Annual Report Format

National Pollutant Discharge Elimination System Stormwater Program

MS4 Annual Report Format

Check box if you are submitting an individual Annual Report with one or more cooperative program elements. ☒

Check box if you are submitting an individual Annual Report with individual program elements only. ☐

Check box if this is a new name, address, etc. ☐

1. MS4(s) Information

NMR04A014 City of Albuquerque

Name of MS4

Kathleen	Verhage	Acting Section Manager
Name of Contact Person (First)	(Last)	(Title)

(505) 768-3654	kverhage@cabq.gov
Telephone (including area code)	E-mail

PO Box 1293, City of Albuquerque, Dept of Municipal Development, Attn: Kathy Verhage Rm 301

Mailing Address

Albuquerque	NM	87103
City	State	ZIP code

What size population does your MS4(s) serve? 546,000 NPDES number

What is the reporting period for this report? (mm/dd/yyyy) From Jul 1, 2018 to Jun 30, 2019

2. Water Quality Priorities

A. Does your MS4(s) discharge to waters listed as impaired on a state 303(d) list? ☒ Yes ☐ No

B. If yes, identify each impaired water, the impairment, whether a TMDL has been approved by EPA for each, and whether the TMDL assigns a wasteload allocation to your MS4(s). Use a new line for each impairment, and attach additional pages as necessary.

Impaired Water	Impairment	Approved TMDL		TMDL assigns WLA to MS4	
Middle Rio Grande	E-coli	☒ Yes	☐ No	☒ Yes	☐ No
Middle Rio Grande	Temperature	☐ Yes	☒ No	☐ Yes	☐ No
Middle Rio Grande	Polychlorinated Biphenyls in Fi	☐ Yes	☒ No	☐ Yes	☐ No
Middle Rio Grande	Dissolved Oxygen	☐ Yes	☒ No	☐ Yes	☐ No

2. B. Continued

Impaired Water	Impairment	Approved TMDL		TMDL assigns WLA to MS4	
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No

C. What specific sources contributing to the impairment(s) are you targeting in your stormwater program?

Pet waste, household hazardous waste, trash and debris (including natural vegetation), sediments, automotive fluids including oil and grease, detergents. A "floatables study" and source testing have been performed. Birds are primary

D. Do you discharge to any high-quality waters (e.g., Tier 2, Tier 3, outstanding natural resource waters, or other state or federal designation)? ☐ Yes ☒ No

E. Are you implementing additional specific provisions to ensure their continued integrity? ☐ Yes ☒ No

3. Public Education and Public Participation

A. Is your public education program targeting specific pollutants and sources of those pollutants? ☒ Yes ☐ No

B. If yes, what are the specific sources and/or pollutants addressed by your public education program?

Our public education program targets pet waste, household hazardous waste, trash and debris (including natural vegetation), sediments, automotive fluids, detergents, fertilizers, pesticides

C. Note specific successful outcome(s) (e.g., quantified reduction in fertilizer use; NOT tasks, events, publications) fully or partially attributable to your public education program during this reporting period.

Survey showed that over 80% of individuals understood the importance of pollution prevention and valued improved stormwater quality. One household hazardous recycling event resulted in the participation of 631 individuals. See

D. Do you have an advisory committee or other body comprised of the public and other stakeholders that provides regular input on your stormwater program? ☒ Yes ☐ No

4. Construction

A. Do you have an ordinance or other regulatory mechanism stipulating:

Erosion and sediment control requirements? ☒ Yes ☐ No

Other construction waste control requirements? ☒ Yes ☐ No

Requirement to submit construction plans for review? ☒ Yes ☐ No

MS4 enforcement authority? ☒ Yes ☐ No

B. Do you have written procedures for:

Reviewing construction plans? ☒ Yes ☐ No

Performing inspections? ☒ Yes ☐ No

Responding to violations? ☒ Yes ☐ No

C. Identify the number of active construction sites ≥ 1 acre in operation in your jurisdiction at any time during the reporting period. 90

D. How many of the sites identified in 4.C did you inspect during this reporting period? 90

E. Describe, on average, the frequency with which your program conducts construction site inspections.

Each site greater than 1 ac is inspected at least once while active. Larger sites with longer active periods are inspected more frequently. On average, the COA performs 45 private development construction inspections per week.

F. Do you prioritize certain construction sites for more frequent inspections? ☒ Yes ☐ No

If Yes, based on what criteria? Size, length of time open, direct impervious connection to a water of the US

G. Identify which of the following types of enforcement actions you used during the reporting period for construction activities, indicate the number of actions, or note those for which you do not have authority:

☒ Yes	Notice of violation	307	No Authority	☐
☒ Yes	Administrative fines	22	No Authority	☐
☐ Yes	Stop Work Orders		No Authority	☒
☒ Yes	Civil penalties	0	No Authority	☐
☐ Yes	Criminal actions		No Authority	☒
☐ Yes	Administrative orders		No Authority	☒
☐ Yes	Other			

H. Do you use an electronic tool (e.g., GIS, data base, spreadsheet) to track the locations, inspection results, and enforcement actions of active construction sites in your jurisdiction? ☒ Yes ☐ No

I. What are the 3 most common types of violations documented during this reporting period?

1. Wash-out not in an acceptable facility. 2. Construction and domestic waste (trash/Litter) not in an acceptable container. 3. Track-out onto street, vehicle tracking control requires maintenance or no vehicle tracking control is

J. How often do municipal employees receive training on the construction program? Annually

5. Illicit Discharge Elimination

A. Have you completed a map of all outfalls and receiving waters of your storm sewer system? ☒ Yes ☐ No

B. Have you completed a map of all storm drain pipes and other conveyances in the storm sewer system? ☒ Yes ☐ No

C. Identify the number of outfalls in your storm sewer system. 37 (see Item 10)

D. Do you have documented procedures, including frequency, for screening outfalls? ☒ Yes ☐ No

E. Of the outfalls identified in 5.C, how many were screened for dry weather discharges during this reporting period?

37

F. Of the outfalls identified in 5.C, how many have been screened for dry weather discharges at any time since you obtained MS4 permit coverage? see Item 10

G. What is your frequency for screening outfalls for illicit discharges? Describe any variation based on size/type.

Complaints regarding spills are investigated immediately (see item 10). The 37 Dry Weather Screening outfalls are screened annually during the Dry Season--typically sometime between November and March (see item 10 for more

H. Do you have an ordinance or other regulatory mechanism that effectively prohibits illicit discharges? ☒ Yes ☐ No

I. Do you have an ordinance or other regulatory mechanism that provides authority for you to take enforcement action and/or recover costs for addressing illicit discharges? ☒ Yes ☐ No

J. During this reporting period, how many illicit discharges/illegal connections have you discovered? see item 10

K. Of those illicit discharges/illegal connections that have been discovered or reported, how many have been eliminated? All Complai

L. How often do municipal employees receive training on the illicit discharge program? Annually (appropriate d

6. Stormwater Management for Municipal Operations

A. Have stormwater pollution prevention plans (or an equivalent plan) been developed for:

All public parks, ball fields, other recreational facilities and other open spaces	☐ Yes	☒ No
All municipal construction activities, including those disturbing less than 1 acre	☐ Yes	☒ No
All municipal turf grass/landscape management activities	☒ Yes	☐ No
All municipal vehicle fueling, operation and maintenance activities	☒ Yes	☐ No
All municipal maintenance yards	☒ Yes	☐ No
All municipal waste handling and disposal areas	☒ Yes	☐ No

Other: All COA golf courses have SWPPPs for their operations. General Parks and Open Spaces do not.

B. Are stormwater inspections conducted at these facilities? ☒ Yes ☐ No

C. If Yes, at what frequency are inspections conducted? It depends. See It

D. List activities for which operating procedures or management practices specific to stormwater management have been developed (e.g., road repairs, catch basin cleaning).

Construction activities, detention pond cleaning, storm inlet and drain cleaning, fueling operations, storage of hazardous and non-hazardous materials, general good housekeeping operations, landfill operations

E. Do you prioritize certain municipal activities and/or facilities for more frequent inspection? ☒ Yes ☐ No

F. If Yes, which activities and/or facilities receive most frequent inspections?

Most frequent inspections occur at facilities that require a Multi Sector General Permit (Landfill and Transit). Good Housekeeping inspections are performed at general maintenance facilities quarterly and monthly if the facility has had

G. Do all municipal employees and contractors overseeing planning and implementation of stormwater-related activities receive comprehensive training on stormwater management? ☒ Yes ☐ No

H. If yes, do you also provide regular updates and refreshers? ☒ Yes ☐ No

I. If so, how frequently and/or under what circumstances?

Annual refreshers are provided. In addition, training materials have been provided to supervisors to be used when staff turns over and new employees are hired. On the spot training also occurs during inspections, as needed.

7. Long-term (Post-Construction) Stormwater Measures

A. Do you have an ordinance or other regulatory mechanism to require:

Site plan reviews for stormwater/water quality of all new and re-development projects?	☒ Yes	☐ No
Long-term operation and maintenance of stormwater management controls?	☐ Yes	☒ No
Retrofitting to incorporate long-term stormwater management controls?	☐ Yes	☒ No

B. If you have retrofit requirements, what are the circumstances/criteria?

None required at this time.

C What are your criteria for determining which new/re-development stormwater plans you will review (e.g., all projects, projects disturbing greater than one acre, etc.)?

Per COA ordinance the following projects are reviewed: 1. more than 500 cubic yards fill exported or impored ; 2. Commercial projects that disturb > 1000 sq ft , 3. Residential projects > 1 Ac, 4. Parking lots > 2000 sq ft, 5. grade change

D. Do you require water quality or quantity design standards or performance standards, either directly or by reference to a state or other standard, be met for new development and re-development? ☒ Yes ☐ No

E. Do these performance or design standards require that pre-development hydrology be met for:

Flow volumes	☒ Yes	☐ No
Peak discharge rates	☒ Yes	☐ No
Discharge frequency	☐ Yes	☒ No
Flow duration	☐ Yes	☒ No

F. Please provide the URL/reference where all post-construction stormwater management standards can be found.

www.amlegal.com/albuquerque_nm/ See the Development Process Manual or DPM

G. How many development and redevelopment project plans were reviewed during the reporting period to assess impacts to water quality and receiving stream protection? 803

H. How many of the plans identified in 7.G were approved? 540

I. How many privately owned permanent stormwater management practices/facilities were inspected during the reporting period? 188

J. How many of the practices/facilities identified in I were found to have inadequate maintenance? 0

K. How long do you give operators to remedy any operation and maintenance deficiencies identified during inspections? 30 days

L. Do you have authority to take enforcement action for failure to properly operate and maintain stormwater practices/facilities? ☒ Yes ☐ No

M. How many formal enforcement actions (i.e., more than a verbal or written warning) were taken for failure to adequately operate and/or maintain stormwater management practices? 0

N. Do you use an electronic tool (e.g., GIS, database, spreadsheet) to track post-construction BMPs, inspections and maintenance? ☒ Yes ☐ No

O. Do all municipal departments and/or staff (as relevant) have access to this tracking system? ☒ Yes ☐ No

P. How often do municipal employees receive training on the post-construction program? Planning - Month

8. Program Resources

A. What was the annual expenditure to implement MS4 permit requirements this reporting period? $9 Million

B. What is next year's budget for implementing the requirements of your MS4 NPDES permit? $8 Million

C. This year what is/are your source(s) of funding for the stormwater program, and annual revenue (amount or percentage) derived from each?

Source:		Amount $		OR %	
Source:	G.O. Bonds (NPDES, Water Quality Compliance)	Amount $	1.1 Milli	OR %	
Source:	General Funds (Arroyo and Street Maintenance)	Amount $	4.5 Milli	OR %	
Source:	Customer Billing (Household Hazardous Waste, G	Amount $	3.4 Milli	OR %	

D. How many FTEs does your municipality devote to the stormwater program (specifically for implementing the stormwater program; not municipal employees with other primary responsibilities)? 41 see

E. Do you share program implementation responsibilities with any other entities? ☒ Yes ☐ No

Entity	Activity/Task/Responsibility	Your Oversight/Accountability Mechanism
AMAFCA, SCAFC	Sampling and Monitoring Wet Weath	Memo of Understanding
AMAFCA, SCAFC	Education and Outreach	Memo of Understanding
AMAFCA, SCAFC	General Watershed Based Permit Impl	Memo of Understanding

9. Evaluating/Measuring Progress

A. What indicators do you use to evaluate the overall effectiveness of your stormwater management program, how long have you been tracking them, and at what frequency? These are not measurable goals for individual management practices or tasks, but large-scale or long-term metrics for the overall program, such as macroinvertebrate community indices, measures of effective impervious cover in the watershed, indicators of in-stream hydrologic stability, etc.

Indicator	Began Tracking (year)	Frequency	Number of Locations
Example: E. coli	2003	Weekly April–September	20
Industrial Inspections	2014	MSGP required once per permit	126 in FY2019
Student and General Public Education an	2006	Reporting Annually, Events Held	Varies
Dry Weather Screening	2003	Annually	37 in FY 2019
Good Housekeeping Inspections	2012	Quarterly to Monthly (if needed	34 locations, 13
Citizen Complaints	2003	As complaints arise	170 in FY2019

B. What environmental quality trends have you documented over the duration of your stormwater program? Reports or summaries can be attached electronically, or provide the URL to where they may be found on the Web.

https://www.cabq.gov/municipaldevelopment/our-department/engineering/storm-water-management/municipal-separate-storm-sewer-system-ms4-permit.

10. Additional Information

Please attach any additional information on the performance of your MS4 program, including information required in Parts I.C, I.D, and III.B. If providing clarification to any of the questions above, please provide the question number (e.g., 2C) in your response.

Certification Statement and Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

☒ Yes ☐ No

Federal regulations require this application to be signed as follows: **For a municipal, State, Federal, or other public facility**: by either a principal executive or ranking elected official.

Signature | Name of Certifying Official, Title | Date (mm/dd/yyyy)

CITY OF ALBUQUERQUE

Annual Report for Fiscal Year 2019 (FY19)

July 1, 2018 to June 30, 2019

NPDES PERMIT NMR04A000, Effective Date December 22, 2014

eNOI Application Date June 21, 2015

ITEM 10 Additional Information

I.C. Special Conditions

1. Compliance with Water Quality Standards

d. Dissolved Oxygen (DO): The Arroyo Metropolitan Flood Control Authority (AMAFCA) continues to monitor the DO in the Rio Grande

e. Polychlorinated Biphenyls (PCBs): The COA began a sediment assessment study in FY16 which was completed in FY17 with a final letter report submitted in FY18 on July 10, 2017. Under this study, soil samples were taken from the 5 outfall locations monitored under the former Phase 1 permit NMS000101 as well as from up and down stream locations along the Rio Grande. These samples were analyzed for PCBs using the Aroclor method. Detection of PCBs at any of these location resulted in further sampling and analysis of upstream areas. Twelve locations were ultimately screened for both PCBs and select metals in the Phase II Assessment based upon the results of the original study. The Synthetic Precipitation Leaching Procedure (SPLP) was used to analyze the following metals: aluminum, cadmium, chromium, lead, nickel, and zinc. No PCBs were found in any of the sediment samples at concentrations above the detection limits that ranged from 0.019 to 0.2 milligrams per kilogram (mg/kg) for the six aroclors analyzed. Both studies are available in the FY17 Annual Report under Attachment 1. The Phase II Assessment was also included in last year's (FY18) Annual Report under Attachment 1. As discussed in the Progress Evaluation Report for the Sediment Pollutant Load Reduction Strategy (see Attachment 1), recent investigations did not identify any sources of PCBs in the Albuquerque metropolitan area that represent a continuing impact to the waters of the Rio Grande.

f. Temperature: AMAFCA continues to monitor temperature in the Rio Grande and at the North Diversion Channel through the deployment of sondes. Analysis of stormwater flows for temperature under the former Phase 1 permit indicates no contribution to temperature exceedances in the Middle Rio Grande and continues to indicate no contribution to any potential temperature exceedances.

2. Discharges to Impaired Waters with and without approved TMDLs

b(i)(c)B: The Monitoring Cooperative has successfully implemented the sampling plan submitted in June 2016 and over the course of the past 3 years, collected and submitted

the results of 7 storm events at 2 locations, 4 events during the wet season and 3 events during the dry season.

The permittees under NMR04A000 have worked with the New Mexico Environment Department (NMED) staff on a methodology to calculate the bacterial load contributed by the source area during a storm event. The results of the Total Maximum Daily Load (TMDL) calculations using this methodology are also in Attachment 2.

During FY19, one set of a wet weather sample was collected from the Rio Grande during the dry season on March 11 and 12 at compliance locations at the northern (Agnogstura Diversion Dam) and southern (Isleta Diversion Dam) boundaries of the watershed. No samples were collected during the wet season from July 1, 2018 through September 30, 2018 because the Monitoring Cooperative completed all of the wet weather monitoring required by the permit in FY18. A report that provides the results of the sampling from this event is included in Attachment 2. Copies of the Discharge Monitoring Reports (DMRs) submitted electronically in the NetDMR system and the results of the Total Maximum Daily Load (TMDL) calculations are also included in Attachment 2. No exceedances were reported at the northern location. The result from the southern location indicated a concentration of e-coli bacteria at 298 colony forming units (CFU) per 100 milliliters (mL).

The COA continues its work to reduce e-coli loads through the pet waste education and outreach program. Dog waste had been estimated to contribute about 22% of the fecal coliform bacteria to the Middle Rio Grande watershed in a microbial source tracking (MST) study completed in 2004 that. A new MST that uses quantitative polymerase chain reaction (qPCR) analysis and fecal indicator bacteria (FIB) by E. coli enumeration was scoped and commissioned by the COA in FY17 at an estimated cost of $250,000. The Quality Assurance Program Plan (QAPP) and sampling and analysis plan (SAP) were prepared in FY17 and the study completed in FY19. The results of this study indicated the presence of moderate canine markers in channels, drains, and arroyos in the northeast and northwest parts of the watershed. Weak human markers were also indicated near some of the bridges as well as downstream of the sanitary reclamation facility. Continued examination of these sources are underway. A copy of the report is provided in Attachment 3.

Finally, the Middle Rio Grande Storm Water Quality Team (MRGSWQT), of which the COA is a member, funded an additional year of dry weather E.coli data collection by college students as part of the Bosque Ecosystem Monitoring Program (BEMP) to better understand the baseline concentration of E.coli prior to storm events. The MRGSWQT also funded a master student's thesis that studied the variability of E.coli concentrations in a water column compared to the juxtaposed sediment.

b(i)(e)A,C,D,E: The COA continues to work with the Albuquerque Bernalillo County Water Utility Authority (WUA) to make improvements to its pump and lift stations. The WUA provides the COA and AMAFCA with copies of DMRs each month that report sanitary overflows, should any have occurred, and corresponding disinfection and clean up efforts.

The COA repaired one residential cross connections that had been illegally discharging to the storm drain system in FY19. A map showing the location of the repaired cross connection is included in Attachment 4.

b(i)(e)C: The Environmental Health Department continues to work with restaurants to reduce waste sources of bacteria from grease traps.

b(i)(e)D. The storm drainage department continues to work with BioPark staff in an effort to ensure that bacteria from animal waste are not discharged to the MS4.

b(i)(e)E. The COA contributes funding to and participates as a founding member of the Storm Water Quality Team. The Team continues education and outreach efforts to educate residents on the effects of bacteria associated with improper pet waste disposal. The COA also works with both the Team and the WUA to educate the public with regards to proper oil and grease disposal and the potential for sanitary overflows due to clogged plumbing.

b(iii)(c): The COA continues to work with Bernalillo County (BernCo) and the NM Department of Transportation (NMDOT) on a joint sampling program in the Tijeras Arroyo. A total maximum daily load for nutrients was approved by the Water Quality Control Commission on September 12, 2017. As a result the COA has begun to develop Best Management Practice (BMP) to minimize impacts, if any, due to potential contributions from the urbanized area that makes up about 1% of the watershed.

In addition, during the late spring of FY18, the COA began work on a joint funding agreement (JFA) with the Ciudad Soil Water and Conservation District for the preparation of a Watershed Based Plan for the Upper Tijeras Arroyo. The JFA was signed in September 2018 and a request for proposals to prepare the plan was issued in early 2019. The winning proposal was selected in February 2019 and is provided in Attachment 5. Work in progress includes the identification of potential sources, development of input parameters for the Spreadsheet Tool for Estimation of Pollutant Load (STEPL), and solicitation of stakeholder input.

The COA Open Space Department created a Tijeras Arroyo Bio-Zone Resource Management Plan for a 3.7 mile stretch of the arroyo along Tijeras Creek in 2014 with a goal of conserving native vegetation and wildlife habitat and restoring vegetation and wildlife where feasible. The COA is actively working on purchasing plots (about 46 acres) in the arroyo for this purpose.

3. Endangered Species Act (ESA) Requirements

a(i) AMAFCA has filled in the former embayment reducing the potential for low DO waters to occur and subsequently discharge from the North Diversion Channel (NDC) to the Rio Grande. The COA continues to install water quality features, such as trash racks and water quality manholes in efforts to collect and reduce trash and debris that contribute to the DO problem.

a(ii) AMAFCA has submitted a revised strategy for reduction of pollutants contributed by the embayment. As stated above, the embayment has been filled in. Annual Incident Take Reports are submitted by AMAFCA to the EPA and Fish and Wildlife Service (FWS).

b(i) See also item 1.e. The COA performed two Sediment Assessment Studies that included an analysis of PCBs and SPLP metals in soils. The first, finalized in October

2016 assessed sediments from 5 major outfall locations. The second, completed in July 2017, further examined potential upstream sources, if any. No PCBs were reported. Metals in general, with the exceptions of Aluminum (Al) and Zinc (Zn) were present at concentrations below detection limits. Detected Al concentrations ranged from 1.9 to 11 mg/L. Detected Zn concentrations ranged from 0.022 to 0.048 mg/L. The Phase II assessment was provided in last year's annual report under Attachment 1. The Phase I Assessment was included in the FY17 Annual Report under Attachment 1.

b(iv) A Progress Evaluation Report for the Sediment Pollutant Load Reduction Strategy (see Attachment 1) was prepared using the results of several previous studies submitted by the COA including data from the Sediment Assessments as well as the USGS Summary of Urban Stormwater Quality In Albuquerque, 2003-2012. Additional data, provided by Bernalillo County, Southern Sandoval County Arroyo Flood Control Authority (SSAFCA) and AMAFCA, was used to provide baseline sediment loading and relative potential for contamination by these sediments from urban activities for areas draining to the Rio Grande. The results of this study pinpointed areas of highest sediment discharge into the Rio Grande during the permit period, which included the North Diversion Channel and Tijeras Arroyo. Although many BMPs, such as ponds, trash racks, and other water quality structures are already in place to reduce pollutants and sediment loads to these drainages, additional projects to improve water quality will continue to be implemented.

I.D. Stormwater Management Program (SWMP)

A copy of the updated SWMP adapted for compliance under NMR04A000 was included with the first full Annual Report on December 1, 2016. An update has been prepared and is provided with this report. The SWMP is available on the COA's DMD MS4 webpage. Copies are also available on compact disks that will be mailed to regulators, stakeholders, and others upon request.

5b. Post-Construction Stormwater Management in New Development and Redevelopment .

(i)(c) Fourteen structural stormwater quality features have been installed since the WBP effective date of December 22, 2014. A listing, map, and description of these features is included in Attachment 6. Of particular note for FY19 is a joint water quality project between the COA and AMAFCA currently under construction. Channel improvements to the Lower Bear Canyon Tributary, began in early 2020. This project is expected to increase the efficiency of the storm drainage system in the Bear Arroyo watershed and provide a regional water quality structure to collect trash and debris before discharging into the NDC and ultimately into the Rio Grande.

(ii)(b) An ordinance increasing the volume of capture of the 80th and 90th percentile storm events and supplying provisions for inspection of post construction stormwater controls and enforcement to ensure compliance was introduced to City Council on January 3, 2018, passed on September 17, 2018, and sent to the Mayor for signature on September 25, 2018. Click on the following link for an electronic copy of the ordinance.

https://cabq.legistar.com/LegislationDetail.aspx?ID=3301114&GUID=CE7540BE-83FF-40DD-B072-CC5E5751E003

(ii)(c) Prior to construction for private development, personnel from Planning Hydrology review BMPs designed to capture the 80th and 90th percentile storm events. Inspectors from the Storm Drainage Section perform inspections of these features every 5 years to ensure proper maintenance. This year 29 inspections of private facilities were conducted.

(vi) Approximately 123 acres of impervious area (IA) was added to the Albuquerque Metropolitan area in FY19 (see Attachment 7). Of this area, roughly 90% drains to first flush ponds and regional features which collect dirt, debris, and trash. Therefore the directly connected impervious area (DCIA) added in FY19 was 123 acres minus 108 acres for a total of 15 acres. The methodology for estimating impervious area is based on land use codes and was sent to EPA in its 2013 Annual report under the former Phase 1 permit NMS000101.

(vii) The COA's Master Drainage Plan provides a ranking of MS4-owned properties for flood control projects including retrofits.

5c. Pollution Prevention/Good Housekeeping for Municipal/Co-permittee Operations

(i)(a) Storm Drainage Inspection staff work with maintenance personnel to ensure adequate training is provided. Annual training of maintenance staff is conducted. In addition, inspections of maintenance facilities is performed quarterly at a minimum. Inspection staff conducted 136 Good Housekeeping inspections at COA facilities in FY19.

5d. Industrial and High Risk Runoff

(vi) In FY19, 136 inspections (126 initial, 10 follow-up) of private facilities that require a Multi Sector General Permit (MSGP) were performed by COA in-house inspectors.

5e. Illicit Discharges and Improper Disposal

(i)e, ii The COA implemented a 311 complaint system to report illicit discharges in the mid-2000s. See Attachment 8 for a map showing the locations of discharges and associated inspection forms reported via this system in FY19.

(iv)A,C The Storm Drainage Section of the Department of Municipal Development (DMD) coordinated with the Solid Waste Department to host one Household Hazardous Waste recycling events in FY2019. Over 630 residents participated in the event, held on August 18, 2018, during which approximately 35,000 pounds of materials were collected. In addition, 10,799 COA residents disposed of roughly 403,000 pounds of hazardous materials at the collection facility during FY19 at a cost of $841,400. Of these materials, over 322,000 pounds or 82 percent were recycled.

(vii) In addition to utilizing the 311 complaint system to pinpoint illicit discharges, the COA implemented an Illicit Discharge Detection and Elimination (IDDE) inspection program in FY16 in order to mitigate the influence of discharges with lower risk but higher likelihood of occurrence. At the onset of the program, a local environmental consulting firm was hired to supply staff to perform these inspections. The COA hired an inspector supervisor and 3 inspectors as permanent employees in FY17 to assist in IDDE inspection and data tracking efforts in future years. In late FY18, COA inspectors took over the IDDE inspection program. A summary of the IDDE inspection program that

was conducted by the consultant is provided in Attachment 9. Consultant staff performed 402 inspections at auto related businesses (380), engine repair facilities (11), carpet cleaners (7) and lawn care (4).

5f. Control of Floatables Discharges

(iii). Street Sweeping crews picked up 6100 cubic yards (5900 tons) of dirt and debris from 39,500 miles of COA Right of Way in FY19. Dirt comprises about 65% of the material picked up by street sweepers with debris making up the remaining 35%. Of the debris, roughly 70% is vegetation. The remaining waste is comprised of plastics (bottles, bags, containers/lids) at 15%, paper and cardboard at 10% and metal at 5%.

In addition, Arroyo Maintenance cleaned 3620 cubic yards of dirt, trash, debris, and vegetation from the storm drain system during FY19.

III.A. Monitoring and Assessment

1. Wet Weather Reporting: The COA participates in the Middle Rio Grande monitoring cooperative. During FY16, the monitoring cooperative, of which the COA is a part, prepared a sampling and analysis plan which was submitted to EPA Region 6 in June 2016 for approval. Permit requirements call for the submission of 7 samples by the end of the permit term. In FY19, the monitoring cooperative collected the one remaining sample during the dry season. The sampling results and a short discussion are provided in a letter report included in Attachment 2. As required in Sections D.1 and D.2, the monitoring results were submitted in the NetDMR system and hard copies and are provided in Attachment 2. Attachment 2 also includes the TMDL calculations and results.

2. Dry Weather Reporting: Dry weather screening is performed at 37 locations (25 direct discharge points to the Rio Grande and an additional 12 locations to assess subwatersheds). See Attachment 10 for results.

3. Floatables Reporting: See item 5f above. In addition an estimated 15 cubic yards of floatables were removed from the Barelas Pump Station in FY2018, the COA's selected floatables monitoring location. AMAFCA provides the information on floatables monitoring in the NDC.

4. Industrial and High Risk Reporting: The COA's landfills are located outside of the MS4 and drain to the Rio Puerco rather than the Rio Grande. Nonetheless, the landfills are permitted under the federal MSGP.

4.b COA's transfer stations, solid waste station at Pino Yards, transit stations, and fueling facilities, all located within the MS4, are classed as sector P and require quarterly visual monitoring only. Because of sporadic localized events that often occur during evening, weekends and other non-work hours, it is often difficult to obtain results. Nonetheless quarterly visual inspections are completed when possible. See Attachment 11 for the visual monitoring results.

ADDITIONAL INFORMATION TO SUPPLEMENT REPORT FORM

Item 3. Public Participation and Education

C. The COA Storm Drainage staff participate in and contributed $48,000 in dues to the MRGSWQT in FY19. Outreach activities performed by the 9 agencies that comprise the MRGSWQT are provided in the Outcomes Report in Attachment 12.

In addition, COA Parks and Recreation and Open Space staff led clean up events at five open space locations in the spring of 2019. During these events, 224 volunteers removed almost 200 pounds of dog waste; 17 bags of trash and mixed recycling; and 35 gallons of glass from trails. A cleanup along the banks of the Rio Grande in mid-May led to the removal of 12 bags of mixed recycling, 15 gallons of glass, 23 tires, a bathtub filled with medical supplies, car parts, 3 mattresses, and 3 shopping carts from the river by 60 volunteers. Staff members also planted over 1000 cottonwood and 200 shrubs in the bosque with the help of 1065 youth and 247 adults during FY19.

The Storm Drainage Section also provided monetary support to The Nature Conservancy ($48,000) during FY18 in their efforts to promote public education in the schools and in the adult community in the area of watershed health.

Item 5. Illicit Discharges

C. There are 25 discharge points to the Rio Grande. Assessment of industrial and commercial development within subwatersheds of the Albuquerque Metropolitan area as led to the selection of 12 additional dry weather screening locations. In total, 37 locations have been selected for dry weather screening. See Attachment 5, Dry Weather Screening for the results.

J. During the reporting period from July 1, 2018 through June 30, 2019, 77 improper discharge related complaints were reported to the 311 system and investigated by a City storm drainage engineer. See Attachment 8 for a map indicating location of discharge. During this time period 1 cross connection into the storm drain was repaired (See Attachment 4)

In May 2018, an oil spill occurred at the Yale facility fueling station from an oil maintenance line. Approximately 150 gallons of oil was released onto the fuel pad and oil water separator. Yale facility staff contacted ACT Enviro to respond to the spill. ACT Enviro drummed 150 gallons of oil and 55 gallons of floor dry containing oil. The spill was contained and properly disposed of with no breech to the oil water separator. Spilled materials did not leave the facility. Since then, facility staff have been striving towards improving good housekeeping, including changing protocol for the use of the fluid pump which is now turned off when the facility is closed.

Item 8. Program Resources

D. 41 full time employees that perform work related to the COA's MS4 include: 32 Arroyo/Storm Drainage Maintenance personnel (including clerical and administrative staff), 8 Storm Drainage personnel (manager, 3 engineers, 1 supervisor inspector, and 3 inspectors), and 1 Stormwater Quality Engineer in Planning.

This 41 does not include 76 FTE's and 80 full time contractor positions in the Clean City Solid Waste program which picks up trash and floatables nor 22 employees in Street Maintenance that perform street sweeping. This also does not include Parks and Open Space personnel who perform restoration projects, host citizen clean up days, and perform education and outreach.

In addition to FTE's employed by the COA, the Department of Municipal Development, Storm Drainage Section budgets and spends approximately $400,000 per year on consultants hired solely to perform NPDES permit compliance tasks. This is the equivalent of 4 FTE's.

Attachment 1

Sediment Pollutant Load Reduction Strategy

Progress Evaluation Report for the Sediment Pollutant Load Reduction Strategy

Prepared for **Bernalillo County *in cooperation with* Albuquerque Metropolitan Arroyo Flood Control Authority, City of Albuquerque, and Southern Sandoval County Flood Control Authority**

June 25, 2019

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A Laboratory Report for Spring 2019 Sediment Sampling

Progress Evaluation Report for the Sediment Pollutant Load Reduction Strategy

1. Introduction

Daniel B. Stephens & Associates, Inc. (DBS&A) has prepared this progress evaluation report for Bohannon Huston Inc. (BHI) for submittal to Bernalillo County (the County) in cooperation with the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA), the City of Albuquerque (COA), and the Southern Sandoval County Flood Control Authority (SSCAFCA). A sediment load reduction strategy (the Strategy) is being implemented by the permittees to reduce stormwater-related pollutant loads associated with sediment into the receiving water of the Rio Grande. The Strategy is being developed in accordance with the Middle Rio Grande (MRG) watershed-based municipal separate storm sewer system (MS4) permit (Permit No. NMR04A000 [effective December 2014]) (the Permit). The Strategy includes the following elements:

- Sediment assessment
- Baseline sediment loading estimates
- Targeted controls and best management practices (BMPs)
- Monitoring and interim reporting to assess progress
- Progress evaluation and reporting regarding overall success of the Strategy
- Verification of no adverse effect to the critical habitat of any threatened or endangered species

DBS&A has assessed the overall success of the Strategy by compiling direct and indirect measurements of program effectiveness and conducting a supporting sediment sampling event. This report presents the progress evaluation and assessment of the Strategy. Section 2 provides a literature review regarding sediment loading and transport in the Middle Rio Grande, along with a list of likely species present. Section 3 discusses the supporting sediment sampling event conducted by DBS&A. Section 4 compiles available water quality and sediment

data, reviews results, and evaluates the Strategy's overall success. Section 5 summarizes the findings and recommendations of the Strategy evaluation and assessment.

2. Background

This section provides a review of relevant professional papers and reports regarding sediment loading and transport in the Middle Rio Grande.

2.1 City of Albuquerque 2016 Sediment Assessment

In cooperation with COA, AMAFCA, New Mexico Department of Transportation (NMDOT), and the University of New Mexico (UNM), the U.S. Geological Survey (USGS) conducted a sampling study of stormwater in the Albuquerque metropolitan area, with samples collected between 2011 and 2015 (DBS&A, 2016). A total of 6 sample locations were selected for investigation as areas that could be contributing to pollutants in sediment entering the Rio Grande during stormwater discharges because they discharge stormwater directly or indirectly to the Rio Grande (DBS&A, 2016). The sampling locations were located at the downstream ends of drainage basins, and included the following:

- North Diversion Channel (NDC) near Alameda (North Diversion Channel)
- Mariposa Diversion of San Antonio Arroyo (San Antonio Arroyo)
- COA Barelas Lift Station No. 32 (Barelas Pump Station)
- San Jose Drain at Woodward Road at Albuquerque (San Jose Drain)
- South Diversion Channel (SDC) above Tijeras Arroyo (South Diversion Channel)
- Tijeras Arroyo near Albuquerque (Tijeras Arroyo)

The report included a review and comparison of water quality data for total dissolved solids (TDS), total suspended solids (TSS), metals, and polychlorinated biphenyls (PCBs) from these locations with corresponding data from the Rio Grande within the greater Albuquerque area (DBS&A, 2016). In general, TDS and TSS concentrations detected in stormwater samples were similar to those detected in the samples collected from the Rio Grande; however, while TDS

concentrations from Rio Grande sampling locations exhibited less variability compared to concentrations measured at the outfalls, TDS concentrations in the Rio Grande samples also appeared typically higher, indicating that the detention ponds and other BMPs within the contributing watersheds to reduce sediment loading to the river are working and do reduce the amount of contaminants making it to the river. The TSS concentrations at the outfall locations varied widely, but more sediment was frequently contributed from the Tijeras Arroyo, SDC, and NDC outfalls; therefore, this report recommended implementation of additional sediment loading reduction BMPs should be targeted in these drainage areas. Total concentrations of lead, cadmium, and zinc appeared higher in outfall samples than in Rio Grande samples (DBS&A, 2016).

The total PCB concentration of the water samples was estimated by summing the individual congener concentrations using EPA method 1668. Total PCB concentrations in the sampled outfall locations ranged from not detected at two outfall locations to 0.123699 micrograms per liter (µg/L) at the NDC. Overall, the total PCB concentrations in stormwater are generally low, although higher concentrations are noted in the samples collected from the NDC and San Jose Drain outfall locations (DBS&A, 2016). Total PCB concentrations in the Rio Grande in the Albuquerque area have ranged from not detected at the Rio Grande upstream of the NDC location to 0.000276 µg/L at the Rio Grande near Isleta location. The detected total PCB concentration was below the New Mexico and Pueblo of Isleta water quality standard of 0.014 µg/L.

The report recommended that COA investigate several specific areas within its jurisdiction that may be contributing excessive levels of pollutants in sediment entering the Rio Grande during stormwater discharge events, targeting areas within Tijeras Arroyo (upstream of the concrete-lined area) and other arroyos that are contributing higher sediment loads (DBS&A, 2016). The recommended investigation would include analytical analyses to determine the presence or absence of near-surface PCB and metal concentrations in collected sediment, including from arroyo locations upgradient of the urbanized area to estimate background concentrations. These data would supplement historical stormwater analytical data and would allow for spatial comparison of PCB and metal concentrations in sediment between the various arroyos and upgradient background locations, as well as the results of previous investigations (DBS&A, 2016).

2.2 City of Albuquerque 2017 Sediment Sampling

This section summarizes a sampling event conducted by DBS&A in 2017 to characterize the presence or absence of near-surface PCB congeners and metal concentrations in sediment along stormwater channels and outfalls within the Albuquerque metropolitan area, including Tijeras Arroyo, as required by Part 1C-special conditions of the Permit (DBS&A, 2017). The sediment sample locations were determined based on a visual screening that focused on areas of sediment deposition (e.g., areas behind erosion control structures and areas of low flow velocities) or from areas that potentially contribute sediment during stormwater events to the Rio Grande. For comparison purposes, representative background sediment samples were collected from natural arroyo channels located upgradient of urbanized development (DBS&A, 2017).

Sediment samples for PCB and metals analyses were collected at or immediately below ground surface from 12 locations at channels, arroyos, and sediment outfalls maintained by AMAFCA (DBS&A, 2017). A total of 5 of these locations represented background samples collected from natural arroyos upgradient of urbanized development. Samples were analyzed for PCBs and selected metals using EPA methods 8082 and 6010B, respectively. The two common analytical tests for measuring PCB concentrations include EPA method 8082, which analyzes for Aroclors, and EPA method 1668, which analyzes for congeners (Storms et al., 2015).

A synthetic precipitation leaching procedure (SPLP) was conducted on the sediment samples to determine the mobility of aluminum, cadmium, chromium, lead, nickel, and zinc. The SPLP simulates exposure of the sediment to rainfall, and is useful in estimating the leaching potential of metals moving from sediment into stormwater (DBS&A, 2017).

Review of the laboratory analytical data indicates that there were no PCBs present at detectable concentrations in the sediment samples collected along stormwater channels and outfalls within the Albuquerque metropolitan area. Aluminum and zinc were detected in the sediment sample leachate, and may be contributing to stormwater concentrations for these metals (DBS&A, 2017).

2.3 Albuquerque Metropolitan Arroyo Flood Control Agency and City of Albuquerque PCB Program

In 2012, AMAFCA and COA developed a strategy for testing key locations within the NDC and San Jose Drain watersheds in order to investigate the presence of PCBs (AMAFCA, 2017c). The results from the 2012-2014 monitoring of the NDC watershed indicated the presence of PCBs at the Grantline and North Camino Inlets. Based on the data, MS4 partners concluded that there are no "hot spots" in the municipal area that are continuing to produce PCBs, with the possible exception of the Grantline and North Camino watersheds. In 2014-2017, AMAFCA continued activities to identify and eliminate controllable sources of PCBs specific to these two inlets. Specifically, historical PCB data for the NDC were reviewed and assessed, commercial and industrial properties that may have contributed PCBs to the North Camino and the Grantline Channel were identified, and past PCB releases from PNM in these areas were researched. A sampling event in July 2015 at the Grantline and North Camino Inlets detected low concentrations of Aroclor 1260 in only 2 of the 20 samples analyzed with EPA method 1668. Additional sampling in October 2015 and December 2016 detected low concentrations of Aroclor 1260 at the Grantline location. Based on the results of these sampling events, it was reported that the occurrences of PCBs are irregular, and that it is difficult to demonstrate correlation or continuity between individual sample sites. When detected, Aroclor 1260 concentrations were below regulatory levels for handling or disposal. Results of these investigations did not identify a source or sources of PCBs that represent a continuing impact to the waters of the Rio Grande (AMAFCA, 2017c).

2.4 U.S. Geological Survey and Bernalillo County PCB Program

The USGS has been conducting a surface water data collection program for the Bernalillo County Public Works Division since 2004. In 2010, they conducted a stormwater sediment screening program using EPA method 1668 to assess historical PCB discharges from 4 County stormwater systems. The results indicated that PCB Aroclors used for a wide range of applications prior to 1950 remain in the contributing watershed and are transported by stormwater. Further sampling at the County Sanchez Farms stormwater facility established that passive sediment removal followed by treatment in constructed wetlands effectively reduced the concentration of PCBs in stormwater.

The current project is supported by a 5-year Joint Funding Agreement for fiscal year (FY) 2014 through 2019 (USGS, 2018). The project objectives are to monitor and characterize stormwater quality for drainage basins in urbanized portions of Bernalillo County and to obtain rainfall data for water quality monitoring, storm flow predictions (flood frequency), and other hydrologic analyses. In FY2016, satellite telemetry instrumentation was installed at selected rain gages (Paseo Pump, Westside Community Center, and South Valley Library), allowing transmission of near real-time rainfall data; the rain gages at these sites are all functioning correctly (USGS, 2018).

The current focus of this program is on PCB and non-routine sampling, as the County participates with other National Pollutant Discharge Elimination System (NPDES) permittees in the Albuquerque metropolitan area in a larger cooperative, watershed-based sampling program. In 2017 and 2018, samples were collected under this program from 5 locations (Adobe Acres, Sanchez Pump Station, Sanchez Inflow, Paseo, and Alameda) (Table 1) and analyzed for PCBs, suspended sediment, TSS, total organic carbon, and field parameters of temperature, pH, and specific conductance. As shown in Table 1, during the 2018 monsoon period (July to September 2018), 18 environmental and 2 replicate samples were collected (USGS, 2018).

The USGS plans to prepare a detailed analysis of PCB congeners detected at concentrations above laboratory reporting limits, along with a thorough literature review to relate the results of this sampling to other studies and to define potential sources that may be contributing PCBs. The preliminary findings indicate that PCB 11 was found at nearly all of the sampling sites, and has been found in the air and water at many locations in the U.S. This suggests that its presence may be related to disposal of consumer goods that make their way into urban waterways (Rodenburg et al., 2010).

In the FY2019 dry season (November-June), the USGS plans to collect 10 samples plus 1 blank sample from the same 5 sampling locations listed above. They also plan to finalize their analysis and approval of the recent data, compare rainfall runoff models, select the model for use in computing discharge values from the sampled rain events, and prepare a report (USGS, 2018).

2.5 U.S. Geological Survey Water Quality Data

The USGS has an urban stormwater program in the Albuquerque metropolitan area, with data available online. The program began in 1976, when AMAFCA, COA, and USGS began collecting hydrologic data to help assess the quality and quantity of surface water resources to determine long-term trends in the Albuquerque area. The objectives of the program are to collect surface water, rainfall, and water quality data for monitoring of water quality, modeling rainfall/runoff, predicting storm flow, and performing other hydrologic analyses as needed by local and other government agencies (USGS, 2019a).

During any particular water year (October 1 to September 30) since 1976, a selected number of streamflow gaging stations and rain gages have been operational in the Albuquerque urban-data collection program. The project website currently has links to data for 11 surface water gages, 2 recording crest-state gages, 2 other crest-state gages, and 18 rain gages (USGS, 2019a). In addition, data are available in the USGS National Water Information System (NWIS) database for the discharge outfalls and for several stream gage locations along the Rio Grande within the greater Albuquerque area (USGS, 2019b). USGS data are discussed in Section 4.

2.6 Potential Species Present

Table 2 summarizes the likelihood of occurrence of state-listed species within the Middle Rio Grande MS4 Permit watershed. State-listed species with the likelihood of occurrence include 1 plant species (Parish's alkali grass), 1 fish species (Rio Grande silvery minnow), 1 mollusk species (paper pondshell), 7 bird species (southwestern willow flycatcher, brown pelican, bald eagle, peregrine falcon, neotropic cormorant, common black hawk, and gray vireo), and 1 mammal species (spotted bat).

Table 3 summarizes the likelihood of occurrence of federally listed species within the Middle Rio Grande MS4 Permit watershed. Federally listed species with the likelihood of occurrence include 1 fish species (Rio Grande silvery minnow) and 2 bird species (southwestern willow flycatcher and yellow-billed cuckoo).

2.7 Potential Effects to Any Threatened or Endangered Species

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA), as amended (16 United States Code [USC] 1531 et seq.) requires that federal agencies ensure that actions they authorize (such as through a permit), fund, or carry out do not jeopardize the existence of any species listed under the ESA, or destroy or adversely modify designated critical habitat of any listed species. To that end, all federal agencies must consult with the U.S. Fish and Wildlife Service (USFWS) (or with the National Marine Fisheries Service in the case of marine species) when any such action may affect a listed endangered or threatened species.

In the case of the Middle Rio Grande watershed-based permit (and its precursor, the Albuquerque MS4 permit), informal consultation between the EPA and the USFWS began in 2004. In June 2007, the USFWS informed the EPA that formal consultation was required on the permit based on new information that revealed that stormwater may adversely affect federally listed species. The EPA's request for consultation, in accordance with Section 7 of the ESA, was initially received on July 16, 2010 and subsequently amended in August 2013, and formal consultation was mutually extended in December 2013, February 2014, and June 2014.

In response to the EPA submitting a supplemental biological evaluation with effect determinations for both the southwestern willow flycatcher and the Rio Grande silvery minnow in 2013, the USFWS issued its biological opinion (BO) on August 21, 2014. In the BO, the USFWS first concurred with the EPA's determination that the proposed Permit "may affect, but is not likely to adversely affect" the southwestern willow flycatcher or its designated critical habitat. The EPA's revised determination that the proposed Permit "may affect, is likely to adversely affect" the silvery minnow and its critical habitat effectively triggered the need for the BO, together with its incidental take permit (ITP). In the BO, the USFWS stated that "[a]dverse effects to silvery minnow and its critical habitat will result from discharge of stormwater pulses that create low oxygen conditions in the North Diversion Channel Embayment and that subsequently convey that low oxygen water and any oxygen demanding pollutants into the MRG." However, the overall conclusion of the USFWS was that "issuance of the [proposed] MRG Watershed MS4 Permit [was] not likely to jeopardize the continued existence of the silvery minnow and [was] not likely to destroy or adversely modify designated critical habitat." As part of the BO, the USFWS thus issued an incidental take statement (ITS). Under the terms of

Section 7(b)(4) and Section 7(o)(2), take that is incidental to and not intended as part of the lead agency action is not considered to be prohibited take under the ESA, provided that such take is in compliance with the terms and conditions of this ITS.

As stated in the BO, the ITS will expire in 2019, effectively requiring the EPA to reinitiate consultation with the USFWS. Other factors compound the need for consultation. Most importantly, the western distinct population segment (DPS) of the yellow-billed cuckoo, including the Middle Rio Grande cuckoo population, became listed as threatened on November 3, 2014, after the 2014 BO had been released. Consultation is therefore needed with the USFWS regarding that species and, in the event of an adverse effect determination, another ITS would be required with its new set of reasonable and prudent measures (RPMs) and terms and conditions specific to the yellow-billed cuckoo. Also notable is the fact that the USFWS never withdrew or finalized its proposed rule to designate critical habitat for the species. An analysis of all likely effects of the Permit on the yellow-billed cuckoo would include consideration of its large insect fauna prey base and any risk of bioaccumulation. The cuckoo's adequate prey base is identified as one of the proposed critical habitat's primary constituent element (PCE) in the USFWS's proposed rule for the designation of critical habitat on August 15, 2014.

Another species recently added to the list of threatened and endangered species is the New Mexico meadow jumping mouse. Its listing as endangered was finalized in 2014 by the USFWS. The species is not known to occur in the MS4 Permit area, but a population was documented at nearby Isleta Pueblo. Informal consultation is therefore also recommended for the jumping mouse.

The 2014 BO identified management necessary to reduce adverse effects on the silvery minnow. In particular, it listed the following RPMs that the USFWS believed were necessary and appropriate "to minimize impacts of incidental take of the silvery minnow resulting from the proposed action:"

- Reduce the incidences of low dissolved oxygen associated with stormwater discharges occurring in the NDC Embayment and in the Middle Rio Grande downstream by 50 percent after two years and another 50 percent after four years from issuance of the Permit.

- Monitor oxygen and temperature in the water column in the NDC Embayment and in the Middle Rio Grande downstream to determine the effectiveness of the dissolved oxygen strategy implemented.

In the 2014 BO, terms and conditions of the ITS describe the steps necessary to implement the RPMs. The USFWS added a list of conservation recommendations, or discretionary actions recommended to be taken by the EPA while covered under the 2014–2019 ITS.

In conclusion, consultation with the USFWS should be reinitiated by the EPA during the next MS4 Permit development for the following reasons:

- To include discussions of potential effects on the yellow-billed cuckoo (and possibly the New Mexico jumping mouse) and verify a "may affect, is not likely to adversely affect" determination for that species.

- Regarding the silvery minnow, either obtain a new ITS with terms and conditions or, in the event that conditions have changed, seek concurrence from the USFWS for a new effects determination of "may affect, is not likely to adversely affect."

2.8 Planned Projects

All AMAFCA and SSCAFCA projects are regional flood control and/or water quality improvement projects, and function to capture sediment pollutant load generated throughout the watershed. The AMAFCA project schedules identify future planning efforts, joint funding initiatives, design, and construction projects to be accomplished over a 6-year planning horizon (AMAFCA, 2017a). These projects are to be implemented in cooperation with other stakeholders (e.g., COA, the County). The projects listed in Tables 4a and 4b relate to sediment reduction and water quality improvements during the periods of 2016-2021 and 2017-2022, respectively. The AMAFCA project schedules include additional projects with other objectives (AMAFCA, 2015 and 2017a).

In addition to the specific projects, AMAFCA has allocated $400,000 per year for small projects throughout their jurisdiction, such as small stormwater quality enhancements and

enhancements to existing structures (AMAFCA, 2017a). All of these planned infrastructure improvements and studies are recommended to further reduce sediment loading and improve stormwater quality in the Albuquerque metropolitan area.

SSCAFCA projects planned for implementation within the next 5 years that have a water quality component include the following (Gatterman, 2019):

- Lisbon Detention Facility
- Industrial Park Water Quality Facility
- Tributary A Dam
- Unser Dam
- Venada Water Quality Dam
- Lomitas Negras Phase III (High Range and Aloe Ponds)
- Badger Dam

These projects are included in SSCAFCA's infrastructure capital improvements plan (ICIP) (Gatterman, 2019).

3. Sediment Sampling Event

In-stream samples collected in the Rio Grande by the Compliance Monitoring Cooperative (CMC) for the FY2018 wet season had analytical results that exceeded applicable water quality standards for PCBs, E. coli, and gross alpha (AMAFCA, 2018). Based on these findings, sediment data were collected in 2019 to characterize the presence or absence of near-surface PCBs, gross alpha, and metals (aluminum, cadmium, chromium, lead, nickel, and zinc) at water quality structures or sediment outfalls along channels or arroyos maintained by AMAFCA, COA, SSCAFCA, or the County. The locations were selected to assess the functionality of the existing water quality control structures and to focus on areas of sediment deposition (e.g., areas behind erosion control structures and low flow velocity areas). The sample locations and

analytical procedures were presented in the approved sampling and analysis plan (DBS&A, 2019), and are summarized along with the sample event results in the following subsections.

3.1 Locations and Collection Method

DBS&A personnel conducted sediment sampling above and below the water quality structures/ sediment collection areas in arroyos, channels, and erosion control structures, where sediment accumulates and has the potential to reach the Rio Grande. Dam locations were not chosen because sediment transport is hampered at these structures, and the sediment is removed before transport can occur to the Rio Grande. Table 5 and Figure 1 identify the 21 sediment sampling locations.

The sediment samples were collected 1 to 2 inches below ground surface. To minimize the potential for cross-contamination, sediment was collected using a new stainless steel spoon for each sample. Photographs and global positioning system (GPS) coordinates (3-meter accuracy) of sample locations were recorded, and soil characteristics were noted.

3.2 Laboratory Analysis

The samples were submitted to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico for analysis of PCBs and selected metals using EPA methods 8082 and 6010B, respectively. The two common analytical tests for measuring PCB concentrations include EPA method 8082, which analyzes for Aroclors, and EPA method 1668, which analyzes for congeners (Storms et al., 2015). SPLP analysis was conducted on the sediment samples to determine the mobility of aluminum, cadmium, chromium, lead, nickel, and zinc. The SPLP simulates exposure of the sediment to rainfall, and is useful in estimating the leaching potential of metals moving from sediment into stormwater. Gross alpha was also analyzed using EPA method 900.0.

3.3 Sample Event Results

The analytical results show that none of the seven PCB Aroclors were detected at the sampling locations. Also, cadmium, chromium, and lead were not detected by the laboratory using the

SPLP method. Aluminum, nickel, zinc and gross alpha concentrations were detected at some locations. Concentrations from the March 28–29 and April 1, 2019 sampling event are shown on Figure 2 and Table 6. The laboratory report is provided as Appendix A.

Aluminum was detected in the sediment collected from each of the 21 sampling locations at concentrations ranging from 2.7 milligrams per liter (mg/L) (at Paseo del Norte Pump Station #42) to 160 mg/L (at the West I-40 Diversion Channel). Aluminum concentrations were lower after the water quality structures at the NDC Bathtub—33 mg/L in the sediment within the bathtub compared to the outfall sample concentration of 7.4 mg/L. At Sanchez Farm Inflow, the aluminum concentration was 14 mg/L compared to 7.3 mg/L at the outfall. The West I-40 Diversion Channel Sediment Collection area sample contained aluminum at a concentration of 160 mg/L compared to 9.2 mg/L in the outfall sample.

Nickel was detected at concentrations above the laboratory detection limit (0.010 mg/L) at 4 of the 21 locations. Nickel was detected in NDC Bathtub sediments at a concentration of 0.018 mg/L, in the West I-40 Sediment Collection Area at 0.074 mg/L, in Sanchez Farm Inflow sediment at 0.010 mg/L, and in the Tijeras/SDC Outfall sediment sample at 0.014 mg/L. Nickel concentrations were below the laboratory detection limit at the other 17 sediment sampling locations.

Zinc concentrations ranged from non-detect (<0.020 mg/L) in the sediment sample collected from the edge of the Rio Grande at Isleta Dam to 0.56 mg/L at the West I-40 Diversion Channel sediment collection area. The West I-40 collection area showed a drop in zinc concentration between the collection area (0.56 mg/L) and the outfall location (0.028 mg/L). A similar trend was observed at the NDC Bathtub, with zinc concentrations of 0.31 mg/L at the bathtub and 0.038 mg/L at the outfall. Sanchez Farm also showed a decrease in zinc concentration between the inflow (0.21 mg/L) and the duckbill outfall sample (0.15 mg/L). Additional sample locations yielded comparable concentrations between the locations upstream and downstream of water quality structures.

Gross alpha activities ranged from 0.597 picocuries per gram (pCi/g) in the sediment collected at Venada Arroyo Outfall to 22.9 pCi/g in sediment collected from the Sanchez Farms Inflow. The next highest gross alpha activity was measured in the sediment collected at Montoyas

Outfall at 21.2 pCi/g. The water quality structures do not appear to have a large impact on the gross alpha activities. Most of the sediment sample locations showed a higher gross alpha activity in the sediment collection area compared to the outfall location. For example, San Antonio Arroyo Pond sample contained a gross alpha activity of 10.8 ± 6.01 pCi/g compared to the San Antonio Arroyo Outfall location activity of 4.83 ± 4.43 pCi/g. The overall trend in the Rio Grande went from 4.67 ± 5.83 pCi/g at Rio Grande at Angastora Dam to 11.3 ± 5.42 pCi/g in the sediments collected at the Rio Grande at Isleta Dam.

4. Data Evaluation

Available water quality data were downloaded from the online USGS NWIS database (USGS, 2019b) along with compliance monitoring data from the MS4 permittees (AMAFCA, 2019; BHI, 2019) for the discharge outfalls and for several stream gage locations along the Rio Grande within the greater Albuquerque area (Figure 3 and Table 7). The data review provided in the COA 2016 sediment assessment report (summarized in Section 2) was updated with data for the Permit period. An additional location, Sanchez Farms Pump Station, was added for the update.

Figure 4a shows recent TDS concentrations for samples collected at the 7 outfall locations. Since 2003, TDS concentrations in the sampled outfall locations have ranged from 75 mg/L at SDC outfall to 940 mg/L at the Tijeras Arroyo outfall (Figure 4a). The TDS concentrations are highly variable within each of the outfalls, but overall concentrations are generally below 200 mg/L. None of the measured values in the stormwater samples at the outfalls exceeded the New Mexico water quality standard of 1,500 mg/L for the Rio Grande Basin for the Permit period.

Figure 4b shows recent TDS concentrations for samples collected from the Rio Grande stream gage locations within the greater Albuquerque area. Since 2003, TDS concentrations in the Rio Grande have ranged from 155 mg/L at the Rio Grande at Alameda Bridge stream gage to 450 mg/L at the Rio Grande at Isleta stream gage (Figure 4b). TDS concentrations in the Rio Grande typically appear to be between 150 and 350 mg/L. No TDS concentration exceeded the New Mexico water quality standard of 1,500 mg/L for the Rio Grande Basin during the Permit period.

Figure 5a shows recent TSS or suspended sediment concentrations for samples collected at the outfall locations. Since 2003, the TSS or suspended solids concentrations in the sampled outfall locations have ranged from not detected (less than 1 mg/L, shown as open symbols in Figure 5a) to 61,100 mg/L at the Tijeras Arroyo outfall (Figure 5a).

Figure 5b shows recent TSS or suspended sediment concentrations from the Rio Grande within the greater Albuquerque area. Since 2003, TSS or suspended sediment concentrations in the Rio Grande have ranged from 45 mg/L to 76,200 mg/L at the Rio Grande at Albuquerque stream gage (Figure 5b).

Available sample data collected for dissolved and total concentrations since 2003 from the outfalls and the Rio Grande were reviewed for the following metals: aluminum, cadmium, chromium, lead, nickel, and zinc. Figures 6a through 11f show the total and dissolved concentrations for these selected metals, along with the difference between total and dissolved metals concentrations (when positive).

4.1 Sediment Removal

DBS&A obtained sediment removal data from AMAFCA, SSCAFCA, the County, and COA. The measurement and subsequent consistent reporting of sediment removals is a challenge that these permittees are working to address in order to better understand sediment load reductions in the watershed. The following volumes of sediment were removed by these permittees in FY2018, FY2017, and FY2016:

- AMAFCA removed a total of 110,617 cubic yards of sediment from 30 locations in FY2018 (Chavez, 2019) (Table 8). This compares to their removal of 18,102 cubic yards of sediment in FY2017 (Table 9) and 32,124 cubic yards of sediment in FY2016 (Table 10). The FY2018 and FY2017 tables (Tables 8 and 9) also provide volumes removed by AMAFCA for trash, vegetation, and homeless debris.

- SSCAFCA records sediment removal data by the calendar year to correspond to their U.S. Army Corps of Engineers (USACE) Memorandum of Understanding period (Gatterman, 2019). Calendar year (CY) 2018 was not a large sediment removal year for

SSCAFCA, with a total of 42,150 cubic yards of sediment removed from three locations (Table 11). In 2017, SSCAFCA removed 16,025 cubic yards of sediment from the Lomitas Negras (a tributary of the Montoyas Arroyo); no earlier sediment removal data are available. More data will be collected going forward, and will be available by either fiscal or calendar year (Gatterman, 2019).

- The County's FY2018 total sediment removal volume was 190 cubic yards (Bronson, 2019). Table 12 provides information regarding the gross material removed by the County from catch basins, wet wells, storm sewer lines, County ponds, channels, and right-of-way in FY2016 through FY2018. Table 13 provides detail on the types of waste removed by the County in FY2018. Table 14 provides the waste characteristics for the non-sediment waste removed by the County in FY2018.

- The COA estimates that the total volumes of sediment they removed in FY2018 were 2,191 cubic yards from arroyos and catch basins and 4,585 cubic yards from street sweeping (Verhage, 2019). Table 15 provides the total volumes of silt, trash, debris, and vegetation removed by the COA from arroyos and catch basins in FY2016 through FY2018. Table 16 provides the volumes of sediment removed by the COA in FY2017 and FY2018 via street sweeping.

Table 17 summarizes the sediment removal data for permittees for FY2014 through FY2019. A total of 155,148 cubic yards of sediment was removed by the permittees in FY2018, and at least 266,453 cubic yards of sediment was removed by the permittees from 2014 to present. There are limited data available for the beginning of the Permit period, when the new tracking systems were being set up and implemented. The measurement and subsequent consistent reporting of sediment removals is a challenge that the permittees are working to address in order to better understand the sediment load reductions in the watershed. Data collection will be more complete going forward.

Figure 12 shows sediment removal by AMAFCA and SSCAFCA graphically for FY2018 (the SSCAFCA data are for CY2018). County and COA data are not included on this figure, as data for individual removal locations are not consistently recorded (Bronson, 2019), and the COA does not record individual location data for the materials removed (Verhage, 2019). As reported

in the 2016 COA sediment assessment report, the Barelas Pump Station and San Jose Drain sites are maintained by the COA and do not have documented sediment removal data. The COA employs several crews that routinely check and clean more than 30,000 storm drains within the city after large storm events. The 14 pump stations and 11 dams the COA maintains are inspected each year in May and June just prior to the monsoon season (DBS&A, 2016).

4.2 Baseline Sediment Loading Evaluation

Part I.C.3.b(ii) of the Permit states that the permittees must provide estimates of baseline total sediment loading and relative potential for contamination by these sediments from urban activities for drainage areas and/or watersheds draining directly to a surface waterbody. The Permit allows for a cooperative approach for this baseline estimate, which is what the watershed permittees have agreed to and is presented here.

A constituent load in a river, stream, or stormwater outfall is the mass or weight of a constituent that passes a cross section of a stream in a specified interval of time. Loads are expressed in mass units (e.g., tons, kilograms) and are considered for time intervals that are relative to the type of pollutant and the watershed area for which the loads are calculated. Loads are calculated from concentrations of constituents obtained from analyses of water samples and stream discharge, which is the volume of water that passes a cross section of the stream in a specific amount of time. Sediment-discharge measurements are usually available on a discrete or periodic basis. In the MS4 Permit area, outfall samples were collected by USGS and AMAFCA for analysis of suspended sediments typically 0 to 3 times a year since 2003.

Suspended sediment is defined as the portion of a water sample that is separated from the water by filtering. This solid material may be composed of organic and inorganic material that includes algae, industrial and municipal wastes, urban and agricultural runoff, and eroded material from geologic formations (e.g., sand and silt). These materials are transported to stream channels by overland flow related to stormwater runoff and cause varying magnitudes of turbidity. For the purpose of determining the baseline total sediment loading from outfalls, TSS is synonymous with sediment transported in the outfalls. Concentrations of TSS in mg/L are determined by laboratory analysis of periodic water grab samples at the outfalls. Table 18 summarizes the available TSS data reported by the USGS and AMAFCA at MS4 outfall

locations, and the corresponding water discharge values reported by the USGS. The reported discharge values include instantaneous value at the time of sample collection, the daily mean value on day of sample collection, the annual mean daily value of outfall, and the annual total discharge volume, if available.

The most commonly used method to calculate sediment-discharge records is based on the derivation of a temporal relation by interpolating between measured suspended sediment concentration values and using measured and estimated concentration values with time-weighted water discharge values to calculate suspended sediment discharges (Porterfield, 1972). The method used to calculate sediment-discharge records is dependent on the types and frequency of available data (Gray and Simões, 2008). Concentrations of suspended sediment at the five main outfalls into the Rio Grande are available infrequently during the Permit period, while discharge data were typically more robust. For this evaluation, concentration values are merged with discharge values and summed to derive suspended sediment discharges using the following equation (Gray and Simões, 2008):

$$Q_s = Q_w * C_s * k \quad (1)$$

where Q_s = suspended sediment discharge (tons per day)
Q_w = water discharge (cubic feet per second [cfs])
C_s = mean concentration of suspended sediment in cross section (mg/L)
k = a coefficient based on the unit of measurement of water discharge that assumes a specific weight of 2.65 for sediment, and equals 0.0027 in inch-pound units

Estimated suspended sediment discharge from the five main outfalls into the Rio Grande is shown in Table 18 for 2012–2018. Per the Permit monitoring methodology, the samples were collected during any portion of the monitoring location's discharge hydrograph (i.e., first flush, rising limb, peak, and falling limb) after a discernible increase in flow at the tributary inlet. Therefore, the load value calculated using the discharge value at time of sample collection may not be representative of the load across the monitoring location's discharge hydrograph, but offers a snapshot of the sediment discharge during that particular storm event. For comparison, the sediment load was also calculated using the daily mean discharge, if available, which may be more indicative of the complete storm event. Finally the suspended sediment discharge was

calculated using the annual mean discharge for the year of sample collection if data were available. The highest sediment discharges based on discharge at time of collection were calculated at the NDC in May 2012 (7,7017.84 tons) and Tijeras Arroyo in July 2012 (4,485.35 tons). During the Permit period, the highest load (3,804.57 tons) was calculated at Tijeras Arroyo in September 2018.

Reliable estimation of sediment discharge presupposes that the data on which the estimates are based are comparable and reliable (Gray and Simoes, 2008); however, the data in the Middle Rio Grande Basin have not necessarily been derived or collected in a consistent manner. The USGS and AMFACA samples were collected and analyzed using different sample collection techniques, laboratories, and analytical methods. The availability, reliability, and comparability of data used to quantify coefficients for suspended load determine the accuracy of the results. Water discharge values were also not available for several sampling events in order to calculate the sediment discharge values, allow comparisons between outfalls, and determine the annual total load to the Rio Grande.

4.3 Pollutant Source Reduction Potential

Based on the results of the sediment assessment (DBS&A, 2016), the Permit Part I.C.3.b(ii) states that the permittee must provide relative potential for contamination of sediments by urban activities for drainage areas, sub-watersheds, impervious areas, and/or directly connected impervious areas draining to the Rio Grande. The sediment assessment (DBS&A, 2016) used the USGS *Summary of Urban Stormwater Quality in Albuquerque, New Mexico, 2003–12* (Storms et al., 2015) to summarize and review TDS, TSS, metals, and PCB congeners. The USGS (Storms et al., 2015) concluded that stormwater samples from outfalls with more urban development (i.e., industrial, commercial, and residential) had higher median concentrations of selected physical and chemical constituents (e.g., pH, specific conductance, TDS, and TSS) than stormwater samples collected from outfalls with less urban development (Storms et al., 2015).

As shown in Table 18, the TSS concentrations at the outfall locations varied widely, but more sediment was frequently contributed from the Tijeras Arroyo, SDC, and NDC outfalls. Therefore, implementation of additional sediment loading reduction BMPs should be targeted in

these drainage areas. The sediment assessment (DBS&A, 2016) reported that concentrations of lead, cadmium, and zinc (total concentrations) appeared higher in outfall samples than in Rio Grande samples.

The purpose and intent of the Strategy is to encourage permittees to look at how to reduce pollutants attached to sediments. The sediment assessment (DBS&A, 2016) determined that BMPs currently in operation by the permittees are reducing the volume of sediment discharged to the river (compared to not having the BMPs), thereby reducing pollutant loading to the Rio Grande.

Entities in the MRG that manage stormwater, including AMAFCA, the County, COA, and SSCAFCA, are currently planning installation of additional studies to improve stormwater quality and decrease the amount of sediment reaching the Rio Grande. Tables 4a and 4b list the projects that are proposed for implementation between 2016 and 2022 that will reduce sediment and/or improve water quality, as outlined in the AMAFCA 2016 and 2018 project schedules (AMAFCA, 2015 and 2017a). There are a total of 34 projects that relate to sediment reduction and/or water quality improvements on the 2016 project schedule (AMAFCA, 2015), and a total of 37 projects on the 2018 project schedule (AMAFCA, 2017a). The main project types include the following:

- Constructing channels, diversion structures, ponds, debris fences, and/or floating booms for drainage, to control flows, and/or to reduce floatables and debris
- Constructing new dams/ponds, enlarging existing ponds, or extending/adding infrastructure to collect and convey stormwater, increase capacities, reduce flooding, and keep from overwhelming facilities with stormwater
- Installing sediment control facilities or providing bank protection and grade control to reduce erosion
- Creating impediments and barriers for birds and humans to congregate to reduce point source pollution
- Monitoring stormwater quality and incorporating BMPs to enhance stormwater quality

Within the project schedules, the project sheets provide descriptions, objectives, locations, sponsors, and stakeholders for each specific project (AMAFCA, 2015 and 2017a). From the project sheets, it is clear which projects have water quality improvement as an objective. In some cases, the pollutant source reduction potential is quantified. These include the Tijeras sediment retention structure to be built to collect 15,000 to 30,000 cubic yards of sediment and debris before it enters the SDC and ultimately the Rio Grande (AMAFCA, 2015). The 2018 AMAFCA project schedule includes an update on this same project, and says that the Tijeras Sediment Facility Phase II project consists of constructing three separate basins with a total storage capacity of approximately 50,000 to 75,000 cubic yards of sediment (AMAFCA, 2017a). Phase II of the project includes constructing the remaining portions of the middle basin and the entirety of the easternmost basin, as well as the concrete box culvert that will connect the basins (AMAFCA, 2017a).

The projects listed on Tables 4a and 4b will have beneficial impacts to water quality; however, in most cases, the project sheets do not include information that quantifies the pollutant source reduction potential. Together, these projects have the potential to significantly reduce pollutant sources in the watershed, but a rigorous evaluation of the potential for pollutant source reduction cannot be completed using the information provided by the project schedules.

4.4 Strategy Evaluation

4.4.1 Monitoring and Interim Reporting to Assess Progress

AMAFCA prepares annual fiscal year reports to assess the status, implementation, and performance of the required permit activities and to present sediment and floatables removal, rainfall, and runoff data (AMAFCA, 2018).

In FY2016, AMAFCA completed the construction of the NDC outfall grade control structure modification and embayment regrading projects (AMAFCA, 2018). In FY2017, AMAFCA worked on facility plans for Tijeras Arroyo and Calabacillas Arroyo, analyzing the arroyos and drainage facilities and assessing the potential for future sediment BMPs in these arroyos (AMAFCA, 2018). In FY2018, AMAFCA began designing Phase II of the Tijeras Arroyo sediment removal system, and finalized the Tijeras Arroyo and Calabacillas Arroyo facility plans (AMAFCA, 2018).

4.4.2 BMPs/Water Quality Structures in the Watershed

AMAFCA reports that it has 127 stormwater quality debris facilities that annually remove an average of 50,000 cubic yards of sediment and 2,500 cubic yards of trash from stormwater before the runoff enters the Rio Grande (AMAFCA, 2015 and 2017). The locations of the BMPs/water quality structures in watershed for many of the cooperating permittees are shown on the AMAFCA maintenance map (Plate 1). The types and numbers of structures installed during the Permit period by AMAFCA and the County are summarized in Table 19.

4.4.3 Evaluation of Sediment in Stormwater Before and After BMP Installation

In 2017, AMAFCA cooperatively with the County completed a study characterizing gross pollutants collected in stormwater quality BMP structures (AMAFCA, 2017b). The objective was to evaluate removal of pollutants from stormwater (e.g., trash, sediment, and organic debris) by structural BMPs within the AMAFCA/Albuquerque drainage system and to update a previous study that was completed in 2005. The study included 13 locations throughout the Albuquerque metropolitan area, chosen to describe the debris at the most downstream end of the watershed before the final discharge point into the Rio Grande (AMAFCA, 2017b). The locations included Domingo Baca, La Cueva Manholes, La Cueva Water Quality, North Pino Pond, Piedras Marcadas #3, Piedras Marcadas #4, Piedras Marcadas #5, Piedras Marcadas #6, South Diversion Manholes (Baffle Chute), South Pino Pond, UNM Water Quality Manholes, West Bluff, and Woodward. The overall study procedure consisted of collecting, separating by sieve/visual inspection, and weighing materials caught by the structural BMPs (AMAFCA, 2017b).

The results of the study showed that sediment is the largest contributor to pollutants collected in stormwater quality BMP structures; on average, 98 percent of the pollutants removed consisted of sediment. Between 2005 and 2017, the total volume of debris captured during the studies decreased by approximately 30 percent; there was a significant increase in the percent of sediment debris being captured and a decrease in the percent of debris from other categories (AMAFCA, 2017b).

The AMAFCA Tijeras Arroyo sediment retention structure (AMAFCA, 2017a) is a regional stormwater quality improvement structure designed to capture sediment above the concrete section of Tijeras Arroyo. The project consists of three separate basins with a total storage capacity of approximately 50,000 to 75,000 cubic yards of sediment. The first basin was

completed in May 2017. The remaining portions of the middle basin and the entirety of the easternmost basin are currently under construction. There has been only one sample collected for TSS analyses below the BMP since May 2017 (Figure 5a). After completion of the Tijeras Arroyo sediment retention structure, the reduction of sediment in stormwater will be evaluated with future sampling events.

Since 2007, AMAFCA has overseen the construction of 48 new water quality facilities and BMPs, increasing the opportunities for debris to be intercepted before reaching the stormwater quality BMP structures. AMAFCA began recording annual sediment, vegetation, and debris volumes cleaned out of each BMP in 2016 (by fiscal year); therefore, a comparison of total debris volume between studies is not currently available, but will be in the future (AMAFCA, 2017b). This study implemented a method for comparing the performance of stormwater quality BMPs and began building a dataset for comparison in the future. Along with increased recordkeeping of total debris volumes removed from these BMPs, quantitative comparison between water quality structures in different drainage basins will be possible in the future, aiding in the evaluation of BMP performance and in prioritizing future projects (AMAFCA, 2017b).

5. Summary and Recommendations

This report provides progress evaluation and reporting regarding the overall success of the Strategy, which is being implemented by the permittees to reduce pollutant loads associated with sediment into the receiving water of the Rio Grande. The overall success of the Strategy has been assessed by compiling direct and indirect measurements of program effectiveness in this progress report and conducting a sediment sampling event in 2019.

5.1 Sampling

The March/April 2019 sediment sampling event was completed to characterize the presence or absence of near-surface PCBs and gross alpha at water quality structures within Bernalillo County. The 2019 sediment sampling event did not detect PCB congeners in sediments sampled above or below water quality structures/sediment collection areas located in arroyos, channels, and erosion control structures. These results are similar to those of the 2017 COA

study, which also did not detect PCBs in the sediment samples collected along stormwater channels and outfalls within the Albuquerque metropolitan area (DBS&A, 2017).

The 2017 and 2019 sediment studies used EPA method 8082 for PCB analysis, which provides procedures for 19 of the 209 possible PCB congeners. Several sampling studies by the County and the USGS used EPA method 1668A, a more robust analytical method appropriate for determining the concentrations of all 209 PCB congeners. The 2010 and recent USGS and County sediment and water quality studies indicated that PCB Aroclors remain in the MRG watershed and can be transported by stormwater. For compliance monitoring, Appendix F of the Permit states that "EPA Method 1668 should be utilized when PCB water column monitoring is conducted to determine compliance with permit requirements." For non-compliance sampling used for internal watershed monitoring, such as the 2019 sediment sampling event, EPA method 608 is applicable for PCB screening. If PCBs had been detected in this study using EPA method 608, EPA method 1668 would be recommended for future sampling events.

Gross alpha activity had not previously been sampled for in sediment collection areas and the outfall locations within the watershed. Most of the 2019 sediment sample locations showed a higher gross alpha activity in the sediment collection area compared to the outfall location, indicating that the collection areas are target areas for reducing sediment transport to the Rio Grande. Gross alpha activity may reflect naturally occurring radioactivity of the sediments, particularly where sources may be derived from volcanic and granitic terrain, as volcanic and granitic rocks are known sources of radioactive elements such as uranium and radium. The 2019 sampling event also characterized the presence of SPLP metals at water quality structures within Bernalillo County. Aluminum, nickel, and zinc were detected in the sediment sample leachate for some samples in the 2017 and 2019 sampling events. These sediment constituents may be contributing to stormwater concentrations of these metals (DBS&A, 2017).

5.2 Targeted Controls for Sediment/Pollution Removal

An important element of the Strategy is the use of targeted controls and BMPs to reduce sediment transport by stormwater into the receiving water of the Rio Grande. As shown in Table 17, a total of 155,148 cubic yards of sediment was removed by the permittees in FY2018 and at least 266,453 cubic yards of sediment was removed by the permittees during the Permit

period. AMAFCA in cooperation with the County completed a study characterizing gross pollutants collected in stormwater quality BMP structures (AMAFCA, 2017b). The results of the study showed that sediment is the largest contributor to pollutants collected in stormwater quality BMP structures; on average, 98 percent of the pollutants removed consisted of sediment (AMAFCA, 2017b). This study also implemented a method for comparing the performance of stormwater quality BMPs and began building a dataset for comparison in the future. Along with increased recordkeeping of total debris volumes removed from BMPs, quantitative comparison between water quality structures in different drainage basins will be possible in the future, aiding in the evaluation of BMP performance and prioritizing future projects.

5.3 Baseline Summary

The Strategy includes estimation of baseline total sediment loading and relative potential for contamination by these sediments from urban activities for areas or watersheds draining directly to a surface waterbody. Estimated suspended sediment discharge from the five main outfalls into the Rio Grande was calculated for 2012–2018 (Table 18). The highest sediment discharge into the Rio Grande during the Permit period was calculated to have occurred in the NDC and Tijeras Arroyo. The method used to calculate baseline total sediment loading is dependent on the types and frequency of available data. Data for the Middle Rio Grande Basin were not necessarily derived or collected in a consistent manner. Better coordination between agencies is recommended when collecting additional analytical samples and discharge measurements to improve the sediment discharge value calculations, allow improved comparisons between outfalls, and facilitate estimation of annual total load discharged to the Rio Grande.

5.4 Species Effects

The Strategy includes the verification of no adverse effect to the critical habitat of any threatened or endangered species. State-listed species with the likelihood of occurrence in the Permit area include Parish's alkali grass, Rio Grande silvery minnow, paper pondshell (mollusk), southwestern willow flycatcher, brown pelican, bald eagle, peregrine falcon, neotropic cormorant, common black hawk, gray vireo, and the spotted bat. Federally listed species with the likelihood of occurrence in the permit area include the Rio Grande silvery minnow, southwestern willow flycatcher, and yellow-billed cuckoo. Consultation with the USFWS should

be reinitiated by the EPA during the next MS4 Permit development to discuss potential effects on the yellow-billed cuckoo and possibly the New Mexico jumping mouse, to verify a "may affect, is not likely to adversely affect" determination for these species. Consultation with the USFWS should also be reinitiated to either obtain a new ITS with terms and conditions or, in the event that conditions have changed, seek concurrence from the USFWS for a new effects determination of "may affect, is not likely to adversely affect" for the Rio Grande silvery minnow.

The purpose and intent of the Strategy is to encourage permittees to evaluate how to reduce pollutant loads associated with sediment from entering the receiving waters of the Rio Grande. The entities collaborating under the Permit are working together to reduce pollutants in stormwater, and the Strategy is having beneficial effects. We recommend that permittees continue to operate and maintain the BMPs already in place to reduce pollutants and sediment loading, continue with the implementation of the proposed projects, and evaluate additional potential projects to reduce sediment loading. Data collection and reporting methods have improved over the Permit period, making additional information available for assessment and comparison in the future. Continued monitoring and assessment of the impaired waters will allow the permittees to evaluate progress toward sediment reduction and adaptively manage future efforts. The Strategy will likely need to be adapted as progress is made, new information is obtained through future studies, new practices and programs are developed, and the new Permit conditions are implemented.

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Figures

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2011 aerial photography from USDA NAIP.

Explanation

AMAFCA watershed

12-digit watershed

Figure 1

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Sediment Quality Sampling Locations

Daniel B. Stephens & Associates, Inc.

6/6/2019 JN WR14.0074

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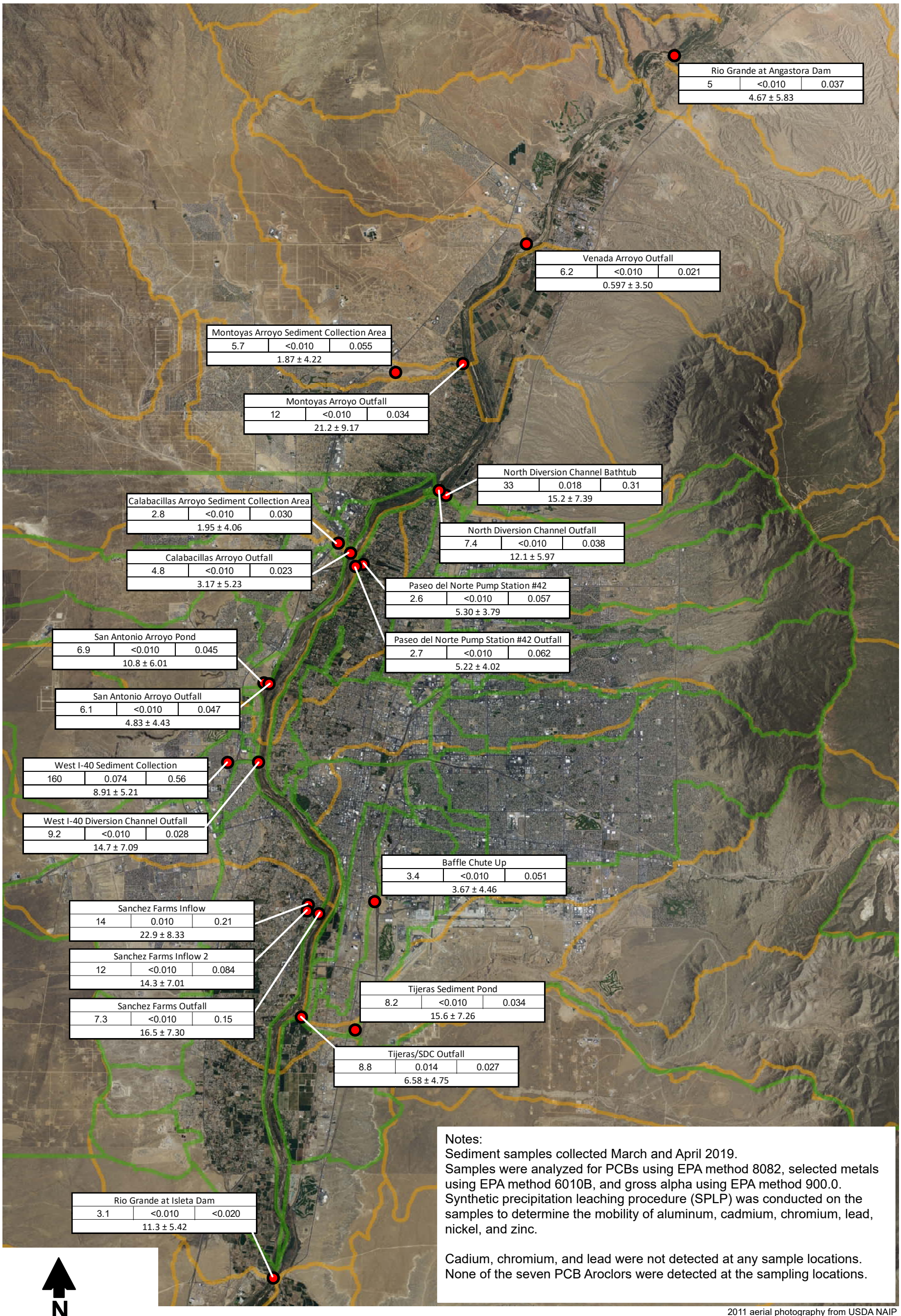

Figure 2

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Sediment Quality Analytical Results

Daniel B. Stephens & Associates, Inc.

6/19/2019 JN DB19.1073

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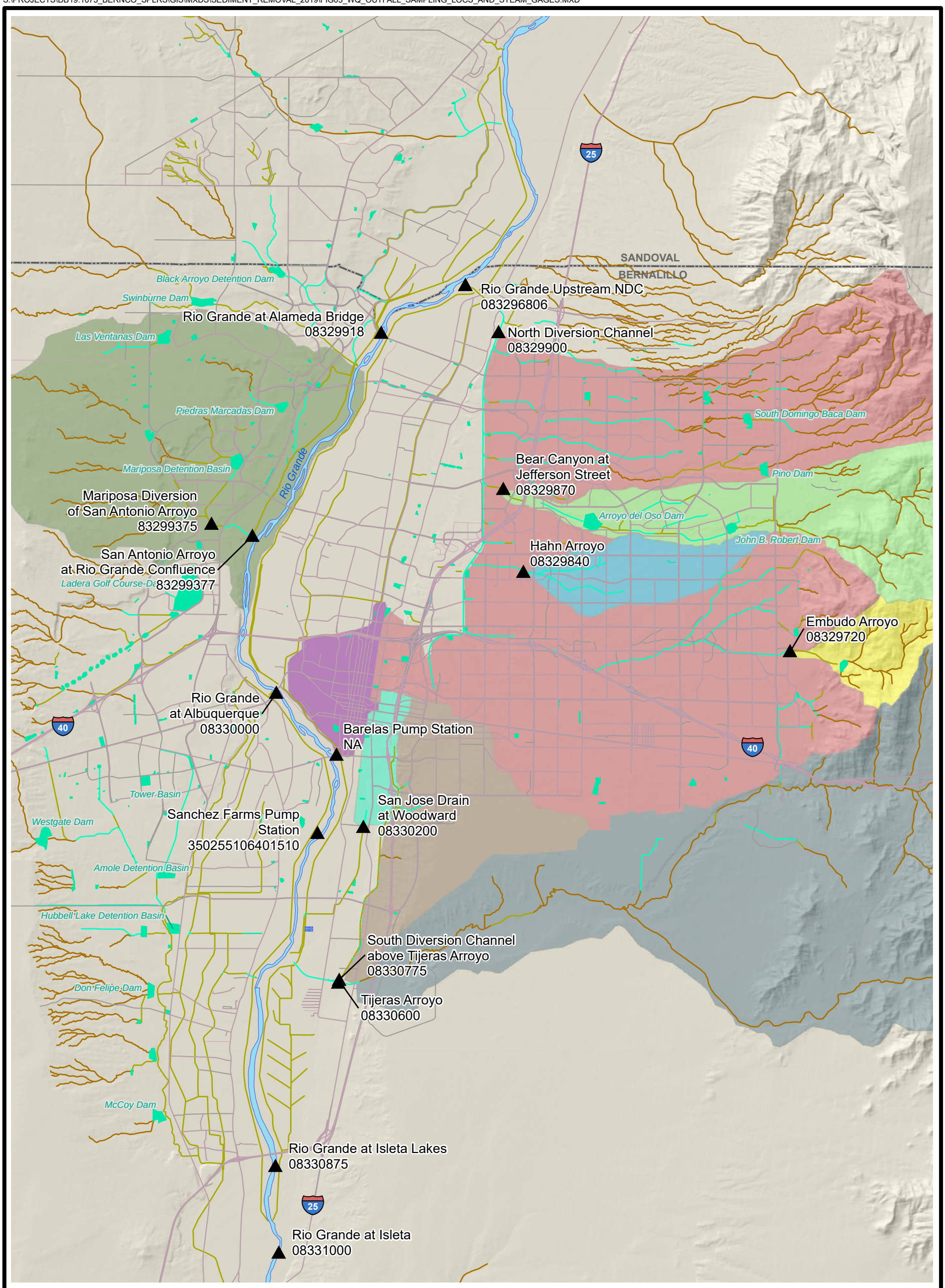

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Outfall Sampling Locations and Stream Gages

Figure 3

Daniel B. Stephens & Associates, Inc.
6/17/2019
JN DB19.1073

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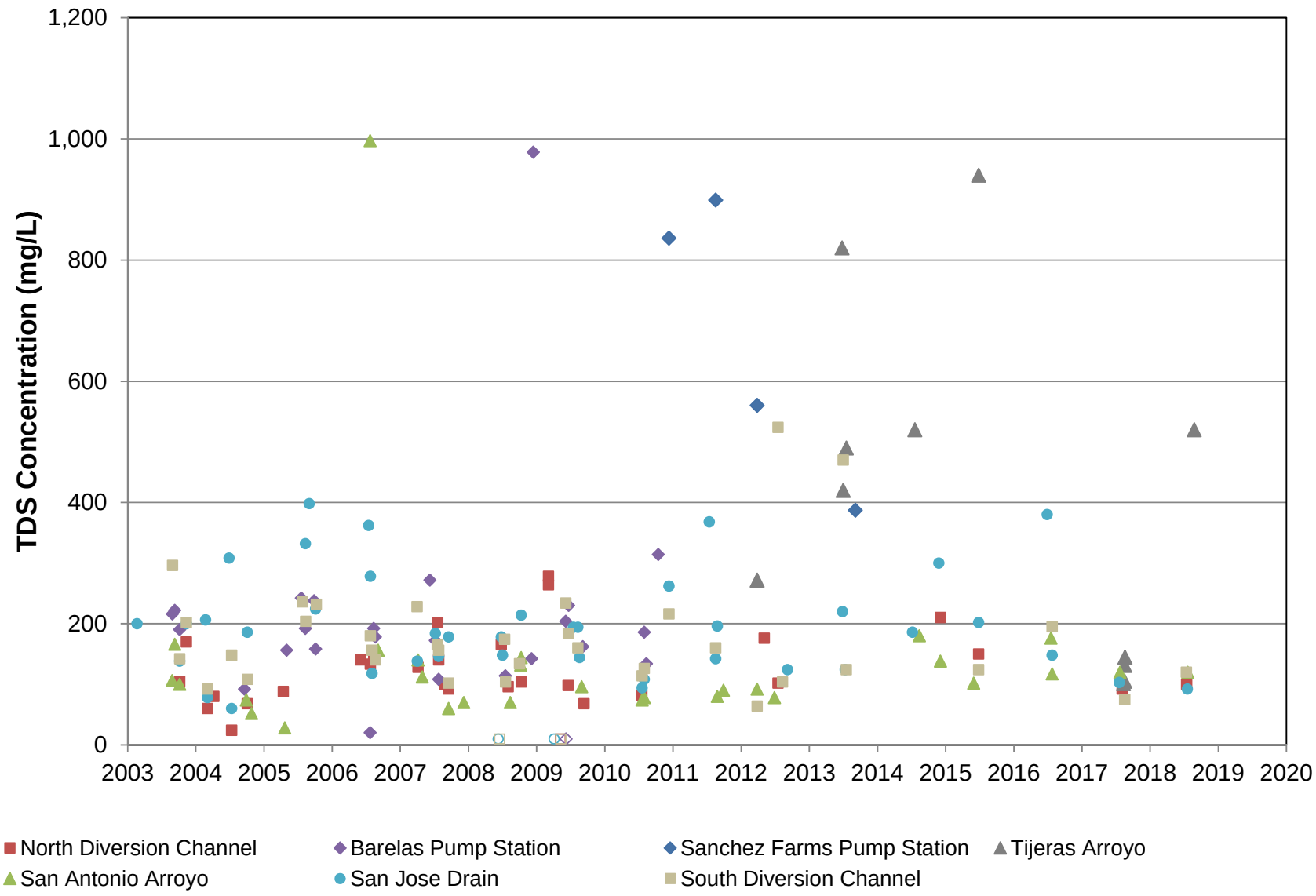

Note: Open symbols denote non-detections (at detection limit).
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

Figure 4a

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Dissolved Solids, Outfall Locations

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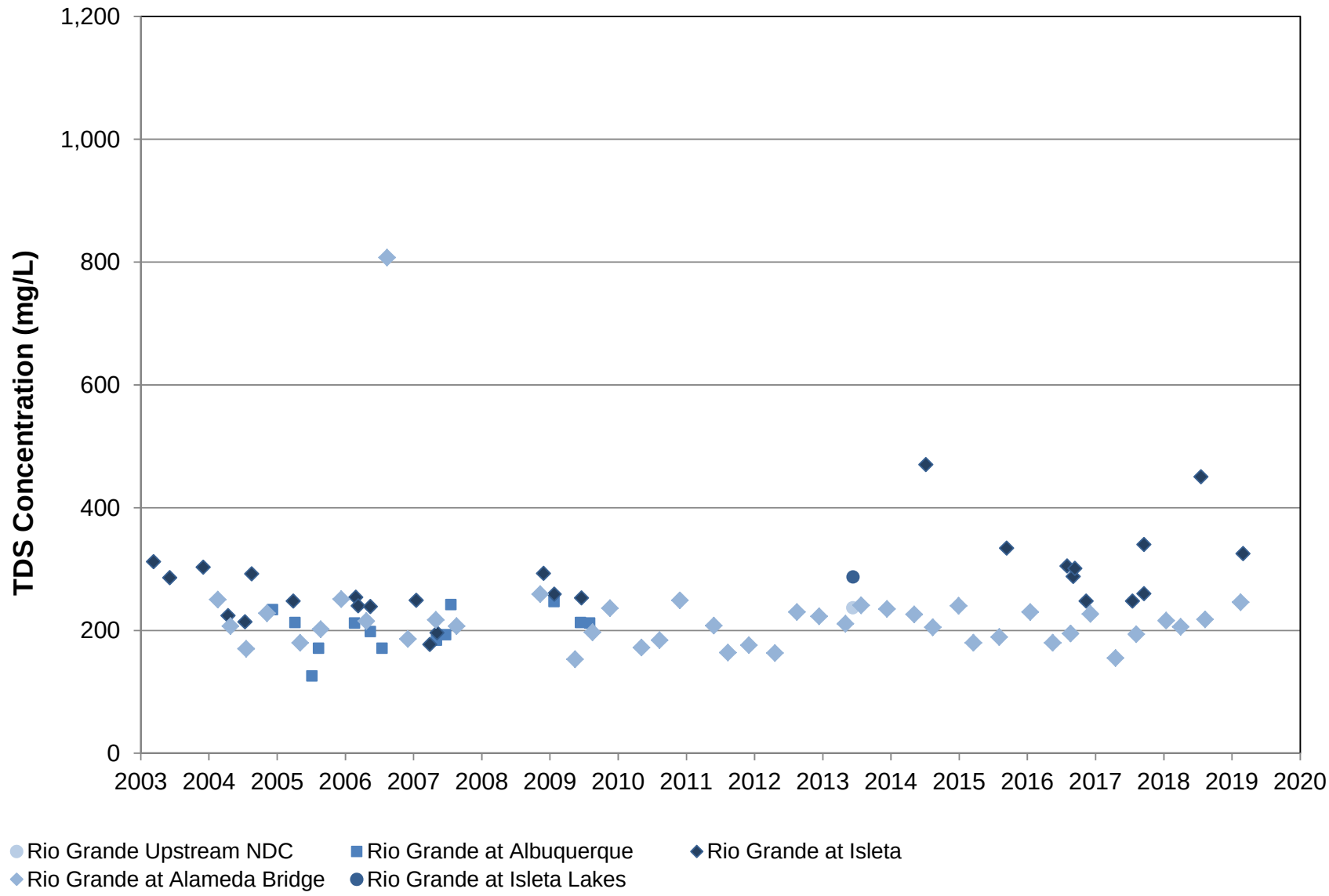
6/6/19



Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

Figure 4b

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Dissolved Solids, Rio Grande Locations

Daniel B. Stephens & Associates, Inc.

6/6/19

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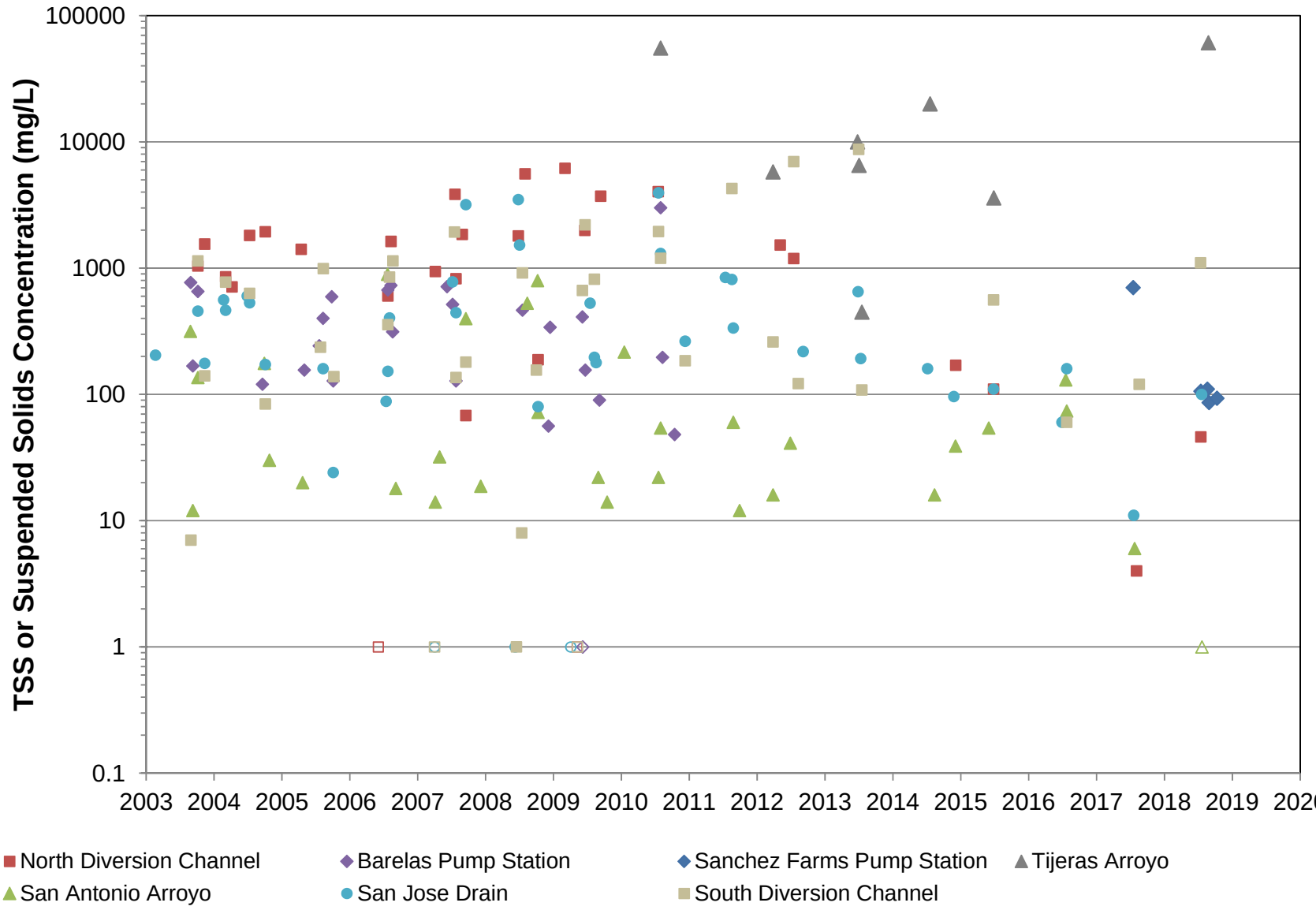

Note: Open symbols denote non-detections (at detection limit).
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Suspended Solids or Suspended Sediment Outfall Locations

Figure 5a

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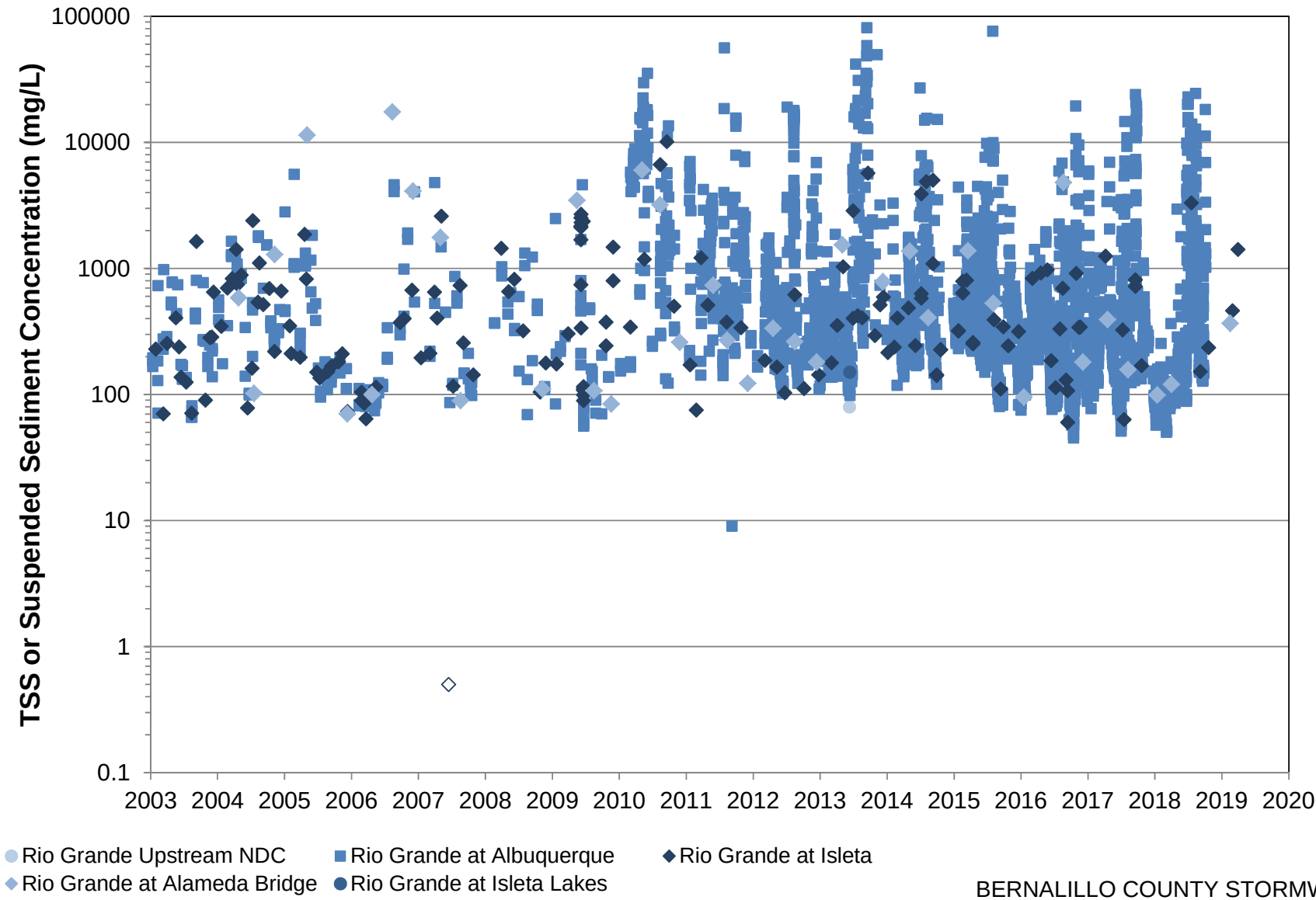
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig05b_TSS-RG.doc



Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Suspended Solids or Suspended Sediment
Rio Grande Locations

Figure 5b

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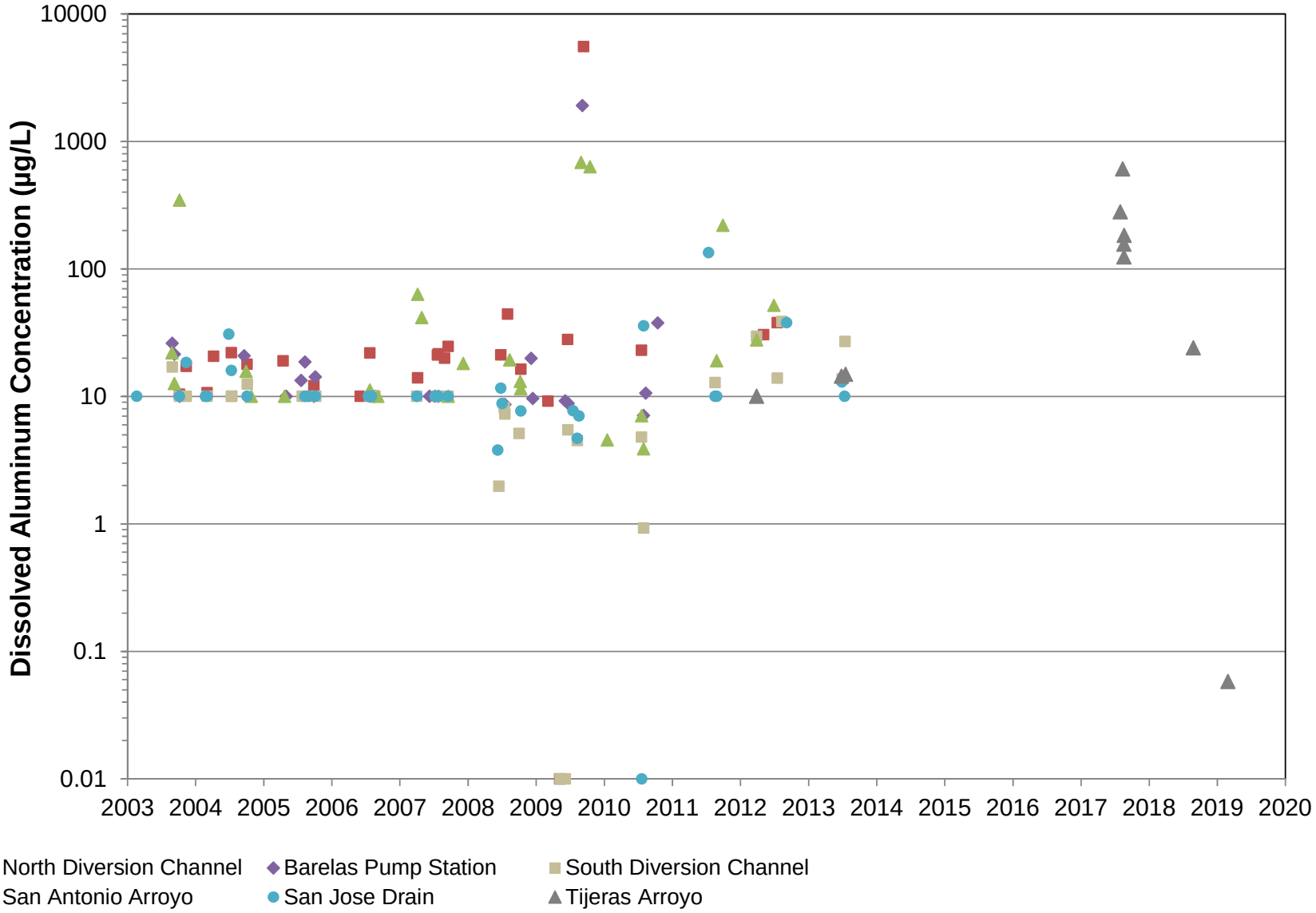
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig06a_Al-Diss-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Dissolved Aluminum, Outfall Locations

Figure 6a

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P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig06b_Al-Tot-Outfalls.doc

Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

Figure 6b

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Aluminum, Outfall Locations

Daniel B. Stephens & Associates, Inc.

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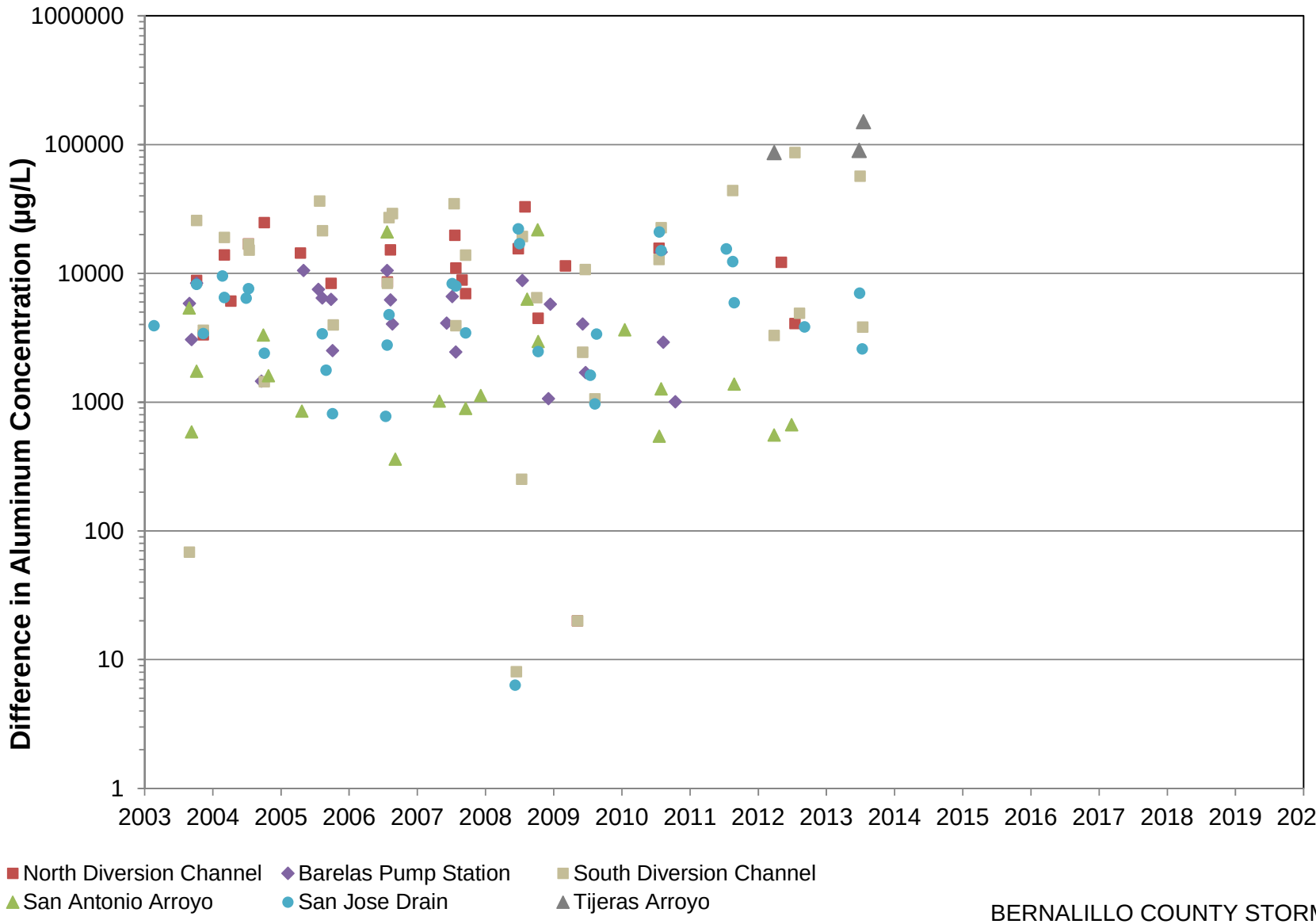

Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Difference Between Total and Dissolved Aluminum
Outfall Locations

Figure 6c

Daniel B. Stephens & Associates, Inc.

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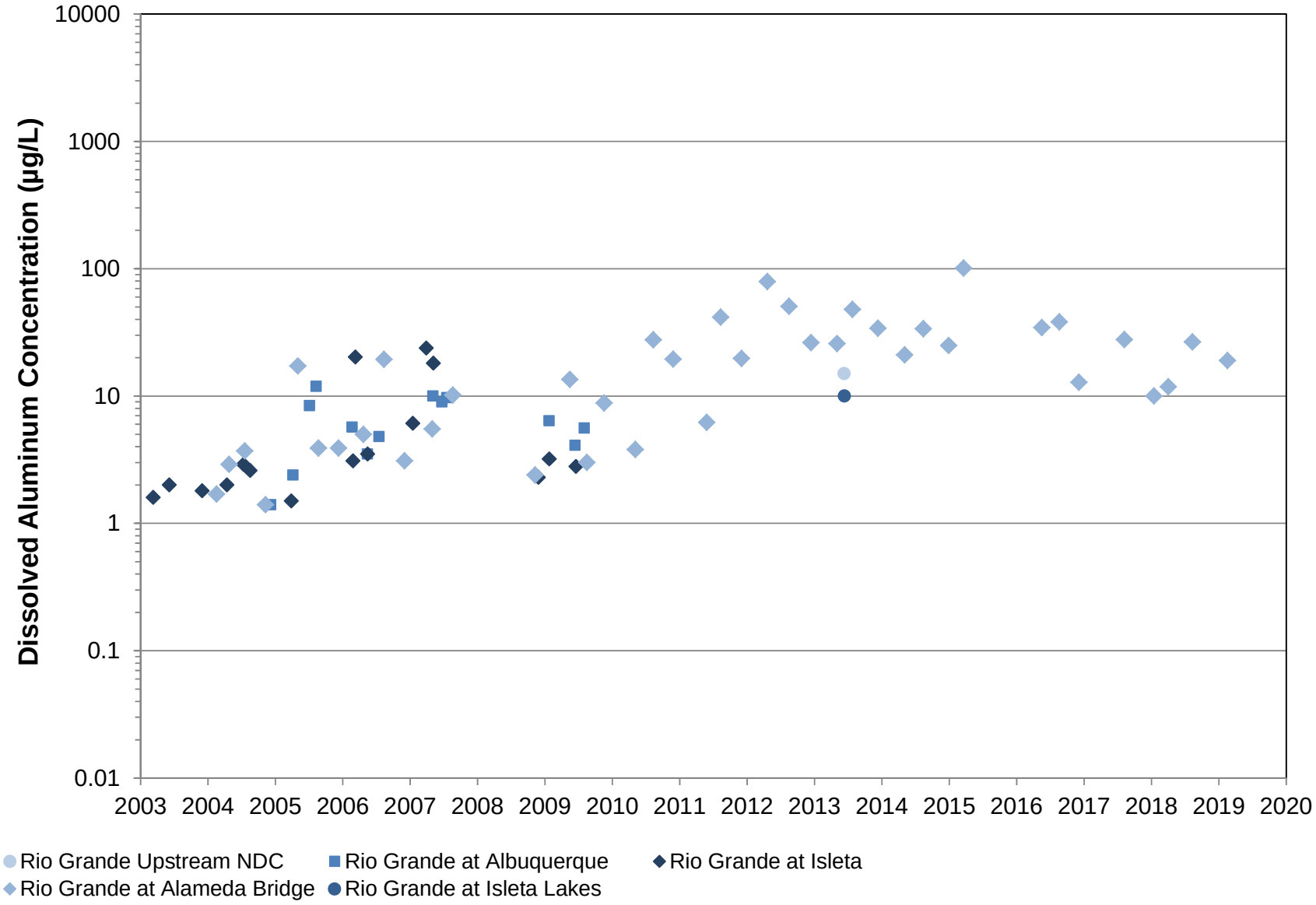
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig06d_Al-Diss-RG.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Dissolved Aluminum, Rio Grande Locations

Figure 6d

Daniel B. Stephens & Associates, Inc.

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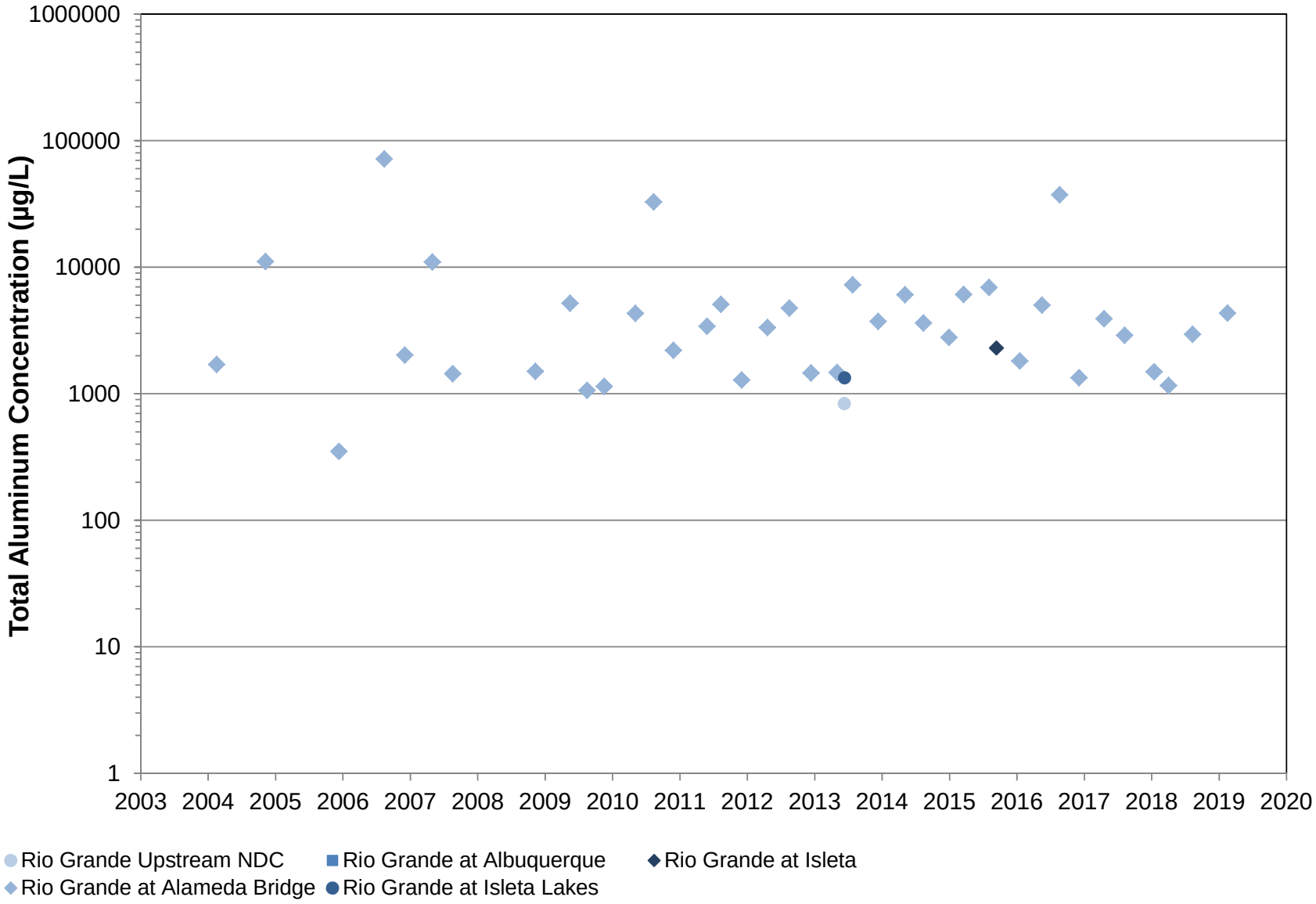
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig06e_Al-Tot-RG.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Aluminum, Rio Grande Locations

Figure 6e

Daniel B. Stephens & Associates, Inc.

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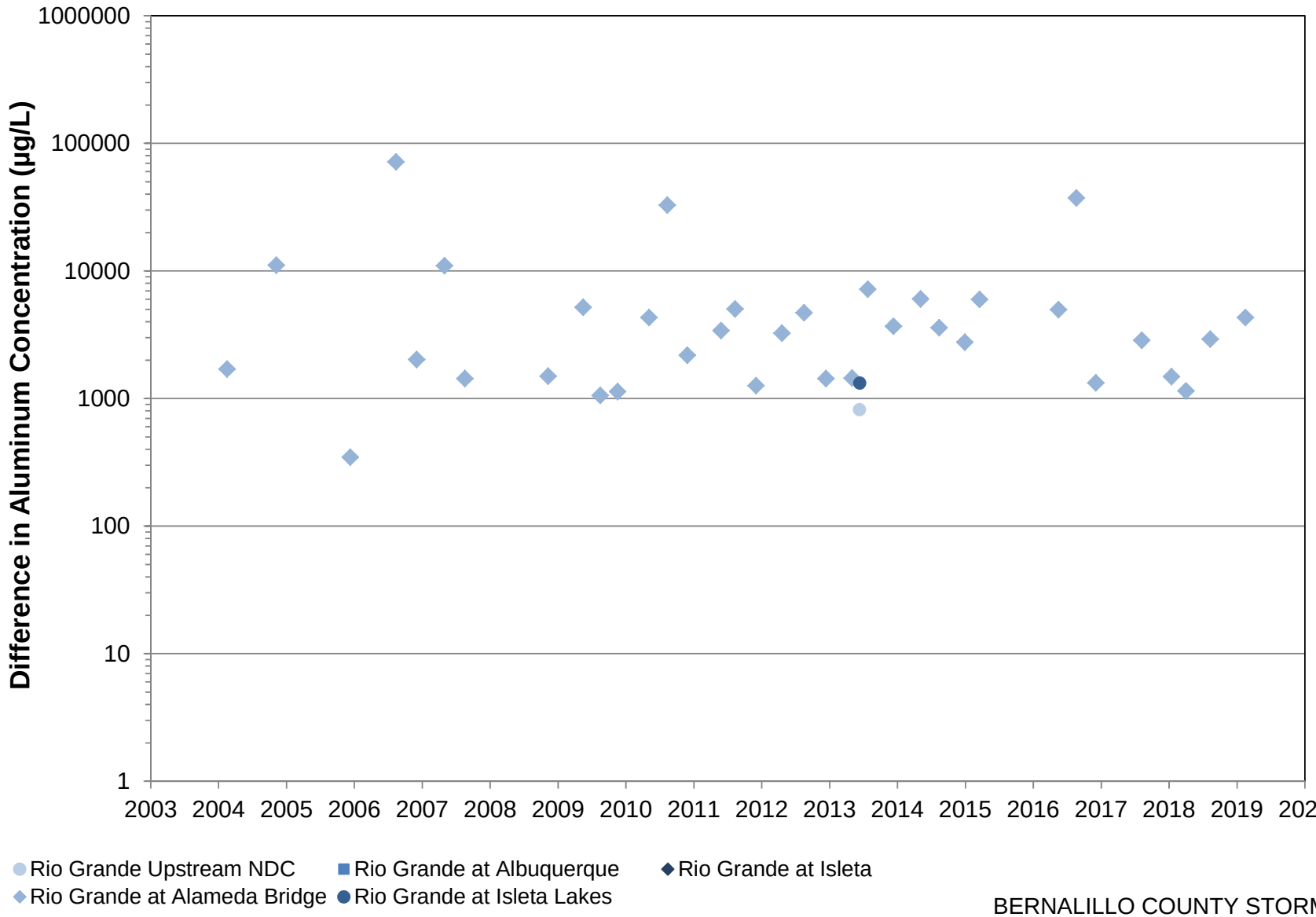
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig06f_Al-Delta-RG.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Difference Between Total and Dissolved Aluminum
Rio Grande Locations

Figure 6f

Daniel B. Stephens & Associates, Inc.

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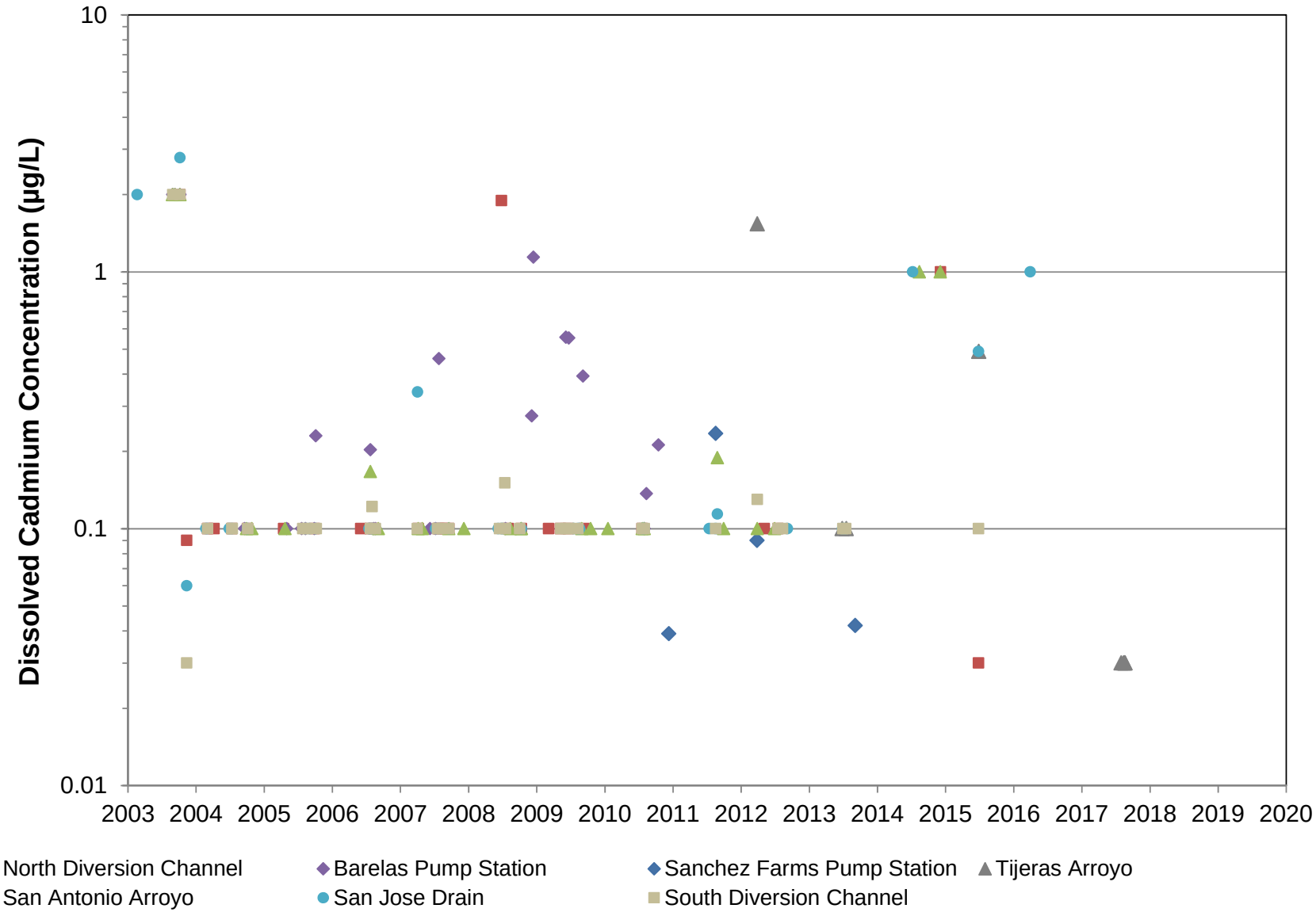
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig07a_Cd-Diss-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Dissolved Cadmium, Outfall Locations

Figure 7a

Daniel B. Stephens & Associates, Inc.

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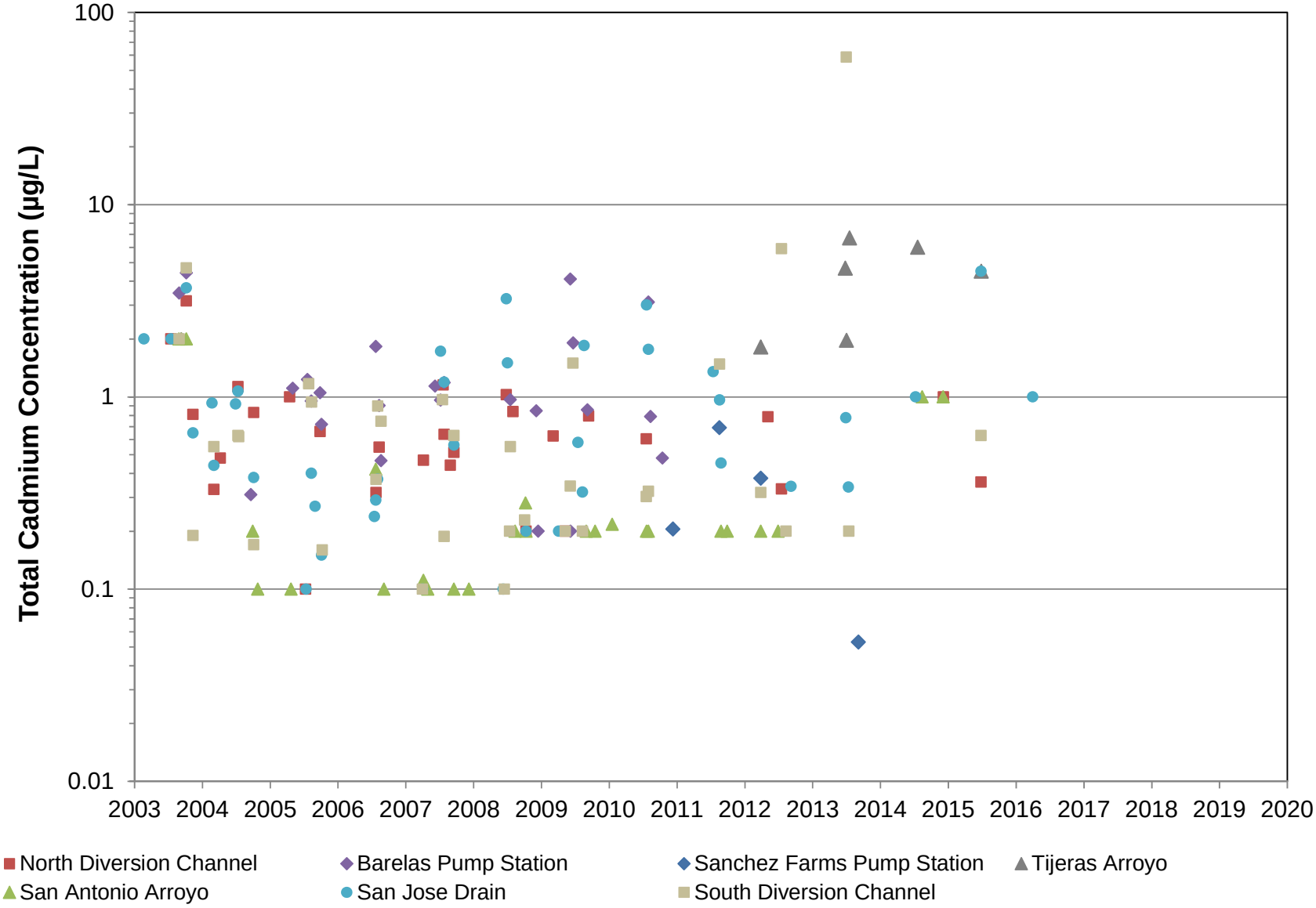
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig07b_Cd-Tot-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Cadmium, Outfall Locations

Figure 7b

Daniel B. Stephens & Associates, Inc.

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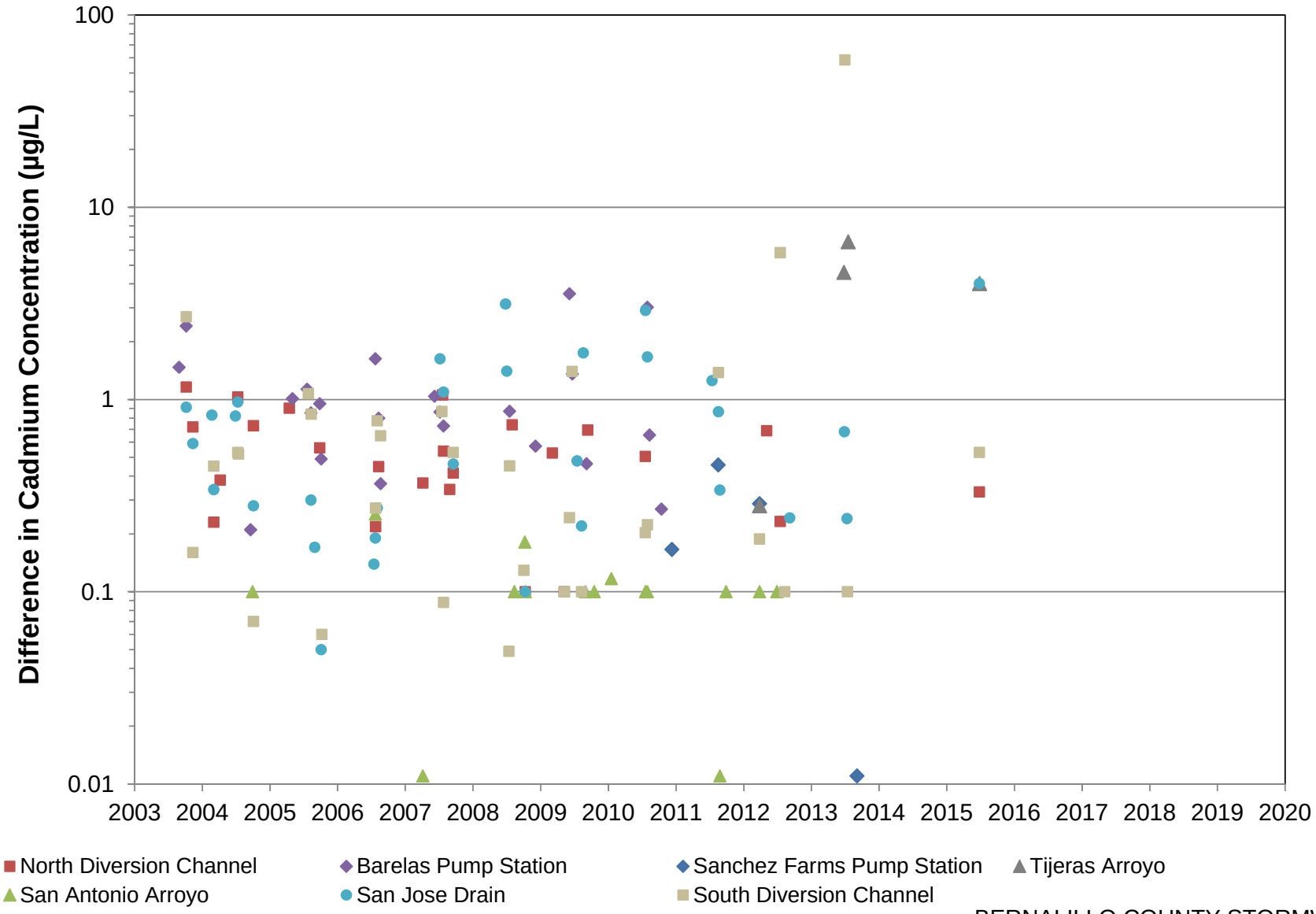
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig07c_Cd-Delta-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Difference Between Total and Dissolved Cadmium Outfall Locations

Figure 7c

Daniel B. Stephens & Associates, Inc.

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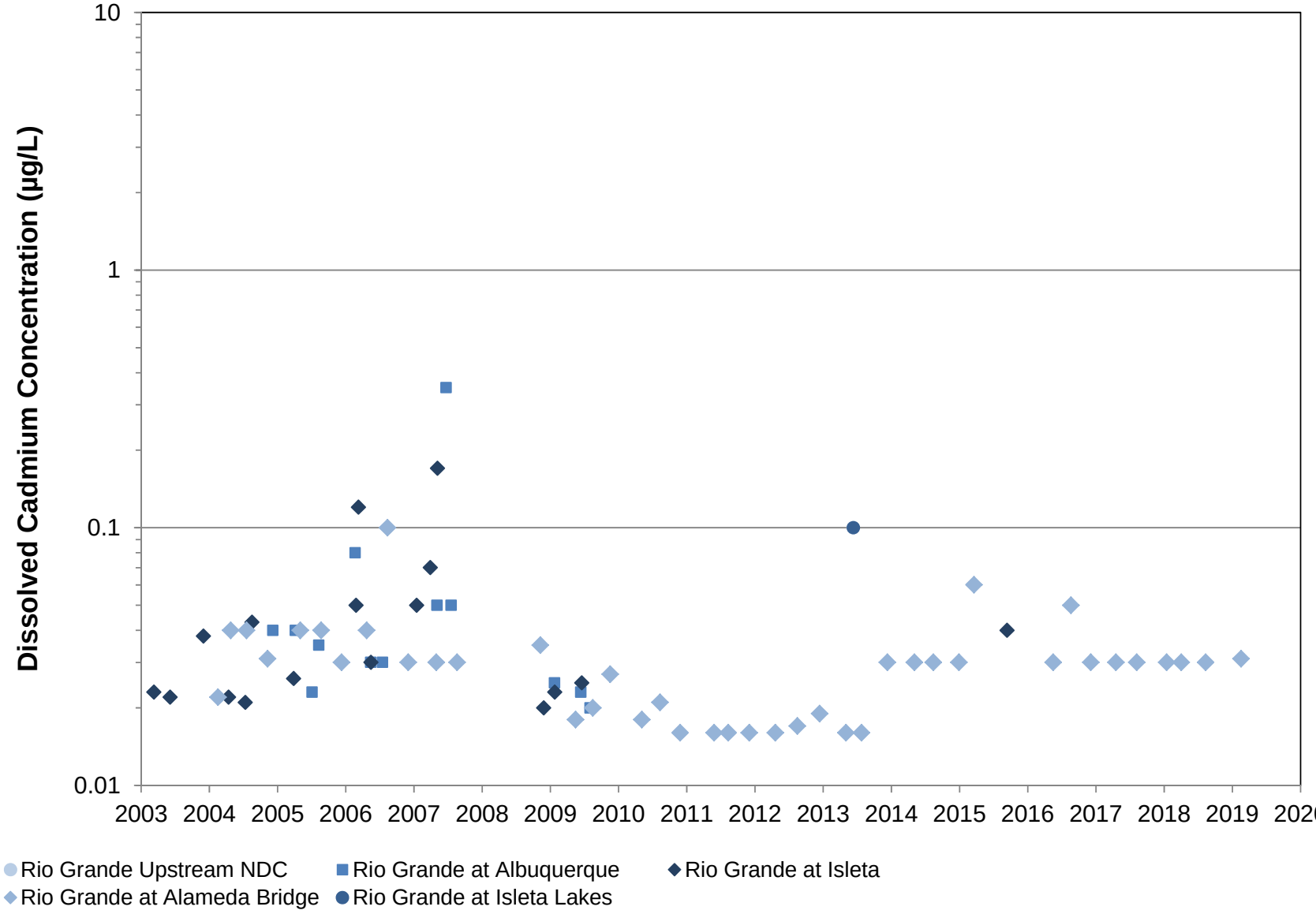


Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

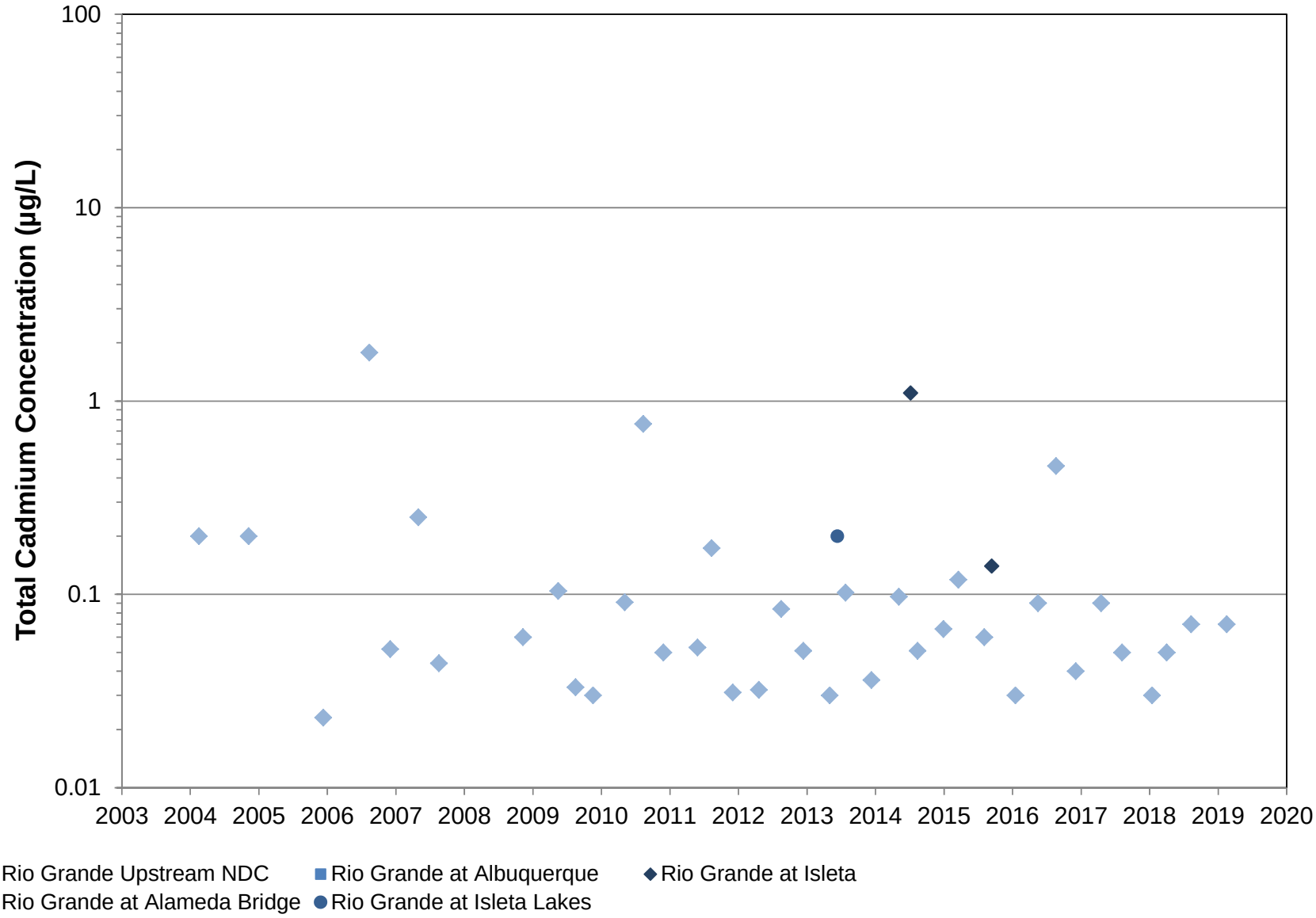
Dissolved Cadmium, Rio Grande Locations

Figure 7d

Daniel B. Stephens & Associates, Inc.

6/6/19

P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig07e_Cd-Tot-RG.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

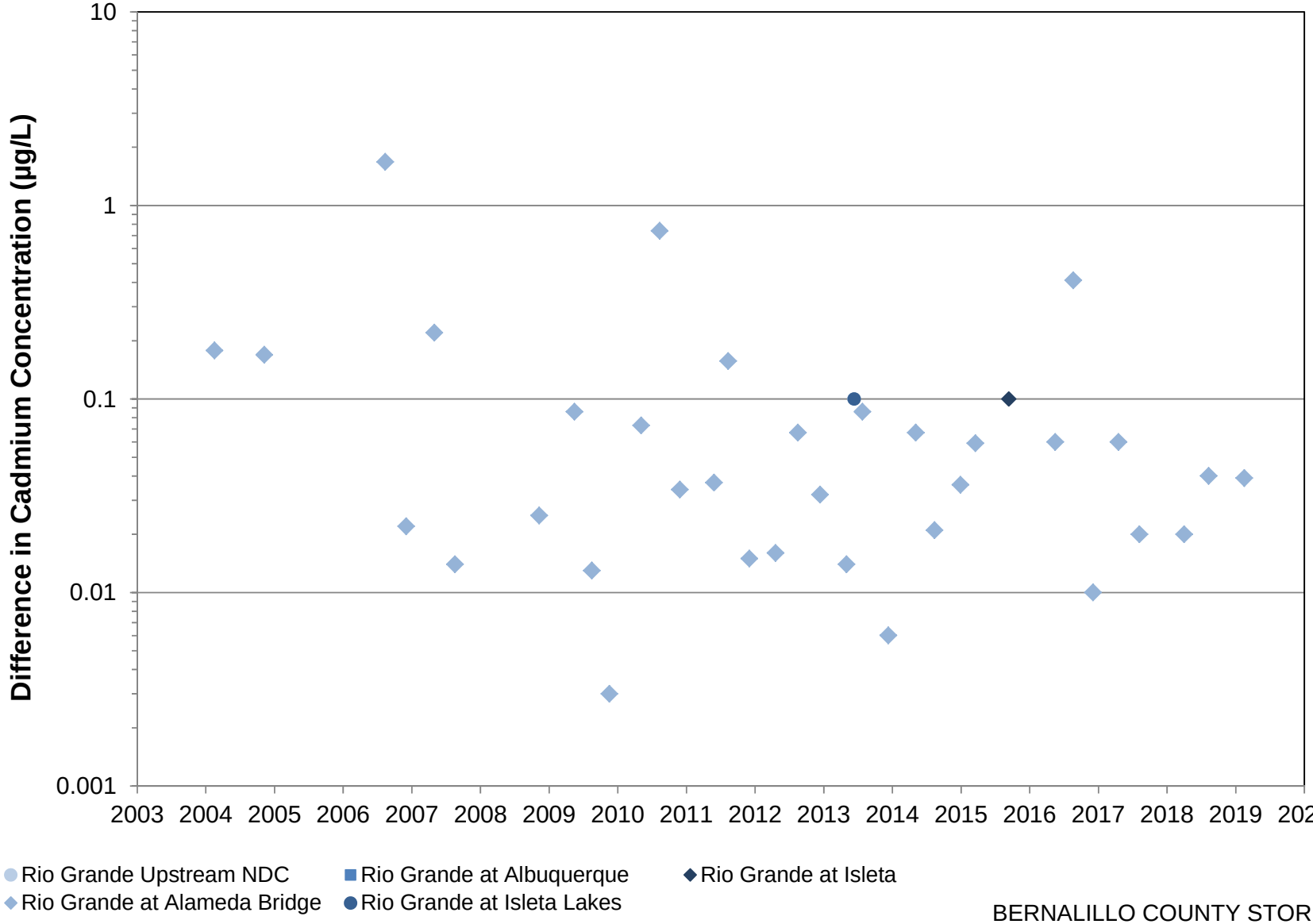
Figure 7e

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Cadmium, Rio Grande Locations

Daniel B. Stephens & Associates, Inc.

6/6/19



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Difference Between Total and Dissolved Cadmium
Rio Grande Locations

Figure 7f

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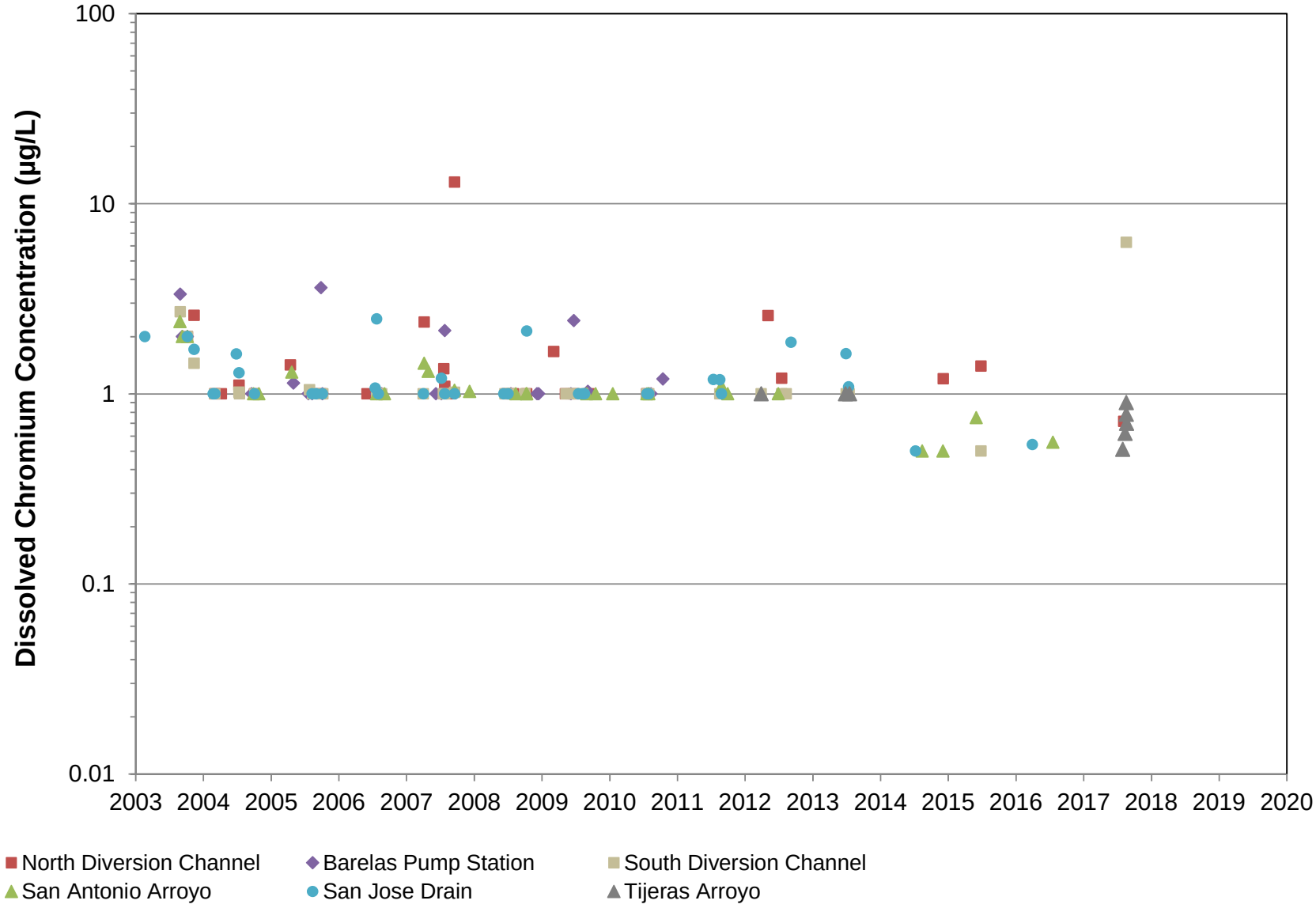
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig08a_Cr-Diss-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

Figure 8a

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Dissolved Chromium, Outfall Locations

Daniel B. Stephens & Associates, Inc.

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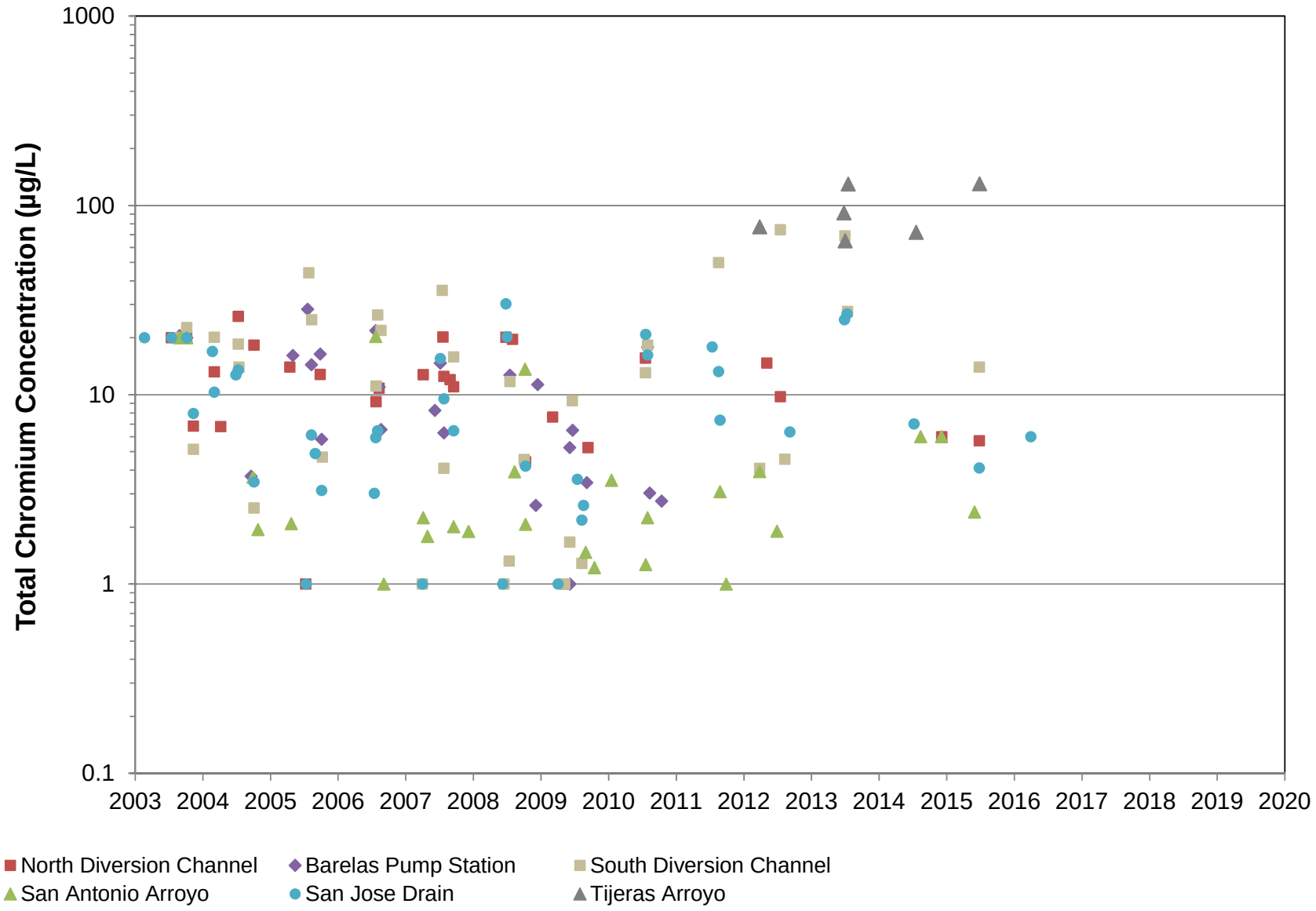
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig08b_Cr-Tot-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

Figure 8b

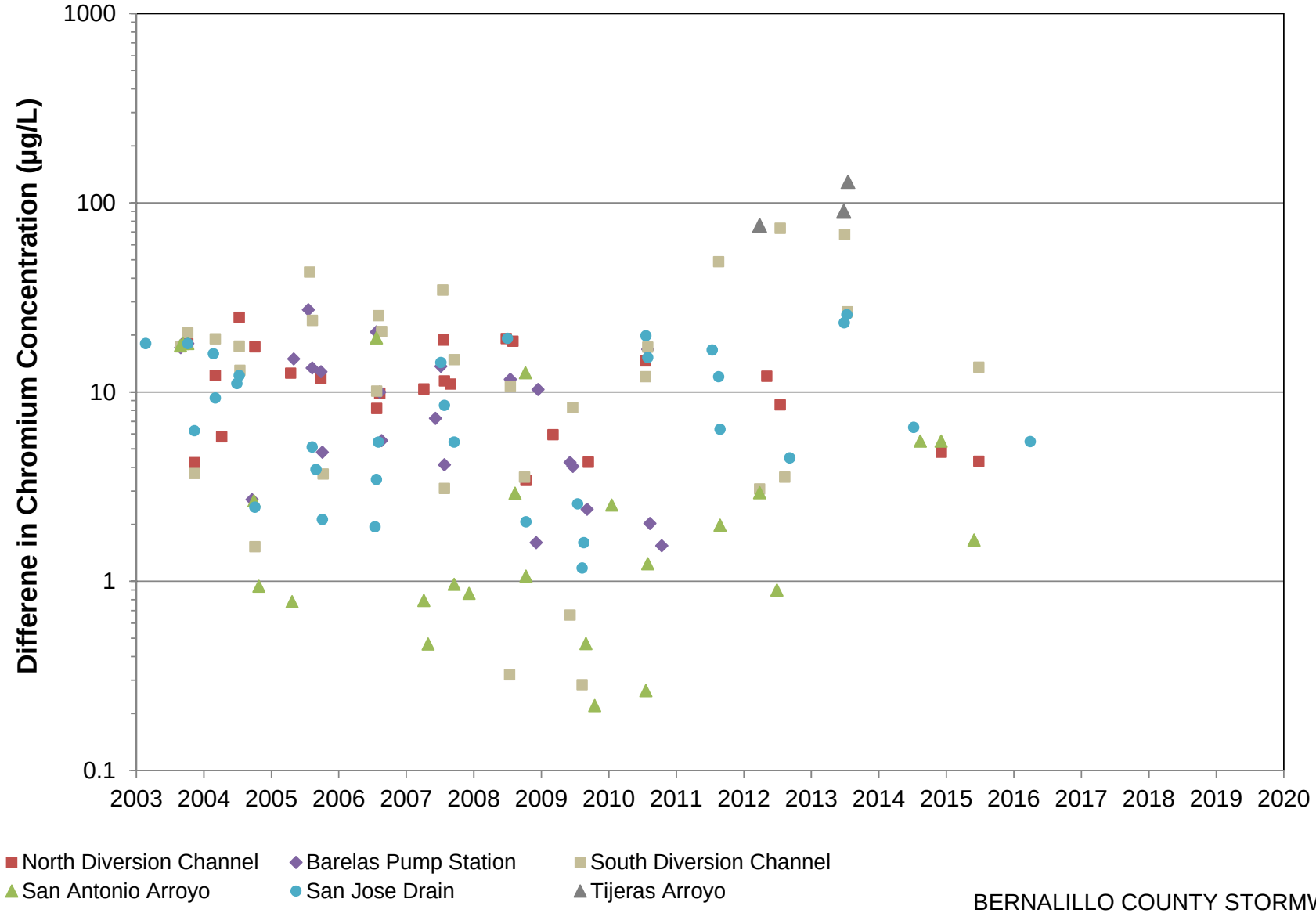
BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Chromium, Outfall Locations

Daniel B. Stephens & Associates, Inc.

6/6/19

P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig08c_Cr-Delta-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

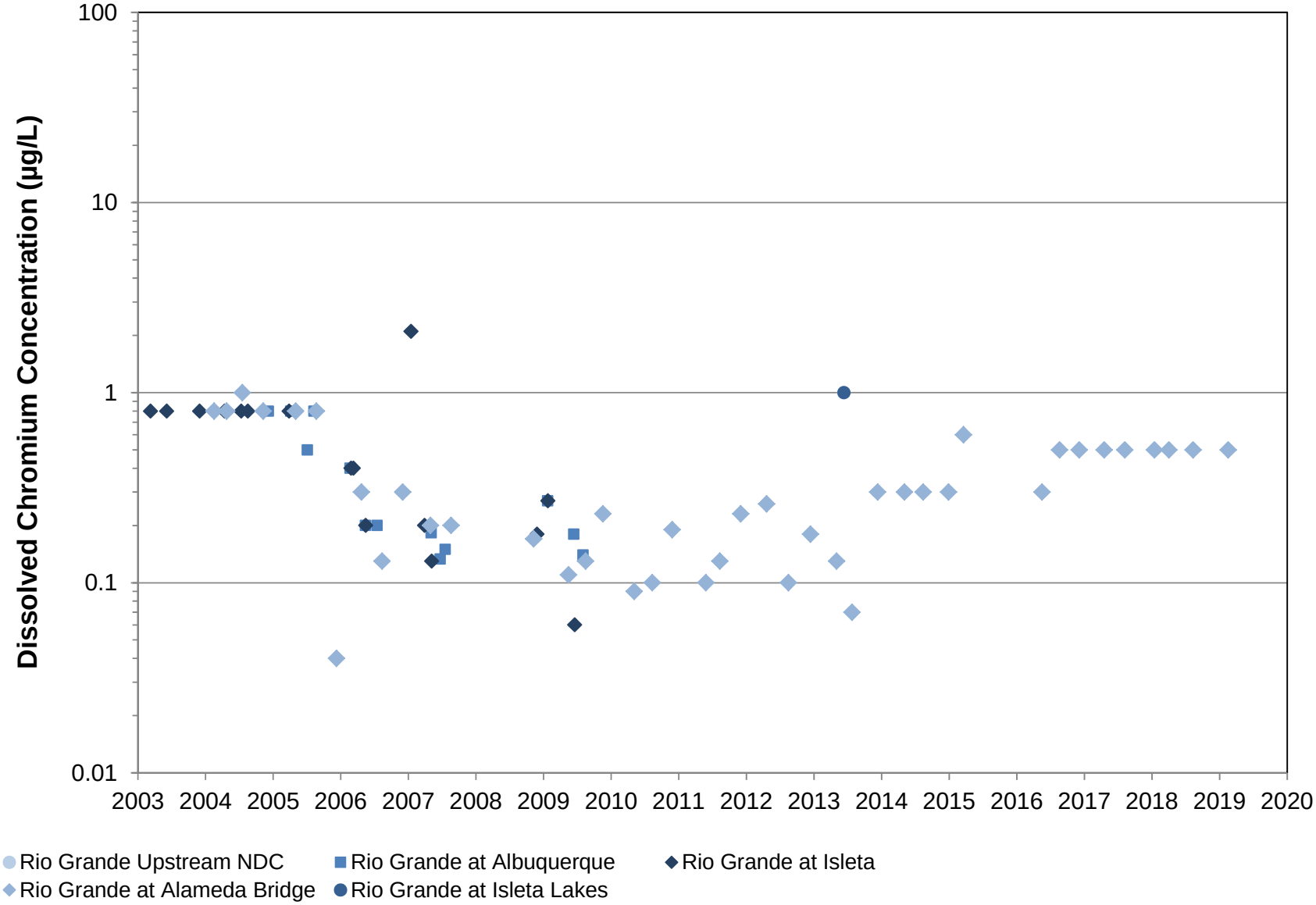
Difference Between Total and Dissolved Chromium Outfall Locations

Figure 8c

Daniel B. Stephens & Associates, Inc.

6/6/19

P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig08d_Cr-Diss-RG.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Dissolved Chromium, Rio Grande Locations

Figure 8d

Daniel B. Stephens & Associates, Inc.

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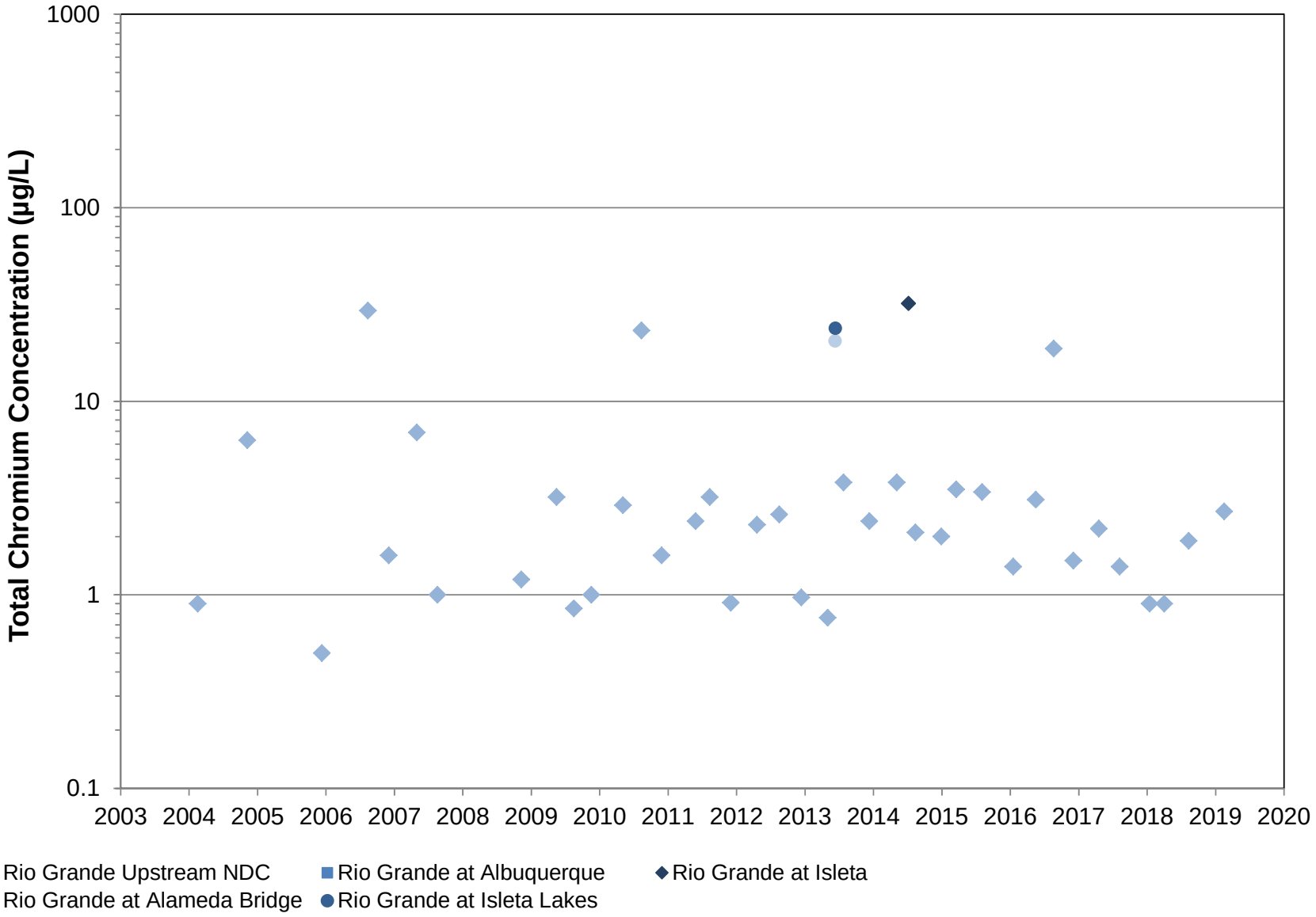

Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Chromium, Rio Grande Locations

Figure 8e

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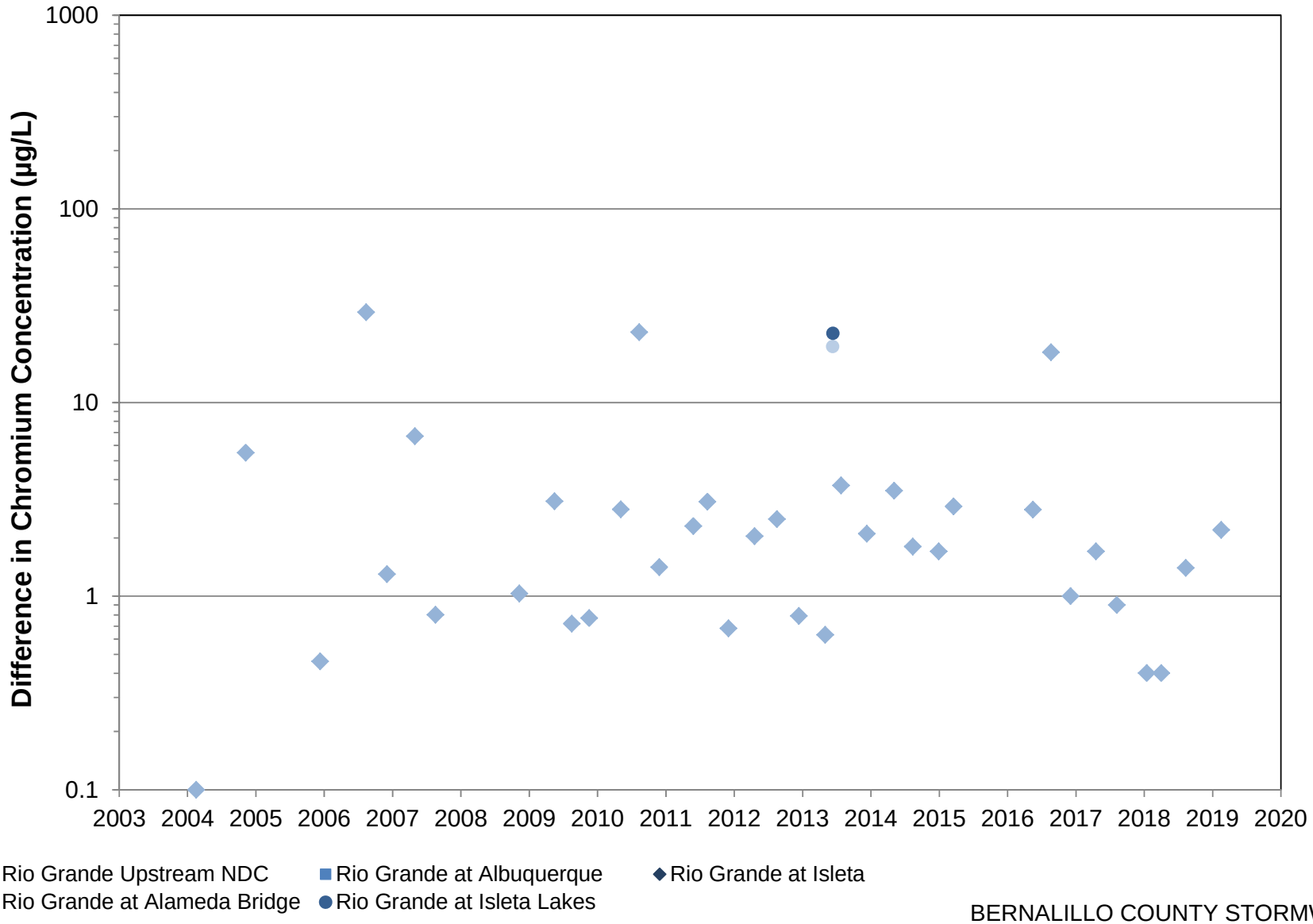

Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Difference Between Total and Dissolved Chromium
Rio Grande Locations

Figure 8f

Daniel B. Stephens & Associates, Inc.

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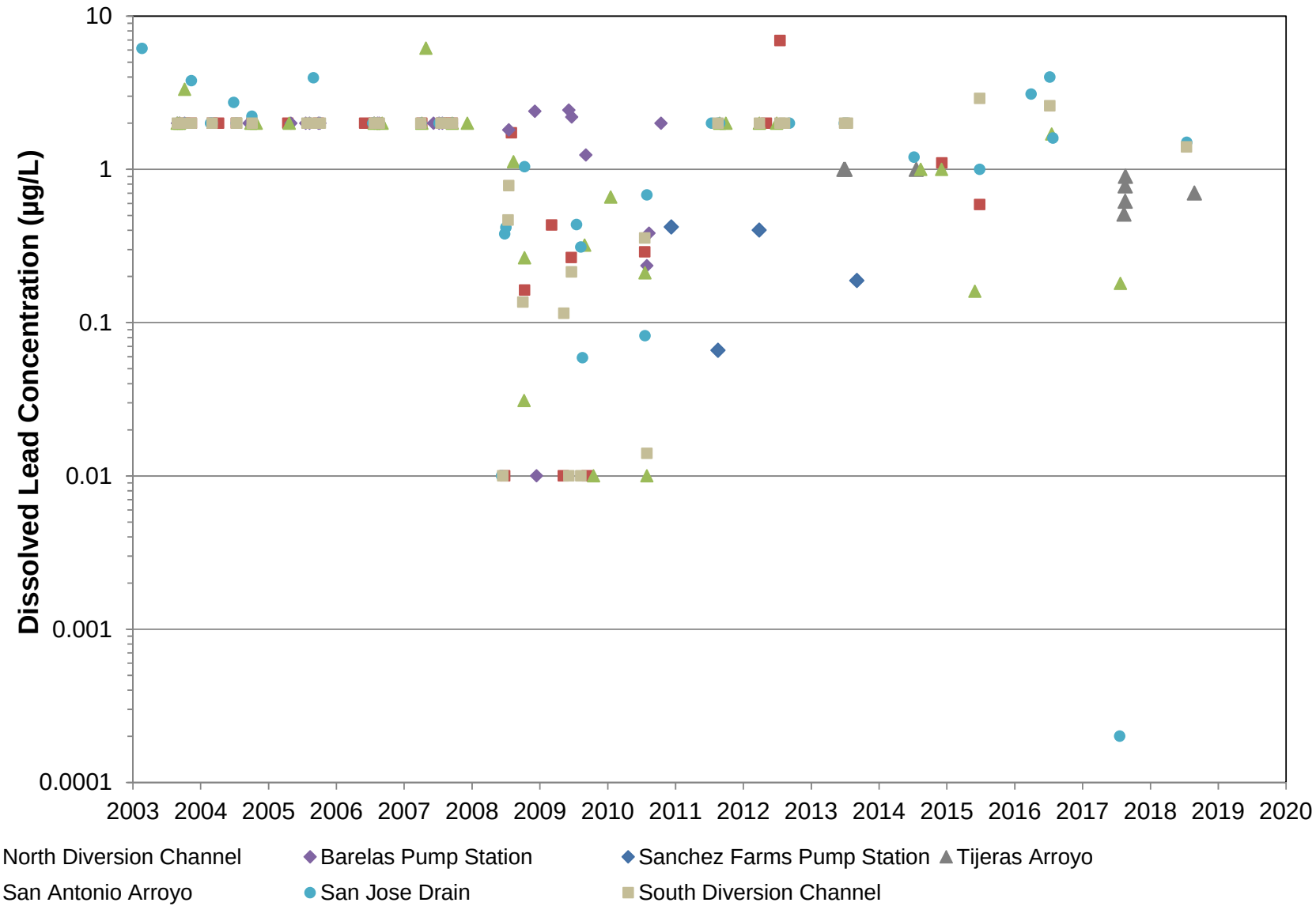
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig09a_Pb-Diss-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

Figure 9a

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Dissolved Lead, Outfall Locations

Daniel B. Stephens & Associates, Inc.

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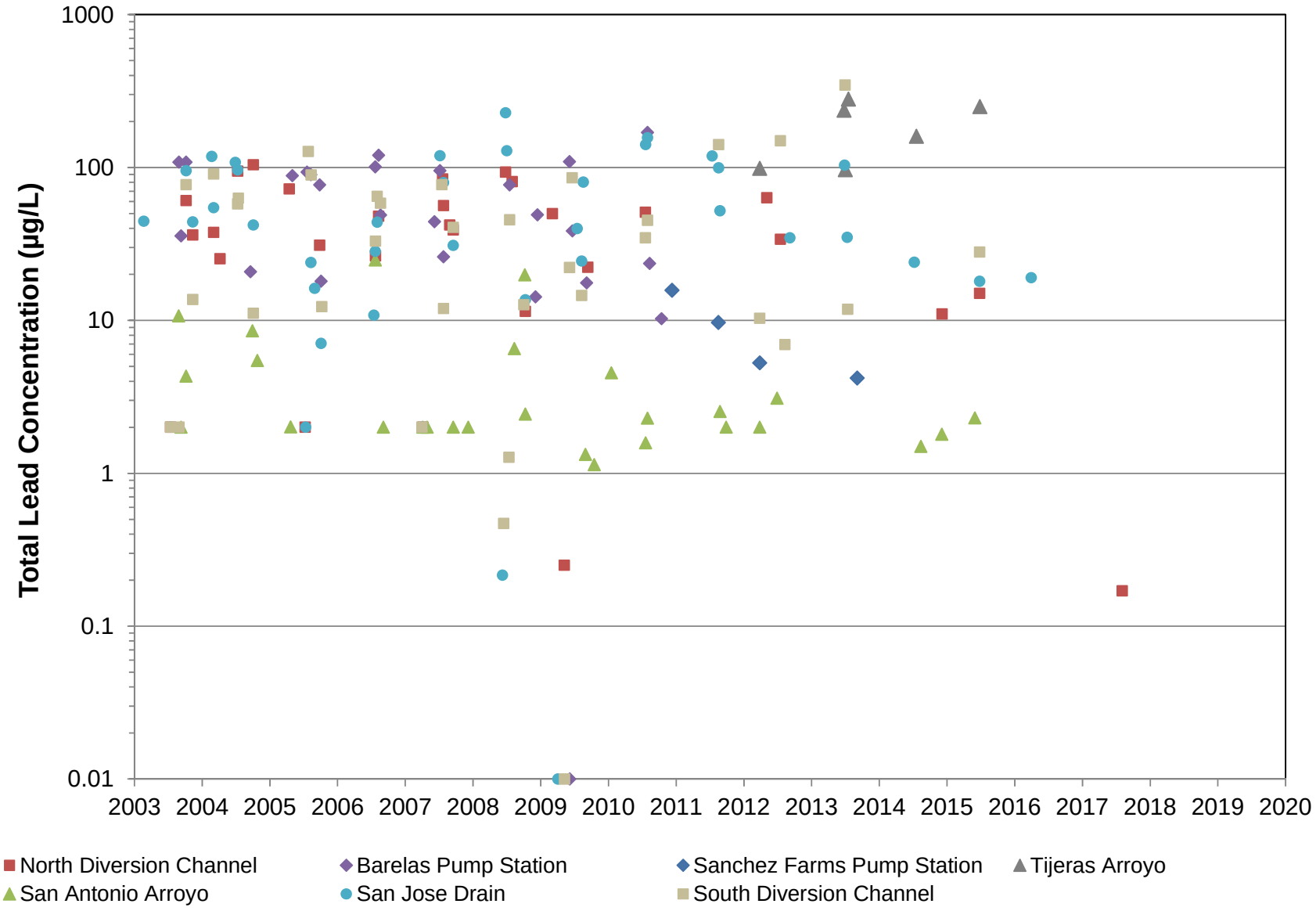
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig09b_Pb-Tot-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

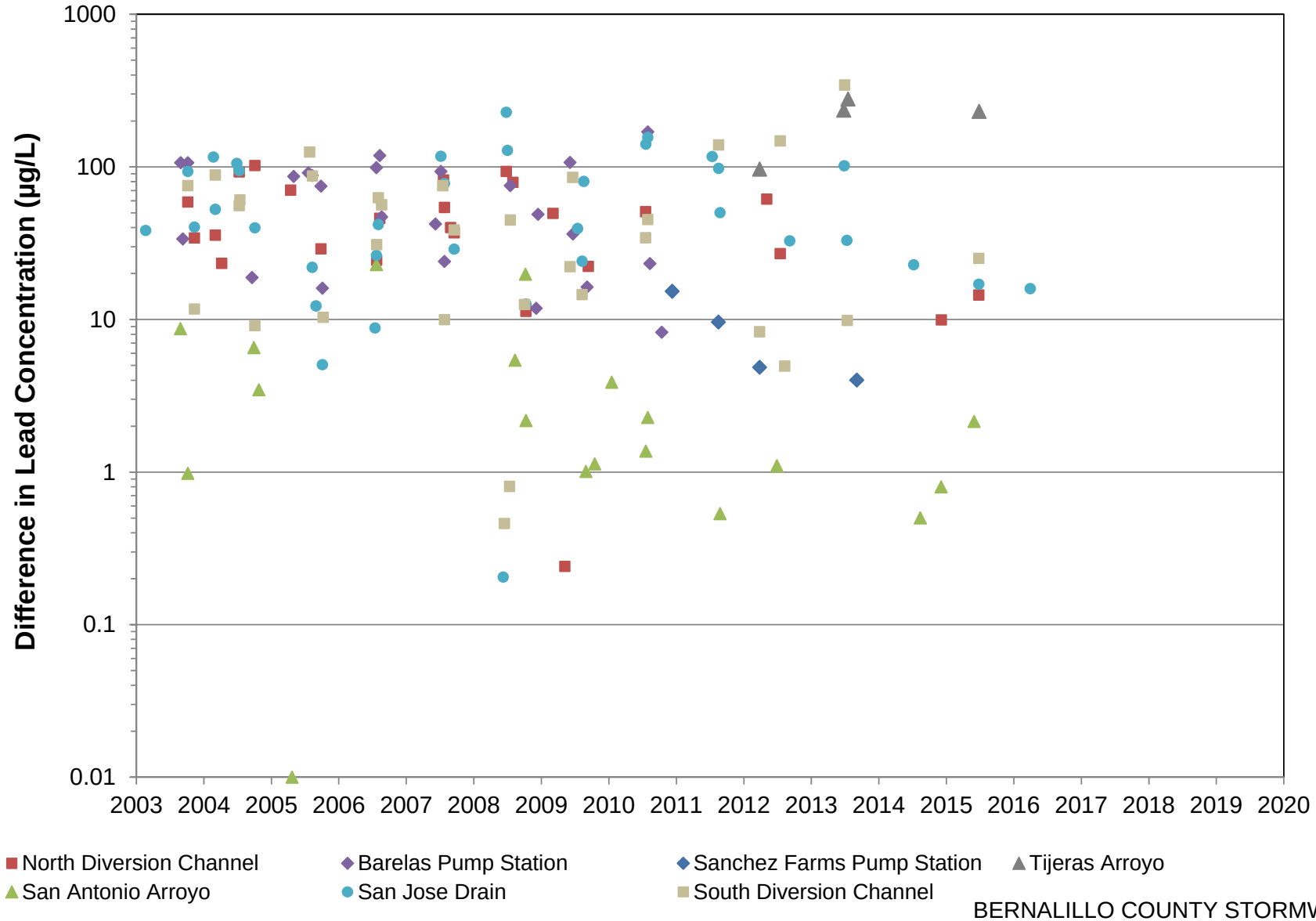
Figure 9b

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Lead, Outfall Locations

Daniel B. Stephens & Associates, Inc.

6/6/19



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Difference Between Total and Dissolved Lead Outfall Locations

Figure 9c

Daniel B. Stephens & Associates, Inc.

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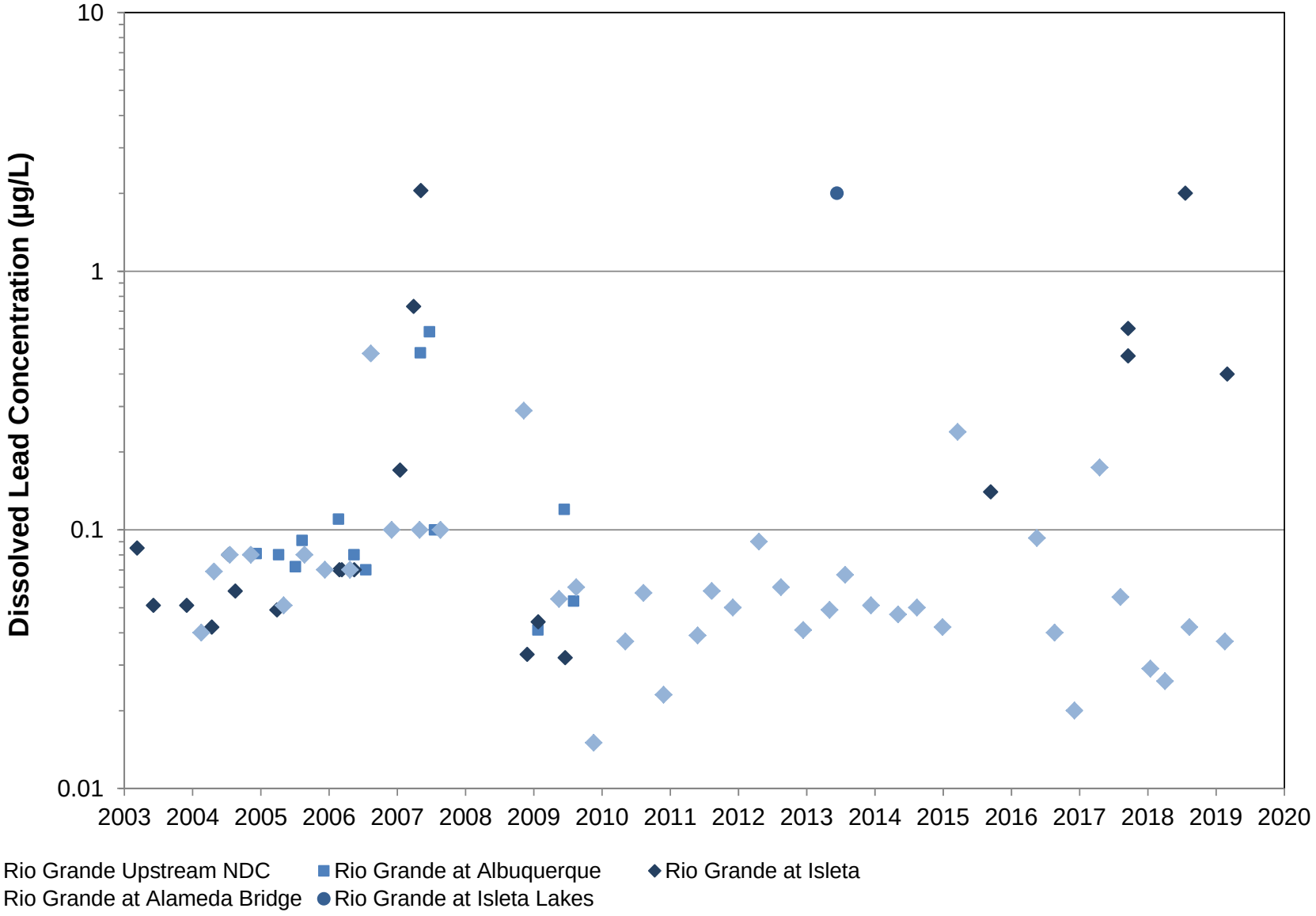
P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig09d_Pb-Diss-RG.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

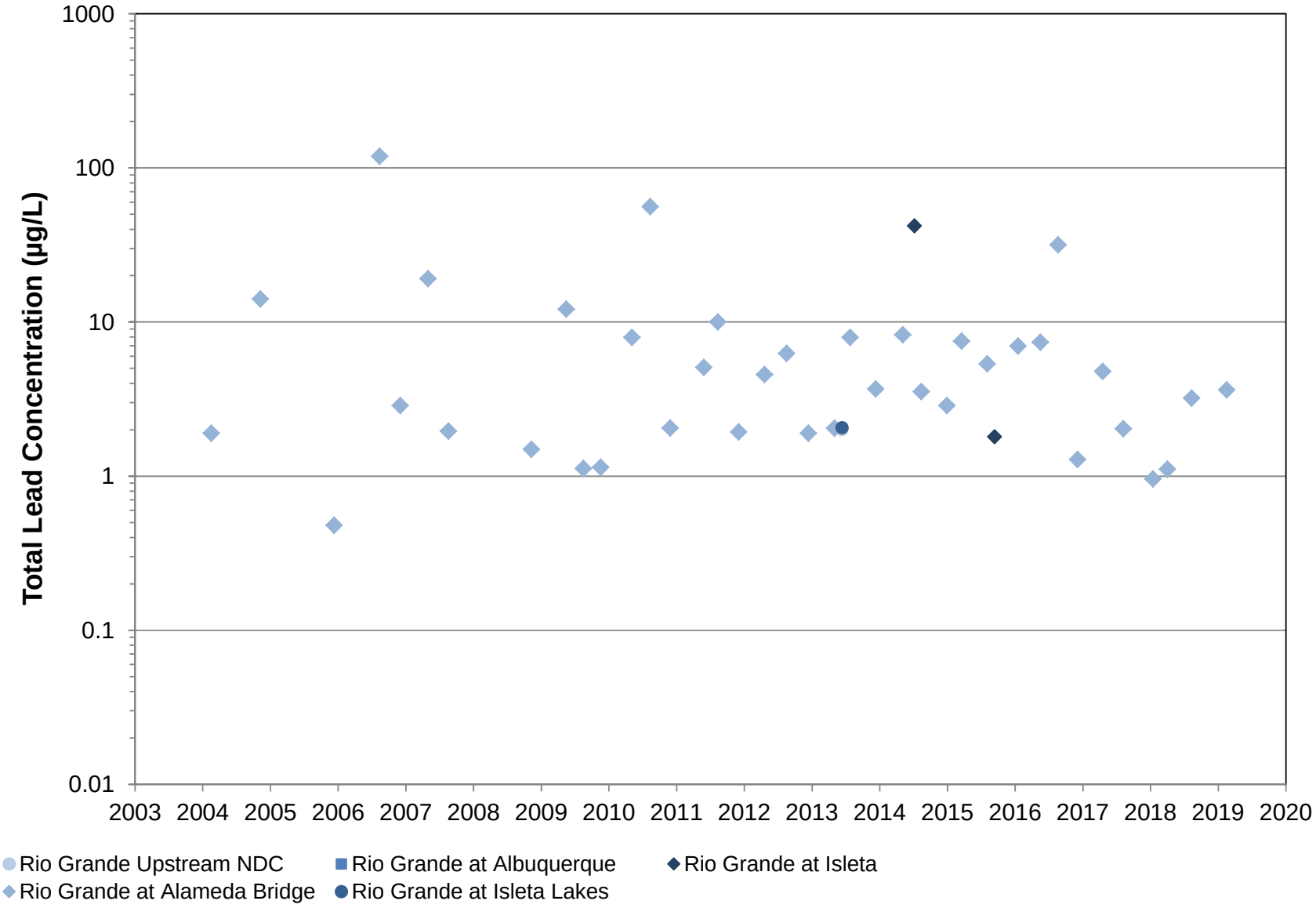
Dissolved Lead, Rio Grande Locations

Figure 9d

Daniel B. Stephens & Associates, Inc.

6/6/19

P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig09e_Pb-Tot-RG.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Lead, Rio Grande Locations

Figure 9e

Daniel B. Stephens & Associates, Inc.

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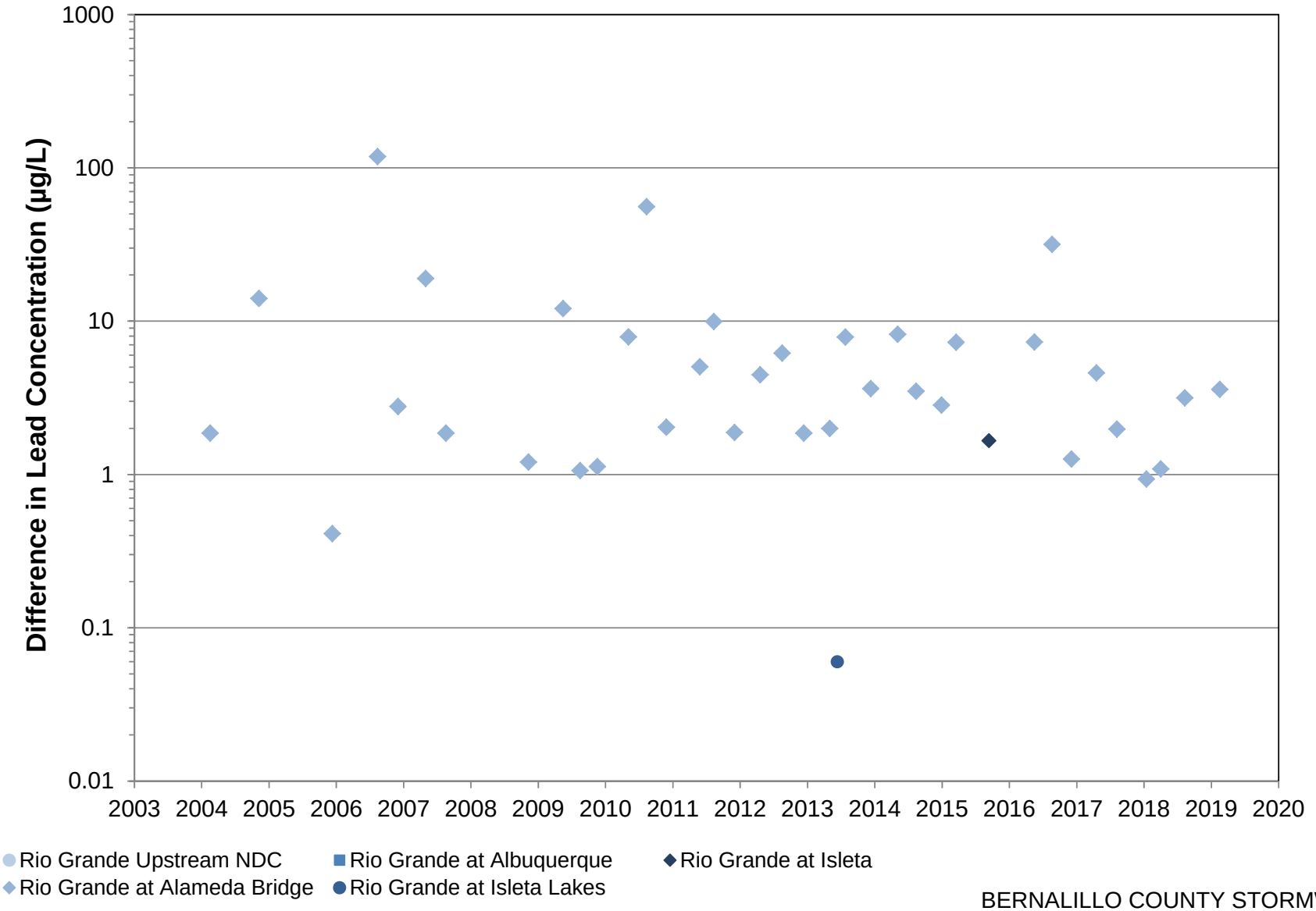


Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

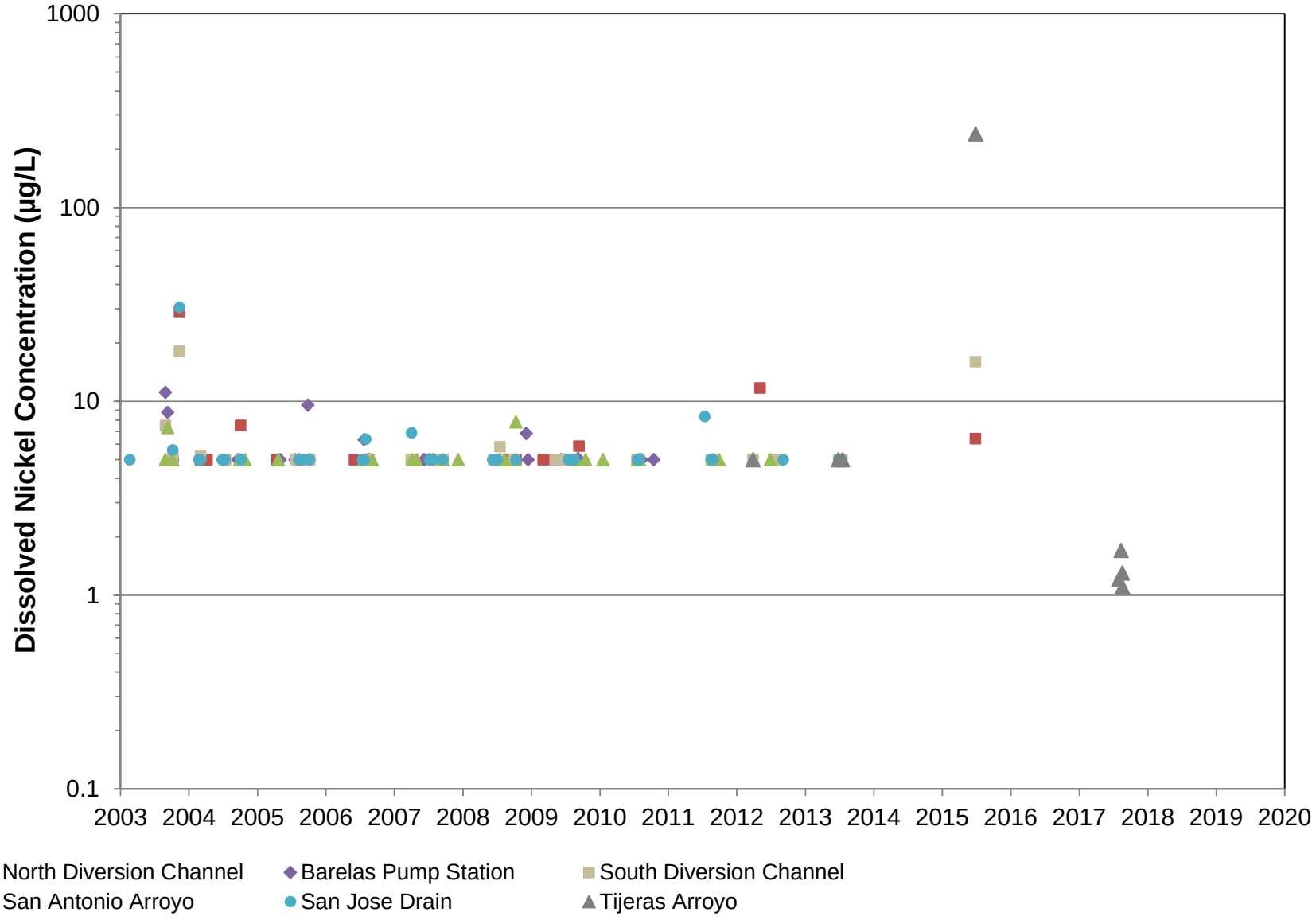
Difference Between Total and Dissolved Lead
Rio Grande Locations

Figure 9f

Daniel B. Stephens & Associates, Inc.

6/6/19

P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig10a_Ni-Diss-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

Figure 10a

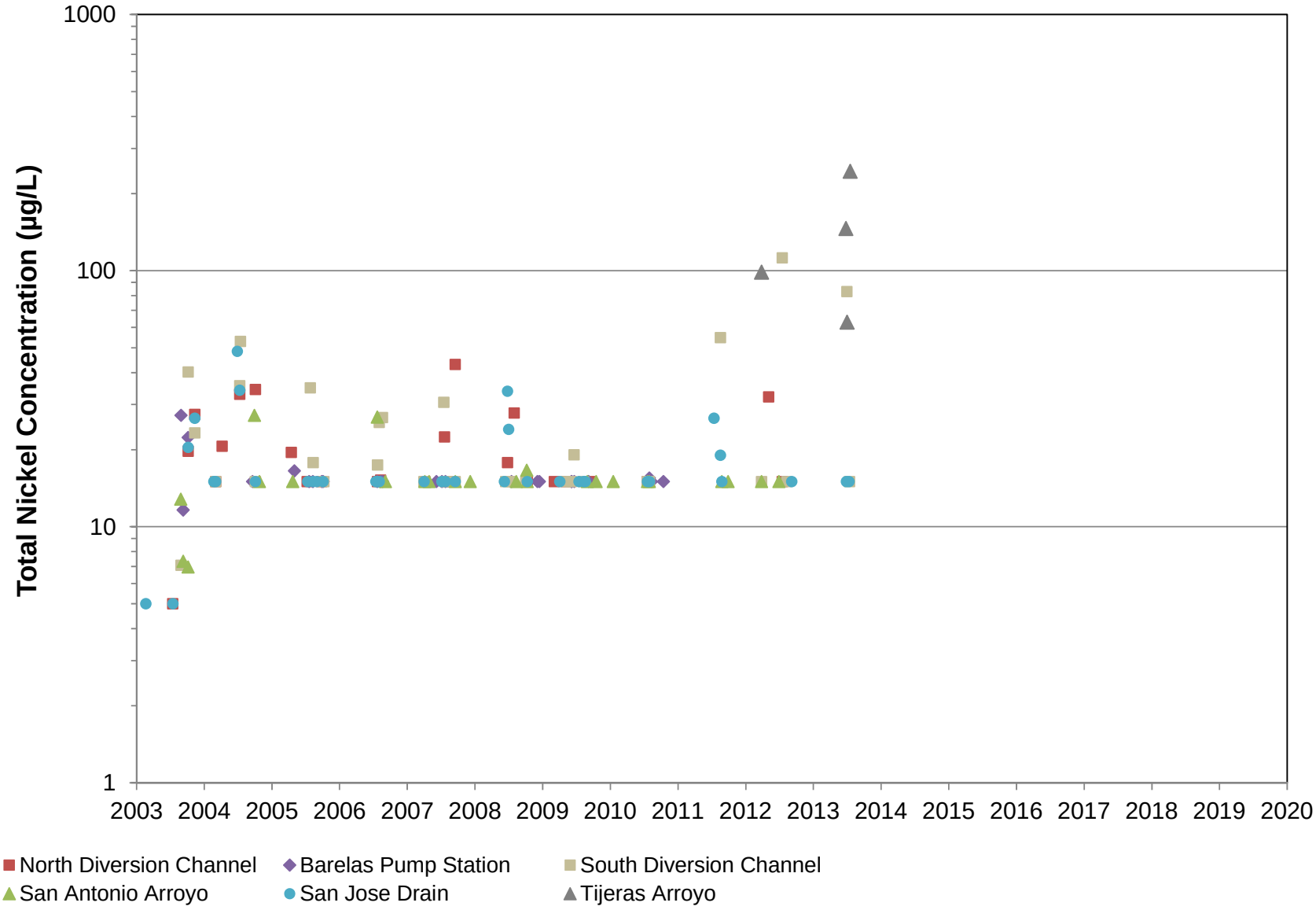
BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Dissolved Nickel, Outfall Locations

Daniel B. Stephens & Associates, Inc.

6/6/19

P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig10b_Ni-Tot-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

Figure 10b

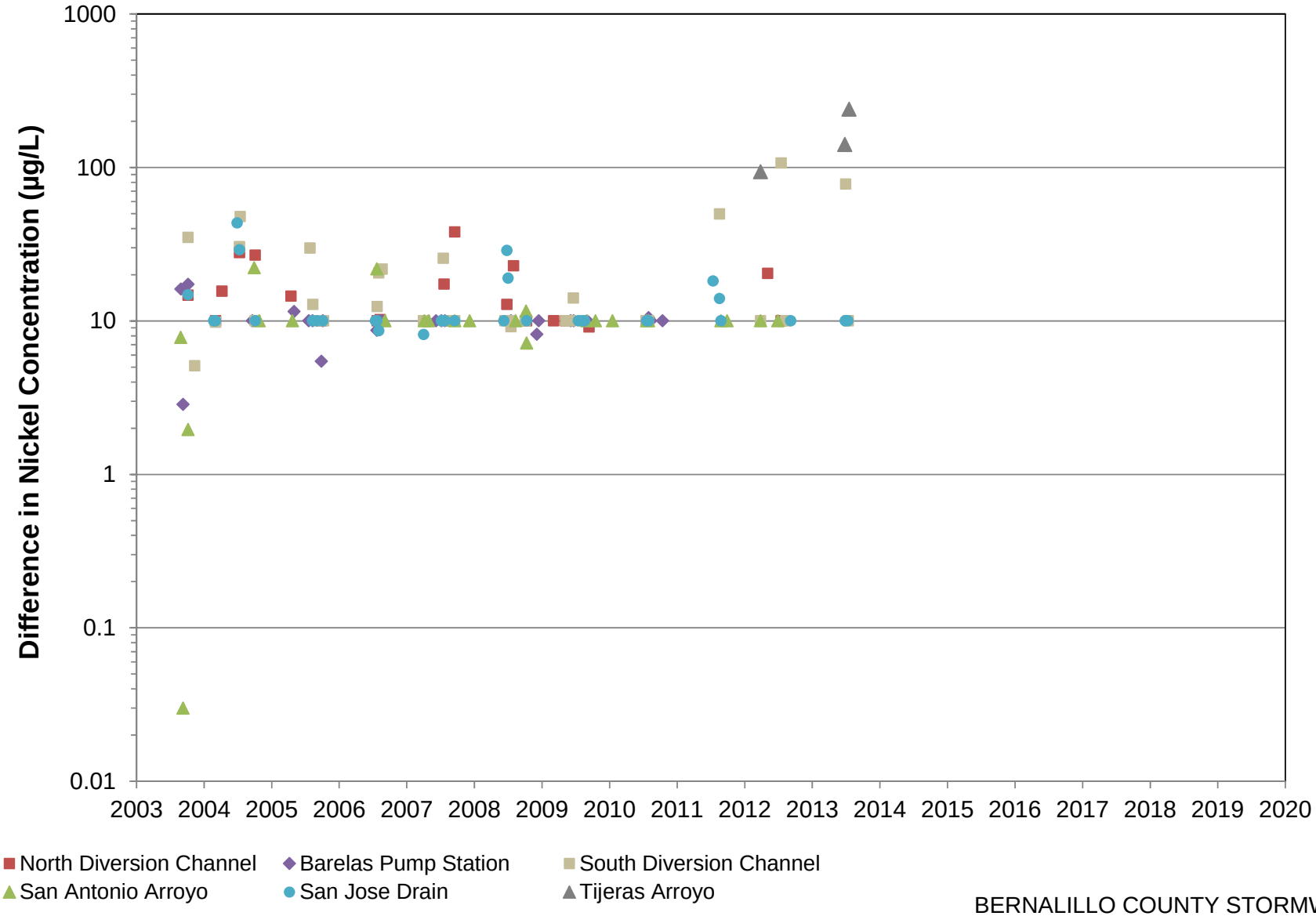
BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Nickel, Outfall Locations

Daniel B. Stephens & Associates, Inc.

6/6/19

P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig10c_Ni-Delta-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

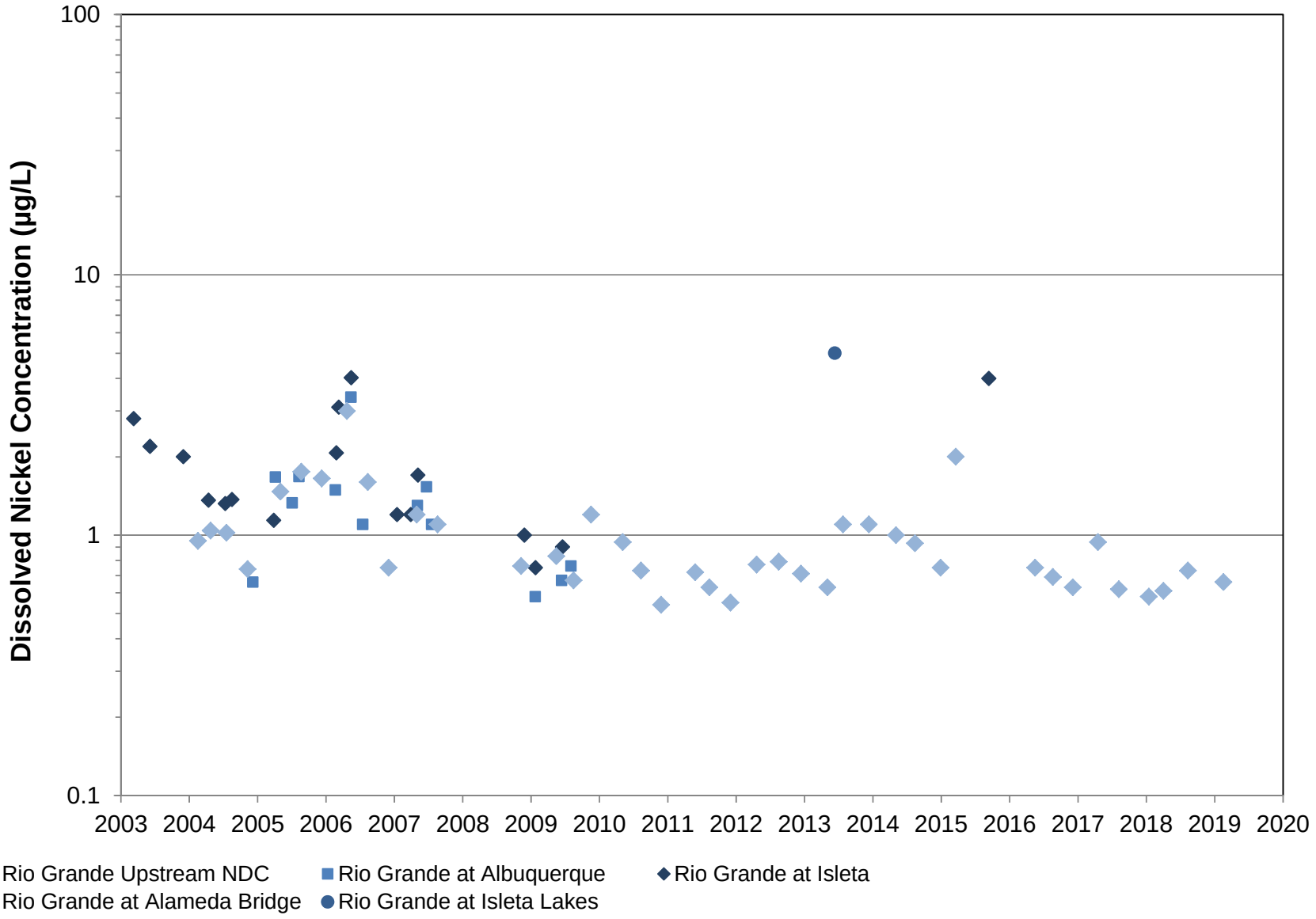
Difference Between Total and Dissolved Nickel Outfall Locations

Figure 10c

Daniel B. Stephens & Associates, Inc.

6/6/19

P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig10d_Ni-Diss-RG.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

Figure 10d

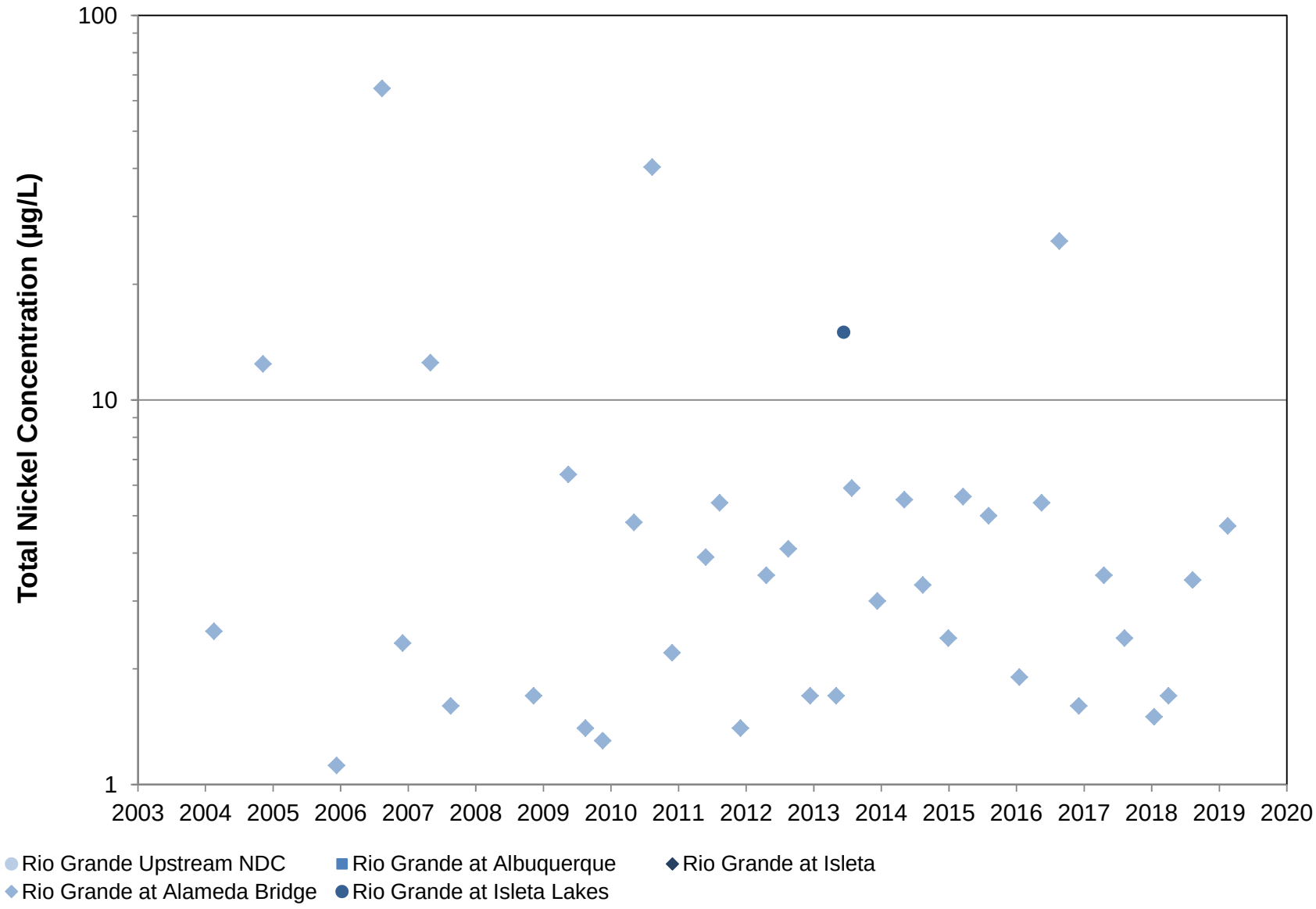
BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Dissolved Nickel, Rio Grande Locations

Daniel B. Stephens & Associates, Inc.

6/6/19

P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig10e_Ni-Tot-RG.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

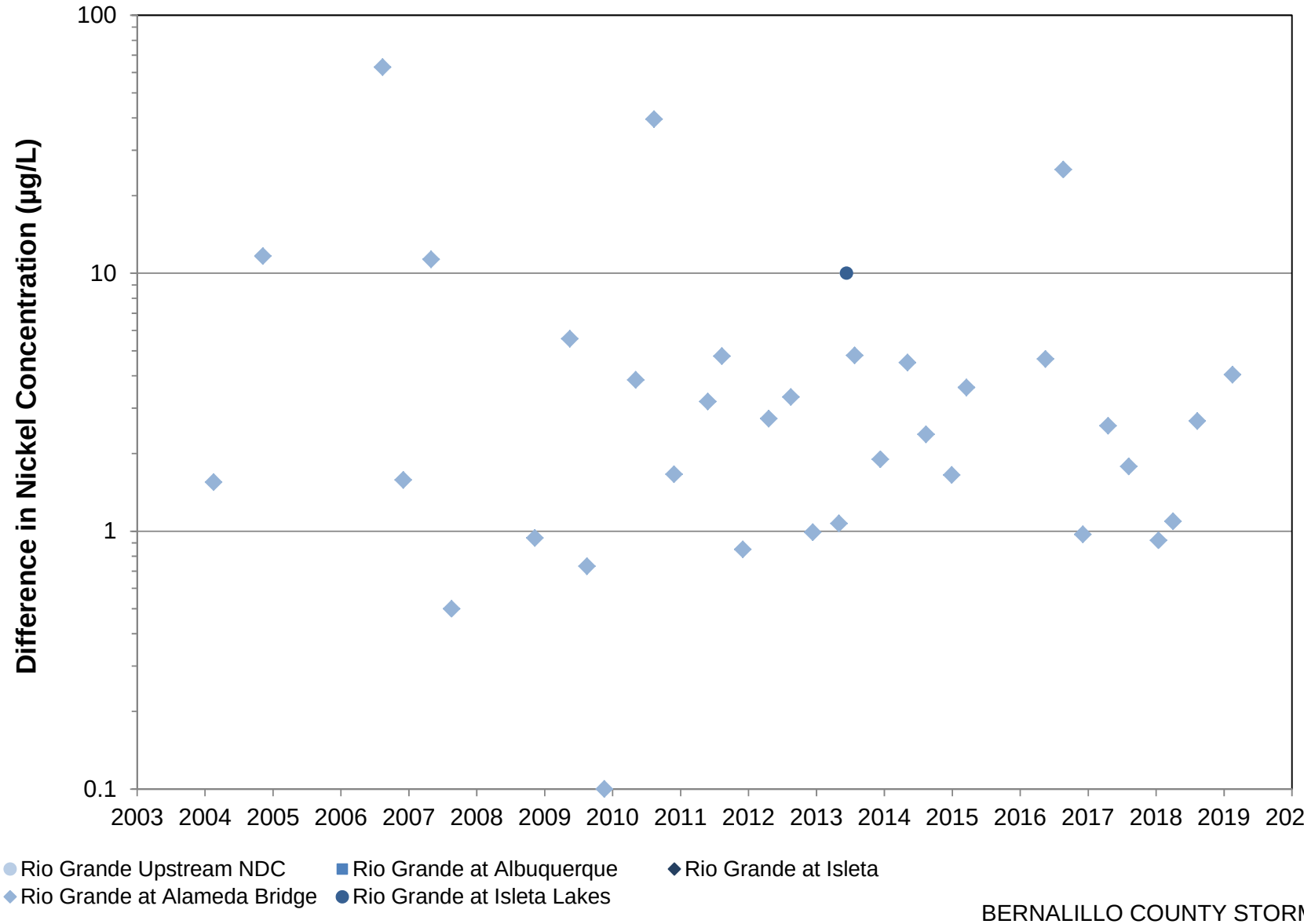
Total Nickel, Rio Grande Locations

Figure 10e

Daniel B. Stephens & Associates, Inc.

6/6/19

P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig10f_Ni-Delta-RG.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Difference Between Total and Dissolved Nickel
Rio Grande Locations

Figure 10f

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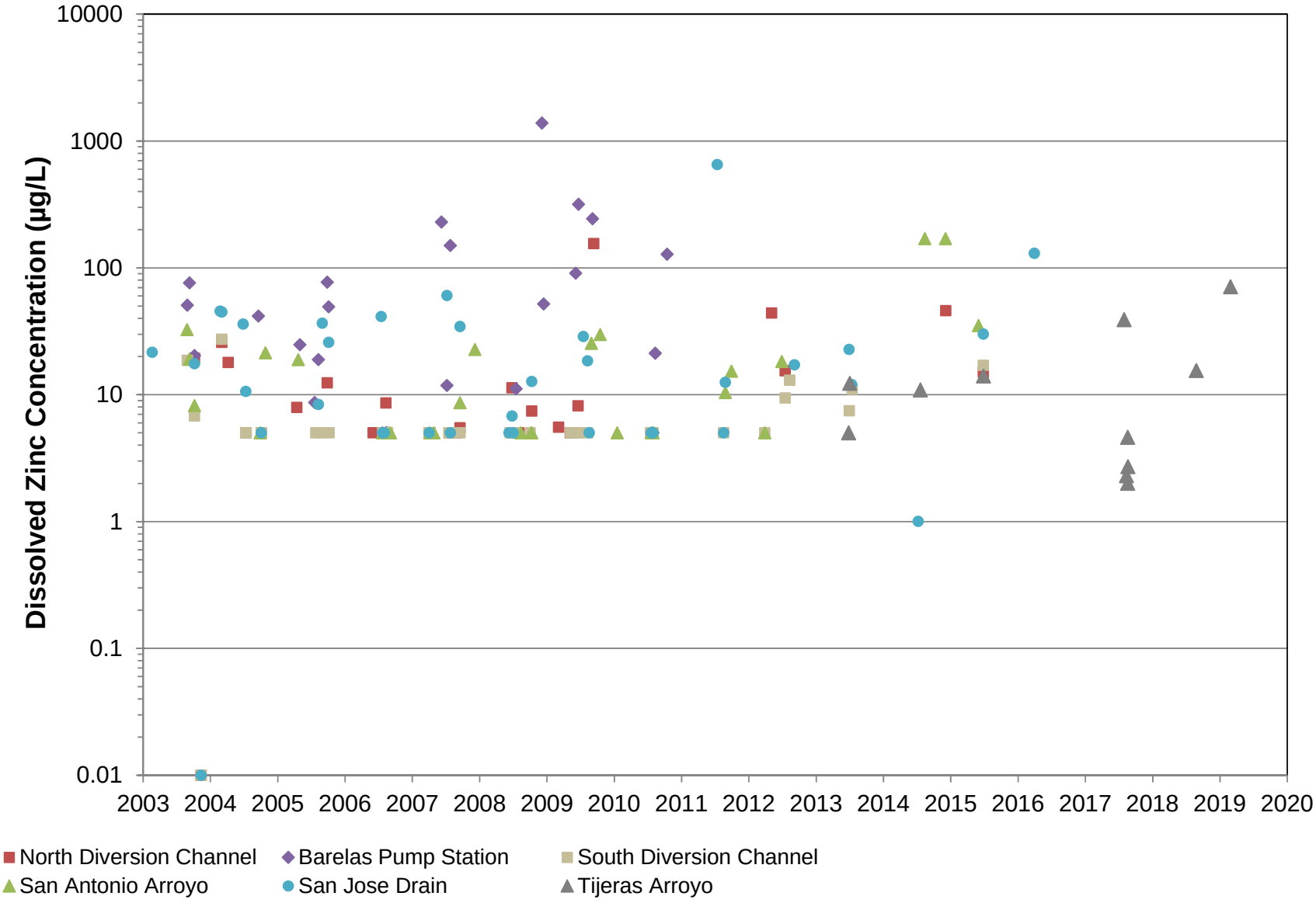


Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

Figure 11a

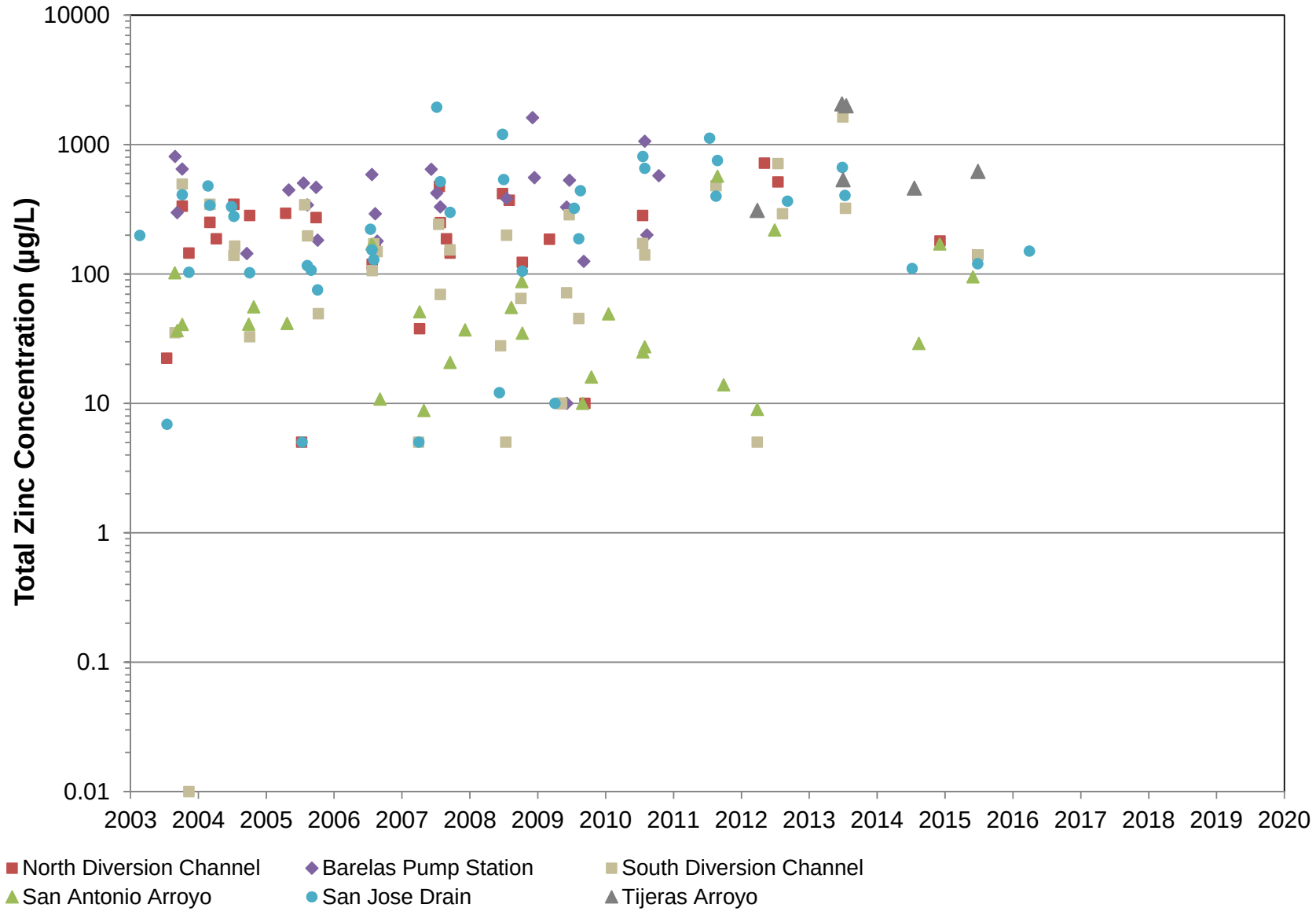
BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Dissolved Zinc, Outfall Locations

Daniel B. Stephens & Associates, Inc.

6/6/19

P:_DB19-1073\Prgrss Rpt.6-19\Figures\Word\Fig11b_Zn-Tot-Outfalls.doc



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

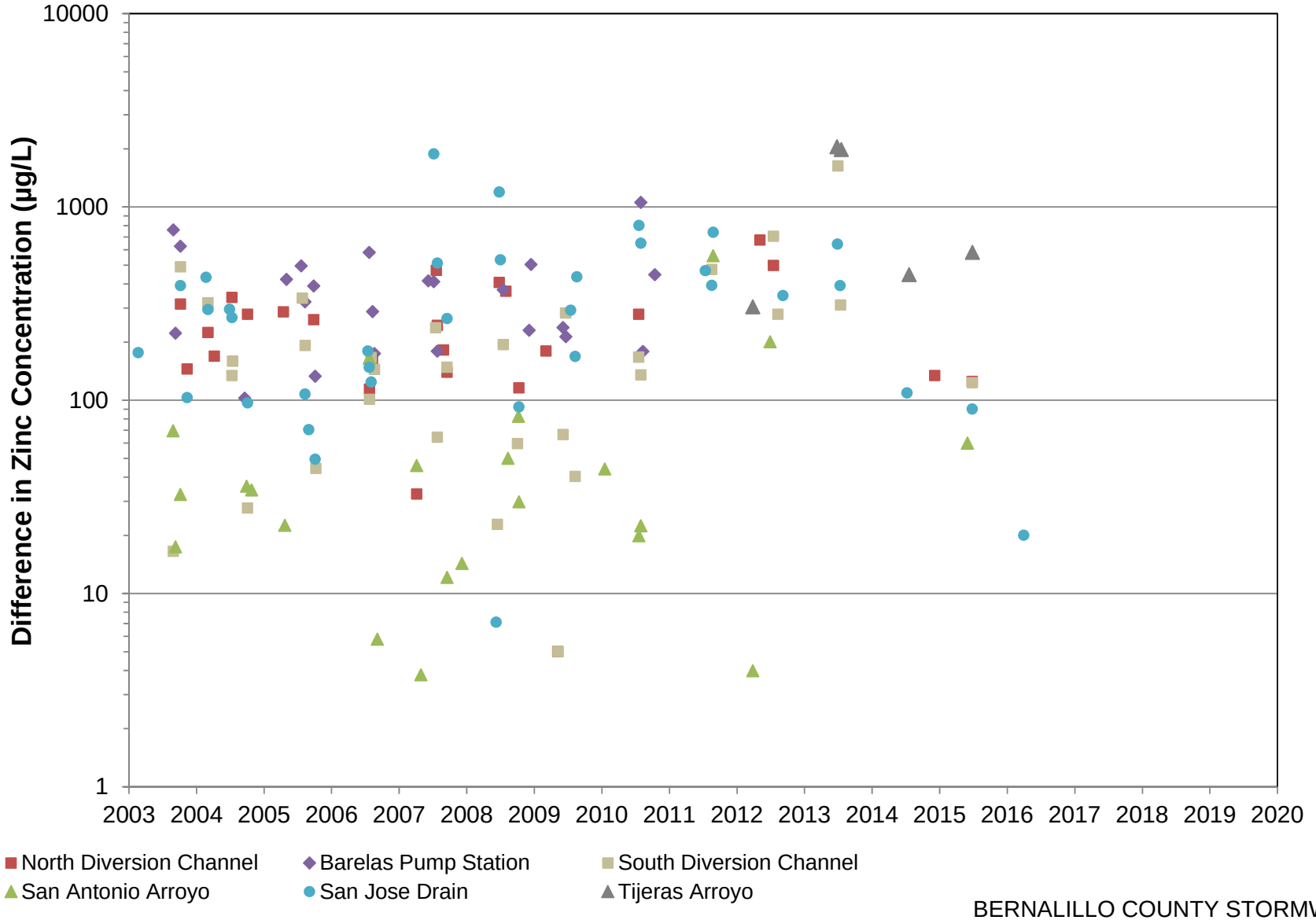
Figure 11b

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Zinc, Outfall Locations

Daniel B. Stephens & Associates, Inc.

6/6/19



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019

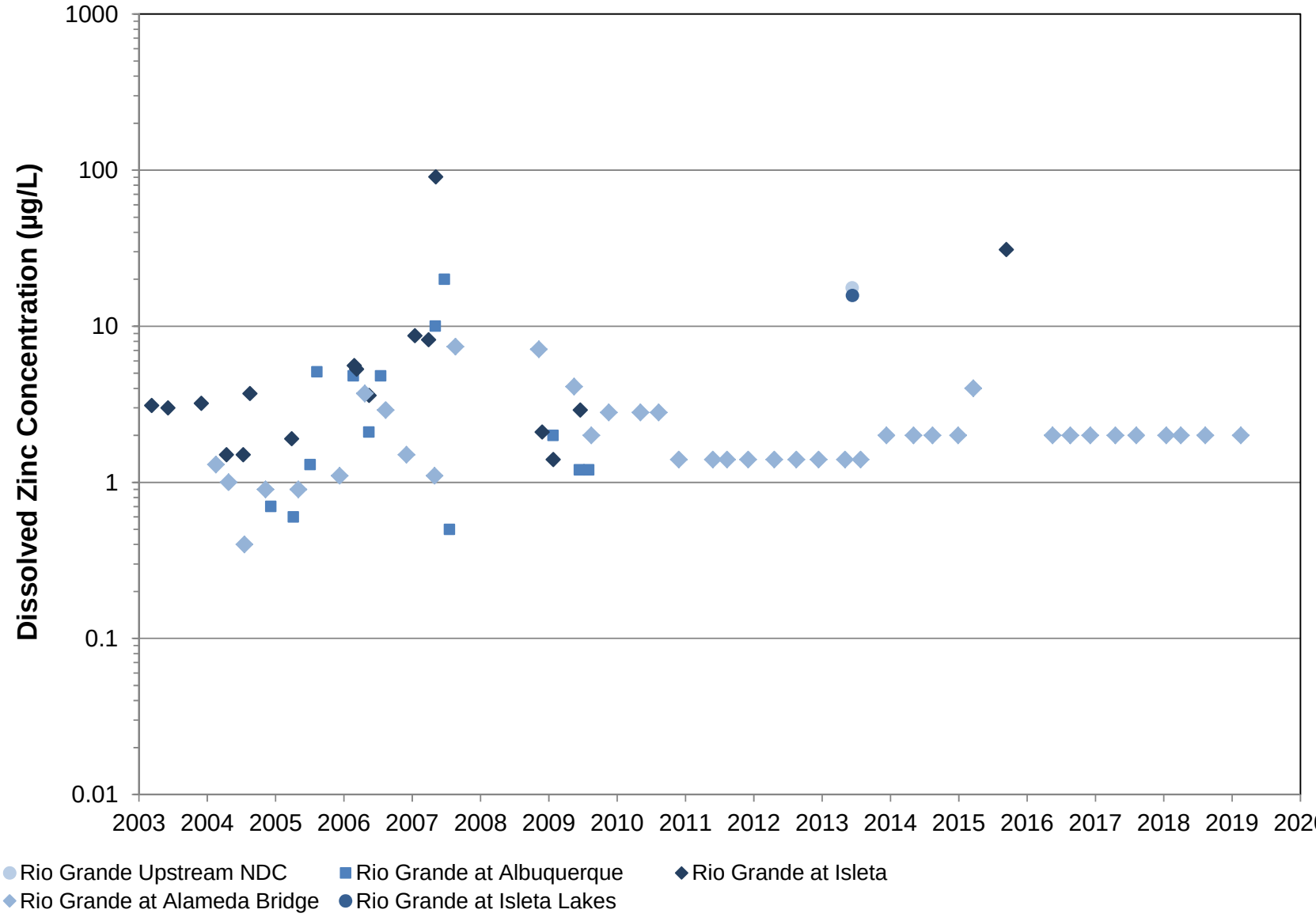
BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Difference Between Total and Dissolved Zinc Outfall Locations

Figure 11c

Daniel B. Stephens & Associates, Inc.

6/6/19



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

Figure 11d

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Dissolved Zinc, Rio Grande Locations

Daniel B. Stephens & Associates, Inc.

6/6/19

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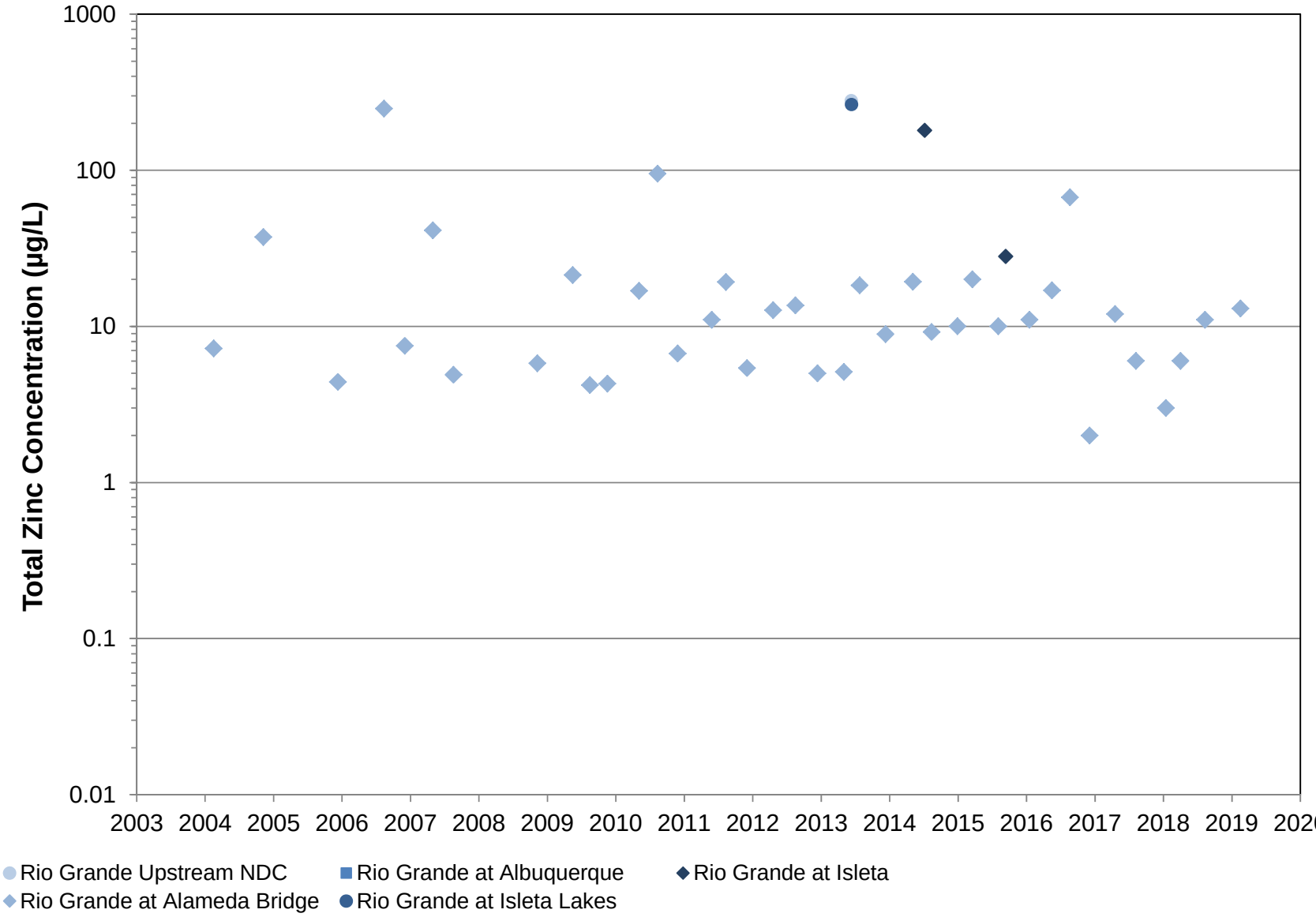


Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

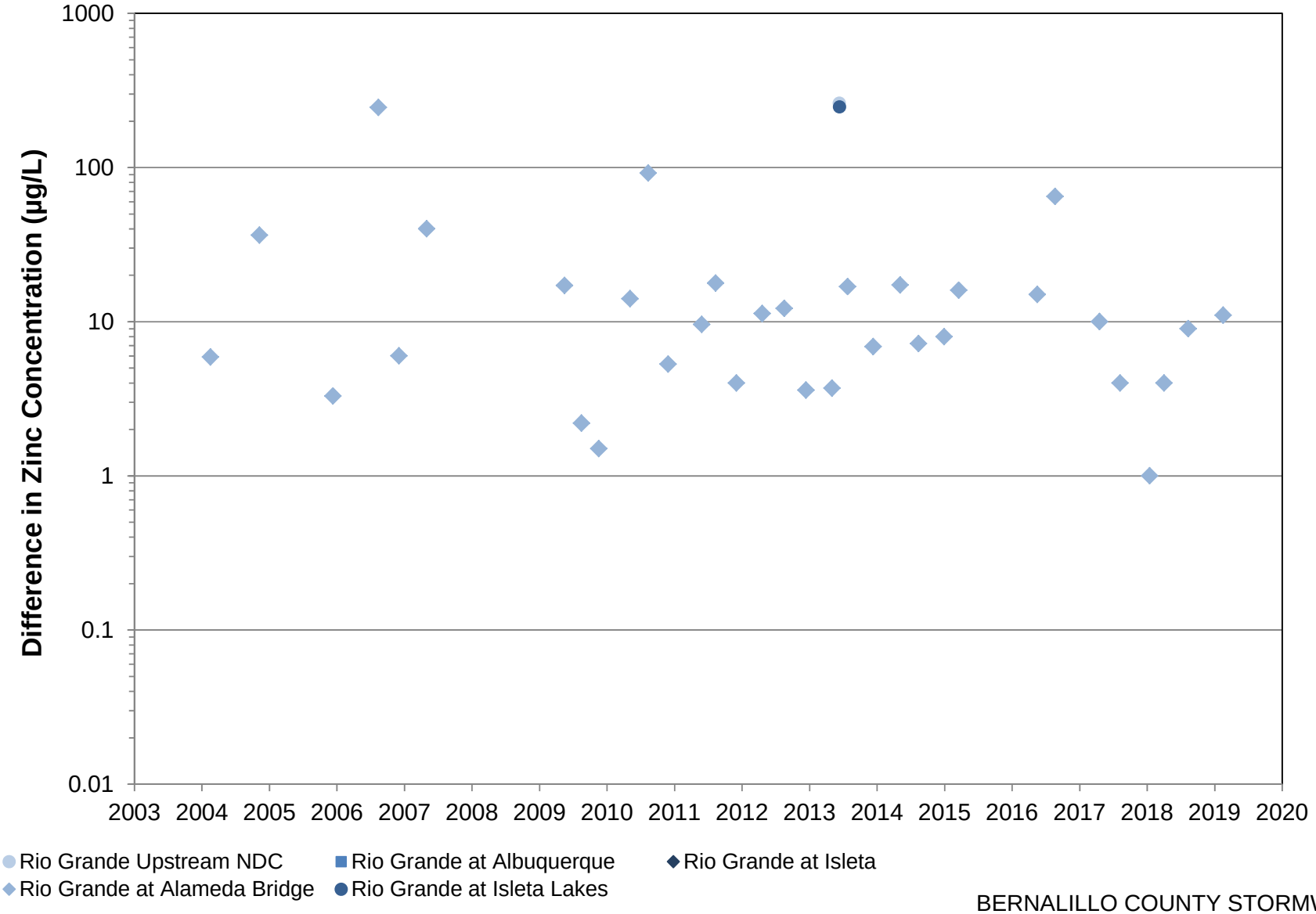
BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Total Zinc, Rio Grande Locations

Figure 11e

Daniel B. Stephens & Associates, Inc.

6/6/19



Note: Non-detections plotted at detection limit.
Sources: Storms et al., 2015; USGS, 2016; USGS, 2019b; AMAFCA, 2019; BHI, 2019

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

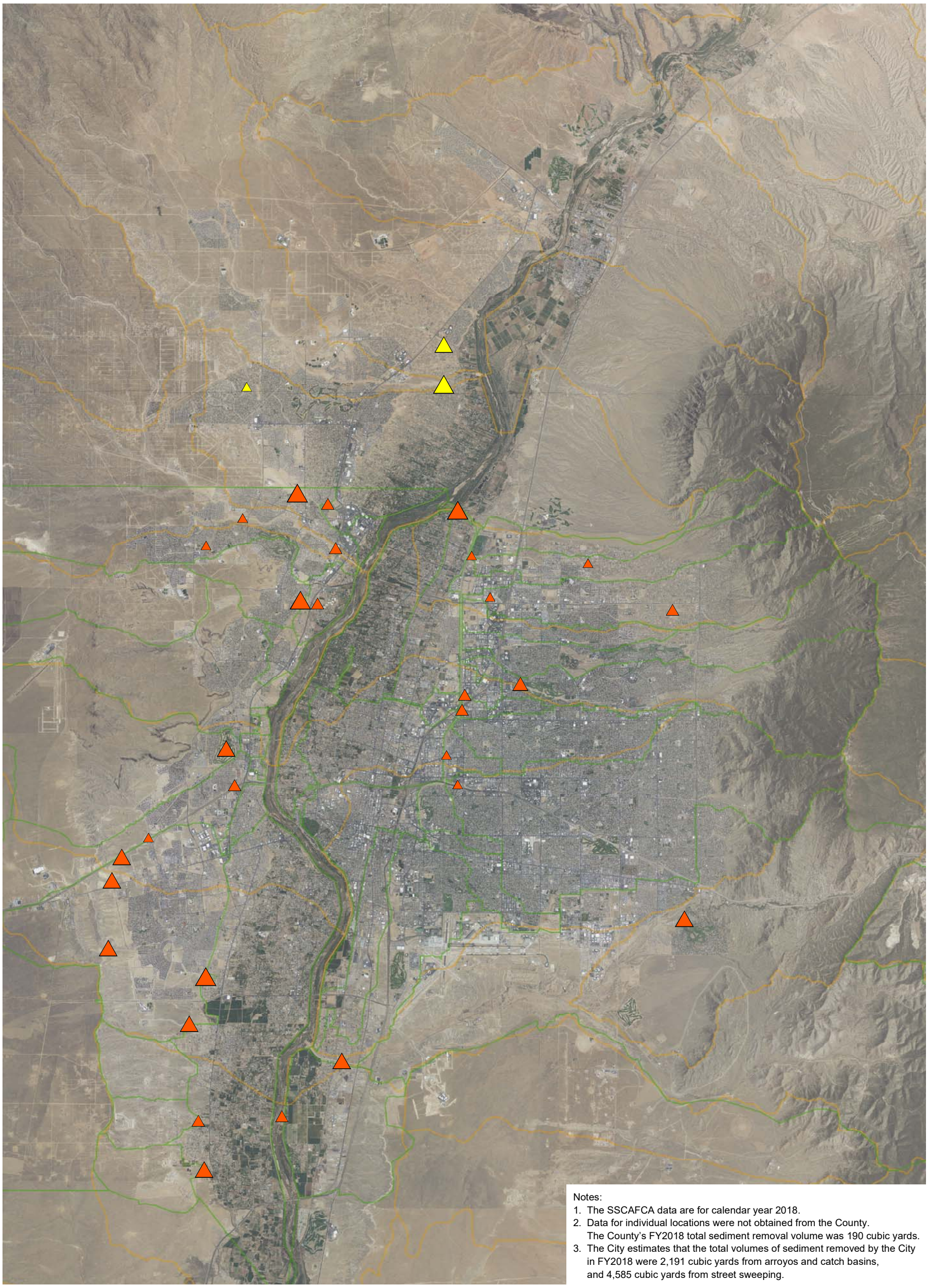
Difference Between Total and Dissolved Zinc
Rio Grande Locations

Figure 11f

Daniel B. Stephens & Associates, Inc.

6/6/19

S:\PROJECTS\DB19.1073_BERNCO_SPLRS\GIS\MXDS\SEDIMENT_REMOVAL_2019\FIG12_SEDIMENT_REMOVAL_VOLUMES_FY2018.MXD



Notes:
1. The SSCAFCA data are for calendar year 2018.
2. Data for individual locations were not obtained from the County. The County's FY2018 total sediment removal volume was 190 cubic yards.
3. The City estimates that the total volumes of sediment removed by the City in FY2018 were 2,191 cubic yards from arroyos and catch basins, and 4,585 cubic yards from street sweeping.

N

0 1.25 2.5 Miles

Explanation

Sediment removal location
- AMAFCA
- SSCAFCA
- AMAFCA watershed
- 12-digit watershed

Sediment removed (cubic yards)
- < 100
- 100 - 500
- 500 - 1000
- 1,000 - 10,000
- 10,000 - 35,000

Figure 12

Daniel B. Stephens & Associates, Inc.
6/6/2019 JN WR14.0074

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Sediment Removal Volumes, FY2018

Tables

Table 1. USGS-Bernalillo County PCB Study Sampling, Fiscal Years 2017 and 2018

Sample Location	Number of Samples Collected							
	FY17 Dry Season [a]		FY17 Monsoon [b]		FY18 Dry Season [a]		FY18 Monsoon [b]	
	Water	Sediment	Water	Sediment	Water	Sediment	Water	Sediment
Adobe Acres	1	—	3	1	1	1	2	1
Sanchez Pump Station	—	—	1	1	1	1	3	1
Sanchez Inflow	—	—	1	—	—	—	1	1
Paseo	—	1	—	—	1	1	2	1
Alameda	1	—	1		1	1	4	2
QA/QC (Blank sample)	—	—	1	1	2	2	1	1
Total	2	1	7	3	6	6	13	7

Source: USGS, 2018

[a] November 1 to June 30

[b] July 1 to October 31

Table 2. Likelihood of Occurrence of State-Listed Species in the Middle Rio Grande MS4 Permit Watershed

Species Category	Species	Status	Notes on Distribution and Habitat Associations	Likelihood of Occurrence in the Watershed
Plants	Lady tresses orchid (*Spiranthes magnicamporum*)	ST	Found in moist to wet meadows in clearings in the northern mountains of New Mexico. Listed in Bernalillo County.	No. Possible occurrence at the higher, wetter elevations of the Sandia Mountains, likely outside the boundaries of the MS4 Permit watershed.
	Parish's alkali grass (*Puccinellia parishii*)	SE	Associated range-wide with alkaline springs, seeps, and seasonally wet areas that occur at the heads of drainages or on gentle slopes at 2,600 to 7,200 feet. The species requires continuously damp soils during its late winter to spring growing period. It frequently grows with *Distichlis stricta* (salt grass), *Sporobolus airoides* (alkali sacaton), *Carex* spp. (sedges), *Scirpus* spp. (bulrushes), *Juncus* spp. (rushes), *Eleocharis* spp. (spike rushes), and *Anemopsis californica* (yerba mansa).	Yes. The species is listed in Sandoval County and its elevational range overlaps that of the watershed. In addition, there may be alkaline springs within the watershed.
	Brack hardwall cactus (*Sclerocactus cloverae* ssp. *brackii*)	SE	Associated with sandy clay strata of the Nacimiento Formation in sparse shadscale scrub; elevational range extends from 5,000 to 6,400 feet. Listed in Sandoval County.	No. The watershed is not within the Nacimiento Formation.
	Pecos sunflower (*Helianthus paradoxus*)	SE	Associated with saturated, saline soils of desert springs (cienegas) or associated wetlands, ranging in elevation from 3,300 to 6,600 feet.	No. Not known to occur within the watershed boundaries (NMRPTC, 2006). Designated critical habitat for the species is located outside of the watershed boundaries.
Fish	Rio Grande silvery minnow (*Hybognathus amarus*)	SE	The Rio Grande silvery minnow is now found only in the 160-mile river reach from Cochiti Dam south to San Marcial. The reach represents only 5% of its former range.	Yes. The Rio Grande silvery minnow occurs in the Middle Rio Grande, with designated critical habitat located within the watershed boundaries.
Amphibians	Jemez Mountain salamander (*Plethodon newmexicanus*)	SE	The Jemez Mountains salamander is an endemic species occurring on talus slopes under rocks and surface debris in the Jemez Mountains.	No. The watershed boundaries are located outside of the Jemez Mountains. There is designated critical habitat for the species, but it is located outside of the watershed.

Note: Explanations and definitions are provided on the last page of the table.

Table 2. Likelihood of Occurrence of State-Listed Species in the Middle Rio Grande MS4 Permit Watershed

Species Category	Species	Status	Notes on Distribution and Habitat Associations	Likelihood of Occurrence in the Watershed
Mollusks	Paper pondshell (*Utterbackia imbecillis*)	SE	One of the most widely distributed freshwater mussels in North America, occurring over a wide variety of substrata (mud to gravel) in reservoirs, lakes, rivers, and streams. The only known New Mexico population was documented by recent shells from Conchas Lake, San Miguel County—hundreds of miles from the nearest known occurrences in adjacent states and in northern Mexico (Río Conchos). In 2007, numerous live *U. imbecillis* were collected from the middle Rio Grande near Rio Rancho, Sandoval County, thus representing an introduction beyond the species' native range.	Yes. Based on the collection of paper pondshells in the Rio Grande in 2007, the species is likely to occur within the watershed in the Rio Grande.
	Wrinkled marshsnail (*Stagnicola caperata*)	SE	In New Mexico, the species is known from the Valles Caldera National Preserve, Jemez Mountains, Sandoval County.	No. The closest documented occurrence is in the Jemez Mountains, outside of the watershed boundaries.
Birds	Southwestern willow flycatcher (*Empidonax traillii extimus*)	SE	Found in dense, moist riparian vegetation communities along perennial rivers, where its diet consists primarily of insects. Suitable vegetation includes dense growth of willows (*Salix* spp.), arrow weed (*Pluchea sericea*), alder (*Alnus* spp.), and saltcedar (*Tamarix* sp.).	Yes. Known breeding territories and designated critical habitat occur south of the watershed. The species is known to migrate along the Middle Rio Grande within the watershed boundaries.
	Brown pelican (*Pelecanus occidentalis*)	SE	Brown pelicans are occasional visitors inland to New Mexico; they occur during all seasons, but are most frequent during the summer-fall period. Through 2005, there have been some 57 reports involving nearly 70 individual birds; these have been from 18 of New Mexico's 33 counties, with most from large lakes or along major rivers, including the Rio Grande. This coastal species breeds from California and the mid-Atlantic states southward to South America.	Yes. There is habitat for the brown pelican within the watershed along the Rio Grande, although this species is not known to breed in New Mexico.

Note: Explanations and definitions are provided on the last page of the table.

Table 2. Likelihood of Occurrence of State-Listed Species in the Middle Rio Grande MS4 Permit Watershed
Page 3 of 6

Species Category	Species	Status	Notes on Distribution and Habitat Associations	Likelihood of Occurrence in the Watershed
Birds (cont.)	Bald eagle (*Haliaeetus leucocephalus*)	ST	In New Mexico, bald eagles migrate and winter along the state's main rivers. Nesting has recently been documented in the state, but not within the boundaries of the watershed or in its vicinity.	Yes. Bald eagles are known to occur in late fall and winter within the boundaries of the watershed, primarily along the Middle Rio Grande.
	Aplomado falcon (*Falco femoralis*)	SE	The Aplomado falcon's historical range in New Mexico includes desert grasslands across the southern one-third of the state, north to Socorro County. The species requires extensive, unbroken desert grasslands characterized by relatively tall, dense grass cover and low woody plant densities.	No. The species was recorded once in Bernalillo County, but its regular distribution is south of the watershed.
	Peregrine falcon (*Falco peregrinus*)	ST	Peregrine falcons are often associated with open wetlands near cliffs. In New Mexico, breeding territories center on cliffs that are in wooded/forested habitats with large "gulfs" of air nearby, where these predators can forage. In winter, peregrine falcons are often found perched on snags in large wetlands	Yes. Peregrine falcons occur during migration and in winter at wetlands within the watershed.
	Least tern (*Sternula antillarum*)	SE	The Least tern occurs in New Mexico as a summer resident, with nesting documented only at and near Bitter Lake NWR. It also occurs as a rare vagrant at other large wetlands in the state.	No. Other than one sighting in 2006 along the Rio Grande in Albuquerque's South Valley, least terns are not known to occur in the watershed.
	Neotropic cormorant (*Phalacrocorax brasilianus*)	ST	This widespread waterbird of Central and South America reaches its northernmost breeding limits in New Mexico, where it nests at the Bosque del Apache NWR, with nonbreeders wandering north to Bernalillo County.	Yes. Nonbreeding neotropic cormorants have been documented within the boundaries of the watershed including at the Rio Grande Nature Center.
	Common black hawk (*Buteogallus anthracinus anthracinus)*	ST	The Common black hawk is found within wooded habitat along permanent streams. In New Mexico, the species is found along the Gila, San Francisco, and Mimbres Rivers in the southwest and the Rio Hondo in the southeastern part of the state. It occasionally nests along the Rio Grande, as far north as Albuquerque.	Yes. The Common black hawk has been documented along the Middle Rio Grande, within the boundaries of the watershed. Nesting is even possible where there are mature, well-developed, relatively isolated gallery forest stands of large trees.

Note: Explanations and definitions are provided on the last page of the table.

Table 2. Likelihood of Occurrence of State-Listed Species in the Middle Rio Grande MS4 Permit Watershed

Species Category	Species	Status	Notes on Distribution and Habitat Associations	Likelihood of Occurrence in the Watershed
Birds (cont.)	Baird's sparrow (*Ammodramus bairdii*)	ST	The Baird's sparrow breeds in a fairly small geographic area of south-central Canada, Montana, North Dakota, and South Dakota. It winters on grasslands of the northern Mexican plateau, primarily in Chihuahua and Durango, but including portions of bordering states. The winter range extends into small portions of southern New Mexico, chiefly Otero Mesa and the Animas Valley, and may include other areas of suitable winter habitat, particularly in the southeastern portion of the state.	No. The watershed is located north of the known winter range of the Baird's sparrow, and lies far outside the species' breeding distribution.
	Common ground-dove (*Columbina passerina*)	SE	In New Mexico, Common ground-doves primarily occupy lowland riparian areas in the southwestern portion of the state. They occur most frequently in the lower Gila Valley (from Cliff south) and in Hidalgo County, especially in Guadalupe Canyon. They also occur rarely in the Rio Grande Valley from Socorro south. In the western and southwestern United States, habitat includes mesquite flats and river bottom woodlands, desert scrub and washes, and xeric riparian areas. Human-modified habitats include ranch lands and irrigation ditches.	No. The watershed lies north of the common ground-dove's distribution.
	Broad-billed hummingbird (*Cynanthus latirostris*)	ST	In New Mexico, the broad-billed hummingbird is largely restricted to the southwestern corner of the state. It is only known to breed in Guadalupe Canyon in Hidalgo County.	No. Guadalupe Canyon is located in the Peloncillo Mountains of southwestern New Mexico, far from the boundaries of the watershed.

Note: Explanations and definitions are provided on the last page of the table.

Table 2. Likelihood of Occurrence of State-Listed Species in the Middle Rio Grande MS4 Permit Watershed

Species Category	Species	Status	Notes on Distribution and Habitat Associations	Likelihood of Occurrence in the Watershed
Birds (cont.)	Costa's hummingbird (*Calypte costae*)	ST	Costa's hummingbird is primarily a desert scrub species of the Sonoran and Mojave deserts, particularly along washes, canyons, and rocky slopes. At the eastern limit of its breeding range in New Mexico, it occupies more characteristic Chihuahuan desert shrub and foothill/montane shrub habitats. This species occurs in spring and early summer in Guadalupe Canyon (Hidalgo County), which is the key habitat area in the state. Vagrants have been recorded northward and eastward to the Rodeo area (Hidalgo County), near Cliff (Grant County), and near Las Cruces. The NMDGF also reported a rare winter occurrence in Sandoval County.	No. There is no breeding habitat within the watershed and it would be unlikely to occur even as a rare visitor.
	White-eared hummingbird (*Hylocharis leucotis*)	ST	This species typically occurs in montane pine (*Pinus* spp.) forest and in oak (*Quercus* spp.) and pine-oak woodland and adjacent riparian sites in Mexico. It reaches Arizona, and more rarely Texas and New Mexico, where it is thought to be accidental and transient in areas of desert scrub/rocky slopes, juniper savannah, pinon/juniper woodland, and ponderosa/oak forests. Accidental occurrence documented in the Sandia Mountains.	No. The white-eared hummingbird is not among the four hummingbird species known to occur regularly in the Middle Rio Grande Valley or the Sandia Mountains. The watershed is far outside the species' regular distribution.
	Bell's vireo (*Vireo bellii*)	ST	In New Mexico, Bell's vireos are locally distributed across the southern one-third of the state during the breeding season, including in the Rio Grande Valley north to San Antonio in Socorro County.	No. Unlikely to occur in the watershed based on its more southerly distribution.
	Gray vireo (*Vireo vicinior*)	ST	In New Mexico, Gray vireos are locally distributed across the western two-thirds of the state, where preferred habitat consists of chaparral-juniper, piñon-juniper, and piñon-madrone associations. They also occur in mid-elevation, montane scrub-oak with rocky slopes and scattered conifers. Gray vireos are often found in areas of moderate shrub cover (35-45%) with large amounts of bare ground between herbaceous plants.	Yes. Documented in the Sandia Mountains, where there is habitat for the gray vireo within the watershed.

Note: Explanations and definitions are provided on the last page of the table.

Table 2. Likelihood of Occurrence of State-Listed Species in the Middle Rio Grande MS4 Permit Watershed
Page 6 of 6

Species Category	Species	Status	Notes on Distribution and Habitat Associations	Likelihood of Occurrence in the Watershed
Birds (cont.)	Pacific marten (*Martes caurina*)	ST	Pacific martens prefer late successional stands of mesic, conifer-dominated forest at elevations ranging from 7,000 to 13,000 feet, primarily above 9,000 feet.	No. The nearest known Pacific marten population is located far outside of the watershed, in the Sangre de Cristo Mountains.
Mammals	Spotted bat (*Euderma maculatum*)	ST	The Spotted bat occupies a wide variety of habitat types. Resident species of ponderosa pine forests in June and July but wanders to lower elevations in late summer and autumn. Also believed to inhabit piñon-juniper woodlands, and netted-over streams or waterholds. Spotted bats are cliff dwellers with diurnal roosts in cracks and crevices of canyons and cliffs. Rocky cliffs are necessary to provide suitable cracks and crevices for roosting as is access to water.	Yes. The spotted bat has been recorded in Bernalillo, Sandoval, and Valencia Counties. There is the potential for occurrence within a variety of habitats within the watershed, but especially in areas with cliffs and access to water.
	Meadow jumping mouse (*Zapus luteus luteus*)	SE	Semiaquatic species associated with moist, grassy areas and wetlands along perennial water. Emergent herbaceous wetlands (i.e., beaked sedge and reed canarygrass alliances), and stringers of sedges in scrub-shrub wetlands (i.e., willow and alder alliances) are preferred, all along the edge of the water (Frey, 2006). Beavers have been found to play an important role in creating complex networks of wetland microhabitats used by the species.	No. Not known to occur within the watershed boundaries. There is no designated critical habitat for the species in the watershed.

SE = State endangered
ST = State threatened
SOC = Species of concern

Unless otherwise noted, habitat and distribution data were taken from the NMDGF (2019) Biota Information System of New Mexico (BISON-M), Cartron (2010), New Mexico Avian Conservation Partners, the NMDGF Threatened and Endangered Species 2018 Biennial Review, and the New Mexico Rare Plant Technical Council (NMRPTC) 2019 New Mexico Rare Plants database.

Table 3. Likelihood of Occurrence of Federally Listed Species in the Middle Rio Grande MS4 Permit Watershed
Page 1 of 2

Species Category	Species	Status	Notes on Distribution and Habitat Associations	Likelihood of Occurrence in the Watershed
Plants	Pecos sunflower (*Helianthus paradoxus*)	FT	Associated with saturated, saline soils of desert springs (cienegas) or associated wetlands, ranging in elevation from 3,300 to 6,600 feet.	No. Not known to occur within the watershed boundaries (NMRPTC, 2006). Designated critical habitat for the species is located outside of the watershed boundaries.
Fish	Rio Grande silvery minnow (*Hybognathus amarus*)	FE	The Rio Grande silvery minnow is now found only in the 160-mile river reach from Cochiti Dam south to San Marcial. The reach represents only 5% of its former range.	Yes. The Rio Grande silvery minnow occurs in the Middle Rio Grande, with designated critical habitat located within the watershed boundaries.
Amphibians	Jemez Mountains salamander (*Plethodon neomexicanus*)	FE	The Jemez Mountains salamander is an endemic species occurring on talus slopes under rocks and surface debris in the Jemez Mountains.	No. The watershed boundaries are located outside of the Jemez Mountains. There is designated critical habitat for the species, but it is located outside of the watershed.
Birds	Southwestern willow flycatcher (*Empidonax trailii extimus*)	FE	Found in dense, moist riparian vegetation communities along perennial rivers, where its diet consists primarily of insects. Suitable vegetation includes dense growth of willows (*Salix* spp.), arrow weed (*Pluchea sericea*), alder (*Alnus* spp.), and saltcedar (*Tamarix* sp.).	Yes. Known breeding territories and designated critical habitat occur south of the watershed. The species is known to migrate along the Middle Rio Grande within the watershed boundaries.
	Mexican spotted owl (*Strix occidentalis*)	FT	Primarily associated with deeply shaded, moist areas and steep topography, such as the lower slopes of steep canyons with a dense canopy of large coniferous or deciduous, riparian trees.	No. Formerly occupied some of the higher slopes of the Sandia Mountains. Not known to currently occur in the watershed.
	Yellow-billed cuckoo (*Coccyzus americanus*)	FT	In New Mexico, yellow-billed cuckoos are typically found in riparian woodlands along perennial water.	Yes. Yellow-billed cuckoos occur in spring and summer within the watershed boundaries along the Rio Grande. Critical habitat has been proposed for the species within the watershed boundaries, also along the Rio Grande corridor.

Note: Explanations and definitions are provided on the last page of the table.

Table 3. Likelihood of Occurrence of Federally Listed Species in the Middle Rio Grande MS4 Permit Watershed
Page 2 of 2

Species Category	Species	Status	Notes on Distribution and Habitat Associations	Likelihood of Occurrence in the Watershed
Mammals	New Mexico meadow jumping mouse (*Zapus hudsonius luteus*)	FE	Semiaquatic species associated with moist, grassy areas and wetlands along perennial water. Emergent herbaceous wetlands (i.e., beaked sedge and reed canarygrass alliances), and stringers of sedges in scrub-shrub wetlands (i.e., willow and alder alliances) are preferred, all along the edge of the water (Frey, 2006). Beavers have been found to play an important role in creating complex networks of wetland microhabitats used by the species.	No. Not known to occur within the watershed boundaries. There is no designated critical habitat for the species in the watershed.

Federal designations: Federal Endangered Species Act, U.S. Fish and Wildlife Service
FE = Federal endangered
FT = Federal threatened

Table 4a. AMAFCA Sediment Reduction and Water Quality Improvement Projects, 2016

Project	Project Location	AMAFCA District	Project Sponsors	Schedule	Cost	Project Description
AMAFCA miscellaneous projects	All areas	1–5	AMAFCA	2016-2021	$2,900,000	Miscellaneous concrete repairs, access control, and minor modifications to existing conveyance, detention, and stormwater quality facilities. These are generally small projects that will prevent future maintenance issues or decrease long-term maintenance cost.
Barelas Pump Station outfall - Bosque SWQ outfall improvements	Mid Valley	1	COA (lead), AMAFCA	2016-2017	$419,000	Construct meandering unlined channels from the basin of the pump station through the bosque with an outfall to the river in order to improve stormwater quality and keep floatables and debris out of the river.
Barr Main Canal improvements	South Valley	1	County (lead), AMAFCA, COA, ACOE	2018-2020	$4,792,000	Widen and deepen the existing irrigation channels to create a drainage system, improving stormwater quality and conveying stormwater to the Rio Grande.
Black Mesa Pump Station outfall upgrade	South Valley	1	County (lead), AMAFCA	2018-2019	$1,014,000	Excavate Black Mesa Pond on Malpais Road to 115 acre-feet to allow it to accept overflow runoff from the Los Padillas Drain and the Isleta Drain. This will keep runoff from overwhelming facilities within the Isleta Reservation. As part of the project, best management practices (BMPs) will be used to enhance stormwater quality.
Black Mesa Storm Drain (Don Felipe)	South Valley	1	AMAFCA (lead), COA	2017-2018	$4,803,000	This project will install a gravity outlet pipe and connect the outlet of the dam to the existing Black Mesa Three-Dam Outlet pipe. The new outlet will provide additional capacity in the dam for runoff from upstream development, reduce local flooding and drainage problems. In addition, a water quality facility for the enhancement of stormwater flows will be included.
Black Mesa Storm Drain (McCoy)	South Valley	1	AMAFCA (lead), ACOE	2016	$3,541,000	This project will install a gravity outlet pipe and connect the outlet of the dam to the existing Black Mesa Three-Dam Outlet pipe. The new outlet will provide additional capacity in the dam for runoff from upstream development and will reduce local flooding and drainage problems. In addition, a water quality facility for the enhancement of stormwater flows will be included.
Bobby Foster Storm Drain	South Valley	1	County (lead), AMAFCA	2018	$4,715,000	Install a trunk line storm drain in Broadway and Bobby Foster in order to collect runoff and convey it into the South Diversion Channel. This will address flooding, erosion, and sediment issues.
Calabacillas Arroyo Bank Monitoring and Enhancement 1 - Coors to the Rio Grande	Northwest Mesa	4	AMAFCA, Private	2016-2021	$500,000	The Calabacillas Arroyo bank monitoring and enhancement project will provide bank protection and grade control structures to maintain the arroyo in a natural state, while providing erosion protection to adjacent lands and controlling sediment transport in the arroyo.
Calabacillas Arroyo Bank Monitoring and Enhancement 2 - Eagle Ranch to Coors	Northwest Mesa	4	AMAFCA	2016-2021	$500,000	
Calabacillas Arroyo Bank Monitoring and Enhancement 3 - Black Diversion to Eagle Ranch	Northwest Mesa	4	AMAFCA, Private	2016-2021	$500,000	
Calabacillas Arroyo Bank Monitoring and Enhancement 4 - Golf Course to Unser Boulevard	Northwest Mesa	2	AMAFCA, Private	2016-2021	$500,000	
Calabacillas Arroyo Prudent Line Study	Northwest Mesa	2, 4	AMAFCA	2016	$200,000	Study the long-term erosion and bank-stability potential of the Calabacillas Arroyo downstream of the Swinburne Dam to determine what protective measures must be constructed to keep the arroyo within its confines.
Flood Control System Telemetry	All areas	1–5	AMAFCA	2016-2021	$1,550,000	To install automated telemetry for AMAFCA facilities to provide information regarding the volume of water in the facility, ambient conditions at that location, possible video reporting, and select water quality parameters. This will allow for focused observation by AMAFCA staff by providing information about the amount and quality of water moving through the system.

Table 4a. AMAFCA Sediment Reduction and Water Quality Improvement Projects, 2016

Project	Project Location	AMAFCA District	Project Sponsors	Schedule	Cost	Project Description
Hamilton Dam	Northeast Heights	4	AMAFCA	2016-2018	$8,156,000	Hamilton Dam will be a new dam designed to release flow rates as provided in the North Albuquerque Acres Drainage Management Plan. The 295-foot-wide and 36-foot-high dam will hold 104 acre-feet of stormwater and sediment, which will decrease the volume of water affecting the floodplain in neighborhoods below it.
Kirtland Air Force Base South Detention Basin	Southeast Heights	5	COA (lead), AMAFCA, U.S. Air Force	2016-2017	$1,481,000	Construct a 30 acre-foot detention pond to collect and limit runoff to prescribed peak flows. The basin will provide detention, water quality, and flood control for runoff that comes from Kirtland Air Force Base, and could also be designed to serve as a water quality structure to satisfy KAFB's EPA MS4 Permit requirements.
Karsten Area Restudy	South Valley	1	COA, AMAFCA	2017	$100,000	Study the South Broadway area near Karsten Road to determine where flooding and drainage issues occur. Storm drain capacities will be calculated and water quality improvement opportunities will be explored.
Las Ventanas Dam Stormwater Quality Upgrades	Northwest Mesa	2	AMAFCA, COA	2019	$391,000	The project will incorporate BMPs to enhance stormwater quality for flows coming into the Las Ventanas Dam, improving the quality of stormwater reaching the river and providing compliance with the EPA MS4 permit.
North Diversion Channel Indian School Stormwater Quality Pond	Northeast Heights	5	AMAFCA (lead), COA, UNM	2020-2021	$2,521,000	Project will create a stormwater quality facility to enhance stormwater quality from flows in the North Diversion Channel through diversion structures and pond(s), providing additional water quality and reuse opportunities for the University of New Mexico North Campus Golf Course and surrounding facilities.
North Diversion Channel I-40 Fecal Reduction Project	Northeast Heights	3	AMAFCA	2016	$931,000	Create impediments and barriers for birds and humans to congregate in this location, thereby reducing the point source of the E. coli concentration.
North Diversion Channel Outfall Stormwater Quality Facility Improvements, Debris Fence	Northeast Heights	4	AMAFCA	2016	$1,037,000	The North Diversion Channel outfall to the Rio Grande is the last opportunity to remove pollutants from urban stormwater before it enters the river for a contributing area of approximately one-third of the metropolitan area. The project will construct a series of low-profile debris fences in the settling basin, and will capture trash and debris coming into the settling area. This will significantly reduce the need for manual trash pick in the settling area.
North Diversion Channel Outfall Stormwater Quality Facility Improvements, Floating Boom	Northeast Heights	4	AMAFCA	2019-2020	$976,000	The project will construct a floating boom system that will collect floatables out of stormwater and deposit them in one location, which will significantly reduce the need for manual trash pick in the settling area.
North Fourth Street Storm Drain	North Valley	4	AMAFCA, County, VLR	2016-2018	$2,999,000	The project will address flooding in the area along 4th Street north of Paseo Del Norte, and will incorporate BMPs to enhance stormwater quality.
North Camino Arroyo Drainage Management Plan	Northeast Heights	4	AMAFCA, County	2020	$200,000	Prepare a Drainage Management and Stormwater Quality Plan for the North Camino Arroyo Watershed.
North Geologic Window Dam	Northwest Mesa	2	AMAFCA	2019-2021	$4,080,000	Construct a 173 acre-foot detention dam to control flows in the Boca Negra Arroyo as it enters the North Geologic Window, a parcel of land included in the Petroglyph National Monument.
Old Coors Ponding Area	Southwest Mesa	1	County (lead), AMAFCA	2016	$600,000	Construct a ponding area near the intersection of Old and New Coors that will provide relief from flooding and provide an opportunity to enhance stormwater quality.

Table 4a. AMAFCA Sediment Reduction and Water Quality Improvement Projects, 2016

Project	Project Location	AMAFCA District	Project Sponsors	Schedule	Cost	Project Description
Pino Dam Emergency Spillway Modifications	Northeast Heights	4	AMAFCA	2017-2018	$3,826,000	Construct a secondary emergency spillway on the west or south side of the dam and/or add erosion resistant structural elements to the primary emergency spillway to remove potential for large erosion on the spillway.
Pond 2149	South Valley	1	County (lead), AMAFCA	2021	$351,000	Construct a pond between the Barr Main Canal and the Albuquerque Riverside Drain to collect runoff east of Second Street between Woodward and Rio Bravo. BMPs will be employed to enhance water quality.
South Diversion Channel Outfall Water Quality	South Valley	1	AMAFCA	2020-2021	$1,134,000	Construct a stormwater quality facility to enhance stormwater quality and remove sediment from flows in the South Diversion Channel prior to discharging to the Rio Grande.
South Second Street Drainage, Prosperity to SDC	South Valley	1	County	2016	$12,000,000	A phased project that will install storm drains and detention ponds to provide adequate drainage facilities for the area of 2nd Street between Prosperity and the South Diversion Channel.
Tijeras Arroyo Facility Plan	Southeast Heights	5	AMAFCA, KAFB, County, ABCWUA	2016	$200,000	Update the Tijeras Arroyo hydrologic and hydraulic analyses from the Four Hills Bridge to the confluence with the South Diversion Channel. This information will provide guidance for facilities that are required to keep the arroyo stable.
Tijeras Sediment Retention Structure	South Valley	1	AMAFCA	2016	$885,000	Construct a structure to divert stormwater flows from the Tijeras Arroyo into a stormwater quality facility and ported outlet to collect 15,000 to 30,000 cubic yards of sediment and debris before it enters the South Diversion Channel and ultimately the Rio Grande.
Upper Snow Vista Channel improvements Study	Southwest Mesa	2	AMAFCA	2016	$100,000	Conduct a study to determine where to place a detention structure in the Snow Vista watershed, which will optimize the existing capacity and allow for the removal of floatables and debris from the system.
Valle de Oro Drainage and Stormwater Quality Infrastructure	South Valley	1	AMAFCA, County, U.S. FWS	2016-2019	$4,877,340	Design and build stormwater conveyance and water quality infrastructure to reduce flooding in the Southeast Valley. The structure will detain about 48 acre-feet of runoff and reduce the pollutants before discharging to the Rio Grande bosque.
West I-40 Diversion Channel	Northwest Mesa	2	AMAFCA, COA, Private	2016	$3,065,000	Upgrade the existing earthen channel to the master planned facility. The upgrade will minimize maintenance costs, reduce sediment loads into the downstream La Presa Detention Pond, and allow for the stable, long-term conveyance of stormwater.

Table 4b. AMAFCA Sediment Reduction and Water Quality Improvement Projects, 2017

Project	AMAFCA District	Project Sponsors	Schedule	Cost	Project Description
AMAFCA Telemetry	1–5	AMAFCA	2019-2023	$1,200,000	To install automated telemetry for AMAFCA facilities to provide information regarding the volume of water in the facility, ambient conditions at that location, possible video reporting, and select water quality parameters. This will allow for focused observation by AMAFCA staff by providing information about the amount and quality of water moving through the system.
Barelas Pump Station Outfall - Stormwater Quality	1	COA, AMAFCA	2018	$419,000	Construct meandering unlined channels from the basin of the pump station through the bosque with an outfall to the river in order to improve stormwater quality and keep floatables and debris out of the river.
Black Mesa Pump Station Outfall Upgrade	1	County, AMAFCA	2019-2020	$1,014,000	Excavate Black Mesa Pond on Malpais Road to 115 acre-feet to allow it to accept overflow runoff from the Los Padillas Drain and the Isleta Drain. This will keep runoff from overwhelming facilities within the Isleta Reservation. As part of the project, best management practices (BMPs) will be used to enhance stormwater quality.
Black Mesa Storm Drain (Don Felipe)	1	AMAFCA, County	2018-2019	$4,803,000	This project will install a gravity outlet pipe and connect the outlet of the dam to the existing Black Mesa Three-Dam Outlet pipe. The new outlet will provide additional capacity in the dam for runoff from upstream development and will reduce local flooding and drainage problems. In addition, a water quality facility for the enhancement of stormwater flows will be included.
Black Mesa Storm Drain (McCoy)	1	AMAFCA, ACOE, County	2018-2020	$3,541,000	This project will install a gravity outlet pipe and connect the outlet of the dam to the existing Black Mesa Three-Dam Outlet pipe. The new outlet will provide additional capacity in the dam for runoff from upstream development and will reduce local flooding and drainage problems. In addition, a water quality facility for the enhancement of stormwater flows will be included.
Calabacillas Arroyo Bank Monitoring and Enhancement 1 - Coors to the Rio Grande	4	AMAFCA	2019-2023	$500,000	The Calabacillas Arroyo bank monitoring and enhancement project will provide bank protection and grade control structures to maintain the arroyo in a natural state, while providing erosion protection to adjacent lands and controlling sediment transport in the arroyo.
Calabacillas Arroyo Bank Monitoring and Enhancement 2 - Eagle Ranch to Coors	4	AMAFCA	2018-2023	$500,000	
Calabacillas Arroyo Bank Monitoring and Enhancement 3 - Black Diversion to Eagle Ranch	4	AMAFCA	2018-2023	$500,000	
Calabacillas Arroyo Bank Monitoring and Enhancement 4 - Golf Course to Unser Boulevard	2	AMAFCA	2018-2023	$500,000	
Calabacillas Flow and Sediment Control	4	AMAFCA	2020-2022	$2,310,000	The grade control structures below Swinburne Dam are sized for the design outflow of the dam. To ensure that the peak outflow is not impacted by higher than normal inflow, a flow control structure may be needed on the main branch of the Calabacillas Arroyo. The design of this structure would have a sediment retention aspect to improve stormwater quality.
Calabacillas GC1A1 & GC1A Expansion	2	AMAFCA	2018	$1,500,000	Calabacillas Grade Control Structure 1a1 is needed to protect the spillway apron of Swinburne Dam, and Calabacillas Grade Control Structure 1a requires expansion. These structures will keep the Calabacillas Arroyo within the erosion setbacks identified when development in the area started.
Calabacillas-Corrales Stormwater Quality Facility	4	AMAFCA, MRGCD	2019-2020	$1,406,000	The Calabacillas-Corrales stormwater quality facility will be constructed adjacent to the Corrales Main Canal, near the Calabacillas Arroyo, to trap trash and debris at the overflow structure where stormwater is separated from irrigation water.

Table 4b. AMAFCA Sediment Reduction and Water Quality Improvement Projects, 2017

Project	AMAFCA District	Project Sponsors	Schedule	Cost	Project Description
Chamisa Pond Expansion	2	AMAFCA, COA	2018-2019	$729,000	The expansion of the Chamisa Pond will provide additional storage of diverted runoff from the Upper Piedras Marcadas watershed, reducing flow to the Piedras Marcadas Dam, which is near capacity. The expansion project will include pond modifications to reduce sediment and trash resulting in improvements in stormwater quality.
GE Pond	1	COA, AMAFCA, County	2018-2019	$4,042,000	The future GE pond is adjacent to the San Jose Drain at the site of a former GE manufacturing facility. The pond will provide additional system capacity for the storm drainage network in the area, and will provide stormwater quality opportunities.
Gibson Louisiana Regional Drainage Facility	5	AMAFCA, COA, U.S. Air Force	2018	$1,481,000	Construct a 30 acre-foot detention pond to collect and limit runoff to prescribed peak flows. The basin will provide detention, water quality, and flood control for runoff that comes from Kirtland Air Force Base (KAFB), and could also be designed to serve as a water quality structure to satisfy KAFB's EPA MS4 Permit requirements.
Hamilton Dam	4	AMAFCA	2018-2022	$7,256,000	Hamilton Dam will be a new dam designed to release flow rates as provided in the North Albuquerque Acres Drainage Management Plan. The 295-foot-wide and 36-foot-high dam will hold 104 acre-feet of stormwater and sediment, which will decrease the volume of water affecting the floodplain in neighborhoods below it.
Karsten Area Restudy	1	COA, AMAFCA	2018	$100,000	The Karsten Area Restudy will determine where flooding and drainage issues occur in the South Broadway area near Karsten Road. The capacities of the current storm drains and drainage infrastructure will be analyzed to make recommendations for future facilities, including those for water quality improvement.
Las Ventanas Dam Stormwater Quality Upgrades	2	AMAFCA, COA	2018-2019	$425,000	The project will incorporate BMPs to enhance stormwater quality for flows coming into the Las Ventanas Dam, improving the quality of stormwater reaching the river and providing compliance with the EPA MS4 permit.
Lower Bear Tributary Stormwater Quality Facility	3	AMAFCA, COA	2018	$400,000	Regional flood control and stormwater quality improvements will be made on the Lower Bear Tributary, increasing the efficiency of the storm drainage system in the Bear Arroyo Watershed by providing a series of regional BMP structures to collect debris, reduce peak runoff flows, and enhance stormwater quality before discharging into the North Diversion Channel and ultimately the Rio Grande.
Max's Inlet Stormwater Quality Upgrade	1	AMAFCA	2023	$745,000	A sediment control facility will be installed to reduce maintenance, control sediment, and reduce floatables before they are discharged into the South Diversion Channel, and ultimately the Rio Grande.
McEwen Pond GI/LID Improvements	1	County, AMAFCA	2018	$100,000	The USGS will monitor stormwater quality pre- and post-installation of green infrastructure (GI) and low impact development (LID) structural features in the pond. The purpose of this pilot project is to sample stormwater before and after processing in the pond, to evaluate the performance of GI BMPs relative to stormwater quality.
Miscellaneous Construction Projects	1–5	AMAFCA	2018-2023	$2,400,000	Small projects throughout the AMAFCA jurisdiction that are too small to be bid independently are combined for better pricing. Typical projects include access control, small stormwater quality enhancements, and enhancements to existing structures.
North Diversion Channel Indian School Stormwater Quality Pond	5	AMAFCA, COA, UNM	2020-2022	$2,521,000	Project will create a stormwater quality facility to enhance stormwater quality from flows in the North Diversion Channel through diversion structures and pond(s), providing additional water quality and reuse opportunities for the University of New Mexico North Campus Golf Course and surrounding facilities.

Table 4b. AMAFCA Sediment Reduction and Water Quality Improvement Projects, 2017

Project	AMAFCA District	Project Sponsors	Schedule	Cost	Project Description
North Diversion Channel Outfall Stormwater Quality Facility Improvements, Debris Fence	4	AMAFCA	2018-2019	$1,037,000	The North Diversion Channel outfall to the Rio Grande is the last opportunity to remove pollutants from urban stormwater before it enters the river for a contributing area of approximately one-third of the metropolitan area. The project will construct a series of low-profile debris fences in the settling basin, and will capture trash and debris coming into the settling area. This will significantly reduce the need for manual trash pick in the settling area.
North Diversion Channel Outfall Stormwater Quality Facility Improvements, Floating Boom	4	AMAFCA	2019-2020	$976,000	The project will construct a floating boom system that will collect floatables out of stormwater and deposit them in one location, significantly reducing the need for manual trash pick in the settling area.
North Geologic Window Dam	2	AMAFCA	2018-2023	$4,080,000	Construct a 173 acre-foot detention dam to control flows in the Boca Negra Arroyo as it enters the North Geologic Window, a parcel of land included in the Petroglyph National Monument.
Pino Dam Emergency Spillway Modifications	4	AMAFCA	2021-2023	$3,826,000	Pino Dam is an earthen dam near Tramway Boulevard and San Antonio Drive, and the spillway has the potential to undergo headcutting if the dam spillway is operating. The proposed modifications will involve either constructing a secondary emergency spillway on the west or south side of the dam and/or adding erosion resistant structural elements to the primary emergency spillway to remove potential for large erosion on the spillway.
South Diversion Channel Outfall Stormwater Quality	1	AMAFCA	2022-2023	$1,134,000	Construct a stormwater quality facility to enhance stormwater quality and remove sediment and debris from flows in the South Diversion Channel prior to discharging to the Rio Grande.
South Domingo Baca Diversion Channel Extension (Hawks Landing)	4	AMAFCA	2018	$40,000	AMAFCA will cost-share with the developer of the Hawk's Landing Subdivision to extend the box culvert at Tramway to provide better access for maintenance of the existing Morgan Flood Wall of the South Domingo Baca Arroyo.
South Pino Bank Monitoring and Enhancement	4	AMAFCA	2018-2021	$200,000	Grade control structures and bank protection may be applied to South Pino Arroyo to prevent lateral erosion and vertical degradation issues if it begins to migrate outside of the designated limits.
Swinburne Dam Regional Stormwater Quality and Sediment Facility	2	AMAFCA	2019-2021	$1,900,000	Design and construction of a water quality pond within the confluence of the west and main branches of the Calabacillas arroyo, capable of holding "first flush" flows, sediment, and debris. The project will incorporate BMPs to enhance stormwater quality for flows coming into the Swinburne Dam, improving the quality of stormwater reaching the river and providing compliance with the EPA MS4 permit.
Tijeras Sediment Facility - Phase II	1	AMAFCA	2018	$2,885,000	The Tijeras Arroyo Sediment Retention Structure is a regional stormwater quality improvement structure designed to capture sediment above the concrete section of the Tijeras Arroyo. The project consists of three separate basins with a total storage capacity of approximately 50,000 to 75,000 cubic yards of sediment. The second phase of the project will construct the remaining portions of the middle basin and the entirety of the easternmost basin.
Upper Bear Tributary Stormwater Quality	3	AMAFCA, COA	2018	$100,000	Regional flood control and stormwater quality improvements will be made to the Upper Bear Tributary to increase the efficiency of the storm drainage system in the Bear Arroyo Watershed, use a regional BMP structure to collect trash and debris, reduce peak runoff flows, and enhance stormwater quality before discharging into the North Diversion Channel and ultimately into the Rio Grande.

Table 4b. AMAFCA Sediment Reduction and Water Quality Improvement Projects, 2017
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Project	AMAFCA District	Project Sponsors	Schedule	Cost	Project Description
Upper Calabacillas Facility Plan	2, 4	AMAFCA	2019	$250,000	The Upper Calabacillas Facility Plan will evaluate the Calabacillas Arroyo from the south edge of Swinburne Dam to the north edge of the AMAFCA jurisdiction. The goal of the plan will be to evaluate the existing grade control structures, evaluate the risks for lateral and vertical erosion, and identify any possible areas for enhancing stormwater quality.
Upper Piedras Marcadas Pond	2	AMAFCA, COA	2018-2020	$1,972,500	A 20 acre-foot detention pond will be constructed to accommodate runoff from future development of the Upper Piedras Marcadas watershed. The pond will safely discharge runoff to prescribed rate and will provide enhanced water quality.
Upper Snow Vista Channel improvements Study	2	AMAFCA	2019	$100,000	Conduct a study to determine where to place a detention structure in the Snow Vista watershed, which will optimize the existing capacity and allow for the removal of floatables and debris from the system.
Valle de Oro Drainage and Stormwater Quality Infrastructure	1	AMAFCA, County, USFWS	2018-2021	$4,058,000	Design and build stormwater conveyance and water quality infrastructure to reduce flooding in the Southeast Valley. The structure will detain about 48 acre-feet of runoff and reduce the pollutants before discharging to the Rio Grande bosque.

Table 5. Sediment Sampling Locations

Location Number	Location Name	Location Type	Sample Name	UTM Coordinates (13 South)	
				X	Y
1	Rio Grande at Angastora Dam	Channel	RG-AngDam-20190328	363833.0003	3916193.8
2	Venada Arroyo Outfall	Outfall	VenadaOut-20190328	357382.3828	3908197.686
3	Montoyas Arroyo Sediment Collection Area	Sediment collection area	MontoyasSed-20190328	351699.6197	3902755.6
4	Montoyas Arroyo Outfall	Outfall	MontoyasOut-20190328	354589.2239	3903096.698
5	North Diversion Channel Bathtub	Sediment bathtub	NDCSed-20190329	353793.887	3897456.278
6	North Diversion Channel Outfall	Sediment outfall	NDCOut-20190329	353509.1619	3897671.736
7	Calabacillas Arroyo Sediment Collection Area	Sediment collection area	CalabacillasSed-20190328	349152.031	3895462.701
8	Calabacillas Arroyo Outfall	Outfall	CalabacillasOut-20190328	349671.2993	3895029.944
9	Paseo del Norte Pump Station #42	Sediment collection area	PND42Sed-20190401	350207.6757	3894536.456
10	Paseo del Norte Pump Station #42 Outfall	Outfall	PND42Out-20190401	349879.0053	3894453.06
11	San Antonio Arroyo Pond	Sediment trap	SanAntonioSed-20190328	345885.4605	3889511.904
12	San Antonio Arroyo Outfall	Arroyo	SanAntonioOut-20190328	346099.8779	3889469.334
13	West I-40 Sediment Collection	Sediment collection area	WestI40DCSed-20190329	344280.8468	3886118.504
14	West I-40 Diversion Channel Outfall	Outfall	WestI40DCOut-20190329	345608.3936	3886109.168
15	Sanchez Farms Inflow	Sediment collection in	SanchezFarmIn-20190329	347664.3861	3879957.902
16	Sanchez Farms Inflow 2	Sediment collection in	SanchezFarmIn2-20190329	347612.313	3879704.803
17	Sanchez Farms Outfall	Sediment collection out	SanchezFarmOut-20190329	348112.1614	3879578.055
18	Baffle Chute Up	Sediment collection area	BaffleUp-20190329	350516.2491	3880066.078
19	Tijeras Sediment Pond	Sediment pond	TijerasSed-20190329	349610.9911	3874573.293
20	Tijeras/SDC Outfall	Channel	SDCOut-20190329	347309.4176	3875153.382
21	Rio Grande at Isleta Dam	Channel	RG-IsletaDam-20190329	345964.6597	3863979.558

Table 6. March/April 2019 Sediment Analytical Results

Sample Location	Location Type	Sample Date	Concentration, PCBs (EPA method 8082) (mg/kg)								Concentration, SPLP Metals (EPA method 6010B) (mg/L)						Gross Alpha (EPA 900.0) (pCi/g)
			Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Aluminum	Cadmium	Chromium	Lead	Nickel	Zinc	
Rio Grande at Angastora Dam	Channel	3/28/2019	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	5.0	<1.0	<5.0	<5.0	<0.010	0.037	4.67 ± 5.83
Venada Arroyo Outfall	Outfall	3/28/2019	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	6.2	<1.0	<5.0	<5.0	<0.010	0.021	0.597 ± 3.50
Montoyas Arroyo Sediment Collection Area	Sediment collection area	3/28/2019	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	5.7	<1.0	<5.0	<5.0	<0.010	0.055	1.87 ± 4.22
Montoyas Arroyo Outfall	Outfall	3/28/2019	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	12	<1.0	<5.0	<5.0	<0.010	0.034	21.2 ± 9.17
North Diversion Channel Bathtub	Sediment bathtub	3/29/2019	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	33	<1.0	<5.0	<5.0	0.018	0.31	15.2 ± 7.39
North Diversion Channel Outfall	Sediment outfall	3/29/2019	<0.052	<0.052	<0.052	<0.052	<0.052	<0.052	<0.052	<0.052	7.4	<1.0	<5.0	<5.0	<0.010	0.038	12.1 ± 5.97
Calabacillas Arroyo Sediment Collection Area	Sediment collection area	3/28/2019	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	2.8	<1.0	<5.0	<5.0	<0.010	0.030	1.95 ± 4.06
Calabacillas Arroyo Outfall	Outfall	3/28/2019	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	4.8	<1.0	<5.0	<5.0	<0.010	0.023	3.17 ± 5.23
Paseo del Norte Pump Station #42	Sediment collection area	4/01/2019	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	2.6	<1.0	<5.0	<5.0	<0.010	0.057	5.30 ± 3.79
Paseo del Norte Pump Station #42 Outfall	Outfall	4/01/2019	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	2.7	<1.0	<5.0	<5.0	<0.010	0.062	5.22 ± 4.02
San Antonio Arroyo Pond	Sediment trap	3/28/2019	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	6.9	<1.0	<5.0	<5.0	<0.010	0.045	10.8 ± 6.01
San Antonio Arroyo Outfall	Arroyo	3/28/2019	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	6.1	<1.0	<5.0	<5.0	<0.010	0.047	4.83 ± 4.43
West I-40 Sediment Collection	Sediment collection area	3/29/2019	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	160	<1.0	<5.0	<5.0	0.074	0.56	8.91 ± 5.21
West I-40 Diversion Channel Outfall	Outfall	3/29/2019	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	9.2	<1.0	<5.0	<5.0	<0.010	0.028	14.7 ± 7.09
Sanchez Farms Inflow	Sediment collection in	3/29/2019	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047	14	<1.0	<5.0	<5.0	0.010	0.21	22.9 ± 8.33
Sanchez Farms Inflow 2	Sediment collection in	3/29/2019	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	12	<1.0	<5.0	<5.0	<0.010	0.084	14.3 ± 7.01
Sanchez Farms Outfall	Sediment collection out	3/29/2019	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	7.3	<1.0	<5.0	<5.0	<0.010	0.15	16.5 ± 7.30
Baffle Chute Up	Sediment collection area	3/29/2019	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	3.4	<1.0	<5.0	<5.0	<0.010	0.051	3.67 ± 4.46
Tijeras Sediment Pond	Sediment pond	3/29/2019	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	8.2	<1.0	<5.0	<5.0	<0.010	0.034	15.6 ± 7.26
Tijeras/SDC Outfall	Channel	3/29/2019	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	8.8	<1.0	<5.0	<5.0	0.014	0.027	6.58 ± 4.75
Rio Grande at Isleta Dam	Channel	3/29/2019	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	3.1	<1.0	<5.0	<5.0	<0.010	<0.020	11.3 ± 5.42

PCBs = Polychlorinated biphenyls
EPA = U.S. Environmental Protection Agency
mg/kg = Milligrams per kilogram
SPLP = Synthetic precipitation leaching procedure
mg/L = Milligrams per liter
pCi/g = Picocuries per gram

Table 7. Outfall Water Quality Sampling Locations

Site Name	Site Number	USGS Station Number	Drainage Area (mi^2)	Land Use (%)					Station Location
				Agricultural	Commercial	Industrial	Open Space	Residential	
North Diversion Channel	UR-9900	08329900	92	36	15	4	4	41	Concrete-lined channel
San Antonio Arroyo	UR-300	083299375	31	73	1	14	1	11	Natural unlined channel
Barelas Pump Station	UR-400B	NA	4	9	34	10	12	35	Stormwater pumping station
San Jose Drain	UR-500	08330200	2	18	30	9	2	41	Concrete-lined channel
Sanchez Farms Pump Station	UR-804	350255106401510	—	—	—	—	—	—	—
South Diversion Channel	UR-200	08330775	11	30	28	21	8	13	Natural unlined channel
Tijeras Arroyo	UR-330600	08330600	135	—	5 [a]	—	90	5 [a]	Natural unlined channel

Source: Storms et al., 2015

[a] Estimated value

USGS = U.S. Geological Survey

mi^2 = Square miles

NA = Not applicable

— = Not provided

Table 8. AMAFCA Sediment, Trash, Vegetation, and Homeless Debris Removal, Fiscal Year 2018

Location Code	Location	Volume (cubic yards)			
		Sediment	Trash	Vegetation	Homeless Debris
10005	98th St. Pond	36	0.0	0.0	0.0
10010	Amole Dam	25,504	112.0	0.0	0.0
10012	AMAFCA Yard	0	0.0	0.0	0.0
10015	Baca Channel	12	0.0	12.0	0.0
10020	Bear Canyon Arroyo	581	147.0	36.0	0.0
10025	Bear Canyon Training Dike	0	0.0	0.0	0.0
10030	Bear Canyon Tributary	0	0.0	0.0	0.0
10035	Black Arroyo Dam	11,145	0.0	0.0	0.0
10040	Black Mesa Storm Drain	0	0.0	0.0	0.0
10045	Boca Negra Dam	0	0.0	0.0	0.0
10050	Borrega Dam and Channel	6,260	9.9	0.0	0.0
10055	Cabezon Channel	0	0.0	0.0	0.0
10060	Calabaciallas Main Arroyo	169	0.0	13.0	0.0
10065	Corrales Main	320	0.0	0.0	0.0
10070	Camino Channel	52	0.0	0.0	0.0
10075	Candelaria Inlet	42	0.0	0.0	0.0
10080	Cottonwood Crossings Pond	0	0.0	0.0	0.0
10085	Don Felipe Dam	0	9.0	0.0	0.0
10086	Domingo Baca Water Quality Structure	0	13.3	12.0	0.0
10090	East Amole Surge Pond	0	6.0	0.0	0.0
10095	El Camino Pond	0	0.0	0.0	0.0
10100	Embudo Channel	60	65.5	0.0	9.0
10105	Fountain Hills Pond	0	0.0	0.0	0.0
10110	Grandmas Pond	0	0.0	0.0	0.0

Source: Chavez, 2019

Table 8. AMAFCA Sediment, Trash, Vegetation, and Homeless Debris Removal, Fiscal Year 2018

Location Code	Location	Volume (cubic yards)			
		Sediment	Trash	Vegetation	Homeless Debris
10115	Grantline Inlet & Water Quality Pond	302	6.0	13.0	0.0
10120	Hahn Channel	0	0.0	0.0	15.0
10125	Hubbell Dam & Spillway	0	30.8	0.0	0.0
10130	John B. Robert Dam	0	0.0	0.0	0.0
10135	Kinney Dam	0	4.7	0.0	1.0
10140	La Cueva System & Water Quality Features	30	0.0	13.0	0.0
10145	La Cueva Training Dike	0	0.0	0.0	0.0
10150	La Cueva Tributary	0	0.0	0.0	0.0
10160	Ladera Channel @ 98th Street	0	0.0	0.0	0.0
10165	Ladera System- Dams & Mirehaven	1,494	25.3	0.0	0.0
10170	Ladera Training Dike	0	0.0	0.0	0.0
10175	La Ventanas Dam & N. Branch PM Channel	54	52.0	0.0	0.0
10180	Los Indios Diversion Channel & Sediment Basin	0	0.0	6.0	0.0
10185	Little Window	0	0.0	0.0	0.0
10190	Los Padillas Spillway Diversion	0	0.0	0.0	0.0
10195	McCoy Dam	5,658	0.0	0.0	0.0
10205	Malpais	0	0.0	0.0	0.0
10210	Mariposa Diversion Channel	0	5.2	0.0	0.0
10215	North Camino Channel & Water Quality Manholes	0	0.0	0.0	0.0
10220	North Camino Sunset Hills	0	0.0	0.0	0.0
10225	North Diversion Channel	10,592	753.7	184.0	40.0
10230	North Domingo Baca Dam & Channel	0	0.0	18.0	0.0
10235	North Domingo Baca Trailer Park Ponds	0	0.0	0.0	0.0
10240	North La Cueva Arroyo	0	0.0	0.0	0.0

Source: Chavez, 2019

Table 8. AMAFCA Sediment, Trash, Vegetation, and Homeless Debris Removal, Fiscal Year 2018
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Location Code	Location	Volume (cubic yards)			
		Sediment	Trash	Vegetation	Homeless Debris
10245	North Pino Channel & Water Quality Features	0	0.0	6.0	0.0
10250	North Pino Diversion	0	0.0	0.0	0.0
10255	Octopus Pond & Channel	0	0.0	0.0	0.0
10265	Piedras Marcadas Dam & Mid Branch PM Channel	19,458	51.3	0.0	0.0
10270	Pino Dam	0	0.0	0.0	0.0
10275	Ponds 187/187A	0	0.0	0.0	0.0
10280	Powerline Channel	9,252	133.1	0.0	0.0
10285	Raymac Dam	347	6.0	30.0	0.0
10290	Rinconada Channel	0	0.0	0.0	0.0
10295	Sacate Blanco Diversion Channel	0	0.0	0.0	0.0
10300	San Antonio Arroyo & Atrisco Diversion	0	5.2	0.0	0.0
10305	Seven Bar Channel	156	0.0	0.0	0.0
10310	Signal Ave. Training Dike	0	0.0	0.0	0.0
10312	Southwest Valley Projects	0	0.0	0.0	0.0
10315	Skyview Detention Pond	0	5.0	0.0	0.0
10320	Snow Vista Pond and Channel	0	31.4	0.0	0.0
10325	South Diversion Channel & Water Quality Structure	9,532	103.5	0.0	0.0
10330	South Domingo Baca Channel	0	0.0	0.0	0.0
10335	South Domingo Baca Dam	262	0.0	0.0	0.0
10340	South La Cueva	0	0.0	0.0	0.0
10345	South Pino Channel & Water Quality Facility	0	10.9	0.0	0.0
10350	Swinburne Dam	18	12.0	0.0	0.0
10355	Tramway Channel - Drop Structure	0	0.0	0.0	0.0
10360	Tijeras Arroyo Hidden Valley	4,262	0.0	0.0	0.0

Source: Chavez, 2019

Table 8. AMAFCA Sediment, Trash, Vegetation, and Homeless Debris Removal, Fiscal Year 2018

Location Code	Location	Volume (cubic yards)			
		Sediment	Trash	Vegetation	Homeless Debris
10365	UNM Water Quality Manholes	0	0.0	0.0	0.0
10366	Valle De Oro Drainage	216	0.0	0.0	0.0
10370	Vineyard Channel & Water Quality Structure	132	30.0	18.0	0.0
10375	West Bluff, Laurelwood Ponds & WQ Structure	451	0.0	0.0	0.0
10380	West Calabacillas DS & WQ Ponds	0	0.0	0.0	0.0
10385	West I-40 Channel & Storm Drains	1,412	29.5	0.0	0.0
10390	Westgate Dam	2,808	6.0	0.0	0.0
	Total	110,617	1,664.2	361.0	65.0

Source: Chavez, 2019

Table 9. AMAFCA Sediment, Trash, Vegetation, and Homeless Debris Removal, Fiscal Year 2017

Location Code	Location	Volume (cubic yards)			
		Sediment	Trash	Vegetation	Homeless Debris
10005	98th St. Pond	0	0.0	0.0	
10010	Amole Dam	0	198.7	26.0	
10015	Baca Channel	0	0.0	0.0	
10020	Bear Canyon Arroyo	0	5.2	0.0	
10025	Bear Canyon Training Dike	0	0.0	0.0	
10030	Bear Canyon Tributary	0	0.0	0.0	
10035	Black Arroyo Dam	3,790	13.0	219.0	
10040	Black Mesa Storm Drain	0	0.0	0.0	
10045	Boca Negra Dam	0	0.0	0.0	
10050	Borrega Dam and Channel	182	0.0	0.0	
10055	Cabezon Channel	144	3.1	0.0	
10060	Calabacillas Main Arroyo	24	53.7	96.0	
10065	Corrales Main	515	5.2	0.0	
10070	Camino Channel	0	0.0	0.0	
10075	Candelaria Inlet	0	0.0	0.0	18.0
10080	Cottonwood Crossings Pond	0	0.0	13.0	
10085	Don Felipe Dam	0	0.0	0.0	
10086	Domingo Baca Water Quality Structure	0	5.0	26.0	
10090	East Amole Surge Pond	0	0.0	0.0	
10095	El Camino Pond	0	0.0	0.0	
10100	Embudo Channel	0	64.7	37.0	24.0
10105	Fountain Hills Pond	0	0.0	0.0	
10110	Grandmas Pond	0	3.3	0.0	
10115	Grantline Inlet & Water Quality Pond	0	13.0	0.0	

Source: Chavez, 2019

Table 9. AMAFCA Sediment, Trash, Vegetation, and Homeless Debris Removal, Fiscal Year 2017

Location Code	Location	Volume (cubic yards)			
		Sediment	Trash	Vegetation	Homeless Debris
10120	Hahn Channel	25	0.0	0.0	
10125	Hubbel Dam & Spillway	120	10.4	6.0	
10130	John B. Robert Dam	0	0.0	26.0	
10135	Kinney Dam	13	22.4	0.0	
10140	La Cueva System & Water Quality Features	36	5.0	0.0	
10145	La Cueva Training Dike	0	0.0	0.0	
10150	La Cueva Tributary	0	0.0	0.0	
10160	Ladera Channel @ 98th Street	228	0.0	0.0	
10165	Ladera System- Dams & Mirehaven	1,555	0.0	39.0	
10170	Ladera Training Dike	0	0.0	0.0	
10175	La Ventanas Dam & N. Branch PM Channel	0	15.6	2.0	
10180	Los Indios Diversion Channel & Sediment Basin	0	0.0	0.0	
10185	Little Window	0	0.0	0.0	
10190	Los Padillas Spillway Diversion	0	0.0	0.0	
10195	McCoy Dam	0	0.0	0.0	
10205	Malpais	0	0.0	0.0	
10210	Mariposa Diversion Channel	12	0.0	0.0	
10215	North Camino Channel & Water Quality Manholes	0	0.0	0.0	
10220	North Camino Sunset Hills	0	0.0	0.0	
10225	North Diversion Channel	3,551	1,014.9	13.0	51.0
10230	North Domingo Baca Dam & Channel	0	2.4	0.0	
10235	North Domingo Baca Trailer Park Ponds	0	3.0	13.0	
10240	North La Cueva Arroyo	0	0.0	0.0	
10245	North Pino Channel & Water Quality Features	666	10.9	26.0	

Source: Chavez, 2019

Table 9. AMAFCA Sediment, Trash, Vegetation, and Homeless Debris Removal, Fiscal Year 2017

Location Code	Location	Volume (cubic yards)			
		Sediment	Trash	Vegetation	Homeless Debris
10250	North Pino Diversion	0	0.0	0.0	
10255	Octopus Pond & Channel	273	0.0	0.0	
10265	Piedras Marcadas Dam & Mid Branch PM Channel	174	35.9	6.0	
10270	Pino Dam	0	0.0	0.0	
10275	Ponds 187/ 187A	52	0.0	26.0	
10280	Powerline Channel	738	10.4	0.0	
10285	Raymac Dam	383	0.0	24.0	
10290	Rinconada Channel	0	0.0	0.0	
10295	Sacate Blanco Diversion Channel	0	0.0	0.0	
10300	San Antonio Arroyo & Atrisco Diversion	181	0.0	65.0	
10305	Seven Bar Channel	0	0.0	0.0	
10310	Signal Ave. Training Dike	0	0.0	0.0	
10312	Southwest Valley Projects	0	0.0	78.0	
10315	Skyview Detention Pond	0	0.0	0.0	
10320	Snow Vista Pond and Channel	0	38.5	13.0	
10325	South Diversion Channel & Water Quality Structure	4,183	59.2	0.0	
10330	South Domingo Baca Channel	0	2.4	0.0	
10335	South Domingo Baca Dam	0	0.0	0.0	
10340	South La Cueva	0	0.0	0.0	
10345	South Pino Channel & Water Quality Facility	441	172.6	39.0	
10350	Swinburne Dam	0	0.0	42.0	
10355	Tramway Channel - Drop Structure	0	0.0	0.0	
10360	Tijeras Arroyo Hidden Valley	0	66.0	12.0	
10365	UNM Water Quality Manholes	0	0.0	0.0	

Source: Chavez, 2019

Table 9. AMAFCA Sediment, Trash, Vegetation, and Homeless Debris Removal, Fiscal Year 2017
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Location Code	Location	Volume (cubic yards)			
		Sediment	Trash	Vegetation	Homeless Debris
10366	Valle De Oro Drainage	0	0.0	0.0	
10370	Vineyard Channel & Water Quality Structure	52	5.0	0.0	
10375	West Bluff, Laurelwood Ponds & WQ Structure	182	5.0	65.0	
10380	West Calabacillas DS & WQ Ponds	0	0.0	0.0	
10385	West I-40 Channel & Storm Drains	582	13.0	13.0	
10390	Westgate Dam	0	0.0	0.0	
	Total	18,102	1,857.5	925.0	93.0

Source: Chavez, 2019

Table 10. AMAFCA Sediment Removal, Fiscal Year 2016
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Location Code	Location	Sediment Volume (cubic yards)
10005	98th St. Pond	0
10010	Amole Dam	18
10015	Baca Channel	0
10020	Bear Canyon Arroyo	0
10025	Bear Canyon Training Dike	0
10030	Bear Canyon Tributary	0
10035	Black Arroyo Dam	2,628
10040	Black Mesa Storm Drain	0
10045	Boca Negra Dam	0
10050	Borrega Dam and Channel	0
10055	Cabezon Channel	286
10060	Calabacillas Main Arroyo	1,190
10065	Corrales Main	2,877
10070	Camino Channel	0
10075	Candelaria Inlet	0
10080	Cottonwood Crossings Pond	0
10085	Don Felipe Dam	4,420
10086	Domingo Baca Water Quality Structure	54
10090	East Amole Surge Pond	156
10095	El Camino Pond	0
10100	Embudo Channel	0
10105	Fountain Hills Pond	0
10110	Grandmas Pond	0
10115	Grantline Inlet & Water Quality Pond	0
10120	Hahn Channel	0
10125	Hubbel Dam & Spillway	186
10130	John B. Robert Dam	0
10135	Kinney Dam	468
10140	La Cueva System & Water Quality Features	26
10145	La Cueva Training Dike	0
10150	La Cueva Tributary	0
10160	Ladera Channel @ 98th Street	0
10165	Ladera System- Dams & Mirehaven	222
10170	Ladera Training Dike	0
10175	La Ventanas Dam & N. Branch PM Channel	0
10180	Los Indios Diversion Channel & Sediment Basin	0

Source: Chavez, 2019

Table 10. AMAFCA Sediment Removal, Fiscal Year 2016
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Location Code	Location	Sediment Volume (cubic yards)
10185	Little Window	0
10190	Los Padillas Spillway Diversion	24
10195	McCoy Dam	0
10205	Malpais	0
10210	Mariposa Diversion Channel	52
10215	North Camino Channel & Water Quality Manholes	0
10220	North Camino Sunset Hills	0
10225	North Diversion Channel	3,418
10230	North Domingo Baca Dam & Channel	104
10235	North Domingo Baca Trailer Park Ponds	26
10240	North La Cueva Arroyo	0
10245	North Pino Channel & Water Quality Features	0
10250	North Pino Diversion	0
10255	Octopus Pond & Channel	0
10265	Piedras Marcadas Dam & Mid Branch PM Channel	0
10270	Pino Dam	0
10275	Ponds 187/187A	0
10280	Powerline Channel	1,404
10285	Raymac Dam	869
10290	Rinconada Channel	0
10295	Sacate Blanco Diversion Channel	0
10300	San Antonio Arroyo & Atrisco Diversion	67
10305	Seven Bar Channel	0
10310	Signal Ave. Training Dike	0
10312	Southwest Valley Projects	0
10315	Skyview Detention Pond	0
10320	Snow Vista Pond and Channel	486
10325	South Diversion Channel & Water Quality Structure	10,331
10330	South Domingo Baca Channel	76
10335	South Domingo Baca Dam	0
10340	South La Cueva	0
10345	South Pino Channel & Water Quality Facility	0
10350	Swinburne Dam	0
10355	Tramway Channel - Drop Structure	0
10360	Tijeras Arroyo Hidden Valley	0
10365	UNM Water Quality Manholes	0

Source: Chavez, 2019

Table 10. AMAFCA Sediment Removal, Fiscal Year 2016
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Location Code	Location	Sediment Volume (cubic yards)
10366	Valle De Oro Drainage	0
10370	Vineyard Channel & Water Quality Structure	0
10375	West Bluff, Laurelwood Ponds & WQ Structure	620
10380	West Calabacillas DS & WQ Ponds	0
10385	West I-40 Channel & Storm Drains	2,116
10390	Westgate Dam	0
	Total	32,124

Source: Chavez, 2019

Table 11. SSCAFCA Sediment Removal, Fiscal Year 2017 and Calendar Year 2018

Location	Volume (cubic yards)	
	FY2017	CY2018
Lisbon Channel	NA	100
Lower Montoyas Water Quality Facility	NA	35,000
Lomitas Negras Water Quality Facility	16,025	7,050
Total	16,025	42,150

Source: Gatterman, 2019
NA = Data not available

Table 12. Bernalillo County Gross Material Removal, Fiscal Years 2016–2018

Material	Location	Fiscal Year	Volume (cubic yards)
Trash, debris, and vegetation	Catch basins, wet wells, and storm sewer lines	2016	63 (84.5 tons)
		2017	120 (55.2 tons)
		2018	759 [a] (349 tons)
Debris including sediment, vegetation, and trash	County ponds, channels, and right-of-way	2016	737
		2017	574
		2018	— [a]

Source: Bronson, 2019

[a] The fiscal year (FY) 2018 volume includes both material types (the County began using a different tracking method in FY2017).

Table 13. Bernalillo County Gross Material Removal, Fiscal Year 2018

Time Period	Weight (tons)				Volume (cubic yards)	
	Green waste	Municipal Waste	Sediment	Total	Total [a]	Total (without sediment)
July 2017–January 2018	67.7	33.9	33.9	135.5	294	221
January 2018–June 2018	106.8	53.4	53.4	213.6	464	348
	50%	25%	25%	349.1	759	569 [b]

Source: Bronson, 2019

[a] Uses conversion factor of 0.46 ton per cubic yard, from the County's average weight measurement at the landfill (FY2017 maintenance manager notes).

[b] The total volume of sediment removed in FY2018 was 190 cubic yards (total – total without sediment in FY2018).

Table 14. Bernalillo County Waste Characteristics, Fiscal Year 2018

Waste Type	Volume Removed (cubic yards)	Percent of Total [a]
Wood	244	42.9
Rock > 1-inch	219	38.5
Plastic	94	16.5
Metal	9	1.6
Paper	3	0.5
Total	569	100

Source: Bronson, 2019

[a] Waste type percentages come from the 2016 AMAFCA/BernCo gross pollutant study, and do not include sediment.

Table 15. City of Albuquerque Silt, Trash, Debris, and Vegetation Removed from Arroyos and Catch Basins, Fiscal Years 2016–2018

Fiscal Year	Total Volume [a] (cubic yards)	Sediment Volume [b] (cubic yards)
2016	3,240	1,620
2017	3,454	1,727
2018	4,382	2,191

Source: Verhage, 2019

[a] The City tracks removal data on a monthly basis, but does not subdivide the volumes removed by location.

[b] The City estimates that 50% of the total volume of material removed is sediment, 40% vegetation, and 10% trash (7.5% plastic, 2% paper, 0.5% metal). For FY2018, the estimate for the volume of sediment removed by the City from arroyos and catch basins was 2,191 cubic yards.

Table 16. City of Albuquerque Street Sweeper Sediment Removal Fiscal Years 2017 and 2018

Fiscal Year	Area	Total Miles Swept	Volume [a] (cubic yards)
2017	East Side	23,866	3,166
	West Side	23,000	3,228
	Total	46,866	6,394
2018	East Side	22,319	2,785
	West Side	20,189	3,328
	Total	42,508	6,113

Source: Verhage, 2019

[a] The City estimates that material removed via street sweeping is 75% sediment, 20% trash, and 5% vegetation (the estimate for sediment removal via street sweeping in FY2018 is 4,585 cubic yards).

Table 17. Sediment Removal, Fiscal Years 2014–2018

Entity	Sediment Removal Volume (cubic yards)					
	FY2014	FY2015	FY2016	FY2017	FY2018	Total
AMAFCA	NA	34,976	32,124	18,102	110,617	195,819
SSCAFCA [a]	NA	NA	NA	16,025	42,150	58,175
Bernalillo County [b]	NA	310	737	574	190	1,811
City of Albuquerque [c]	2,764	2,346	1,620	1,727	2,191	10,648
Total	2,764	37,632	34,481	36,428	155,148	266,453

[a] SSCAFCA 2018 volume is for calendar year 2018.

[b] FY2016 and FY2017 volumes are for sediment, vegetation, and trash.

[c] 2014 and 2015 City of Albuquerque volumes are for the calendar years.

NA = Data not available

Table 18. Estimated Middle Rio Grande Sediment Baseline Loading
Page 1 of 2

Outfall	Sample Date	Sample Time	Total Suspended Solids (mg/L)	USGS NWIS Water Discharge Values				Calculated Sediment Discharge (tons per day)			TSS Data Source
				Mean Daily Discharge (cfs)	Discharge at Sample Collection (cfs)	Annual Mean Discharge (cfs)	Annual Total Discharge Volume (cubic feet)	Suspended Sediment Discharge using Daily Mean Discharge	Suspended Sediment Discharge using Discharge at Sample Collection Time	Suspended Sediment Discharge using Annual Mean Discharge	
USGS 08329900 North Floodway Channel Near Alameda, NM	5/11/2012	17:30	1,520	82	1,710	7	2,680	340	7,000	30	USGS
	7/23/2012	18:00	1,190	34	463	—	—	110	1,500	24	
	12/14/2014	16:05	170	82	30	7	2,480	38	14	3.1	AMAFCA
	7/06/2015	16:30	110	146	77	11	3,980	43	23	3.2	
	8/15/2017	9:10	4	11	7	—	—	0.1	0.1	—	
	7/27/2018	9:47	46	256	17	—	—	32	2.1	—	
USGS 083299377 San Antonio Arroyo at Rio Grande Confluence	4/03/2012	11:00	16	—	—	—	—	—	—	—	USGS
	7/05/2012	18:50	41	—	—	—	—	—	—	—	
	8/22/2014	11:00	16	—	—	—	—	—	—	—	AMAFCA
	12/13/2014	16:23	39	—	—	—	—	—	—	—	
	6/10/2015	15:36	54	—	—	—	—	—	—	—	
	7/29/2016	17:26	130	—	21	—	—	—	7.4	—	
	8/04/2016	19:03	74	—	3	—	—	—	0.6	—	
	8/04/2017	17:25	6	—	23	—	—	—	0.4	—	
USGS 08330200 San Jose Drain at Woodward Rd	9/12/2012	18:30	218	3	11	—	—	5	5.1	—	USGS
	7/05/2013	16:45	650	1	3	0	—	0.3	0	0.4	
	7/16/2014	19:00	160	3	31	0	89	1.4	13	0.1	AMAFCA
	12/04/2014	16:30	96	2	—	—	—	0.6	—	0.1	
	7/06/2015	19:09	110	18	6	0	87	5.4	1.7	0.1	
	8/04/2016	22:45	160	2	18	0	80	0.9	7.7	0.1	
	7/31/2017	16:26	11	1	11	0	47	0	0.3	0	
	7/31/2018	16:26	100	0	0	0	59	0	0	0	
USGS 08330775 South Diversion Channel Above Tijeras Arroyo	4/03/2012	9:16	260	14	—	0	130	10	—	0.3	USGS
	7/23/2012	17:20	6,980	10	238	—	—	190	4,500	6.7	
	8/16/2012	22:00	122	4	21	—	—	1.2	6.9	0.1	
	7/08/2013	21:55	8,740	13	190	1	350	320	4,500	23	
	7/26/2013	4:36	108	94	23	—	—	28	6.6	0.3	
	7/06/2015	19:00	560	96	86	1	307	140	130	1.3	AMAFCA
	8/04/2016	22:45	60	5	58	0	152	0.8	9.4	0.1	
	8/29/2017	19:46	120	11	92	1	230	3.7	30	0.2	
	7/26/2018	0:11	1,100	42	129	—	—	120	380	—	

mg/L = Milligrams per liter
USGS NWIS = U.S. Geological Survey National Water Information System
AMAFCA = Albuquerque Metropolitan Arroyo Flood Control Authority
— = Data not available

Table 18. Estimated Middle Rio Grande Sediment Baseline Loading
Page 2 of 2

Outfall	Sample Date	Sample Time	Total Suspended Solids (mg/L)	USGS NWIS Water Discharge Values				Calculated Sediment Discharge (tons per day)			TSS Data Source
				Mean Daily Discharge (cfs)	Discharge at Sample Collection (cfs)	Annual Mean Discharge (cfs)	Annual Total Discharge Volume (cubic feet)	Suspended Sediment Discharge using Daily Mean Discharge	Suspended Sediment Discharge using Discharge at Sample Collection Time	Suspended Sediment Discharge using Annual Mean Discharge	
USGS 08330600 Tijeras Arroyo	4/03/2012	9:01	5,770	6	9	0	98	88	140	4.2	USGS
	7/03/2013	3:52	10,010	40	298	1	462	1,080	8,100	34	
	7/09/2013	21:15	6,490	4	—	—	—	76	—	22	
	7/26/2013	3:41	448	32	19	—	—	39	23	1.5	
	7/07/2015	13:33	3,600	—	—	—	—	—	—	—	AMAFCA
	9/06/2018	21:17	61,000	0	23	—	—	23	3,800	—	

mg/L = Milligrams per liter
USGS NWIS = U.S. Geological Survey National Water Information System
AMAFCA = Albuquerque Metropolitan Arroyo Flood Control Authority
— = Data not available

Table 19. Best Management Practices and Water Quality Structures Installed During Permit Period

Project Name	Water Quality Facility	Receiving Facility	Project Location	Maintained by
Fiscal Year 2016				
ABQ Health Partners	Water quality pond	South Diversion Channel	I-25/Sunport	Private
Adobe Acres Stormwater Facility	Inlet retrofit	Rio Grande	Isleta Blvd/Camino Del Valle	Bernalillo County
Vista del Rio Road Improvements	Water quality pond	Atrisco Drain	Isleta Blvd/Perry Rd	Bernalillo County
Mountain View Elementary School	Water quality pond	South Diversion Channel	2nd St/Prosperity	APS
Green Jeans Development Water	Harvesting ponds, tanks, bioswales	Embudo Arroyo	I-40/Carlisle	Private
Juan Tabo Hills Estates Subdivision	Water quality manholes and pond	Tijeras Arroyo	South Juan Tabo	Private/COA
Presbyterian Health Clinic	Water quality ponds	Fountain Hills Pond	Paseo del Norte/Eagle Ranch	Private
Westside Baseball Complex	Water quality ponds	Ladera Dam 5S	Arroyo Vista Blvd	COA
Hawk's Landing Subdivision	Water quality manholes	South Domingo Baca Dam	Paseo del Norte/ Tramway Blvd	Private
Unser Blvd Improvements Project	Water quality inlet	San Antonio Diversion Channel	Unser/Dellyne	COA
North Domingo Baca Park, Phase 9	Small ponding area	Kinney Dam	Louisiana/Carmel	COA
The Foothills Development	Water quality manholes	Pino Dam	Tramway/San Antonio	—
Stone Systems	Water quality pond	South Diversion Channel	Los Picaros Rd/Bobby Foster Rd	Private
Piedras Marcadas Dam Outfall Water Quality Improvement project	Water quality pond	Corrales Main Canal	Coors Blvd/Eagle Ranch Rd	—
Pond 187 Pond Outfall project	Water quality pond	Isleta Drain	La Fonda Road	AMAFCA
Pond 187A/Conveyance project	Water quality pond	Isleta Drain	Don Andres Rd/Rio Grande High School	AMAFCA/County
Ladera Dam 8 Ported Outlet Structure	Water quality pond	San Antonio Diversion Channel	Ladera Dr /Ouray Rd	AMAFCA/COA

See last page of table for notes and definitions.

Table 19. Best Management Practices and Water Quality Structures Installed During Permit Period
Page 2 of 3

Project Name	Water Quality Facility	Receiving Facility	Project Location	Maintained by
Fiscal Year 2017				
Independence Square	Pond	South Pino Arroyo	Jefferson/Osuna	Private
Balloon Fiesta Parking Area	Ponds/parking lot treatment	North Diversion Channel	North Edith	AIBF (onsite)/County
I-25/Rio Bravo Improvements	Ponds/inlets	South Diversion Channel	Rio Bravo	NMDOT
Stormcloud Unit 4	Water quality pond	Mirehaven Arroyo	Tierra Pintada	Private
State Employees CU Pond North Diversion Channel Montgomery/Carlisle Private	Water quality pond	North Diversion Channel	Montgomery/Carlisle	Private
NM Mutual Office	Parking lot ponds/riprap rundown	North Camino Channel	Balloon Fiesta Drive	Private
APS Northwest Complex Ph. 1	Pond	Ladera Dam 5S	Arroyo Vista Drive	APS
2nd Street FLAP Project	Pond/landscaped areas	2nd Street Channel	South 2nd Street	County
Tijeras Arroyo Sediment Removal System	Basins	Tijeras Arroyo	Interstate 25/Bobby Foster Rd	AMAFCA
Hawk's Landing	Proposed water quality manholes	South Domingo Baca Arroyo	Tramway/Paseo del Norte	Private
Independence Square - DRB 1005517	Proposed BMPs	South Pino Arroyo	Jefferson - Between Osuna and Ellison	Private
Superior Express Car Wash - EPC 1000936	Proposed bioswales	Black Arroyo	Unser/Crown	Private
Global Storage Coors - EPC 1003993	Proposed permeable pavement	CoA Storm Drain - Sequoia Outfall	Coors/Sequoia Rd	Private
Fiscal Year 2018				
Ladera Dam 6 Ported Outlet	Ported dam outlet	San Antonio Diversion Channel	Ladera Dr/Ouray Rd	AMAFCA
Swinburne Dam	Water quality structures	Calabacillas Arroyo	Unser/Crown	AMAFCA
Domingo Baca Improvements	Water quality structures	Domingo Baca	Jeffferson/Paseo del Norte	AMAFCA
Kirtland Drainage Project	Water quality pond	South Diversion Channel	Gibson Ave	AMAFCA

See last page of table for notes and definitions.

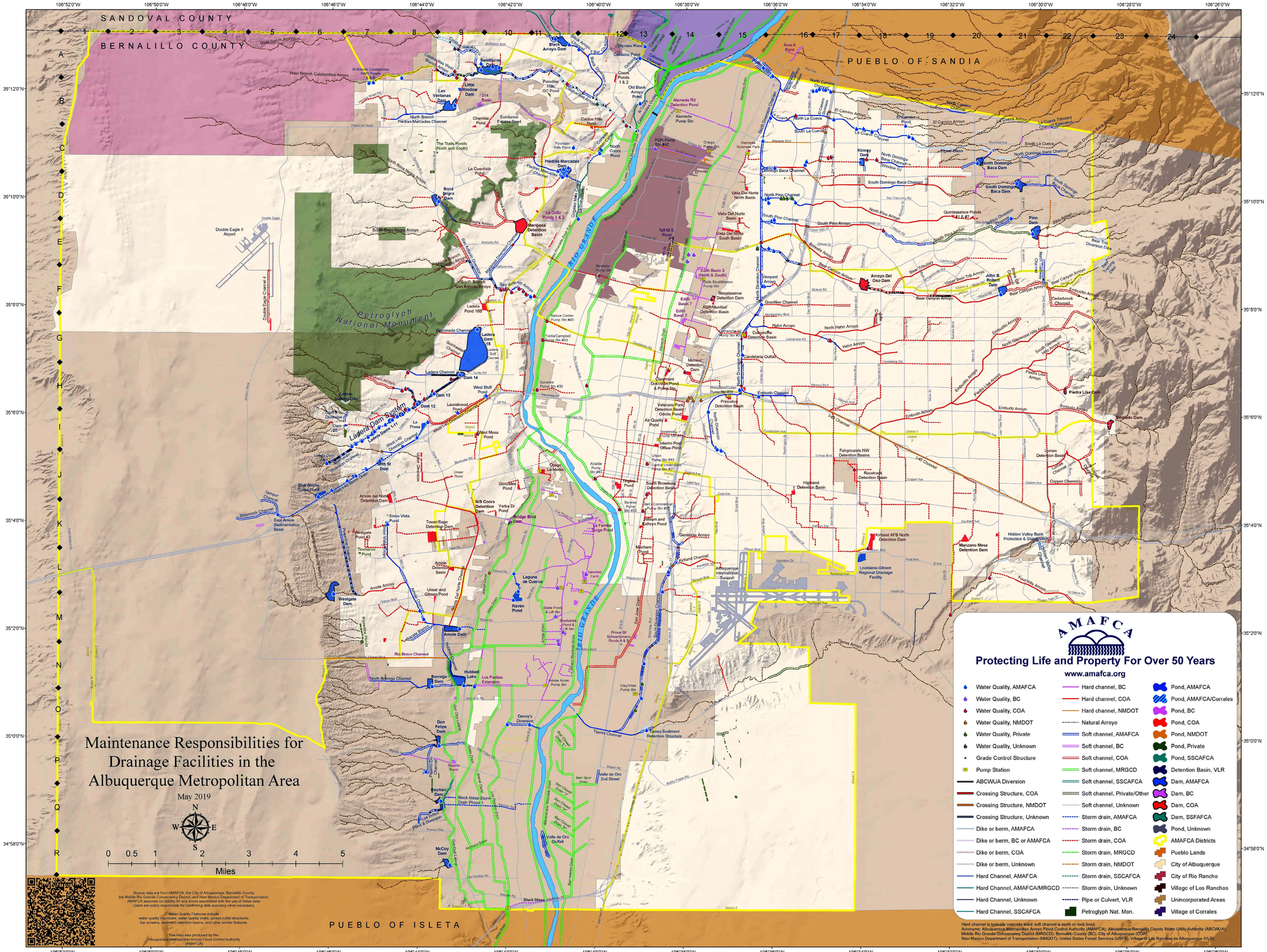
Table 19. Best Management Practices and Water Quality Structures Installed During Permit Period

Project Name	Water Quality Facility	Receiving Facility	Project Location	Maintained by
Fiscal Year 2018 (cont.)				
2nd Street Improvement Project	Water quality ponds, GI/LID	Barr Main Channel	2nd Street/Desert Rd	AMAFCA/County
Alameda Drain Trail	GI/LID	Rio Grande	I-40/2nd Street	County
Fiscal Year 2019				
Las Ventanas Water Quality Facility	Debris fences	Calabacillas Arroyo	Paradise Blvd/Universe Blvd	AMAFCA
Lower Bear Tributary Water Quality Facility	BMP structures	Bear Arroyo	Wyoming/Osuna	AMAFCA
Tijeras Arroyo Sediment Removal System Phase II	Basins	Tijeras Arroyo	I-25/Bobby Foster Rd	AMAFCA

Sources: AMAFCA, 2015, 2016, 2017, and 2019; Bernalillo, 2019

AMAFCA = Albuquerque Metropolitan Arroyo Flood Control Authority
County = Bernalillo County
COA = City of Albuquerque
BMP = Best management practice
GI/LID = Green infrastructure and low impact development

Plate



Source: Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA)

BERNALILLO COUNTY STORMWATER
SEDIMENT POLLUTANT LOAD REDUCTION
PROGRESS EVALUATION REPORT

Plate 1. AMAFCA Maintenance Map

Daniel B. Stephens & Associates, Inc.
6/6/2019 JN DB19.1073

S:\Projects\DB19.1073_BernCo_SR\GIS\MXDs\Sediment_Removal_2019\AMAFCA_Figure.mxd

Appendix A

Laboratory Report for Spring 2019 Sediment Sampling

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

May 14, 2019

Chad Johannesen

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL: (505) 822-9400
FAX: (505) 822-8877

RE: Bern Co Sed Load OrderNo.: 1904057

Dear Chad Johannesen:

Hall Environmental Analysis Laboratory received 21 sample(s) on 4/1/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: RG-AngDam-20190328
Project: Bern Co Sed Load
Collection Date: 3/28/2019 10:40:00 AM
Lab ID: 1904057-001 **Matrix:** SEDIMENT **Received Date:** 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	5.0	0.20		mg/L	5	5/1/2019 9:34:10 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 11:59:27 AM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 11:59:27 AM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 11:59:27 AM	44155
Nickel	ND	0.010		mg/L	1	4/6/2019 11:59:27 AM	44155
Zinc	0.037	0.020		mg/L	1	5/1/2019 8:48:57 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.026		mg/Kg	1	4/15/2019 10:57:42 PM	44045
Aroclor 1221	ND	0.026		mg/Kg	1	4/15/2019 10:57:42 PM	44045
Aroclor 1232	ND	0.026		mg/Kg	1	4/15/2019 10:57:42 PM	44045
Aroclor 1242	ND	0.026		mg/Kg	1	4/15/2019 10:57:42 PM	44045
Aroclor 1248	ND	0.026		mg/Kg	1	4/15/2019 10:57:42 PM	44045
Aroclor 1254	ND	0.026		mg/Kg	1	4/15/2019 10:57:42 PM	44045
Aroclor 1260	ND	0.026		mg/Kg	1	4/15/2019 10:57:42 PM	44045
Surr: Decachlorobiphenyl	75.2	31.9-130		%Rec	1	4/15/2019 10:57:42 PM	44045
Surr: Tetrachloro-m-xylene	81.6	21.2-142		%Rec	1	4/15/2019 10:57:42 PM	44045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Venada Out-20190328
Project: Bern Co Sed Load
Collection Date: 3/28/2019 11:55:00 AM
Lab ID: 1904057-002
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	6.2	0.20		mg/L	5	5/1/2019 9:38:40 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:04:06 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:04:06 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:04:06 PM	44155
Nickel	ND	0.010		mg/L	1	4/6/2019 12:04:06 PM	44155
Zinc	0.021	0.020		mg/L	1	5/1/2019 8:53:08 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.022		mg/Kg	1	4/15/2019 11:30:41 PM	44045
Aroclor 1221	ND	0.022		mg/Kg	1	4/15/2019 11:30:41 PM	44045
Aroclor 1232	ND	0.022		mg/Kg	1	4/15/2019 11:30:41 PM	44045
Aroclor 1242	ND	0.022		mg/Kg	1	4/15/2019 11:30:41 PM	44045
Aroclor 1248	ND	0.022		mg/Kg	1	4/15/2019 11:30:41 PM	44045
Aroclor 1254	ND	0.022		mg/Kg	1	4/15/2019 11:30:41 PM	44045
Aroclor 1260	ND	0.022		mg/Kg	1	4/15/2019 11:30:41 PM	44045
Surr: Decachlorobiphenyl	78.8	31.9-130		%Rec	1	4/15/2019 11:30:41 PM	44045
Surr: Tetrachloro-m-xylene	89.2	21.2-142		%Rec	1	4/15/2019 11:30:41 PM	44045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Montoyas Sed-20190328
Project: Bern Co Sed Load
Collection Date: 3/28/2019 1:30:00 PM
Lab ID: 1904057-003
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	5.7	0.20		mg/L	5	5/1/2019 9:40:09 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:05:33 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:05:33 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:05:33 PM	44155
Nickel	ND	0.010		mg/L	1	4/6/2019 12:05:33 PM	44155
Zinc	0.055	0.020		mg/L	1	5/1/2019 8:54:37 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.024		mg/Kg	1	4/16/2019 12:03:43 AM	44045
Aroclor 1221	ND	0.024		mg/Kg	1	4/16/2019 12:03:43 AM	44045
Aroclor 1232	ND	0.024		mg/Kg	1	4/16/2019 12:03:43 AM	44045
Aroclor 1242	ND	0.024		mg/Kg	1	4/16/2019 12:03:43 AM	44045
Aroclor 1248	ND	0.024		mg/Kg	1	4/16/2019 12:03:43 AM	44045
Aroclor 1254	ND	0.024		mg/Kg	1	4/16/2019 12:03:43 AM	44045
Aroclor 1260	ND	0.024		mg/Kg	1	4/16/2019 12:03:43 AM	44045
Surr: Decachlorobiphenyl	71.2	31.9-130		%Rec	1	4/16/2019 12:03:43 AM	44045
Surr: Tetrachloro-m-xylene	79.2	21.2-142		%Rec	1	4/16/2019 12:03:43 AM	44045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Montoyas Out-20190328
Project: Bern Co Sed Load
Collection Date: 3/28/2019 2:10:00 PM
Lab ID: 1904057-004
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	12	0.20		mg/L	5	5/1/2019 9:45:58 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:07:03 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:07:03 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:07:03 PM	44155
Nickel	ND	0.010		mg/L	1	4/6/2019 12:07:03 PM	44155
Zinc	0.034	0.020		mg/L	1	5/1/2019 8:56:05 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.023		mg/Kg	1	4/16/2019 12:36:44 AM	44045
Aroclor 1221	ND	0.023		mg/Kg	1	4/16/2019 12:36:44 AM	44045
Aroclor 1232	ND	0.023		mg/Kg	1	4/16/2019 12:36:44 AM	44045
Aroclor 1242	ND	0.023		mg/Kg	1	4/16/2019 12:36:44 AM	44045
Aroclor 1248	ND	0.023		mg/Kg	1	4/16/2019 12:36:44 AM	44045
Aroclor 1254	ND	0.023		mg/Kg	1	4/16/2019 12:36:44 AM	44045
Aroclor 1260	ND	0.023		mg/Kg	1	4/16/2019 12:36:44 AM	44045
Surr: Decachlorobiphenyl	76.0	31.9-130		%Rec	1	4/16/2019 12:36:44 AM	44045
Surr: Tetrachloro-m-xylene	84.4	21.2-142		%Rec	1	4/16/2019 12:36:44 AM	44045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Calabacitas Out-20190328
Project: Bern Co Sed Load
Collection Date: 3/28/2019 3:50:00 PM
Lab ID: 1904057-005
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	4.8	0.040		mg/L	1	5/1/2019 8:57:34 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:08:32 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:08:32 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:08:32 PM	44155
Nickel	ND	0.010		mg/L	1	4/6/2019 12:08:32 PM	44155
Zinc	0.023	0.020		mg/L	1	5/1/2019 8:57:34 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.022		mg/Kg	1	4/16/2019 1:09:45 AM	44045
Aroclor 1221	ND	0.022		mg/Kg	1	4/16/2019 1:09:45 AM	44045
Aroclor 1232	ND	0.022		mg/Kg	1	4/16/2019 1:09:45 AM	44045
Aroclor 1242	ND	0.022		mg/Kg	1	4/16/2019 1:09:45 AM	44045
Aroclor 1248	ND	0.022		mg/Kg	1	4/16/2019 1:09:45 AM	44045
Aroclor 1254	ND	0.022		mg/Kg	1	4/16/2019 1:09:45 AM	44045
Aroclor 1260	ND	0.022		mg/Kg	1	4/16/2019 1:09:45 AM	44045
Surr: Decachlorobiphenyl	65.6	31.9-130		%Rec	1	4/16/2019 1:09:45 AM	44045
Surr: Tetrachloro-m-xylene	73.6	21.2-142		%Rec	1	4/16/2019 1:09:45 AM	44045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Calabacitas Sed-20190328
Project: Bern Co Sed Load
Collection Date: 3/28/2019 4:15:00 PM
Lab ID: 1904057-006
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	2.8	0.040		mg/L	1	5/1/2019 8:59:03 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:10:01 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:10:01 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:10:01 PM	44155
Nickel	ND	0.010		mg/L	1	4/6/2019 12:10:01 PM	44155
Zinc	0.030	0.020		mg/L	1	5/1/2019 8:59:03 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.022		mg/Kg	1	4/16/2019 1:42:44 AM	44045
Aroclor 1221	ND	0.022		mg/Kg	1	4/16/2019 1:42:44 AM	44045
Aroclor 1232	ND	0.022		mg/Kg	1	4/16/2019 1:42:44 AM	44045
Aroclor 1242	ND	0.022		mg/Kg	1	4/16/2019 1:42:44 AM	44045
Aroclor 1248	ND	0.022		mg/Kg	1	4/16/2019 1:42:44 AM	44045
Aroclor 1254	ND	0.022		mg/Kg	1	4/16/2019 1:42:44 AM	44045
Aroclor 1260	ND	0.022		mg/Kg	1	4/16/2019 1:42:44 AM	44045
Surr: Decachlorobiphenyl	58.0	31.9-130		%Rec	1	4/16/2019 1:42:44 AM	44045
Surr: Tetrachloro-m-xylene	61.6	21.2-142		%Rec	1	4/16/2019 1:42:44 AM	44045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: San Antonio Sed-20190328
Project: Bern Co Sed Load
Collection Date: 3/28/2019 4:50:00 PM
Lab ID: 1904057-007
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	6.9	0.20		mg/L	5	5/1/2019 9:47:29 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:11:30 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:11:30 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:11:30 PM	44155
Nickel	ND	0.010		mg/L	1	4/6/2019 12:11:30 PM	44155
Zinc	0.045	0.020		mg/L	1	5/1/2019 9:00:32 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.13		mg/Kg	1	4/16/2019 2:15:47 AM	44045
Aroclor 1221	ND	0.13		mg/Kg	1	4/16/2019 2:15:47 AM	44045
Aroclor 1232	ND	0.13		mg/Kg	1	4/16/2019 2:15:47 AM	44045
Aroclor 1242	ND	0.13		mg/Kg	1	4/16/2019 2:15:47 AM	44045
Aroclor 1248	ND	0.13		mg/Kg	1	4/16/2019 2:15:47 AM	44045
Aroclor 1254	ND	0.13		mg/Kg	1	4/16/2019 2:15:47 AM	44045
Aroclor 1260	ND	0.13		mg/Kg	1	4/16/2019 2:15:47 AM	44045
Surr: Decachlorobiphenyl	118	31.9-130		%Rec	1	4/16/2019 2:15:47 AM	44045
Surr: Tetrachloro-m-xylene	134	21.2-142		%Rec	1	4/16/2019 2:15:47 AM	44045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: San Antonio Out-20190328
Project: Bern Co Sed Load
Collection Date: 3/28/2019 5:05:00 PM
Lab ID: 1904057-008
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	6.1	0.20		mg/L	5	5/1/2019 9:48:58 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:12:59 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:12:59 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:12:59 PM	44155
Nickel	ND	0.010		mg/L	1	4/6/2019 12:12:59 PM	44155
Zinc	0.047	0.020		mg/L	1	5/1/2019 9:02:01 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.041		mg/Kg	1	4/16/2019 2:48:46 AM	44045
Aroclor 1221	ND	0.041		mg/Kg	1	4/16/2019 2:48:46 AM	44045
Aroclor 1232	ND	0.041		mg/Kg	1	4/16/2019 2:48:46 AM	44045
Aroclor 1242	ND	0.041		mg/Kg	1	4/16/2019 2:48:46 AM	44045
Aroclor 1248	ND	0.041		mg/Kg	1	4/16/2019 2:48:46 AM	44045
Aroclor 1254	ND	0.041		mg/Kg	1	4/16/2019 2:48:46 AM	44045
Aroclor 1260	ND	0.041		mg/Kg	1	4/16/2019 2:48:46 AM	44045
Surr: Decachlorobiphenyl	110	31.9-130		%Rec	1	4/16/2019 2:48:46 AM	44045
Surr: Tetrachloro-m-xylene	125	21.2-142		%Rec	1	4/16/2019 2:48:46 AM	44045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: NDC Sed-20190329
Project: Bern Co Sed Load
Collection Date: 3/29/2019 9:00:00 AM
Lab ID: 1904057-009
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	33	0.40		mg/L	10	5/1/2019 9:50:27 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:18:56 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:18:56 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:18:56 PM	44155
Nickel	0.018	0.010		mg/L	1	5/1/2019 9:07:53 AM	44155
Zinc	0.31	0.020		mg/L	1	5/1/2019 9:07:53 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.11		mg/Kg	1	4/16/2019 3:54:43 AM	44045
Aroclor 1221	ND	0.11		mg/Kg	1	4/16/2019 3:54:43 AM	44045
Aroclor 1232	ND	0.11		mg/Kg	1	4/16/2019 3:54:43 AM	44045
Aroclor 1242	ND	0.11		mg/Kg	1	4/16/2019 3:54:43 AM	44045
Aroclor 1248	ND	0.11		mg/Kg	1	4/16/2019 3:54:43 AM	44045
Aroclor 1254	ND	0.11		mg/Kg	1	4/16/2019 3:54:43 AM	44045
Aroclor 1260	0.13	0.11		mg/Kg	1	4/16/2019 3:54:43 AM	44045
Surr: Decachlorobiphenyl	138	31.9-130	S	%Rec	1	4/16/2019 3:54:43 AM	44045
Surr: Tetrachloro-m-xylene	152	21.2-142	S	%Rec	1	4/16/2019 3:54:43 AM	44045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: NDC Out-20190329
Project: Bern Co Sed Load
Collection Date: 3/29/2019 9:30:00 AM
Lab ID: 1904057-010
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	7.4	0.20		mg/L	5	5/1/2019 9:51:56 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:20:27 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:20:27 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:20:27 PM	44155
Nickel	ND	0.010		mg/L	1	5/1/2019 9:09:24 AM	44155
Zinc	0.038	0.020		mg/L	1	5/1/2019 9:09:24 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.052		mg/Kg	1	4/16/2019 4:27:42 AM	44045
Aroclor 1221	ND	0.052		mg/Kg	1	4/16/2019 4:27:42 AM	44045
Aroclor 1232	ND	0.052		mg/Kg	1	4/16/2019 4:27:42 AM	44045
Aroclor 1242	ND	0.052		mg/Kg	1	4/16/2019 4:27:42 AM	44045
Aroclor 1248	ND	0.052		mg/Kg	1	4/16/2019 4:27:42 AM	44045
Aroclor 1254	ND	0.052		mg/Kg	1	4/16/2019 4:27:42 AM	44045
Aroclor 1260	ND	0.052		mg/Kg	1	4/16/2019 4:27:42 AM	44045
Surr: Decachlorobiphenyl	110	31.9-130		%Rec	1	4/16/2019 4:27:42 AM	44045
Surr: Tetrachloro-m-xylene	126	21.2-142		%Rec	1	4/16/2019 4:27:42 AM	44045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: West I40DC-20190329
Project: Bern Co Sed Load
Collection Date: 3/29/2019 10:45:00 AM
Lab ID: 1904057-011
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	160	2.0		mg/L	50	5/1/2019 9:53:25 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:21:56 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:21:56 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:21:56 PM	44155
Nickel	0.074	0.010		mg/L	1	5/1/2019 9:10:53 AM	44155
Zinc	0.56	0.020		mg/L	1	5/1/2019 9:10:53 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.13		mg/Kg	1	4/16/2019 5:00:39 AM	44045
Aroclor 1221	ND	0.13		mg/Kg	1	4/16/2019 5:00:39 AM	44045
Aroclor 1232	ND	0.13		mg/Kg	1	4/16/2019 5:00:39 AM	44045
Aroclor 1242	ND	0.13		mg/Kg	1	4/16/2019 5:00:39 AM	44045
Aroclor 1248	ND	0.13		mg/Kg	1	4/16/2019 5:00:39 AM	44045
Aroclor 1254	ND	0.13		mg/Kg	1	4/16/2019 5:00:39 AM	44045
Aroclor 1260	ND	0.13		mg/Kg	1	4/16/2019 5:00:39 AM	44045
Surr: Decachlorobiphenyl	120	31.9-130		%Rec	1	4/16/2019 5:00:39 AM	44045
Surr: Tetrachloro-m-xylene	134	21.2-142		%Rec	1	4/16/2019 5:00:39 AM	44045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: West I40DC Out-20190329
Project: Bern Co Sed Load
Collection Date: 3/29/2019 11:40:00 AM
Lab ID: 1904057-012
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	9.2	0.20		mg/L	5	5/1/2019 9:54:54 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:23:25 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:23:25 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:23:25 PM	44155
Nickel	ND	0.010		mg/L	1	5/1/2019 9:12:30 AM	44155
Zinc	0.028	0.020		mg/L	1	5/1/2019 9:12:30 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.033		mg/Kg	1	4/16/2019 7:45:36 AM	44129
Aroclor 1221	ND	0.033		mg/Kg	1	4/16/2019 7:45:36 AM	44129
Aroclor 1232	ND	0.033		mg/Kg	1	4/16/2019 7:45:36 AM	44129
Aroclor 1242	ND	0.033		mg/Kg	1	4/16/2019 7:45:36 AM	44129
Aroclor 1248	ND	0.033		mg/Kg	1	4/16/2019 7:45:36 AM	44129
Aroclor 1254	ND	0.033		mg/Kg	1	4/16/2019 7:45:36 AM	44129
Aroclor 1260	ND	0.033		mg/Kg	1	4/16/2019 7:45:36 AM	44129
Surr: Decachlorobiphenyl	59.2	31.9-130		%Rec	1	4/16/2019 7:45:36 AM	44129
Surr: Tetrachloro-m-xylene	64.8	21.2-142		%Rec	1	4/16/2019 7:45:36 AM	44129

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Sanchez Farm In-20190329
Project: Bern Co Sed Load
Collection Date: 3/29/2019 1:15:00 PM
Lab ID: 1904057-013
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	14	0.20		mg/L	5	5/1/2019 9:56:23 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:24:54 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:24:54 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:24:54 PM	44155
Nickel	0.010	0.010		mg/L	1	5/1/2019 9:13:59 AM	44155
Zinc	0.21	0.020		mg/L	1	5/1/2019 9:13:59 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.047		mg/Kg	1	4/16/2019 11:05:19 AM	44129
Aroclor 1221	ND	0.047		mg/Kg	1	4/16/2019 11:05:19 AM	44129
Aroclor 1232	ND	0.047		mg/Kg	1	4/16/2019 11:05:19 AM	44129
Aroclor 1242	ND	0.047		mg/Kg	1	4/16/2019 11:05:19 AM	44129
Aroclor 1248	ND	0.047		mg/Kg	1	4/16/2019 11:05:19 AM	44129
Aroclor 1254	ND	0.047		mg/Kg	1	4/16/2019 11:05:19 AM	44129
Aroclor 1260	ND	0.047		mg/Kg	1	4/16/2019 11:05:19 AM	44129
Surr: Decachlorobiphenyl	79.2	31.9-130		%Rec	1	4/16/2019 11:05:19 AM	44129
Surr: Tetrachloro-m-xylene	83.2	21.2-142		%Rec	1	4/16/2019 11:05:19 AM	44129

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Sanchez Farm In2-20190329
Project: Bern Co Sed Load
Collection Date: 3/29/2019 1:40:00 PM
Lab ID: 1904057-014
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	12	0.20		mg/L	5	5/1/2019 9:57:53 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:26:22 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:26:22 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:26:22 PM	44155
Nickel	ND	0.010		mg/L	1	5/1/2019 9:15:28 AM	44155
Zinc	0.084	0.020		mg/L	1	5/1/2019 9:15:28 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.022		mg/Kg	1	4/16/2019 11:38:20 AM	44129
Aroclor 1221	ND	0.022		mg/Kg	1	4/16/2019 11:38:20 AM	44129
Aroclor 1232	ND	0.022		mg/Kg	1	4/16/2019 11:38:20 AM	44129
Aroclor 1242	ND	0.022		mg/Kg	1	4/16/2019 11:38:20 AM	44129
Aroclor 1248	ND	0.022		mg/Kg	1	4/16/2019 11:38:20 AM	44129
Aroclor 1254	ND	0.022		mg/Kg	1	4/16/2019 11:38:20 AM	44129
Aroclor 1260	ND	0.022		mg/Kg	1	4/16/2019 11:38:20 AM	44129
Surr: Decachlorobiphenyl	60.0	31.9-130		%Rec	1	4/16/2019 11:38:20 AM	44129
Surr: Tetrachloro-m-xylene	63.2	21.2-142		%Rec	1	4/16/2019 11:38:20 AM	44129

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Sanchez Farm Out-20190329
Project: Bern Co Sed Load
Collection Date: 3/29/2019 2:30:00 PM
Lab ID: 1904057-015
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	7.3	0.20		mg/L	5	5/1/2019 9:59:22 AM	44155
Cadmium	ND	1.0		mg/L	1	4/6/2019 12:27:51 PM	44155
Chromium	ND	5.0		mg/L	1	4/6/2019 12:27:51 PM	44155
Lead	ND	5.0		mg/L	1	4/6/2019 12:27:51 PM	44155
Nickel	ND	0.010		mg/L	1	5/1/2019 9:16:57 AM	44155
Zinc	0.15	0.020		mg/L	1	5/1/2019 9:16:57 AM	44155
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.025		mg/Kg	1	4/16/2019 12:11:22 PM	44129
Aroclor 1221	ND	0.025		mg/Kg	1	4/16/2019 12:11:22 PM	44129
Aroclor 1232	ND	0.025		mg/Kg	1	4/16/2019 12:11:22 PM	44129
Aroclor 1242	ND	0.025		mg/Kg	1	4/16/2019 12:11:22 PM	44129
Aroclor 1248	ND	0.025		mg/Kg	1	4/16/2019 12:11:22 PM	44129
Aroclor 1254	ND	0.025		mg/Kg	1	4/16/2019 12:11:22 PM	44129
Aroclor 1260	ND	0.025		mg/Kg	1	4/16/2019 12:11:22 PM	44129
Surr: Decachlorobiphenyl	67.2	31.9-130		%Rec	1	4/16/2019 12:11:22 PM	44129
Surr: Tetrachloro-m-xylene	75.2	21.2-142		%Rec	1	4/16/2019 12:11:22 PM	44129

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Baffle Up2-20190329
Project: Bern Co Sed Load
Collection Date: 3/29/2019 3:40:00 PM
Lab ID: 1904057-016
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	3.4	0.040		mg/L	1	5/1/2019 9:18:26 AM	44237
Cadmium	ND	1.0		mg/L	1	5/1/2019 9:18:26 AM	44237
Chromium	ND	5.0		mg/L	1	5/1/2019 9:18:26 AM	44237
Lead	ND	5.0		mg/L	1	4/10/2019 1:10:34 PM	44237
Nickel	ND	0.010		mg/L	1	5/1/2019 9:18:26 AM	44237
Zinc	0.051	0.020		mg/L	1	5/1/2019 9:18:26 AM	44237
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.22		mg/Kg	1	4/16/2019 12:44:24 PM	44129
Aroclor 1221	ND	0.22		mg/Kg	1	4/16/2019 12:44:24 PM	44129
Aroclor 1232	ND	0.22		mg/Kg	1	4/16/2019 12:44:24 PM	44129
Aroclor 1242	ND	0.22		mg/Kg	1	4/16/2019 12:44:24 PM	44129
Aroclor 1248	ND	0.22		mg/Kg	1	4/16/2019 12:44:24 PM	44129
Aroclor 1254	ND	0.22		mg/Kg	1	4/16/2019 12:44:24 PM	44129
Aroclor 1260	ND	0.22		mg/Kg	1	4/16/2019 12:44:24 PM	44129
Surr: Decachlorobiphenyl	0	31.9-130	S	%Rec	1	4/16/2019 12:44:24 PM	44129
Surr: Tetrachloro-m-xylene	0	21.2-142	S	%Rec	1	4/16/2019 12:44:24 PM	44129

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Tijeras Sed-20190329
Project: Bern Co Sed Load
Collection Date: 3/29/2019 4:15:00 PM
Lab ID: 1904057-017
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	8.2	0.20		mg/L	5	5/1/2019 10:05:12 AM	44237
Cadmium	ND	1.0		mg/L	1	5/1/2019 9:26:43 AM	44237
Chromium	ND	5.0		mg/L	1	5/1/2019 9:26:43 AM	44237
Lead	ND	5.0		mg/L	1	4/10/2019 1:19:31 PM	44237
Nickel	ND	0.010		mg/L	1	5/1/2019 9:26:43 AM	44237
Zinc	0.034	0.020		mg/L	1	5/1/2019 9:26:43 AM	44237
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.024		mg/Kg	1	4/16/2019 1:17:27 PM	44129
Aroclor 1221	ND	0.024		mg/Kg	1	4/16/2019 1:17:27 PM	44129
Aroclor 1232	ND	0.024		mg/Kg	1	4/16/2019 1:17:27 PM	44129
Aroclor 1242	ND	0.024		mg/Kg	1	4/16/2019 1:17:27 PM	44129
Aroclor 1248	ND	0.024		mg/Kg	1	4/16/2019 1:17:27 PM	44129
Aroclor 1254	ND	0.024		mg/Kg	1	4/16/2019 1:17:27 PM	44129
Aroclor 1260	ND	0.024		mg/Kg	1	4/16/2019 1:17:27 PM	44129
Surr: Decachlorobiphenyl	40.8	31.9-130		%Rec	1	4/16/2019 1:17:27 PM	44129
Surr: Tetrachloro-m-xylene	46.0	21.2-142		%Rec	1	4/16/2019 1:17:27 PM	44129

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: SDC Out-20190329
Project: Bern Co Sed Load
Collection Date: 3/29/2019 5:00:00 PM
Lab ID: 1904057-018
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	8.8	0.20		mg/L	5	5/1/2019 10:06:43 AM	44237
Cadmium	ND	1.0		mg/L	1	5/1/2019 9:28:15 AM	44237
Chromium	ND	5.0		mg/L	1	5/1/2019 9:28:15 AM	44237
Lead	ND	5.0		mg/L	1	4/10/2019 1:21:00 PM	44237
Nickel	0.014	0.010		mg/L	1	5/1/2019 9:28:15 AM	44237
Zinc	0.027	0.020		mg/L	1	5/1/2019 9:28:15 AM	44237
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.023		mg/Kg	1	4/16/2019 1:50:28 PM	44129
Aroclor 1221	ND	0.023		mg/Kg	1	4/16/2019 1:50:28 PM	44129
Aroclor 1232	ND	0.023		mg/Kg	1	4/16/2019 1:50:28 PM	44129
Aroclor 1242	ND	0.023		mg/Kg	1	4/16/2019 1:50:28 PM	44129
Aroclor 1248	ND	0.023		mg/Kg	1	4/16/2019 1:50:28 PM	44129
Aroclor 1254	ND	0.023		mg/Kg	1	4/16/2019 1:50:28 PM	44129
Aroclor 1260	ND	0.023		mg/Kg	1	4/16/2019 1:50:28 PM	44129
Surr: Decachlorobiphenyl	53.2	31.9-130		%Rec	1	4/16/2019 1:50:28 PM	44129
Surr: Tetrachloro-m-xylene	60.8	21.2-142		%Rec	1	4/16/2019 1:50:28 PM	44129

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: RG-Isleta Dam-20190329
Project: Bern Co Sed Load
Collection Date: 3/29/2019 5:30:00 PM
Lab ID: 1904057-019
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	3.1	0.040		mg/L	1	5/1/2019 9:29:44 AM	44237
Cadmium	ND	1.0		mg/L	1	5/1/2019 9:29:44 AM	44237
Chromium	ND	5.0		mg/L	1	5/1/2019 9:29:44 AM	44237
Lead	ND	5.0		mg/L	1	4/10/2019 1:22:29 PM	44237
Nickel	ND	0.010		mg/L	1	5/1/2019 9:29:44 AM	44237
Zinc	ND	0.020		mg/L	1	5/1/2019 9:29:44 AM	44237
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.021		mg/Kg	1	4/16/2019 2:23:31 PM	44129
Aroclor 1221	ND	0.021		mg/Kg	1	4/16/2019 2:23:31 PM	44129
Aroclor 1232	ND	0.021		mg/Kg	1	4/16/2019 2:23:31 PM	44129
Aroclor 1242	ND	0.021		mg/Kg	1	4/16/2019 2:23:31 PM	44129
Aroclor 1248	ND	0.021		mg/Kg	1	4/16/2019 2:23:31 PM	44129
Aroclor 1254	ND	0.021		mg/Kg	1	4/16/2019 2:23:31 PM	44129
Aroclor 1260	ND	0.021		mg/Kg	1	4/16/2019 2:23:31 PM	44129
Surr: Decachlorobiphenyl	51.6	31.9-130		%Rec	1	4/16/2019 2:23:31 PM	44129
Surr: Tetrachloro-m-xylene	62.8	21.2-142		%Rec	1	4/16/2019 2:23:31 PM	44129

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: PND42 Sed-20190401
Project: Bern Co Sed Load
Collection Date: 4/1/2019 2:00:00 PM
Lab ID: 1904057-020
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	2.6	0.040		mg/L	1	5/1/2019 9:31:12 AM	44237
Cadmium	ND	1.0		mg/L	1	5/1/2019 9:31:12 AM	44237
Chromium	ND	5.0		mg/L	1	5/1/2019 9:31:12 AM	44237
Lead	ND	5.0		mg/L	1	4/10/2019 1:23:58 PM	44237
Nickel	ND	0.010		mg/L	1	5/1/2019 9:31:12 AM	44237
Zinc	0.057	0.020		mg/L	1	5/1/2019 9:31:12 AM	44237
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.26		mg/Kg	1	4/16/2019 2:56:32 PM	44129
Aroclor 1221	ND	0.26		mg/Kg	1	4/16/2019 2:56:32 PM	44129
Aroclor 1232	ND	0.26		mg/Kg	1	4/16/2019 2:56:32 PM	44129
Aroclor 1242	ND	0.26		mg/Kg	1	4/16/2019 2:56:32 PM	44129
Aroclor 1248	ND	0.26		mg/Kg	1	4/16/2019 2:56:32 PM	44129
Aroclor 1254	ND	0.26		mg/Kg	1	4/16/2019 2:56:32 PM	44129
Aroclor 1260	ND	0.26		mg/Kg	1	4/16/2019 2:56:32 PM	44129
Surr: Decachlorobiphenyl	0	31.9-130	S	%Rec	1	4/16/2019 2:56:32 PM	44129
Surr: Tetrachloro-m-xylene	0	21.2-142	S	%Rec	1	4/16/2019 2:56:32 PM	44129

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: PND42 Out-20190401
Project: Bern Co Sed Load
Collection Date: 4/1/2019 1:15:00 PM
Lab ID: 1904057-021
Matrix: SEDIMENT
Received Date: 4/1/2019 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: SPLP METALS						Analyst: **ELS**	
Aluminum	2.7	0.040		mg/L	1	5/1/2019 9:32:41 AM	44237
Cadmium	ND	1.0		mg/L	1	5/1/2019 9:32:41 AM	44237
Chromium	ND	5.0		mg/L	1	5/1/2019 9:32:41 AM	44237
Lead	ND	5.0		mg/L	1	4/10/2019 1:25:28 PM	44237
Nickel	ND	0.010		mg/L	1	5/1/2019 9:32:41 AM	44237
Zinc	0.062	0.020		mg/L	1	5/1/2019 9:32:41 AM	44237
EPA METHOD 8082A: PCB'S						Analyst: **TOM**	
Aroclor 1016	ND	0.23		mg/Kg	1	4/16/2019 3:29:32 PM	44129
Aroclor 1221	ND	0.23		mg/Kg	1	4/16/2019 3:29:32 PM	44129
Aroclor 1232	ND	0.23		mg/Kg	1	4/16/2019 3:29:32 PM	44129
Aroclor 1242	ND	0.23		mg/Kg	1	4/16/2019 3:29:32 PM	44129
Aroclor 1248	ND	0.23		mg/Kg	1	4/16/2019 3:29:32 PM	44129
Aroclor 1254	ND	0.23		mg/Kg	1	4/16/2019 3:29:32 PM	44129
Aroclor 1260	ND	0.23		mg/Kg	1	4/16/2019 3:29:32 PM	44129
Surr: Decachlorobiphenyl	0	31.9-130	S	%Rec	1	4/16/2019 3:29:32 PM	44129
Surr: Tetrachloro-m-xylene	0	21.2-142	S	%Rec	1	4/16/2019 3:29:32 PM	44129

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1904057
Pace Project No.: 30287865

Sample: 1904057-001B RG-AngDam-2019032 **Lab ID: 30287865001** Collected: 03/28/19 10:40 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**4.67 ± 5.83 (12.2) C:NA T:NA**	pCi/g	04/15/19 07:42	12587-46-1	

Sample: 1904057-002B RG-Venada Out-201 **Lab ID: 30287865002** Collected: 03/28/19 11:55 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**0.597 ± 3.50 (8.54) C:NA T:NA**	pCi/g	04/15/19 07:42	12587-46-1	

Sample: 1904057-003B Montoyas Sed-2019 **Lab ID: 30287865003** Collected: 03/28/19 13:30 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**1.87 ± 4.22 (9.52) C:NA T:NA**	pCi/g	04/15/19 07:42	12587-46-1	

Sample: 1904057-004B Montoyas Out-2019 **Lab ID: 30287865004** Collected: 03/28/19 14:10 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**21.2 ± 9.17 (12.8) C:NA T:NA**	pCi/g	04/15/19 07:42	12587-46-1	

Sample: 1904057-005B CalabacitasOut-20 **Lab ID: 30287865005** Collected: 03/28/19 15:50 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**3.17 ± 5.23 (11.4) C:NA T:NA**	pCi/g	04/15/19 07:42	12587-46-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1904057
Pace Project No.: 30287865

Sample: 1904057-006B CalabacitasSed-20 **Lab ID: 30287865006** Collected: 03/28/19 16:15 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**1.95 ± 4.06 (9.08) C:NA T:NA**	pCi/g	04/15/19 07:42	12587-46-1	

Sample: 1904057-007B SanAntonio Sed-20 **Lab ID: 30287865007** Collected: 03/28/19 16:50 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**10.8 ± 6.01 (9.00) C:NA T:NA**	pCi/g	04/15/19 07:42	12587-46-1	

Sample: 1904057-008B SanAntonio Out-20 **Lab ID: 30287865008** Collected: 03/28/19 17:05 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**4.83 ± 4.43 (8.33) C:NA T:NA**	pCi/g	04/15/19 07:42	12587-46-1	

Sample: 1904057-009B NDC Sed-20190329 **Lab ID: 30287865009** Collected: 03/29/19 09:00 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**15.2 ± 7.39 (10.9) C:NA T:NA**	pCi/g	04/15/19 07:42	12587-46-1	

Sample: 1904057-010B NDC Out-20190329 **Lab ID: 30287865010** Collected: 03/29/19 09:30 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**12.1 ± 5.97 (8.39) C:NA T:NA**	pCi/g	04/15/19 07:43	12587-46-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1904057
Pace Project No.: 30287865

Sample: 1904057-011B West I40DC-201903 **Lab ID: 30287865011** Collected: 03/29/19 10:45 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**8.91 ± 5.21 (8.12) C:NA T:NA**	pCi/g	04/15/19 07:43	12587-46-1	

Sample: 1904057-012B West I40DC Out-20 **Lab ID: 30287865012** Collected: 03/29/19 11:40 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**14.7 ± 7.09 (10.5) C:NA T:NA**	pCi/g	04/15/19 07:43	12587-46-1	

Sample: 1904057-013B Sanchez Farm In-2 **Lab ID: 30287865013** Collected: 03/29/19 13:15 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**22.9 ± 8.33 (8.73) C:NA T:NA**	pCi/g	04/15/19 07:43	12587-46-1	

Sample: 1904057-014B Sanchez Farm In2- **Lab ID: 30287865014** Collected: 03/29/19 13:40 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**14.3 ± 7.01 (10.2) C:NA T:NA**	pCi/g	04/15/19 07:43	12587-46-1	

Sample: 1904057-015B Sanchez Farm Out- **Lab ID: 30287865015** Collected: 03/29/19 14:30 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**16.5 ± 7.30 (9.66) C:NA T:NA**	pCi/g	04/15/19 07:43	12587-46-1	

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1904057
Pace Project No.: 30287865

Sample: 1904057-016B Baffle Up2-201903 **Lab ID: 30287865016** Collected: 03/29/19 15:40 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:
Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**3.67 ± 4.46 (9.17) C:NA T:NA**	pCi/g	04/15/19 07:43	12587-46-1	

Sample: 1904057-017B Tijeras Sed-20190 **Lab ID: 30287865017** Collected: 03/29/19 16:15 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:
Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**15.6 ± 7.26 (10.7) C:NA T:NA**	pCi/g	04/15/19 07:43	12587-46-1	

Sample: 1904057-018B SDC Out-20190329 **Lab ID: 30287865018** Collected: 03/29/19 17:00 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:
Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**6.58 ± 4.75 (8.09) C:NA T:NA**	pCi/g	04/15/19 07:43	12587-46-1	

Sample: 1904057-019B RG-Isleta Dam-201 **Lab ID: 30287865019** Collected: 03/29/19 17:30 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:
Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**11.3 ± 5.42 (6.90) C:NA T:NA**	pCi/g	04/15/19 08:00	12587-46-1	

Sample: 1904057-020B PND42 Sed-2019040 **Lab ID: 30287865020** Collected: 04/01/19 14:00 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:
Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**5.30 ± 3.79 (6.01) C:NA T:NA**	pCi/g	04/15/19 08:00	12587-46-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1904057
Pace Project No.: 30287865

Sample: 1904057-021B PND42 Out-2019040 **Lab ID: 30287865021** Collected: 04/01/19 13:15 Received: 04/04/19 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 9310	**5.22 ± 4.02 (6.22)** **C:NA T:NA**	pCi/g	04/12/19 08:00	12587-46-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1904057
Pace Project No.: 30287865

QC Batch: 337662
QC Batch Method: EPA 9310
Analysis Method: EPA 9310
Analysis Description: 9310 Gross Alpha/Beta
Associated Lab Samples: 30287865021

METHOD BLANK: 1643413
Matrix: Solid
Associated Lab Samples: 30287865021

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.014 ± 0.0621 (0.156) C:NA T:NA	pCi/g	04/12/19 07:52	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1904057
Pace Project No.: 30287865

QC Batch: 337930 Analysis Method: EPA 9310
QC Batch Method: EPA 9310 Analysis Description: 9310 Gross Alpha/Beta
Associated Lab Samples: 30287865001, 30287865002, 30287865003, 30287865004, 30287865005, 30287865006, 30287865007, 30287865008, 30287865009, 30287865010, 30287865011, 30287865012, 30287865013, 30287865014, 30287865015, 30287865016, 30287865017, 30287865018, 30287865019, 30287865020

METHOD BLANK: 1644563 Matrix: Solid
Associated Lab Samples: 30287865001, 30287865002, 30287865003, 30287865004, 30287865005, 30287865006, 30287865007, 30287865008, 30287865009, 30287865010, 30287865011, 30287865012, 30287865013, 30287865014, 30287865015, 30287865016, 30287865017, 30287865018, 30287865019, 30287865020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.092 ± 0.0846 (0.153) C:NA T:NA	pCi/g	04/15/19 07:42	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1904057
Pace Project No.: 30287865

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1904057**

14-May-19

Client: Daniel B. Stephens & Assoc.

Project: Bern Co Sed Load

Sample ID: **MB-44045** SampType: **MBLK** TestCode: **EPA Method 8082A: PCB's**

Client ID: **PBS** Batch ID: **44045** RunNo: **59194**

Prep Date: **4/3/2019** Analysis Date: **4/15/2019** SeqNo: **1993125** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.025								
Aroclor 1221	ND	0.025								
Aroclor 1232	ND	0.025								
Aroclor 1242	ND	0.025								
Aroclor 1248	ND	0.025								
Aroclor 1254	ND	0.025								
Aroclor 1260	ND	0.025								
Surr: Decachlorobiphenyl	0.041		0.06250		66.0	31.9	130			
Surr: Tetrachloro-m-xylene	0.041		0.06250		66.0	21.2	142			

Sample ID: **LCS-44045** SampType: **LCS** TestCode: **EPA Method 8082A: PCB's**

Client ID: **LCSS** Batch ID: **44045** RunNo: **59194**

Prep Date: **4/3/2019** Analysis Date: **4/15/2019** SeqNo: **1993127** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	0.12	0.025	0.1250	0	94.0	35.9	162			
Aroclor 1260	0.091	0.025	0.1250	0	73.0	37.9	147			
Surr: Decachlorobiphenyl	0.043		0.06250		69.2	31.9	130			
Surr: Tetrachloro-m-xylene	0.045		0.06250		72.0	21.2	142			

Sample ID: **1904057-011AMS** SampType: **MS** TestCode: **EPA Method 8082A: PCB's**

Client ID: **West I40DC-201903** Batch ID: **44045** RunNo: **59194**

Prep Date: **4/3/2019** Analysis Date: **4/16/2019** SeqNo: **1993144** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	0.14	0.13	0.1271	0	109	33.5	145			
Aroclor 1260	0.14	0.13	0.1271	0	108	39.1	160			
Surr: Decachlorobiphenyl	0.078		0.06355		122	31.9	130			
Surr: Tetrachloro-m-xylene	0.086		0.06355		136	21.2	142			

Sample ID: **1904057-011AMSD** SampType: **MSD** TestCode: **EPA Method 8082A: PCB's**

Client ID: **West I40DC-201903** Batch ID: **44045** RunNo: **59194**

Prep Date: **4/3/2019** Analysis Date: **4/16/2019** SeqNo: **1993146** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.12	0.1231	0	97.0	33.5	145	200	36.6	
Aroclor 1260	0.14	0.12	0.1231	0	111	39.1	160	0.287	39	
Surr: Decachlorobiphenyl	0.071		0.06155		116	31.9	130	0	0	
Surr: Tetrachloro-m-xylene	0.079		0.06155		128	21.2	142	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1904057**

14-May-19

Client: Daniel B. Stephens & Assoc.

Project: Bern Co Sed Load

Sample ID: **MB-44129** SampType: **MBLK** TestCode: **EPA Method 8082A: PCB's**

Client ID: **PBS** Batch ID: **44129** RunNo: **59194**

Prep Date: **4/4/2019** Analysis Date: **4/16/2019** SeqNo: **1993147** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.025								
Aroclor 1221	ND	0.025								
Aroclor 1232	ND	0.025								
Aroclor 1242	ND	0.025								
Aroclor 1248	ND	0.025								
Aroclor 1254	ND	0.025								
Aroclor 1260	ND	0.025								
Surr: Decachlorobiphenyl	0.037		0.06250		58.8	31.9	130			
Surr: Tetrachloro-m-xylene	0.041		0.06250		66.0	21.2	142			

Sample ID: **LCS-44129** SampType: **LCS** TestCode: **EPA Method 8082A: PCB's**

Client ID: **LCSS** Batch ID: **44129** RunNo: **59194**

Prep Date: **4/4/2019** Analysis Date: **4/16/2019** SeqNo: **1993148** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	0.12	0.025	0.1250	0	99.7	35.9	162			
Aroclor 1260	0.084	0.025	0.1250	0	67.0	37.9	147			
Surr: Decachlorobiphenyl	0.034		0.06250		54.4	31.9	130			
Surr: Tetrachloro-m-xylene	0.039		0.06250		62.0	21.2	142			

Sample ID: **1904057-012AMS** SampType: **MS** TestCode: **EPA Method 8082A: PCB's**

Client ID: **West I40DC Out-201** Batch ID: **44129** RunNo: **59194**

Prep Date: **4/4/2019** Analysis Date: **4/16/2019** SeqNo: **1993151** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	0.081	0.032	0.07957	0	102	33.5	145			
Aroclor 1260	0.088	0.032	0.07957	0	111	39.1	160			
Surr: Decachlorobiphenyl	0.035		0.03978		88.8	31.9	130			
Surr: Tetrachloro-m-xylene	0.033		0.03978		84.0	21.2	142			

Sample ID: **1904057-012AMSD** SampType: **MSD** TestCode: **EPA Method 8082A: PCB's**

Client ID: **West I40DC Out-201** Batch ID: **44129** RunNo: **59194**

Prep Date: **4/4/2019** Analysis Date: **4/16/2019** SeqNo: **1993154** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	0.060	0.030	0.07490	0	80.0	33.5	145	30.5	36.6	
Aroclor 1260	0.060	0.030	0.07490	0	80.6	39.1	160	37.5	39	
Surr: Decachlorobiphenyl	0.032		0.03745		85.6	31.9	130	0	0	
Surr: Tetrachloro-m-xylene	0.032		0.03745		86.4	21.2	142	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1904057**

14-May-19

Client: Daniel B. Stephens & Assoc.

Project: Bern Co Sed Load

Sample ID: **MB-44155** SampType: **MBLK** TestCode: **EPA Method 6010B: SPLP Metals**

Client ID: **PBW** Batch ID: **44155** RunNo: **58945**

Prep Date: **4/5/2019** Analysis Date: **4/6/2019** SeqNo: **1982213** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Nickel	ND	0.010								

Sample ID: **LCS-44155** SampType: **LCS** TestCode: **EPA Method 6010B: SPLP Metals**

Client ID: **LCSW** Batch ID: **44155** RunNo: **58945**

Prep Date: **4/5/2019** Analysis Date: **4/6/2019** SeqNo: **1982214** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	1.0	0.5000	0	105	80	120			
Chromium	ND	5.0	0.5000	0	102	80	120			
Lead	ND	5.0	0.5000	0	104	80	120			
Nickel	0.52	0.010	0.5000	0	104	80	120			

Sample ID: **1904057-001AMS** SampType: **MS** TestCode: **EPA Method 6010B: SPLP Metals**

Client ID: **RG-AngDam-201903** Batch ID: **44155** RunNo: **58945**

Prep Date: **4/5/2019** Analysis Date: **4/6/2019** SeqNo: **1982226** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	1.0	0.5000	0	0	75	125			S
Chromium	ND	5.0	0.5000	0	0	75	125			S
Lead	ND	5.0	0.5000	0	104	75	125			
Nickel	0.53	0.010	0.5000	0	105	75	125			

Sample ID: **1904057-001AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: SPLP Metals**

Client ID: **RG-AngDam-201903** Batch ID: **44155** RunNo: **58945**

Prep Date: **4/5/2019** Analysis Date: **4/6/2019** SeqNo: **1982227** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	1.0	0.5000	0	0	75	125	0	20	S
Chromium	ND	5.0	0.5000	0	0	75	125	0	20	S
Lead	ND	5.0	0.5000	0	102	75	125	0	20	
Nickel	0.52	0.010	0.5000	0	104	75	125	0.898	20	

Sample ID: **MB-44237** SampType: **MBLK** TestCode: **EPA Method 6010B: SPLP Metals**

Client ID: **PBW** Batch ID: **44237** RunNo: **59041**

Prep Date: **4/9/2019** Analysis Date: **4/10/2019** SeqNo: **1987320** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1904057**
14-May-19

Client: Daniel B. Stephens & Assoc.
Project: Bern Co Sed Load

Sample ID: **MB-44237** SampType: **MBLK** TestCode: **EPA Method 6010B: SPLP Metals**
Client ID: **PBW** Batch ID: **44237** RunNo: **59041**
Prep Date: **4/9/2019** Analysis Date: **4/10/2019** SeqNo: **1987320** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

Sample ID: **LCS-44237** SampType: **LCS** TestCode: **EPA Method 6010B: SPLP Metals**
Client ID: **LCSW** Batch ID: **44237** RunNo: **59041**
Prep Date: **4/9/2019** Analysis Date: **4/10/2019** SeqNo: **1987321** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	98.5	80	120			

Sample ID: **1904057-016AMS** SampType: **MS** TestCode: **EPA Method 6010B: SPLP Metals**
Client ID: **Baffle Up2-20190329** Batch ID: **44237** RunNo: **59041**
Prep Date: **4/9/2019** Analysis Date: **4/10/2019** SeqNo: **1987361** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	103	75	125			

Sample ID: **1904057-016AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: SPLP Metals**
Client ID: **Baffle Up2-20190329** Batch ID: **44237** RunNo: **59041**
Prep Date: **4/9/2019** Analysis Date: **4/10/2019** SeqNo: **1987362** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	101	75	125	0	20	

Sample ID: **MB-44155** SampType: **MBLK** TestCode: **EPA Method 6010B: SPLP Metals**
Client ID: **PBW** Batch ID: **44155** RunNo: **59555**
Prep Date: **4/5/2019** Analysis Date: **5/1/2019** SeqNo: **2006739** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.040								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Nickel	ND	0.010								
Zinc	ND	0.020								

Sample ID: **LCS-44155** SampType: **LCS** TestCode: **EPA Method 6010B: SPLP Metals**
Client ID: **LCSW** Batch ID: **44155** RunNo: **59555**
Prep Date: **4/5/2019** Analysis Date: **5/1/2019** SeqNo: **2006740** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1904057**

14-May-19

Client: Daniel B. Stephens & Assoc.

Project: Bern Co Sed Load

Sample ID: **LCS-44155**	SampType: **LCS**	TestCode: **EPA Method 6010B: SPLP Metals**
Client ID: **LCSW**	Batch ID: **44155**	RunNo: **59555**
Prep Date: **4/5/2019**	Analysis Date: **5/1/2019**	SeqNo: **2006740** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.56	0.040	0.5000	0	112	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	100	80	120			
Lead	ND	5.0	0.5000	0	98.2	80	120			
Nickel	0.49	0.010	0.5000	0	98.0	80	120			
Zinc	0.50	0.020	0.5000	0	99.9	80	120			

Sample ID: **MB-44237**	SampType: **MBLK**	TestCode: **EPA Method 6010B: SPLP Metals**
Client ID: **PBW**	Batch ID: **44237**	RunNo: **59555**
Prep Date: **4/9/2019**	Analysis Date: **5/1/2019**	SeqNo: **2006742** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.040								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Nickel	ND	0.010								
Zinc	ND	0.020								

Sample ID: **LCS-44237**	SampType: **LCS**	TestCode: **EPA Method 6010B: SPLP Metals**
Client ID: **LCSW**	Batch ID: **44237**	RunNo: **59555**
Prep Date: **4/9/2019**	Analysis Date: **5/1/2019**	SeqNo: **2006743** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.64	0.040	0.5000	0	128	80	120			S
Cadmium	ND	1.0	0.5000	0	104	80	120			
Chromium	ND	5.0	0.5000	0	102	80	120			
Lead	ND	5.0	0.5000	0	98.9	80	120			
Nickel	0.49	0.010	0.5000	0	98.0	80	120			
Zinc	0.54	0.020	0.5000	0	108	80	120			

Sample ID: **1904057-001AMS**	SampType: **MS**	TestCode: **EPA Method 6010B: SPLP Metals**
Client ID: **RG-AngDam-201903**	Batch ID: **44155**	RunNo: **59555**
Prep Date: **4/5/2019**	Analysis Date: **5/1/2019**	SeqNo: **2006778** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Zinc	0.52	0.020	0.5000	0.03667	96.2	75	125			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1904057**

14-May-19

Client: Daniel B. Stephens & Assoc.

Project: Bern Co Sed Load

Sample ID: **1904057-001AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: SPLP Metals**

Client ID: **RG-AngDam-201903** Batch ID: **44155** RunNo: **59555**

Prep Date: **4/5/2019** Analysis Date: **5/1/2019** SeqNo: **2006779** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Zinc	0.52	0.020	0.5000	0.03667	97.0	75	125	0.810	20	

Sample ID: **1904057-016AMS** SampType: **MS** TestCode: **EPA Method 6010B: SPLP Metals**

Client ID: **Baffle Up2-20190329** Batch ID: **44237** RunNo: **59555**

Prep Date: **4/9/2019** Analysis Date: **5/1/2019** SeqNo: **2006797** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.7	0.040	0.5000	3.355	278	75	125			S
Cadmium	ND	1.0	0.5000	0	0	75	125			S
Chromium	ND	5.0	0.5000	0	0	75	125			S
Nickel	0.49	0.010	0.5000	0	98.4	75	125			
Zinc	0.54	0.020	0.5000	0.05139	97.4	75	125			

Sample ID: **1904057-016AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: SPLP Metals**

Client ID: **Baffle Up2-20190329** Batch ID: **44237** RunNo: **59555**

Prep Date: **4/9/2019** Analysis Date: **5/1/2019** SeqNo: **2006798** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.8	0.040	0.5000	3.355	293	75	125	1.51	20	S
Cadmium	ND	1.0	0.5000	0	0	75	125	0	20	S
Chromium	ND	5.0	0.5000	0	0	75	125	0	20	S
Nickel	0.49	0.010	0.5000	0	98.3	75	125	0.0631	20	
Zinc	0.55	0.020	0.5000	0.05139	100	75	125	2.56	20	

Sample ID: **1904057-001AMS** SampType: **MS** TestCode: **EPA Method 6010B: SPLP Metals**

Client ID: **RG-AngDam-201903** Batch ID: **44155** RunNo: **59555**

Prep Date: **4/5/2019** Analysis Date: **5/1/2019** SeqNo: **2006807** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	8.1	0.20	0.5000	5.037	618	75	125			S

Sample ID: **1904057-001AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: SPLP Metals**

Client ID: **RG-AngDam-201903** Batch ID: **44155** RunNo: **59555**

Prep Date: **4/5/2019** Analysis Date: **5/1/2019** SeqNo: **2006808** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	7.8	0.20	0.5000	5.037	548	75	125	4.42	20	S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: DBS Work Order Number: 1904057 RcptNo: 1

Received By: **Desiree Dominguez** 4/1/2019 3:00:00 PM DD

Completed By: **Desiree Dominguez** 4/1/2019 3:45:02 PM DD

Reviewed By: [signature] 4/2/19

LB: DAD 4/2/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: DAD 4/2/19

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.8	Good	Not Present			
2	5.1	Good	Not Present			

Chain-of-Custody Record

Client: DBSA

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Bern Co Sed Load

Project #: DB19.1073 P3

Project Manager: Chad Johannesen

Sampler: E. Bastien

On Ice: ☒ Yes ☐ No

# of Coolers: 2

Cooler Temp (including CF): 4.8°c 5.1°c

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1904057	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	PCB (SW-846 8082)	SPLP metal (EPA 6010)	Gross Alpha (EPA 900.0)			
3/28/19	10:40	Sed	RG-Ang Dam-20190328	3 glass 4oz jars		-001											X	X	X			
3/28/19	11:55		Venada Out-20190328		None	-002											X	X	X			
3/28/19	13:30		Montoyas Sed-20190328			-003											X	X	X			
3/28/19	14:10		Montoyas Out-20190328			-004											X	X	X			
3/28/19	15:50		Calabacillas Out-20190328			-005											X	X	X			
3/28/19	16:15		Calabacillas Sed-20190328			-006											X	X	X			
3/28/19	16:50		San Antonio Sed-20190328			-007											X	X	X			
3/28	17:05		San Antonio Out-20190328			-008											X	X	X			
3/29	9:00		NDC Sed-20190329			-009											X	X	X			
3/29	9:30		NDC Out-20190329			-010											X	X	X			
3/29	10:45		West 140 DC-20190329			-011																
3/29	11:40		West 140 DC Out-20190329			-012																

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
4/1/19	15:00	Elizabeth Bastien	HEB	COO	4/1/19	15:00
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks: SPLP metals by 6010 of 4/2/19

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: DBSA

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Bern Co Sed Load

Project #: DB19.1073 P3

Project Manager: Chad Johannesen

Sampler: E Bastian

On Ice: ☒ Yes ☐ No

# of Coolers: 2

Cooler Temp(including CF): 4.8°c 5.1°c

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1904057
3/29/19	13:15	Sed	SanchezFarmIn-20190329	3-4oz glass	None	-013
	13:40		SanchezFarmIN2-20190329			-014
	14:30		SanchezFarmOut-20190329			-015
	15:40		BaffleUp2-20190329			-016
	16:15		TijerasSed-20190329			-017
	17:00		SDCOut-20190329			-018
	17:30		RG-IsletaDam-20190329			-019
4/1/19	14:00		PND42Sed-20190401			-020
4/1/19	13:15		PND42Out-20190401			-021

EB 4/1/19

Analysis Request

BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	PCB (Method SW-846 8082)	SPLP metals (EPA 6020A)	Gross Alpha (EPA 900.0)			
										X	X	X			
										X	X	X			
										X	X	X			
										X	X	X			
										X	X	X			
										X	X	X			
										X	X	X			
										X	X	X			
										X	X	X			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
4/1/19	15:00				4/1/19	15:00
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Table 2. Required Volume, Containers, Preservatives, and Holding Times

Analyte	Method	Volume and Container	Preservative	Holding Time [a]
PCBs	SW-846 8082	125-mL wide-mouth glass jar	Store at 4 ± 2°C	14 days
SPLP metals [b]	EPA 6020A	4-oz glass jar	Store at 4 ± 2°C	6 months
Gross alpha	EPA 900.0	4-oz glass jar	Store at 4 ± 2°C	180 days

[a] Holding time is measured from the time of sample collection to the time of sample extraction and analysis
[b] Aluminum, cadmium, chromium, nickel, lead, and zinc
PCBs = Polychlorinated biphenyls
mL = Milliliter(s)
SPLP = Synthetic precipitation leaching procedure
EPA = U.S. Environmental Protection Agency
oz = Ounce(s)

Attachment 2

Wet and Dry Season Monitoring Results

Discharge Monitoring Reports (DMRs)

Waste Load Allocation Results

Cooperative Monitoring Compliance (CMC)
Waste Load Allocation (WLA) Calculation
FY 2017 - Wet & Dry Season Wet Weather Sampling
FY 2018 - Wet Season Wet Weather Sampling
FY 2019 - Dry Season Wet Weather Sampling
Date: 6/20/2019

Includes Edits From NMED 2/1/17 Meeting

References:

* NPDES General Permit No. NMR04A000, Dec. 22, 2014 with minor Permit modification on April 9, 2015
  WLA is defined in Part I.C.2.b.(i) - Discharges to Impaired Water Bodies with an Approved TMDL, p. 15 of Part I
  and in Appendix B of the Permit. Using Waste Load Allocation (WLA) as it related to stormwater.
* US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010
  Appendix F - Jurisdiction Area Approach
  This report defines the flow duration curves - which provide a "technical framework for identifying 'daily loads' in TMDL development" (p. 35).
  For Rio Grande Isleta Pueblo to Alameda Bridge - NMED used USGS gage 08330000 (Rio Grande at Albuquerque (Central)) - see Table D.2
  For Rio Grande Alameda Bridge to Angostura - NMED used USGS gage 0829928 (Rio Grande near Alameda) - see Table D.1
  The TMDL is calculated by multiplying the applicable WQ standard (Pueblo Geometric Mean x flow x conversions).
  WQ data not used in calc of TMDL - used in determining NMED integrated list
* AMAFCA Example E. coli loading calculation, July 6, 2016
* Nov. 4, 2015 E-mail from Sarah Holcomb, NMED SWQB to Middle Rio Grande MS4s with table of Load
  Allocations NMED calculated based on geographic area. This has an aggregate/combined WLA assigned for the
  current 12 CMC members. From 2/1/17 meeting - the flow regime in Sarah's e-mail needs to be modified to match
  the 2010 TMDL flow regimes for the Angostura to Alameda segment.
* Cooperative Monitoring Plan – MS4 Watershed-Based Permit, April 25, 2016
* Feb. 16, 2017 Phone call with Sarah Holcomb, Wayno Urbanos, and Heidi Henderson regarding the calculation
of the percent of total E. coli loading applicable to the MS4s.
* March 2, 2017 e-mail from Sarah Holcomb stating agreement with approach to estimating the CMC's WLA contribution.
* April 18, 2017 e-mail from Nelly Smith, EPA Region 6 stating agreement with approach to estimating the CMC's WLA contribution.

FY 2017 - Wet Season Wet Weather Sampling for CMC - three qualifying event samples obtained:

August 10-11, 2016
September 12-13, 2016
September 21-22, 2016

FY 2017 - Dry Season Wet Weather Sampling for CMC - one qualifying event sample obtained:

November 21-22, 2016

FY 2018 - Wet Season Wet Weather Sampling for CMC - two qualifying events sample obtained:

July 27-28, 2017
September 27-28, 2017

FY 2019 - Dry Season Wet Weather Sampling for CMC - one qualifying event sample obtained (last required event for the 2014-2019 Permit Term):

March 11-13, 2019

Nov. 4, 2015 E-mail from Sarah Holcomb, NMED SWQB to Middle Rio Grande MS4s with table of Waste Load Allocations NMED calculated based on geographic area.

Below, please find the Waste Load Allocations NMED has calculated based on geographic area under the NPDES Watershed Based MS4 Permit for the Middle Rio Grande.
The aggregate/combined WLA assigned to the permittees working to sample cooperatively in accordance with the permit applies to:

- Town of Bernalillo
- Village of Los Ranchos
- ESCAFCA
- SSCAFCA
- City of Albuquerque
- Village of Corrales
- City of Rio Rancho
- AMAFCA
- NMDOT
- Sandoval County
- Bernalillo County
- UNM

Kirtland AFB, Sandia Labs/DOE and EXPO NM all indicated in their NOIs that they would be sampling individually and their individual WLAs are indicated below.
Please incorporate these numbers into your SWMPs and monitoring plans, as appropriate. If you have any questions or need more information, please let me know.

Alameda to Isleta	High	Moist	Mid	Dry	Low	
	(>3,360 cfs)	(929-3,360 cfs)	(664-929 cfs)	(319-664 cfs)	(0-319 cfs)	**Flows from Figure 4.3 2010 TMDL Report, USGS 08330000 Rio Grande at Abq (Central)**
Kirtland AFB	1.20E+11	3.01E+10	2.03E+10	7.46E+09	1.74E+09	
Sandia Labs/DOE	2.08E+09	5.20E+08	3.50E+08	1.29E+08	2.99E+07	
Combined WLA for Cooperative	2.51E+11	6.29E+10	4.22E+10	1.57E+10	3.42E+09	
Total WLA	3.73E+11	9.35E+10	6.29E+10	2.33E+10	5.19E+09	
CMC % of WLA	67%	67%	67%	67%	66%	

Angostura to Alameda	High	Moist	Mid	Dry	Low	**Flows from Figure 4.4 2010 TMDL Report, USGS 08329928 Rio Grande near Alameda**
	~~(>3360 cfs)~~	~~(929-3360 cfs)~~	~~(664-929 cfs)~~	~~(319-664 cfs)~~	~~(0-319 cfs)~~	**Not used - from original e-mail - corrected on 2/1/17 with direction from Sarah Holcomb**
	(>3,670 cfs)	(922-3,670 cfs)	(647-922 cfs)	(359-647 cfs)	(0-359 cfs)	**From 2010 TMDL report - Figure 4.4, page 35**
EXPO NM	6.23E+08	1.56E+08	1.05E+08	3.86E+07	8.98E+06	
Combined WLA for Cooperative	3.14E+11	9.09E+10	No Value	3.24E+10	1.68E+10	
Total WLA	3.15E+11	9.11E+10		3.25E+10	1.68E+10	
CMC % of WLA	99.80%	99.83%	No Value	99.88%	99.95%	

Note: BHI added the CMC % of WLA row

Table Author:
Sarah Holcomb
Industrial and Stormwater Team Supervisor
Safety Liaison & Chemical Hygiene Officer
NMED Surface Water Quality Bureau
PO Box 5469, Santa Fe, NM 87504
(505) 827-2798 (Santa Fe, Monday-Thursday)
(505) 231-2608 (Albuquerque, Friday)

Note - BHI -flow regime values listed above are from 2010 TMDL NMED report and are for the USGS 08330000 Rio Grande at Albuquerque, NM gage
There are slightly different values for the flow regimes for the southern segment (if using USGS 08329928 Rio Grande near Alameda, NM)
Refer to Tables 4.3 and 4.4 in 2010 TMDL NMED report.
Per discussion with Sarah Holcomb at NMED on 2/1/2017 - was given direction to use the 2010 TMDL report flow rates.

Tables Below are from 2010 TMDL Report - Tables 4.11 and 4.12 - % of Total TMDL
MS4 Values - updated using the E-mail Table above from Sarah Holcomb, NMED

Isleta to Alameda	Flow Conditions									
	CFU/100 ml	%	CFU/100 ml	%	CFU/100 ml	%	CFU/100 ml	%	CFU/100 ml	%
	High Conc.	High	Moist Conc.	Moist	Mid Conc.	Mid	Dry Conc.	Dry	Low Conc.	Low
TMDL	**5.27E+12**		**1.65E+12**		**9.03E+11**		**5.77E+11**		**1.90E+11**	
ABCWUA	1.35E+11	2.56%	1.35E+11	8.2%	1.35E+11	15.0%	1.35E+11	23.4%	1.35E+11	70.7%
Sandia Peak Ski Co.	1.34E+07	0.00%	1.34E+07	0.0%	1.34E+07	0.0%	1.34E+07	0.0%	1.34E+07	0.0%
(TMDL Report -NMS00101-old)	3.36E+11	see below	8.41E+10	see below	5.66E+10	see below	2.09E+10	see below	4.67E+09	see below
(TMDL Report - NMR04000-old)	3.73E+10	see below	9.35E+09	see below	6.29E+09	see below	2.32E+09	see below	5.19E+08	see below
CMC WLA	2.51E+11	4.76%	6.29E+10	3.8%	4.22E+10	4.7%	1.57E+10	2.7%	3.42E+09	1.8%
Remaining MS4 WLA	1.22E+11	2.32%	3.06E+10	1.9%	2.07E+10	2.3%	7.59E+09	1.3%	1.77E+09	0.9%
Total WLA	5.08E+11	--	2.29E+11	--	1.98E+11	--	1.58E+11	--	1.40E+11	--
Load Allocation (Natural Background)	3.36E+12	63.78%	8.41E+11	51.1%	5.66E+11	62.7%	2.09E+11	36.2%	4.86E+10	25.5%
Margin of Safety	1.40E+12	26.58%	5.77E+11	35.0%	1.38E+11	15.3%	2.10E+11	36.4%	1.89E+09	1.0%
	Check %	100%	Check %	100%	Check %	100%	Check %	100%	Check %	100%

Per discussion on 2/16/17 with NMED - NMED provided agreement to use the percentage of CMC WLA to Total TMDL as an estimate of E. coli loading attributable to the CMC MS4s.
After review and consideration of NMED's input, agreed that the percentage of the CMC WLA to the Total TMDL minus the MOS was a reasonable way to estimate the
E. coli loading attributable to the CMC MS4s given the total E. coli loading in the Rio Grande.

Isleta to Alameda					
Flow Condition	High	Moist	Mid	Dry	Low
% of E. coli Loading in Rio Grande Estimated to be Attributed to the CMC CMC WLA divided by (TMDL minus MOS)	6.5%	5.9%	5.5%	4.3%	1.8%

Percentage Comparisons (following calculations in 2010 TMDL Appendix F - this does not include the point sources in the comparison):

CMC MS4 WLA compared to Natural Background	6.7%	6.7%	6.7%	6.8%	6.4%
Remaining MS4 compared to Natural Background	3.3%	3.3%	3.3%	3.3%	3.3%
Total	10.0%	10.0%	10.0%	10.0%	9.7%

As defined in the 2010 TMDL, App. F, Jurisdictional Area Approach - MS4s equal to the 10% in the TMDL. This percentage only relates to the natural background (loading allocation), not the total loading.

Alameda to Angostura	Flow Conditions									
	CFU/100 ml	%	CFU/100 ml	%	CFU/100 ml	%	CFU/100 ml	%	CFU/100 ml	%
	High Conc.	High	Moist Conc.	Moist	Mid Conc.	Mid	Dry Conc.	Dry	Low Conc.	Low
TMDL	**5.54E+12**		**1.61E+12**		--	--	**5.83E+11**		**2.94E+11**	
Town of Bernalillo WWTP	1.43E+09	0.0%	1.43E+09	0.1%	--	--	1.43E+09	0.2%	1.43E+09	0.5%
CORR - No.2	9.80E+09	0.2%	9.80E+09	0.6%	--	--	9.80E+09	1.7%	9.80E+09	3.3%
CORR - No.3	1.51E+09	0.0%	1.51E+09	0.1%	--	--	1.51E+09	0.3%	1.51E+09	0.5%
(TMDL Report -NMS00101-old)	5.25E+10	see below	1.52E+10	see below	--	--	5.43E+09	see below	2.80E+09	see below
(TMDL Report - NMR04000-old)	2.62E+11	see below	7.59E+10	see below	--	--	2.71E+10	see below	1.40E+10	see below
CMC WLA	3.14E+11	5.7%	9.09E+10	5.6%	--	--	3.24E+10	5.6%	1.68E+10	5.7%
Remaining MS4 WLA	6.23E+08	0.0%	1.56E+08	0.0%	--	--	3.86E+07	0.0%	8.98E+06	0.0%
Total WLA	3.27E+11	--	1.04E+11	--	--	--	4.52E+10	--	2.96E+10	--
Load Allocation (Natural Background)	4.93E+12	89.1%	1.43E+12	88.6%	--	--	5.10E+11	87.5%	2.63E+11	89.5%
Margin of Safety	2.77E+11	5.0%	8.06E+10	5.0%	--	--	2.92E+10	5.0%	2.96E+09	1.0%
	Check %	100%	Check %	100%	Check %	0%	Check %	100%	Check %	100%

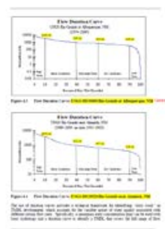
Per discussion on 2/16/17 with NMED - NMED provided agreement to use the percentage of CMC WLA to Total TMDL as an estimate of E. coli loading attributable to the CMC MS4s.
After review and consideration of NMED's input, decided that the percentage of the CMC WLA to the Total TMDL minus the MOS was a reasonable way to estimate the
E. coli loading attributable to the CMC MS4s given the total E. coli loading in the Rio Grande.

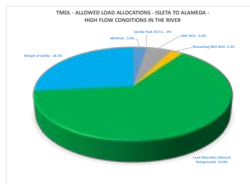
Alameda to Angostura					
Flow Condition	High	Moist	Mid	Dry	Low
% of E. coli Loading in Rio Grande Estimated to be Attributed to the CMC CMC WLA divided by (TMDL minus MOS)	6.0%	5.9%	--	5.9%	5.8%

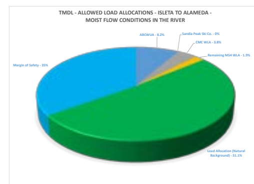
Percentage Comparisons (following calculations in 2010 TMDL Appendix F):

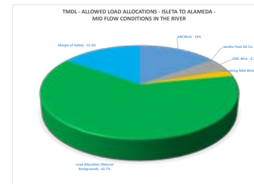
CMC MS4 WLA compared to Natural Background	6%	6%		6%	6%
Remaining MS4 compared to Natural Background	0%	0%		0%	0%
Total	6%	6%		6%	6%

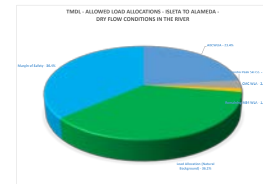
As defined in the 2010 TMDL, App. F, Jurisdictional Area Approach - MS4 equal to the 6% in the TMDL. This percentage only relates to the natural background (loading allocation), not the total loading.

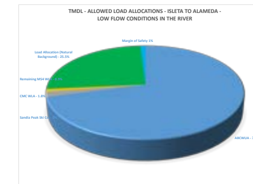


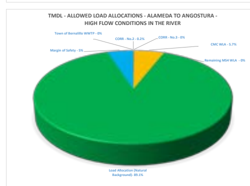


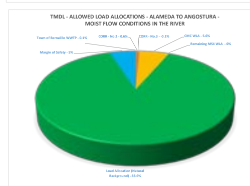


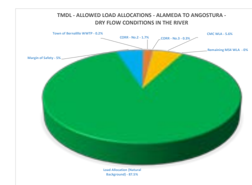


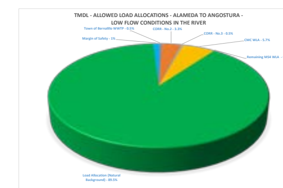












Compliance Monitoring Cooperative (CMC)
Summary of E. coli Loading Calculation Compared to Waste Load Allocation (WLA)

CMC Sample #	FY	Wet or Dry Season	Storm Event Date	Stream Segment	Stream Name / Related USGS Gage	Total E. coli Loading in River Exceeds TMDL for River?	Estimated CMC E. coli Loading (CFU/day) for Each Segment	Daily Mean Flow (cfs)	Flow Conditions	WLA for CMC Based on Flow Conditions & Stream Segment (CFU/day)	WLA - Potential Exceedance or Acceptable	CMC - Delta - E. coli Loading Minus WLA (CFU/day)
1	FY 2017	Wet Season	8/10/2016	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Yes	8.32E+11	639	Dry	3.24E+10	WLA Potential Exceedance	8.00E+11
			8/10/2016	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	2.34E+11	703	Mid	4.22E+10	WLA Potential Exceedance	1.92E+11
2	FY 2017	Wet Season	9/12/2016	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Yes	4.67E+11	435	Dry	3.24E+10	WLA Potential Exceedance	4.35E+11
			9/12/2016	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	1.02E+11	467	Dry	1.57E+10	WLA Potential Exceedance	8.62E+10
3	FY 2017	Wet Season	9/21/2016	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Yes	1.29E+11	350	Low	1.68E+10	WLA Potential Exceedance	1.13E+11
			9/21/2016	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	1.22E+10	251	Low	3.42E+09	WLA Potential Exceedance	8.74E+09
4	FY 2017	Dry Season	11/21/2016	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	No	--	710	Mid	No Value	WLA Acceptable	--
			11/21/2016	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	1.68E+12	881	Mid	4.22E+10	WLA Potential Exceedance	1.63E+12
5	FY 2018	Wet Season	7/27/2017	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	No	2.50E+10	545	Dry	3.24E+10	WLA Acceptable	--
			7/27/2017	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	8.63E+10	470	Dry	1.57E+10	WLA Potential Exceedance	7.06E+10
6	FY 2018	Wet Season	9/27/2017	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Yes	7.34E+12	983	Moist	9.09E+10	WLA Potential Exceedance	7.25E+12
			9/27/2017	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	2.18E+12	1,190	Moist	6.29E+10	WLA Potential Exceedance	2.11E+12
7	FY 2019	Dry Season	3/13/2019	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Yes	8.49E+11	1,188	Moist	9.09E+10	WLA Potential Exceedance	7.59E+11
			3/13/2019	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	2.52E+11	1,202	Moist	6.29E+10	WLA Potential Exceedance	1.89E+11

Compliance Monitoring Cooperative (CMC)
E. coli Loading Calculation Compared to Waste Load Allocation (WLA)
FY 2017 - Wet Season Wet Weather Sampling

Date: 2/22/17

Storm Event Date: 8/10/2016

Table 1
Stormwater Sample Analysis Results for E. coli:

Monitoring Location	E. coli Concentration (CFU/100 mL)[3]	Date & Time of Sample	Date & Time Sample Delivered to HEAL
Rio Grande North	35.9	8/10/2016 12:50 PM	8/10/2016 1:50 PM
Rio Grande South	1,106	8/11/2016 11:30 AM	8/11/2016 1:00 PM

Notes:
1. Hall Environmental Analysis Laboratory (HEAL) lab report for Rio Grande North: Order number 1608623
2. HEAL lab report for Rio Grande South: Order number 1608678
3. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method for units of MPN/100 mL, lab report uses units CFU/100 mL, for this analysis it was assumed that the two units are equivalent based on Feb. 26, 2014 NMED Memo "Triennial Review - Most probable number (MPN)/colony forming units (CFU) enumeration methods and probable standards reporting revision" and discussions with NMED, Feb. 2017.

Table 2
Rio Grande Flow:

Monitoring Location	USGS Gage & Location	Daily Mean Flow (cfs) 8/10/16	Daily Mean Flow (cfs) 8/11/16	Calculated Mean Flow (cfs) from 8/10/16 11:30 AM to 8/11/16 11:30 AM	Maximum Flow Used for this Analysis (cfs)
Rio Grande North	08329928 - Rio Grande near Alameda	639	500	593	639
Rio Grande South	0833000 - Rio Grande at Albuquerque, NM (Central)	669	525	703	703

Notes:
1. See 'USGS Daily Mean Discharge' worksheet for data obtained from USGS website on 12/14/16.
2. Since this storm spans 2 days - BHI also checked mean flow by calculating mean flow from 11:30 AM on 8/10/16 to 11:30 AM on 8/11/16.

Table 3
Determination of Storm Event Flow Conditions - As Defined in the WSB MS4 Permit and NMED TMDL Report:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions (from WSB MS4 Permit Appendix B) & NMED 2010 TMDL Report				
		High (>3,670 cfs)	Moist (922-3,670 cfs)	Mid (647-922 cfs)	Dry (359-647 cfs)	Low (0-359 cfs)
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--	--	--	Storm Event Flow Condition	--
		High (>3,360 cfs)	**Moist (929-3,360 cfs)**	**Mid (664-929 cfs)**	**Dry (319-664 cfs)**	**Low (0-319 cfs)**
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	--	--	Storm Event Flow Condition	--	--
		High	**Moist**	**Mid**	**Dry**	**Low**

Notes:
1. Flow ranges for flow conditions are not listed in Appendix B of WSB MS4 Permit, the flow ranges are from NMED, Sarah Holcomb, Nov. 2016 e-mail (see "WLAs From NMED" worksheet) and 2/1/17 NMED meeting, which are from the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, Figures 4.3 and 4.4.

Table 4
Calculate E. coli Loading for Rio Grande North and Rio Grande South and Delta in E. coli Loading Between North and South Locations:

Monitoring Location	E. coli Concentration (CFU/100 mL)	Daily Mean Flow (cfs)	E. coli Loading (CFU/day)
Rio Grande North	35.9	639	5.61E+11
Rio Grande South	1,106	703	1.90E+13
Delta in E. coli Loading Between North and South Locations			1.85E+13

* If loading is negative, the delta will default to zero.

Notes:
1. Used maximum in Table 2 for the Daily Mean Flow in the loading calculation. E. coli loading instream looked at on a daily basis by NMED and EPA.

E. Coli Loading Calculation:

$$E.\,Coli\ Concentration\ \left(\frac{CFU}{100mL}\right) x\ 28{,}316.85\ \left(\frac{mL}{ft^3}\right) x\ \text{Mean Daily Flow}\ \left(\frac{ft^3}{sec}\right) x\ 3{,}600\ \left(\frac{sec}{hr}\right) x\ 24\ \left(\frac{hr}{day}\right) = \text{E. coli Loading}\ \left(\frac{CFU}{day}\right)$$

Not all E. coli sampled in the Rio Grande is attributable to MS4 activities. This storm event E. coli loading must be reduced to only represent the estimated CMC MS4 E. coli loading so that a comparison can be made to the MS4 Waste Load Allocations (WLAs).

The NMED presented a Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010. This approach in 2010 has the MS4s divided into Phase I and Phase II permittees, which no longer applies. NMED provided an e-mail that applies to the current CMC MS4 members and remaining MS4 members.

The CMC monitoring scheme dis not have an interim E. coli sample at the Alameda Bridge during collection of this sample, which is the division of the two stream segments. Therefore, to determine the E. coli loading for the northern and southern stream segments, ratios need to be applied to the E. coli loading. The areas used in NMED's Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010 were used to determine this ratio. The total contributing watershed area for the Alameda to Angostura segment = 1,612.72 sq. mi. with the total contributing watershed area = 2084.15 sq. mi. From the 2/1/17 meeting with NMED, the WLA determination is not an additive determination - the WLA considers each stream segment separately - so even though the north segment flows into the south segment, the WLA, and therefore the E. coli loading, looks at each segment independently.

$\frac{1612.72\ sq.mi.}{2084.15\ sq.mi.}$ = 0.77 or 77% for the north segment - Alameda to Angostura

1 -- 0.77 = 0.23 or 23% for the south segment - Isleta to Alameda

An estimation of the E. coli loading attributable to the CMC is needed to allow comparison with the WLA values. This approach uses percentages that calculate a percentage of the CMC WLA value divided by the TMDL minus the MOS. This percentage represents an estimate of the percent of the CMC E. coli loading to all of the E. coli contributors (point sources, MS4s, and natural background). This percentage allows a reasonable estimation of the percent of the E. coli loading that is attributable to the CMC MS4s. Since our discussion, we removed the MOS from our percentage calculation.

Using the above approach, the CMC then has an E. coli loading value to compare to the applicable WLA values, for a given stream segment and flow regime.

Table 5
Calculate E. coli Loading Per Stream Segment Reach and Compare to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Contributing Area Ratio for Each Segment	E. coli Loading (CFU/day) for Each Segment	Total TMDL for Segment	TMDL Exceedance?
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	0.77	1.42E+13	5.83E+11	TMDL Exceeded
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	0.23	4.25E+12	9.03E+11	TMDL Exceeded

1. Compares the E. coli loading to the TMDL - the E. coli loading represents all of the E. coli sources and not just the CMC MS4. The TMDL could be from any source and this analysis cannot distinguish between sources.

Table 6
Calculate CMC MS4 E. coli Loading Per Stream Segment Reach - apply Percent based on CMC WLA compared to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions	Percent of E. coli Associated with CMC Members	Total CMC E. coli Loading (CFU/day) for Each Segment
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Dry	5.9%	8.32E+11
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Mid	5.5%	2.34E+11

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for estimated percent of E. coli associated with the CMC compared to total TMDL minus the MOS.
2. The CMC measured a total E. coli loading in the Rio Grande - this is all of the E. coli, regardless of source - so the CMC WLA compared to the TMDL minus the Margin of Safety was used as a way to estimate what percent of the total E. coli could be attributed to the CMC. Discussed this approach with NMED on 2/16/17.

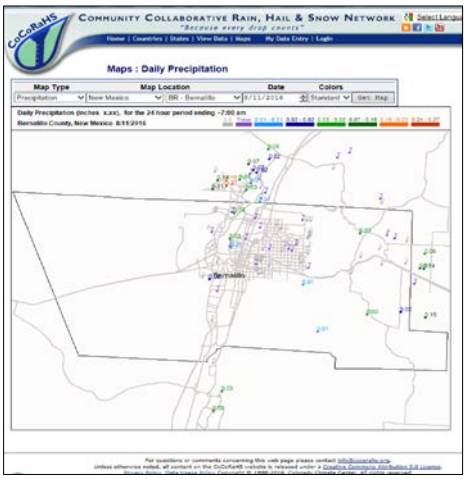
Table 7
Compare Storm Event E. coli Loading to WLA for CMC:

Stream Segment	Stream Name / Related USGS Gage	CMC E. coli Loading (CFU/day) for Each Segment	Flow Conditions	WLA for CMC for Flow Conditions	WLA - Potential Exceedance or Acceptable
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	8.32E+11	Dry	3.24E+10	WLA Potential Exceedance
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	2.34E+11	Mid	4.22E+10	WLA Potential Exceedance

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for CMC for Storm Event.
2. Flow Conditions were defined in Table 3 "Determination of Storm Event Flow Conditions" above.

US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, page 40:

Rainfall Data - CoCoRaHS.org



It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards. Since flows vary throughout the year in these systems the target load will vary based on the changing flow. Management of the load to improve stream water quality and meet water quality criteria should be a goal to be attained. Meeting the calculated TMDL may be a difficult objective.

Compliance Monitoring Cooperative (CMC)
E. coli Loading Calculation Compared to Waste Load Allocation (WLA)
FY 2017 - Wet Season Wet Weather Sampling

Date: 2/22/17

Storm Event Date: 9/12/2016

Table 1
Stormwater Sample Analysis Results for E. coli:

Monitoring Location	E. coli Concentration (CFU/100 mL)[1]	Date & Time of Sample	Date & Time Sample Delivered to HEAL
Rio Grande North	55.6	9/12/2016 11:00 AM	9/12/2016 1:10 PM
Rio Grande South	959	9/13/2016 7:15 AM	9/13/2016 10:30 AM

Notes:
1. Hall Environmental Analysis Laboratory (HEAL) lab report for Rio Grande North: Order number 1609527
2. HEAL lab report for Rio Grande South: Order number 1609609
3. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method for units of MPN/100 mL, lab report uses units CFU/100 mL, for this analysis assuming two units are equivalent based on Feb. 26, 2014 NMED Memo "Triennial Review - Most probable number (MPN)/colony forming units (CFU) enumeration methods and probable standards reporting revision" and discussions with NMED. Feb. 2017.

Table 2
Rio Grande Flow:

Monitoring Location	USGS Gage & Location	Daily Mean Flow (cfs) 9/12/16	Daily Mean Flow (cfs) 9/13/16	Calculated Mean Flow (cfs) from 9/12/16 11:45 AM to 9/13/16 11:45 AM	Maximum Flow Used for this Analysis (cfs)
Rio Grande North	08329928 - Rio Grande near Alameda	435	380	409	435
Rio Grande South	0813000 - Rio Grande at Albuquerque, NM (Central)	467	354	381	467

Notes:
1. See "USGS Daily Mean Discharge' worksheet for data obtained from USGS website on 12/14/16.
2. Since this storm spans 2 days - BHI checked mean flow by calculating mean flow from the time of collection at 11:45 AM on 9/12/16 to 11:45 AM on 9/13/16.

Table 3
Determination of Storm Event Flow Conditions - As Defined in the WSB MS4 Permit and NMED TMDL Report:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions (from WSB MS4 Permit Appendix B) & NMED 2010 TMDL Report				
		High (>3,670 cfs)	Moist (922-3,670 cfs)	Mid (647-922 cfs)	Dry (359-647 cfs)	Low (0-359 cfs)
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	..	..	..	Storm Event Flow Condition	..
		High (>3,360 cfs)	**Moist (929-3,360 cfs)**	**Mid (664-929 cfs)**	**Dry (319-664 cfs)**	**Low (0-319 cfs)**
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0813000 - Rio Grande at Albuquerque, NM (Central)	..	..	..	Storm Event Flow Condition	..
		High	**Moist**	**Mid**	**Dry**	**Low**

Notes:
1. Flow ranges for flow conditions are not listed in Appendix B of WSB MS4 Permit, the flow ranges are from NMED, Sarah Holcomb, Nov. 2016 e-mail (see "WLAs From NMED" worksheet) and 2/1/17 NMED meeting, which are from the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, Figures 4.3 and 4.4.

Table 4
Calculate E. coli Loading for Rio Grande North and Rio Grande South and Delta in E. coli Loading Between North and South Locations:

Monitoring Location	E. coli Concentration (CFU/100 mL)	Daily Mean Flow (cfs)	E. coli Loading (CFU/day)
Rio Grande North	55.6	435	5.92E+11
Rio Grande South	959	467	1.10E+13
Delta in E. coli loading Between North and South Locations			1.04E+13

* If loading is negative, the delta will default to zero.

Notes:
1. Used maximum in Table 2 for the Daily Mean Flow in the loading calculation. E. coli loading instream looked at on a daily basis by NMED and EPA.

E. Coli Loading Calculation:

$$E.\,Coli\ Concentration\ \left(\frac{CFU}{100mL}\right) x\ 28{,}316.85\ \left(\frac{mL}{ft^3}\right) x\ \text{Mean Daily Flow}\ \left(\frac{ft^3}{sec}\right) x\ 3{,}600\ \left(\frac{sec}{hr}\right) x\ 24\ \left(\frac{hr}{day}\right) = \text{E. coli Loading}\ \left(\frac{CFU}{day}\right)$$

Not all E. coli sampled in the Rio Grande is attributable to MS4 activities. This storm event E. coli loading must be reduced to only represent the estimated CMC MS4 E. coli loading so that a comparison can be made to the MS4 Waste Load Allocations (WLAs).

The NMED presented a Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010. This approach in 2010 has the MS4s divided into Phase I and Phase II permittees, which no longer applies. NMED provided an e-mail that applies to the current CMC MS4 members and remaining MS4 members.

The CMC monitoring scheme dis not have an interim E. coli sample at the Alameda Bridge during collection of this sample, which is the division of the two stream segments. Therefore, to determine the E. coli loading for the northern and southern stream segments, ratios need to be applied to the E. coli loading. The areas used in NMED's Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010 were used to determine this ratio. The total contributing watershed area for the Alameda to Angostura segment = 1,612.72 sq. mi. with the total contributing watershed area = 2084.15 sq. mi. From the 2/1/17 meeting with NMED, the WLA determination is not an additive determination - the WLA considers each stream segment separately - so even though the north segment flows into the south segment, the WLA, and therefore the E. coli loading, looks at each segment independently.

$\frac{1612.72\ sq\,mi}{2084.15\ sq\,mi} = 0.77$ or 77% for the north segment - Alameda to Angostura

$1 - 0.77 = 0.23$ or 23% for the south segment - Isleta to Alameda

An estimation of the E. coli loading attributable to the CMC is needed to allow comparison with the WLA values. This approach uses percentages that calculate a percentage of the CMC WLA value divided by the TMDL minus the MOS. This percentage represents an estimate of the percent of the CMC E. coli loading to all of the E. coli contributors (point sources, MS4s, and natural background). This percentage allows a reasonable estimation of the percent of the E. coli loading that is attributable to the CMC MS4s. Since our discussion, we removed the MOS from our percentage calculation.

Using the above approach, the CMC then has an E. coli loading value to compare to the applicable WLA values, for a given stream segment and flow regime.

Table 5
Calculate E. coli Loading Per Stream Segment Reach and Compare to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Contributing Area Ratio for Each Segment	E. coli Loading (CFU/day) for Each Segment	Total TMDL for Segment	TMDL Exceedance?
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	0.77	7.98E+12	5.83E+11	TMDL Exceeded
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0813000 - Rio Grande at Albuquerque, NM (Central)	0.23	2.38E+12	5.77E+11	TMDL Exceeded

1. Compares the E. coli loading to the TMDL - the E. coli loading represents all of the E. coli sources and not just the CMC MS4. The TMDL could be from any source and this analysis cannot distinguish between sources.

Table 6
Calculate CMC MS4 E. coli Loading Per Stream Segment Reach - apply % based on WLA compared to total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions	Percent of E. coli Associated with MS4s	Total MS4 E. coli Loading (CFU/day) for Each Segment
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Dry	5.9%	4.67E+11
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0813000 - Rio Grande at Albuquerque, NM (Central)	Dry	4.3%	1.02E+11

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for estimated percent of E. coli associated with the CMC compared to total TMDL minus the MOS.
2. The CMC measured a total E. coli loading in the Rio Grande - this is all of the E. coli, regardless of source - so the CMC WLA compared to the TMDL minus the Margin of Safety was used as a way to estimate what percent of the total E. coli could be attributed to the CMC. Discussed this approach with NMED on 2/14/17.

Table 7
Compare Storm Event E. coli Loading to WLA for CMC:

Stream Segment	Stream Name / Related USGS Gage	CMC E. coli Loading (CFU/day) for Each Segment	Flow Conditions	WLA for CMC for Flow Conditions	WLA - Potential Exceedance or Acceptable
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	4.67E+11	Dry	3.24E+10	WLA Potential Exceedance
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0813000 - Rio Grande at Albuquerque, NM (Central)	1.02E+11	Dry	1.57E+10	WLA Potential Exceedance

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for CMC for Storm Event.
2. Flow Conditions were defined in Table 3 "Determination of Storm Event Flow Conditions" above.

US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, page 40:

It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards. Since flows vary throughout the year in these systems the target load will vary based on the changing flow. Management of the load to improve stream water quality and meet water quality criteria should be a goal to be attained. Meeting the calculated TMDL may be a difficult objective.

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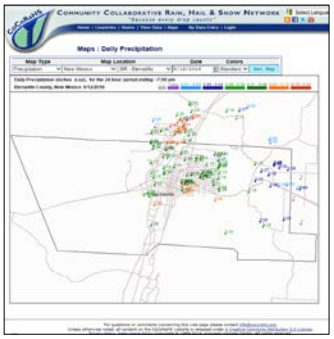

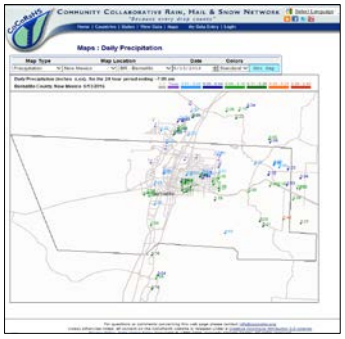

Compliance Monitoring Cooperative (CMC)
E. coli Loading Calculation Compared to Waste Load Allocation (WLA)
FY 2017 - Wet Season Wet Weather Sampling

Date: 2/22/17

Storm Event Date: 9/21/2016

Table 1
Stormwater Sample Analysis Results for E. coli:

Monitoring Location	E. coli Concentration (CFU/100 mL)[3]	Date & Time of Sample	Date & Time Sample Delivered to HEAL
Rio Grande North	31.1	9/21/2016 12:15 PM	9/21/2016 2:00 PM
Rio Grande South	517	9/22/2016 11:00 AM	9/22/2016 3:50 PM

Notes:
1. Hall Environmental Analysis Laboratory (HEAL) lab report for Rio Grande North: Order number 1609894
2. HEAL lab report for Rio Grande South: Order number 1609C98
3. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method for units of MPN/100 mL, lab report uses units CFU/100 mL, for this analysis assuming two units are equivalent based on Feb. 26, 2014 NMED Memo "Triennial Review - Most probable number (MPN)/colony forming units (CFU) enumeration methods and probable standards reporting revision" and discussions with NMED, Feb. 2017.

Table 2
Rio Grande Flow:

Monitoring Location	USGS Gage & Location	Daily Mean Flow (cfs) 9/21/16	Daily Mean Flow (cfs) 9/22/16	Calculated Mean Flow (cfs) from 9/21/16 11:00 AM to 9/22/16 11:00 AM	Maximum Flow Used for this Analysis (cfs)
Rio Grande North	08329928 - Rio Grande near Alameda	327	350	333	350
Rio Grande South	0833000 - Rio Grande at Albuquerque, NM (Central)	251	250	251	251

Notes:
1. See 'USGS Daily Mean Discharge' worksheet for data obtained from USGS website on 12/15/16.
2. Since this storm spans 2 days - BHI checked mean flow by calculating mean flow from the time of collection at 12:15 PM on 9/21/16.

Table 3
Determination of Storm Event Flow Conditions - As Defined in the WSB MS4 Permit and NMED TMDL Report:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions (from WSB MS4 Permit Appendix B) & NMED 2010 TMDL Report				
		High (>3,670 cfs)	Moist (922-3,670 cfs)	Mid (647-922 cfs)	Dry (359-647 cfs)	Low (0-359 cfs)
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--	--	--	--	Storm Event Flow Condition
		High (>3,360 cfs)	**Moist (929-3,360 cfs)**	**Mid (664-929 cfs)**	**Dry (319-664 cfs)**	**Low (0-319 cfs)**
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	--	--	--	--	Storm Event Flow Condition
		High	**Moist**	**Mid**	**Dry**	**Low**

1. Flow ranges for flow conditions are not listed in Appendix B of WSB MS4 Permit, the flow ranges are from NMED, Sarah Holcomb, Nov. 2016 e-mail (see "WLAs From NMED" worksheet) and 2/1/17 NMED meeting, which are from the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, Figures 4.3 and 4.4.

Table 4
Calculate E. coli Loading for Rio Grande North and Rio Grande South and Delta in E. coli Loading Between North and South Locations:

Monitoring Location	E. coli Concentration (CFU/100 mL)	Daily Mean Flow (cfs)	E. coli Loading (CFU/day)
Rio Grande North	31.1	350	2.66E+11
Rio Grande South	517	251	3.18E+12
Delta in E. coli Loading Between North and South Locations			2.91E+12

* If loading is negative, the delta will default to zero.

Notes:
1. Used maximum in Table 2 for the Daily Mean Flow in the loading calculation. E. coli loading instream looked at on a daily basis by NMED and EPA.

E. Coli Loading Calculation:

$$E.Coli\ Concentration\ \left(\frac{CFU}{100mL}\right) x\ 28{,}316.85\ \left(\frac{mL}{ft^3}\right) x\ \text{Mean Daily Flow}\ \left(\frac{ft^3}{sec}\right) x\ 3{,}600\ \left(\frac{sec}{hr}\right) x\ 24\ \left(\frac{hr}{day}\right) = \text{E. coli Loading}\ \left(\frac{CFU}{day}\right)$$

Not all E. coli sampled in the Rio Grande is attributable to MS4 activities. This storm event E. coli loading must be reduced to only represent the estimated CMC MS4 E. coli loading so that a comparison can be made to the MS4 Waste Load Allocations (WLAs).

The NMED presented a Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010. This approach in 2010 has the MS4s divided into Phase I and Phase II permittees, which no longer applies. NMED provided an e-mail that applies to the current CMC MS4 members and remaining MS4 members.

The CMC monitoring scheme dis not have an interim E. coli sample at the Alameda Bridge during collection of this sample, which is the division of the two stream segments. Therefore, to determine the E. coli loading for the northern and southern stream segments, ratios need to be applied to the E. coli loading. The areas used in NMED's Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010 were used to determine this ratio. The total contributing watershed area for the Alameda to Angostura segment = 1,612.72 sq. mi. with the total contributing watershed area = 2084.15 sq. mi. From the 2/1/17 meeting with NMED, the WLA determination is not an additive determination - the WLA considers each stream segment separately - so even though the north segment flows into the south segment, the WLA, and therefore the E. coli loading, looks at each segment independently.

$\frac{1612.72\ sq.mi.}{2084.15\ sq.mi.}$ = 0.77 or 77% for the north segment - Alameda to Angostura
1 – 0.77 = 0.23 or 23% for the south segment - Isleta to Alameda

An estimation of the E. coli loading attributable to the CMC is needed to allow comparison with the WLA values. This approach uses percentages that calculate a percentage of the CMC WLA value divided by the TMDL minus the MOS. This percentage represents an estimate of the percent of the CMC E. coli loading to all of the E. coli contributors (point sources, MS4s, and natural background). This percentage allows a reasonable estimation of the percent of the E. coli loading that is attributable to the CMC MS4s. Since our discussion, we removed the MOS from our percentage calculation.

Using the above approach, the CMC then has an E. coli loading value to compare to the applicable WLA values, for a given stream segment and flow regime.

Table 5
Calculate E. coli Loading Per Stream Segment Reach and Compare to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Contributing Area Ratio for Each Segment	E. coli Loading (CFU/day) for Each Segment	Total TMDL for Segment	TMDL Exceedance?
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	0.77	2.24E+12	2.94E+11	TMDL Exceeded
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	0.23	6.69E+11	1.90E+11	TMDL Exceeded

1. Compares the E. coli loading to the TMDL - the E. coli loading represents all of the E. coli sources and not just the CMC MS4. The TMDL could be from any source and this analysis cannot distinguish between sources.

Table 6
Calculate CMC MS4 E. coli Loading Per Stream Segment Reach - apply % based on WLA compared to total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions	Percent of E. coli Associated with MS4s	Total MS4 E. coli Loading (CFU/day) for Each Segment
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Low	5.8%	1.29E+11
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Low	1.8%	1.22E+10

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for estimated percent of E. coli associated with the CMC compared to total TMDL minus the MOS.
2. The CMC measured a total E. coli loading in the Rio Grande - this is all of the E. coli, regardless of source - so the CMC WLA compared to the TMDL minus the Margin of Safety was used as a way to estimate what percent of the total E. coli could be attributed to the CMC. Discussed this approach with NMED on 2/16/17.

Table 7
Compare Storm Event E. coli Loading to WLA for CMC:

Stream Segment	Stream Name / Related USGS Gage	CMC E. coli Loading (CFU/day) for Each Segment	Flow Conditions	WLA for CMC for Flow Conditions	WLA - Potential Exceedance or Acceptable
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	1.29E+11	Low	1.68E+10	WLA Potential Exceedance
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	1.22E+10	Low	3.42E+09	WLA Potential Exceedance

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for CMC for Storm Event.
2. Flow Conditions were defined in Table 3 "Determination of Storm Event Flow Conditions" above.

US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, page 40:

It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards. Since flows vary throughout the year in these systems the target load will vary based on the changing flow. Management of the load to improve stream water quality and meet water quality criteria should be a goal to be attained. Meeting the calculated TMDL may be a difficult objective.

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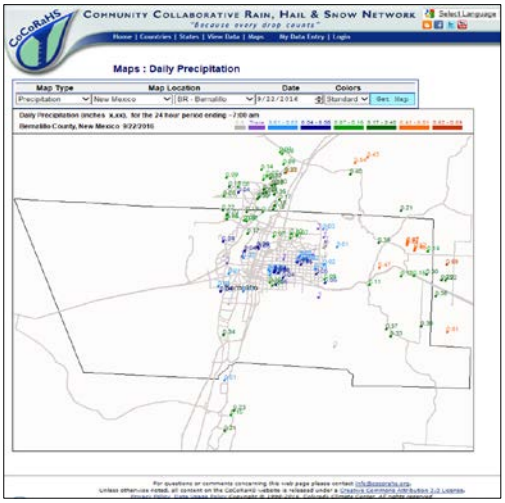


Compliance Monitoring Cooperative (CMC)
E. coli Loading Calculation Compared to Waste Load Allocation (WLA)
FY 2017 - Dry Season Wet Weather Sampling

Date: 2/6/17

Storm Event Date: 11/21/2016

Table 1
Stormwater Sample Analysis Results for E. coli:

Monitoring Location	E. coli Concentration (CFU/100 mL)[3]	Date & Time of Sample	Date & Time Sample Delivered to HEAL
Rio Grande North	43.5	11/21/2016 9:30 AM	11/21/2016 11:20 AM
Rio Grande South	7,270	11/22/2016 7:00 AM	11/22/2016 9:15 AM

Notes:
1. Hall Environmental Analysis Laboratory (HEAL) lab report for Rio Grande North: Order number 1611B12
2. HEAL lab report for Rio Grande South: Order number 1611B75
3. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method for units of MPN/100 mL, lab report uses units CFU/100 mL, for this analysis assuming two units are equivalent based on Feb. 26, 2014 NMED Memo "Triennial Review - Most probable number (MPN)/colony forming units (CFU) enumeration methods and probable standards reporting revision" and discussions with NMED, Feb. 2017.

Table 2
Rio Grande Flow:

Monitoring Location	USGS Gage & Location	Daily Mean Flow (cfs) 11/21/16	Daily Mean Flow (cfs) 11/22/16	Calculated Mean Flow (cfs) from 11/21/16 9:30 AM to 11/22/16 9:30 AM	Maximum Flow Used for this Analysis (cfs)
Rio Grande North	08329928 - Rio Grande near Alameda	639	659	710	710
Rio Grande South	0833000 - Rio Grande at Albuquerque, NM (Central)	722	881	853	881

Notes:
1. See 'USGS Daily Mean Discharge' worksheet for data obtained from USGS website on 12/15/16.
2. Since this storm spans 2 days - BHI checked mean flow by calculating mean flow from the time of collection at 9:30 AM on 11/21/16.

Table 3
Determination of Storm Event Flow Conditions - As Defined in the WSB MS4 Permit and NMED TMDL Report:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions (from WSB MS4 Permit Appendix B) & NMED 2010 TMDL Report				
		High (>3,670 cfs)	Moist (922-3,670 cfs)	Mid (647-922 cfs)	Dry (359-647 cfs)	Low (0-359 cfs)
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--	--	Storm Event Flow Condition	--	--
		High (>3,360 cfs)	**Moist (929-3,360 cfs)**	**Mid (664-929 cfs)**	**Dry (319-664 cfs)**	**Low (0-319 cfs)**
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	--	--	Storm Event Flow Condition	--	--
		High	**Moist**	**Mid**	**Dry**	**Low**

1. Flow ranges for flow conditions are not listed in Appendix B of WSB MS4 Permit, the flow ranges are from NMED, Sarah Holcomb, Nov. 2016 e-mail (see "WLAs From NMED" worksheet) and 2/1/17 NMED meeting, which are from the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, Figures 4.3 and 4.4.

Table 4
Calculate E. coli Loading for Rio Grande North and Rio Grande South and Delta in E. coli Loading Between North and South Locations:

Monitoring Location	E. coli Concentration (CFU/100 mL)	Daily Mean Flow (cfs)	E. coli Loading (CFU/day)
Rio Grande North	43.5	710	7.56E+11
Rio Grande South	7,270	881	1.57E+14
Delta in E. coli Loading Between North and South Locations			1.56E+14

* if loading is negative, the delta will default to zero.

Notes:
1. Used maximum in Table 2 for the Daily Mean Flow in the loading calculation. E. coli loading instream looked at on a daily basis by NMED and EPA.

E. Coli Loading Calculation (per day):

$$E.Coli\ Concentration\ \left(\frac{CFU}{100mL}\right) x\ 28{,}316.85\ \left(\frac{mL}{ft^3}\right) x\ \text{Mean Daily Flow}\ \left(\frac{ft^3}{sec}\right)\ \text{x 3,600}\ \left(\frac{sec}{hr}\right)\ \text{x 24}\ \left(\frac{hr}{day}\right) = \text{E. coli Loading}\ \left(\frac{CFU}{day}\right)$$

Not all E. coli sampled in the Rio Grande is attributable to MS4 activities. This storm event E. coli loading must be reduced to only represent the estimated CMC MS4 E. coli loading so that a comparison can be made to the MS4 Waste Load Allocations (WLAs).

The NMED presented a Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010. This approach in 2010 has the MS4s divided into Phase I and Phase II permittees, which no longer applies. NMED provided an e-mail that applies to the current CMC MS4 members and remaining MS4 members.

The CMC monitoring scheme dis not have an interim E. coli sample at the Alameda Bridge during collection of this sample, which is the division of the two stream segments. Therefore, to determine the E. coli loading for the northern and southern stream segments, ratios need to be applied to the E. coli loading. The areas used in NMED's Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010 were used to determine this ratio. The total contributing watershed area for the Alameda to Angostura segment = 1,612.72 sq. mi. with the total contributing watershed area = 2084.15 sq. mi. From the 2/1/17 meeting with NMED, the WLA determination is not an additive determination - the WLA considers each stream segment separately - so even though the north segment flows into the south segment, the WLA, and therefore the E. coli loading, looks at each segment independently.

$\frac{1612.72\ sq.mi.}{2084.15\ sq.mi.}$ = 0.77 or 77% for the north segment - Alameda to Angostura
1 – 0.77 = 0.23 or 23% for the south segment - Isleta to Alameda

An estimation of the E. coli loading attributable to the CMC is needed to allow comparison with the WLA values. This approach uses percentages that calculate a percentage of the CMC WLA value divided by the TMDL minus the MOS. This percentage represents an estimate of the percent of the CMC E. coli loading to all of the E. coli contributors (point sources, MS4s, and natural background). This percentage allows a reasonable estimation of the percent of the E. coli loading that is attributable to the CMC MS4s. Since our discussion, we removed the MOS from our percentage calculation.

Using the above approach, the CMC then has an E. coli loading value to compare to the applicable WLA values, for a given stream segment and flow regime.

Table 5
Calculate E. coli Loading Per Stream Segment Reach and Compare to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Contributing Area Ratio for Each Segment	E. coli Loading (CFU/day) for Each Segment	Total TMDL for Segment	TMDL Exceedance?
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	0.77	1.20E+14	--	TMDL Not Exceeded
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	0.23	3.59E+13	9.03E+11	TMDL Exceeded

1. Compares the E. coli loading to the TMDL - the E. coli loading represents all of the E. coli sources and not just the CMC MS4. The TMDL could be from any source and this analysis cannot distinguish between sources.

Table 6
Calculate CMC MS4 E. coli Loading Per Stream Segment Reach - apply % based on WLA compared to total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions	Percent of E. coli Associated with MS4s	Total MS4 E. coli Loading (CFU/day) for Each Segment
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Mid	--	--
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Mid	4.7%	1.68E+12

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for estimated percent of E. coli associated with the CMC compared to total TMDL minus the MOS.
2. The CMC measured a total E. coli loading in the Rio Grande - this is all of the E. coli, regardless of source - so the CMC WLA compared to the TMDL minus the Margin of Safety was used as a way to estimate what percent of the total E. coli could be attributed to the CMC. Discussed this approach with NMED on 2/16/17.

Table 7
Compare Storm Event E. coli Loading to WLA for CMC:

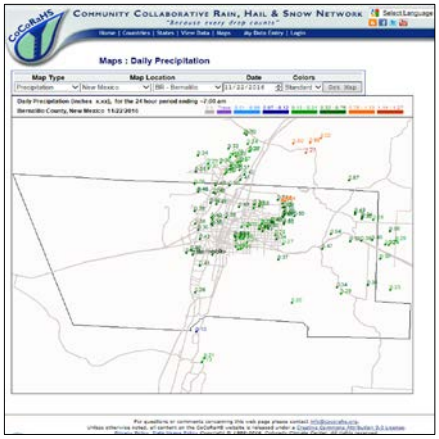
Stream Segment	Stream Name / Related USGS Gage	CMC E. coli Loading (CFU/day) for Each Segment	Flow Conditions	WLA for CMC for Flow Conditions	WLA - Potential Exceedance or Acceptable
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--	Mid	No Value	WLA Acceptable
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	1.68E+12	Mid	4.22E+10	WLA Potential Exceedance

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for CMC for Storm Event.
2. Flow Conditions were defined in Table 3 "Determination of Storm Event Flow Conditions" above.

US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, page 40:

It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards. Since flows vary throughout the year in these systems the target load will vary based on the changing flow. Management of the load to improve stream water quality and meet water quality criteria should be a goal to be attained. Meeting the calculated TMDL may be a difficult objective.

Rainfall Data - CoCoRaHS.org



Compliance Monitoring Cooperative (CMC)
E. coli Loading Calculation Compared to Waste Load Allocation (WLA)
FY 2018 - Wet Season Wet Weather Sampling

Date: 12/19/17

Storm Event Date: 7/27/2017

Calculated following CMC monitoring procedure and using only Rio Grande North and South E. coli sample results. Results in this Worksheet were not used for Memo reporting - see next tab - used results with Alameda sample.

Table 1
Stormwater Sample Analysis Results for E. coli:

Monitoring Location	E. coli Concentration (CFU/100 mL)[3]	Date & Time of Sample	Date & Time Sample Delivered to HEAL
Rio Grande North	20	7/27/2017 12:30 PM	7/27/2017 1:30 PM
Rio Grande South	236	7/28/2017 8:45 AM	7/28/2017 10:47 AM

Notes:
1. Hall Environmental Analysis Laboratory (HEAL) lab report for Rio Grande North: Order number 1707E07
2. HEAL lab report for Rio Grande South: Order number 1707E46
3. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method uses units of MPN/100 mL, WLA calculations use CFU/100 mL, for this analysis it was assumed that the two units are equivalent based on Feb. 26, 2014 NMED Memo "Triennial Review - Most probable number (MPN)/colony forming units (CFU) enumeration methods and probable standards reporting revision" and discussions with NMED, Feb. 2017.

Table 2
Rio Grande Flow:

Monitoring Location	USGS Gage & Location	Daily Mean Flow (cfs) 7/27/17	Daily Mean Flow (cfs) 7/28/17	Calculated Mean Flow (cfs) from 7/27/17 12:30 PM to 7/28/17 12:30 PM	Maximum Flow Used for this Analysis (cfs)
Rio Grande North	08329928 - Rio Grande near Alameda	465	545	496	545
Rio Grande South	0833000 - Rio Grande at Albuquerque, NM (Central)	414	470	425	470

Notes:
1. See 'USGS Daily Mean Discharge' worksheet for data obtained from USGS website on 12/19/17.
2. Since this storm spans 2 days - BHI also checked mean flow by calculating mean flow from 12:30 PM on 7/27/17 to 12:30 PM on 7/28/17.

Table 3
Determination of Storm Event Flow Conditions - As Defined in the WSB MS4 Permit and NMED TMDL Report:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions (from WSB MS4 Permit Appendix B) & NMED 2010 TMDL Report				
		High (>3,670 cfs)	Moist (922-3,670 cfs)	Mid (647-922 cfs)	Dry (359-647 cfs)	Low (0-359 cfs)
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--	--	--	Storm Event Flow Condition	--
		High (>3,360 cfs)	**Moist (929-3,360 cfs)**	**Mid (664-929 cfs)**	**Dry (319-664 cfs)**	**Low (0-319 cfs)**
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	--	--	--	Storm Event Flow Condition	--
		High	**Moist**	**Mid**	**Dry**	**Low**

Notes:
1. Flow ranges for flow conditions are not listed in Appendix B of WSB MS4 Permit, the flow ranges are from NMED, Sarah Holcomb, Nov. 2016 e-mail (see "WLAs From NMED" worksheet) and 2/1/17 NMED meeting, which are from the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, Figures 4.3 and 4.4.

Table 4
Calculate E. coli Loading for Rio Grande North and Rio Grande South and Delta in E. coli Loading Between North and South Locations:

Monitoring Location	E. coli Concentration (CFU/100 mL)	Daily Mean Flow (cfs)	E. coli Loading (CFU/day)
Rio Grande North	20.0	545	2.67E+11
Rio Grande South	236	470	2.71E+12
Delta in E. coli Loading Between North and South Locations			2.45E+12

* If loading is negative, the delta will default to zero.

Notes:
1. Used maximum in Table 2 for the Daily Mean Flow in the loading calculation. E. coli loading instream looked at on a daily basis by NMED and EPA.

E. Coli Loading Calculation:

$$E.\,Coli\ Concentration\ \left(\frac{CFU}{100mL}\right) x\ 28{,}316.85\ \left(\frac{mL}{ft^3}\right) x\ \text{Mean Daily Flow}\ \left(\frac{ft^3}{sec}\right) \text{x } 3{,}600\ \left(\frac{sec}{hr}\right) \text{x } 24\ \left(\frac{hr}{day}\right) = \text{E. coli Loading}\ \left(\frac{CFU}{day}\right)$$

Not all E. coli sampled in the Rio Grande is attributable to MS4 activities. This storm event E. coli loading must be reduced to only represent the estimated CMC MS4 E. coli loading so that a comparison can be made to the MS4 Waste Load Allocations (WLAs).

The NMED presented a Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010. This approach in 2010 has the MS4s divided into Phase I and Phase II permittees, which no longer applies. NMED provided an e-mail that applies to the current CMC MS4 members and remaining MS4 members.

The CMC monitoring scheme does not have an interim E. coli sample at the Alameda Bridge during collection of this sample, which is the division of the two stream segments. However, for this storm event, an E. coli sample was obtained at the Alameda Bridge.

For this storm - calculations will be done two ways - 1) using the area approach, as has been done with prior CMC samples and 2) busing the Alameda sample to determine the north and south segment loads.

For the area approach, to determine the E. coli loading for the northern and southern stream segments, ratios need to be applied to the E. coli loading. The areas used in NMED's Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010 were used to determine this ratio. The total contributing watershed area for the Alameda to Angostura segment = 1,612.72 sq. mi. with the total contributing watershed area = 2084.15 sq. mi. From the 2/1/17 meeting with NMED, the LA determination is not an additive determination - the LA considers each stream segment separately - so even though the north segment flows into the south segment, the LA, and therefore the E. coli loading, looks at each segment independently.

$\frac{1612.72\ sq.mi.}{2084.15\ sq.mi.}$ = 0.77 or 77% for the north segment - Alameda to Angostura

1 – 0.77 = 0.23 or 23% for the south segment - Isleta to Alameda

An estimation of the E. coli loading attributable to the CMC is needed to allow comparison with the LA values. This approach uses percentages that calculate a percentage of the CMC LA value divided by the TMDL minus the MOS. This percentage represents an estimate of the percent of the CMC E. coli loading to all of the E. coli contributors (point sources, MS4s, and natural background). This percentage allows a reasonable estimation of the percent of the E. coli loading that is attributable to the CMC MS4s. Since our discussion, we removed the MOS from our percentage calculation.

Table 5
Calculate E. coli Loading Per Stream Segment Reach and Compare to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Contributing Area Ratio for Each Segment	E. coli Loading (CFU/day) for Each Segment	Total TMDL for Segment	TMDL Exceedance?
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	0.77	1.88E+12	5.83E+11	TMDL Exceeded
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	0.23	5.63E+11	5.77E+11	TMDL Not Exceeded

1. Compares the E. coli loading to the TMDL - the E. coli loading represents all of the E. coli sources and not just the CMC MS4. The TMDL could be from any source and this analysis cannot distinguish between sources.

Table 6
Calculate CMC MS4 E. coli Loading Per Stream Segment Reach - apply Percent based on CMC WLA compared to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions	Percent of E. coli Associated with CMC Members	Total CMC E. coli Loading (CFU/day) for Each Segment
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Dry	5.9%	1.10E+11
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Dry	4.3%	2.40E+10

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for estimated percent of E. coli associated with the CMC compared to total TMDL minus the MOS.
2. The CMC measured a total E. coli loading in the Rio Grande - this is all of the E. coli, regardless of source - so the CMC WLA compared to the TMDL minus the Margin of Safety was used as a way to estimate what percent of the total E. coli could be attributed to the CMC. Discussed this approach with NMED on 2/16/17.

Table 7
Compare Storm Event E. coli Loading to WLA for CMC:

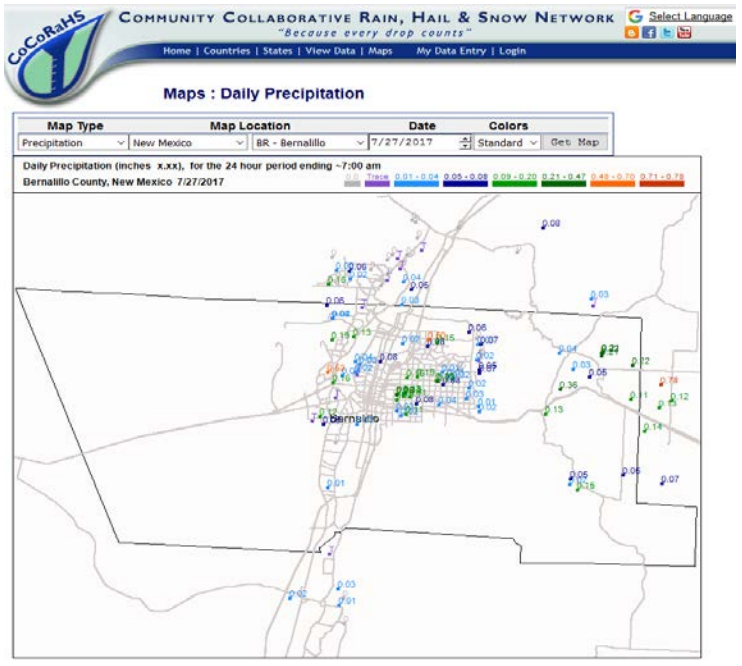
Stream Segment	Stream Name / Related USGS Gage	CMC E. coli Loading (CFU/day) for Each Segment	Flow Conditions	WLA for CMC for Flow Conditions	WLA - Potential Exceedance or Acceptable
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	1.10E+11	Dry	3.24E+10	WLA Potential Exceedance
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	2.40E+10	Dry	1.57E+10	WLA Potential Exceedance

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for CMC for Storm Event.
2. Flow Conditions were defined in Table 3 "Determination of Storm Event Flow Conditions" above.

US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, page 40:

It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards. Since flows vary throughout the year in these systems the target load will vary based on the changing flow. Management of the load to improve stream water quality and meet water quality criteria should be a goal to be attained. Meeting the calculated TMDL may be a difficult objective.

Rainfall Data - CoCoRaHS.org



Compliance Monitoring Cooperative (CMC)
E. coli Loading Calculation Compared to Waste Load Allocation (WLA)
FY 2018 - Wet Season Wet Weather Sampling

Date: 12/19/17

Storm Event Date: 7/27/2017

Calculated using the sample results obtained from The Rio Grande at Alameda (division point between Rio Grande North and South segments), This is different than the regular CMC calculation, since the mid-point E. coli sample is not a part of the CMC Monitoring Plan.

Table 1
Stormwater Sample Analysis Results for E. coli:

Monitoring Location	E. coli Concentration (CFU/100 mL)[3]	Date & Time of Sample	Date & Time Sample Delivered to HEAL	
Rio Grande North	20	7/27/2017 12:30 PM	7/27/2017 1:30 PM	
Rio Grande at Alameda	52	7/27/2017 10:30 PM	7/27/2017 10:47 PM	* Sample tested at the Bernalillo WWTP
Rio Grande South	236	7/28/2017 8:45 AM	7/28/2017 10:47 AM	

Notes:
1. Hall Environmental Analysis Laboratory (HEAL) lab report for Rio Grande North: Order number 1707E07
2. HEAL lab report for Rio Grande South: Order number 1707E46
3. Alameda sample collected at tested at the Bernalillo WWTP
4. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method uses units of MPN/100 mL, WLA calculations use CFU/100 mL, for this analysis it was assumed that the two units are equivalent based on Feb. 26, 2014 NMED Memo "Triennial Review - Most probable number (MPN)/colony forming units (CFU) enumeration methods and probable standards reporting revision" and discussions with NMED, Feb. 2017.

Table 2
Rio Grande Flow:

Monitoring Location	USGS Gage & Location	Daily Mean Flow (cfs) 7/27/17	Daily Mean Flow (cfs) 7/28/17	Calculated Mean Flow (cfs) from 7/27/17 12:30 PM to 7/28/17 12:30 PM	Maximum Flow Used for this Analysis (cfs)
Rio Grande North	08329928 - Rio Grande near Alameda	465	545	496	545
Rio Grande South	0833000 - Rio Grande at Albuquerque, NM (Central)	414	470	425	470

Notes:
1. See 'USGS Daily Mean Discharge' worksheet for data obtained from USGS website on 12/19/17.
2. Since this storm spans 2 days - BHI also checked mean flow by calculating mean flow from 12:30 PM on 7/27/17 to 12:30 PM on 7/28/17.

Table 3
Determination of Storm Event Flow Conditions - As Defined in the WSB MS4 Permit and NMED TMDL Report:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions (from WSB MS4 Permit Appendix B) & NMED 2010 TMDL Report				
		High (>3,670 cfs)	Moist (922-3,670 cfs)	Mid (647-922 cfs)	Dry (359-647 cfs)	Low (0-359 cfs)
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--	--	--	Storm Event Flow Condition	--
		High (>3,360 cfs)	**Moist (929-3,360 cfs)**	**Mid (664-929 cfs)**	**Dry (319-664 cfs)**	**Low (0-319 cfs)**
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	--	--	--	Storm Event Flow Condition	--
		High	**Moist**	**Mid**	**Dry**	**Low**

Notes:
1. Flow ranges for flow conditions are not listed in Appendix B of WSB MS4 Permit, the flow ranges are from NMED, Sarah Holcomb, Nov. 2016 e-mail (see "WLAs From NMED" worksheet) and 2/1/17 NMED meeting, which are from the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, Figures 4.3 and 4.4.

Table 4
Calculate E. coli Loading for Rio Grande North and Rio Grande South and Delta in E. coli Loading Between North and South Locations:

Monitoring Location	E. coli Concentration (CFU/100 mL)	Daily Mean Flow (cfs)	E. coli Loading (CFU/day)	
Rio Grande North	20	545	2.67E+11	
Rio Grande at Alameda	52	545	6.93E+11	
Delta in E. coli Loading Between North and Alameda Locations - This is the E. coli Loading for the Northern Segment			4.27E+11	* If loading is negative, the delta will default to zero.
Rio Grande South	236	470	2.71E+12	
Delta in E. coli Loading Between Alameda and South Locations - This is the E. coli Loading for the Southern Segment			2.02E+12	* If loading is negative, the delta will default to zero.

Notes:
1. Used maximum in Table 2 for the Daily Mean Flow in the loading calculation. E. coli loading instream looked at on a daily basis by NMED and EPA.
2. Used Rio Grande near Alameda gage for the flow rate at Alameda.

E. Coli Loading Calculation:

$$E.\,Coli\ Concentration\ \left(\frac{CFU}{100mL}\right) x\ 28{,}316.85\ \left(\frac{mL}{ft^3}\right) x\ \text{Mean Daily Flow}\ \left(\frac{ft^3}{sec}\right) \text{x } 3{,}600\ \left(\frac{sec}{hr}\right) \text{x } 24\ \left(\frac{hr}{day}\right) = \text{E. coli Loading}\ \left(\frac{CFU}{day}\right)$$

Not all E. coli sampled in the Rio Grande is attributable to MS4 activities. This storm event E. coli loading must be reduced to only represent the estimated CMC MS4 E. coli loading so that a comparison can be made to the MS4 Waste Load Allocations (WLAs).

The NMED presented a Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010. This approach in 2010 has the MS4s divided into Phase I and Phase II permittees, which no longer applies. NMED provided an e-mail that applies to the current CMC MS4 members and remaining MS4 members.

The CMC monitoring scheme does not have an interim E. coli sample at the Alameda Bridge during collection of this sample, which is the division of the two stream segments. However, for this storm event, an E. coli sample was obtained at the Alameda Bridge.

For this storm - calculations will be done two ways - 1) using the area approach, as has been done with prior CMC samples and 2) busing the Alameda sample to determine the north and south segment loads.

See previous worksheet for the area approach.

In Table 6 - An estimation of the E. coli loading attributable to the CMC is needed to allow comparison with the LA values. This approach uses percentages that calculate a percentage of the CMC LA value divided by the TMDL minus the MOS. This percentage represents an estimate of the percent of the CMC E. coli loading to all of the E. coli contributors (point sources, MS4s, and natural background). This percentage allows a reasonable estimation of the percent of the E. coli loading that is attributable to the CMC MS4s. Since our discussion, we removed the MOS from our percentage calculation.

Using the above approach, the CMC then has an E. coli loading value to compare to the applicable WLA values, for a given stream segment and flow regime.

Table 5
Calculate E. coli Loading Per Stream Segment Reach and Compare to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Contributing Area Ratio for Each Segment	E. coli Loading (CFU/day) for Each Segment	Total TMDL for Segment	TMDL Exceedance?
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Not Applicable - Have a Mid Point Sample	4.27E+11	5.83E+11	TMDL Not Exceeded
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Not Applicable - Have a Mid Point Sample	2.02E+12	5.77E+11	TMDL Exceeded

1. Compares the E. coli loading to the TMDL - the E. coli loading represents all of the E. coli sources and not just the CMC MS4. The TMDL could be from any source and this analysis cannot distinguish between sources.

Calculated using the sample results obtained from The Rio Grande at Alameda (division point between Rio Grande North and South segments), This is different than the regular CMC calculation, since the mid-point E. coli sample is not a part of the CMC Monitoring Plan.

Table 6
Calculate CMC MS4 E. coli Loading Per Stream Segment Reach - apply Percent based on CMC WLA compared to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions	Percent of E. coli Associated with CMC Members	Total CMC E. coli Loading (CFU/day) for Each Segment
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Dry	5.9%	2.50E+10
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Dry	4.3%	8.63E+10

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for estimated percent of E. coli associated with the CMC compared to total TMDL minus the MOS.
2. The CMC measured a total E. coli loading in the Rio Grande - this is all of the E. coli, regardless of source - so the CMC WLA compared to the TMDL minus the Margin of Safety was used as a way to estimate what percent of the total E. coli could be attributed to the CMC. Discussed this approach with NMED on 2/16/17.

Table 7
Compare Storm Event E. coli Loading to WLA for CMC:

Stream Segment	Stream Name / Related USGS Gage	CMC E. coli Loading (CFU/day) for Each Segment	Flow Conditions	WLA for CMC for Flow Conditions	WLA - Potential Exceedance or Acceptable
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	2.50E+10	Dry	3.24E+10	WLA Acceptable
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	8.63E+10	Dry	1.57E+10	WLA Potential Exceedance

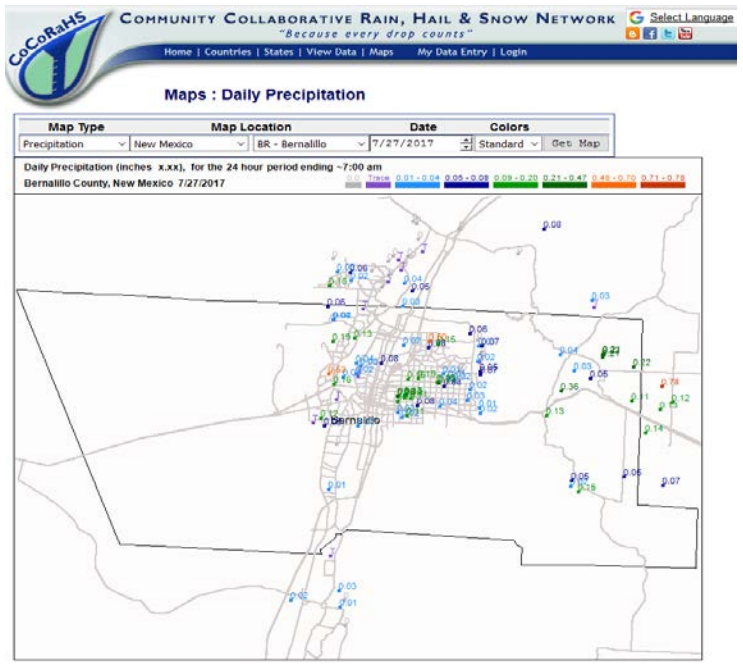
Using the mid-point Alameda sample results, the LA is acceptable for the northern segment.

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for CMC for Storm Event.
2. Flow Conditions were defined in Table 3 "Determination of Storm Event Flow Conditions" above.

US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, page 40:

It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards. Since flows vary throughout the year in these systems the target load will vary based on the changing flow. Management of the load to improve stream water quality and meet water quality criteria should be a goal to be attained. Meeting the calculated TMDL may be a difficult objective.

Rainfall Data - CoCoRaHS.org



Compliance Monitoring Cooperative (CMC)
E. coli Loading Calculation Compared to Waste Load Allocation (WLA)
FY 2018 - Wet Season Wet Weather Sampling

Date: 12/19/17

Storm Event Date: 9/27/2017

Table 1
Stormwater Sample Analysis Results for E. coli:

Monitoring Location	E. coli Concentration (CFU/100 mL)[3]	Date & Time of Sample	Date & Time Sample Delivered to HEAL
Rio Grande North	733	9/27/2017 12:00 PM	9/27/2017 12:30 PM
Rio Grande South	6,131	9/28/2017 9:00 AM	9/28/2017 1:40 PM

Notes:
1. Hall Environmental Analysis Laboratory (HEAL) lab report for Rio Grande North: Order number 1709F09
2. HEAL lab report for Rio Grande South: Order number 1709F81
3. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method uses units of MPN/100 mL, LA calculations use CFU/100 mL, for this analysis it was assumed that the two units are equivalent based on Feb. 26, 2014 NMED Memo "Triennial Review - Most probable number (MPN)/colony forming units (CFU) enumeration methods and probable standards reporting revision" and discussions with NMED, Feb. 2017.

Table 2
Rio Grande Flow:

Monitoring Location	USGS Gage & Location	Daily Mean Flow (cfs) 9/27/17	Daily Mean Flow (cfs) 9/28/17	Calculated Mean Flow (cfs) from 9/27/17 12:00 PM to 9/28/17 12:00 PM	Maximum Flow Used for this Analysis (cfs)
Rio Grande North	08329928 - Rio Grande near Alameda	744	979	983	983
Rio Grande South	0833000 - Rio Grande at Albuquerque, NM (Central)	643	1,190	985	1,190

Notes:
1. See 'USGS Daily Mean Discharge' worksheet for data obtained from USGS website on 12/19/17.
2. Since this storm spans 2 days - BHI also checked mean flow by calculating mean flow from 12:00 PM on 9/27/17 to 12:00 PM on 9/28/17.

Table 3
Determination of Storm Event Flow Conditions - As Defined in the WSB MS4 Permit and NMED TMDL Report:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions (from WSB MS4 Permit Appendix B) & NMED 2010 TMDL Report				
		High (>3,670 cfs)	Moist (922-3,670 cfs)	Mid (647-922 cfs)	Dry (359-647 cfs)	Low (0-359 cfs)
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--	Storm Event Flow Condition	--	--	--
		High (>3,360 cfs)	**Moist (929-3,360 cfs)**	**Mid (664-929 cfs)**	**Dry (319-664 cfs)**	**Low (0-319 cfs)**
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	--	Storm Event Flow Condition	--	--	--
		High	**Moist**	**Mid**	**Dry**	**Low**

Notes:
1. Flow ranges for flow conditions are not listed in Appendix B of WSB MS4 Permit, the flow ranges are from NMED, Sarah Holcomb, Nov. 2016 e-mail (see "WLAs From NMED" worksheet) and 2/1/17 NMED meeting, which are from the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, Figures 4.3 and 4.4.

Table 4
Calculate E. coli Loading for Rio Grande North and Rio Grande South and Delta in E. coli Loading Between North and South Locations:

Monitoring Location	E. coli Concentration (CFU/100 mL)	Daily Mean Flow (cfs)	E. coli Loading (CFU/day)
Rio Grande North	733	983	1.76E+13
Rio Grande South	6,131	1,190	1.78E+14
Delta in E. coli Loading Between North and South Locations			1.61E+14

* If loading is negative, the delta will default to zero.

Notes:
1. Used maximum in Table 2 for the Daily Mean Flow in the loading calculation. E. coli loading instream looked at on a daily basis by NMED and EPA.

E. Coli Loading Calculation:

$$E.\,Coli\ Concentration\ \left(\frac{CFU}{100mL}\right) x\ 28{,}316.85\ \left(\frac{mL}{ft^3}\right) x\ \text{Mean Daily Flow}\ \left(\frac{ft^3}{sec}\right) \text{x } 3{,}600\ \left(\frac{sec}{hr}\right) \text{x } 24\ \left(\frac{hr}{day}\right) = \text{E. coli Loading}\ \left(\frac{CFU}{day}\right)$$

Not all E. coli sampled in the Rio Grande is attributable to MS4 activities. This storm event E. coli loading must be reduced to only represent the estimated CMC MS4 E. coli loading so that a comparison can be made to the MS4 Waste Load Allocations (WLAs).

The NMED presented a Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010. This approach in 2010 has the MS4s divided into Phase I and Phase II permittees, which no longer applies. NMED provided an e-mail that applies to the current CMC MS4 members and remaining MS4 members.

The CMC monitoring scheme dis not have an interim E. coli sample at the Alameda Bridge during collection of this sample, which is the division of the two stream segments. Therefore, to determine the E. coli loading for the northern and southern stream segments, ratios need to be applied to the E. coli loading. The areas used in NMED's Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010 were used to determine this ratio. The total contributing watershed area for the Alameda to Angostura segment = 1,612.72 sq. mi. with the total contributing watershed area = 2084.15 sq. mi. From the 2/1/17 meeting with NMED, the WLA determination is not an additive determination - the WLA considers each stream segment separately - so even though the north segment flows into the south segment, the WLA, and therefore the E. coli loading, looks at each segment independently.

$\frac{1612.72\ sq.mi.}{2084.15\ sq.mi.}$ = 0.77 or 77% for the north segment - Alameda to Angostura

1 – 0.77 = 0.23 or 23% for the south segment - Isleta to Alameda

An estimation of the E. coli loading attributable to the CMC is needed to allow comparison with the WLA values. This approach uses percentages that calculate a percentage of the CMC WLA value divided by the TMDL minus the MOS. This percentage represents an estimate of the percent of the CMC E. coli loading to all of the E. coli contributors (point sources, MS4s, and natural background). This percentage allows a reasonable estimation of the percent of the E. coli loading that is attributable to the CMC MS4s. Since our discussion, we removed the MOS from our percentage calculation.

Using the above approach, the CMC then has an E. coli loading value to compare to the applicable WLA values, for a given stream segment and flow regime.

Table 5
Calculate E. coli Loading Per Stream Segment Reach and Compare to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Contributing Area Ratio for Each Segment	E. coli Loading (CFU/day) for Each Segment	Total TMDL for Segment	TMDL Exceedance?
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	0.77	1.24E+14	1.61E+12	TMDL Exceeded
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	0.23	3.70E+13	1.65E+12	TMDL Exceeded

1. Compares the E. coli loading to the TMDL - the E. coli loading represents all of the E. coli sources and not just the CMC MS4. The TMDL could be from any source and this analysis cannot distinguish between sources.

Table 6
Calculate CMC MS4 E. coli Loading Per Stream Segment Reach - apply Percent based on CMC WLA compared to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions	Percent of E. coli Associated with CMC Members	Total CMC E. coli Loading (CFU/day) for Each Segment
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Moist	5.9%	7.34E+12
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Moist	5.9%	2.18E+12

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for estimated percent of E. coli associated with the CMC compared to total TMDL minus the MOS.
2. The CMC measured a total E. coli loading in the Rio Grande - this is all of the E. coli, regardless of source - so the CMC WLA compared to the TMDL minus the Margin of Safety was used as a way to estimate what percent of the total E. coli could be attributed to the CMC. Discussed this approach with NMED on 2/16/17.

Table 7
Compare Storm Event E. coli Loading to WLA for CMC:

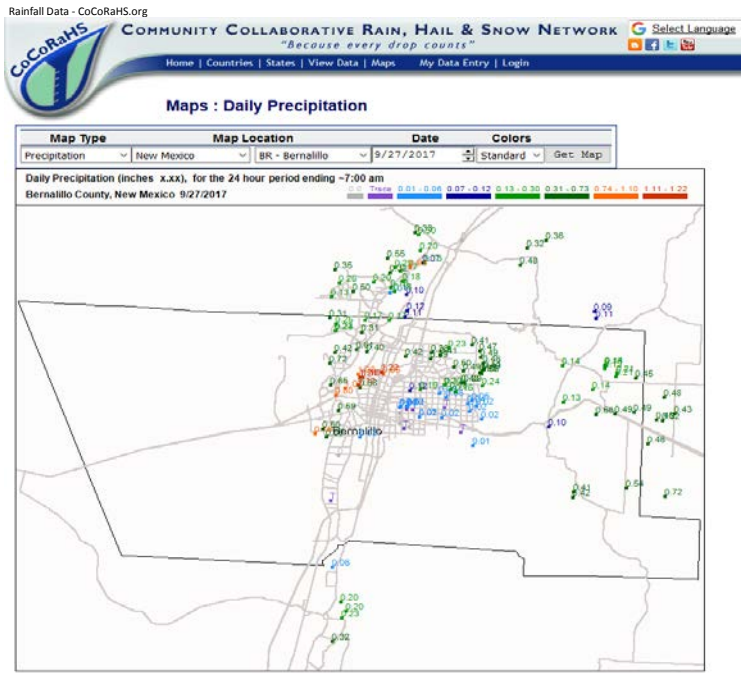
Stream Segment	Stream Name / Related USGS Gage	CMC E. coli Loading (CFU/day) for Each Segment	Flow Conditions	WLA for CMC for Flow Conditions	WLA - Potential Exceedance or Acceptable
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	7.34E+12	Moist	9.09E+10	WLA Potential Exceedance
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	2.18E+12	Moist	6.29E+10	WLA Potential Exceedance

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for CMC for Storm Event.
2. Flow Conditions were defined in Table 3 "Determination of Storm Event Flow Conditions" above.

US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, page 40:

It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards. Since flows vary throughout the year in these systems the target load will vary based on the changing flow. Management of the load to improve stream water quality and meet water quality criteria should be a goal to be attained. Meeting the calculated TMDL may be a difficult objective.

Rainfall Data - CoCoRaHS.org



Compliance Monitoring Cooperative (CMC)
E. coli Loading Calculation Compared to Waste Load Allocation (WLA)
FY 2018 - Wet Season Wet Weather Sampling

Date: 12/19/17

Storm Event Date: 9/27/2017

Calculated using the pre-storm sample results obtained from the Rio Grande. Checking - Is TMDL exceeded even before the storm begins? Also, have an Alameda sample for pre-storm.

Table 1
Stormwater Sample Analysis Results for E. coli:

Monitoring Location	E. coli Concentration (CFU/100 mL)[3]	Date & Time of Sample	Date & Time Sample Delivered to HEAL
Rio Grande North (Pre-Storm)	733	9/27/2017 12:00 PM	9/27/2017 12:30 PM
Rio Grande at Alameda (Pre-Storm)	218	9/27/2017 10:30 AM	9/27/2017 10:54 AM
Rio Grande South (Pre-Storm)	2,359	9/27/2017 12:00 PM	9/27/2017 3:00 PM

Notes:
1. Hall Environmental Analysis Laboratory (HEAL) lab report for Rio Grande North: Order number 1709F09
2. HEAL lab report for Rio Grande South: Order number 1709F32
3. HEAL lab report for Rio Grande at Alameda (pre-dprm): Order number 1709F01
4. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method uses units of MPN/100 mL, LA calculations use CFU/100 mL, for this analysis it was assumed that the two units are equivalent based on Feb. 26, 2014 NMED Memo "Triennial Review - Most probable number (MPN)/colony forming units (CFU) enumeration methods and probable standards reporting revision" and discussions with NMED, Feb. 2017.

Table 2
Rio Grande Flow:

Monitoring Location	USGS Gage & Location	Daily Mean Flow (cfs) 9/26/17	Daily Mean Flow (cfs) 9/27/17	Calculated Mean Flow (cfs) from 9/27/17 12:00 AM to 9/27/17 12:00 PM	Maximum Flow Used for this Analysis (cfs)
Rio Grande North	08329928 - Rio Grande near Alameda	524	744	513	744
Rio Grande South	0833000 - Rio Grande at Albuquerque, NM (Central)	519	643	530	643

Notes:
1. See 'USGS Daily Mean Discharge' worksheet for data obtained from USGS website on 12/19/17.

Table 3
Determination of Storm Event Flow Conditions - As Defined in the WSB MS4 Permit and NMED TMDL Report:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions (from WSB MS4 Permit Appendix B) & NMED 2010 TMDL Report				
		High (>3,670 cfs)	Moist (922-3,670 cfs)	Mid (647-922 cfs)	Dry (359-647 cfs)	Low (0-359 cfs)
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--	--	Storm Event Flow Condition	--	--
		High (>3,360 cfs)	**Moist (929-3,360 cfs)**	**Mid (664-929 cfs)**	**Dry (319-664 cfs)**	**Low (0-319 cfs)**
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	--	--	--	Storm Event Flow Condition	--
		High	**Moist**	**Mid**	**Dry**	**Low**

Notes:
1. Flow ranges for flow conditions are not listed in Appendix B of WSB MS4 Permit, the flow ranges are from NMED, Sarah Holcomb, Nov. 2016 e-mail (see "WLAs From NMED" worksheet) and 2/1/17 NMED meeting, which are from the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, Figures 4.3 and 4.4.

Table 4
Calculate E. coli Loading for Rio Grande North and Rio Grande South and Delta in E. coli Loading Between North and South Locations:

Monitoring Location	E. coli Concentration (CFU/100 mL)	Daily Mean Flow (cfs)	E. coli Loading (CFU/day)
Rio Grande North	733	744	1.33E+13
Rio Grande at Alameda	218	744	3.97E+12
Delta in E. coli Loading Between North and Alameda Locations - This is the E. coli Loading for the Northern Segment			0.00E+00
Rio Grande South	2,359	643	3.71E+13
Delta in E. coli Loading Between Alameda and South Locations - This is the E. coli Loading for the Southern Segment			3.31E+13

* If loading is negative, the delta will default to zero.

Notes:
1. Used maximum in Table 2 for the Daily Mean Flow in the loading calculation. E. coli loading instream looked at on a daily basis by NMED and EPA.

E. Coli Loading Calculation:

$$E.Coli\ Concentration\ \left(\frac{CFU}{100mL}\right) x\ 28{,}316.85\ \left(\frac{mL}{ft^3}\right) x\ \text{Mean Daily Flow}\ \left(\frac{ft^3}{sec}\right) x\ 3{,}600\ \left(\frac{sec}{hr}\right) x\ 24\ \left(\frac{hr}{day}\right) = \text{E. coli Loading}\ \left(\frac{CFU}{day}\right)$$

Not all E. coli sampled in the Rio Grande is attributable to MS4 activities. This storm event E. coli loading must be reduced to only represent the estimated CMC MS4 E. coli loading so that a comparison can be made to the MS4 Waste Load Allocations (WLAs).
The NMED presented a Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010. This approach in 2010 has the MS4s divided into Phase I and Phase II permittees, which no longer applies. NMED provided an e-mail that applies to the current CMC MS4 members and remaining MS4 members.
The CMC monitoring scheme does not have an interim E. coli sample at the Alameda Bridge during collection of this sample, which is the division of the two stream segments. However, for this storm event, an E. coli sample was obtained at the Alameda Bridge.
For this storm - calculations will be done two ways - 1) using the area approach, as has been done with prior CMC samples and 2) busing the Alameda sample to determine the north and south segment loads.
See previous worksheet for the area approach.

In Table 6 - An estimation of the E. coli loading attributable to the CMC is needed to allow comparison with the LA values. This approach uses percentages that calculate a percentage of the CMC LA value divided by the TMDL minus the MOS. This percentage represents an estimate of the percent of the CMC E. coli loading to all of the E. coli contributors (point sources, MS4s, and natural background). This percentage allows a reasonable estimation of the percent of the E. coli loading that is attributable to the CMC MS4s. Since our discussion, we removed the MOS from our percentage calculation.
Using the above approach, the CMC then has an E. coli loading value to compare to the applicable WLA values, for a given stream segment and flow regime.

Table 5
Calculate E. coli Loading Per Stream Segment Reach and Compare to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Contributing Area Ratio for Each Segment	E. coli Loading (CFU/day) for Each Segment	Total TMDL for Segment	TMDL Exceedance?
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Not Applicable - Have a Mid Point Sample	0.00E+00	--	TMDL Not Exceeded
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Not Applicable - Have a Mid Point Sample	3.31E+13	5.77E+11	TMDL Exceeded

1. Compares the E. coli loading to the TMDL - the E. coli loading represents all of the E. coli sources and not just the CMC MS4. The TMDL could be from any source and this analysis cannot distinguish between sources.

Table 6
Calculate CMC MS4 E. coli Loading Per Stream Segment Reach - apply Percent based on CMC WLA compared to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions	Percent of E. coli Associated with CMC Members	Total CMC E. coli Loading (CFU/day) for Each Segment
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Mid	--	--
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Dry	4.3%	1.42E+12

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for estimated percent of E. coli associated with the CMC compared to total TMDL minus the MOS.
2. The CMC measured a total E. coli loading in the Rio Grande - this is all of the E. coli, regardless of source - so the CMC WLA compared to the TMDL minus the Margin of Safety was used as a way to estimate what percent of the total E. coli could be attributed to the CMC. Discussed this approach with NMED on 2/16/17.

Table 7
Compare Storm Event E. coli Loading to WLA for CMC:

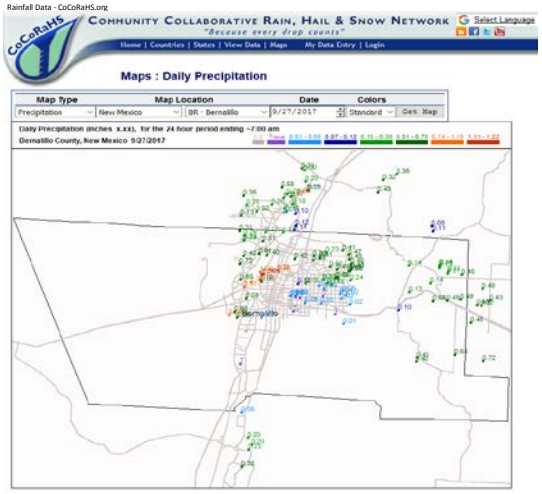
Stream Segment	Stream Name / Related USGS Gage	CMC E. coli Loading (CFU/day) for Each Segment	Flow Conditions	WLA for CMC for Flow Conditions	WLA - Potential Exceedance or Acceptable
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--	Mid	No Value	WLA Acceptable
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	1.42E+12	Dry	1.57E+10	WLA Potential Exceedance

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for CMC for Storm Event.
2. Flow Conditions were defined in Table 3 "Determination of Storm Event Flow Conditions" above.

US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, page 40:

It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards. Since flows vary throughout the year in these systems the target load will vary based on the changing flow. Management of the load to improve stream water quality and meet water quality criteria should be a goal to be attained. Meeting the calculated TMDL may be a difficult objective.

Rainfall Data - CoCoRaHS.org



Comaliance Monitorine Cooperative (CMC)
E. coli Loading Calculation Compared to Waste Load Allocation (WLA)
FY 2019 - Dry Season, Wet Weather Stormwater Monitoring

Date: 6/20/2019

Storm Event Date: 3/11/2019 - 3/13/2019

Table 1
Stormwater Sample Analysis Results for E. coli:

Monitoring Location	E. coli Concentration (CFU/100 mL)[1]	Date & Time of Sample	Date & Time Sample Delivered to HEAL
Rio Grande North	32	3/11/2019 10:45 AM	3/11/2019 11:37 AM
Rio Grande South	594	3/11/2019 9:45 AM	3/13/2019 1:40 PM

Notes:
1. Hall Environmental Analysis Laboratory (HEAL) lab report for Rio Grande North: Order number 1903677
2. HEAL lab report for Rio Grande South: Order number 1903661
3. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method uses units of MPN/100 mL, WLA calculations use CFU/100 mL, for this analysis it was assumed that the two units are equivalent based on Feb. 26, 2014 NMED Memo "Triennial Review - Most probable number (MPN)/colony forming units (CFU) enumeration methods and probable standards reporting revision" and discussions with NMED, Feb. 2017.

Table 2
Rio Grande Flow:

Monitoring Location	USGS Gage & Location	Daily Mean Flow (cfs) 3/11/19	Daily Mean Flow (cfs) 3/12/19	Daily Mean Flow (cfs) 3/13/19	Calculated Mean Flow (cfs) from 3/11/19 and 3/13/19	Maximum Flow Used for this Analysis (cfs)
Rio Grande North	08329928 - Rio Grande near Alameda	1,100	1,180	1,290	1,188	1,290
Rio Grande South	0833000 - Rio Grande at Albuquerque, NM (Central)	1,090	1,170	1,350	1,202	1,350

Notes:
1. See '2018-19 USGS Daily Mean Disch.' worksheet for data obtained from USGS website on 5/22/2019.
2. Since this storm spans 2 days - 844 also checked mean flow by calculating mean flow from 3/11/19 to 3/13/19, refer to worksheet 'USGS 1-11 & 3-13 Flow Data' for calculation.

Table 3
Determination of Storm Event Flow Conditions - As Defined in the WSB MS4 Permit and NMED TMDL Report:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions (from WSB MS4 Permit Appendix B) & NMED 2010 TMDL Report				
		High (>3,670 cfs)	Moist (922-3,670 cfs)	Mid (647-922 cfs)	Dry (359-647 cfs)	Low (0-359 cfs)
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--	Storm Event Flow Condition	--	--	--
		High (>3,360 cfs)	**Moist (929-3,360 cfs)**	**Mid (664-929 cfs)**	**Dry (319-664 cfs)**	**Low (0-319 cfs)**
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	--	Storm Event Flow Condition	--	--	--
		High	**Moist**	**Mid**	**Dry**	**Low**

Notes:
1. Flow ranges for flow conditions are not listed in Appendix B of WSB MS4 Permit, the flow ranges are from NMED, Sarah Holcomb, Nov. 2016 e-mail (see "WLAs From NMED" worksheet) and 2/1/17 NMED meeting, which are from the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, Figures 4.3 and 4.4.

Table 4
Calculate E. coli loading for Rio Grande North and Rio Grande South and Delta in E. coli Loading Between North and South Locations:

Monitoring Location	E. coli Concentration (CFU/100 mL)	Daily Mean Flow (cfs)	E. coli Loading (CFU/day)
Rio Grande North	32	1,290	1.00E+12
Rio Grande South	594	1,350	1.96E+13
Delta in E. coli Loading Between North and South Locations			1.86E+13

* If loading is negative, the delta will default to zero.

Notes:
1. Used maximum flow in Table 2 for the Daily Mean Flow in the loading calculation. E. coli loading instream looked at on a daily basis by NMED and EPA.

E. Coli Loading Calculation:

$$E.Coli\ Concentration\ \left(\frac{CFU}{100\,mL}\right) \times 28{,}316.85\ \left(\frac{mL}{CF}\right) \times \text{Mean Daily Flow}\ \left(\frac{CF}{sec}\right) \times 3{,}600\ \left(\frac{sec}{hr}\right) \times 24\ \left(\frac{hr}{day}\right) = \text{E. coli Loading}\ \left(\frac{CFU}{day}\right)$$

Not all E. coli sampled in the Rio Grande is attributable to MS4 activities. This storm event E. coli loading must be reduced to only represent the estimated CMC MS4 E. coli loading so that a comparison can be made to the MS4 Waste Load Allocations (WLAs).

The NMED presented a Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010. This approach in 2010 has the MS4s divided into Phase I and Phase II permittees, which no longer applies. NMED provided an e-mail that applies to the current CMC MS4 members and remaining MS4 members.

The CMC monitoring scheme did not have an interim E. coli sample at the Alameda Bridge during collection of this sample, which is the division of the two stream segments. Therefore, to determine the E. coli loading for the northern and southern stream segments, ratios need to be applied to the E. coli loading. The areas used in NMED's Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010 were used to determine this ratio. The total contributing watershed area for the Alameda to Angostura segment = 1,612.72 sq. mi. with the total contributing watershed area = 2084.15 sq. mi. From the 2/1/17 meeting with NMED, the WLA determination is not an additive determination - the WLA considers each stream segment separately - so even though the north segment flows into the south segment, the WLA, and therefore the E. coli loading, looks at each segment independently.

$\frac{1612.72\ sq\ mi}{2084.15\ sq\ mi}$ = 0.77 or 77% for the north segment - Alameda to Angostura

1 – 0.77 = 0.23 or 23% for the south segment - Isleta to Alameda

An estimation of the E. coli loading attributable to the CMC is needed to allow comparison with the WLA values. This approach uses percentages that calculate a percentage of the CMC WLA value divided by the TMDL minus the MOS. This percentage represents an estimate of the percent of the CMC E. coli loading to all of the E. coli contributors (point sources, MS4s, and natural background). This percentage allows a reasonable estimation of the percent of the E. coli loading that is attributable to the CMC MS4s. Since our discussion, we removed the MOS from our percentage calculation.

Using the above approach, the CMC then has an E. coli loading value to compare to the applicable WLA values, for a given stream segment and flow regime.

Table 5
Calculate Total E. coli Loading Per Stream Segment Reach and Compare to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Contributing Area Ratio for Each Segment	E. coli Loading (CFU/day) for Each Segment	Total TMDL for Segment	TMDL Exceedance?
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	0.77	1.43E+13	1.61E+12	TMDL Exceeded
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	0.23	4.28E+12	1.65E+12	TMDL Exceeded

1. Compares the E. coli loading to the TMDL - the E. coli loading regresents all of the E. coli sources and not just the CMC MS4. The TMDL could be from any source and this analysis cannot distingush between sources.

Table 6
Calculate CMC MS4 E. coli Loading Per Stream Segment Reach - apply percent based on CMC WLA compared to Total TMDL:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions	Percent of E. coli Associated with CMC Members	Total CMC E. coli Loading (CFU/day) for Each Segment
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Moist	5.9%	8.49E+11
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Moist	5.9%	2.52E+11

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for estimated percent of E. coli associated with the CMC compared to total TMDL minus the MOS.
2. The CMC measured a total E. coli loading in the Rio Grande - this is all of the E. coli, regardless of source - so the CMC WLA compared to the TMDL minus the Margin of Safety was used as a way to estimate what percent of the total E. coli could be attributed to the CMC. Discussed this approach with NMED on 2/16/17.

Table 7
Compare Storm Event E. coli Loading to WLA for CMC:

Stream Segment	Stream Name / Related USGS Gage	CMC E. coli Loading (CFU/day) for Each Segment	Flow Conditions	WLA for CMC for Flow Conditions	WLA - Potential Exceedance or Acceptable
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	8.49E+11	Moist	9.09E+10	WLA Potential Exceedance
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	2.52E+11	Moist	6.29E+10	WLA Potential Exceedance

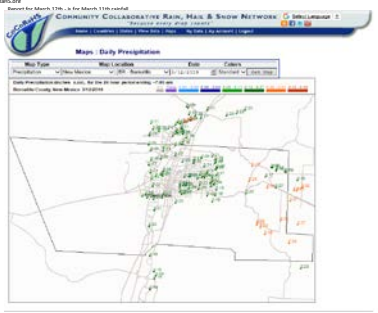
Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for CMC for Storm Event.
2. Flow Conditions were defined in Table 3 "Determination of Storm Event Flow Conditions" above.

US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, page 40:

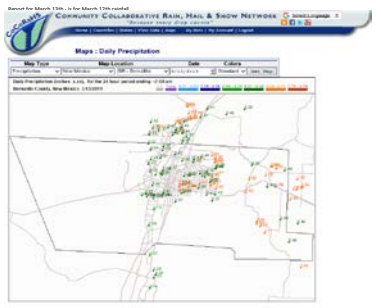
It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards. Since flows vary throughout the year in these systems the target load will vary based on the changing flow. Management of the load to improve stream water quality and meet water quality criteria should be a goal to be attained. Meeting the calculated TMDL may be a difficult objective.

Rainfall Data - CoCoRaHS.ore

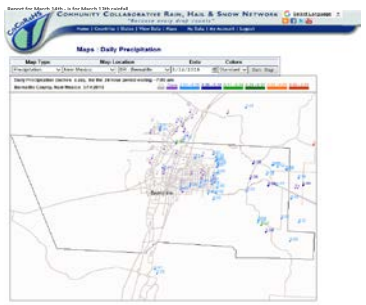
Report for March 11th - is for March 11th rainfall



Report for March 12th - is for March 12th rainfall



Report for March 14th - is for March 13th rainfall



Cooperative Monitoring Compliance (CMC)
E. coli Loading Calculation Compared to Waste Load Allocation (WLA)
FY 2017 - Wet Season Wet Weather Sampling

Date: 2/6/17

Storm Event Date: 7/6/2016 - Example provided by AMAFCA for original WLA calcul

Table 1
Stormwater Sample Analysis Results for E. coli:

Monitoring Location	E. coli Concentration (CFU/100 mL)[3]
Rio Grande North	41
Rio Grande South	246

Notes:
1. Hall Environmental Analysis Laboratory (HEAL) lab report for Rio Grande North: Order number_____
2. HEAL lab report for Rio Grande South: Order number _____
3. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method for units of MPN/100 mL, lab report uses units CFU/1 based on Feb. 26, 2014 NMED Memo "Triennial Review - Most probable number (MPN)/colony forming units (CFU) er discussions with NMED, Feb. 2017.

Table 2
Rio Grande Flow:

Monitoring Location	USGS Gage & Location
Rio Grande North	08329928 - Rio Grande near Alameda
Rio Grande South	0833000 - Rio Grande at Albuquerque, NM (Centra

Notes:
1. See 'USGS Daily Mean Discharge' worksheet for data obtained from USGS website on 12/15/16.

Table 3
Determination of Storm Event Flow Conditions - As Defined in the WSB MS4 Permit and NMED TMDL Repo

Stream Segment	Stream Name / Related USGS Gage	F
		High (>3,670 cfs)
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--
		High

		(>3,360 cfs)
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	--
		High

1. Flow ranges for flow conditions are not listed in Appendix B of WSB MS4 Permit, the flow ranges are from NMED, Sara
NMED meeting, which are from the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Wa

Table 4

Calculate E. coli Loading for Rio Grande North and Rio Grande South and Delta in E. coli Loading Between N

Monitoring Location	**E. coli Concentration (CFU/100 mL)**
Rio Grande North	41
Rio Grande South	246
Delta in E. coli Loading Between North and South Locations	

Notes:

1. Used maximum in Table 2 for the Daily Mean Flow in the loading calculation. E. coli loading instream looked at on a da

E. Coli Loading Calculation:

$E.\,Coli\ Concentration\ \left(\frac{CFU}{100mL}\right) x\ 28{,}316.85\ \left(\frac{mL}{ft^3}\right) x$ Mean Daily Flow $\left(\frac{ft^3}{sec}\right)$ x 3,600 $\left(\frac{sec}{hr}\right)$ x 24 $\left(\frac{}{d}\right.$

Not all E. coli sampled in the Rio Grande is attributable to MS4 activities. This storm event E. coli loading n MS4 E. coli loading so that a comparison can be made to the MS4 Waste Load Allocations (WLAs).

The NMED presented a Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximu Watershed, June 30, 2010. This approach in 2010 has the MS4s divided into Phase I and Phase II permittee that applies to the current CMC MS4 members and remaining MS4 members.

The CMC monitoring scheme dis not have an interim E. coli sample at the Alameda Bridge during collectior segments. Therefore, to determine the E. coli loading for the northern and southern stream segments, rat used in NMED's Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily June 30, 2010 were used to determine this ratio. The total contributing watershed area for the Alameda t contributing watershed area = 2084.15 sq. mi. From the 2/1/17 meeting with NMED, the WLA determinat considers each stream segment separately - so even though the north segment flows into the south segme each segment independently.

$\frac{1612.72\ sq.mi.}{2084.15\ sq.mi.}$ = 0.77 or 77% for the north segment - Alameda to Angost

$1 - 0.77$ = 0.23 or 23% for the south segment - Isleta to Alameda

An estimation of the E. coli loading attributable to the CMC is needed to allow comparison with the WLA v
percentage of the CMC WLA value divided by the TMDL minus the MOS. This percentage represents an es
the E. coli contributors (point sources, MS4s, and natural background). This percentage allows a reasonab
attributable to the CMC MS4s. Since our discussion, we removed the MOS from our percentage calculatio

Using the above approach, the CMC then has an E. coli loading value to compare to the applicable WLA val

Table 5
Calculate E. coli Loading Per Stream Segment Reach:

Stream Segment	Stream Name / Related USGS Gage	Contributing Area Ratio for Each Segment
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	0.77
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	0.23

Table 6
Calculate CMC MS4 E. coli Loading Per Stream Segment Reach - apply % based on WLA compared to total T

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Mid
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Dry

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for estimated percent of E. coli associated with the CMC compared t
2. The CMC measured a total E. coli loading in the Rio Grande - this is all of the E. coli, regardless of source - so the CMC Margin of Safety was used as a way to estimate what percent of the total E. coli could be attributed to the CMC. Discu

Table 7
Compare Storm Event E. coli Loading to WLA for CMC:

Stream Segment	Stream Name / Related USGS Gage	CMC E. coli Loading (CFU/day) for Each Segment
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--

2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	2.97E+10

Notes:

1. Refer to "WLAs From NMED" worksheet for WLA for CMC for Storm Event.
2. Flow Conditions were defined in Table 3 above.

US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, Ju

It is important to remember that the TMDL is a planning tool to be used to achieve water qualit
throughout the year in these systems the target load will vary based on the changing flow. Man
stream water quality and meet water quality criteria should be a goal to be attained. Meeting t
difficult objective.

ations. These samples were taken during dry weather - no stormwater

Date & Time of Sample	Date & Time Sample Delivered to HEAL
7/6/2016*	7/6/2016*
7/6/2016*	7/6/2016*

*Don't have this data since this is a simple example

.00 mL, for this analysis assuming two units are equivalent
ıumeration methods and probable standards reporting revision" and

	Daily Mean Flow (cfs) 7/6/16		
	772		
al)	631		

ort:

low Conditions (from WSB MS4 Permit Appendix B) & NMED 2010 TMDL Report			
Moist (922-3,670 cfs)	**Mid (647-922 cfs)**	**Dry (359-647 cfs)**	**Low (0-359 cfs)**
--	Storm Event Flow Condition	--	--
Moist	**Mid**	**Dry**	**Low**

(929-3,360 cfs)	(664-929 cfs)	(319-664 cfs)	(0-319 cfs)
--	--	Storm Event Flow Condition	--
Moist	**Mid**	**Dry**	**Low**

ah Holcomb, Nov. 2016 e-mail (see "WLAs From NMED" worksheet) and 2/1/17
tershed, June 30, 2010, Figures 4.3 and 4.4.

North and South Locations:

Daily Mean Flow (cfs)	E. coli Loading (CFU/day)
772	7.74E+11
631	3.80E+12
	3.02E+12

* If loading is negative, the delta will default to zero.

aily basis by NMED and EPA.

$\frac{hr}{day}$) = E. coli Loading $\left(\frac{CFU}{day}\right)$

nust be reduced to only represent the estimated CMC

m Daily Load (TMDL) for the Middle Rio Grande
es, which no longer applies. NMED provided an e-mail

n of this sample, which is the division of the two stream
tios need to be applied to the E. coli loading. The areas
Load (TMDL) for the Middle Rio Grande Watershed,
o Angostura segment = 1,612.72 sq. mi. with the total
tion is not an additive determination - the WLA
ent, the WLA, and therefore the E. coli loading, looks at

ura

alues. This approach uses percentages that calculate a
timate of the percent of the CMC E. coli loading to all of
le estimation of the percent of the E. coli loading that is
n.

lues, for a given stream segment and flow regime.

E. coli Loading (CFU/day) for Each Segment
2.33E+12
6.95E+11

TMDL:

Percent of E. coli Associated with MS4s	Total MS4 E. coli Loading (CFU/day) for Each Segment
--	--
4.3%	2.97E+10

o total TMDL minus the MOS.
WLA compared to the TMDL minus the
ussed this approach with NMED on 2/16/17.

Flow Conditions	WLA for CMC if there was a storm event	WLA - Potential Exceedance or Acceptable
Mid	No Value	WLA Acceptable

Even though there was no st
this date - the calculated E. c
river - for the MS4 portion - e

Dry	1.57E+10	WLA Potential Exceedance

ne 30, 2010, page 40:

ty standards. Since flows vary
nagement of the load to improve
he calculated TMDL may be a

CoCoRaHS data

Maximum Flow Used for this Analysis (cfs)
772
631

Table 9: Compare Storm Event E. coli Loading to Total TMDL and to Point Source WLA

Stream Segment	Stream Name / Related USGS Gage
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)
	Total E. coli Loading

Notes:

1. E. coli loading calculated in Table 4.
2. TMDL values from Table 4.11 and 4.12 in NMED 2010 TMDL Report.
3. Assumes zero discharge from MS4s.

Table 4.11. TMDLs for *E. coli*: Rio Grande (Isleta Pueblo bnd to Alamed

	FLOW CONDITIO			
	High	Moist	Mid-Range	
TMDL	**5.27×10^{12}**	**1.65×10^{12}**	**9.03×10^{11}**	
NM0022250	1.35×10^{11}	1.35×10^{11}	1.35×10^{11}	
NM0027873	1.34×10^{7}	1.34×10^{7}	1.34×10^{7}	
NMS000101	3.36×10^{11}	8.41×10^{10}	5.66×10^{10}	
NMR040000	3.73×10^{10}	9.35×10^{9}	6.29×10^{9}	
Total Waste Load Allocation	**5.08×10^{11}**	**2.28×10^{11}**	**1.98×10^{11}**	
Load Allocation	**3.36×10^{12}**	**8.41×10^{11}**	**5.66×10^{11}**	
Margin of Safety	**1.40×10^{12}**	**5.77×10^{11}**	**1.38×10^{11}**	

Table 4.12. TMDLs for *E. coli*: Rio Grande (non-Pueblo Alameda Bridge Div)

	FLOW CONDITIO			
	High	Moist	Mid-Range	
TMDL	**5.54×10^{12}**	**1.61×10^{12}**	-	
NM0023485	1.43×10^{9}	1.43×10^{9}	-	
NM0027987	9.80×10^{9}	9.80×10^{9}	-	
NM0029602	1.51×10^{9}	1.51×10^{9}	-	
NMS000101	5.25×10^{10}	1.52×10^{10}	-	
NMR040000	2.62×10^{11}	7.59×10^{10}	-	
Total Waste Load Allocation	**3.28×10^{11}**	**1.04×10^{11}**	-	
Load Allocation	**4.93×10^{12}**	**1.43×10^{12}**	-	
Margin of Safety	**2.77×10^{11}**	**8.06×10^{10}**	-	

The extensive data collection and analyses necessary to determine background
the Middle Rio Grande watershed were beyond the resources available for
therefore assumed that a portion of the load allocation is made up of natural bac

ormwater flow on
oli loading in the
exceeds the WLA.

E. coli Loading (CFU/day)[1]	Flow Conditions	TMDL minus MOS minus the MS4 WLAs - from Tables 4.11 and 4.12 in 2010 TMDL Report[3]	Loading Compared to Total TMDL minus MOS minus MS4 WLAs
2.33E+12	Mid	No Value	OK
6.95E+11	Dry	3.44E+11	Loading Exceeds TMDL
3.02E+12			

la Street Bridge)

NS	
Dry	Low
5.77 x 10^{11}	1.89 x 10^{11}
1.35 x 10^{11}	1.35 x 10^{11}
1.34 x 10^{7}	1.34 x 10^{7}
2.09 x 10^{10}	4.67 x 10^{9}
2.32 x 10^{9}	5.19 x 10^{8}
1.58 x 10^{11}	1.40 x 10^{11}
2.09 x 10^{11}	4.86 x 10^{10}
2.10 x 10^{11}	1.89 x 10^{9}

: to Angostura

Isleta to Alameda - Allowed Load Allocations - Dry Conditions

Source	Permit Number
ABCWUA	NM0022250
Sandia Peak Ski Co.	NM0027863
CMC MS4s	12 members
Other MS4s	Kirtland & Sandia
Non-Point & Natural Background	Load Allocation
MOS	
Total	

check MS4 contribution using TMDL table — 2.32E+10

MS4 WLA/(TMDL-MOS-

E. coli Loading (CFU/day) = 6.95E+11

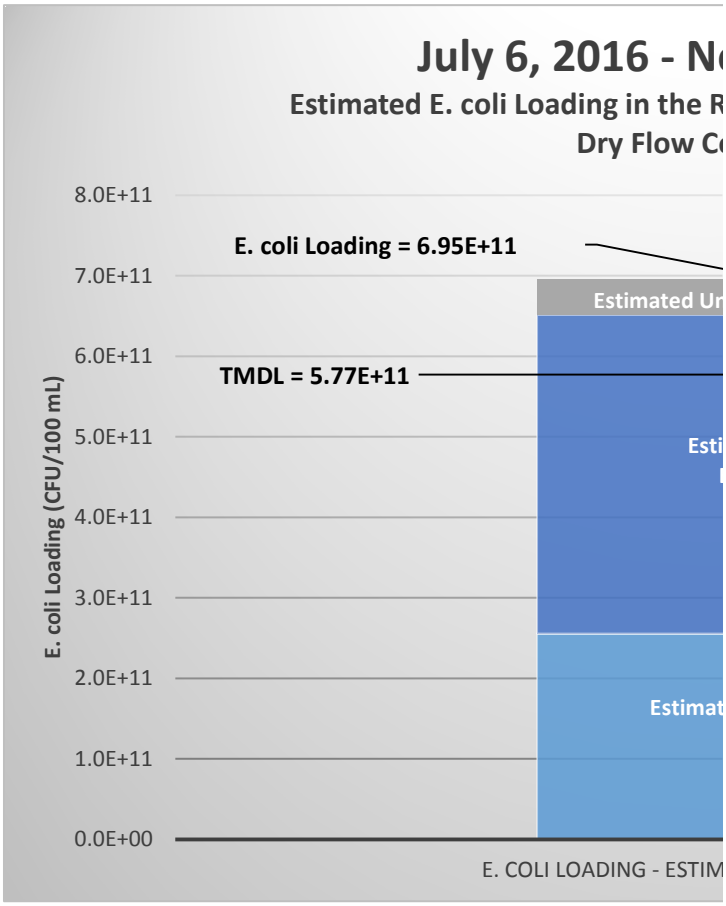
Isleta to Alameda - This Sampling Event =- Proportion of E. cc

Source	Permit Number

)NS	
Dry	Low
5.85 x 10^{11}	**2.96 x 10^{11}**
1.43 x 10^{9}	1.43 x 10^{9}
9.80 x 10^{9}	9.80 x 10^{9}
1.51 x 10^{9}	1.51 x 10^{9}
5.43 x 10^{9}	2.80 x 10^{9}
2.71 x 10^{10}	1.40 x 10^{10}
4.53 x 10^{10}	**2.95 x 10^{10}**
5.10 x 10^{11}	**2.63 x 10^{11}**
2.92 x 10^{10}	**2.96 x 10^{9}**

l *E. coli* loads for this study. It is kground loads.

ABCWUA	NM0022250
Sandia Peak Ski Co.	NM0027863
CMC MS4s	12 members
Other MS4s	Kirtland & Sandia
Non-Point & Natural Background	Load Allocation
MOS	
Unknown Sources	
Total E. coli Loading	
TMDL	5.77E+11
check MS4 contribution using TMDL table	6.29E+10



Point Source WLA - from Tables 4.11 and 4.12 in 2010 TMDL Report	Estimated Point Source Loading (23.4% of E. coli Loading) (CFU/day)[1]	Point Source Loading (23.4% of Loading) Compared to Point Source WLA
No Value	No Value	OK
1.35E+11	1.63E+11	Loading Exceeds WLA

;

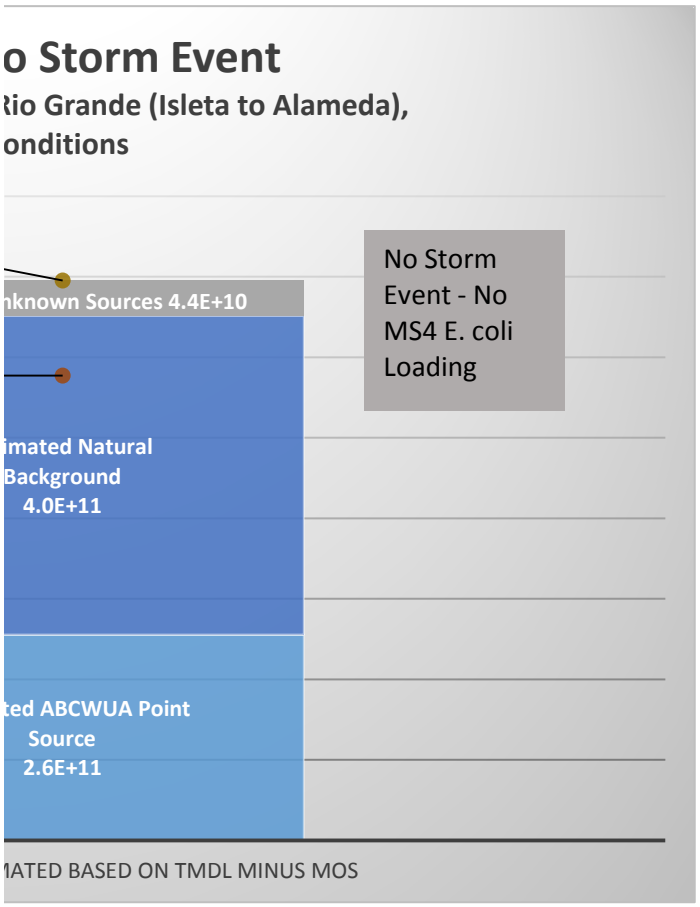
WLA	% of Total
1.35E+11	23.4%
1.34E+07	0%
1.57E+10	2.7%
7.59E+09	1.3%
2.09E+11	36.2%
2.10E+11	36.4%
5.77E+11	100%

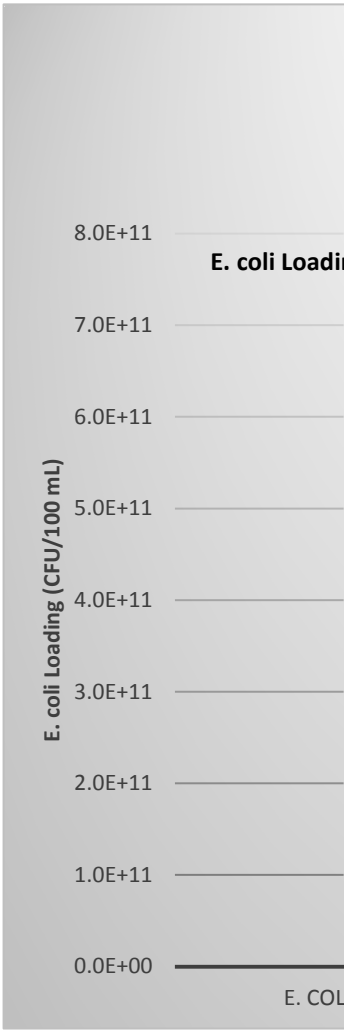
-Point Sources) = 10%

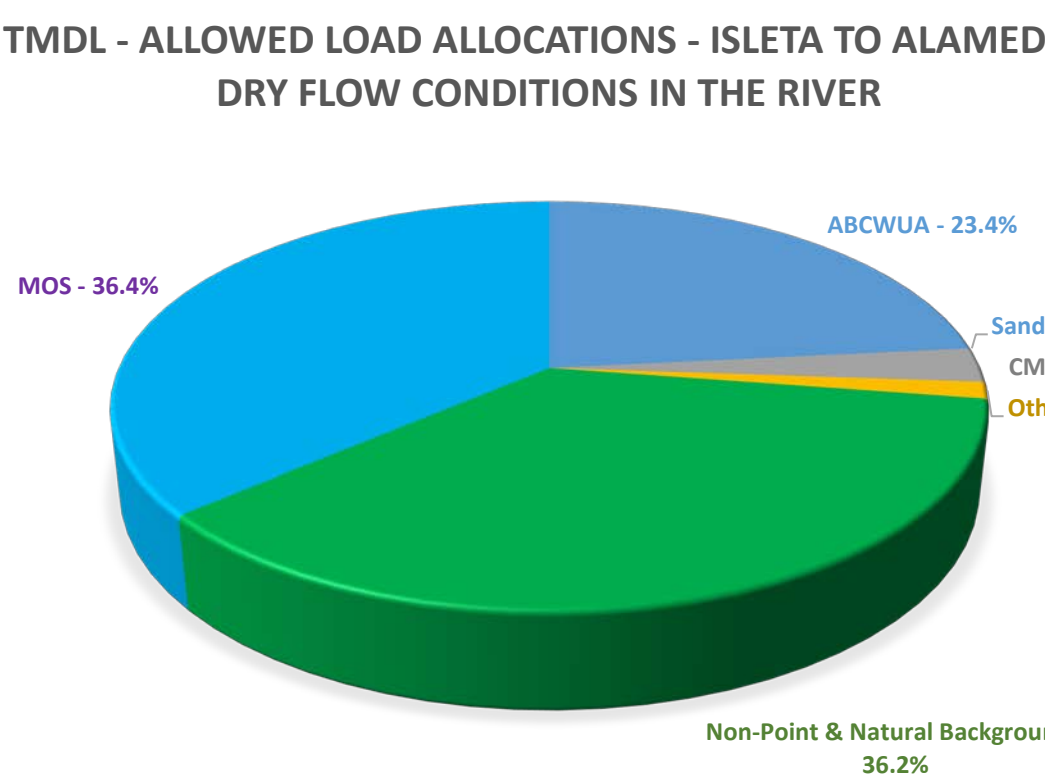
)li Loading No Stormwater - 0% to MS4s

WLA & LA	% of Total TMDL	% of Total TMDL minus MOS	Estimated Based on TMDL minus MOS

1.35E+11	23.4%	36.8%	2.6E+11
1.34E+07	0.0%	0.0%	2.5E+07
1.57E+10	0.0%	4.3%	0.0E+00
7.59E+09	0.0%	2.1%	0.0E+00
2.09E+11	36.2%	56.9%	4.0E+11
2.10E+11	36.4%		
			4.4E+10
5.77E+11	96%	100%	6.95E+11
			5.77E+11

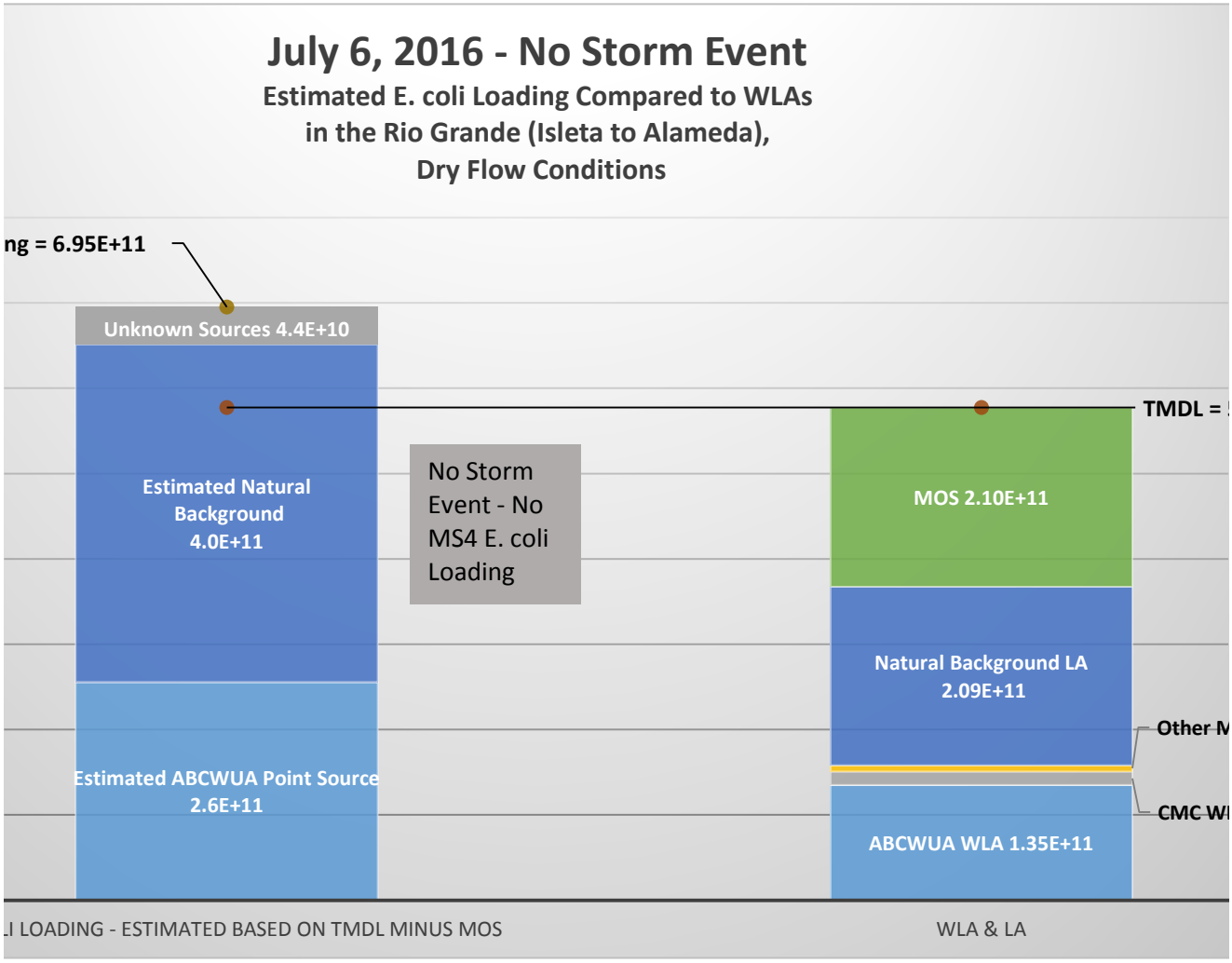




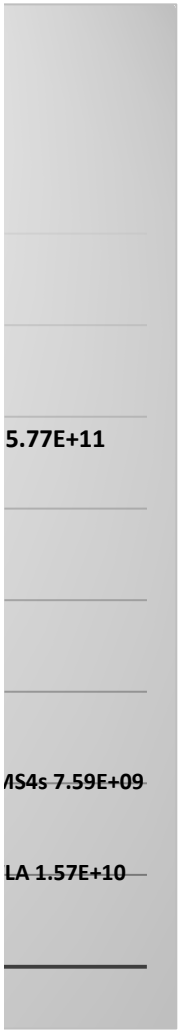


E. Coli Loading Exceeds WLA?

WLA Exceedance
WLA Exceedance
WLA OK
WLA OK
WLA Exceedance
WLA OK




)A -
lia Peak Ski Co. - 0%
IC MS4s - 2.7%
ıer MS4s - 1.3%
nd -


5.77E+11
MS4s 7.59E+09
LA 1.57E+10

Cooperative Monitoring Compliance (CMC)
E. coli Loading Calculation Compared to Waste Load Allocation (WLA)
FY 2017 - Wet Season Wet Weather Sampling

Date: 2/6/17

Storm Event Date: 12/21/2016 & 12/22/16 - Data provided by AM

Table 1
Stormwater Sample Analysis Results for E. coli:

Monitoring Location	E. coli Concentration (CFU/100 ml)[3]
Rio Grande North	3.1
Rio Grande South	317

Notes:
1. Hall Environmental Analysis Laboratory (HEAL) lab report for Rio Grande North: Order number 1612B89
2. HEAL lab report for Rio Grande South: Order number 1612C60
3. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method for units of MPN/100 ml, lab report uses units CFU/1(based on Feb. 26, 2014 NMED Memo "Triennial Review - Most probable number (MPN)/colony forming units (CFU) er discussions with NMED, Feb. 2017.

Table 2
Rio Grande Flow:

Monitoring Location	USGS Gage & Location
Rio Grande North	08329928 - Rio Grande near Alameda
Rio Grande South	0833000 - Rio Grande at Albuquerque, NM (Centra

Notes:
1. See 'USGS Daily Mean Discharge' worksheet for data obtained from USGS website on 12/15/16.

Table 3
Determination of Storm Event Flow Conditions - As Defined in the WSB MS4 Permit and NMED TMDL Repo

Stream Segment	Stream Name / Related USGS Gage	Flow C
		High (>3,670 cfs)
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--
		High

		(>3,360 cfs)
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	--
		High

1. Flow ranges for flow conditions are not listed in Appendix B of WSB MS4 Permit, the flow ranges are from NMED, Sara
NMED meeting, which are from the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Wa

Table 4

Calculate E. coli Loading for Rio Grande North and Rio Grande South and Delta in E. coli Loading Between N

Monitoring Location	E. coli Concentration (CFU/100 mL)
Rio Grande North	3.1
Rio Grande South	317
Delta in E. coli Loading Between North and South Locations	

Notes:

1. Used maximum in Table 2 for the Daily Mean Flow in the loading calculation. E. coli loading instream looked at on a d

E. Coli Loading Calculation:

$$E.Coli\ Concentration\ \left(\frac{CFU}{100mL}\right) x\ 28{,}316.85\ \left(\frac{mL}{ft^3}\right) x\ \text{Mean Daily Flow}\ \left(\frac{ft^3}{sec}\right) \text{ x } 3{,}600\ \left(\frac{sec}{hr}\right) \text{ x } 24\ \left(\frac{}{d}\right.$$

Not all E. coli sampled in the Rio Grande is attributable to MS4 activities. This storm event E. coli loading n
MS4 E. coli loading so that a comparison can be made to the MS4 Waste Load Allocations (WLAs).

The NMED presented a Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximu
Watershed, June 30, 2010. This approach in 2010 has the MS4s divided into Phase I and Phase II permittee
that applies to the current CMC MS4 members and remaining MS4 members.

The CMC monitoring scheme dis not have an interim E. coli sample at the Alameda Bridge during collectior
segments. Therefore, to determine the E. coli loading for the northern and southern stream segments, rat
used in NMED's Jurisdictional Area Approach in Appendix F of the US EPA Approved, Total Maximum Daily
June 30, 2010 were used to determine this ratio. The total contributing watershed area for the Alameda t
contributing watershed area = 2084.15 sq. mi. From the 2/1/17 meeting with NMED, the WLA determinat
considers each stream segment separately - so even though the north segment flows into the south segme
each segment independently.

$\frac{1612.72\ sq.mi.}{}$ = 0.77 or 77% for the north segment - Alameda to Angost

$\frac{}{2084.15\ sq.mi.}$ = 0.77 or 77% for the north segment - Alameda to Angost

$1 - 0.77 = 0.23$ or 23% for the south segment - Isleta to Alameda

An estimation of the E. coli loading attributable to the CMC is needed to allow comparison with the WLA v
percentage of the CMC WLA value divided by the TMDL minus the MOS. This percentage represents an es
of the E. coli contributors (point sources, MS4s, and natural background). This percentage allows a reason
that is attributable to the CMC MS4s. Since our discussion, we removed the MOS from our percentage cal

Using the above approach, the CMC then has an E. coli loading value to compare to the applicable WLA val

Table 5

Calculate E. coli Loading Per Stream Segment Reach:

Stream Segment	Stream Name / Related USGS Gage	Contributing Area Ratio for Each Segment
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	0.77
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	0.23

Table 6

Calculate CMC MS4 E. coli Loading Per Stream Segment Reach - apply % based on WLA compared to total T

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Mid
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Mid

Notes:

1. Refer to "WLAs From NMED" worksheet for WLA for estimated percent of E. coli associated with the CMC compared t
2. The CMC measured a total E. coli loading in the Rio Grande - this is all of the E. coli, regardless of source - so the CMC Margin of Safety was used as a way to estimate what percent of the total E. coli could be attributed to the CMC. Discu

Table 7

Compare Storm Event E. coli Loading to WLA for CMC:

Stream Segment	Stream Name / Related USGS Gage	CMC E. coli Loading (CFU/day) for Each Segment

2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	--
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	7.27E+10

Notes:

1. Refer to "WLAs From NMED" worksheet for WLA for CMC for Storm Event.
2. Flow Conditions were defined in Table 3 above.

US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, Ju

It is important to remember that the TMDL is a planning tool to be used to achieve water qualit
throughout the year in these systems the target load will vary based on the changing flow. Mar
stream water quality and meet water quality criteria should be a goal to be attained. Meeting t
difficult objective.

AFCA for example of sample results that were taken during dry weather - no stormwater

Date & Time of Sample	Date & Time Sample Delivered to HEAL
12/21/2016 2:45PM	12/21/2016 3:20PM
12/22/2016 2:20PM	12/22/2016 2:50PM

00 ml, for this analysis assuming two units are equivalent
ıumeration methods and probable standards reporting revision" and

	Daily Mean Flow (cfs) 12/21/16	Daily Mean Flow (cfs) 12/22/16	Calculated Mean Flow (cfs) from 12/21/16 to 12/22/16	Maximum Flow Used for this Analysis (cfs)
	800	858	829	858
al)	798	881	840	881

ort:

Conditions (from WSB MS4 Permit Appendix B) & NMED 2010 TMDL Report			
Moist (922-3,670 cfs)	**Mid (647-922 cfs)**	**Dry (359-647 cfs)**	**Low (0-359 cfs)**
--	Storm Event Flow Condition	--	--
Moist	**Mid**	**Dry**	**Low**

(929-3,360 cfs)	(664-929 cfs)	(319-664 cfs)	(0-319 cfs)
--	Storm Event Flow Condition	--	--
Moist	**Mid**	**Dry**	**Low**

ah Holcomb, Nov. 2016 e-mail (see "WLAs From NMED" worksheet) and 2/1/17
tershed, June 30, 2010, Figures 4.3 and 4.4.

North and South Locations:

Daily Mean Flow (cfs)	E. coli Loading (CFU/day)
858	6.51E+10
881	6.83E+12
	6.77E+12

* If loading is negative, the delta will default to zero.

aily basis by NMED and EPA.

$\left(\frac{hr}{day}\right)$ = E. coli Loading $\left(\frac{CFU}{day}\right)$

nust be reduced to only represent the estimated CMC

m Daily Load (TMDL) for the Middle Rio Grande
es, which no longer applies. NMED provided an e-mail

n of this sample, which is the division of the two stream
tios need to be applied to the E. coli loading. The areas
Load (TMDL) for the Middle Rio Grande Watershed,
o Angostura segment = 1,612.72 sq. mi. with the total
tion is not an additive determination - the WLA
ent, the WLA, and therefore the E. coli loading, looks at

ura

alues. This approach uses percentages that calculate a timate of the percent of the CMC E. coli loading to all able estimation of the percent of the E. coli loading culation.

lues, for a given stream segment and flow regime.

E. coli Loading (CFU/day) for Each Segment
5.21E+12
1.56E+12

TMDL:

Percent of E. coli Associated with MS4s	Total MS4 E. coli Loading (CFU/day) for Each Segment
--	--
4.7%	7.27E+10

o total TMDL minus the MOS.
WLA compared to the TMDL minus the
ussed this approach with NMED on 2/16/17.

Flow Conditions	WLA for CMC if there was a storm event	WLA - Potential Exceedance or Acceptable

Mid	No Value	WLA Acceptable
Mid	4.22E+10	WLA Potential Exceedance

Even though there was no stormwater flow on this date - the calculated E. coli loading in the river - for the MS4 portion - exceeds the WLA.

ne 30, 2010, page 40:

ty standards. Since flows vary
nagement of the load to improve
he calculated TMDL may be a

CoCoRaHS data

Table 9: Compare Storm Event E. coli Loading to Total TMDL and to Point Source WLA

Stream Segment	Stream Name / Related USGS Gage
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)
	Total E. coli Loading

Notes:

2. TMDL values from Table 4.11 and 4.12 in NMED 2010 TMDL Report.
3. Assumes zero discharge from MS4s.

Table 4.11. TMDLs for *E. coli*: Rio Grande (Isleta Pueblo bnd to Alamed

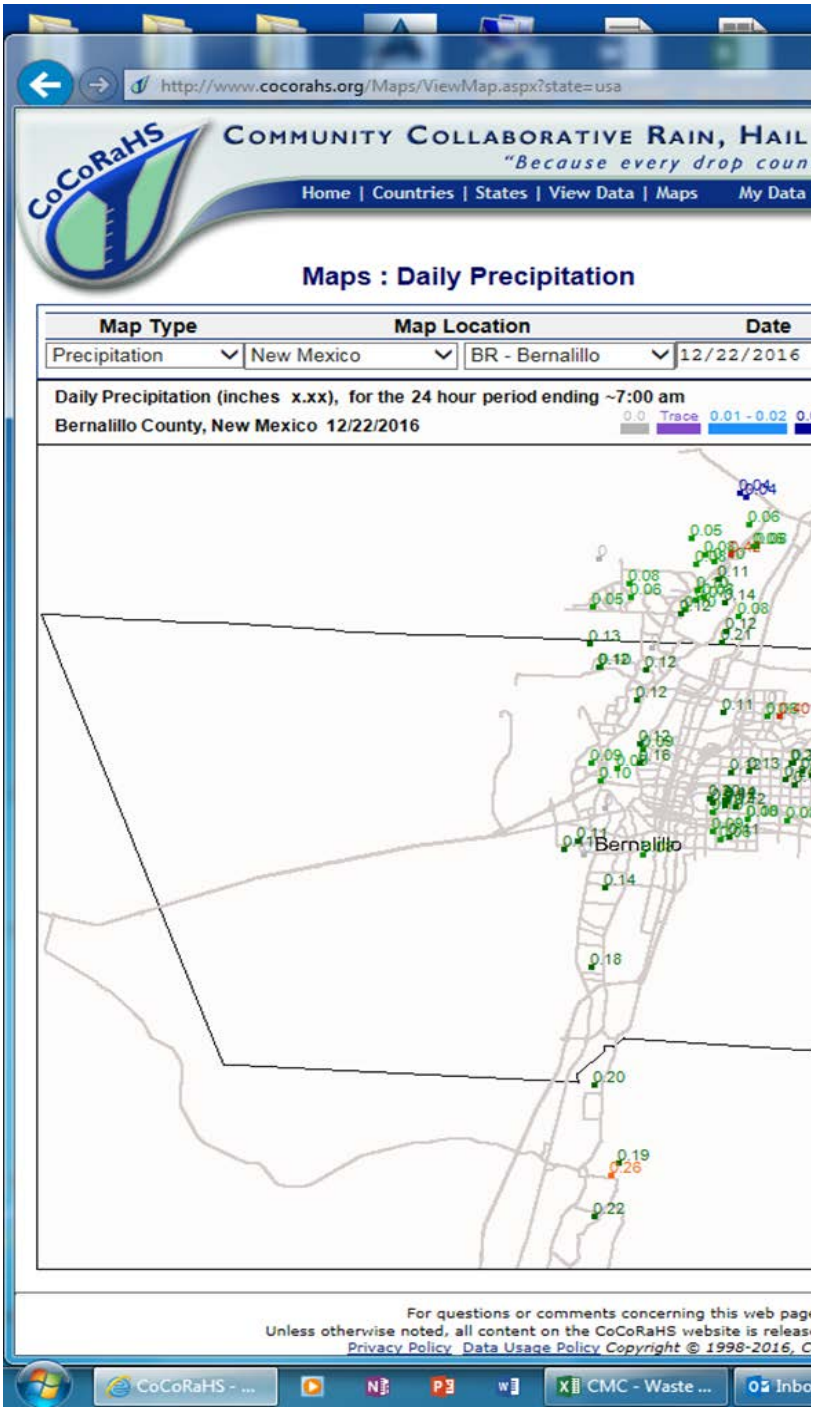
	FLOW CONDITIO			
	High	Moist	Mid-Range	
TMDL	**5.27×10^{12}**	**1.65×10^{12}**	**9.03×10^{11}**	
NM0022250	1.35×10^{11}	1.35×10^{11}	1.35×10^{11}	
NM0027873	1.34×10^{7}	1.34×10^{7}	1.34×10^{7}	
NMS000101	3.36×10^{11}	8.41×10^{10}	5.66×10^{10}	
NMR040000	3.73×10^{10}	9.35×10^{9}	6.29×10^{9}	
Total Waste Load Allocation	**5.08×10^{11}**	**2.28×10^{11}**	**1.98×10^{11}**	
Load Allocation	**3.36×10^{12}**	**8.41×10^{11}**	**5.66×10^{11}**	
Margin of Safety	**1.40×10^{12}**	**5.77×10^{11}**	**1.38×10^{11}**	

Table 4.12. TMDLs for *E. coli*: Rio Grande (non-Pueblo Alameda Bridge

Div)

	FLOW CONDITIO			
	High	Moist	Mid-Range	
TMDL	**5.54×10^{12}**	**1.61×10^{12}**	-	
NM0023485	1.43×10^{9}	1.43×10^{9}	-	
NM0027987	9.80×10^{9}	9.80×10^{9}	-	
NM0029602	1.51×10^{9}	1.51×10^{9}	-	
NMS000101	5.25×10^{10}	1.52×10^{10}	-	
NMR040000	2.62×10^{11}	7.59×10^{10}	-	
Total Waste Load Allocation	**3.28×10^{11}**	**1.04×10^{11}**	-	
Load Allocation	**4.93×10^{12}**	**1.43×10^{12}**	-	
Margin of Safety	**2.77×10^{11}**	**8.06×10^{10}**	-	

The extensive data collection and analyses necessary to determine background the Middle Rio Grande watershed were beyond the resources available for therefore assumed that a portion of the load allocation is made up of natural bac


http://www.cocorahs.org/Maps/ViewMap.aspx?state=usa
COMMUNITY COLLABORATIVE RAIN, HAIL
"Because every drop coun
Home | Countries | States | View Data | Maps
My Data
Maps : Daily Precipitation
Map Type
Map Location
Date
Precipitation
New Mexico
BR - Bernalillo
12/22/2016
Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am
Bernalillo County, New Mexico 12/22/2016
0.0
Trace
0.01 - 0.02
Bernalillo
For questions or comments concerning this web pag
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CoCoRaHS - ...
CMC - Waste ...

E. coli Loading (CFU/day)[1]	Flow Conditions	TMDL minus MOS minus MS4 WLA - from Tables 4.11 and 4.12 in 2010 TMDL Report[3]	Loading Compared to Total TMDL
5.21E+12	Mid	No Value	OK
1.56E+12	Mid	7.02E+11	Loading Exceeds TMDL
6.77E+12			

la Street Bridge)

NS	
Dry	Low
5.77 x 10^{11}	**1.89 x 10^{11}**
1.35 x 10^{11}	1.35 x 10^{11}
1.34 x 10^{7}	1.34 x 10^{7}
2.09 x 10^{10}	4.67 x 10^{9}
2.32 x 10^{9}	5.19 x 10^{8}
1.58 x 10^{11}	**1.40 x 10^{11}**
2.09 x 10^{11}	**4.86 x 10^{10}**
2.10 x 10^{11}	**1.89 x 10^{9}**

e to Angostura

Isleta to Alameda - Allowed Load Allocations - Mid Range Flo

Source	Permit Number
ABCWUA	NM0022250
Sandia Peak Ski Co.	NM0027863
CMC MS4s	12 members
Other MS4s	Kirtland & Sandia
Non-Point & Natural Background	Load Allocation
MOS	
Total	

check MS4 contribution using TMDL table 6.29E+10

E. coli Loading (CFU/day) = 1.56E+12

Isleta to Alameda - This Sampling Event =- Proportion of E. cc

ONS	
Dry	Low
5.85×10^{11}	**2.96×10^{11}**
1.43×10^{9}	1.43×10^{9}
9.80×10^{9}	9.80×10^{9}
1.51×10^{9}	1.51×10^{9}
5.43×10^{9}	2.80×10^{9}
2.71×10^{10}	1.40×10^{10}
4.53×10^{10}	**2.95×10^{10}**
5.10×10^{11}	**2.63×10^{11}**
2.92×10^{10}	**2.96×10^{9}**

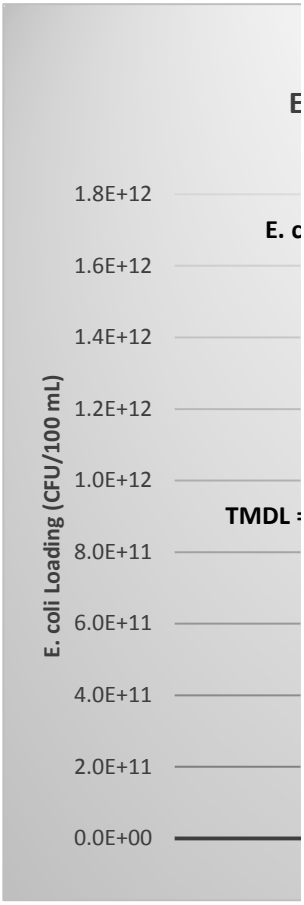
l *E. coli* loads for this study. It is kground loads.

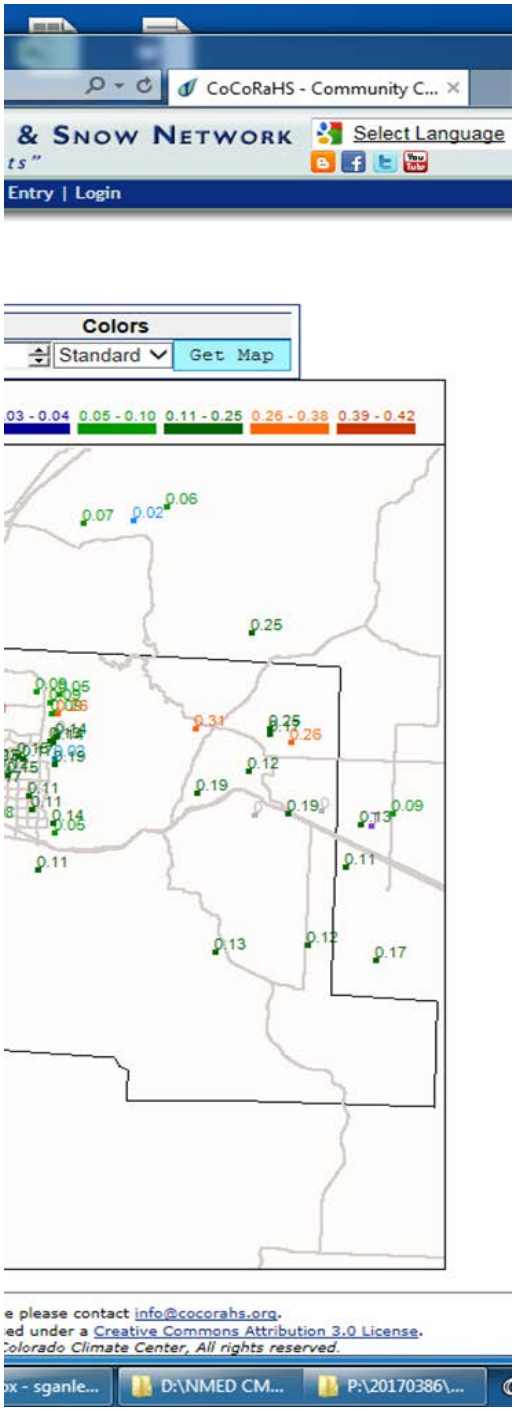
Source	Permit Number
ABCWUA	NM0022250
Sandia Peak Ski Co.	NM0027863
CMC MS4s	12 members
Other MS4s	Kirtland & Sandia
Non-Point & Natural Background	Load Allocation
MOS	
Unknown Sources	
Total E. coli Loading	

TMDL

check MS4 contribution using TMDL table

6.29E+10




CoCoRaHS - Community C...
& Snow Network
Select Language
Entry | Login
Colors
Standard
Get Map
.03 - 0.04
0.05 - 0.10
0.11 - 0.25
0.26 - 0.38
0.39 - 0.42
0.07
0.02
0.06
0.25
0.31
0.26
0.12
0.19
0.19
0.13
0.09
0.11
0.11
0.13
0.12
0.17
e please contact info@cocorahs.org.
ed under a Creative Commons Attribution 3.0 License.
Colorado Climate Center, All rights reserved.
D:\NMED CM...
P:\20170386\...

Loading Compared to Total TMDL minus MOS minus MS4 WLAs	Point Source WLA - from Tables 4.11 and 4.12 in 2010 TMDL Report	Estimated Point Source Loading (% of E. coli Loading) (CFU/day)	Point Source Loading (23.4% of Loading) Compared to Point Source WLA
No Value	No Value	No Value	OK
1.35E+11	0.00E+00	2.33E+11	Loading Exceeds WLA

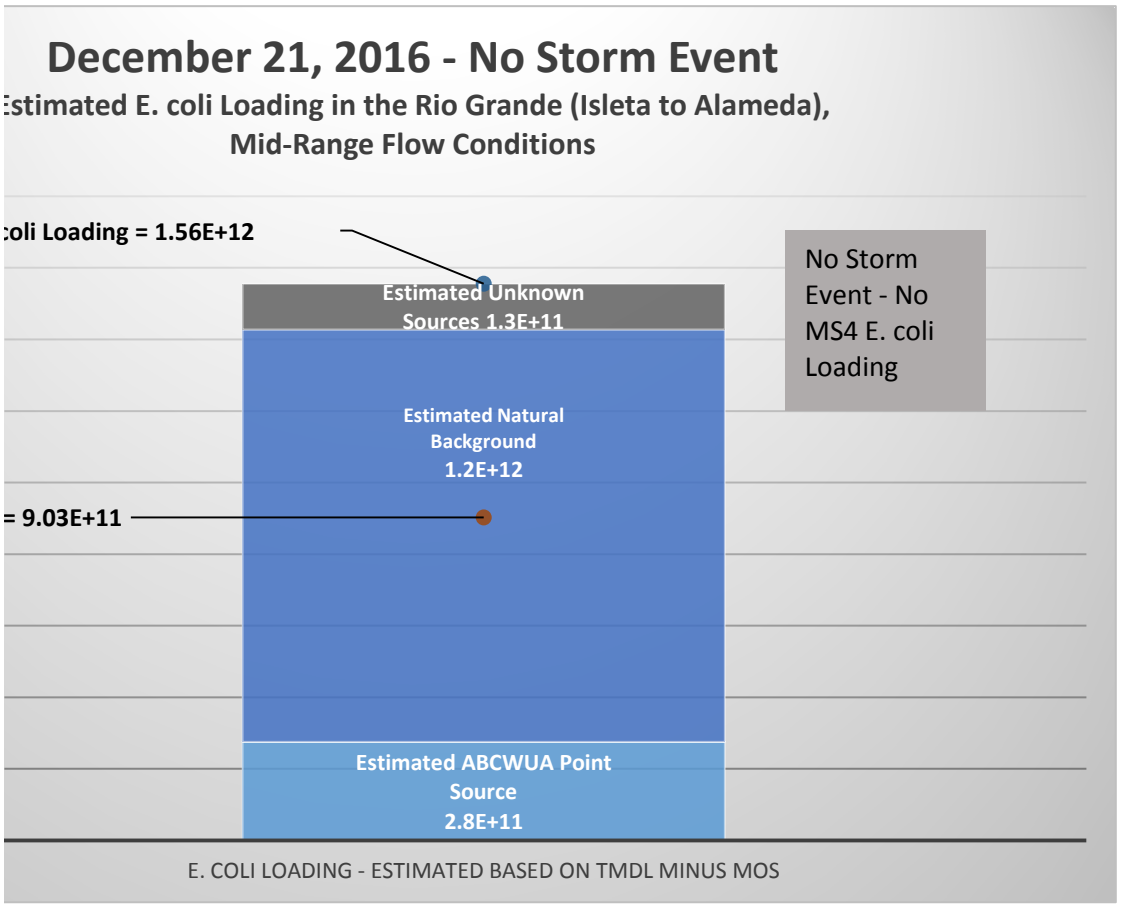
w Conditions

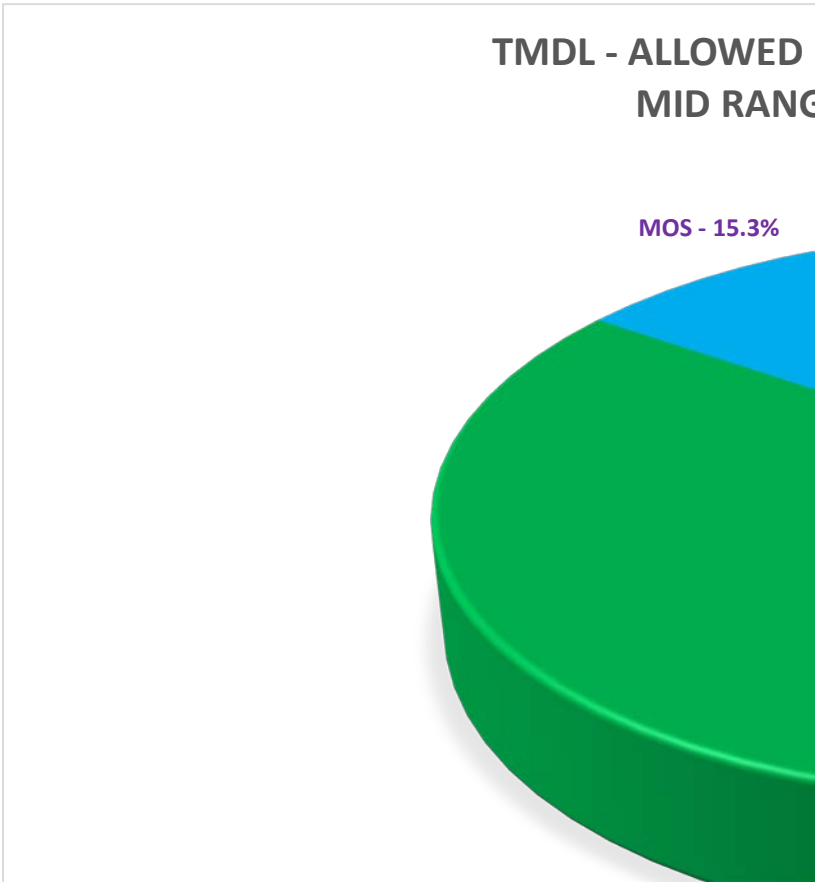
WLA	% of Total TMDL	% of Total WL
1.35E+11	15.0%	
1.34E+07	0.0%	
4.22E+10	4.7%	7%
2.07E+10	2.3%	3%
5.66E+11	62.7%	
1.38E+11	15.3%	
9.03E+11	100%	

›li Loading No Stormwater - 0% to MS4s

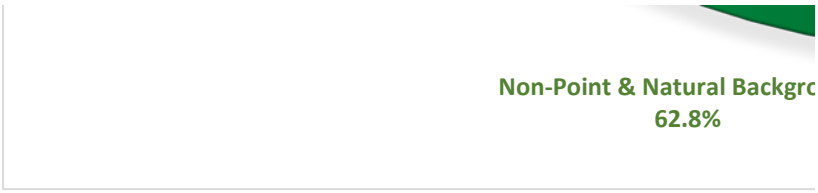
WLA	% of Total TMDL	% of Total TMDL minus MOS	E. Coli Loading - Estimated Based on TMDL minus MOS
1.35E+11	15.0%	17.7%	2.8E+11
1.34E+07	0.0%	0.0%	2.7E+07
4.22E+10	0.0%	5.5%	0.0E+00
2.07E+10	0.0%	2.7%	0.0E+00
5.66E+11	62.7%	74.1%	1.2E+12
1.38E+11	15.3%		
			1.3E+11
9.03E+11	93%	100%	1.56E+12
			9.03E+11

7% MS4s - but no storm event

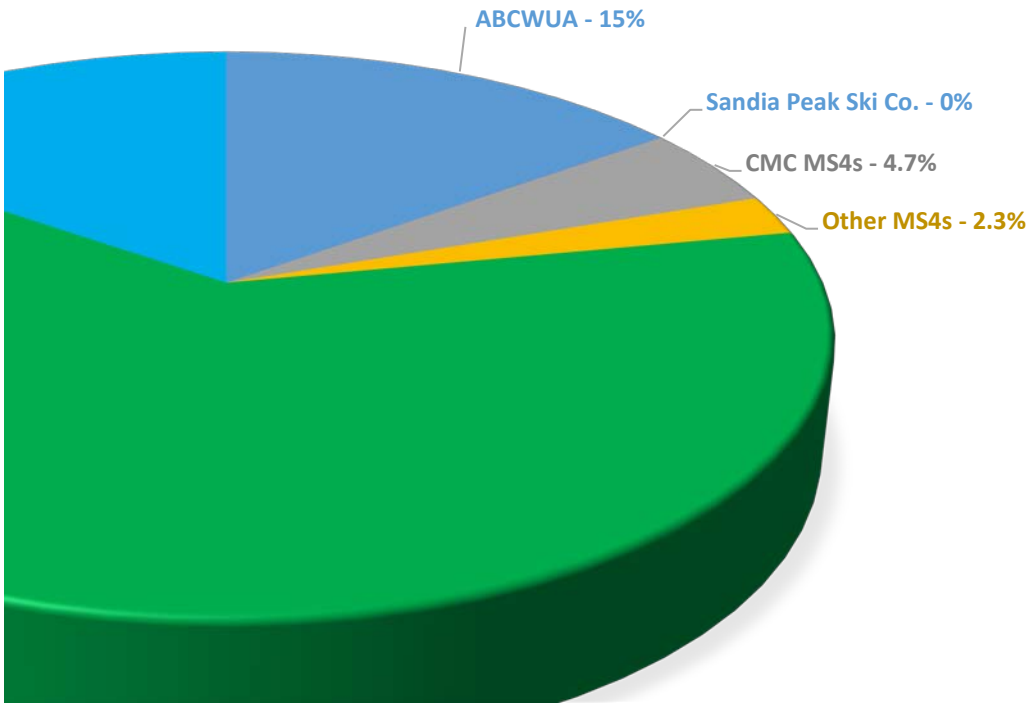



TMDL - ALLOWED
MID RANG
MOS - 15.3%

E. Coli Loading Exceeds WLA?
WLA Exceedance
WLA Exceedance
WLA OK
WLA OK
WLA Exceedance
WLA OK



LOAD ALLOCATIONS - ISLETA TO ALAMEDA - GE FLOW CONDITIONS IN THE RIVER



ound -

USGS 08330000 RIO GRANDE AT ALBUQUERQUE, NM (Central)

http://waterdata.usgs.gov/nwis/dv?cb_00060=on&cb_80154=on&cb_80155=on&format=html&site_no=0833000
e=2015-12-14&end_date=2016-12-13

Downloaded on 1/11/17 - some values changed since 12/14/16 download. Values in WLA spreadsheets updated t
Note: "P" designates USGS data is provisional and subject to revision

	Daily Mean Discharge, cubic feet per second								
DATE	**Dec 2015**	**Jan 2016**	**Feb 2016**	**Mar 2016**	**Apr 2016**	**May 2016**	**Jun 2016**	**Jul 2016**	**Aug 2016**
1		615[A]	528[P]	819[P]	795[P]	1,080[P]	2,650[P]	654[P]	740[P]
2		596[A]	526[P]	854[P]	798[P]	1,100[P e]	2,720[P]	692[P]	631[P]
3		621[A]	543[P]	819[P]	798[P]	1,100[P e]	2,670[P]	669[P]	643[P]
4		630[A]	591[P]	860[P]	800[P]	1,070[P]	2,780[P]	654[P]	623[P]
5		614[P]	564[P]	1,050[P]	647[P]	1,040[P]	2,850[P]	669[P]	891[P]
6		633[P]	584[P]	1,100[P]	590[P]	992[P]	3,220[P]	631[P]	717[P]
7		634[P]	569[P]	1,070[P]	557[P]	938[P]	3,510[P]	555[P]	691[P]
8		616[P]	582[P]	1,020[P]	534[P]	960[P]	3,350[P]	557[P]	752[P]
9		641[P]	577[P]	901[P]	654[P]	967[P]	3,260[P]	566[P]	666[P]
10		658[P]	540[P]	895[P]	586[P]	1,010[P]	3,280[P]	575[P]	669[P]
11		654[P]	562[P]	1,090[P]	562[P]	1,130[P]	3,130[P]	560[P]	525[P]
12		636[P]	575[P]	1,100[P]	754[P]	1,150[P]	2,960[P]	528[P]	415[P]
13		626[P e]	618[P]	1,120[P]	826[P]	1,170[P]	2,950[P]	574[P]	398[P]
14	1,820[A]	578[P]	646[P]	1,110[P]	661[P]	1,170[P]	2,790[P]	580[P]	482[P]
15	1,860[A]	539[P]	657[P]	978[P]	570[P]	1,270[P]	2,640[P]	608[P]	378[P]
16	1,870[A]	522[P]	671[P]	946[P]	594[P]	1,400[P]	2,620[P]	642[P]	373[P]
17	1,890[A]	521[P]	789[P]	912[P]	641[P]	1,510[P]	2,470[P]	655[P]	351[P]
18	1,750[A]	567[P]	881[P]	866[P]	654[P]	1,590[P]	2,220[P]	658[P]	395[P]
19	1,740[A]	619[P]	982[P]	815[P]	947[P]	1,690[P]	1,920[P]	656[P]	375[P]
20	1,770[A]	611[P]	998[P]	825[P]	962[P]	1,850[P]	1,690[P]	614[P]	360[P]
21	1,780[A]	614[P]	1,010[P]	817[P]	1,010[P]	1,970[P]	1,460[P]	561[P]	369[P]
22	1,700[A]	605[P]	895[P]	833[P]	1,070[P]	1,990[P]	1,220[P]	559[P]	761[P]
23	1,450[A]	605[P]	1,050[P]	827[P]	1,080[P]	1,990[P]	1,050[P]	536[P]	695[P]
24	1,280[A]	613[P]	1,080[P]	866[P]	1,060[P]	2,360[P]	860[P]	587[P]	547[P]
25	1,020[A]	614[P]	1,080[P]	907[P]	1,060[P]	2,580[P]	835[P]	600[P]	573[P]
26	970[A]	540[P]	1,100[P]	926[P]	1,180[P]	2,630[P]	905[P]	581[P]	542[P]
27	948[A]	526[P]	1,020[P]	922[P]	1,190[P]	2,610[P]	927[P]	543[P]	568[P]
28	927[A]	496[P]	977[P]	938[P]	1,190[P]	2,620[P]	919[P]	488[P]	526[P]
29	796[A]	515[P]	964[P]	924[P]	1,100[P]	2,670[P]	833[P]	532[P]	464[P]
30	687[A]	516[P]		872[P]	1,060[P]	2,700[P]	731[P]	745[P]	462[P]
31	650[A]	522[P]		840[P]		2,700[P]		1,080[P]	384[P]
COUNT	**18**	**31**	**29**	**31**	**30**	**31**	**30**	**31**	**31**
MAX	**1,890**	**658**	**1,100**	**1,120**	**1,190**	**2,700**	**3,510**	**1,080**	**891**

MIN	**650**	**496**	**526**	**815**	**534**	**938**	**731**	**488**	**351**

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						Daily Mean Discharge, cubic feet per second			
DATE	**Dec 2015**	**Jan 2016**	**Feb 2016**	**Mar 2016**	**Apr 2016**	**May 2016**	**Jun 2016**	**Jul 2016**	**Aug 2016**
1		615[A]	528[P]	819[P]	795[P]	1,080[P]	2,650[P]	654[P]	731[P]
2		596[A]	526[P]	854[P]	798[P]	1,100[P]	2,720[P]	692[P]	615[P]
3		621[A]	543[P]	819[P]	798[P]	1,080[P]	2,670[P]	669[P]	627[P]
4		630[A]	591[P]	860[P]	800[P]	1,070[P]	2,780[P]	654[P]	607[P]
5		614[P]	564[P]	1,050[P]	647[P]	1,040[P]	2,850[P]	669[P]	885[P]
6		633[P]	584[P]	1,100[P]	590[P]	992[P]	3,220[P]	631[P]	716[P]
7		634[P]	569[P]	1,070[P]	557[P]	938[P]	3,510[P]	555[P]	703[P]
8		616[P]	582[P]	1,020[P]	534[P]	960[P]	3,350[P]	557[P]	778[P]
9		641[P]	577[P]	901[P]	654[P]	967[P]	3,250[P]	566[P]	701[P]
10		658[P]	540[P]	895[P]	586[P]	1,010[P]	3,260[P]	575[P]	720[P]
11		654[P]	562[P]	1,090[P]	562[P]	1,130[P]	3,110[P]	560[P]	569[P]
12		636[P]	575[P]	1,100[P]	754[P]	1,150[P]	2,930[P]	528[P]	444[P]
13		610[P e]	618[P]	1,120[P]	826[P]	1,170[P]	2,920[P]	574[P]	421[P]
14	1,820[A]	578[P]	646[P]	1,110[P]	661[P]	1,170[P]	2,770[P]	580[P]	497[P]
15	1,860[A]	539[P]	657[P]	978[P]	570[P]	1,270[P]	2,620[P]	608[P]	386[P]
16	1,870[A]	522[P]	671[P]	946[P]	594[P]	1,400[P]	2,590[P]	642[P]	373[P]
17	1,890[A]	521[P]	789[P]	912[P]	641[P]	1,510[P]	2,440[P]	655[P]	348[P]
18	1,750[A]	567[P]	881[P]	866[P]	654[P]	1,590[P]	2,190[P]	658[P]	389[P]
19	1,740[A]	619[P]	982[P]	815[P]	947[P]	1,690[P]	1,900[P]	656[P]	365[P]
20	1,770[A]	611[P]	998[P]	825[P]	962[P]	1,850[P]	1,670[P]	614[P]	348[P]
21	1,780[A]	614[P]	1,010[P]	817[P]	1,010[P]	1,970[P]	1,450[P]	561[P]	353[P]
22	1,700[A]	605[P]	895[P]	833[P]	1,070[P]	1,990[P]	1,210[P]	559[P]	766[P]
23	1,450[A]	605[P]	1,050[P]	827[P]	1,080[P]	1,990[P]	1,040[P]	536[P]	722[P]
24	1,280[A]	613[P]	1,080[P]	866[P]	1,060[P]	2,360[P]	850[P]	587[P]	563[P]
25	1,020[A]	614[P]	1,080[P]	907[P]	1,060[P]	2,580[P]	826[P]	600[P]	588[P]
26	970[A]	540[P]	1,100[P]	926[P]	1,180[P]	2,630[P]	896[P]	581[P]	554[P]
27	948[A]	526[P]	1,020[P]	922[P]	1,190[P]	2,610[P]	919[P]	543[P]	576[P]
28	927[A]	496[P]	977[P]	938[P]	1,190[P]	2,620[P]	919[P]	488[P]	533[P]
29	796[A]	515[P]	964[P]	924[P]	1,100[P]	2,670[P]	833[P]	532[P]	464[P]
30	687[A]	516[P]		872[P]	1,060[P]	2,700[P]	731[P]	747[P]	462[P]
31	650[A]	522[P]		840[P]		2,700[P]		1,090[P]	380[P]
COUNT	**18**	**31**	**29**	**31**	**30**	**31**	**30**	**31**	**31**
MAX	**1,890**	**658**	**1,100**	**1,120**	**1,190**	**2,700**	**3,510**	**1,090**	**885**
MIN	**650**	**496**	**526**	**815**	**534**	**938**	**731**	**488**	**348**

0&referred_module=sw&period=&begin_dat

o reflect 1/11/17 download.

Sep 2016	Oct 2016	Nov 2016	Dec 2016
347 P	264 P	251 P	816 P
319 P	223 P	283 P	845 P
312 P	222 P	276 P	712 P
343 P	179 P	285 P	638 P
331 P	146 P	314 P	609 P
388 P	130 P	502 P	619 P
503 P	126 P	349 P	619 P
404 P	142 P	358 P	673 P
392 P	186 P	366 P	702 P
378 P	149 P	347 P	751 P
390 P	143 P	371 P	770 P
496 P	134 P	376 P	776 P
375 P	119 P	374 P	810 P
345 P	110 P	374 P	
304 P	116 P	454 P	
310 P	117 P	488 P	
285 P	122 P	522 P	
265 P e	110 P	524 P	
252 P e	112 P	604 P	
251 P e	117 P	666 P	
251 P e	122 P	722 P	798 P
250 P e	134 P	881 P	881 P
254 P	141 P	786 P	
223 P	133 P	770 P	
237 P	127 P	768 P	
262 P	126 P e	765 P	
270 P	128 P	766 P	
266 P	146 P	771 P	
257 P	156 P	780 P	
269 P	158 P	786 P	
	188 P		
30	**31**	**30**	**13**
503	**264**	**881**	**845**

USGS 08329928 RIO GRANDE NR ALAMEDA,

http://nwis.waterdata.usgs.gov/nwis/dv?cb_(
14&end_date=2016-12-13

Downloaded on 1/11/17 - no difference from

Note: "P" designates USGS data is provisional

DATE	Dec 2015	Jan 2016	Feb 2016
1		611 P	506 P
2		603 P	498 P
3		622 P	590 P e
4		624 P	610 P e
5		619 P	548 P
6		649 P	564 P
7		649 P	592 P
8		648 P	610 P
9		679 P	633 P
10		666 P	626 P
11		655 P	615 P
12		647 P	604 P
13		614 P	649 P
14	1,770 P	533 P	662 P
15	1,750 P	515 P	644 P
16	1,690 P	512 P	652 P
17	1,740 P	532 P	775 P
18	1,510 P	621 P	870 P
19	1,560 P	663 P	1,040 P
20	1,650 P	662 P	1,040 P
21	1,620 P	655 P	1,030 P
22	1,440 P	671 P	834 P
23	1,200 P	666 P	1,190 P
24	1,070 P	656 P	1,190 P
25	849 P	642 P	1,190 P
26	825 P	554 P	1,200 P
27	793 P	539 P	1,020 P
28	797 P	544 P	999 P
29	720 P	554 P	989 P
30	653 P	546 P	
31	629 P	531 P	
COUNT	**18**	**31**	**29**
MAX	**1,770**	**679**	**1,200**

223	**110**	**251**	**609**

MIN	**629**	**512**	**498**

Downloaded on 12/14/16

Sep 2016	Oct 2016	Nov 2016	Dec 2016
342[P]	253[P]	289[P]	733[P]
313[P]	216[P]	321[P]	759[P]
302[P]	217[P]	315[P]	655[P]
332[P]	171[P]	324[P]	601[P]
316[P]	136[P]	347[P]	579[P]
370[P]	118[P]	490[P]	592[P]
484[P]	115[P]	364[P]	594[P]
386[P]	131[P]	373[P]	639[P]
374[P]	180[P]	379[P]	665[P]
360[P]	142[P]	362[P]	707[P]
370[P]	137[P]	383[P]	725[P]
467[P]	130[P]	387[P]	732[P]
354[P]	114[P]	387[P]	764[P]
325[P]	105[P]	385[P]	
289[P]	116[P]	450[P]	
295[P]	119[P]	479[P]	
271[P]	127[P]	505[P]	
231[P e]	115[P]	506[P]	
225[P e]	119[P]	569[P]	
234[P e]	128[P]	617[P]	
245[P e]	131[P]	663[P]	
242[P e]	142[P]	805[P]	
243[P]	148[P]	709[P]	
215[P]	134[P]	698[P]	
228[P]	123[P]	695[P]	
250[P]	121[P e]	695[P]	
256[P]	122[P]	695[P]	
252[P]	147[P]	699[P]	
246[P]	160[P]	705[P]	
255[P]	163[P]	710[P]	
	206[P]		
30	**31**	**30**	**13**
484	**253**	**805**	**764**
215	**105**	**289**	**579**

DATE	Dec 2015	Jan 2016	Feb 2016
1		611[P]	506[P]
2		603[P]	498[P]
3		622[P]	590[P e]
4		624[P]	610[P e]
5		619[P]	548[P]
6		649[P]	564[P]
7		649[P]	592[P]
8		648[P]	610[P]
9		679[P]	633[P]
10		666[P]	626[P]
11		655[P]	615[P]
12		647[P]	604[P]
13		614[P]	649[P]
14	1,770[P]	533[P]	662[P]
15	1,750[P]	515[P]	644[P]
16	1,690[P]	512[P]	652[P]
17	1,740[P]	532[P]	775[P]
18	1,510[P]	621[P]	870[P]
19	1,560[P]	663[P]	1,040[P]
20	1,650[P]	662[P]	1,040[P]
21	1,620[P]	655[P]	1,030[P]
22	1,440[P]	671[P]	834[P]
23	1,200[P]	666[P]	1,190[P]
24	1,070[P]	656[P]	1,190[P]
25	849[P]	642[P]	1,190[P]
26	825[P]	554[P]	1,200[P]
27	793[P]	539[P]	1,020[P]
28	797[P]	544[P]	999[P]
29	720[P]	554[P]	989[P]
30	653[P]	546[P]	
31	629[P]	531[P]	
COUNT	**18**	**31**	**29**
MAX	**1,770**	**679**	**1,200**
MIN	**629**	**512**	**498**

NM

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and subject to revision

Daily Mean Discharge, cubic feet per second									
Mar 2016	Apr 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016	Nov 2016	Dec 2016
821 P	735 P	1,080 P	2,840 P	795 P	717 P	401 P	299 P	270 P	698 P
866 P	727 P	1,100 P	2,860 P	816 P	666 P	357 P	272 P	281 P	724 P
795 P	738 P	1,100 P	2,840 P	799 P	696 P	388 P	262 P	279 P	590 P
792 P	744 P	1,110 P	3,060 P	793 P	705 P	403 P	196 P	292 P	582 P
1,100 P	634 P	1,120 P	3,160 P	792 P	846 P	407 P	184 P	312 P	582 P
1,110 P	640 P	1,060 P	3,560 P	772 P	694 P	488 P	179 P	437 P	617 P
1,140 P	610 P	1,020 P	3,770 P	717 P	687 P	430 P	175 P	306 P	617 P
977 P	615 P	1,060 P	3,810 P	719 P	686 P	409 P	183 P	350 P	697 P
875 P	707 P	1,070 P	3,720 P	720 P	638 P	397 P	214 P	345 P	704 P
871 P	640 P	1,160 P	3,710 P	714 P	639 P	376 P	187 P	319 P	740 P
1,230 P	647 P	1,260 P	3,600 P	706 P	500 P	450 P	185 P	344 P	754 P
1,220 P	854 P	1,250 P	3,390 P	667 P	472 P	435 P	184 P	350 P	762 P
1,230 P	871 P	1,250 P	3,370 P	733 P	488 P	380 P	177 P	365 P	802 P
1,180 P	705 P	1,230 P	3,100 P	739 P	509 P	358 P	172 P	368 P	
868 P	640 P	1,300 P	2,920 P	768 P	468 P	334 P	170 P	419 P	
882 P	658 P	1,420 P	2,910 P	763 P	468 P	336 P	170 P	435 P	
878 P	636 P	1,490 P	2,620 P	743 P	465 P	324 P	170 P	465 P	
842 P	638 P	1,560 P	2,340 P	734 P	519 P	325 P	170 P	469 P	
774 P	945 P	1,710 P	1,960 P	730 P	466 P	325 P	171 P	548 P	
776 P	951 P	1,840 P	1,710 P	692 P	450 P	322 P	170 P	566 P	
787 P	1,070 P	2,000 P	1,460 P	672 P	453 P	327 P	176 P	639 P	800 P
781 P	1,130 P	1,990 P	1,210 P	652 P	695 P	350 P e	174 P	659 P	858 P
809 P	1,140 P	2,050 P	1,040 P	674 P	554 P	360 P e	175 P	643 P	
854 P	1,130 P	2,630 P	891 P	630 P	539 P	333 P	177 P	640 P	
993 P	1,140 P	2,880 P	883 P	655 P	546 P	339 P	167 P	664 P	
992 P	1,280 P	2,880 P	933 P	657 P	562 P	335 P	171 P	681 P	
1,020 P	1,280 P	2,790 P	940 P	606 P	530 P	321 P	177 P	709 P	
1,000 P	1,270 P	2,850 P	941 P	576 P	504 P	321 P	202 P	707 P	
974 P	1,150 P	2,940 P	892 P	600 P	442 P	315 P	210 P	690 P	
797 P	1,110 P	2,940 P	808 P	932 P	448 P	325 P	205 P	691 P	
782 P		2,900 P		881 P	399 P		209 P		
31	30	31	30	31	31	30	31	30	13
1,230	1,280	2,940	3,810	932	846	488	299	709	802

774	**610**	**1,020**	**808**	**576**	**399**	**315**	**167**	**270**	**582**

Daily Mean Discharge, cubic feet per second

Mar 2016	Apr 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016	Nov 2016	Dec 2016
821[P]	735[P]	1,080[P]	2,840[P]	795[P]	717[P]	401[P]	299[P]	270[P]	698[P]
866[P]	727[P]	1,100[P]	2,860[P]	816[P]	666[P]	357[P]	272[P]	281[P]	724[P]
795[P]	738[P]	1,100[P]	2,840[P]	799[P]	696[P]	388[P]	262[P]	279[P]	590[P]
792[P]	744[P]	1,110[P]	3,060[P]	793[P]	705[P]	403[P]	196[P]	292[P]	582[P]
1,100[P]	634[P]	1,120[P]	3,160[P]	792[P]	846[P]	407[P]	184[P]	312[P]	582[P]
1,110[P]	640[P]	1,060[P]	3,560[P]	772[P]	694[P]	488[P]	179[P]	437[P]	617[P]
1,140[P]	610[P]	1,020[P]	3,770[P]	717[P]	687[P]	430[P]	175[P]	306[P]	617[P]
977[P]	615[P]	1,060[P]	3,810[P]	719[P]	686[P]	409[P]	183[P]	350[P]	697[P]
875[P]	707[P]	1,070[P]	3,720[P]	720[P]	638[P]	397[P]	214[P]	345[P]	704[P]
871[P]	640[P]	1,160[P]	3,710[P]	714[P]	639[P]	376[P]	187[P]	319[P]	740[P]
1,230[P]	647[P]	1,260[P]	3,600[P]	706[P]	500[P]	450[P]	185[P]	344[P]	754[P]
1,220[P]	854[P]	1,250[P]	3,390[P]	667[P]	472[P]	435[P]	184[P]	350[P]	762[P]
1,230[P]	871[P]	1,250[P]	3,370[P]	733[P]	488[P]	380[P]	177[P]	365[P]	802[P]
1,180[P]	705[P]	1,230[P]	3,100[P]	739[P]	509[P]	358[P]	172[P]	368[P]	
868[P]	640[P]	1,300[P]	2,920[P]	768[P]	468[P]	334[P]	170[P]	419[P]	
882[P]	658[P]	1,420[P]	2,910[P]	763[P]	468[P]	336[P]	170[P]	435[P]	
878[P]	636[P]	1,490[P]	2,620[P]	743[P]	465[P]	324[P]	170[P]	465[P]	
842[P]	638[P]	1,560[P]	2,340[P]	734[P]	519[P]	325[P]	170[P]	469[P]	
774[P]	945[P]	1,710[P]	1,960[P]	730[P]	466[P]	325[P]	171[P]	548[P]	
776[P]	951[P]	1,840[P]	1,710[P]	692[P]	450[P]	322[P]	170[P]	566[P]	
787[P]	1,070[P]	2,000[P]	1,460[P]	672[P]	453[P]	327[P]	176[P]	639[P]	
781[P]	1,130[P]	1,990[P]	1,210[P]	652[P]	695[P]	350[P e]	174[P]	659[P]	
809[P]	1,140[P]	2,050[P]	1,040[P]	674[P]	554[P]	360[P e]	175[P]	643[P]	
854[P]	1,130[P]	2,630[P]	891[P]	630[P]	539[P]	333[P]	177[P]	640[P]	
993[P]	1,140[P]	2,880[P]	883[P]	655[P]	546[P]	339[P]	167[P]	664[P]	
992[P]	1,280[P]	2,880[P]	933[P]	657[P]	562[P]	335[P]	171[P]	681[P]	
1,020[P]	1,280[P]	2,790[P]	940[P]	606[P]	530[P]	321[P]	177[P]	709[P]	
1,000[P]	1,270[P]	2,850[P]	941[P]	576[P]	504[P]	321[P]	202[P]	707[P]	
974[P]	1,150[P]	2,940[P]	892[P]	600[P]	442[P]	315[P]	210[P]	690[P]	
797[P]	1,110[P]	2,940[P]	808[P]	932[P]	448[P]	325[P]	205[P]	691[P]	
782[P]		2,900[P]		881[P]	399[P]		209[P]		

31	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**13**
1,230	**1,280**	**2,940**	**3,810**	**932**	**846**	**488**	**299**	**709**	**802**
774	**610**	**1,020**	**808**	**576**	**399**	**315**	**167**	**270**	**582**

USGS 08331160 RIO GRANDE NEAR BOSQUE FARMS, NM

https://waterdata.usgs.gov/nm/nwis/dv?cb_00060=on&format=html&site_no=08331160&01&end_date=2016-12-31

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Note: "P" designates USGS data is provisional and subject to revision

	Daily Mean Discharge, cubic feet						
DATE	**Jan 2016**	**Feb 2016**	**Mar 2016**	**Apr 2016**	**May 2016**	**Jun 2016**	**Jul 2016**
1	646[P]	630[P]	818[P]	396[P]	---	2,550[P]	301[P]
2	628[P]	635[P]	760[P]	393[P]	---	2,710[P]	272[P]
3	631[P]	---	754[P]	420[P]	647[P]	2,570[P]	334[P]
4	634[P]	---	781[P]	446[P]	589[P]	2,620[P]	319[P]
5	639[P]	---	917[P]	---	554[P]	2,740[P]	294[P]
6	647[P]	---	1,060[P]	---	508[P]	2,870[P]	303[P]
7	697[P]	640[P]	990[P]	---	512[P]	3,190[P]	256[P]
8	668[P]	680[P]	927[P]	---	536[P]	3,180[P]	244[P]
9	670[P]	685[P]	763[P]	245[P]	497[P]	3,290[P]	209[P]
10	697[P]	687[P]	688[P]	224[P]	501[P]	3,390[P]	202[P]
11	687[P]	685[P]	821[P]	216[P]	595[P]	3,970[P]	194[P]
12	681[P]	680[P]	891[P]	233[P]	642[P]	3,840[P]	210[P]
13	691[P]	689[P]	868[P]	408[P]	659[P]	---	178[P]
14	644[P]	724[P]	871[P]	385[P]	633[P]	2,580[P]	142[P]
15	610[P]	720[P]	811[P]	309[P]	693[P]	2,320[P]	134[P]
16	605[P]	714[P]	730[P]	276[P]	806[P]	2,190[P]	133[P]
17	616[P]	751[P]	691[P]	305[P]	948[P]	2,000[P]	134[P]
18	622[P]	851[P]	603[P]	299[P]	1,050[P]	1,730[P]	155[P]
19	684[P]	949[P]	558[P]	390[P]	1,160[P]	1,510[P]	155[P]
20	662[P]	1,020[P]	545[P]	490[P]	1,280[P]	1,290[P]	135[P]
21	650[P]	1,040[P]	531[P]	494[P]	1,440[P]	1,080[P]	114[P]
22	659[P]	1,020[P]	515[P]	561[P]	1,540[P]	1,100[P]	116[P]
23	656[P]	1,020[P]	586[P]	582[P]	1,510[P]	875[P]	118[P]
24	674[P]	1,150[P]	589[P]	609[P]	1,760[P]	---	121[P]
25	686[P]	---	593[P]	618[P]	2,310[P]	---	125[P]
26	681[P]	1,100[P]	638[P]	655[P]	2,340[P]	---	119[P]
27	631[P]	1,100[P]	675[P]	706[P]	---	---	94[P]
28	629[P]	1,010[P]	621[P]	---	2,230[P]	475[P]	89[P]
29	629[P]	1,010[P]	566[P]	---	---	429[P]	84[P]
30	629[P]		522[P]	---	---	393[P]	170[P]
31	622[P]		440[P]		---		645[P]
COUNT	**31**	**24**	**31**	**23**	**25**	**25**	**31**
MAX	**697**	**1,150**	**1,060**	**706**	**2,340**	**3,970**	**645**

MIN	**605**	**630**	**440**	**216**	**497**	**393**	**84**

referred_module=sw&period=&begin_date=2016-01-

per second				
Aug 2016	**Sep 2016**	**Oct 2016**	**Nov 2016**	**Dec 2016**
345[P]	47[P]	51[P]	292[P]	714[P]
264[P]	42[P]	63[P]	343[P]	719[P]
222[P]	39[P]	63[P]	337[P]	694[P]
199[P]	41[P]	45[P]	329[P]	600[P]
500[P]	40[P]	34[P]	366[P]	594[P]
353[P]	37[P]	32[P]	444[P]	---
326[P]	81[P]	39[P]	456[P]	---
348[P]	50[P]	31[P]	379[P]	---
411[P]	36[P]	107[P]	403[P]	678[P]
348[P]	31[P]	166[P]	382[P]	688[P]
279[P]	29[P]	92[P]	386[P]	713[P]
112[P]	142[P]	61[P]	403[P]	---
90[P]	60[P]	52[P]	414[P]	726[P]
91[P]	45[P]	48[P]	450[P]	763[P]
98[P]	36[P]	40[P]	490[P]	778[P]
71[P]	31[P]	56[P]	518[P]	773[P]
77[P]	29[P]	55[P]	527[P]	809[P]
78[P]	25[P]	35[P]	527[P]	820[P]
86[P]	24[P]	30[P]	518[P]	792[P]
74[P]	24[P]	30[P]	590[P]	786[P]
74[P]	22[P]	29[P]	624[P]	778[P]
125[P]	24[P]	27[P]	815[P]	818[P]
---	24[P]	25[P]	714[P]	845[P]
154[P]	29[P]	26[P]	728[P]	688[P]
---	24[P]	28[P]	712[P]	692[P]
99[P]	25[P]	28[P]	711[P]	696[P]
90[P]	30[P]	35[P]	712[P]	725[P]
91[P]	31[P]	47[P]	704[P]	743[P]
84[P]	35[P]	92[P]	716[P]	761[P]
62[P]	38[P]	128[P]	715[P]	751[P]
51[P]		237[P]		699[P]
29	**30**	**31**	**30**	**27**
500	**142**	**237**	**815**	**845**

51	**22**	**25**	**292**	**594**

USGS 08330000 RIO GRANDE AT ALBUQUERQUE, NM (Central)

http://waterdata.usgs.gov/nwis/dv?cb_00060=on&cb_80154=on&cb_80155=on&format=html&site_no=0833000
e=2015-12-14&end_date=2016-12-13

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Note: "P" designates USGS data is provisional and subject to revision

	Daily Mean Discharge, cubic feet per second								
DATE	Dec 2016	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	Jun 2017	Jul 2017	Aug 2017
1		746 A	463 A	763 A	3,410 A	3,810 A	3,730 A	668 A	581 A
2		709 A	474 A	687 A	3,480 A	3,570 A	3,530 A	620 A	464 A
3		690 A	442 A	665 A	3,430 A	3,300 A	3,410 A	601 A	455 A
4		641 A	537 A	694 A	3,290 A	3,080 A	3,350 A	582 A	481 A
5		614 A	579 A	730 A	3,280 A	2,830 A	3,330 A	604 A	513 A
6		608 A	591 A	707 A	3,150 A	2,820 A	3,260 A	581 A	496 A
7		596 A	598 A	688 A	2,700 A	2,870 A	3,240 A	583 A	467 A
8		585 A	587 A	685 A	2,450 A	2,910 A	3,230 A	565 A	422 A
9		586 A	620 A	769 A	2,430 A	3,590 A	3,380 A	570 A	392 A
10		579 A	628 A	806 A	2,390 A	4,610 A	3,430 A	581 A	376 A
11		575 A	692 A	814 A	2,460 A	4,560 A	3,480 A	522 A	466 A
12	776 A	605 A	711 A	822 A	2,550 A	4,950 A	3,260 A	488 A	701 A
13	810 A	609 A	779 A	802 A	2,600 A	4,990 A	3,040 A	461 A	518 A
14	803 A	635 A	897 A	971 A	2,620 A	4,970 A	2,800 A	590 A	420 A
15	791 A	862 A	882 A e	973 A	2,870 A	4,960 A	2,440 A	508 A	431 A
16	777 A	934 A	871 A e	1,260 A	3,200 A	4,860 A	2,020 A	533 A	395 A
17	816 A	855 A	879 A e	1,500 A	3,480 A	5,120 A	1,600 A	563 A	375 A
18	770 A	857 A	926 A e	1,740 A	3,560 A	5,190 A	1,240 A	607 A	371 A
19	780 A	838 A	943 A e	1,810 A	3,550 A	5,310 A	1,200 A	515 A	369 A
20	765 A	825 A	963 A e	1,880 A	3,600 A	5,350 A	1,140 A	479 A	376 A
21	771 A	822 A	961 A e	2,390 A	3,610 A	5,360 A	1,130 A	482 A	415 A
22	835 A	742 A	951 A	2,570 A	3,610 A	4,950 A	1,110 A	479 A	415 A
23	781 A	731 A	941 A	2,600 A	3,590 A	4,270 A	1,100 A	465 A	397 A
24	699 A	708 A	936 A	2,730 A	4,160 A	3,480 A	1,030 A	471 A	428 A
25	714 A	702 A	923 A	3,010 A	4,400 A	3,340 A	1,150 A	440 A	419 A
26	728 A	659 A e	925 A	3,180 A	4,430 A	3,330 A	924 A	436 A	389 A
27	729 A	626 A e	959 A	3,300 A	4,520 A	3,330 A	828 A	414 A	377 A
28	738 A	624 A e	890 A	3,610 A	4,160 A	3,330 A	753 A	470 A	358 A
29	781 A	564 A		3,620 A	4,000 A	3,370 A	685 A	467 A	371 A
30	737 A	541 A		3,590 A	4,000 A	3,360 A	666 A	407 A	439 A
31	719 A	497 A		3,520 A		3,650 A		745 A	369 A
COUNT	20	31	28	31	30	31	30	31	31
MAX	835	934	963	3,620	4,520	5,360	3,730	745	701

MIN	**699**	**497**	**442**	**665**	**2,390**	**2,820**	**666**	**407**	**358**

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USGS 08329928 RIO GRANDE NR ALAMEDA,

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14&end_date=2016-12-13

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Note: "P" designates USGS data is provisional

Sep 2017	Oct 2017	Nov 2017	Dec 2017
363[A]	2,500[A]	634[P]	1,500[P]
337[A]	1,410[A]	670[P]	1,460[P]
324[A]	1,010[A]	680[P]	1,450[P]
310[A]	942[A]	688[P]	1,450[P]
304[A]	2,730[A]	694[P]	1,430[P]
370[A]	3,130[A]	677[P]	1,430[P]
394[A]	1,960[A]	799[P]	1,430[P]
426[A]	1,650[A]	882[P]	1,350[P]
447[A]	1,560[A]	898[P]	---
440[A]	1,480[A]	974[P]	1,260[P]
460[A]	1,220[P]	987[P]	1,270[P]
469[A]	1,130[P]	976[P]	
448[A]	1,080[P]	980[P]	
436[A]	796[P]	793[P]	
461[A]	739[P]	1,190[P]	
439[A]	730[P]	1,300[P]	
428[A]	684[P]	1,110[P]	
437[A]	650[P]	1,060[P]	
420[A]	603[P]	1,230[P]	
417[A]	582[P]	1,200[P]	
403[A]	576[P]	1,130[P]	
387[A]	580[P]	1,250[P]	
399[A]	578[P]	1,330[P]	
453[A]	557[P]	1,340[P]	
471[A]	520[P]	1,350[P]	
519[A]	534[P]	1,360[P]	
643[A]	523[P]	1,370[P]	
1,190[A]	533[P]	1,380[P]	
1,390[A]	528[P]	1,400[P]	
1,320[A]	625[P]	1,490[P]	
	651[P]		
30	**31**	**30**	**10**
1,390	**3,130**	**1,490**	**1,500**

DATE	Dec 2016	Jan 2017	Feb 2017
1		736[P]	510[P]
2		733[P]	515[P]
3		721[P]	522[P]
4		669[P]	581[P]
5		657[P]	578[P]
6		640[P]	575[P]
7		641[P]	574[P]
8		639[P]	564[P]
9		635[P]	592[P]
10		613[P]	614[P]
11		627[P]	702[P]
12	748[P]	656[P]	707[P]
13	790[P]	651[P]	808[P]
14	806[P]	700[P]	897[P]
15	806[P]	868[P]	908[P]
16	823[P]	886[P]	909[P]
17	843[P]	841[P]	953[P]
18	814[P]	857[P]	1,010[P]
19	826[P]	858[P]	989[P]
20	823[P]	863[P]	972[P]
21	831[P]	835[P]	958[P]
22	894[P]	774[P]	956[P]
23	778[P]	752[P e]	952[P]
24	762[P]	730[P e]	955[P]
25	757[P]	708[P e]	981[P]
26	738[P]	686[P e]	983[P]
27	741[P]	664[P e]	965[P]
28	741[P]	642[P]	890[P]
29	796[P]	608[P]	
30	732[P]	574[P]	
31	737[P]	520[P]	
COUNT	**20**	**31**	**28**
MAX	**894**	**886**	**1,010**

304	**520**	**634**	**1,260**

MIN	**732**	**520**	**510**

NM

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and subject to revision

Daily Mean Discharge, cubic feet per second									
Mar 2017	Apr 2017	May 2017	Jun 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017
785 P	3,580 P	3,870 P	3,740 P	712 P	470 P	382 P	2,510 P	625 P	1,430 P
737 P	3,580 P	3,690 P	3,600 P	681 P	455 P	365 P	1,200 P	681 P	1,390 P
666 P	3,620 P	3,460 P	3,430 P	671 P	469 P	353 P	972 P	696 P	1,380 P
679 P	3,430 P	3,330 P	3,430 P	668 P	459 P	353 P	992 P	691 P	1,360 P
670 P	3,360 P	3,070 P	3,390 P	668 P	502 P	367 P	3,390 P e	707 P	1,330 P
684 P	3,220 P	3,090 P	3,390 P	648 P	456 P	426 P	2,900 P e	734 P	1,310 P
680 P	2,830 P	3,130 P	3,370 P	643 P	438 P	441 P	1,780 P	894 P	1,310 P
686 P	2,630 P	3,210 P	3,330 P	631 P	435 P	487 P	1,460 P	978 P	1,220 P
787 P	2,580 P	4,140 P e	3,470 P	635 P	423 P	503 P	1,400 P	965 P	1,150 P
826 P	2,570 P	---	3,460 P	629 P	409 P	516 P	1,380 P	1,020 P	1,150 P
854 P	2,660 P	4,740 P e	3,460 P	595 P	536 P	540 P	1,150 P	1,010 P	1,150 P
883 P	2,730 P	4,880 P	3,150 P	582 P	605 P	558 P	1,100 P	1,010 P	
917 P	2,750 P	4,930 P	2,910 P	548 P	465 P	562 P	1,070 P	990 P	
1,100 P	2,790 P	4,980 P	2,800 P	643 P	435 P	559 P	853 P e	914 P	
1,150 P	3,080 P	4,970 P	2,480 P	559 P	444 P	559 P	825 P e	1,210 P	
1,420 P	3,440 P	4,970 P	1,970 P	562 P	431 P	524 P	815 P e	1,220 P	
1,830 P	3,660 P	5,230 P	1,520 P	608 P	423 P	---	765 P e	1,160 P	
2,040 P	3,700 P	5,200 P	1,230 P	601 P	423 P	---	755 P e	1,150 P	
2,090 P	3,730 P	5,340 P	1,210 P	538 P	422 P	498 P	720 P e	1,210 P	
2,180 P	3,790 P	5,360 P	1,170 P	532 P	414 P	500 P	703 P	1,160 P	
2,650 P	3,800 P	5,340 P	1,140 P	532 P	413 P	473 P	676 P	1,160 P	
2,790 P	3,800 P	4,860 P	1,140 P	532 P	417 P	473 P	677 P	1,230 P	
2,930 P e	3,800 P e	4,290 P	1,100 P	517 P	420 P	484 P	683 P	1,270 P	
3,090 P e	---	3,710 P	1,050 P	522 P	427 P	507 P	669 P	1,270 P	
3,260 P	4,420 P e	3,660 P	1,120 P	499 P	435 P	521 P	655 P	1,280 P	
3,400 P	4,390 P	3,550 P	939 P	493 P	417 P	524 P	652 P	1,280 P	
3,380 P	4,390 P	3,490 P	854 P e	465 P	413 P	744 P	635 P	1,290 P	
3,510 P	4,170 P	3,450 P	765 P e	545 P	415 P	979 P	631 P	1,270 P	
3,450 P	4,130 P	3,440 P	718 P e	491 P	464 P	1,330 P	625 P	1,280 P	
3,590 P	4,080 P	3,420 P	715 P	487 P	416 P	1,270 P	710 P	1,380 P	
3,590 P		3,740 P		766 P	393 P		666 P		
31	**29**	**30**	**30**	**31**	**31**	**28**	**31**	**30**	**11**
3,590	**4,420**	**5,360**	**3,740**	**766**	**605**	**1,330**	**3,390**	**1,380**	**1,430**

666	**2,570**	**3,070**	**715**	**465**	**393**	**353**	**625**	**625**	**1,150**

USGS 08331160 RIO GRANDE NEAR BOSQUE FARMS, NM

https://waterdata.usgs.gov/nm/nwis/dv?cb_00060=on&format=html&site_no=08331160&01&end_date=2016-12-31

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Note: "P" designates USGS data is provisional and subject to revision

	Daily Mean Discharge, cubic feet						
DATE	**Jan 2016**	**Feb 2016**	**Mar 2016**	**Apr 2016**	**May 2016**	**Jun 2016**	**Jul 2016**
1	646[P]	630[P]	818[P]	396[P]	---	2,550[P]	301[P]
2	628[P]	635[P]	760[P]	393[P]	---	2,710[P]	272[P]
3	631[P]	---	754[P]	420[P]	647[P]	2,570[P]	334[P]
4	634[P]	---	781[P]	446[P]	589[P]	2,620[P]	319[P]
5	639[P]	---	917[P]	---	554[P]	2,740[P]	294[P]
6	647[P]	---	1,060[P]	---	508[P]	2,870[P]	303[P]
7	697[P]	640[P]	990[P]	---	512[P]	3,190[P]	256[P]
8	668[P]	680[P]	927[P]	---	536[P]	3,180[P]	244[P]
9	670[P]	685[P]	763[P]	245[P]	497[P]	3,290[P]	209[P]
10	697[P]	687[P]	688[P]	224[P]	501[P]	3,390[P]	202[P]
11	687[P]	685[P]	821[P]	216[P]	595[P]	3,970[P]	194[P]
12	681[P]	680[P]	891[P]	233[P]	642[P]	3,840[P]	210[P]
13	691[P]	689[P]	868[P]	408[P]	659[P]	---	178[P]
14	644[P]	724[P]	871[P]	385[P]	633[P]	2,580[P]	142[P]
15	610[P]	720[P]	811[P]	309[P]	693[P]	2,320[P]	134[P]
16	605[P]	714[P]	730[P]	276[P]	806[P]	2,190[P]	133[P]
17	616[P]	751[P]	691[P]	305[P]	948[P]	2,000[P]	134[P]
18	622[P]	851[P]	603[P]	299[P]	1,050[P]	1,730[P]	155[P]
19	684[P]	949[P]	558[P]	390[P]	1,160[P]	1,510[P]	155[P]
20	662[P]	1,020[P]	545[P]	490[P]	1,280[P]	1,290[P]	135[P]
21	650[P]	1,040[P]	531[P]	494[P]	1,440[P]	1,080[P]	114[P]
22	659[P]	1,020[P]	515[P]	561[P]	1,540[P]	1,100[P]	116[P]
23	656[P]	1,020[P]	586[P]	582[P]	1,510[P]	875[P]	118[P]
24	674[P]	1,150[P]	589[P]	609[P]	1,760[P]	---	121[P]
25	686[P]	---	593[P]	618[P]	2,310[P]	---	125[P]
26	681[P]	1,100[P]	638[P]	655[P]	2,340[P]	---	119[P]
27	631[P]	1,100[P]	675[P]	706[P]	---	---	94[P]
28	629[P]	1,010[P]	621[P]	---	2,230[P]	475[P]	89[P]
29	629[P]	1,010[P]	566[P]	---	---	429[P]	84[P]
30	629[P]		522[P]	---	---	393[P]	170[P]
31	622[P]		440[P]		---		645[P]
COUNT	**31**	**24**	**31**	**23**	**25**	**25**	**31**
MAX	**697**	**1,150**	**1,060**	**706**	**2,340**	**3,970**	**645**

MIN	**605**	**630**	**440**	**216**	**497**	**393**	**84**

referred_module=sw&period=&begin_date=2016-01-

per second				
Aug 2016	**Sep 2016**	**Oct 2016**	**Nov 2016**	**Dec 2016**
345[P]	47[P]	51[P]	292[P]	714[P]
264[P]	42[P]	63[P]	343[P]	719[P]
222[P]	39[P]	63[P]	337[P]	694[P]
199[P]	41[P]	45[P]	329[P]	600[P]
500[P]	40[P]	34[P]	366[P]	594[P]
353[P]	37[P]	32[P]	444[P]	---
326[P]	81[P]	39[P]	456[P]	---
348[P]	50[P]	31[P]	379[P]	---
411[P]	36[P]	107[P]	403[P]	678[P]
348[P]	31[P]	166[P]	382[P]	688[P]
279[P]	29[P]	92[P]	386[P]	713[P]
112[P]	142[P]	61[P]	403[P]	---
90[P]	60[P]	52[P]	414[P]	726[P]
91[P]	45[P]	48[P]	450[P]	763[P]
98[P]	36[P]	40[P]	490[P]	778[P]
71[P]	31[P]	56[P]	518[P]	773[P]
77[P]	29[P]	55[P]	527[P]	809[P]
78[P]	25[P]	35[P]	527[P]	820[P]
86[P]	24[P]	30[P]	518[P]	792[P]
74[P]	24[P]	30[P]	590[P]	786[P]
74[P]	22[P]	29[P]	624[P]	778[P]
125[P]	24[P]	27[P]	815[P]	818[P]
---	24[P]	25[P]	714[P]	845[P]
154[P]	29[P]	26[P]	728[P]	688[P]
---	24[P]	28[P]	712[P]	692[P]
99[P]	25[P]	28[P]	711[P]	696[P]
90[P]	30[P]	35[P]	712[P]	725[P]
91[P]	31[P]	47[P]	704[P]	743[P]
84[P]	35[P]	92[P]	716[P]	761[P]
62[P]	38[P]	128[P]	715[P]	751[P]
51[P]		237[P]		699[P]
29	**30**	**31**	**30**	**27**
500	**142**	**237**	**815**	**845**

51	**22**	**25**	**292**	**594**

USGS 08330000 RIO GRANDE AT ALBUQUERQUE, NM (Central)

http://waterdata.usgs.gov/nwis/dv?cb_00060=on&cb_80154=on&cb_80155=on&format=html&site_no=0833000
e=2015-12-14&end_date=2016-12-13

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Note: "P" designates USGS data is provisional and subject to revision

	Daily Mean Discharge, cubic feet per second								
DATE	**Dec 2018**	**Jan 2019**	**Feb 2019**	**Mar 2019**	**Apr 2019**	**May 2019**	**Jun 2019**	**Jul 2019**	**Aug 2019**
1	207[P]	342[P]	458[P]	592[P]	2,070[P]				
2	223[P]	334[P]	445[P]	592[P]	1,950[P]				
3	233[P]	322[P]	445[P]	593[P]	1,940[P]				
4	281[P]	276[P]	428[P]	610[P]	2,060[P]				
5	332[P]	257[P]	421[P]	699[P]	1,990[P]				
6	330[P]	234[P]	422[P]	844[P]	1,930[P]				
7	321[P]	241[P]	406[P]	917[P]	1,960[P]				
8	305[P]	252[P]	459[P]	1,020[P]	1,980[P]				
9	298[P]	244[P]	480[P]	1,170[P]	2,040[P]				
10	365[P]	333[P]	474[P]	1,160[P]	2,230[P]				
11	460[P]	480[P]	477[P]	1,090[P]	2,510[P]				
12	501[P]	480[P]	484[P]	1,170[P]	2,640[P]				
13	464[P]	493[P]	436[P]	1,350[P]	2,340[P]				
14	417[P]	500[P]	404[P]	1,470[P]	2,330[P]				
15	408[P]	419[P]	410[P]	1,330[P]	2,120[P]				
16	409[P]	257[P]	395[P]	1,380[P]	1,690[P]				
17	418[P]	354[P]	401[P]	1,390[P]	1,350[P]				
18	430[P]	529[P]	393[P]	1,340[P]	1,640[P]				
19	430[P]	529[P]	385[P]	1,010[P]	1,970[P]				
20	432[P]	523[P]	498[P]	1,150[P]	2,010[P]				
21	410[P]	524[P]	562[P]	1,360[P]	2,570[P]				
22	399[P]	526[P]	634[P]	1,350[P]	2,630[P]				
23	390[P]	527[P]	814[P]	1,340[P]	3,220[P]				
24	384[P]	514[P]	774[P]	1,330[P]	3,150[P]				
25	392[P]	521[P]	789[P]	1,380[P]	3,460[P]				
26	382[P]	455[P]	785[P]	1,500[P]	3,520[P]				
27	380[P]	448[P]	777[P]	1,570[P]	3,750[P]				
28	399[P]	448[P]	669[P]	1,770[P]	3,780[P]				
29	429[P]	444[P]		2,110[P]	3,860[P]				
30	422[P]	444[P]		2,270[P]	4,150[P]				
31	423[P]	463[P]		2,170[P]					
COUNT	**31**	**31**	**28**	**31**	**30**				
MAX	**501**	**529**	**814**	**2,270**	**4,150**				

MIN	**207**	**234**	**385**	**592**	**1,350**				

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USGS 08329928 RIO GRANDE NR ALAMEDA,

http://nwis.waterdata.usgs.gov/nwis/dv?cb_0
14&end_date=2016-12-13

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Note: "P" designates USGS data is provisional

Sep 2019	Oct 2019	Nov 2019	Dec 2019

DATE	Dec 2018	Jan 2019	Feb 2019
1	214[P]	314[P]	399[P]
2	219[P]	326[P]	395[P]
3	221[P]	322[P]	392[P]
4	309[P]	284[P]	378[P]
5	329[P]	274[P]	404[P]
6	334[P]	260[P]	446[P]
7	331[P]	266[P]	456[P]
8	326[P]	268[P]	502[P]
9	322[P]	267[P]	514[P]
10	358[P]	350[P]	522[P]
11	416[P]	407[P]	531[P]
12	430[P]	412[P]	526[P]
13	417[P]	419[P]	465[P]
14	399[P]	428[P]	418[P]
15	382[P]	376[P]	410[P]
16	379[P]	285[P]	400[P]
17	379[P]	400[P]	392[P]
18	385[P]	448[P]	398[P]
19	383[P]	450[P]	403[P]
20	372[P]	457[P]	514[P]
21	363[P]	461[P]	540[P]
22	356[P]	457[P]	635[P]
23	354[P]	452[P]	744[P]
24	354[P]	444[P]	701[P]
25	358[P]	442[P]	703[P]
26	359[P]	419[P]	709[P]
27	351[P]	419[P]	703[P]
28	379[P]	423[P]	617[P]
29	381[P]	421[P]	
30	387[P]	415[P]	
31	385[P]	405[P]	
COUNT	31	31	28
MAX	430	461	744

MIN	**214**	**260**	**378**

NM

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and subject to revision

Daily Mean Discharge, cubic feet per second									
Mar 2019	Apr 2019	May 2019	Jun 2019	Jul 2019	Aug 2019	Sep 2019	Oct 2019	Nov 2019	Dec 2019
616[P]	2,160[P e]								
631[P]	2,020[P e]								
636[P]	1,960[P e]								
650[P]	2,030[P]								
750[P]	1,890[P]								
848[P]	1,840[P]								
897[P]	1,850[P]								
1,020[P]	1,900[P]								
1,160[P]	1,980[P]								
1,100[P]	2,180[P]								
1,100[P]	2,420[P]								
1,180[P]	2,550[P]								
1,290[P]	2,280[P]								
1,350[P]	2,240[P]								
1,270[P]	1,990[P]								
1,300[P]	1,640[P]								
1,300[P]	1,470[P]								
1,250[P]	1,690[P]								
986[P]	1,960[P]								
1,190[P]	2,100[P]								
1,290[P]	2,570[P]								
1,320[P]	2,660[P]								
1,350[P]	3,010[P]								
1,350[P]	3,000[P]								
1,420[P]	3,260[P]								
1,510[P]	3,310[P]								
1,550[P]	3,570[P]								
1,690[P]	3,750[P]								
2,020[P]	3,660[P]								
2,160[P]	4,000[P]								
2,130[P e]									
31	**30**								
2,160	**4,000**								

616	**1,470**								

USGS 08331160 RIO GRANDE NEAR BOSQUE FARMS, NM

https://waterdata.usgs.gov/nm/nwis/dv?cb_00060=on&format=html&site_no=08331160&01&end_date=2016-12-31

Downloaded on 5/23/2019

Note: "P" designates USGS data is provisional and subject to revision

	Daily Mean Discharge, cubic feet						
DATE	**Dec 2018**	**Jan 2019**	**Feb 2019**	**Mar 2019**	**Apr 2019**	**May 2019**	**Jun 2019**
1	254[P]	420[P]	518[P]	632[P]	1,830[P]		
2	254[P]	348[P]	509[P]	639[P]	1,630[P]		
3	265[P]	350[P]	517[P]	664[P]	1,590[P]		
4	271[P]	325[P]	516[P]	675[P]	1,670[P]		
5	337[P]	295[P]	470[P]	696[P]	1,640[P]		
6	359[P]	286[P]	483[P]	829[P]	1,560[P]		
7	369[P]	274[P]	493[P]	920[P]	1,520[P]		
8	355[P]	281[P]	490[P]	990[P]	1,460[P]		
9	347[P]	274[P]	522[P]	1,120[P]	1,500[P]		
10	378[P]	284[P]	504[P]	---	1,650[P]		
11	446[P]	451[P]	537[P]	---	1,990[P]		
12	529[P]	499[P]	548[P]	1,190[P]	2,130[P]		
13	531[P]	505[P]	526[P]	1,370[P]	1,920[P]		
14	483[P]	525[P]	482[P]	1,460[P]	1,810[P]		
15	486[P]	499[P]	457[P]	1,370[P]	1,640[P]		
16	466[P]	381[P]	450[P]	1,410[P]	1,270[P]		
17	484[P]	299[P]	454[P]	1,330[P]	932[P]		
18	476[P]	534[P]	461[P]	1,380[P]	1,040[P]		
19	467[P]	564[P]	454[P]	1,080[P]	1,340[P]		
20	455[P]	580[P]	483[P]	914[P]	1,420[P]		
21	436[P]	585[P]	584[P]	1,130[P]	1,890[P]		
22	440[P]	582[P]	600[P]	1,130[P]	2,050[P]		
23	416[P]	578[P]	766[P]	1,060[P]	2,660[P]		
24	407[P]	571[P]	761[P]	1,030[P]	2,800[P]		
25	415[P]	574[P]	779[P]	1,030[P]	3,040[P]		
26	415[P]	558[P]	791[P]	1,120[P]	3,200[P]		
27	441[P]	520[P]	774[P]	1,180[P]	3,440[P]		
28	426[P]	525[P]	719[P]	1,270[P]	3,580[P]		
29	454[P]	524[P]		1,570[P]	3,630[P]		
30	443[P]	519[P]		1,790[P]	3,800[P]		
31	463[P]	520[P]		1,900[P]			
COUNT	**31**	**31**	**28**	**29**	**30**		
MAX	**531**	**585**	**791**	**1,900**	**3,800**		

MIN	**254**	**274**	**450**	**632**	**932**		

referred_module=sw&period=&begin_date=2016-01-

per second				
Jul 2019	Aug 2019	Sept 2019	Oct 2019	Nov 2019

USGS 08330000 RIO GRANDE AT ALBUQUERQUE, NM (Central)

http://nwis.waterdata.usgs.gov/usa/nwis/uv/?cb_00060=on&cb_00065=on&format=rdb&site_no=08330000

Downloaded on 12/14/16

Note: USGS data is provisional and subject to revision

Date/Time	Discharge (cfs)
08/10/2016 00:00 MDT	707
08/10/2016 00:15 MDT	699
08/10/2016 00:30 MDT	699
08/10/2016 00:45 MDT	690
08/10/2016 01:00 MDT	690
08/10/2016 01:15 MDT	690
08/10/2016 01:30 MDT	690
08/10/2016 01:45 MDT	681
08/10/2016 02:00 MDT	681
08/10/2016 02:15 MDT	690
08/10/2016 02:30 MDT	681
08/10/2016 02:45 MDT	681
08/10/2016 03:00 MDT	681
08/10/2016 03:15 MDT	690
08/10/2016 03:30 MDT	690
08/10/2016 03:45 MDT	699
08/10/2016 04:00 MDT	699
08/10/2016 04:15 MDT	699
08/10/2016 04:30 MDT	699
08/10/2016 04:45 MDT	699
08/10/2016 05:00 MDT	707
08/10/2016 05:15 MDT	707
08/10/2016 05:30 MDT	707
08/10/2016 05:45 MDT	699
08/10/2016 06:00 MDT	699
08/10/2016 06:15 MDT	699
08/10/2016 06:30 MDT	690
08/10/2016 06:45 MDT	690
08/10/2016 07:00 MDT	681
08/10/2016 07:15 MDT	681
08/10/2016 07:30 MDT	690
08/10/2016 07:45 MDT	681
08/10/2016 08:00 MDT	681
08/10/2016 08:15 MDT	681
08/10/2016 08:30 MDT	681
08/10/2016 08:45 MDT	681
08/10/2016 09:00 MDT	681
08/10/2016 09:15 MDT	681
08/10/2016 09:30 MDT	681
08/10/2016 09:45 MDT	681

Rio Grande Mean Flow at Central

Calculated from 11:30 AM on 8/10/16

to 11:30 AM on 8/11/16

703	cfs

08/10/2016 10:00 MDT	681
08/10/2016 10:15 MDT	690
08/10/2016 10:30 MDT	690
08/10/2016 10:45 MDT	690
08/10/2016 11:00 MDT	690
08/10/2016 11:15 MDT	690
08/10/2016 11:30 MDT	690
08/10/2016 11:45 MDT	699
08/10/2016 12:00 MDT	699
08/10/2016 12:15 MDT	707
08/10/2016 12:30 MDT	716
08/10/2016 12:45 MDT	716
08/10/2016 13:00 MDT	725
08/10/2016 13:15 MDT	725
08/10/2016 13:30 MDT	725
08/10/2016 13:45 MDT	725
08/10/2016 14:00 MDT	725
08/10/2016 14:15 MDT	716
08/10/2016 14:30 MDT	716
08/10/2016 14:45 MDT	716
08/10/2016 15:00 MDT	716
08/10/2016 15:15 MDT	707
08/10/2016 15:30 MDT	707
08/10/2016 15:45 MDT	707
08/10/2016 16:00 MDT	699
08/10/2016 16:15 MDT	699
08/10/2016 16:30 MDT	699
08/10/2016 16:45 MDT	690
08/10/2016 17:00 MDT	690
08/10/2016 17:15 MDT	690
08/10/2016 17:30 MDT	690
08/10/2016 17:45 MDT	690
08/10/2016 18:00 MDT	690
08/10/2016 18:15 MDT	699
08/10/2016 18:30 MDT	699
08/10/2016 18:45 MDT	707
08/10/2016 19:00 MDT	716
08/10/2016 19:15 MDT	734
08/10/2016 19:30 MDT	743
08/10/2016 19:45 MDT	752
08/10/2016 20:00 MDT	761
08/10/2016 20:15 MDT	770
08/10/2016 20:30 MDT	779
08/10/2016 20:45 MDT	798
08/10/2016 21:00 MDT	807
08/10/2016 21:15 MDT	826
08/10/2016 21:30 MDT	836

08/10/2016 21:45 MDT	845
08/10/2016 22:00 MDT	855
08/10/2016 22:15 MDT	865
08/10/2016 22:30 MDT	865
08/10/2016 22:45 MDT	855
08/10/2016 23:00 MDT	855
08/10/2016 23:15 MDT	845
08/10/2016 23:30 MDT	836
08/10/2016 23:45 MDT	826
08/11/2016 00:00 MDT	817
08/11/2016 00:15 MDT	798
08/11/2016 00:30 MDT	788
08/11/2016 00:45 MDT	770
08/11/2016 01:00 MDT	761
08/11/2016 01:15 MDT	752
08/11/2016 01:30 MDT	743
08/11/2016 01:45 MDT	734
08/11/2016 02:00 MDT	716
08/11/2016 02:15 MDT	716
08/11/2016 02:30 MDT	716
08/11/2016 02:45 MDT	707
08/11/2016 03:00 MDT	699
08/11/2016 03:15 MDT	690
08/11/2016 03:30 MDT	690
08/11/2016 03:45 MDT	681
08/11/2016 04:00 MDT	681
08/11/2016 04:15 MDT	673
08/11/2016 04:30 MDT	664
08/11/2016 04:45 MDT	664
08/11/2016 05:00 MDT	656
08/11/2016 05:15 MDT	656
08/11/2016 05:30 MDT	648
08/11/2016 05:45 MDT	648
08/11/2016 06:00 MDT	640
08/11/2016 06:15 MDT	640
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08/11/2016 06:45 MDT	623
08/11/2016 07:00 MDT	623
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08/11/2016 07:30 MDT	607
08/11/2016 07:45 MDT	607
08/11/2016 08:00 MDT	599
08/11/2016 08:15 MDT	592
08/11/2016 08:30 MDT	592
08/11/2016 08:45 MDT	592
08/11/2016 09:00 MDT	592
08/11/2016 09:15 MDT	584

08/11/2016 09:30 MDT	592
08/11/2016 09:45 MDT	584
08/11/2016 10:00 MDT	584
08/11/2016 10:15 MDT	584
08/11/2016 10:30 MDT	592
08/11/2016 10:45 MDT	592
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08/11/2016 11:15 MDT	584
08/11/2016 11:30 MDT	584
08/11/2016 11:45 MDT	584
08/11/2016 12:00 MDT	584
08/11/2016 12:15 MDT	576
08/11/2016 12:30 MDT	576
08/11/2016 12:45 MDT	576
08/11/2016 13:00 MDT	576
08/11/2016 13:15 MDT	576
08/11/2016 13:30 MDT	576
08/11/2016 13:45 MDT	568
08/11/2016 14:00 MDT	568
08/11/2016 14:15 MDT	568
08/11/2016 14:30 MDT	553
08/11/2016 14:45 MDT	538
08/11/2016 15:00 MDT	524
08/11/2016 15:15 MDT	517
08/11/2016 15:30 MDT	510
08/11/2016 15:45 MDT	502
08/11/2016 16:00 MDT	495
08/11/2016 16:15 MDT	488
08/11/2016 16:30 MDT	482
08/11/2016 16:45 MDT	475
08/11/2016 17:00 MDT	468
08/11/2016 17:15 MDT	468
08/11/2016 17:30 MDT	461
08/11/2016 17:45 MDT	461
08/11/2016 18:00 MDT	454
08/11/2016 18:15 MDT	454
08/11/2016 18:30 MDT	454
08/11/2016 18:45 MDT	448
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08/11/2016 19:30 MDT	448
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08/11/2016 20:00 MDT	441
08/11/2016 20:15 MDT	441
08/11/2016 20:30 MDT	441
08/11/2016 20:45 MDT	441
08/11/2016 21:00 MDT	441

08/11/2016 21:15 MDT	441
08/11/2016 21:30 MDT	441
08/11/2016 21:45 MDT	441
08/11/2016 22:00 MDT	441
08/11/2016 22:15 MDT	441
08/11/2016 22:30 MDT	441
08/11/2016 22:45 MDT	441
08/11/2016 23:00 MDT	435
08/11/2016 23:15 MDT	435
08/11/2016 23:30 MDT	441
08/11/2016 23:45 MDT	441

USGS 08329928 RIO GRANDE NR ALAMEDA, NM

)&period=&begin_date http://nwis.waterdata.usgs.gov/nwis/uv?cb_00060=on&cb_00065=on&format=ht

Downloaded on 12/14/16

Note: USGS data is provisional and subject to revision

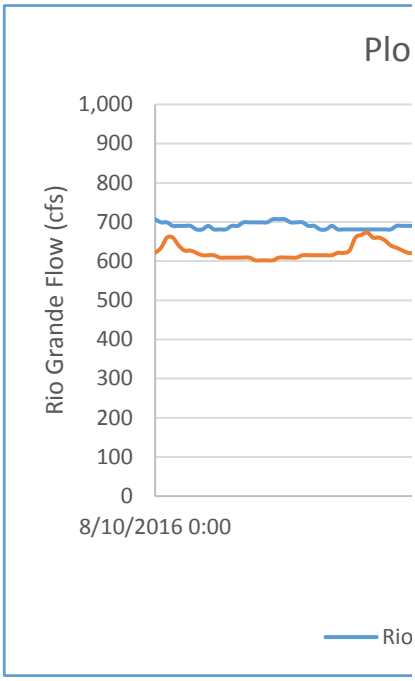
Date/Time	Discharge (cfs)
8/10/2016 0:00	621
8/10/2016 0:15	634
8/10/2016 0:30	660
8/10/2016 0:45	660
8/10/2016 1:00	640
8/10/2016 1:15	627
8/10/2016 1:30	627
8/10/2016 1:45	621
8/10/2016 2:00	615
8/10/2016 2:15	615
8/10/2016 2:30	615
8/10/2016 2:45	609
8/10/2016 3:00	609
8/10/2016 3:15	609
8/10/2016 3:30	609
8/10/2016 3:45	609
8/10/2016 4:00	609
8/10/2016 4:15	602
8/10/2016 4:30	602
8/10/2016 4:45	602
8/10/2016 5:00	602
8/10/2016 5:15	609
8/10/2016 5:30	609
8/10/2016 5:45	609
8/10/2016 6:00	609
8/10/2016 6:15	615
8/10/2016 6:30	615
8/10/2016 6:45	615
8/10/2016 7:00	615
8/10/2016 7:15	615
8/10/2016 7:30	615
8/10/2016 7:45	621
8/10/2016 8:00	621
8/10/2016 8:15	627
8/10/2016 8:30	660
8/10/2016 8:45	667
8/10/2016 9:00	673
8/10/2016 9:15	660
8/10/2016 9:30	660
8/10/2016 9:45	653

Rio Grande Mean Flow Near Alam

Calculated from 11:30 AM on 8/10

to 11:30 AM on 8/11/16

593	cfs



8/10/2016 10:00	640
8/10/2016 10:15	634
8/10/2016 10:30	627
8/10/2016 10:45	621
8/10/2016 11:00	621
8/10/2016 11:15	621
8/10/2016 11:30	615
8/10/2016 11:45	621
8/10/2016 12:00	621
8/10/2016 12:15	621
8/10/2016 12:30	621
8/10/2016 12:45	627
8/10/2016 13:00	621
8/10/2016 13:15	615
8/10/2016 13:30	621
8/10/2016 13:45	627
8/10/2016 14:00	627
8/10/2016 14:15	627
8/10/2016 14:30	627
8/10/2016 14:45	640
8/10/2016 15:00	667
8/10/2016 15:15	694
8/10/2016 15:30	700
8/10/2016 15:45	700
8/10/2016 16:00	707
8/10/2016 16:15	707
8/10/2016 16:30	707
8/10/2016 16:45	714
8/10/2016 17:00	714
8/10/2016 17:15	714
8/10/2016 17:30	714
8/10/2016 17:45	714
8/10/2016 18:00	714
8/10/2016 18:15	714
8/10/2016 18:30	714
8/10/2016 18:45	714
8/10/2016 19:00	707
8/10/2016 19:15	707
8/10/2016 19:30	700
8/10/2016 19:45	673
8/10/2016 20:00	653
8/10/2016 20:15	634
8/10/2016 20:30	627
8/10/2016 20:45	627
8/10/2016 21:00	621
8/10/2016 21:15	615
8/10/2016 21:30	609

8/10/2016 21:45	609
8/10/2016 22:00	609
8/10/2016 22:15	609
8/10/2016 22:30	609
8/10/2016 22:45	609
8/10/2016 23:00	602
8/10/2016 23:15	596
8/10/2016 23:30	596
8/10/2016 23:45	596
8/11/2016 0:00	590
8/11/2016 0:15	590
8/11/2016 0:30	584
8/11/2016 0:45	578
8/11/2016 1:00	572
8/11/2016 1:15	572
8/11/2016 1:30	566
8/11/2016 1:45	560
8/11/2016 2:00	554
8/11/2016 2:15	554
8/11/2016 2:30	548
8/11/2016 2:45	542
8/11/2016 3:00	537
8/11/2016 3:15	537
8/11/2016 3:30	531
8/11/2016 3:45	525
8/11/2016 4:00	520
8/11/2016 4:15	514
8/11/2016 4:30	497
8/11/2016 4:45	487
8/11/2016 5:00	497
8/11/2016 5:15	520
8/11/2016 5:30	537
8/11/2016 5:45	554
8/11/2016 6:00	560
8/11/2016 6:15	542
8/11/2016 6:30	525
8/11/2016 6:45	525
8/11/2016 7:00	520
8/11/2016 7:15	514
8/11/2016 7:30	508
8/11/2016 7:45	508
8/11/2016 8:00	508
8/11/2016 8:15	508
8/11/2016 8:30	514
8/11/2016 8:45	514
8/11/2016 9:00	514
8/11/2016 9:15	508

8/11/2016 9:30	508
8/11/2016 9:45	514
8/11/2016 10:00	514
8/11/2016 10:15	514
8/11/2016 10:30	508
8/11/2016 10:45	497
8/11/2016 11:00	492
8/11/2016 11:15	487
8/11/2016 11:30	487
8/11/2016 11:45	481
8/11/2016 12:00	476
8/11/2016 12:15	476
8/11/2016 12:30	476
8/11/2016 12:45	465
8/11/2016 13:00	465
8/11/2016 13:15	455
8/11/2016 13:30	460
8/11/2016 13:45	460
8/11/2016 14:00	460
8/11/2016 14:15	465
8/11/2016 14:30	465
8/11/2016 14:45	471
8/11/2016 15:00	465
8/11/2016 15:15	465
8/11/2016 15:30	471
8/11/2016 15:45	471
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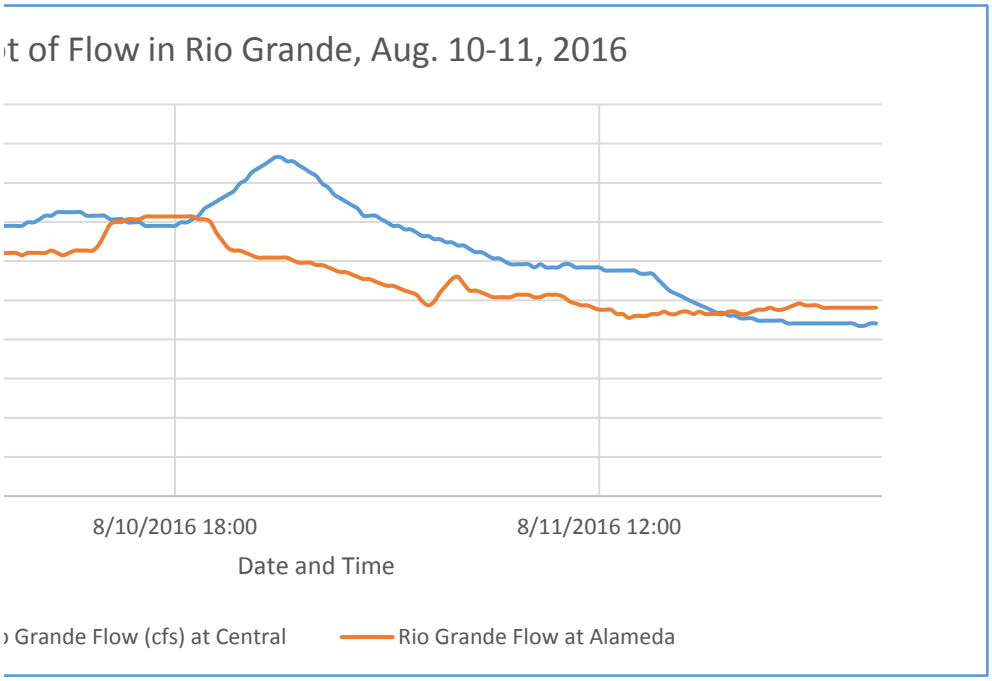
8/11/2016 18:00	465
8/11/2016 18:15	465
8/11/2016 18:30	471
8/11/2016 18:45	476
8/11/2016 19:00	476
8/11/2016 19:15	481
8/11/2016 19:30	476
8/11/2016 19:45	476
8/11/2016 20:00	481
8/11/2016 20:15	487
8/11/2016 20:30	492
8/11/2016 20:45	487
8/11/2016 21:00	487

8/11/2016 21:15	487
8/11/2016 21:30	481
8/11/2016 21:45	481
8/11/2016 22:00	481
8/11/2016 22:15	481
8/11/2016 22:30	481
8/11/2016 22:45	481
8/11/2016 23:00	481
8/11/2016 23:15	481
8/11/2016 23:30	481
8/11/2016 23:45	481

tml&site_no=08329928&period=&begin_date=2016-08-10&end_date=2016-08-11

eda
)/16



USGS 08330000 RIO GRANDE AT ALBUQUERQUE, NM (Central)

https://nwis.waterdata.usgs.gov/usa/nwis/uv/?cb_00060=on&cb_00065=on&format=rdb&site_no=0833

Downloaded on 12/15/16

Note: USGS data is provisional and subject to revision

Date	Time	Discharge (cfs)
9/12/2016	12:00 AM	561
9/12/2016	12:15 AM	584
9/12/2016	12:30 AM	623
9/12/2016	12:45 AM	656
9/12/2016	1:00 AM	681
9/12/2016	1:15 AM	707
9/12/2016	1:30 AM	734
9/12/2016	1:45 AM	743
9/12/2016	2:00 AM	752
9/12/2016	2:15 AM	752
9/12/2016	2:30 AM	752
9/12/2016	2:45 AM	743
9/12/2016	3:00 AM	734
9/12/2016	3:15 AM	734
9/12/2016	3:30 AM	716
9/12/2016	3:45 AM	699
9/12/2016	4:00 AM	681
9/12/2016	4:15 AM	664
9/12/2016	4:30 AM	648
9/12/2016	4:45 AM	623
9/12/2016	5:00 AM	607
9/12/2016	5:15 AM	584
9/12/2016	5:30 AM	568
9/12/2016	5:45 AM	546
9/12/2016	6:00 AM	531
9/12/2016	6:15 AM	517
9/12/2016	6:30 AM	502
9/12/2016	6:45 AM	488
9/12/2016	7:00 AM	475
9/12/2016	7:15 AM	461
9/12/2016	7:30 AM	454
9/12/2016	7:45 AM	441
9/12/2016	8:00 AM	435
9/12/2016	8:15 AM	428
9/12/2016	8:30 AM	428
9/12/2016	8:45 AM	422
9/12/2016	9:00 AM	422
9/12/2016	9:15 AM	422
9/12/2016	9:30 AM	416
9/12/2016	9:45 AM	416

Rio Grande Mean Flow at Central

Calculated from 11:45 AM on 9/12/16

to 11:45 AM on 9/13/16

381	cfs

9/12/2016	10:00 AM	416
9/12/2016	10:15 AM	409
9/12/2016	10:30 AM	409
9/12/2016	10:45 AM	403
9/12/2016	11:00 AM	403
9/12/2016	11:15 AM	397
9/12/2016	11:30 AM	391
9/12/2016	11:45 AM	391
9/12/2016	12:00 PM	385
9/12/2016	12:15 PM	385
9/12/2016	12:30 PM	379
9/12/2016	12:45 PM	379
9/12/2016	1:00 PM	379
9/12/2016	1:15 PM	379
9/12/2016	1:30 PM	379
9/12/2016	1:45 PM	379
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9/12/2016	2:15 PM	379
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9/12/2016	2:45 PM	379
9/12/2016	3:00 PM	379
9/12/2016	3:15 PM	379
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9/12/2016	3:45 PM	379
9/12/2016	4:00 PM	379
9/12/2016	4:15 PM	379
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9/12/2016	4:45 PM	373
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9/12/2016	5:30 PM	379
9/12/2016	5:45 PM	379
9/12/2016	6:00 PM	379
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9/12/2016	6:45 PM	385
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9/12/2016	8:00 PM	379
9/12/2016	8:15 PM	379
9/12/2016	8:30 PM	379
9/12/2016	8:45 PM	379
9/12/2016	9:00 PM	379
9/12/2016	9:15 PM	385
9/12/2016	9:30 PM	385

9/12/2016	9:45 PM	385
9/12/2016	10:00 PM	385
9/12/2016	10:15 PM	385
9/12/2016	10:30 PM	391
9/12/2016	10:45 PM	391
9/12/2016	11:00 PM	391
9/12/2016	11:15 PM	391
9/12/2016	11:30 PM	397
9/12/2016	11:45 PM	397
9/13/2016	12:00 AM	397
9/13/2016	12:15 AM	391
9/13/2016	12:30 AM	397
9/13/2016	12:45 AM	397
9/13/2016	1:00 AM	397
9/13/2016	1:15 AM	397
9/13/2016	1:30 AM	397
9/13/2016	1:45 AM	397
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9/13/2016	2:30 AM	391
9/13/2016	2:45 AM	391
9/13/2016	3:00 AM	391
9/13/2016	3:15 AM	397
9/13/2016	3:30 AM	397
9/13/2016	3:45 AM	397
9/13/2016	4:00 AM	403
9/13/2016	4:15 AM	403
9/13/2016	4:30 AM	403
9/13/2016	4:45 AM	403
9/13/2016	5:00 AM	403
9/13/2016	5:15 AM	403
9/13/2016	5:30 AM	403
9/13/2016	5:45 AM	397
9/13/2016	6:00 AM	397
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9/13/2016	7:30 AM	379
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9/13/2016	8:15 AM	367
9/13/2016	8:30 AM	362
9/13/2016	8:45 AM	362
9/13/2016	9:00 AM	356
9/13/2016	9:15 AM	356

9/13/2016	9:30 AM	356
9/13/2016	9:45 AM	356
9/13/2016	10:00 AM	350
9/13/2016	10:15 AM	350
9/13/2016	10:30 AM	350
9/13/2016	10:45 AM	344
9/13/2016	11:00 AM	344
9/13/2016	11:15 AM	344
9/13/2016	11:30 AM	339
9/13/2016	11:45 AM	339
9/13/2016	12:00 PM	339
9/13/2016	12:15 PM	339
9/13/2016	12:30 PM	333
9/13/2016	12:45 PM	333
9/13/2016	1:00 PM	328
9/13/2016	1:15 PM	328
9/13/2016	1:30 PM	328
9/13/2016	1:45 PM	328
9/13/2016	2:00 PM	328
9/13/2016	2:15 PM	328
9/13/2016	2:30 PM	328
9/13/2016	2:45 PM	328
9/13/2016	3:00 PM	328
9/13/2016	3:15 PM	328
9/13/2016	3:30 PM	328
9/13/2016	3:45 PM	328
9/13/2016	4:00 PM	328
9/13/2016	4:15 PM	328
9/13/2016	4:30 PM	328
9/13/2016	4:45 PM	328
9/13/2016	5:00 PM	328
9/13/2016	5:15 PM	328
9/13/2016	5:30 PM	328
9/13/2016	5:45 PM	328
9/13/2016	6:00 PM	328
9/13/2016	6:15 PM	328
9/13/2016	6:30 PM	328
9/13/2016	6:45 PM	328
9/13/2016	7:00 PM	328
9/13/2016	7:15 PM	328
9/13/2016	7:30 PM	328
9/13/2016	7:45 PM	328
9/13/2016	8:00 PM	328
9/13/2016	8:15 PM	328
9/13/2016	8:30 PM	328
9/13/2016	8:45 PM	328
9/13/2016	9:00 PM	328

9/13/2016	9:15 PM	328
9/13/2016	9:30 PM	328
9/13/2016	9:45 PM	328
9/13/2016	10:00 PM	328
9/13/2016	10:15 PM	328
9/13/2016	10:30 PM	328
9/13/2016	10:45 PM	328
9/13/2016	11:00 PM	328
9/13/2016	11:15 PM	328
9/13/2016	11:30 PM	323
9/13/2016	11:45 PM	323

USGS 08329928 RIO GRANDE NR ALAMEDA, NM

30000&peri https://nwis.waterdata.usgs.gov/nwis/uv?cb_00060=on&cb_00065=on&format=rdb&site_r

Downloaded on 12/14/16

Note: USGS data is provisional and subject to revision

Date	Time	Discharge (cfs)
9/12/2016	12:00 AM	627
9/12/2016	12:15 AM	627
9/12/2016	12:30 AM	596
9/12/2016	12:45 AM	554
9/12/2016	1:00 AM	531
9/12/2016	1:15 AM	514
9/12/2016	1:30 AM	497
9/12/2016	1:45 AM	487
9/12/2016	2:00 AM	471
9/12/2016	2:15 AM	460
9/12/2016	2:30 AM	455
9/12/2016	2:45 AM	445
9/12/2016	3:00 AM	435
9/12/2016	3:15 AM	430
9/12/2016	3:30 AM	425
9/12/2016	3:45 AM	420
9/12/2016	4:00 AM	425
9/12/2016	4:15 AM	425
9/12/2016	4:30 AM	430
9/12/2016	4:45 AM	430
9/12/2016	5:00 AM	430
9/12/2016	5:15 AM	435
9/12/2016	5:30 AM	455
9/12/2016	5:45 AM	460
9/12/2016	6:00 AM	445
9/12/2016	6:15 AM	435
9/12/2016	6:30 AM	425
9/12/2016	6:45 AM	415
9/12/2016	7:00 AM	392
9/12/2016	7:15 AM	396
9/12/2016	7:30 AM	401
9/12/2016	7:45 AM	406
9/12/2016	8:00 AM	406
9/12/2016	8:15 AM	406
9/12/2016	8:30 AM	406
9/12/2016	8:45 AM	410
9/12/2016	9:00 AM	406
9/12/2016	9:15 AM	410
9/12/2016	9:30 AM	410
9/12/2016	9:45 AM	410

Rio Grande Mean Flow Near Alam

Calculated from 11:45 AM on 9/12

to 11:45 AM on 9/13/16

409	cfs

9/12/2016	10:00 AM	406
9/12/2016	10:15 AM	415
9/12/2016	10:30 AM	420
9/12/2016	10:45 AM	420
9/12/2016	11:00 AM	415
9/12/2016	11:15 AM	410
9/12/2016	11:30 AM	415
9/12/2016	11:45 AM	410
9/12/2016	12:00 PM	415
9/12/2016	12:15 PM	415
9/12/2016	12:30 PM	415
9/12/2016	12:45 PM	415
9/12/2016	1:00 PM	415
9/12/2016	1:15 PM	420
9/12/2016	1:30 PM	415
9/12/2016	1:45 PM	415
9/12/2016	2:00 PM	415
9/12/2016	2:15 PM	415
9/12/2016	2:30 PM	420
9/12/2016	2:45 PM	415
9/12/2016	3:00 PM	425
9/12/2016	3:15 PM	425
9/12/2016	3:30 PM	420
9/12/2016	3:45 PM	415
9/12/2016	4:00 PM	420
9/12/2016	4:15 PM	415
9/12/2016	4:30 PM	420
9/12/2016	4:45 PM	415
9/12/2016	5:00 PM	420
9/12/2016	5:15 PM	420
9/12/2016	5:30 PM	420
9/12/2016	5:45 PM	420
9/12/2016	6:00 PM	420
9/12/2016	6:15 PM	435
9/12/2016	6:30 PM	455
9/12/2016	6:45 PM	450
9/12/2016	7:00 PM	445
9/12/2016	7:15 PM	440
9/12/2016	7:30 PM	430
9/12/2016	7:45 PM	430
9/12/2016	8:00 PM	425
9/12/2016	8:15 PM	425
9/12/2016	8:30 PM	425
9/12/2016	8:45 PM	425
9/12/2016	9:00 PM	430
9/12/2016	9:15 PM	440
9/12/2016	9:30 PM	445

9/12/2016	9:45 PM	445
9/12/2016	10:00 PM	440
9/12/2016	10:15 PM	435
9/12/2016	10:30 PM	430
9/12/2016	10:45 PM	430
9/12/2016	11:00 PM	430
9/12/2016	11:15 PM	430
9/12/2016	11:30 PM	440
9/12/2016	11:45 PM	465
9/13/2016	12:00 AM	476
9/13/2016	12:15 AM	481
9/13/2016	12:30 AM	476
9/13/2016	12:45 AM	465
9/13/2016	1:00 AM	450
9/13/2016	1:15 AM	435
9/13/2016	1:30 AM	420
9/13/2016	1:45 AM	420
9/13/2016	2:00 AM	415
9/13/2016	2:15 AM	410
9/13/2016	2:30 AM	406
9/13/2016	2:45 AM	401
9/13/2016	3:00 AM	396
9/13/2016	3:15 AM	392
9/13/2016	3:30 AM	392
9/13/2016	3:45 AM	387
9/13/2016	4:00 AM	382
9/13/2016	4:15 AM	382
9/13/2016	4:30 AM	378
9/13/2016	4:45 AM	378
9/13/2016	5:00 AM	378
9/13/2016	5:15 AM	378
9/13/2016	5:30 AM	378
9/13/2016	5:45 AM	378
9/13/2016	6:00 AM	382
9/13/2016	6:15 AM	387
9/13/2016	6:30 AM	382
9/13/2016	6:45 AM	382
9/13/2016	7:00 AM	382
9/13/2016	7:15 AM	382
9/13/2016	7:30 AM	378
9/13/2016	7:45 AM	373
9/13/2016	8:00 AM	373
9/13/2016	8:15 AM	373
9/13/2016	8:30 AM	369
9/13/2016	8:45 AM	351
9/13/2016	9:00 AM	347
9/13/2016	9:15 AM	356

9/13/2016	9:30 AM	360
9/13/2016	9:45 AM	364
9/13/2016	10:00 AM	364
9/13/2016	10:15 AM	364
9/13/2016	10:30 AM	364
9/13/2016	10:45 AM	369
9/13/2016	11:00 AM	364
9/13/2016	11:15 AM	364
9/13/2016	11:30 AM	373
9/13/2016	11:45 AM	369
9/13/2016	12:00 PM	364
9/13/2016	12:15 PM	369
9/13/2016	12:30 PM	369
9/13/2016	12:45 PM	369
9/13/2016	1:00 PM	369
9/13/2016	1:15 PM	373
9/13/2016	1:30 PM	369
9/13/2016	1:45 PM	369
9/13/2016	2:00 PM	364
9/13/2016	2:15 PM	369
9/13/2016	2:30 PM	369
9/13/2016	2:45 PM	369
9/13/2016	3:00 PM	369
9/13/2016	3:15 PM	360
9/13/2016	3:30 PM	364
9/13/2016	3:45 PM	364
9/13/2016	4:00 PM	364
9/13/2016	4:15 PM	369
9/13/2016	4:30 PM	364
9/13/2016	4:45 PM	369
9/13/2016	5:00 PM	364
9/13/2016	5:15 PM	369
9/13/2016	5:30 PM	369
9/13/2016	5:45 PM	364
9/13/2016	6:00 PM	364
9/13/2016	6:15 PM	364
9/13/2016	6:30 PM	364
9/13/2016	6:45 PM	364
9/13/2016	7:00 PM	364
9/13/2016	7:15 PM	364
9/13/2016	7:30 PM	364
9/13/2016	7:45 PM	364
9/13/2016	8:00 PM	369
9/13/2016	8:15 PM	373
9/13/2016	8:30 PM	378
9/13/2016	8:45 PM	387
9/13/2016	9:00 PM	392

9/13/2016	9:15 PM	387
9/13/2016	9:30 PM	382
9/13/2016	9:45 PM	382
9/13/2016	10:00 PM	378
9/13/2016	10:15 PM	378
9/13/2016	10:30 PM	378
9/13/2016	10:45 PM	378
9/13/2016	11:00 PM	373
9/13/2016	11:15 PM	373
9/13/2016	11:30 PM	378
9/13/2016	11:45 PM	392

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2/16

USGS 08330000 RIO GRANDE AT ALBUQUERQUE, NM (Central)

https://nwis.waterdata.usgs.gov/usa/nwis/uv/?cb_00060=on&cb_00065=on&format=rdb&site_no=083

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Note: USGS data is provisional and subject to revision

Date	Time	Discharge (cfs)
9/21/2016	12:00 AM	243
9/21/2016	1:00 AM	243
9/21/2016	3:00 AM	226
9/21/2016	5:00 AM	248
9/21/2016	7:00 AM	239
9/21/2016	9:00 AM	239
9/21/2016	11:00 AM	239
9/21/2016	1:00 PM	235
9/21/2016	3:00 PM	257
9/21/2016	5:00 PM	257
9/21/2016	7:00 PM	257
9/21/2016	9:00 PM	248
9/21/2016	11:00 PM	253
9/22/2016	12:00 AM	257
9/22/2016	1:00 AM	257
9/22/2016	3:00 AM	257
9/22/2016	5:00 AM	262
9/22/2016	7:00 AM	253
9/22/2016	9:00 AM	243
9/22/2016	11:00 AM	239
9/22/2016	11:45 AM	235
9/22/2016	12:00 PM	235
9/22/2016	12:15 PM	235
9/22/2016	12:30 PM	230
9/22/2016	12:45 PM	230
9/22/2016	1:00 PM	230
9/22/2016	1:15 PM	230
9/22/2016	1:30 PM	230
9/22/2016	1:45 PM	230
9/22/2016	2:00 PM	230
9/22/2016	2:15 PM	230
9/22/2016	2:30 PM	230
9/22/2016	2:45 PM	230
9/22/2016	3:00 PM	230
9/22/2016	3:15 PM	226
9/22/2016	3:30 PM	230
9/22/2016	3:45 PM	226
9/22/2016	4:00 PM	226
9/22/2016	4:15 PM	230
9/22/2016	4:30 PM	230

Rio Grande Mean Flow at Central
Calculated from 11:00 AM on 9/21/16
to 11:00 AM on 9/22/16

251	cfs

9/22/2016	4:45 PM	230
9/22/2016	5:00 PM	230
9/22/2016	5:15 PM	230
9/22/2016	5:30 PM	230
9/22/2016	5:45 PM	230
9/22/2016	6:00 PM	230
9/22/2016	6:15 PM	230
9/22/2016	6:30 PM	230
9/22/2016	6:45 PM	235
9/22/2016	7:00 PM	235
9/22/2016	7:15 PM	235
9/22/2016	7:30 PM	235
9/22/2016	7:45 PM	235
9/22/2016	8:00 PM	235
9/22/2016	8:15 PM	235
9/22/2016	8:30 PM	235
9/22/2016	8:45 PM	235
9/22/2016	9:00 PM	235
9/22/2016	9:15 PM	235
9/22/2016	9:30 PM	235
9/22/2016	9:45 PM	235
9/22/2016	10:00 PM	235
9/22/2016	10:15 PM	235
9/22/2016	10:30 PM	235
9/22/2016	10:45 PM	239
9/22/2016	11:00 PM	235
9/22/2016	11:15 PM	235
9/22/2016	11:30 PM	239
9/22/2016	11:45 PM	239

USGS 08329928 RIO GRANDE NR ALAMEDA, NM

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Note: USGS data is provisional and subject to revision

Date	Time	Discharge (cfs)
9/21/2016	12:00 AM	322
9/21/2016	12:15 AM	334
9/21/2016	12:30 AM	343
9/21/2016	12:45 AM	339
9/21/2016	1:00 AM	330
9/21/2016	1:15 AM	322
9/21/2016	1:30 AM	318
9/21/2016	1:45 AM	314
9/21/2016	2:00 AM	314
9/21/2016	2:15 AM	318
9/21/2016	2:30 AM	318
9/21/2016	2:45 AM	318
9/21/2016	3:00 AM	318
9/21/2016	3:15 AM	322
9/21/2016	3:30 AM	322
9/21/2016	3:45 AM	322
9/21/2016	4:00 AM	322
9/21/2016	4:15 AM	322
9/21/2016	4:30 AM	318
9/21/2016	4:45 AM	318
9/21/2016	5:00 AM	318
9/21/2016	5:15 AM	322
9/21/2016	5:30 AM	318
9/21/2016	5:45 AM	322
9/21/2016	6:00 AM	326
9/21/2016	6:15 AM	334
9/21/2016	6:30 AM	339
9/21/2016	6:45 AM	339
9/21/2016	7:00 AM	334
9/21/2016	7:15 AM	334
9/21/2016	7:30 AM	318
9/21/2016	7:45 AM	306
9/21/2016	8:00 AM	302
9/21/2016	8:15 AM	310
9/21/2016	8:30 AM	314
9/21/2016	8:45 AM	322
9/21/2016	9:00 AM	330
9/21/2016	9:15 AM	343
9/21/2016	9:30 AM	343
9/21/2016	9:45 AM	339

Rio Grande Mean Flow Near Alam

Calculated from 11:00 AM on 9/21

to 11:00 AM on 9/22/16

333	cfs

9/21/2016	10:00 AM	339
9/21/2016	10:15 AM	339
9/21/2016	10:30 AM	339
9/21/2016	10:45 AM	334
9/21/2016	11:00 AM	334
9/21/2016	11:15 AM	330
9/21/2016	11:30 AM	330
9/21/2016	11:45 AM	330
9/21/2016	12:00 PM	334
9/21/2016	12:15 PM	330
9/21/2016	12:30 PM	330
9/21/2016	12:45 PM	334
9/21/2016	1:00 PM	334
9/21/2016	1:15 PM	334
9/21/2016	1:30 PM	334
9/21/2016	1:45 PM	330
9/21/2016	2:00 PM	334
9/21/2016	2:15 PM	330
9/21/2016	2:30 PM	330
9/21/2016	2:45 PM	330
9/21/2016	3:00 PM	330
9/21/2016	3:15 PM	326
9/21/2016	3:30 PM	326
9/21/2016	3:45 PM	322
9/21/2016	4:00 PM	326
9/21/2016	4:15 PM	326
9/21/2016	4:30 PM	322
9/21/2016	4:45 PM	322
9/21/2016	5:00 PM	322
9/21/2016	5:15 PM	322
9/21/2016	5:30 PM	322
9/21/2016	5:45 PM	322
9/21/2016	6:00 PM	326
9/21/2016	6:15 PM	326
9/21/2016	6:30 PM	326
9/21/2016	6:45 PM	330
9/21/2016	7:00 PM	330
9/21/2016	7:15 PM	330
9/21/2016	7:30 PM	330
9/21/2016	7:45 PM	330
9/21/2016	8:00 PM	330
9/21/2016	8:15 PM	330
9/21/2016	8:30 PM	326
9/21/2016	8:45 PM	330
9/21/2016	9:00 PM	326
9/21/2016	9:15 PM	326
9/21/2016	9:30 PM	314

9/21/2016	9:45 PM	326
9/21/2016	10:00 PM	330
9/21/2016	10:15 PM	326
9/21/2016	10:30 PM	330
9/21/2016	10:45 PM	330
9/21/2016	11:00 PM	334
9/21/2016	11:15 PM	334
9/21/2016	11:30 PM	330
9/21/2016	11:45 PM	334
9/22/2016	12:00 AM	351
9/22/2016	12:15 AM	373
9/22/2016	12:30 AM	382
9/22/2016	12:45 AM	373
9/22/2016	1:00 AM	360
9/22/2016	1:15 AM	356
9/22/2016	1:30 AM	347
9/22/2016	1:45 AM	347
9/22/2016	2:00 AM	343
9/22/2016	2:15 AM	339
9/22/2016	2:30 AM	339
9/22/2016	2:45 AM	339
9/22/2016	3:00 AM	339
9/22/2016	3:15 AM	339
9/22/2016	3:30 AM	334
9/22/2016	3:45 AM	334
9/22/2016	4:00 AM	334
9/22/2016	4:15 AM	334
9/22/2016	4:30 AM	334
9/22/2016	4:45 AM	334
9/22/2016	5:00 AM	330
9/22/2016	5:15 AM	334
9/22/2016	5:30 AM	334
9/22/2016	5:45 AM	334
9/22/2016	6:00 AM	330
9/22/2016	6:15 AM	330
9/22/2016	6:30 AM	330
9/22/2016	6:45 AM	330
9/22/2016	7:00 AM	330
9/22/2016	7:15 AM	330
9/22/2016	7:30 AM	326
9/22/2016	7:45 AM	326
9/22/2016	8:00 AM	326
9/22/2016	8:15 AM	326
9/22/2016	8:30 AM	330
9/22/2016	8:45 AM	334
9/22/2016	9:00 AM	330
9/22/2016	9:15 AM	330

9/22/2016	9:30 AM	334
9/22/2016	9:45 AM	330
9/22/2016	10:00 AM	330
9/22/2016	10:15 AM	330
9/22/2016	10:30 AM	334
9/22/2016	10:45 AM	330
9/22/2016	11:00 AM	334
9/22/2016	11:15 AM	339
9/22/2016	11:30 AM	334
9/22/2016	11:45 AM	334
9/22/2016	12:00 PM	339
9/22/2016	12:15 PM	343
9/22/2016	12:30 PM	339
9/22/2016	12:45 PM	343
9/22/2016	1:00 PM	339
9/22/2016	1:15 PM	343
9/22/2016	1:30 PM	339
9/22/2016	1:45 PM	343
9/22/2016	2:00 PM	343
9/22/2016	2:15 PM	343
9/22/2016	2:30 PM	343
9/22/2016	2:45 PM	339
9/22/2016	3:00 PM	343
9/22/2016	3:15 PM	339
9/22/2016	3:30 PM	334

no=08329928&period=&begin_date=2016-09-21&end_date=2016-09-22

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USGS 08330000 RIO GRANDE AT ALBUQUERQUE, NM (Central)

https://nwis.waterdata.usgs.gov/usa/nwis/uv/?cb_00060=on&cb_00065=on&format=rdb&site_no=08

Downloaded on 1/11/17

Note: USGS data is provisional and subject to revision

Date/Time	Discharge (cfs)
11/21/2016 0:00	725
11/21/2016 0:15	734
11/21/2016 0:30	743
11/21/2016 0:45	752
11/21/2016 1:00	761
11/21/2016 1:15	761
11/21/2016 1:30	761
11/21/2016 1:45	770
11/21/2016 2:00	770
11/21/2016 2:15	770
11/21/2016 2:30	770
11/21/2016 2:45	761
11/21/2016 3:00	752
11/21/2016 3:15	752
11/21/2016 3:30	752
11/21/2016 3:45	734
11/21/2016 4:00	716
11/21/2016 4:15	699
11/21/2016 4:30	681
11/21/2016 4:45	673
11/21/2016 5:00	664
11/21/2016 5:15	656
11/21/2016 5:30	648
11/21/2016 5:45	640
11/21/2016 6:00	640
11/21/2016 6:15	640
11/21/2016 6:30	631
11/21/2016 6:45	631
11/21/2016 7:00	640
11/21/2016 7:15	640
11/21/2016 7:30	640
11/21/2016 7:45	640
11/21/2016 8:00	640
11/21/2016 8:15	640
11/21/2016 8:30	648
11/21/2016 8:45	648
11/21/2016 9:00	648
11/21/2016 9:15	648
11/21/2016 9:30	648
11/21/2016 9:45	648
11/21/2016 10:00	648

Rio Grande Mean Flow at Central
Calculated from 9:30 AM on 11/21/16
to 9:30 AM on 11/22/16

853	cfs

11/21/2016 10:15	648
11/21/2016 10:30	648
11/21/2016 10:45	656
11/21/2016 11:00	656
11/21/2016 11:15	656
11/21/2016 11:30	664
11/21/2016 11:45	664
11/21/2016 12:00	664
11/21/2016 12:15	664
11/21/2016 12:30	664
11/21/2016 12:45	664
11/21/2016 13:00	664
11/21/2016 13:15	664
11/21/2016 13:30	664
11/21/2016 13:45	664
11/21/2016 14:00	664
11/21/2016 14:15	664
11/21/2016 14:30	664
11/21/2016 14:45	664
11/21/2016 15:00	664
11/21/2016 15:15	664
11/21/2016 15:30	664
11/21/2016 15:45	664
11/21/2016 16:00	673
11/21/2016 16:15	664
11/21/2016 16:30	673
11/21/2016 16:45	673
11/21/2016 17:00	673
11/21/2016 17:15	681
11/21/2016 17:30	681
11/21/2016 17:45	681
11/21/2016 18:00	699
11/21/2016 18:15	707
11/21/2016 18:30	743
11/21/2016 18:45	761
11/21/2016 19:00	788
11/21/2016 19:15	798
11/21/2016 19:30	798
11/21/2016 19:45	798
11/21/2016 20:00	817
11/21/2016 20:15	817
11/21/2016 20:30	817
11/21/2016 20:45	826
11/21/2016 21:00	826
11/21/2016 21:15	836
11/21/2016 21:30	845
11/21/2016 21:45	855

11/21/2016 22:00	875
11/21/2016 22:15	885
11/21/2016 22:30	905
11/21/2016 22:45	913
11/21/2016 23:00	928
11/21/2016 23:15	944
11/21/2016 23:30	976
11/21/2016 23:45	1010
11/22/2016 0:00	1040
11/22/2016 0:15	1080
11/22/2016 0:30	1110
11/22/2016 0:45	1140
11/22/2016 1:00	1170
11/22/2016 1:15	1170
11/22/2016 1:30	1190
11/22/2016 1:45	1190
11/22/2016 2:00	1180
11/22/2016 2:15	1160
11/22/2016 2:30	1130
11/22/2016 2:45	1110
11/22/2016 3:00	1100
11/22/2016 3:15	1080
11/22/2016 3:30	1070
11/22/2016 3:45	1050
11/22/2016 4:00	1030
11/22/2016 4:15	1020
11/22/2016 4:30	1000
11/22/2016 4:45	984
11/22/2016 5:00	968
11/22/2016 5:15	952
11/22/2016 5:30	944
11/22/2016 5:45	936
11/22/2016 6:00	928
11/22/2016 6:15	928
11/22/2016 6:30	928
11/22/2016 6:45	928
11/22/2016 7:00	928
11/22/2016 7:15	928
11/22/2016 7:30	936
11/22/2016 7:45	944
11/22/2016 8:00	952
11/22/2016 8:15	952
11/22/2016 8:30	960
11/22/2016 8:45	960
11/22/2016 9:00	968
11/22/2016 9:15	968
11/22/2016 9:30	968

11/22/2016 9:45	968
11/22/2016 10:00	960
11/22/2016 10:15	960
11/22/2016 10:30	952
11/22/2016 10:45	944
11/22/2016 11:00	936
11/22/2016 11:15	928
11/22/2016 11:30	928
11/22/2016 11:45	913
11/22/2016 12:00	895
11/22/2016 12:15	885
11/22/2016 12:30	865
11/22/2016 12:45	845
11/22/2016 13:00	836
11/22/2016 13:15	826
11/22/2016 13:30	807
11/22/2016 13:45	798
11/22/2016 14:00	779
11/22/2016 14:15	770
11/22/2016 14:30	761
11/22/2016 14:45	761
11/22/2016 15:00	752
11/22/2016 15:15	743
11/22/2016 15:30	743
11/22/2016 15:45	743
11/22/2016 16:00	734
11/22/2016 16:15	734
11/22/2016 16:30	734
11/22/2016 16:45	734
11/22/2016 17:00	725
11/22/2016 17:15	725
11/22/2016 17:30	716
11/22/2016 17:45	716
11/22/2016 18:00	716
11/22/2016 18:15	707
11/22/2016 18:30	707
11/22/2016 18:45	707
11/22/2016 19:00	707
11/22/2016 19:15	707
11/22/2016 19:30	707
11/22/2016 19:45	716
11/22/2016 20:00	716
11/22/2016 20:15	716
11/22/2016 20:30	725
11/22/2016 20:45	725
11/22/2016 21:00	734
11/22/2016 21:15	734

11/22/2016 21:30	734
11/22/2016 21:45	734
11/22/2016 22:00	734
11/22/2016 22:15	734
11/22/2016 22:30	743
11/22/2016 22:45	752
11/22/2016 23:00	770
11/22/2016 23:15	770
11/22/2016 23:30	779
11/22/2016 23:45	788

USGS 08329928 RIO GRANDE NR ALAMEDA, NM

https://nwis.waterdata.usgs.gov/nwis/uv?cb_00060=on&cb_00065=on&format=rdb&site_no=08329928&

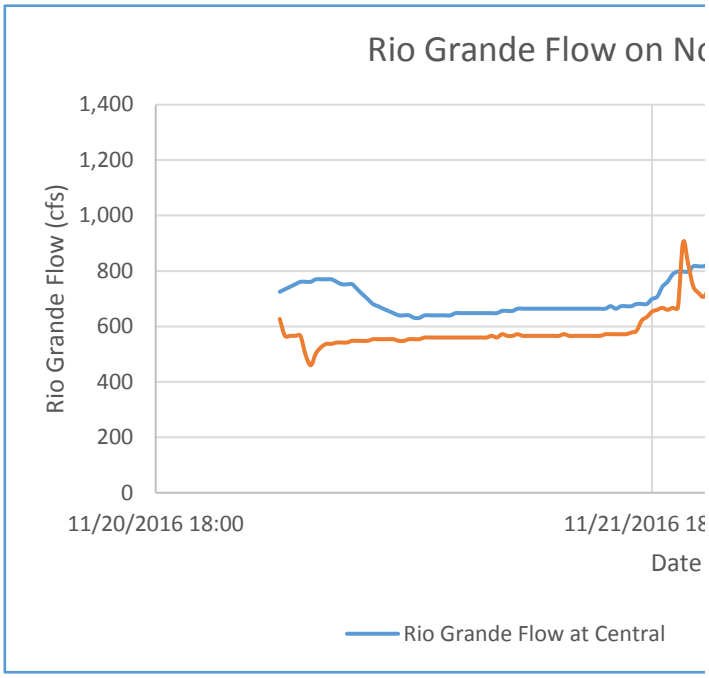
Downloaded on 1/11/17

Note: USGS data is provisional and subject to revision

Date/Time	Discharge (cfs)
11/21/2016 0:00	627
11/21/2016 0:15	566
11/21/2016 0:30	566
11/21/2016 0:45	566
11/21/2016 1:00	566
11/21/2016 1:15	497
11/21/2016 1:30	460
11/21/2016 1:45	503
11/21/2016 2:00	525
11/21/2016 2:15	537
11/21/2016 2:30	537
11/21/2016 2:45	542
11/21/2016 3:00	542
11/21/2016 3:15	542
11/21/2016 3:30	548
11/21/2016 3:45	548
11/21/2016 4:00	548
11/21/2016 4:15	548
11/21/2016 4:30	554
11/21/2016 4:45	554
11/21/2016 5:00	554
11/21/2016 5:15	554
11/21/2016 5:30	554
11/21/2016 5:45	548
11/21/2016 6:00	548
11/21/2016 6:15	554
11/21/2016 6:30	554
11/21/2016 6:45	554
11/21/2016 7:00	560
11/21/2016 7:15	560
11/21/2016 7:30	560
11/21/2016 7:45	560
11/21/2016 8:00	560
11/21/2016 8:15	560
11/21/2016 8:30	560
11/21/2016 8:45	560
11/21/2016 9:00	560
11/21/2016 9:15	560
11/21/2016 9:30	560
11/21/2016 9:45	560
11/21/2016 10:00	560

Rio Grande Mean Flow at Central
Calculated from 9:30 AM on 11/21/16
to 9:30 AM on 11/22/16

710	cfs



11/21/2016 10:15	566
11/21/2016 10:30	560
11/21/2016 10:45	572
11/21/2016 11:00	566
11/21/2016 11:15	566
11/21/2016 11:30	572
11/21/2016 11:45	566
11/21/2016 12:00	566
11/21/2016 12:15	566
11/21/2016 12:30	566
11/21/2016 12:45	566
11/21/2016 13:00	566
11/21/2016 13:15	566
11/21/2016 13:30	566
11/21/2016 13:45	572
11/21/2016 14:00	566
11/21/2016 14:15	566
11/21/2016 14:30	566
11/21/2016 14:45	566
11/21/2016 15:00	566
11/21/2016 15:15	566
11/21/2016 15:30	566
11/21/2016 15:45	572
11/21/2016 16:00	572
11/21/2016 16:15	572
11/21/2016 16:30	572
11/21/2016 16:45	572
11/21/2016 17:00	578
11/21/2016 17:15	584
11/21/2016 17:30	621
11/21/2016 17:45	634
11/21/2016 18:00	653
11/21/2016 18:15	660
11/21/2016 18:30	667
11/21/2016 18:45	660
11/21/2016 19:00	667
11/21/2016 19:15	667
11/21/2016 19:30	903
11/21/2016 19:45	824
11/21/2016 20:00	743
11/21/2016 20:15	721
11/21/2016 20:30	707
11/21/2016 20:45	743
11/21/2016 21:00	863
11/21/2016 21:15	996
11/21/2016 21:30	1090
11/21/2016 21:45	1120

11/21/2016 22:00	1130
11/21/2016 22:15	1110
11/21/2016 22:30	1090
11/21/2016 22:45	1060
11/21/2016 23:00	1010
11/21/2016 23:15	988
11/21/2016 23:30	953
11/21/2016 23:45	903
11/22/2016 0:00	772
11/22/2016 0:15	700
11/22/2016 0:30	750
11/22/2016 0:45	743
11/22/2016 1:00	728
11/22/2016 1:15	714
11/22/2016 1:30	707
11/22/2016 1:45	707
11/22/2016 2:00	707
11/22/2016 2:15	694
11/22/2016 2:30	694
11/22/2016 2:45	694
11/22/2016 3:00	700
11/22/2016 3:15	707
11/22/2016 3:30	707
11/22/2016 3:45	721
11/22/2016 4:00	743
11/22/2016 4:15	757
11/22/2016 4:30	772
11/22/2016 4:45	786
11/22/2016 5:00	786
11/22/2016 5:15	794
11/22/2016 5:30	794
11/22/2016 5:45	809
11/22/2016 6:00	809
11/22/2016 6:15	794
11/22/2016 6:30	786
11/22/2016 6:45	779
11/22/2016 7:00	757
11/22/2016 7:15	750
11/22/2016 7:30	735
11/22/2016 7:45	721
11/22/2016 8:00	714
11/22/2016 8:15	694
11/22/2016 8:30	680
11/22/2016 8:45	673
11/22/2016 9:00	660
11/22/2016 9:15	653
11/22/2016 9:30	640

11/22/2016 9:45	634
11/22/2016 10:00	615
11/22/2016 10:15	590
11/22/2016 10:30	596
11/22/2016 10:45	602
11/22/2016 11:00	596
11/22/2016 11:15	590
11/22/2016 11:30	584
11/22/2016 11:45	584
11/22/2016 12:00	578
11/22/2016 12:15	578
11/22/2016 12:30	572
11/22/2016 12:45	572
11/22/2016 13:00	572
11/22/2016 13:15	572
11/22/2016 13:30	566
11/22/2016 13:45	566
11/22/2016 14:00	572
11/22/2016 14:15	572
11/22/2016 14:30	572
11/22/2016 14:45	578
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11/22/2016 15:15	578
11/22/2016 15:30	578
11/22/2016 15:45	578
11/22/2016 16:00	578
11/22/2016 16:15	578
11/22/2016 16:30	590
11/22/2016 16:45	602
11/22/2016 17:00	609
11/22/2016 17:15	615
11/22/2016 17:30	615
11/22/2016 17:45	615
11/22/2016 18:00	615
11/22/2016 18:15	615
11/22/2016 18:30	615
11/22/2016 18:45	615
11/22/2016 19:00	609
11/22/2016 19:15	609
11/22/2016 19:30	596
11/22/2016 19:45	590
11/22/2016 20:00	584
11/22/2016 20:15	584
11/22/2016 20:30	794
11/22/2016 20:45	714
11/22/2016 21:00	673
11/22/2016 21:15	660

11/22/2016 21:30	660
11/22/2016 21:45	660
11/22/2016 22:00	653
11/22/2016 22:15	653
11/22/2016 22:30	653
11/22/2016 22:45	653
11/22/2016 23:00	660
11/22/2016 23:15	660
11/22/2016 23:30	660
11/22/2016 23:45	667

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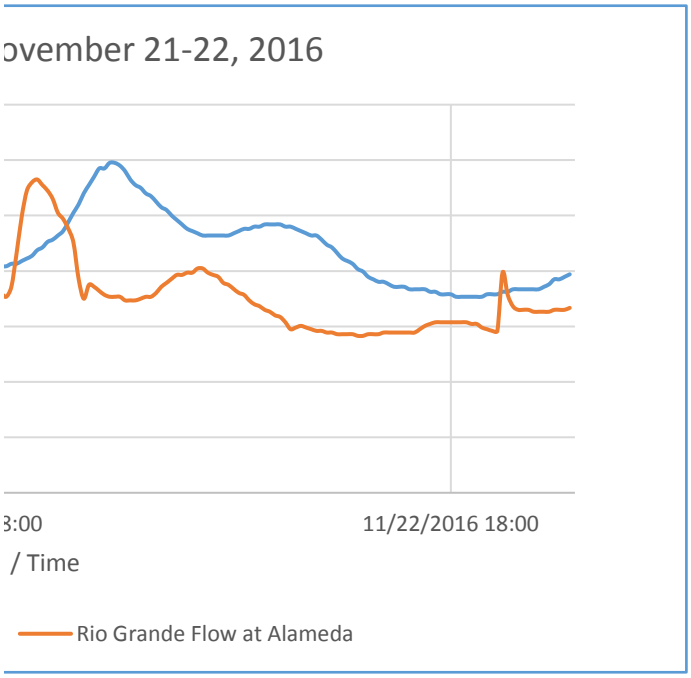

USGS 08330000 RIO GRANDE AT ALBUQUERQUE, NM (Central)

https://nwis.waterdata.usgs.gov/usa/nwis/uv/?cb_00060=on&cb_00065=on&format=rdb&site_no=08

Downloaded on 12/16/16

Note: "P" designates USGS data is provisional and subject to revision

Date	Time	Discharge (cfs)	
7/6/2016	12:00 AM	623	P
7/6/2016	12:15 AM	623	P
7/6/2016	12:30 AM	615	P
7/6/2016	12:45 AM	623	P
7/6/2016	1:00 AM	615	P
7/6/2016	1:15 AM	615	P
7/6/2016	1:30 AM	615	P
7/6/2016	1:45 AM	607	P
7/6/2016	2:00 AM	607	P
7/6/2016	2:15 AM	607	P
7/6/2016	2:30 AM	607	P
7/6/2016	2:45 AM	607	P
7/6/2016	3:00 AM	607	P
7/6/2016	3:15 AM	607	P
7/6/2016	3:30 AM	615	P
7/6/2016	3:45 AM	623	P
7/6/2016	4:00 AM	623	P
7/6/2016	4:15 AM	623	P
7/6/2016	4:30 AM	623	P
7/6/2016	4:45 AM	623	P
7/6/2016	5:00 AM	623	P
7/6/2016	5:15 AM	623	P
7/6/2016	5:30 AM	623	P
7/6/2016	5:45 AM	623	P
7/6/2016	6:00 AM	623	P
7/6/2016	6:15 AM	615	P
7/6/2016	6:30 AM	615	P
7/6/2016	6:45 AM	615	P
7/6/2016	7:00 AM	615	P
7/6/2016	7:15 AM	615	P
7/6/2016	7:30 AM	623	P
7/6/2016	7:45 AM	615	P
7/6/2016	8:00 AM	623	P
7/6/2016	8:15 AM	623	P
7/6/2016	8:30 AM	631	P
7/6/2016	8:45 AM	631	P
7/6/2016	9:00 AM	640	P
7/6/2016	9:15 AM	640	P
7/6/2016	9:30 AM	648	P
7/6/2016	9:45 AM	648	P

Rio Grande Mean Flow at Central
Calculated from 12:00 AM on 7/6/16
to 12:00 PM on 7/6/16

631	cfs

7/6/2016	10:00 AM	656	P
7/6/2016	10:15 AM	656	P
7/6/2016	10:30 AM	664	P
7/6/2016	10:45 AM	673	P
7/6/2016	11:00 AM	673	P
7/6/2016	11:15 AM	681	P
7/6/2016	11:30 AM	690	P
7/6/2016	11:45 AM	690	P
7/6/2016	12:00 PM	690	P
7/6/2016	12:15 PM	699	P
7/6/2016	12:30 PM	699	P
7/6/2016	12:45 PM	699	P
7/6/2016	1:00 PM	699	P
7/6/2016	1:15 PM	699	P
7/6/2016	1:30 PM	690	P
7/6/2016	1:45 PM	699	P
7/6/2016	2:00 PM	690	P
7/6/2016	2:15 PM	690	P
7/6/2016	2:30 PM	690	P
7/6/2016	2:45 PM	681	P
7/6/2016	3:00 PM	681	P
7/6/2016	3:15 PM	681	P
7/6/2016	3:30 PM	673	P
7/6/2016	3:45 PM	664	P
7/6/2016	4:00 PM	656	P
7/6/2016	4:15 PM	648	P
7/6/2016	4:30 PM	648	P
7/6/2016	4:45 PM	640	P
7/6/2016	5:00 PM	640	P
7/6/2016	5:15 PM	631	P
7/6/2016	5:30 PM	631	P
7/6/2016	5:45 PM	623	P
7/6/2016	6:00 PM	623	P
7/6/2016	6:15 PM	615	P
7/6/2016	6:30 PM	615	P
7/6/2016	6:45 PM	615	P
7/6/2016	7:00 PM	607	P
7/6/2016	7:15 PM	607	P
7/6/2016	7:30 PM	599	P
7/6/2016	7:45 PM	599	P
7/6/2016	8:00 PM	592	P
7/6/2016	8:15 PM	592	P
7/6/2016	8:30 PM	592	P
7/6/2016	8:45 PM	592	P
7/6/2016	9:00 PM	592	P
7/6/2016	9:15 PM	584	P
7/6/2016	9:30 PM	584	P

7/6/2016	9:45 PM	584	P
7/6/2016	10:00 PM	584	P
7/6/2016	10:15 PM	576	P
7/6/2016	10:30 PM	576	P
7/6/2016	10:45 PM	576	P
7/6/2016	11:00 PM	576	P
7/6/2016	11:15 PM	576	P
7/6/2016	11:30 PM	576	P
7/6/2016	11:45 PM	576	P

USGS 08329928 RIO GRANDE NR ALAMEDA, NM

8330000&p https://nwis.waterdata.usgs.gov/nwis/uv?cb_00060=on&cb_00065=on&format=rdb&site_no=083

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Note: "P" designates USGS data is provisional and subject to revision

Date	Time	Discharge (cfs)	
7/6/2016	12:00 AM	757	P
7/6/2016	12:15 AM	801	P
7/6/2016	12:30 AM	824	P
7/6/2016	12:45 AM	809	P
7/6/2016	1:00 AM	786	P
7/6/2016	1:15 AM	772	P
7/6/2016	1:30 AM	764	P
7/6/2016	1:45 AM	750	P
7/6/2016	2:00 AM	743	P
7/6/2016	2:15 AM	743	P
7/6/2016	2:30 AM	743	P
7/6/2016	2:45 AM	743	P
7/6/2016	3:00 AM	743	P
7/6/2016	3:15 AM	750	P
7/6/2016	3:30 AM	750	P
7/6/2016	3:45 AM	757	P
7/6/2016	4:00 AM	757	P
7/6/2016	4:15 AM	757	P
7/6/2016	4:30 AM	764	P
7/6/2016	4:45 AM	772	P
7/6/2016	5:00 AM	779	P
7/6/2016	5:15 AM	779	P
7/6/2016	5:30 AM	786	P
7/6/2016	5:45 AM	794	P
7/6/2016	6:00 AM	794	P
7/6/2016	6:15 AM	801	P
7/6/2016	6:30 AM	801	P
7/6/2016	6:45 AM	809	P
7/6/2016	7:00 AM	809	P
7/6/2016	7:15 AM	816	P
7/6/2016	7:30 AM	816	P
7/6/2016	7:45 AM	824	P
7/6/2016	8:00 AM	824	P
7/6/2016	8:15 AM	824	P
7/6/2016	8:30 AM	824	P
7/6/2016	8:45 AM	832	P
7/6/2016	9:00 AM	824	P
7/6/2016	9:15 AM	824	P
7/6/2016	9:30 AM	824	P
7/6/2016	9:45 AM	824	P

Rio Grande Mean Flow Near Alameda
Calculated from 12:00 AM on 7/6/16
to 12:00 PM on 7/6/16

772	cfs

7/6/2016	10:00 AM	824	P
7/6/2016	10:15 AM	816	P
7/6/2016	10:30 AM	809	P
7/6/2016	10:45 AM	809	P
7/6/2016	11:00 AM	794	P
7/6/2016	11:15 AM	801	P
7/6/2016	11:30 AM	794	P
7/6/2016	11:45 AM	786	P
7/6/2016	12:00 PM	786	P
7/6/2016	12:15 PM	779	P
7/6/2016	12:30 PM	786	P
7/6/2016	12:45 PM	779	P
7/6/2016	1:00 PM	779	P
7/6/2016	1:15 PM	779	P
7/6/2016	1:30 PM	779	P
7/6/2016	1:45 PM	779	P
7/6/2016	2:00 PM	779	P
7/6/2016	2:15 PM	772	P
7/6/2016	2:30 PM	772	P
7/6/2016	2:45 PM	764	P
7/6/2016	3:00 PM	764	P
7/6/2016	3:15 PM	772	P
7/6/2016	3:30 PM	757	P
7/6/2016	3:45 PM	772	P
7/6/2016	4:00 PM	750	P
7/6/2016	4:15 PM	750	P
7/6/2016	4:30 PM	750	P
7/6/2016	4:45 PM	743	P
7/6/2016	5:00 PM	750	P
7/6/2016	5:15 PM	743	P
7/6/2016	5:30 PM	743	P
7/6/2016	5:45 PM	743	P
7/6/2016	6:00 PM	743	P
7/6/2016	6:15 PM	743	P
7/6/2016	6:30 PM	743	P
7/6/2016	6:45 PM	743	P
7/6/2016	7:00 PM	743	P
7/6/2016	7:15 PM	743	P
7/6/2016	7:30 PM	743	P
7/6/2016	7:45 PM	743	P
7/6/2016	8:00 PM	743	P
7/6/2016	8:15 PM	735	P
7/6/2016	8:30 PM	735	P
7/6/2016	8:45 PM	735	P
7/6/2016	9:00 PM	728	P
7/6/2016	9:15 PM	728	P
7/6/2016	9:30 PM	728	P

7/6/2016	9:45 PM	728	P
7/6/2016	10:00 PM	728	P
7/6/2016	10:15 PM	721	P
7/6/2016	10:30 PM	721	P
7/6/2016	10:45 PM	714	P
7/6/2016	11:00 PM	728	P
7/6/2016	11:15 PM	764	P
7/6/2016	11:30 PM	786	P
7/6/2016	11:45 PM	816	P

329928&period=&begin_date=2016-07-06&end_date=2016-07-06

USGS 08330000 RIO GRANDE AT ALBUQUERQUE, NM (Central)

https://nwis.waterdata.usgs.gov/usa/nwis/uv/?cb_00060=on&cb_00065=on&format=rdb&site_no=08

Downloaded on 12/19/17

Note: USGS data is provisional and subject to revision

Date/Time	Discharge (cfs)
7/27/2017 0:00	424
7/27/2017 0:15	418
7/27/2017 0:30	418
7/27/2017 0:45	424
7/27/2017 1:00	424
7/27/2017 1:15	430
7/27/2017 1:30	435
7/27/2017 1:45	430
7/27/2017 2:00	430
7/27/2017 2:15	430
7/27/2017 2:30	441
7/27/2017 2:45	441
7/27/2017 3:00	435
7/27/2017 3:15	430
7/27/2017 3:30	430
7/27/2017 3:45	430
7/27/2017 4:00	430
7/27/2017 4:15	424
7/27/2017 4:30	418
7/27/2017 4:45	418
7/27/2017 5:00	413
7/27/2017 5:15	424
7/27/2017 5:30	430
7/27/2017 5:45	430
7/27/2017 6:00	424
7/27/2017 6:15	418
7/27/2017 6:30	418
7/27/2017 6:45	424
7/27/2017 7:00	424
7/27/2017 7:15	413
7/27/2017 7:30	418
7/27/2017 7:45	424
7/27/2017 8:00	424
7/27/2017 8:15	418
7/27/2017 8:30	412
7/27/2017 8:45	412
7/27/2017 9:00	412
7/27/2017 9:15	418
7/27/2017 9:30	418
7/27/2017 9:45	412
7/27/2017 10:00	412

Rio Grande Mean Flow at Central
Calculated from 12:30 PM on 7/27/17
to 12:30 PM on 7/28/17

425	cfs

7/27/2017 10:15	407
7/27/2017 10:30	407
7/27/2017 10:45	412
7/27/2017 11:00	424
7/27/2017 11:15	424
7/27/2017 11:30	424
7/27/2017 11:45	424
7/27/2017 12:00	418
7/27/2017 12:15	412
7/27/2017 12:30	412
7/27/2017 12:45	418
7/27/2017 13:00	424
7/27/2017 13:15	429
7/27/2017 13:30	424
7/27/2017 13:45	429
7/27/2017 14:00	429
7/27/2017 14:15	412
7/27/2017 14:30	407
7/27/2017 14:45	412
7/27/2017 15:00	418
7/27/2017 15:15	424
7/27/2017 15:30	418
7/27/2017 15:45	412
7/27/2017 16:00	412
7/27/2017 16:15	412
7/27/2017 16:30	412
7/27/2017 16:45	418
7/27/2017 17:00	418
7/27/2017 17:15	418
7/27/2017 17:30	407
7/27/2017 17:45	407
7/27/2017 18:00	407
7/27/2017 18:15	407
7/27/2017 18:30	407
7/27/2017 18:45	407
7/27/2017 19:00	407
7/27/2017 19:15	407
7/27/2017 19:30	407
7/27/2017 19:45	407
7/27/2017 20:00	390
7/27/2017 20:15	401
7/27/2017 20:30	395
7/27/2017 20:45	390
7/27/2017 21:00	395
7/27/2017 21:15	395
7/27/2017 21:30	395
7/27/2017 21:45	401

7/27/2017 22:00	401
7/27/2017 22:15	407
7/27/2017 22:30	407
7/27/2017 22:45	401
7/27/2017 23:00	401
7/27/2017 23:15	390
7/27/2017 23:30	390
7/27/2017 23:45	395
7/28/2017 0:00	395
7/28/2017 0:15	401
7/28/2017 0:30	395
7/28/2017 0:45	395
7/28/2017 1:00	390
7/28/2017 1:15	384
7/28/2017 1:30	390
7/28/2017 1:45	395
7/28/2017 2:00	395
7/28/2017 2:15	401
7/28/2017 2:30	401
7/28/2017 2:45	407
7/28/2017 3:00	407
7/28/2017 3:15	407
7/28/2017 3:30	407
7/28/2017 3:45	412
7/28/2017 4:00	423
7/28/2017 4:15	423
7/28/2017 4:30	429
7/28/2017 4:45	441
7/28/2017 5:00	447
7/28/2017 5:15	447
7/28/2017 5:30	447
7/28/2017 5:45	447
7/28/2017 6:00	464
7/28/2017 6:15	458
7/28/2017 6:30	464
7/28/2017 6:45	464
7/28/2017 7:00	464
7/28/2017 7:15	470
7/28/2017 7:30	464
7/28/2017 7:45	452
7/28/2017 8:00	452
7/28/2017 8:15	446
7/28/2017 8:30	446
7/28/2017 8:45	446
7/28/2017 9:00	452
7/28/2017 9:15	452
7/28/2017 9:30	446

7/28/2017 9:45	446
7/28/2017 10:00	452
7/28/2017 10:15	452
7/28/2017 10:30	452
7/28/2017 10:45	452
7/28/2017 11:00	470
7/28/2017 11:15	482
7/28/2017 11:30	488
7/28/2017 11:45	488
7/28/2017 12:00	495
7/28/2017 12:15	508
7/28/2017 12:30	508
7/28/2017 12:45	514
7/28/2017 13:00	508
7/28/2017 13:15	514
7/28/2017 13:30	514
7/28/2017 13:45	514
7/28/2017 14:00	514
7/28/2017 14:15	514
7/28/2017 14:30	514
7/28/2017 14:45	507
7/28/2017 15:00	501
7/28/2017 15:15	495
7/28/2017 15:30	482
7/28/2017 15:45	476
7/28/2017 16:00	470
7/28/2017 16:15	476
7/28/2017 16:30	476
7/28/2017 16:45	464
7/28/2017 17:00	452
7/28/2017 17:15	452
7/28/2017 17:30	452
7/28/2017 17:45	452
7/28/2017 18:00	446
7/28/2017 18:15	440
7/28/2017 18:30	446
7/28/2017 18:45	452
7/28/2017 19:00	446
7/28/2017 19:15	446
7/28/2017 19:30	458
7/28/2017 19:45	470
7/28/2017 20:00	482
7/28/2017 20:15	482
7/28/2017 20:30	482
7/28/2017 20:45	494
7/28/2017 21:00	501
7/28/2017 21:15	507

7/28/2017 21:30	514
7/28/2017 21:45	520
7/28/2017 22:00	514
7/28/2017 22:15	520
7/28/2017 22:30	514
7/28/2017 22:45	520
7/28/2017 23:00	520
7/28/2017 23:15	527
7/28/2017 23:30	534
7/28/2017 23:45	534

USGS 08329928 RIO GRANDE NR ALAMEDA, NM

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Note: USGS data is provisional and subject to revision

Date/Time	Discharge (cfs)
7/27/2017 0:00	482
7/27/2017 0:15	482
7/27/2017 0:30	482
7/27/2017 0:45	482
7/27/2017 1:00	482
7/27/2017 1:15	477
7/27/2017 1:30	477
7/27/2017 1:45	477
7/27/2017 2:00	477
7/27/2017 2:15	472
7/27/2017 2:30	477
7/27/2017 2:45	472
7/27/2017 3:00	472
7/27/2017 3:15	468
7/27/2017 3:30	472
7/27/2017 3:45	472
7/27/2017 4:00	468
7/27/2017 4:15	468
7/27/2017 4:30	468
7/27/2017 4:45	463
7/27/2017 5:00	463
7/27/2017 5:15	463
7/27/2017 5:30	463
7/27/2017 5:45	463
7/27/2017 6:00	463
7/27/2017 6:15	458
7/27/2017 6:30	458
7/27/2017 6:45	458
7/27/2017 7:00	458
7/27/2017 7:15	458
7/27/2017 7:30	454
7/27/2017 7:45	458
7/27/2017 8:00	458
7/27/2017 8:15	458
7/27/2017 8:30	454
7/27/2017 8:45	454
7/27/2017 9:00	458
7/27/2017 9:15	454
7/27/2017 9:30	454
7/27/2017 9:45	454
7/27/2017 10:00	458

Rio Grande Mean Flow at Central

Calculated from 12:30 PM on 7/27/17

to 12:30 PM on 7/28/17

496	cfs

7/27/2017 10:15	458
7/27/2017 10:30	458
7/27/2017 10:45	458
7/27/2017 11:00	458
7/27/2017 11:15	463
7/27/2017 11:30	463
7/27/2017 11:45	463
7/27/2017 12:00	463
7/27/2017 12:15	463
7/27/2017 12:30	463
7/27/2017 12:45	463
7/27/2017 13:00	463
7/27/2017 13:15	468
7/27/2017 13:30	468
7/27/2017 13:45	468
7/27/2017 14:00	468
7/27/2017 14:15	463
7/27/2017 14:30	463
7/27/2017 14:45	463
7/27/2017 15:00	463
7/27/2017 15:15	463
7/27/2017 15:30	463
7/27/2017 15:45	458
7/27/2017 16:00	458
7/27/2017 16:15	458
7/27/2017 16:30	458
7/27/2017 16:45	458
7/27/2017 17:00	458
7/27/2017 17:15	458
7/27/2017 17:30	458
7/27/2017 17:45	458
7/27/2017 18:00	458
7/27/2017 18:15	463
7/27/2017 18:30	458
7/27/2017 18:45	458
7/27/2017 19:00	458
7/27/2017 19:15	458
7/27/2017 19:30	458
7/27/2017 19:45	454
7/27/2017 20:00	454
7/27/2017 20:15	458
7/27/2017 20:30	454
7/27/2017 20:45	454
7/27/2017 21:00	454
7/27/2017 21:15	454
7/27/2017 21:30	454
7/27/2017 21:45	454

7/27/2017 22:00	458
7/27/2017 22:15	458
7/27/2017 22:30	454
7/27/2017 22:45	454
7/27/2017 23:00	458
7/27/2017 23:15	458
7/27/2017 23:30	458
7/27/2017 23:45	463
7/28/2017 0:00	506
7/28/2017 0:15	542
7/28/2017 0:30	557
7/28/2017 0:45	542
7/28/2017 1:00	526
7/28/2017 1:15	521
7/28/2017 1:30	521
7/28/2017 1:45	521
7/28/2017 2:00	521
7/28/2017 2:15	521
7/28/2017 2:30	521
7/28/2017 2:45	521
7/28/2017 3:00	516
7/28/2017 3:15	511
7/28/2017 3:30	506
7/28/2017 3:45	501
7/28/2017 4:00	496
7/28/2017 4:15	496
7/28/2017 4:30	492
7/28/2017 4:45	487
7/28/2017 5:00	487
7/28/2017 5:15	487
7/28/2017 5:30	492
7/28/2017 5:45	496
7/28/2017 6:00	506
7/28/2017 6:15	516
7/28/2017 6:30	526
7/28/2017 6:45	537
7/28/2017 7:00	552
7/28/2017 7:15	563
7/28/2017 7:30	568
7/28/2017 7:45	573
7/28/2017 8:00	579
7/28/2017 8:15	579
7/28/2017 8:30	584
7/28/2017 8:45	579
7/28/2017 9:00	579
7/28/2017 9:15	573
7/28/2017 9:30	563

7/28/2017 9:45	557
7/28/2017 10:00	552
7/28/2017 10:15	547
7/28/2017 10:30	542
7/28/2017 10:45	537
7/28/2017 11:00	537
7/28/2017 11:15	526
7/28/2017 11:30	521
7/28/2017 11:45	516
7/28/2017 12:00	511
7/28/2017 12:15	511
7/28/2017 12:30	501
7/28/2017 12:45	506
7/28/2017 13:00	501
7/28/2017 13:15	501
7/28/2017 13:30	496
7/28/2017 13:45	496
7/28/2017 14:00	496
7/28/2017 14:15	496
7/28/2017 14:30	492
7/28/2017 14:45	496
7/28/2017 15:00	506
7/28/2017 15:15	547
7/28/2017 15:30	568
7/28/2017 15:45	568
7/28/2017 16:00	573
7/28/2017 16:15	584
7/28/2017 16:30	584
7/28/2017 16:45	573
7/28/2017 17:00	573
7/28/2017 17:15	563
7/28/2017 17:30	557
7/28/2017 17:45	563
7/28/2017 18:00	563
7/28/2017 18:15	568
7/28/2017 18:30	568
7/28/2017 18:45	563
7/28/2017 19:00	563
7/28/2017 19:15	563
7/28/2017 19:30	568
7/28/2017 19:45	563
7/28/2017 20:00	568
7/28/2017 20:15	584
7/28/2017 20:30	584
7/28/2017 20:45	584
7/28/2017 21:00	579
7/28/2017 21:15	579

7/28/2017 21:30	579
7/28/2017 21:45	579
7/28/2017 22:00	579
7/28/2017 22:15	584
7/28/2017 22:30	584
7/28/2017 22:45	584
7/28/2017 23:00	584
7/28/2017 23:15	584
7/28/2017 23:30	584
7/28/2017 23:45	584

:period=&begin_date=2016-09-21&end_date=2016-09-22

USGS 08330000 RIO GRANDE AT ALBUQUERQUE, NM (Central)

https://nwis.waterdata.usgs.gov/usa/nwis/uv/?cb_00060=on&cb_00065=on&format=rdb&site_no=08

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Date/Time	Discharge (cfs)
9/27/2017 0:00	597
9/27/2017 0:15	590
9/27/2017 0:30	590
9/27/2017 0:45	590
9/27/2017 1:00	590
9/27/2017 1:15	590
9/27/2017 1:30	583
9/27/2017 1:45	583
9/27/2017 2:00	583
9/27/2017 2:15	590
9/27/2017 2:30	597
9/27/2017 2:45	604
9/27/2017 3:00	597
9/27/2017 3:15	590
9/27/2017 3:30	583
9/27/2017 3:45	583
9/27/2017 4:00	583
9/27/2017 4:15	570
9/27/2017 4:30	563
9/27/2017 4:45	569
9/27/2017 5:00	569
9/27/2017 5:15	556
9/27/2017 5:30	549
9/27/2017 5:45	536
9/27/2017 6:00	529
9/27/2017 6:15	529
9/27/2017 6:30	522
9/27/2017 6:45	516
9/27/2017 7:00	509
9/27/2017 7:15	509
9/27/2017 7:30	496
9/27/2017 7:45	490
9/27/2017 8:00	484
9/27/2017 8:15	478
9/27/2017 8:30	478
9/27/2017 8:45	472
9/27/2017 9:00	466
9/27/2017 9:15	466
9/27/2017 9:30	466
9/27/2017 9:45	460
9/27/2017 10:00	460

Rio Grande Mean Flow at Central
Calculated from 12:00 PM on 9/27/17
to 12:00 PM on 9/28/17

985	cfs

Pre-Storm
Rio Grande Mean Flow at Central
Calculated from 12:00 AM on 9/27/17
to 12:00 PM on 9/27/17

530	cfs

9/27/2017 10:15	465
9/27/2017 10:30	454
9/27/2017 10:45	448
9/27/2017 11:00	442
9/27/2017 11:15	459
9/27/2017 11:30	471
9/27/2017 11:45	477
9/27/2017 12:00	471
9/27/2017 12:15	465
9/27/2017 12:30	465
9/27/2017 12:45	465
9/27/2017 13:00	483
9/27/2017 13:15	483
9/27/2017 13:30	490
9/27/2017 13:45	483
9/27/2017 14:00	471
9/27/2017 14:15	490
9/27/2017 14:30	483
9/27/2017 14:45	496
9/27/2017 15:00	503
9/27/2017 15:15	490
9/27/2017 15:30	496
9/27/2017 15:45	509
9/27/2017 16:00	509
9/27/2017 16:15	516
9/27/2017 16:30	522
9/27/2017 16:45	522
9/27/2017 17:00	516
9/27/2017 17:15	490
9/27/2017 17:30	522
9/27/2017 17:45	569
9/27/2017 18:00	632
9/27/2017 18:15	668
9/27/2017 18:30	690
9/27/2017 18:45	713
9/27/2017 19:00	705
9/27/2017 19:15	698
9/27/2017 19:30	698
9/27/2017 19:45	720
9/27/2017 20:00	728
9/27/2017 20:15	720
9/27/2017 20:30	743
9/27/2017 20:45	743
9/27/2017 21:00	759
9/27/2017 21:15	782
9/27/2017 21:30	814
9/27/2017 21:45	830

9/27/2017 22:00	854
9/27/2017 22:15	870
9/27/2017 22:30	886
9/27/2017 22:45	919
9/27/2017 23:00	994
9/27/2017 23:15	1110
9/27/2017 23:30	1230
9/27/2017 23:45	1360
9/28/2017 0:00	1480
9/28/2017 0:15	1550
9/28/2017 0:30	1620
9/28/2017 0:45	1650
9/28/2017 1:00	1690
9/28/2017 1:15	1680
9/28/2017 1:30	1690
9/28/2017 1:45	1650
9/28/2017 2:00	1670
9/28/2017 2:15	1700
9/28/2017 2:30	1660
9/28/2017 2:45	1620
9/28/2017 3:00	1620
9/28/2017 3:15	1570
9/28/2017 3:30	1560
9/28/2017 3:45	1530
9/28/2017 4:00	1500
9/28/2017 4:15	1450
9/28/2017 4:30	1410
9/28/2017 4:45	1340
9/28/2017 5:00	1320
9/28/2017 5:15	1280
9/28/2017 5:30	1260
9/28/2017 5:45	1230
9/28/2017 6:00	1200
9/28/2017 6:15	1170
9/28/2017 6:30	1130
9/28/2017 6:45	1090
9/28/2017 7:00	1070
9/28/2017 7:15	1050
9/28/2017 7:30	1070
9/28/2017 7:45	1070
9/28/2017 8:00	1070
9/28/2017 8:15	1050
9/28/2017 8:30	1060
9/28/2017 8:45	1060
9/28/2017 9:00	1040
9/28/2017 9:15	1040
9/28/2017 9:30	1050

9/28/2017 9:45	1080
9/28/2017 10:00	1090
9/28/2017 10:15	1060
9/28/2017 10:30	1050
9/28/2017 10:45	1050
9/28/2017 11:00	1060
9/28/2017 11:15	1090
9/28/2017 11:30	1110
9/28/2017 11:45	1130
9/28/2017 12:00	1140
9/28/2017 12:15	1160
9/28/2017 12:30	1210
9/28/2017 12:45	1230
9/28/2017 13:00	1250
9/28/2017 13:15	1250
9/28/2017 13:30	1270
9/28/2017 13:45	1280
9/28/2017 14:00	1310
9/28/2017 14:15	1330
9/28/2017 14:30	1360
9/28/2017 14:45	1360
9/28/2017 15:00	1370
9/28/2017 15:15	1360
9/28/2017 15:30	1340
9/28/2017 15:45	1340
9/28/2017 16:00	1330
9/28/2017 16:15	1330
9/28/2017 16:30	1330
9/28/2017 16:45	1330
9/28/2017 17:00	1320
9/28/2017 17:15	1310
9/28/2017 17:30	1290
9/28/2017 17:45	1250
9/28/2017 18:00	1230
9/28/2017 18:15	1200
9/28/2017 18:30	1190
9/28/2017 18:45	1170
9/28/2017 19:00	1150
9/28/2017 19:15	1130
9/28/2017 19:30	1120
9/28/2017 19:45	1100
9/28/2017 20:00	1070
9/28/2017 20:15	1050
9/28/2017 20:30	1020
9/28/2017 20:45	1000
9/28/2017 21:00	986
9/28/2017 21:15	969

9/28/2017 21:30	944
9/28/2017 21:45	936
9/28/2017 22:00	919
9/28/2017 22:15	911
9/28/2017 22:30	895
9/28/2017 22:45	878
9/28/2017 23:00	862
9/28/2017 23:15	854
9/28/2017 23:30	830
9/28/2017 23:45	838

USGS 08329928 RIO GRANDE NR ALAMEDA, NM

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Date/Time	Discharge (cfs)
9/27/2017 0:00	612
9/27/2017 0:15	584
9/27/2017 0:30	557
9/27/2017 0:45	542
9/27/2017 1:00	531
9/27/2017 1:15	531
9/27/2017 1:30	526
9/27/2017 1:45	526
9/27/2017 2:00	521
9/27/2017 2:15	516
9/27/2017 2:30	516
9/27/2017 2:45	511
9/27/2017 3:00	506
9/27/2017 3:15	506
9/27/2017 3:30	501
9/27/2017 3:45	496
9/27/2017 4:00	496
9/27/2017 4:15	492
9/27/2017 4:30	492
9/27/2017 4:45	487
9/27/2017 5:00	487
9/27/2017 5:15	487
9/27/2017 5:30	482
9/27/2017 5:45	482
9/27/2017 6:00	482
9/27/2017 6:15	477
9/27/2017 6:30	477
9/27/2017 6:45	482
9/27/2017 7:00	487
9/27/2017 7:15	492
9/27/2017 7:30	492
9/27/2017 7:45	496
9/27/2017 8:00	496
9/27/2017 8:15	501
9/27/2017 8:30	506
9/27/2017 8:45	511
9/27/2017 9:00	516
9/27/2017 9:15	521
9/27/2017 9:30	526
9/27/2017 9:45	531
9/27/2017 10:00	537

Rio Grande Mean Flow at Central
Calculated from 12:00 PM on 9/27/17
to 12:00 PM on 9/28/17

983	cfs

Pre-Storm
Rio Grande Mean Flow at Central
Calculated from 12:00 AM on 9/27/17
to 12:00 PM on 9/27/17

513	cfs

9/27/2017 10:15	537
9/27/2017 10:30	537
9/27/2017 10:45	531
9/27/2017 11:00	526
9/27/2017 11:15	526
9/27/2017 11:30	526
9/27/2017 11:45	526
9/27/2017 12:00	521
9/27/2017 12:15	521
9/27/2017 12:30	521
9/27/2017 12:45	516
9/27/2017 13:00	516
9/27/2017 13:15	511
9/27/2017 13:30	507
9/27/2017 13:45	507
9/27/2017 14:00	507
9/27/2017 14:15	502
9/27/2017 14:30	502
9/27/2017 14:45	502
9/27/2017 15:00	502
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USGS 08330000 RIO GRANDE AT ALBUQUERQUE, NM (Central)

https://waterdata.usgs.gov/nm/nwis/uv?cb_00060=on&format=rdb&site_no=08330000&period=&be

Downloaded on 6/20/2019

Note: USGS data is provisional and subject to revision

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Rio Grande Mean Flow at Central
Calculated from 12:00 PM on 3/11/19
to 12:00 PM on 3/13/19

1202	cfs

Pre-Storm
Rio Grande Mean Flow at Central
Calculated from 12:00 PM on 3/10/19
to 12:00 PM on 3/11/19

1114	cfs

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USGS 08329928 RIO GRANDE NR ALAMEDA, NM

https://waterdata.usgs.gov/nm/nwis/uv?cb_00060=on&cb_00065=on&format=rdb&site_no=08329928&p

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Date/Time	Discharge (cfs)
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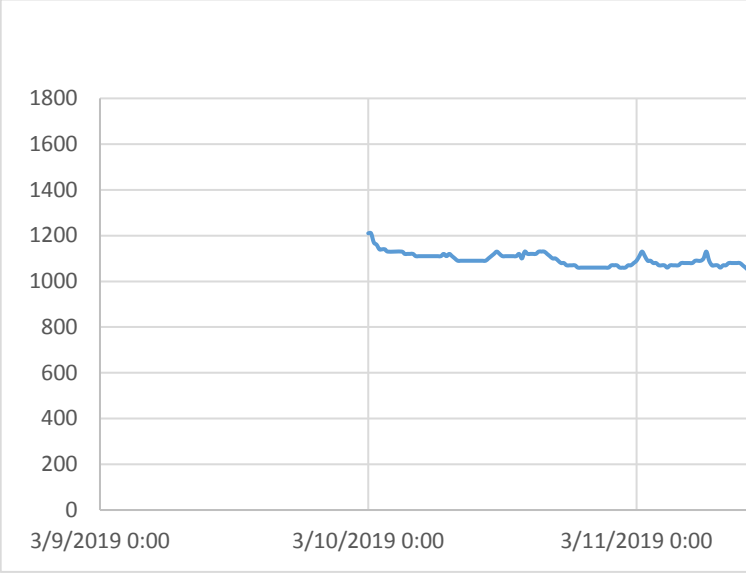
3/10/2019 11:00	1110

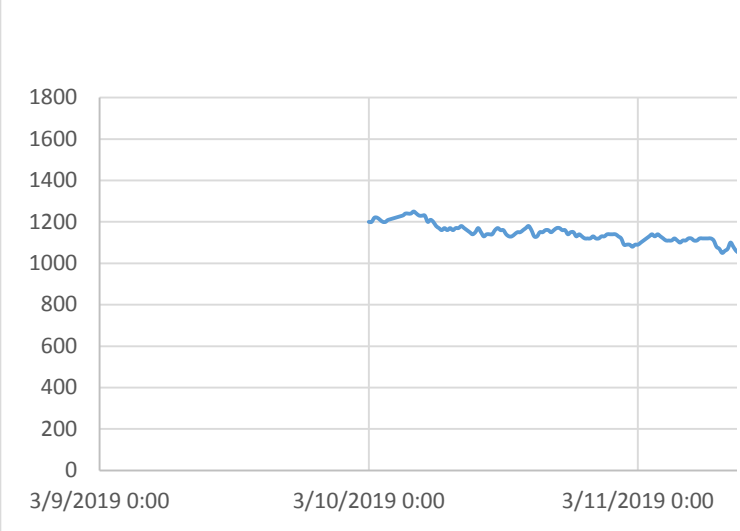
Rio Grande Mean Flow at Central
Calculated from 12:00 PM on 3/11/19
to 12:00 PM on 3/13/19

1188	cfs

Pre-Storm
Rio Grande Mean Flow at Central
Calculated from 12:00 AM on 3/10/19
to 12:00 PM on 3/11/19

1082	cfs





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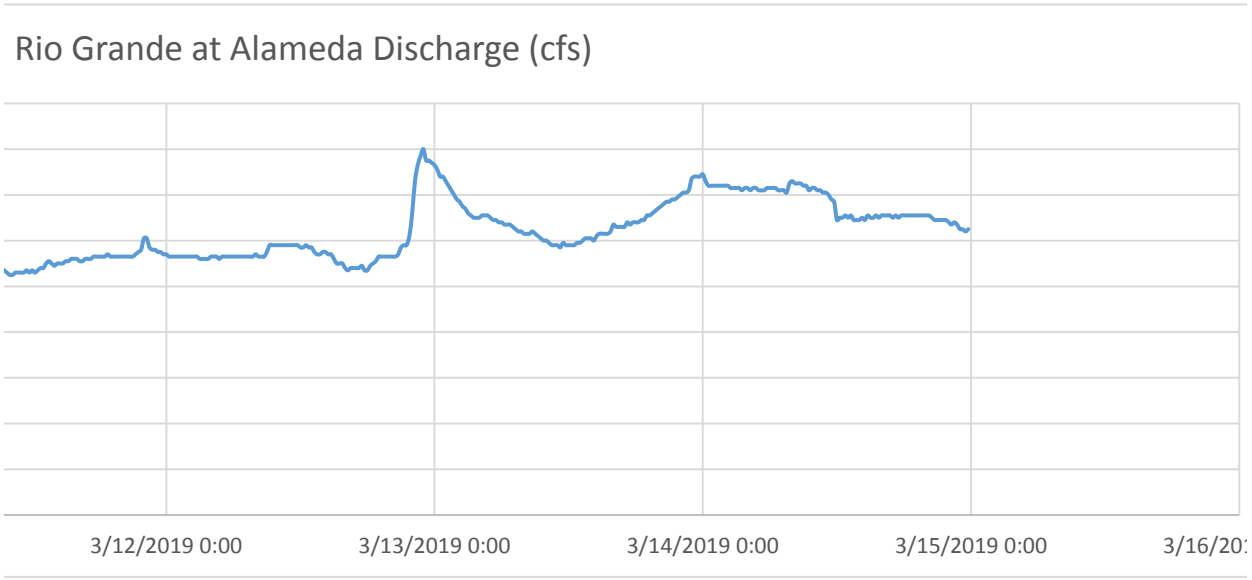

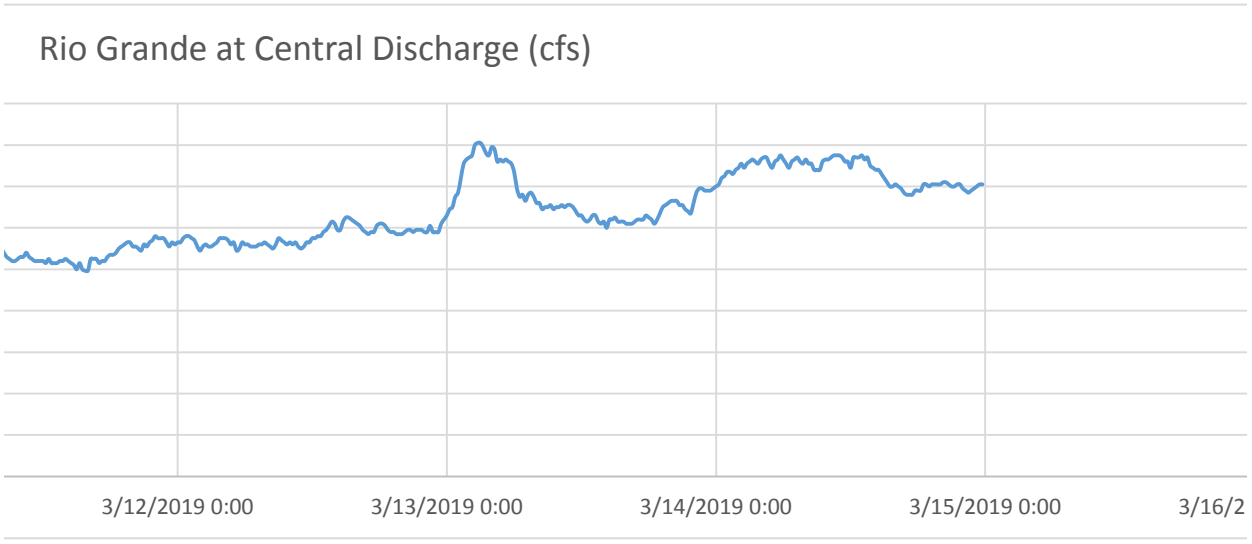


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Compliance Monitoring Cooperative (CMC)
E. coli Loading Calculation Compared to Waste Load Allocation (WLA)
FY 2017 - Wet Season Wet Weather Sampling

Date: 12/14/16

Storm Event Date: TRIAL - to see how various values impact loading

Trials:

- upstream E. coli concentration = 44 CFU/100 mL (Pueblo Geometric Mean WQS), varied the flow conditions - low - downstream can be 50 CFU/100mL, dry - downstream can be 63 CFU/100mL, ...
- downstream E. coli concentration = 88 CFU/100 mL (Pueblo Single Sample WQS), upstream set at 44 CFU/100 mL (Pueblo Geometric Mean WQS), varied the flow conditions - WLA is NOT acceptable for any flow regime for the southern segment.
- If upstream E. coli is higher than WQS (example - use 100 CFU/100 mL) - the E. coli can be higher than WQS and still have acceptable WLA (looks at the delta).

Table 1
Stormwater Sample Analysis Results for E. coli:

Monitoring Location	E. coli Concentration (CFU/100 mL)	Date & Time of Sample	Date & Time Sample Delivered to HEAL
Rio Grande North		TRIAL	TRIAL
Rio Grande South		TRIAL	TRIAL

Rio Grande Flow:
Table 3
Determination of Storm Event Flow Conditions - As Defined in the WSB MS4 Permit and NMED TMDL Report:

Stream Segment	Stream Name / Related USGS Gage	Flow Conditions (from WSB MS4 Permit Appendix B)				
		High (>3,360 cfs)	Moist (923-3,360 cfs)	Mid (664-929 cfs)	Dry (319-664 cfs)	Low (0-319 cfs)

Calculate E. coli Loading for Rio Grande North and Rio Grande South and Delta in E. coli Loading Between North and South Locations:

Monitoring Location	E. coli Concentration (CFU/100 mL)	Daily Mean Flow (cfs)	E. coli Loading (CFU/day)
Rio Grande North	35.9	639	5.61E+11
Rio Grande South	88	669	1.44E+12
Delta in E. coli Loading Between North and South Locations			8.79E+11

For trials - used 300 cfs for low, 500 cfs for dry, 700 cfs for mid, 1,500 cfs for moist, and 4,000 cfs for high

Compare Storm Event E. coli Loading to WLA for CMC:

Stream Segment	Stream Name / Related USGS Gage	CMC E. coli Loading (CFU/day) for Each Segment	Flow Conditions	WLA for CMC for TRIAL Storm Event	WLA - Exceedance or Acceptable
2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	#REF!		#REF!	#REF!
2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	#REF!		#REF!	#REF!

Notes:
1. Refer to "WLAs From NMED" worksheet for WLA for CMC for Storm Event.
2. Flow Conditions were defined in Table 3 "Determination of Storm Event Flow Conditions" above.

US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, page 40:

It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards. Since flows vary throughout the year in these systems the target load will vary based on the changing flow. Management of the load to improve stream water quality and meet water quality criteria should be a goal to be attained. Meeting the calculated TMDL may be a difficult objective.

Provisional or Verified	CMC SAMPLE 2 SOUTH Collection Date 9/13/2016 Wet Season Sample	Qualifier	Check compared to Water Quality Criterion
V	130		--
V	288	D	OK
V	18.6		--
V	<2.0		--
V	6.32		OK
V	ND		OK
V	959		HWQ Standard
V	8.45		OK
V	ND		--
V	0.83		OK
V	0.5		--
V	ND		OK
V	ND		OK
V	0.65		--
V	ND	screening method	OK
V	0.00272		HWQ Standard
V	6.16 ± 2.62		OK
V	ND		--
V	ND		OK
V	ND		OK
V	ND		OK
V	ND		OK
V	ND		OK
V	ND		OK
V	ND		OK
V	ND		OK
V	ND		OK
V	ND		--
V	ND		OK
V	ND		OK
V	1.6		OK
V	ND		OK
V	ND		OK
V	412		--
V	18.7		OK
V	150		--

CMC Water Quality Results Database
FY 2017
Date: Nov. 29, 2017
DMR 001-W, 001-WA, 001-WB - signed and certified in CDX system on 11/29/17

		Rio Grande North				Rio Grande South					
DMR Form Parameter	**Database Parameter Name (for lookup)**	**CMC SAMPLE 1 NORTH** Collection Date 8/10-8/11/16 Wet Season Sample	**CMC SAMPLE 2 NORTH** Collection Date 9/12-9/13/2016 Wet Season Sample	**CMC SAMPLE 3 NORTH** Collection Date 9/21-9/22/2016 Wet Season Sample	**CMC SAMPLE 4 NORTH** Collection Date 11/21/2016 Dry Season Sample	**CMC SAMPLE 1 SOUTH** Collection Date 8/11/2016 Wet Season Sample	**CMC SAMPLE 2 SOUTH** Collection Date 9/13/2016 Wet Season Sample	**CMC SAMPLE 3 SOUTH** Collection Date 9/22/2016 Wet Season Sample	**CMC SAMPLE 4 SOUTH** Collection Date 11/22/2016 Dry Season Sample	**Units**	**Unit Check**
		DMR 001-W	**DMR 001-WA**	**DMR 001-WB**	**DMR 001-D**	**DMR 002-W**	**DMR 002-WA**	**DMR 002-WB**	**DMR 002-D**		
Temperature, water deg. Centigrade	**Temperature**	22.8	20.01	20.99	10.36	7.4	6.83	24.92	18.7	deg C	°C
Conductivity	**Conductivity**	280	318	298	305	369	325	326	412	umho/cm	umhos/cm
Oxygen, dissolved [DO]	**Dissolved Oxygen (DO)**	7.18	6.24	7.14	10.62	11.16	10.78	5.33	6.32	mg/L	mg/L
BOD, 5-day, 20 deg. C	**Biochemical Oxygen Demand (BOD_5)**	<2.0	<2.0	<2.0	<2	0.0	6	<2.0	<2.0	mg/L	mg/L
Oxygen demand, chem. [high level] [COD]	**Chemical Oxygen Demand (COD)**	16.2	12.3	8.49	16.4	0	9.75	17	18.6	mg/L	mg/L
pH	**pH**	8.73	8.53	8.96	8.4	7.6	6.87	8.7	8.45	SU	S.U.
Solids, total suspended	**Total Suspended Solids (TSS)**	41	29	26	27	0	44	330	130	mg/L	mg/L
Oil & Grease	**Oil and Grease (N-Hexane Extractable Material)**	ND	ND	ND	ND	0.0	ND	ND	ND	mg/L	mg/L
Nitrogen, Kjedahl, total [as N]	**Total Kjedahl Nitrogen (TKN)**	ND	ND	ND	ND	0.0	0.7	ND	ND	mg/L	mg/L
Nitrite + Nitrate total [as N]	**Nitrate plus Nitrite**	ND	ND	ND	ND	0.0	ND	ND	0.83	mg/L	mg/L
Phosphorus, total [as P]	**Total Phosphorous**	0.081	0.052	0.042	0.042	0.00	0.058	0.38	0.65	mg/L	mg/L
Phosphorus, dissolved	**Dissolved Phosphorous**	0.03	0.018	0.016	0.012	0.00	0.015	0.17	0.5	mg/L	mg/L
Chromium, hexavalent [as Cr]	**Chromium VI (Hexavalent)**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Copper, dissolved [as Cu]	**Dissolved Copper**	1.2	2.4	1.3	ND	0.0	5.5	1.2	1.6	ug/L	µg/L
Lead, dissolved [as Pb]	**Dissolved Lead**	ND	ND	ND	ND	0.0	0.11	ND	ND	ug/L	µg/L
Benzo[b]fluoranthene	**Benzo[b]fluoranthene (other name: 3,4-Benzofluoranthene)**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Benzo[k]fluoranthene	**Benzo(k)fluoranthene**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Benzo[a]pyrene	**Benzo(a)pyrene**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Chrysene	**Chrysene**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Indeno[1,2,3-cd]pyrene	**Indeno(1,2,3-cd)Pyrene**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Benzo[a]anthracene	**Benzo(a)anthracene**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Dibenz[a,h]anthracene	**Dibenz(a,h)anthracene**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Pentachlorophenol	**Pentachlorophenol**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Di[2-ethylhexyl]phthalate [DEHP]	**Bis (2-ethyhexyl) Phthalate (other names: Di(2-ethylhexly)phthalate, DEHP)**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Benzidine	**Benzidine**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Dieldrin	**Dieldrin**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Polychlorinated biphenyls [PCBs] - *DMR units in mg/L - CMC Database and Lab Reports units in ug/L*	**PCBs (screening - used method 608)**	ND			0	0.0				ug/L	µg/L
	PCBS (Method 1668A - sum of all congeners)		0.0000014	0.0000015	0.0000001		0.0000002	0.0000000	0.0000027	ug/L	µg/L Entry in DMR defaults to 7 decimal spaces
E. coli	**E. coli**	35.9	55.6	31.1	43.5	2	32	1106	959	CFU/100mL	MPN (CFU/100 mL)
Solids, total dissolved	**Total Dissolved Solids (TDS)**	230	201	215	213	0	228	305	288	mg/L	mg/L
Alpha gross radioactivity	**Gross Alpha, Adjusted**	3.72 ± 1.97	2.32 ± 1.47	5.68 ± 2.38	3.11 ± 0.884	0.0	1.94 ± NA	10.6 ± 3.61	6.16 ± 2.62	pCi/L	pCi/L
Dibenzofuran	**Dibenzofuran**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L
Tetrahydrofuran	**Tetrahydrofuran**	ND	ND	ND	ND	0.0	ND	ND	ND	ug/L	µg/L

CMC Water Quality Results Database
FY 2018
Date: March 29, 2018

Data checked, entered into DMRs on 3/29/18 and se

DMR Form Parameter
Temperature, water deg. Centigrade
Conductivity
Oxygen, dissolved [DO]
BOD, 5-day, 20 deg. C
Oxygen demand, chem. [high level] [COD]
pH
Solids, total suspended
Oil & Grease
Nitrogen, Kjedahl, total [as N]
Nitrite + Nitrate total [as N]
Phosphorus, total [as P]
Phosphorus, dissolved
Chromium, hexavalent [as Cr]
Copper, dissolved [as Cu]
Lead, dissolved [as Pb]
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[a]pyrene
Chrysene
Indeno[1,2,3-cd]pyrene
Benzo[a]anthracene
Dibenz[a,h]anthracene
Pentachlorophenol
Di[2-ethylhexyl]phthalate [DEHP]
Benzidine
Dieldrin

Polychlorinated biphenyls [PCBs] - *DMR units in mg/L - CMC Database and Lab Reports units in ug/L conversion of 1/1000 applied here - DMR limits to 7 decimal places*
E. coli
Solids, total dissolved
Alpha gross radioactivity
Dibenzofuran
Tetrahydrofuran

ent to AMAFCA to sign

	Rio Grande North		Rio Grande South
Database Parameter Name (for lookup)	**CMC SAMPLE 5 NORTH Collection Date 7/27/17** Wet Season Sample	**CMC SAMPLE 6 NORTH Collection Date 9/27/17** Wet Season Sample	**CMC SAMPLE 5 SOUTH Collection Date 7/27/2017** Wet Season Sample
Temperature	23.47	16.3	22.0
Conductivity	247	103.4	436
Dissolved Oxygen (DO)	6.73	7.13	8.3
Biochemical Oxygen Demand (BOD_5)	<2.0	2	<2.0
Chemical Oxygen Demand (COD)	19.9	20.5	11
pH	7.37	7.83	9.00
Total Suspended Solids (TSS)	32	260	60
Oil and Grease (N-Hexane Extractable Material)	5.17	ND	ND
Total Kjedahl Nitrogen (TKN)	ND	0.84	ND
Nitrate plus Nitrite	0.05	0.2	0.95
Total Phosphorous	0.062	0.28	0.42
Dissolved Phosphorous	0.025	0.029	0.32
Chromium VI (Hexavalent)	ND	ND	ND
Dissolved Copper	1.1	0.95	1.2
Dissolved Lead	ND	ND	ND
Benzo[b]fluoranthene (other name: 3,4-Benzofluoranthene)	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND
Chrysene	ND	ND	ND
Indeno(1,2,3-cd)Pyrene	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND
Dibenz(a,h)anthracene	ND	ND	ND
Pentachlorophenol	ND	ND	ND
Bis (2-ethyhexyl) Phthalate (other names: Di(2-ethylhexly)phthalate, DEHP)	5.5	3.06	ND
Benzidine	ND	ND	ND
Dieldrin	ND	ND	ND

PCBs (screening - used method 608)			
PCBS (Method 1668A - sum of all congeners)	0.0000001	0.0000002	0.0000022
E. coli	20	733	517.2
Total Dissolved Solids (TDS)	181	225	301.0
Gross Alpha, Adjusted	2.06 ± 1.6	2.91 ± NA	2.25 ± 1.6
Dibenzofuran	ND	ND	ND
Tetrahydrofuran	ND	ND	ND

CMC SAMPLE 6 SOUTH Collection Date 9/27/2017 Wet Season Sample	Units
9.3	deg C
367	umho/cm
8.01	mg/L
3	mg/L
23.1	mg/L
8.08	SU
340	mg/L
ND	mg/L
2.2	mg/L
0.68	mg/L
0.55	mg/L
0.3	mg/L
ND	ug/L
ND	ug/L
ND	ug/L
ND	ug/L
ND	ug/L
ND	ug/L
ND	ug/L
ND	ug/L
ND	ug/L
ND	ug/L
ND	ug/L
ND	ug/L
ND	ug/L

0.0000017	mg/L
7270	CFU/100mL
248	mg/L
7.26 ± 1.94	pCi/L
ND	ug/L
ND	ug/L

Entry in DMR defaults to 7 decimal spaces

CMC Water Quality Results Database
FY 2019
Date: June 17, 2019
Data checked, entered into DMRs on 6/25/19

		Rio Grande North	Rio Grande South	
DMR Form Parameter	**Database Parameter Name (for lookup)**	**CMC SAMPLE 7 NORTH Collection Date 3/11/2019** Dry Season Sample	**CMC SAMPLE 7 SOUTH Collection Date 3/13/2019** Dry Season Sample	**Units**
Temperature, water deg. Centigrade	**Temperature**	6.83	7.41	deg C
Conductivity	**Conductivity**	325	358	umho/cm
Oxygen, dissolved [DO]	**Dissolved Oxygen (DO)**	10.78	10.86	mg/L
BOD, 5-day, 20 deg. C	**Biochemical Oxygen Demand (BOD_5)**	6	5	mg/L
Oxygen demand, chem. [high level] [COD]	**Chemical Oxygen Demand (COD)**	9.75	24.8	mg/L
pH	**pH**	6.87	6.95	SU
Solids, total suspended	**Total Suspended Solids (TSS)**	44	460	mg/L
Oil & Grease	**Oil and Grease (N-Hexane Extractable Material)**	ND	ND	mg/L
Nitrogen, Kjedahl, total [as N]	**Total Kjedahl Nitrogen (TKN)**	0.7	1.1	mg/L
Nitrite + Nitrate total [as N]	**Nitrate plus Nitrite**	ND	0.43	mg/L
Phosphorus, total [as P]	**Total Phosphorous**	0.058	0.45	mg/L
Phosphorus, dissolved	**Dissolved Phosphorous**	0.015	0.054	mg/L
Chromium, hexavalent [as Cr]	**Chromium VI (Hexavalent)**	ND	ND	ug/L
Copper, dissolved [as Cu]	**Dissolved Copper**	5.5	0.74	ug/L
Lead, dissolved [as Pb]	**Dissolved Lead**	0.11	0.40	ug/L
Benzo[b]fluoranthene	**Benzo[b]fluoranthene (other name: 3,4-Benzofluoranthene)**	ND	ND	ug/L
Benzo[k]fluoranthene	**Benzo(k)fluoranthene**	ND	ND	ug/L
Benzo[a]pyrene	**Benzo(a)pyrene**	ND	ND	ug/L
Chrysene	**Chrysene**	ND	ND	ug/L
Indeno[1,2,3-cd]pyrene	**Indeno(1,2,3-cd)Pyrene**	ND	ND	ug/L
Benzo[a]anthracene	**Benzo(a)anthracene**	ND	ND	ug/L
Dibenz[a,h]anthracene	**Dibenz(a,h)anthracene**	ND	ND	ug/L
Pentachlorophenol	**Pentachlorophenol**	ND	ND	ug/L
Di[2-ethylhexyl]phthalate [DEHP]	**Bis (2-ethyhexyl) Phthalate (other names: Di(2-ethylhexly)phthalate, DEHP)**	ND	ND	ug/L
Benzidine	**Benzidine**	ND	ND	ug/L
Dieldrin	**Dieldrin**	ND	ND	ug/L
Polychlorinated biphenyls [PCBs] - *DMR units in mg/L - CMC Database and Lab Reports units in ug/L conversion of 1/1000 applied here - DMR limits to 7 decimal places*	**PCBs (screening - used method 608)**			
	PCBS (Method 1668A - sum of all congeners)	0.0000002	0.0000026	mg/L
E. coli	**E. coli**	31.8	594	CFU/100mL
Solids, total dissolved	**Total Dissolved Solids (TDS)**	228	325	mg/L
Alpha gross radioactivity	**Gross Alpha, Adjusted**	1.94 ± NA	7.86 ± NA	pCi/L
Dibenzofuran	**Dibenzofuran**	ND	ND	ug/L
Tetrahydrofuran	**Tetrahydrofuran**	ND	ND	ug/L

Entry in DMR defaults to 7 decimal spaces

NM WQ standards - lookup tables

Hardness Dependent Acute and Chronic Aquatic Life Criteria for Metals

Copper (Cu) - NMAC 20.6.4.900.I(3)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	4	3
30	4	3
40	6	4
50	7	5
60	8	6
70	10	7
80	11	7
90	12	8
100	13	9
200	26	16
300	38	23
400	50	29

Sandia

Copper (Cu)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	3.6	2.7
30	4.3	3.2
40	5.7	4.1
50	7.0	5.0
60	8.3	5.8
70	9.6	6.6
80	10.9	7.4
90	12.2	8.2
100	13.4	9.0
200	25.8	16.2
300	37.8	22.9
400	49.6	29.3

Cadmium (Cd) - NMAC 20.6.4.900.I(3)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	0.51	0.17
30	0.59	0.19
40	0.76	0.23
50	0.91	0.28
60	1.07	0.31
70	1.22	0.35
80	1.37	0.39
90	1.51	0.42
100	1.65	0.45
200	2.98	0.75
300	4.21	1
400	5.38	1.22

Cadmium (Cd)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	0.52	0.09
30	0.62	0.11
40	0.83	0.13
50	1.03	0.15
60	1.23	0.17
70	1.42	0.19
80	1.62	0.21
90	1.82	0.23
100	2.01	0.25
200	3.95	0.40
300	5.85	0.53
400	7.74	0.64

Aluminum (Al) - NMAC 20.6.4.900.I(3)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	512	205

Chromium (III)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	183.1	23.8

30	658	263
40	975	391
50	1324	530
60	1699	681
70	2099	841
80	2520	1010
90	2961	1186
100	3421	1370
200	8838	3541
220	10071	4035
400	10071	4035

30	212.6	27.6
40	269.0	35.0
50	323.0	42.0
60	375.0	48.8
70	425.4	55.3
80	474.6	61.7
90	522.7	68.0
100	569.8	74.1
200	1005.2	130.8
300	1401.1	182.3
400	1773.3	230.7

For aluminum, the criteria are based on analysis of total recoverable aluminum in a sample that is filtered to minimize mineral phases as specified by the d

Lead (Pb)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	14.01	0.53
30	17.53	0.66
40	24.98	0.94
50	32.87	1.23
60	41.14	1.54
70	49.72	1.87
80	58.59	2.20
90	67.71	2.54
100	77.07	2.89
200	180.54	6.77
300	296.89	11.12
400	422.46	15.81

Zinc (Zn)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	36.2	36.5
30	42.3	42.6
40	53.9	54.4
50	65.1	65.7
60	76.0	76.6
70	86.6	87.3
80	97.0	97.8
90	107.2	108.0
100	117.2	118.1
200	210.8	212.5
300	297.3	299.7
400	379.3	382.4

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CF Acute	CF Chronic
1.00	0.97
0.99	0.96
0.98	0.95
0.97	0.94
0.97	0.93
0.96	0.92
0.95	0.92
0.95	0.91
0.94	0.91
0.92	0.88
0.90	0.86
0.89	0.85

Copper (Cu)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	3.6	2.7
30	4.3	3.2
40	5.7	4.1
50	7.0	5.0
60	8.3	5.8
70	9.6	6.6
80	10.9	7.4
90	12.2	8.2
100	13.4	9.0
200	25.8	16.2
300	37.8	22.9
400	49.6	29.3

Cadmium (Cd)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	0.51	0.09
30	0.61	0.10
40	0.82	0.13
50	1.03	0.15
60	1.23	0.17
70	1.44	0.19
80	1.65	0.22
90	1.86	0.23
100	2.08	0.25
200	4.20	0.42
300	6.34	0.57
400	8.50	0.71

Chromium (III)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	183.1	23.8

30	212.5	27.6
40	269.0	35.0
50	323.0	42.0
60	375.0	48.8
70	425.4	55.3
80	474.6	61.7
90	522.7	68.0
100	569.8	74.1
200	1005.2	130.8
300	1401.1	182.2
400	1773.3	230.7

CF Acute	CF Chronic
1.00	0.97
0.99	0.96
0.98	0.95
0.97	0.94
0.97	0.93
0.96	0.92
0.95	0.92
0.95	0.91
0.94	0.91
0.92	0.88
0.90	0.86
0.89	0.85

Lead (Pb)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	13.88	0.54
30	17.04	0.66
40	23.51	0.92
50	30.14	1.17
60	36.88	1.44
70	43.71	1.70
80	50.61	1.97
90	57.57	2.24
100	64.58	2.52
200	136.14	5.31
300	208.58	8.13
400	280.85	10.94

CF Acute	CF Chronic
0.99	0.99
0.97	0.97
0.92	0.92
0.89	0.89
0.87	0.87
0.84	0.84
0.82	0.82
0.81	0.81
0.79	0.79
0.69	0.69
0.63	0.63
0.59	0.59

Zinc (Zn)		
Hardness as CaCO3 dissolved (mg/L)	Acute (ug/L)	Chronic (ug/L)
25	36.2	36.5
30	42.3	42.6
40	53.9	54.4
50	65.1	65.7
60	76.0	76.6
70	86.6	87.3
80	97.0	97.8
90	107.2	108.0
100	117.2	118.1
200	210.8	212.5
300	297.3	299.7
400	379.3	382.4

Ammonia - WQS

Freshwater acute aquatic life criteria for total (unfiltered) ammonia are expressed as a function of pH and the presence or absence of salmonids; values displayed correspond to a pH of 7.8 and absence of salmonids based on the overall median and average pH and absence of salmonids at the outfalls. Freshwater chronic aquatic life criteria for total ammonia are expressed as a function of pH and water temperature in the water body; values displayed correspond to a pH of 7.8 and temperature greater than 15 degrees Celsius based on the overall median and average pH and temperature values at the outfalls;

NMAC - water quality standard for ammonia, unfiltered, as N

Acute criteria - use table below - Chronic (if there are multiple samples per month) - there are various tables and f

K. Acute aquatic life criteria for total ammonia are dependent on pH and the pr
criteria in mg/L as N based on analysis of unfiltered samples are as follows:

pH	Where Salmonids Present	Where Salmonid
6.5 and below	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0 and above	0.885	1.32

L. Chronic aquatic life criteria for total ammonia are dependent on pH, temperature and whether fish in e
are present or absent. The criteria are based on analysis of unfiltered samples and are calculated according to the equation
Paragraphs (1) and (2) of this subsection. For temperatures from below 0 to 14°C, the criteria for 14°C apply; for tempera

Paragraphs (1) and (2) of this subsection. For temperatures from below 0 to 14 °C, the criteria for 14 °C apply; for tempera 30°C, the criteria for 30°C apply. For pH values below 6.5, the criteria for 6.5 apply; for pH values above 9.0, the criteria

(1) Chronic aquatic life criteria for total ammonia when fish early life stages are present:

(a) The equation to calculate chronic criteria in mg/L as N is:

$$((0.0577/(1 + 10^{7.688-pH})) + (2.487/(1 + 10^{pH-7.688})) \times MIN (2.85, 1.45 \times 10^{0.028 \times (25-T)})$$

(b) Selected values of calculated chronic criteria in mg/L as N:

pH	Temperature (°C)									
	14 and below	15	16	18	20	22	24	26	28	30 and above
6.5 and below	6.67	6.46	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.36	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.25	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.10	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	5.93	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.73	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.49	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.22	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	4.92	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.59	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.23	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.85	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.47	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.09	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.71	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.36	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.03	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.74	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.48	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.25	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.06	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.892	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.754	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.641	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.548	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0 and above	0.486	0.471	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

(2) Chronic aquatic life criteria for total ammonia when fish early life stages are absent.

(a) The equation to calculate chronic criteria in mg/L as N is:

$$((0.0577/(1 + 10^{7.688-pH})) + (2.487/(1 + 10^{pH-7.688})) \times 1.45 \times 10^{0.028 \times (25-MAX(T,7))}$$

(b) Selected values of calculated chronic criteria in mg/L as N:

pH	Temperature (°C)								
	7 and below	8	9	10	11	12	13	14	15 and above
6.5 and below	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46
6.6	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36

6.7	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25
6.8	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10
6.9	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93
7.0	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73
7.1	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49
7.2	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22
7.3	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92
7.4	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59
7.5	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23
7.6	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85
7.7	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47
7.8	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09
7.9	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71
8.0	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36
8.1	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03
8.2	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74
8.3	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48
8.4	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25
8.5	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06
8.6	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892
8.7	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754
8.8	1.07	1.01	0.944	0.855	0.829	0.778	0.729	0.684	0.641
8.9	0.917	0.860	0.806	0.756	0.709	0.664	0.623	0.584	0.548
9.0 and above	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471

pH	**Temperature (°C)**								
	7 and below	8	9	10	11	12	13	14	15 and above
At 15°C and above, the criterion for fish early life stages absent is the same as the criterion for fish early life stages present (refer to table in Paragraph (1) of this subsection).									

[20.6.4.900 NMAC - Rp 20 NMAC 6.1.3100, 10-12-2000; A, 10-11-2002; A, 05-23-2005; A, 07-17-2005; A, 12-01-2010; A, 03-02-2017]

ish stages to consider.

esence or absence of salmonids. The

s Absent

arly life stages
s in
tures above

Isleta WQS
Chronic Criterion is not to be exceeded more
For WQSs with CMC - will be looking at acute

APPENDIX III. C.

TOTAL AMMONIA, ACU	
pH	COLDWATER DESIG WATER BODY
6.5	32.6
6.6	31.3
6.7	29.8
6.8	28.1
6.9	26.2
7.0	24.1
7.1	22.0
7.2	19.7
7.3	17.5
7.4	15.4
7.5	13.3
7.6	11.4
7.7	9.65
7.8	8.11
7.9	6.77
8.0	5.62
8.1	4.64
8.2	3.83
8.3	3.15
8.4	2.59
8.5	2.14
8.6	1.77
8.7	1.47
8.8	1.23
8.9	1.04
9.0	0.885

APPEND

rules above
for 9.0 apply.

than once in a three year period.
criteria

TE CRITERIA , (mg Nitrogen/L)	
NATED	WARMWATER DESIGNATED WATER BODY
	48.8
	46.8
	44.6
	42.0
	39.1
	36.1
	32.8
	29.5
	26.2
	23.0
	19.9
	17.0
	14.4
	12.1
	10.1
	8.40
	6.95
	5.72
	4.71
	3.88
	3.20
	2.65
	2.20
	1.84
	1.56
	1.32

CMC Monitoring - E. coli Results

CMC E. coli Data Comparisons

FY 2017 - Wet Season[1] - E. coli Results (CFU/100 mL) in the Rio Grande - North and South of the Middle Rio Grand						
	Date					
	Not A Qualifying Storm Event	Not A Qualifying Storm Event		Not A Qualifying Storm Event	Not A Qualifying Storm Event	
Location in Rio Grande	8/2/16	8/3/16	8/10/16	8/31/16	9/7/16	9/12/16
Rio Grande North	28.1	185.0	35.9	88.2	82.0	55.6
Rio Grande South			1,106.0			959.0

[1]Wet season defined in MS4 Permit NMR04A000 as July 1 through October 31

FY 2017 - Dry Season[1] - E. coli Results (CFU/100 mL) in the Rio Grande - North and South of the Middle Rio Grand						
	Date					
	Not A Qualifying Storm Event					
Location in Rio Grande	11/3/16	11/21/16				
Rio Grande North	42.0	43.5				
Rio Grande South		7,270				

[1]Dry season defined in MS4 Permit NMR04A000 as November 1 through June 30

CMC Monitoring - E. coli Results

FY 2018 - Wet Season[1] - E. coli Results (CFU/100 mL) in the Rio Grande - North and South of the Middle Rio Grand						
	Date					
Location in Rio Grande	7/27/17	9/27/17				
Rio Grande North	20.0	733.0				
Rio Grande South	236.0	6,131.0				

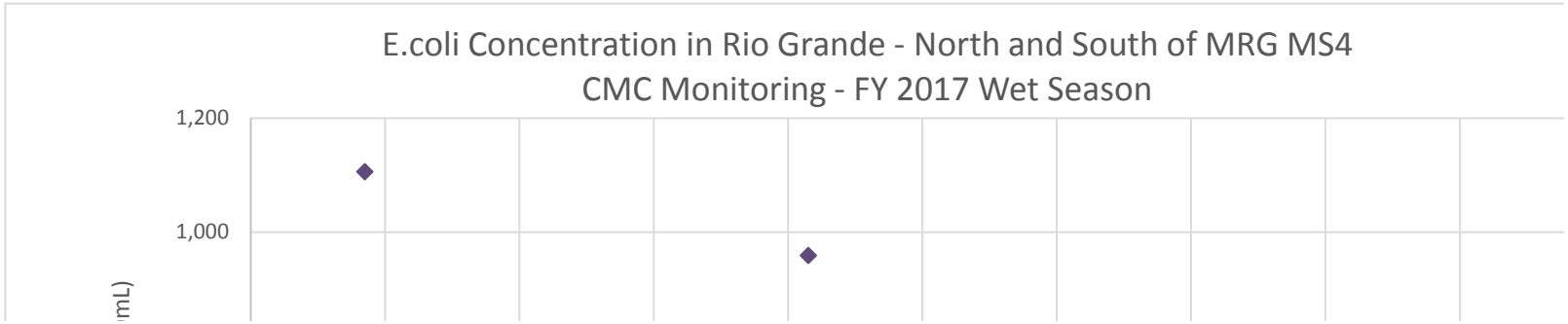
[1]Wet season defined in MS4 Permit NMR04A000 as July 1 through October 31

FY 2017 - Dry Season[1] - E. coli Results (CFU/100 mL) in the Rio Grande - North and South of the Middle Rio Grand						
	Date					
Location in Rio Grande	2/14/19	3/11/19	3/12/19	3/13/19		
Rio Grande North	2.0	31.8	-	-		
Rio Grande South	-	-	309	594		

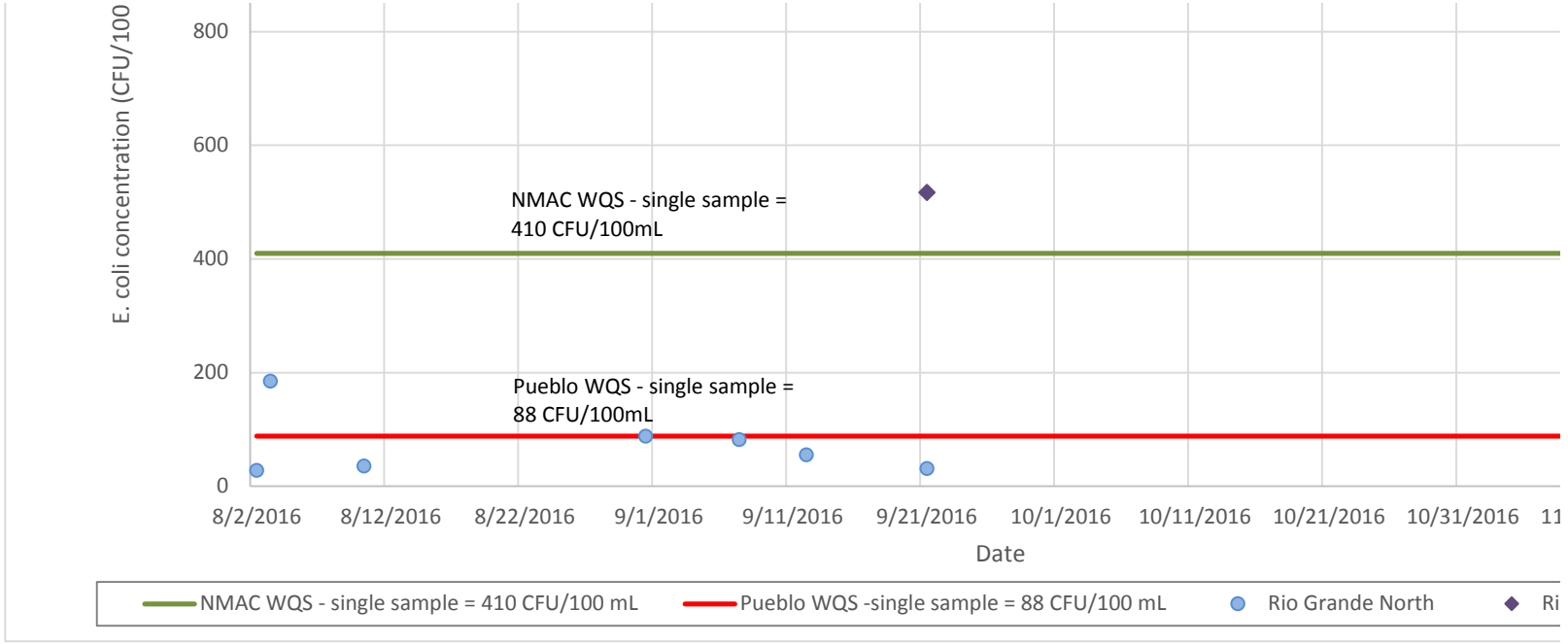
[1]Dry season defined in MS4 Permit NMR04A000 as November 1 through June 30

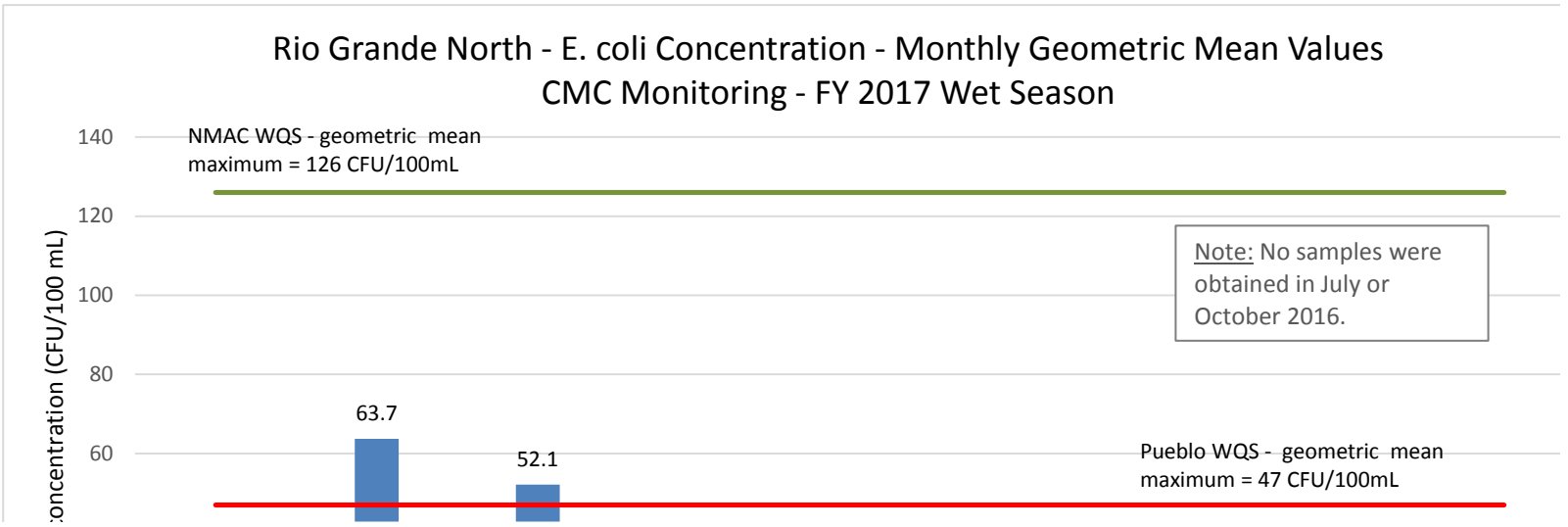
CMC Monitoring - E. coli Results

	NMAC WQS - single	Pueblo WQS -	NMAC WQS -	Pueblo WQS -
8/2/2016	410	88	126	47
8/3/2016	410	88	126	47
8/10/2016	410	88	126	47
8/31/2016	410	88	126	47
9/7/2016	410	88	126	47
9/21/2016	410	88	126	47
10/1/2016	410	88	126	47
11/3/2016	410	88	126	47
11/21/2016	410	88	126	47
7/18/2017	410	88	126	47
9/27/2017	410	88	126	47
10/10/2017	410	88	126	47
2/12/2019	410	88	126	47
2/14/2019	410	88	126	47
3/7/2019	410	88	126	47
3/11/2019	410	88	126	47
3/13/2019	410	88	126	47
3/30/2019	410	88	126	47

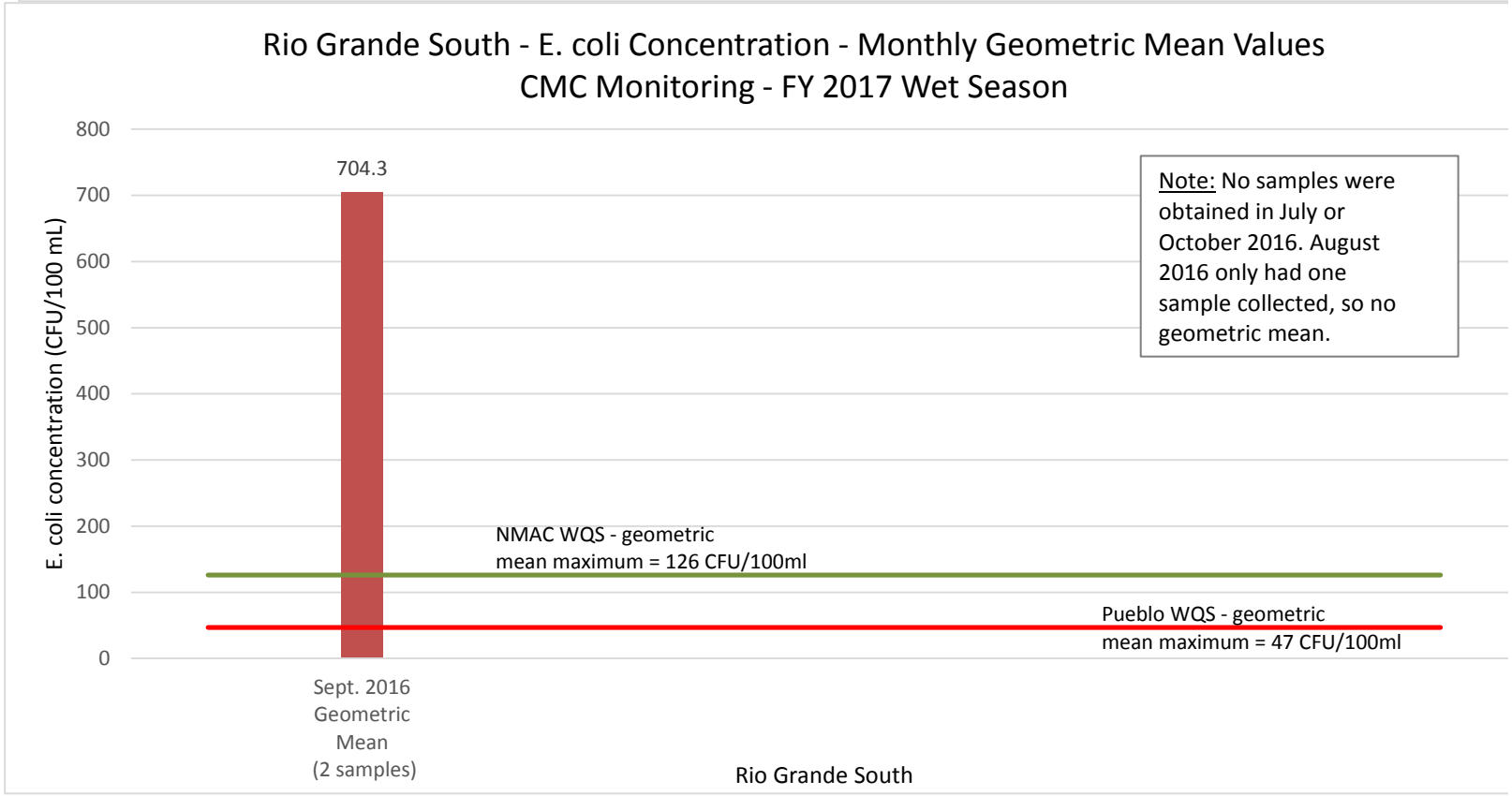


CMC Monitoring - E. coli Results





CMC Monitoring - E. coli Results



CMC Monitoring - E. coli Results

CMC Monitoring - E. coli Results

e MS4			Sept. 2016 Geometric Mean (2 samples)				
	Statistical Analysis						
9/21/16		Aug. 2016 Geometric Mean (4 samples)	Sept. 2016 Geometric Mean (3 samples)	Mean	Median		Stand Dev
31.1		63.7	52.1	72.3	55.6		55.2
517.2			704.3	860.7	959.0		306.5

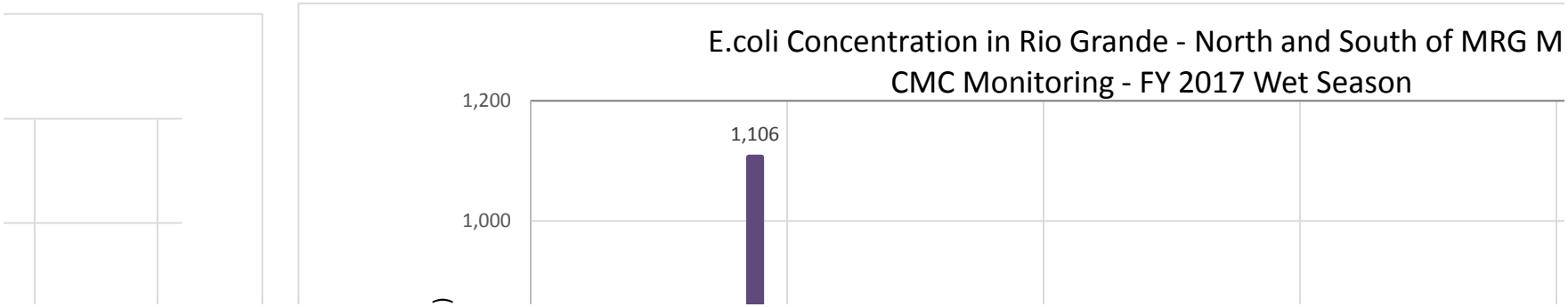
e MS4							
	Statistical Analysis						
	Min	Nov. 2016 Geometric Mean (2 samples)		Mean	Median	Max	Stand Dev
	42.0	42.7		42.8	42.8	43.5	1.1
	7,270.0			7,270	7,270	7,270	

CMC Monitoring - E. coli Results

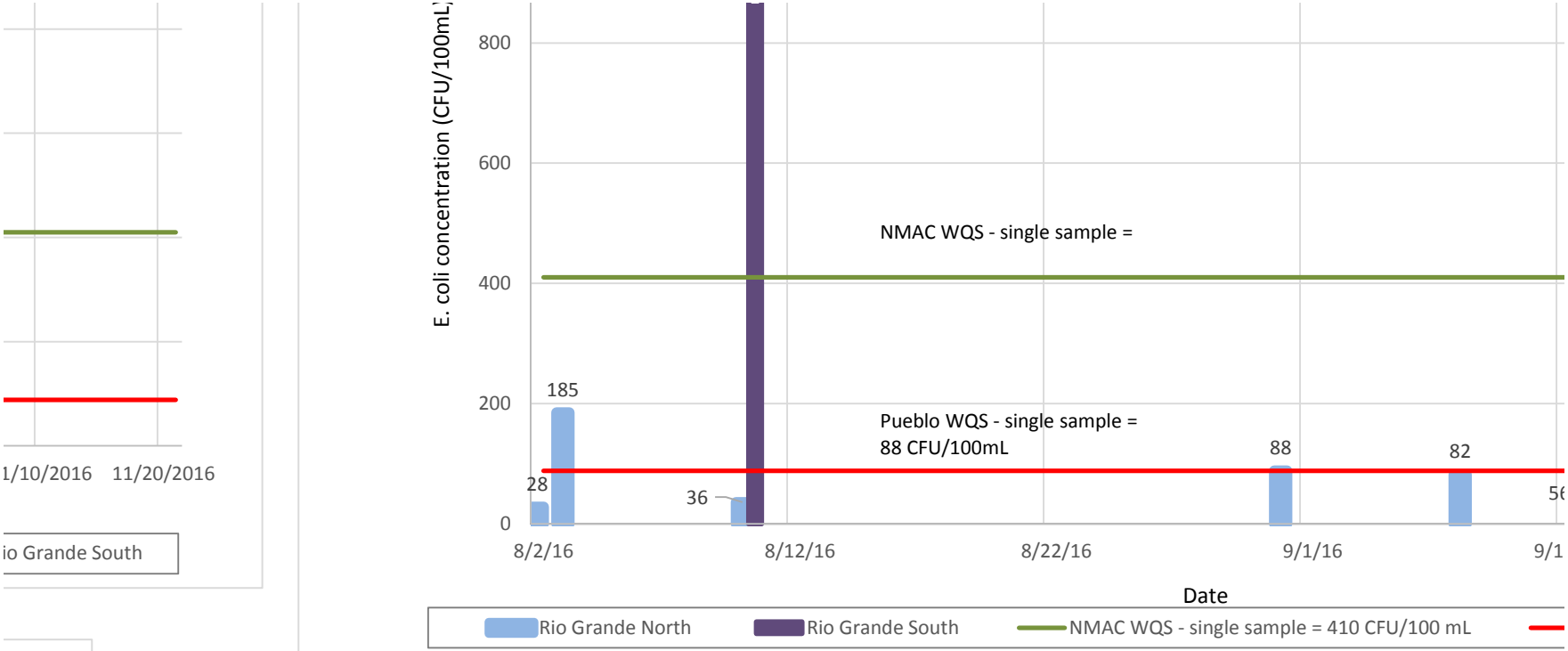
e MS4			Sept. 2016 Geometric Mean (2 samples)				
	Statistical Analysis						
		Aug. 2016 Geometric Mean (4 samples)	Sept. 2016 Geometric Mean (3 samples)	Mean	Median		Stand Dev
		121.1	121.1	376.5	376.5		504.2
			1,202.9	3,183.5	3,183.5		4,168.4

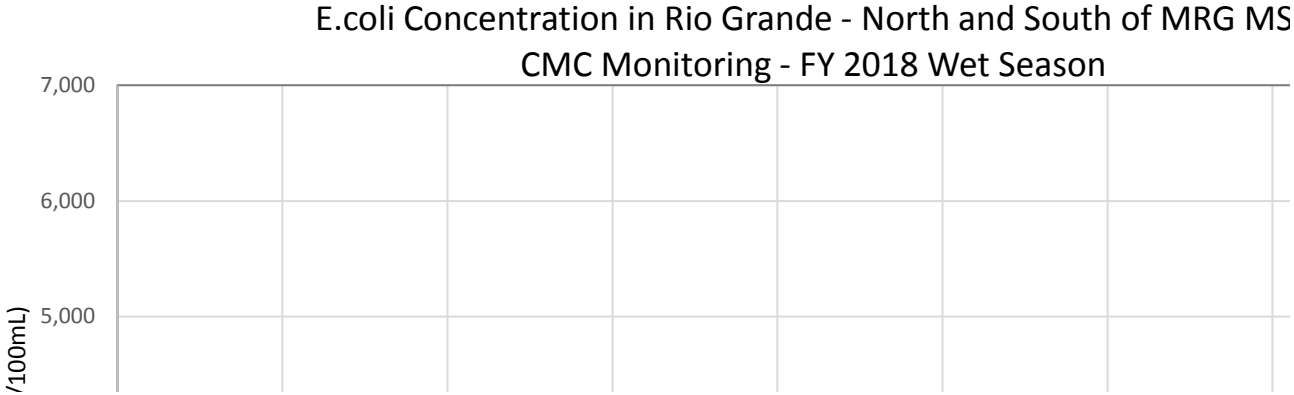
le MS4							
	Statistical Analysis						
	Min	Nov. 2016 Geometric Mean (2 samples)		Mean	Median	Max	Stand Dev
	2.0	8.0		16.9	16.9	31.8	
	309.0			452	452	594	

CMC Monitoring - E. coli Results

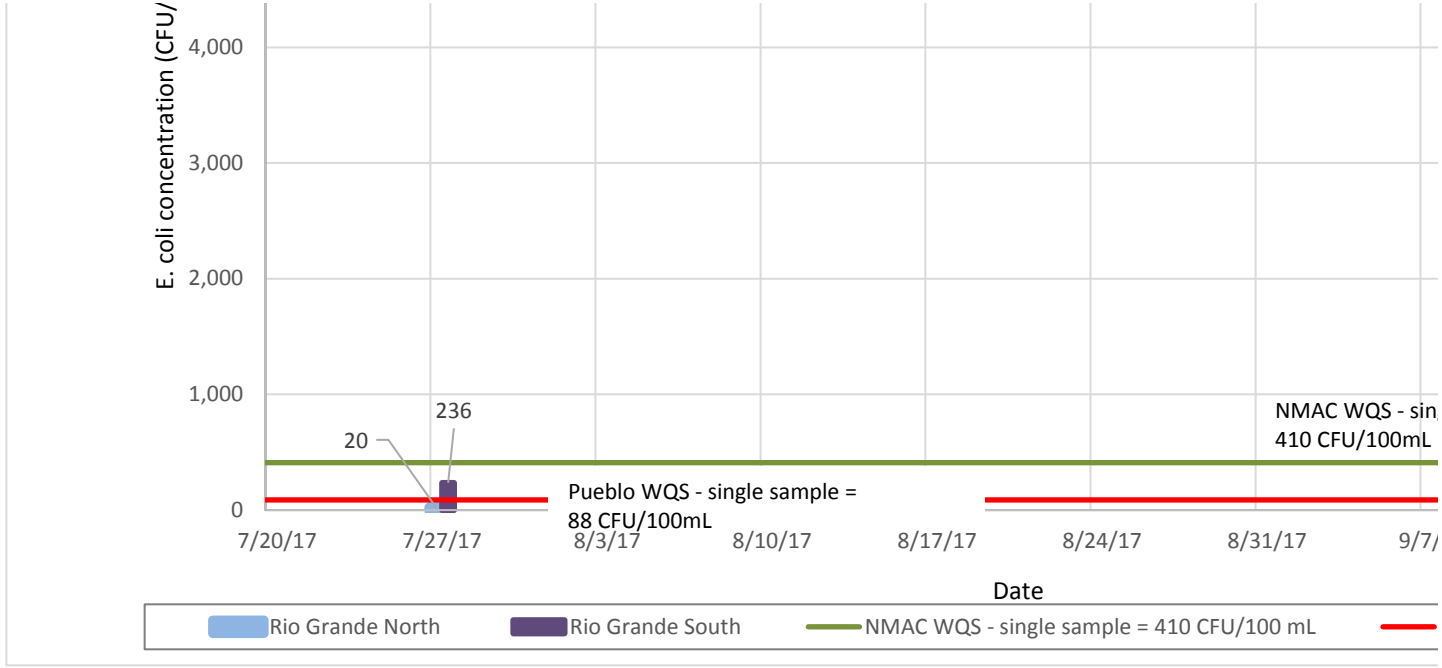


CMC Monitoring - E. coli Results





CMC Monitoring - E. coli Results

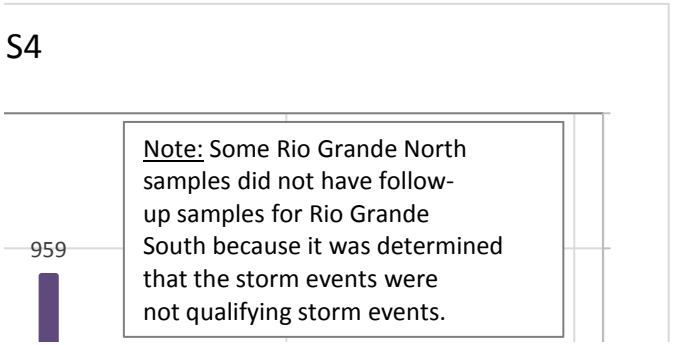


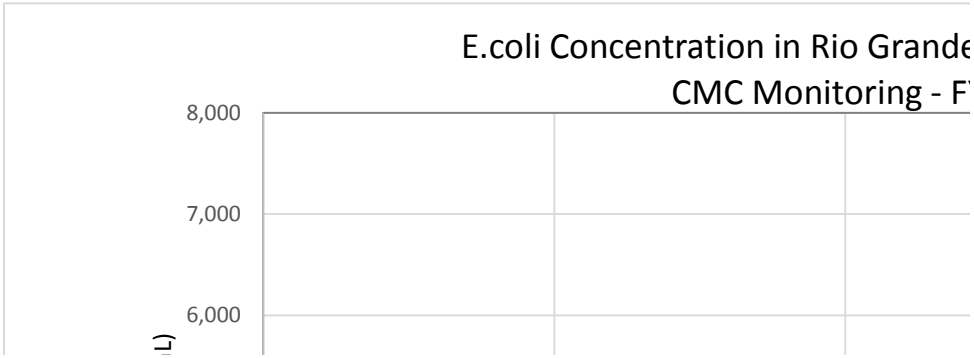
CMC Monitoring - E. coli Results

CMC Monitoring - E. coli Results

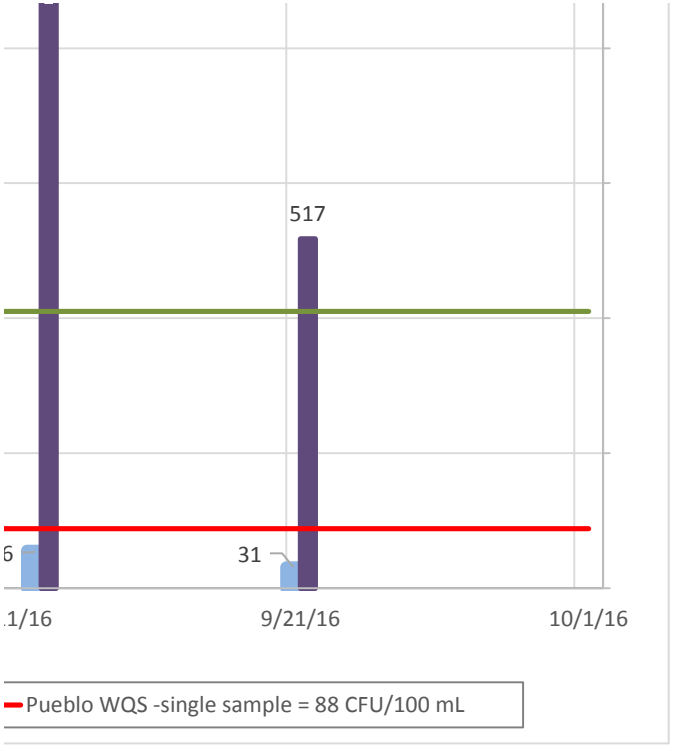
CMC Monitoring - E. coli Results

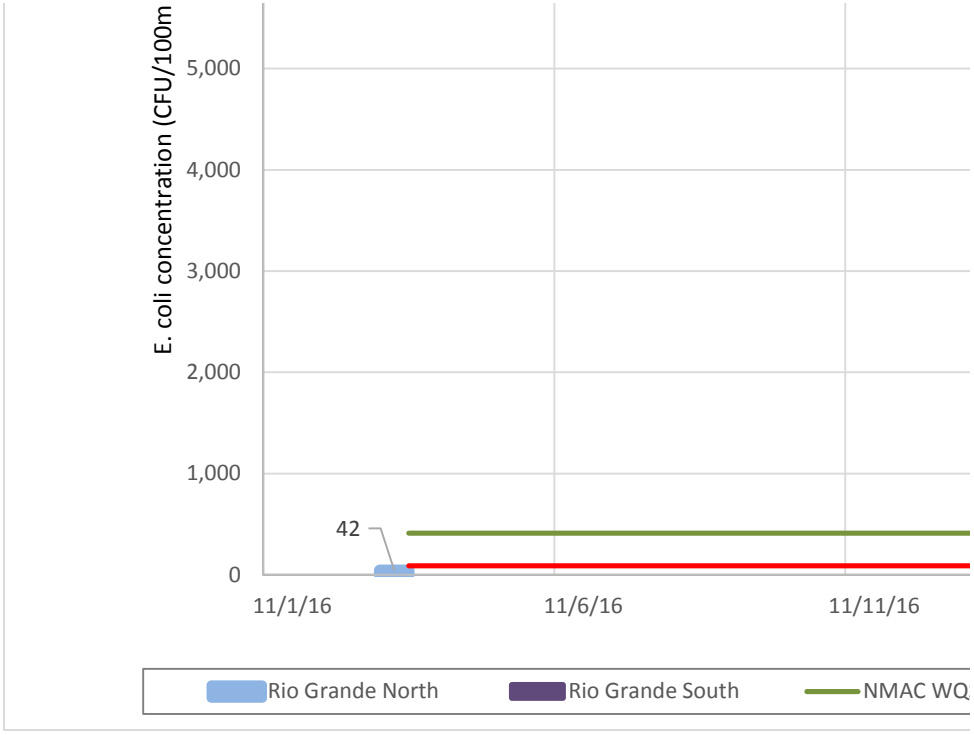
CMC Monitoring - E. coli Results

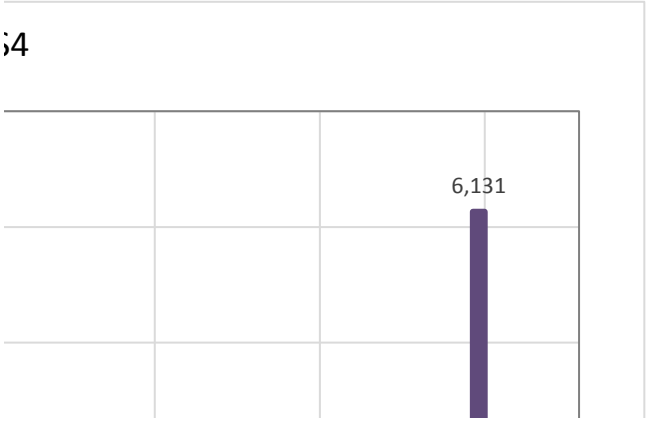


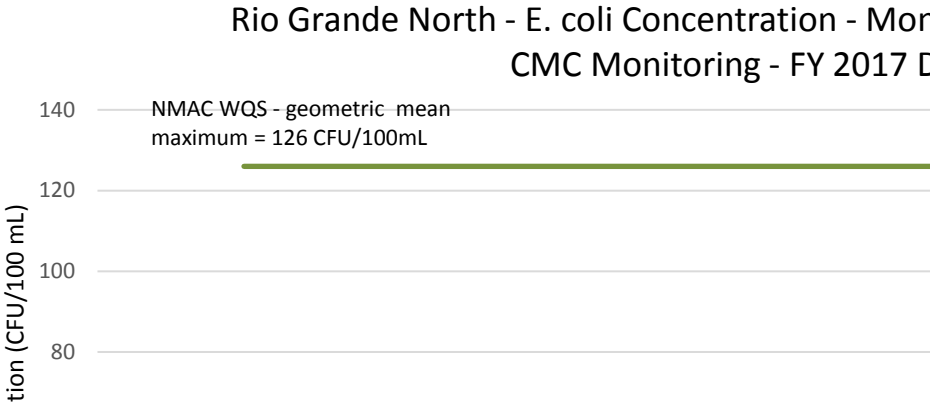


CMC Monitoring - E. coli Results

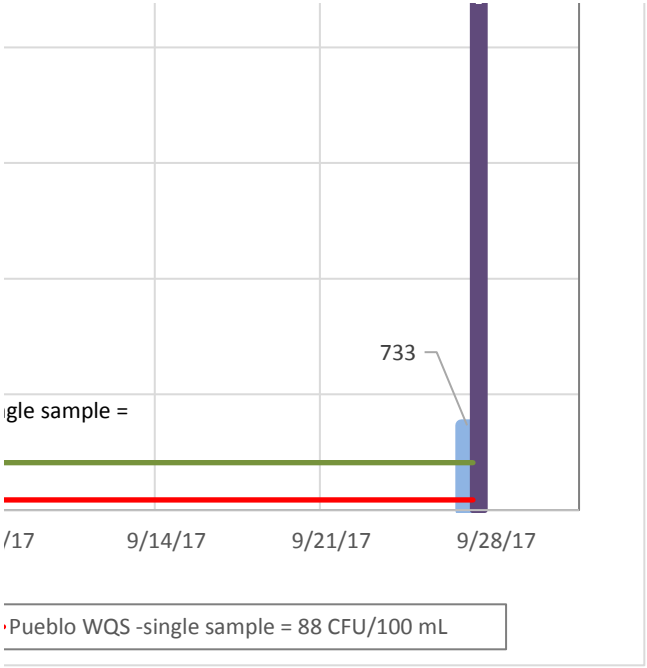


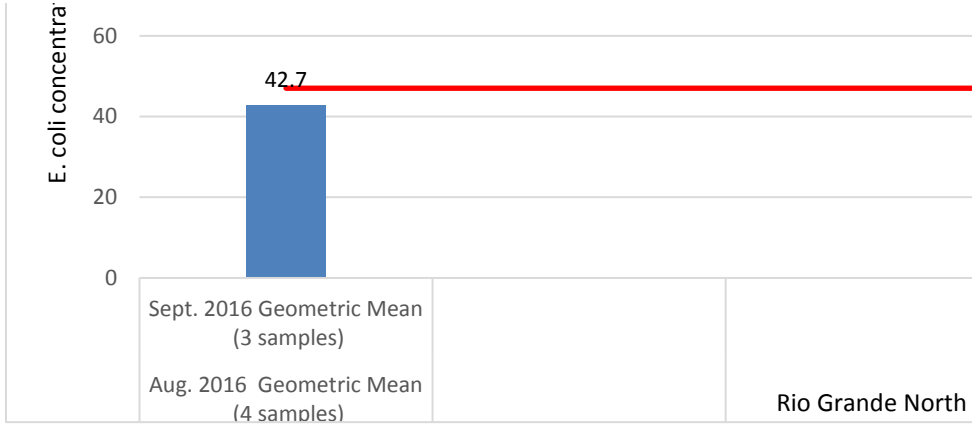


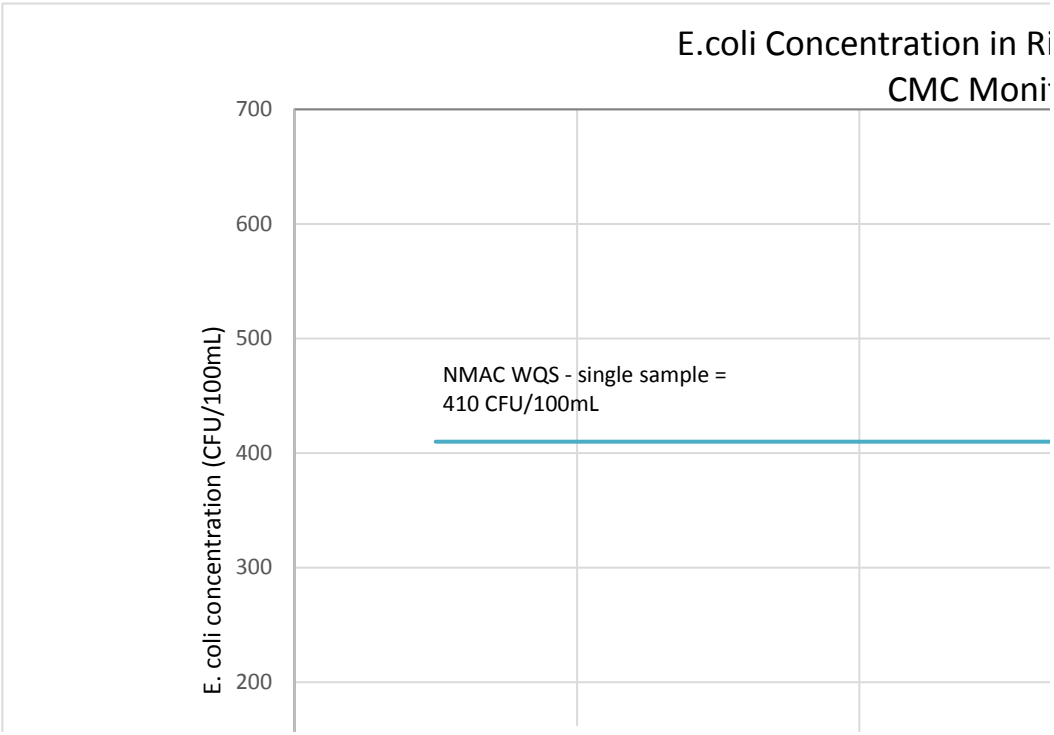




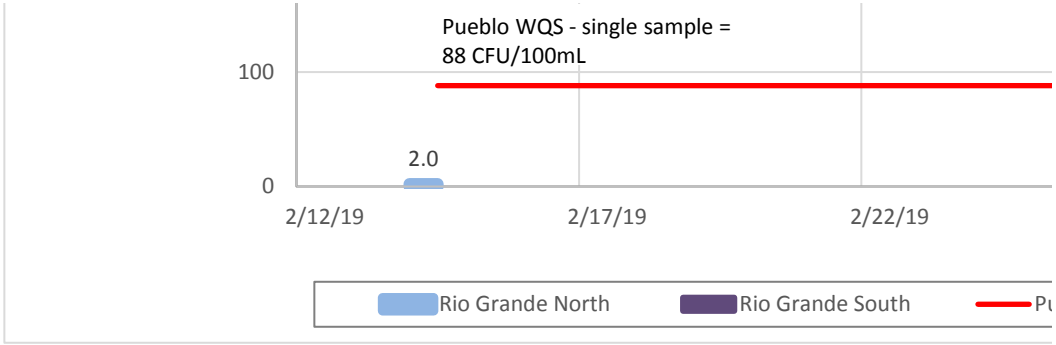
CMC Monitoring - E. coli Results







CMC Monitoring - E. coli Results



CMC Monitoring - E. coli Results

CMC Monitoring - E. coli Results

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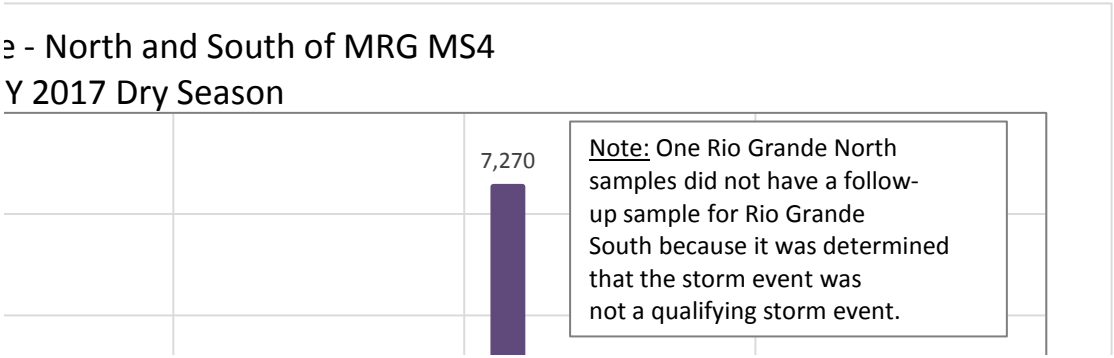
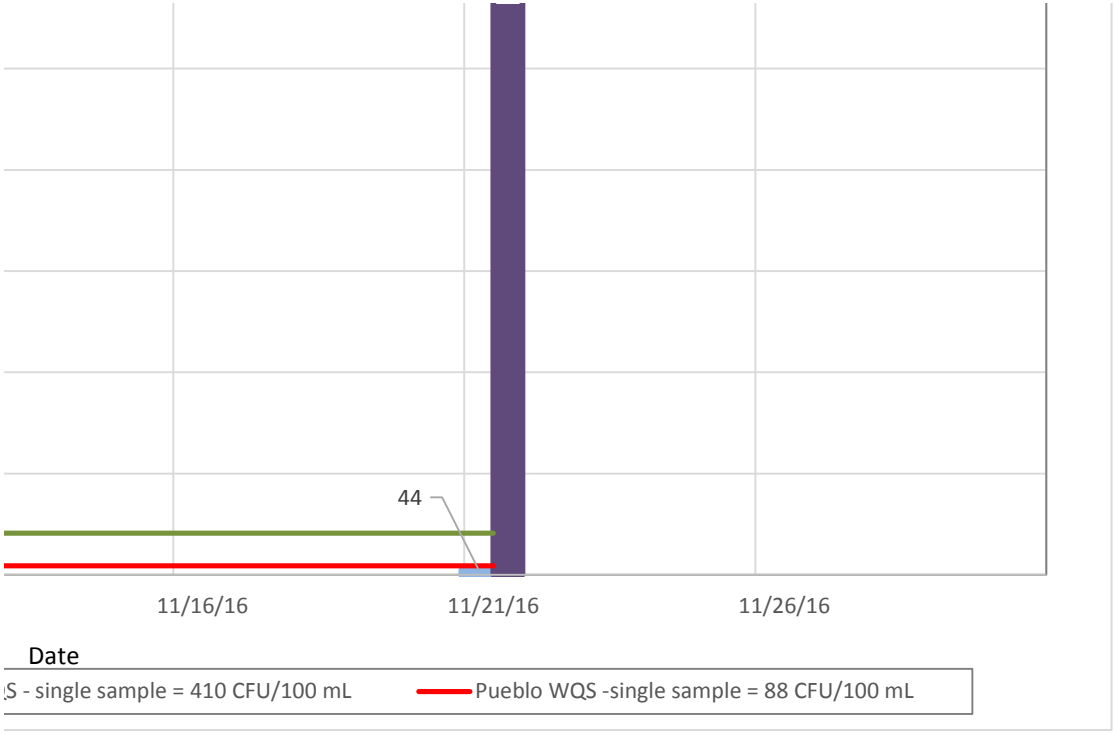
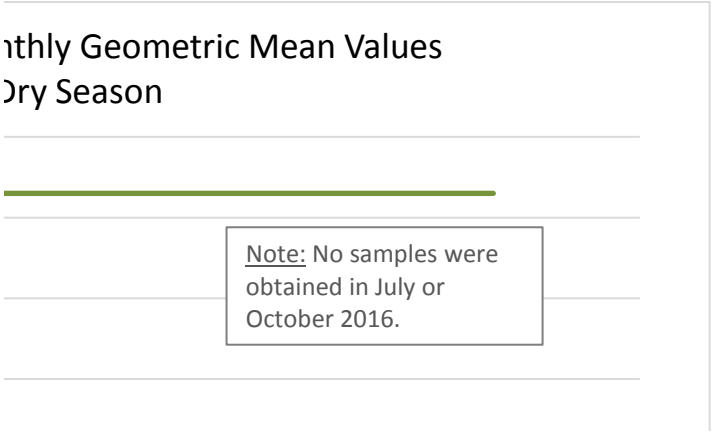
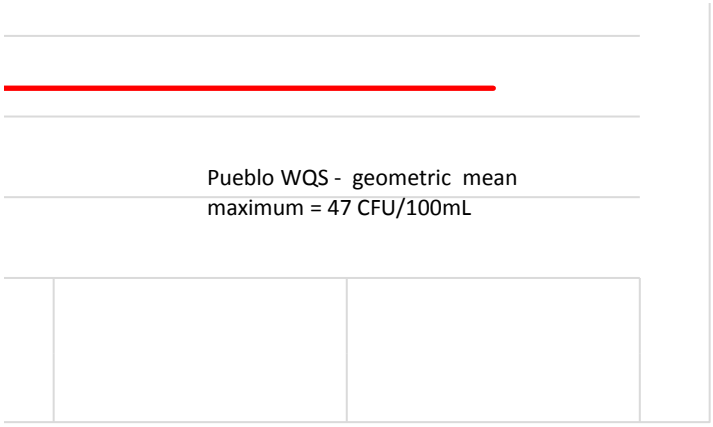


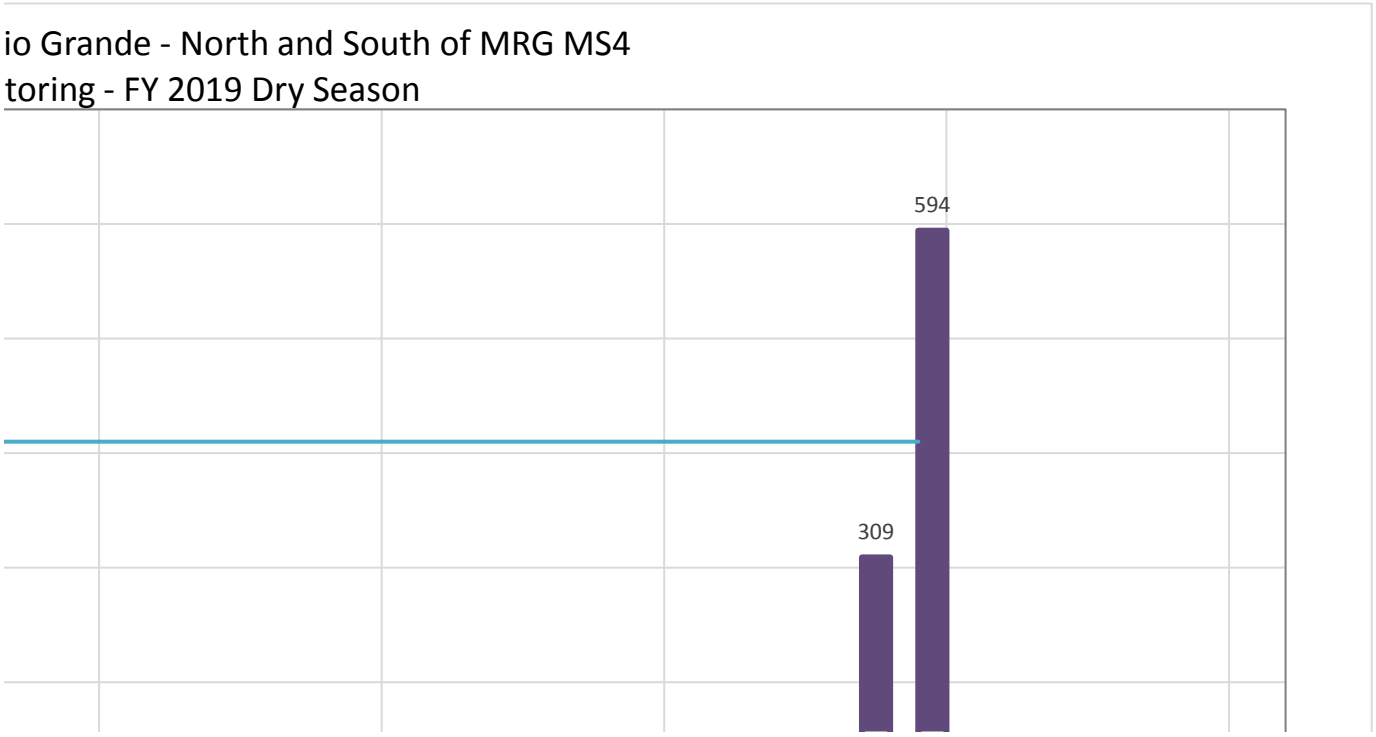
CMC Monitoring - E. coli Results



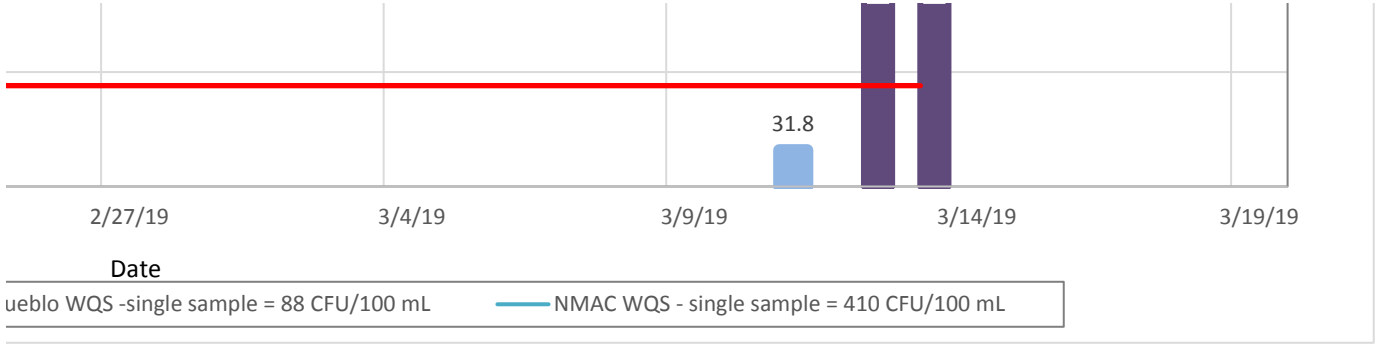


CMC Monitoring - E. coli Results





CMC Monitoring - E. coli Results



	Rio Grande North							Rio Grande South							
CMC Sample	1	2	3	4	5	6	7	1	2	3	4	5	6	7	Duplicate
Date	8/10-8/11/16	9/12-9/13/2016	9/21-9/22/2016	11/21/2016	7/27/2017	9/27/2017	3/11/2019	8/11/2016	9/13/2016	9/22/2016	11/22/2016	7/28/2017	9/28/2017	3/13/2019	3/13/2019
PCB - lab report (ug/L)	N/D	0.00144	0.00146	0.00006	0.000127	0.00021	0.000187	N/D	0.00272	0.002190	0.001720	0.00022	0.00104	0.00261	0.00188
MS4 Reporting MQL for PCBs (ug/L = 0.2) *	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
NM Surface WQ Standard Drinking Water Supply=0.5 ug/L	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Pueblo of Isleta - Wildlife=0.074 ug/L	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074
Pueblo of Isleta - Aquatic (Chronic)=0.014 ug/L	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
NM Wildlife and Aquatic (Acute)=0.014 ug/L	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
Pueblo of Isleta -Human Health Fish Consumption=0.00017 ug/L	0.00017	0.00017	0.00017	0.00017	0.00017	0.00017	0.00017	0.00017	0.00017	0.00017	0.00017	0.00017	0.00017	0.00017	0.00017
NM Human Health-Organism Only (HH-OO)=0.00064 ug/L	0.00064	0.00064	0.00064	0.00064	0.00064	0.00064	0.00064	0.00064	0.00064	0.00064	0.00064	0.00064	0.00064	0.00064	0.00064

Human Health WQSs - Not Previously Compared for CMC Results

CMC PCB Result Exceeds NM and/or Pueblo of Isleta Human Health WQSs - All other NM and Pueblo of Isleta WQSs met

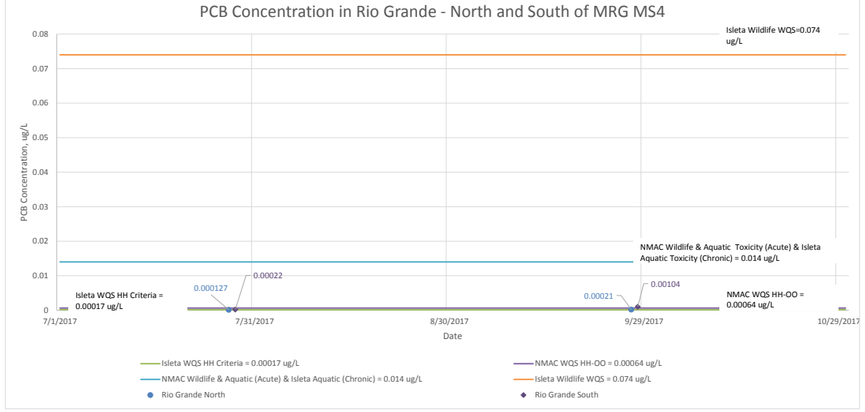
CMC PCB Result meets all NM and Pueblo of Isleta WQSs

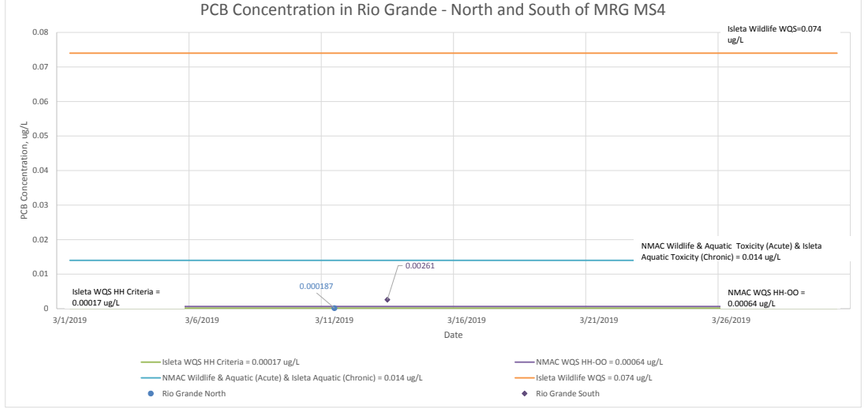
* Appendix F of Middle Rio Grande Watershed Based MS4 Permit states the following Minimum Quantification Levels (MQLs) are to be used for reporting pollutant data for NPDES permit applications and/or compliance reporting. The PCB MQL is 0.2 ug/L - which is higher than all of the WQS values except for drinking water. In the net DMR forms, EPA has PCBs set up to report in units of mg/L.

NM Surface WQ Standards - Designated Uses for Rio Grande through Albuquerque (2 reaches, same use designations):
Irrigation
Marginal Warmwater Aquatic Life
Livestock Watering
Public Water Supply
Wildlife Habitat
Primary Contact

Isleta Pueblo Surface WQ Standards - Designated Uses for Rio Grande through the Pueblo:
Irrigation
Warmwater Fishery Use
Primary Contact Ceremonial Use
Primary Contact Recreational Use
Agricultural Water Supply Use
Industrial Water Supply Use
Wildlife Usage

	Isleta WQS HH Criteria = 0.00017 ug/L	NMAC WQS HH-OO = 0.00064 ug/L	NMAC Wildlife & Aquatic (Acute) & Isleta Aquatic (Chronic) = 0.014 ug/L	Isleta Wildlife WQS = 0.074 ug/L	NMAC Drinking Water WQS = 0.5 ug/L
7/1/2017	0.00017	0.00064	0.014	0.074	0.5
10/30/2017	0.00017	0.00064	0.014	0.074	0.5
3/1/2019	0.00017	0.00064	0.014	0.074	0.5
3/30/2019	0.00017	0.00064	0.014	0.074	0.5





CMC Dissolved Oxygen Data Comparisons

Wet Season[1] - Dissolved Oxygen Results (mg/L) in the Rio Grande - North an				
Location in Rio Grande	Date			
	8/2/16	8/3/16	8/10/16	8/31/16
Rio Grande North	5.9	5.8	7.2	7.1
Rio Grande South			5.3	

[1]Wet season defined in MS4 Permit NMR04A000 as July 1 through October 31

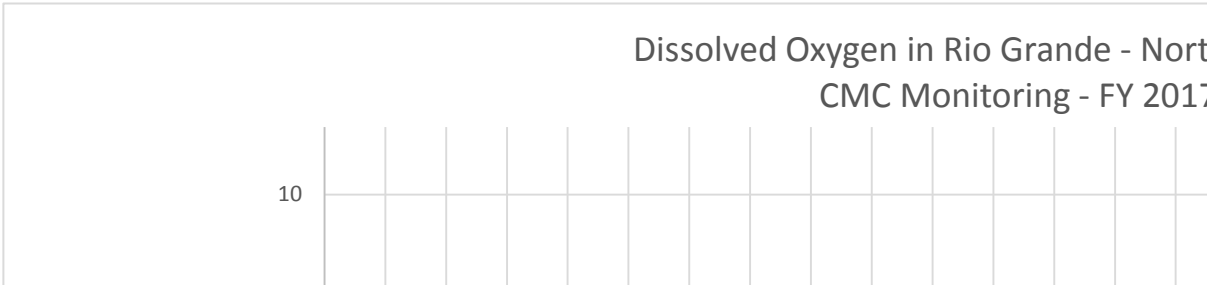
Dry Season[1] - Dissolved Oxygen Results (mg/L) in the Rio Grande - North and				
Location in Rio Grande	**Date**			
	11/3/16	**11/21/16**	**3/11/19**	**3/13/19**
Rio Grande North	8.6	10.6	10.8	
Rio Grande South		8.0		10.9

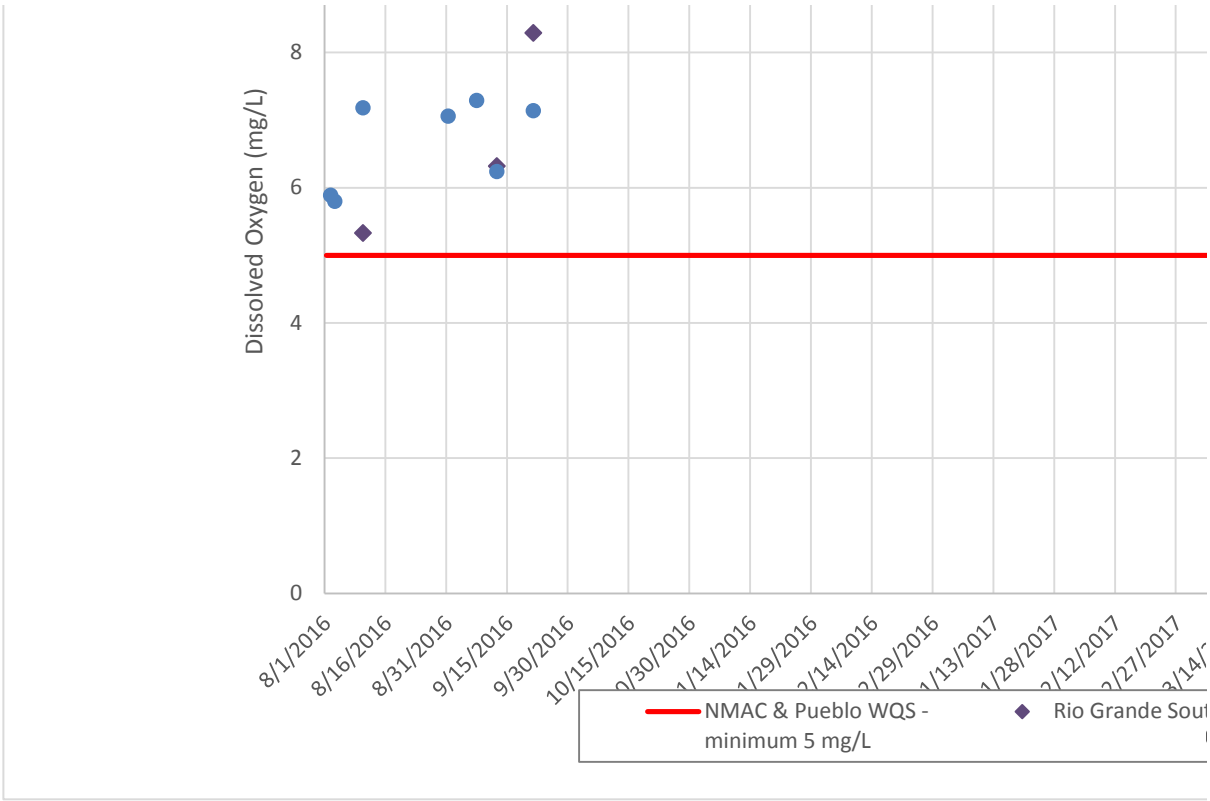
[1]Dry season defined in MS4 Permit NMR04A000 as November 1 through June 30

Wet Season[1] - Dissolved Oxygen Results (mg/L) in the Rio Grande - North an				
Location in Rio Grande	Date			
	7/27/17	9/27/17		
Rio Grande North	6.7	7.1		
Rio Grande South	6.8	7.2		

[1]Wet season defined in MS4 Permit NMR04A000 as July 1 through October 31

	NMAC & Pueblo WQS - minimum 5 mg/L
8/1/2016	5
8/3/2016	5
8/10/2016	5
8/31/2016	5
9/7/2016	5
9/21/2016	5
10/1/2016	5
7/1/2017	5
10/15/2017	5



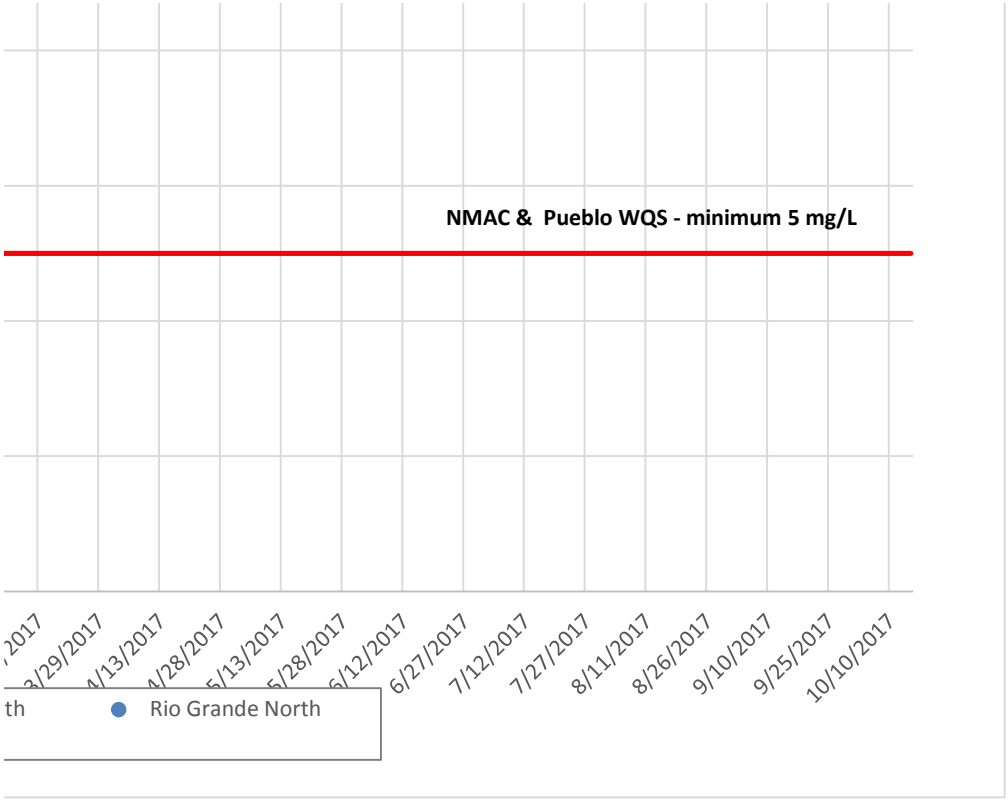

Dissolved Oxygen (mg/L)
8
6
4
2
0
8/1/2016
8/16/2016
8/31/2016
9/15/2016
9/30/2016
10/15/2016
NMAC & Pueblo WQS - minimum 5 mg/L
Rio Grande Sout

d South of the Middle Rio Grande MS4				
9/7/16	9/12/16	9/21/16	11/3/16	11/21/16
7.3	6.2	7.1	8.6	10.6
	6.3	8.3		8.0

d South of the Middle Rio Grande MS4		

d South of the Middle Rio Grande MS4				

th and South of MRG MS4
7 Wet Season

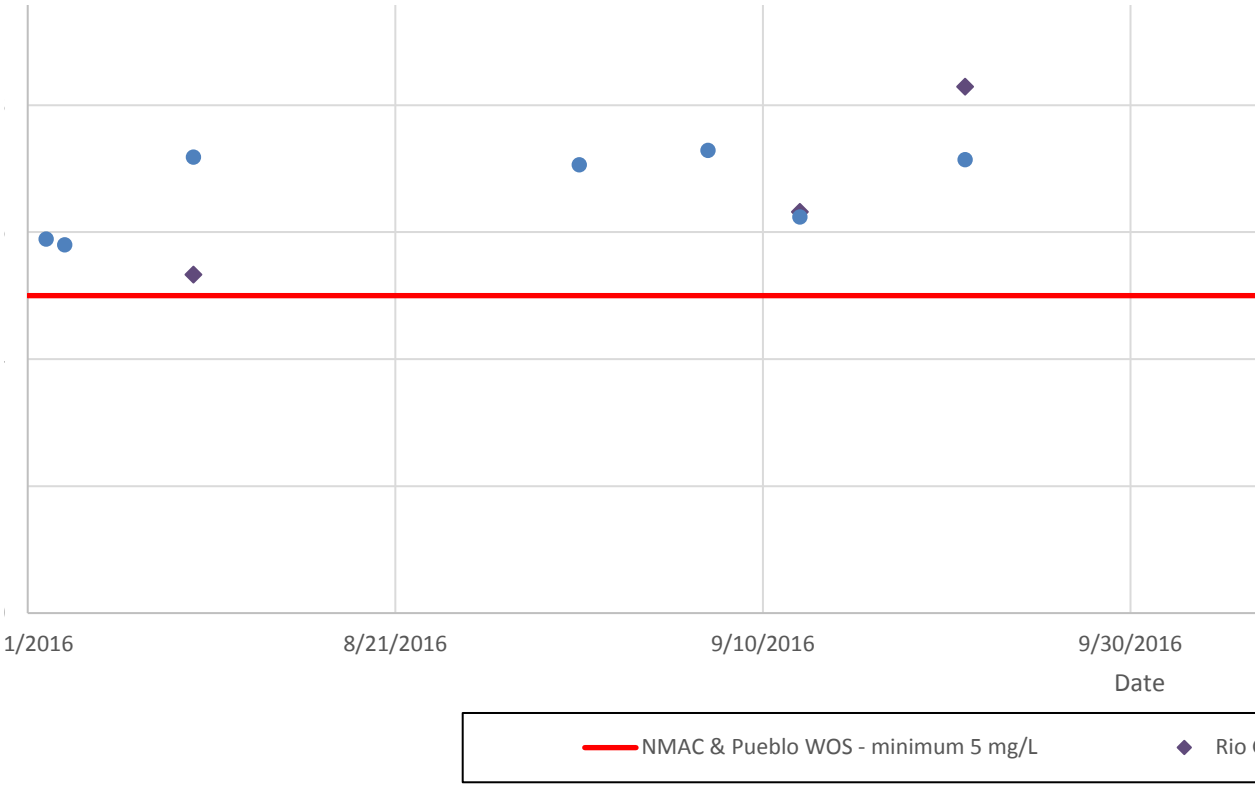

NMAC & Pueblo WQS - minimum 5 mg/L
3/29/2017
4/13/2017
4/28/2017
5/13/2017
5/28/2017
6/12/2017
6/27/2017
7/12/2017
7/27/2017
8/11/2017
8/26/2017
9/10/2017
9/25/2017
10/10/2017
th
Rio Grande North


Dissolved Oxygen (mg/L)
8
6
4
2
0
8/

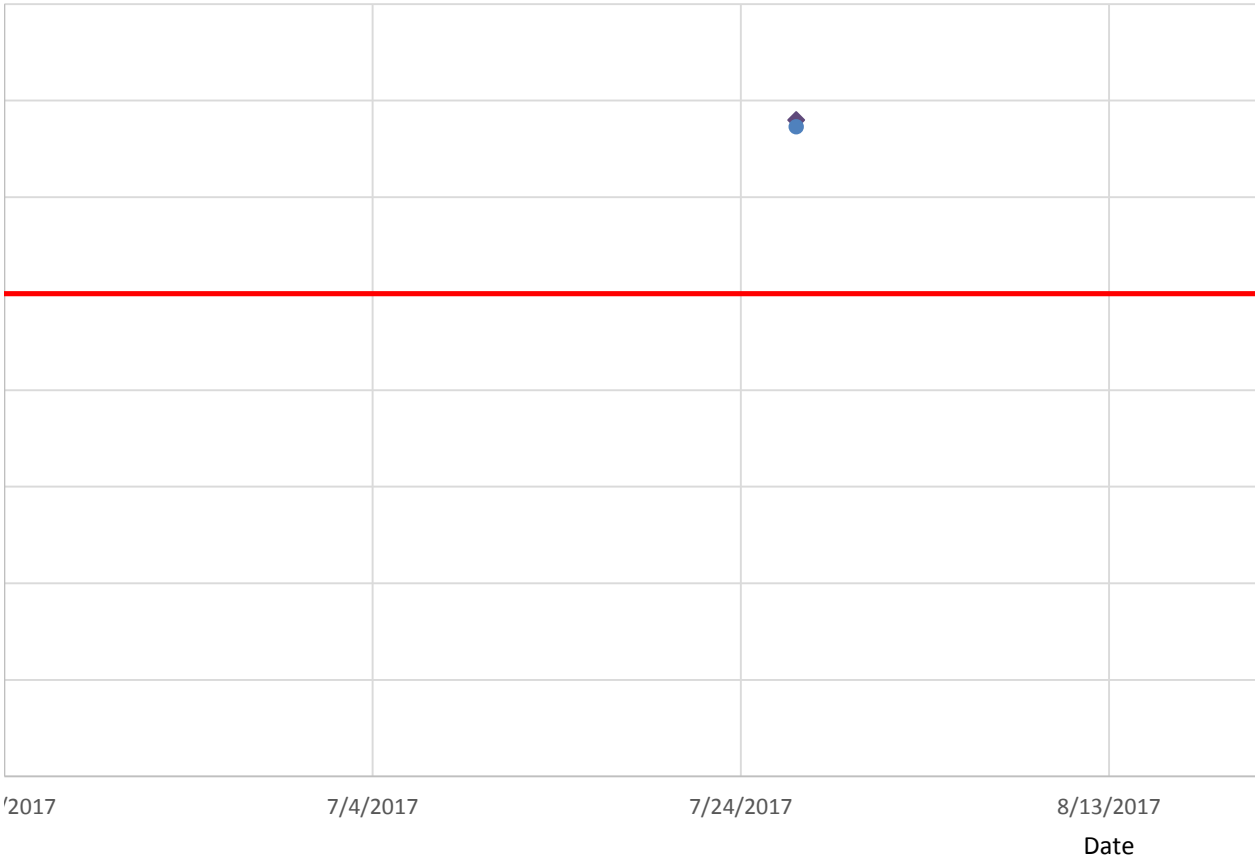

Dissolved Oxygen (mg/L)
8
7
6
5
4
3
2
1
0
6/14/

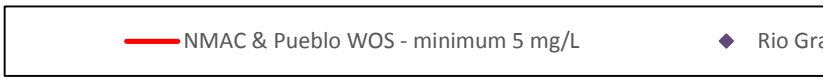
Dissolved Oxygen in Rio Grande - North a
CMC Monitoring - FY 2017 Wet

	FY 2017 Wet Season Results		

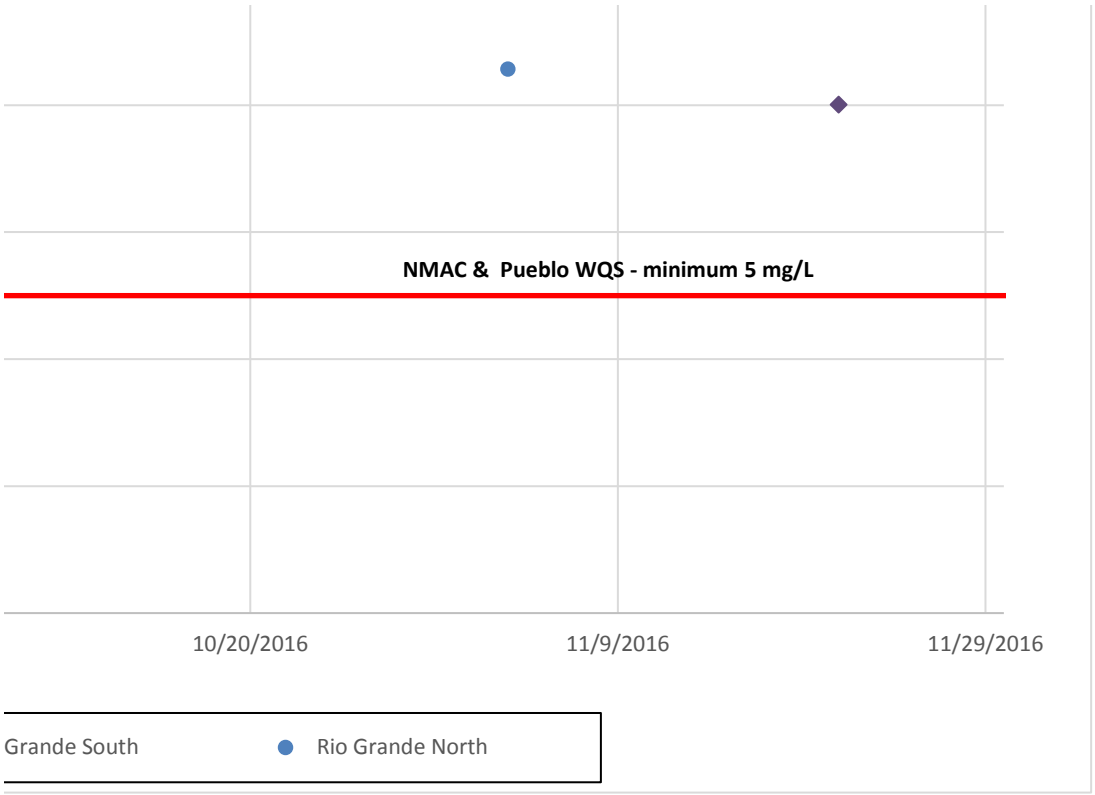


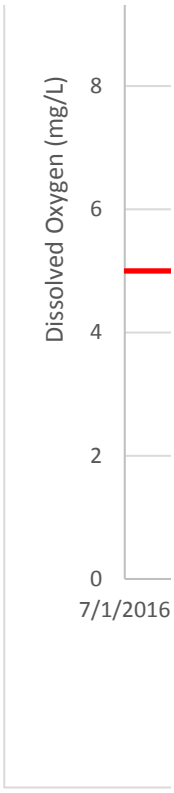
Dissolved Oxygen in Rio Grande - North an
CMC Monitoring - FY 2018 We

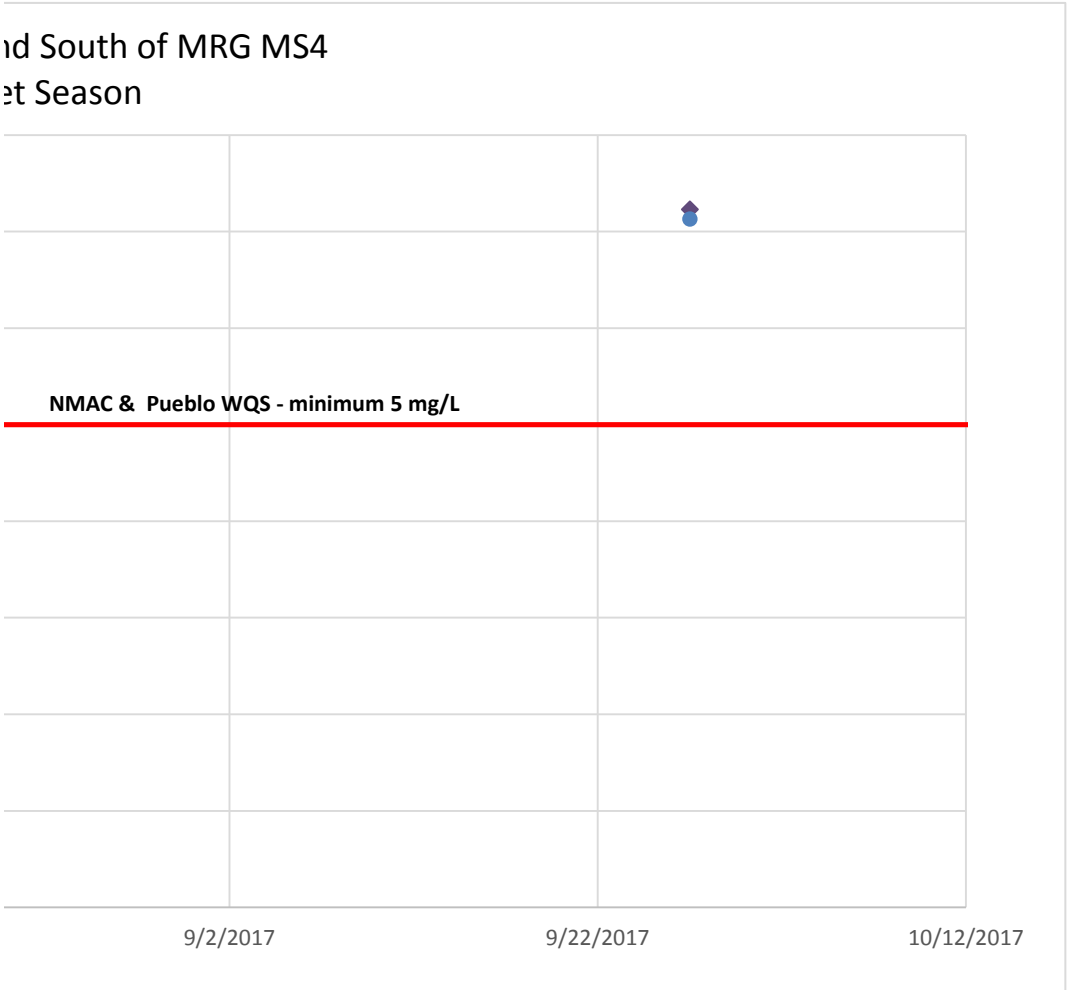



NMAC & Pueblo WOS - minimum 5 mg/L
Rio Gra

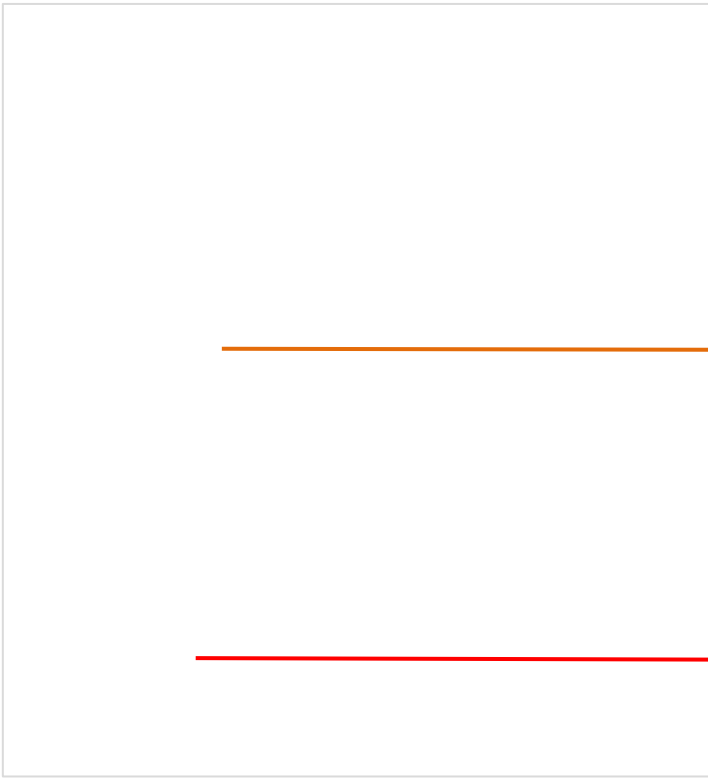
Location in Rio Grande				
	7/1/2016	8/2/2016	8/3/2016	8/10/2016
Rio Grande North		5.89	5.80	7.18
Rio Grande South				5.33
NMAC & Pueblo WQS - minimum 5 mg/L	5	5	5	5


NMAC & Pueblo WQS - minimum 5 mg/L
10/20/2016
11/9/2016
11/29/2016
Grande South
Rio Grande North

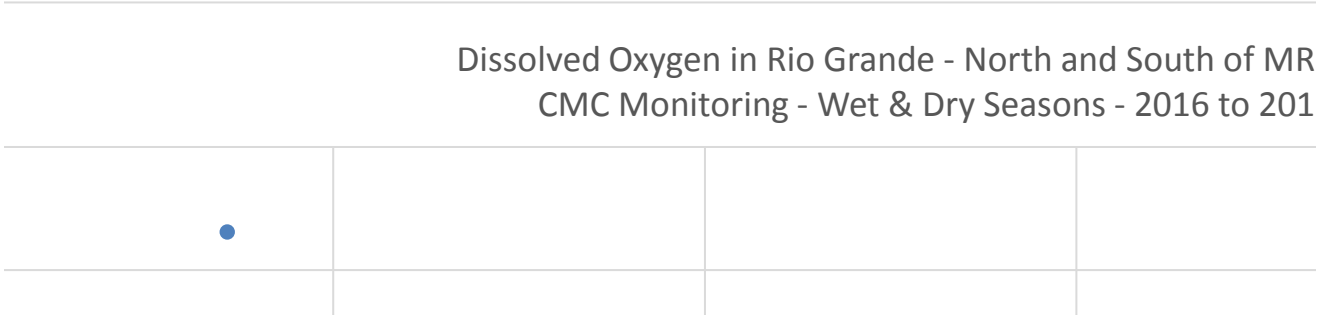

Dissolved Oxygen (mg/L)
8
6
4
2
0
7/1/2016

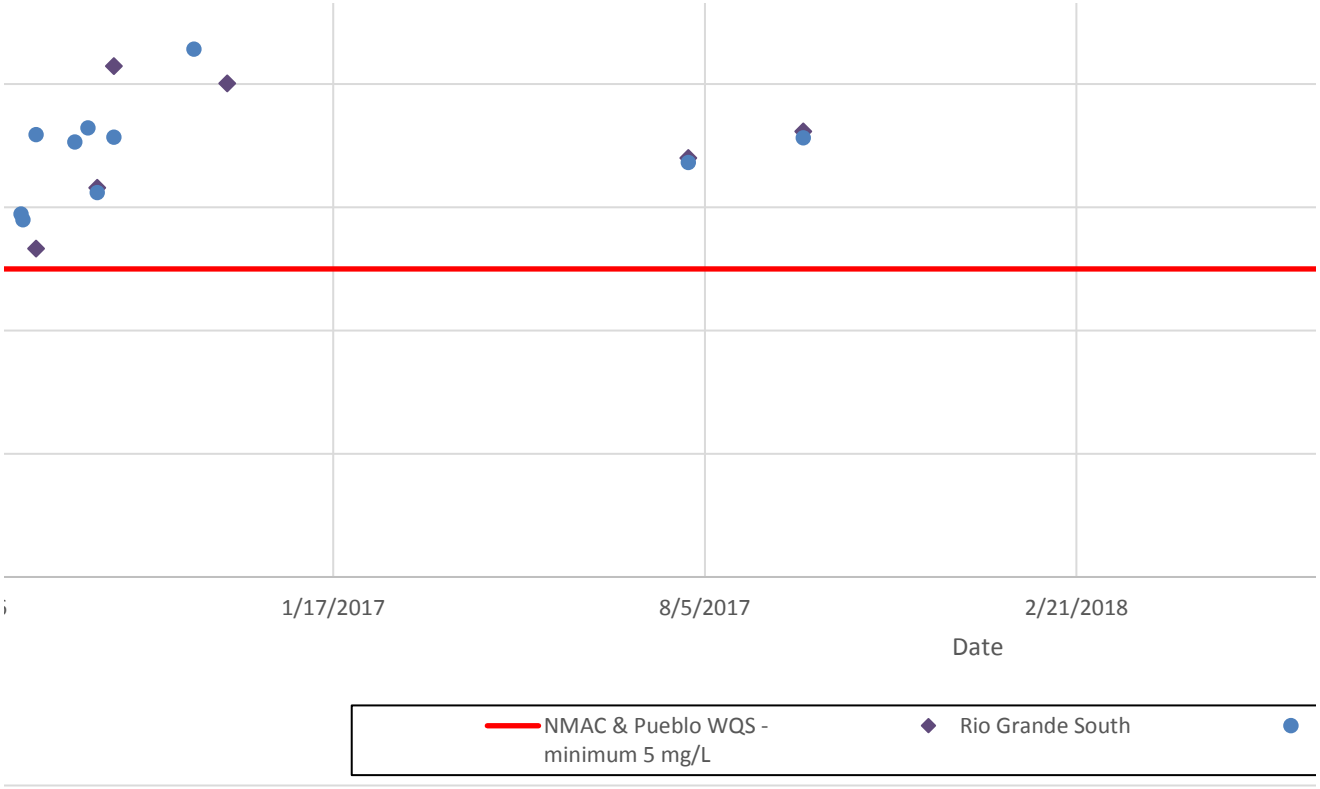

ıd South of MRG MS4
ɛt Season
NMAC & Pueblo WQS - minimum 5 mg/L
9/2/2017
9/22/2017
10/12/2017


ande South
Rio Grande North

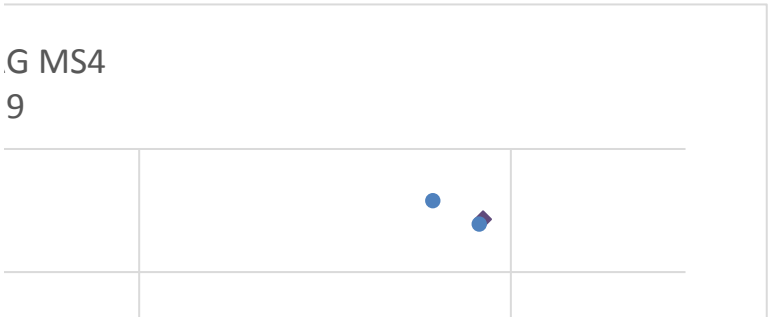


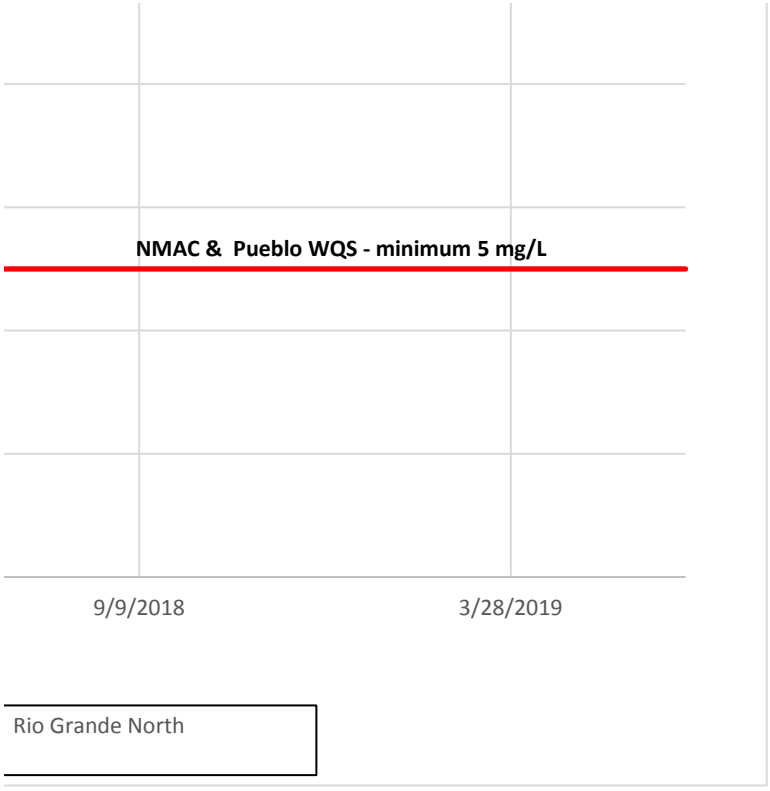
8/31/2016	9/7/2016	9/12/2016	9/21/2016	11/3/2016	11/21/2016	7/27/2017	9/27/2017
7.06	7.29	6.24	7.14	8.57	10.62	6.73	7.13
		6.32	8.29		8.01	6.80	7.23
5	5	5	5	5	5	5	5




1/17/2017
8/5/2017
2/21/2018
Date
NMAC & Pueblo WQS - minimum 5 mg/L
Rio Grande South

2/14/2019	3/11/2019	3/13/2019	########
11.16	10.78		
		10.86	
5	5	5	5




NMAC & Pueblo WQS - minimum 5 mg/L
9/9/2018
3/28/2019
Rio Grande North

CMC Temperature Data Comparisons

FY 2017 - Wet Season[1] - Temperature Results (°C) in the Rio Grande - North an				
Location in Rio Grande	8/2/16	8/3/16	8/10/16	8/31/16
Rio Grande North	24.2	23.7	22.8	21.2
Rio Grande South			24.9	
NMAC & Pueblo WQS	32.2	32.2	32.2	32.2

[1]Wet season defined in MS4 Permit NMR04A000 as July 1 through October 31

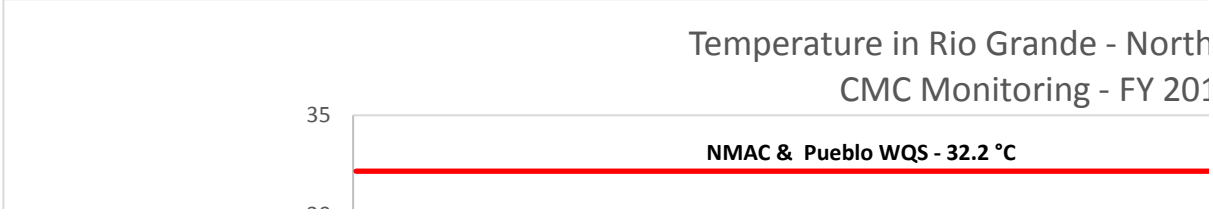
FY 2017 - Dry Season[1] - Temperature Results (°C) in the Rio Grande - North an				
Location in Rio Grande				**Date**
	11/3/16	**11/21/16**	**3/11/19**	**3/13/19**
Rio Grande North	14.6	10.4	6.8	
Rio Grande South		9.3		7.4

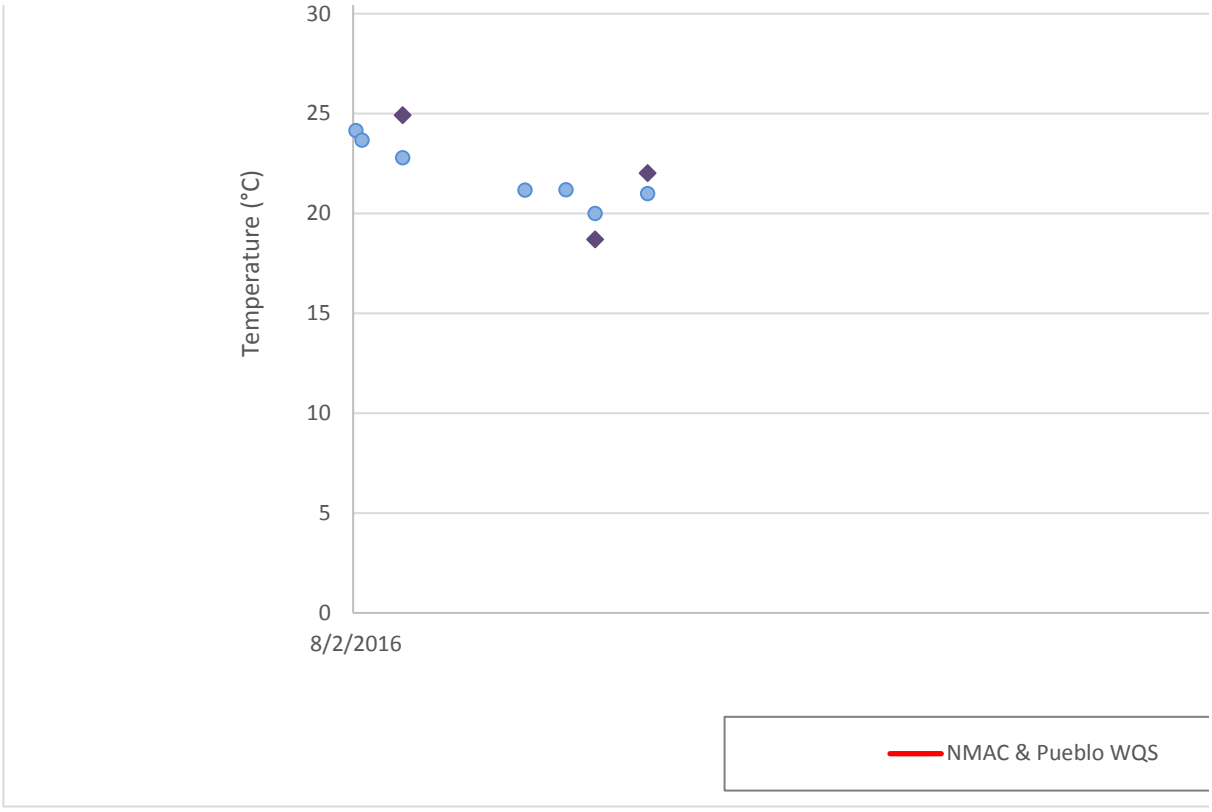
[1]Dry season defined in MS4 Permit NMR04A000 as November 1 through June 30

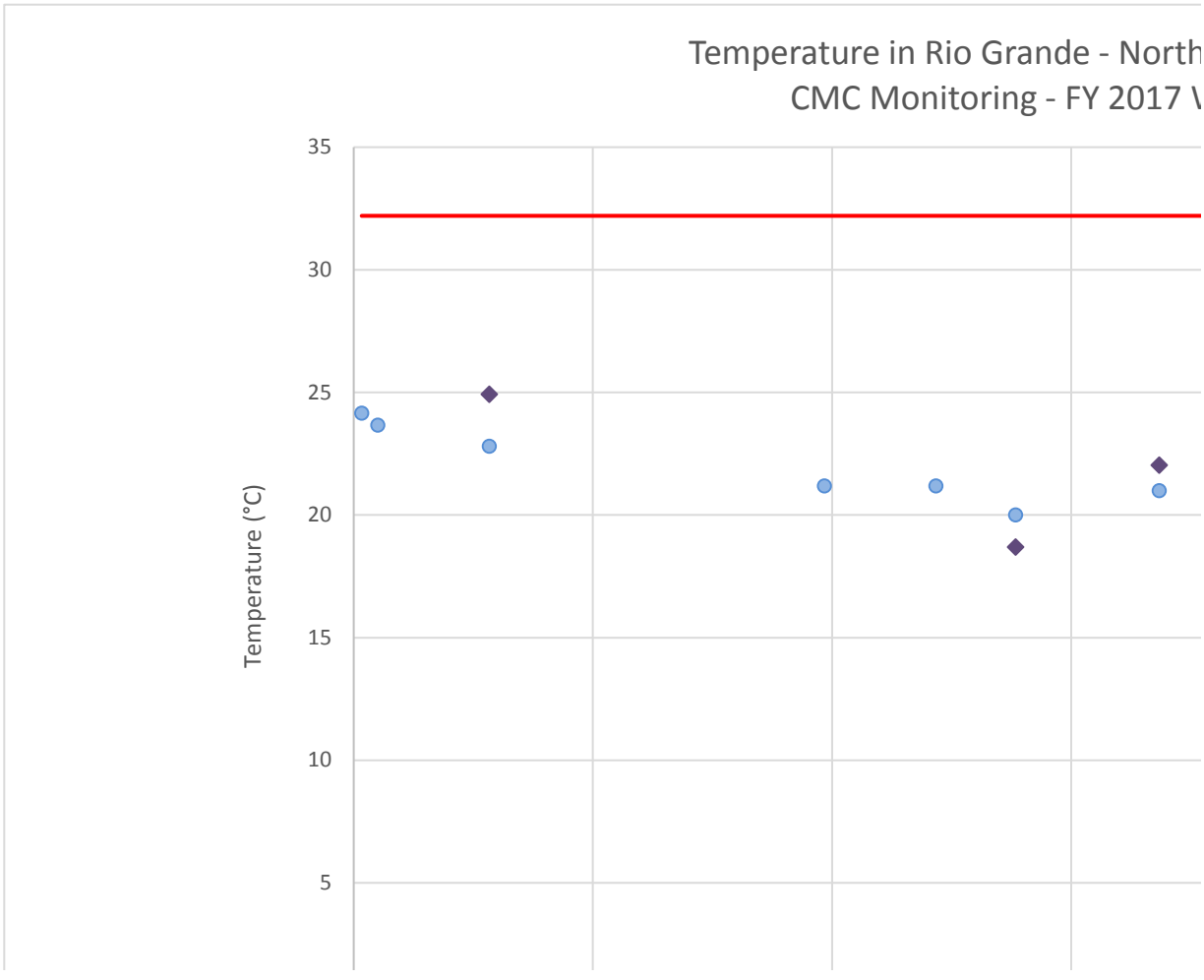
FY 2018 - Wet Season[1] - Temperature Results (°C) in the Rio Grande - North an				
Location in Rio Grande	7/27/17	9/27/17		
	7/1/17	10/15/17		
Rio Grande North	23.5	16.3		
Rio Grande South	23.6	15.2		
NMAC & Pueblo WQS	32.2	32.2		

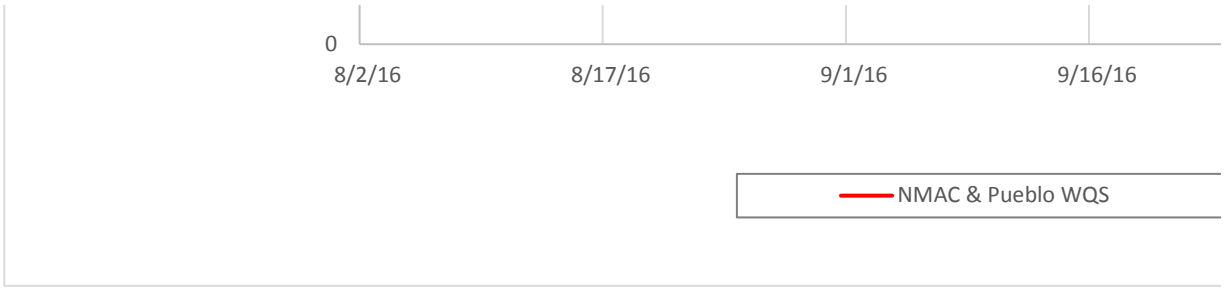
[1]Wet season defined in MS4 Permit NMR04A000 as July 1 through October 31

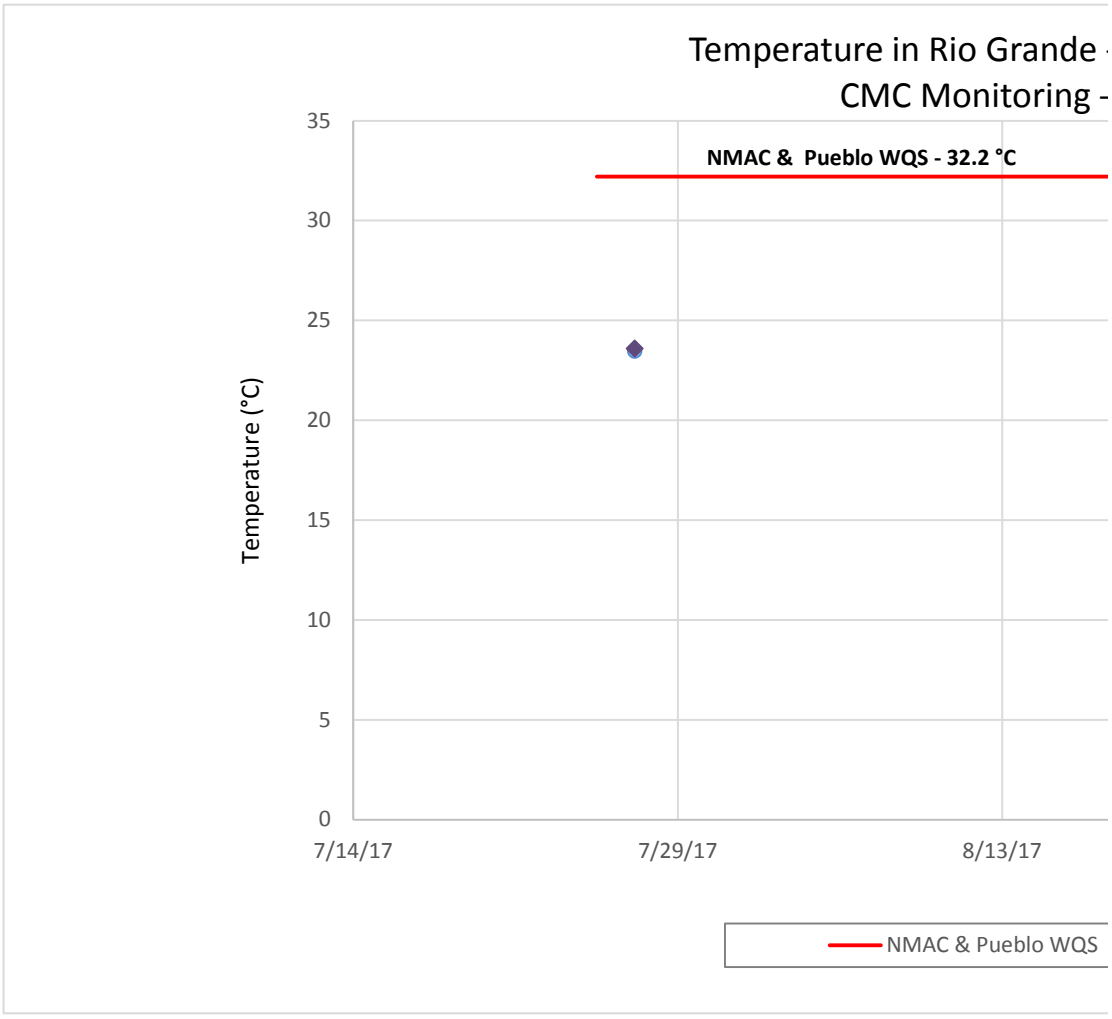
	NMAC & Pueblo WQS
8/2/2016	32.2
8/3/2016	32.2
8/10/2016	32.2
8/31/2016	32.2
9/7/2016	32.2
9/21/2016	32.2
7/1/2017	32.2
10/15/2017	32.2




30
25
20
15
10
5
0
Temperature (°C)
8/2/2016
NMAC & Pueblo WQS


Temperature in Rio Grande - North
CMC Monitoring - FY 2017 \
35
30
25
20
15
10
5
Temperature (°C)

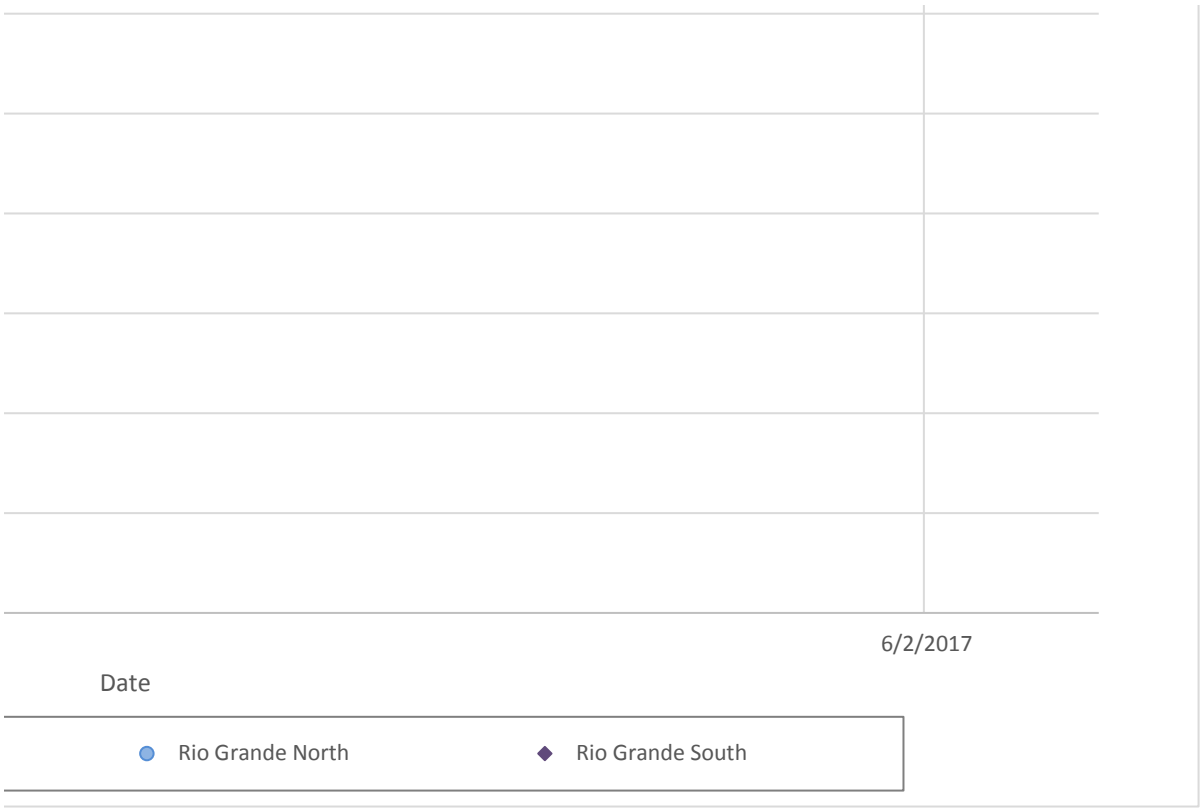

0
8/2/16
8/17/16
9/1/16
9/16/16
NMAC & Pueblo WQS


Temperature in Rio Grande
CMC Monitoring -
NMAC & Pueblo WQS - 32.2 °C
Temperature (°C)
35
30
25
20
15
10
5
0
7/14/17
7/29/17
8/13/17
NMAC & Pueblo WQS

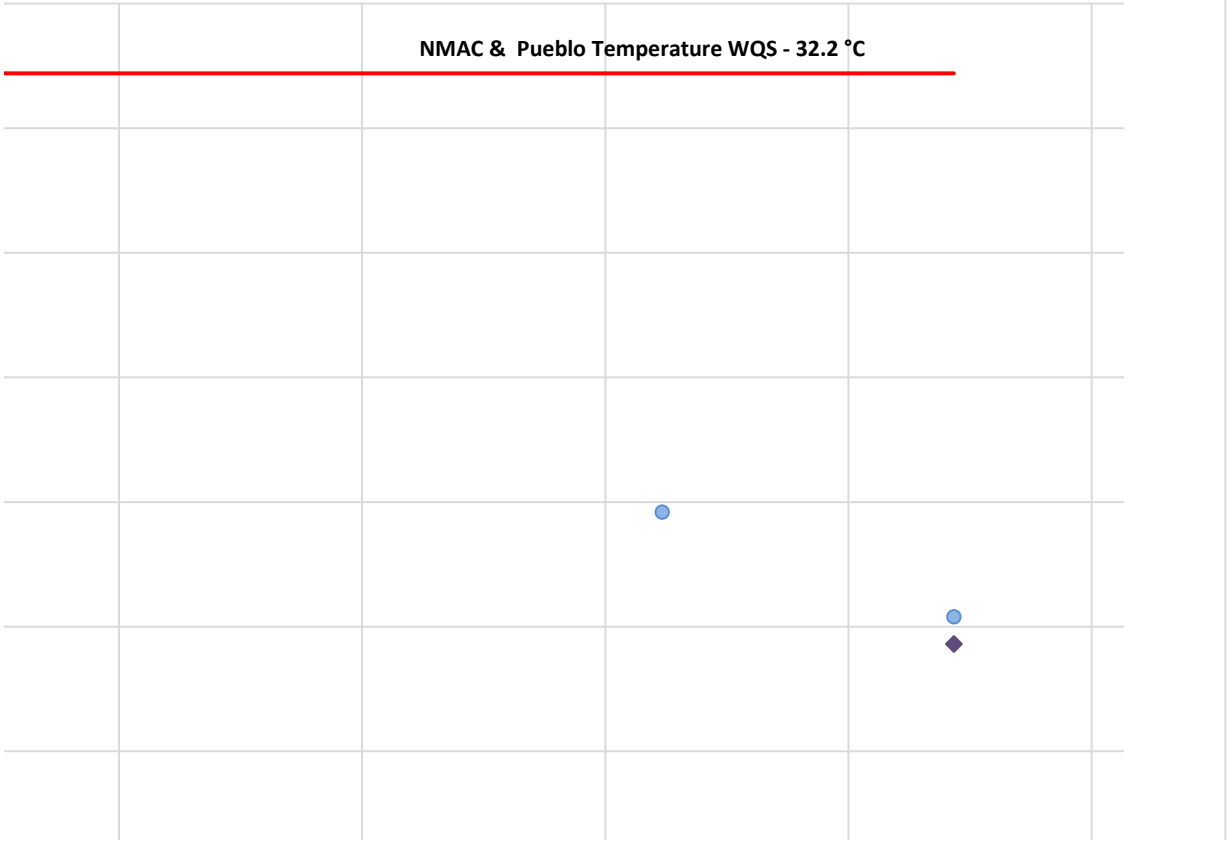
d South of the Middle Rio Grande MS4				
Date				
9/7/16	9/12/16	9/21/16	11/3/16	11/21/16
21.2	20.0	21.0	14.6	10.4
	18.7	22.0		9.3
32.2	32.2	32.2	32.2	32.2

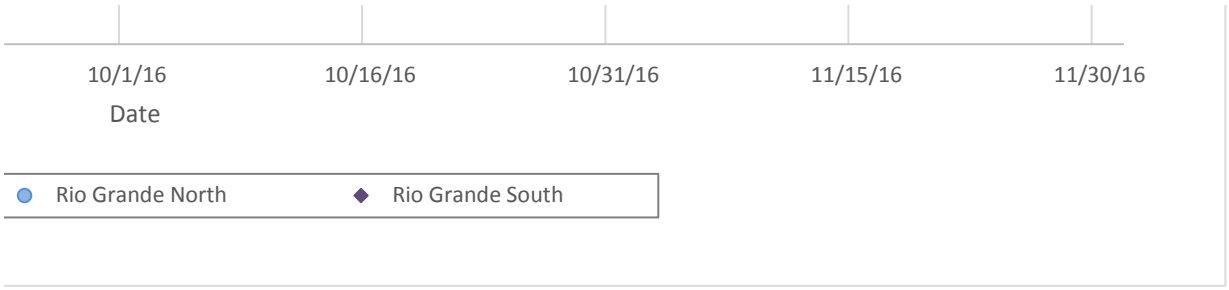
d South of the Middle Rio Grande MS4		

d South of the Middle Rio Grande MS4				
Date				
			11/3/16	11/21/16
			14.6	10.4
				9.3
			32.2	32.2

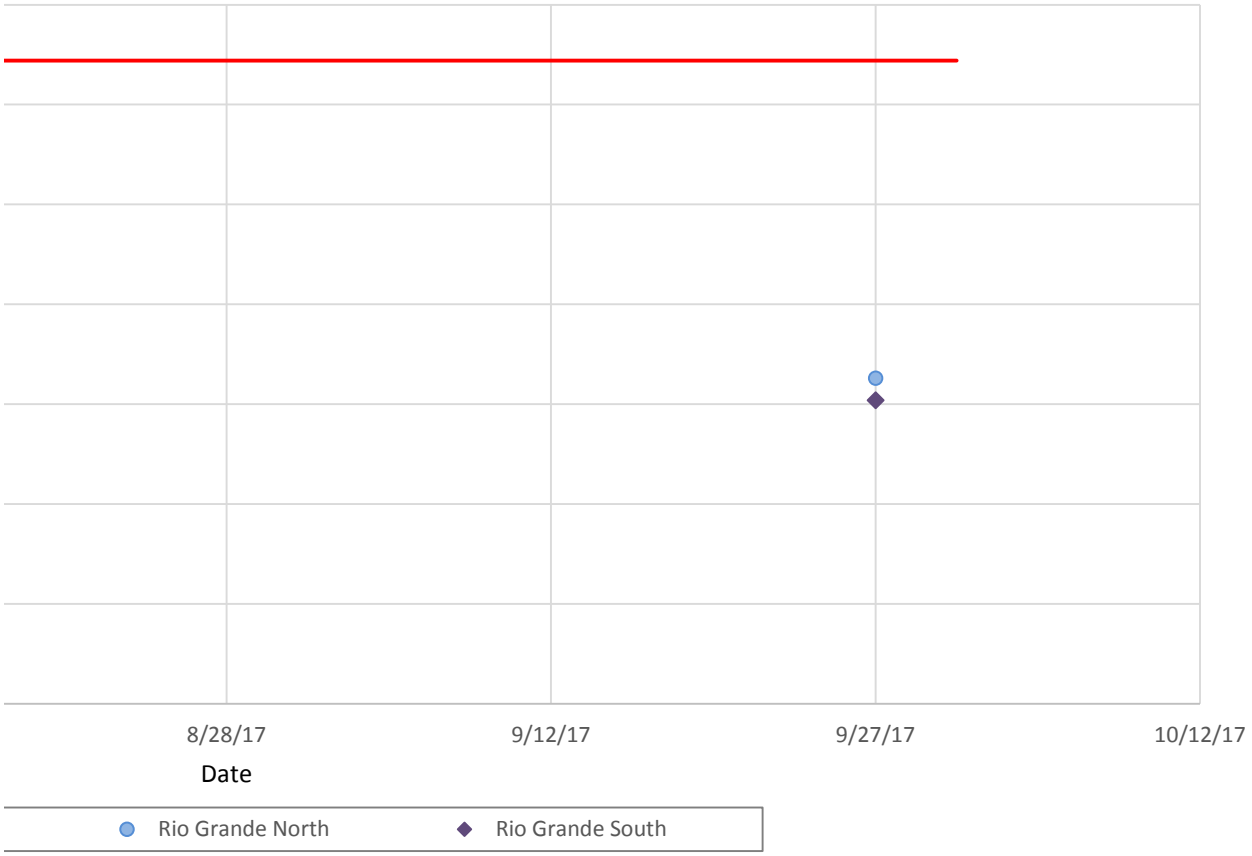


ı and South of MRG MS4
Wet & Dry Season

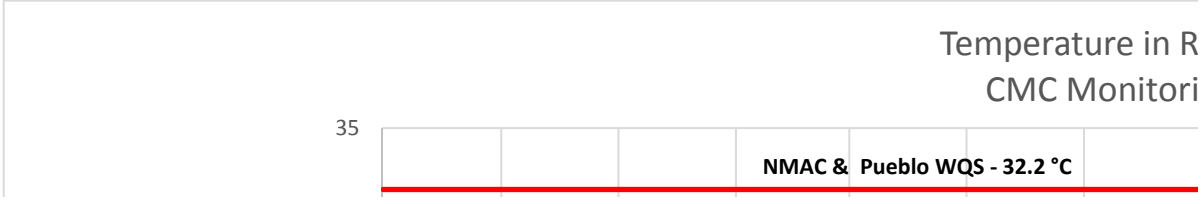


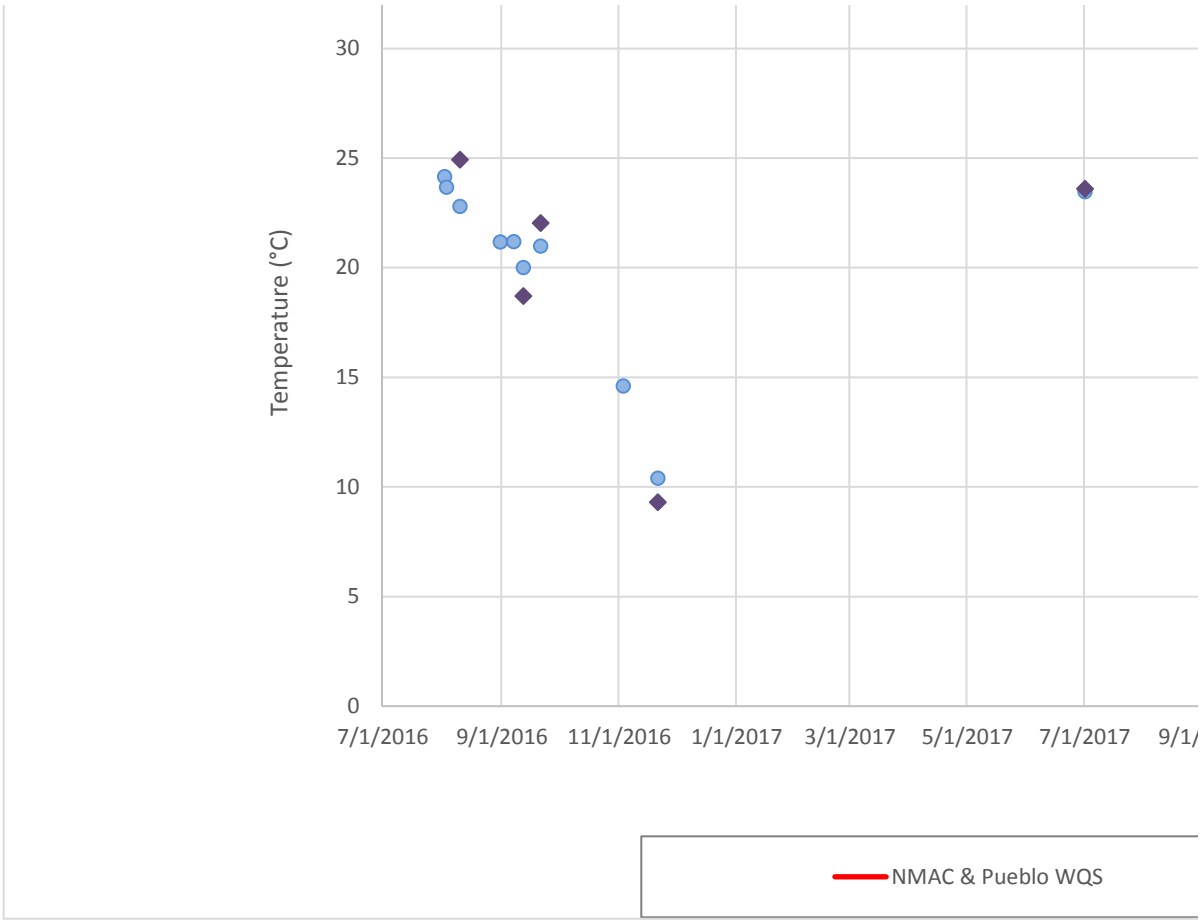


- North and South of MRG MS4
- FY 2018 Wet Season



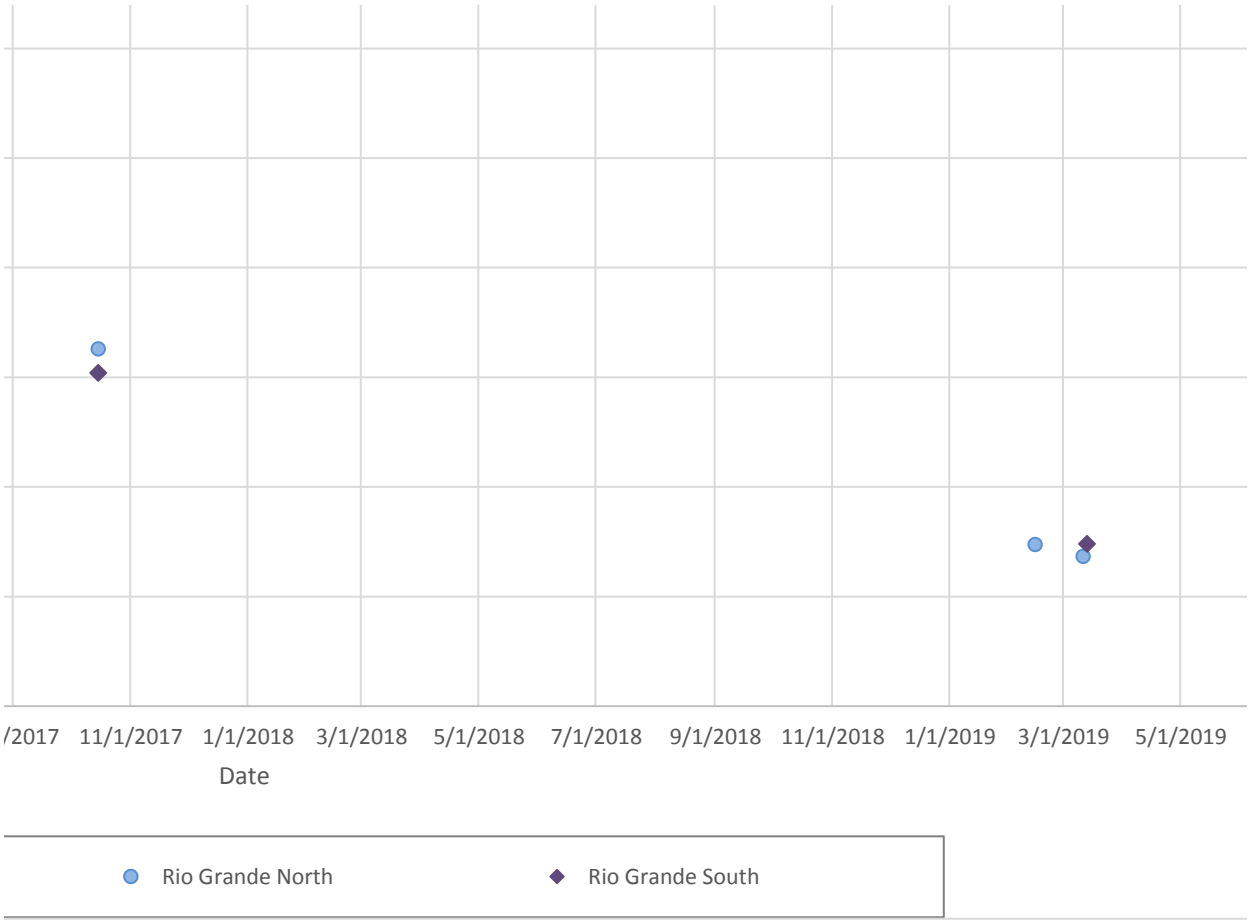
Location in Rio Grande	7/1/2016	8/2/16	8/3/16
Rio Grande North		24.2	23.7
Rio Grande South			
NMAC & Pueblo WQS	32.2	32.2	32.2




30
25
20
15
10
5
0
Temperature (°C)
7/1/2016
9/1/2016
11/1/2016
1/1/2017
3/1/2017
5/1/2017
7/1/2017
9/1/
NMAC & Pueblo WQS

Wet and Dry season Temperature								
Date								
8/10/16	8/31/16	9/7/16	9/12/16	9/21/16	11/3/16	11/21/16	7/1/17	10/15/17
22.8	21.2	21.2	20.0	21.0	14.6	10.4	23.47	16.30
24.9			18.7	22.0		9.3	23.60	15.20
32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2

Rio Grande - North and South of MRG MS4
ing - Wet & Dry Seasons - 2016 to 2019


/2017
11/1/2017
1/1/2018
3/1/2018
5/1/2018
7/1/2018
9/1/2018
11/1/2018
1/1/2019
3/1/2019
5/1/2019
Date
Rio Grande North
Rio Grande South

2/14/19	3/11/19	3/13/19	7/1/19
7.38	6.83		
		7.41	
32.2	32.2	32.2	32.2

Data V&V - for Blanks and Duplicates

checked 1/13/17 SJG

Parameter	Sample Date: 8/10 to 8/11/16 Location: Rio Grande North & South Blank Results V&V
Total Suspended Solids (TSS)	OK, ND
Total Dissolved Solids (TDS)	OK, ND
Chemical Oxygen Demand (COD)	OK, < SDL
Biochemical Oxygen Demand (BOD_5)	OK, ND
Dissolved Oxygen (DO)	Field - N/A
Oil and Grease (N-Hexane Extractable Material)	OK, ND
E. coli	OK, < SDL
pH	Field - N/A
Total Kjedahl Nitrogen (TKN)	OK, ND
Nitrate plus Nitrite	OK, ND
Dissolved Phosphorous	OK, ND
Ammonia (mg/L as N)	OK, ND
Total Nitrogen	OK, ND
Total Phosphorous	OK, ND
PCBs (screening - used method 608)	OK, ND
PCBS (Method 1668A - sum of all congeners)	Method not used
Gross Alpha	OK, < SDL
Tetrahydrofuran	OK, ND
Benzo(a)pyrene	OK, ND
Benzo[b]fluoranthene (other name: 3,4-Benzofluoranthene)	OK, ND
Benzo(k)fluoranthene	OK, ND
Chrysene	OK, ND
Indeno(1,2,3-cd)Pyrene	OK, ND
Dieldrin	OK, ND
Pentachlorophenol	OK, ND
Benzidine	OK, ND
Benzo(a)anthracene	OK, ND
Dibenzofuran	OK, ND
Dibenz(a,h)anthracene	OK, ND
Chromium VI (Hexavalent)	OK, < SDL
Dissolved Copper	OK, ND
Dissolved Lead	OK, ND
Bis (2-ethyhexyl) Phthalate	OK, ND
Conductivity	Field - N/A
Temperature	Field - N/A

Hardness (as $CaCO_3$)	OK, ND

Note - field samples do not have lab blanks for duplicates to use for validation

checked 1/13/17 SJG	checked 1/13/17 SJG
Sample Date: 8/10 to 8/11/16 Location: Rio Grande North & South Duplicate Results V&V	Sample Date: 9/12 to 9/13/16 Location: Rio Grande North & South Blank Results V&V
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, < SDL
OK, RPD < 20%	OK, ND
Field - N/A	Field - N/A
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, < SDL
Field - N/A	Field - N/A
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	No Blank Reported
OK, RPD < 20%	OK, ND
No Duplicate Reported	OK, ND
Method not used	OK, < SDL
No Duplicate Reported	OK, < SDL
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, ND
OK, RPD < 20%	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, < SDL
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, ND
Field - N/A	Field - N/A
Field - N/A	Field - N/A

OK, RPD < 20%	OK, ND

checked 1/13/17 SJG	checked 1/13/17 SJG
Sample Date: 9/12 to 9/13/16 Location: Rio Grande North & South Duplicate Results V&V	Sample Date: 9/21 to 9/22/16 Location: Rio Grande North & South Blank Results V&V
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, < SDL
OK, RPD < 20%	OK, ND
Field - N/A	Field - N/A
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, < SDL
Field - N/A	Field - N/A
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	Not Reported
No Duplicate Reported	OK, ND
No Duplicate Reported	No Blank Reported
OK, RPD < 20%	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, < SDL
No Duplicate Reported	OK, < SDL
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, ND
OK, RPD < 20%	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, < SDL
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, ND
Field - N/A	Field - N/A
Field - N/A	Field - N/A

No Duplicate Reported	OK, ND

checked 1/13/17 SJG	checked 1/20/17 SJG
Sample Date: 9/21 to 9/22/16 Location: Rio Grande North & South Duplicate Results V&V	Sample Date: 11/21 to 11/22/16 Location: Rio Grande North & South Blank Results V&V
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, < SDL
OK, RPD < 20%	OK, ND
Field - N/A	Field - N/A
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, < SDL
Field - N/A	Field - N/A
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
Not Reported	Not Reported
No Duplicate Reported	OK, ND
No Duplicate Reported	No Blank Reported
OK, RPD < 20%	OK, ND
No Duplicate Reported	Not used
OK, RPD < 20%	OK, < SDL
No Duplicate Reported	OK, < SDL
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, ND
OK, RPD < 20%	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, < SDL
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, ND
Field - N/A	Field - N/A
Field - N/A	Field - N/A

No Duplicate Reported	OK, ND

checked 1/20/17 SJG	checked 10/26/17 SJG
Sample Date: 11/21 to 11/22/16 Location: Rio Grande North & South Duplicate Results V&V	Sample Date: 7/27/17 to 7/28/17 Location: Rio Grande North & South Blank Results V&V
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, U - not detected
OK, RPD < 20%	OK, ND
Field - N/A	Field - N/A
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, < PQL
Field - N/A	Field - N/A
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
Not Reported	Not Reported
No Duplicate Reported	OK, ND
No Duplicate Reported	Combo of TKN, Nitrate+Nitrite
OK, RPD < 20%	OK, ND
Not used	Not used
OK, RPD < 20%	met acceptance criteria
No Duplicate Reported	OK, < SDL
No Duplicate Reported	Not reported in table - analytical note
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	Not reported in table - analytical note
OK, RPD < 20%	OK, ND
No Duplicate Reported	Not reported in table - analytical note
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, U - not detected
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
OK, RPD < 20%	OK, ND
Field - N/A	Field - N/A
Field - N/A	Field - N/A

No Duplicate Reported	OK, ND

checked 10/26/17 SJG	checked 12/27/17 SJG
Sample Date: 7/27/17 to 7/28/17 Location: Rio Grande North & South Duplicate Results V&V	Sample Date: 9/27/17 to 9/28/17 Location: Rio Grande North & South Duplicate Results V&V
No Duplicate Reported	OK, MBLK ND
No Duplicate Reported	OK, MBLK ND
OK, RPD < 20%	OK, RPD < 20%
OK, RPD < 20%	OK, RPD < 20%
Field - N/A	Field - N/A
No Duplicate Reported	OK, MBLK ND
No Duplicate Reported	OK, MBLK < PQL
Field - N/A	Field - N/A
No Duplicate Reported	OK, MBLK ND
No Duplicate Reported	OK, MBLK ND
Not Reported	Not Reported
No Duplicate Reported	OK, MBLK ND
Combo of TKN, Nitrate+Nitrite	Combo of TKN, Nitrate+Nitrite
No Duplicate Reported	OK, RPD < 20%
Not used	Not used
met acceptance limits	met acceptance limits
No Duplicate Reported	Method Blank OK, no Duplicate reported
Not reported in table - analytical note	No Duplicate Reported/ Method Blank ND
No Duplicate Reported	No Duplicate Reported, MBLK ND
No Duplicate Reported	No Duplicate Reported, MBLK ND
No Duplicate Reported	No Duplicate Reported, MBLK ND
No Duplicate Reported	No Duplicate Reported, MBLK ND
No Duplicate Reported	No Duplicate Reported, MBLK ND
Not reported in table - analytical note	OK, RPD < 20%
OK, RPD < 20%	OK, RPD < 20%
Not reported in table - analytical note	No Duplicate Reported, MBLK ND
No Duplicate Reported	No Duplicate Reported, MBLK ND
No Duplicate Reported	No Duplicate Reported, MBLK ND
No Duplicate Reported	No Duplicate Reported, MBLK ND
OK, RPD < 20%	OK, RPD < 20%
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, ND
No Duplicate Reported	OK, RPD < 20%, blank reported 0.57 ug/L
Field - N/A	Field - N/A
Field - N/A	Field - N/A

No Duplicate Reported	No Duplicate Reported

checked 6/17/19 SJG

Sample Date: 3/13/19 Location: Rio Grande North & South & South DUP Duplicate Results V&V
OK, MBLK ND
OK, MBLK ND
MBLK OK, Duplicate RPD < 20%
NOT OK per QAPP - R flag - RPD between dilutions >30%
Field - N/A
OK, MBLK ND
OK, MBLK < PQL
Field - N/A
OK, MBLK ND
OK, MBLK ND
Not Reported, assume similar to Total
OK, MBLK ND
Combo of TKN, Nitrate+Nitrite
MBLK ND, Duplicate RPD <2 0%
Not used
met acceptance limits for recovery and RPDs. Some congeners have "B" flags, meaning they were present in the blanks.
Method Blank OK, no Duplicate reported
Matrix Spike Duplicate OK RPD < 20%, MBLK ND
Duplicate OK RPD < 20%, MBLK ND
No Duplicate Reported, MBLK ND
No Duplicate Reported, MBLK ND
No Duplicate Reported, MBLK ND
No Duplicate Reported, MBLK ND
MBLK OK, Duplicate RPD < 20%
Duplicate OK RPD < 20%, MBLK ND
No Duplicate Reported, MBLK ND
No Duplicate Reported, MBLK ND
No Duplicate Reported, MBLK ND
No Duplicate Reported, MBLK ND
No Duplicate Reported
Duplicate OK RPD < 20%, MBLK ND
Duplicate OK RPD < 20%, MBLK ND
Duplicate OK RPD < 20%, MBLK ND
Field - N/A
Field - N/A

No Duplicate Reported

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MEMORANDUM

DATE: June 27, 2019

TO: Jerry Lovato, PE, AMAFCA
Patrick Chavez, PE, AMAFCA

FROM: Craig Hoover, PE
Sarah Ganley, PE

SUBJECT: **CMC Dry Season, Wet Weather Stormwater Monitoring Data Verification, Analysis Results Database, and Reporting FY 2019 Dry Season (November 1, 2018 to June 30, 2019) Task 28 Memo**

Notification of In-Stream Water Quality Exceedances

One (1) set of Compliance Monitoring Cooperative (CMC) samples were collected in the FY 2019 dry season (November 1, 2018 to June 30, 2019). For downstream notification purposes, the following parameters for the in-stream samples taken in the Rio Grande for the FY 2019 dry season had results that exceeded applicable water quality standards: E. coli and Polychlorinated Biphenyls (PCBs). Table 1 summarizes the samples with exceedances and the applicable water quality standards (WQS) that were exceeded. Additional details on the sampling results are provided in this memo.

Table 1: Parameters Detected Above Applicable Water Quality Standards CMC FY 2019 Dry Season, Wet Weather Monitoring

Sampling Date Location	Parameters, Applicable Water Quality Standard (WQS), and Results Exceeding Applicable WQS	
	E. coli	PCBs
	WQS: 88 CFU/100 ml Pueblo of Isleta Primary Contact Ceremonial & Recreational	**WQS: 0.00017 ug/L** Pueblo of Isleta Human Health Criteria (based on fish consumption only) **WQS: 0.00064 ug/L** NM Human Health- Organism Only Criteria (HH-OO)
3/11/2019 Rio Grande North Angostura Diversion Dam	No Exceedance	0.000187 ug/L
3/12/2019 Rio Grande South Isleta Diversion Dam	298 CFU/100ml	Not Tested

Sampling Date Location	Parameters, Applicable Water Quality Standard (WQS), and Results Exceeding Applicable WQS	
	E. coli	**PCBs**
	WQS: 88 CFU/100 ml Pueblo of Isleta Primary Contact Ceremonial & Recreational	**WQS: 0.00017 ug/L** Pueblo of Isleta Human Health Criteria (based on fish consumption only) **WQS: 0.00064 ug/L** NM Human Health- Organism Only Criteria (HH-OO)
3/12/2019 Rio Grande South Isleta Diversion Dam	309 CFU/100ml	Not Tested
3/13/2019 Rio Grande South Isleta Diversion Dam	594 CFU/100ml	0.00261 ug/L
3/13/2019 Rio Grande South Isleta Diversion Dam – Duplicate Sample	479 CFU/100ml	0.00188 ug/L

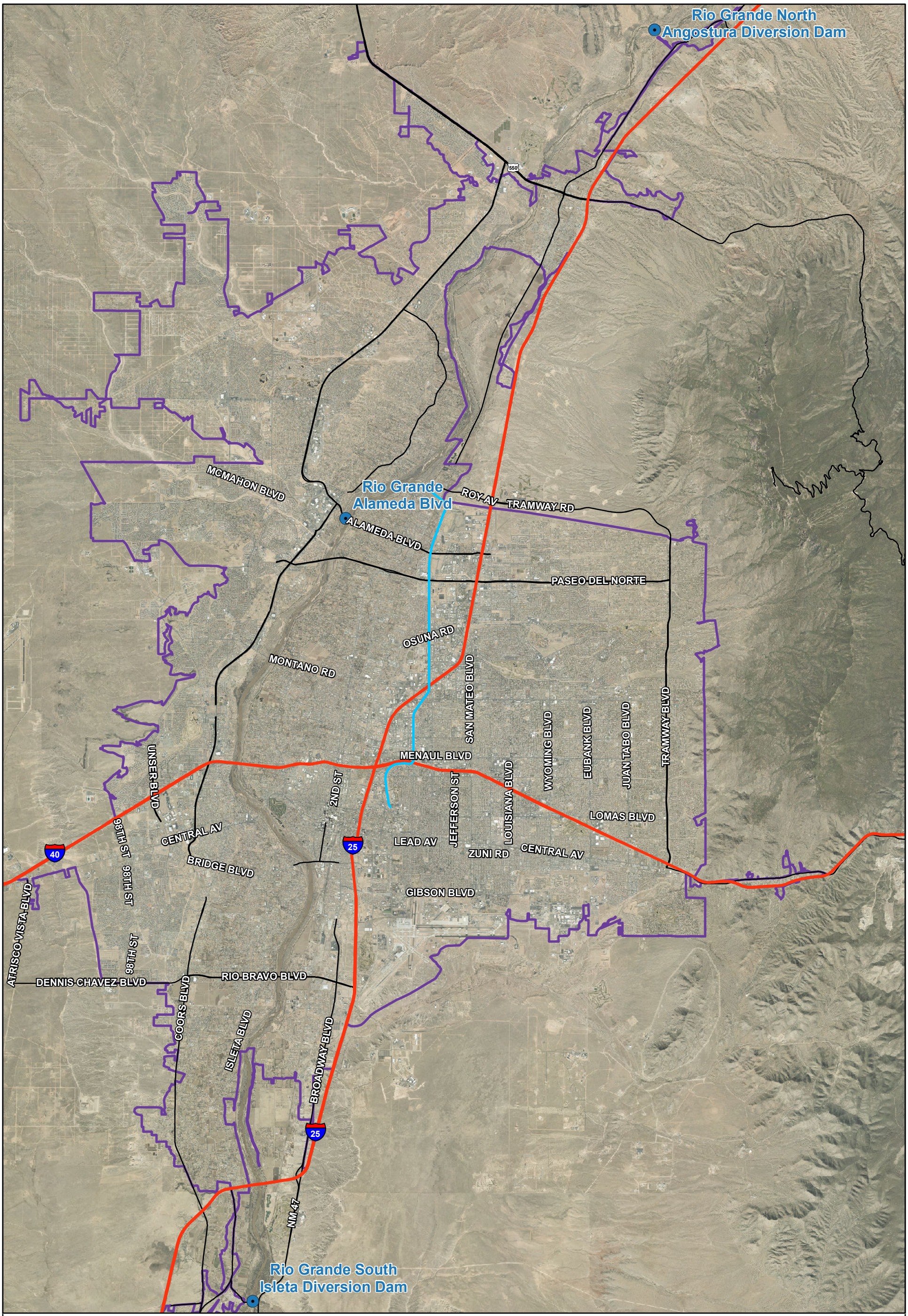
Overview of Stormwater Monitoring Activity

Bohannan Huston, Inc. (BHI) has been tasked to perform water quality services for the CMC Stormwater Data Verification, Database, and Reporting for the Wet Weather Stormwater Quality Monitoring Program for Fiscal Year (FY) 2019 (July 1, 2018 to June 30, 2019). The scope of work for this task includes data verification of the stormwater laboratory results, compiling the laboratory results into a database, and calculating the E. coli loading to compare with the Waste Load Allocation (WLA) for the qualifying storm events. The stormwater compliance monitoring is being conducted separately by Daniel B. Stephens & Associates, Inc. (DBS&A) and is not a part of this on-call task. This task is being conducted to assist the CMC members with their comprehensive monitoring and assessment program for compliance under the 2014 Middle Rio Grande Watershed Based Municipal Separate Storm Sewer System (MS4) Permit, NPDES Permit No. NMR04A000 ("WSB MS4 Permit").

As identified in the CMC Monitoring Plan, the WSB MS4 Permit requires a minimum of seven (7) storm events be sampled at both the Rio Grande North and Rio Grande South locations (refer to Figure 1, page 4, with at least three (3) events in the wet season and two (2) events in the dry season. Four (4) samples were collected in FY 2017 toward the WSB MS4 Permit requirements – three (3) in the wet season and one (1) in the dry season. In addition, two (2) samples were collected during the FY 2018 wet season (July 1, 2017 to October 31, 2017); reporting for these samples is in the February 2, 2018, CMC Wet Season, Wet Weather Stormwater Monitoring memo. No CMC samples were able to be collected in the FY 2018 dry season (November 1, 2017 to June 30, 2018) as reported in the July 3, 2018, CMC Dry Season, Wet Weather Monitoring memo. The final dry season storm event to meet WSB MS4 Permit requirements was sampled by the CMC on March 11-13, 2019, and the results are reported in this memo. All CMC samples obtained to date to meet the WSB MS4 Permit requirements are summarized in Table 2 below:

Table 2: CMC Sample Summary
Compared to WSB MS4 Requirements

No. of Storm Events Required to Sample	CMC-WSB MS4 Permit Required Samples per Season	FY (Date) Samples Obtained for CMC
1	#1 Wet Season	FY 2017 (8/10/2016)
2	#2 Wet Season	FY 2017 (9/12/2016)
3	#3 Wet Season	FY 2017 (9/21/2016)
4	#1 Dry Season	FY 2017 (11/21/2016)
5	#2 Dry Season	FY 2019 (3/13/2019)
6	Any Season	FY 2018 (Wet Season - 7/27/2017)
7	Any Season	FY 2018 (Wet Season - 9/27/2017)



P:\20180302\WR\Reports\Preliminary & Draft\Figures\MXDs\Figure1-CMCMonitoringLocations.mxd
Author: eburn

Summary of the CMC Sampling Plan

Sampling Parameters:

Samples from both the Rio Grande North and Rio Grande South monitoring locations were analyzed for the parameters defined in the Environmental Protection Agency (EPA) and New Mexico Environment Department (NMED) approved WSB MS4 CMC Monitoring Plan, May 5, 2016. The parameter list for both locations, which is intended to characterize MS4 stormwater discharges into the Rio Grande, is as follows:

Total Suspended Solids (TSS)
Total Dissolved Solids (TDS)
Chemical Oxygen Demand (COD)
Biological Oxygen Demand – 5-day (BOD_5)
Dissolved Oxygen (DO)
Oil & grease (N-Hexane Extractable Material)
E. coli
pH
Total Kjeldahl Nitrogen (TKN)
Nitrate plus Nitrite
Dissolved Phosphorus
Ammonia plus Organic Nitrogen (Nitrogen, Ammonia and Nitrogen, Total)
Phosphorous (Total Phosphorous)
Polychlorinated Biphenyls (PCBs - Method 1668A)
Gross Alpha, adjusted
Tetrahydrofuran
Benzo(a)pyrene
Benzo(b)fluoranthene (3, 4 Benzofluoranthene)
Benzo(k)fluoranthene
Chrysene
lndeno(1 ,2,3-cd)pyrene
Dieldrin
Pentachlorophenol
Benzidine
Benzo(a)anthracene
Dibenzofuran
Dibenz(a, h)anthracene
Chromium VI (Hexavalent)
Copper- Dissolved
Lead- Dissolved
Bis(2-ethylhexyl)phthalate (other names: Di(2-ethylhexly)phthalate, DEHP)
Conductivity
Temperature

Hardness (as $CaCO_3$) was added to the parameter list to allow dissolved metal results to be compared to the applicable WQSs. DO, pH, conductivity, and temperature are required by the WSB MS4 Permit to be analyzed in the field during sample collection, which was conducted by DBS&A, within fifteen (15) minutes of sample collection. All E. coli samples were submitted to the laboratory within six (6) hours of collection in order to meet the specified hold time.

Sampling Locations:

The sampling locations are shown in Figure 1, page 4.

Rio Grande North – In-stream sampling within the Rio Grande was performed upstream of the Angostura Diversion Dam at the north end of the watershed. The location is upstream of all inputs from the Urban Area (UA) to the river and provides the background water conditions.

Rio Grande South – In-stream sampling within the Rio Grande was performed at the Isleta Bridge at the south end of the watershed. The location is downstream of all inputs from the UA to the river and provides the downstream water conditions. These locations have been accepted by EPA and NMED to meet the WSB MS4 Permit requirements in Part III.A.

In February 2017, during discussions with NMED regarding potential refinements to E. coli loading calculations, NMED recommended that the CMC also sample E. coli at a mid-point at the Alameda Bridge location, which corresponds to the NMED defined stream segment divide. Four (4) of the seven (7) required CMC samples had already been obtained before this meeting. Since that meeting, the CMC has attempted to collect a mid-point CMC E. coli sample and was successful during one (1) of the three (3) remaining CMC sampled storm events (July 2017). During the FY 2019 dry season, an E. coli only sampling point within the Rio Grande at Alameda Boulevard was not able to be obtained during the storm event.

Sample Collection:

As mentioned previously, sample collection for the CMC is being conducted by DBS&A (through a separate on-call contract) as well as by CMC members. Since BHI was not involved, this task and memo do not address the details of the methodologies regarding sampling, determining if an event was a qualifying storm event, or determining the timing of the hydrograph at the Rio Grande Alameda and Rio Grande South locations.

DBS&A provided BHI with their field notes and field sample data (temperature, DO, specific conductivity, and pH) for the FY 2019 dry season sampling (refer to Attachment 1). AMAFCA provided BHI the completed laboratory analysis reports from Hall Environmental Analysis Laboratory (HEAL) for this monitoring season (refer to Attachment 2).

Quality Assurance Project Plan (QAPP):

AMAFCA provided BHI with the Draft Quality Assurance Project Plan (QAPP) for the CMC dated June 14, 2016. DBS&A followed this QAPP during sample collection. BHI used this QAPP and the included standard operating procedures (SOPs) for the data verification and validation.

Monitoring Activity & Lab Analysis Summary

The list below provides a summary of the CMC comprehensive monitoring program activities completed for the FY 2019 dry season from November 2018 through June 2019. One (1) qualifying storm event was sampled and analyzed during the FY 2019 dry season.

- **February 14, 2019 – Only E. coli for Rio Grande North.** A sample was collected at the Rio Grande North location and sent to the laboratory for an E. coli only test. Based on review of the storm event by the CMC, it was determined this was not a qualifying storm

event; therefore, full parameter testing did not occur for the sample collected at the Rio Grande North location.

- **March 11-13, 2019 – Qualifying Storm Event – Full Analysis of Samples.** A sample was collected at the Rio Grande North location beginning at 9:55 a.m. on March 11 and sent to the laboratory for an E. coli only test. This event turned into a two-day storm event with the Rio Grande hydrograph still showing an increase on March 12th. The storm event for March 11th was reported as 0.21-inches at the Albuquerque Sunport and 0.25-inches within the Northeast contributing watershed using Community Collaborative Rain, Hail & Snow Network (CoCoRaHS). The storm event continued through March 12th with a reported total rainfall of 0.32-inches at the Albuquerque Sunport on March 12th. To ensure the storm event was adequately sampled, the CMC obtained a Rio Grande South E. coli sample at 11:15 a.m. on March 12th and a 9:45 a.m. full parameter sample on March 13th; the samples from the North (from March 11th) and South (from March 13th) locations were taken to the HEAL laboratory for full parameter testing. In addition, quality control samples including an equipment blank, trip blank, and full duplicate sample were obtained at the Rio Grande South location on March 13th.

Stormwater Quality Database for CMC

For the March 11-13, 2019 storm event, DBS&A's field notes containing DO, pH, conductivity, and temperature measurements, as well as sampling comments have been received and added to the CMC stormwater quality database (refer to Attachment 1 for field data sheets). Additionally, the HEAL lab reports for the corresponding time period have been received, added to the database, and are provided with this memo (Attachment 2). The laboratory reports attached to this memo have BHI added comments including relevant notes related to the laboratory reports.

The database contains sample locations (Rio Grande North and Rio Grande South), sample date, analyses conducted, methods used, applicable surface water quality standards (WQS), WSB MS4 Permit required Minimum Quantification Levels (MQL), and analysis results. Applicable surface WQS found in New Mexico Administrative Code (NMAC) 20.6.4 as well as the Pueblo of Isleta and Pueblo of Sandia WQS are entered in the Excel database for comparison purposes with testing results. There is an indicator in the database to show if the monitoring results exceed the applicable surface WQS. An exceedance is not a violation of the WSB MS4 Permit, as the Permit does not have numeric discharge limitations. These ">WQ Standard" flags simply and quickly show the CMC members where the results of the lab data exceed the applicable WQS.

Upon receipt of the HEAL lab reports, water quality data was entered into the database. All data entered into the database is initially denoted with a "P" to indicate that it is provisional and has not yet been through the verification and validation process.

Data Verification and Validation:

The HEAL laboratory analysis reports were provided to BHI by AMAFCA. The lab reports also contain the Chain of Custody for the submitted samples. Field data was requested by and provided to BHI by DBS&A. Data verification and validation (V&V) was conducted by BHI on all field notes, lab reports, and Chain of Custody documents in accordance with the CMC Water Quality Standard Operating Procedure (SOP) #2, which is part of the existing CMC QAPP, Draft June 14, 2016. These procedures are based on EPA Guidance for Environmental Data Verification and Validation (U.S. EPA, 2008).

As stated in the QAPP, the V&V process was completed by a different person than the one who entered the data into the database. The V&V process included use of the *Data Verification and Validation Worksheet* (provided in the QAPP). For this task, field data was verified first, confirming that all field notes were complete. BHI handled field parameter questions directly with DBS&A. Chemical data verification began as soon as the lab reports were received, checking that all parameters were tested and looking for any obvious exceedances of WQS. Other steps listed on the *Data Verification and Validation Worksheet* were completed after all data from the laboratory was received and entered into the database. Sample blank results were reviewed to identify potential contamination during field processing or transport. Replica/duplicate samples were evaluated based on relative percent difference (as described in more detail in the QAPP) to determine the variability of the samples.

Direction has been obtained from NMED that E. coli units are and can be reported interchangeably in colony forming units (CFU)/100 milliliters (mL) or as most probable number (MPN) per 100 mL. The laboratory method used by HEAL is an EPA approved method that produces results in MPN/100 mL. The New Mexico and Pueblo WQS for E. coli are currently in units of CFU/100 mL.

For the CMC FY 2019 dry season data, HEAL assigned the results for Biochemical Oxygen Demand (BOD_5) a qualifier of "R", which indicates that the relative percent difference (RPD) between laboratory replicate dilutions done during the testing were greater than 30 percent. This parameter also had a hold time flag for the Rio Grande North sample, since the multi-day storm resulted in this sample being submitted to the laboratory after the 48-hour hold time. The BOD_5 sample results (5-6 mg/L) were within the range of typical CMC BOD_5 results (<2 – 5 mg/L). Research related to the acceptable RPD for BOD_5, specifically related to stormwater applications, found that RPD values greater than 30% are not unusual especially for lower concentrations (5-10 mg/L range). The CMC data for BOD_5 is considered useable with the data flag maintained in the database and reporting documents.

Once the V&V process was completed, the worksheets were signed. Copies of the V&V worksheets are provided with this memo (Attachment 3). In the database, data that was checked during the V&V process was then changed from being denoted with a "P" for provisional to a "V" for verified, and laboratory qualifiers were added, as needed.

CMC FY 2019 Dry Season Assessment and Evaluation of Monitoring Results

The EPA approved WSB MS4 CMC Monitoring Plan, May 5, 2016, has thirty-three (33) parameters to monitor at the Rio Grande North and Rio Grande South monitoring locations. Of these thirty-three (33) parameters, fourteen (14) parameters were not detected in the FY 2019 dry season samples at either the Rio Grande North or South locations. Refer to Table 3 for a list of the parameters that were not detected.

Looking at all seven (7) samples obtained during the WSB MS4 Permit term by the CMC, there were thirteen (13) parameters that were not detected in any of the CMC samples; refer to Table 4 for a list of the parameters that were not detected in any of the CMC samples obtained during this MS4 Permit term. Of these parameters listed in Table 4, two (2) of the parameters not detected by the CMC have been detected by AMAFCA during stormwater quality monitoring within the watershed: Benzo(b)fluoranthene (3, 4 Benzofluoranthene) and Chromium VI (Hexavalent).

During the next MS4 Permit term, the non-detected parameters should be discussed with EPA and NMED for potential removal from the sampling list.

Table 3: Parameters Not Detected
CMC FY 2019 Dry Season Monitoring

Parameters Not Detected by CMC	
Tetrahydrofuran	Dieldrin
Benzo(a)pyrene	Pentachlorophenol
Benzo(b)fluoranthene (3, 4 Benzofluoranthene)	Benzidine
Benzo(k)fluoranthene	Benzo(a)anthracene
Chrysene	Dibenzofuran
Indeno(1,2,3-cd)Pyrene	Dibenzo(a,h)anthracene
Chromium VI (Hexavalent)	Bis[2-ethylhexyl]phthalate [DEHP]

Table 4: Parameters Not Detected in CMC Samples
During MS4 Permit Term

Parameters Not Detected During Entire Permit Term	
Tetrahydrofuran	Dieldren
Benzo(a)pyrene	Pentachlorophenol
Benzo(b)fluoranthene (3, 4 Benzofluoranthene)*	Benzidine
Benzo(k)fluoranthene	Benzo(a)anthracene
Chrysene	Dibenzofuran
Indeno(1,2,3-cd)Pyrene	Dibenzo(a,h)anthracene
Chromium VI (Hexavalent)*	

**Two of the parameters not detected by the CMC have been detected by AMAFCA during stormwater quality monitoring from 2014-2018 within the watershed: Benzo(b)fluoranthene (3, 4 Benzofluoranthene) and Chromium VI (Hexavalent).*

For the FY 2019 dry season, out of the remaining nineteen (19) parameters on the CMC monitoring parameter list, only two (2) parameters (E. coli and PCBs) had exceedances of the applicable surface WQS found in New Mexico Administrative Code (NMAC) 20.6.4 and the Pueblo of Isleta WQS during the FY 2018 wet season. These exceedances are summarized in Table 1, page 1 and discussed below in further detail.

E. coli:

All E. coli results collected during the FY 2019 dry season are summarized in Table 5.

Table 5: E. coli Results
CMC FY 2019 Dry Season Monitoring

Date – Rio Grande Location	E. coli Results (CFU/100 ml)
February 14, 2019 – North	2
March 11, 2019 – North	31.8
March 12, 2019 – South	298
March 12, 2019 – South (Duplicate)	309
March 13, 2019 – South	594
March 13, 2019 – South (Duplicate)	479

At the Rio Grande North location (upstream of the Albuquerque UA, at the Angostura Diversion Dam), all collected samples tested for E. coli were below the primary contact-single sample Pueblo of Isleta and Pueblo of Sandia WQS (88 CFU/100 mL) as well as the primary contact-single sample NMAC WQS (410 CFU/100 ml). At the Rio Grande South location (downstream of the MS4 UA), all collected samples tested for E. coli exceeded the Pueblo of Isleta and Pueblo of Sandia WQS (88 CFU/100 mL) and only the March 13, 2019 samples also exceeded the primary contact-single sample NMAC WQS (410 CFU/100 ml).

As a reminder, NMED has clarified that the units MPN/100 mL and CFU/100 mL are considered to be interchangeable for the purposes of this stormwater quality monitoring reporting. The New Mexico and Pueblo WQS for E. coli are currently in units of CFU/100 mL while the lab reports are typically in units of MPN/100mL. The graph presented in this section uses units of CFU/100 mL to be consistent with the WQSs units. Refer to Figure 2 for a graphical representation of dry season E. coli results at the Rio Grande North and Rio Grande South locations.

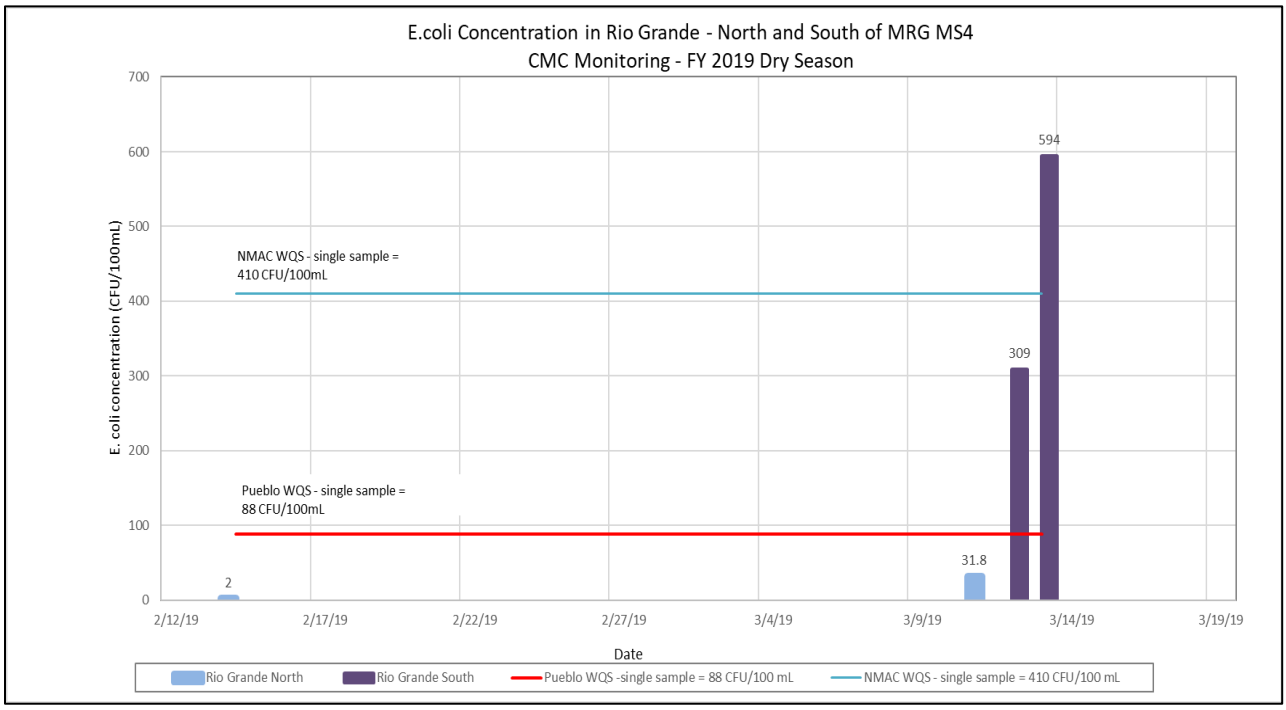


Figure 2: E. coli Results
CMC Monitoring – FY 2019 Dry Season

PCBs:

There are multiple surface water quality standard values listed for PCBs in both the Pueblo of Isleta and the State of New Mexico standards for the various designated uses. The PCBs measured in samples collected from the Rio Grande during the FY 2019 dry season stormwater events were all below the minimum quantification level (MQL) established in U.S. Environmental Protection Agency (USEPA) standards for MS4 NPDES Permit (Appendix F, 0.2 ug/L for PCBs). The PCB results were also below the New Mexico Surface WQSs and Pueblo of Isleta Surface WQSs for designated uses including drinking water, wildlife habitat, acute aquatic life, chronic aquatic life, and New Mexico human health-organism only (fish consumption only). However, the March 11 and March 13, 2019 CMC samples from the Rio Grande were above the Pueblo of Isleta human health criteria (based on fish consumption only) WQS for surface waters. The human health-organism only criterion is based upon human consumption of fish and other aquatic life that bioaccumulate contaminants over time. The FY 2019 dry season PCB results are shown in Figure 3 relative to various WQSs for PCBs.

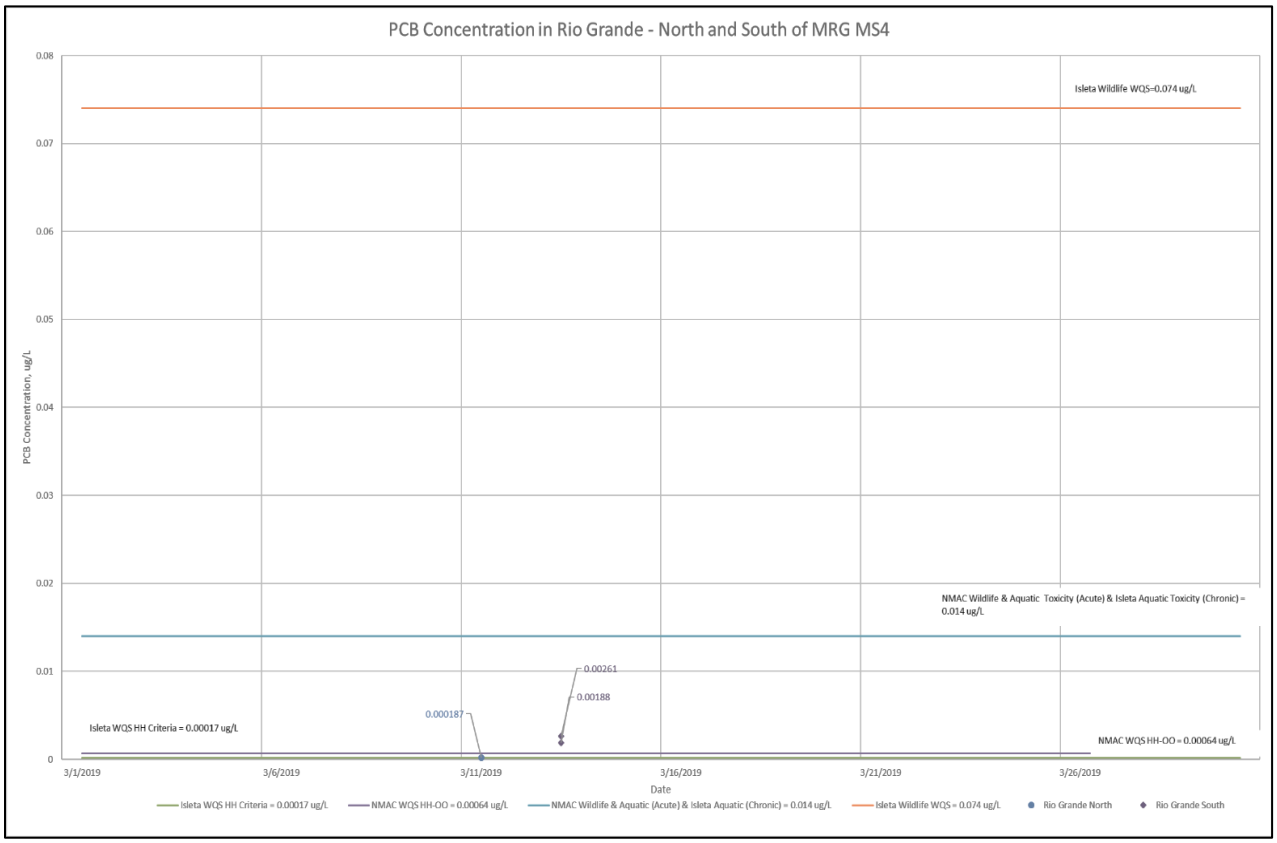


Figure 3: PCB Results
CMC Monitoring – FY 2019 Dry Season

Adjusted Gross Alpha:

There were no exceedances in adjusted gross alpha for the FY 2019 dry season samples. Due to prior exceedances, the CMC will continue to closely evaluate this parameter in future samples. If additional exceedances occur, the CMC will discuss the results further and may consult NMED for further guidance.

Dissolved Oxygen and Temperature:

Two (2) of the water quality parameters are specifically worth mentioning in this memo because they are listed in the WSB MS4 Permit, Part I.C.1 – Special Conditions: dissolved oxygen and temperature. These two (2) parameters did not have any surface water quality exceedances during the FY 2019 dry season sampling.

Dissolved oxygen is a water quality concern in the Rio Grande if it is below 5 mg/L. None of the samples taken from the Rio Grande during the CMC FY 2019 dry season monitoring had dissolved oxygen values below 5 mg/L. This provides the MS4s with specific monitoring data showing that stormwater did not cause or contribute to exceedances of applicable dissolved oxygen water quality standards in the Rio Grande during the FY 2019 dry season. Refer to Figure 4 for dissolved oxygen results and comparison to applicable WQS. For all of the CMC samples taken during this MS4 Permit Term, there have not been any dissolved oxygen readings below the 5 mg/L WQS.

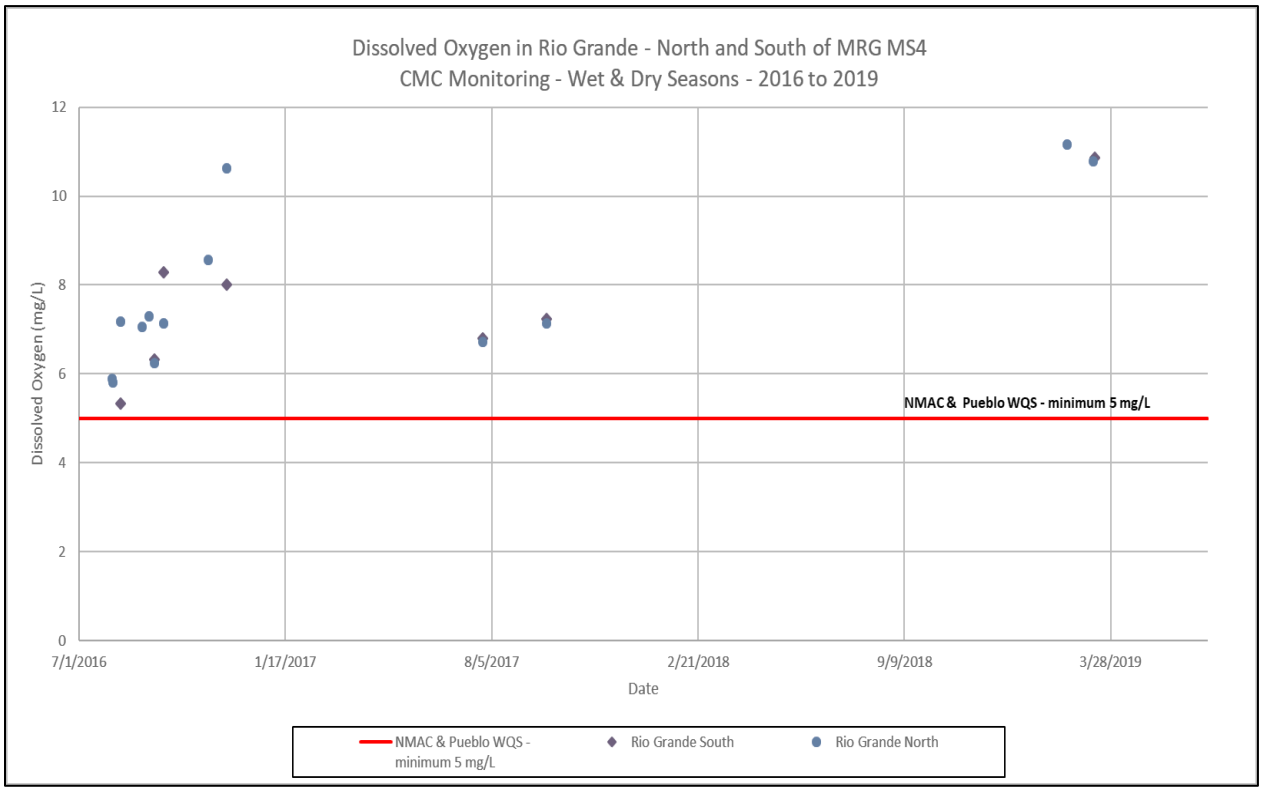


Figure 4: Dissolved Oxygen Results for Rio Grande
CMC Monitoring – FY 2016 through FY 2019 Wet & Dry Season

Temperature is listed in the WSB MS4 Permit as a special condition (currently only applicable to the City of Albuquerque and AMAFCA). Past data submitted to EPA and NMED has demonstrated that stormwater discharges into the Rio Grande are not raising the Rio Grande temperature above the WQS. The data collected during this CMC FY 2019 dry season monitoring supports this conclusion. All the temperature field readings taken in the Rio Grande during the CMC FY 2019 dry season were below 32.2°C (90 °F) - the WQS for the State of New Mexico and for the Isleta and Sandia Pueblos. Refer to Figure 5 for temperature results and comparison to applicable WQS. For all of the CMC samples taken during this MS4 Permit Term, there have not been any temperature readings above the 32.2°C WQS.

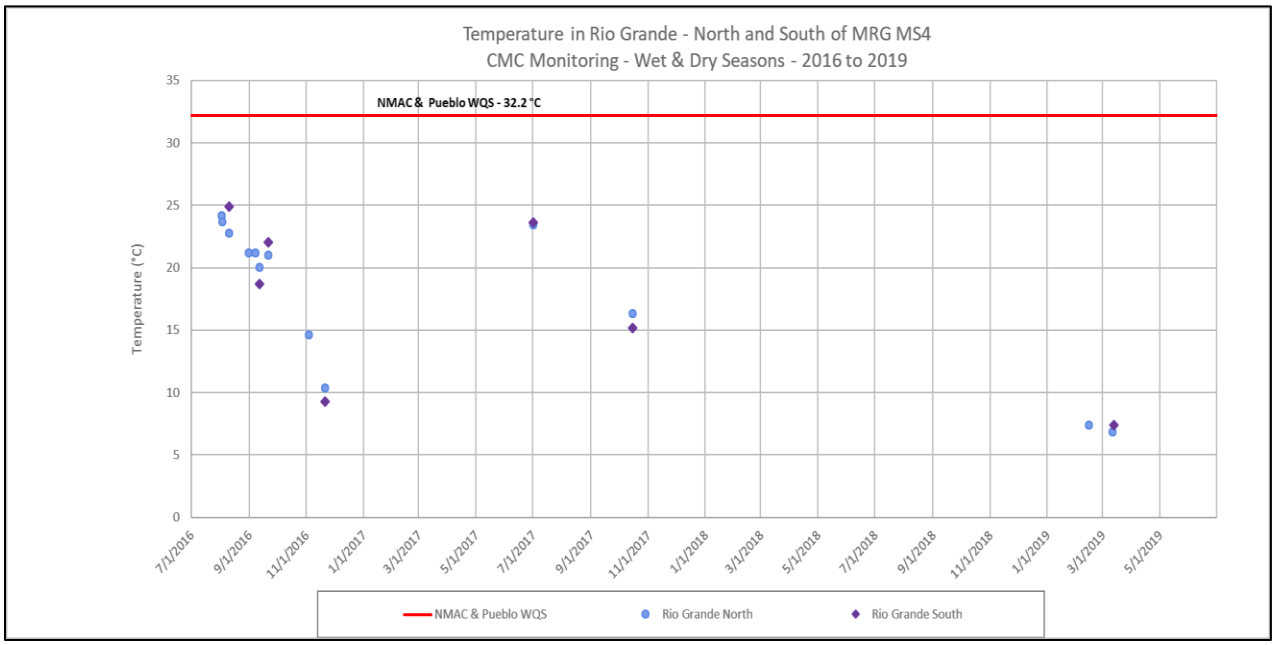


Figure 5: Temperature Monitoring Results in Rio Grande
CMC Monitoring – FY 2016 through FY 2019 Wet & Dry Season

CMC FY 2019 Dry Season E. coli Loading Calculations and Waste Load Allocation (WLA)

Related to assessing the stormwater results, BHI has calculated the E. coli loading and compared it to the aggregate Total Maximum Daily Load (TMDL) Waste Load Allocation (WLA) for the CMC group. A TMDL is the maximum amount of a pollutant (E. coli in this case) that a water body (Rio Grande) can assimilate on a daily basis without violating applicable surface WQS. The total TMDL for a stream segment consists of the multiple WLA for point sources, non-point sources, and natural sources, plus a margin of safety. The CMC MS4 allotted WLA was determined in the US EPA Approved, Total Maximum Daily Load for the Middle Rio Grande Watershed, June 30, 2010, and subsequent communications with NMED. The WLA varies by flow condition in the Rio Grande and by stream segment.

E. coli loading calculations and comparison to the WLA follows the WSB MS4 Permit requirements in "Discharges to Water Quality Impaired Water Bodies with an Approved TMDL," Part I.C.2.b.(i).(c).B, Appendix B-Total Maximum Daily Loads (TMDLs) Tables of the WSB MS4 Permit, and the NMED guidance provided to the CMC. Attached to this memo is the WLA Calculation spreadsheet which steps through the E. coli loading calculations and assumptions comparing the calculated E. coli loading to the CMC aggregate WLA defined by NMED.

There are two (2) stream segments defined in the WSB MS4 Permit (Appendix B): Isleta Pueblo Boundary to Alameda Street Bridge (Stream Segment 2105_50) and Non-Pueblo Alameda Bridge to Angostura Diversion (Stream Segment 2105.1_00). These stream segments differ from NMED's current stream segments defined in "2016-2018 State of New Mexico Clean Water Act Section 303(d)/Section 305(b) Integrated Report," September 23, 2016. NMED currently has four (4) stream segments instead of the two (2) WSB MS4 stream segments; of the four (4) segments,

only one (1) segment has an impairment for E. coli (2105_50 Isleta Pueblo Boundary to Tijeras Arroyo). These various stream segment designations are shown in Figure 6, page 16.

The NMED 303(d)/305(b) 2018-2020 Integrated Report tables show the most recent assessment results, and currently there is only one segment of the Rio Grande (Isleta to Tijeras) that was found to be impaired for E. coli. However, the TMDL for the other stream segments do not go away even if they are no longer impaired—the TMDL remains in place as a protective measure. TMDLs remain in effect after impairments are removed as protective measures.

The E. coli daily loading associated with the CMC group and comparison to the NMED WLA was completed for the one (1) qualifying dry season storm event – March 11-13, 2019. Refer to Table 5 for a summary of the WLA comparison results. Attachment 4 summarizes the CMC E. coli loading for all of the seven (7) CMC samples collected during this WSB Permit term. A spreadsheet is attached to this memo that provides the detailed calculations.

Table 5: Summary of CMC E. Coli Loading Compared to WLA for the CMC

Date / Stream Segment	Daily Mean Flow (cfs)	Flow Conditions (cfs) *range defined by NMED*	CMC Daily E. coli Loading (CFU/day)	NMED WLA for CMC for Stream Segment and Flow Conditions	Loading Compared to WLA Potential Exceedance or Acceptable
March 11-13, 2019 – Rio Grande North E. coli concentration = 32 CFU/100 mL and Rio Grande South E. coli Concentration = 594 CFU/100 mL					
Alameda to Angostura	1,290	Moist	8.49E+11	9.09E+10	WLA Potential Exceedance
Isleta to Alameda	1,350	Moist	2.52E+11	6.29E+10	WLA Potential Exceedance

As Table 5 illustrates, the E. coli loading for the March 11-13, 2019 storm event for both segments of the Rio Grande potentially exceeded the CMC allocated WLA. The WSB MS4 Permit implies that the WLA is a measurable goal for the MS4s related to E. coli. Based on extensive review of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, this seems to be an unattainable goal for MS4s. The 2010 TMDL Report states on page 40, “It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards…Meeting the calculated TMDL may be a difficult objective.” The TMDL/WLA was calculated by NMED to meet the Pueblos’ (Sandia and Isleta) geometric mean maximum of 47 CFU/100 mL which was done to be “protective of downstream waters” and “to provide an implicit margin of safety (MOS).” A single grab sample E. coli result meeting this very low geometric mean WQS will be very difficult for the MS4s to obtain.

The CMC members discussed the difficulty of using the WLA as a measurable goal with NMED on February 1, 2017. NMED explained that exceeding the WLA does not trigger enforcement. However, NMED strongly encouraged the MS4s to document what they are doing once they realize the WLA is potentially exceeded. The February 1, 2017, meeting and the February 16, 2017, CMC discussion with NMED demonstrate CMC members are working toward better understanding the WLA.

MS4 Permit Stream Segment
Alameda Bridge to
Angostura Diversion
2105.1_00

Rio Grande Segment
Hwy 550 Bridge to Angostura Diversion
NM-2015.1_02

Impairments CWA 303(d) List*	TDML
None	E. coli

Rio Grande Segment
Alameda Bridge to Hwy 550 Bridge
NM-2015.1_00

Impairments CWA 303(d) List*	TMDL
Gross alpha, adjusted	E. coli
PCB in fish tissue	
PCB in water column	

Rio Grande Segment
Tijeras Arroyo to Alameda Bridge
NM-2015_51

Impairments CWA 303(d) List*	TMDL
Oxygen, dissolved percent saturation	E. coli
PCB in fish tissue	
Temperature, water deg. Centigrade	

MS4 Permit Stream Segment
Isleta Pueblo Boundary
to Alameda St. Bridge
2105_50

Rio Grande Segment
Isleta Pueblo Boundary to Tijeras Arroyo
NM-2105_50

Impairments CWA 303(d) List*	TMDL
Oxygen, dissolved percent saturation	E. coli
PCB in fish tissue	
E. coli	

MCMAHON BLVD
NM 528
ROY AV
ALAMEDA BLVD
PASEO DEL NORTE
OSUNA RD
2ND ST
MONTANO RD
MONTGOMERY BLVD
CANDELARIA RD
MENAUL BLVD
3RD ST
98TH ST
LEAD AV
COAL AV
JEFFERSON ST
SAN MATEO BLVD
LOUISIANA BLVD
WYOMING BLVD
EUBANK BLVD
JUAN TABO BLVD
TRAMWAY BLVD
LOMAS BLVD
ZUNI RD
CENTRAL AV
BRIDGE BLVD
UNSER BLVD
COORS BLVD
GIBSON BLVD
DENNIS CHAVEZ BLVD
RIO BRAVO BLVD
BROADWAY BLVD
ISLETA BLVD
NM 47
Tijeras Arroyo
25
40
550

Legend

- MS4 Permit Stream Segments
- State of NM Stream Segments
- North Diversion Channel
- Rio Grande
- Interstate Highway
- U.S. Highway
- State Highway

* Final 2018-2020 State of NM Clean Water Act Section 303(d)/Section 305(b) Integrated Report

N W E S

0 1 2 4
Miles

Rio Grande Impairments and TMDL Information

Figure 6

AMAFCA
Bohannan Huston
www.bhinc.com 800.877.5332

P:\20180302\WR\Reports\Final\Figures\MXDs\Figure6-MS4_TMDLStreamSegments.mxd
Author: mmeroni

June 2019

Data Entry for Discharge Monitoring Reports

As required in the WSB MS4 Permit, verified stormwater quality data must be submitted annually to the EPA using electronic Discharge Monitoring Report (DMR) forms. Data from the DMRs are uploaded to a comprehensive nation-wide database that contains discharge data for facilities and other point sources that discharge directly to receiving streams. For this Task, BHI has completed data entry related to the EPA CMC DMRs for the FY 2019 dry season. DMRs with this data are due to the EPA on December 1, 2019, and these forms will be submitted to the EPA by AMAFCA as the delegated data entry member for the CMC.

Conclusions and Planning

To summarize:

- With the FY 2019 dry season samples, all seven (7) required samples in the WSB MS4 Permit Wet Weather Monitoring section have been obtained. The CMC has met the required WSB MS4 Permit minimum of three (3) events during the wet season and two (2) events during the dry season.
- The current 2014 Middle Rio Grande Watershed Based Municipal Separate Storm Sewer System (MS4) Permit, NPDES Permit No. NMR04A000, expires in December 2019. On July 27, 2019 the EPA (Brent Larson/Maria Martinez, EPA Region 6) indicated to the MS4 permittees at a meeting at Bernalillo County Public Works, Albuquerque, NM that this permit will most likely be administratively continued. Administrative continuance of this Permit would mean that since the CMC members have met all requirement in Part III. A.1.b ("The monitoring program must sample the pollutants for a minimum of 7 storm events per location during the permit term which at least 3 events in the wet season and 2 events in the dry season"), no additional monitoring would be required until a new permit is issued. However, the CMC members may choose to continue sampling to support their MS4 program needs, demonstrate program progress, or gather additional data in support of the future permit modifications.
- When a new MS4 permit is being written by the EPA, BHI recommends that the permittees consider using the CMC data to support a reduced parameter list for required stormwater quality monitoring (refer to Table 4).

SG/ab

Attachments:

Attachment 1 – Field Notes and Field Sample Data for FY 2018 Dry Season
Attachment 2 – Hall Environmental Analysis Laboratory Reports with BHI Notes for FY 2019 Dry Season
Attachment 3 – FY 2019 Dry Season Completed Data Verification and Validation Forms
Attachment 4 – Summary of E. coli Loading Calculations for All Seven Required CMC Samples

Spreadsheets Included Separately:

Excel CMC Spreadsheet (updated with water quality criterion details)
Excel Waste Load Allocation Spreadsheet

ATTACHMENT 1

FIELD NOTES AND FIELD SAMPLE DATA FOR FY 2018 DRY SEASON

DBS&A
Daniel B. Stephens & Associates, Inc.

Samplers Chad Johannesen
Elizabeth Bastian

CMC Sampling Data Sheet

Site Identification: **Rio Grande at Angostura Dam**

Sample Date and Time:
2-14-19 13:20

Sample Identification:
RioGrandeNorth-20190214

QC Samples: Duplicate / (None)

QC samples require a DIFFERENT sample time than the environmental sample.
QC Sample Time:
QC Sample ID:

Collection Point : Dam runnal
Collection Equipment : Plastic Bucket

Total Sample Volume: 6.0 gal Collection Time Start: 1230 End: 1315

Water Quality Meter ID: YSI 556 MPS # 07H102053
Calibration Date: 2/14/19

Field Parameters

Time	Temp (°C)	pH	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	ORP (mV)	Volume (Gallons)	
1230	6.15	6.66	471	15.10	121.4	584.8	1.5	
12:45	5.79	7.04	369	13.85	111.7	581.4	~~3.0~~ 1.5	recalibrate DO meter
13:00	7.32	7.06	375	12.29	102.7	605,3	1.5	
13:15	6.92	7.79	370	11.84	97.6	625,5	1.5	
Composite	7.38	7.63	369	11.16	92,7%	631.4	6.0	

Notes: Analysis suite in attached 2016_Paramter list_CMC.pdf

DBS&A
Daniel B. Stephens & Associates, Inc.

Samplers EB / CJ

CMC Sampling Data Sheet

Site Identification: **Rio Grande at Angostura Dam**

Sample Date and Time: 3/11/19 10:45

Sample Identification: RGNorth-20190311

QC Samples: Duplicate / (None)

QC samples require a DIFFERENT sample time than the environmental sample.
QC Sample Time:
QC Sample ID:

Collection Point : Agastastra damn
Collection Equipment : Plastic Bucket

Total Sample Volume: 6.0 Collection Time Start: 9:55 End: 10:40

Water Quality Meter ID: 455-556 SN:07H102053
Calibration Date: 3/11/19

Field Parameters

Time	Temp (°C)	pH	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	ORP (mV)	Volume (Gallons)
9:55	8.54	6.76	336	9.44	80.8	219.3	1.5
10:10	6.87	6.85	326	11.43	93.9	211.1	1.5
10:25	7.01	6.97	328	11.23	92.5	204.4	1.5
10:40	6.85	6.89	327	11.01 ~~12.~~	214.2 88.5		1.5
Composite 10:48	6.83	6.87	325	10.78	88.0 ~~81~~	216.6	6.0

Notes: Analysis suite in attached 2016_Paramter list_CMC.pdf

MRGCD - Jeremy onsite @ 10:00

DBS&A
Daniel B. Stephens & Associates, Inc.

Samplers EB / CJ

CMC Sampling Data Sheet

Site Identification: **Rio Grande at Isleta Dam**

Sample Date and Time:
3/12/19 11:15

Sample Identification:
RG-South-20190312

QC Samples: (Duplicate) / None

QC samples require a DIFFERENT sample time than the environmental sample.
QC Sample Time: 11:30
QC Sample ID: RG-South-DP-20190312

Collection Point : Bucket from western half of Dam/Bridge
Collection Equipment : Plastic Bucket

Total Sample Volume: 6. Collection Time Start: 10:25 End: 11:10

Water Quality Meter ID: YSI-556 07H100053
Calibration Date: 3/12/19

Field Parameters

Time	Temp (°C)	pH	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	ORP (mV)	Volume (Gallons)
10:25	10.92	6.87	382	7.33	66.3	152.7	2.5
10:40	10.87	7.16	381	6.80	61.6	177.2	2.5
10:55	10.79	7.35	381	7.30	65.9	172.2	2.5
11:10	11.63	7.68	384	7.40	70.1	153.9	2.5
Composite	12.53	7.73	381	7.72	70.3	152.4	10

Notes: Analysis suite in attached 2016_Paramter list_CMC.pdf

DBS&A
Daniel B. Stephens & Associates, Inc.

Samplers EB/CJ

CMC Sampling Data Sheet

Site Identification: **Rio Grande at Isleta Dam**

Sample Date and Time: 3/13/19 9:45

Sample Identification: RG-South-20190313

QC Samples: Duplicate / None

QC samples require a DIFFERENT sample time than the environmental sample.
QC Sample Time: 10:00
QC Sample ID: RG-South-DP-20190313

Collection Point : Isleta Diversion Dam
Collection Equipment : Plastic Bucket

Total Sample Volume: 10 Collection Time Start: 9:00 End: 9:45

Water Quality Meter ID: YSI-556 07H102053
Calibration Date:

Field Parameters

Time	Temp (°C)	pH	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	ORP (mV)	Volume (Gallons)
9:00	7.77	6.36	365	11.10	94.1	188.7	2.5
9:15	7.73	6.81	358	10.41	87.3	195.8	2.5
9:30	7.60	6.87	358	9.98	83.5	195.7	2.5
9:45	7.60	6.86	357	10.00	83.5	203.8	2.5
Composite	7.41	6.95	358	10.86	90.4	197.3	10

Notes: Analysis suite in attached 2016_Paramter list_CMC.pdf

YSI SONDE CALIBRATION WORKSHEET

Rev. 10 - 1/03/2007

Sonde ID: YSI 556 07H100853 Date/Time: 2/14/19 Technician: EMB

Reason for Calibration: CMC Upper location sampling

Rio Grande North - At Angostura Dam

Battery Voltage: _____ (6920 & 600 XLM only)

Specific Conductance:

Standard Used (mS)	Calibration Values Initial	Post Cal.	Cell Constant:*	
1413 µS/cm	1247	1416	7.25°C	(Range: 5 +/- 0.5)

pH

		Calibration Values Initial	Post Cal.	mV	
7 Buffer:	(first)	4.40	6.99	11.32°C	(Range: 0 mV +/- 50)
4 Buffer:	(second)	3.91	3.98	12.35°C	(Range: +177 from pH 7)
10 Buffer:	(third)	9.80	10.04	17.43°C	(Range: -177 from pH 7)

Note: Span between pH 7 and pH 4, and pH 7 and pH 10 should be aproximately 165 to 180 mV.

DO % Sat. Membrane Changed? Y(N) If yes, run probe at least 15 mins before calibration. Optimally, wait 6 to 8 hrs before calibration / use.

DO Charge ~ (Range: 50 +/- 25)

mm Hg 631.6

Calibration Values % Initial	Post Cal.	DO Gain*	
67.3	83.3		(Range: 1 (0.7 to 1.5))

15.96°C

Turbidity Wiper Changed? Y/N _____ Wiper parks ~180 degrees from optic port? Y/N _____

Standards Values (NTUs)	Calibration Values Initial	Post Cal.
Zero (Always First)		

Note: Use longer probe guard with black turb probe; shorter guard with grey probe.

Post Calibration DO Sensor Output Test

Turn off handset (650MDS). Wait 1 minute, turn handset on and enter "Run". DO % Sat. must start reading with a high value and descend to the calibration value in 1 to 2 minutes. **If it does not, reject.**

Note: Disregard the first two readings as they may be affected by the warm-up process.

Accept? _____ Reject? _____ See note in comments

Calibration Comments

* Found in: Main Menu --> Sonde Menu --> Advanced --> Calibration Constants

YSI SONDE CALIBRATION WORKSHEET

Rev. 10 03/03/2007

Sonde ID: YSI-556 Date/Time: 3/11/19 09:20 Technician: EB, CJ

SN 07H102053

Reason for Calibration: CMC Sampling

Battery Voltage: _____ (6920 & 600 XLM only)

Specific Conductance:

Standard Used (mS) 1413

Calibration Values		
Initial	Post Cal.	Cell Constant:*
1413	1413	_____

(Range: 5 +/-0.5)

pH

		Calibration Values			
		Initial	Post Cal.	mV Temp	
7 Buffer:	(first)	7.12	7.03	19.20	(Range: 0 mV +/- 50)
4 Buffer:	(second)	3.36	4.0	18.56	(Range: +177 from pH 7)
10 Buffer:	(third)	10.07	10.05	19.76	(Range: -177 from pH 7)

Note: Span between pH 7 and pH 4, and pH 7 and pH 10 should be aproximately 165 to 180 mV.

DO % Sat. Membrane Changed? Y/(N) If yes, run probe at least 15 mins before calibration. Optimally, wait 6 to 8 hrs before calibration / use.

DO Charge _____ (Range: 50 +/- 25)

mm Hg 636.2

Calibration Values %		
Initial	Post Cal.	DO Gain*
—	83.7	_____

(Range: 1 (0.7 to 1.5))

@ 18.48°C

Turbidity Wiper Changed? Y/N _____ Wiper parks ~180 degrees from optic port? Y/N _____

Standards Values (NTUs)	Calibration Values	
	Initial	Post Cal.
Zero (Always First)		

Note: Use longer probe guard with black turb probe; shorter guard with grey probe.

Post Calibration DO Sensor Output Test

Turn off handset (650MDS). Wait 1 minute, turn handset on and enter "Run". DO % Sat. must start reading with a high value and descend to the calibration value in 1 to 2 minutes. **If it does not, reject.**

Note: Disregard the first two readings as they may be affected by the warm-up process.

Accept? ✓ Reject? _____ See note in comments

Calibration Comments

* Found in: Main Menu --> Sonde Menu --> Advanced --> Calibration Constants

YSI SONDE CALIBRATION WORKSHEET

Last Revision 01/03/2007

Sonde ID: YSI-556 07H102053 Date/Time: 3/12/19 Technician: E. Bastien

Reason for Calibration: RG sampling @ Isleta (CMC)

Battery Voltage: _____ (6920 & 600 XLM only)

Specific Conductance:

Standard Used (mS) 1413 µS

Calibration Values		
Initial	Post Cal.	Cell Constant:*
1404	1413	_____

(Range: 5 +/- 0.5)

pH

		Calibration Values			
		Initial	Post Cal.	mV Temp	
7 Buffer:	(first)	7.46	7.00	18.78°C	(Range: 0 mV +/- 50)
4 Buffer:	(second)	3.99	4.00	19.85	(Range: +177 from pH 7)
10 Buffer:	(third)	9.99	10.01	19.52	(Range: -177 from pH 7)

Note: Span between pH 7 and pH 4, and pH 7 and pH 10 should be aproximately 165 to 180 mV.

DO % Sat. Membrane Changed? Y/N (Y) If yes, run probe at least 15 mins before calibration. Optimally, wait 6 to 8 hrs before calibration / use.

DO Charge _____ (Range: 50 +/- 25)

mm Hg 632.8

Calibration Values %		
Initial	Post Cal.	DO Gain*
108.2	83.3% @14.96°C	_____

(Range: 1 (0.7 to 1.5))

Turbidity Wiper Changed? Y/N _____ Wiper parks ~180 degrees from optic port? Y/N _____

Standards Values (NTUs) NA

Calibration Values	
Initial	Post Cal.

Zero (Always First)

Note: Use longer probe guard with black turb probe; shorter guard with grey probe.

Post Calibration DO Sensor Output Test

Turn off handset (650MDS). Wait 1 minute, turn handset on and enter "Run". DO % Sat. must start reading with a high value and descend to the calibration value in 1 to 2 minutes. **If it does not, reject.**

Note: Disregard the first two readings as they may be affected by the warm-up process.

Accept? ✓ Reject? _____ See note in comments

Calibration Comments

ORP set + 220mV / reads 220mV @ 19.7 °C

* Found in: Main Menu --> Sonde Menu --> Advanced --> Calibration Constants

YSI SONDE CALIBRATION WORKSHEET

Last Rev. 10/31/2007

Sonde ID: _____ Date/Time: 3/13/19 Technician: EBastien

Reason for Calibration: CMC Isleta Diversion Dam

Battery Voltage: _____ (6920 & 600 XLM only)

Specific Conductance:

Standard Used (mS) 1.413

Calibration Values			
Initial	Post Cal.	~~Cell Constant:*~~	
1430	1414	14.23 °C	(Range: 5 +/- 0.5)

pH

Calibration Values			
Initial	Post Cal.	mV Temp	
7.01	7.04	15.78	(Range: 0 mV +/- 50)
4.21	4.01	14.23	(Range: +177 from pH 7)
10.21	10.12	16.95	(Range: -177 from pH 7)

7 Buffer: (first)
4 Buffer: (second)
10 Buffer: (third)

Note: Span between pH 7 and pH 4, and pH 7 and pH 10 should be aproximately 165 to 180 mV.

DO % Sat. Membrane Changed? Y/N If yes, run probe at least 15 mins before calibration. Optimally, wait 6 to 8 hrs before calibration / use.

DO Charge _____ (Range: 50 +/- 25)

mm Hg 625.5

Calibration Values %			
Initial	Post Cal.	~~DO Gain*~~ Temp	
5.62 mg/L	82.3%	15.67	(Range: 1 (0.7 to 1.5))
56.5%			

Turbidity Wiper Changed? Y/N _____ Wiper parks ~180 degrees from optic port? Y/N _____

Standards Values (NTUs)	Calibration Values	
	Initial	Post Cal.
Zero (Always First)		

Note: Use longer probe guard with black turb probe; shorter guard with grey probe.

Post Calibration DO Sensor Output Test

Turn off handset (650MDS). Wait 1 minute, turn handset on and enter "Run". DO % Sat. must start reading with a high value and descend to the calibration value in 1 to 2 minutes. **If it does not, reject.**

Note: Disregard the first two readings as they may be affected by the warm-up process.

Accept? Yes Reject? _____ See note in comments

Calibration Comments

ORP set to 227, reads 227.4 mV @ 14.43°C

* Found in: Main Menu --> Sonde Menu --> Advanced --> Calibration Constants

ATTACHMENT 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY REPORTS WITH BHI NOTES FOR FY 2019 DRY SEASON

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 19, 2019

Patrick Chavez
AMAFCA
2600 Prospect Ave NE
Albuquerque, NM 87107
TEL: (505) 884-2215
FAX

February 14, 2019 Rio Grande North - E. coli results

RE: CMC OrderNo.: 1902657

Dear Patrick Chavez:

Hall Environmental Analysis Laboratory received 1 sample(s) on 2/14/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1902657**
Date Reported: **2/19/2019**

CLIENT: AMAFCA
Client Sample ID: Rio Grande-North-20190214
Project: CMC
Collection Date: 2/14/2019 1:20:00 PM
Lab ID: 1902657-001
Matrix: SURFACE W
Received Date: 2/14/2019 2:34:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **plr**	
E. Coli	2.0	1.000		MPN/100	1	2/15/2019 5:15:00 PM	43174

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: AMAFCA Work Order Number: 1902657 RcptNo: 1

Received By: Isaiah Ortiz 2/14/2019 2:34:00 PM I_Ox

Completed By: Isaiah Ortiz 2/14/2019 2:57:11 PM I_Ox

Reviewed By: DAD 2/14/19 @ 15:25
LB: YG 2/14/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preserved added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: YG 2/14/19 (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.4	Good	Yes			

Chain-of-Custody Record

Client: CMC / AMAFCA

Mailing Address:

Phone #:

email or Fax#: PChavez@amafca.org

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
CMC

Project #:
DB17,1316

Project Manager:
Patrick Chavez

Sampler: Chad Johannesen

On Ice: ☒ Yes ☐ No

Sample Temperature: 6.4°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1907657	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	See attachment E.coli Numeration			Air Bubbles (Y or N)
2/14/19	13:20	SW	RioGrandeNorth-20190214	Various	Various	-001												X			

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/14/19	14:24	Elizabeth Bastian	COO	2/14/19	1434
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 11, 2019 Rio Grande North - E. coli results

March 15, 2019

Patrick Chavez
AMAFCA
2600 Prospect Ave NE
Albuquerque, NM 87107
TEL: (505) 884-2215
FAX

RE: CMC OrderNo.: 1903477

Dear Patrick Chavez:

Hall Environmental Analysis Laboratory received 1 sample(s) on 3/11/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1903477**
Date Reported: **3/15/2019**

CLIENT: AMAFCA
Client Sample ID: RG-North-20190311
Project: CMC
Collection Date: 3/11/2019 10:45:00 AM
Lab ID: 1903477-001 **Matrix:** AQUEOUS **Received Date:** 3/11/2019 11:37:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **SMS**
E. Coli	31.8	1.000		MPN/100	1	3/12/2019 4:45:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: AMAFCA Work Order Number: 1903477 RcptNo: 1

Received By: Victoria Zellar 3/11/2019 11:37:00 AM Victoria Zellar

Completed By: Victoria Zellar 3/11/2019 12:14:26 PM Victoria Zellar

Reviewed By: JO 3/11/19 1240

labeled by YG 3/11/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: (<2 or >12 unless noted)
Adjusted?
Checked by: YG 3/11/19

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	7.8	Good	Not Present			

Chain-of-Custody Record

Client: AMAFCA

Mailing Address: 2600 Prospect NE

Phone #:

email or Fax#: pchavez@amafca.org

QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: CMC

Project #:

Project Manager: Patrick Chavez

Sampler: Chad Johannesen

On Ice: ☑ Yes ☐ No

Sample Temperature: 7.8°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1903477	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	X E. coli, enumeration				Air Bubbles (Y or N)
3-11-19	1045	AQ	RG-North-20190311	1		-001												X				

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
3-11-19	1137		CDO		
				3/11/19	1137
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 20, 2019

March 12, 2019 Rio Grande South, Rio Grande South Duplicate, and blank sample - E. coli results

Patrick Chavez
AMAFCA
2600 Prospect Ave NE
Albuquerque, NM 87107
TEL: (505) 884-2215
FAX

RE: CMC OrderNo.: 1903546

Dear Patrick Chavez:

Hall Environmental Analysis Laboratory received 3 sample(s) on 3/12/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order: **1903546**
Date Reported: **3/20/2019**

CLIENT: AMAFCA
Project: CMC
Lab Order: 1903546

Lab ID: 1903546-001 **Collection Date:** 3/12/2019 11:15:00 AM
Client Sample ID: RG-South-20190312 **Matrix:** SURFACE WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **plr**	
E. Coli	298	10.00		MPN/100	10	3/13/2019 6:06:00 PM	43643

Lab ID: 1903546-002 **Collection Date:** 3/12/2019 11:30:00 AM
Client Sample ID: RG-South-DP-20190312 **Matrix:** SURFACE WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **plr**	
E. Coli	309	10.00		MPN/100	10	3/13/2019 6:06:00 PM	43643

Lab ID: 1903546-003 **Collection Date:** 3/12/2019 12:00:00 PM
Client Sample ID: Eq Blank-20190312 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **plr**	
E. Coli	<1	1.000		MPN/100	1	3/13/2019 6:06:00 PM	43643

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: AMAFCA Work Order Number: 1903546 RcptNo: 1

Received By: **Isaiah Ortiz** 3/12/2019 1:20:00 PM I-04

Completed By: **Isaiah Ortiz** 3/12/2019 1:39:19 PM I-04

Reviewed By: JMM 3-12-19 @ 15.00

LB: YG 3/12/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: YG 3/12/19

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	13.9	Good	Not Present			

Chain-of-Custody Record

Client: CMC / Patrick Chavez

Mailing Address: 2600 Prospect Ave.

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: CMC

Project #:

Project Manager: Patrick Chavez

Sampler: C. Johannesen

On Ice: ■ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 13.9°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1903546	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	E. coli Numbers only					
3/12/19	11:15	SW	RG-South-20190312	1-125mL		-001											X					
3/12/19	11:30	SW	RG-South-DP-20190312	1-125mL		-002											X					
3/12/19	12:00	AQ	EqBlank-20190312	1-125mL		-003											X					

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
3/12/19	13:20			COO	3/12/19	13:20
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 11, 2019 Rio Grande North
and
March 13, 2019 Rio Grande South
& South Duplicate results

April 08, 2019

Patrick Chavez
AMAFCA
2600 Prospect Ave NE
Albuquerque, NM 87107
TEL: (505) 884-2215
FAX

RE: CMC OrderNo.: 1903661

Dear Patrick Chavez:

Hall Environmental Analysis Laboratory received 9 sample(s) on 3/13/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1903661**
Date Reported: **4/8/2019**

CLIENT: AMAFCA
Client Sample ID: RG-North-20190311
Project: CMC
Collection Date: 3/11/2019 10:45:00 AM
Lab ID: 1903661-001
Matrix: AQUEOUS
Received Date: 3/13/2019 1:40:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES							Analyst: **JME**	
Dieldrin	ND	0.048	0.10		µg/L	1	3/19/2019 9:52:41 AM	43723
Surr: Decachlorobiphenyl	37.1	0	29.4-99.8		%Rec	1	3/19/2019 9:52:41 AM	43723
Surr: Tetrachloro-m-xylene	37.7	0	20.7-100		%Rec	1	3/19/2019 9:52:41 AM	43723
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Nitrate+Nitrite as N	ND	0.49	1.0		mg/L	5	3/14/2019 12:32:50 PM	R58394
EPA METHOD 200.7: METALS							Analyst: **bcv**	
Calcium	37	0.062	1.0		mg/L	1	3/20/2019 8:08:51 PM	43738
Magnesium	8.2	0.050	1.0		mg/L	1	3/20/2019 8:08:51 PM	43738
EPA 200.8: DISSOLVED METALS							Analyst: **DBK**	
Copper	0.0055	0.00027	0.0010		mg/L	1	3/22/2019 12:09:25 PM	A58572
Lead	0.00011	0.000055	0.00050	J	mg/L	1	3/22/2019 12:09:25 PM	A58572
SM2340B: HARDNESS							Analyst: **bcv**	
Hardness (As CaCO3)	120	2.5	6.6		mg/L	1	3/20/2019 3:56:00 PM	R58535
SM5210B: BOD							Analyst: **SMS**	
Biochemical Oxygen Demand	6.0	2.0	2.0	RH	mg/L	1	3/18/2019 3:09:00 PM	43669
NOTES:								
R - RPD between dilutions >30%.								
EPA METHOD 1664B							Analyst: **plr**	
N-Hexane Extractable Material	ND	3.75	10.1		mg/L	1	3/18/2019 9:01:00 AM	43725
SM 4500 NH3: AMMONIA							Analyst: **OG**	
Nitrogen, Ammonia	ND	0.25	1.0		mg/L	1	3/28/2019 12:00:00 PM	R58721
SM4500-H+B / 9040C: PH Field pH data used for reporting							Analyst: **JRR**	
pH	8.04			H	pH units	1	3/14/2019 12:00:50 PM	R58386
EPA METHOD 365.1: TOTAL PHOSPHOROUS							Analyst: **CJS**	
Phosphorus, Total (As P)	0.058	0.010	0.010		mg/L	1	3/21/2019 11:29:00 AM	43794
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **CJS**	
Total Dissolved Solids	228	20.0	20.0		mg/L	1	3/20/2019 10:02:00 AM	43747
SM 4500 NORG C: TKN							Analyst: **OG**	
Nitrogen, Kjeldahl, Total	0.70	0.57	1.0	J	mg/L	1	3/29/2019 3:30:00 PM	43956
SM 2540D: TSS							Analyst: **CJS**	
Suspended Solids	44	3.9	4.0		mg/L	1	3/18/2019 1:08:00 PM	43714

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: Eq Blank-20190312
Project: CMC
Collection Date: 3/12/2019 12:00:00 PM
Lab ID: 1903661-002
Matrix: AQUEOUS
Received Date: 3/13/2019 1:40:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES							Analyst: **JME**	
Dieldrin	ND	0.048	0.10		µg/L	1	3/19/2019 10:05:59 AM	43723
Surr: Decachlorobiphenyl	54.0	0	29.4-99.8		%Rec	1	3/19/2019 10:05:59 AM	43723
Surr: Tetrachloro-m-xylene	61.3	0	20.7-100		%Rec	1	3/19/2019 10:05:59 AM	43723
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Nitrogen, Nitrite (As N)	ND	0.070	0.10		mg/L	1	3/14/2019 10:28:43 AM	R58394
Nitrogen, Nitrate (As N)	ND	0.029	0.10		mg/L	1	3/14/2019 10:28:43 AM	R58394
EPA METHOD 200.7: METALS							Analyst: **bcv**	
Calcium	ND	0.062	1.0		mg/L	1	3/20/2019 8:23:15 PM	43738
Magnesium	ND	0.050	1.0		mg/L	1	3/20/2019 8:23:15 PM	43738
EPA 200.8: DISSOLVED METALS							Analyst: **DBK**	
Copper	0.00052	0.00027	0.0010	J	mg/L	1	3/22/2019 12:17:17 PM	A58572
Lead	ND	0.000055	0.00050		mg/L	1	3/22/2019 12:17:17 PM	A58572
SM2340B: HARDNESS							Analyst: **bcv**	
Hardness (As CaCO3)	ND	2.5	6.6		mg/L	1	3/20/2019 3:56:00 PM	R58535
SM5210B: BOD							Analyst: **SMS**	
Biochemical Oxygen Demand	DO Depletion <2.0	2.0	2.0		mg/L	1	3/18/2019 3:09:00 PM	43669
EPA METHOD 1664B							Analyst: **plr**	
N-Hexane Extractable Material	ND	3.44	9.23		mg/L	1	3/18/2019 9:01:00 AM	43725
SM 4500 NH3: AMMONIA							Analyst: **OG**	
Nitrogen, Ammonia	ND	0.25	1.0		mg/L	1	3/28/2019 12:00:00 PM	R58721
SM4500-H+B / 9040C: PH Field pH data used for reporting							Analyst: **JRR**	
pH	5.50			H	pH units	1	3/14/2019 12:14:19 PM	R58386
EPA METHOD 365.1: TOTAL PHOSPHOROUS							Analyst: **CJS**	
Phosphorus, Total (As P)	ND	0.010	0.010		mg/L	1	3/21/2019 11:31:00 AM	43794
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **CJS**	
Total Dissolved Solids	ND	20.0	20.0		mg/L	1	3/20/2019 10:02:00 AM	43747
SM 4500 NORG C: TKN							Analyst: **OG**	
Nitrogen, Kjeldahl, Total	ND	0.57	1.0		mg/L	1	3/29/2019 3:30:00 PM	43956
SM 2540D: TSS							Analyst: **CJS**	
Suspended Solids	ND	3.9	4.0		mg/L	1	3/18/2019 1:08:00 PM	43714

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG-South-20190313
Project: CMC
Collection Date: 3/13/2019 9:45:00 AM
Lab ID: 1903661-003
Matrix: AQUEOUS
Received Date: 3/13/2019 1:40:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES							Analyst: **JME**	
Dieldrin	ND	0.048	0.10		µg/L	1	3/19/2019 10:19:12 AM	43723
Surr: Decachlorobiphenyl	49.6	0	29.4-99.8		%Rec	1	3/19/2019 10:19:12 AM	43723
Surr: Tetrachloro-m-xylene	55.2	0	20.7-100		%Rec	1	3/19/2019 10:19:12 AM	43723
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Nitrogen, Nitrite (As N)	ND	0.35	0.50		mg/L	5	3/14/2019 11:18:22 AM	R58394
Nitrogen, Nitrate (As N)	0.43	0.14	0.50	J	mg/L	5	3/14/2019 11:18:22 AM	R58394
EPA METHOD 200.7: METALS							Analyst: **bcv**	
Calcium	60	0.062	1.0		mg/L	1	3/20/2019 8:37:41 PM	43738
Magnesium	13	0.050	1.0		mg/L	1	3/20/2019 8:37:41 PM	43738
EPA 200.8: DISSOLVED METALS							Analyst: **DBK**	
Copper	0.00074	0.00027	0.0010	J	mg/L	1	3/22/2019 12:27:49 PM	A58572
Lead	0.00040	0.000055	0.00050	J	mg/L	1	3/22/2019 12:27:49 PM	A58572
SM2340B: HARDNESS							Analyst: **bcv**	
Hardness (As CaCO3)	200	2.5	6.6		mg/L	1	3/20/2019 3:56:00 PM	R58535
SM5210B: BOD							Analyst: **SMS**	
Biochemical Oxygen Demand	5.0	2.0	2.0	R	mg/L	1	3/18/2019 3:09:00 PM	43669
NOTES: R - RPD between dilutions >30%.								
SM 9223B FECAL INDICATOR: E. COLI MPN							Analyst: **plr**	
E. Coli	594	10.00	10.00		MPN/100	10	3/14/2019 5:05:00 PM	43668
EPA METHOD 1664B							Analyst: **plr**	
N-Hexane Extractable Material	ND	3.70	9.92		mg/L	1	3/18/2019 9:01:00 AM	43725
SM 4500 NH3: AMMONIA							Analyst: **OG**	
Nitrogen, Ammonia	0.28	0.25	1.0	J	mg/L	1	3/28/2019 12:00:00 PM	R58721
SM4500-H+B / 9040C: PH Field pH data used for reporting							Analyst: **JRR**	
pH	8.03			H	pH units	1	3/14/2019 12:18:53 PM	R58386
EPA METHOD 365.1: TOTAL PHOSPHOROUS							Analyst: **CJS**	
Phosphorus, Total (As P)	0.45	0.050	0.050	D	mg/L	1	3/21/2019 11:35:00 AM	43794
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **CJS**	
Total Dissolved Solids	325	100	100	D	mg/L	1	3/20/2019 10:02:00 AM	43747
SM 4500 NORG C: TKN							Analyst: **OG**	
Nitrogen, Kjeldahl, Total	1.1	0.57	1.0		mg/L	1	3/29/2019 3:30:00 PM	43956
SM 2540D: TSS							Analyst: **CJS**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG-South-20190313
Project: CMC
Collection Date: 3/13/2019 9:45:00 AM
Lab ID: 1903661-003
Matrix: AQUEOUS
Received Date: 3/13/2019 1:40:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM 2540D: TSS							Analyst: **CJS**	
Suspended Solids	460	20	20	D	mg/L	1	3/18/2019 1:08:00 PM	43714

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG-South-DP-20190313
Project: CMC
Collection Date: 3/13/2019 10:00:00 AM
Lab ID: 1903661-004
Matrix: AQUEOUS
Received Date: 3/13/2019 1:40:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES							Analyst: **JME**	
Dieldrin	ND	0.048	0.10		µg/L	1	3/19/2019 10:32:39 AM	43723
Surr: Decachlorobiphenyl	33.0	0	29.4-99.8		%Rec	1	3/19/2019 10:32:39 AM	43723
Surr: Tetrachloro-m-xylene	29.0	0	20.7-100		%Rec	1	3/19/2019 10:32:39 AM	43723
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Nitrogen, Nitrite (As N)	ND	0.35	0.50		mg/L	5	3/14/2019 11:43:11 AM	R58394
Nitrogen, Nitrate (As N)	0.43	0.14	0.50	J	mg/L	5	3/14/2019 11:43:11 AM	R58394
EPA METHOD 200.7: METALS							Analyst: **bcv**	
Calcium	59	0.062	1.0		mg/L	1	3/20/2019 8:43:17 PM	43738
Magnesium	13	0.050	1.0		mg/L	1	3/20/2019 8:43:17 PM	43738
EPA 200.8: DISSOLVED METALS							Analyst: **DBK**	
Copper	0.00096	0.00027	0.0010	J	mg/L	1	3/22/2019 12:30:27 PM	A58572
Lead	0.00030	0.000055	0.00050	J	mg/L	1	3/22/2019 12:30:27 PM	A58572
SM2340B: HARDNESS							Analyst: **bcv**	
Hardness (As CaCO3)	200	2.5	6.6		mg/L	1	3/20/2019 3:56:00 PM	R58535
SM5210B: BOD							Analyst: **SMS**	
Biochemical Oxygen Demand	5.6	2.0	2.0	R	mg/L	1	3/18/2019 3:09:00 PM	43669
NOTES: R - RPD between dilutions >30%.								
SM 9223B FECAL INDICATOR: E. COLI MPN							Analyst: **plr**	
E. Coli	479	10.00	10.00		MPN/100	10	3/14/2019 5:05:00 PM	43668
EPA METHOD 1664B							Analyst: **plr**	
N-Hexane Extractable Material	3.69	3.62	9.72	J	mg/L	1	3/18/2019 9:01:00 AM	43725
SM 4500 NH3: AMMONIA							Analyst: **OG**	
Nitrogen, Ammonia	ND	0.25	1.0		mg/L	1	3/28/2019 12:00:00 PM	R58721
SM4500-H+B / 9040C: PH Field pH data used for reporting							Analyst: **JRR**	
pH	8.07			H	pH units	1	3/14/2019 12:23:16 PM	R58386
EPA METHOD 365.1: TOTAL PHOSPHOROUS							Analyst: **CJS**	
Phosphorus, Total (As P)	0.44	0.050	0.050	D	mg/L	1	3/21/2019 11:37:00 AM	43794
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **CJS**	
Total Dissolved Solids	300	100	100	D	mg/L	1	3/20/2019 10:02:00 AM	43747
SM 4500 NORG C: TKN							Analyst: **OG**	
Nitrogen, Kjeldahl, Total	1.5	0.57	1.0		mg/L	1	3/29/2019 3:30:00 PM	43956
SM 2540D: TSS							Analyst: **CJS**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG-South-DP-20190313
Project: CMC
Collection Date: 3/13/2019 10:00:00 AM
Lab ID: 1903661-004
Matrix: AQUEOUS
Received Date: 3/13/2019 1:40:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM 2540D: TSS							Analyst: **CJS**	
Suspended Solids	490	20	20	D	mg/L	1	3/18/2019 1:08:00 PM	43714

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG-North-20190311 Filtered
Project: CMC
Collection Date: 3/11/2019 10:45:00 AM
Lab ID: 1903661-006
Matrix: AQUEOUS
Received Date: 3/13/2019 1:40:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 365.1: TOTAL PHOSPHOROUS							Analyst: **CJS**	
Phosphorus, Total (As P)	0.015	0.010	0.010		mg/L	1	3/21/2019 11:38:00 AM	43794

Dissolved phosphorous - filtered sample

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: Eq Blank-20190312 Filtered
Project: CMC
Collection Date: 3/12/2019 12:00:00 PM
Lab ID: 1903661-007
Matrix: AQUEOUS
Received Date: 3/13/2019 1:40:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 365.1: TOTAL PHOSPHOROUS							Analyst: **CJS**	
Phosphorus, Total (As P)	ND	0.010	0.010		mg/L	1	3/21/2019 11:40:00 AM	43794

Dissolved phosphorous - filtered sample

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG-South-20190313 Filtered
Project: CMC
Collection Date: 3/13/2019 9:45:00 AM
Lab ID: 1903661-008
Matrix: AQUEOUS
Received Date: 3/13/2019 1:40:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 365.1: TOTAL PHOSPHOROUS							Analyst: **CJS**	
Phosphorus, Total (As P)	0.054	0.010	0.010		mg/L	1	3/21/2019 11:46:00 AM	43794

Dissolved phosphorous - filtered sample

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG-South-DP-201903 Filtered
Project: CMC
Collection Date: 3/13/2019 10:00:00 AM
Lab ID: 1903661-009
Matrix: AQUEOUS
Received Date: 3/13/2019 1:40:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 365.1: TOTAL PHOSPHOROUS							Analyst: **CJS**	
Phosphorus, Total (As P)	0.053	0.010	0.010		mg/L	1	3/21/2019 11:47:00 AM	43794

Dissolved phosphorous - filtered sample

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	190315036
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1903661
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	190315036-001	**Sampling Date**	3/11/2019	**Date/Time Received**	3/15/201911:00 AM
Matrix	Water	**Sampling Time**	10:45 AM		
Client Sample ID	1903661-001A/RG-NORTH-20190311				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Tetrahydrofuran	ND	ug/L	0.5	3/22/2019 5:07:00 PM	SAT	EPA 8260C	

Surrogate Data

Sample Number 190315036-001

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	97.8	70-130
4-Bromofluorobenzene	EPA 8260C	97.0	70-130
Toluene-d8	EPA 8260C	102.8	70-130

Sample Number	190315036-004	**Sampling Date**	3/12/2019	**Date/Time Received**	3/15/201911:00 AM
Matrix	Water	**Sampling Time**	12:00 PM		
Client Sample ID	1903661-002A/EQ BLANK-20190312				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Tetrahydrofuran	ND	ug/L	0.5	3/22/2019 5:36:00 PM	SAT	EPA 8260C	

Surrogate Data

Sample Number 190315036-004

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	98.0	70-130
4-Bromofluorobenzene	EPA 8260C	98.2	70-130
Toluene-d8	EPA 8260C	99.6	70-130

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 190315036
Project Name: 1903661

Analytical Results Report

Sample Number 190315036-007 **Sampling Date** 3/13/2019 **Date/Time Received** 3/15/201911:00 AM
Matrix Water **Sampling Time** 9:45 AM
Client Sample ID 1903661-003A/RG-SOUTH-20190313
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Tetrahydrofuran	ND	ug/L	0.5	3/22/2019 6:05:00 PM	SAT	EPA 8260C	

Surrogate Data

Sample Number 190315036-007

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	99.0	70-130
4-Bromofluorobenzene	EPA 8260C	95.4	70-130
Toluene-d8	EPA 8260C	96.8	70-130

Sample Number 190315036-010 **Sampling Date** 3/13/2019 **Date/Time Received** 3/15/201911:00 AM
Matrix Water **Sampling Time** 10:00 AM
Client Sample ID 1903661-004A/R6-SOUTH-DP-20190313
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Tetrahydrofuran	ND	ug/L	0.5	3/22/2019 6:34:00 PM	SAT	EPA 8260C	

Surrogate Data

Sample Number 190315036-010

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	100.0	70-130
4-Bromofluorobenzene	EPA 8260C	96.4	70-130
Toluene-d8	EPA 8260C	99.2	70-130

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	190315036
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1903661
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	190315036-013	**Sampling Date**	3/11/2019	**Date/Time Received**	3/15/201911:00 AM
Matrix	Water	**Sampling Time**			
Client Sample ID	1903661-005A/TRIP BLANK				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Tetrahydrofuran	ND	ug/L	0.5	3/22/2019 4:38:00 PM	SAT	EPA 8260C	

Surrogate Data

Sample Number 190315036-013

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	97.8	70-130
4-Bromofluorobenzene	EPA 8260C	97.0	70-130
Toluene-d8	EPA 8260C	100.4	70-130

Authorized Signature

Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 190315036
Project Name: 1903661

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Tetrahydrofuran	9.43	ug/L	10	94.3	70-130	3/22/2019	3/22/2019

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
190315036-001	Tetrahydrofuran	ND	10.9	ug/L	10	109.0	70-130	3/22/2019	3/22/2019

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Tetrahydrofuran	10.6	ug/L	10	106.0	2.8	0-20	3/22/2019	3/22/2019

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Tetrahydrofuran	ND	ug/L	0.5	3/22/2019	3/22/2019

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments: COD SUB TO SPOA

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	190315036
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1903661
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	190315036-002	**Sampling Date**	3/11/2019	**Date/Time Received**	3/15/201911:00 AM
Matrix	Water	**Sampling Time**	10:45 AM	**Extraction Date**	3/18/2019
Client Sample ID	1903661-001B/RG-NORTH-20190311				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzidine	ND	ug/L	0.5	3/22/2019 9:56:00 PM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.5	3/22/2019 9:56:00 PM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.5	3/22/2019 9:56:00 PM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.5	3/22/2019 9:56:00 PM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	3/22/2019 9:56:00 PM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	3/22/2019 9:56:00 PM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	3/22/2019 9:56:00 PM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	3/22/2019 9:56:00 PM	TGT	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	3/22/2019 9:56:00 PM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	3/22/2019 9:56:00 PM	TGT	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	3/22/2019 9:56:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 190315036-002

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	90.8	43-120
2-Fluorobiphenyl	EPA 8270D	91.2	55-127
2-Fluorophenol	EPA 8270D	79.4	41-119
Nitrobenzene-d5	EPA 8270D	90.0	55-120
Phenol-d5	EPA 8270D	82.0	52-115
Terphenyl-d14	EPA 8270D	97.2	22-133

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	190315036
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1903661
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	190315036-005	**Sampling Date**	3/12/2019	**Date/Time Received**	3/15/201911:00 AM
Matrix	Water	**Sampling Time**	12:00 PM	**Extraction Date**	3/18/2019
Client Sample ID	1903661-002B/EQ BLANK-20190312				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzidine	ND	ug/L	0.5	3/22/2019 10:23:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.5	3/22/2019 10:23:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.5	3/22/2019 10:23:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.5	3/22/2019 10:23:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	3/22/2019 10:23:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	3/22/2019 10:23:00 AM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	3/22/2019 10:23:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	3/22/2019 10:23:00 AM	TGT	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	3/22/2019 10:23:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	3/22/2019 10:23:00 AM	TGT	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	3/22/2019 10:23:00 AM	TGT	EPA 8270D	

Surrogate Data

Sample Number 190315036-005

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	79.6	43-120
2-Fluorobiphenyl	EPA 8270D	93.6	55-127
2-Fluorophenol	EPA 8270D	83.6	41-119
Nitrobenzene-d5	EPA 8270D	93.2	55-120
Phenol-d5	EPA 8270D	85.8	52-115
Terphenyl-d14	EPA 8270D	107.6	22-133

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	190315036
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1903661
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	190315036-008	**Sampling Date**	3/13/2019	**Date/Time Received**	3/15/201911:00 AM
Matrix	Water	**Sampling Time**	9:45 AM	**Extraction Date**	3/18/2019
Client Sample ID	1903661-003B/RG-SOUTH-20190313				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzidine	ND	ug/L	0.5	3/22/2019 10:50:00 PM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.5	3/22/2019 10:50:00 PM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.5	3/22/2019 10:50:00 PM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.5	3/22/2019 10:50:00 PM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	3/22/2019 10:50:00 PM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	3/22/2019 10:50:00 PM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	3/22/2019 10:50:00 PM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	3/22/2019 10:50:00 PM	TGT	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	3/22/2019 10:50:00 PM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	3/22/2019 10:50:00 PM	TGT	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	3/22/2019 10:50:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 190315036-008

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	88.0	43-120
2-Fluorobiphenyl	EPA 8270D	90.4	55-127
2-Fluorophenol	EPA 8270D	81.8	41-119
Nitrobenzene-d5	EPA 8270D	89.2	55-120
Phenol-d5	EPA 8270D	84.6	52-115
Terphenyl-d14	EPA 8270D	72.8	22-133

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	190315036
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1903661
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	190315036-011	**Sampling Date**	3/13/2019	**Date/Time Received**	3/15/201911:00 AM
Matrix	Water	**Sampling Time**	10:00 AM	**Extraction Date**	3/18/2019
Client Sample ID	1903661-004B/R6-SOUTH-DP-20190313				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzidine	ND	ug/L	0.5	3/22/2019 11:18:00 PM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.5	3/22/2019 11:18:00 PM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.5	3/22/2019 11:18:00 PM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.5	3/22/2019 11:18:00 PM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	3/22/2019 11:18:00 PM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	3/22/2019 11:18:00 PM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	3/22/2019 11:18:00 PM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	3/22/2019 11:18:00 PM	TGT	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	3/22/2019 11:18:00 PM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	3/22/2019 11:18:00 PM	TGT	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	3/22/2019 11:18:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 190315036-011

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	88.8	43-120
2-Fluorobiphenyl	EPA 8270D	92.0	55-127
2-Fluorophenol	EPA 8270D	80.6	41-119
Nitrobenzene-d5	EPA 8270D	91.6	55-120
Phenol-d5	EPA 8270D	81.6	52-115
Terphenyl-d14	EPA 8270D	50.8	22-133

Authorized Signature

Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 190315036
Project Name: 1903661

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Pentachlorophenol	4.02	ug/L	5	80.4	22-138	3/18/2019	3/22/2019
bis(2-Ethylhexyl)phthalate	4.84	ug/L	5	96.8	51-149	3/18/2019	3/22/2019
Benzo[a]pyrene	4.05	ug/L	5	81.0	63-120	3/18/2019	3/22/2019

Lab Control Sample Duplicate

Parameter	LCSD Result	Units	LCSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Pentachlorophenol	3.89	ug/L	5	77.8	3.3	0-39	3/18/2019	3/22/2019
bis(2-Ethylhexyl)phthalate	4.80	ug/L	5	96.0	0.8	0-43	3/18/2019	3/22/2019
Benzo[a]pyrene	3.99	ug/L	5	79.8	1.5	0-20	3/18/2019	3/22/2019

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Benzidine	ND	ug/L	0.5	3/18/2019	3/22/2019
Benzo[a]anthracene	ND	ug/L	0.5	3/18/2019	3/22/2019
Benzo[a]pyrene	ND	ug/L	0.5	3/18/2019	3/22/2019
Benzo[b]fluoranthene	ND	ug/L	0.5	3/18/2019	3/22/2019
Benzo[k]fluoranthene	ND	ug/L	0.5	3/18/2019	3/22/2019
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	3/18/2019	3/22/2019
Chrysene	ND	ug/L	0.5	3/18/2019	3/22/2019
Dibenz[a,h]anthracene	ND	ug/L	0.5	3/18/2019	3/22/2019
Dibenzofuran	ND	ug/L	0.5	3/18/2019	3/22/2019
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	3/18/2019	3/22/2019
Pentachlorophenol	ND	ug/L	0.5	3/18/2019	3/22/2019

AR Acceptable Range
ND Not Detected
PQL Practical Quantitation Limit
RPD Relative Percentage Difference

Comments: COD SUB TO SPOA

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	190315036
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1903661
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	190315036-003	**Sampling Date**	3/11/2019	**Date/Time Received**	3/15/2019	11:00 AM	
Matrix	Water	**Sampling Time**	10:45 AM				
Client Sample ID	1903661-001I/RG-NORTH-20190311						
Comments							

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
COD	9.75	mg/L	5	3/21/2019 11:30:00 AM	NDE	EPA 410.4	

Sample Number	190315036-006	**Sampling Date**	3/12/2019	**Date/Time Received**	3/15/2019	11:00 AM	
Matrix	Water	**Sampling Time**	12:00 PM				
Client Sample ID	1903661-002I/EQ BLANK-20190312						
Comments							

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
COD	<5	mg/L	5	3/21/2019 11:30:00 AM	NDE	EPA 410.4	

Sample Number	190315036-009	**Sampling Date**	3/13/2019	**Date/Time Received**	3/15/2019	11:00 AM	
Matrix	Water	**Sampling Time**	9:45 AM				
Client Sample ID	1903661-003I/RG-SOUTH-20190313						
Comments							

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
COD	24.8	mg/L	7.5	3/21/2019 11:30:00 AM	NDE	EPA 410.4	

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	190315036
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1903661
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	190315036-012	**Sampling Date**	3/13/2019	**Date/Time Received**	3/15/2019	11:00 AM	
Matrix	Water	**Sampling Time**	10:00 AM				
Client Sample ID	1903661-004I/R6-SOUTH-DP-20190313						
Comments							

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
COD	26.8	mg/L	7.5	3/21/2019 11:30:00 AM	NDE	EPA 410.4	

Authorized Signature

Todd Taruscio, Lab Manager

MCL	EPA's Maximum Contaminant Level
ND	Not Detected
PQL	Practical Quantitation Limit

The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 190315036
Project Name: 1903661

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
COD	107	mg/L	100	107.0	90-110	3/21/2019	3/21/2019

Lab Control Sample Duplicate

Parameter	LCSD Result	Units	LCSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
COD	107	mg/L	100	107.0	0.0	0-20	3/21/2019	3/21/2019

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
190313063-005	COD	<5	112	mg/L	100	112.0	80-120	3/21/2019	3/21/2019

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
COD	110	mg/L	100	110.0	1.8	0-20	3/21/2019	3/21/2019

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
COD	<5	mg/L	5	3/21/2019	3/21/2019

Duplicate

Sample Number	Parameter	Sample Result	Duplicate Result	Units	%RPD	AR %RPD	Prep Date	Analysis Date
190320039-002	COD	32.4	34.8	mg/L	7.1	0-20	3/21/2019	3/21/2019

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments: COD SUB TO SPOA

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Wet Chemistry by Method 3500Cr C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Hexavalent Chromium	ND		0.000500	1	03/20/2019 16:57	WG1251570

Wet Chemistry by Method 3500Cr C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Hexavalent Chromium	ND		0.000500	1	03/20/2019 17:19	WG1251570

Wet Chemistry by Method 3500Cr C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Hexavalent Chromium	ND		0.000500	1	03/20/2019 17:27	WG1251570

Wet Chemistry by Method 3500Cr C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Hexavalent Chromium	ND		0.000500	1	03/20/2019 17:34	WG1251570

Method Blank (MB)

(MB) R3393856-1 03/20/19 15:28

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Hexavalent Chromium	U		0.000150	0.000500

Laboratory Control Sample (LCS)

(LCS) R3393856-2 03/20/19 15:36

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Hexavalent Chromium	0.00200	0.00191	95.6	90.0-110	

L1079077-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1079077-01 03/20/19 19:10 • (MS) R3393856-6 03/20/19 19:18

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	mg/l	mg/l	mg/l	%		%	
Hexavalent Chromium	0.0500	ND	0.0480	96.0	1	90.0-110	

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

CFA | Cape Fear Analytical LLC
an affiliate of The GEL Group INC

3306 Kitty Hawk Road, Suite 120 Wilmington, NC 28405
P 910.795.0421

www.capefearanalytical.com

April 03, 2019

Mr. Andy Freeman
Hall Environmental
4901 Hawkins NE
Suite D
Albuquerque, New Mexico 87109

Re: Routine Analysis
Work Order: 14707
SDG: 1903661

Dear Mr. Freeman:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 15, 2019. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,

Cynde Larkins

Cynde Larkins
Project Manager

Purchase Order: IDIQ Pricing
Enclosures

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

CFA WO#14707

SUB CONTRATOR: **Cape Fear Analytical**	COMPANY: **Cape Fear Analytical**	PHONE: **(910) 795-0421**	FAX:
ADDRESS: **3306 Kitty Hawk Rd Ste 120**		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: **Wilmington, NC 28405**			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	1903661-001K	RG-North-20190311	1LAmber	Aqueous	3/11/2019 10:45:00 AM	1	PCB CONGENERS ~~PREP~~ 1668
2	1903661-002K	Eq Blank-20190312	1LAmber	Aqueous	3/12/2019 12:00:00 PM	1	PCB CONGENERS ~~PREP~~ 1668
3	1903661-003K	RG-South-20190313	1LAmber	Aqueous	3/13/2019 9:45:00 AM	1	PCB CONGENERS ~~PREP~~ 1668
4	1903661-004K	R6-South-DP-20190313	1LAmber	Aqueous	3/13/2019 10:00:00 AM	1	PCB CONGENERS ~~PREP~~ 1668

AT 03/14/19

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 3/14/2019	Time: 8:13 AM	Received By: Cynde Larkins	Date: 15MAR19	Time: 1010
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☒ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 3.9 °C Attempt to Cool ? ✓
Comments:

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: HALL	Work Order: 14707
Shipping Company: FedEx	Date/Time Received: 15MAR19 1010

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		✓	
Samples < 2x background?		✓	

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Custody seal/s present on cooler?	✓			Seal Intact? Yes (No)
3	Chain of Custody documents included with shipment?	✓			
4	Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: ice bags (blue ice) dry ice none other (describe) Temperature Blank present: Yes (No) 4.4° - 0.5 = 3.9°C
5	Aqueous samples found to have visible solids?	✓			Sample IDs, containers affected: Minimal visible solids (<1%) in 1903661-003K and -004K
5	Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: pH=7 on all If preservative added, Lot#:
7	Samples requiring preservation have no residual chlorine?	✓			Sample IDs, containers affected: If preservative added, Lot#:
8	Samples received within holding time?	✓			Sample IDs, tests affected:
9	Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected: RG or RG on handwritten labels
10	Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
11	Number of containers received match number indicated on COC?	✓			List type and number of containers / Sample IDs, containers affected: 1-1L WMA glass bottles per sample 4 total
12	COC form is properly signed in relinquished/received sections?	✓			

Comments:

Checklist performed by: Initials: CR Date: 15MAR19

Subject: RE: 1903661
From: Anne Thorne <anne@hallenvironmental.com>
Date: 3/15/2019, 12:34 PM
To: Cynde Larkins <cynde.larkins@cfanalytical.com>

Yes please change that one as well to RG. See it snagged me as well. Those curly letters drive me nuts!

Have a nice weekend

at

From: Cynde Larkins <cynde.larkins@cfanalytical.com>
Sent: Friday, March 15, 2019 10:13 AM
To: Anne Thorne <anne@hallenvironmental.com>
Subject: Re: 1903661

Aha! So, should I change the one that has "R6" to "RG"?

On 3/15/2019 12:11 PM, Anne Thorne wrote:

> Hi Cynde
>
> RG for Rio Grande
>
> Thanks for checking
>
> **From:** Cynde Larkins <cynde.larkins@cfanalytical.com>
> **Sent:** Friday, March 15, 2019 9:57 AM
> **To:** Anne Thorne <anne@hallenvironmental.com>
> **Subject:** 1903661
>
> Hi Anne!
>
> CFA received the samples today for 1903661 in good condition and within temperature. I was hoping you would verify the sample ID's, though. The handwritten labels look like they are "R6", but your COC and printed labels have 2 ID's as "RG". Please advise.
>
> Thanks,
>
> --
> Cynde Larkins
> Project Manager
> Cape Fear Analytical, LLC
> 3306 Kitty Hawk Road Suite 120
> Wilmington, NC 28405
> (910) 795-0421

notify the sender immediately and delete the original message and any files transmitted. The unauthorized use of this e-mail or any files transmitted with it is prohibited and disclaimed by Cape Fear Analytcal, LLC and its affiliates. How was your customer experience? Customer service is a high priority for us, so we listen to what our customers have to say! Thank you for taking time to email us your thoughts and opinions at feedback@cfanalytical.com
http://www.gellaboratories.com

--
Cynde Larkins
Project Manager
Cape Fear Analytical, LLC
3306 Kitty Hawk Road Suite 120
Wilmington, NC 28405
(910) 795-0421

PCB Congeners Analysis

Case Narrative

PCBC Case Narrative
Hall Environmental Analysis Laboratory (HALL)
SDG 1903661
Work Order 14707

Method/Analysis Information

Product:	**PCB Congeners by EPA Method 1668A in Liquids**
Analytical Method:	EPA Method 1668A
Extraction Method:	SW846 3520C
Analytical Batch Number:	40255
Clean Up Batch Number:	40254
Extraction Batch Number:	40253

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1668A:

Sample ID	Client ID
12023489	Method Blank (MB)
12023490	Laboratory Control Sample (LCS)
12023491	Laboratory Control Sample Duplicate (LCSD)
14707001	1903661-001K RG-North-20190311
14707002	1903661-002K Eq BLank-20190312
14707003	1903661-003K RG-South-20190313
14707004	1903661-004K RG-South-DP-20190313

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-003 REV# 7.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement
The test results presented in this document are certified to meet all requirements of the 2009 TNI Standard.

Method Blank (MB) Statement
The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries
All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery
The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement
The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation
A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications
CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis
Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation
A NCR was not required for this SDG.

Manual Integrations
Manual integrations were required for data files in this SDG. Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

System Configuration
This analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
HRP875_1	PCB Analysis	PCB Analysis	SPB-Octyl	30m x 0.25mm, 0.25um

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC
3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report
for

HALL001 Hall Environmental Analysis Laboratory

Client SDG: 1903661 CFA Work Order: 14707

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria
** Analyte is a surrogate compound
B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: Heather Patterson **Name: Heather Patterson**

Date: 03 APR 2019 **Title: Group Leader**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707001**	**Date Collected:**	**03/11/2019 10:45**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-001K RG-North-20190311**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 18:03**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-6**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**907.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
2051-60-7	1-MoCB	U	ND	pg/L	2.25	110
2051-61-8	2-MoCB	U	ND	pg/L	1.12	110
2051-62-9	3-MoCB	U	ND	pg/L	1.01	110
13029-08-8	4-DiCB	U	ND	pg/L	5.84	110
16605-91-7	5-DiCB	U	ND	pg/L	3.79	110
25569-80-6	6-DiCB	U	ND	pg/L	3.15	110
33284-50-3	7-DiCB	U	ND	pg/L	3.26	110
34883-43-7	8-DiCB	U	ND	pg/L	7.06	110
34883-39-1	9-DiCB	U	ND	pg/L	3.66	110
33146-45-1	10-DiCB	U	ND	pg/L	4.06	110
2050-67-1	11-DiCB	BJ	29.5	pg/L	3.57	110
2974-92-7	12-DiCB	CU	ND	pg/L	3.51	220
2974-90-5	13-DiCB	C12				
34883-41-5	14-DiCB	U	ND	pg/L	3.29	110
2050-68-2	15-DiCB	U	ND	pg/L	13.2	110
38444-78-9	16-TrCB	U	ND	pg/L	2.34	110
37680-66-3	17-TrCB	BJ	3.66	pg/L	1.87	110
37680-65-2	18-TrCB	BCJ	5.95	pg/L	1.54	220
38444-73-4	19-TrCB	J	4.30	pg/L	1.98	110
38444-84-7	20-TrCB	BCJ	11.4	pg/L	1.32	220
55702-46-0	21-TrCB	CU	ND	pg/L	4.19	220
38444-85-8	22-TrCB	BJ	4.48	pg/L	1.32	110
55720-44-0	23-TrCB	U	ND	pg/L	1.28	110
55702-45-9	24-TrCB	U	ND	pg/L	1.43	110
55712-37-3	25-TrCB	U	ND	pg/L	1.19	110
38444-81-4	26-TrCB	CJ	1.98	pg/L	1.32	220
38444-76-7	27-TrCB	U	ND	pg/L	1.39	110
7012-37-5	28-TrCB	C20				
15862-07-4	29-TrCB	C26				
35693-92-6	30-TrCB	C18				
16606-02-3	31-TrCB	BJ	6.90	pg/L	1.26	110
38444-77-8	32-TrCB	BJ	3.22	pg/L	1.23	110

Comments:

B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707001**	**Date Collected:**	**03/11/2019 10:45**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-001K RG-North-20190311**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 18:03**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-6**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**907.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
38444-86-9	33-TrCB	C21				
37680-68-5	34-TrCB	U	ND	pg/L	1.43	110
37680-69-6	35-TrCB	U	ND	pg/L	1.39	110
38444-87-0	36-TrCB	U	ND	pg/L	1.23	110
38444-90-5	37-TrCB	BJ	3.33	pg/L	1.81	110
53555-66-1	38-TrCB	U	ND	pg/L	1.28	110
38444-88-1	39-TrCB	U	ND	pg/L	1.17	110
38444-93-8	40-TeCB	BCJ	3.35	pg/L	2.12	220
52663-59-9	41-TeCB	U	ND	pg/L	2.98	110
36559-22-5	42-TeCB	U	ND	pg/L	2.40	110
70362-46-8	43-TeCB	U	ND	pg/L	2.60	110
41464-39-5	44-TeCB	BCJ	7.56	pg/L	2.20	331
70362-45-7	45-TeCB	CU	ND	pg/L	3.92	220
41464-47-5	46-TeCB	U	ND	pg/L	1.72	110
2437-79-8	47-TeCB	C44				
70362-47-9	48-TeCB	U	ND	pg/L	2.32	110
41464-40-8	49-TeCB	BCJ	3.99	pg/L	2.12	220
62796-65-0	50-TeCB	CU	ND	pg/L	1.94	220
68194-04-7	51-TeCB	C45				
35693-99-3	52-TeCB	BJ	10.4	pg/L	2.45	110
41464-41-9	53-TeCB	C50				
15968-05-5	54-TeCB	U	ND	pg/L	1.17	110
74338-24-2	55-TeCB	U	ND	pg/L	1.94	110
41464-43-1	56-TeCB	BJ	4.01	pg/L	2.01	110
70424-67-8	57-TeCB	U	ND	pg/L	1.96	110
41464-49-7	58-TeCB	U	ND	pg/L	1.94	110
74472-33-6	59-TeCB	CU	ND	pg/L	1.81	331
33025-41-1	60-TeCB	U	ND	pg/L	1.90	110
33284-53-6	61-TeCB	BCJ	11.6	pg/L	1.92	441
54230-22-7	62-TeCB	C59				
74472-34-7	63-TeCB	U	ND	pg/L	1.85	110
52663-58-8	64-TeCB	J	3.59	pg/L	1.79	110

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707001**	**Date Collected:**	**03/11/2019 10:45**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-001K RG-North-20190311**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 18:03**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-6**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**907.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
33284-54-7	65-TeCB	C44				
32598-10-0	66-TeCB	U	ND	pg/L	5.56	110
73575-53-8	67-TeCB	U	ND	pg/L	1.68	110
73575-52-7	68-TeCB	U	ND	pg/L	1.70	110
60233-24-1	69-TeCB	C49				
32598-11-1	70-TeCB	C61				
41464-46-4	71-TeCB	C40				
41464-42-0	72-TeCB	U	ND	pg/L	1.90	110
74338-23-1	73-TeCB	U	ND	pg/L	1.81	110
32690-93-0	74-TeCB	C61				
32598-12-2	75-TeCB	C59				
70362-48-0	76-TeCB	C61				
32598-13-3	77-TeCB	U	ND	pg/L	2.45	110
70362-49-1	78-TeCB	U	ND	pg/L	2.01	110
41464-48-6	79-TeCB	U	ND	pg/L	1.68	110
33284-52-5	80-TeCB	U	ND	pg/L	1.72	110
70362-50-4	81-TeCB	U	ND	pg/L	2.20	110
52663-62-4	82-PeCB	U	ND	pg/L	2.25	110
60145-20-2	83-PeCB	U	ND	pg/L	2.32	110
52663-60-2	84-PeCB	U	ND	pg/L	2.23	110
65510-45-4	85-PeCB	CU	ND	pg/L	1.65	331
55312-69-1	86-PeCB	BCJ	5.29	pg/L	1.76	661
38380-02-8	87-PeCB	C86				
55215-17-3	88-PeCB	CU	ND	pg/L	2.09	220
73575-57-2	89-PeCB	U	ND	pg/L	2.16	110
68194-07-0	90-PeCB	BCJ	5.60	pg/L	1.76	331
68194-05-8	91-PeCB	C88				
52663-61-3	92-PeCB	U	ND	pg/L	2.07	110
73575-56-1	93-PeCB	CU	ND	pg/L	2.07	220
73575-55-0	94-PeCB	U	ND	pg/L	2.12	110
38379-99-6	95-PeCB	J	4.19	pg/L	2.07	110
73575-54-9	96-PeCB	U	ND	pg/L	0.992	110

Comments:

B **The target analyte was detected in the associated blank.**
C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**
J **Value is estimated**
U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707001**	**Date Collected:**	**03/11/2019 10:45**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-001K RG-North-20190311**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 18:03**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-6**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**907.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
41464-51-1	97-PeCB	C86				
60233-25-2	98-PeCB	CU	ND	pg/L	2.16	220
38380-01-7	99-PeCB	J	2.23	pg/L	1.72	110
39485-83-1	100-PeCB	C93				
37680-73-2	101-PeCB	C90				
68194-06-9	102-PeCB	C98				
60145-21-3	103-PeCB	U	ND	pg/L	1.96	110
56558-16-8	104-PeCB	U	ND	pg/L	1.04	110
32598-14-4	105-PeCB	BJ	3.55	pg/L	1.85	110
70424-69-0	106-PeCB	U	ND	pg/L	1.61	110
70424-68-9	107-PeCB	U	ND	pg/L	1.39	110
70362-41-3	108-PeCB	CU	ND	pg/L	1.57	220
74472-35-8	109-PeCB	C86				
38380-03-9	110-PeCB	BCJ	4.54	pg/L	1.59	220
39635-32-0	111-PeCB	U	ND	pg/L	1.48	110
74472-36-9	112-PeCB	U	ND	pg/L	1.52	110
68194-10-5	113-PeCB	C90				
74472-37-0	114-PeCB	U	ND	pg/L	1.83	110
74472-38-1	115-PeCB	C110				
18259-05-7	116-PeCB	C85				
68194-11-6	117-PeCB	C85				
31508-00-6	118-PeCB	BJ	4.52	pg/L	1.74	110
56558-17-9	119-PeCB	C86				
68194-12-7	120-PeCB	U	ND	pg/L	1.46	110
56558-18-0	121-PeCB	U	ND	pg/L	1.50	110
76842-07-4	122-PeCB	U	ND	pg/L	1.65	110
65510-44-3	123-PeCB	U	ND	pg/L	1.70	110
70424-70-3	124-PeCB	C108				
74472-39-2	125-PeCB	C86				
57465-28-8	126-PeCB	U	ND	pg/L	2.03	110
39635-33-1	127-PeCB	U	ND	pg/L	1.52	110
38380-07-3	128-HxCB	CU	ND	pg/L	1.54	220

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707001**	**Date Collected:**	**03/11/2019 10:45**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-001K RG-North-20190311**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 18:03**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-6**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**907.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
55215-18-4	129-HxCB	BCJ	5.62	pg/L	1.72	331
52663-66-8	130-HxCB	U	ND	pg/L	2.01	110
61798-70-7	131-HxCB	U	ND	pg/L	2.23	110
38380-05-1	132-HxCB	U	ND	pg/L	1.92	110
35694-04-3	133-HxCB	U	ND	pg/L	1.90	110
52704-70-8	134-HxCB	U	ND	pg/L	2.45	110
52744-13-5	135-HxCB	BCJ	2.29	pg/L	0.926	220
38411-22-2	136-HxCB	J	0.838	pg/L	0.706	110
35694-06-5	137-HxCB	U	ND	pg/L	1.72	110
35065-28-2	138-HxCB	C129				
56030-56-9	139-HxCB	CU	ND	pg/L	1.72	220
59291-64-4	140-HxCB	C139				
52712-04-6	141-HxCB	U	ND	pg/L	1.74	110
41411-61-4	142-HxCB	U	ND	pg/L	1.98	110
68194-15-0	143-HxCB	U	ND	pg/L	1.81	110
68194-14-9	144-HxCB	U	ND	pg/L	0.882	110
74472-40-5	145-HxCB	U	ND	pg/L	0.706	110
51908-16-8	146-HxCB	U	ND	pg/L	1.61	110
68194-13-8	147-HxCB	BCJ	3.59	pg/L	1.70	220
74472-41-6	148-HxCB	U	ND	pg/L	0.904	110
38380-04-0	149-HxCB	C147				
68194-08-1	150-HxCB	U	ND	pg/L	0.661	110
52663-63-5	151-HxCB	C135				
68194-09-2	152-HxCB	U	ND	pg/L	0.706	110
35065-27-1	153-HxCB	BCJ	4.15	pg/L	1.46	220
60145-22-4	154-HxCB	U	ND	pg/L	0.772	110
33979-03-2	155-HxCB	U	ND	pg/L	0.683	110
38380-08-4	156-HxCB	CJ	2.78	pg/L	1.43	220
69782-90-7	157-HxCB	C156				
74472-42-7	158-HxCB	U	ND	pg/L	1.23	110
39635-35-3	159-HxCB	U	ND	pg/L	0.970	110
41411-62-5	160-HxCB	U	ND	pg/L	1.43	110

Comments:

B **The target analyte was detected in the associated blank.**
C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**
J **Value is estimated**
U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707001**	**Date Collected:**	**03/11/2019 10:45**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-001K RG-North-20190311**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 18:03**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-6**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**907.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
74472-43-8	161-HxCB	U	ND	pg/L	1.43	110
39635-34-2	162-HxCB	J	1.01	pg/L	0.948	110
74472-44-9	163-HxCB	C129				
74472-45-0	164-HxCB	U	ND	pg/L	1.37	110
74472-46-1	165-HxCB	U	ND	pg/L	1.48	110
41411-63-6	166-HxCB	C128				
52663-72-6	167-HxCB	U	ND	pg/L	1.28	110
59291-65-5	168-HxCB	C153				
32774-16-6	169-HxCB	BJ	1.54	pg/L	1.19	110
35065-30-6	170-HpCB	BJ	1.63	pg/L	1.34	110
52663-71-5	171-HpCB	CU	ND	pg/L	1.32	220
52663-74-8	172-HpCB	U	ND	pg/L	1.34	110
68194-16-1	173-HpCB	C171				
38411-25-5	174-HpCB	J	1.74	pg/L	1.26	110
40186-70-7	175-HpCB	U	ND	pg/L	1.10	110
52663-65-7	176-HpCB	U	ND	pg/L	0.860	110
52663-70-4	177-HpCB	U	ND	pg/L	1.34	110
52663-67-9	178-HpCB	U	ND	pg/L	1.15	110
52663-64-6	179-HpCB	U	ND	pg/L	0.860	110
35065-29-3	180-HpCB	BCJ	4.17	pg/L	1.10	220
74472-47-2	181-HpCB	U	ND	pg/L	1.23	110
60145-23-5	182-HpCB	U	ND	pg/L	1.06	110
52663-69-1	183-HpCB	CU	ND	pg/L	1.85	220
74472-48-3	184-HpCB	U	ND	pg/L	0.794	110
52712-05-7	185-HpCB	C183				
74472-49-4	186-HpCB	U	ND	pg/L	0.860	110
52663-68-0	187-HpCB	J	1.87	pg/L	1.01	110
74487-85-7	188-HpCB	U	ND	pg/L	0.882	110
39635-31-9	189-HpCB	U	ND	pg/L	1.10	110
41411-64-7	190-HpCB	U	ND	pg/L	1.15	110
74472-50-7	191-HpCB	U	ND	pg/L	0.992	110
74472-51-8	192-HpCB	U	ND	pg/L	1.06	110

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	1903661	**Client:**	HALL001	**Project:**	HALL00113
Lab Sample ID:	14707001	**Date Collected:**	03/11/2019 10:45	**Matrix:**	WATER
Client Sample:	1668A Water	**Date Received:**	03/15/2019 10:10		
Client ID:	1903661-001K RG-North-20190311			**Prep Basis:**	As Received
Batch ID:	40255	**Method:**	EPA Method 1668A		
Run Date:	03/29/2019 18:03	**Analyst:**	MLS	**Instrument:**	HRP875
Data File:	d29mar19a-6			**Dilution:**	1
Prep Batch:	40253	**Prep Method:**	SW846 3520C	**Prep SOP Ref:**	CF-OA-E-001
Prep Date:	28-MAR-19	**Prep Aliquot:**	907.1 mL		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
69782-91-8	193-HpCB	C180				
35694-08-7	194-OcCB	BJ	2.29	pg/L	0.860	110
52663-78-2	195-OcCB	U	ND	pg/L	0.904	110
42740-50-1	196-OcCB	U	ND	pg/L	0.926	110
33091-17-7	197-OcCB	CU	ND	pg/L	0.639	220
68194-17-2	198-OcCB	BCJ	1.81	pg/L	0.882	220
52663-75-9	199-OcCB	C198				
52663-73-7	200-OcCB	C197				
40186-71-8	201-OcCB	U	ND	pg/L	0.639	110
2136-99-4	202-OcCB	U	ND	pg/L	0.750	110
52663-76-0	203-OcCB	BJ	1.21	pg/L	0.794	110
74472-52-9	204-OcCB	U	ND	pg/L	0.661	110
74472-53-0	205-OcCB	J	0.794	pg/L	0.728	110
40186-72-9	206-NoCB	U	ND	pg/L	1.72	110
52663-79-3	207-NoCB	U	ND	pg/L	1.26	110
52663-77-1	208-NoCB	U	ND	pg/L	1.30	110
2051-24-3	209-DeCB	J	0.948	pg/L	0.706	110
1336-36-3	Total PCB Congeners	J	187	pg/L		110

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		1080	2200	pg/L	49.1	(15%-150%)
13C-3-MoCB		1060	2200	pg/L	48.0	(15%-150%)
13C-4-DiCB		1030	2200	pg/L	46.9	(25%-150%)
13C-15-DiCB		1290	2200	pg/L	58.3	(25%-150%)
13C-19-TrCB		1130	2200	pg/L	51.5	(25%-150%)
13C-37-TrCB		1580	2200	pg/L	71.8	(25%-150%)
13C-54-TeCB		1440	2200	pg/L	65.1	(25%-150%)
13C-77-TeCB		1530	2200	pg/L	69.2	(25%-150%)
13C-81-TeCB		1560	2200	pg/L	70.8	(25%-150%)
13C-104-PeCB		1570	2200	pg/L	71.2	(25%-150%)
13C-105-PeCB		1620	2200	pg/L	73.5	(25%-150%)
13C-114-PeCB		1630	2200	pg/L	73.8	(25%-150%)
13C-118-PeCB		1610	2200	pg/L	73.0	(25%-150%)
13C-123-PeCB		1700	2200	pg/L	77.2	(25%-150%)
13C-126-PeCB		1550	2200	pg/L	70.1	(25%-150%)
13C-155-HxCB		1460	2200	pg/L	66.1	(25%-150%)
13C-156-HxCB	C	3230	4410	pg/L	73.1	(25%-150%)
13C-157-HxCB	C156L					
13C-167-HxCB		1640	2200	pg/L	74.4	(25%-150%)
13C-169-HxCB		1650	2200	pg/L	74.9	(25%-150%)
13C-188-HpCB		1540	2200	pg/L	69.8	(25%-150%)
13C-189-HpCB		1610	2200	pg/L	73.2	(25%-150%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	1903661	**Client:**	HALL001	**Project:**	HALL00113
Lab Sample ID:	14707001	**Date Collected:**	03/11/2019 10:45	**Matrix:**	WATER
Client Sample:	1668A Water	**Date Received:**	03/15/2019 10:10		
Client ID:	1903661-001K RG-North-20190311			**Prep Basis:**	As Received
Batch ID:	40255	**Method:**	EPA Method 1668A		
Run Date:	03/29/2019 18:03	**Analyst:**	MLS	**Instrument:**	HRP875
Data File:	d29mar19a-6			**Dilution:**	1
Prep Batch:	40253	**Prep Method:**	SW846 3520C	**Prep SOP Ref:**	CF-OA-E-001
Prep Date:	28-MAR-19	**Prep Aliquot:**	907.1 mL		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-202-OcCB		1480	2200	pg/L	67.3	(25%-150%)
13C-205-OcCB		1850	2200	pg/L	83.7	(25%-150%)
13C-206-NoCB		1820	2200	pg/L	82.6	(25%-150%)
13C-208-NoCB		1580	2200	pg/L	71.5	(25%-150%)
13C-209-DeCB		1710	2200	pg/L	77.5	(25%-150%)
13C-28-TrCB		1590	2200	pg/L	71.9	(30%-135%)
13C-111-PeCB		1540	2200	pg/L	70.0	(30%-135%)
13C-178-HpCB		1600	2200	pg/L	72.4	(30%-135%)

Comments:

B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707002**	**Date Collected:**	**03/12/2019 12:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-002K Eq BLank-20190312**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 19:12**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-7**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**925.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
2051-60-7	1-MoCB	U	ND	pg/L	2.81	108
2051-61-8	2-MoCB	U	ND	pg/L	1.08	108
2051-62-9	3-MoCB	U	ND	pg/L	1.47	108
13029-08-8	4-DiCB	U	ND	pg/L	7.02	108
16605-91-7	5-DiCB	U	ND	pg/L	4.91	108
25569-80-6	6-DiCB	U	ND	pg/L	4.09	108
33284-50-3	7-DiCB	U	ND	pg/L	4.24	108
34883-43-7	8-DiCB	U	ND	pg/L	3.74	108
34883-39-1	9-DiCB	U	ND	pg/L	4.73	108
33146-45-1	10-DiCB	U	ND	pg/L	4.67	108
2050-67-1	11-DiCB	BJ	18.3	pg/L	4.63	108
2974-92-7	12-DiCB	CU	ND	pg/L	4.54	216
2974-90-5	13-DiCB	C12				
34883-41-5	14-DiCB	U	ND	pg/L	4.26	108
2050-68-2	15-DiCB	U	ND	pg/L	5.88	108
38444-78-9	16-TrCB	U	ND	pg/L	2.31	108
37680-66-3	17-TrCB	U	ND	pg/L	2.51	108
37680-65-2	18-TrCB	CU	ND	pg/L	3.83	216
38444-73-4	19-TrCB	U	ND	pg/L	2.72	108
38444-84-7	20-TrCB	BCJ	6.42	pg/L	1.79	216
55702-46-0	21-TrCB	CU	ND	pg/L	3.96	216
38444-85-8	22-TrCB	BJ	2.16	pg/L	1.77	108
55720-44-0	23-TrCB	U	ND	pg/L	1.73	108
55702-45-9	24-TrCB	U	ND	pg/L	1.92	108
55712-37-3	25-TrCB	U	ND	pg/L	1.60	108
38444-81-4	26-TrCB	CU	ND	pg/L	2.46	216
38444-76-7	27-TrCB	U	ND	pg/L	1.86	108
7012-37-5	28-TrCB	C20				
15862-07-4	29-TrCB	C26				
35693-92-6	30-TrCB	C18				
16606-02-3	31-TrCB	BJ	4.45	pg/L	1.66	108
38444-77-8	32-TrCB	U	ND	pg/L	1.64	108

Comments:

B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707002**	**Date Collected:**	**03/12/2019 12:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-002K Eq BLank-20190312**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 19:12**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-7**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**925.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
38444-86-9	33-TrCB	C21				
37680-68-5	34-TrCB	U	ND	pg/L	1.90	108
37680-69-6	35-TrCB	U	ND	pg/L	1.73	108
38444-87-0	36-TrCB	U	ND	pg/L	1.53	108
38444-90-5	37-TrCB	BJ	3.29	pg/L	2.23	108
53555-66-1	38-TrCB	U	ND	pg/L	1.60	108
38444-88-1	39-TrCB	U	ND	pg/L	1.47	108
38444-93-8	40-TeCB	CU	ND	pg/L	3.24	216
52663-59-9	41-TeCB	U	ND	pg/L	4.58	108
36559-22-5	42-TeCB	U	ND	pg/L	3.70	108
70362-46-8	43-TeCB	U	ND	pg/L	4.02	108
41464-39-5	44-TeCB	BCJ	8.30	pg/L	3.39	324
70362-45-7	45-TeCB	BCJ	3.76	pg/L	1.99	216
41464-47-5	46-TeCB	U	ND	pg/L	2.01	108
2437-79-8	47-TeCB	C44				
70362-47-9	48-TeCB	U	ND	pg/L	3.57	108
41464-40-8	49-TeCB	BCJ	3.31	pg/L	3.26	216
62796-65-0	50-TeCB	CU	ND	pg/L	1.86	216
68194-04-7	51-TeCB	C45				
35693-99-3	52-TeCB	BJ	9.70	pg/L	3.76	108
41464-41-9	53-TeCB	C50				
15968-05-5	54-TeCB	U	ND	pg/L	1.43	108
74338-24-2	55-TeCB	U	ND	pg/L	1.97	108
41464-43-1	56-TeCB	BJ	3.98	pg/L	2.05	108
70424-67-8	57-TeCB	U	ND	pg/L	2.01	108
41464-49-7	58-TeCB	U	ND	pg/L	1.99	108
74472-33-6	59-TeCB	CU	ND	pg/L	2.77	324
33025-41-1	60-TeCB	U	ND	pg/L	1.92	108
33284-53-6	61-TeCB	BCJ	12.6	pg/L	1.97	432
54230-22-7	62-TeCB	C59				
74472-34-7	63-TeCB	U	ND	pg/L	1.90	108
52663-58-8	64-TeCB	U	ND	pg/L	2.77	108

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707002**	**Date Collected:**	**03/12/2019 12:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-002K Eq BLank-20190312**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 19:12**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-7**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**925.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
33284-54-7	65-TeCB	C44				
32598-10-0	66-TeCB	U	ND	pg/L	5.43	108
73575-53-8	67-TeCB	U	ND	pg/L	1.73	108
73575-52-7	68-TeCB	U	ND	pg/L	1.75	108
60233-24-1	69-TeCB	C49				
32598-11-1	70-TeCB	C61				
41464-46-4	71-TeCB	C40				
41464-42-0	72-TeCB	U	ND	pg/L	1.92	108
74338-23-1	73-TeCB	U	ND	pg/L	2.79	108
32690-93-0	74-TeCB	C61				
32598-12-2	75-TeCB	C59				
70362-48-0	76-TeCB	C61				
32598-13-3	77-TeCB	U	ND	pg/L	2.40	108
70362-49-1	78-TeCB	U	ND	pg/L	2.05	108
41464-48-6	79-TeCB	U	ND	pg/L	1.73	108
33284-52-5	80-TeCB	U	ND	pg/L	1.75	108
70362-50-4	81-TeCB	U	ND	pg/L	2.25	108
52663-62-4	82-PeCB	U	ND	pg/L	2.33	108
60145-20-2	83-PeCB	U	ND	pg/L	2.42	108
52663-60-2	84-PeCB	U	ND	pg/L	2.31	108
65510-45-4	85-PeCB	CU	ND	pg/L	1.73	324
55312-69-1	86-PeCB	CU	ND	pg/L	6.42	648
38380-02-8	87-PeCB	C86				
55215-17-3	88-PeCB	CU	ND	pg/L	2.16	216
73575-57-2	89-PeCB	U	ND	pg/L	2.23	108
68194-07-0	90-PeCB	BCJ	4.43	pg/L	1.84	324
68194-05-8	91-PeCB	C88				
52663-61-3	92-PeCB	U	ND	pg/L	2.16	108
73575-56-1	93-PeCB	CU	ND	pg/L	2.14	216
73575-55-0	94-PeCB	U	ND	pg/L	2.18	108
38379-99-6	95-PeCB	J	4.00	pg/L	2.14	108
73575-54-9	96-PeCB	U	ND	pg/L	1.06	108

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707002**	**Date Collected:**	**03/12/2019 12:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-002K Eq BLank-20190312**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 19:12**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-7**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**925.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
41464-51-1	97-PeCB	C86				
60233-25-2	98-PeCB	CU	ND	pg/L	2.23	216
38380-01-7	99-PeCB	U	ND	pg/L	1.82	108
39485-83-1	100-PeCB	C93				
37680-73-2	101-PeCB	C90				
68194-06-9	102-PeCB	C98				
60145-21-3	103-PeCB	U	ND	pg/L	2.03	108
56558-16-8	104-PeCB	U	ND	pg/L	1.17	108
32598-14-4	105-PeCB	BJ	3.76	pg/L	2.03	108
70424-69-0	106-PeCB	U	ND	pg/L	1.77	108
70424-68-9	107-PeCB	U	ND	pg/L	1.51	108
70362-41-3	108-PeCB	CU	ND	pg/L	1.73	216
74472-35-8	109-PeCB	C86				
38380-03-9	110-PeCB	BCJ	4.32	pg/L	1.64	216
39635-32-0	111-PeCB	U	ND	pg/L	1.53	108
74472-36-9	112-PeCB	U	ND	pg/L	1.58	108
68194-10-5	113-PeCB	C90				
74472-37-0	114-PeCB	U	ND	pg/L	2.01	108
74472-38-1	115-PeCB	C110				
18259-05-7	116-PeCB	C85				
68194-11-6	117-PeCB	C85				
31508-00-6	118-PeCB	U	ND	pg/L	4.71	108
56558-17-9	119-PeCB	C86				
68194-12-7	120-PeCB	U	ND	pg/L	1.51	108
56558-18-0	121-PeCB	U	ND	pg/L	1.56	108
76842-07-4	122-PeCB	U	ND	pg/L	1.82	108
65510-44-3	123-PeCB	U	ND	pg/L	1.84	108
70424-70-3	124-PeCB	C108				
74472-39-2	125-PeCB	C86				
57465-28-8	126-PeCB	U	ND	pg/L	2.23	108
39635-33-1	127-PeCB	U	ND	pg/L	1.69	108
38380-07-3	128-HxCB	CU	ND	pg/L	1.71	216

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707002**	**Date Collected:**	**03/12/2019 12:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-002K Eq BLank-20190312**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 19:12**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-7**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**925.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
55215-18-4	129-HxCB	BCJ	4.37	pg/L	1.90	324
52663-66-8	130-HxCB	U	ND	pg/L	2.20	108
61798-70-7	131-HxCB	U	ND	pg/L	2.42	108
38380-05-1	132-HxCB	U	ND	pg/L	2.12	108
35694-04-3	133-HxCB	U	ND	pg/L	2.08	108
52704-70-8	134-HxCB	U	ND	pg/L	2.68	108
52744-13-5	135-HxCB	BCJ	1.82	pg/L	1.19	216
38411-22-2	136-HxCB	U	ND	pg/L	0.908	108
35694-06-5	137-HxCB	U	ND	pg/L	1.88	108
35065-28-2	138-HxCB	C129				
56030-56-9	139-HxCB	CU	ND	pg/L	1.88	216
59291-64-4	140-HxCB	C139				
52712-04-6	141-HxCB	U	ND	pg/L	1.90	108
41411-61-4	142-HxCB	U	ND	pg/L	2.18	108
68194-15-0	143-HxCB	U	ND	pg/L	1.97	108
68194-14-9	144-HxCB	U	ND	pg/L	1.15	108
74472-40-5	145-HxCB	U	ND	pg/L	0.908	108
51908-16-8	146-HxCB	U	ND	pg/L	1.75	108
68194-13-8	147-HxCB	BCJ	3.52	pg/L	1.86	216
74472-41-6	148-HxCB	U	ND	pg/L	1.17	108
38380-04-0	149-HxCB	C147				
68194-08-1	150-HxCB	U	ND	pg/L	0.865	108
52663-63-5	151-HxCB	C135				
68194-09-2	152-HxCB	U	ND	pg/L	0.908	108
35065-27-1	153-HxCB	CU	ND	pg/L	3.46	216
60145-22-4	154-HxCB	U	ND	pg/L	0.994	108
33979-03-2	155-HxCB	U	ND	pg/L	0.908	108
38380-08-4	156-HxCB	CJ	2.23	pg/L	1.51	216
69782-90-7	157-HxCB	C156				
74472-42-7	158-HxCB	U	ND	pg/L	1.34	108
39635-35-3	159-HxCB	U	ND	pg/L	1.04	108
41411-62-5	160-HxCB	U	ND	pg/L	1.58	108

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707002**	**Date Collected:**	**03/12/2019 12:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-002K Eq BLank-20190312**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 19:12**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-7**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**925.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
74472-43-8	161-HxCB	U	ND	pg/L	1.56	108
39635-34-2	162-HxCB	U	ND	pg/L	0.994	108
74472-44-9	163-HxCB	C129				
74472-45-0	164-HxCB	U	ND	pg/L	1.49	108
74472-46-1	165-HxCB	U	ND	pg/L	1.62	108
41411-63-6	166-HxCB	C128				
52663-72-6	167-HxCB	U	ND	pg/L	1.08	108
59291-65-5	168-HxCB	C153				
32774-16-6	169-HxCB	U	ND	pg/L	1.23	108
35065-30-6	170-HpCB	U	ND	pg/L	2.12	108
52663-71-5	171-HpCB	CJ	1.49	pg/L	1.36	216
52663-74-8	172-HpCB	U	ND	pg/L	1.38	108
68194-16-1	173-HpCB	C171				
38411-25-5	174-HpCB	U	ND	pg/L	1.45	108
40186-70-7	175-HpCB	U	ND	pg/L	0.951	108
52663-65-7	176-HpCB	U	ND	pg/L	0.757	108
52663-70-4	177-HpCB	U	ND	pg/L	1.38	108
52663-67-9	178-HpCB	U	ND	pg/L	0.994	108
52663-64-6	179-HpCB	U	ND	pg/L	0.735	108
35065-29-3	180-HpCB	BCJ	3.87	pg/L	1.15	216
74472-47-2	181-HpCB	U	ND	pg/L	1.25	108
60145-23-5	182-HpCB	U	ND	pg/L	0.908	108
52663-69-1	183-HpCB	BCJ	1.66	pg/L	1.21	216
74472-48-3	184-HpCB	U	ND	pg/L	0.692	108
52712-05-7	185-HpCB	C183				
74472-49-4	186-HpCB	U	ND	pg/L	0.735	108
52663-68-0	187-HpCB	J	1.56	pg/L	0.886	108
74487-85-7	188-HpCB	U	ND	pg/L	0.800	108
39635-31-9	189-HpCB	U	ND	pg/L	0.973	108
41411-64-7	190-HpCB	U	ND	pg/L	1.06	108
74472-50-7	191-HpCB	U	ND	pg/L	1.02	108
74472-51-8	192-HpCB	U	ND	pg/L	1.08	108

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707002**	**Date Collected:**	**03/12/2019 12:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-002K Eq BLank-20190312**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 19:12**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-7**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**925.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
69782-91-8	193-HpCB	C180				
35694-08-7	194-OcCB	BJ	2.03	pg/L	0.994	108
52663-78-2	195-OcCB	BJ	1.21	pg/L	1.06	108
42740-50-1	196-OcCB	U	ND	pg/L	1.04	108
33091-17-7	197-OcCB	CU	ND	pg/L	0.757	216
68194-17-2	198-OcCB	BCJ	2.16	pg/L	1.06	216
52663-75-9	199-OcCB	C198				
52663-73-7	200-OcCB	C197				
40186-71-8	201-OcCB	U	ND	pg/L	0.778	108
2136-99-4	202-OcCB	U	ND	pg/L	0.886	108
52663-76-0	203-OcCB	BJ	1.36	pg/L	0.951	108
74472-52-9	204-OcCB	U	ND	pg/L	0.778	108
74472-53-0	205-OcCB	U	ND	pg/L	0.843	108
40186-72-9	206-NoCB	U	ND	pg/L	2.27	108
52663-79-3	207-NoCB	U	ND	pg/L	1.30	108
52663-77-1	208-NoCB	U	ND	pg/L	1.32	108
2051-24-3	209-DeCB	U	ND	pg/L	0.821	108
1336-36-3	Total PCB Congeners	J	120	pg/L		108

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		1060	2160	pg/L	49.1	(15%-150%)
13C-3-MoCB		1060	2160	pg/L	49.0	(15%-150%)
13C-4-DiCB		1030	2160	pg/L	47.7	(25%-150%)
13C-15-DiCB		1280	2160	pg/L	59.2	(25%-150%)
13C-19-TrCB		1190	2160	pg/L	54.9	(25%-150%)
13C-37-TrCB		1560	2160	pg/L	72.2	(25%-150%)
13C-54-TeCB		1420	2160	pg/L	65.6	(25%-150%)
13C-77-TeCB		1590	2160	pg/L	73.5	(25%-150%)
13C-81-TeCB		1610	2160	pg/L	74.6	(25%-150%)
13C-104-PeCB		1600	2160	pg/L	73.9	(25%-150%)
13C-105-PeCB		1760	2160	pg/L	81.5	(25%-150%)
13C-114-PeCB		1760	2160	pg/L	81.4	(25%-150%)
13C-118-PeCB		1750	2160	pg/L	80.7	(25%-150%)
13C-123-PeCB		1850	2160	pg/L	85.4	(25%-150%)
13C-126-PeCB		1670	2160	pg/L	77.1	(25%-150%)
13C-155-HxCB		1520	2160	pg/L	70.4	(25%-150%)
13C-156-HxCB	C	3570	4320	pg/L	82.6	(25%-150%)
13C-157-HxCB	C156L					
13C-167-HxCB		1820	2160	pg/L	84.2	(25%-150%)
13C-169-HxCB		1820	2160	pg/L	84.3	(25%-150%)
13C-188-HpCB		1680	2160	pg/L	77.9	(25%-150%)
13C-189-HpCB		1860	2160	pg/L	85.8	(25%-150%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707002**	**Date Collected:**	**03/12/2019 12:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-002K Eq BLank-20190312**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 19:12**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-7**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**925.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-202-OcCB		1660	2160	pg/L	76.9	(25%-150%)
13C-205-OcCB		2100	2160	pg/L	97.1	(25%-150%)
13C-206-NoCB		2090	2160	pg/L	96.9	(25%-150%)
13C-208-NoCB		1820	2160	pg/L	84.2	(25%-150%)
13C-209-DeCB		1990	2160	pg/L	92.1	(25%-150%)
13C-28-TrCB		1500	2160	pg/L	69.3	(30%-135%)
13C-111-PeCB		1620	2160	pg/L	75.0	(30%-135%)
13C-178-HpCB		1720	2160	pg/L	79.5	(30%-135%)

Comments:

B **The target analyte was detected in the associated blank.**
C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**
J **Value is estimated**
U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707003**	**Date Collected:**	**03/13/2019 09:45**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-003K RG-South-20190313**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 20:21**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-8**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**921 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
2051-60-7	1-MoCB	BJ	2.32	pg/L	0.955	109
2051-61-8	2-MoCB	U	ND	pg/L	2.37	109
2051-62-9	3-MoCB	J	2.48	pg/L	1.09	109
13029-08-8	4-DiCB	U	ND	pg/L	4.78	109
16605-91-7	5-DiCB	U	ND	pg/L	12.1	109
25569-80-6	6-DiCB	U	ND	pg/L	10.1	109
33284-50-3	7-DiCB	U	ND	pg/L	10.5	109
34883-43-7	8-DiCB	U	ND	pg/L	9.25	109
34883-39-1	9-DiCB	U	ND	pg/L	11.7	109
33146-45-1	10-DiCB	U	ND	pg/L	3.24	109
2050-67-1	11-DiCB	BJ	67.7	pg/L	11.4	109
2974-92-7	12-DiCB	CU	ND	pg/L	11.2	217
2974-90-5	13-DiCB	C12				
34883-41-5	14-DiCB	U	ND	pg/L	10.5	109
2050-68-2	15-DiCB	U	ND	pg/L	14.7	109
38444-78-9	16-TrCB	U	ND	pg/L	4.02	109
37680-66-3	17-TrCB	U	ND	pg/L	4.54	109
37680-65-2	18-TrCB	CU	ND	pg/L	9.97	217
38444-73-4	19-TrCB	U	ND	pg/L	3.13	109
38444-84-7	20-TrCB	BCJ	19.8	pg/L	1.24	217
55702-46-0	21-TrCB	BCJ	8.03	pg/L	1.22	217
38444-85-8	22-TrCB	BJ	7.12	pg/L	1.22	109
55720-44-0	23-TrCB	U	ND	pg/L	1.19	109
55702-45-9	24-TrCB	U	ND	pg/L	1.32	109
55712-37-3	25-TrCB	U	ND	pg/L	1.93	109
38444-81-4	26-TrCB	CJ	3.91	pg/L	1.22	217
38444-76-7	27-TrCB	U	ND	pg/L	1.28	109
7012-37-5	28-TrCB	C20				
15862-07-4	29-TrCB	C26				
35693-92-6	30-TrCB	C18				
16606-02-3	31-TrCB	BJ	13.0	pg/L	1.15	109
38444-77-8	32-TrCB	BJ	3.41	pg/L	1.13	109

Comments:

B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707003**	**Date Collected:**	**03/13/2019 09:45**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-003K RG-South-20190313**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 20:21**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-8**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**921 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
38444-86-9	33-TrCB	C21				
37680-68-5	34-TrCB	U	ND	pg/L	1.32	109
37680-69-6	35-TrCB	U	ND	pg/L	3.67	109
38444-87-0	36-TrCB	U	ND	pg/L	1.52	109
38444-90-5	37-TrCB	BJ	7.93	pg/L	2.13	109
53555-66-1	38-TrCB	J	2.15	pg/L	1.59	109
38444-88-1	39-TrCB	U	ND	pg/L	1.45	109
38444-93-8	40-TeCB	CU	ND	pg/L	5.75	217
52663-59-9	41-TeCB	U	ND	pg/L	3.89	109
36559-22-5	42-TeCB	J	4.80	pg/L	3.13	109
70362-46-8	43-TeCB	U	ND	pg/L	3.41	109
41464-39-5	44-TeCB	BCJ	18.7	pg/L	2.89	326
70362-45-7	45-TeCB	BCJ	5.21	pg/L	1.54	217
41464-47-5	46-TeCB	U	ND	pg/L	1.56	109
2437-79-8	47-TeCB	C44				
70362-47-9	48-TeCB	J	3.30	pg/L	3.02	109
41464-40-8	49-TeCB	BCJ	8.82	pg/L	2.78	217
62796-65-0	50-TeCB	CJ	3.43	pg/L	1.43	217
68194-04-7	51-TeCB	C45				
35693-99-3	52-TeCB	BJ	22.0	pg/L	3.19	109
41464-41-9	53-TeCB	C50				
15968-05-5	54-TeCB	U	ND	pg/L	1.19	109
74338-24-2	55-TeCB	U	ND	pg/L	1.82	109
41464-43-1	56-TeCB	U	ND	pg/L	7.82	109
70424-67-8	57-TeCB	U	ND	pg/L	1.87	109
41464-49-7	58-TeCB	U	ND	pg/L	1.85	109
74472-33-6	59-TeCB	CU	ND	pg/L	2.35	326
33025-41-1	60-TeCB	J	3.78	pg/L	1.78	109
33284-53-6	61-TeCB	BCJ	27.5	pg/L	1.82	434
54230-22-7	62-TeCB	C59				
74472-34-7	63-TeCB	U	ND	pg/L	1.76	109
52663-58-8	64-TeCB	J	7.06	pg/L	2.35	109

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707003**	**Date Collected:**	**03/13/2019 09:45**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-003K RG-South-20190313**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 20:21**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-8**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**921 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
33284-54-7	65-TeCB	C44				
32598-10-0	66-TeCB	BJ	12.7	pg/L	1.85	109
73575-53-8	67-TeCB	U	ND	pg/L	1.59	109
73575-52-7	68-TeCB	U	ND	pg/L	1.61	109
60233-24-1	69-TeCB	C49				
32598-11-1	70-TeCB	C61				
41464-46-4	71-TeCB	C40				
41464-42-0	72-TeCB	U	ND	pg/L	1.78	109
74338-23-1	73-TeCB	U	ND	pg/L	2.37	109
32690-93-0	74-TeCB	C61				
32598-12-2	75-TeCB	C59				
70362-48-0	76-TeCB	C61				
32598-13-3	77-TeCB	U	ND	pg/L	5.06	109
70362-49-1	78-TeCB	U	ND	pg/L	1.89	109
41464-48-6	79-TeCB	U	ND	pg/L	1.59	109
33284-52-5	80-TeCB	U	ND	pg/L	1.61	109
70362-50-4	81-TeCB	U	ND	pg/L	2.04	109
52663-62-4	82-PeCB	U	ND	pg/L	5.04	109
60145-20-2	83-PeCB	U	ND	pg/L	2.82	109
52663-60-2	84-PeCB	U	ND	pg/L	7.04	109
65510-45-4	85-PeCB	CU	ND	pg/L	5.62	326
55312-69-1	86-PeCB	BCJ	25.8	pg/L	2.15	651
38380-02-8	87-PeCB	C86				
55215-17-3	88-PeCB	CJ	4.06	pg/L	2.54	217
73575-57-2	89-PeCB	U	ND	pg/L	2.63	109
68194-07-0	90-PeCB	BCJ	41.8	pg/L	2.15	326
68194-05-8	91-PeCB	C88				
52663-61-3	92-PeCB	U	ND	pg/L	7.01	109
73575-56-1	93-PeCB	CU	ND	pg/L	2.52	217
73575-55-0	94-PeCB	U	ND	pg/L	2.56	109
38379-99-6	95-PeCB	J	29.5	pg/L	2.52	109
73575-54-9	96-PeCB	U	ND	pg/L	1.06	109

Comments:

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707003**	**Date Collected:**	**03/13/2019 09:45**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-003K RG-South-20190313**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 20:21**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-8**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**921 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
41464-51-1	97-PeCB	C86				
60233-25-2	98-PeCB	CU	ND	pg/L	2.63	217
38380-01-7	99-PeCB	U	ND	pg/L	8.56	109
39485-83-1	100-PeCB	C93				
37680-73-2	101-PeCB	C90				
68194-06-9	102-PeCB	C98				
60145-21-3	103-PeCB	U	ND	pg/L	2.37	109
56558-16-8	104-PeCB	U	ND	pg/L	1.11	109
32598-14-4	105-PeCB	BJ	13.7	pg/L	2.11	109
70424-69-0	106-PeCB	U	ND	pg/L	1.85	109
70424-68-9	107-PeCB	J	2.56	pg/L	1.61	109
70362-41-3	108-PeCB	CU	ND	pg/L	1.80	217
74472-35-8	109-PeCB	C86				
38380-03-9	110-PeCB	BCJ	45.1	pg/L	1.93	217
39635-32-0	111-PeCB	U	ND	pg/L	1.78	109
74472-36-9	112-PeCB	U	ND	pg/L	1.85	109
68194-10-5	113-PeCB	C90				
74472-37-0	114-PeCB	U	ND	pg/L	2.08	109
74472-38-1	115-PeCB	C110				
18259-05-7	116-PeCB	C85				
68194-11-6	117-PeCB	C85				
31508-00-6	118-PeCB	BJ	32.1	pg/L	2.06	109
56558-17-9	119-PeCB	C86				
68194-12-7	120-PeCB	U	ND	pg/L	1.76	109
56558-18-0	121-PeCB	U	ND	pg/L	1.82	109
76842-07-4	122-PeCB	U	ND	pg/L	1.91	109
65510-44-3	123-PeCB	U	ND	pg/L	1.98	109
70424-70-3	124-PeCB	C108				
74472-39-2	125-PeCB	C86				
57465-28-8	126-PeCB	U	ND	pg/L	2.35	109
39635-33-1	127-PeCB	U	ND	pg/L	1.76	109
38380-07-3	128-HxCB	BCJ	11.9	pg/L	1.89	217

Comments:

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707003**	**Date Collected:**	**03/13/2019 09:45**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-003K RG-South-20190313**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 20:21**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-8**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**921 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
55215-18-4	129-HxCB	CJ	152	pg/L	2.08	326
52663-66-8	130-HxCB	J	5.91	pg/L	2.43	109
61798-70-7	131-HxCB	U	ND	pg/L	2.69	109
38380-05-1	132-HxCB	J	36.9	pg/L	2.32	109
35694-04-3	133-HxCB	U	ND	pg/L	2.30	109
52704-70-8	134-HxCB	U	ND	pg/L	4.65	109
52744-13-5	135-HxCB	CJ	51.8	pg/L	0.825	217
38411-22-2	136-HxCB	J	14.7	pg/L	0.630	109
35694-06-5	137-HxCB	J	2.50	pg/L	2.08	109
35065-28-2	138-HxCB	C129				
56030-56-9	139-HxCB	CU	ND	pg/L	2.08	217
59291-64-4	140-HxCB	C139				
52712-04-6	141-HxCB	J	31.9	pg/L	2.11	109
41411-61-4	142-HxCB	U	ND	pg/L	2.41	109
68194-15-0	143-HxCB	U	ND	pg/L	2.17	109
68194-14-9	144-HxCB	J	7.04	pg/L	0.803	109
74472-40-5	145-HxCB	U	ND	pg/L	0.630	109
51908-16-8	146-HxCB	J	19.4	pg/L	1.93	109
68194-13-8	147-HxCB	CJ	109	pg/L	2.06	217
74472-41-6	148-HxCB	U	ND	pg/L	0.825	109
38380-04-0	149-HxCB	C147				
68194-08-1	150-HxCB	U	ND	pg/L	0.608	109
52663-63-5	151-HxCB	C135				
68194-09-2	152-HxCB	U	ND	pg/L	0.630	109
35065-27-1	153-HxCB	CJ	137	pg/L	1.76	217
60145-22-4	154-HxCB	J	1.13	pg/L	0.695	109
33979-03-2	155-HxCB	U	ND	pg/L	0.934	109
38380-08-4	156-HxCB	CJ	13.9	pg/L	2.04	217
69782-90-7	157-HxCB	C156				
74472-42-7	158-HxCB	J	12.2	pg/L	1.50	109
39635-35-3	159-HxCB	U	ND	pg/L	1.37	109
41411-62-5	160-HxCB	U	ND	pg/L	1.74	109

Comments:

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707003**	**Date Collected:**	**03/13/2019 09:45**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-003K RG-South-20190313**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 20:21**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-8**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**921 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
74472-43-8	161-HxCB	U	ND	pg/L	1.72	109
39635-34-2	162-HxCB	U	ND	pg/L	1.30	109
74472-44-9	163-HxCB	C129				
74472-45-0	164-HxCB	J	10.9	pg/L	1.65	109
74472-46-1	165-HxCB	U	ND	pg/L	1.80	109
41411-63-6	166-HxCB	C128				
52663-72-6	167-HxCB	BJ	6.30	pg/L	1.45	109
59291-65-5	168-HxCB	C153				
32774-16-6	169-HxCB	U	ND	pg/L	1.56	109
35065-30-6	170-HpCB	J	73.6	pg/L	1.30	109
52663-71-5	171-HpCB	CJ	20.9	pg/L	1.28	217
52663-74-8	172-HpCB	J	14.2	pg/L	1.28	109
68194-16-1	173-HpCB	C171				
38411-25-5	174-HpCB	J	73.7	pg/L	1.19	109
40186-70-7	175-HpCB	BJ	3.50	pg/L	0.934	109
52663-65-7	176-HpCB	J	8.27	pg/L	0.738	109
52663-70-4	177-HpCB	J	43.2	pg/L	1.28	109
52663-67-9	178-HpCB	J	15.0	pg/L	0.977	109
52663-64-6	179-HpCB	J	26.1	pg/L	0.717	109
35065-29-3	180-HpCB	CJ	168	pg/L	1.06	217
74472-47-2	181-HpCB	U	ND	pg/L	1.17	109
60145-23-5	182-HpCB	U	ND	pg/L	0.912	109
52663-69-1	183-HpCB	CJ	45.8	pg/L	1.13	217
74472-48-3	184-HpCB	U	ND	pg/L	0.717	109
52712-05-7	185-HpCB	C183				
74472-49-4	186-HpCB	U	ND	pg/L	0.738	109
52663-68-0	187-HpCB	J	85.8	pg/L	0.869	109
74487-85-7	188-HpCB	U	ND	pg/L	0.890	109
39635-31-9	189-HpCB	BJ	3.67	pg/L	1.22	109
41411-64-7	190-HpCB	J	16.9	pg/L	0.999	109
74472-50-7	191-HpCB	J	3.41	pg/L	0.955	109
74472-51-8	192-HpCB	U	ND	pg/L	0.999	109

Comments:

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	1903661	**Client:**	HALL001	**Project:**	HALL00113
Lab Sample ID:	14707003	**Date Collected:**	03/13/2019 09:45	**Matrix:**	WATER
Client Sample:	1668A Water	**Date Received:**	03/15/2019 10:10		
Client ID:	1903661-003K RG-South-20190313			**Prep Basis:**	As Received
Batch ID:	40255	**Method:**	EPA Method 1668A		
Run Date:	03/29/2019 20:21	**Analyst:**	MLS	**Instrument:**	HRP875
Data File:	d29mar19a-8			**Dilution:**	1
Prep Batch:	40253	**Prep Method:**	SW846 3520C	**Prep SOP Ref:**	CF-OA-E-001
Prep Date:	28-MAR-19	**Prep Aliquot:**	921 mL		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
69782-91-8	193-HpCB	C180				
35694-08-7	194-OcCB	J	50.3	pg/L	1.13	109
52663-78-2	195-OcCB	J	19.2	pg/L	1.22	109
42740-50-1	196-OcCB	J	26.1	pg/L	1.02	109
33091-17-7	197-OcCB	BCJ	10.9	pg/L	0.760	217
68194-17-2	198-OcCB	CJ	139	pg/L	1.04	217
52663-75-9	199-OcCB	C198				
52663-73-7	200-OcCB	C197				
40186-71-8	201-OcCB	J	9.38	pg/L	0.782	109
2136-99-4	202-OcCB	J	31.7	pg/L	0.890	109
52663-76-0	203-OcCB	J	50.9	pg/L	0.955	109
74472-52-9	204-OcCB	U	ND	pg/L	0.782	109
74472-53-0	205-OcCB	J	2.71	pg/L	0.955	109
40186-72-9	206-NoCB		343	pg/L	1.61	109
52663-79-3	207-NoCB	J	32.5	pg/L	1.17	109
52663-77-1	208-NoCB		177	pg/L	1.19	109
2051-24-3	209-DeCB	J	37.6	pg/L	0.630	109
1336-36-3	Total PCB Congeners	J	2610	pg/L		109

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		975	2170	pg/L	44.9	(15%-150%)
13C-3-MoCB		1020	2170	pg/L	46.8	(15%-150%)
13C-4-DiCB		967	2170	pg/L	44.5	(25%-150%)
13C-15-DiCB		1260	2170	pg/L	57.8	(25%-150%)
13C-19-TrCB		1080	2170	pg/L	49.7	(25%-150%)
13C-37-TrCB		1530	2170	pg/L	70.5	(25%-150%)
13C-54-TeCB		1370	2170	pg/L	62.9	(25%-150%)
13C-77-TeCB		1470	2170	pg/L	67.5	(25%-150%)
13C-81-TeCB		1500	2170	pg/L	69.3	(25%-150%)
13C-104-PeCB		1520	2170	pg/L	69.9	(25%-150%)
13C-105-PeCB		1560	2170	pg/L	71.9	(25%-150%)
13C-114-PeCB		1560	2170	pg/L	71.7	(25%-150%)
13C-118-PeCB		1540	2170	pg/L	70.7	(25%-150%)
13C-123-PeCB		1610	2170	pg/L	74.4	(25%-150%)
13C-126-PeCB		1520	2170	pg/L	70.2	(25%-150%)
13C-155-HxCB		1330	2170	pg/L	61.2	(25%-150%)
13C-156-HxCB	C	3020	4340	pg/L	69.5	(25%-150%)
13C-157-HxCB	C156L					
13C-167-HxCB		1550	2170	pg/L	71.2	(25%-150%)
13C-169-HxCB		1600	2170	pg/L	73.5	(25%-150%)
13C-188-HpCB		1340	2170	pg/L	61.9	(25%-150%)
13C-189-HpCB		1510	2170	pg/L	69.7	(25%-150%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	1903661	**Client:**	HALL001	**Project:**	HALL00113
Lab Sample ID:	14707003	**Date Collected:**	03/13/2019 09:45	**Matrix:**	WATER
Client Sample:	1668A Water	**Date Received:**	03/15/2019 10:10		
Client ID:	1903661-003K RG-South-20190313			**Prep Basis:**	As Received
Batch ID:	40255	**Method:**	EPA Method 1668A		
Run Date:	03/29/2019 20:21	**Analyst:**	MLS	**Instrument:**	HRP875
Data File:	d29mar19a-8			**Dilution:**	1
Prep Batch:	40253	**Prep Method:**	SW846 3520C	**Prep SOP Ref:**	CF-OA-E-001
Prep Date:	28-MAR-19	**Prep Aliquot:**	921 mL		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-202-OcCB		1300	2170	pg/L	60.0	(25%-150%)
13C-205-OcCB		1680	2170	pg/L	77.2	(25%-150%)
13C-206-NoCB		1640	2170	pg/L	75.7	(25%-150%)
13C-208-NoCB		1430	2170	pg/L	66.0	(25%-150%)
13C-209-DeCB		1540	2170	pg/L	71.0	(25%-150%)
13C-28-TrCB		1520	2170	pg/L	70.2	(30%-135%)
13C-111-PeCB		1470	2170	pg/L	67.5	(30%-135%)
13C-178-HpCB		1450	2170	pg/L	66.9	(30%-135%)

Comments:

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J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707004**	**Date Collected:**	**03/13/2019 10:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-004K RG-South-DP-201903**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 21:30**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-9**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**933.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
2051-60-7	1-MoCB	U	ND	pg/L	2.70	107
2051-61-8	2-MoCB	U	ND	pg/L	2.29	107
2051-62-9	3-MoCB	U	ND	pg/L	2.76	107
13029-08-8	4-DiCB	U	ND	pg/L	6.56	107
16605-91-7	5-DiCB	U	ND	pg/L	4.59	107
25569-80-6	6-DiCB	U	ND	pg/L	3.81	107
33284-50-3	7-DiCB	U	ND	pg/L	3.96	107
34883-43-7	8-DiCB	U	ND	pg/L	7.82	107
34883-39-1	9-DiCB	U	ND	pg/L	4.41	107
33146-45-1	10-DiCB	U	ND	pg/L	3.86	107
2050-67-1	11-DiCB	BJ	71.5	pg/L	4.33	107
2974-92-7	12-DiCB	CU	ND	pg/L	4.22	214
2974-90-5	13-DiCB	C12				
34883-41-5	14-DiCB	U	ND	pg/L	3.96	107
2050-68-2	15-DiCB	J	14.2	pg/L	5.08	107
38444-78-9	16-TrCB	U	ND	pg/L	3.49	107
37680-66-3	17-TrCB	BJ	5.01	pg/L	1.95	107
37680-65-2	18-TrCB	CU	ND	pg/L	9.62	214
38444-73-4	19-TrCB	J	2.70	pg/L	2.42	107
38444-84-7	20-TrCB	BCJ	19.1	pg/L	1.39	214
55702-46-0	21-TrCB	BCJ	8.98	pg/L	1.37	214
38444-85-8	22-TrCB	BJ	6.81	pg/L	1.37	107
55720-44-0	23-TrCB	U	ND	pg/L	1.35	107
55702-45-9	24-TrCB	U	ND	pg/L	1.50	107
55712-37-3	25-TrCB	J	1.89	pg/L	1.24	107
38444-81-4	26-TrCB	CJ	3.58	pg/L	1.37	214
38444-76-7	27-TrCB	U	ND	pg/L	1.50	107
7012-37-5	28-TrCB	C20				
15862-07-4	29-TrCB	C26				
35693-92-6	30-TrCB	C18				
16606-02-3	31-TrCB	BJ	12.5	pg/L	1.31	107
38444-77-8	32-TrCB	BJ	3.45	pg/L	1.29	107

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707004**	**Date Collected:**	**03/13/2019 10:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-004K RG-South-DP-201903**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 21:30**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-9**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**933.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
38444-86-9	33-TrCB	C21				
37680-68-5	34-TrCB	U	ND	pg/L	1.48	107
37680-69-6	35-TrCB	J	4.03	pg/L	1.89	107
38444-87-0	36-TrCB	U	ND	pg/L	1.67	107
38444-90-5	37-TrCB	BJ	7.91	pg/L	2.23	107
53555-66-1	38-TrCB	U	ND	pg/L	1.76	107
38444-88-1	39-TrCB	U	ND	pg/L	1.61	107
38444-93-8	40-TeCB	CU	ND	pg/L	6.02	214
52663-59-9	41-TeCB	U	ND	pg/L	4.03	107
36559-22-5	42-TeCB	J	3.86	pg/L	3.24	107
70362-46-8	43-TeCB	U	ND	pg/L	3.54	107
41464-39-5	44-TeCB	BCJ	17.2	pg/L	2.98	321
70362-45-7	45-TeCB	CU	ND	pg/L	5.14	214
41464-47-5	46-TeCB	U	ND	pg/L	2.34	107
2437-79-8	47-TeCB	C44				
70362-47-9	48-TeCB	J	3.49	pg/L	3.13	107
41464-40-8	49-TeCB	BCJ	8.98	pg/L	2.87	214
62796-65-0	50-TeCB	CJ	3.17	pg/L	1.56	214
68194-04-7	51-TeCB	C45				
35693-99-3	52-TeCB	BJ	22.4	pg/L	3.30	107
41464-41-9	53-TeCB	C50				
15968-05-5	54-TeCB	U	ND	pg/L	1.29	107
74338-24-2	55-TeCB	U	ND	pg/L	1.76	107
41464-43-1	56-TeCB	BJ	7.31	pg/L	1.82	107
70424-67-8	57-TeCB	U	ND	pg/L	1.80	107
41464-49-7	58-TeCB	U	ND	pg/L	1.78	107
74472-33-6	59-TeCB	CJ	3.47	pg/L	2.44	321
33025-41-1	60-TeCB	J	4.50	pg/L	1.71	107
33284-53-6	61-TeCB	BCJ	26.5	pg/L	1.76	429
54230-22-7	62-TeCB	C59				
74472-34-7	63-TeCB	U	ND	pg/L	1.69	107
52663-58-8	64-TeCB	J	7.44	pg/L	2.42	107

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707004**	**Date Collected:**	**03/13/2019 10:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-004K RG-South-DP-201903**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 21:30**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-9**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**933.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
33284-54-7	65-TeCB	C44				
32598-10-0	66-TeCB	BJ	12.8	pg/L	1.78	107
73575-53-8	67-TeCB	U	ND	pg/L	1.52	107
73575-52-7	68-TeCB	U	ND	pg/L	1.54	107
60233-24-1	69-TeCB	C49				
32598-11-1	70-TeCB	C61				
41464-46-4	71-TeCB	C40				
41464-42-0	72-TeCB	U	ND	pg/L	1.71	107
74338-23-1	73-TeCB	U	ND	pg/L	2.44	107
32690-93-0	74-TeCB	C61				
32598-12-2	75-TeCB	C59				
70362-48-0	76-TeCB	C61				
32598-13-3	77-TeCB	J	4.41	pg/L	2.06	107
70362-49-1	78-TeCB	U	ND	pg/L	1.82	107
41464-48-6	79-TeCB	U	ND	pg/L	1.52	107
33284-52-5	80-TeCB	U	ND	pg/L	1.56	107
70362-50-4	81-TeCB	U	ND	pg/L	1.97	107
52663-62-4	82-PeCB	J	4.29	pg/L	2.55	107
60145-20-2	83-PeCB	U	ND	pg/L	2.66	107
52663-60-2	84-PeCB	J	6.13	pg/L	2.53	107
65510-45-4	85-PeCB	CJ	6.58	pg/L	1.89	321
55312-69-1	86-PeCB	BCJ	25.2	pg/L	2.01	643
38380-02-8	87-PeCB	C86				
55215-17-3	88-PeCB	CJ	4.22	pg/L	2.38	214
73575-57-2	89-PeCB	U	ND	pg/L	2.46	107
68194-07-0	90-PeCB	BCJ	39.3	pg/L	2.01	321
68194-05-8	91-PeCB	C88				
52663-61-3	92-PeCB	U	ND	pg/L	6.36	107
73575-56-1	93-PeCB	CU	ND	pg/L	2.36	214
73575-55-0	94-PeCB	U	ND	pg/L	2.42	107
38379-99-6	95-PeCB	J	27.5	pg/L	2.36	107
73575-54-9	96-PeCB	U	ND	pg/L	1.03	107

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707004**	**Date Collected:**	**03/13/2019 10:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-004K RG-South-DP-201903**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 21:30**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-9**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**933.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
41464-51-1	97-PeCB	C86				
60233-25-2	98-PeCB	CU	ND	pg/L	2.46	214
38380-01-7	99-PeCB	J	8.55	pg/L	1.97	107
39485-83-1	100-PeCB	C93				
37680-73-2	101-PeCB	C90				
68194-06-9	102-PeCB	C98				
60145-21-3	103-PeCB	U	ND	pg/L	2.23	107
56558-16-8	104-PeCB	U	ND	pg/L	1.07	107
32598-14-4	105-PeCB	BJ	14.0	pg/L	2.25	107
70424-69-0	106-PeCB	U	ND	pg/L	1.95	107
70424-68-9	107-PeCB	J	2.08	pg/L	1.67	107
70362-41-3	108-PeCB	CU	ND	pg/L	2.64	214
74472-35-8	109-PeCB	C86				
38380-03-9	110-PeCB	BCJ	42.2	pg/L	1.82	214
39635-32-0	111-PeCB	U	ND	pg/L	1.67	107
74472-36-9	112-PeCB	U	ND	pg/L	1.74	107
68194-10-5	113-PeCB	C90				
74472-37-0	114-PeCB	U	ND	pg/L	2.21	107
74472-38-1	115-PeCB	C110				
18259-05-7	116-PeCB	C85				
68194-11-6	117-PeCB	C85				
31508-00-6	118-PeCB	BJ	32.9	pg/L	2.14	107
56558-17-9	119-PeCB	C86				
68194-12-7	120-PeCB	U	ND	pg/L	1.65	107
56558-18-0	121-PeCB	U	ND	pg/L	1.71	107
76842-07-4	122-PeCB	U	ND	pg/L	1.99	107
65510-44-3	123-PeCB	U	ND	pg/L	2.06	107
70424-70-3	124-PeCB	C108				
74472-39-2	125-PeCB	C86				
57465-28-8	126-PeCB	U	ND	pg/L	2.40	107
39635-33-1	127-PeCB	U	ND	pg/L	1.84	107
38380-07-3	128-HxCB	BCJ	12.0	pg/L	1.82	214

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707004**	**Date Collected:**	**03/13/2019 10:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-004K RG-South-DP-201903**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 21:30**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-9**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**933.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
55215-18-4	129-HxCB	CJ	146	pg/L	2.01	321
52663-66-8	130-HxCB	J	6.17	pg/L	2.34	107
61798-70-7	131-HxCB	U	ND	pg/L	2.59	107
38380-05-1	132-HxCB	J	34.8	pg/L	2.25	107
35694-04-3	133-HxCB	U	ND	pg/L	2.23	107
52704-70-8	134-HxCB	J	5.87	pg/L	2.85	107
52744-13-5	135-HxCB	CJ	48.8	pg/L	1.63	214
38411-22-2	136-HxCB	J	13.3	pg/L	1.22	107
35694-06-5	137-HxCB	J	2.44	pg/L	2.01	107
35065-28-2	138-HxCB	C129				
56030-56-9	139-HxCB	CU	ND	pg/L	1.99	214
59291-64-4	140-HxCB	C139				
52712-04-6	141-HxCB	J	31.7	pg/L	2.04	107
41411-61-4	142-HxCB	U	ND	pg/L	2.31	107
68194-15-0	143-HxCB	U	ND	pg/L	2.10	107
68194-14-9	144-HxCB	J	7.26	pg/L	1.56	107
74472-40-5	145-HxCB	U	ND	pg/L	1.22	107
51908-16-8	146-HxCB	J	17.9	pg/L	1.86	107
68194-13-8	147-HxCB	CJ	106	pg/L	1.97	214
74472-41-6	148-HxCB	U	ND	pg/L	1.59	107
38380-04-0	149-HxCB	C147				
68194-08-1	150-HxCB	U	ND	pg/L	1.18	107
52663-63-5	151-HxCB	C135				
68194-09-2	152-HxCB	U	ND	pg/L	1.22	107
35065-27-1	153-HxCB	CJ	135	pg/L	1.69	214
60145-22-4	154-HxCB	U	ND	pg/L	1.37	107
33979-03-2	155-HxCB	U	ND	pg/L	1.20	107
38380-08-4	156-HxCB	CJ	13.2	pg/L	1.76	214
69782-90-7	157-HxCB	C156				
74472-42-7	158-HxCB	J	11.1	pg/L	1.44	107
39635-35-3	159-HxCB	U	ND	pg/L	1.20	107
41411-62-5	160-HxCB	U	ND	pg/L	1.67	107

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707004**	**Date Collected:**	**03/13/2019 10:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-004K RG-South-DP-201903**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 21:30**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-9**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**933.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
74472-43-8	161-HxCB	U	ND	pg/L	1.65	107
39635-34-2	162-HxCB	U	ND	pg/L	1.14	107
74472-44-9	163-HxCB	C129				
74472-45-0	164-HxCB	J	10.5	pg/L	1.61	107
74472-46-1	165-HxCB	U	ND	pg/L	1.74	107
41411-63-6	166-HxCB	C128				
52663-72-6	167-HxCB	BJ	5.14	pg/L	1.29	107
59291-65-5	168-HxCB	C153				
32774-16-6	169-HxCB	U	ND	pg/L	1.39	107
35065-30-6	170-HpCB	J	70.8	pg/L	1.67	107
52663-71-5	171-HpCB	CJ	20.6	pg/L	1.65	214
52663-74-8	172-HpCB	J	13.7	pg/L	1.67	107
68194-16-1	173-HpCB	C171				
38411-25-5	174-HpCB	J	71.8	pg/L	1.56	107
40186-70-7	175-HpCB	U	ND	pg/L	3.02	107
52663-65-7	176-HpCB	J	7.37	pg/L	0.900	107
52663-70-4	177-HpCB	J	44.6	pg/L	1.67	107
52663-67-9	178-HpCB	J	14.9	pg/L	1.20	107
52663-64-6	179-HpCB	J	25.2	pg/L	0.879	107
35065-29-3	180-HpCB	CJ	164	pg/L	1.37	214
74472-47-2	181-HpCB	U	ND	pg/L	1.52	107
60145-23-5	182-HpCB	U	ND	pg/L	1.11	107
52663-69-1	183-HpCB	CJ	42.2	pg/L	1.46	214
74472-48-3	184-HpCB	U	ND	pg/L	0.836	107
52712-05-7	185-HpCB	C183				
74472-49-4	186-HpCB	U	ND	pg/L	0.900	107
52663-68-0	187-HpCB	J	83.9	pg/L	1.05	107
74487-85-7	188-HpCB	U	ND	pg/L	0.921	107
39635-31-9	189-HpCB	BJ	3.36	pg/L	1.26	107
41411-64-7	190-HpCB	J	15.4	pg/L	1.29	107
74472-50-7	191-HpCB	J	3.00	pg/L	1.22	107
74472-51-8	192-HpCB	U	ND	pg/L	1.31	107

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**14707004**	**Date Collected:**	**03/13/2019 10:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**03/15/2019 10:10**		
Client ID:	**1903661-004K RG-South-DP-201903**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 21:30**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-9**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**933.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
69782-91-8	193-HpCB	C180				
35694-08-7	194-OcCB	J	42.7	pg/L	1.24	107
52663-78-2	195-OcCB	J	16.1	pg/L	1.33	107
42740-50-1	196-OcCB	J	19.9	pg/L	1.52	107
33091-17-7	197-OcCB	BCJ	6.41	pg/L	1.14	214
68194-17-2	198-OcCB	CJ	43.1	pg/L	1.54	214
52663-75-9	199-OcCB	C198				
52663-73-7	200-OcCB	C197				
40186-71-8	201-OcCB	BJ	4.56	pg/L	1.14	107
2136-99-4	202-OcCB	J	7.48	pg/L	1.31	107
52663-76-0	203-OcCB	J	25.0	pg/L	1.41	107
74472-52-9	204-OcCB	U	ND	pg/L	1.16	107
74472-53-0	205-OcCB	J	2.76	pg/L	1.07	107
40186-72-9	206-NoCB	BJ	15.5	pg/L	1.91	107
52663-79-3	207-NoCB	J	2.40	pg/L	1.39	107
52663-77-1	208-NoCB	J	4.46	pg/L	1.46	107
2051-24-3	209-DeCB	J	5.06	pg/L	0.729	107
1336-36-3	Total PCB Congeners	J	1880	pg/L		107

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		994	2140	pg/L	46.4	(15%-150%)
13C-3-MoCB		1050	2140	pg/L	49.0	(15%-150%)
13C-4-DiCB		998	2140	pg/L	46.6	(25%-150%)
13C-15-DiCB		1300	2140	pg/L	60.7	(25%-150%)
13C-19-TrCB		1140	2140	pg/L	53.2	(25%-150%)
13C-37-TrCB		1610	2140	pg/L	75.0	(25%-150%)
13C-54-TeCB		1420	2140	pg/L	66.0	(25%-150%)
13C-77-TeCB		1560	2140	pg/L	73.0	(25%-150%)
13C-81-TeCB		1580	2140	pg/L	73.7	(25%-150%)
13C-104-PeCB		1560	2140	pg/L	72.8	(25%-150%)
13C-105-PeCB		1610	2140	pg/L	75.3	(25%-150%)
13C-114-PeCB		1620	2140	pg/L	75.4	(25%-150%)
13C-118-PeCB		1580	2140	pg/L	73.8	(25%-150%)
13C-123-PeCB		1680	2140	pg/L	78.5	(25%-150%)
13C-126-PeCB		1580	2140	pg/L	74.0	(25%-150%)
13C-155-HxCB		1380	2140	pg/L	64.3	(25%-150%)
13C-156-HxCB	C	3160	4290	pg/L	73.8	(25%-150%)
13C-157-HxCB	C156L					
13C-167-HxCB		1610	2140	pg/L	75.3	(25%-150%)
13C-169-HxCB		1660	2140	pg/L	77.3	(25%-150%)
13C-188-HpCB		1450	2140	pg/L	67.6	(25%-150%)
13C-189-HpCB		1590	2140	pg/L	74.0	(25%-150%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	1903661	**Client:**	HALL001	**Project:**	HALL00113
Lab Sample ID:	14707004	**Date Collected:**	03/13/2019 10:00	**Matrix:**	WATER
Client Sample:	1668A Water	**Date Received:**	03/15/2019 10:10		
Client ID:	1903661-004K RG-South-DP-201903			**Prep Basis:**	As Received
Batch ID:	40255	**Method:**	EPA Method 1668A		
Run Date:	03/29/2019 21:30	**Analyst:**	MLS	**Instrument:**	HRP875
Data File:	d29mar19a-9			**Dilution:**	1
Prep Batch:	40253	**Prep Method:**	SW846 3520C	**Prep SOP Ref:**	CF-OA-E-001
Prep Date:	28-MAR-19	**Prep Aliquot:**	933.3 mL		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-202-OcCB		1410	2140	pg/L	65.8	(25%-150%)
13C-205-OcCB		1790	2140	pg/L	83.4	(25%-150%)
13C-206-NoCB		1750	2140	pg/L	81.5	(25%-150%)
13C-208-NoCB		1520	2140	pg/L	71.1	(25%-150%)
13C-209-DeCB		1660	2140	pg/L	77.6	(25%-150%)
13C-28-TrCB		1710	2140	pg/L	80.0	(30%-135%)
13C-111-PeCB		1630	2140	pg/L	76.1	(30%-135%)
13C-178-HpCB		1600	2140	pg/L	74.5	(30%-135%)

Comments:

B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

PCB Congeners

Surrogate Recovery Report

SDG Number: 1903661

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12023490	LCS for batch 40253	13C-1-MoCB		50.5	(15%-140%)
		13C-3-MoCB		48.8	(15%-140%)
		13C-4-DiCB		48.7	(30%-140%)
		13C-15-DiCB		59.7	(30%-140%)
		13C-19-TrCB		53.3	(30%-140%)
		13C-37-TrCB		71.4	(30%-140%)
		13C-54-TeCB		67.5	(30%-140%)
		13C-77-TeCB		70.1	(30%-140%)
		13C-81-TeCB		72.9	(30%-140%)
		13C-104-PeCB		74.5	(30%-140%)
		13C-105-PeCB		77.9	(30%-140%)
		13C-114-PeCB		77.6	(30%-140%)
		13C-118-PeCB		76.5	(30%-140%)
		13C-123-PeCB		81.9	(30%-140%)
		13C-126-PeCB		73.0	(30%-140%)
		13C-155-HxCB		67.7	(30%-140%)
		13C-156-HxCB	C	77.9	(30%-140%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		79.3	(30%-140%)
		13C-169-HxCB		79.5	(30%-140%)
		13C-188-HpCB		70.9	(30%-140%)
		13C-189-HpCB		77.7	(30%-140%)
		13C-202-OcCB		70.0	(30%-140%)
		13C-205-OcCB		89.4	(30%-140%)
		13C-206-NoCB		89.4	(30%-140%)
		13C-208-NoCB		77.6	(30%-140%)
		13C-209-DeCB		84.2	(30%-140%)
		13C-28-TrCB		72.1	(40%-125%)
		13C-111-PeCB		70.8	(40%-125%)
		13C-178-HpCB		74.6	(40%-125%)
12023491	LCSD for batch 40253	13C-1-MoCB		57.5	(15%-140%)
		13C-3-MoCB		55.0	(15%-140%)
		13C-4-DiCB		54.6	(30%-140%)
		13C-15-DiCB		64.6	(30%-140%)
		13C-19-TrCB		61.9	(30%-140%)
		13C-37-TrCB		73.9	(30%-140%)
		13C-54-TeCB		70.9	(30%-140%)
		13C-77-TeCB		71.4	(30%-140%)
		13C-81-TeCB		73.1	(30%-140%)
		13C-104-PeCB		78.6	(30%-140%)
		13C-105-PeCB		77.3	(30%-140%)
		13C-114-PeCB		78.2	(30%-140%)
		13C-118-PeCB		77.2	(30%-140%)
		13C-123-PeCB		81.7	(30%-140%)
		13C-126-PeCB		72.0	(30%-140%)
		13C-155-HxCB		70.7	(30%-140%)
		13C-156-HxCB	C	76.2	(30%-140%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		78.7	(30%-140%)
		13C-169-HxCB		76.8	(30%-140%)
		13C-188-HpCB		75.0	(30%-140%)
		13C-189-HpCB		77.8	(30%-140%)

PCB Congeners

Surrogate Recovery Report

SDG Number: 1903661

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12023491	LCSD for batch 40253	13C-202-OcCB		72.4	(30%-140%)
		13C-205-OcCB		88.6	(30%-140%)
		13C-206-NoCB		89.1	(30%-140%)
		13C-208-NoCB		77.7	(30%-140%)
		13C-209-DeCB		84.6	(30%-140%)
		13C-28-TrCB		73.4	(40%-125%)
		13C-111-PeCB		70.8	(40%-125%)
		13C-178-HpCB		73.9	(40%-125%)
12023489	MB for batch 40253	13C-1-MoCB		47.9	(15%-150%)
		13C-3-MoCB		45.1	(15%-150%)
		13C-4-DiCB		46.2	(25%-150%)
		13C-15-DiCB		54.6	(25%-150%)
		13C-19-TrCB		50.7	(25%-150%)
		13C-37-TrCB		64.1	(25%-150%)
		13C-54-TeCB		64.1	(25%-150%)
		13C-77-TeCB		65.0	(25%-150%)
		13C-81-TeCB		67.4	(25%-150%)
		13C-104-PeCB		71.0	(25%-150%)
		13C-105-PeCB		73.1	(25%-150%)
		13C-114-PeCB		73.4	(25%-150%)
		13C-118-PeCB		72.0	(25%-150%)
		13C-123-PeCB		76.4	(25%-150%)
		13C-126-PeCB		67.2	(25%-150%)
		13C-155-HxCB		65.0	(25%-150%)
		13C-156-HxCB	C	72.1	(25%-150%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		73.9	(25%-150%)
		13C-169-HxCB		72.4	(25%-150%)
		13C-188-HpCB		69.5	(25%-150%)
		13C-189-HpCB		73.4	(25%-150%)
		13C-202-OcCB		68.1	(25%-150%)
		13C-205-OcCB		85.1	(25%-150%)
		13C-206-NoCB		85.6	(25%-150%)
		13C-208-NoCB		74.6	(25%-150%)
		13C-209-DeCB		80.9	(25%-150%)
		13C-28-TrCB		70.9	(30%-135%)
		13C-111-PeCB		68.6	(30%-135%)
		13C-178-HpCB		71.8	(30%-135%)
14707001	1903661-001K RG-North-20190311	13C-1-MoCB		49.1	(15%-150%)
		13C-3-MoCB		48.0	(15%-150%)
		13C-4-DiCB		46.9	(25%-150%)
		13C-15-DiCB		58.3	(25%-150%)
		13C-19-TrCB		51.5	(25%-150%)
		13C-37-TrCB		71.8	(25%-150%)
		13C-54-TeCB		65.1	(25%-150%)
		13C-77-TeCB		69.2	(25%-150%)
		13C-81-TeCB		70.8	(25%-150%)
		13C-104-PeCB		71.2	(25%-150%)
		13C-105-PeCB		73.5	(25%-150%)
		13C-114-PeCB		73.8	(25%-150%)
		13C-118-PeCB		73.0	(25%-150%)

PCB Congeners
Surrogate Recovery Report

SDG Number: 1903661

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
14707001	1903661-001K RG-North-20190311	13C-123-PeCB		77.2	(25%-150%)
		13C-126-PeCB		70.1	(25%-150%)
		13C-155-HxCB		66.1	(25%-150%)
		13C-156-HxCB	C	73.1	(25%-150%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		74.4	(25%-150%)
		13C-169-HxCB		74.9	(25%-150%)
		13C-188-HpCB		69.8	(25%-150%)
		13C-189-HpCB		73.2	(25%-150%)
		13C-202-OcCB		67.3	(25%-150%)
		13C-205-OcCB		83.7	(25%-150%)
		13C-206-NoCB		82.6	(25%-150%)
		13C-208-NoCB		71.5	(25%-150%)
		13C-209-DeCB		77.5	(25%-150%)
		13C-28-TrCB		71.9	(30%-135%)
		13C-111-PeCB		70.0	(30%-135%)
		13C-178-HpCB		72.4	(30%-135%)
14707002	1903661-002K Eq BLank-20190312	13C-1-MoCB		49.1	(15%-150%)
		13C-3-MoCB		49.0	(15%-150%)
		13C-4-DiCB		47.7	(25%-150%)
		13C-15-DiCB		59.2	(25%-150%)
		13C-19-TrCB		54.9	(25%-150%)
		13C-37-TrCB		72.2	(25%-150%)
		13C-54-TeCB		65.6	(25%-150%)
		13C-77-TeCB		73.5	(25%-150%)
		13C-81-TeCB		74.6	(25%-150%)
		13C-104-PeCB		73.9	(25%-150%)
		13C-105-PeCB		81.5	(25%-150%)
		13C-114-PeCB		81.4	(25%-150%)
		13C-118-PeCB		80.7	(25%-150%)
		13C-123-PeCB		85.4	(25%-150%)
		13C-126-PeCB		77.1	(25%-150%)
		13C-155-HxCB		70.4	(25%-150%)
		13C-156-HxCB	C	82.6	(25%-150%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		84.2	(25%-150%)
		13C-169-HxCB		84.3	(25%-150%)
		13C-188-HpCB		77.9	(25%-150%)
		13C-189-HpCB		85.8	(25%-150%)
		13C-202-OcCB		76.9	(25%-150%)
		13C-205-OcCB		97.1	(25%-150%)
		13C-206-NoCB		96.9	(25%-150%)
		13C-208-NoCB		84.2	(25%-150%)
		13C-209-DeCB		92.1	(25%-150%)
		13C-28-TrCB		69.3	(30%-135%)
		13C-111-PeCB		75.0	(30%-135%)
		13C-178-HpCB		79.5	(30%-135%)
14707003	1903661-003K RG-South-20190313	13C-1-MoCB		44.9	(15%-150%)
		13C-3-MoCB		46.8	(15%-150%)
		13C-4-DiCB		44.5	(25%-150%)
		13C-15-DiCB		57.8	(25%-150%)

PCB Congeners
Surrogate Recovery Report

SDG Number: 1903661

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
14707003	1903661-003K RG-South-20190313	13C-19-TrCB		49.7	(25%-150%)
		13C-37-TrCB		70.5	(25%-150%)
		13C-54-TeCB		62.9	(25%-150%)
		13C-77-TeCB		67.5	(25%-150%)
		13C-81-TeCB		69.3	(25%-150%)
		13C-104-PeCB		69.9	(25%-150%)
		13C-105-PeCB		71.9	(25%-150%)
		13C-114-PeCB		71.7	(25%-150%)
		13C-118-PeCB		70.7	(25%-150%)
		13C-123-PeCB		74.4	(25%-150%)
		13C-126-PeCB		70.2	(25%-150%)
		13C-155-HxCB		61.2	(25%-150%)
		13C-156-HxCB	C	69.5	(25%-150%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		71.2	(25%-150%)
		13C-169-HxCB		73.5	(25%-150%)
		13C-188-HpCB		61.9	(25%-150%)
		13C-189-HpCB		69.7	(25%-150%)
		13C-202-OcCB		60.0	(25%-150%)
		13C-205-OcCB		77.2	(25%-150%)
		13C-206-NoCB		75.7	(25%-150%)
		13C-208-NoCB		66.0	(25%-150%)
		13C-209-DeCB		71.0	(25%-150%)
		13C-28-TrCB		70.2	(30%-135%)
		13C-111-PeCB		67.5	(30%-135%)
		13C-178-HpCB		66.9	(30%-135%)
14707004	1903661-004K RG-South-DP-20190313	13C-1-MoCB		46.4	(15%-150%)
		13C-3-MoCB		49.0	(15%-150%)
		13C-4-DiCB		46.6	(25%-150%)
		13C-15-DiCB		60.7	(25%-150%)
		13C-19-TrCB		53.2	(25%-150%)
		13C-37-TrCB		75.0	(25%-150%)
		13C-54-TeCB		66.0	(25%-150%)
		13C-77-TeCB		73.0	(25%-150%)
		13C-81-TeCB		73.7	(25%-150%)
		13C-104-PeCB		72.8	(25%-150%)
		13C-105-PeCB		75.3	(25%-150%)
		13C-114-PeCB		75.4	(25%-150%)
		13C-118-PeCB		73.8	(25%-150%)
		13C-123-PeCB		78.5	(25%-150%)
		13C-126-PeCB		74.0	(25%-150%)
		13C-155-HxCB		64.3	(25%-150%)
		13C-156-HxCB	C	73.8	(25%-150%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		75.3	(25%-150%)
		13C-169-HxCB		77.3	(25%-150%)
		13C-188-HpCB		67.6	(25%-150%)
		13C-189-HpCB		74.0	(25%-150%)
		13C-202-OcCB		65.8	(25%-150%)
		13C-205-OcCB		83.4	(25%-150%)
		13C-206-NoCB		81.5	(25%-150%)
		13C-208-NoCB		71.1	(25%-150%)

PCB Congeners

Surrogate Recovery Report

SDG Number: 1903661

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
14707004	1903661-004K RG-South-DP-20190313	13C-209-DeCB		77.6	(25%-150%)
		13C-28-TrCB		80.0	(30%-135%)
		13C-111-PeCB		76.1	(30%-135%)
		13C-178-HpCB		74.5	(30%-135%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

PCB Congeners

Quality Control Summary
Spike Recovery Report

SDG Number: 1903661
Client ID: LCS for batch 40253
Lab Sample ID: 12023490
Instrument: HRP875
Analyst: MLS

Sample Type: Laboratory Control Sample
Matrix: WATER
Analysis Date: 03/29/2019 14:36
Dilution: 1
Prep Batch ID: 40253
Batch ID: 40255

CAS No.		Parmname	Amount Added pg/L		Spike Conc. pg/L	Recovery %	Acceptance Limits
2051-60-7	LCS	1-MoCB	500		509	102	50-150
2051-62-9	LCS	3-MoCB	500		546	109	50-150
13029-08-8	LCS	4-DiCB	500		482	96.5	50-150
2050-68-2	LCS	15-DiCB	500		550	110	50-150
38444-73-4	LCS	19-TrCB	500		531	106	50-150
38444-90-5	LCS	37-TrCB	500		535	107	50-150
15968-05-5	LCS	54-TeCB	1000		975	97.5	50-150
32598-13-3	LCS	77-TeCB	1000		993	99.3	50-150
70362-50-4	LCS	81-TeCB	1000		975	97.5	50-150
56558-16-8	LCS	104-PeCB	1000		1010	101	50-150
32598-14-4	LCS	105-PeCB	1000		1130	113	50-150
74472-37-0	LCS	114-PeCB	1000		1130	113	50-150
31508-00-6	LCS	118-PeCB	1000		1100	110	50-150
65510-44-3	LCS	123-PeCB	1000		911	91.1	50-150
57465-28-8	LCS	126-PeCB	1000		1160	116	50-150
33979-03-2	LCS	155-HxCB	1000		1050	105	50-150
38380-08-4	LCS	156-HxCB	2000	C	2170	109	50-150
69782-90-7	LCS	157-HxCB		C156			
52663-72-6	LCS	167-HxCB	1000		1090	109	50-150
32774-16-6	LCS	169-HxCB	1000		1080	108	50-150
74487-85-7	LCS	188-HpCB	1000		995	99.5	50-150
39635-31-9	LCS	189-HpCB	1000		1040	104	50-150
2136-99-4	LCS	202-OcCB	1500		1510	100	50-150
74472-53-0	LCS	205-OcCB	1500		1410	93.8	50-150
40186-72-9	LCS	206-NoCB	1500		1380	92.2	50-150
52663-77-1	LCS	208-NoCB	1500		1570	105	50-150
2051-24-3	LCS	209-DeCB	1500		1500	99.8	50-150

PCB Congeners

Quality Control Summary
Spike Recovery Report

SDG Number: 1903661 **Sample Type:** Laboratory Control Sample Duplicate

Client ID: LCSD for batch 40253 **Matrix:** WATER

Lab Sample ID: 12023491

Instrument: HRP875 **Analysis Date:** 03/29/2019 15:45 **Dilution:** 1

Analyst: MLS **Prep Batch ID:** 40253

Batch ID: 40255

CAS No.		Parmname	Amount Added pg/L		Spike Conc. pg/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
2051-60-7	LCSD	1-MoCB	500		507	101	50-150	0.307	0-20
2051-62-9	LCSD	3-MoCB	500		538	108	50-150	1.39	0-20
13029-08-8	LCSD	4-DiCB	500		468	93.5	50-150	3.13	0-20
2050-68-2	LCSD	15-DiCB	500		525	105	50-150	4.78	0-20
38444-73-4	LCSD	19-TrCB	500		484	96.8	50-150	9.30	0-20
38444-90-5	LCSD	37-TrCB	500		525	105	50-150	1.93	0-20
15968-05-5	LCSD	54-TeCB	1000		960	96	50-150	1.65	0-20
32598-13-3	LCSD	77-TeCB	1000		964	96.4	50-150	3.02	0-20
70362-50-4	LCSD	81-TeCB	1000		969	96.9	50-150	0.599	0-20
56558-16-8	LCSD	104-PeCB	1000		978	97.8	50-150	3.44	0-20
32598-14-4	LCSD	105-PeCB	1000		1110	111	50-150	2.33	0-20
74472-37-0	LCSD	114-PeCB	1000		1090	109	50-150	3.36	0-20
31508-00-6	LCSD	118-PeCB	1000		1070	107	50-150	2.46	0-20
65510-44-3	LCSD	123-PeCB	1000		891	89.1	50-150	2.27	0-20
57465-28-8	LCSD	126-PeCB	1000		1140	114	50-150	1.72	0-20
33979-03-2	LCSD	155-HxCB	1000		1000	100	50-150	4.84	0-20
38380-08-4	LCSD	156-HxCB	2000	C	2140	107	50-150	1.56	0-20
69782-90-7	LCSD	157-HxCB		C156					
52663-72-6	LCSD	167-HxCB	1000		1060	106	50-150	2.52	0-20
32774-16-6	LCSD	169-HxCB	1000		1060	106	50-150	1.71	0-20
74487-85-7	LCSD	188-HpCB	1000		968	96.8	50-150	2.70	0-20
39635-31-9	LCSD	189-HpCB	1000		1030	103	50-150	1.72	0-20
2136-99-4	LCSD	202-OcCB	1500		1470	98.2	50-150	2.17	0-20
74472-53-0	LCSD	205-OcCB	1500		1380	92.3	50-150	1.59	0-20
40186-72-9	LCSD	206-NoCB	1500		1350	89.8	50-150	2.66	0-20
52663-77-1	LCSD	208-NoCB	1500		1560	104	50-150	1.17	0-20
2051-24-3	LCSD	209-DeCB	1500		1460	97	50-150	2.88	0-20

Method Blank Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Matrix:**	**WATER**
Client ID:	**MB for batch 40253**	**Instrument ID:**	**HRP875**	**Data File:**	**d29mar19a-5**
Lab Sample ID:	**12023489**	**Prep Date:**	**28-MAR-19**	**Analyzed:**	**03/29/19 16:54**
Column:					

This method blank applies to the following samples and quality control samples:

	Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01	LCS for batch 40253	12023490	d29mar19a-3	03/29/19	1436
02	LCSD for batch 40253	12023491	d29mar19a-4	03/29/19	1545
03	1903661-001K RG-North-20190311	14707001	d29mar19a-6	03/29/19	1803
04	1903661-002K Eq BLank-20190312	14707002	d29mar19a-7	03/29/19	1912
05	1903661-003K RG-South-20190313	14707003	d29mar19a-8	03/29/19	2021
06	1903661-004K RG-South-DP-20190313	14707004	d29mar19a-9	03/29/19	2130

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12023489**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 40253**				
Client ID:	**MB for batch 40253**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 16:54**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-5**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
2051-60-7	1-MoCB	J	2.08	pg/L	0.920	100
2051-61-8	2-MoCB	U	ND	pg/L	0.960	100
2051-62-9	3-MoCB	U	ND	pg/L	1.66	100
13029-08-8	4-DiCB	U	ND	pg/L	7.24	100
16605-91-7	5-DiCB	U	ND	pg/L	4.22	100
25569-80-6	6-DiCB	U	ND	pg/L	3.52	100
33284-50-3	7-DiCB	U	ND	pg/L	3.64	100
34883-43-7	8-DiCB	U	ND	pg/L	3.22	100
34883-39-1	9-DiCB	U	ND	pg/L	4.08	100
33146-45-1	10-DiCB	U	ND	pg/L	4.82	100
2050-67-1	11-DiCB	J	21.6	pg/L	3.98	100
2974-92-7	12-DiCB	CU	ND	pg/L	3.90	200
2974-90-5	13-DiCB	C12				
34883-41-5	14-DiCB	U	ND	pg/L	3.66	100
2050-68-2	15-DiCB	U	ND	pg/L	5.06	100
38444-78-9	16-TrCB	U	ND	pg/L	1.88	100
37680-66-3	17-TrCB	J	2.28	pg/L	2.04	100
37680-65-2	18-TrCB	CJ	3.52	pg/L	1.70	200
38444-73-4	19-TrCB	U	ND	pg/L	2.20	100
38444-84-7	20-TrCB	CJ	6.50	pg/L	1.46	200
55702-46-0	21-TrCB	CJ	3.84	pg/L	1.44	200
38444-85-8	22-TrCB	J	2.56	pg/L	1.44	100
55720-44-0	23-TrCB	U	ND	pg/L	1.40	100
55702-45-9	24-TrCB	U	ND	pg/L	1.58	100
55712-37-3	25-TrCB	U	ND	pg/L	1.30	100
38444-81-4	26-TrCB	CU	ND	pg/L	1.44	200
38444-76-7	27-TrCB	U	ND	pg/L	1.52	100
7012-37-5	28-TrCB	C20				
15862-07-4	29-TrCB	C26				
35693-92-6	30-TrCB	C18				
16606-02-3	31-TrCB	J	5.60	pg/L	1.36	100
38444-77-8	32-TrCB	J	1.36	pg/L	1.34	100

Comments:

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12023489**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 40253**				
Client ID:	**MB for batch 40253**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 16:54**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-5**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
38444-86-9	33-TrCB	C21				
37680-68-5	34-TrCB	U	ND	pg/L	1.56	100
37680-69-6	35-TrCB	U	ND	pg/L	1.62	100
38444-87-0	36-TrCB	U	ND	pg/L	1.44	100
38444-90-5	37-TrCB	J	4.04	pg/L	2.10	100
53555-66-1	38-TrCB	U	ND	pg/L	1.50	100
38444-88-1	39-TrCB	U	ND	pg/L	1.38	100
38444-93-8	40-TeCB	CJ	2.62	pg/L	1.82	200
52663-59-9	41-TeCB	U	ND	pg/L	2.56	100
36559-22-5	42-TeCB	U	ND	pg/L	2.06	100
70362-46-8	43-TeCB	U	ND	pg/L	2.24	100
41464-39-5	44-TeCB	CJ	8.04	pg/L	1.90	300
70362-45-7	45-TeCB	CJ	3.38	pg/L	1.60	200
41464-47-5	46-TeCB	U	ND	pg/L	1.60	100
2437-79-8	47-TeCB	C44				
70362-47-9	48-TeCB	U	ND	pg/L	2.00	100
41464-40-8	49-TeCB	CJ	3.38	pg/L	1.84	200
62796-65-0	50-TeCB	CU	ND	pg/L	1.48	200
68194-04-7	51-TeCB	C45				
35693-99-3	52-TeCB	J	10.0	pg/L	2.10	100
41464-41-9	53-TeCB	C50				
15968-05-5	54-TeCB	U	ND	pg/L	1.08	100
74338-24-2	55-TeCB	U	ND	pg/L	1.94	100
41464-43-1	56-TeCB	J	4.36	pg/L	2.02	100
70424-67-8	57-TeCB	U	ND	pg/L	2.00	100
41464-49-7	58-TeCB	U	ND	pg/L	1.96	100
74472-33-6	59-TeCB	CU	ND	pg/L	1.56	300
33025-41-1	60-TeCB	U	ND	pg/L	3.36	100
33284-53-6	61-TeCB	CJ	12.7	pg/L	1.94	400
54230-22-7	62-TeCB	C59				
74472-34-7	63-TeCB	U	ND	pg/L	1.88	100
52663-58-8	64-TeCB	U	ND	pg/L	2.46	100

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12023489**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 40253**				
Client ID:	**MB for batch 40253**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 16:54**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-5**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
33284-54-7	65-TeCB	C44				
32598-10-0	66-TeCB	J	5.02	pg/L	1.98	100
73575-53-8	67-TeCB	U	ND	pg/L	1.70	100
73575-52-7	68-TeCB	U	ND	pg/L	1.72	100
60233-24-1	69-TeCB	C49				
32598-11-1	70-TeCB	C61				
41464-46-4	71-TeCB	C40				
41464-42-0	72-TeCB	U	ND	pg/L	1.90	100
74338-23-1	73-TeCB	U	ND	pg/L	1.56	100
32690-93-0	74-TeCB	C61				
32598-12-2	75-TeCB	C59				
70362-48-0	76-TeCB	C61				
32598-13-3	77-TeCB	U	ND	pg/L	3.88	100
70362-49-1	78-TeCB	U	ND	pg/L	2.02	100
41464-48-6	79-TeCB	U	ND	pg/L	1.70	100
33284-52-5	80-TeCB	U	ND	pg/L	1.72	100
70362-50-4	81-TeCB	U	ND	pg/L	2.28	100
52663-62-4	82-PeCB	U	ND	pg/L	2.28	100
60145-20-2	83-PeCB	U	ND	pg/L	2.36	100
52663-60-2	84-PeCB	U	ND	pg/L	2.24	100
65510-45-4	85-PeCB	CU	ND	pg/L	1.68	300
55312-69-1	86-PeCB	CJ	7.46	pg/L	1.78	600
38380-02-8	87-PeCB	C86				
55215-17-3	88-PeCB	CU	ND	pg/L	2.12	200
73575-57-2	89-PeCB	U	ND	pg/L	2.18	100
68194-07-0	90-PeCB	CJ	5.68	pg/L	1.78	300
68194-05-8	91-PeCB	C88				
52663-61-3	92-PeCB	U	ND	pg/L	2.10	100
73575-56-1	93-PeCB	CU	ND	pg/L	2.08	200
73575-55-0	94-PeCB	U	ND	pg/L	2.14	100
38379-99-6	95-PeCB	U	ND	pg/L	2.92	100
73575-54-9	96-PeCB	U	ND	pg/L	0.920	100

Comments:

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12023489**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 40253**				
Client ID:	**MB for batch 40253**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 16:54**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-5**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
41464-51-1	97-PeCB	C86				
60233-25-2	98-PeCB	CU	ND	pg/L	2.18	200
38380-01-7	99-PeCB	U	ND	pg/L	1.74	100
39485-83-1	100-PeCB	C93				
37680-73-2	101-PeCB	C90				
68194-06-9	102-PeCB	C98				
60145-21-3	103-PeCB	U	ND	pg/L	1.98	100
56558-16-8	104-PeCB	U	ND	pg/L	0.960	100
32598-14-4	105-PeCB	J	4.84	pg/L	2.00	100
70424-69-0	106-PeCB	U	ND	pg/L	1.74	100
70424-68-9	107-PeCB	U	ND	pg/L	1.50	100
70362-41-3	108-PeCB	CJ	2.84	pg/L	1.70	200
74472-35-8	109-PeCB	C86				
38380-03-9	110-PeCB	CJ	6.74	pg/L	1.62	200
39635-32-0	111-PeCB	U	ND	pg/L	1.48	100
74472-36-9	112-PeCB	U	ND	pg/L	1.54	100
68194-10-5	113-PeCB	C90				
74472-37-0	114-PeCB	U	ND	pg/L	1.96	100
74472-38-1	115-PeCB	C110				
18259-05-7	116-PeCB	C85				
68194-11-6	117-PeCB	C85				
31508-00-6	118-PeCB	J	5.30	pg/L	1.90	100
56558-17-9	119-PeCB	C86				
68194-12-7	120-PeCB	U	ND	pg/L	1.46	100
56558-18-0	121-PeCB	U	ND	pg/L	1.52	100
76842-07-4	122-PeCB	U	ND	pg/L	1.80	100
65510-44-3	123-PeCB	U	ND	pg/L	1.88	100
70424-70-3	124-PeCB	C108				
74472-39-2	125-PeCB	C86				
57465-28-8	126-PeCB	U	ND	pg/L	2.34	100
39635-33-1	127-PeCB	U	ND	pg/L	1.66	100
38380-07-3	128-HxCB	CJ	2.20	pg/L	1.70	200

Comments:

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12023489**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 40253**				
Client ID:	**MB for batch 40253**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 16:54**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-5**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
55215-18-4	129-HxCB	CJ	4.38	pg/L	1.90	300
52663-66-8	130-HxCB	U	ND	pg/L	2.22	100
61798-70-7	131-HxCB	U	ND	pg/L	2.44	100
38380-05-1	132-HxCB	U	ND	pg/L	2.12	100
35694-04-3	133-HxCB	U	ND	pg/L	2.08	100
52704-70-8	134-HxCB	U	ND	pg/L	2.68	100
52744-13-5	135-HxCB	CJ	2.00	pg/L	1.10	200
38411-22-2	136-HxCB	U	ND	pg/L	0.840	100
35694-06-5	137-HxCB	U	ND	pg/L	1.90	100
35065-28-2	138-HxCB	C129				
56030-56-9	139-HxCB	CU	ND	pg/L	1.88	200
59291-64-4	140-HxCB	C139				
52712-04-6	141-HxCB	U	ND	pg/L	1.92	100
41411-61-4	142-HxCB	U	ND	pg/L	2.18	100
68194-15-0	143-HxCB	U	ND	pg/L	1.98	100
68194-14-9	144-HxCB	U	ND	pg/L	1.08	100
74472-40-5	145-HxCB	U	ND	pg/L	0.840	100
51908-16-8	146-HxCB	U	ND	pg/L	1.76	100
68194-13-8	147-HxCB	CJ	2.66	pg/L	1.86	200
74472-41-6	148-HxCB	U	ND	pg/L	1.08	100
38380-04-0	149-HxCB	C147				
68194-08-1	150-HxCB	U	ND	pg/L	0.800	100
52663-63-5	151-HxCB	C135				
68194-09-2	152-HxCB	U	ND	pg/L	0.840	100
35065-27-1	153-HxCB	CJ	3.10	pg/L	1.60	200
60145-22-4	154-HxCB	U	ND	pg/L	0.940	100
33979-03-2	155-HxCB	U	ND	pg/L	0.800	100
38380-08-4	156-HxCB	CU	ND	pg/L	4.28	200
69782-90-7	157-HxCB	C156				
74472-42-7	158-HxCB	U	ND	pg/L	1.36	100
39635-35-3	159-HxCB	J	1.26	pg/L	0.960	100
41411-62-5	160-HxCB	U	ND	pg/L	1.58	100

Comments:

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12023489**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 40253**				
Client ID:	**MB for batch 40253**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 16:54**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-5**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
74472-43-8	161-HxCB	U	ND	pg/L	1.56	100
39635-34-2	162-HxCB	U	ND	pg/L	1.52	100
74472-44-9	163-HxCB	C129				
74472-45-0	164-HxCB	U	ND	pg/L	1.50	100
74472-46-1	165-HxCB	U	ND	pg/L	1.64	100
41411-63-6	166-HxCB	C128				
52663-72-6	167-HxCB	J	1.86	pg/L	1.04	100
59291-65-5	168-HxCB	C153				
32774-16-6	169-HxCB	J	1.96	pg/L	1.18	100
35065-30-6	170-HpCB	J	1.94	pg/L	1.26	100
52663-71-5	171-HpCB	CU	ND	pg/L	2.14	200
52663-74-8	172-HpCB	U	ND	pg/L	1.24	100
68194-16-1	173-HpCB	C171				
38411-25-5	174-HpCB	U	ND	pg/L	1.28	100
40186-70-7	175-HpCB	J	1.04	pg/L	0.940	100
52663-65-7	176-HpCB	U	ND	pg/L	0.740	100
52663-70-4	177-HpCB	U	ND	pg/L	1.24	100
52663-67-9	178-HpCB	U	ND	pg/L	1.00	100
52663-64-6	179-HpCB	U	ND	pg/L	0.720	100
35065-29-3	180-HpCB	CJ	3.08	pg/L	1.02	200
74472-47-2	181-HpCB	U	ND	pg/L	1.14	100
60145-23-5	182-HpCB	U	ND	pg/L	0.920	100
52663-69-1	183-HpCB	CJ	1.76	pg/L	1.10	200
74472-48-3	184-HpCB	U	ND	pg/L	0.680	100
52712-05-7	185-HpCB	C183				
74472-49-4	186-HpCB	U	ND	pg/L	0.740	100
52663-68-0	187-HpCB	U	ND	pg/L	1.30	100
74487-85-7	188-HpCB	U	ND	pg/L	0.760	100
39635-31-9	189-HpCB	J	1.60	pg/L	1.02	100
41411-64-7	190-HpCB	U	ND	pg/L	1.24	100
74472-50-7	191-HpCB	U	ND	pg/L	0.920	100
74472-51-8	192-HpCB	U	ND	pg/L	0.980	100

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12023489**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 40253**				
Client ID:	**MB for batch 40253**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 16:54**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-5**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
69782-91-8	193-HpCB	C180				
35694-08-7	194-OcCB	J	2.66	pg/L	0.860	100
52663-78-2	195-OcCB	J	1.36	pg/L	0.920	100
42740-50-1	196-OcCB	J	1.52	pg/L	0.880	100
33091-17-7	197-OcCB	CJ	1.48	pg/L	0.640	200
68194-17-2	198-OcCB	CJ	2.02	pg/L	0.880	200
52663-75-9	199-OcCB	C198				
52663-73-7	200-OcCB	C197				
40186-71-8	201-OcCB	J	0.680	pg/L	0.660	100
2136-99-4	202-OcCB	U	ND	pg/L	0.760	100
52663-76-0	203-OcCB	J	1.72	pg/L	0.800	100
74472-52-9	204-OcCB	U	ND	pg/L	0.700	100
74472-53-0	205-OcCB	U	ND	pg/L	1.32	100
40186-72-9	206-NoCB	J	2.00	pg/L	1.68	100
52663-79-3	207-NoCB	U	ND	pg/L	1.20	100
52663-77-1	208-NoCB	U	ND	pg/L	1.24	100
2051-24-3	209-DeCB	U	ND	pg/L	1.16	100
1336-36-3	Total PCB Congeners	J	178	pg/L		100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		959	2000	pg/L	47.9	(15%-150%)
13C-3-MoCB		901	2000	pg/L	45.1	(15%-150%)
13C-4-DiCB		924	2000	pg/L	46.2	(25%-150%)
13C-15-DiCB		1090	2000	pg/L	54.6	(25%-150%)
13C-19-TrCB		1010	2000	pg/L	50.7	(25%-150%)
13C-37-TrCB		1280	2000	pg/L	64.1	(25%-150%)
13C-54-TeCB		1280	2000	pg/L	64.1	(25%-150%)
13C-77-TeCB		1300	2000	pg/L	65.0	(25%-150%)
13C-81-TeCB		1350	2000	pg/L	67.4	(25%-150%)
13C-104-PeCB		1420	2000	pg/L	71.0	(25%-150%)
13C-105-PeCB		1460	2000	pg/L	73.1	(25%-150%)
13C-114-PeCB		1470	2000	pg/L	73.4	(25%-150%)
13C-118-PeCB		1440	2000	pg/L	72.0	(25%-150%)
13C-123-PeCB		1530	2000	pg/L	76.4	(25%-150%)
13C-126-PeCB		1340	2000	pg/L	67.2	(25%-150%)
13C-155-HxCB		1300	2000	pg/L	65.0	(25%-150%)
13C-156-HxCB	C	2880	4000	pg/L	72.1	(25%-150%)
13C-157-HxCB	C156L					
13C-167-HxCB		1480	2000	pg/L	73.9	(25%-150%)
13C-169-HxCB		1450	2000	pg/L	72.4	(25%-150%)
13C-188-HpCB		1390	2000	pg/L	69.5	(25%-150%)
13C-189-HpCB		1470	2000	pg/L	73.4	(25%-150%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12023489**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 40253**				
Client ID:	**MB for batch 40253**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 16:54**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-5**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-202-OcCB		1360	2000	pg/L	68.1	(25%-150%)
13C-205-OcCB		1700	2000	pg/L	85.1	(25%-150%)
13C-206-NoCB		1710	2000	pg/L	85.6	(25%-150%)
13C-208-NoCB		1490	2000	pg/L	74.6	(25%-150%)
13C-209-DeCB		1620	2000	pg/L	80.9	(25%-150%)
13C-28-TrCB		1420	2000	pg/L	70.9	(30%-135%)
13C-111-PeCB		1370	2000	pg/L	68.6	(30%-135%)
13C-178-HpCB		1440	2000	pg/L	71.8	(30%-135%)

Comments:

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12023490**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 40253**				
Client ID:	**LCS for batch 40253**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 14:36**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-3**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
2051-60-7	1-MoCB		509	pg/L	1.70	100
2051-62-9	3-MoCB		546	pg/L	2.10	100
13029-08-8	4-DiCB		482	pg/L	8.20	100
2050-68-2	15-DiCB		550	pg/L	6.34	100
38444-73-4	19-TrCB		531	pg/L	3.18	100
38444-90-5	37-TrCB		535	pg/L	6.04	100
15968-05-5	54-TeCB		975	pg/L	1.62	100
32598-13-3	77-TeCB		993	pg/L	7.14	100
70362-50-4	81-TeCB		975	pg/L	6.44	100
56558-16-8	104-PeCB		1010	pg/L	1.40	100
32598-14-4	105-PeCB		1130	pg/L	5.16	100
74472-37-0	114-PeCB		1130	pg/L	5.14	100
31508-00-6	118-PeCB		1100	pg/L	4.98	100
65510-44-3	123-PeCB		911	pg/L	4.78	100
57465-28-8	126-PeCB		1160	pg/L	5.94	100
33979-03-2	155-HxCB		1050	pg/L	1.02	100
38380-08-4	156-HxCB	C	2170	pg/L	3.94	200
69782-90-7	157-HxCB	C156				
52663-72-6	167-HxCB		1090	pg/L	2.84	100
32774-16-6	169-HxCB		1080	pg/L	3.22	100
74487-85-7	188-HpCB		995	pg/L	1.22	100
39635-31-9	189-HpCB		1040	pg/L	1.70	100
2136-99-4	202-OcCB		1510	pg/L	1.38	100
74472-53-0	205-OcCB		1410	pg/L	1.36	100
40186-72-9	206-NoCB		1380	pg/L	2.10	100
52663-77-1	208-NoCB		1570	pg/L	1.60	100
2051-24-3	209-DeCB		1500	pg/L	0.880	100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		1010	2000	pg/L	50.5	(15%-140%)
13C-3-MoCB		976	2000	pg/L	48.8	(15%-140%)
13C-4-DiCB		973	2000	pg/L	48.7	(30%-140%)
13C-15-DiCB		1190	2000	pg/L	59.7	(30%-140%)
13C-19-TrCB		1070	2000	pg/L	53.3	(30%-140%)
13C-37-TrCB		1430	2000	pg/L	71.4	(30%-140%)
13C-54-TeCB		1350	2000	pg/L	67.5	(30%-140%)
13C-77-TeCB		1400	2000	pg/L	70.1	(30%-140%)
13C-81-TeCB		1460	2000	pg/L	72.9	(30%-140%)
13C-104-PeCB		1490	2000	pg/L	74.5	(30%-140%)
13C-105-PeCB		1560	2000	pg/L	77.9	(30%-140%)
13C-114-PeCB		1550	2000	pg/L	77.6	(30%-140%)
13C-118-PeCB		1530	2000	pg/L	76.5	(30%-140%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12023490**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 40253**				
Client ID:	**LCS for batch 40253**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 14:36**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-3**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-123-PeCB		1640	2000	pg/L	81.9	(30%-140%)
13C-126-PeCB		1460	2000	pg/L	73.0	(30%-140%)
13C-155-HxCB		1350	2000	pg/L	67.7	(30%-140%)
13C-156-HxCB	C	3120	4000	pg/L	77.9	(30%-140%)
13C-157-HxCB	C156L					
13C-167-HxCB		1590	2000	pg/L	79.3	(30%-140%)
13C-169-HxCB		1590	2000	pg/L	79.5	(30%-140%)
13C-188-HpCB		1420	2000	pg/L	70.9	(30%-140%)
13C-189-HpCB		1550	2000	pg/L	77.7	(30%-140%)
13C-202-OcCB		1400	2000	pg/L	70.0	(30%-140%)
13C-205-OcCB		1790	2000	pg/L	89.4	(30%-140%)
13C-206-NoCB		1790	2000	pg/L	89.4	(30%-140%)
13C-208-NoCB		1550	2000	pg/L	77.6	(30%-140%)
13C-209-DeCB		1680	2000	pg/L	84.2	(30%-140%)
13C-28-TrCB		1440	2000	pg/L	72.1	(40%-125%)
13C-111-PeCB		1420	2000	pg/L	70.8	(40%-125%)
13C-178-HpCB		1490	2000	pg/L	74.6	(40%-125%)

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12023491**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 40253**				
Client ID:	**LCSD for batch 40253**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 15:45**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-4**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
2051-60-7	1-MoCB		507	pg/L	1.88	100
2051-62-9	3-MoCB		538	pg/L	2.28	100
13029-08-8	4-DiCB		468	pg/L	8.12	100
2050-68-2	15-DiCB		525	pg/L	6.34	100
38444-73-4	19-TrCB		484	pg/L	3.42	100
38444-90-5	37-TrCB		525	pg/L	9.44	100
15968-05-5	54-TeCB		960	pg/L	1.60	100
32598-13-3	77-TeCB		964	pg/L	7.10	100
70362-50-4	81-TeCB		969	pg/L	6.74	100
56558-16-8	104-PeCB		978	pg/L	1.28	100
32598-14-4	105-PeCB		1110	pg/L	5.74	100
74472-37-0	114-PeCB		1090	pg/L	5.50	100
31508-00-6	118-PeCB		1070	pg/L	5.30	100
65510-44-3	123-PeCB		891	pg/L	5.14	100
57465-28-8	126-PeCB		1140	pg/L	6.50	100
33979-03-2	155-HxCB		1000	pg/L	1.02	100
38380-08-4	156-HxCB	C	2140	pg/L	5.38	200
69782-90-7	157-HxCB	C156				
52663-72-6	167-HxCB		1060	pg/L	3.86	100
32774-16-6	169-HxCB		1060	pg/L	4.46	100
74487-85-7	188-HpCB		968	pg/L	1.28	100
39635-31-9	189-HpCB		1030	pg/L	1.88	100
2136-99-4	202-OcCB		1470	pg/L	1.70	100
74472-53-0	205-OcCB		1380	pg/L	1.64	100
40186-72-9	206-NoCB		1350	pg/L	2.52	100
52663-77-1	208-NoCB		1560	pg/L	1.92	100
2051-24-3	209-DeCB		1460	pg/L	0.980	100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		1150	2000	pg/L	57.5	(15%-140%)
13C-3-MoCB		1100	2000	pg/L	55.0	(15%-140%)
13C-4-DiCB		1090	2000	pg/L	54.6	(30%-140%)
13C-15-DiCB		1290	2000	pg/L	64.6	(30%-140%)
13C-19-TrCB		1240	2000	pg/L	61.9	(30%-140%)
13C-37-TrCB		1480	2000	pg/L	73.9	(30%-140%)
13C-54-TeCB		1420	2000	pg/L	70.9	(30%-140%)
13C-77-TeCB		1430	2000	pg/L	71.4	(30%-140%)
13C-81-TeCB		1460	2000	pg/L	73.1	(30%-140%)
13C-104-PeCB		1570	2000	pg/L	78.6	(30%-140%)
13C-105-PeCB		1550	2000	pg/L	77.3	(30%-140%)
13C-114-PeCB		1560	2000	pg/L	78.2	(30%-140%)
13C-118-PeCB		1540	2000	pg/L	77.2	(30%-140%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1903661**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12023491**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 40253**				
Client ID:	**LCSD for batch 40253**			**Prep Basis:**	**As Received**
Batch ID:	**40255**	**Method:**	**EPA Method 1668A**		
Run Date:	**03/29/2019 15:45**	**Analyst:**	**MLS**	**Instrument:**	**HRP875**
Data File:	**d29mar19a-4**			**Dilution:**	**1**
Prep Batch:	**40253**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**28-MAR-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-123-PeCB		1630	2000	pg/L	81.7	(30%-140%)
13C-126-PeCB		1440	2000	pg/L	72.0	(30%-140%)
13C-155-HxCB		1410	2000	pg/L	70.7	(30%-140%)
13C-156-HxCB	C	3050	4000	pg/L	76.2	(30%-140%)
13C-157-HxCB	C156L					
13C-167-HxCB		1570	2000	pg/L	78.7	(30%-140%)
13C-169-HxCB		1540	2000	pg/L	76.8	(30%-140%)
13C-188-HpCB		1500	2000	pg/L	75.0	(30%-140%)
13C-189-HpCB		1560	2000	pg/L	77.8	(30%-140%)
13C-202-OcCB		1450	2000	pg/L	72.4	(30%-140%)
13C-205-OcCB		1770	2000	pg/L	88.6	(30%-140%)
13C-206-NoCB		1780	2000	pg/L	89.1	(30%-140%)
13C-208-NoCB		1550	2000	pg/L	77.7	(30%-140%)
13C-209-DeCB		1690	2000	pg/L	84.6	(30%-140%)
13C-28-TrCB		1470	2000	pg/L	73.4	(40%-125%)
13C-111-PeCB		1420	2000	pg/L	70.8	(40%-125%)
13C-178-HpCB		1480	2000	pg/L	73.9	(40%-125%)

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

Pace Analytical
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1903661
Pace Project No.: 30284534

Sample: 1903661-001 RG-North-20190311 **Lab ID: 30284534001** Collected: 03/11/19 10:45 Received: 03/15/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**3.91 ± 2.25 (2.52) C:NA T:NA**	pCi/L	03/25/19 10:03	12587-46-1	
Adjusted Gross Alpha	EPA 900.0	**1.94 ± NA (NA) C:NA T:NA**	pCi/L	04/05/19 16:45		
Total Uranium	ASTM D5174-97	**2.91 ± 0.073 (0.262) C:NA T:NA**	ug/L	04/05/19 16:16	7440-61-1	

Sample: 1903661-002 EQ Blank-20190312 **Lab ID: 30284534002** Collected: 03/11/19 12:00 Received: 03/15/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**-0.021 ± 0.434 (1.23) C:NA T:NA**	pCi/L	03/25/19 10:03	12587-46-1	
Adjusted Gross Alpha	EPA 900.0	**0.000 ± NA (NA) C:NA T:NA**	pCi/L	04/05/19 16:45		
Total Uranium	ASTM D5174-97	**0.167 ± 0.007 (0.262) C:NA T:NA**	ug/L	04/05/19 16:18	7440-61-1	

Sample: 1903661-003 RG-South-20190313 **Lab ID: 30284534003** Collected: 03/11/19 09:45 Received: 03/15/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**10.2 ± 3.57 (2.89) C:NA T:NA**	pCi/L	03/26/19 08:09	12587-46-1	
Adjusted Gross Alpha	EPA 900.0	**7.86 ± NA (NA) C:NA T:NA**	pCi/L	04/05/19 16:45		
Total Uranium	ASTM D5174-97	**3.46 ± 0.099 (0.262) C:NA T:NA**	ug/L	04/05/19 16:20	7440-61-1	

Sample: 1903661-004 R6-South-DP-201903 **Lab ID: 30284534004** Collected: 03/11/19 10:00 Received: 03/15/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**14.6 ± 4.70 (2.92) C:NA T:NA**	pCi/L	03/26/19 08:09	12587-46-1	
Adjusted Gross Alpha	EPA 900.0	**12.3 ± NA (NA) C:NA T:NA**	pCi/L	04/05/19 16:45		
Total Uranium	ASTM D5174-97	**3.47 ± 0.099 (0.262) C:NA T:NA**	ug/L	04/05/19 16:22	7440-61-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1903661
Pace Project No.: 30284534

QC Batch: 334653 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30284534001, 30284534002, 30284534003, 30284534004

METHOD BLANK: 1628572 Matrix: Water
Associated Lab Samples: 30284534001, 30284534002, 30284534003, 30284534004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	-0.226 ± 0.450 (1.38) C:NA T:NA	pCi/L	03/25/19 09:52	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1903661
Pace Project No.: 30284534

QC Batch: 334682 Analysis Method: ASTM D5174-97
QC Batch Method: ASTM D5174-97 Analysis Description: D5174.97 Total Uranium KPA
Associated Lab Samples: 30284534001, 30284534002, 30284534003, 30284534004

METHOD BLANK: 1628668 Matrix: Water
Associated Lab Samples: 30284534001, 30284534002, 30284534003, 30284534004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Total Uranium	0.085 ± 0.003 (0.262) C:NA T:NA	ug/L	04/03/19 18:36	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1903661
Pace Project No.: 30284534

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**

08-Apr-19

Client: AMAFCA

Project: CMC

Sample ID: **MB-43725**	SampType: **MBLK**	TestCode: **EPA Method 1664B**
Client ID: **PBW**	Batch ID: **43725**	RunNo: **58435**
Prep Date: **3/18/2019**	Analysis Date: **3/18/2019**	SeqNo: **1961092** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Hexane Extractable Material	ND	10.0								

Sample ID: **LCS-43725**	SampType: **LCS**	TestCode: **EPA Method 1664B**
Client ID: **LCSW**	Batch ID: **43725**	RunNo: **58435**
Prep Date: **3/18/2019**	Analysis Date: **3/18/2019**	SeqNo: **1961093** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Hexane Extractable Material	32.2	10.0	40.00	0	80.5	78	114			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**

08-Apr-19

Client: AMAFCA

Project: CMC

Sample ID: **MB-43738** SampType: **MBLK** TestCode: **EPA Method 200.7: Metals**

Client ID: **PBW** Batch ID: **43738** RunNo: **58535**

Prep Date: **3/18/2019** Analysis Date: **3/20/2019** SeqNo: **1965261** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								

Sample ID: **LLLCS-43738** SampType: **LCSLL** TestCode: **EPA Method 200.7: Metals**

Client ID: **BatchQC** Batch ID: **43738** RunNo: **58535**

Prep Date: **3/18/2019** Analysis Date: **3/20/2019** SeqNo: **1965262** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.50	1.0	0.5000	0	101	50	150			J
Magnesium	0.52	1.0	0.5000	0	105	50	150			J

Sample ID: **LCS-43738** SampType: **LCS** TestCode: **EPA Method 200.7: Metals**

Client ID: **LCSW** Batch ID: **43738** RunNo: **58535**

Prep Date: **3/18/2019** Analysis Date: **3/20/2019** SeqNo: **1965263** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	47	1.0	50.00	0	94.1	85	115			
Magnesium	51	1.0	50.00	0	102	85	115			

Sample ID: **1903661-001GMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**

Client ID: **RG-North-20190311** Batch ID: **43738** RunNo: **58535**

Prep Date: **3/18/2019** Analysis Date: **3/20/2019** SeqNo: **1965294** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	81	1.0	50.00	36.53	89.7	70	130			
Magnesium	60	1.0	50.00	8.188	103	70	130			

Sample ID: **1903661-001GMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**

Client ID: **RG-North-20190311** Batch ID: **43738** RunNo: **58535**

Prep Date: **3/18/2019** Analysis Date: **3/20/2019** SeqNo: **1965295** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	82	1.0	50.00	36.53	90.1	70	130	0.208	20	
Magnesium	60	1.0	50.00	8.188	103	70	130	0.0733	20	

Sample ID: **MB-43738** SampType: **MBLK** TestCode: **EPA Method 200.7: Metals**

Client ID: **PBW** Batch ID: **43738** RunNo: **58558**

Prep Date: **3/18/2019** Analysis Date: **3/21/2019** SeqNo: **1966114** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**

08-Apr-19

Client: AMAFCA

Project: CMC

Sample ID: **MB-43738**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Metals**
Client ID: **PBW**	Batch ID: **43738**	RunNo: **58558**
Prep Date: **3/18/2019**	Analysis Date: **3/21/2019**	SeqNo: **1966114** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								

Sample ID: **LLLCS-43738**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Metals**
Client ID: **BatchQC**	Batch ID: **43738**	RunNo: **58558**
Prep Date: **3/18/2019**	Analysis Date: **3/21/2019**	SeqNo: **1966116** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.57	1.0	0.5000	0	113	50	150			J
Magnesium	0.53	1.0	0.5000	0	107	50	150			J

Sample ID: **LCS-43738**	SampType: **LCS**	TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW**	Batch ID: **43738**	RunNo: **58558**
Prep Date: **3/18/2019**	Analysis Date: **3/21/2019**	SeqNo: **1966118** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	49	1.0	50.00	0	97.5	85	115			
Magnesium	49	1.0	50.00	0	97.9	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**
08-Apr-19

Client: AMAFCA
Project: CMC

Sample ID: **MB** SampType: **MBLK** TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW** Batch ID: **A58572** RunNo: **58572**
Prep Date: Analysis Date: **3/22/2019** SeqNo: **1966586** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	ND	0.0010								
Lead	ND	0.00050								

Sample ID: **LLLCS** SampType: **LCSLL** TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **BatchQC** Batch ID: **A58572** RunNo: **58572**
Prep Date: Analysis Date: **3/22/2019** SeqNo: **1966587** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.00097	0.0010	0.001000	0	96.9	50	150			J
Lead	0.00048	0.00050	0.0005000	0	96.0	50	150			J

Sample ID: **LCS** SampType: **LCS** TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW** Batch ID: **A58572** RunNo: **58572**
Prep Date: Analysis Date: **3/22/2019** SeqNo: **1966588** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.023	0.0010	0.02500	0	92.9	85	115			
Lead	0.012	0.00050	0.01250	0	94.3	85	115			

Sample ID: **1903661-001HMS** SampType: **MS** TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **RG-North-20190311** Batch ID: **A58572** RunNo: **58572**
Prep Date: Analysis Date: **3/22/2019** SeqNo: **1966604** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.030	0.0010	0.02500	0.005472	96.6	70	130			
Lead	0.012	0.00050	0.01250	0.0001054	94.1	70	130			

Sample ID: **1903661-001HMSD** SampType: **MSD** TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **RG-North-20190311** Batch ID: **A58572** RunNo: **58572**
Prep Date: Analysis Date: **3/22/2019** SeqNo: **1966605** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.029	0.0010	0.02500	0.005472	95.0	70	130	1.35	20	
Lead	0.012	0.00050	0.01250	0.0001054	92.8	70	130	1.36	20	

Sample ID: **1903661-002HMS** SampType: **MS** TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **Eq Blank-20190312** Batch ID: **A58572** RunNo: **58572**
Prep Date: Analysis Date: **3/22/2019** SeqNo: **1966609** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**
08-Apr-19

Client: AMAFCA
Project: CMC

Sample ID: **1903661-002HMS** SampType: **MS** TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **Eq Blank-20190312** Batch ID: **A58572** RunNo: **58572**
Prep Date: Analysis Date: **3/22/2019** SeqNo: **1966609** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.025	0.0010	0.02500	0.0005160	96.2	70	130			
Lead	0.012	0.00050	0.01250	0	94.1	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**

08-Apr-19

Client: AMAFCA

Project: CMC

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R58394**	RunNo: **58394**
Prep Date:	Analysis Date: **3/14/2019**	SeqNo: **1959412** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R58394**	RunNo: **58394**
Prep Date:	Analysis Date: **3/14/2019**	SeqNo: **1959413** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0	96.7	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	99.9	90	110			
Nitrate+Nitrite as N	3.5	0.20	3.500	0	99.0	90	110			

Sample ID: **1903661-002FMS**	SampType: **ms**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Eq Blank-20190312**	Batch ID: **R58394**	RunNo: **58394**
Prep Date:	Analysis Date: **3/14/2019**	SeqNo: **1959415** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.93	0.10	1.000	0	93.3	82.4	108			
Nitrogen, Nitrate (As N)	2.4	0.10	2.500	0	96.9	79.1	116			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	95.9	70	117			

Sample ID: **1903661-002FMSD**	SampType: **msd**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Eq Blank-20190312**	Batch ID: **R58394**	RunNo: **58394**
Prep Date:	Analysis Date: **3/14/2019**	SeqNo: **1959416** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.94	0.10	1.000	0	94.0	82.4	108	0.751	20	
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	98.1	79.1	116	1.21	20	
Nitrate+Nitrite as N	3.4	0.20	3.500	0	97.0	70	117	1.09	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**
08-Apr-19

Client: AMAFCA
Project: CMC

Sample ID: **MB-43723**	SampType: **MBLK**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **PBW**	Batch ID: **43723**	RunNo: **58464**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962217** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dieldrin	ND	0.10								
Surr: Decachlorobiphenyl	1.7		2.500		68.3	29.4	99.8			
Surr: Tetrachloro-m-xylene	1.5		2.500		61.3	20.7	100			

Sample ID: **LCS-43723**	SampType: **LCS**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSW**	Batch ID: **43723**	RunNo: **58464**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962218** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dieldrin	0.42	0.10	0.5000	0	84.6	42.7	151			
Surr: Decachlorobiphenyl	1.8		2.500		72.5	29.4	99.8			
Surr: Tetrachloro-m-xylene	1.9		2.500		74.1	20.7	100			

Sample ID: **LCSD-43723**	SampType: **LCSD**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSS02**	Batch ID: **43723**	RunNo: **58464**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962219** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dieldrin	0.41	0.10	0.5000	0	81.7	42.7	151	3.48	37.9	
Surr: Decachlorobiphenyl	1.8		2.500		72.7	29.4	99.8	0	20	
Surr: Tetrachloro-m-xylene	1.7		2.500		69.6	20.7	100	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**

08-Apr-19

Client: AMAFCA

Project: CMC

Sample ID: **MB-43669**	SampType: **MBLK**	TestCode: **SM5210B: BOD**
Client ID: **PBW**	Batch ID: **43669**	RunNo: **58475**
Prep Date: **3/13/2019**	Analysis Date: **3/18/2019**	SeqNo: **1962474** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Biochemical Oxygen Demand	ND	2.0								

Sample ID: **LCS-43669**	SampType: **LCS**	TestCode: **SM5210B: BOD**
Client ID: **LCSW**	Batch ID: **43669**	RunNo: **58475**
Prep Date: **3/13/2019**	Analysis Date: **3/18/2019**	SeqNo: **1962475** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Biochemical Oxygen Demand	100	2.0	198.0	0	52.0	84.6	115.4			S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**
08-Apr-19

Client: AMAFCA
Project: CMC

Sample ID: **MB-43668**	SampType: **MBLK**	TestCode: **SM 9223B Fecal Indicator: E. coli MPN**
Client ID: **PBW**	Batch ID: **43668**	RunNo: **58390**
Prep Date: **3/13/2019**	Analysis Date: **3/14/2019**	SeqNo: **1959325** Units: **MPN/100mL**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
E. Coli	<1	1.000								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**

08-Apr-19

Client: AMAFCA

Project: CMC

Sample ID: **MB**	SampType: **MBLK**	TestCode: **SM 4500 NH3: Ammonia**
Client ID: **PBW**	Batch ID: **R58721**	RunNo: **58721**
Prep Date:	Analysis Date: **3/28/2019**	SeqNo: **1972372** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Ammonia	ND	1.0								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **SM 4500 NH3: Ammonia**
Client ID: **LCSW**	Batch ID: **R58721**	RunNo: **58721**
Prep Date:	Analysis Date: **3/28/2019**	SeqNo: **1972373** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Ammonia	10	1.0	10.00	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**
08-Apr-19

Client: AMAFCA
Project: CMC

Sample ID: **MB-43794**	SampType: **MBLK**	TestCode: **EPA Method 365.1: Total Phosphorous**
Client ID: **PBW**	Batch ID: **43794**	RunNo: **58536**
Prep Date: **3/20/2019**	Analysis Date: **3/21/2019**	SeqNo: **1965454** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	ND	0.010								

Sample ID: **LCS-43794**	SampType: **LCS**	TestCode: **EPA Method 365.1: Total Phosphorous**
Client ID: **LCSW**	Batch ID: **43794**	RunNo: **58536**
Prep Date: **3/20/2019**	Analysis Date: **3/21/2019**	SeqNo: **1965455** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.24	0.010	0.2500	0	97.8	90	110			

Sample ID: **1903661-002FMSD**	SampType: **MSD**	TestCode: **EPA Method 365.1: Total Phosphorous**
Client ID: **Eq Blank-20190312**	Batch ID: **43794**	RunNo: **58536**
Prep Date: **3/20/2019**	Analysis Date: **3/21/2019**	SeqNo: **1965459** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.24	0.010	0.2500	0	95.0	90	110	1.10	20	

Sample ID: **1903661-002FMS**	SampType: **MS**	TestCode: **EPA Method 365.1: Total Phosphorous**
Client ID: **Eq Blank-20190312**	Batch ID: **43794**	RunNo: **58536**
Prep Date: **3/20/2019**	Analysis Date: **3/21/2019**	SeqNo: **1965484** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.23	0.010	0.2500	0	94.0	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**

08-Apr-19

Client: AMAFCA

Project: CMC

Sample ID: **MB-43747**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **43747**	RunNo: **58487**
Prep Date: **3/18/2019**	Analysis Date: **3/20/2019**	SeqNo: **1963253** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-43747**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **43747**	RunNo: **58487**
Prep Date: **3/18/2019**	Analysis Date: **3/20/2019**	SeqNo: **1963254** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	999	20.0	1000	0	99.9	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**

08-Apr-19

Client: AMAFCA

Project: CMC

Sample ID: **MB-43956**	SampType: **MBLK**	TestCode: **SM 4500 Norg C: TKN**
Client ID: **PBW**	Batch ID: **43956**	RunNo: **58775**
Prep Date: **3/28/2019**	Analysis Date: **3/29/2019**	SeqNo: **1974972** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Kjeldahl, Total	ND	1.0								

Sample ID: **LCS-43956**	SampType: **LCS**	TestCode: **SM 4500 Norg C: TKN**
Client ID: **LCSW**	Batch ID: **43956**	RunNo: **58775**
Prep Date: **3/28/2019**	Analysis Date: **3/29/2019**	SeqNo: **1974973** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Kjeldahl, Total	10	1.0	10.00	0	104	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1903661**

08-Apr-19

Client: AMAFCA

Project: CMC

Sample ID: **MB-43714**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**
Client ID: **PBW**	Batch ID: **43714**	RunNo: **58433**
Prep Date: **3/15/2019**	Analysis Date: **3/18/2019**	SeqNo: **1960958** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-43714**	SampType: **LCS**	TestCode: **SM 2540D: TSS**
Client ID: **LCSW**	Batch ID: **43714**	RunNo: **58433**
Prep Date: **3/15/2019**	Analysis Date: **3/18/2019**	SeqNo: **1960959** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	86	4.0	95.10	0	90.4	81.07	115.67			

Sample ID: **1903661-002FDUP**	SampType: **DUP**	TestCode: **SM 2540D: TSS**
Client ID: **Eq Blank-20190312**	Batch ID: **43714**	RunNo: **58433**
Prep Date: **3/15/2019**	Analysis Date: **3/18/2019**	SeqNo: **1961026** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0						0	5	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: AMAFCA Work Order Number: 1903661 RcptNo: 1

Received By: **Isaiah Ortiz** 3/13/2019 1:40:00 PM I-OK

Completed By: **Anne Thorne** 3/13/2019 2:39:19 PM Anne Thorne

Reviewed By: ENM 3/14/19

Labeled by: DAD 3/14/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☑ No ☐ No VOA Vials ☐
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: 24 (<2 or >12 unless noted)
Adjusted? NO
Checked by: DAD 3/14/19

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.6	Good	Not Present			
2	5.3	Good	Not Present			
3	3.4	Good	Not Present			
4	0.2	Good	Not Present			

Chain-of-Custody Record

Client: AMAFCA

Mailing Address: 2600 Prospect

Phone #:

email or Fax#: pchavez@amafca.org

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☒ EDD (Type)

Turn-Around Time:

☒ Standard ☐ Rush

Project Name: CMC

Project #:

Project Manager: Patrick Chavez

Sampler: Chad Johannesen - DBSA

On Ice: ☒ Yes ☐ No

# of Coolers: 4

Cooler Temp (including CF): 0.6°C, 5.3°C, 3.4°C, 0.2°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1903161	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	See attached	Ecoli - enumeration
3-11-19	1045	AQ	RG-North-20190311	Num	Num	-006	001										X	
3-12-19	1200	AQ	EqBlank-20190312			-007	002										X	
3-13-19	945	AQ	RG-South-20190313	3		-008	003										X	X
3-13-19	1000	AQ	RG-South-DP-20190313	↓	↓	-009	004										X	X
—	—	AQ	Trip Blank	HCL			005										X	

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
3/13/19	13:40	Elizabeth Baxter	[illegible]	COC	3/13/19	1340
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks:
See Attached Collaborative monitoring Cooperative Analyses list.
PCBs by 1668; Dieldrin by 8081

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Collaborative Monitoring Cooperative - Analyses List
Attach to Chain of Custody

Please refer to attached NPDES Permit No. NMR04A00 Appendix F. Methods and minimum quantification levels (MQL's) will be those approved under 40 CFR 136 and specified in the attached permit

Hardness (Ca + Mg)	NA	Total	200.7	2.4
Lead	7439-92-1	Dissolved	200.8	0.09
Copper	7440-50-8	Dissolved	200.8	1.06
Ammonia + organic nitrogen	7664-41-7	Total	350.1	31.32
Total Kjehldal Nitrogen	17778-88-0	Total	351.2	58.78
Nitrate + Nitrite	14797-55-8	Total	353.2	10.17
Polychlorinated biphenyls (PCBs)	1336-36-3	Total	1668	0.014
Tetrahydrofuran (THF)	109-99-9	Total	8260C	7.9
bis(2-Ethylhexyl)phthalate	117-81-7	Total	8270D	0.2
Dibenzofuran	132-64-9	Total	8270D	0.2
Indeno(1,2,3-cd)pyrene	193-39-5	Total	8270D	0.2
Benzo(b)fluoranthene	205-99-2	Total	8270D	0.1
Benzo(k)fluoranthene	207-08-9	Total	8270D	0.1
Chrysene	218-01-9	Total	8270D	0.2
Benzo(a)pyrene	50-32-8	Total	8270D	0.3
Dibenzo(a,h)anthracene	53-70-3	Total	8270D	0.3
Benzo(a)anthracene	56-55-3	Total	8270D	0.2
Dieldrin	60-57-1	Total	~~8270D~~ 8081	0.1
Pentachlorophenol	87-86-5	Total	8270D	0.2
Benzidine	92-87-5	Total	8270D	0.1
Chemical Oxygen Demand	E1641638[2]	Total	HACH	5100
Gross alpha (adjusted)	NA	Total	Method 900	0.1 pCi/L
Total Dissolved Solids	E1642222[2]	Total	SM 2540C	60.4
Total Suspended Solids	NA	Total	SM 2540D	3450
Biological Oxygen Demand	N/A	Total	Standard Methods	930
Oil and Grease		Total	1664A	5000
Ecoli			SM 9223B	
pH			SM 4500	
Phosphorus		Dissolved	365.1	100
Phosphorus		Total	365.1	100
Chromium IV		Total	3500Cr C-2011	100

ATTACHMENT 3

FY 2019 DRY SEASON COMPLETED DATA VERIFICATION AND VALIDATION FORMS

Attachment 1.1 Water Quality Sample Data Verification and Validation Worksheet

Study Name: Compliance Monitoring Cooperative (CMC)
Year: FY 2019 (March 2019 – Dry Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Rio Grande North – 3/11/2019
Version of Verification/Validation Procedures: QAPP – SOP #2 (6/14/2016)

Step 1: Verify Field Data

A. Are all Field Data forms present and complete? ☒ Yes ☐ No

If yes, proceed; if no, attempt to locate missing forms, then indicate any remaining missing forms and action taken.

Missing Field Data Forms	Action Taken

Total number of occurrences: 0

B. Are station name and ID, and sampling date and time on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station and Parameter	Action Taken	Re-verified?

Total number of occurrences: 0

C. Are field data on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station	Sampling Date	Parameter(s) Corrected	Re-verified?

Total number of occurrences: 0

D. Are RIDs correct and associated with the correct analytical suite, media subdivision (e.g. surface water, municipal waste, etc.) and activity type (e.g. Field observation, Routine sample, QA sample etc.)?
☒ Yes ☐ No

If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify

Station/RID	Sampling Date	RID Corrected	Re-verified?

Total number of occurrences: 0

☒ **Step 1 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 2: Verify Data Deliverables
A. Have all data in question been delivered? ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing data (samples or blanks) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken. Complete this step upon receipt of all missing data.

RID	Submittal Date	Missing Data/Parameters	Date of Initial Verification	Date Missing Data Were Received

Total number of occurrences: 0

B. Do all of the analytical suites have the correct number and type of analytes. ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing or incorrect analyte(s) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken.

*Note – Lab report identifies “Dissolved Phosphorous” as “Total Phosphorous” on a filtered sample (identified under “Client Sample ID”).
*Note – Lab report includes pH value – field recorded pH value is used in CMC reporting, not the lab report pH value.

RID	Submittal Date	Missing or Incorrect Parameters	Action Taken	Re-verified?

☒ **Step 2 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 3: Verify Flow Data

*Note – Not Applicable – no flow data provided with CMC sample collection

A. Identify incorrect or missing data on the flow calculation spreadsheet and correct errors.

Station	Sampling Date	Flow data missing or incorrect?

Total number of occurrences: 0

B. Identify incorrect or missing discharge measurements, correct errors in database and re-verify.

Station	Sampling Date	Flow data missing or incorrect?	Re-verified?

Total number of occurrences: 0

Not Applicable

☐ **Step 3 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 4: Verify Analytical Results for Missing Information or Questionable Results

Were any results with missing/questionable information identified? ☒ Yes ☐ No

If no, proceed; if yes, indicate results with missing information or questionable results or attach report. Contact data source and indicate action taken. Complete this step upon receipt of missing information or clarification of questionable results (clarify questionable results only, DO NOT change results without written approval (from lab or QA officer) and associated documentation).

RID	Sample Date	Missing or Questionable Information/Results	Action Taken
Rio Grande South	3/13/2019	Lab report provides Dissolved Phosphorous results as "Total Phosphorous" for "filtered sample".	Notified AMAFCA of this and verified with HEAL. BHI added note to the lab report.

*Note – HEAL Lab report order number – 1903661
Total number of occurrences: 1

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 5: Validate Blanks Results
Were any analytes of concern detected in blank samples? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager, with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes have been added to database correctly.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database? *

*See validation procedures to determine which associated data need to be flagged and include on *Validation Codes Form*.
Many of the reported PCB congener values have a qualifier B and/or J. "B" means target analyte was detected in the associated blank. "J" means value is estimated.

Total number of occurrences: 0

☒ **Step 5 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 6: Validate Holding Times Violations
Were any samples submitted that did not meet specified holding times? ☒ Yes ☐ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database to ALL associated data?*
	3/11/2019	BOD		X	H	Yes

*See validation procedures to determine which associated data need to be flagged.
*Note – Lab reports lists pH with hold time flag. Database uses field data reported pH, so this is hold time violation is not applicable.
*Note – BOD, Information provided by DBS&A: Missed 48 hours holding time. Collected RG North sample 3/11/19 10:45, submitted 3/13/19 13:40, analyzed 3/18/19 15:09. Delay due to second sampling event directed at RG South.

Total number of occurrences: 1

☒ **Step 6 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 7: Validate Replicate/Duplicate Results (if applicable)
Were any replicate/duplicate pairs submitted outside of the established control limit of 20%?
☒ Yes ☐ No
If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID Pairs		Replicate or Duplicate?	Sample Date	Parameter	RPD	Validation Code/Flag Applied	Code/Flag verified in database applied?*
			3/11/2019	BOD	>30%	R	Yes

Total number of occurrences: 1

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

****

After all of the above steps have been completed, save and print the worksheet, attach all applicable supplemental information and sign below.

I acknowledge that the data verification and validation process has been completed for the data identified above in accordance with the procedures described in the CMC QAPP, SOP #2

6/17/2019

Data Verifier/Validator Signature Date

COMPLETION OF DATA VERIFICATION AND VALIDATION PROCESS

Once the data verification and validation process has been completed for the entire study (note: if the worksheet is for a subset of the data from a study, be sure ALL the data for the entire study is included before final completion of the data verification and validation process), notify the NMSQUID administrator that the process is complete and request that “V V in STORET” be added to the project title.

Once all data have been verified and validated for a study provide copies of ALL *Data Verification and Validation Worksheets* and attachments associated with the study to the Quality Assurance Officer and retain originals in the project binder.

Attachment 1.2 SWQB Validation Codes

When deficiencies are identified through the data verification and validation process, AMAFCA documents or "flags" the deficiencies by assigning validation codes. All data collected from the last compliant QC sample and up to the next compliant QC sample are assigned validation codes. The validation code alerts the data user that the results are outside QA control limits and may require re-sampling or a separate, qualitative analysis based on professional judgment.

Validation Code	Definition	WQX Equivalent
A1	Sample not collected according to SOP	
B1	Chemical was detected in the field blank at a concentration less than 5% of the sample concentration.	
BN	Blanks NOT collected during sampling run	
BU	Detection in blank. Analyte was not detected in this sample above the method's sample detection limit.	BU
RB1	Chemical was detected in the field blank at a concentration greater than or equal to 5% of the sample concentration. Results for this sample are rejected because they may be the result of contamination; the results may not be reported or used for regulatory compliance purposes.	B
R1	Rejected due to incorrect sample preservation	R
R2	Rejected due to equipment failure in the field	R
R3	Rejected based on best professional judgment	R
D1	Spike recovery not within method acceptance limits	
F1	Sample filter time exceeded	
J1	Estimated: the analyte was positively identified and the associated value is an approximate concentration of the analyte in the sample	J
K1	Holding time violation	H
Ea	Estimated-Incubation temperature between 35.5 and 38.0° Celsius	
Er	Rejected-Incubation temperature < 34.5 or >38.0° Celsius	
PD1	Percent difference between duplicate samples excessive	
S1	Per SLD, uncertainties (sigmas) are expressed as one standard deviation, i.e. one standard error. Small negative or positive values that are less than two standard deviations should be interpreted as "less than the detection limit."	
S2	Data are suspect but deemed usable based on best professional judgment; documentation of justification is required and should be included in the Data Verification and Validation Packet and reported with results	
Z1	Macroinvertebrate data did not meet QC criteria specified in Section 2.5 of QAPP	
H1	Habitat data did not meet QC criteria specified in Section 2.5 of QAPP	

Attachment 1.1 Water Quality Sample Data Verification and Validation Worksheet

Study Name: Compliance Monitoring Cooperative (CMC)
Year: FY 2019 (March 2019 – Dry Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Equipment Blank QA Sample – 3/12/2019
Version of Verification/Validation Procedures: QAPP – SOP #2 (6/14/2016)

Step 1: Verify Field Data

A. Are all Field Data forms present and complete? ☒ Yes ☐ No

If yes, proceed; if no, attempt to locate missing forms, then indicate any remaining missing forms and action taken.

Missing Field Data Forms	Action Taken

Total number of occurrences: 0

B. Are station name and ID, and sampling date and time on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station and Parameter	Action Taken	Re-verified?

Total number of occurrences: 0

C. Are field data on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station	Sampling Date	Parameter(s) Corrected	Re-verified?

Total number of occurrences: 0

D. Are RIDs correct and associated with the correct analytical suite, media subdivision (e.g. surface water, municipal waste, etc.) and activity type (e.g. Field observation, Routine sample, QA sample etc.)?
☒ Yes ☐ No

If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify

Station/RID	Sampling Date	RID Corrected	Re-verified?

Total number of occurrences: 0

☒ **Step 1 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 2: Verify Data Deliverables
A. Have all data in question been delivered? ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing data (samples or blanks) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken. Complete this step upon receipt of all missing data.

RID	Submittal Date	Missing Data/Parameters	Date of Initial Verification	Date Missing Data Were Received

Total number of occurrences: 0

B. Do all of the analytical suites have the correct number and type of analytes. ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing or incorrect analyte(s) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken.

*Note – Lab report identifies “Dissolved Phosphorous” as “Total Phosphorous” on a filtered sample (identified under “Client Sample ID”).
*Note – Lab report includes pH value – field recorded pH value is used in CMC reporting, not the lab report pH value.

RID	Submittal Date	Missing or Incorrect Parameters	Action Taken	Re-verified?

☒ **Step 2 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 3: Verify Flow Data

*Note – Not Applicable – no flow data provided with CMC sample collection

A. Identify incorrect or missing data on the flow calculation spreadsheet and correct errors.

Station	Sampling Date	Flow data missing or incorrect?

Total number of occurrences: 0

B. Identify incorrect or missing discharge measurements, correct errors in database and re-verify.

Station	Sampling Date	Flow data missing or incorrect?	Re-verified?

Total number of occurrences: 0

Not Applicable

☐ **Step 3 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 4: Verify Analytical Results for Missing Information or Questionable Results

Were any results with missing/questionable information identified? ☒ Yes ☐ No

If no, proceed; if yes, indicate results with missing information or questionable results or attach report. Contact data source and indicate action taken. Complete this step upon receipt of missing information or clarification of questionable results (clarify questionable results only, DO NOT change results without written approval (from lab or QA officer) and associated documentation).

RID	Sample Date	Missing or Questionable Information/Results	Action Taken
Rio Grande South	3/13/2019	Lab report provides Dissolved Phosphorous results as "Total Phosphorous" for "filtered sample".	Notified AMAFCA of this and verified with HEAL. BHI added note to the lab report.

*Note – HEAL Lab report order number – 1903661
Total number of occurrences: 1

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 5: Validate Blanks Results
Were any analytes of concern detected in blank samples? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager, with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes have been added to database correctly.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database? *

*See validation procedures to determine which associated data need to be flagged and include on *Validation Codes Form*.
This is an Equipment Blank taken at the same time as the Rio Grande-South sample. There were traces of PCBs present; The PCB analysis does typically have some values reported. All of the reported values (congener) have a qualifier B and/or J. "B" means target analyte was detected in the associated blank. "J" means value is estimated. Also, dissolved copper was detected with a J flag – meaning the concentration detected was below the testing quantification level.

Total number of occurrences: 0

☒ **Step 5 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 6: Validate Holding Times Violations
Were any samples submitted that did not meet specified holding times? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database to ALL associated data?*

*See validation procedures to determine which associated data need to be flagged.
*Note – Lab reports lists pH with hold time flag. Database uses field data reported pH, so this is hold time violation is not applicable.

Total number of occurrences: 0

☒ **Step 6 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 7: Validate Replicate/Duplicate Results (if applicable)
Were any replicate/duplicate pairs submitted outside of the established control limit of 20%?
☐ Yes ☒ No
If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID Pairs		Replicate or Duplicate?	Sample Date	Parameter	RPD	Validation Code/Flag Applied	Code/Flag verified in database applied?*

Total number of occurrences: 0

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

****

After all of the above steps have been completed, save and print the worksheet, attach all applicable supplemental information and sign below.

I acknowledge that the data verification and validation process has been completed for the data identified above in accordance with the procedures described in the CMC QAPP, SOP #2

6/17/2019

Data Verifier/Validator Signature Date

COMPLETION OF DATA VERIFICATION AND VALIDATION PROCESS

Once the data verification and validation process has been completed for the entire study (note: if the worksheet is for a subset of the data from a study, be sure ALL the data for the entire study is included before final completion of the data verification and validation process), notify the NMSQUID administrator that the process is complete and request that “V V in STORET” be added to the project title.

Once all data have been verified and validated for a study provide copies of ALL *Data Verification and Validation Worksheets* and attachments associated with the study to the Quality Assurance Officer and retain originals in the project binder.

Attachment 1.2 SWQB Validation Codes

When deficiencies are identified through the data verification and validation process, AMAFCA documents or "flags" the deficiencies by assigning validation codes. All data collected from the last compliant QC sample and up to the next compliant QC sample are assigned validation codes. The validation code alerts the data user that the results are outside QA control limits and may require re-sampling or a separate, qualitative analysis based on professional judgment.

Validation Code	Definition	WQX Equivalent
A1	Sample not collected according to SOP	
B1	Chemical was detected in the field blank at a concentration less than 5% of the sample concentration.	
BN	Blanks NOT collected during sampling run	
BU	Detection in blank. Analyte was not detected in this sample above the method's sample detection limit.	BU
RB1	Chemical was detected in the field blank at a concentration greater than or equal to 5% of the sample concentration. Results for this sample are rejected because they may be the result of contamination; the results may not be reported or used for regulatory compliance purposes.	B
R1	Rejected due to incorrect sample preservation	R
R2	Rejected due to equipment failure in the field	R
R3	Rejected based on best professional judgment	R
D1	Spike recovery not within method acceptance limits	
F1	Sample filter time exceeded	
J1	Estimated: the analyte was positively identified and the associated value is an approximate concentration of the analyte in the sample	J
K1	Holding time violation	H
Ea	Estimated-Incubation temperature between 35.5 and 38.0° Celsius	
Er	Rejected-Incubation temperature < 34.5 or >38.0° Celsius	
PD1	Percent difference between duplicate samples excessive	
S1	Per SLD, uncertainties (sigmas) are expressed as one standard deviation, i.e. one standard error. Small negative or positive values that are less than two standard deviations should be interpreted as "less than the detection limit."	
S2	Data are suspect but deemed usable based on best professional judgment; documentation of justification is required and should be included in the Data Verification and Validation Packet and reported with results	
Z1	Macroinvertebrate data did not meet QC criteria specified in Section 2.5 of QAPP	
H1	Habitat data did not meet QC criteria specified in Section 2.5 of QAPP	

Attachment 1.1 Water Quality Sample Data Verification and Validation Worksheet

Study Name: Compliance Monitoring Cooperative (CMC)
Year: FY 2019 (March 2019 – Dry Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Rio Grande South – 3/13/2019
Version of Verification/Validation Procedures: QAPP – SOP #2 (6/14/2016)

Step 1: Verify Field Data

A. Are all Field Data forms present and complete? ☒ Yes ☐ No

If yes, proceed; if no, attempt to locate missing forms, then indicate any remaining missing forms and action taken.

Missing Field Data Forms	Action Taken

Total number of occurrences: 0

B. Are station name and ID, and sampling date and time on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station and Parameter	Action Taken	Re-verified?

Total number of occurrences: 0

C. Are field data on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station	Sampling Date	Parameter(s) Corrected	Re-verified?

Total number of occurrences: 0

D. Are RIDs correct and associated with the correct analytical suite, media subdivision (e.g. surface water, municipal waste, etc.) and activity type (e.g. Field observation, Routine sample, QA sample etc.)?
☒ Yes ☐ No

If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify

Station/RID	Sampling Date	RID Corrected	Re-verified?

Total number of occurrences: 0

☒ **Step 1 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 2: Verify Data Deliverables
A. Have all data in question been delivered? ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing data (samples or blanks) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken. Complete this step upon receipt of all missing data.

RID	Submittal Date	Missing Data/Parameters	Date of Initial Verification	Date Missing Data Were Received

Total number of occurrences: 0

B. Do all of the analytical suites have the correct number and type of analytes. ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing or incorrect analyte(s) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken.

*Note – Lab report identifies “Dissolved Phosphorous” as “Total Phosphorous” on a filtered sample (identified under “Client Sample ID”).
*Note – Lab report includes pH value – field recorded pH value is used in CMC reporting, not the lab report pH value.

RID	Submittal Date	Missing or Incorrect Parameters	Action Taken	Re-verified?

☒ **Step 2 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 3: Verify Flow Data

*Note – Not Applicable – no flow data provided with CMC sample collection

A. Identify incorrect or missing data on the flow calculation spreadsheet and correct errors.

Station	Sampling Date	Flow data missing or incorrect?

Total number of occurrences: 0

B. Identify incorrect or missing discharge measurements, correct errors in database and re-verify.

Station	Sampling Date	Flow data missing or incorrect?	Re-verified?

Total number of occurrences: 0

Not Applicable

☐ **Step 3 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 4: Verify Analytical Results for Missing Information or Questionable Results

Were any results with missing/questionable information identified? ☒ Yes ☐ No

If no, proceed; if yes, indicate results with missing information or questionable results or attach report. Contact data source and indicate action taken. Complete this step upon receipt of missing information or clarification of questionable results (clarify questionable results only, DO NOT change results without written approval (from lab or QA officer) and associated documentation).

RID	Sample Date	Missing or Questionable Information/Results	Action Taken
Rio Grande South	3/13/2019	Lab report provides Dissolved Phosphorous results as "Total Phosphorous" for "filtered sample".	Notified AMAFCA of this and verified with HEAL. BHI added note to the lab report.

*Note – HEAL Lab report order number – 1903661

Total number of occurrences: 1

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 5: Validate Blanks Results

Were any analytes of concern detected in blank samples? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager, with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes have been added to database correctly.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database? *

*See validation procedures to determine which associated data need to be flagged and include on *Validation Codes Form*.

Total number of occurrences: 0

☒ **Step 5 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 6: Validate Holding Times Violations

Were any samples submitted that did not meet specified holding times? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database to ALL associated data?*

*See validation procedures to determine which associated data need to be flagged.
*Note – Lab reports lists pH with hold time flag. Database uses field data reported pH, so this is hold time is not applicable.
Total number of occurrences: 0

☒ **Step 6 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 7: Validate Replicate/Duplicate Results (if applicable)
Were any replicate/duplicate pairs submitted outside of the established control limit of 20%?
☒ Yes ☐ No
If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID Pairs		Replicate or Duplicate?	Sample Date	Parameter	RPD	Validation Code/Flag Applied	Code/Flag verified in database applied?*
			3/13/2019	BOD	>30%	R	Yes

Total number of occurrences: 1

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

****

After all of the above steps have been completed, save and print the worksheet, attach all applicable supplemental information and sign below.

I acknowledge that the data verification and validation process has been completed for the data identified above in accordance with the procedures described in the CMC QAPP, SOP #2

6/17/2019

Data Verifier/Validator Signature Date

COMPLETION OF DATA VERIFICATION AND VALIDATION PROCESS

Once the data verification and validation process has been completed for the entire study (note: if the worksheet is for a subset of the data from a study, be sure ALL the data for the entire study is included before final completion of the data verification and validation process), notify the NMSQUID administrator that the process is complete and request that “V V in STORET” be added to the project title.

Once all data have been verified and validated for a study provide copies of ALL *Data Verification and Validation Worksheets* and attachments associated with the study to the Quality Assurance Officer and retain originals in the project binder.

Attachment 1.2 SWQB Validation Codes

When deficiencies are identified through the data verification and validation process, AMAFCA documents or "flags" the deficiencies by assigning validation codes. All data collected from the last compliant QC sample and up to the next compliant QC sample are assigned validation codes. The validation code alerts the data user that the results are outside QA control limits and may require re-sampling or a separate, qualitative analysis based on professional judgment.

Validation Code	Definition	WQX Equivalent
A1	Sample not collected according to SOP	
B1	Chemical was detected in the field blank at a concentration less than 5% of the sample concentration.	
BN	Blanks NOT collected during sampling run	
BU	Detection in blank. Analyte was not detected in this sample above the method's sample detection limit.	BU
RB1	Chemical was detected in the field blank at a concentration greater than or equal to 5% of the sample concentration. Results for this sample are rejected because they may be the result of contamination; the results may not be reported or used for regulatory compliance purposes.	B
R1	Rejected due to incorrect sample preservation	R
R2	Rejected due to equipment failure in the field	R
R3	Rejected based on best professional judgment	R
D1	Spike recovery not within method acceptance limits	
F1	Sample filter time exceeded	
J1	Estimated: the analyte was positively identified and the associated value is an approximate concentration of the analyte in the sample	J
K1	Holding time violation	H
Ea	Estimated-Incubation temperature between 35.5 and 38.0° Celsius	
Er	Rejected-Incubation temperature < 34.5 or >38.0° Celsius	
PD1	Percent difference between duplicate samples excessive	
S1	Per SLD, uncertainties (sigmas) are expressed as one standard deviation, i.e. one standard error. Small negative or positive values that are less than two standard deviations should be interpreted as "less than the detection limit."	
S2	Data are suspect but deemed usable based on best professional judgment; documentation of justification is required and should be included in the Data Verification and Validation Packet and reported with results	
Z1	Macroinvertebrate data did not meet QC criteria specified in Section 2.5 of QAPP	
H1	Habitat data did not meet QC criteria specified in Section 2.5 of QAPP	

Attachment 1.1 Water Quality Sample Data Verification and Validation Worksheet

Study Name: Compliance Monitoring Cooperative (CMC)
Year: FY 2019 (March 2019 – Dry Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Rio Grande South Duplicate – 3/13/2019
Version of Verification/Validation Procedures: QAPP – SOP #2 (6/14/2016)

Step 1: Verify Field Data

A. Are all Field Data forms present and complete? ☒ Yes ☐ No

If yes, proceed; if no, attempt to locate missing forms, then indicate any remaining missing forms and action taken.

Missing Field Data Forms	Action Taken

Total number of occurrences: 0

B. Are station name and ID, and sampling date and time on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station and Parameter	Action Taken	Re-verified?

Total number of occurrences: 0

C. Are field data on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station	Sampling Date	Parameter(s) Corrected	Re-verified?

Total number of occurrences: 0

D. Are RIDs correct and associated with the correct analytical suite, media subdivision (e.g. surface water, municipal waste, etc.) and activity type (e.g. Field observation, Routine sample, QA sample etc.)?

☒ Yes ☐ No

If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify

Station/RID	Sampling Date	RID Corrected	Re-verified?

Total number of occurrences: 0

☒ **Step 1 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 2: Verify Data Deliverables

A. Have all data in question been delivered? ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing data (samples or blanks) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken. Complete this step upon receipt of all missing data.

RID	Submittal Date	Missing Data/Parameters	Date of Initial Verification	Date Missing Data Were Received

Total number of occurrences: 0

B. Do all of the analytical suites have the correct number and type of analytes. ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing or incorrect analyte(s) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken.

*Note – Lab report identifies “Dissolved Phosphorous” as “Total Phosphorous” on a filtered sample (identified under “Client Sample ID”).
*Note – Lab report includes pH value – field recorded pH value is used in CMC reporting, not the lab report pH value.

RID	Submittal Date	Missing or Incorrect Parameters	Action Taken	Re-verified?

☒ **Step 2 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 3: Verify Flow Data

*Note – Not Applicable – no flow data provided with CMC sample collection

A. Identify incorrect or missing data on the flow calculation spreadsheet and correct errors.

Station	Sampling Date	Flow data missing or incorrect?

Total number of occurrences: 0

B. Identify incorrect or missing discharge measurements, correct errors in database and re-verify.

Station	Sampling Date	Flow data missing or incorrect?	Re-verified?

Total number of occurrences: 0

Not Applicable

☐ **Step 3 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 4: Verify Analytical Results for Missing Information or Questionable Results

Were any results with missing/questionable information identified? ☒ Yes ☐ No

If no, proceed; if yes, indicate results with missing information or questionable results or attach report. Contact data source and indicate action taken. Complete this step upon receipt of missing information or clarification of questionable results (clarify questionable results only, DO NOT change results without written approval (from lab or QA officer) and associated documentation).

RID	Sample Date	Missing or Questionable Information/Results	Action Taken
Rio Grande South	3/13/2019	Lab report provides Dissolved Phosphorous results as "Total Phosphorous" for "filtered sample".	Notified AMAFCA of this and verified with HEAL. BHI added note to the lab report.

*Note – HEAL Lab report order number – 1903661
Total number of occurrences: 1

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 5: Validate Blanks Results
Were any analytes of concern detected in blank samples? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager, with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes have been added to database correctly.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database? *

*See validation procedures to determine which associated data need to be flagged and include on *Validation Codes Form*.
Some of the reported PCB congener values have a qualifier B and/or J. "B" means target analyte was detected in the associated blank. "J" means value is estimated.
Total number of occurrences: 0

☒ **Step 5 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 6: Validate Holding Times Violations
Were any samples submitted that did not meet specified holding times? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database to ALL associated data?*
_____	_____	_____	_____	_____		_____
_____	_____	_____	_____	_____		_____

*See validation procedures to determine which associated data need to be flagged.
*Note – Lab reports lists pH with hold time flag. Database uses field data reported pH, so this is hold time is not applicable.
Total number of occurrences: 0

☒ **Step 6 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

- -

Step 7: Validate Replicate/Duplicate Results (if applicable)
Were any replicate/duplicate pairs submitted outside of the established control limit of 20%?
☒ Yes ☐ No
If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID Pairs		Replicate or Duplicate?	Sample Date	Parameter	RPD	Validation Code/Flag Applied	Code/Flag verified in database applied?*
_____	_____	_____	3/13/2019	BOD	>30%	R	Yes
_____	_____	_____	_____	_____	_____		_____

Total number of occurrences: 1

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 6/17/2019

****

After all of the above steps have been completed, save and print the worksheet, attach all applicable supplemental information and sign below.

I acknowledge that the data verification and validation process has been completed for the data identified above in accordance with the procedures described in the CMC QAPP, SOP #2

6/17/2019

Data Verifier/Validator Signature Date

COMPLETION OF DATA VERIFICATION AND VALIDATION PROCESS

Once the data verification and validation process has been completed for the entire study (note: if the worksheet is for a subset of the data from a study, be sure ALL the data for the entire study is included before final completion of the data verification and validation process), notify the NMSQUID administrator that the process is complete and request that “V V in STORET” be added to the project title.

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RB1	Chemical was detected in the field blank at a concentration greater than or equal to 5% of the sample concentration. Results for this sample are rejected because they may be the result of contamination; the results may not be reported or used for regulatory compliance purposes.	B
R1	Rejected due to incorrect sample preservation	R
R2	Rejected due to equipment failure in the field	R
R3	Rejected based on best professional judgment	R
D1	Spike recovery not within method acceptance limits	
F1	Sample filter time exceeded	
J1	Estimated: the analyte was positively identified and the associated value is an approximate concentration of the analyte in the sample	J
K1	Holding time violation	H
Ea	Estimated-Incubation temperature between 35.5 and 38.0° Celsius	
Er	Rejected-Incubation temperature < 34.5 or >38.0° Celsius	
PD1	Percent difference between duplicate samples excessive	
S1	Per SLD, uncertainties (sigmas) are expressed as one standard deviation, i.e. one standard error. Small negative or positive values that are less than two standard deviations should be interpreted as "less than the detection limit."	
S2	Data are suspect but deemed usable based on best professional judgment; documentation of justification is required and should be included in the Data Verification and Validation Packet and reported with results	
Z1	Macroinvertebrate data did not meet QC criteria specified in Section 2.5 of QAPP	
H1	Habitat data did not meet QC criteria specified in Section 2.5 of QAPP	

ATTACHMENT 4

SUMMARY OF E. COLI LOADING CALCULATIONS FOR ALL SEVEN REQUIRED CMC SAMPLES

Compliance Monitoring Cooperative (CMC)
Summary of E. coli Loading Calculation Compared to Waste Load Allocation (WLA)

CMC Sample #	FY	Wet or Dry Season	Storm Event Date	Stream Segment	Stream Name / Related USGS Gage	Total E. coli Loading in River Exceeds TMDL for River?	Estimated CMC E. coli Loading (CFU/day) for Each Segment	Daily Mean Flow (cfs)	Flow Conditions	WLA for CMC Based on Flow Conditions & Stream Segment (CFU/day)	WLA - Potential Exceedance or Acceptable	CMC - Delta - E. coli Loading Minus WLA (CFU/day)
1	FY 2017	Wet Season	8/10/2016	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Yes	8.32E+11	639	Dry	3.24E+10	WLA Potential Exceedance	8.00E+11
			8/10/2016	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	2.34E+11	703	Mid	4.22E+10	WLA Potential Exceedance	1.92E+11
2	FY 2017	Wet Season	9/12/2016	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Yes	4.67E+11	435	Dry	3.24E+10	WLA Potential Exceedance	4.35E+11
			9/12/2016	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	1.02E+11	467	Dry	1.57E+10	WLA Potential Exceedance	8.62E+10
3	FY 2017	Wet Season	9/21/2016	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Yes	1.29E+11	350	Low	1.68E+10	WLA Potential Exceedance	1.13E+11
			9/21/2016	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	1.22E+10	251	Low	3.42E+09	WLA Potential Exceedance	8.74E+09
4	FY 2017	Dry Season	11/21/2016	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	No	--	710	Mid	No Value	WLA Acceptable	--
			11/21/2016	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	1.68E+12	881	Mid	4.22E+10	WLA Potential Exceedance	1.63E+12
5	FY 2018	Wet Season	7/27/2017	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	No	2.50E+10	545	Dry	3.24E+10	WLA Acceptable	--
			7/27/2017	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	8.63E+10	470	Dry	1.57E+10	WLA Potential Exceedance	7.06E+10
6	FY 2018	Wet Season	9/27/2017	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Yes	7.34E+12	983	Moist	9.09E+10	WLA Potential Exceedance	7.25E+12
			9/27/2017	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	2.18E+12	1,190	Moist	6.29E+10	WLA Potential Exceedance	2.11E+12
7	FY 2019	Dry Season	3/13/2019	2105.1_00	***Alameda to Angostura*** Non-Pueblo Alameda Bridge to Angostura Diversion / 08329928 - Rio Grande near Alameda	Yes	8.49E+11	1,188	Moist	9.09E+10	WLA Potential Exceedance	7.59E+11
			3/13/2019	2105_50	***Isleta to Alameda*** Isleta Pueblo Boundary to Alameda Street Bridge / 0833000 - Rio Grande at Albuquerque, NM (Central)	Yes	2.52E+11	1,202	Moist	6.29E+10	WLA Potential Exceedance	1.89E+11

Attachment 3

Microbial Source Tracking Study

January 25, 2019

Ms. Shellie Eaton
City of Albuquerque
Department of Municipal Development, Storm Drainage Design
P.O. Box 1293
Room 301
Albuquerque, New Mexico 87103

Re: Status Report for the City of Albuquerque's Microbial Source Tracking Program, Albuquerque, New Mexico

Dear Ms. Eaton:

Daniel B. Stephens & Associates, Inc. (DBS&A) has prepared this letter report summarizing results of six sampling events in 2018 (Table 1) in support of the City of Albuquerque (COA) Microbial Source Tracking (MST) Program. The MST program, as described in the February 2017 field sampling plan, consists of water quality sampling at designated sites in the Albuquerque basin's stormwater drainage system during rain events (Figure 1). Water quality samples were collected in accordance with special conditions (bacteria) monitoring in the watershed-based municipal separate storm sewer system (MS4) Permit (No. NMR04A000) (the Permit) (U.S. EPA, 2014). The Permit requires the co-permittees to include focused best management practices (BMPs) to reduce the impairment of the Rio Grande by bacteria, and to monitor or assess progress in achieving goals and effectiveness of BMPs (Permit Part 1, Section C. Special Conditions subsection 2.b(f)). The purpose of the MST program is to assess progress in achieving goals and the effectiveness of the City's BMPs to reduce the impairment of the Rio Grande by bacteria discharged in surface water.

This report discusses the results of four sampling events that occurred in response to qualifying precipitation events. Two dry weather sampling events were performed in April 2018 and May 2018 to (1) assess developed field and laboratory sampling protocols and (2) characterize sources causing high levels of bacteria in the Rio Grande. The results of the background field events were discussed in the August 2018 status report. Table 2 summarizes the analytical results for each sample location, organized by sample location type. The MST program sample location types include (1) arroyos, (2) channels, (3) drains, (4) pump station, (5) Rio Grande, (6) wastewater treatment outfall, and (7) blanks. Table 3 summarizes the analytical data by sampling event and then by sample location type.

qPCR Technology

The MST program consists of sample collection for quantitative polymerase chain reaction (qPCR) analysis and fecal indicator bacteria (FIB) by E. coli enumeration. qPCR methods are used to detect the presence of various microbial pathogens through the amplification of specific DNA sequences without culturing bacteria. This technique allows quantification of

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genetic markers that are specific to the host of the bacteria *Bacteroidales*. Members of the order *Bacteroidales* have been proposed as an alternative fecal indicator and source identifier due to their host specificity, broad geographic stability, and abundance in the gastrointestinal tract of warm-blooded animals. Bacteria typically comprise approximately one-third of human feces by weight, and *Bacteroidales* are estimated to comprise about 10 percent of fecal mass (Stephen and Cummings, 1980). qPCR-based methodologies have been designed to target specific diagnostic sequences within the *Bacteroidales* 16S rRNA gene present in feces from different animals. Host-associated *Bacteroidales* genetic markers have been developed to identify pollution sources from human, dog, cattle, horse, swine, chicken, bird (avian), elk, and ruminants (Roslev and Bukh, 2011; Harwood et al., 2014). Several aspects of the qPCR testing method need be fully understood to understand the data:

- The determination of host contributions of FIB by qPCR analysis allows for the quantification of specific host inputs (e.g., human, bird). Each marker is strongly associated with, but not exclusive to, the source tested for. Each has some degree of non-specificity.
- Each marker constitutes a separate test, and the levels of the various markers within the same sample cannot be compared. For example, if Sample A has an HF183 (human) result of 1,000 and an avian GFD result of 100, it is not valid to say that there is more human contamination than avian contamination in Sample A.
- Levels of the same marker in different samples can be compared. For example, if Sample A has an avian GFD result of 1,000 and Sample B has an avian GFD result of 10,000, it is valid to conclude that there is more avian fecal contamination in Sample B than in Sample A. If Site H sampled in January has an avian GFD result of 500 and when sampled in February has an avian GFD result of 10,000, it is valid to conclude that the level of avian fecal contamination is greater in February.
- The numbers and contributions of different gut bacteria vary greatly between each host individual and among host species. As a result, there is no fixed ratio of, for example E. coli to *Bacteroidales,* between individuals of one host species—much less across all host sources. Consequently, the majority of DNA copies being associated with a particular animal as the origin of fecal bacteria, does not necessarily equate to that animal being the primary source of bacteria in the watershed. While having the majority of DNA copies matched to a particular source means that a source is active in the watershed, and likely more abundant than the others, it might not be appropriate to use the specific "percentages" or relative abundances of the different sources for quantitative analyses.
- qPCR assays cannot discriminate between live and dead DNA. Host-specific genetic signals are still measureable whether the bacterium is alive or dead. Hence, a portion of the human and canine assay in the Valle Del Oro and I-25 samples may be a result of discharge from the Southside Wastewater Reclamation Plant (SWRP) located upstream of the sample locations. The SWRP has E. coli permit effluent limits of 47 colony forming units per 100 milliliters (cfu/100 mL) monthly average and 88 cfu/100 mL daily maximum. According to SWRP operators, the plant employs Trojan UV3000Plus™

lamps that emit ultraviolet light (UV-C) radiation, which is effective for total disinfection and DNA degradation. However, it is possible that the UV light disinfection system at SWRP may not operate such that it degrades all DNA in the discharge.

- qPCR measures the concentration of DNA, which is likely related to, but not necessarily directly proportional to, the number of bacteria cells present in the water sample.
- To be classified as a significantly greater or lesser result, the level of marker should vary by a factor of 10.

Field Procedures

Field procedures include collection of water samples of 250 milliliters (mL) for qPCR analysis in sterile containers and transportation to the DBS&A filtration laboratory on ice within 2 hours. Samples of 100 mL were filtered through a 0.2-micron (μm) Supor funnel filter. The filters were kept on dry ice and shipped to the Weston Solutions (Weston) laboratory until DNA extraction was carried out. Water samples of 125 mL were collected for E. coli enumeration analysis in sterile containers with preservative and transported on ice to Hall Environmental Analysis Laboratory (HEAL) within 2 hours. DBS&A submitted field and laboratory method blanks to Weston for qPCR analysis. Four field blanks were collected and analyzed to determine if any conditions or processes have caused sample contamination. Five laboratory blanks were collected and analyzed to test the effectiveness of the prescribed sterile filtration procedure.

Results of Laboratory Analysis for Dry Weather Samples

The results of the laboratory analysis for the two dry weather sampling events are presented in Tables 2 and 3. Complete laboratory reports are provided in Attachment 1. The results of the dry weather screening events were discussed in the August status report. The dry weather samples were collected from locations on the Rio Grande, the North Diversion Channel (NDC), and the Riverside Drain. The markers reported above laboratory detection limits in the 12 dry weather screening samples include the following:

- Avian marker reported in all 12 samples.
- Human marker reported in 7 of 12 samples.
- Ruminant marker reported in 2 of 12 surface water samples. Ruminating mammals include cattle, goats, sheep, giraffes, yaks, deer, and antelope.
- Canine marker reported in 4 of 12 surface water samples.
- Cow and horse markers were not reported in any of the surface water samples.
- No markers, E. coli, or general *Bacteroidales* were reported in the field and laboratory blanks.

Results of Laboratory Analysis for Wet Weather Samples

The results of the four wet weather screening events are also presented in Tables 2 and 3. A total of 46 wet weather samples were collected in 2018 from the Rio Grande, arroyo and distribution channels, drains, pump stations, and the SWRP. The markers reported above laboratory detection limits in the 43 wet weather screening samples include the following:

- Avian marker reported in 40 of 43 samples.
- Human marker reported in 19 of 43 samples.
- Ruminant marker reported in 12 of 43 surface water samples.
- Canine marker reported in 17 of 43 surface water samples.
- Horse marker reported in 1 of 43 surface water samples.
- Cow markers were not reported in any of the surface water samples.
- No markers, E. coli, or general *Bacteroidales* were reported in the field and laboratory blanks.
- General *Bacteroidales* values reported ranged from 279.5 to 32,457,665 copies/100 mL. The highest values are reported for the South Diversion Channel (SDC) at Broadway and Barelas Pump Station samples.

Data Interpretation

This section describes the range and spatial distribution of FIB and qPCR markers found in the watershed, including the avian, human, ruminant, and canine markers. Only one horse marker was found in the study at the NDC at Edith, and cow markers were not reported above reporting limits in any of the wet weather samples. The reported marker values are classified into weak, moderate, and strong categories. To be classified as a significantly greater or lesser result, the level of marker should vary by a factor of 10. Figure 2 shows the proportional contribution of the markers in the study samples. Figures 3, 4, and 5 show the proportional contribution of markers for the channel/arroyos, drains, and Rio Grande, respectively. The spatial distribution of the reported markers for the dry and wet weather sampling is shown in Figures 6a through 11b.

Avian

Avian markers were reported in all 12 dry weather samples and in 40 of 43 wet weather samples (Tables 2 and 3). Of these 52 samples with reported avian markers, 13 were Rio Grande samples. Avian markers reported above detection limits were detected in 95 percent of all program samples (Figure 2), 91 percent of samples from channels and arroyos (Figure 3), 100 percent of drain samples (Figure 4), and 93 percent of Rio Grande samples (Figure 5).

The spatial distribution of the reported avian markers is shown in Figure 6a for dry weather sampling and Figure 6b for wet weather sampling. For avian markers, the weak category contains values above reporting limits to 10,000 copies/100 mL, the moderate category is 10,000 to 80,000 copies/100 mL, and the strong category consists of values greater than 80,000 copies/100 mL. Moderate to strong levels of avian markers were reported in 47 percent of all program samples, 13 percent of samples from channels and arroyos, 67 percent of drain samples, and 79 percent of Rio Grande samples.

The highest avian marker value reported was 110,240 copies/100 mL collected at Atrisco Drain at Rio Bravo. Other high values were reported at San Antonio Arroyo (95,612 copies/100 mL) and Upper Corrales Riverside Drain (69,955 copies/100 mL). These samples were collected during the September 2018 event. The three locations where avian markers were reported below detection limits were (1) Rio Grande at Rio Bravo (September 2018), (2) Embudo at Monte Largo (October 2018), and (3) Tijeras at Four Hills (October 2018).

Human

Human markers were reported in 7 of 12 dry weather samples and 19 of 43 wet weather samples (Tables 2 and 3). Of these 26 samples with reported human markers above detection limits, 8 were Rio Grande samples. Human markers reported above detection limits were detected in 47 percent of all program samples (Figure 2), 48 percent of samples from channels and arroyos (Figure 3), 33 percent of drain samples (Figure 4), and 57 percent of Rio Grande samples (Figure 5).

The spatial distribution of the reported human markers is shown in Figure 7a for dry weather sampling and Figure 7b for wet weather sampling. For human markers, the weak category contains values above reporting limits to 10,000 copies/100 mL, the moderate category is 10,000 to 40,000 copies/100 mL, and the strong category consists of values greater than 40,000 copies/100 mL. Moderate to strong levels of human markers were reported in 9 percent of all program samples, 9 percent of samples from channels and arroyos, 0 percent of drain samples, and 7 percent of Rio Grande samples.

The highest human marker value reported was 71,871 copies/100 mL collected at SDC at Broadway. Other high values were reported at Barelas Pump Station (51,646 copies/100 mL), WWTP Outfall (53,005 copies/100 mL), Rio Grande at I-25 (22,304 copies/100 mL), and Hahn Arroyo at Carlisle (20,847 copies/100 mL). These samples were collected during the September and October 2018 events.

Canine

Canine markers were reported in 4 of 12 dry weather samples and 31 of 43 wet weather samples (Tables 2 and 3). Of these 35 samples with reported canine markers above detection limits, 5 were Rio Grande samples. Canine markers reported above detection limits were detected in 64 percent of all program samples (Figure 2), 70 percent of samples from channels

and arroyos (Figure 3), 73 percent of drain samples (Figure 4), and 36 percent of Rio Grande samples (Figure 5).

The spatial distribution of the reported canine markers is shown in Figure 8a for dry weather sampling and Figure 8b for wet weather sampling. For canine markers, the weak category contains values above reporting limits to 10,000 copies/100 mL, the moderate category is 10,000 to 90,000 copies/100 mL, and the strong category consists of values greater than 90,000 copies/100 mL. Moderate to strong levels of canine markers were reported in 24 percent of all program samples, 30 percent of samples from channels and arroyos, 33 percent of drain samples, and 0 percent of Rio Grande samples.

The highest canine marker value reported was 303,454 copies/100 mL collected at Amole del Norte Channel above Amole Dam. Other high values were reported at NDC at Paseo Del Norte (74,634 copies/100 mL), Barelas Pump Station (47,251 copies/100 mL), Lower Pino Arroyo at Washington (37,239 copies/100 mL), and Isleta Drain at Cypress Drive (34,445 copies/100 mL).

Ruminants

Ruminant markers were reported in 2 of 12 dry weather samples and 12 of 43 wet weather samples (Tables 2 and 3). Of these 14 samples with reported ruminant markers above detection limits, 3 were Rio Grande samples. Ruminant markers reported above detection limits were detected in 25 percent of all program samples (Figure 2), 9 percent of samples from channels and arroyos (Figure 3), 44 percent of drain samples (Figure 4), and 21 percent of Rio Grande samples (Figure 5).

The spatial distribution of the reported ruminant markers is displayed in Figure 9a for dry weather sampling and Figure 9b for wet weather sampling. For ruminant markers, the weak category contains values above reporting limits to 10,000 copies/100 mL, the moderate category is 10,000 to 30,000 copies/100 mL, and the strong category consists of values greater than 30,000 copies/100 mL. Moderate to strong levels of ruminant markers were reported in 2 percent of all program samples, 0 percent of samples from channels and arroyos, 6 percent of drain samples, and 0% of Rio Grande samples.

The highest ruminant marker value reported was 38,575 copies/100 mL collected at Albuquerque Riverside Drain below NDC. The next highest value was 1,806 copies/100 mL at Tijeras Arroyo at Four Hills.

General Bacteroidales

Quantification of total *Bacteroidales* provides a general indicator of fecal contamination. General *Bacteroidales* markers were reported in all dry and wet weather samples (Tables 2 and 3). The spatial distribution of the reported *Bacteroidales* markers is shown in Figure 10a for dry weather sampling and Figure 10b for wet weather sampling. For general *Bacteroidales* markers, the weak category contains values above reporting limits to

200,000 copies/100 mL, the moderate category is 200,000 to 900,000 copies/100 mL, and the strong category consists of values greater than 900,000 copies/100 mL.

Moderate to strong levels of general *Bacteroidales* markers were reported in 75 percent of all program samples, 48 percent of samples from channels and arroyos, 93 percent of drain samples, and 93 percent of Rio Grande samples. The values reported range from 3,395 copies/100 mL at Embudo Arroyo at Monte Largo to 32,457,665 copies/100 mL collected at SDC at Broadway. The next highest values were 9,036,244 copies/100 mL at Barelas Pump Station, 7,813,912 copies/100 mL at Alameda Drain at El Caminito, and 6,923,074 copies/100 mL at Alameda Drain at Matthew.

E. coli (FIB)

FIB E. coli was reported above detection limits in 12 of 12 dry weather samples and 41 of 43 wet weather samples (Tables 2 and 3). The spatial distribution of the reported E. coli results is shown in Figure 11a for dry weather sampling and Figure 11b for wet weather sampling. The applicable Pueblo of Isleta and Pueblo of Sandia surface water quality standard for E. coli is 88 cfu/100 mL. The HEAL E. coli results are reported in most probable number per 100 milliliters (MPN/100 mL). The reporting unit of cfu/100 mL represents the actual count from the surface of a plate, while MPN/100 mL represents a statistical probability of the number of organisms. Assuming the units are equivalent, 44 of 55 (80 percent) of the samples exceeded the E. coli water quality standard.

The reported E. coli values ranged from 10 MPN/100 mL at Rio Grande at Central to above 14,136 MPN/100 mL collected at San Jose at Woodward Avenue during the July 2018 event. An illicit discharge from a sewer lift station occurred near the San Jose location on June 4, 2018 and sewage was retained in the San Jose Channel. Residual sewage in the channel may be represented in the July 2018 sample. The next highest values were 12,997 MPN/100 mL at Rio Grande at I-25 during the September 2018 event, 6,131 MPN/100 mL at Calabacillas Arroyo at Coors in September 2018, and 6,131 MPN/100 mL at the NDC Outfall at Edith at the July 2018 event.

The number of E. coli markers detected by qPCR analysis conducted by Weston is also reported in Tables 2 and 3 and Figure 12. The results of the FIB and qPCR E. coli analyses are related but not proportional.

Conclusions

The purpose of the MST program is to assess progress in achieving goals and the effectiveness of the City's BMPs to reduce the impairment of the Rio Grande by bacteria discharged in surface water. The majority of the City's BMPs are designed to reduce the addition of pet and human fecal waste to the stormwater conveyance system and subsequently to the Rio Grande. BMPs are not currently in place to reduce input of avian or ruminant fecal material to the drainage system.

In the wet weather events, indications of weak to moderate human markers were reported in the Alameda Drain, Hahn Arroyo, and NDC in the northeast parts of the study area (Figure 7b). Notable areas in the southern part of the study area with strong human markers include those serviced by the Barelas Pump Station and those drained by the SDC.

As discussed in the August 2018 status report, the dry weather sampling indicated weak human markers in the Central, Bridge, and Rio Bravo samples collected upstream of the SWRP and a moderate human fecal source downstream of the SWRP. A sample was not collected from the SWRP outfall during the dry weather background events. A sample was collected from the SWRP outfall during a wet weather sampling event in September 2018. The SWRP outfall sample indicated a moderate to strong (53,005 copies/100 mL) human fecal source (Figure 7b). Rio Grande samples collected below the SWRP indicated a moderate (22,304 copies/100 mL) human signal at the Rio Grande I-25 sample location. No copies of human markers above detection limits were reported in the Rio Grande at Rio Bravo and Rio Grande at Alameda samples collected upstream of the SWRP. Hence, the copies reported downstream of the SWRP at the Rio Grande I-25 sample location (22,304 copies/100 mL) may be a result of SWRP effluent. The FIB reported value of the SWRP outfall sample was 20 MPN/100 mL, below the E. coli permit effluent limits of 47 cfu/100 mL monthly average and 88 cfu/100 mL daily maximum. If future Rio Grande samples are collected below the SWRP, additional sampling of the SWRP effluent for qPCR analysis is recommended to determine the SWRP contribution of *Bacteroidales* DNA to the Rio Grande.

Indications of moderate canine markers in the wet weather events were reported in several channels, drains, and arroyos in the northeast and northwest parts of the study area (Figure 8b). Samples collected in the northeast foothills reported weak to non-detectable markers, indicating the addition of canine fecal material to the drainage system within the northern urban areas. The marked increase in the reported canine markers collected in the Embudo Arroyo from the foothills location at Monte Largo (1,128 copies/100 mL) to Snow Heights Park (15,960 copies/100 mL) supports this conclusion. Other notable areas with reported moderate canine fecal sources include those serviced by the Barelas Pump Station, Isleta Drain at Cypress Drive, and the San Jose Drain at Woodward.

U.S. Environmental Protection Agency (EPA) recommended guidelines for acceptable microbiological water quality are based on the cultivable densities of *Enterococcus* spp. or E. coli (U.S. EPA, 1986). Cultivable E. coli is currently used as the preferred indicator of fresh surface water quality by a majority of states and tribes in the U.S. (U.S. EPA, 2003). During the wet weather events, the highest values of cultivable E. coli were detected throughout the study area (Figure 11b). A total of 80 percent of the samples exceeded the applicable E. coli water quality standard of 88 cfu/100 mL. The relatively low levels reported in the samples collected in northeast foothills are notable, indicating the addition of bacteria to the drainage system within the northern urban areas.

Recent epidemiological studies indicate that the results of qPCR analysis method for *Enterococcus* spp. were a stronger predictor of swimming-associated gastrointestinal illnesses than the accepted culture method for this FIB group (Wade et al., 2006 and 2008). Figure 12 shows the spatial distribution of the E. coli marker in the study area. Again, the relatively low levels reported in the samples collected in the northeast foothills and the marked increase at outlets to the Rio Grande indicate the addition of bacteria to the drainage system within the urban areas.

No markers were reported in the dry and wet weather equipment and laboratory blanks (Tables 2 and 3), indicating that the developed protocols are adequate for the MST program.

Closing

We appreciate the opportunity to serve the City of Albuquerque on this important project. If you have any questions regarding this sampling report, please call me at (505) 822-9400.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.

Chad Johannesen
Project Manager

CJ/rpf
Attachments

References

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Figures

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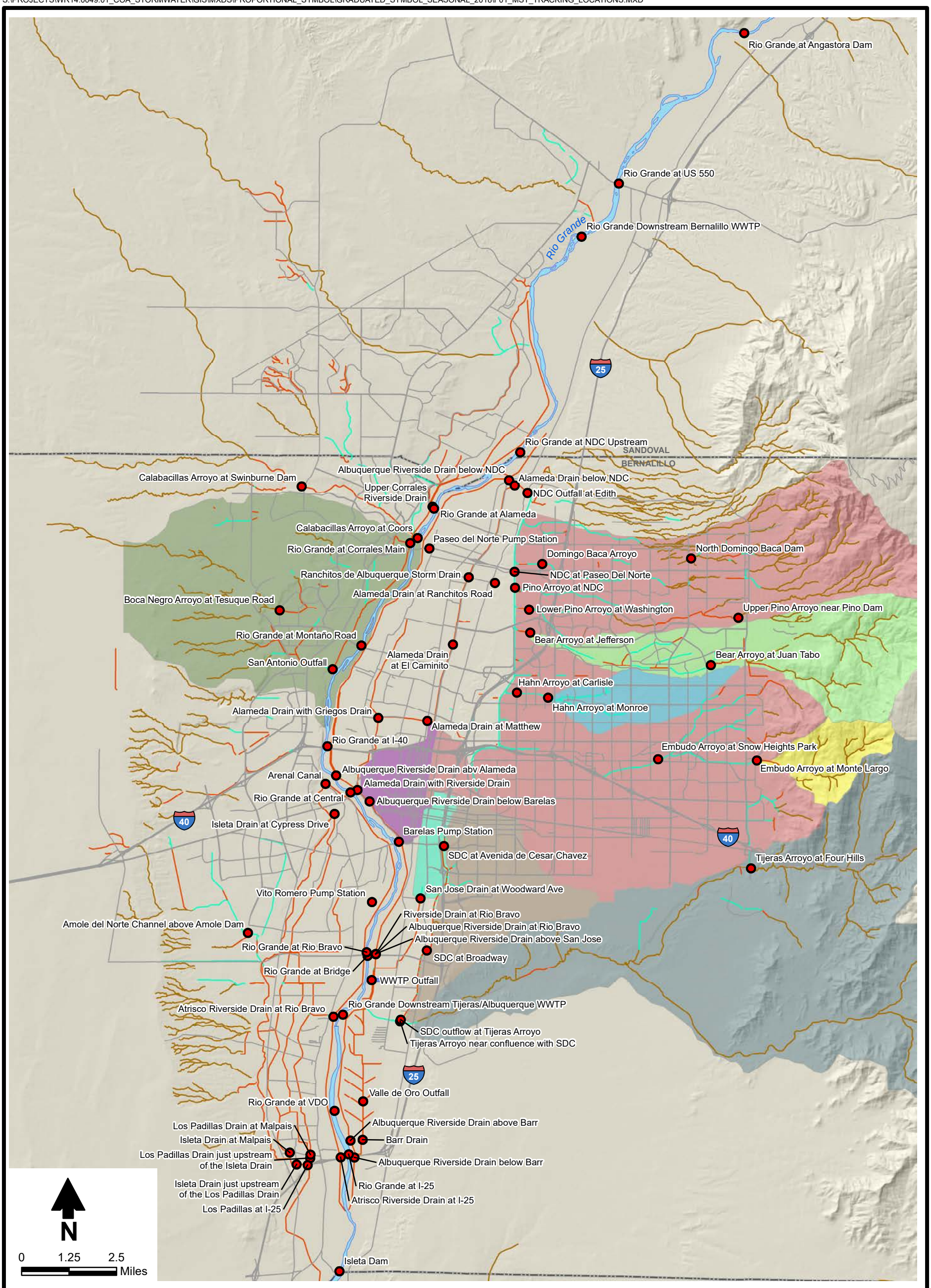

Explanation

- Microbial source tracking sample location
- Natural arroyo
- Concrete-lined channel
- Natural or rock-lined channel
- Barelas Pump Station
- Bear Arroyo
- Embudo Arroyo
- Hahn Arroyo
- North Diversion Channel
- San Antonio
- San Jose Drain
- South Diversion Channel
- Tijeras Arroyo

CITY OF ALBUQUERQUE

Microbial Source Tracking Water Quality Sampling

Figure 1

Daniel B. Stephens & Associates, Inc.

1/11/2019 JN DB17.1158

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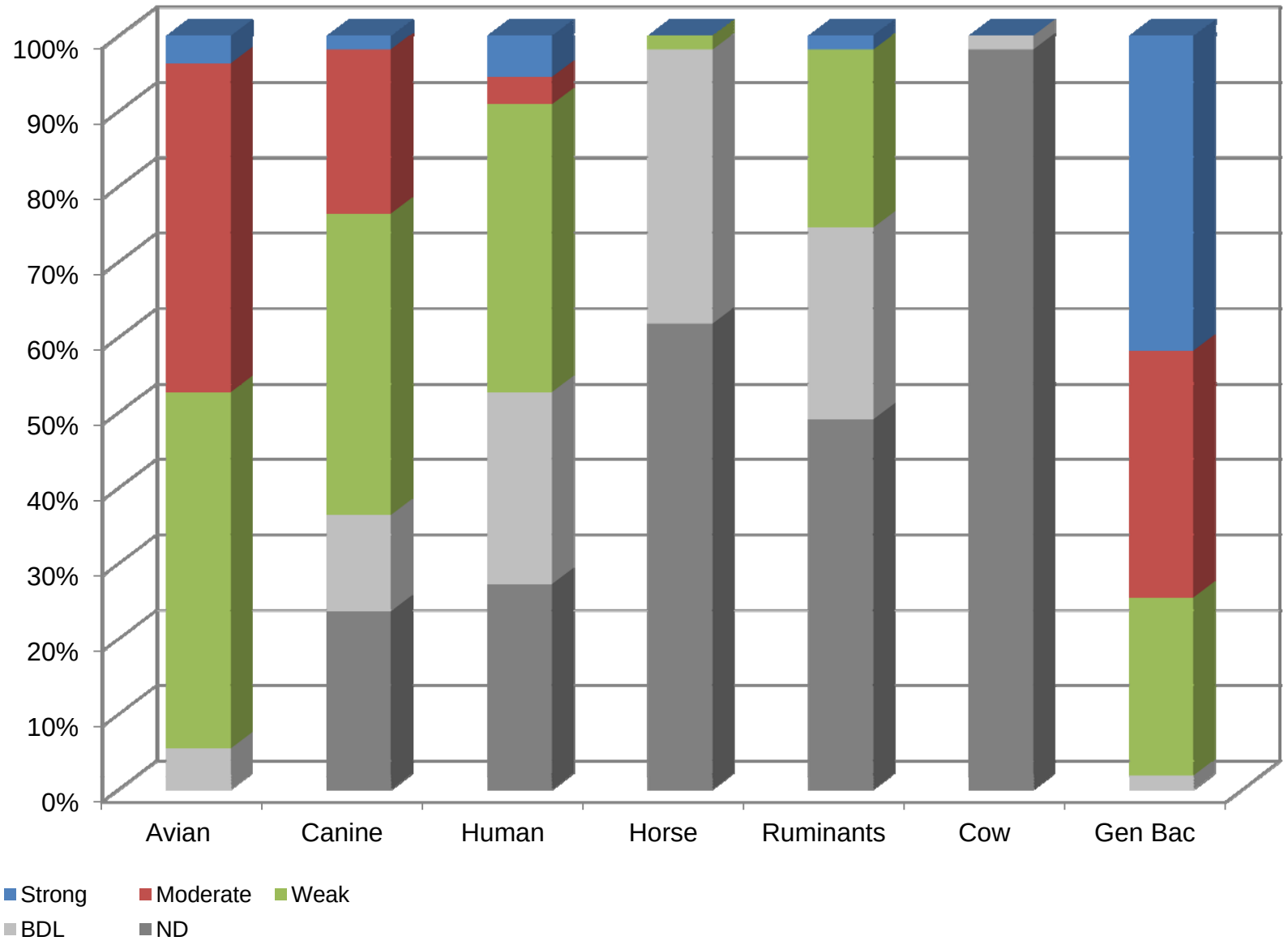

Figure 2

CITY OF ALBUQUERQUE

Marker Results for All Sample Locations

Daniel B. Stephens & Associates, Inc.

1/11/19

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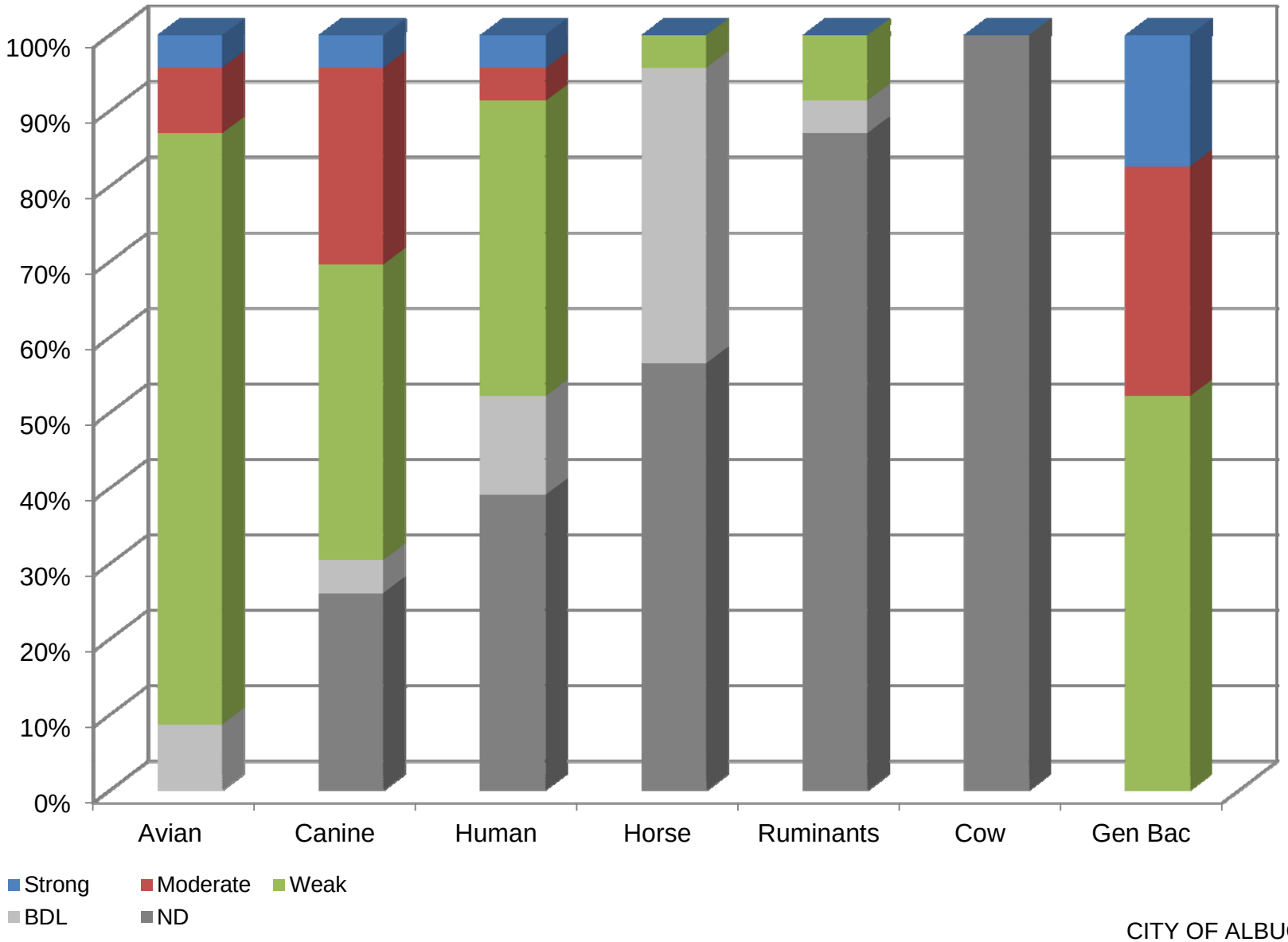

Figure 3

CITY OF ALBUQUERQUE

Marker Results for
Channel and Arroyo Sample Locations

Daniel B. Stephens & Associates, Inc.

1/11/19

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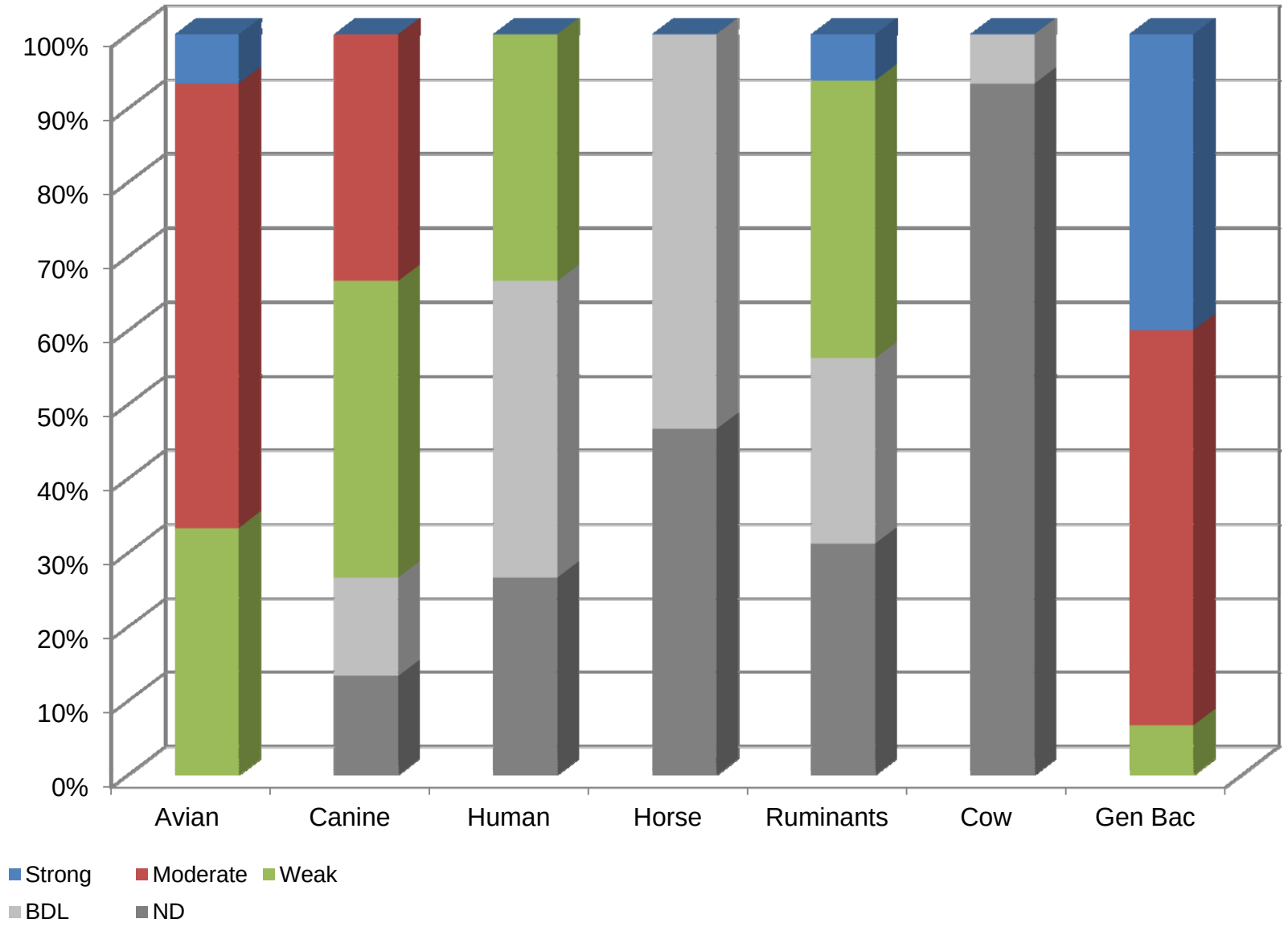

CITY OF ALBUQUERQUE

Marker Results for Drain Sample Locations

Figure 4

Daniel B. Stephens & Associates, Inc.

1/11/19

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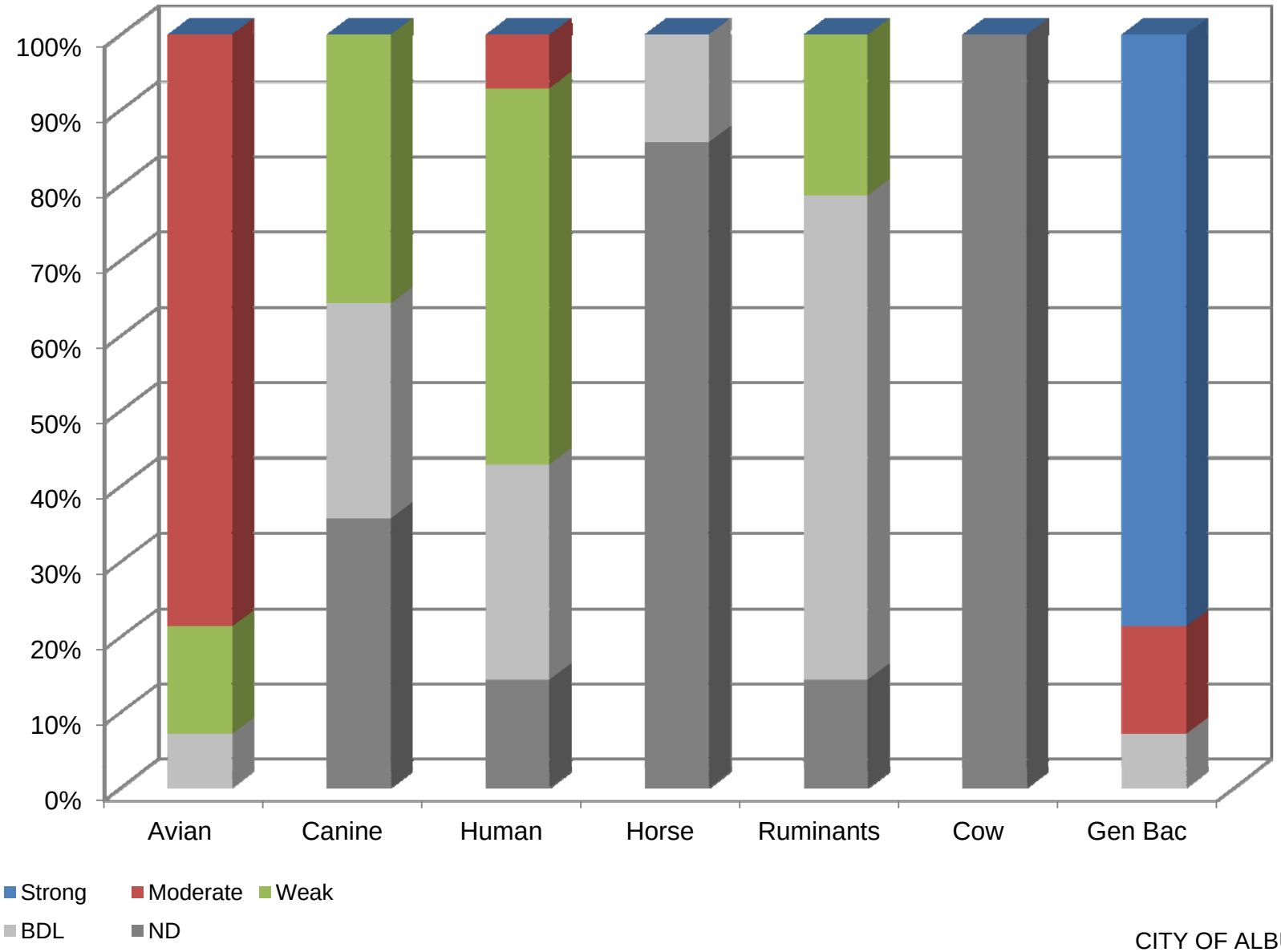

Figure 5

CITY OF ALBUQUERQUE

Marker Results for
Rio Grande Sample Locations

Daniel B. Stephens & Associates, Inc.

1/11/19

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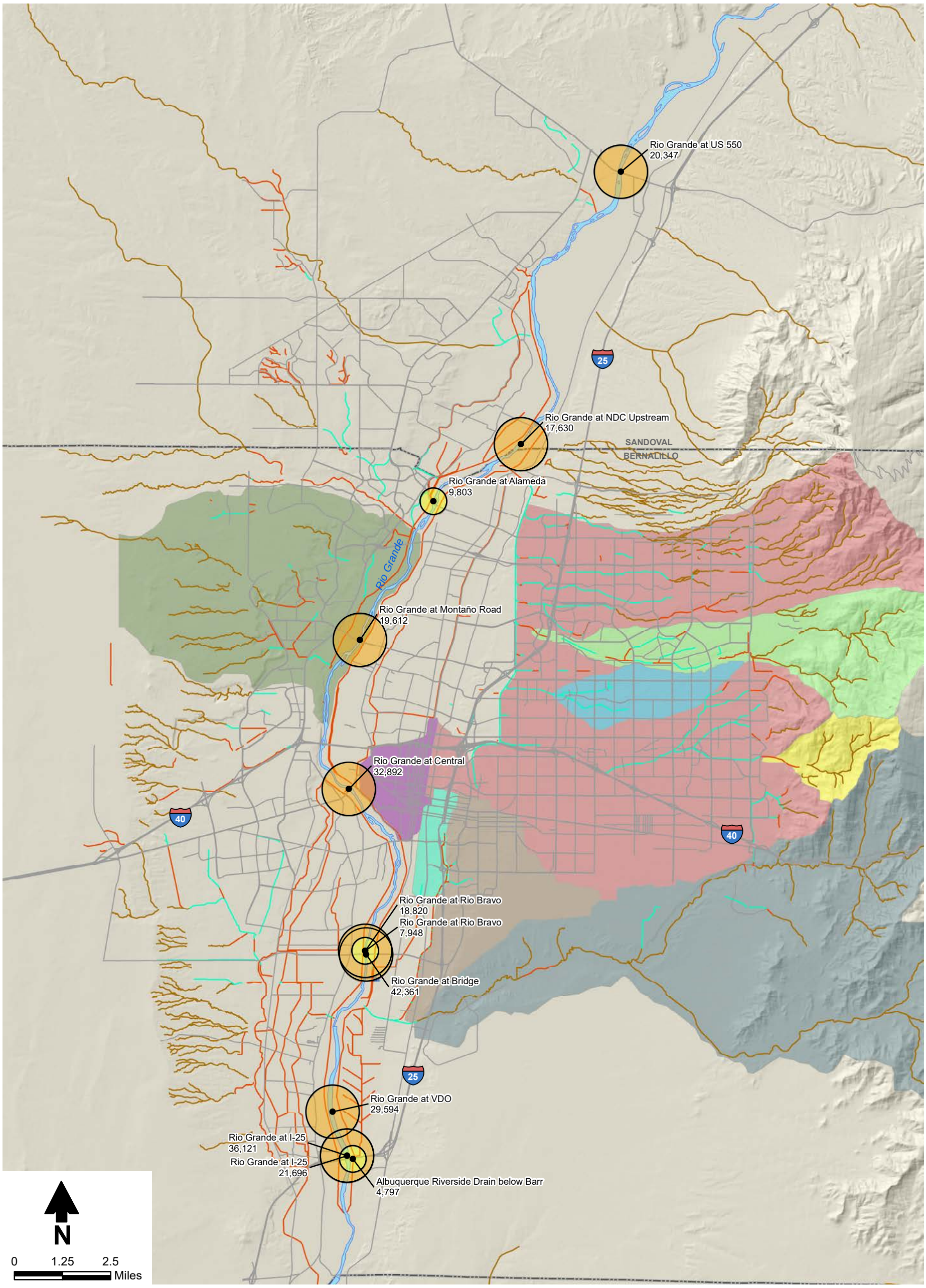

Explanation

Avian (Copies/100 mL)

Weak
(4,797 - 10,000)

Moderate
(10,001 - 80,000)

Strong
(>80,001)

Note:
BDL = Below detectable limits
ND = Not detected

CITY OF ALBUQUERQUE

Avian GFD

Microbial Source Tracking

Water Quality Dry Weather Sampling

April - May 2018

Figure 6a

Daniel B. Stephens & Associates, Inc.

1/11/2019

JN DB17.1158

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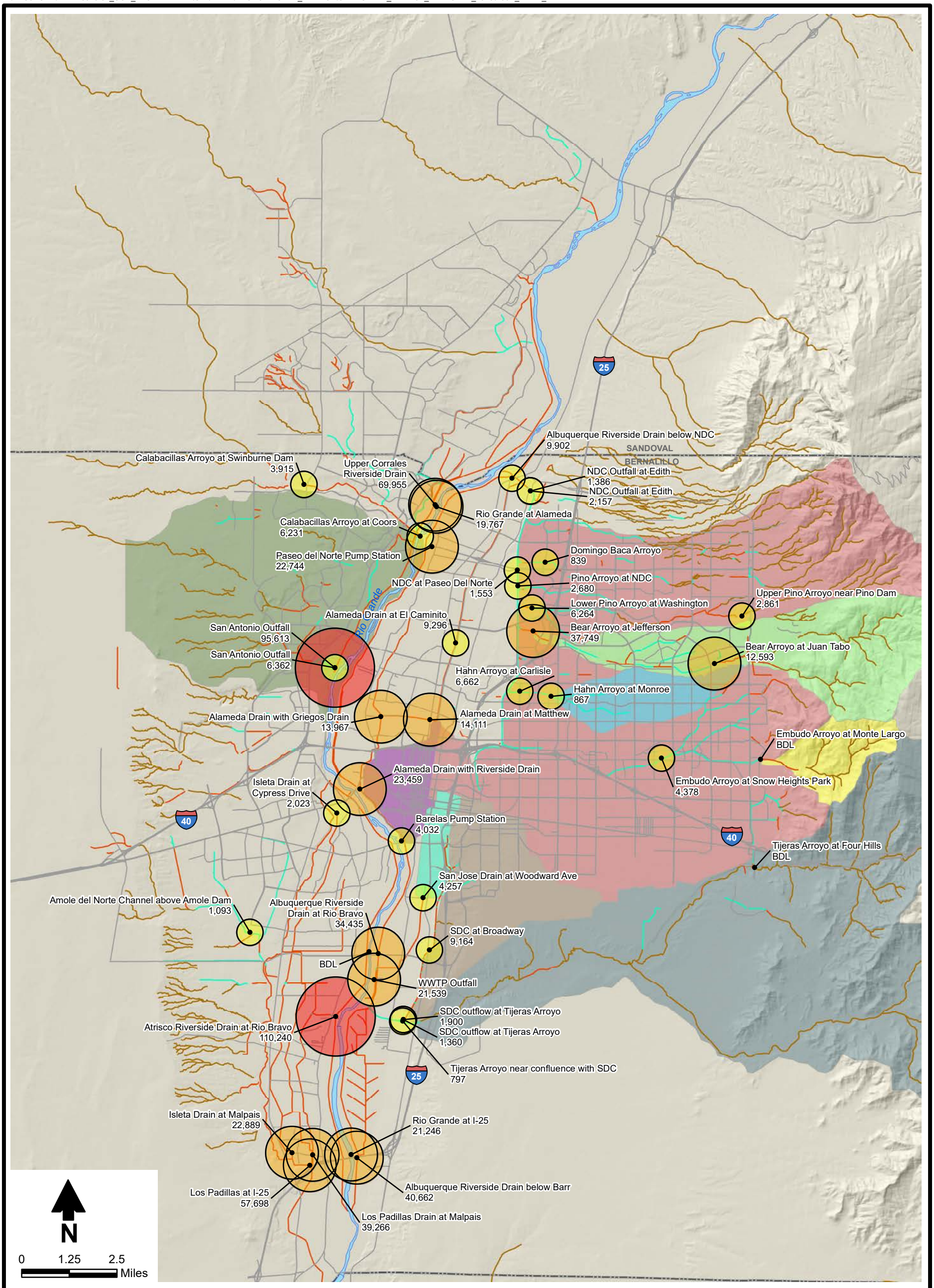

Explanation

Avian (copies/100 mL)

Weak
(225 - 10,000)

Moderate
(10,001 - 80,000)

Strong
(<80,001)

Note:
BDL = below detectable Limits
ND = Not detected

CITY OF ALBUQUERQUE

Avian GFD
Microbial Source Tracking
Water Quality Wet Weather Sampling
July - October 2018

Figure 6b

Daniel B. Stephens & Associates, Inc.
1/11/2019
JN DB17.1158

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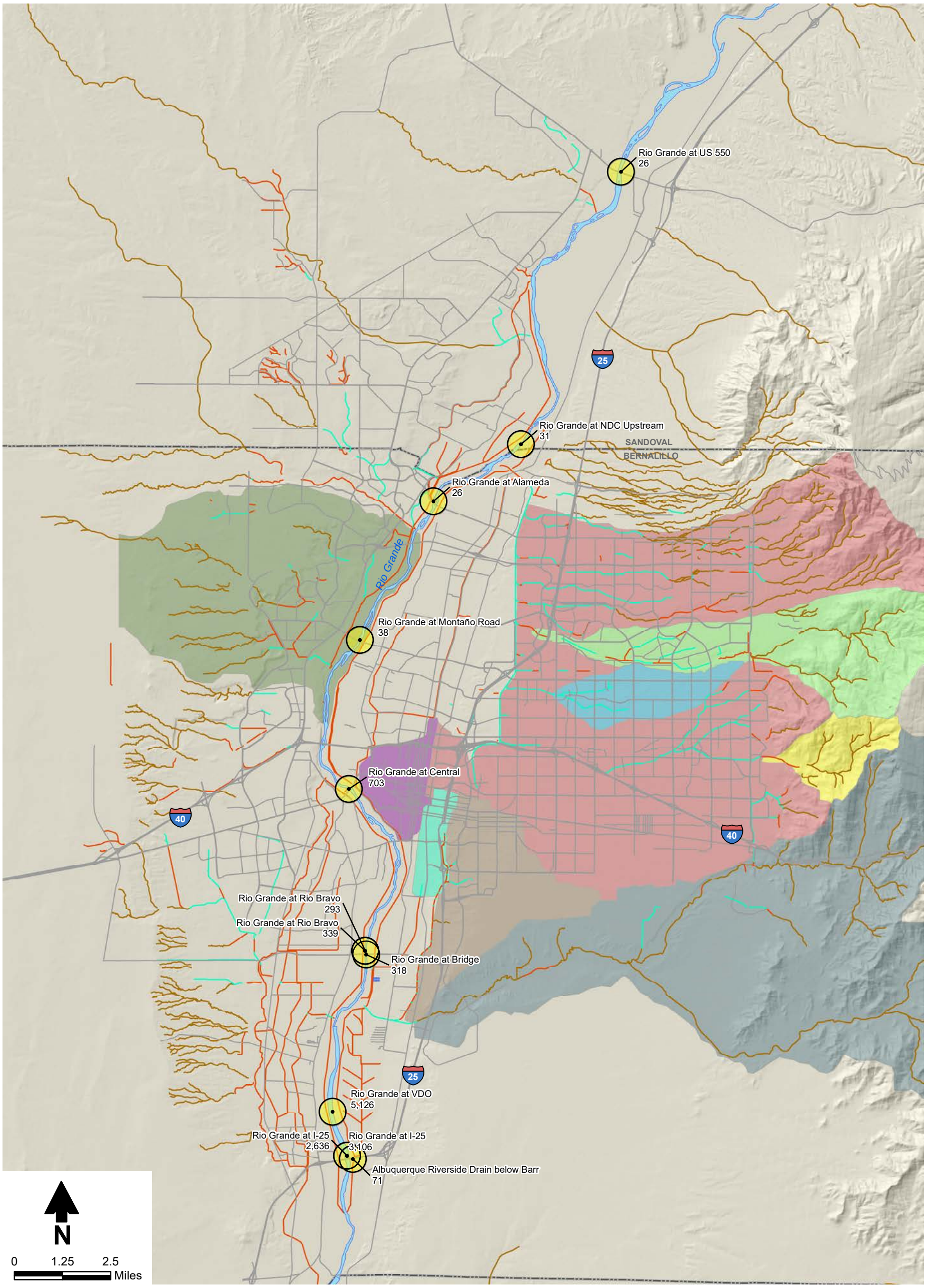

Explanation

Human HF183 (copies/100 mL)

Weak
(0 - 10,000)

Moderate
(10,001 - 40,000)

Strong
(>40,001)

Note:
BDL = Below detectable limits
ND = Not detected

CITY OF ALBUQUERQUE

Human HF183
Microbial Source Tracking
Water Quality Dry Weather Sampling
April - May 2018

Figure 7a

Daniel B. Stephens & Associates, Inc.
1/11/2019
JN DB17.1158

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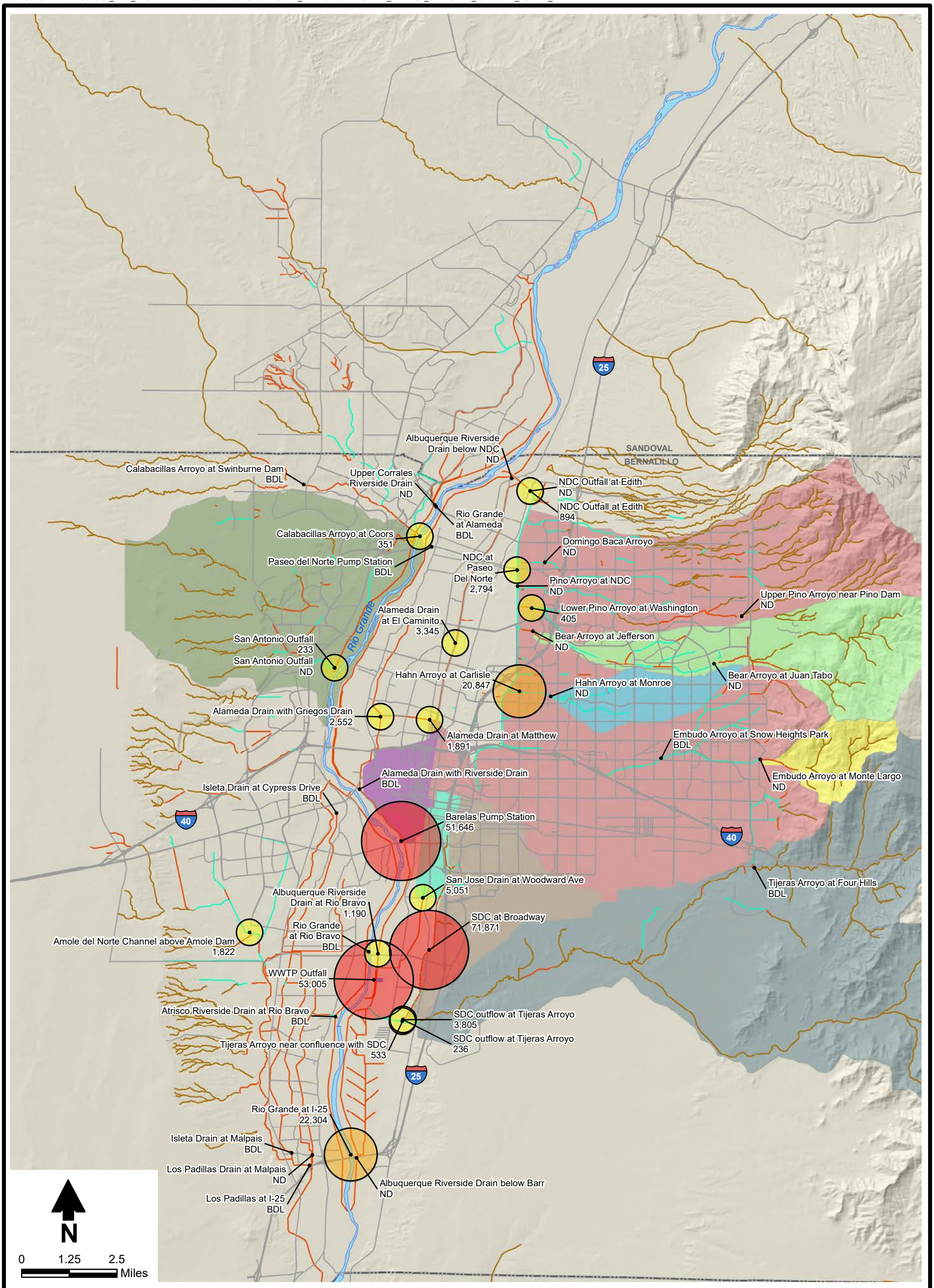

Explanation

Human HF183 (copies/100 mL)

Weak
(26 - 10,000)

Moderate
(10,001 - 40,000)

Strong
(>40,001)

Note:
BDL = Below detectable limits
ND = Not detected

CITY OF ALBUQUERQUE

Human HF 183
Microbial Source Tracking
Water Quality Wet Weather Sampling
July - October 2018

Figure 7b

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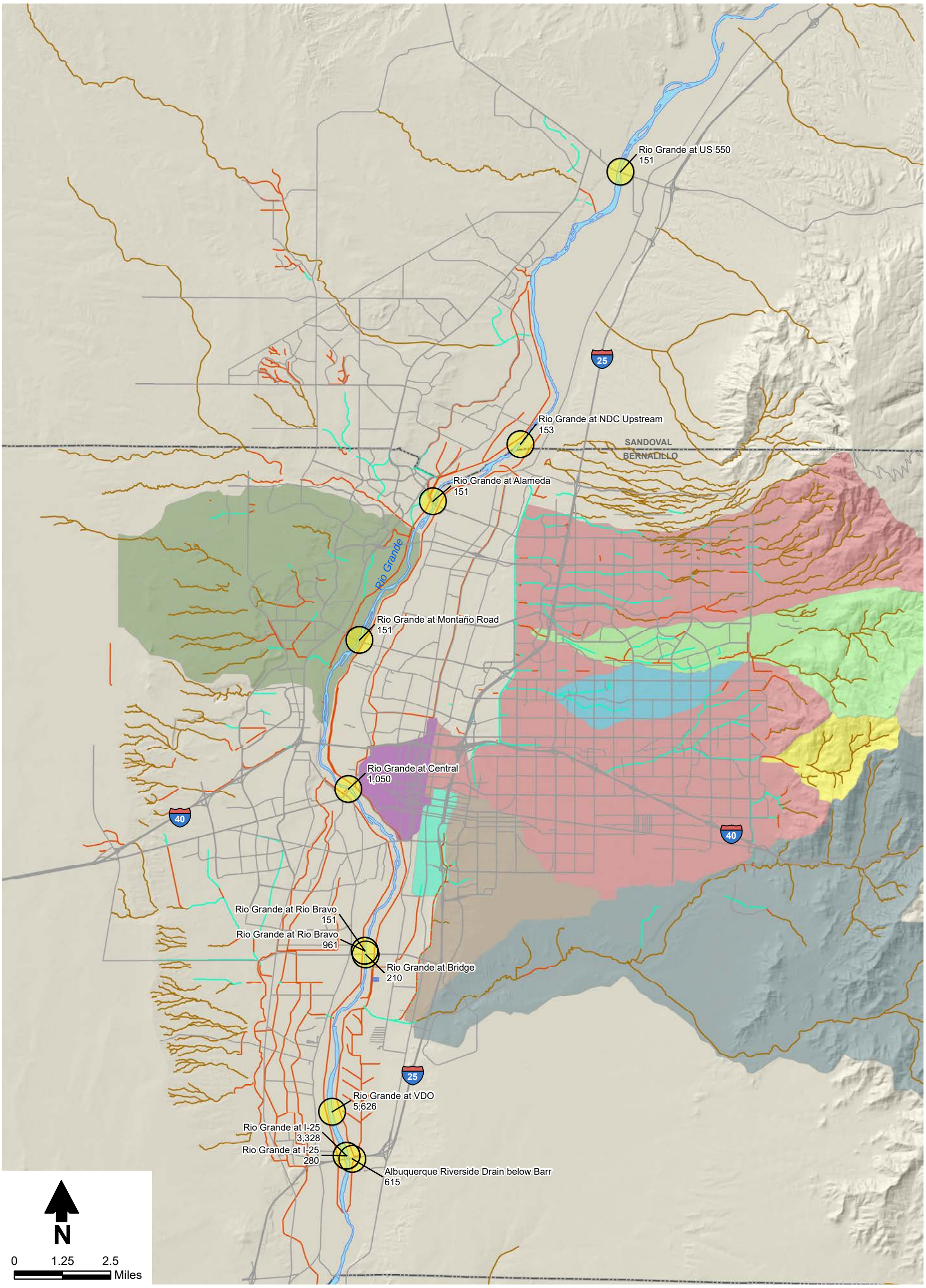

Explanation

Canine (copies/100 mL)

Weak
(0 - 10,000)

Moderate
(10,001 - 90,000)

Strong
(>90,001)

Note:
BDL = Below detectable limits
ND = Not detected

CITY OF ALBUQUERQUE

Canine Bacteria
Microbial Source Tracking
Water Quality Dry Weather Sampling
April - May 2018

Figure 8a

Daniel B. Stephens & Associates, Inc.
1/11/2019
JN DB17.1158

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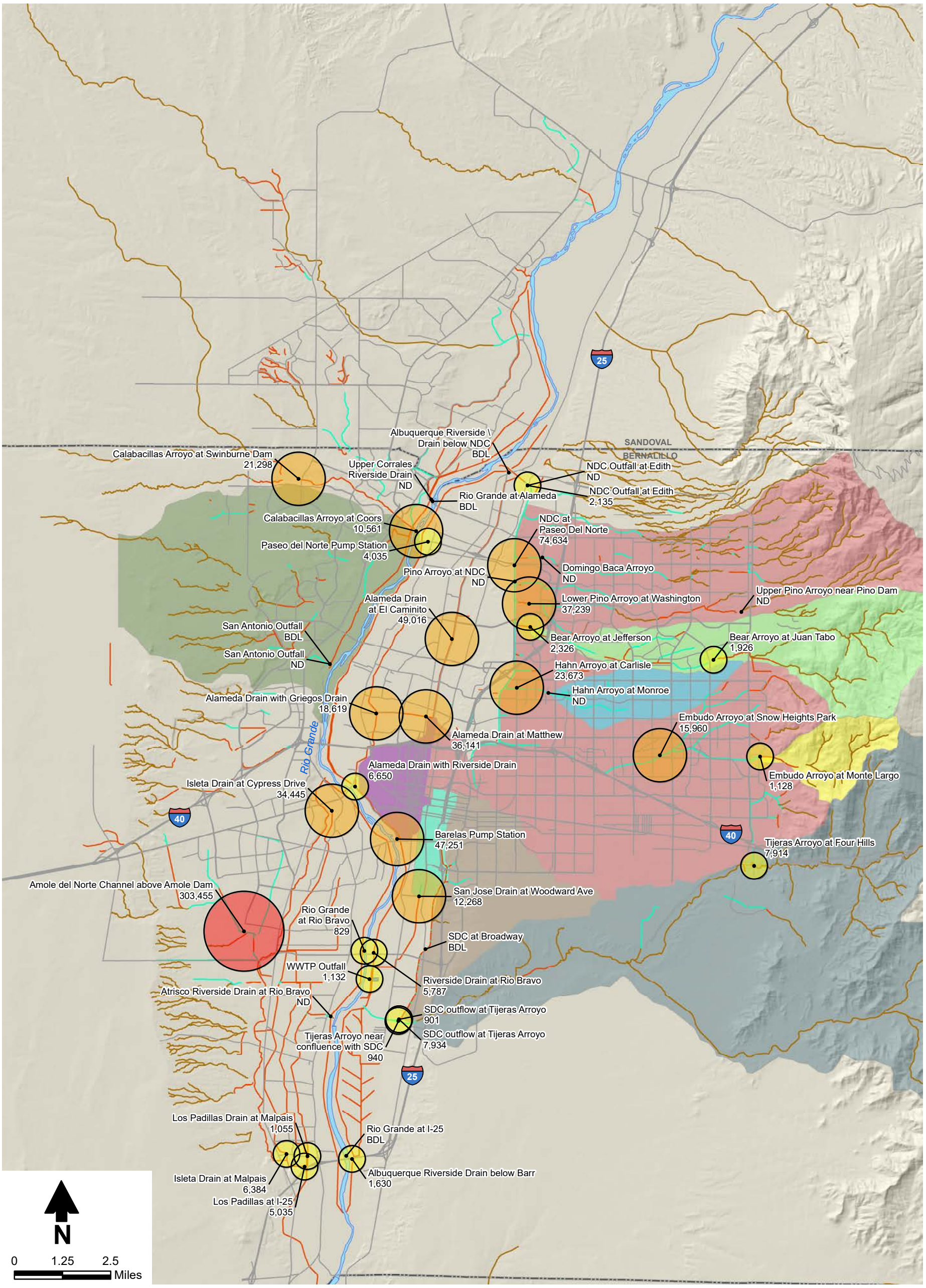

Explanation

Canine (copies/100 mL)

Weak (151 - 10,000)

Moderate (10,001 - 90,000)

Strong (> 90,001)

Note:
BDL = Below detectable limits
ND = Not detected

CITY OF ALBUQUERQUE

Canine Bacteria

Microbial Source Tracking

Water Quality Wet Weather Sampling

July - October 2018

Figure 8b

Daniel B. Stephens & Associates, Inc.

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JN DB17.1158

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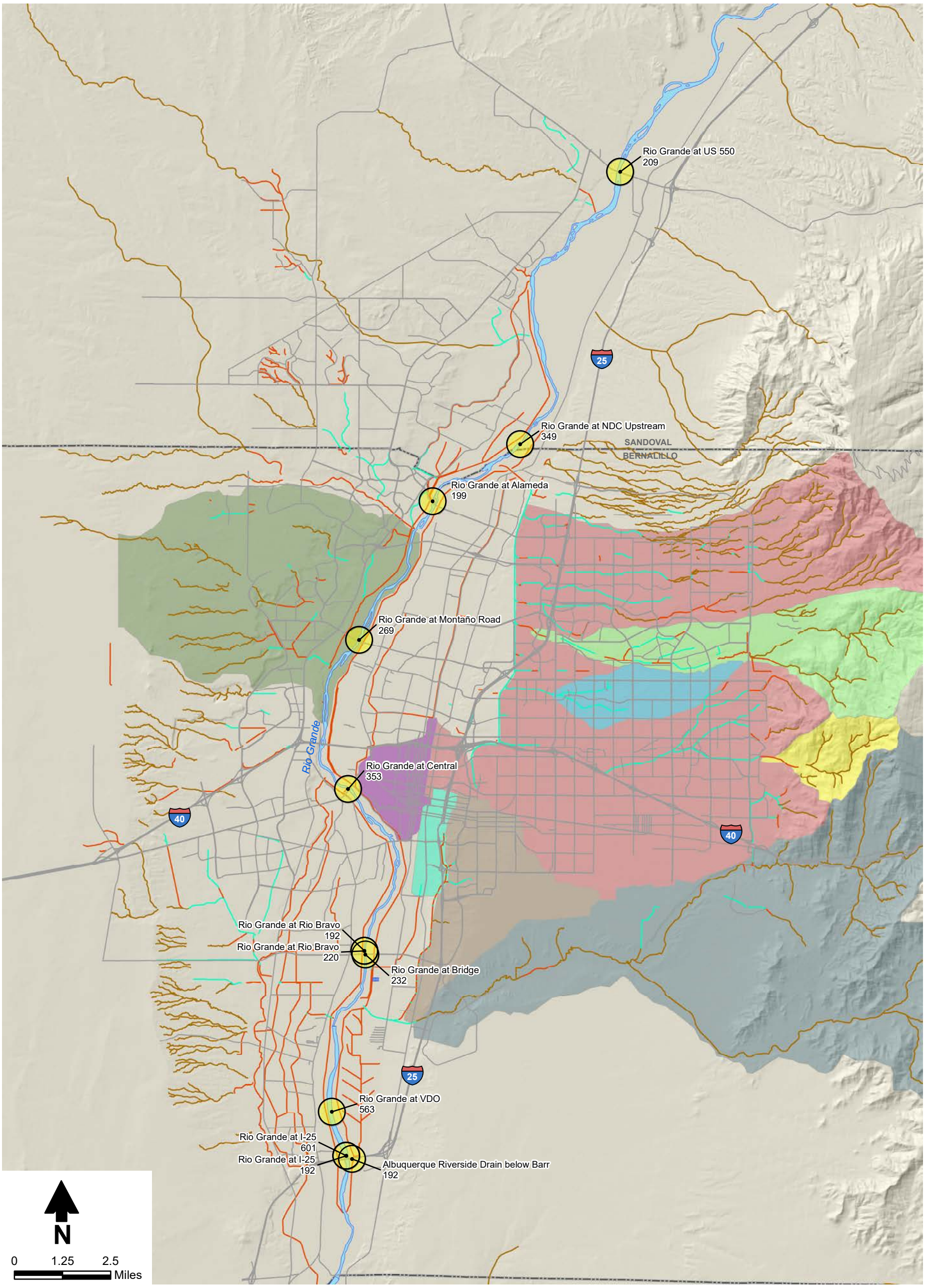

Explanation

Ruminant bacteria (copies/100 mL)

Weak
(0 - 10,000)

Moderate
(10,001 - 30,000)

Strong
(>30,001)

Note:
BDL = Below detectable limits
ND = Not detected

CITY OF ALBUQUERQUE

Ruminant Bacteria
Microbial Source Tracking
Water Quality Dry Weather Sampling
April - May 2018

Figure 9a

Daniel B. Stephens & Associates, Inc.

1/11/2019

JN DB17.1158

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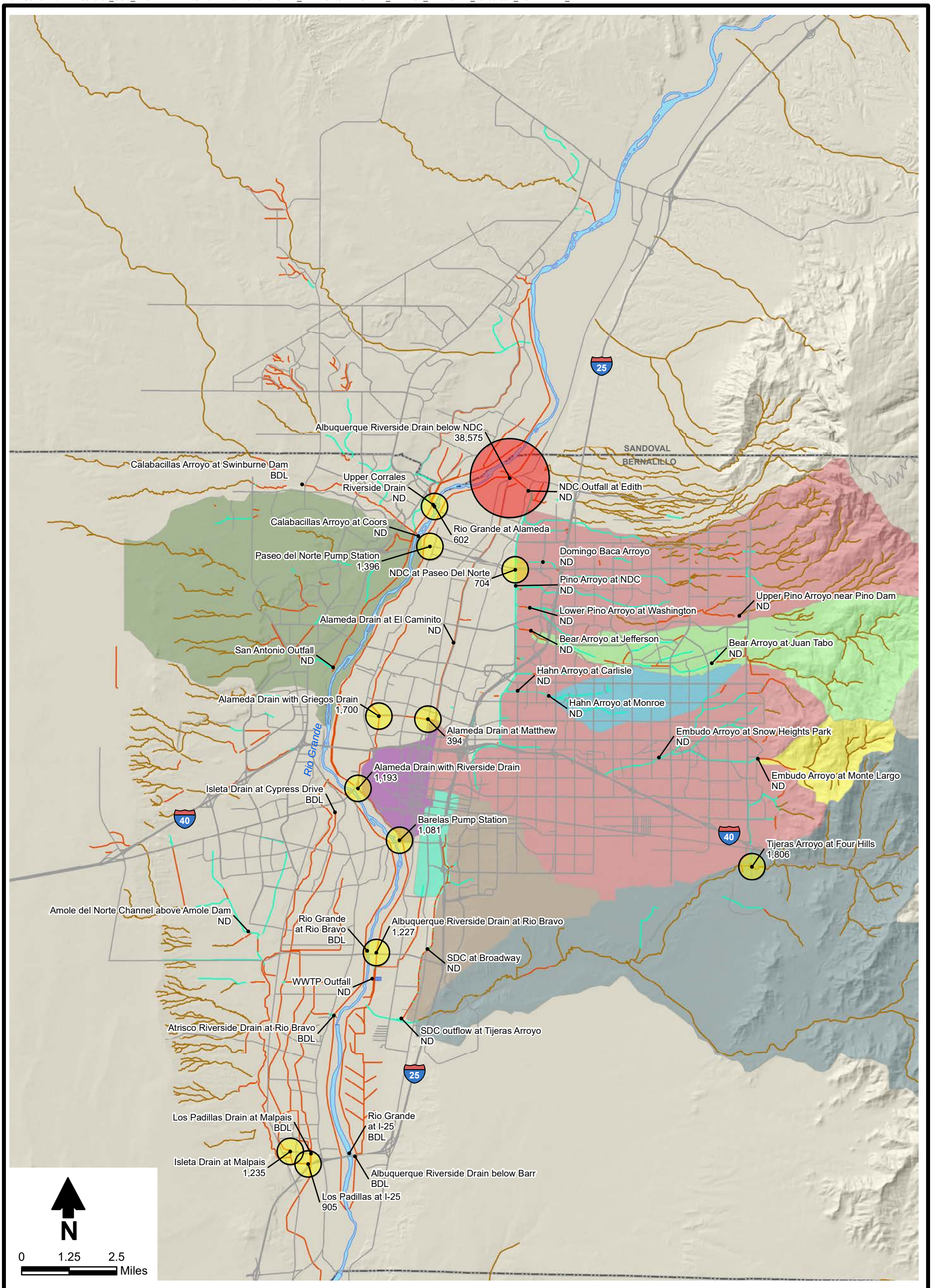


Explanation

Ruminant bacteria (copies/100 mL)

Weak
(192 - 10,000)

Moderate
(10,001 - 30,000)

Strong
(>30,001)

Note:
BDL = Below detectable limits
ND = Not detected

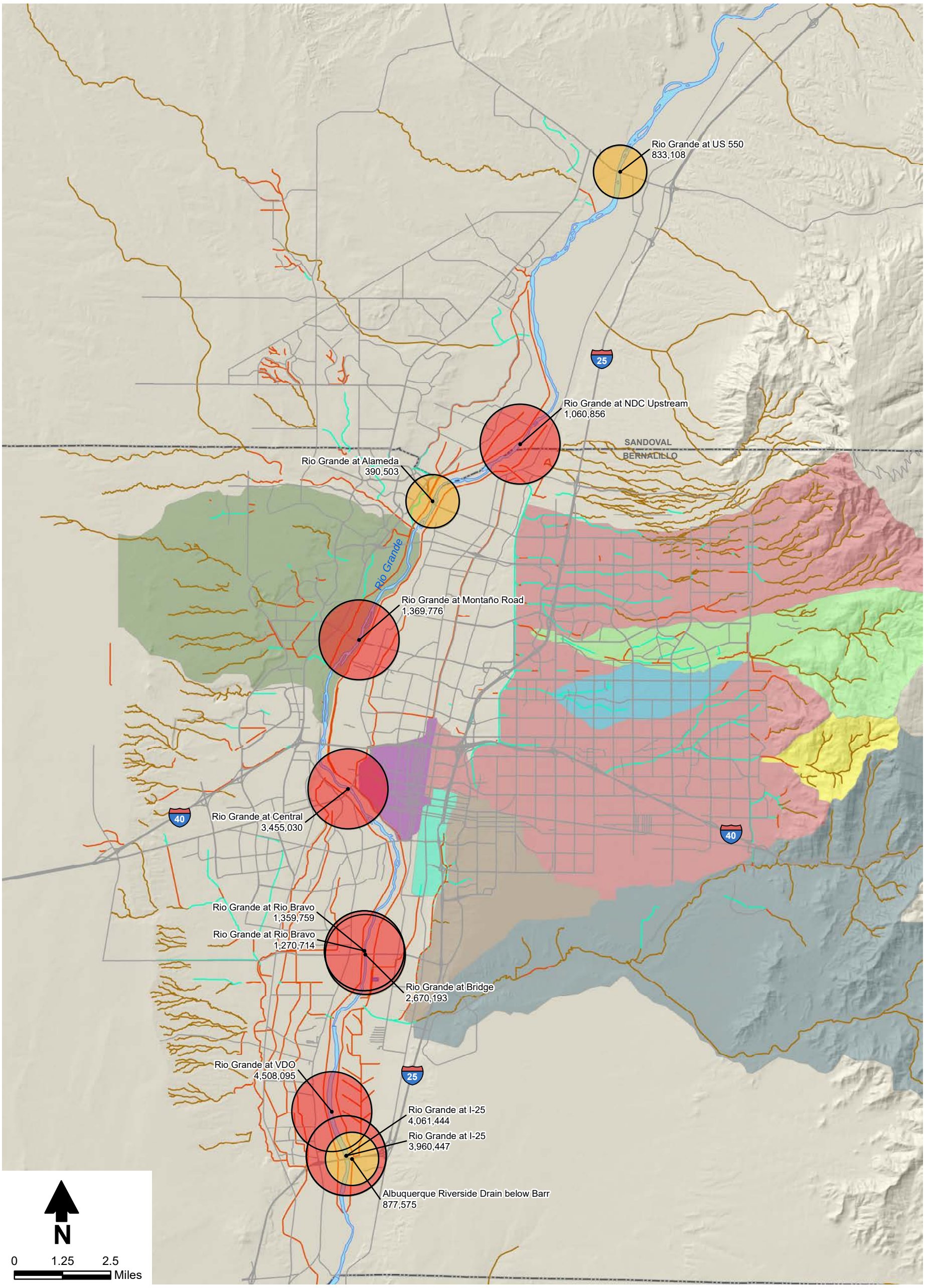
CITY OF ALBUQUERQUE

Ruminant Bacteria
Microbial Source Tracking
Water Quality Wet Weather Sampling
July - October 2018

Figure 9b

Daniel B. Stephens & Associates, Inc.
1/11/2019
JN DB17.1158

S:\PROJECTS\WR14.0049.01_COA_STORMWATER\GIS\MXDS\PROPORTIONAL_SYMBOL\GRADUATED_SYMBOL_SEASONAL_2018\F10A_GENBAC_DRY.MXD



Explanation

General *Bacteroidales* (GenBac 3) (copies/100 mL)

Weak
(0 - 200,000)

Moderate
(200,001 - 900,000)

Strong
(>900,001)

Note:
BDL = Below detectable limits
ND = Not detected

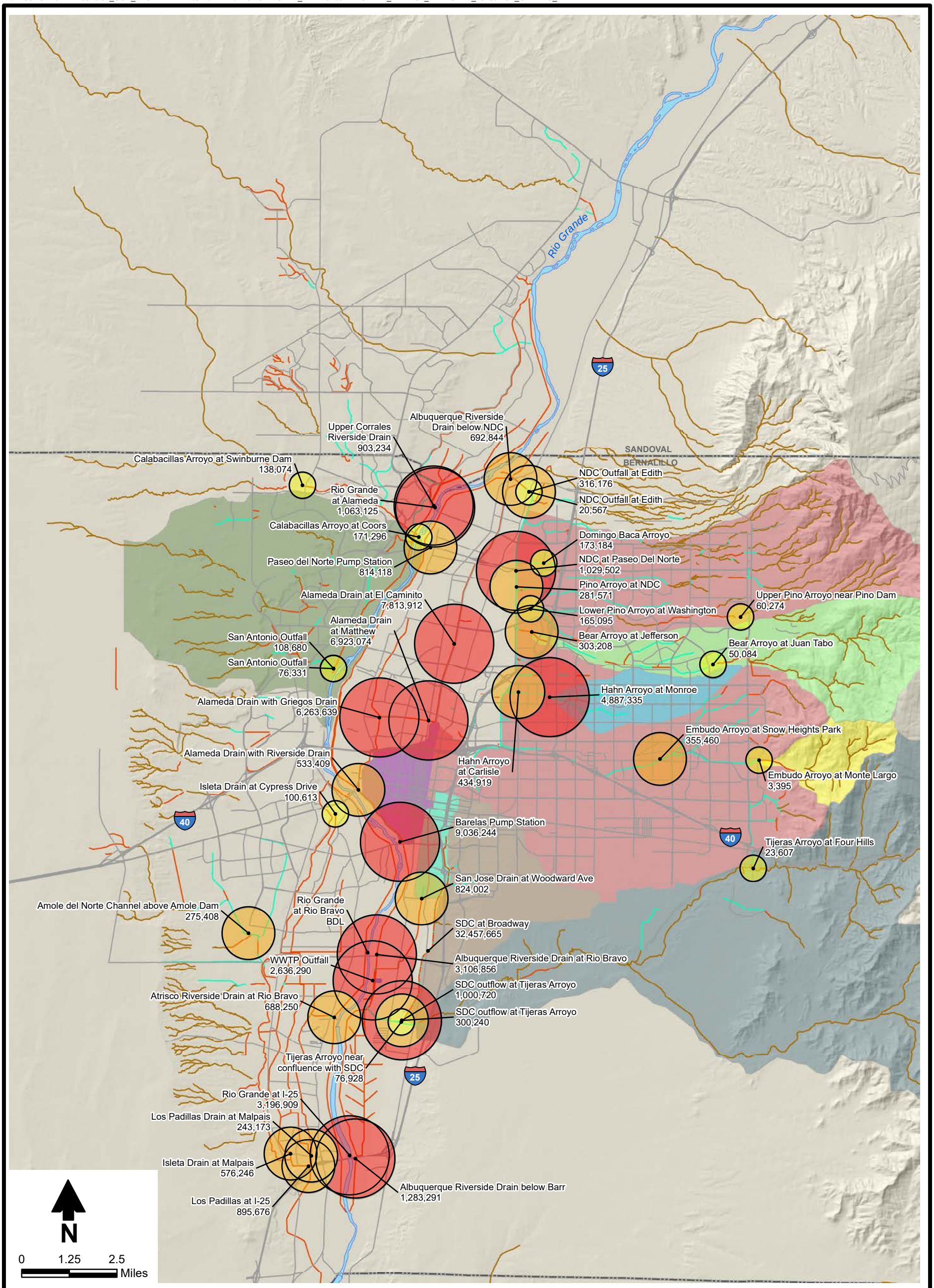
CITY OF ALBUQUERQUE

General *Bacteroidales*
Microbial Source Tracking
Water Quality Dry Weather Sampling
April - May 2018

Figure 10a

Daniel B. Stephens & Associates, Inc.
1/11/2019
JN DB17.1158

S:\PROJECTS\WR14.0049.01_COA_STORMWATER\GIS\MXDS\PROPORTIONAL_SYMBOL\GRADUATED_SYMBOL_SEASONAL_2018\F10B_GENBAC_WET.MXD



Explanation

General *Bacteroidales* (GenBac 3) (copies/100 mL)

Weak (280 - 200,000)

Moderate (200,001 - 900,000)

Strong (>900,001)

Note:
BDL = Below detectable limits
ND = Not detected

CITY OF ALBUQUERQUE

General *Bacteroidales* Microbial Source Tracking Water Quality Wet Weather Sampling July - October 2018

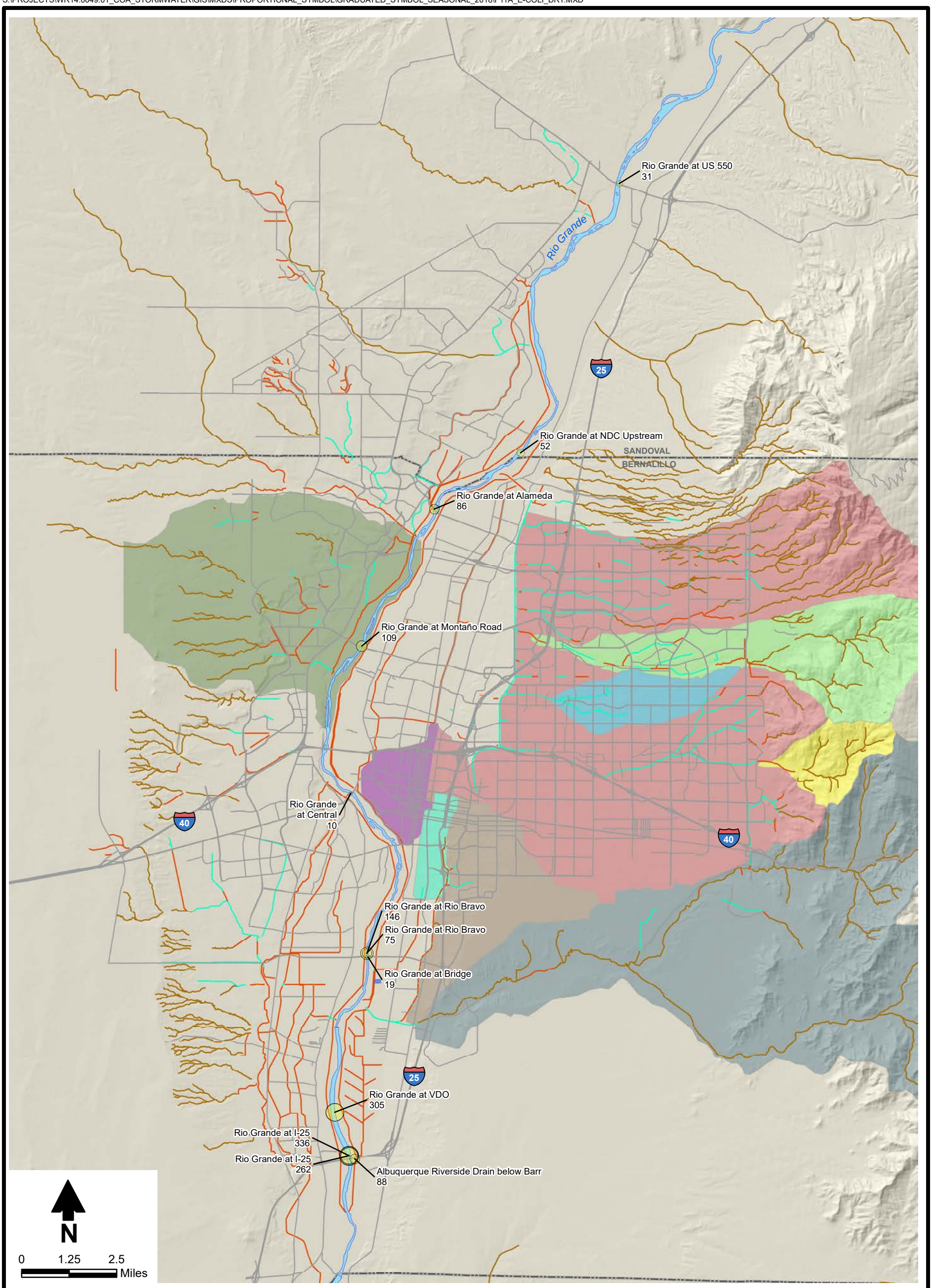
Figure 10b

Daniel B. Stephens & Associates, Inc.

1/11/2019

JN DB17.1158

S:\PROJECTS\WR14.0049.01_COA_STORMWATER\GIS\MXDS\PROPORTIONAL_SYMBOL\GRADUATED_SYMBOL_SEASONAL_2018\F11A_E-COLI_DRY.MXD



Explanation

E. coli (MPN/100 mL)

10

100

10,000

CITY OF ALBUQUERQUE

FIB E. coli Results

Microbial Source Tracking

Water Quality Dry Weather Sampling

April - May 2018

Figure 11a

Daniel B. Stephens & Associates, Inc.

1/11/2019

JN DB17.1158

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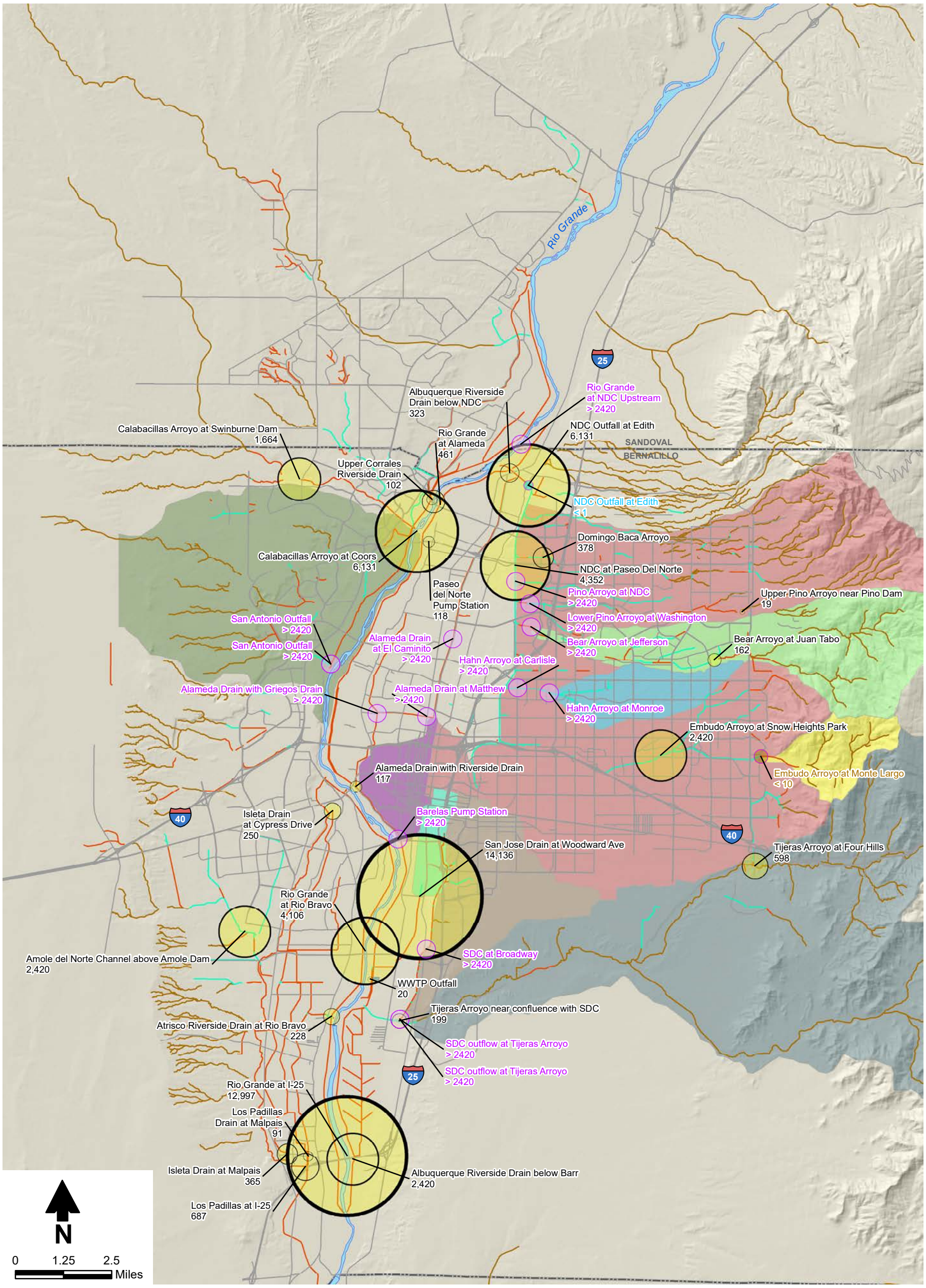


Explanation

E. coli (MPN/100 mL)

10

100

10,000

Note: Symbols not shown in yellow represent value ranges above and below stated number.

- <1
- <10
- >2419.6

CITY OF ALBUQUERQUE

FIB E. coli Results
Microbial Source Tracking
Water Quality Wet Weather Sampling
July - October 2018

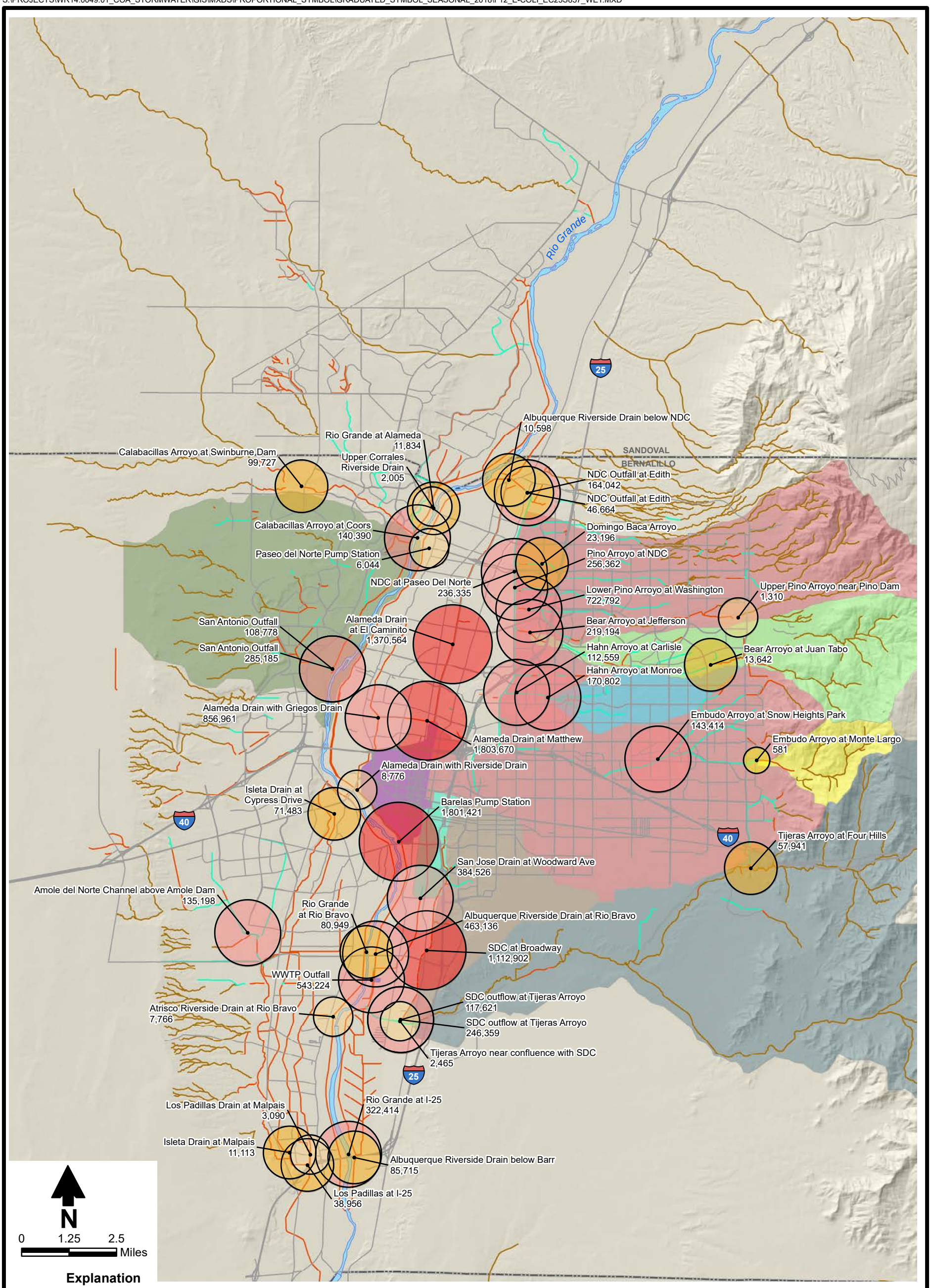
Figure 11b

Daniel B. Stephens & Associates, Inc.

1/11/2019

JN DB17.1158

S:\PROJECTS\WR14.0049.01_COA_STORMWATER\GIS\MXDS\PROPORTIONAL_SYMBOL\GRADUATED_SYMBOL_SEASONAL_2018\F12_E-COLI_EC23S857_WET.MXD



CITY OF ALBUQUERQUE

qPCR E. coli Results
Microbial Source Tracking
Water Quality Wet Weather Sampling
July - October 2018

Figure 12

Daniel B. Stephens & Associates, Inc.

1/11/2019

JN DB17.1158

Tables

Table 1. Sampling Events

Sampling Event Date	Duration of Storm Event (hours)	Rainfall Measurement or Estimate (inches)	Duration between this Event and End of Previous Measurable Event (hours)
4/12/2018 [a]	0	0	408
5/29/2018 [a]	0	0	192
7/26/2018	2.25	0.8	23
8/23/2018	1.9	0.27	11.5
9/20/2018	14.5	0.3	252
10/23/2018	24.25	1.4	241

[a] Background dry weather event

Table 2. Analytical Results by Sample Location Type

Location	Sample Date	Fecal Indicator Bacteria (MPN/100 mL)	Result (copies/100 mL)							
			E. coli EC23S857	General Bacteroidales GenBac3	Avian GFD	Human HF183	Canine DogBact	Ruminant Rum2Bac	Cow CowM2	Horse HorseBact
Arroyo Sample Locations										
Bear Arroyo at Jefferson	9/20/2018	>2,420	219,194	303,208	37,749	ND	2,326	ND	ND	BDL
Bear Arroyo at Juan Tabo	9/20/2018	162	13,642	50,084	12,593	ND	1,926	ND	ND	ND
Calabacillas Arroyo at Coors	9/20/2018	6,131	140,390	171,296	6,231	350	10,561	ND	ND	ND
Calabacillas Arroyo at Swinburne Dam	10/23/2018	1,664	99,727	138,074	3,915	BDL	21,298	BDL	ND	BDL
Domingo Baca Arroyo	8/23/2018	378	23,196	173,184	839	ND	ND	ND	ND	ND
Embudo Arroyo at Monte Largo	10/23/2018	<10	581	3,395	BDL	ND	1,128	ND	ND	BDL
Embudo Arroyo at Snow Heights Park	9/20/2018	2,420	143,414	355,460	4,378	BDL	15,960	ND	ND	ND
Hahn Arroyo at Carlisle	9/20/2018	>2,420	112,559	434,919	6,662	20,847	23,673	ND	ND	ND
Hahn Arroyo at Monroe	7/26/2018	>2,420	170,802	4,887,335	867	ND	ND	ND	ND	ND
Lower Pino Arroyo at Washington	9/20/2018	>2,420	722,792	165,095	6,264	405	37,239	ND	ND	BDL
Pino Arroyo at NDC	8/23/2018	>2,420	256,362	281,571	2,680	ND	ND	ND	ND	ND
Tijeras Arroyo at Four Hills	10/23/2018	598	57,941	23,607	BDL	BDL	7,914	1,806	ND	BDL
Tijeras Arroyo near confluence with SDC	7/27/2018	199	2,465	76,928	797	533	940	ND	ND	BDL
Upper Pino Arroyo near Pino Dam	9/20/2018	18	1,310	60,274	2,861	ND	ND	ND	ND	ND
Channel Sample Locations										
Amole del Norte Channel above Amole Dam	10/23/2018	2,420	135,198	275,408	1,093	1,822	303,454	ND	ND	ND

MPN/100 mL = Most probable number per 100 milliliters
ND = Not detected
BDL = Below detection limit
— = Not analyzed

Table 2. Analytical Results by Sample Location Type

Location	Sample Date	Fecal Indicator Bacteria (MPN/100 mL)	Result (copies/100 mL)							
			E. coli EC23S857	General Bacteroidales GenBac3	Avian GFD	Human HF183	Canine DogBact	Ruminant Rum2Bac	Cow CowM2	Horse HorseBact
Channel Sample Locations (cont.)										
NDC at Paseo Del Norte	10/23/2018	4,352	236,335	1,029,502	1,553	2,794	74,634	704	ND	ND
NDC Outfall at Edith	7/27/2018	6,131	164,042	316,176	1,386	894	2,134	ND	ND	912
	8/23/2018	<1	46,664	20,566	2,156	ND	ND	ND	ND	BDL
San Antonio Outfall	7/27/2018	>2,420	108,778	76,331	6,362	ND	ND	ND	ND	BDL
	9/20/2018	>2,420	285,185	108,680	95,612	233	BDL	ND	ND	ND
SDC at Broadway	9/20/2018	>2,420	1,112,902	32,457,665	9,164	71,871	488	ND	ND	ND
SDC outflow at Tijeras Arroyo	7/27/2018	>2,420	117,621	300,240	1,360	236	7,934	ND	ND	ND
	8/23/2018	>2,420	246,359	1,000,720	1,900	3,805	901	ND	ND	BDL
Drain Sample Locations										
Alameda Drain at El Caminito	9/20/2018	>2,420	1,370,564	7,813,912	9,296	3,345	36,141	ND	ND	BDL
Alameda Drain at Matthew	9/20/2018	>2,420	1,803,670	6,923,074	14,110	1,891	36,141	394	ND	ND
Alameda Drain with Griegos Drain	9/20/2018	>2,420	856,961	6,263,639	13,967	2,552	18,619	1,700	ND	ND
Alameda Drain with Riverside Drain	10/23/2018	117	8,776	533,409	23,458	BDL	6,650	1,193	ND	BDL
Albuquerque Riverside Drain at Rio Bravo	9/20/2018	>2,420	463,136	3,106,856	34,435	1,190	5,787	1,227	ND	ND
Albuquerque Riverside Drain below Barr	4/12/2018	88	5,870	877,575	4,797	BDL	BDL	ND	ND	BDL
	9/20/2018	2,420	85,715	1,283,291	40,662	ND	1,630	BDL	ND	ND
Albuquerque Riverside Drain below NDC	8/23/2018	323	10,598	692,844	9,902	ND	BDL	38,575	BDL	BDL

MPN/100 mL = Most probable number per 100 milliliters
ND = Not detected
BDL = Below detection limit
— = Not analyzed

Table 2. Analytical Results by Sample Location Type

Location	Sample Date	Fecal Indicator Bacteria (MPN/100 mL)	Result (copies/100 mL)							
			E. coli EC23S857	General Bacteroidales GenBac3	Avian GFD	Human HF183	Canine DogBact	Ruminant Rum2Bac	Cow CowM2	Horse HorseBact
Drain Sample Locations (cont.)										
Atrisco Riverside Drain at Rio Bravo	9/20/2018	228	7,766	688,250	110,240	BDL	ND	BDL	ND	ND
Isleta Drain at Cypress Drive	10/23/2018	250	71,483	100,613	2,023	BDL	34,445	BDL	ND	ND
Isleta Drain at Malpais	10/23/2018	365	11,113	576,246	22,889	BDL	6,384	1,235	ND	BDL
Los Padillas at I-25	10/23/2018	687	38,956	895,676	57,698	BDL	5,035	905	ND	BDL
Los Padillas Drain at Malpais	10/23/2018	91	3,090	243,173	39,266	ND	1,055	BDL	ND	BDL
San Jose Drain at Woodward Ave	7/27/2018	14,136	384,526	824,002	4,257	5,051	12,268	ND	ND	BDL
Upper Corrales Riverside Drain	9/20/2018	102	2,005	903,234	69,955	ND	ND	ND	ND	ND
Pump Station Sample Locations										
Barelas Pump Station	10/23/2018	24,196	1,801,421	9,036,244	4,032	51,646	47,251	1,081	ND	BDL
Paseo del Norte Pump Station	10/23/2018	118	6,044	814,118	22,744	BDL	4,035	1,396	ND	ND
Rio Grande Sample Locations										
Rio Grande at US 550	5/29/2018	31	1,019	833,108	20,347	ND	ND	BDL	ND	ND
Rio Grande at NDC Upstream	5/29/2018	52	2,267	1,060,856	17,630	BDL	ND	BDL	ND	ND
Rio Grande at Alameda	5/29/2018	86	886	390,503	9,803	ND	ND	BDL	ND	ND
	9/20/2018	461	11,834	1,063,125	19,767	BDL	BDL	602	ND	ND
Rio Grande at Montaño Road	5/29/2018	109	3,174	1,369,776	19,612	BDL	ND	BDL	ND	ND

MPN/100 mL = Most probable number per 100 milliliters
ND = Not detected
BDL = Below detection limit
— = Not analyzed

Table 2. Analytical Results by Sample Location Type

Location	Sample Date	Fecal Indicator Bacteria (MPN/100 mL)	Result (copies/100 mL)							
			E. coli EC23S857	General Bacteroidales GenBac3	Avian GFD	Human HF183	Canine DogBact	Ruminant Rum2Bac	Cow CowM2	Horse HorseBact
Rio Grande Sample Locations (cont.)										
Rio Grande at Central	5/29/2018	10	11,770	3,455,030	32,892	703	1,050	BDL	ND	ND
Rio Grande at Bridge	5/29/2018	18	8,586	2,670,193	42,361	318	BDL	BDL	ND	ND
Rio Grande at Rio Bravo	4/12/2018	75	2,559	1,270,714	7,948	293	ND	ND	ND	ND
	5/29/2018	146	5,614	1,359,759	18,820	339	961	BDL	ND	ND
	9/20/2018	4,106	80,949	BDL	BDL	BDL	829	BDL	ND	BDL
Rio Grande at VDO	5/29/2018	305	105,709	4,508,095	29,594	5,126	5,626	563	ND	ND
Rio Grande at I-25	4/12/2018	262	12,859	4,061,444	21,696	3,106	BDL	ND	ND	BDL
	5/29/2018	336	82,008	3,960,447	36,121	2,636	3,328	601	ND	ND
	9/20/2018	12,997	322,414	3,196,909	21,246	22,304	BDL	BDL	ND	ND
WWTP Samples										
WWTP Outfall	9/20/2018	20	543,224	2,636,290	21,539	53,005	1,132	ND	ND	ND
Blanks										
Equipment blank	5/29/2018	—	ND	ND	ND	ND	ND	ND	ND	ND
	7/27/2018	—	ND	—	—	—	—	—	—	—
	9/20/2018	—	ND	—	—	—	—	—	—	—
	10/23/2018	—	ND	—	—	—	—	—	—	—
Method blank	4/12/2018	—	ND	ND	ND	ND	ND	ND	ND	ND
	7/27/2018	—	ND	—	—	—	—	—	—	—
	8/24/2018	—	ND	—	—	—	—	—	—	—
	9/20/2018	—	ND	—	—	—	—	—	—	—
	10/23/2018	—	ND	—	—	—	—	—	—	—

MPN/100 mL = Most probable number per 100 milliliters
ND = Not detected
BDL = Below detection limit
— = Not analyzed

Table 3. Analytical Results by Sampling Event

Location	Sample Date	Fecal Indicator Bacteria (MPN/100 mL)	Result (copies/100 mL)							
			E. coli EC23S857	General Bacteroidales GenBac3	Avian GFD	Human HF183	Canine DogBact	Ruminant Rum2Bac	Cow CowM2	Horse HorseBact
April 2018 Dry Weather Event										
Albuquerque Riverside Drain below Barr	4/12/2018	88	5,870	877,575	4,797	BDL	BDL	ND	ND	BDL
Rio Grande at I-25	4/12/2018	262	12,859	4,061,444	21,696	3,106	BDL	ND	ND	BDL
Rio Grande at Rio Bravo	4/12/2018	75	2,559	1,270,714	7,948	293	ND	ND	ND	ND
Method blank	4/12/2018	—	ND	ND	ND	ND	ND	ND	ND	ND
May 2018 Dry Weather Event										
Rio Grande at Alameda	5/29/2018	86	886	390,503	9,803	ND	ND	BDL	ND	ND
Rio Grande at Bridge	5/29/2018	18	8,586	2,670,193	42,361	318	BDL	BDL	ND	ND
Rio Grande at Central	5/29/2018	10	11,770	3,455,030	32,892	703	1,050	BDL	ND	ND
Rio Grande at I-25	5/29/2018	336	82,008	3,960,447	36,121	2,636	3,328	601	ND	ND
Rio Grande at Montaño Road	5/29/2018	109	3,174	1,369,776	19,612	BDL	ND	BDL	ND	ND
Rio Grande at NDC Upstream	5/29/2018	52	2,267	1,060,856	17,630	BDL	ND	BDL	ND	ND
Rio Grande at Rio Bravo	5/29/2018	146	5,614	1,359,759	18,820	339	961	BDL	ND	ND
Rio Grande at US 550	5/29/2018	31	1,019	833,108	20,347	ND	ND	BDL	ND	ND
Rio Grande at VDO	5/29/2018	305	105,709	4,508,095	29,594	5,126	5,626	563	ND	ND
Equipment blank	5/29/2018	—	ND	ND	ND	ND	ND	ND	ND	ND
July 2018 Wet Weather Event										
Hahn Arroyo at Monroe	7/26/2018	>2,420	170,802	4,887,335	867	ND	ND	ND	ND	ND
Tijeras Arroyo near confluence with SDC	7/27/2018	199	2,465	76,928	797	533	940	ND	ND	BDL

MPN/100 mL = Most probable number per 100 milliliters
ND = Not detected
BDL = Below detection limit
— = Not analyzed

Table 3. Analytical Results by Sampling Event

Location	Sample Date	Fecal Indicator Bacteria (MPN/100 mL)	Result (copies/100 mL)							
			E. coli EC23S857	General Bacteroidales GenBac3	Avian GFD	Human HF183	Canine DogBact	Ruminant Rum2Bac	Cow CowM2	Horse HorseBact
July 2018 Wet Weather Event (cont.)										
NDC Outfall at Edith	7/27/2018	6,131	164,042	316,176	1,386	894	2,134	ND	ND	912
San Antonio Outfall	7/27/2018	>2,420	108,778	76,331	6,362	ND	ND	ND	ND	BDL
SDC outflow at Tijeras Arroyo	7/27/2018	>2,420	117,621	300,240	1,360	236	7,934	ND	ND	ND
San Jose Drain at Woodward Ave	7/27/2018	14,136	384,526	824,002	4,257	5,051	12,268	ND	ND	BDL
Equipment blank	7/27/2018	—	ND	—	—	—	—	—	—	—
Method blank	7/27/2018	—	ND	—	—	—	—	—	—	—
August 2018 Wet Weather Event										
Domingo Baca Arroyo	8/23/2018	378	23,196	173,184	839	ND	ND	ND	ND	ND
Pino Arroyo at NDC	8/23/2018	>2,420	256,362	281,571	2,680	ND	ND	ND	ND	ND
NDC Outfall at Edith	8/23/2018	<1	46,664	20,566	2,156	ND	ND	ND	ND	BDL
SDC outflow at Tijeras Arroyo	8/23/2018	>2,420	246,359	1,000,720	1,900	3,805	901	ND	ND	BDL
Albuquerque Riverside Drain below NDC	8/23/2018	323	10,598	692,844	9,902	ND	BDL	38,575	BDL	BDL
Method blank	8/24/2018	—	ND	—	—	—	—	—	—	—
September 2018 Wet Weather Event										
Bear Arroyo at Jefferson	9/20/2018	>2,420	219,194	303,208	37,749	ND	2,326	ND	ND	BDL
Bear Arroyo at Juan Tabo	9/20/2018	162	13,642	50,084	12,593	ND	1,926	ND	ND	ND
Calabacillas Arroyo at Coors	9/20/2018	6,131	140,390	171,296	6,231	350	10,561	ND	ND	ND

MPN/100 mL = Most probable number per 100 milliliters
ND = Not detected
BDL = Below detection limit
— = Not analyzed

Table 3. Analytical Results by Sampling Event
Page 3 of 5

Location	Sample Date	Fecal Indicator Bacteria (MPN/100 mL)	Result (copies/100 mL)							
			E. coli EC23S857	General Bacteroidales GenBac3	Avian GFD	Human HF183	Canine DogBact	Ruminant Rum2Bac	Cow CowM2	Horse HorseBact
September 2018 Wet Weather Event (cont.)										
Embudo Arroyo at Snow Heights Park	9/20/2018	2,420	143,414	355,460	4,378	BDL	15,960	ND	ND	ND
Hahn Arroyo at Carlisle	9/20/2018	>2,420	112,559	434,919	6,662	20,847	23,673	ND	ND	ND
Lower Pino Arroyo at Washington	9/20/2018	>2,420	722,792	165,095	6,264	405	37,239	ND	ND	BDL
Upper Pino Arroyo near Pino Dam	9/20/2018	18	1,310	60,274	2,861	ND	ND	ND	ND	ND
San Antonio Outfall	9/20/2018	>2,420	285,185	108,680	95,612	233	BDL	ND	ND	ND
SDC at Broadway	9/20/2018	>2,420	1,112,902	32,457,665	9,164	71,871	488	ND	ND	ND
Alameda Drain at El Caminito	9/20/2018	>2,420	1,370,564	7,813,912	9,296	3,345	36,141	ND	ND	BDL
Alameda Drain at Matthew	9/20/2018	>2,420	1,803,670	6,923,074	14,110	1,891	36,141	394	ND	ND
Alameda Drain with Griegos Drain	9/20/2018	>2,420	856,961	6,263,639	13,967	2,552	18,619	1,700	ND	ND
Albuquerque Riverside Drain at Rio Bravo	9/20/2018	>2,420	463,136	3,106,856	34,435	1,190	5,787	1,227	ND	ND
Albuquerque Riverside Drain below Barr	9/20/2018	2,420	85,715	1,283,291	40,662	ND	1,630	BDL	ND	ND
Atrisco Riverside Drain at Rio Bravo	9/20/2018	228	7,766	688,250	110,240	BDL	ND	BDL	ND	ND
Upper Corrales Riverside Drain	9/20/2018	102	2,005	903,234	69,955	ND	ND	ND	ND	ND
Rio Grande at Alameda	9/20/2018	461	11,834	1,063,125	19,767	BDL	BDL	602	ND	ND

MPN/100 mL = Most probable number per 100 milliliters
ND = Not detected
BDL = Below detection limit
— = Not analyzed

Table 3. Analytical Results by Sampling Event
Page 4 of 5

Location	Sample Date	Fecal Indicator Bacteria (MPN/100 mL)	Result (copies/100 mL)							
			E. coli EC23S857	General Bacteroidales GenBac3	Avian GFD	Human HF183	Canine DogBact	Ruminant Rum2Bac	Cow CowM2	Horse HorseBact
September 2018 Wet Weather Event (cont.)										
Rio Grande at I-25	9/20/2018	12,997	322,414	3,196,909	21,246	22,304	BDL	BDL	ND	ND
Rio Grande at Rio Bravo	9/20/2018	4,106	80,949	BDL	BDL	BDL	829	BDL	ND	BDL
WWTP Outfall	9/20/2018	20	543,224	2,636,290	21,539	53,005	1,132	ND	ND	ND
Equipment blank	9/20/2018	—	ND	—	—	—	—	—	—	—
Method blank	9/20/2018	—	ND	—	—	—	—	—	—	—
October 2018 Wet Weather Event										
Calabacillas Arroyo at Swinburne Dam	10/23/2018	1,664	99,727	138,074	3,915	BDL	21,298	BDL	ND	BDL
Embudo Arroyo at Monte Largo	10/23/2018	<10	581	3,395	BDL	ND	1,128	ND	ND	BDL
Tijeras Arroyo at Four Hills	10/23/2018	598	57,941	23,607	BDL	BDL	7,914	1,806	ND	BDL
Amole del Norte Channel above Amole Dam	10/23/2018	2,420	135,198	275,408	1,093	1,822	303,454	ND	ND	ND
NDC at Paseo Del Norte	10/23/2018	4,352	236,335	1,029,502	1,553	2,794	74,634	704	ND	ND
Alameda Drain with Riverside Drain	10/23/2018	117	8,776	533,409	23,458	BDL	6,650	1,193	ND	BDL
Isleta Drain at Cypress Drive	10/23/2018	250	71,483	100,613	2,023	BDL	34,445	BDL	ND	ND
Isleta Drain at Malpais	10/23/2018	365	11,113	576,246	22,889	BDL	6,384	1,235	ND	BDL
Los Padillas at I-25	10/23/2018	687	38,956	895,676	57,698	BDL	5,035	905	ND	BDL
Los Padillas Drain at Malpais	10/23/2018	91	3,090	243,173	39,266	ND	1,055	BDL	ND	BDL
Barelas Pump Station	10/23/2018	24,196	1,801,421	9,036,244	4,032	51,646	47,251	1,081	ND	BDL

MPN/100 mL = Most probable number per 100 milliliters
ND = Not detected
BDL = Below detection limit
— = Not analyzed

Table 3. Analytical Results by Sampling Event

Location	Sample Date	Fecal Indicator Bacteria (MPN/100 mL)	Result (copies/100 mL)							
			E. coli EC23S857	General Bacteroidales GenBac3	Avian GFD	Human HF183	Canine DogBact	Ruminant Rum2Bac	Cow CowM2	Horse HorseBact
October 2018 Wet Weather Event (cont.)										
Paseo del Norte Pump Station	10/23/2018	118	6,044	814,118	22,744	BDL	4,035	1,396	ND	ND
Equipment blank	10/23/2018	—	ND	—	—	—	—	—	—	—
Method blank	10/23/2018	—	ND	—	—	—	—	—	—	—

MPN/100 mL = Most probable number per 100 milliliters
ND = Not detected
BDL = Below detection limit
— = Not analyzed

Attachment 1

Laboratory Reports

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

June 01, 2018

Chad Johannesen

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL: (505) 822-9400
FAX (505) 822-8877

RE: COA IDDE MST OrderNo.: 1805E98

Dear Chad Johannesen:

Hall Environmental Analysis Laboratory received 9 sample(s) on 5/29/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order: **1805E98**
Date Reported: **6/1/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Project: COA IDDE MST
Lab Order: 1805E98

Lab ID: 1805E98-001 **Collection Date:** 5/29/2018 10:14:00 AM
Client Sample ID: NDC Upstream_180529 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **SMS**	
E. Coli	52	10.00		MPN/100mL	10	5/30/2018 5:17:00 PM	38371

Lab ID: 1805E98-002 **Collection Date:** 5/29/2018 11:04:00 AM
Client Sample ID: RG@ 550_180529 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **SMS**	
E. Coli	31	10.00		MPN/100mL	10	5/30/2018 5:17:00 PM	38371

Lab ID: 1805E98-003 **Collection Date:** 5/29/2018 11:55:00 AM
Client Sample ID: RG@ Alameda_180529 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **SMS**	
E. Coli	86	10.00		MPN/100mL	10	5/30/2018 5:17:00 PM	38371

Lab ID: 1805E98-004 **Collection Date:** 5/29/2018 1:30:00 PM
Client Sample ID: RG@ Montano_180529 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **SMS**	
E. Coli	109	10.00		MPN/100mL	10	5/30/2018 5:17:00 PM	38371

Lab ID: 1805E98-005 **Collection Date:** 5/29/2018 10:00:00 AM
Client Sample ID: RG@ Central_20180529 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **SMS**	
E. Coli	10	10.00		MPN/100mL	10	5/30/2018 5:17:00 PM	38371

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Lab Order:** 1805E98
Project: COA IDDE MST

Lab ID: 1805E98-006 **Collection Date:** 5/29/2018 11:00:00 AM
Client Sample ID: RG@ Bridge_20180529 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **SMS**	
E. Coli	18.5	10.00		MPN/100mL	10	5/30/2018 5:17:00 PM	38371

Lab ID: 1805E98-007 **Collection Date:** 5/29/2018 12:00:00 PM
Client Sample ID: RG@ Rio Bravo_20180529 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **SMS**	
E. Coli	146	10.00		MPN/100mL	10	5/30/2018 5:17:00 PM	38371

Lab ID: 1805E98-008 **Collection Date:** 5/29/2018 1:15:00 PM
Client Sample ID: RG@ VDO_20180529 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **SMS**	
E. Coli	305	10.00		MPN/100mL	10	5/30/2018 5:17:00 PM	38371

Lab ID: 1805E98-009 **Collection Date:** 5/29/2018 2:00:00 PM
Client Sample ID: RG@ I25_20180529 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **SMS**	
E. Coli	336	10.00		MPN/100mL	10	5/30/2018 5:17:00 PM	38371

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: DBS | Work Order Number: 1805E98 | RcptNo: 1

Received By: Ashley Gallegos 5/29/2018 2:56:00 PM

Completed By: Erin Melendrez 5/29/2018 3:00:35 PM

Reviewed By: 05/29/18 @1400

Labled By: SD 05/29/18

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Client		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
	Samples were collected the same day and chilled.		
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: SD 05/29/18

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	17.3	Good	Not Present			

Chain-of-Custody Record

Client: Daniel B. Stephens & Assoc.

Mailing Address: 6020 Academy RD NE

Phone #: 505-822-9400

email or Fax#: CJohannessen@Geoltgic

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: AIR ~~[redacted]~~ COA IDDE MST

Project #: DB17.1158

Project Manager: Chad Johannessen

Sampler: Amy Rosebrough + Elizabeth Botts

On Ice: ☒ Yes ☐ No

Sample Temperature: 17.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1805E98	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	E. coli by Enumeration				Air Bubbles (Y or N)
05/29/18	10:14	SW	NDC Upstream_180529	125mL poly		-001												X				
05/29/18	11:04	SW	RG@ 550_180529	125mL poly		-002												X				
05/29/18	11:55	SW	RG@Alameda_180529	125mL Poly		-003												X				
05/29/18	13:30	SW	RG@ Montano_180529	125mL Poly		-004												X				
05/29/18	10:00	SW	RG-Central-20180529	125mL Poly		-005												X				
05/29/18	11:00	SW	RG-Bridge-20180529	125mL Poly		-006												X				
05/29/18	12:00	SW	RG-RioBravo-20180529	125mL Poly		-007												X				
05/29/18	13:15	SW	RG-VDO-20180529	125mL Poly		-008												X				
05/29/18	14:00	SW	RG-I25-20180529	125mL Poly		-009												X				

Date	Time	Relinquished by:	Received by:	Date	Time
5/29/18	1456			05/29/18	1456
Date	Time	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 31, 2018

Chad Johannesen

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL: (505) 822-9400
FAX (505) 822-8877

RE: COA-MST OrderNo.: 1807E89

Dear Chad Johannesen:

Hall Environmental Analysis Laboratory received 6 sample(s) on 7/27/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order: **1807E89**
Date Reported: **7/31/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Project: COA-MST
Lab Order: 1807E89

Lab ID: 1807E89-001 **Collection Date:** 7/27/2018 9:30:00 AM
Client Sample ID: NDC-20180727 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **AKS**	
E. Coli	6131	10.00		MPN/100	10	7/28/2018 4:55:00 PM	39462

Lab ID: 1807E89-002 **Collection Date:** 7/26/2018 7:37:00 PM
Client Sample ID: Hahn-20180726 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **AKS**	
E. Coli	>2419.6	1.000		MPN/100	1	7/28/2018 4:55:00 PM	39462

Lab ID: 1807E89-003 **Collection Date:** 7/27/2018 12:30:00 PM
Client Sample ID: SDC-20180727 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **AKS**	
E. Coli	>2419.6	1.000		MPN/100	1	7/28/2018 4:55:00 PM	39462

Lab ID: 1807E89-004 **Collection Date:** 7/27/2018 12:00:00 PM
Client Sample ID: Tijeras-20180727 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **AKS**	
E. Coli	199	10.00		MPN/100	10	7/28/2018 4:55:00 PM	39462

Lab ID: 1807E89-005 **Collection Date:** 7/27/2018 2:15:00 AM
Client Sample ID: San Jose-20180727 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **AKS**	
E. Coli	14136	10.00		MPN/100	10	7/28/2018 4:55:00 PM	39462

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Project: COA-MST
Lab Order: 1807E89

Lab ID: 1807E89-006
Collection Date: 7/27/2018 11:40:00 AM
Client Sample ID: San Antonio-20180727
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **AKS**	
E. Coli	>2419.6	1.000		MPN/100	1	7/28/2018 4:55:00 PM	39462

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: DBS | Work Order Number: 1807E89 | RcptNo: 1

Received By: **Erin Melendrez** 7/27/2018 2:10:00 PM

Completed By: **Michelle Garcia** 7/27/2018 2:34:03 PM Michelle Garcia

Reviewed By: MW 7/27/18 @ 1520

LB: ENM 7/27/18

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____
ENM 7/27/18

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	23.3	Good	Not Present			

Chain-of-Custody Record

Client: ~~COA MST~~ DBSA

Mailing Address: 6020 Academy

Phone #: 505-882-9400

email or Fax#: cjohannesen@geo-logic.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: COA-MST

Project #: COA-MST DB17.1158 phase6, task2

Project Manager: Chad Johannesen

Sampler: M. Tebo Zeh

On Ice: ☐ Yes ☒ No

Sample Temperature: 24.3-1.0(CA)=23.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1807E89	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Ecoli Enumeration				Air Bubbles (Y or N)
7/~~26~~/18	0930	W	NDC-20180727	Poly	NaThio	001												X				
7/26/18	1937	W	Hahn-20180726	Poly	NaThio	002												X				
~~7/26/18~~	~~2129~~	W	~~SDC-20180726~~	~~Poly~~														X				
7/27/18	1230	W	SDC-20180727	poly		003												X				
7/27/18	1200	W	Tijeras-20180727	poly		004												X				
7/27/18	0215	W	Sanjose-20180727	poly		005												X				
7/27/18	1140	W	Santantonio-20180727	poly		006												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
7/27/18	1410			7/27/18	1410
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 28, 2018

Chad Johannesen

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL: (505) 822-9400
FAX (505) 822-8877

RE: MST OrderNo.: 1808F02

Dear Chad Johannesen:

Hall Environmental Analysis Laboratory received 5 sample(s) on 8/23/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order: **1808F02**
Date Reported: **8/28/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Project: MST
Lab Order: 1808F02

Lab ID: 1808F02-001 **Collection Date:** 8/23/2018 11:30:00 AM
Client Sample ID: SDC-20180823 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	>2419.6	1.000		MPN/100	1	8/24/2018 5:01:00 PM	39970

Lab ID: 1808F02-002 **Collection Date:** 8/23/2018 1:00:00 PM
Client Sample ID: DomingoBaca-20180823 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	378.4	1.000		MPN/100	1	8/24/2018 5:01:00 PM	39970

Lab ID: 1808F02-003 **Collection Date:** 8/23/2018 1:30:00 PM
Client Sample ID: NDC-20180823 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	<1	1.000		MPN/100	1	8/24/2018 5:01:00 PM	39970

Lab ID: 1808F02-004 **Collection Date:** 8/23/2018 2:00:00 PM
Client Sample ID: ABQ RiverDrain NDC-20180803 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	323	10.00		MPN/100	10	8/24/2018 5:01:00 PM	39970

Lab ID: 1808F02-005 **Collection Date:** 8/23/2018 2:25:00 PM
Client Sample ID: Pino-20180823 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	>2419.6	1.000		MPN/100	1	8/24/2018 5:01:00 PM	39970

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

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TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: DBS | Work Order Number: 1808F02 | RcptNo: 1

Received By: Jazzmine Burkhead 8/23/2018 4:15:00 PM

Completed By: Ashley Gallegos 8/23/2018 4:26:42 PM

Reviewed By: ENM 8/23/18 @ 1627 labeled by: 08/23/18

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Client		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____ 08/23/18
Checked by: _____

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	10.0	Good	Not Present			

Chain-of-Custody Record

Client: DBSA

Mailing Address: 6020 Academy ABQ NM

Phone #: 505-822-9400

email or Fax#: Cjohannesen@geo-logic.com

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☐ Standard ☐ Rush _____

Project Name: MST

Project #:

Project Manager: Chad Johannesen

Sampler: "

On Ice: ☑ Yes ☐ No

Sample Temperature: 10.0

HEAL No. 1808F02

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	E. coli - enumeration				Air Bubbles (Y or N)
8-23-18	1130	AQ	SDC-20180823	1		-001												X				
"	1300	"	DomingoBaca-20180823	1		-002												X				
"	1330	"	NDC-20180823	1		-003												X				
"	1400	"	ABQ River Drain NDC-	20180803 1		-004												X				
"	1425	"	RINO-20180823	1		-005												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-23-18	1615			08/23/18	16:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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Analysis Request

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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September 27, 2018

Chad Johannesen

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL: (505) 822-9400
FAX (505) 822-8877

RE: MST OrderNo.: 1809C06

Dear Chad Johannesen:

Hall Environmental Analysis Laboratory received 20 sample(s) on 9/20/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Lab Order:** 1809C06
Project: MST

Lab ID: 1809C06-001 **Collection Date:** 9/20/2018 7:45:00 AM
Client Sample ID: UCRD-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	101.9	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-002 **Collection Date:** 9/20/2018 8:00:00 AM
Client Sample ID: RGAB-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	461.1	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-003 **Collection Date:** 9/20/2018 8:30:00 AM
Client Sample ID: CAC-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	6131	10.00		MPN/100	10	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-004 **Collection Date:** 9/20/2018 9:15:00 AM
Client Sample ID: ADV-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	>2419.6	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-005 **Collection Date:** 9/20/2018 10:00:00 AM
Client Sample ID: HAC-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	>2419.6	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Lab Order:** 1809C06
Project: MST

Lab ID: 1809C06-006 **Collection Date:** 9/20/2018 10:20:00 AM
Client Sample ID: ADM-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	>2419.6	1.000		MPN/100	1	9/21/2018 3:10:00 PM	40489

Lab ID: 1809C06-007 **Collection Date:** 9/20/2018 10:40:00 AM
Client Sample ID: AwithG-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	>2419.6	1.000		MPN/100	1	9/21/2018 3:10:00 PM	40489

Lab ID: 1809C06-008 **Collection Date:** 9/20/2018 8:45:00 AM
Client Sample ID: AtriscoatRioB-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	228.2	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-009 **Collection Date:** 9/20/2018 9:00:00 AM
Client Sample ID: RGatRioB-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	4106	10.00		MPN/100	10	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-010 **Collection Date:** 9/20/2018 9:30:00 AM
Client Sample ID: RiversideDatRioB-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	>24196	10.00		MPN/100	10	9/21/2018 1:48:00 PM	40482

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Lab Order:** 1809C06
Project: MST

Lab ID: 1809C06-011 **Collection Date:** 9/20/2018 10:05:00 AM
Client Sample ID: WWTPOutfall-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	19.7	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-012 **Collection Date:** 9/20/2018 6:25:00 AM
Client Sample ID: BAatJT20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	162.4	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-013 **Collection Date:** 9/20/2018 6:50:00 AM
Client Sample ID: PinoUp20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	18.5	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-014 **Collection Date:** 9/20/2018 7:30:00 AM
Client Sample ID: SanAntonio20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	>2419.6	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-015 **Collection Date:** 9/20/2018 8:50:00 AM
Client Sample ID: SDCBroadway-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	>2419.6	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Lab Order:** 1809C06
Project: MST

Lab ID: 1809C06-016 **Collection Date:** 9/20/2018 9:20:00 AM
Client Sample ID: RivDrainatI25-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	2419.6	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-017 **Collection Date:** 9/20/2018 9:40:00 AM
Client Sample ID: RGISLETA-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	12997	10.00		MPN/100	10	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-018 **Collection Date:** 9/20/2018 5:55:00 AM
Client Sample ID: EMBATSNHT-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	2419.6	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-019 **Collection Date:** 9/20/2018 8:15:00 AM
Client Sample ID: BearArroy-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	>2419.6	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Lab ID: 1809C06-020 **Collection Date:** 9/20/2018 9:00:00 AM
Client Sample ID: PinoArroyo-20180920 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	>2419.6	1.000		MPN/100	1	9/21/2018 1:48:00 PM	40482

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **DBS** Work Order Number: **1809C06** RcptNo: **1**

Received By: **Andy Freeman** **9/20/2018 12:20:00 PM**

Completed By: **Michelle Garcia** **9/20/2018 1:12:20 PM**

Reviewed By: VVZ 09/20/18 09/20/18 @ 1300

Labeled by: mg 09/20/18

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	12.1	Good	No			

Chain-of-Custody Record

Client: Daniel B Stephens

Mailing Address:

Phone #: 505-822-9400

email or Fax#: cjohanneson@geo-logic.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: MST

Project #: DB17.1158 P6

Project Manager: Chad Johanneson

Sampler: DBSA

On Ice: ☒ Yes ☐ No

Sample Temperature: 12.1 C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1809C06	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Excel. enumeration				Air Bubbles (Y or N)
9-20	7:45	water	MCRD-20180920	1	NaThiO	001												X				
	8:00		RGAB-20180920	1		002												X				
	8:30		CAC-20180920	1		003												X				
	9:15		ADV-20180920	1		004												X				
	1000		HAC-20180920	1		005												X				
	1020		ADM-20180920	1		006												X				
	1040		Awith G-20180920	1		007												X				
	845		AtriscoatRioB-20180920	1		008												X				
	900		RGatRioB-20180920	1		009												X				
	930		RiversideDatRioB-20180920	1		010												X				
	1005		WWTPOutfall-20180920	1		011												X				
~~9-20~~	~~6:10~~		~~BEARCANYON-20180920~~																			

Date	Time	Relinquished by:	Received by:	Date	Time
9-20-18	1228			9/20/18	1228
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Page 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Daniel B Stephens

Mailing Address:

Phone #: 505-822-9400

email or Fax#: CJohannesen@geo-logic.com

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: MST

Project #: DB17.1158 P6

Project Manager: Chad Johannesen

Sampler:

On Ice: ☒ Yes ☐ No

Sample Temperature: 12.1 C

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1809C04	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	E. Coli - enumeration				Air Bubbles (Y or N)
9-20-18	6:25	AQ	BAatJT20180920	1	NaTh:O	012												X				
	6:50		PINOUP20180920	1		013												X				
	7:30		SANANTONIO-20180920	1		014												X				
	8:50		SDCBROADWAY-20180920	1		015												X				
	9:20		RIVDRAINATI25-20180920	1		016												X				
	9:40		RGTSLETA-20180920	1		017												X				
	~~9:55~~ 555		EMBATCNHT20180920	1		018												X				
	815		BEARAN040-20180920	1		019												X				
	900		PINATRAYO-20180920	1		020												X				

Date	Time	Relinquished by:	Received by:	Date	Time
9-20-18	1228			9/20/18	1228
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Page 2 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 25, 2018

Chad Johannesen

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL: (505) 822-9400
FAX (505) 822-8877

RE: COA MST OrderNo.: 1810C06

Dear Chad Johannesen:

Hall Environmental Analysis Laboratory received 10 sample(s) on 10/23/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Project: COA MST
Lab Order: 1810C06

Lab ID: 1810C06-001 **Collection Date:** 10/23/2018 9:30:00 AM
Client Sample ID: NDC Paseo-20181023 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	4352	10.00		MPN/100	10	10/24/2018 5:17:00 PM	41156

Lab ID: 1810C06-002 **Collection Date:** 10/23/2018 10:00:00 AM
Client Sample ID: PDN_Pump-20181023 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	117.8	1.000		MPN/100	1	10/24/2018 5:17:00 PM	41156

Lab ID: 1810C06-003 **Collection Date:** 10/23/2018 10:45:00 AM
Client Sample ID: CalaSwinbuene-20181023 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	1664	10.00		MPN/100	10	10/24/2018 5:17:00 PM	41156

Lab ID: 1810C06-004 **Collection Date:** 10/23/2018 11:40:00 AM
Client Sample ID: IsletaDr_CYPCNS-20181023 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	249.5	1.000		MPN/100	1	10/24/2018 5:17:00 PM	41156

Lab ID: 1810C06-005 **Collection Date:** 10/23/2018 10:15:00 AM
Client Sample ID: IsletaDr_Malpais-20181023 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	365.4	1.000		MPN/100	1	10/24/2018 5:17:00 PM	41156

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Lab Order:** 1810C06
Project: COA MST

Lab ID: 1810C06-006 **Collection Date:** 10/23/2018 10:30:00 AM
Client Sample ID: LosPadDr_Malpais-20181023 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	90.9	1.000		MPN/100	1	10/24/2018 5:17:00 PM	41156

Lab ID: 1810C06-007 **Collection Date:** 10/23/2018 10:50:00 AM
Client Sample ID: LosPadDr_I25-20181023 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	686.7	1.000		MPN/100	1	10/24/2018 5:17:00 PM	41156

Lab ID: 1810C06-008 **Collection Date:** 10/23/2018 9:40:00 AM
Client Sample ID: Amle_Unser-20181023 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	2419.6	1.000		MPN/100	1	10/24/2018 5:17:00 PM	41156

Lab ID: 1810C06-009 **Collection Date:** 10/23/2018 12:00:00 PM
Client Sample ID: Alamedda_Riverside-20181023 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	116.9	1.000		MPN/100	1	10/24/2018 5:17:00 PM	41156

Lab ID: 1810C06-010 **Collection Date:** 10/23/2018 11:00:00 AM
Client Sample ID: Barelas_Pump-20181023 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	>24196	10.00		MPN/100	10	10/24/2018 5:17:00 PM	41156

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: DBS | Work Order Number: 1810C06 | RcptNo: 1

Received By: Erin Melendrez 10/23/2018 2:50:00 PM

Completed By: Ashley Gallegos 10/23/2018 2:58:45 PM

Reviewed By: ENM 10/23/18@1515 (B: JO 10/23/18

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Client		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
Samples were collected the same day and chilled.			
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

JO 10/23/18

# of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	10.8	Good	Not Present			

Chain-of-Custody Record

Client: ~~COA-MST~~ D35A Mt.

Mailing Address:

Phone #:

email or Fax#: CJohannesen@geologic.com

QA/QC Package:
~~Standard~~ ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
~~Standard~~ ☐ Rush

Project Name: COA-MST

Project #: D317.1158

Project Manager: C. Johannesen

Sampler: M. Zbrozek

On Ice: ~~Yes~~ ☐ No

Sample Temperature: 11.7-0.9(CF)= 10.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	ECOLI Enumeration				Air Bubbles (Y or N)
		~~Soil~~	10/23/18			1810COLD																
10.23	0930	AQ	NDC_Paseo-20181023	1 poly	NaThio	-001												X				
	1000		PON_Pump-20181023			-002												X				
	1045		CalaSwinburne-20181023			-003												X				
	1140		IsletaDr_CYPCNS-20181023			-005												X				
	10:15		IsletaDr_Malpais-20181023			-006												X				
	10:30		LosPadDr_Malpais-20181023			-007												X				
	10:50		LosPadDr_I25-20181023			-008												X				
	9:40		Amole_Unser-20181023			-009												X				
	—		~~Augustoca-20181023~~																			
	—		~~IsletaDam-20181023~~																			
	1200		Alameda_Riverside-20181023			-010												X				
	1100		Barelas_Pump-20181023			-011												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/23/2018	1450			10/23/18	~~1550~~ 1814
Date:	Time:	Relinquished by:	Received by:	Date	Time

ENM

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 25, 2018

Chad Johannesen

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL: (505) 822-9400
FAX (505) 822-8877

RE: CABQ MST OrderNo.: 1810C11

Dear Chad Johannesen:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/23/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order: **1810C11**
Date Reported: **10/25/2018**

CLIENT: Daniel B. Stephens & Assoc.
Project: CABQ MST
Lab Order: 1810C11

Lab ID: 1810C11-001
Collection Date: 10/23/2018 3:10:00 PM
Client Sample ID: Tijeras 4 Hills-20181023
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	598	10.00		MPN/100	10	10/24/2018 5:17:00 PM	41156

Lab ID: 1810C11-002
Collection Date: 10/23/2018 3:20:00 PM
Client Sample ID: Embudo Monte-20181023
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	<1	10.00		MPN/100	10	10/24/2018 5:17:00 PM	41156

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: DBS | Work Order Number: 1810C11 | RcptNo: 1

Received By: **Jazzmine Burkhead** 10/23/2018 4:00:00 PM

Completed By: **Jazzmine Burkhead** 10/23/2018 4:12:54 PM

Reviewed By: 10/23/18 @ 1633

Labeled by: DAD 10/23/18 @

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Client		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
	Samples were collected the same day and chilled.		
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: DAD 10/23/18

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	15.0	Good	Not Present			

Chain-of-Custody Record

Client: DBSA

Mailing Address: 6020 Academy

Phone #: 505-822-9400

email or Fax#: Johannessen@Geologic.com

QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: CABQ-MST

Project #: DB17.1158

Project Manager: C. Johannessen

Sampler:

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 15.9-0.9(1P)=15.0

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1810C11
1023	0510	SW	Tijeras4A.1S-20181023	1poly	WASHG	-001
↓	0520	Aq	Embudomonitor-20181023	1poly		-002
		JMB 10/23/18				

Analysis Request

BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Ecoli enumeration
										X
										X

Date:	Time:	Relinquished by	Received by:	Via:	Date	Time
10/23/18	1600				10/23/18	16:00
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks: Client

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 16, 2018

Chad Johannesen

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL: (505) 822-9400
FAX (505) 822-8877

RE: MST Program OrderNo.: 1804670

Dear Chad Johannesen:

Hall Environmental Analysis Laboratory received 3 sample(s) on 4/12/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order: **1804670**
Date Reported: **4/16/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Project: MST Program
Lab Order: 1804670

Lab ID: 1804670-001 **Collection Date:** 4/12/2018 10:48:00 AM
Client Sample ID: RG Rio Bravo 20180412 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	75	10.00		MPN/100mL	10	4/13/2018 3:18:00 PM	37581

Lab ID: 1804670-002 **Collection Date:** 4/12/2018 11:30:00 AM
Client Sample ID: Riverside Drain I25 20180412 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	88.2	1.000		MPN/100mL	1	4/13/2018 3:18:00 PM	37581

Lab ID: 1804670-003 **Collection Date:** 4/12/2018 11:55:00 AM
Client Sample ID: RG I25 20180412 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dbf**	
E. Coli	262	10.00		MPN/100mL	10	4/13/2018 3:18:00 PM	37581

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix
W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: DBS | Work Order Number: 1804670 | RcptNo: 1

Received By: Anne Thorne 4/12/2018 1:20:00 PM

Completed By: Michelle Garcia 4/12/2018 2:04:02 PM @ 1505

Reviewed By: SRC 04/12/18

LB: ENM

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples were collected the same day and chilled.
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
    # of preserved bottles checked for pH: ____ (<2 or >12 unless noted)
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐ Adjusted?
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐ Checked by:

ENM 4/12/18

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	18.2	Good	Not Present			

Chain-of-Custody Record

Client: DBS+A

Mailing Address: 6020 Academy

Phone #: 505-822-9400

email or Fax#: cjohannesen@dbstephens.

QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: MST Program

Project #: DB17.1158

Project Manager: Chad Johannesen

Sampler: same

On Ice: ☒ Yes ☐ No

Sample Temperature: 19.2-CF-1.0=18.2

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1804670	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	E.coli - enumerated				Air Bubbles (Y or N)
4-12-18	1048	AQ	RG-RioBravo-20180412			001												X				
↓	1130	AQ	Riverside Drain-I25-20180412			002												X				
↓	1155	AQ	RG-I25-20180412			003												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
4-12-18	1320	Chad Johannesen			
Date:	Time:	Relinquished by:	Received by:	Date	Time
				04/12/18	1320

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

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www.westonsolutions.com

Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 1 and 2
Date Received: 4/13 and 5/31/18
n Samples: 14
Date Filtered: 4/12 and 5/29/18
Date Extracted: 4/20 and 6/1/18
Date PCR: 6/7/18

Assay: AvianHelicobacter-GFDSYBRAvian
µL Template per Reaction: 2
Lab Blanks: passed n= 2
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 6
Inhibition Control[B]: HF183 (B.dorei) Sketa
File name(s): Plate 309 AvianGFD rm.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
RG-RioBravo-20180412	RG - Rio Bravo	3699RG-RioBravo	04/12/18	1048	FW	Detected, ROQ		7,948	1,587	copies/100mL	714	714	111	0
RiversideDrain-I25-20180412	Riverside Drain	3700RSDrainI25	04/12/18	1130	FW	Detected, ROQ		4,797	2,329	copies/100mL	714	714	67	0
RG-I25-20180412	RG - I25	3701RGI25	04/12/18	1155	FW	Detected, ROQ		21,696	6,797	copies/100mL	714	714	304	0
Mblank-20180412	M Blank	3702Mblank	04/12/18	1500	Blank	ND	§<	13	0	copies/100mL	714	714	0	0
NDCupstream-180529	NDCupstream	3780NDCupstream	05/29/18	1014	FW	Detected, ROQ		17,630	2,272	copies/100mL	725	725	243	0
RG@Mon-180529	RG@Montano	3781RG@Mon	05/29/18	1330	FW	Detected, ROQ		19,612	2,179	copies/100mL	718	718	273	0
RG@550-180529	RG@550	3782RG@550	05/29/18	1104	FW	Detected, ROQ		20,347	1,711	copies/100mL	718	718	283	0
RG@Alameda-180529	RG@Alameda	3783RG@Alameda	05/29/18	1155	FW	Detected, ROQ		9,803	998	copies/100mL	718	718	136	0
Equip-blank-180529	Equip-blank	3784Equip-blank	05/29/18	1330	Blank	ND	§<	13	0	copies/100mL	716	716	0	0
RG-Central-20180529	RG@Central	3785RG-Central	05/29/18	1000	FW	Detected, ROQ		32,892	8,202	copies/100mL	716	716	459	0
RG-Bridge-20180529	RG@Bridge	3786RG-Bridge	05/29/18	1100	FW	Detected, ROQ		42,361	8,589	copies/100mL	714	714	593	0
RG-VDO-20180529	RG@VDO	3787RG-VDO	05/29/18	1315	FW	Detected, ROQ		29,594	7,215	copies/100mL	716	716	413	0
RG-I25-20180529	RG@I25	3788RG-I25	05/29/18	1400	FW	Detected, ROQ		36,121	8,817	copies/100mL	716	716	504	0
RG-RioBravo-20180529	RG@RioBravo	3789RG-RioBravo	05/29/18	1200	FW	Detected, ROQ		18,820	3,359	copies/100mL	716	716	263	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 1 and 2 **Date Received:** 4/13 and 5/31/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via internal process control (sketa) instead.
3701RGI25
3787RG-VDO
3788RG-I25

Standard Curve Metrics*

Assay	AvianHelicobacter-GFDSYBRAvian		
% Efficiency	94.00		
r^2	0.992		
slope	-3.47		
y-intercept	37.40		
curve source	Weston Master Curve		
standard source	plasmid		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	0.18	10	10
Ct equivalent	40.00	33.92	33.92
LOD % amplification	100		
LLOQ StdDev	1.01		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplifcation rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positve with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 1 and 2
Date Received: 4/13 and 5/31/18
n Samples: 14
Date Filtered: 4/12 and 5/29/18
Date Extracted: 4/20 and 6/1/18
Date PCR: 6/12/18

Assay: CowBacteroidales-Cow M2
µL Template per Reaction: 2
Lab Blanks: passed n= 2
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 6
Inhibition Control[B]: HF183 (B.dorei) Sketa
File name(s): Plate 311 CowM2 ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
RG-RioBravo-20180412	RG - Rio Bravo	3699RG-RioBravo	04/12/18	1048	FW	ND	§<	210	0	copies/100mL	500	714	3	0
RiversideDrain-I25-20180412	Riverside Drain	3700RSDrainI25	04/12/18	1130	FW	ND	§<	210	0	copies/100mL	500	714	3	0
RG-I25-20180412	RG - I25	3701RGI25	04/12/18	1155	FW	ND	§<	210	0	copies/100mL	500	714	3	0
Mblank-20180412	M Blank	3702Mblank	04/12/18	1500	Blank	ND	§<	210	0	copies/100mL	500	714	3	0
NDCupstream-180529	NDCupstream	3780NDCupstream	05/29/18	1014	FW	ND	§<	213	0	copies/100mL	507	725	3	0
RG@Mon-180529	RG@Montano	3781RG@Mon	05/29/18	1330	FW	ND	§<	211	0	copies/100mL	503	718	3	0
RG@550-180529	RG@550	3782RG@550	05/29/18	1104	FW	ND	§<	211	0	copies/100mL	503	718	3	0
RG@Alameda-180529	RG@Alameda	3783RG@Alameda	05/29/18	1155	FW	ND	§<	211	0	copies/100mL	503	718	3	0
Equip-blank-180529	Equip-blank	3784Equip-blank	05/29/18	1330	Blank	ND	§<	211	0	copies/100mL	501	716	3	0
RG-Central-20180529	RG@Central	3785RG-Central	05/29/18	1000	FW	ND	§<	211	0	copies/100mL	501	716	3	0
RG-Bridge-20180529	RG@Bridge	3786RG-Bridge	05/29/18	1100	FW	ND	§<	210	0	copies/100mL	500	714	3	0
RG-VDO-20180529	RG@VDO	3787RG-VDO	05/29/18	1315	FW	ND	§<	211	0	copies/100mL	501	716	3	0
RG-I25-20180529	RG@I25	3788RG-I25	05/29/18	1400	FW	ND	§<	211	0	copies/100mL	501	716	3	0
RG-RioBravo-20180529	RG@RioBravo	3789RG-RioBravo	05/29/18	1200	FW	ND	§<	211	0	copies/100mL	501	716	3	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 1 and 2 **Date Received:** 4/13 and 5/31/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via internal process control (sketa) instead.
3701RGI25
3787RG-VDO
3788RG-I25

Standard Curve Metrics*

Assay	CowBacteroidales-Cow M2		
% Efficiency	94.22		
r^2	0.996		
slope	-3.47		
y-intercept	41.63		
curve source	Weston Master Curve		
standard source	plasmid		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	2.9	7.0	10
Ct equivalent	40.00	38.70	38.16
LOD % amplification	90		
LLOQ StdDev	1.03		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplifcation rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positve with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 1 and 2
Date Received: 4/13 and 5/31/18
n Samples: 14
Date Filtered: 4/12 and 5/29/18
Date Extracted: 4/20 and 6/1/18
Date PCR: 6/13/18

Assay: DogBacteroidales-DogBact
µL Template per Reaction: 2
Lab Blanks: passed n= 2
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 6
Inhibition Control[B]: HF183 (B.dorei) Sketa
File name(s): Plate 313 DogBact ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
RG-RioBravo-20180412	RG - Rio Bravo	3699RG-RioBravo	04/12/18	1048	FW	ND	§<	150	0	copies/100mL	714	1786	2	0
RiversideDrain-I25-20180412	Riverside Drain	3700RSDrainI25	04/12/18	1130	FW	BDL		615	371	copies/100mL	714	1786	9	0
RG-I25-20180412	RG - I25	3701RGI25	04/12/18	1155	FW	BDL	§<	280	224	copies/100mL	714	1786	4	0
Mblank-20180412	M Blank	3702Mblank	04/12/18	1500	Blank	ND	§<	150	0	copies/100mL	714	1786	2	0
NDCupstream-180529	NDCupstream	3780NDCupstream	05/29/18	1014	FW	ND	§<	153	0	copies/100mL	725	1812	2	0
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RG-Central-20180529	RG@Central	3785RG-Central	05/29/18	1000	FW	Detected, DNQ		1,050	265	copies/100mL	716	1791	15	0
RG-Bridge-20180529	RG@Bridge	3786RG-Bridge	05/29/18	1100	FW	BDL	§<	210	103	copies/100mL	714	1786	3	0
RG-VDO-20180529	RG@VDO	3787RG-VDO	05/29/18	1315	FW	Detected, ROQ		5,626	2,602	copies/100mL	716	1791	79	0
RG-I25-20180529	RG@I25	3788RG-I25	05/29/18	1400	FW	Detected, ROQ		3,328	1,399	copies/100mL	716	1791	46	0
RG-RioBravo-20180529	RG@RioBravo	3789RG-RioBravo	05/29/18	1200	FW	Detected, DNQ		961	620	copies/100mL	716	1791	13	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

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3701RGI25
3787RG-VDO
3788RG-I25

Standard Curve Metrics*

Assay	DogBacteroidales-DogBact		
% Efficiency	105.35		
r^2	0.990		
slope	-3.20		
y-intercept	41.04		
curve source	Weston Master Curve		
standard source	plasmid		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	2.1	10	25
Ct equivalent	40.00	37.84	36.56
LOD > % amplification	73		
LLOQ StdDev	0.55		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplifcation rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as “equivocal” because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positve with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 1 and 2
Date Received: 4/13 and 5/31/18
n Samples: 14
Date Filtered: 4/12 and 5/29/18
Date Extracted: 4/20 and 6/1/18
Date PCR: 6/6/18

Assay: E.coli-EC23S857
µL Template per Reaction: 5
Lab Blanks: passed n= 2
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 6
Inhibition Control[B]: HF183 (B.dorei) Sketa
File name(s): Plate307 EC23S857 rm.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
RG-RioBravo-20180412	RG - Rio Bravo	3699RG-RioBravo	04/12/18	1048	FW	Detected, ROQ		2,559	587	copies/100mL	286	429	90	0
RiversideDrain-I25-20180412	Riverside Drain	3700RSDrainI25	04/12/18	1130	FW	Detected, ROQ		5,870	536	copies/100mL	286	429	205	0
RG-I25-20180412	RG - I25	3701RGI25	04/12/18	1155	FW	Detected, ROQ		12,859	1,361	copies/100mL	286	429	450	0
Mblank-20180412	M Blank	3702Mblank	04/12/18	1500	Blank	ND	§<	127	0	copies/100mL	286	429	4	0
NDCupstream-180529	NDCupstream	3780NDCupstream	05/29/18	1014	FW	Detected, ROQ		2,267	1,055	copies/100mL	290	435	78	0
RG@Mon-180529	RG@Montano	3781RG@Mon	05/29/18	1330	FW	Detected, ROQ		3,174	2,390	copies/100mL	287	431	110	0
RG@550-180529	RG@550	3782RG@550	05/29/18	1104	FW	Detected, ROQ		1,019	343	copies/100mL	287	431	35	0
RG@Alameda-180529	RG@Alameda	3783RG@Alameda	05/29/18	1155	FW	Detected, ROQ		886	290	copies/100mL	287	431	31	0
Equip-blank-180529	Equip-blank	3784Equip-blank	05/29/18	1330	Blank	ND	§<	127	0	copies/100mL	287	430	4	0
RG-Central-20180529	RG@Central	3785RG-Central	05/29/18	1000	FW	Detected, ROQ		11,770	649	copies/100mL	287	430	411	0
RG-Bridge-20180529	RG@Bridge	3786RG-Bridge	05/29/18	1100	FW	Detected, ROQ		8,587	863	copies/100mL	286	429	301	0
RG-VDO-20180529	RG@VDO	3787RG-VDO	05/29/18	1315	FW	Detected, ROQ		105,709	11,251	copies/100mL	287	430	3,689	0
RG-I25-20180529	RG@I25	3788RG-I25	05/29/18	1400	FW	Detected, ROQ		82,008	6,676	copies/100mL	287	430	2,862	0
RG-RioBravo-20180529	RG@RioBravo	3789RG-RioBravo	05/29/18	1200	FW	Detected, ROQ		5,614	776	copies/100mL	287	430	196	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 1 and 2 **Date Received:** 4/13 and 5/31/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via internal process control (sketa) instead.
3701RGI25
3787RG-VDO
3788RG-I25

Standard Curve Metrics*

Assay	E.coli-EC23S857		
% Efficiency	97.17		
r^2	0.998		
slope	-3.39		
y-intercept	42.19		
curve source	Weston Master Curve		
standard source	plasmid		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	4.4	10	15
Ct equivalent	40.00	38.80	38.20
LOD % amplification	89		
LLOQ StdDev	0.78		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplifcation rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positve with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 1 and 2
Date Received: 4/13 and 5/31/18
n Samples: 14
Date Filtered: 4/12 and 5/29/18
Date Extracted: 4/20 and 6/1/18
Date PCR: 6/25/18

Assay: GeneralBacteroidales-GenBac3
µL Template per Reaction: 2
Lab Blanks: passed n= 2
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 6
Inhibition Control[B]: HF183 (B.dorei) Sketa
File name(s): Plate 321 GenBac3 ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
RG-RioBravo-20180412	RG - Rio Bravo	3699RG-RioBravo	04/12/18	1048	FW	Detected, ROQ		1,270,714	25,061	copies/100mL	1071	1429	17,790	0
RiversideDrain-I25-20180412	Riverside Drain	3700RSDrainI25	04/12/18	1130	FW	Detected, ROQ		877,575	82,877	copies/100mL	1071	1429	12,286	0
RG-I25-20180412	RG - I25	3701RGI25	04/12/18	1155	FW	Detected, ROQ		4,061,444	558,702	copies/100mL	1071	1429	56,860	0
Mblank-20180412	M Blank	3702Mblank	04/12/18	1500	Blank	ND	§<	316	0	copies/100mL	1071	1429	4	0
NDCupstream-180529	NDCupstream	3780NDCupstream	05/29/18	1014	FW	Detected, ROQ		1,060,856	92,904	copies/100mL	1087	1449	14,640	0
RG@Mon-180529	RG@Montano	3781RG@Mon	05/29/18	1330	FW	Detected, ROQ		1,369,776	48,501	copies/100mL	1078	1437	19,067	0
RG@550-180529	RG@550	3782RG@550	05/29/18	1104	FW	Detected, ROQ		833,108	52,783	copies/100mL	1078	1437	11,597	0
RG@Alameda-180529	RG@Alameda	3783RG@Alameda	05/29/18	1155	FW	Detected, ROQ		390,503	25,454	copies/100mL	1078	1437	5,436	0
Equip-blank-180529	Equip-blank	3784Equip-blank	05/29/18	1330	Blank	ND	§<	316	0	copies/100mL	1074	1433	4	0
RG-Central-20180529	RG@Central	3785RG-Central	05/29/18	1000	FW	Detected, ROQ		3,455,030	310,769	copies/100mL	1074	1433	48,232	0
RG-Bridge-20180529	RG@Bridge	3786RG-Bridge	05/29/18	1100	FW	Detected, ROQ		2,670,193	218,605	copies/100mL	1071	1429	37,383	0
RG-VDO-20180529	RG@VDO	3787RG-VDO	05/29/18	1315	FW	Detected, ROQ		4,508,095	454,617	copies/100mL	1074	1433	62,933	0
RG-I25-20180529	RG@I25	3788RG-I25	05/29/18	1400	FW	Detected, ROQ		3,960,447	97,410	copies/100mL	1074	1433	55,288	0
RG-RioBravo-20180529	RG@RioBravo	3789RG-RioBravo	05/29/18	1200	FW	Detected, ROQ		1,359,759	87,012	copies/100mL	1074	1433	18,982	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 1 and 2 **Date Received:** 4/13 and 5/31/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via internal process control (sketa) instead.
3701RGI25
3787RG-VDO
3788RG-I25

Standard Curve Metrics*

Assay	GeneralBacteroidales-GenBac3		
% Efficiency	94.15		
r^2	0.991		
slope	-3.47		
y-intercept	42.24		
curve source	Weston Master Curve		
standard source	genomic		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	4.4	15	20
Ct equivalent	40.00	38.16	37.72
LOD > % amplification	80		
LLOQ StdDev	0.61		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplifcation rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as “equivocal” because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positve with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 1 and 2
Date Received: 4/13 and 5/31/18
n Samples: 14
Date Filtered: 4/12 and 5/29/18
Date Extracted: 4/20 and 6/1/18
Date PCR: 4/24, 6/7, and 6/18/18

Assay: HumanBacteroidales-HF183TaqmanCAMan
µL Template per Reaction: 2
Lab Blanks: passed n= 2
No Template Controls: passed n= 9
Positive Extraction Controls[A]: passed n= 6
Inhibition Control[B]: HF183 (B.dorei) Sketa
File name(s): Plate 285 HF183TMCaMan ka.pcrd Plate 316 HF183TMCaMan rm.pcrd
Plate 308 HF183TMCaMan ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
RG-RioBravo-20180412	RG - Rio Bravo	3699RG-RioBravo	04/12/18	1048	FW	Detected, DNQ		293	167	copies/100mL	214	429	4	0
RiversideDrain-I25-20180412	Riverside Drain	3700RSDrainI25	04/12/18	1130	FW	BDL	§<	71	39	copies/100mL	214	429	1	0
RG-I25-20180412	RG - I25	3701RGI25	04/12/18	1155	FW	Detected, ROQ		3,106	981	copies/100mL	214	429	43	0
Mblank-20180412	M Blank	3702Mblank	04/12/18	1500	Blank	ND	§<	26	0	copies/100mL	214	429	0	0
NDCupstream-180529	NDCupstream	3780NDCupstream	05/29/18	1014	FW	BDL	§<	31	11	copies/100mL	217	435	0	0
RG@Mon-180529	RG@Montano	3781RG@Mon	05/29/18	1330	FW	BDL	§<	38	16	copies/100mL	216	431	1	0
RG@550-180529	RG@550	3782RG@550	05/29/18	1104	FW	ND	§<	26	0	copies/100mL	216	431	0	0
RG@Alameda-180529	RG@Alameda	3783RG@Alameda	05/29/18	1155	FW	ND	§<	26	0	copies/100mL	216	431	0	0
Equip-blank-180529	Equip-blank	3784Equip-blank	05/29/18	1330	Blank	ND	§<	26	0	copies/100mL	215	430	0	0
RG-Central-20180529	RG@Central	3785RG-Central	05/29/18	1000	FW	Detected, ROQ		703	205	copies/100mL	215	430	10	0
RG-Bridge-20180529	RG@Bridge	3786RG-Bridge	05/29/18	1100	FW	Detected, DNQ		318	68	copies/100mL	214	429	4	0
RG-VDO-20180529	RG@VDO	3787RG-VDO	05/29/18	1315	FW	Detected, ROQ		5,126	936	copies/100mL	215	430	72	0
RG-I25-20180529	RG@I25	3788RG-I25	05/29/18	1400	FW	Detected, ROQ		2,636	83	copies/100mL	215	430	37	0
RG-RioBravo-20180529	RG@RioBravo	3789RG-RioBravo	05/29/18	1200	FW	Detected, DNQ		339	151	copies/100mL	215	430	5	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 1 and 2 **Date Received:** 4/13 and 5/31/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via internal process control (sketa) instead.
3701RGI25
3787RG-VDO
3788RG-I25

Standard Curve Metrics*

Assay	HumanBacteroidales-HF183TaqmanCAMan		
% Efficiency	99.32		
r^2	0.992		
slope	-3.34		
y-intercept	38.52		
curve source	Weston Master Curve		
standard source	genomic		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	0.36	3.0	6.0
Ct equivalent	40.00	36.93	35.93
LOD > % amplification	83		
LLOQ StdDev	0.85		

Copies per genome 7

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplifcation rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as “equivocal” because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positve with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 1 and 2
Date Received: 4/13 and 5/31/18
n Samples: 14
Date Filtered: 4/12 and 5/29/18
Date Extracted: 4/20 and 6/1/18
Date PCR: 6/12/18

Assay: Horse Bacteroidales-HorseBact
µL Template per Reaction: 2
Lab Blanks: passed n= 2
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 6
Inhibition Control[B]: HF183 (B.dorei) Sketa
File name(s): Plate 312 HorseBact rm.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
RG-RioBravo-20180412	RG - Rio Bravo	3699RG-RioBravo	04/12/18	1048	FW	ND	§<	59	0	copies/100mL	714	727	1	0
RiversideDrain-I25-20180412	Riverside Drain	3700RSDrainI25	04/12/18	1130	FW	BDL	§<	95	62	copies/100mL	714	727	1	0
RG-I25-20180412	RG - I25	3701RGI25	04/12/18	1155	FW	BDL	§<	116	98	copies/100mL	714	727	2	0
Mblank-20180412	M Blank	3702Mblank	04/12/18	1500	Blank	ND	§<	59	0	copies/100mL	714	727	1	0
NDCupstream-180529	NDCupstream	3780NDCupstream	05/29/18	1014	FW	ND	§<	60	0	copies/100mL	725	738	1	0
RG@Mon-180529	RG@Montano	3781RG@Mon	05/29/18	1330	FW	ND	§<	59	0	copies/100mL	718	731	1	0
RG@550-180529	RG@550	3782RG@550	05/29/18	1104	FW	ND	§<	59	0	copies/100mL	718	731	1	0
RG@Alameda-180529	RG@Alameda	3783RG@Alameda	05/29/18	1155	FW	ND	§<	59	0	copies/100mL	718	731	1	0
Equip-blank-180529	Equip-blank	3784Equip-blank	05/29/18	1330	Blank	ND	§<	59	0	copies/100mL	716	729	1	0
RG-Central-20180529	RG@Central	3785RG-Central	05/29/18	1000	FW	ND	§<	59	0	copies/100mL	716	729	1	0
RG-Bridge-20180529	RG@Bridge	3786RG-Bridge	05/29/18	1100	FW	ND	§<	59	0	copies/100mL	714	727	1	0
RG-VDO-20180529	RG@VDO	3787RG-VDO	05/29/18	1315	FW	ND	§<	59	0	copies/100mL	716	729	1	0
RG-I25-20180529	RG@I25	3788RG-I25	05/29/18	1400	FW	ND	§<	59	0	copies/100mL	716	729	1	0
RG-RioBravo-20180529	RG@RioBravo	3789RG-RioBravo	05/29/18	1200	FW	ND	§<	59	0	copies/100mL	716	729	1	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 1 and 2 **Date Received:** 4/13 and 5/31/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via internal process control (sketa) instead.
3701RGI25
3787RG-VDO
3788RG-I25

Standard Curve Metrics*

Assay	Horse Bacteroidales-HorseBact		
% Efficiency	100.54		
r^2	0.995		
slope	-3.31		
y-intercept	39.73		
curve source	Weston Master Curve		
standard source	plasmid		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	0.83	10	10
Ct equivalent	40.00	36.42	36.39
LOD > % amplification	100		
LLOQ StdDev	0.61		

* based on a master standard curve with a minimum of 45 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplifcation rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as “equivocal” because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positve with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 1 and 2
Date Received: 4/13 and 5/31/18
n Samples: 14
Date Filtered: 4/12 and 5/29/18
Date Extracted: 4/20 and 6/1/18
Date PCR: 6/27/18

Assay: Ruminant Bacteroidales-Rum2Bac
µL Template per Reaction: 2
Lab Blanks: passed n= 2
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 6
Inhibition Control[B]: HF183 (B.dorei) Sketa
File name(s): Plate 322 Rum2Bac rm.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
RG-RioBravo-20180412	RG - Rio Bravo	3699RG-RioBravo	04/12/18	1048	FW	ND	§<	192	0	copies/100mL	357	714	3	0
RiversideDrain-I25-20180412	Riverside Drain	3700RSDrainI25	04/12/18	1130	FW	ND	§<	192	0	copies/100mL	357	714	3	0
RG-I25-20180412	RG - I25	3701RGI25	04/12/18	1155	FW	ND	§<	192	0	copies/100mL	357	714	3	0
Mblank-20180412	M Blank	3702Mblank	04/12/18	1500	Blank	ND	§<	192	0	copies/100mL	357	714	3	0
NDCupstream-180529	NDCupstream	3780NDCupstream	05/29/18	1014	FW	BDL	§<	349	160	copies/100mL	362	725	5	0
RG@Mon-180529	RG@Montano	3781RG@Mon	05/29/18	1330	FW	BDL	§<	269	132	copies/100mL	359	718	4	0
RG@550-180529	RG@550	3782RG@550	05/29/18	1104	FW	BDL	§<	208	27	copies/100mL	359	718	3	0
RG@Alameda-180529	RG@Alameda	3783RG@Alameda	05/29/18	1155	FW	BDL	§<	199	11	copies/100mL	359	718	3	0
Equip-blank-180529	Equip-blank	3784Equip-blank	05/29/18	1330	Blank	ND	§<	192	0	copies/100mL	358	716	3	0
RG-Central-20180529	RG@Central	3785RG-Central	05/29/18	1000	FW	BDL		353	102	copies/100mL	358	716	5	0
RG-Bridge-20180529	RG@Bridge	3786RG-Bridge	05/29/18	1100	FW	BDL	§<	232	59	copies/100mL	357	714	3	0
RG-VDO-20180529	RG@VDO	3787RG-VDO	05/29/18	1315	FW	Detected, DNQ		563	172	copies/100mL	358	716	8	0
RG-I25-20180529	RG@I25	3788RG-I25	05/29/18	1400	FW	Detected, DNQ		601	375	copies/100mL	358	716	8	0
RG-RioBravo-20180529	RG@RioBravo	3789RG-RioBravo	05/29/18	1200	FW	BDL	§<	220	48	copies/100mL	358	716	3	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 1 and 2 **Date Received:** 4/13 and 5/31/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via internal process control (sketa) instead.
3701RGI25
3787RG-VDO
3788RG-I25

Standard Curve Metrics*

Assay	Ruminant Bacteroidales-Rum2Bac		
% Efficiency	94.27		
r^2	0.995		
slope	-3.47		
y-intercept	41.49		
curve source	Weston Master Curve		
standard source	plasmid		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	2.7	5.0	10
Ct equivalent	40.00	39.06	38.02
LOD > % amplification	85		
LLOQ StdDev	1.39		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplifcation rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as “equivocal” because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positve with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 3 and 4
Date Received: 7/31 and 8/28/18
n Samples: 11
Date Filtered: 7/27 and 8/24/18
Date Extracted: 9/20/18
Date PCR: 9/28/18

Assay: AvianHelicobacter-GFDSYBRAvian
µL Template per Reaction: 2
Lab Blanks: passed n= 2
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 2
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 381 AvianGFD ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
NDC	NDC	4267NDC	07/27/18	0930	SW	Detected, ROQ		1,386	344	copies/100mL	714	714	19	0
SDC	SDC	4268SDC	07/27/18	1230	SW	Detected, ROQ		1,360	776	copies/100mL	714	714	19	0
Tijeras	Tijeras	4269Tijeras	07/27/18	1200	SW	Detected, ROQ		797	300	copies/100mL	716	716	11	0
SanJose	SanJose	4270SanJose	07/27/18	0215	SW	Detected, ROQ		4,257	633	copies/100mL	714	714	60	0
SanAntonio	SanAntonio	4271SanAntonio	07/27/18	1140	SW	Detected, ROQ		6,362	1,475	copies/100mL	715	715	89	0
Hahn	Hahn	4272Hahn	07/26/18	1937	SW	Detected, ROQ		867	348	copies/100mL	714	714	12	0
SDC	SDC	4500SDC	08/23/18	1130	SW	Detected, ROQ		1,900	720	copies/100mL	714	714	27	0
Domingo	Domingo	4501Domingo	08/23/18	1300	SW	Detected, ROQ		839	209	copies/100mL	715	715	12	0
NDC	NDC	4502NDC	08/23/18	1330	SW	Detected, ROQ		2,156	778	copies/100mL	714	714	30	0
ABQRivDrain	ABQRivDrain	4503ABQRivDrain	08/23/18	1400	SW	Detected, ROQ		9,901	2,614	copies/100mL	714	714	139	0
Pino	Pino	4504Pino	08/23/18	1425	SW	Detected, ROQ		2,680	1,427	copies/100mL	714	714	38	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 3 and 4 **Date Received:** 7/31 and 8/28/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via qPCR performance of internal process control (sketa) instead.

4270SanJose, 4500SDC

Standard Curve Metrics*

Assay	AvianHelicobacter-GFDSYBRAvian
% Efficiency	94.00
r^2	0.992
slope	-3.47
y-intercept	37.40
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	0.18	10	10
Ct equivalent	40.00	33.92	33.92
LOD > % amplification	100		
LLOQ StdDev	1.01		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 3 and 4
Date Received: 7/31 and 8/28/18
n Samples: 11
Date Filtered: 7/27 and 8/24/18
Date Extracted: 9/20/18
Date PCR: 10/1/18

Assay: CowBacteroidales-Cow M2
µL Template per Reaction: 2
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 2
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 382 CowM2 ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
NDC	NDC	4267NDC	07/27/18	0930	SW	ND	§<	210	0	copies/100mL	500	714	3	0
SDC	SDC	4268SDC	07/27/18	1230	SW	ND	§<	210	0	copies/100mL	500	714	3	0
Tijeras	Tijeras	4269Tijeras	07/27/18	1200	SW	ND	§<	211	0	copies/100mL	501	716	3	0
SanJose	SanJose	4270SanJose	07/27/18	0215	SW	ND	§<	210	0	copies/100mL	500	714	3	0
SanAntonio	SanAntonio	4271SanAntonio	07/27/18	1140	SW	ND	§<	211	0	copies/100mL	501	715	3	0
Hahn	Hahn	4272Hahn	07/26/18	1937	SW	ND	§<	210	0	copies/100mL	500	714	3	0
SDC	SDC	4500SDC	08/23/18	1130	SW	ND	§<	210	0	copies/100mL	500	714	3	0
Domingo	Domingo	4501Domingo	08/23/18	1300	SW	ND	§<	211	0	copies/100mL	501	715	3	0
NDC	NDC	4502NDC	08/23/18	1330	SW	ND	§<	210	0	copies/100mL	500	714	3	0
ABQRivDrain	ABQRivDrain	4503ABQRivDrain	08/23/18	1400	SW	BDL	§<	348	238	copies/100mL	500	714	5	0
Pino	Pino	4504Pino	08/23/18	1425	SW	ND	§<	210	0	copies/100mL	500	714	3	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 3 and 4 **Date Received:** 7/31 and 8/28/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via qPCR performance of internal process control (sketa) instead.

4270SanJose, 4500SDC

Standard Curve Metrics*

Assay	CowBacteroidales-Cow M2		
% Efficiency	94.22		
r^2	0.996		
slope	-3.47		
y-intercept	41.63		
curve source	Weston Master Curve		
standard source	plasmid		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	2.9	7.0	10
Ct equivalent	40.00	38.70	38.16
LOD > % amplification	90		
LLOQ StdDev	1.03		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 3 and 4
Date Received: 7/31 and 8/28/18
n Samples: 11
Date Filtered: 7/27 and 8/24/18
Date Extracted: 9/20/18
Date PCR: 10/8/18

Assay: DogBacteroidales-DogBact
µL Template per Reaction: 2
Lab Blanks: passed n= 2
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 2
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 384 DogBact rm.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
NDC	NDC	4267NDC	07/27/18	0930	SW	Detected, ROQ		2,134	259	copies/100mL	714	1786	30	0
SDC	SDC	4268SDC	07/27/18	1230	SW	Detected, ROQ		7,934	2,062	copies/100mL	714	1786	111	0
Tijeras	Tijeras	4269Tijeras	07/27/18	1200	SW	Detected, DNQ		940	730	copies/100mL	716	1791	13	0
SanJose	SanJose	4270SanJose	07/27/18	0215	SW	Detected, ROQ		12,268	8,201	copies/100mL	714	1786	172	0
SanAntonio	SanAntonio	4271SanAntonio	07/27/18	1140	SW	ND	§<	151	0	copies/100mL	715	1788	2	0
Hahn	Hahn	4272Hahn	07/26/18	1937	SW	ND	§<	150	0	copies/100mL	714	1786	2	0
SDC	SDC	4500SDC	08/23/18	1130	SW	Detected, DNQ		901	463	copies/100mL	714	1786	13	0
Domingo	Domingo	4501Domingo	08/23/18	1300	SW	ND	§<	151	0	copies/100mL	715	1788	2	0
NDC	NDC	4502NDC	08/23/18	1330	SW	ND	§<	150	0	copies/100mL	714	1786	2	0
ABQRivDrain	ABQRivDrain	4503ABQRivDrain	08/23/18	1400	SW	BDL	§<	173	39	copies/100mL	714	1786	2	0
Pino	Pino	4504Pino	08/23/18	1425	SW	ND	§<	150	0	copies/100mL	714	1786	2	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 3 and 4 **Date Received:** 7/31 and 8/28/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via qPCR performance of internal process control (sketa) instead.

4270SanJose, 4500SDC

Standard Curve Metrics*

Assay	DogBacteroidales-DogBact
% Efficiency	105.35
r^2	0.990
slope	-3.20
y-intercept	41.04
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	2.1	10	25
Ct equivalent	40.00	37.84	36.56
LOD > % amplification	73		
LLOQ StdDev	0.55		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 3 and 4
Date Received: 7/31 and 8/28/18
n Samples: 14
Date Filtered: 7/27 and 8/24/18
Date Extracted: 9/20/18
Date PCR: 9/28 and 10/11/18

Assay: E.coli-EC23S857
µL Template per Reaction: 5
Lab Blanks: passed n= 2
No Template Controls: passed n= 6
Positive Extraction Controls[A]: passed n= 3
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 379 EC23S857 ka.pcrd
Plate 410 EC23S857 ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
NDC	NDC	4267NDC	07/27/18	0930	SW	Detected, ROQ		164,042	17,529	copies/100mL	286	429	5,741	0
SDC	SDC	4268SDC	07/27/18	1230	SW	Detected, ROQ		117,621	4,963	copies/100mL	286	429	4,117	0
Tijeras	Tijeras	4269Tijeras	07/27/18	1200	SW	Detected, ROQ		2,465	494	copies/100mL	287	430	86	0
SanJose	SanJose	4270SanJose	07/27/18	0215	SW	Detected, ROQ		384,526	57,643	copies/100mL	286	429	13,458	0
SanAntonio	SanAntonio	4271SanAntonio	07/27/18	1140	SW	Detected, ROQ		108,778	10,085	copies/100mL	286	429	3,802	0
Hahn	Hahn	4272Hahn	07/26/18	1937	SW	Detected, ROQ		170,802	20,233	copies/100mL	286	429	5,978	0
Methodblank	Methodblank	4273Methodblank	07/27/18	1700	SW	ND	§<	127	0	copies/100mL	287	430	4	0
Field Blank	Field Blank	4274Field Blank	07/27/18	1321	SW	ND	§<	127	0	copies/100mL	286	429	4	0
SDC	SDC	4500SDC	08/23/18	1130	SW	Detected, ROQ		246,359	26,220	copies/100mL	286	429	8,610	0
Domingo	Domingo	4501Domingo	08/23/18	1300	SW	Detected, ROQ		23,196	2,771	copies/100mL	286	429	812	0
NDC	NDC	4502NDC	08/23/18	1330	SW	Detected, ROQ		46,664	1,351	copies/100mL	286	429	1,633	0
ABQRivDrain	ABQRivDrain	4503ABQRivDrain	08/23/18	1400	SW	Detected, ROQ		10,598	583	copies/100mL	286	429	371	0
Pino	Pino	4504Pino	08/23/18	1425	SW	Detected, ROQ		256,362	23,206	copies/100mL	286	429	8,973	0
Methodblank	Methodblank	4505Methodblank	08/24/18	1230	SW	ND	§<	127	0	copies/100mL	286	429	4	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 3 and 4 **Date Received:** 7/31 and 8/28/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via qPCR performance of internal process control (sketa) instead.

4270SanJose, 4500SDC

Standard Curve Metrics*

Assay	E.coli-EC23S857		
% Efficiency	97.17		
r^2	0.998		
slope	-3.39		
y-intercept	42.19		
curve source	Weston Master Curve		
standard source	plasmid		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	4.4	10	15
Ct equivalent	40.00	38.80	38.20
LOD > % amplification	89		
LLOQ StdDev	0.78		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 3 and 4
Date Received: 7/31 and 8/28/18
n Samples: 11
Date Filtered: 7/27 and 8/24/18
Date Extracted: 9/20/18
Date PCR: 10/5/18

Assay: GeneralBacteroidales-GenBac3
µL Template per Reaction: 5
Lab Blanks: passed n= 2
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 2
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 380 GenBac3 ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
NDC	NDC	4267NDC	07/27/18	0930	SW	Detected, ROQ		316,175	17,796	copies/100mL	429	571	11,066	0
SDC	SDC	4268SDC	07/27/18	1230	SW	Detected, ROQ		300,240	34,841	copies/100mL	429	571	10,508	0
Tijeras	Tijeras	4269Tijeras	07/27/18	1200	SW	Detected, ROQ		76,928	13,306	copies/100mL	430	573	2,685	0
SanJose	SanJose	4270SanJose	07/27/18	0215	SW	Detected, ROQ		824,002	135,979	copies/100mL	429	571	28,840	0
SanAntonio	SanAntonio	4271SanAntonio	07/27/18	1140	SW	Detected, ROQ		76,331	12,583	copies/100mL	429	572	2,668	0
Hahn	Hahn	4272Hahn	07/26/18	1937	SW	Detected, ROQ		4,887,335	333,340	copies/100mL	429	571	171,057	0
SDC	SDC	4500SDC	08/23/18	1130	SW	Detected, ROQ		1,000,720	72,224	copies/100mL	429	571	35,025	0
Domingo	Domingo	4501Domingo	08/23/18	1300	SW	Detected, ROQ		173,184	26,910	copies/100mL	429	572	6,053	0
NDC	NDC	4502NDC	08/23/18	1330	SW	Detected, ROQ		20,566	1,320	copies/100mL	429	571	720	0
ABQRivDrain	ABQRivDrain	4503ABQRivDrain	08/23/18	1400	SW	Detected, ROQ		692,844	43,668	copies/100mL	429	571	24,250	0
Pino	Pino	4504Pino	08/23/18	1425	SW	Detected, ROQ		281,571	30,354	copies/100mL	429	571	9,855	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 3 and 4 **Date Received:** 7/31 and 8/28/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via qPCR performance of internal process control (sketa) instead.

4270SanJose, 4500SDC

Standard Curve Metrics*

Assay	GeneralBacteroidales-GenBac3
% Efficiency	94.15
r^2	0.991
slope	-3.47
y-intercept	42.24
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	4.4	15	20
Ct equivalent	40.00	38.16	37.72
LOD > % amplification	80		
LLOQ StdDev	0.61		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 3 and 4
Date Received: 7/31 and 8/28/18
n Samples: 11
Date Filtered: 7/27 and 8/24/18
Date Extracted: 9/20/18
Date PCR: 9/26/18

Assay: HumanBacteroidales-HF183TaqmanCAMan
µL Template per Reaction: 2
Lab Blanks: passed n= 4
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 2
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 378 HF183TMCaMan ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
NDC	NDC	4267NDC	07/27/18	0930	SW	Detected, ROQ		894	150	copies/100mL	214	429	13	0
SDC	SDC	4268SDC	07/27/18	1230	SW	Detected, DNQ		236	210	copies/100mL	214	429	3	0
Tijeras	Tijeras	4269Tijeras	07/27/18	1200	SW	Detected, ROQ		533	25	copies/100mL	215	430	7	0
SanJose	SanJose	4270SanJose	07/27/18	0215	SW	Detected, ROQ		5,051	1,202	copies/100mL	214	429	71	0
SanAntonio	SanAntonio	4271SanAntonio	07/27/18	1140	SW	ND	§<	26	0	copies/100mL	215	429	0	0
Hahn	Hahn	4272Hahn	07/26/18	1937	SW	ND	§<	26	0	copies/100mL	214	429	0	0
SDC	SDC	4500SDC	08/23/18	1130	SW	Detected, ROQ		3,805	848	copies/100mL	214	429	53	0
Domingo	Domingo	4501Domingo	08/23/18	1300	SW	ND	§<	26	0	copies/100mL	215	429	0	0
NDC	NDC	4502NDC	08/23/18	1330	SW	ND	§<	26	0	copies/100mL	214	429	0	0
ABQRivDrain	ABQRivDrain	4503ABQRivDrain	08/23/18	1400	SW	ND	§<	26	0	copies/100mL	214	429	0	0
Pino	Pino	4504Pino	08/23/18	1425	SW	ND	§<	26	0	copies/100mL	214	429	0	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 3 and 4 **Date Received:** 7/31 and 8/28/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via qPCR performance of internal process control (sketa) instead.

4270SanJose, 4500SDC

Standard Curve Metrics*

Assay	HumanBacteroidales-HF183TaqmanCAMan		
% Efficiency	99.32		
r^2	0.992		
slope	-3.34		
y-intercept	38.52		
curve source	Weston Master Curve		
standard source	genomic		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	0.36	3.0	6.0
Ct equivalent	40.00	36.93	35.93
LOD > % amplification	83		
LLOQ StdDev	0.85		

Copies per genome 7

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 3 and 4
Date Received: 7/31 and 8/28/18
n Samples: 11
Date Filtered: 7/27 and 8/24/18
Date Extracted: 9/20/18
Date PCR: 10/1/18

Assay: Horse Bacteroidales-HorseBact
µL Template per Reaction: 2
Lab Blanks: passed n= 2
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 2
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 383 HorseBact ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
NDC	NDC	4267NDC	07/27/18	0930	SW	Detected, ROQ		912	185	copies/100mL	714	714	13	0
SDC	SDC	4268SDC	07/27/18	1230	SW	ND	§<	59	0	copies/100mL	714	714	1	0
Tijeras	Tijeras	4269Tijeras	07/27/18	1200	SW	BDL	§<	79	34	copies/100mL	716	716	1	0
SanJose	SanJose	4270SanJose	07/27/18	0215	SW	BDL	§<	111	91	copies/100mL	714	714	2	0
SanAntonio	SanAntonio	4271SanAntonio	07/27/18	1140	SW	BDL	§<	79	34	copies/100mL	715	715	1	0
Hahn	Hahn	4272Hahn	07/26/18	1937	SW	ND	§<	59	0	copies/100mL	714	714	1	0
SDC	SDC	4500SDC	08/23/18	1130	SW	BDL	§<	103	76	copies/100mL	714	714	1	0
Domingo	Domingo	4501Domingo	08/23/18	1300	SW	ND	§<	59	0	copies/100mL	715	715	1	0
NDC	NDC	4502NDC	08/23/18	1330	SW	BDL	§<	192	129	copies/100mL	714	714	3	0
ABQRivDrain	ABQRivDrain	4503ABQRivDrain	08/23/18	1400	SW	BDL	§<	128	120	copies/100mL	714	714	2	0
Pino	Pino	4504Pino	08/23/18	1425	SW	ND	§<	59	0	copies/100mL	714	714	1	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 3 and 4 **Date Received:** 7/31 and 8/28/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via qPCR performance of internal process control (sketa) instead.

4270SanJose, 4500SDC

Standard Curve Metrics*

Assay	Horse Bacteroidales-HorseBact
% Efficiency	100.54
r^2	0.995
slope	-3.31
y-intercept	39.73
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	0.83	10	10
Ct equivalent	40.00	36.42	36.42
LOD > % amplification	100		
LLOQ StdDev	0.61		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 3 and 4
Date Received: 7/31 and 8/28/18
n Samples: 11
Date Filtered: 7/27 and 8/24/18
Date Extracted: 9/20/18
Date PCR: 10/8/18

Assay: Ruminant Bacteroidales-Rum2Bac
µL Template per Reaction: 2
Lab Blanks: passed n= 2
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 2
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 385 Rum2Bac ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
NDC	NDC	4267NDC	07/27/18	0930	SW	ND	§<	192	0	copies/100mL	357	714	3	0
SDC	SDC	4268SDC	07/27/18	1230	SW	ND	§<	192	0	copies/100mL	357	714	3	0
Tijeras	Tijeras	4269Tijeras	07/27/18	1200	SW	ND	§<	192	0	copies/100mL	358	716	3	0
SanJose	SanJose	4270SanJose	07/27/18	0215	SW	ND	§<	192	0	copies/100mL	357	714	3	0
SanAntonio	SanAntonio	4271SanAntonio	07/27/18	1140	SW	ND	§<	192	0	copies/100mL	358	715	3	0
Hahn	Hahn	4272Hahn	07/26/18	1937	SW	ND	§<	192	0	copies/100mL	357	714	3	0
SDC	SDC	4500SDC	08/23/18	1130	SW	ND	§<	192	0	copies/100mL	357	714	3	0
Domingo	Domingo	4501Domingo	08/23/18	1300	SW	ND	§<	192	0	copies/100mL	358	715	3	0
NDC	NDC	4502NDC	08/23/18	1330	SW	ND	§<	192	0	copies/100mL	357	714	3	0
ABQRivDrain	ABQRivDrain	4503ABQRivDrain	08/23/18	1400	SW	Detected, ROQ		38,575	16,357	copies/100mL	357	714	540	0
Pino	Pino	4504Pino	08/23/18	1425	SW	ND	§<	192	0	copies/100mL	357	714	3	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 3 and 4 **Date Received:** 7/31 and 8/28/18

Comments:
For the samples listed below (Weston DNA-ID) the Inhibition control via B.dorei spike was not possible due to the HF183TMCaMan marker concentration (>20 cpr). Inhibition was assessed via qPCR performance of internal process control (sketa) instead.

4270SanJose, 4500SDC

Standard Curve Metrics*

Assay	Ruminant Bacteroidales-Rum2Bac
% Efficiency	94.27
r^2	0.995
slope	-3.47
y-intercept	41.49
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	2.7	5	10
Ct equivalent	40.00	39.06	38.02
LOD > % amplification	85		
LLOQ StdDev	1.39		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/22/18

Assay: AvianHelicobacter-GFDSYBRAvian
µL Template per Reaction: 2
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 403 AvianGFD ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	Detected, ROQ		69,955	2,055	copies/100mL	714	714	979	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	Detected, ROQ		19,767	1,726	copies/100mL	714	714	277	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	Detected, ROQ		6,231	1,654	copies/100mL	716	716	87	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	Detected, ROQ		9,296	1,231	copies/100mL	714	714	130	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	Detected, ROQ		6,662	1,228	copies/100mL	714	714	93	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	Detected, ROQ		14,110	1,706	copies/100mL	720	720	196	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	Detected, ROQ		13,967	809	copies/100mL	718	718	194	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	Detected, ROQ		110,240	13,565	copies/100mL	714	714	1,543	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	Detected, ROQ		34,435	2,526	copies/100mL	720	720	478	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	Detected, ROQ		21,539	1,880	copies/100mL	714	714	302	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	Detected, ROQ		12,593	1,542	copies/100mL	714	714	176	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	Detected, ROQ		2,861	585	copies/100mL	714	714	40	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	Detected, ROQ		95,613	9,426	copies/100mL	714	714	1,339	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	Detected, ROQ		9,164	1,104	copies/100mL	714	714	128	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	Detected, ROQ		40,662	5,747	copies/100mL	714	714	569	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	Detected, ROQ		21,246	5,899	copies/100mL	714	714	297	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	Detected, ROQ		4,378	362	copies/100mL	714	714	61	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	Detected, ROQ		37,749	3,552	copies/100mL	714	714	528	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	Detected, ROQ		6,264	966	copies/100mL	716	716	87	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	BDL		224	242	copies/100mL	714	714	3	0

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Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	AvianHelicobacter-GFDSYBRAvian
% Efficiency	94.00
r^2	0.992
slope	-3.47
y-intercept	37.40
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	0.18	10.0	10.0
Ct equivalent	40.00	33.92	33.92
LOD > % amplification	100		
LLOQ StdDev	1.01		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/22/18

Assay: CowBacteroidales-Cow M2
µL Template per Reaction: 2
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 404 CowM2 rm.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	ND	§<	210	0	copies/100mL	500	714	3	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	ND	§<	210	0	copies/100mL	500	714	3	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	ND	§<	211	0	copies/100mL	501	716	3	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	ND	§<	210	0	copies/100mL	500	714	3	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	ND	§<	210	0	copies/100mL	500	714	3	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	ND	§<	212	0	copies/100mL	504	720	3	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	ND	§<	211	0	copies/100mL	503	718	3	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	ND	§<	210	0	copies/100mL	500	714	3	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	ND	§<	212	0	copies/100mL	504	720	3	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	ND	§<	210	0	copies/100mL	500	714	3	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	ND	§<	210	0	copies/100mL	500	714	3	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	ND	§<	210	0	copies/100mL	500	714	3	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	ND	§<	210	0	copies/100mL	500	714	3	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	ND	§<	210	0	copies/100mL	500	714	3	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	ND	§<	210	0	copies/100mL	500	714	3	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	ND	§<	210	0	copies/100mL	500	714	3	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	ND	§<	210	0	copies/100mL	500	714	3	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	ND	§<	210	0	copies/100mL	500	714	3	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	ND	§<	211	0	copies/100mL	501	716	3	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	ND	§<	210	0	copies/100mL	500	714	3	0

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Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	CowBacteroidales-Cow M2
% Efficiency	94.22
r^2	0.996
slope	-3.47
y-intercept	41.63
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	2.94	7.0	10.0
Ct equivalent	40.00	38.70	38.16
LOD > % amplification	90		
LLOQ StdDev	1.03		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/23/18

Assay: DogBacteroidales-DogBact
µL Template per Reaction: 2
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 406 DogBact rm.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	ND	§<	150	0	copies/100mL	714	1786	2	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	BDL	§<	171	36	copies/100mL	714	1786	2	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	Detected, ROQ		10,561	3,576	copies/100mL	716	1791	147	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	Detected, ROQ		49,016	15,616	copies/100mL	714	1786	686	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	Detected, ROQ		23,673	4,458	copies/100mL	714	1786	331	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	Detected, ROQ		36,141	1,451	copies/100mL	720	1801	502	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	Detected, ROQ		18,619	3,313	copies/100mL	718	1796	259	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	ND	§<	150	0	copies/100mL	714	1786	2	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	Detected, ROQ		5,787	557	copies/100mL	720	1801	80	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	Detected, DNQ		1,132	691	copies/100mL	714	1786	16	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	Detected, ROQ		1,926	1,213	copies/100mL	714	1786	27	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	ND	§<	150	0	copies/100mL	714	1786	2	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	BDL	§<	413	284	copies/100mL	714	1786	6	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	BDL		488	445	copies/100mL	714	1786	7	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	Detected, DNQ		1,630	1,737	copies/100mL	714	1786	23	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	BDL	§<	682	472	copies/100mL	714	1786	10	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	Detected, ROQ		15,960	1,716	copies/100mL	714	1786	223	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	Detected, ROQ		2,326	1,078	copies/100mL	714	1786	33	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	Detected, ROQ		37,239	4,985	copies/100mL	716	1791	520	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	Detected, DNQ	§<	829	599	copies/100mL	714	1786	12	0

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Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	DogBacteroidales-DogBact
% Efficiency	105.35
r^2	0.990
slope	-3.20
y-intercept	41.04
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	2.11	10.0	25.0
Ct equivalent	40.00	37.84	36.56
LOD > % amplification	73		
LLOQ StdDev	0.55		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 22
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/22/18

Assay: E.coli-EC23S857
µL Template per Reaction: 5
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 401 EC23S857 ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	Detected, ROQ		2,005	948	copies/100mL	286	429	70	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	Detected, ROQ		11,834	1,771	copies/100mL	286	429	414	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	Detected, ROQ		140,390	36,133	copies/100mL	287	430	4,900	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	Detected, ROQ		1,370,564	261,909	copies/100mL	286	429	47,970	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	Detected, ROQ		112,559	9,856	copies/100mL	286	429	3,940	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	Detected, ROQ		1,803,670	308,086	copies/100mL	288	432	62,587	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	Detected, ROQ		856,961	71,343	copies/100mL	287	431	29,822	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	Detected, ROQ		7,766	819	copies/100mL	286	429	272	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	Detected, ROQ		463,136	48,088	copies/100mL	288	432	16,071	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	Detected, ROQ		543,224	96,580	copies/100mL	286	429	19,013	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	Detected, ROQ		13,642	1,925	copies/100mL	286	429	477	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	Detected, ROQ		1,310	416	copies/100mL	286	429	46	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	Detected, ROQ		285,185	20,909	copies/100mL	286	429	9,981	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	Detected, ROQ		1,112,902	88,972	copies/100mL	286	429	38,952	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	Detected, ROQ		85,715	3,804	copies/100mL	286	429	3,000	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	Detected, ROQ		322,414	24,584	copies/100mL	286	429	11,284	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	Detected, ROQ		143,414	15,345	copies/100mL	286	429	5,019	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	Detected, ROQ		219,194	32,273	copies/100mL	286	429	7,672	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	Detected, ROQ		722,792	38,838	copies/100mL	287	430	25,225	0
Field Blank-20180920	Field Blank	4744Field Blank	09/20/18	1000	FB	ND	§<	127	0	copies/100mL	286	429	4	0

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Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
Methodblank-20180920	Method Blank	4745Methodblank	09/20/18	1100	FB	ND	§<	127	0	copies/100mL	286	429	4	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	Detected, ROQ		80,949	13,867	copies/100mL	286	429	2,833	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	E.coli-EC23S857		
% Efficiency	97.17		
r^2	0.998		
slope	-3.39		
y-intercept	42.19		
curve source	Weston Master Curve		
standard source	plasmid		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	4.4	10	15
Ct equivalent	40.00	38.80	38.20
LOD > % amplification	89		
LLOQ StdDev	0.78		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

Report template version 6.05

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/22 and 10/25/18

Assay: GeneralBacteroidales-GenBac3
µL Template per Reaction: 5
Lab Blanks: passed n= 3
No Template Controls: passed n= 6
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 402 GenBac3 rm.pcrd
Plate 412 GenBac3 ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	Detected, ROQ		903,234	46,915	copies/100mL	429	571	31,613	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	Detected, ROQ		1,063,125	183,414	copies/100mL	429	571	37,209	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	Detected, ROQ		171,296	38,124	copies/100mL	430	573	5,978	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	Detected, ROQ		7,813,912	1,132,166	copies/100mL	429	571	273,487	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	Detected, ROQ		434,919	66,191	copies/100mL	429	571	15,222	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	Detected, ROQ		6,923,074	394,194	copies/100mL	432	576	240,231	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	Detected, ROQ		6,263,639	1,012,612	copies/100mL	431	575	217,975	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	Detected, ROQ		688,250	69,581	copies/100mL	429	571	24,089	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	Detected, ROQ		3,106,855	245,885	copies/100mL	432	576	107,808	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	Detected, ROQ		2,636,290	293,649	copies/100mL	429	571	92,270	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	Detected, ROQ		50,084	3,951	copies/100mL	429	571	1,753	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	Detected, ROQ		60,274	9,757	copies/100mL	429	571	2,110	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	Detected, ROQ		108,680	2,117	copies/100mL	429	571	3,804	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	Detected, ROQ		32,457,665	1,284,795	copies/100mL	429	571	1,136,018	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	Detected, ROQ		1,283,291	81,695	copies/100mL	429	571	44,915	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	Detected, ROQ		3,196,909	107,300	copies/100mL	429	571	111,892	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	Detected, ROQ		355,460	14,461	copies/100mL	429	571	12,441	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	Detected, ROQ		303,208	11,846	copies/100mL	429	571	10,612	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	Detected, ROQ		165,095	3,115	copies/100mL	430	573	5,762	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	BDL		279	146	copies/100mL	429	571	10	0

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Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	GeneralBacteroidales-GenBac3		
% Efficiency	94.15		
r^2	0.991		
slope	-3.47		
y-intercept	42.24		
curve source	Weston Master Curve		
standard source	plasmid		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	4.42	15.0	20.0
Ct equivalent	40.00	38.16	37.72
LOD > % amplification	80		
LLOQ StdDev	0.61		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/18 and 10/19/18

Assay: HumanBacteroidales-HF183TaqmanCAMan
µL Template per Reaction: 2
Lab Blanks: passed n= 5
No Template Controls: passed n= 6
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 399 HF183TMCaMan ka.pcrd
Plate 400 HF183TMCaMan ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	ND	§<	26	0	copies/100mL	214	429	0	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	BDL	§<	69	75	copies/100mL	214	429	1	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	Detected, DNQ		350	263	copies/100mL	215	430	5	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	Detected, ROQ		3,345	922	copies/100mL	214	429	47	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	Detected, ROQ		20,847	1,829	copies/100mL	214	429	292	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	Detected, ROQ		1,891	588	copies/100mL	216	432	26	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	Detected, ROQ		2,552	336	copies/100mL	216	431	36	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	BDL	§<	29	6	copies/100mL	214	429	0	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	Detected, ROQ		1,190	397	copies/100mL	216	432	17	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	Detected, ROQ		53,005	6,759	copies/100mL	214	429	742	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	ND	§<	26	0	copies/100mL	214	429	0	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	ND	§<	26	0	copies/100mL	214	429	0	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	Detected, DNQ	§<	233	335	copies/100mL	214	429	3	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	Detected, ROQ		71,871	4,756	copies/100mL	214	429	1,006	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	ND	§<	26	0	copies/100mL	214	429	0	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	Detected, ROQ		22,304	2,062	copies/100mL	214	429	312	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	BDL		109	29	copies/100mL	214	429	2	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	ND	§<	26	0	copies/100mL	214	429	0	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	Detected, DNQ		405	180	copies/100mL	215	430	6	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	BDL		167	51	copies/100mL	214	429	2	0

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Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	HumanBacteroidales-HF183TaqmanCAMan
% Efficiency	99.32
r^2	0.992
slope	-3.34
y-intercept	38.52
curve source	Weston Master Curve
standard source	genomic

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	0.36	3.0	6.0
Ct equivalent	40.00	36.93	35.93
LOD > % amplification	83		
LLOQ StdDev	0.85		

Copies per genome 7

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
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Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/23/18

Assay: Horse Bacteroidales-HorseBact
µL Template per Reaction: 2
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 405 HorseBact ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	ND	§<	59	0	copies/100mL	714	714	1	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	ND	§<	59	0	copies/100mL	714	714	1	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	ND	§<	59	0	copies/100mL	716	716	1	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	BDL	§<	80	36	copies/100mL	714	714	1	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	ND	§<	59	0	copies/100mL	714	714	1	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	ND	§<	60	0	copies/100mL	720	720	1	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	ND	§<	59	0	copies/100mL	718	718	1	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	ND	§<	59	0	copies/100mL	714	714	1	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	ND	§<	60	0	copies/100mL	720	720	1	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	ND	§<	59	0	copies/100mL	714	714	1	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	ND	§<	59	0	copies/100mL	714	714	1	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	ND	§<	59	0	copies/100mL	714	714	1	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	ND	§<	59	0	copies/100mL	714	714	1	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	ND	§<	59	0	copies/100mL	714	714	1	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	ND	§<	59	0	copies/100mL	714	714	1	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	ND	§<	59	0	copies/100mL	714	714	1	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	ND	§<	59	0	copies/100mL	714	714	1	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	BDL	§<	117	100	copies/100mL	714	714	2	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	BDL	§<	129	120	copies/100mL	716	716	2	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	BDL	§<	115	97	copies/100mL	714	714	2	0

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Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	Horse Bacteroidales-HorseBact
% Efficiency	100.54
r^2	0.995
slope	-3.31
y-intercept	39.73
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	0.83	10.0	10.0
Ct equivalent	40.00	36.42	36.42
LOD > % amplification	100		
LLOQ StdDev	0.61		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/24/18

Assay: Ruminant Bacteroidales-Rum2Bac
µL Template per Reaction: 2
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 407 Rum2Bac ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	ND	§<	192	0	copies/100mL	357	714	3	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	Detected, DNQ		602	54	copies/100mL	357	714	8	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	ND	§<	192	0	copies/100mL	358	716	3	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	ND	§<	192	0	copies/100mL	357	714	3	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	ND	§<	192	0	copies/100mL	357	714	3	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	Detected, DNQ	§<	394	211	copies/100mL	360	720	5	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	Detected, ROQ		1,700	593	copies/100mL	359	718	24	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	BDL	§<	215	41	copies/100mL	357	714	3	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	Detected, ROQ		1,227	432	copies/100mL	360	720	17	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	ND	§<	192	0	copies/100mL	357	714	3	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	ND	§<	192	0	copies/100mL	357	714	3	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	ND	§<	192	0	copies/100mL	357	714	3	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	ND	§<	192	0	copies/100mL	357	714	3	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	ND	§<	192	0	copies/100mL	357	714	3	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	BDL	§<	225	59	copies/100mL	357	714	3	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	BDL	§<	197	9	copies/100mL	357	714	3	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	ND	§<	192	0	copies/100mL	357	714	3	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	ND	§<	192	0	copies/100mL	357	714	3	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	ND	§<	192	0	copies/100mL	358	716	3	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	BDL	§<	252	104	copies/100mL	357	714	4	0

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Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	Ruminant Bacteroidales-Rum2Bac
% Efficiency	94.27
r^2	0.995
slope	-3.47
y-intercept	41.49
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	2.68	5.0	10.0
Ct equivalent	40.00	39.06	38.02
LOD > % amplification	85		
LLOQ StdDev	1.39		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/22/18

Assay: AvianHelicobacter-GFDSYBRAvian
µL Template per Reaction: 2
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 403 AvianGFD ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	Detected, ROQ		69,955	2,055	copies/100mL	714	714	979	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	Detected, ROQ		19,767	1,726	copies/100mL	714	714	277	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	Detected, ROQ		6,231	1,654	copies/100mL	716	716	87	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	Detected, ROQ		9,296	1,231	copies/100mL	714	714	130	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	Detected, ROQ		6,662	1,228	copies/100mL	714	714	93	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	Detected, ROQ		14,110	1,706	copies/100mL	720	720	196	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	Detected, ROQ		13,967	809	copies/100mL	718	718	194	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	Detected, ROQ		110,240	13,565	copies/100mL	714	714	1,543	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	Detected, ROQ		34,435	2,526	copies/100mL	720	720	478	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	Detected, ROQ		21,539	1,880	copies/100mL	714	714	302	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	Detected, ROQ		12,593	1,542	copies/100mL	714	714	176	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	Detected, ROQ		2,861	585	copies/100mL	714	714	40	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	Detected, ROQ		95,613	9,426	copies/100mL	714	714	1,339	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	Detected, ROQ		9,164	1,104	copies/100mL	714	714	128	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	Detected, ROQ		40,662	5,747	copies/100mL	714	714	569	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	Detected, ROQ		21,246	5,899	copies/100mL	714	714	297	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	Detected, ROQ		4,378	362	copies/100mL	714	714	61	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	Detected, ROQ		37,749	3,552	copies/100mL	714	714	528	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	Detected, ROQ		6,264	966	copies/100mL	716	716	87	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	BDL		224	242	copies/100mL	714	714	3	0

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Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	AvianHelicobacter-GFDSYBRAvian
% Efficiency	94.00
r^2	0.992
slope	-3.47
y-intercept	37.40
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	0.18	10.0	10.0
Ct equivalent	40.00	33.92	33.92
LOD > % amplification	100		
LLOQ StdDev	1.01		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/22/18

Assay: CowBacteroidales-Cow M2
µL Template per Reaction: 2
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 404 CowM2 rm.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	ND	§<	210	0	copies/100mL	500	714	3	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	ND	§<	210	0	copies/100mL	500	714	3	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	ND	§<	211	0	copies/100mL	501	716	3	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	ND	§<	210	0	copies/100mL	500	714	3	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	ND	§<	210	0	copies/100mL	500	714	3	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	ND	§<	212	0	copies/100mL	504	720	3	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	ND	§<	211	0	copies/100mL	503	718	3	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	ND	§<	210	0	copies/100mL	500	714	3	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	ND	§<	212	0	copies/100mL	504	720	3	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	ND	§<	210	0	copies/100mL	500	714	3	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	ND	§<	210	0	copies/100mL	500	714	3	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	ND	§<	210	0	copies/100mL	500	714	3	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	ND	§<	210	0	copies/100mL	500	714	3	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	ND	§<	210	0	copies/100mL	500	714	3	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	ND	§<	210	0	copies/100mL	500	714	3	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	ND	§<	210	0	copies/100mL	500	714	3	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	ND	§<	210	0	copies/100mL	500	714	3	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	ND	§<	210	0	copies/100mL	500	714	3	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	ND	§<	211	0	copies/100mL	501	716	3	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	ND	§<	210	0	copies/100mL	500	714	3	0

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Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	CowBacteroidales-Cow M2
% Efficiency	94.22
r^2	0.996
slope	-3.47
y-intercept	41.63
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	2.94	7.0	10.0
Ct equivalent	40.00	38.70	38.16
LOD > % amplification	90		
LLOQ StdDev	1.03		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/23/18

Assay: DogBacteroidales-DogBact
µL Template per Reaction: 2
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 406 DogBact rm.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	ND	§<	150	0	copies/100mL	714	1786	2	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	BDL	§<	171	36	copies/100mL	714	1786	2	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	Detected, ROQ		10,561	3,576	copies/100mL	716	1791	147	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	Detected, ROQ		49,016	15,616	copies/100mL	714	1786	686	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	Detected, ROQ		23,673	4,458	copies/100mL	714	1786	331	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	Detected, ROQ		36,141	1,451	copies/100mL	720	1801	502	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	Detected, ROQ		18,619	3,313	copies/100mL	718	1796	259	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	ND	§<	150	0	copies/100mL	714	1786	2	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	Detected, ROQ		5,787	557	copies/100mL	720	1801	80	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	Detected, DNQ		1,132	691	copies/100mL	714	1786	16	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	Detected, ROQ		1,926	1,213	copies/100mL	714	1786	27	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	ND	§<	150	0	copies/100mL	714	1786	2	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	BDL	§<	413	284	copies/100mL	714	1786	6	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	BDL		488	445	copies/100mL	714	1786	7	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	Detected, DNQ		1,630	1,737	copies/100mL	714	1786	23	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	BDL	§<	682	472	copies/100mL	714	1786	10	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	Detected, ROQ		15,960	1,716	copies/100mL	714	1786	223	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	Detected, ROQ		2,326	1,078	copies/100mL	714	1786	33	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	Detected, ROQ		37,239	4,985	copies/100mL	716	1791	520	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	Detected, DNQ	§<	829	599	copies/100mL	714	1786	12	0

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Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	DogBacteroidales-DogBact
% Efficiency	105.35
r^2	0.990
slope	-3.20
y-intercept	41.04
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	2.11	10.0	25.0
Ct equivalent	40.00	37.84	36.56
LOD > % amplification	73		
LLOQ StdDev	0.55		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 22
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/22/18

Assay: E.coli-EC23S857
µL Template per Reaction: 5
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 401 EC23S857 ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	Detected, ROQ		2,005	948	copies/100mL	286	429	70	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	Detected, ROQ		11,834	1,771	copies/100mL	286	429	414	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	Detected, ROQ		140,390	36,133	copies/100mL	287	430	4,900	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	Detected, ROQ		1,370,564	261,909	copies/100mL	286	429	47,970	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	Detected, ROQ		112,559	9,856	copies/100mL	286	429	3,940	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	Detected, ROQ		1,803,670	308,086	copies/100mL	288	432	62,587	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	Detected, ROQ		856,961	71,343	copies/100mL	287	431	29,822	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	Detected, ROQ		7,766	819	copies/100mL	286	429	272	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	Detected, ROQ		463,136	48,088	copies/100mL	288	432	16,071	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	Detected, ROQ		543,224	96,580	copies/100mL	286	429	19,013	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	Detected, ROQ		13,642	1,925	copies/100mL	286	429	477	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	Detected, ROQ		1,310	416	copies/100mL	286	429	46	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	Detected, ROQ		285,185	20,909	copies/100mL	286	429	9,981	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	Detected, ROQ		1,112,902	88,972	copies/100mL	286	429	38,952	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	Detected, ROQ		85,715	3,804	copies/100mL	286	429	3,000	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	Detected, ROQ		322,414	24,584	copies/100mL	286	429	11,284	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	Detected, ROQ		143,414	15,345	copies/100mL	286	429	5,019	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	Detected, ROQ		219,194	32,273	copies/100mL	286	429	7,672	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	Detected, ROQ		722,792	38,838	copies/100mL	287	430	25,225	0
Field Blank-20180920	Field Blank	4744Field Blank	09/20/18	1000	FB	ND	§<	127	0	copies/100mL	286	429	4	0

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Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
Methodblank-20180920	Method Blank	4745Methodblank	09/20/18	1100	FB	ND	§<	127	0	copies/100mL	286	429	4	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	Detected, ROQ		80,949	13,867	copies/100mL	286	429	2,833	0

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	E.coli-EC23S857		
% Efficiency	97.17		
r^2	0.998		
slope	-3.39		
y-intercept	42.19		
curve source	Weston Master Curve		
standard source	plasmid		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	4.4	10	15
Ct equivalent	40.00	38.80	38.20
LOD > % amplification	89		
LLOQ StdDev	0.78		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/22 and 10/25/18

Assay: GeneralBacteroidales-GenBac3
µL Template per Reaction: 5
Lab Blanks: passed n= 3
No Template Controls: passed n= 6
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 402 GenBac3 rm.pcrd
Plate 412 GenBac3 ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	Detected, ROQ		903,234	46,915	copies/100mL	429	571	31,613	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	Detected, ROQ		1,063,125	183,414	copies/100mL	429	571	37,209	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	Detected, ROQ		171,296	38,124	copies/100mL	430	573	5,978	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	Detected, ROQ		7,813,912	1,132,166	copies/100mL	429	571	273,487	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	Detected, ROQ		434,919	66,191	copies/100mL	429	571	15,222	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	Detected, ROQ		6,923,074	394,194	copies/100mL	432	576	240,231	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	Detected, ROQ		6,263,639	1,012,612	copies/100mL	431	575	217,975	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	Detected, ROQ		688,250	69,581	copies/100mL	429	571	24,089	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	Detected, ROQ		3,106,855	245,885	copies/100mL	432	576	107,808	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	Detected, ROQ		2,636,290	293,649	copies/100mL	429	571	92,270	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	Detected, ROQ		50,084	3,951	copies/100mL	429	571	1,753	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	Detected, ROQ		60,274	9,757	copies/100mL	429	571	2,110	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	Detected, ROQ		108,680	2,117	copies/100mL	429	571	3,804	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	Detected, ROQ		32,457,665	1,284,795	copies/100mL	429	571	1,136,018	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	Detected, ROQ		1,283,291	81,695	copies/100mL	429	571	44,915	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	Detected, ROQ		3,196,909	107,300	copies/100mL	429	571	111,892	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	Detected, ROQ		355,460	14,461	copies/100mL	429	571	12,441	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	Detected, ROQ		303,208	11,846	copies/100mL	429	571	10,612	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	Detected, ROQ		165,095	3,115	copies/100mL	430	573	5,762	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	BDL		279	146	copies/100mL	429	571	10	0

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Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	GeneralBacteroidales-GenBac3		
% Efficiency	94.15		
r^2	0.991		
slope	-3.47		
y-intercept	42.24		
curve source	Weston Master Curve		
standard source	plasmid		
Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	4.42	15.0	20.0
Ct equivalent	40.00	38.16	37.72
LOD > % amplification	80		
LLOQ StdDev	0.61		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/18 and 10/19/18

Assay: HumanBacteroidales-HF183TaqmanCAMan
µL Template per Reaction: 2
Lab Blanks: passed n= 5
No Template Controls: passed n= 6
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 399 HF183TMCaMan ka.pcrd
Plate 400 HF183TMCaMan ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	ND	§<	26	0	copies/100mL	214	429	0	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	BDL	§<	69	75	copies/100mL	214	429	1	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	Detected, DNQ		350	263	copies/100mL	215	430	5	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	Detected, ROQ		3,345	922	copies/100mL	214	429	47	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	Detected, ROQ		20,847	1,829	copies/100mL	214	429	292	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	Detected, ROQ		1,891	588	copies/100mL	216	432	26	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	Detected, ROQ		2,552	336	copies/100mL	216	431	36	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	BDL	§<	29	6	copies/100mL	214	429	0	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	Detected, ROQ		1,190	397	copies/100mL	216	432	17	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	Detected, ROQ		53,005	6,759	copies/100mL	214	429	742	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	ND	§<	26	0	copies/100mL	214	429	0	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	ND	§<	26	0	copies/100mL	214	429	0	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	Detected, DNQ	§<	233	335	copies/100mL	214	429	3	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	Detected, ROQ		71,871	4,756	copies/100mL	214	429	1,006	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	ND	§<	26	0	copies/100mL	214	429	0	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	Detected, ROQ		22,304	2,062	copies/100mL	214	429	312	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	BDL		109	29	copies/100mL	214	429	2	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	ND	§<	26	0	copies/100mL	214	429	0	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	Detected, DNQ		405	180	copies/100mL	215	430	6	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	BDL		167	51	copies/100mL	214	429	2	0

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Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	HumanBacteroidales-HF183TaqmanCAMan
% Efficiency	99.32
r^2	0.992
slope	-3.34
y-intercept	38.52
curve source	Weston Master Curve
standard source	genomic

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	0.36	3.0	6.0
Ct equivalent	40.00	36.93	35.93
LOD > % amplification	83		
LLOQ StdDev	0.85		

Copies per genome 7

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/23/18

Assay: Horse Bacteroidales-HorseBact
µL Template per Reaction: 2
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 405 HorseBact ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	ND	§<	59	0	copies/100mL	714	714	1	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	ND	§<	59	0	copies/100mL	714	714	1	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	ND	§<	59	0	copies/100mL	716	716	1	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	BDL	§<	80	36	copies/100mL	714	714	1	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	ND	§<	59	0	copies/100mL	714	714	1	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	ND	§<	60	0	copies/100mL	720	720	1	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	ND	§<	59	0	copies/100mL	718	718	1	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	ND	§<	59	0	copies/100mL	714	714	1	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	ND	§<	60	0	copies/100mL	720	720	1	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	ND	§<	59	0	copies/100mL	714	714	1	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	ND	§<	59	0	copies/100mL	714	714	1	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	ND	§<	59	0	copies/100mL	714	714	1	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	ND	§<	59	0	copies/100mL	714	714	1	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	ND	§<	59	0	copies/100mL	714	714	1	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	ND	§<	59	0	copies/100mL	714	714	1	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	ND	§<	59	0	copies/100mL	714	714	1	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	ND	§<	59	0	copies/100mL	714	714	1	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	BDL	§<	117	100	copies/100mL	714	714	2	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	BDL	§<	129	120	copies/100mL	716	716	2	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	BDL	§<	115	97	copies/100mL	714	714	2	0

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Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	Horse Bacteroidales-HorseBact
% Efficiency	100.54
r^2	0.995
slope	-3.31
y-intercept	39.73
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	0.83	10.0	10.0
Ct equivalent	40.00	36.42	36.42
LOD > % amplification	100		
LLOQ StdDev	0.61		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

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Weston Solutions qPCR Report - Sample Results

Client: Daniel B Stephens & Assoc.
Project: COA MST
Survey: 5
Date Received: 9/25/18
n Samples: 20
Date Filtered: 9/20/18
Date Extracted: 10/10 and 10/11/18
Date PCR: 10/24/18

Assay: Ruminant Bacteroidales-Rum2Bac
µL Template per Reaction: 2
Lab Blanks: passed n= 3
No Template Controls: passed n= 3
Positive Extraction Controls[A]: passed n= 20
Inhibition Control[B]: HF183 (B.dorei)
File name(s): Plate 407 Rum2Bac ka.pcrd

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]
UCRD-20180920	Upper Corrales Riverside Drain	4725UCRD	09/20/18	0745	FW	ND	§<	192	0	copies/100mL	357	714	3	0
RGAB-20180920	Rio Grande @ Alameda	4726RGAB	09/20/18	8000	FW	Detected, DNQ		602	54	copies/100mL	357	714	8	0
CAC-20180920	Calabacillas Arroyo	4727CAC	09/20/18	0830	FW	ND	§<	192	0	copies/100mL	358	716	3	0
ADV-20180920	Alameda drain	4728ADV	09/20/18	0915	FW	ND	§<	192	0	copies/100mL	357	714	3	0
HAC-20180920	Hahn at Carisle	4729HAC	09/20/18	1000	FW	ND	§<	192	0	copies/100mL	357	714	3	0
ADM-20180920	Alameda drain	4730ADM	09/20/18	1020	FW	Detected, DNQ	§<	394	211	copies/100mL	360	720	5	0
AwithG-20180920	Alameda drain	4731AwithG	09/20/18	1040	FW	Detected, ROQ		1,700	593	copies/100mL	359	718	24	0
AtriscoatRioB-20180920	Atrisco @ Rio Bravo	4732AtriscoRioB	09/20/18	0845	FW	BDL	§<	215	41	copies/100mL	357	714	3	0
RiversideatRioB-20180920	Riverside drain Rio B	4733RivrsdeRioB	09/20/18	0930	FW	Detected, ROQ		1,227	432	copies/100mL	360	720	17	0
WWTPOutfall-20180920	WWTP Outfall	4734WWTPOutfall	09/20/18	1005	FW	ND	§<	192	0	copies/100mL	357	714	3	0
BAatJT-20180920	Bear Arroyo @ Juan	4735BAatJT	09/20/18	0625	FW	ND	§<	192	0	copies/100mL	357	714	3	0
PinoUp-20180920	Pino Arroyo at DB	4736PinoUp	09/20/18	0650	FW	ND	§<	192	0	copies/100mL	357	714	3	0
SanAntonio-20180920	San Antonio Arroyo	4737SanAntonio	09/20/18	0730	FW	ND	§<	192	0	copies/100mL	357	714	3	0
SDCBroadway-20180920	SDC at Broadway	4738SDCBroadway	09/20/18	0850	FW	ND	§<	192	0	copies/100mL	357	714	3	0
RiverdrainatI25-20180920	Riverside Drain I25	4739RvrdrnatI25	09/20/18	0920	FW	BDL	§<	225	59	copies/100mL	357	714	3	0
RGIsleta-20180920	Rio Grande at Isleta	4740RGIsleta	09/20/18	0940	FW	BDL	§<	197	9	copies/100mL	357	714	3	0
EMBATSNHT-20180920	Embudo Arroyo Snow	4741EMBATSNHT	09/20/18	0555	FW	ND	§<	192	0	copies/100mL	357	714	3	0
BearArroyo-20180920	Bear Canyon @ Jefferson	4742BearArroyo	09/20/18	0815	FW	ND	§<	192	0	copies/100mL	357	714	3	0
PinoArroyo-20180920	Pino Arroyo at Wash	4743PinoArroyo	09/20/18	0900	FW	ND	§<	192	0	copies/100mL	358	716	3	0
RGatRioBravo-20180920	Rio Grande @ Rio Bravo	4746RGatRioB	09/20/18	0900	FW	BDL	§<	252	104	copies/100mL	357	714	4	0

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Carlsbad, CA 92008
(760) 795-6900 / (760) 931-1580
www.westonsolutions.com

Weston Solutions qPCR Report - Sample Results

Sample ID	Site ID	Weston DNA ID	Date Sampled	Time Sampled	Matrix	Sample Result[C]	Qualifier[D]	Sample Concentration[E]	Sample Stdev[F]	Units[G]	SLOD[H]	SLLOQ[H]	cpr	Inhibition Result[I]

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; FW: Fresh Water; GW: Ground Water; L; SLT: Salt Water; SW: Storm Water; LOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

Footnotes: [A]Sample Process Control (SPC), Sketa assay for salmon sperm. [B]Inhibition Control = assay used for 2 well spike with DNA dilution method. [C]Suggestion for conversion of sample result into categorical results: ROQ and DNQ = positive; ND = negative; BDL = equivocal (see explanation on Part B). [D]If shown: §Average computed for ND result by substituting Cq with maximum number of cycles (Boehm et al., 2013). [E]Concentration = mean of at least 3 technical replicates. [F]Standard Deviation of at least 3 technical replicates. [G]For enterococci, results are given in Target Sequence Copies (TSC), as per EPA Method 1611 (standard concs in TSC/ul = copies/ul x 4). [H]SLOD and SLLOQ: sample specific detection and quantification limits calculated based on sample specific processing volumes see more information on Part B. [I]Inhibition: 0 = no inhibition observed, 1 = inhibition observed, but overcome in diluted sample, 2 = inhibition not overcome in diluted sample: The given concentration may be underestimated for positive samples, 3 = Dilution needed to overcome inhibition did not yield amplification. Given concentration may be underestimated. NT = not tested. See Part B for additional comments.

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Weston Solutions qPCR Report - Standard Curve Metrics

Client: Daniel B Stephens & Assoc. **Project:** COA MST **Survey:** 5 **Date Received:** 9/25/2018

Comments:

Standard Curve Metrics*

Assay	Ruminant Bacteroidales-Rum2Bac
% Efficiency	94.27
r^2	0.995
slope	-3.47
y-intercept	41.49
curve source	Weston Master Curve
standard source	plasmid

Site Conclusion Values	**ND sub**	**LOD**	**LLOQ**
cpr (copies per reaction)	2.68	5.0	10.0
Ct equivalent	40.00	39.06	38.02
LOD > % amplification	85		
LLOQ StdDev	1.39		

* based on a master standard curve with a minimum of 50 data points.

AVG Filtration Volume 100 mL

Sample result calculations use cpr values based on the following definitions:
ND: Cq=maximum cycle number, negative result.
BDL: 0<Cq≤LOD, Equivocal result.
DNQ: LOD<Cq≤LLOQ, positive binary result.
ROQ: Cq>LLOQ, positive result.
LLOQ : lowest concentration with amplification rate of 100% (>20 reps).

In addition, SLOD and SLLOQ values are provided. These are sample specific detection limits which take into account sample processing, for example volumes or mass.

Categorical Results:
ROQ and DNQ = positive; ND = negative
BDL results are categorized as "equivocal" because a signal was observed below the limit of detection. The result can therefore not be classified as either a negative or positive with great confidence. Weston uses BDL concentration values to compute averages unless directed otherwise by Client. Sites with chronic BDL results may warrant additional monitoring.

Abbreviations: Avg = Average; BDL = Below Detection Limit; cpr = copies per reaction; Cq = quantification (threshold) cycle; DNQ = Detectable But Not Quantifiable; FB = Field Blank; LLOQ = Lower Limit of Quantification; LOD = Limit of Detection; n=number; N/A = Not Applicable; ND = Not Detected; NDsub = substitution value for nondetects; PCR = Polymerase chain reaction; rxs = reactions; StdDev = Standard Deviation; sub = substitution; TSC = Target Sequence Copies; ROQ = Range of Quantification; SLLOQ = Sample Specific Lower Limit of Quantification; SLOD = Sample Specific Limit of Detection.

QC Officer (Satomi Yonemasu) Date

Report template version 6.05

Attachment 4

Map of Repaired Cross Connections

CROSS CONNECTION DISCOVERED 7/1/2018 to 6/30/2019

wetaburger at 200 menaul nw

ALAMEDA
PASEO DEL NORTE
OSUNA
MONTANO
2ND
RIO GRANDE
UNSER
COORS
MONTGOMERY
WYOMING
EUBANK
JUAN TABO
CANDELARIA
SAN MATEO
MENAUL
LOMAS
LOUISIANA
3RD
MARTIN LUTHER KING
TIJERAS
LEAD
COAL
CENTRAL
ZUNI
GUADALUPE OVERPASS
BRIDGE
BROADWAY
GIBSON
SUNPORT
ISLETA
98TH
SNOW VISTA
ATRISCO VISTA
CENTRAL
25
40

N

Cross Connection
City Limits

0 1 2 4
Miles

Address	**WHATABURGER AT 200 Menaul NW**
Building_type	fast food Restaurant
SD_size_inch	15
building_name	Whataburger
Date Discovered	11/29/2018
Date Disconnected	12/3/2018
How_Discovered	Whataburger asked WA to clean up the sanitary line because their restroom flooded with sewage. WA found that the sanitary line from Whataburger is connected to storm line instead of sanitary line.
cost	
who_paid	WHATABURGER OF NEW MEXICO
ID	3
Link_X_Drive	X:\MD\SHARE\MD-Storm\7_NPDES\CROSS_CONNECTIONS\200 menaul

Attachment 5

Tijeras Creek Watershed Based Plan Proposal

Proposal for Tijeras Creek Watershed-Based Plan

Prepared by

Joanne Hilton, P.G. with Rosemary Romero and Jim Brooks

For Ciudad Soil and Water Conservation District

January 2019

1. Introduction

The following proposal for preparation of a Tijeras Creek Watershed Based Plan is being submitted by Joanne Hilton, P.G. in conjunction with Jim Brooks and Rosemary Romero. The proposal addresses all aspects of the Requests for Proposals, including a Statement of Qualifications (Section 2), a description of tasks to be completed (Section 3) anticipated costs and schedule (Section 4) and letters of recommendation (Attachment 1).

2. Statement of Qualifications

Joanne Hilton, P.G. is experienced and knowledgeable in all aspects of Watershed Based Planning. She is a registered profession geologist and has B.S. and M.S. degrees in Hydrology and has experience in development of water quality standards, water quality monitoring including quality assurance protocol, field assessment of stream stability, and preparation of numerous water resource plans. Her water planning experience includes a Watershed Based Plan (WBP) for the Cimarron Watershed, watershed and wetland restoration plans for the Pueblo of Acoma and the Hopi Tribe, community water development plans, and multiple regional water plans that included a focus on watershed restoration. The Cimarron Watershed Based plan authored by Ms. Hilton included field assessment of Cimaroncito Creek, mapping of causes and sources of pollutants, calculation of load reductions based on the STEPL model, coordination with the Cimarron Watershed Alliance Board and volunteers, and preparation of draft and final plans that addressed all 9 elements of Watershed Based Planning. She has managed field thinning and restoration projects and has worked with diverse stakeholder groups throughout New Mexico to develop plans that address multiple and sometimes conflicting goals. Ms. Hilton, through her business Global Hydrologic Solutions will be the prime contractor, project manager and primary author of the WBP with assistance from Rosemary Romero and Jim Brooks as described below.

Rosemary Romero has designed and facilitated numerous public involvement projects and has facilitated discussions of controversial issues with various federal, state, local governments and nonprofit organizations. As a native New Mexican, she brings a heightened awareness of cross-cultural issues in the resolution of disputes. She is the former President of Western Network, a non-profit organization that developed an extensive practice centered on conflict resolution specific to natural resource issues such as water planning and land use planning. Ms. Romero developed 9 Watershed Restoration Plans for NMED and she organized and facilitated two statewide workshops to develop strategies for update to the NM Non-Point Source Advisory Committee. She facilitated monthly meetings of the watershed group developed by Amigos Bravos in Taos for the Rio Fernando Watershed Revitalization, facilitated community meetings to discuss opportunities for small business development based on products through forest restoration in northern New Mexico for the Nature Conservancy and has worked for 20 years with facilitated Collaborative Forest Restoration Program processes. Ms. Romero will assist with stakeholder outreach and public meetings.

James Brooks, founder and president of Soilutions, Inc., has provided consultation, design and installation services for soil and water conservation and compost products for over 20 years and is trained as a permaculture designer and certified as a permaculture instructor. James uses permaculture principles as a guide to the preservation of natural resources, and the creation of healthy terrain systems. He has designed and installed storm water, erosion control and landscape systems that maximize water infiltration and retention while minimizing soil erosion at many private, commercial, and governmental sites. James is widely respected in New Mexico as an erosion control expert. He is past chair of the New Mexico Organic Recycling Organization and is former chair of the Ciudad Soil and Water Conservation District and past president of the New Mexico Organic Growers Association. Currently, James is an instructor for the New Mexico Environment Department and he has worked on restoration in the Tijeras Creek watershed. James will primarily assist with identifying nonpoint source management measures and associated costs.

3. Tasks to be Completed

This section identifies the tasks to be completed for development of a Tijeras Creek Watershed Based Plan, based on the knowledge and experience in Watershed Based Planning of the project team. The overall objective of this project will be to complete a Watershed Based Plan that addresses the 9 elements of Watershed Based Planning as outlined in the U.S. Environmental Protection Agency Handbook (EPA, 2008). The primary planning goal is to prepare a plan that leads to on-the-ground implementation projects resulting in measurable improvements to water quality in the Tijeras Creek watershed. To achieve this goal the project focus will include the following priorities:

- *Effective stakeholder participation:* Building from the existing Tijeras Creek Watershed Collaborative (TCWC), stakeholders that are engaged and informed about the watershed efforts will guide the planning effort. If desired a core team from the project partners can be designated to provide additional project guidance and more closely review interim draft materials. The TCWC already includes many agencies, the Carnuel land grant, and non-profits with interest in the watershed. Additional potential partners such as the Village of Tijeras, APS, private landowners and NMDOT will be invited to participate.

- *Practical solutions for watershed health:* The plan will focus on identifying implementable projects that can improve water quality, watershed health, and climate resiliance. Therefore a key priority is project design, cost, and identification of potential funding sources, and monitoring plans so that priority projects are identified and ready to move forward by the end of the WBP planning process. Linking these projects to sources of nutrients is also a priority.

A list of tasks to be completed is provided on Table 1. The task list corresponds to the nine elements of watershed based planning as described in the RFP and the EPA Handbook. For each of the nine elements, the priority objectives and areas of focus are identified on Table 1.

Table 1. Tasks, Priorities, Schedule, and Cost

Element of Watershed Based Planning	Definition of Element per the EPA Handbook	Tasks to be Completed	Prioritization/Key Objectives	Schedule[1]	Cost[2]
Source of Load Reductions	Identify the causes and sources, or groups of similar sources, which must be controlled to achieve load reductions.	The cause of pollution to be addressed as identified in the Tijeras Creek TMDL is nutrients, including nitrogen and phosphorus. Sources will be identified based on existing data review and field recognizance.	It will be important to understand relative contributions from varying sources, particularly the MS4 stormwater runoff, so that management measures are accurately targeted to actual sources. Data gaps and quality issues will be identified.	September 2019	$10,900
Estimate Load Reductions	Estimate the expected load reductions by using the management measures described below.	Load reductions to comply with the TMDL will be calculated using STEPL or another model as approved by the group. STEPL calculates nutrient loading based on runoff volume and the pollutant concentrations in the runoff water, as influenced by factors such as land-use distribution and management practices.	Due to the variable flow regime, estimating load reductions for both high and low flows is a priority. The STEPL gully and streambank calculation tool, along with inputs from the field survey, may be a valuable tool to estimate erosion that could contribute to the sediment and nutrient load. Streambank stability ranking may be a useful input to modeling.	November 2019	$11,000
Nonpoint Source Management Measures	Describe the nonpoint source (NPS) management measures needed to achieve estimated load reductions.	The variable flow regime in Tijeras Creek necessitates that measures to address nutrient inputs during both low flows and storm flows be addressed. Priority projects will be identified with input from the stakeholder group.	Management measures that are practical, implementable and fundable are a priority. Projects that emphasize climate resilience (droughts, fire, and extreme precipitation) are key priorities for overall watershed health and addressing nutrient loads.	February 2020	$11,200

[1] Assumes a May 1, 2019 Start Date. The schedule can be adjusted as needed for earlier or later start dates.
[2] See text on page 5 for cost assumptions and discussion.

Cost Estimate	Provide an estimate of the amounts of technical and financial assistance, associated costs, and/or sources and authorities to be used to implement the Tijeras Creek WBP.	Costs for implementing priority projects will be estimated, and potential funding sources for each project will be identified. Costs will be estimated for key projects based on design knowledge and standard rates.	Developing projects that qualify for funding and identifying potential partners and matching funds is a priority for developing a plan that can be effectively implemented. Sources or funding, including CFRP, NMED, Water Trust Board, and other grant programs.	March 2020	$7,600
Information/ Education Component	Include an information/education component to enhance public understanding and encourage participation.	Work with Tijeras Creek Watershed Collaborative and any additional stakeholders. Prepare a written information/ outreach/ education plan.	A priority is to meet with local groups and stakeholders in ways that work for them, such as attending their meetings, in addition to hosting larger events that are advertised and open to the public.	March 2020 with interim meetings	$9,300
Implementation Schedule w/Interim Milestones	Devise a schedule for implementing the NPS management measures identified in the WBP. Include interim measurable milestones.	The schedule will include project design, implementation, and monitoring. This addresses 2 of the required elements for a WBP –the implementation schedule and the interim milestones.	A schedule that reflects realistic funding expectations needed for new projects will be developed. The schedule will include interim milestones. For example key projects to be completed in 1-2 years will be listed along with longer term goals.	April 2020	$3,700
Load Reduction Criteria	Compile a set of criteria to determine whether loading reductions are being achieved over time and to determine if substantial progress is being made towards attaining water quality standards.	Examples of load reduction criteria (in addition to water quality and vegetation monitoring), include measures such as project funding, completion of project implementation or other interim measures.	A priority for this WBP element is to identify criteria that can flag effective or non-effective management measures so that adaptive management can be implemented. Load reduction criteria help to ensure the plan is being effectively implemented to reduce nutrient loads.	April 2020	$3,700
Monitoring Component	Include a monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria.	Include long-term monitoring to better understand nutrient variability under a greater range of streamflow conditions, and project specific monitoring to evaluate management measures.	A priority for ongoing monitoring is to ensure that station locations and timing adequately distinguish various sources of nutrients, and are able to accurately detect MS4 contributions.	May 2020	$5,000

4. Cost Estimate and Time Requirement/Schedule

The schedule priority (schedule of completion) and cost estimate for the project is also provided in Table 1. The schedule for each of the 9 elements is based on the schedule outlined in the RFP, but can be flexible as needed to coordinate with other efforts. Following completion of each of the 9 elements in the timeframe identified in Table 1, a draft WBP will be completed in June 2020 and a final WBP will be completed in August 2020 as specified in the RFP.

The schedule reflects when tasks will be completed, and a time requirement (number of hours) for each task was also estimated to develop the costs shown in Table 1. If NMED funding is obtained to support the planning effort, their requirements indicate that all contract work must be performed under a maximum hourly rate cap. The contractors on this team have all agreed to work under the rate cap as needed for compliance with NMED Section 319 funding rules. Costs were developed based on the required rate along with some minimal expenses (e.g. copying of meeting materials).

The estimated costs shown on Table 1 include: 1) Initial Public Outreach to identify and add stakeholders that are not already participating in the TCWC 2) 4 Interim meetings with the Oversight Group (Ciudad and Partners and open to the entire Watershed Group if desired) to discuss schedule, objectives, interim work products or any other pertinent issues, 3) Preparation of a draft Tijeras Creek Watershed Based Plan which includes each of the 9 elements of watershed based planning 4) Preparation of public notice and a public meeting to present the draft plan 5) Integration of comments on the draft plan based on a compiled set of comments submitted by the project partners, and 6) Preparation of a final plan.

The cost estimate is based on the following assumptions 1) Joanne Hilton will attend 4 meetings and Jim Brooks will attend 2 meetings with the Tijeras Creek Watershed Collaborative or a designated oversight group for the Watershed Based Plan to present and discuss interim deliverables 1) existing GIS maps will be used or amended through County in-kind matching 3) field reconnaissance will be limited to 2 days 4) existing data will be supplied by Ciudad SWCD or one of the project partners 5) Rosemary Romero will facilitate one larger public meeting as approved by the project partners (additional meetings can be added if desired 6) edits and input on project objectives will be coordinated through one of the project partners, to avoid making multiple conflicting edits to address different concerns.

The project team understands funding limitations and is willing to negotiate specific scope items so that the best plan can be developed within the available resources.

5. References

U.S. Environmental Protection Agency, March, 2008. Handbook for Developing Watershed Plans to Restore and Protect Our Waters.

Attachment 1. Letters of Recommendation

Mark Ira Scheinbaum, B.A., M.A.

Managing Director Shearson Financial Services LLC,

Adjunct Prof. Florida International University

14888 Enclave Lakes Dr., Suite C-4, Delray Beach, FL 33484 Mbshine@aol.com

15 Jan. 2019

Mr. Sean Ludden, Programs Coordinator

Ciudad SWCD

100 Sun Ave., Rm 160

Albuquerque, NM 87109

Re: Endorsement/Recommendation FBO Joanne A. Hilton

Dear Mr. Ludden,

I was pleased and honored to be asked by Ms. Joanne Hilton to provide a recommendation for her potential participation and work on your project. Not being a very "scientific" guy, I found my years working with Ms. Hilton more like a constant tutorial in which complex water issues became comprehensible and complex funding issues were resolved for our stakeholders.

As owner of my own small Brite-Tree Ranch near the Palo Flechado Pass on the Taos/Colfax border I was a stakeholder in the Cimarron Watershed Alliance for nearly 11 years, an executive board member for five years and Treasurer of the Alliance for three years. When the Cimarron Watershed Based Plan was envisioned and then developed in 2011-12 Ms. Hilton and her grant-writing skills, knowledge of (what sometimes seemed to me) a convoluted and bizarre bureaucracy and myriad pitfalls we needed to avoid, proved successful. By utilizing Ms. Hilton who was recommended because of her domestic and even international water reputation, we had made the right choice.

From a management point of view, I would emphasize that we had a very diverse group of board members and stakeholders. Keep in mind we interacted with one of the largest landowners in the United States in the Vermejo Park Ranch of Ted Turner, and the needs and desires of retirees, land investors, and ski resort visitors in the Moreno Valley. Competing "constituencies" from the protection of pristine areas of Philmont

Scout Ranch, to concerns about soil and flora quality in high wildfire risk zones were always part of the “mix” in delicate information sessions, public relations, and answers to stakeholder inquiries.

Ms. Hilton handled our executive and public sessions with total poise and professionalism, and perhaps most importantly, she brought our project in on budget in a timely manner. I might add that she also became a “resource” person in an informal manner on many issues, at least until I had to relocate away from New Mexico for family health reasons in 2014 I was always impressed with her “extra efforts.”

Please give me a call on my cell line 561 371 9066 if you need some additional information.

In summary, I think you will look back and smile in satisfaction for inclusion of Ms. Hilton to augment your worthy efforts. In any case, continued success in the land I love and all prosperity in the New Year.

Respectfully,

/s/ *Mark Scheinbaum*

Mark Scheinbaum

LAND & CULTURE CONSULTING

sustaining healthy relationships between people and place

January 14, 2019

To Whom It May Concern:

It has been my professional and personal pleasure to work closely with Rosemary Romero for many years on several different projects.

From 2000 to 2003 I worked with Rosemary on and off as a subcontractor with the Red River Watershed Group and on the Red River Watershed Restoration Action Strategy (https://www.env.nm.gov/swqb/wps/WRAS/Red_River_13020101_WRAS_Nov_2003.pdf). With competing interests and a very diverse group of stakeholders in what has been called the most complex and challenging watershed in the state, this project could have easily run into obstacles or floundered in partisan squabbling, but was highly successful as a direct result of Rosemary's exceptional and light-hearted facilitation skills.

In 2006 I again worked with Rosemary as a subcontractor on the Upper Rio Grande Watershed Restoration Action Strategy and Non-Point Source Abatement Plan (https://www.env.nm.gov/swqb/wps/WRAS/UpperRioGrandeWRAS.pdf), which included every tributary watershed of the Rio Grande downstream of the Red River between San Cristóbal and Pilar. This was another even more complex collection of watershed issues and diverse constituents and interests that Rosemary facilitated and navigated with great skill and grace.

In addition, while I was executive director of Taos Land Trust (TLT) from 2003 to 2012, we contracted with Rosemary to facilitate two strategic planning efforts, working with our diverse board of directors, staff, and volunteers to develop strategic goals and objectives for the organization. The second strategic plan was part of the foundation that allowed TLT to become the first land trust in New Mexico to be fully accredited.

Since then I have participated in several meetings regarding the Taos Regional Water Plan Update, facilitated by Rosemary.

Rosemary knows the watershed concept and water-quality and water-use issues as well as anyone, understands the history and nuances of New Mexico culture, and has an exceptional ability to facilitate potentially controversial dialogs with great skill, grace, and humor. She is always and consistently a true pleasure to work with and I highly recommend her for any watershed-based or facilitation work.

Please contact me any time if I can provide more information or answer any questions.

Sincerely,

Ernie Atencio

PO Box 537 • Arroyo Hondo, NM 87513 • 575-770-4565
atencio@newmex.com • landcultureconsulting.com

Dominique Cartron, J.D.

January 28, 2019

Mr. Sean Ludden
Ciudad Soil and Water Conservation District
100 Sun Avenue NE, Room 160
Albuquerque, NM 87109

This letter is submitted in support of the proposal from Joanne Hilton and Rosemary Romero in response to the *RFP for the Tijeras Creek Watershed Based Plan.* At Daniel B. Stephens and Associates, I have worked with Joanne Hilton and Rosemary Romero on multiple water resource planning projects in New Mexico over the last 20 years. Joanne has been the technical lead, analyzing data, writing the hydrologic and water quality and other technical sections while also providing review and input to all sections of the plans including recommendations. Rosemary has prepared public involvement plans, provided stakeholder outreach and facilitation of public meetings for numerous planning projects.

A key focus of many of the planning efforts we have worked on has been watershed management and the need for on-the-ground watershed projects, increased data gathering and monitoring, public involvement and education, leveraging and coordination of resources among the multiple agencies and groups working within specific watersheds.

Rosemary has excellent facilitation and communication skills for public processes. She has worked with me on stakeholder outreach by identifying and contacting key stakeholders, and facilitating meetings. Having worked with stakeholders from all water use sectors, and having been a city councilor, she brings a unique perspective on New Mexico issues and is an excellent listener and communicator.

Joanne brings valuable expertise to watershed projects as she has the technical knowledge and skills related to developing and implementing water quality monitoring programs. She fully understands data collection and water quality indicators and can interpret a range of water quality data. She understands funding sources and regulatory drivers, and has experience identifying specific projects and programs needed to improve watershed management.

In addition to her technical skills, Joanne is a highly organized project manager. She understands the level of effort required to accomplish technical and planning tasks and has completed her projects within budget and on schedule. She listens carefully to her clients to ensure the project deliverables meet expectations and is able to adjust to changing circumstances. Joanne is easy to work with, collaborative, and provides the highest quality work product.

I highly recommend Joanne Hilton and Rosemary Romero for the Tijeras Creek Watershed Based Plan.

Sincerely,

Dominique Cartron, Esq.

8521 Las Camas NE, Albuquerque NM, 87109 ▪ Phone: 505-507-7536 ▪ dcartronlaw@cybermesa.com

Attachment 6

Listing, Map, and Description

Storm Water Quality Features

City of Albuquerque Stormwater Quality Features 2019

N

SWQ Features

Dams

Detention Basins

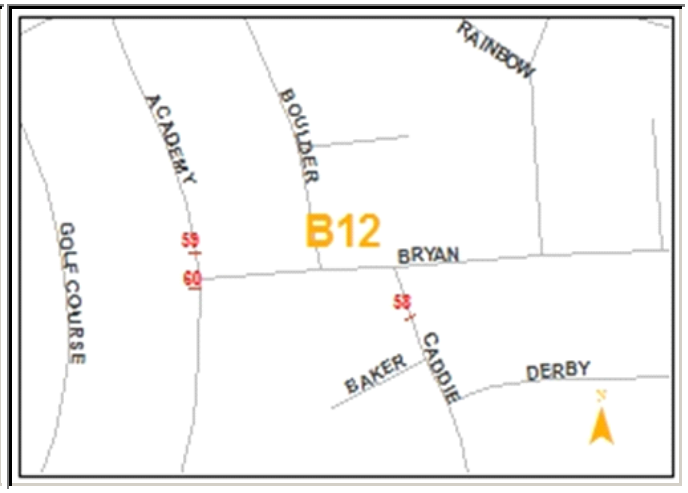
Cattle Guard Inlets

City Limits

0 1 2 4

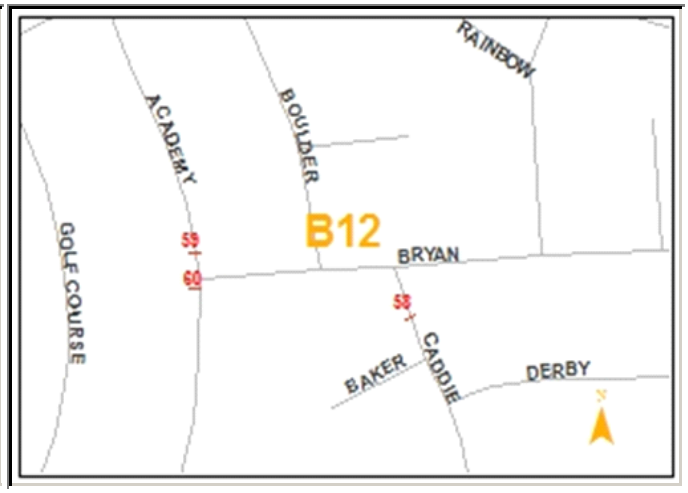
Miles

ACADEMY N BRYAN NW



NO	59
ZONE	B12
LENGTH, ft	30
WIDTH, in	42
YEAR BUILT	2007
PROJECT #	26-5828.91-07

ACADEMY S BRYAN NW

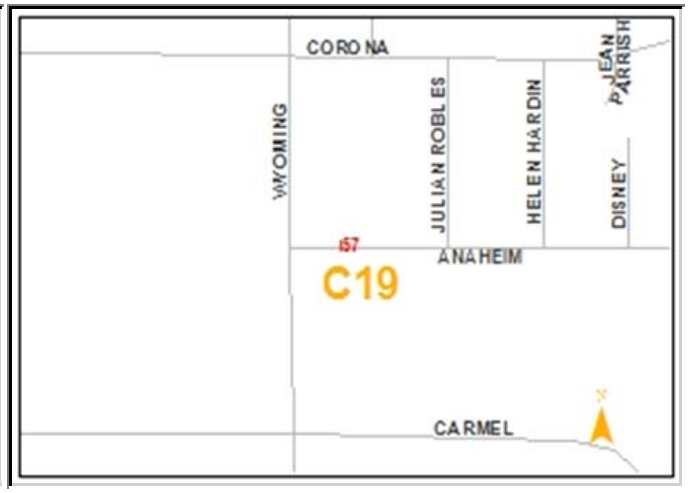


NO	60
ZONE	B12
LENGTH, ft	31
WIDTH, in	42
YEAR BUILT	2007
PROJECT #	26-5828.91-07

ACOMA E ELIZABETH SE

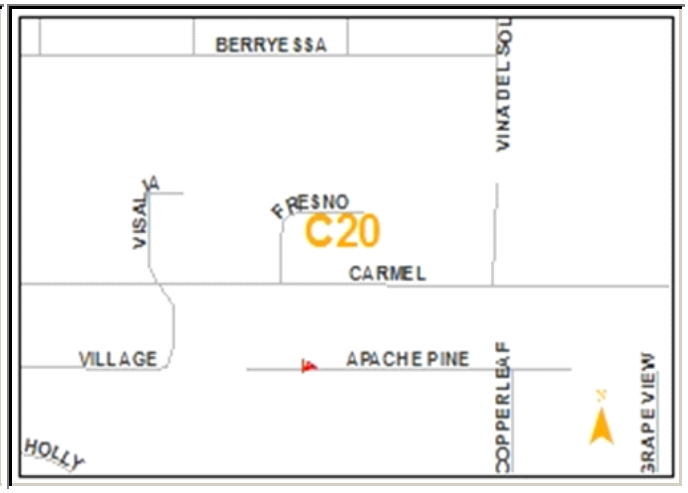
NO	45
ZONE	L21
LENGTH, ft	30
WIDTH, in	42
YEAR BUILT	2001
PROJECT #	26-6366.91-01

ANAHEIM E WYOMING NE



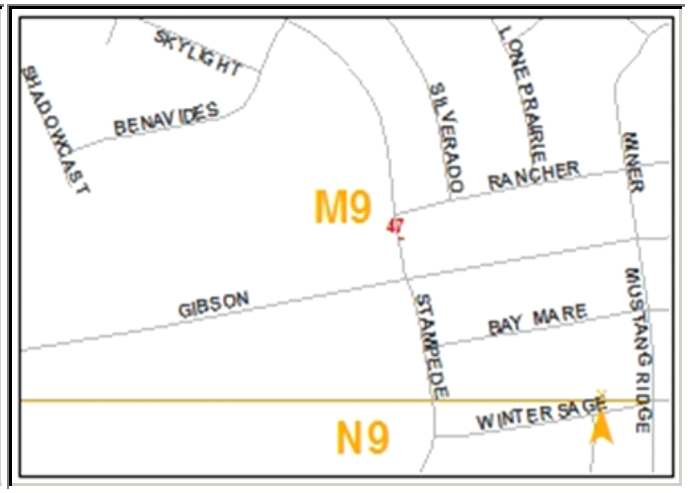
NO	57
ZONE	C19
LENGTH, ft	38
WIDTH, in	42
YEAR BUILT	2007
PROJECT #	26-6445.02-07

APACHE PINE W COPPERLEAF NE



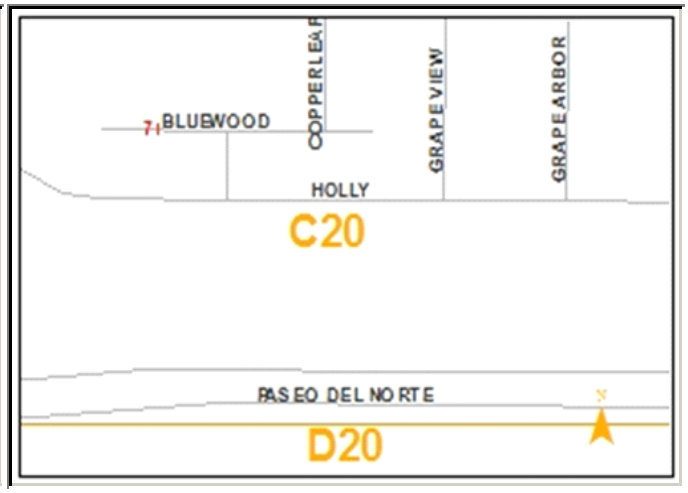
NO	4
ZONE	C20
LENGTH, ft	23
WIDTH, in	42
YEAR BUILT	2004
PROJECT #	26-7084.81-04

BARBADOS N GIBSON SW



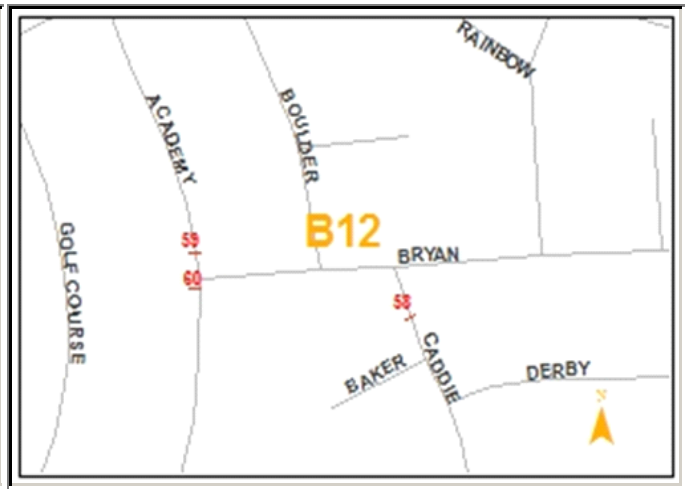
NO	47
ZONE	M09
LENGTH, ft	20
WIDTH, in	42
YEAR BUILT	2004
PROJECT #	26-6456.81-04

BLUEWOOD W COPPERLEAF NE



NO	7
ZONE	C20
LENGTH, ft	22
WIDTH, in	42
YEAR BUILT	2004
PROJECT #	26-7084.81-04

CADDIE SOUTH OF BRYAN NW

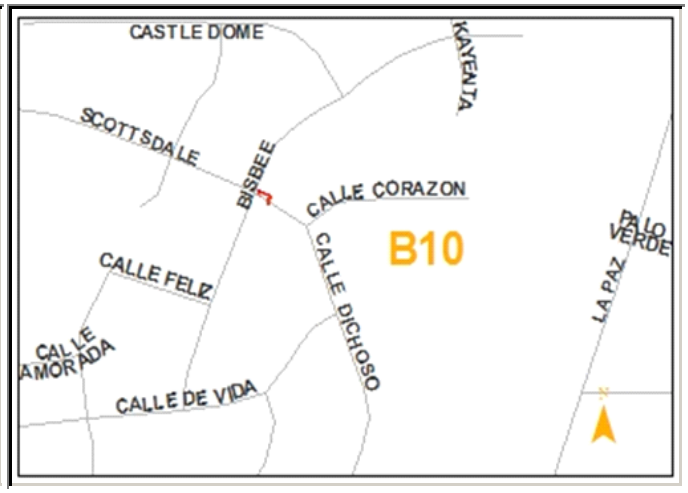


NO	58
ZONE	B12
LENGTH, ft	29
WIDTH, in	42
YEAR BUILT	2007
PROJECT #	26-5828.91-07

CALLE DE ENTRADA S CORTE DEL VIENTO NW

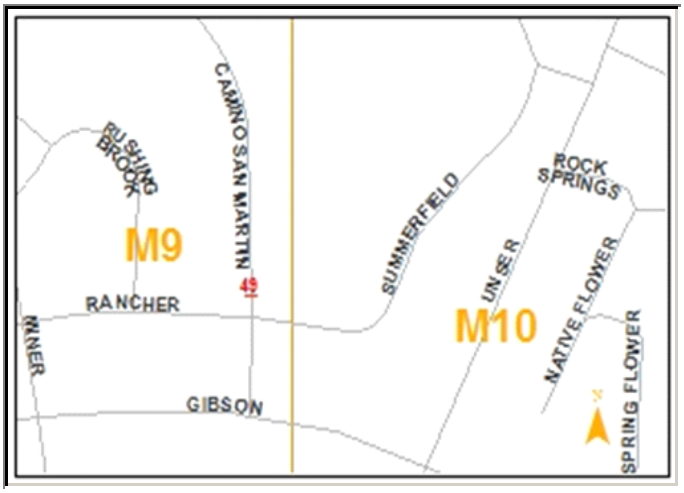
NO	18
ZONE	H09
LENGTH, ft	40
WIDTH, in	42
YEAR BUILT	2004
PROJECT #	26-6915.81-04

CALLE DICHOSO EAST OF BISBEE NW



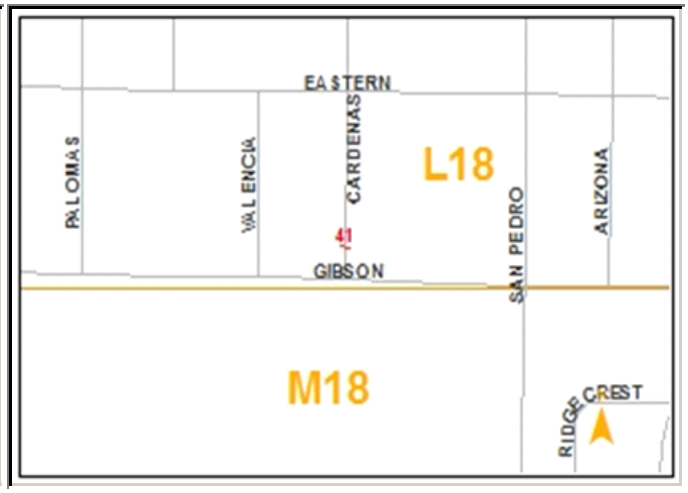
NO	1
ZONE	B10
LENGTH, ft	29
WIDTH, in	42
YEAR BUILT	2002
PROJECT #	26-6416.81-02

CAMINO SAN MARTIN N RANCHER SW



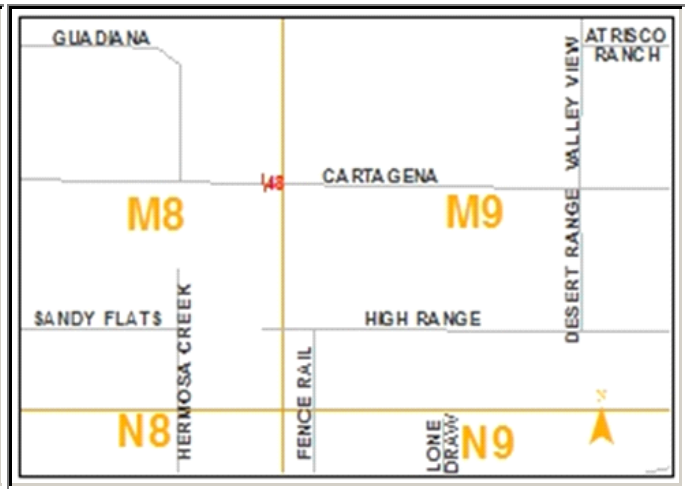
NO	49
ZONE	M10
LENGTH, ft	33
WIDTH, in	42
YEAR BUILT	2004
PROJECT #	26-6456.81-04

CARDENAS N GIBSON SE



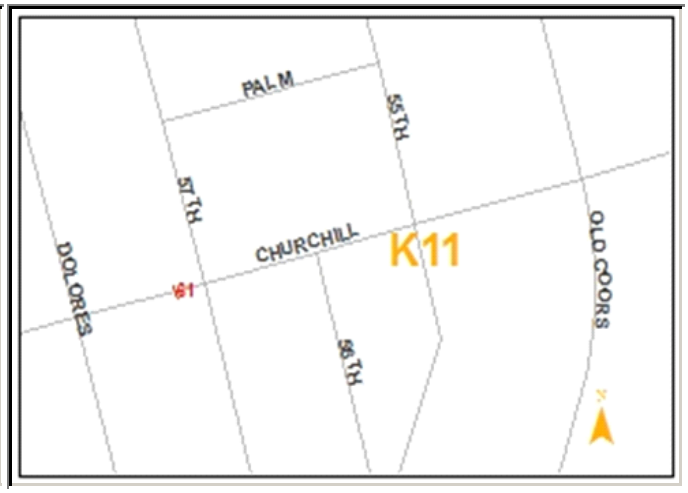
NO	41
ZONE	L18
LENGTH, ft	43
WIDTH, in	42
YEAR BUILT	1997
PROJECT #	26-2363.90

CARTAGENA E MESSINA SW



NO	48
ZONE	M09
LENGTH, ft	33
WIDTH, in	42
YEAR BUILT	2005
PROJECT #	26-6993.85-05

CHURCHILL W 57TH ST SW

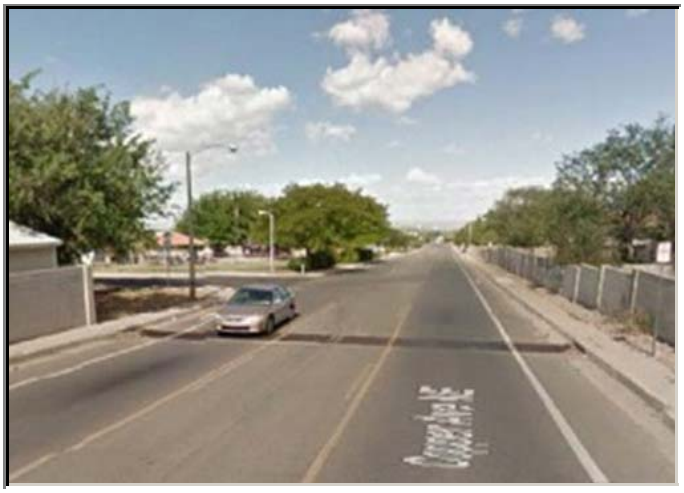


NO	61
ZONE	K11
LENGTH, ft	32
WIDTH, in	42
YEAR BUILT	2007
PROJECT #	26-7219.02-07

COCHITI E ELIZABETH SE

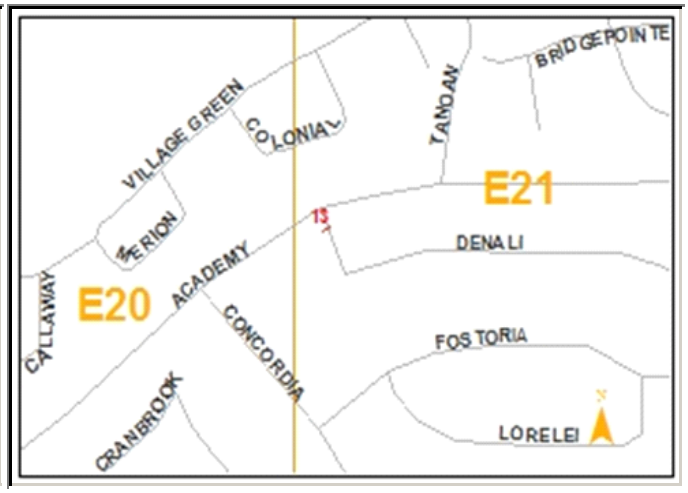
NO	44
ZONE	L21
LENGTH, ft	30
WIDTH, in	42
YEAR BUILT	2001
PROJECT #	26-6366.91-01

COPPER W BURMA NE



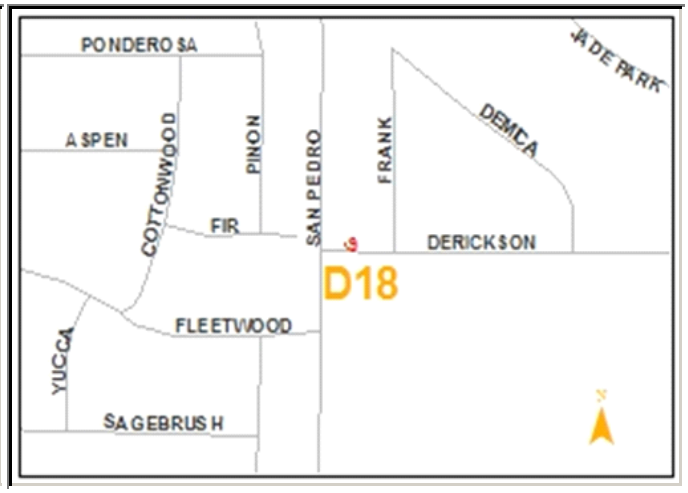
NO	37
ZONE	K22
LENGTH, ft	49
WIDTH, in	42
YEAR BUILT	1972
PROJECT #	10-178-72

DENALI S ACADEMY NE



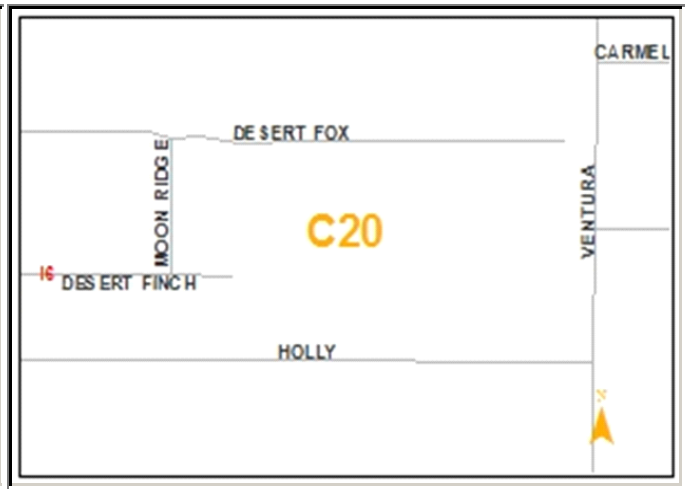
NO	13
ZONE	E21
LENGTH, ft	30
WIDTH, in	42
YEAR BUILT	1989
PROJECT #	26-3344-90

DERICKSON E SAN PEDRO NE



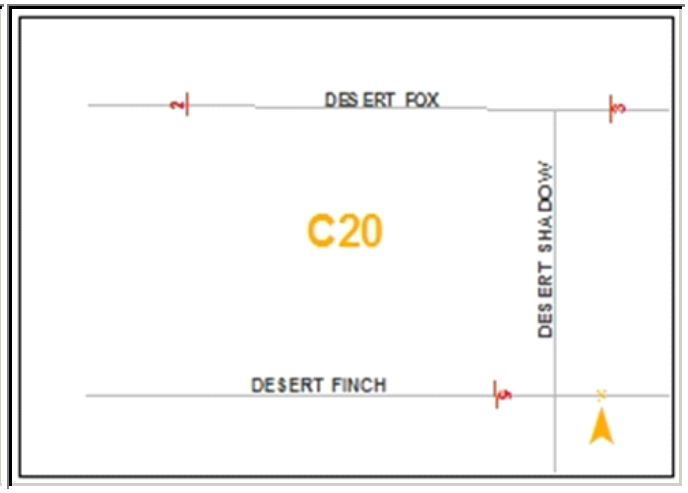
NO	9
ZONE	D18
LENGTH, ft	12
WIDTH, in	42
YEAR BUILT	2006
PROJECT #	26-7168.02-06

DESERT FINCH E DESERT SHADOW NE



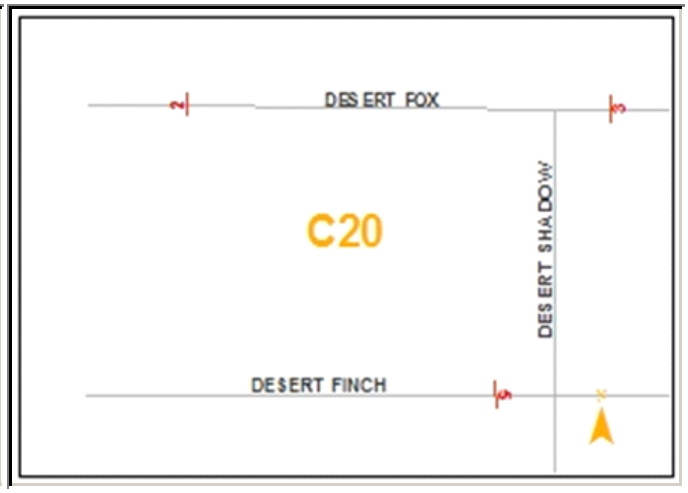
NO	6
ZONE	C20
LENGTH, ft	23
WIDTH, in	42
YEAR BUILT	2004
PROJECT #	26-7084.81-04

DESERT FINCH W DESERT SHADOW NE



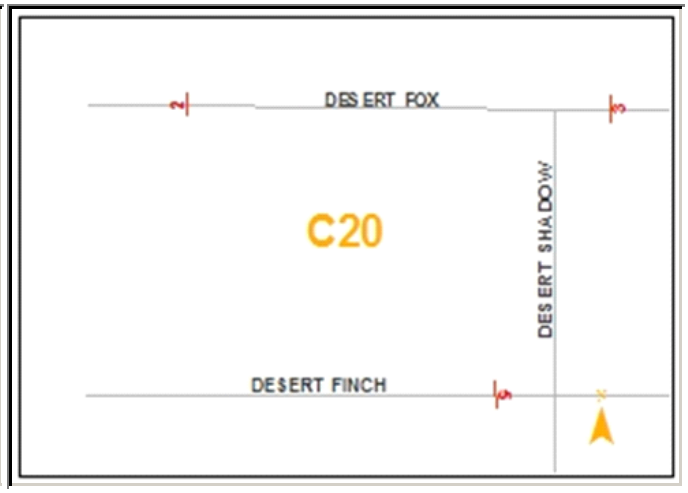
NO	5
ZONE	C20
LENGTH, ft	23
WIDTH, in	42
YEAR BUILT	2004
PROJECT #	26-7084.81-04

DESERT FOX E DESERT SHADOW NE



NO	3
ZONE	C20
LENGTH, ft	24
WIDTH, in	42
YEAR BUILT	2004
PROJECT #	26-6948.81-04

DESERT FOX W DESERT SHADOW NE

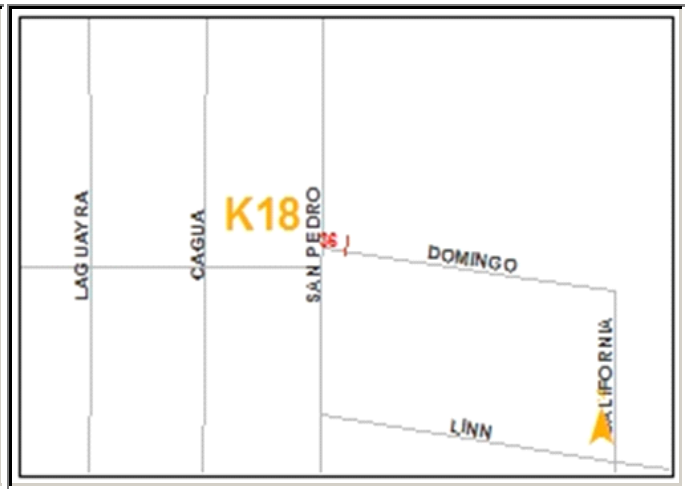


NO	2
ZONE	C20
LENGTH, ft	20
WIDTH, in	42
YEAR BUILT	2004
PROJECT #	26-6948.81-04

DESERT MAIZE S ROUND ROCK SW

NO	39
ZONE	L09
LENGTH, ft	25
WIDTH, in	42
YEAR BUILT	2004
PROJECT #	26-7133.81-04

DOMINGO E SAN PEDRO NE

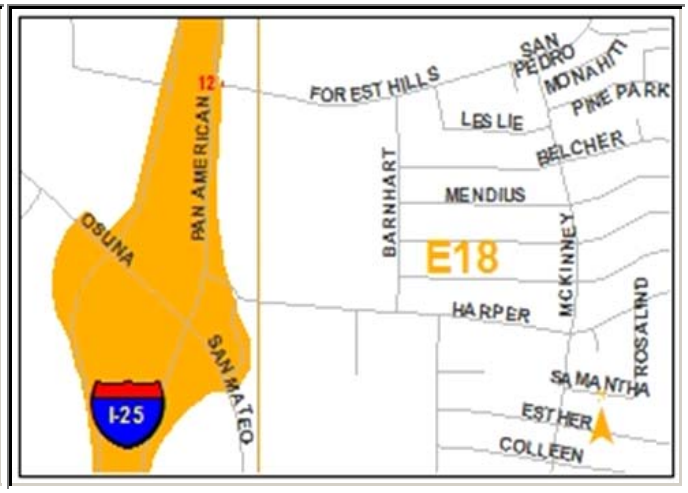


NO	36
ZONE	K18
LENGTH, ft	43
WIDTH, in	42
YEAR BUILT	1997
PROJECT #	26-4610.90-97

EAGLE RIVER E ROARING FORK PL NW

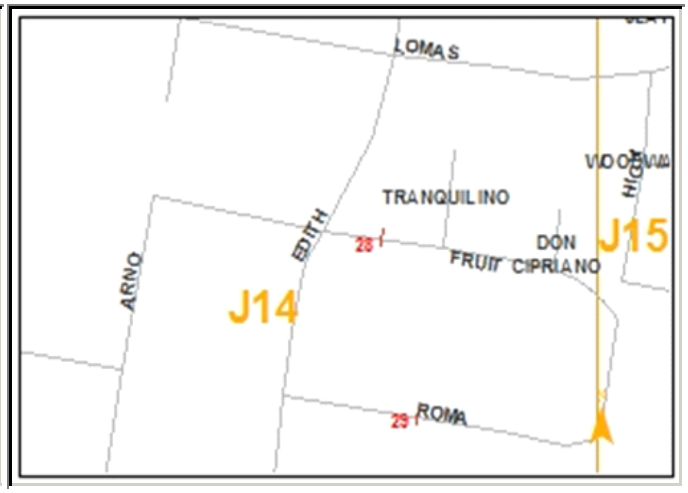
NO	62
ZONE	H09
LENGTH, ft	29
WIDTH, in	42
YEAR BUILT	2007
PROJECT #	26-5453.83-07

FOREST HILLS E PAN AMERICAN NE



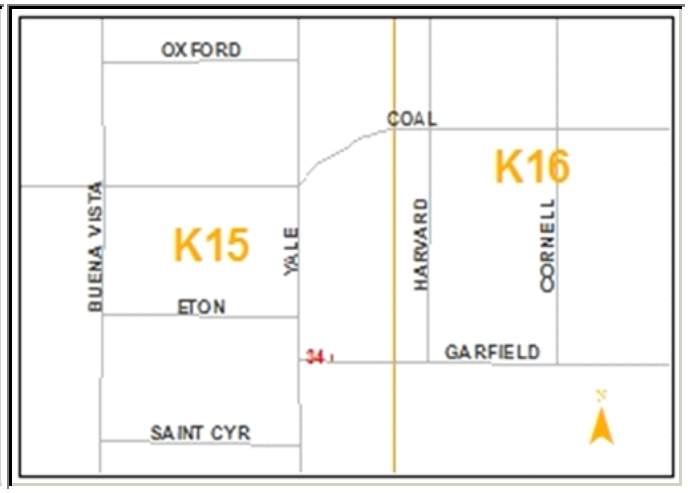
NO	12
ZONE	E17
LENGTH, ft	38
WIDTH, in	42
YEAR BUILT	1983
PROJECT #	26-1460-83

FRUIT E EDITH NE



NO	28
ZONE	J14
LENGTH, ft	43
WIDTH, in	42
YEAR BUILT	1974
PROJECT #	10-002-74

GARFIELD E YALE SE

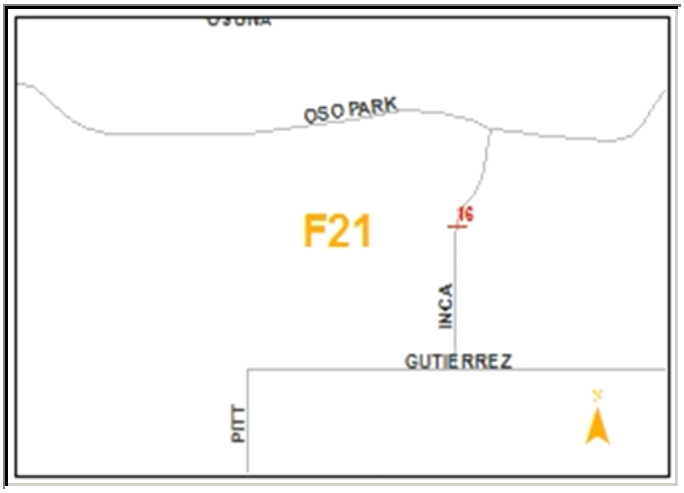


NO	34
ZONE	K15
LENGTH, ft	20
WIDTH, in	42
YEAR BUILT	1997
PROJECT #	26-4522.90-97

GLENRIO W 68 TH ST NW

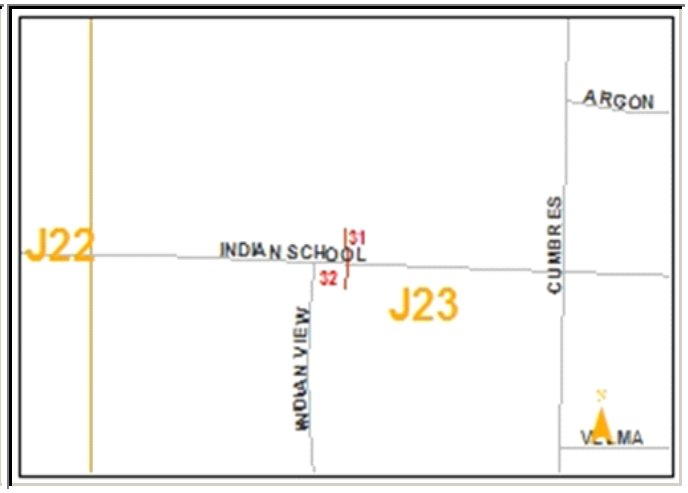
NO	27
ZONE	J10
LENGTH, ft	6
WIDTH, in	42
YEAR BUILT	2004
PROJECT #	26-5381.04-04

INCA S OSOPARK NE



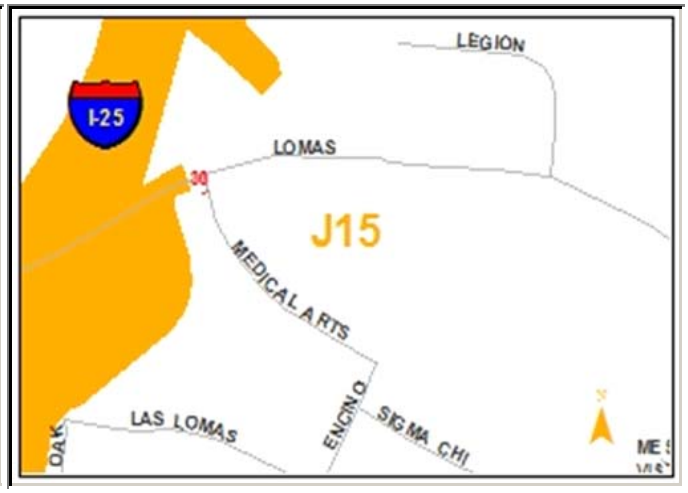
NO	16
ZONE	F21
LENGTH, ft	32
WIDTH, in	42
YEAR BUILT	2002
PROJECT #	26-6329.81-02

INDIAN SCHOOL EB E INDIAN VIEW NE



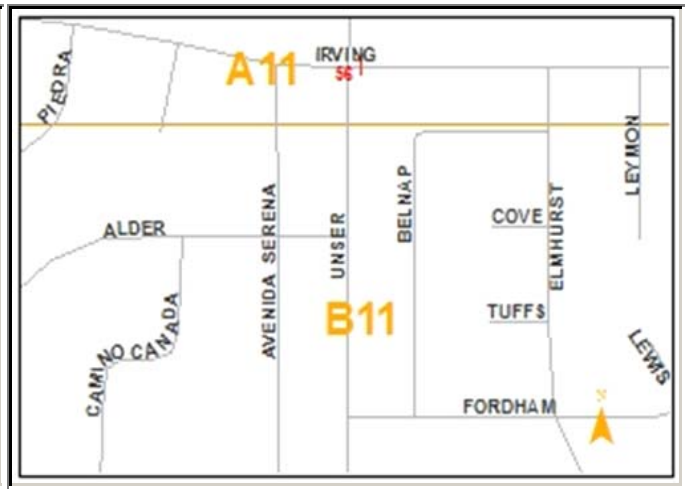
NO	32
ZONE	J23
LENGTH, ft	28
WIDTH, in	42
YEAR BUILT	1987
PROJECT #	26-2996-87

INDIAN SCHOOL WB E INDIAN VIEW NE



NO	31
ZONE	J23
LENGTH, ft	38
WIDTH, in	42
YEAR BUILT	1987
PROJECT #	26-2996-87

IRVING EAST OF UNSER NW

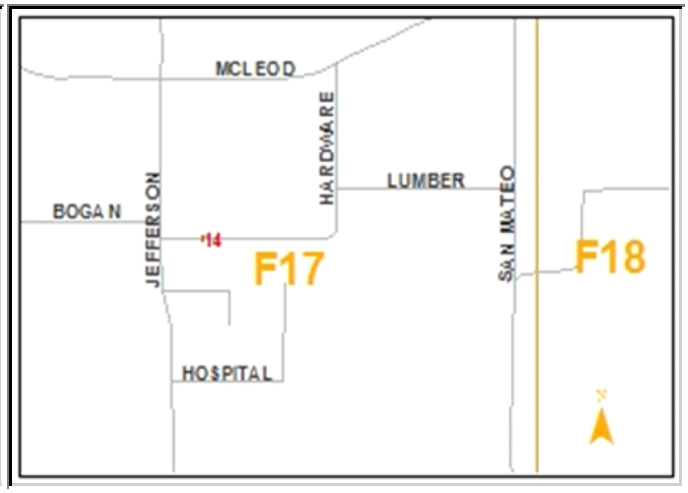


NO	56
ZONE	B11
LENGTH, ft	64
WIDTH, in	42
YEAR BUILT	2007
PROJECT #	26-7497.81-07

JUAN TABO S BUENA VENTURA NE

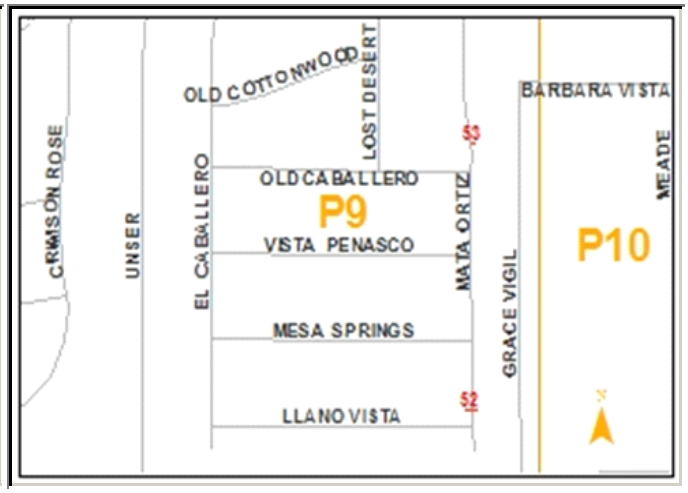
NO	38
ZONE	K21
LENGTH, ft	86
WIDTH, in	42
YEAR BUILT	1975
PROJECT #	10-183-75

LUMBER E JEFFERSON NE



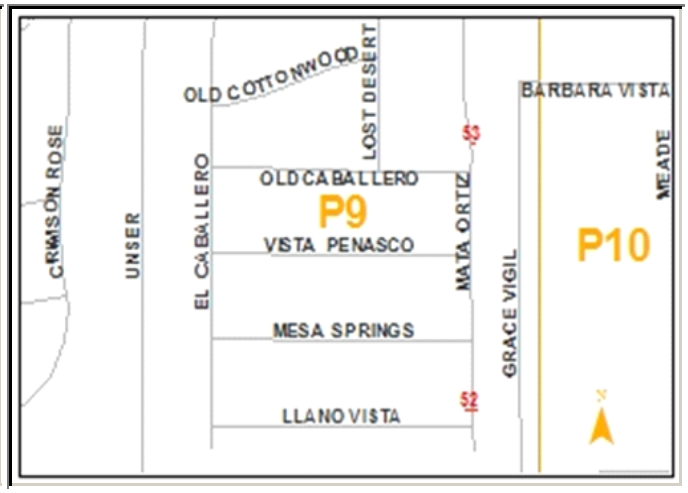
NO	14
ZONE	F17
LENGTH, ft	44
WIDTH, in	42
YEAR BUILT	1976
PROJECT #	20-020-76

MATA ORTIZ N LLANO VISTA SW



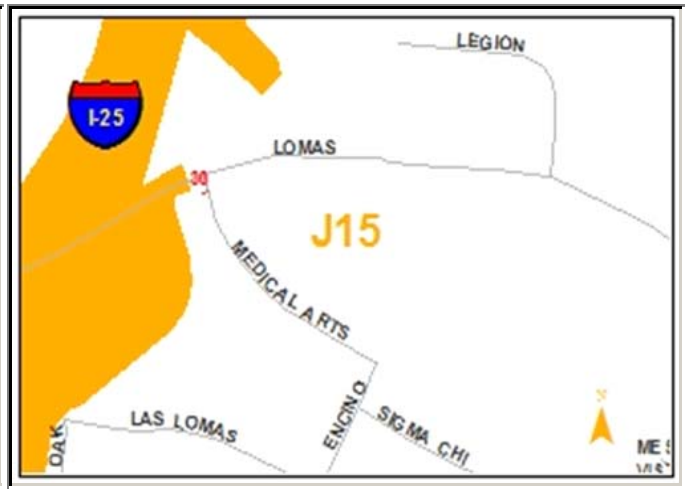
NO	52
ZONE	P09
LENGTH, ft	32
WIDTH, in	42
YEAR BUILT	2007
PROJECT #	26-5768.91-06

MATA ORTIZ N OLD CABALLERO SW



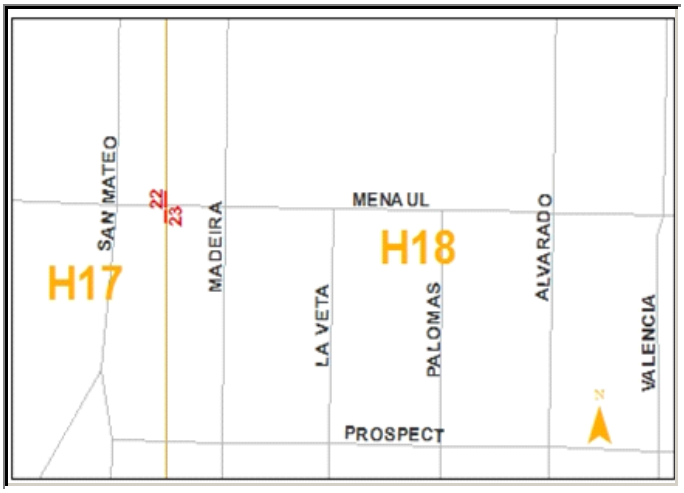
NO	53
ZONE	P09
LENGTH, ft	35
WIDTH, in	42
YEAR BUILT	2007
PROJECT #	26-5768.91-06

MEDICAL ARTS S LOMAS NE



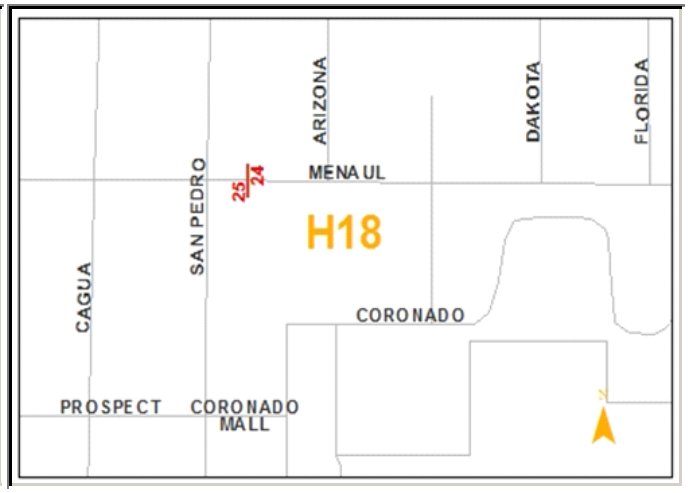
NO	30
ZONE	J15
LENGTH, ft	30
WIDTH, in	42
YEAR BUILT	1992
PROJECT #	26-3903.90-92

MENAUL EB E SAN MATEO NE



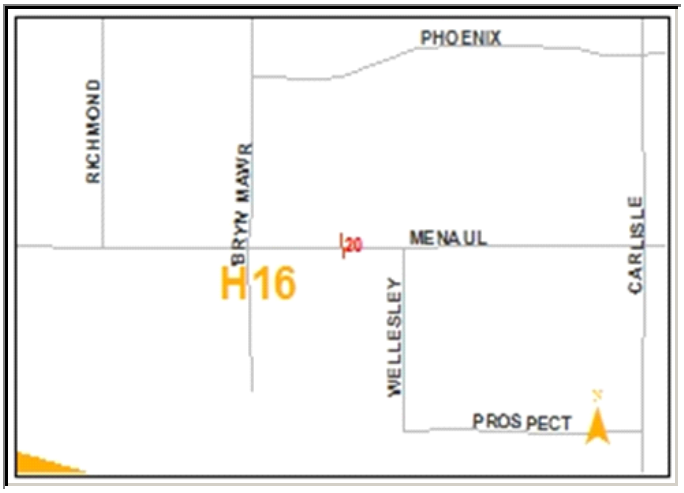
NO	23
ZONE	H18
LENGTH, ft	18
WIDTH, in	42
YEAR BUILT	1972
PROJECT #	08-172B-72

MENAUL EB E SAN PEDRO NE



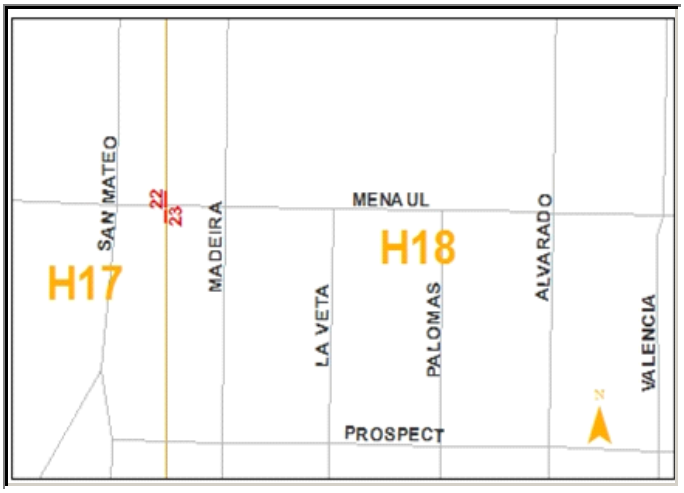
NO	25
ZONE	H18
LENGTH, ft	22
WIDTH, in	42
YEAR BUILT	1972
PROJECT #	08-172B-72

MENAUL W CARLISLE NE



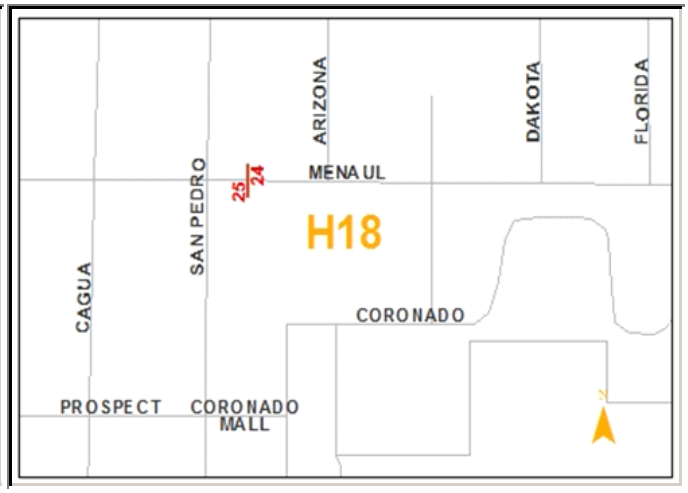
NO	20
ZONE	H16
LENGTH, ft	90
WIDTH, in	42
YEAR BUILT	1968
PROJECT #	08-002-68

MENAUL WB E SAN MATEO NE



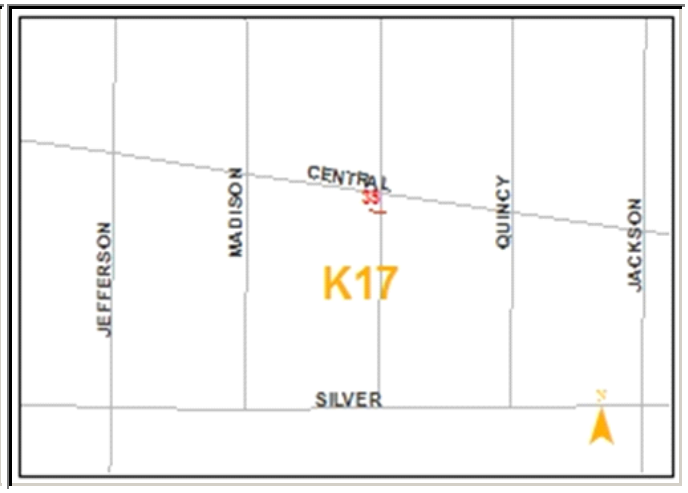
NO	22
ZONE	H18
LENGTH, ft	71
WIDTH, in	42
YEAR BUILT	1972
PROJECT #	08-172B-72

MENAUL WB E SAN PEDRO NE



NO	24
ZONE	H18
LENGTH, ft	74
WIDTH, in	42
YEAR BUILT	1972
PROJECT #	08-172B-72

MONROE S CENTRAL NE

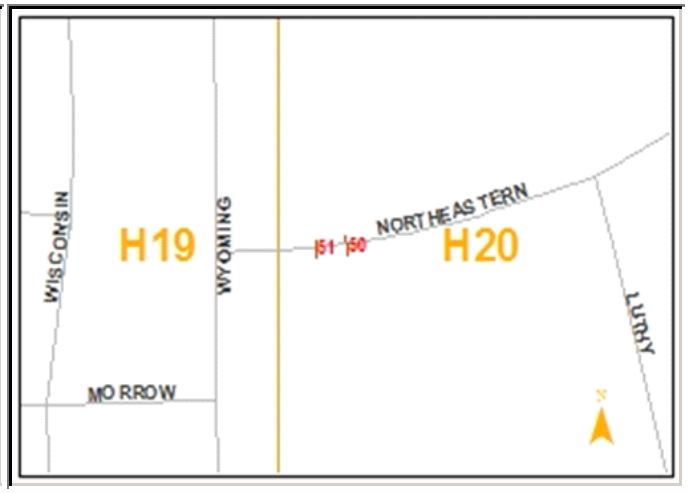


NO	35
ZONE	K17
LENGTH, ft	40
WIDTH, in	42
YEAR BUILT	1996
PROJECT #	432490

Montano plazw w coors nw

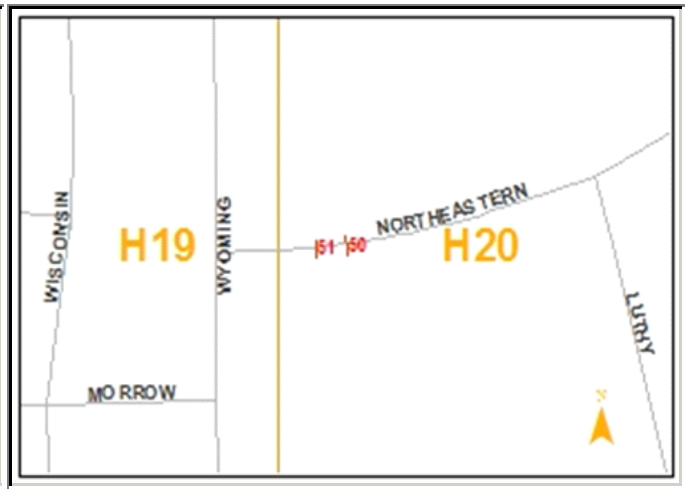
NO	40
ZONE	E12
LENGTH, ft	
WIDTH, in	
YEAR BUILT	
PROJECT #	

NORTHEASTERN E WYOMING NE-FAR



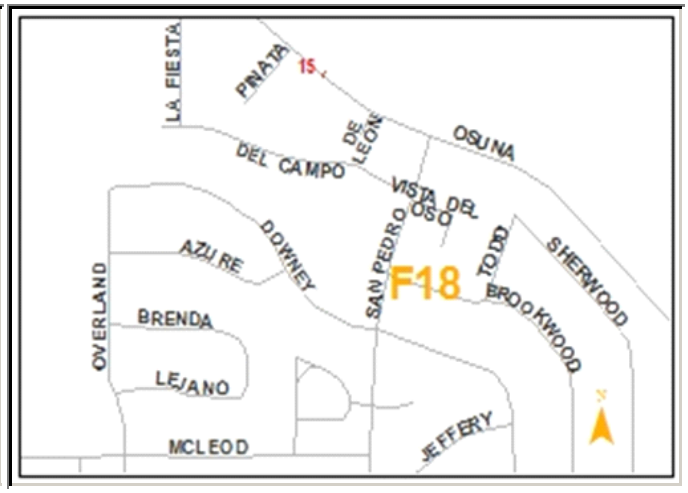
NO	50
ZONE	H20
LENGTH, ft	43
WIDTH, in	42
YEAR BUILT	2006
PROJECT #	26-5768.91-06

NORTHEASTERN E WYOMING NE



NO	51
ZONE	H20
LENGTH, ft	41
WIDTH, in	42
YEAR BUILT	2006
PROJECT #	26-5768.91-06

OSUNA W SAN PEDRO NE



NO	15
ZONE	F18
LENGTH, ft	41
WIDTH, in	42
YEAR BUILT	1971
PROJECT #	10-176-71

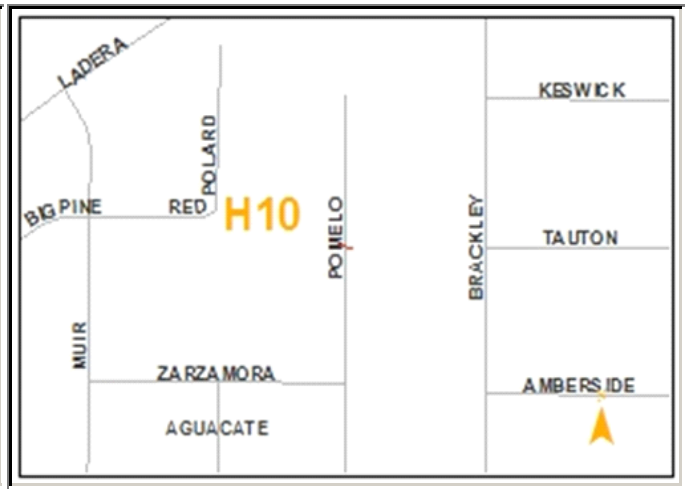
PASEO DEL NORTE NORTH OF PARDISE NW

NO	55
ZONE	B11
LENGTH, ft	57
WIDTH, in	42
YEAR BUILT	2007
PROJECT #	26-7497.82-07

PATHWAY E VASSAR NE

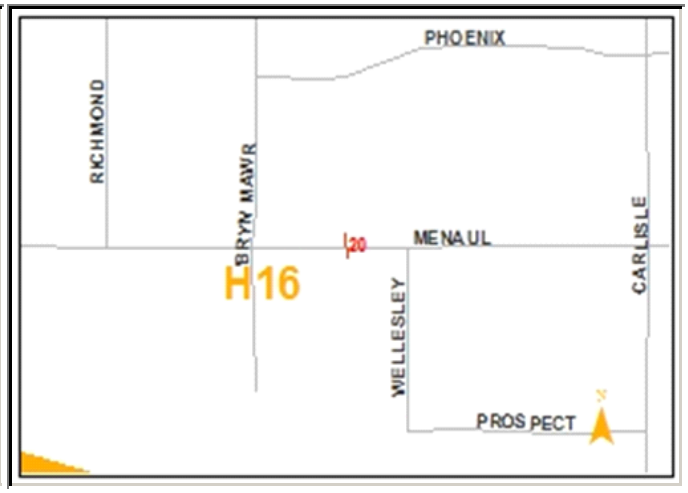
NO	17
ZONE	G16
LENGTH, ft	38
WIDTH, in	42
YEAR BUILT	2000
PROJECT #	26-5952.81-00

POMELO N ZARZAMORA NW



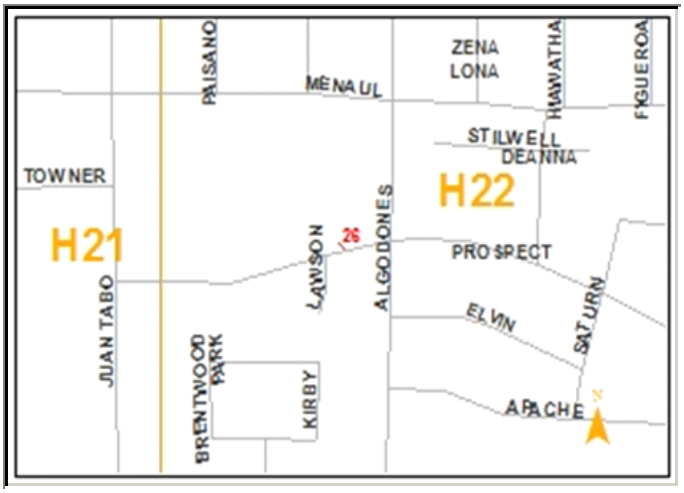
NO	19
ZONE	H10
LENGTH, ft	31
WIDTH, in	42
YEAR BUILT	2004
PROJECT #	26-6913.81-04

PRINCETON S MENAUL NE



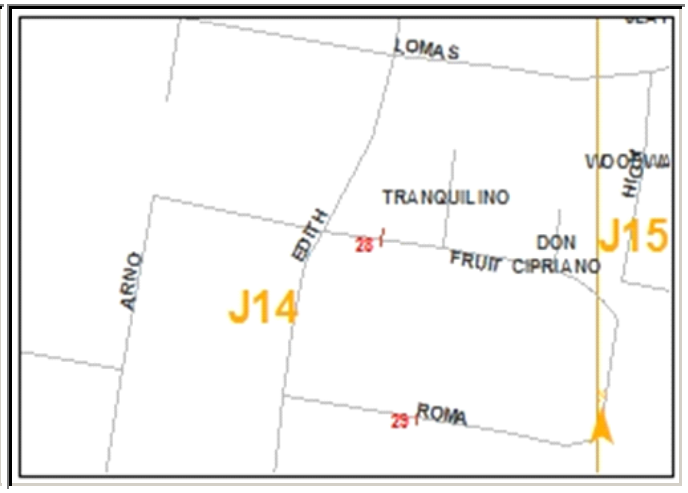
NO	21
ZONE	H16
LENGTH, ft	14
WIDTH, in	42
YEAR BUILT	1972
PROJECT #	08-171-72

PROSPECT E LAWSON NE



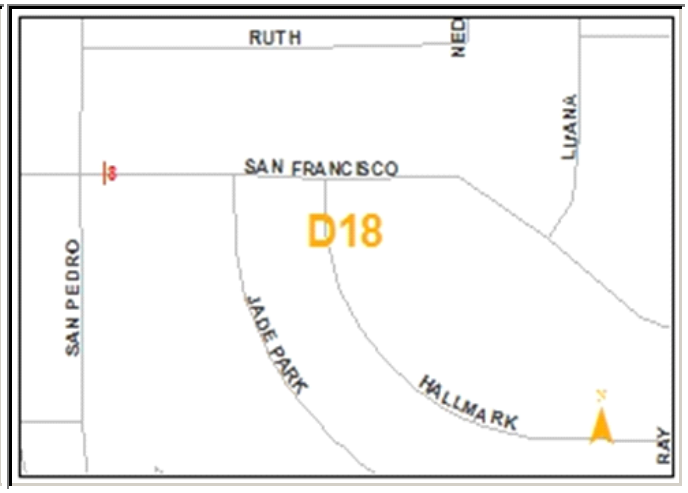
NO	26
ZONE	H22
LENGTH, ft	33
WIDTH, in	42
YEAR BUILT	1984
PROJECT #	26-1029-84

ROMA E EDITH NE



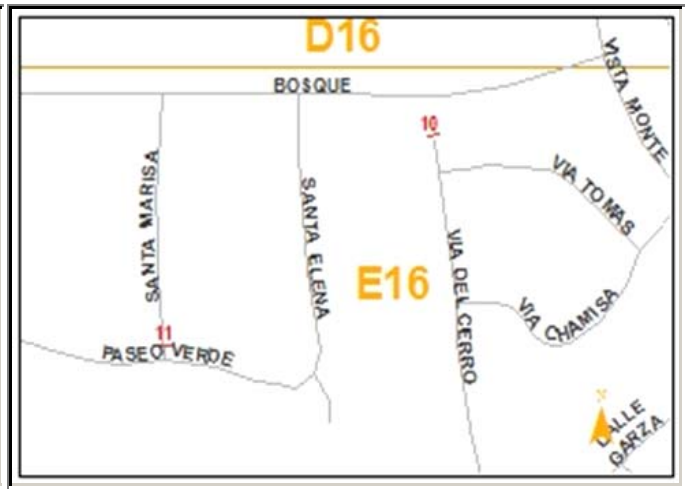
NO	29
ZONE	J14
LENGTH, ft	40
WIDTH, in	42
YEAR BUILT	1974
PROJECT #	10-002-74

SAN FRANCISCO E SAN PEDRO NE



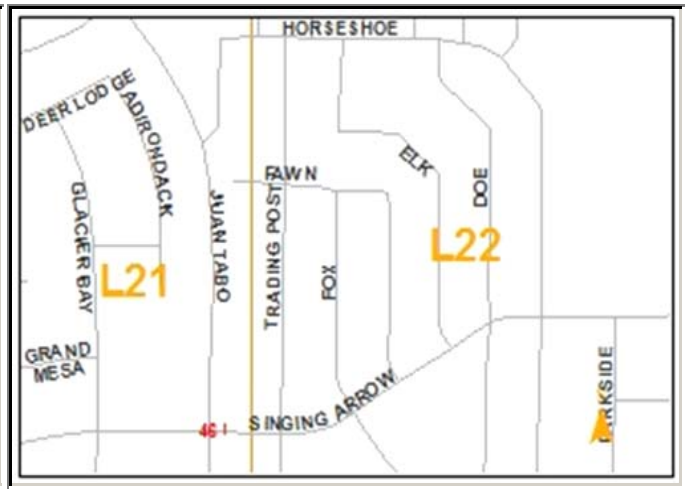
NO	8
ZONE	D18
LENGTH, ft	51
WIDTH, in	42
YEAR BUILT	2005
PROJECT #	26-7168.02-05

SANTA MARISA N PASEO VERDE NE



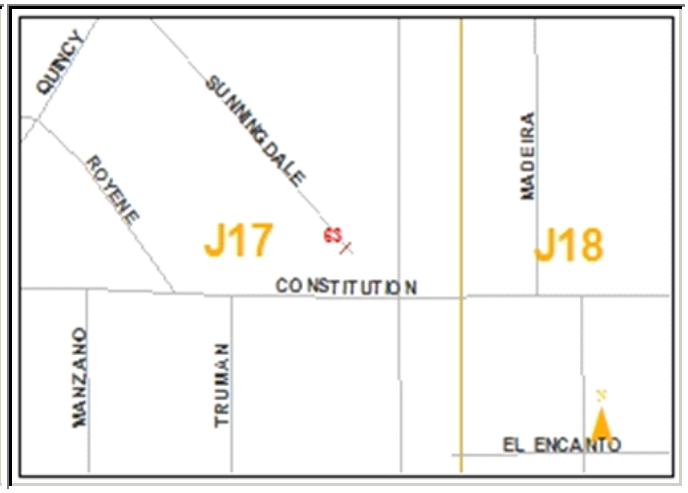
NO	11
ZONE	E16
LENGTH, ft	32
WIDTH, in	42
YEAR BUILT	2001
PROJECT #	26-6450.81-01

SINGING ARROW E JUAN TABO SE



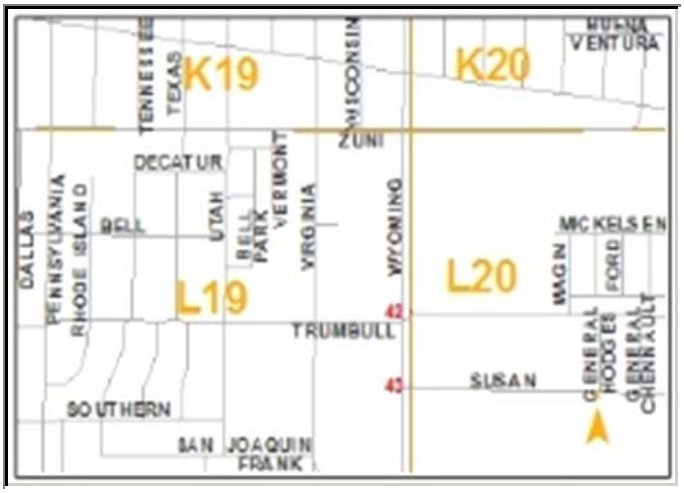
NO	46
ZONE	L22
LENGTH, ft	43
WIDTH, in	42
YEAR BUILT	1997
PROJECT #	26-4790.92-97

SUNNINGDALE E QUINCY NE



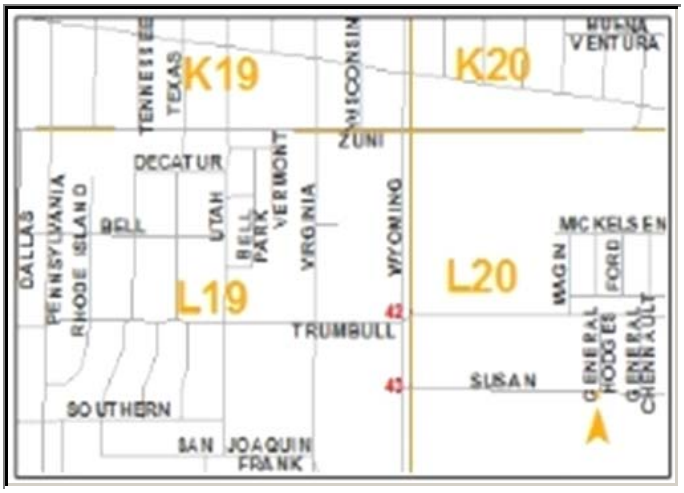
NO	63
ZONE	J17
LENGTH, ft	40
WIDTH, in	42
YEAR BUILT	1968
PROJECT #	08-006-68

SUSAN E WYOMING SE



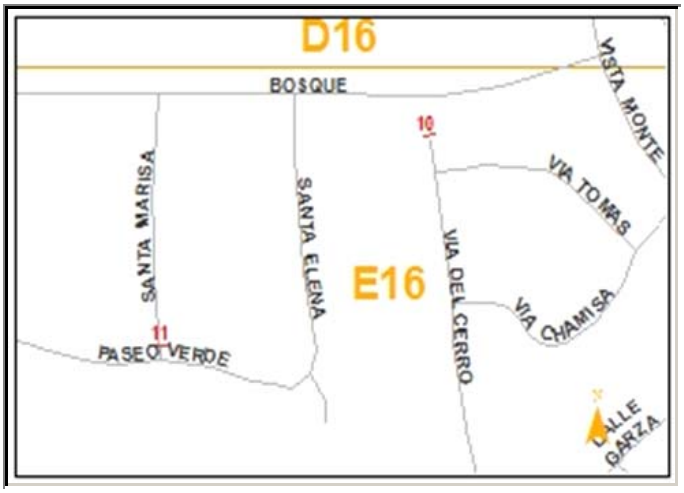
NO	43
ZONE	L20
LENGTH, ft	29
WIDTH, in	42
YEAR BUILT	1974
PROJECT #	12-001-74

TRUMBULL E WYOMING SE



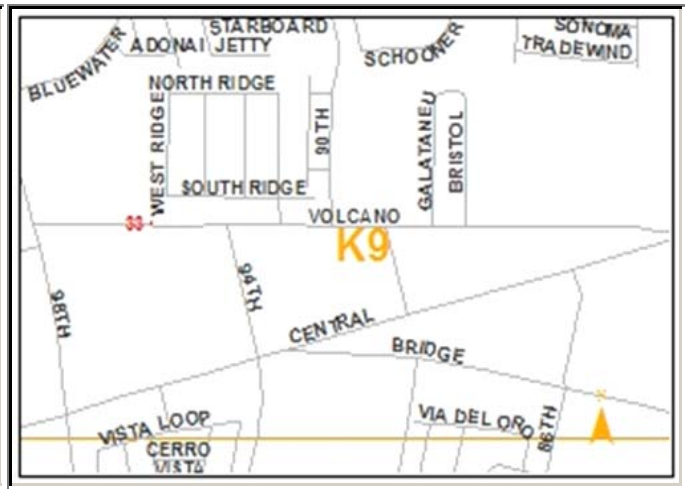
NO	42
ZONE	L20
LENGTH, ft	28
WIDTH, in	42
YEAR BUILT	1974
PROJECT #	12-001-74

VIADEL CERRO N VIA TOMAS NE



NO	10
ZONE	E16
LENGTH, ft	29
WIDTH, in	42
YEAR BUILT	2001
PROJECT #	26-6093.81-01

VOLCANO E 98TH ST NW



NO	33
ZONE	K09
LENGTH, ft	39
WIDTH, in	42
YEAR BUILT	1999
PROJECT #	26-5930.81-99

WATERSHED S WARM SPRINGS NW

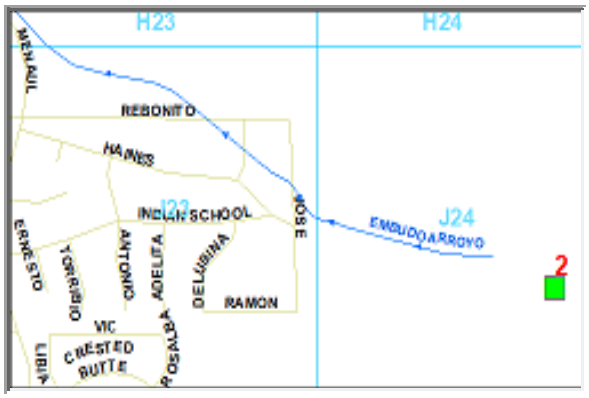
NO	54
ZONE	H09
LENGTH, ft	54
WIDTH, in	42
YEAR BUILT	200200
PROJECT #	26-7429.81-07

PONDS

ARROYO DEL OSO DETENTION DAM-HH

PondNo	1	CITY ZONE KEY	F-19
Location	OSUNA & LOUISIANA	CITY QUAD	NE
year built	1956		
Area, Acre	5.0	LastMaintDate	
InletSource	Bear Canion Arroyo E	OutletSource	cbc 6' H x 12' W- no trash rack
Note	High Hazard Dam	ID	16
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

EMBUDO DETENTION DAM-HH

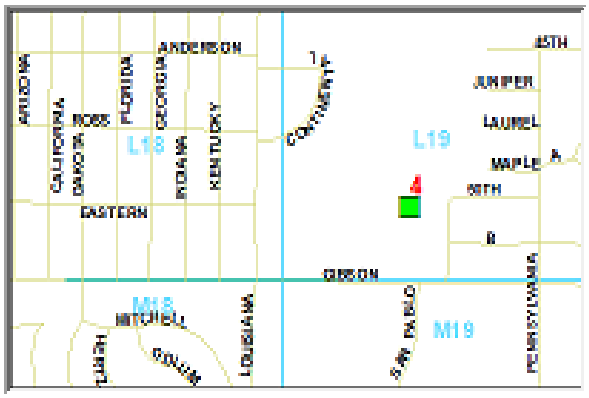


PondNo	2	CITY ZONE KEY	J-24
Location	EAST END OF INDIAN SCHOOL ROAD	CITY QUAD	NE
year built	1980		
Area, Acre	5.0	LastMaintDate	
InletSource	open space E	OutletSource	48" RCP W through a trash rack
Note	High Hazard Dam	ID	31
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

PIEDRA LISA DETENTION DAM

PondNo	3	CITY ZONE KEY	H-23
Location	EAST END OF MENAUL	CITY QUAD	NE
year built	1982		
Area, Acre	5.0	LastMaintDate	
InletSource	Piedra lisa arroyo and open space E	OutletSource	30" RCP W-through dmd ported riser
Note	Dam	ID	67
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

KIRTLAND DETENTION BASIN

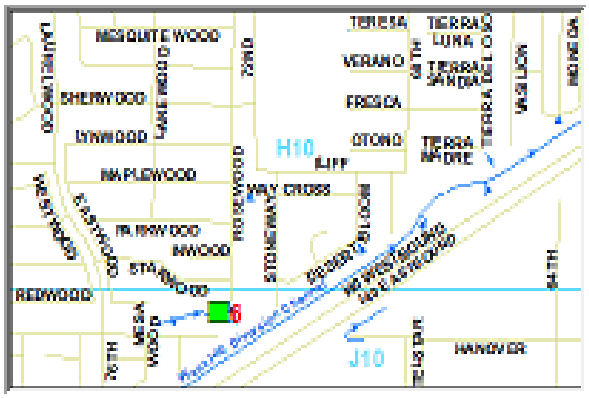


PondNo	4	CITY ZONE KEY	L-19
Location	NW GIBSON AND LOUISINA INSIDE THE KAFB	CITY QUAD	SE
year built	1985		
Area, Acre	3.0	LastMaintDate	
InletSource	24", 2@40", 60" RCP E	OutletSource	30"RCP W through a trash rack
Note	Dam, Access restrict	ID	43
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

MARIPOSA DETENTION BASIN-HH

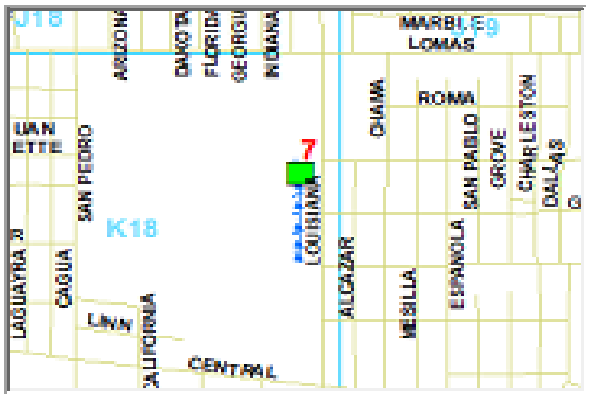
PondNo	5	CITY ZONE KEY	E-11
Location	TAYLOR RANCH ROAD & KATCHINA DRIVE	CITY QUAD	NW
year built	1983		
Area, Acre	33.8	LastMaintDate	
InletSource	60 ft W Mariposa arroyo W 2 @36 in , 30 in RCP N, 2 @36 in	OutletSource	8 ft w x 6 ft h cbc s - no trash screen
Note		ID	58
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

LAUELWOOD DETENTION BASIN



PondNo	6		CITY ZONE KEY	J-10	
Location	NW HANOVER/ I-40 (LAURELWOOD PARKWAY)		CITY QUAD	NW	
year built					
Area, Acre	3.0		LastMaintDate		
InletSource	30 in rcp N, 54 in rcp W		OutletSource	48 in rcp SE to W I-40 CH- through concrete box reverse slope pipes	
Note			ID	50	
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P				

EXPO NM LOUISIANA & CENTRAL

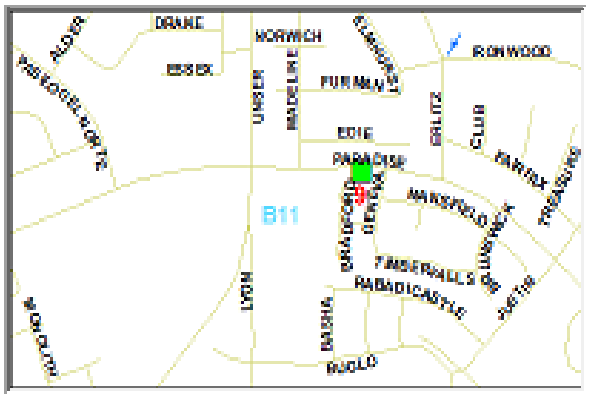


PondNo	7	CITY ZONE KEY	K-18
Location	FAIRGROUND LOUISIANA & CENTRAL	CITY QUAD	NE
year built			
Area, Acre	5.0	LastMaintDate	
InletSource	66 in and 90 in RCP E	OutletSource	36 in RCP NW- through concte box with reverse slope outlets
Note		ID	87
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

NORTH/SOUTH COORS DETENTION BASIN

PondNo	8	CITY ZONE KEY	L-10
Location	SW CORNER OF COORS & BRIDGE	CITY QUAD	SW
year built	1988		
Area, Acre	8.0	LastMaintDate	
InletSource	15 ft w tierra bayita channel w 72 in rcp e	OutletSource	3 rcp @54 in s- no trash screens
Note		ID	63
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

Paradise and Geneva NW



PondNo	9	CITY ZONE KEY	B-11
Location	Paradise and Geneva NW	CITY QUAD	NW
year built			
Area, Acre	1.0	LastMaintDate	
InletSource	8 ft w swell w, 18 in rcp s	OutletSource	24 in rcp e through inlet grates
Note		ID	36
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

RENAISSANCE DETENTION DAM

PondNo	10	CITY ZONE KEY	F-15
Location	0.2 M W OF RENAISSANCE/MONTGOM	CITY QUAD	NE
year built	1985		
Area, Acre	3.7	LastMaintDate	
InletSource	84 in rcp n, 24 in rcp e	OutletSource	18 in rcp n through a trash rack
Note		ID	74
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

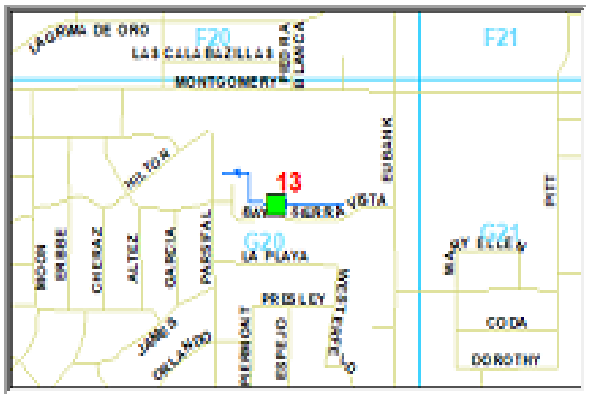
ODELIA POND

PondNo	11	CITY ZONE KEY	J-15
Location	NW INDIAN SCHOOL AND I-25	CITY QUAD	NE
year built			
Area, Acre	10.0	LastMaintDate	
InletSource	3 rcp @72 in (6 ft) e	OutletSource	30 in rcp w through dmd ported riser
Note		ID	64
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

HIGHLAND

PondNo	12	CITY ZONE KEY	K-17
Location	NE JEFFERSON / COAL	CITY QUAD	SW
year built			
Area, Acre	3.0	LastMaintDate	
InletSource	42 in rcp n	OutletSource	78 in rcp w through a pyrimid type trash screen
Note		ID	40
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

HILTON-SIERRA VISTA-EUBANK-MONTG.

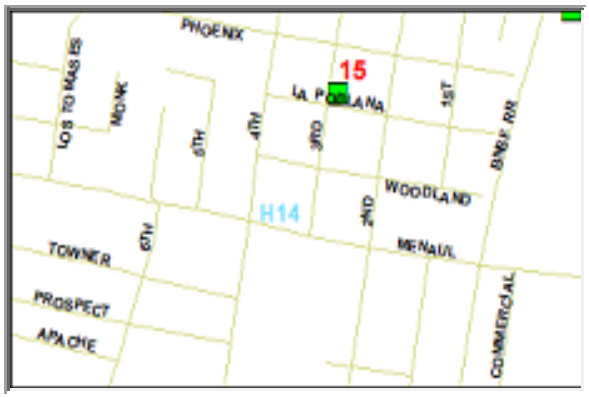


PondNo	13	CITY ZONE KEY	G-20
Location	END OF SIERRA VISTA CT	CITY QUAD	NE
year built			
Area, Acre	3.0	LastMaintDate	
InletSource	30 in rcp e, 15 ft w channel s	OutletSource	36 in rcp e through a trash rack
Note		ID	41
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

COORS-BY-PASS BW ELESON and 7 BAR LP

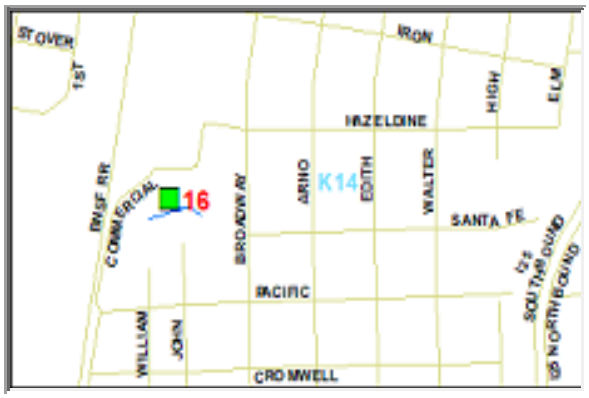
PondNo	14	CITY ZONE KEY	A-13
Location	SW COORS-BY-PASS & ELESON	CITY QUAD	NW
year built			
Area, Acre	3.0	LastMaintDate	
InletSource	42 in rcp nw,36 in rcp e, 24 in rcp se, 10 ft w run down w	OutletSource	24 in rcp ne through ported riser
Note		ID	79
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

3RD & LA POBLANA



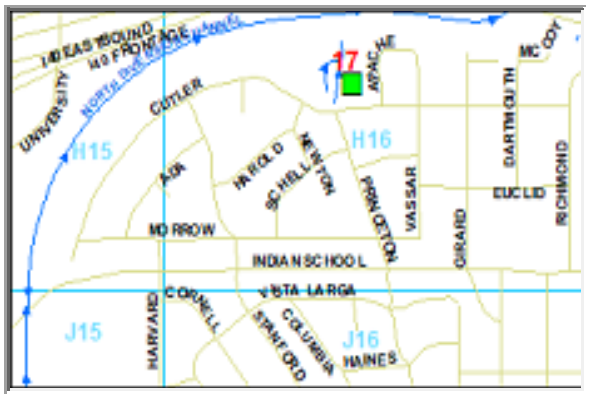
PondNo	15	CITY ZONE KEY	H-14
Location	3RD & LA POBLANA	CITY QUAD	NW
year built			
Area, Acre	1.0	LastMaintDate	
InletSource	30 ft rundown s	OutletSource	30 in rcp ?
Note		ID	98
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

SOUTH BROADWAY at JOHN-HAZELDINE



PondNo	16	CITY ZONE KEY	K-14
Location	S JOHN / HAZELDINE-COMMERCIAL -2 BLOKS S COAL	CITY QUAD	SW
year built			
Area, Acre	3.0	LastMaintDate	
InletSource	90 in rcp se,	OutletSource	30 in rcp se with trash rack
Note		ID	19
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

PRINCETON-CUTLER



PondNo	17	CITY ZONE KEY	H-16
Location	NE PRINCTON / CUTLER	CITY QUAD	NE
year built			
Area, Acre	3.0	LastMaintDate	
InletSource	48 in s, 60 in and 72 in n, 24 in ne	OutletSource	4 CI 24 in, 6 in CI PS-36, 2 -48 in rcp n to north of i-40-through trash screen
Note		ID	69
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

COMANCHE-3101 comanche ne

PondNo	18	CITY ZONE KEY	G-16
Location	NE COMANCHE / NORTH DIV CHANNEL	CITY QUAD	NE
year built	1967		
Area, Acre	2.0	LastMaintDate	
InletSource	2 rcp @ 36 in s	OutletSource	PS 2 CI pipes @12 in and 1 @4 in to NDC-through trash screen
Note	ps-35	ID	24
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

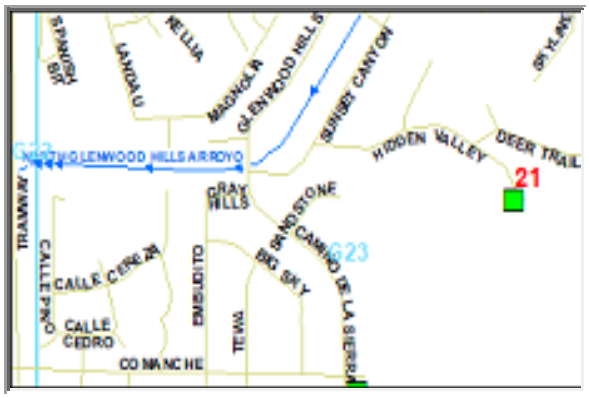
LOMAS

PondNo	19	CITY ZONE KEY	J-23
Location	0.2 MILE EAST OF TRAMWAY / LOMAS	CITY QUAD	NE
year built			
Area, Acre	6.0	LastMaintDate	
InletSource	10 ft w channel se, 36 in rcp nw, 48 in rcp e	OutletSource	10 ft w channel w
Note		ID	52
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

GLENWOOD HILLS at comanche and camino de la sierra ne

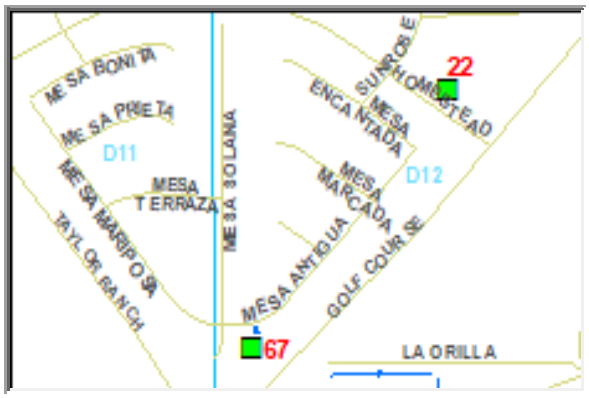
PondNo	20	CITY ZONE KEY	G-23
Location	SE CAMINO DE LA SIERRA / COMANCHE	CITY QUAD	NE
year built			
Area, Acre	0.7	LastMaintDate	
InletSource	watershed from e	OutletSource	20 ft wide spillway
Note		ID	34
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

HIDDEN VALLEY BASIN



PondNo	21	CITY ZONE KEY	G-23
Location	EAST END OF HIDDEN VALLEY	CITY QUAD	NE
year built	1975		
Area, Acre	2.0	LastMaintDate	
InletSource	watershed from e & s	OutletSource	54 in rcp w with security rack
Note		ID	39
X_Link			

PRAIRIE RIDGE POND



PondNo	22	CITY ZONE KEY	D-12
Location	NW HOMESTEAD / GOLF COURSE	CITY QUAD	NW
year built			
Area, Acre	1.4	LastMaintDate	
InletSource	42 in rcp w	OutletSource	18 in rcp s through perforated riser
Note		ID	68
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

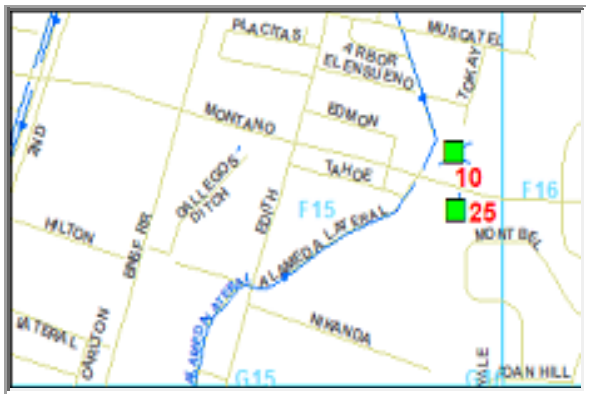
HALTER-HACKAMORE

PondNo	23	CITY ZONE KEY	L-08
Location	HALTER / HACKAMORE- NEAR TOWER/98TH ST	CITY QUAD	SW
year built			
Area, Acre	0.3	LastMaintDate	
InletSource	10 ft w rundown w	OutletSource	18 in rcp and 17 ft w spillway to snow vista arroyo e with pryamid type trash rack
Note		ID	38
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

COTTONWOOD RIDGE SUBDIVISION POND-priv?

PondNo	24	CITY ZONE KEY	A-14
Location	SE NM528 / COTTONWOOD	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	30
X_Link			

A.G.P POND (ALEXANDER / MONTANO)



PondNo	25	CITY ZONE KEY	F-16
Location	0.2 MILE SW MONTANO / RENAISSANCE	CITY QUAD	NE
year built			
Area, Acre	1.0	LastMaintDate	
InletSource	10 ft w rundown s, 30 in rcp ne	OutletSource	12 in rcp n through perforated standing pipe
Note		ID	8
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

EUCARIZ POND(BRIDGE / EUCARIZ)

PondNo	26	CITY ZONE KEY	L-11
Location	NW BRIDGE / YERBA	CITY QUAD	SW
year built			
Area, Acre	1.7	LastMaintDate	
InletSource	66 in rcp n, 10 ft w rundown n	OutletSource	30 in rcp- no trash rack
Note		ID	32
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

SUNSET GARDENS POND

PondNo	27	CITY ZONE KEY	K-11
Location	NE SUNSET GARDENS / PITTARD ????	CITY QUAD	SW
year built			
Area, Acre	0.1	LastMaintDate	
InletSource	2 sidewalk culverts each 6 in x 24 in	OutletSource	no outlet-no tras rack
Note		ID	78
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

REGINA POND (REGINA / BLUEWATER)

PondNo	28	CITY ZONE KEY	J-11
Location	REGINA PL	CITY QUAD	NW
year built	1992		
Area, Acre	2.0	LastMaintDate	
InletSource	30 in rcp w	OutletSource	18 in rcp s with grate inlet
Note		ID	73
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

SALVADOR & LUNA RW

PondNo	29	CITY ZONE KEY	K-11
Location	SW SALVADOR - LUNA	CITY QUAD	SW
year built			
Area, Acre	1.0	LastMaintDate	
InletSource	no	OutletSource	no
Note	rw land	ID	76
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

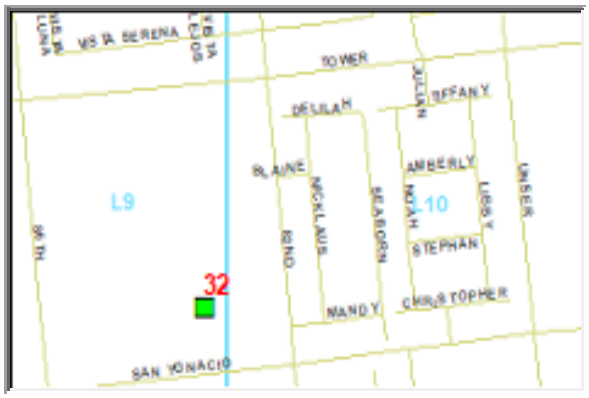
ALMAGORDO-I-40 EASMT

PondNo	30	CITY ZONE KEY	H-11
Location	SW OF ALMAGORDO AND BRIDGES	CITY QUAD	
year built			
Area, Acre	1.0	LastMaintDate	
InletSource	8 ft rundown n	OutletSource	30 in rcp s with inclined pipe trash rack
Note		ID	12
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

MANZANO MESA DAM

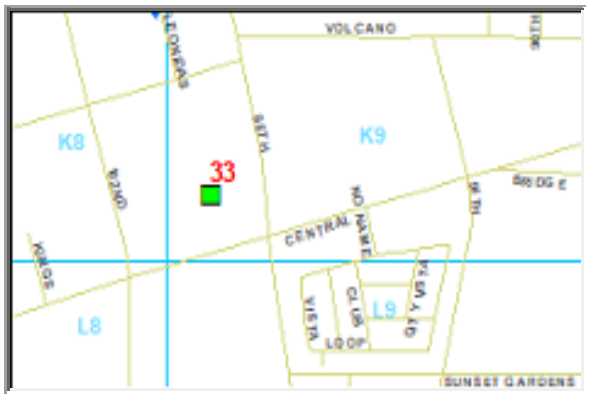
PondNo	31	CITY ZONE KEY	L-21
Location	NE CORNER INOVATION PKWY & STEPHEN MOODY	CITY QUAD	SE
year built	2002		
Area, Acre	12.2	LastMaintDate	
InletSource	78 in rcp ne, 48 in rcp w, 72 in rcp se, 24 in rcp s	OutletSource	72 in rcp w with beehive pyramid type trash rack two round horizontal screen bars
Note	dam	ID	57
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

TOWER-SAGE DAM



PondNo	32	CITY ZONE KEY	L-09
Location	SW CORNER 86TH & TOWER	CITY QUAD	SW
year built	2001		
Area, Acre	18.0	LastMaintDate	
InletSource	96 in rcp sw, 2 @18 in rcp w, 90 in rcp ne	OutletSource	36 in rcp se with two surge beehives pyramid type trash racks
Note	dam	ID	83
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

AMOLE DEL NORTE DAM-HH

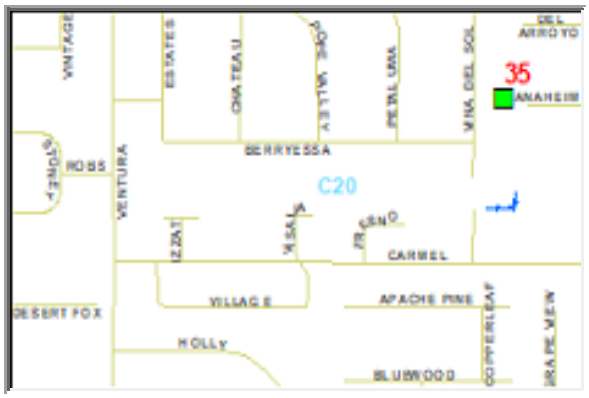


PondNo	33	CITY ZONE KEY	K-09
Location	NW CORNER CENTRAL & 98TH	CITY QUAD	NW
year built	1983		
Area, Acre	10.0	LastMaintDate	
InletSource	84 in rcp n	OutletSource	36 in rcp se with inclined pipe type trash rack
Note	high hazard dam	ID	13
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

MENAUL DETENTION DAM

PondNo	34	CITY ZONE KEY	H-15
Location	SE BROADWAY-CANDELARIA	CITY QUAD	NE
year built	1995		
Area, Acre	8.2	LastMaintDate	
InletSource	30 ft w broadbent channel s, 42 in rcp s, 8 ft w rundown s, 18 in	OutletSource	12 in pvc underdrain e, 12 in pvc under drain sw, and 24 in rcp nw, with ported riser and
Note	dam	ID	60
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

ANAHIM & HALBROOK easement

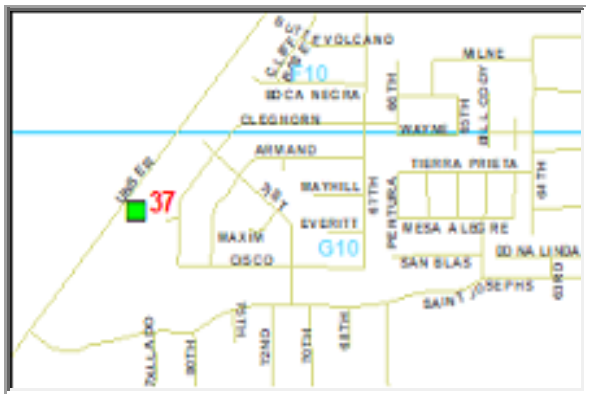


PondNo	35	CITY ZONE KEY	C-20
Location	0.25 M W HALBROOK	CITY QUAD	NE
year built			
Area, Acre	0.1	LastMaintDate	
InletSource	open space e, 4 inlets @ 2 ft x 18 ft inlets	OutletSource	24 in rcp with concrete box type riser and horizontal trash rack
Note		ID	14
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

LITTLE LEAGUE FIELD

PondNo	36	CITY ZONE KEY	G-16
Location	COMANCHE AND BRYNMAWR	CITY QUAD	NE
year built			
Area, Acre	9.8	LastMaintDate	
InletSource	10 ft x 2.5 ft cbc e and 10 ft w run down	OutletSource	36 in rcp n with inclined pipe type trash rack
Note		ID	1
X_Link	X:\MUNICIPAL DEVELOPMENT\SHARE\MD-Storm\P		

UNSER ST. JOSEPH 4 PONDS



PondNo	37	CITY ZONE KEY	G-10
Location	UNSER & SAINT JOSEPH, EAST UNSER	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	93
X_Link			

102ND-PEACOOK

PondNo	38	CITY ZONE KEY	M-9
Location	102ND-PEACOOK	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	2
X_Link			

CIBOLA -coors by pass- park and ride

PondNo	39	CITY ZONE KEY	B-13
Location	NW OF COOR-BY-PASS & ELLISON	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	22
X_Link			

LADERA-W UNSER

PondNo	40	CITY ZONE KEY	J-9
Location	1/4 MILE W LADERA-UNSER	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	45
X_Link			

UNSER-TWIN OAKS

PondNo	41	CITY ZONE KEY	H-10
Location	UNSER-TWIN OAKS	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	54
X_Link			

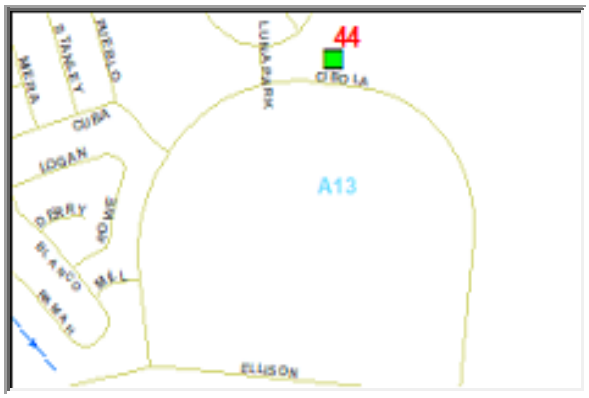
ALTA VISTA POND

PondNo	42	CITY ZONE KEY	L-11
Location	FOOTHILL NORTH OF BRIDGE	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	94
X_Link			

QUINTESSENCE -#1-(PARK)

PondNo	43	CITY ZONE KEY	D-21
Location	RAMTH /QUINTESSENCE ROAD	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	70
X_Link			

CIBOLA LP-LUNA PARK-priv

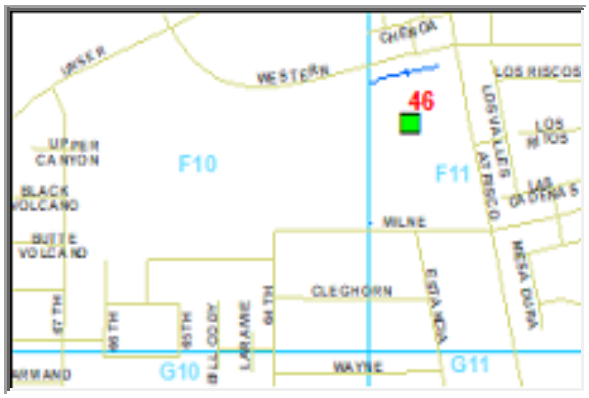


PondNo	44	CITY ZONE KEY	A-13
Location	NE LUNA PARK-CIBOLA LP	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	21
X_Link			

CONGRESS DETENTION BASIN

PondNo	45	CITY ZONE KEY	B-13
Location	SE CONGRESS / BENTON	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	25
X_Link			

LADERA-16B

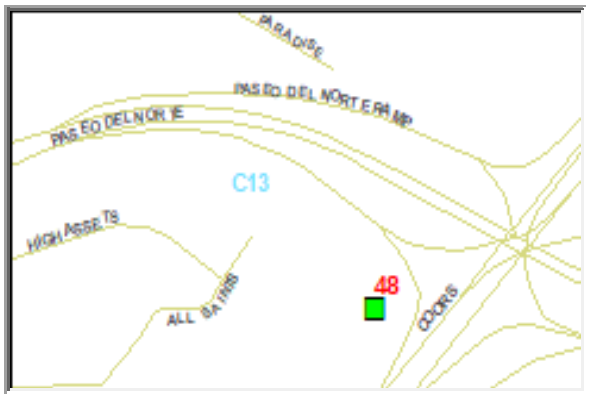


PondNo	46	CITY ZONE KEY	F-11
Location	WESTERN TRAIL / ATRISCO	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	44
X_Link			

8TH AND STOVER TINGLEY PARK

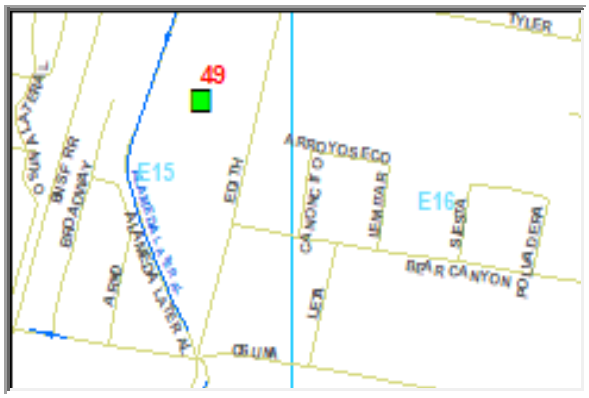
PondNo	47	CITY ZONE KEY	A-13
Location	8TH AND STOVER TINGLEY PARK	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	96
X_Link			

ALL SAINTS



PondNo	48	CITY ZONE KEY	C-13
Location	SW PASEO DEL NORTE & COORS	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	11
X_Link			

NORTH EDITH

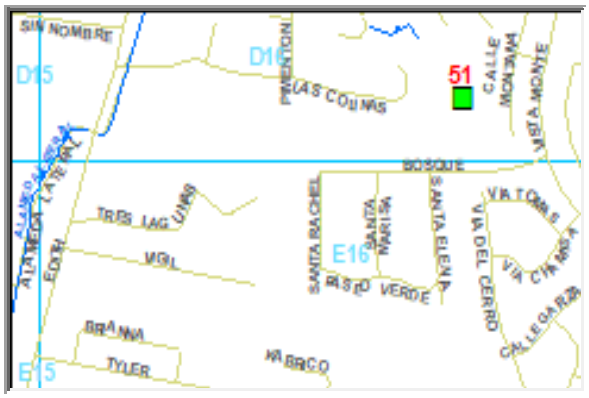


PondNo	49	CITY ZONE KEY	E-15
Location	0.4 M N OSUNA AT TYLER	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	62
X_Link			

ALAMEDA

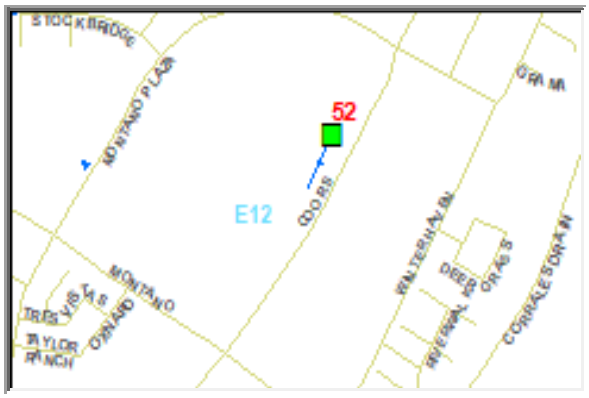
PondNo	50	CITY ZONE KEY	C-16
Location	0.4 M N PASEO DEL NORTE	CITY QUAD	
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	10
X_Link			

VISTA DEL NORTE



PondNo	51	CITY ZONE KEY	D-16
Location	BOSQUE 1/4 MILE W VISTA DEL NORTE(OSUNA & N DIV CH)	CITY QUAD	ne
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	95
X_Link			

COORS & MONTANO PLAZA #2-SOTUH

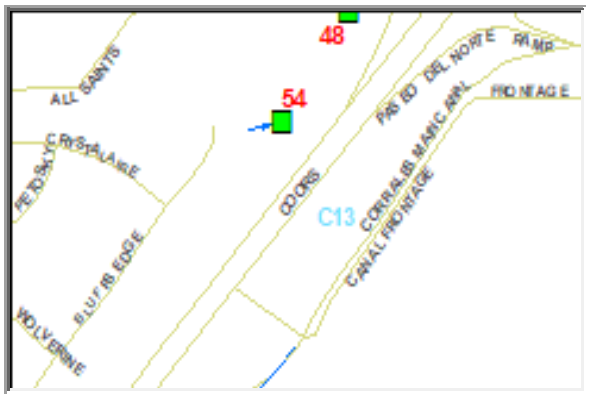


PondNo	52	CITY ZONE KEY	E-12
Location	SOUTH SIDE OF MONTANO PLAZA-COORS	CITY QUAD	
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	29
X_Link			

CLAREMONT

PondNo	53	CITY ZONE KEY	H-14
Location	ON CLAREMONT & COMMERCIAL	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	23
X_Link			

BLUFFS EDGE COORS SOUTH OF PDN



PondNo	54	CITY ZONE KEY	C-13
Location	BLUFFS EDGE COORS SOUTH OF PDN	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	33
X_Link			

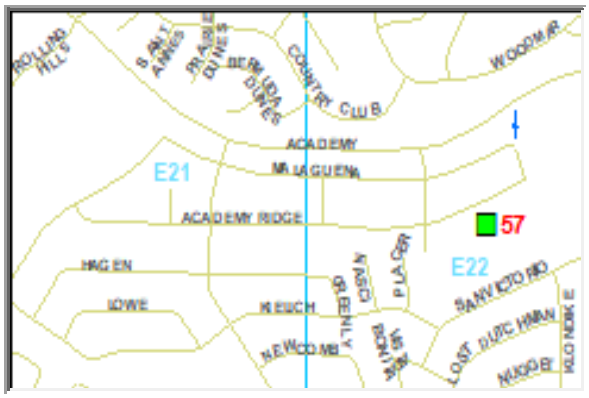
GLENWOOD HILLS DETENTION BASIN #2

PondNo	55	CITY ZONE KEY	G-23
Location	NE CAMINO DE LA SIERRA / MOUNTAIN SHADOW	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	35
X_Link			

LOS LOMITAS SUB DIV

PondNo	56	CITY ZONE KEY	H-9
Location	SW CALLE DE ENTRADA AND CORTE DEL VIENTO	CITY QUAD	
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	55
X_Link			

ACADEMY RIDGE

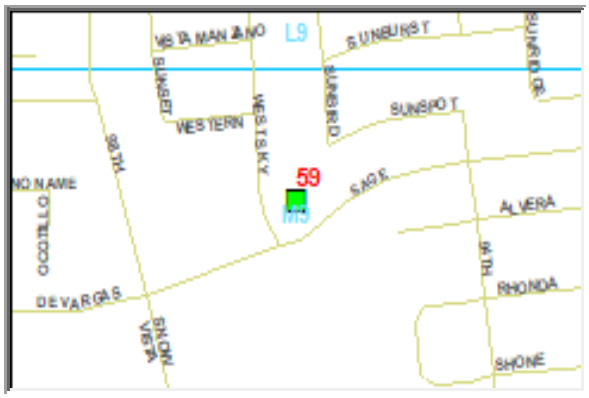


PondNo	57	CITY ZONE KEY	E-22
Location	S MALAGUENA AND ACADEMY RIDGE	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	9
X_Link			

1152 CASSANDRA SW

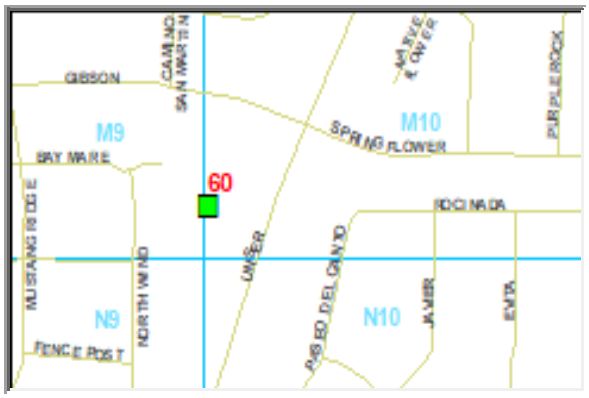
PondNo	58	CITY ZONE KEY	M-10
Location	SW OF SAGE -82 ND	CITY QUAD	
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	4
X_Link			

SAGE &98TH ST



PondNo	59	CITY ZONE KEY	M-09
Location	NE SAGE / WEST SKY	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	75
X_Link			

UNSER AND GOBSON

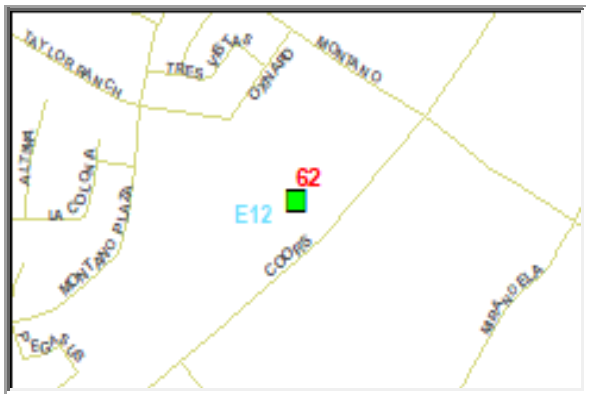


PondNo	60	CITY ZONE KEY	M-10
Location	UNSER AND GOBSON	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	99
X_Link			

LOS ANAYAS POND

PondNo	61	CITY ZONE KEY	H-12
Location	LOS ANAYAS / LOS LUCEROS	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	53
X_Link			

COORS & MONTANO



PondNo	62	CITY ZONE KEY	E-12
Location	COORS / MONTANO, BEHIND GAS STATION	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	27
X_Link			

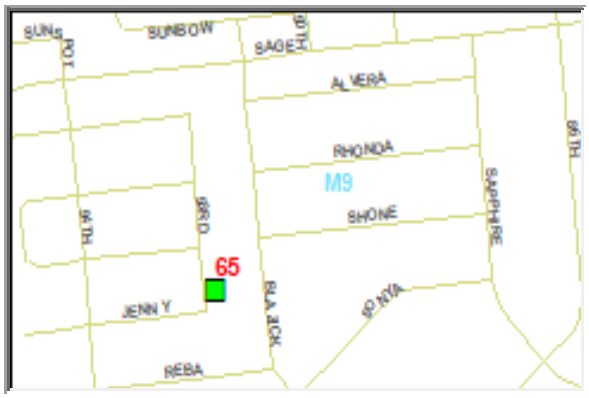
QUICK WATER ARROYO AT OURAY AND RONDA

PondNo	63	CITY ZONE KEY	G-10
Location	QUICK WATER ARROYO AT OURAY AND RONDA	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	84
X_Link			

3RD & AZTEC

PondNo	64	CITY ZONE KEY	G-14
Location		CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	5
X_Link			

93RD / JENNY DETENTION BASIN

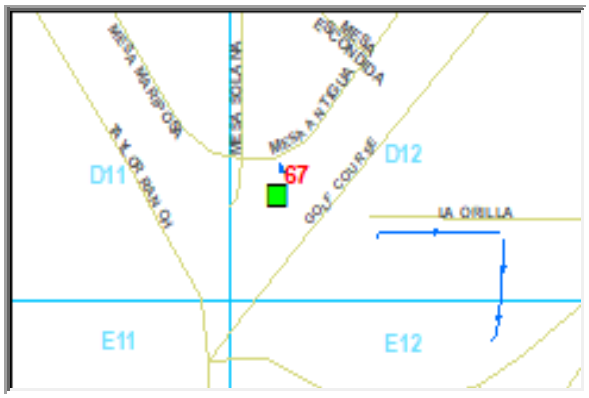


PondNo	65	CITY ZONE KEY	M-09
Location	EAST OF 93RD / JENNY	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	7
X_Link			

AQ POND BROADWAY & ODELIA

PondNo	66	CITY ZONE KEY	J-14
Location	AQ POND BROADWAY & ODELIA	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	81
X_Link			

MESA ANTIGUA POND

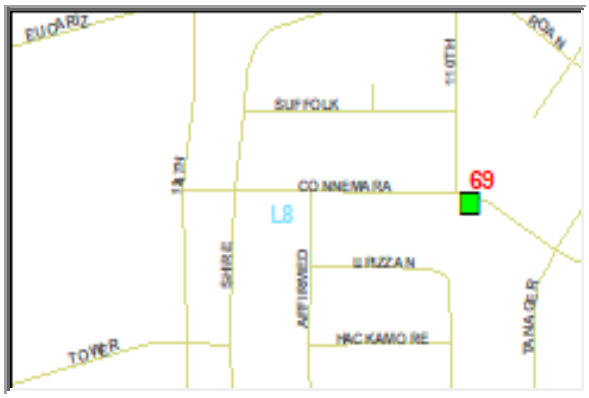


PondNo	67	CITY ZONE KEY	D-12
Location	MESA ANTIGUA AND MESA SOLANA NW	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	61
X_Link			

TERRACOTTA-MALACHITE- TOWER

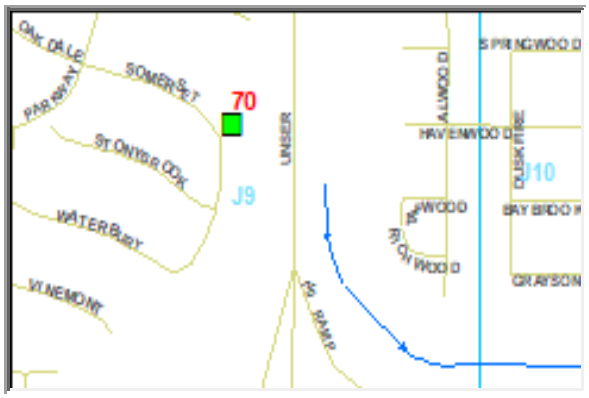
PondNo	68	CITY ZONE KEY	L-09
Location	ONE BLOCK S TERRACOTTA PL / TOWER	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	80
X_Link			

CONNMMARA - WESTGATE POND #2



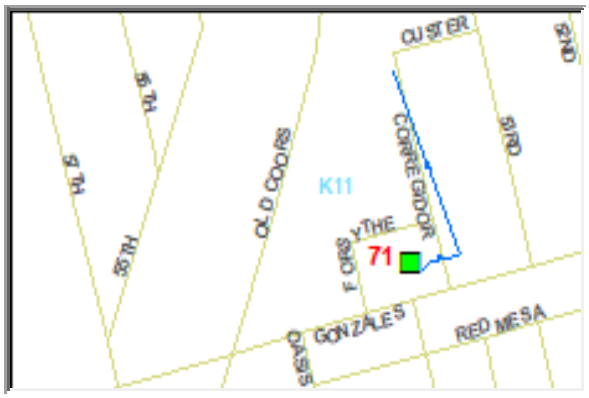
PondNo	69	CITY ZONE KEY	L-08
Location	CONNEMARA /110TH ST	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	26
X_Link			

PARKWAY SUBDIVISION POND



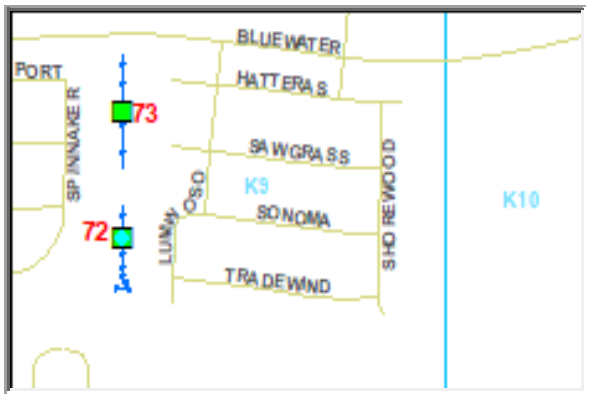
PondNo	70	CITY ZONE KEY	J-09
Location	??	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	66
X_Link			

GONZALES



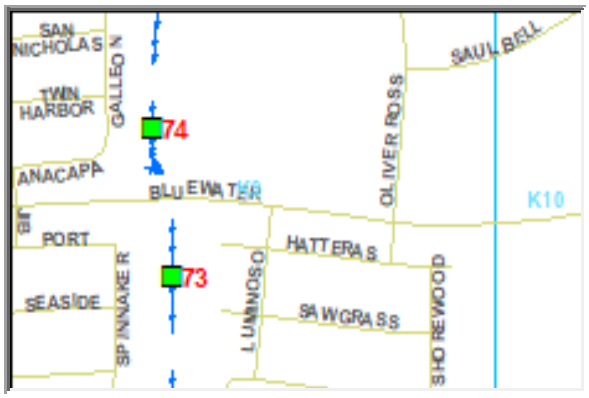
PondNo	71	CITY ZONE KEY	K-10
Location	1/2 BLOCL WEST OLD COORS / GONZALES	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	37
X_Link			

UNSER DIVERSION POND #1



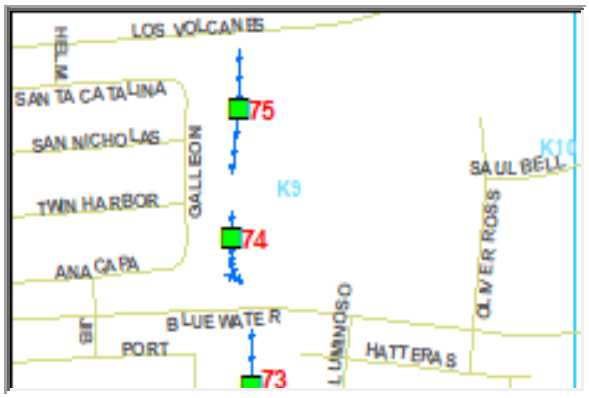
PondNo	72	CITY ZONE KEY	K-10
Location	200 FT SW BLUEWATER / UNSER	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	88
X_Link			

UNSER DIVERSION POND #2



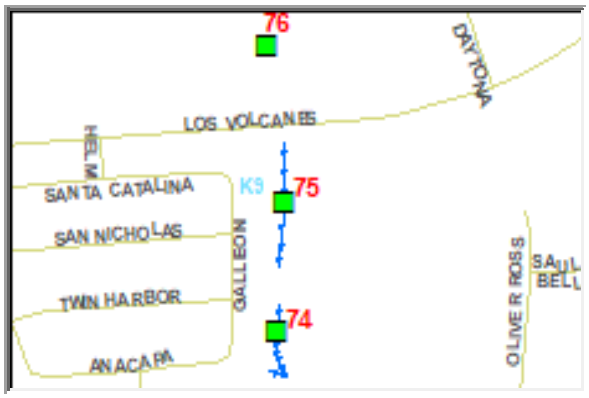
PondNo	73	CITY ZONE KEY	K-10
Location	SW BLUEWATER / UNSER	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	89
X_Link			

UNSER DIVERSION POND #3



PondNo	74	CITY ZONE KEY	K-10
Location	NW W BLUEWATER / UNSER	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	90
X_Link			

UNSER DIVERSION POND #4

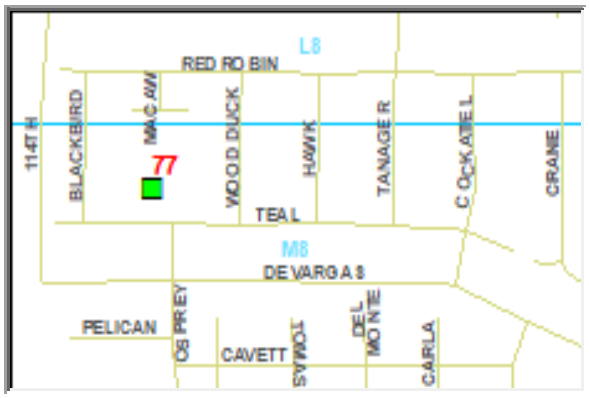


PondNo	75	CITY ZONE KEY	K-10
Location	SW W BLUEWATER / LOS VOLCANOES	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	91
X_Link			

UNSER DIVERSION POND #5

PondNo	76	CITY ZONE KEY	K-10
Location	NW W BLUEWATER / LOS VOLCANOES	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	92
X_Link			

TIMARRON POND

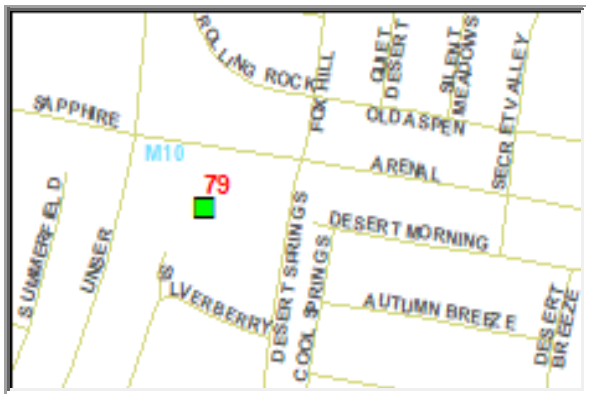


PondNo	77	CITY ZONE KEY	M-08
Location	TIMARRON / TEAL -OSPRAY	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	82
X_Link			

JILL PATRICIA POND

PondNo	78	CITY ZONE KEY	C-12
Location	JILL PATRICIA / GOLF COURSE ??	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	42
X_Link			

ARENAL & UNSER



PondNo	79	CITY ZONE KEY	M-10
Location		CITY QUAD	
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	100
X_Link			

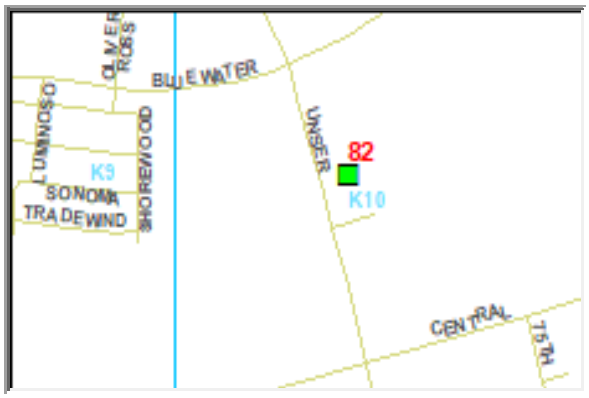
COORS & MONTANO PLAZA #1-NORTH

PondNo	80	CITY ZONE KEY	E-12
Location	NORTH SIDE OF MONTANO PLAZA-COORS	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	28
X_Link			

BOSQUE MEADOW POND

PondNo	81	CITY ZONE KEY	D-12
Location	NE OF BOSQUE MEADOW / COORS	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	18
X_Link			

BLUEWATER POND

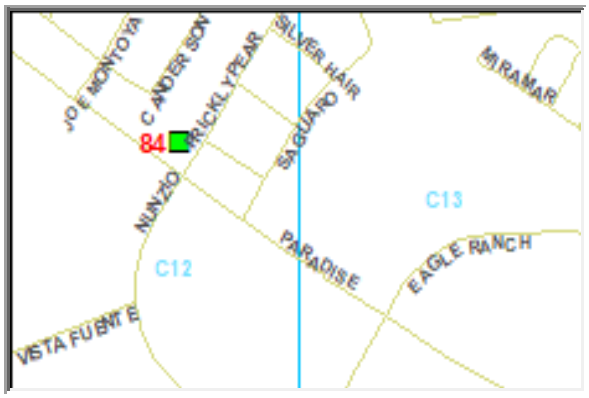


PondNo	82	CITY ZONE KEY	K-10
Location	EAST OF UNSER B/W BLUEWATER AND CENTRAL	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	17
X_Link			

UNSER & BRIDGE LAND R/W

PondNo	83	CITY ZONE KEY	L-10
Location	UNSER & BRIDGE	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	86
X_Link			

PARADIS & PRICKLY PEAR

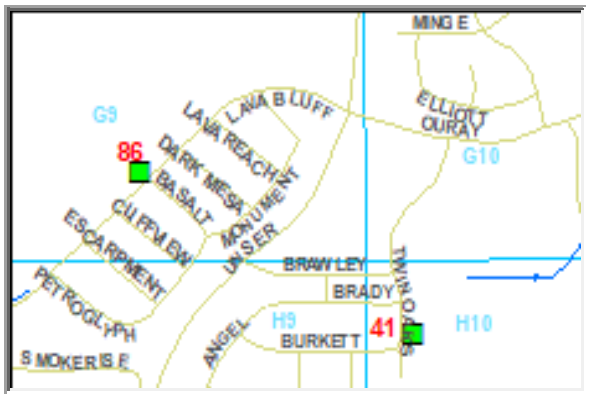


PondNo	84	CITY ZONE KEY	C-12
Location	PARADIS & PRICKLY PEAR	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	65
X_Link			

LOS TOMASES & PHOENIX POND

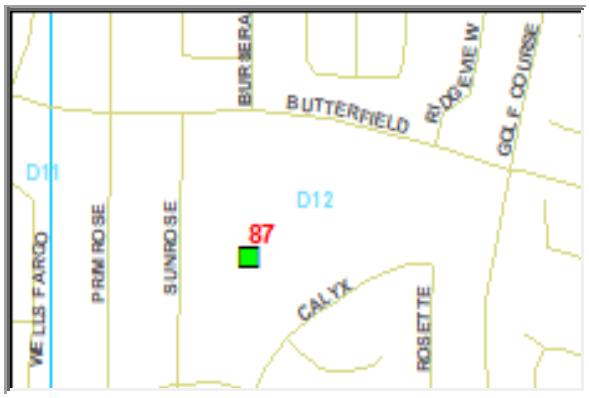
PondNo	85	CITY ZONE KEY	H-14
Location	LOS TOMASES & PHOENIX	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	56
X_Link			

LAVA BLUFF POND



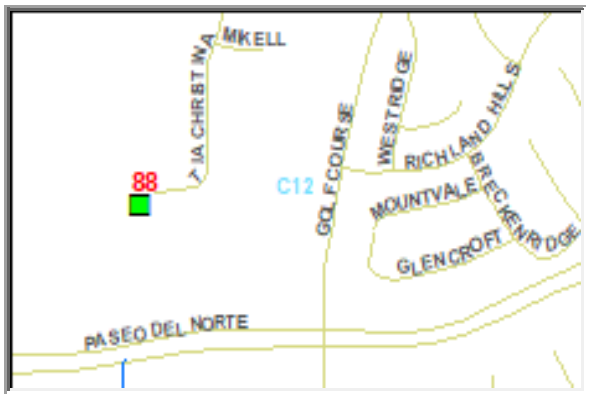
PondNo	86	CITY ZONE KEY	H-09
Location	LAVA BLUFF / PARKWEST	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	51
X_Link			

BUTTERFIELD & GOLF COURSE



PondNo	87	CITY ZONE KEY	D-12
Location	SW OF BUTTERFIELD AND GOLFCOURSE	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	20
X_Link			

LAS MARCADAS POND

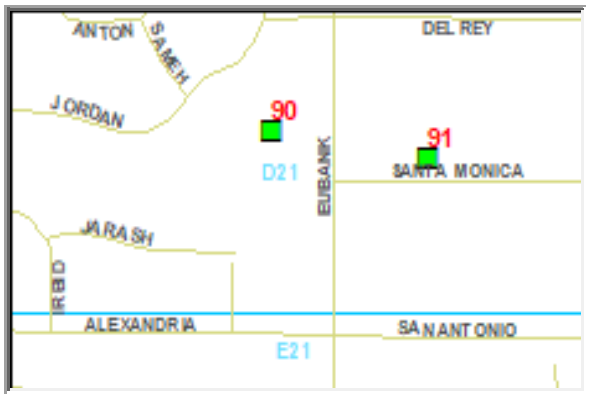


PondNo	88	CITY ZONE KEY	C-12
Location	MARNA LYNN AVE / CHRISTINA ??	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	49
X_Link			

TRES PLACITAS-private

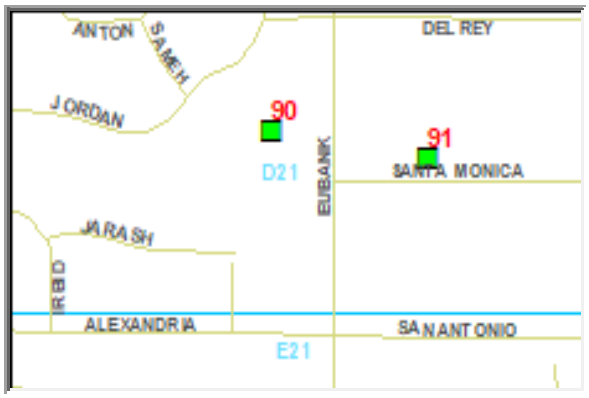
PondNo	89	CITY ZONE KEY	A-13
Location	MIERA DRIVE / CUBA ??	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	85
X_Link			

QUINTESSENCE -#2-(ENTRANCE)



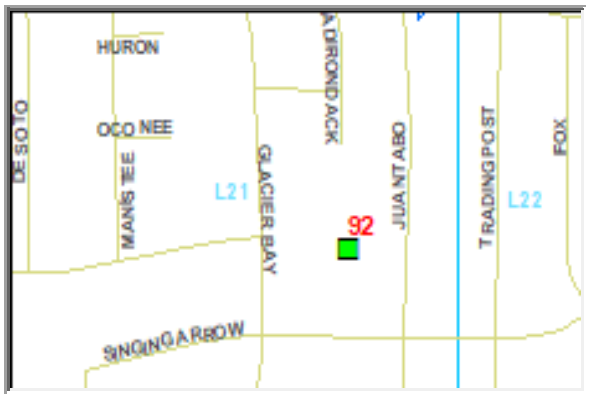
PondNo	90	CITY ZONE KEY	D-21
Location	QUINTESSENCE / EUBANK	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	71
X_Link			

QUINTESSENCE -#3-(E. EUBANK)



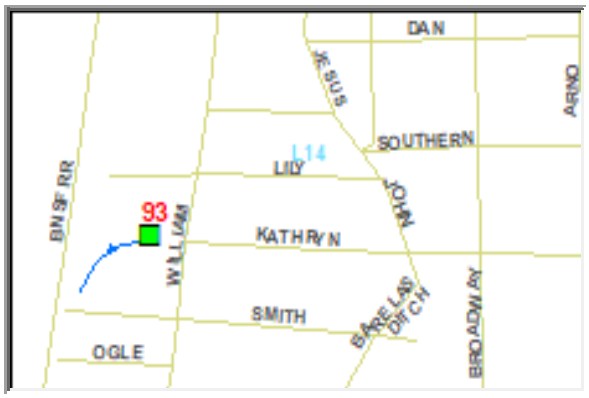
PondNo	91	CITY ZONE KEY	D-21
Location	NE EUBANK & SANTA MONICA	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	72
X_Link			

SINGINING ARROW-MONTABELLA



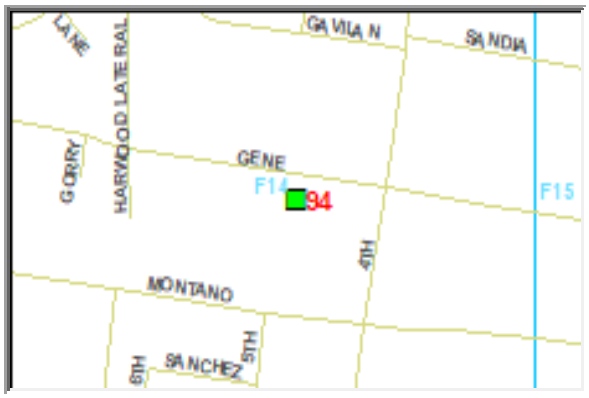
PondNo	92	CITY ZONE KEY	L-21
Location	NW CORNER OF JUAN TABO / SINGING ARROW	CITY QUAD	SE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	77
X_Link			

WILLIAM & KATHRYN



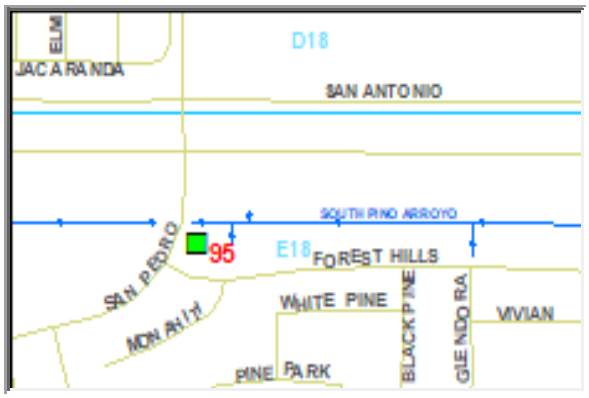
PondNo	93	CITY ZONE KEY	L-14
Location	WILLIAM & KATHRYN-4 BLOCHS S BRIDGE	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	97
X_Link			

LAND AT 424 GENE



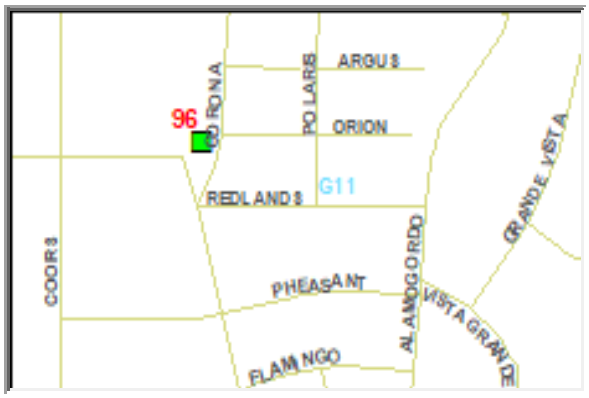
PondNo	94	CITY ZONE KEY	F-14
Location	4TH AND MONTANIO	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	48
X_Link			

LAND AT SAN PEDRO & FOREST HILLS



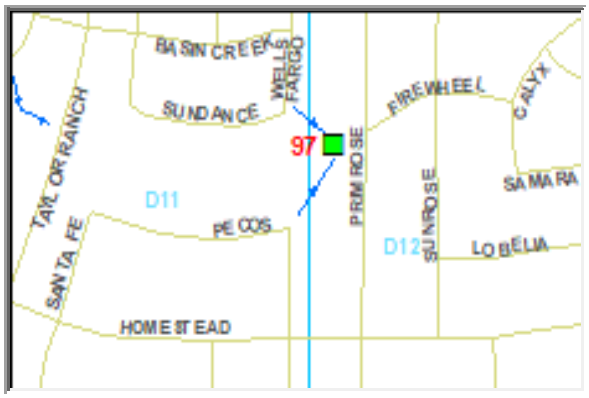
PondNo	95	CITY ZONE KEY	E-18
Location	???	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	47
X_Link			

LAND AT REDLAND & CORONA



PondNo	96	CITY ZONE KEY	G-11
Location	???	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	46
X_Link			

PRIMROSE FIREWHEEL

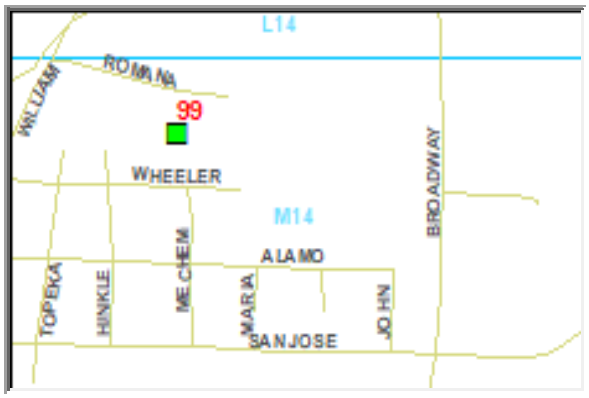


PondNo	97	CITY ZONE KEY	D-12
Location	PRIMROSE FIREWHEEL	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	102
X_Link			

WEST MESA FORTUNA - COORS

PondNo	98	CITY ZONE KEY	J-10
Location	WEST MESA FORTUNA - COORS	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	103
X_Link			

MECHEM POND

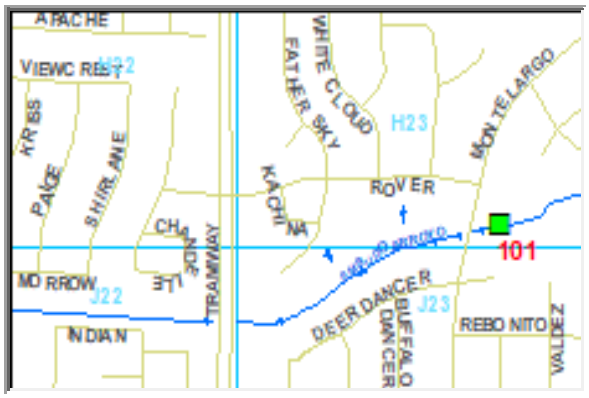


PondNo	99	CITY ZONE KEY	M-14
Location	E MECHEM / WHEELER	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	59
X_Link			

106TH-EUCARIZ

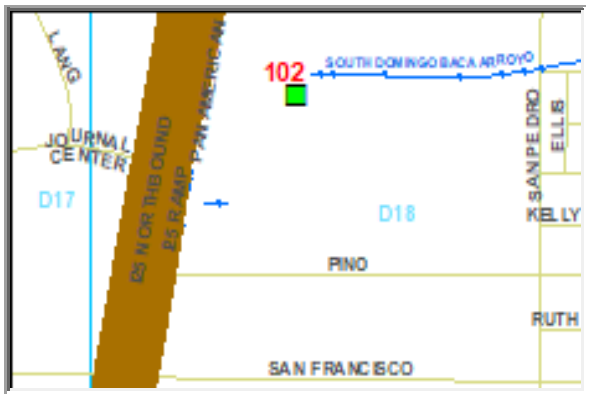
PondNo	100	CITY ZONE KEY	L-08
Location	106 TH / EUCARIZ	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	3
X_Link			

EMBUDO AT MONTELARGO



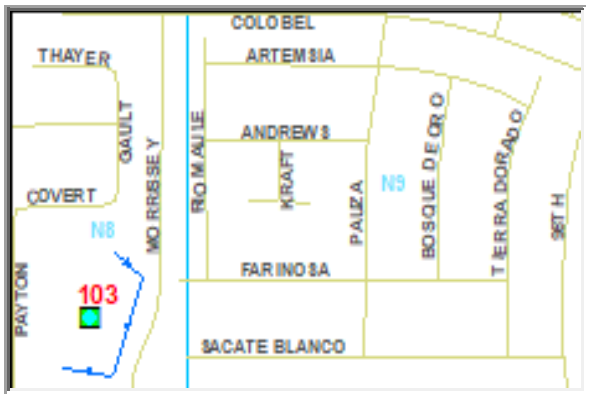
PondNo	101	CITY ZONE KEY	H-23
Location	EMBUDO AT MONTELARGO	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	15
X_Link			

PINO CITY YARD POND



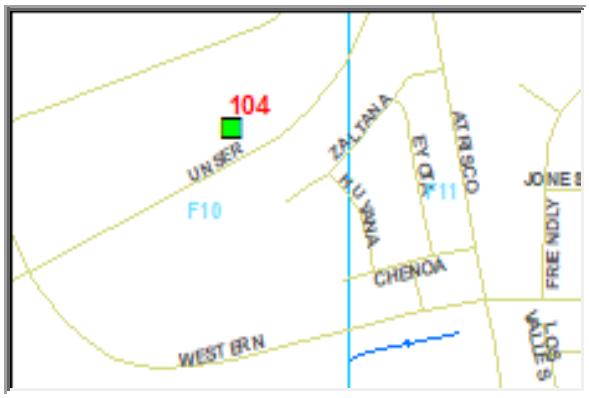
PondNo	102	CITY ZONE KEY	D-18
Location	PINO CITY YARD	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	104
X_Link			

MORRISSEY AND ANTLER TOOL SW



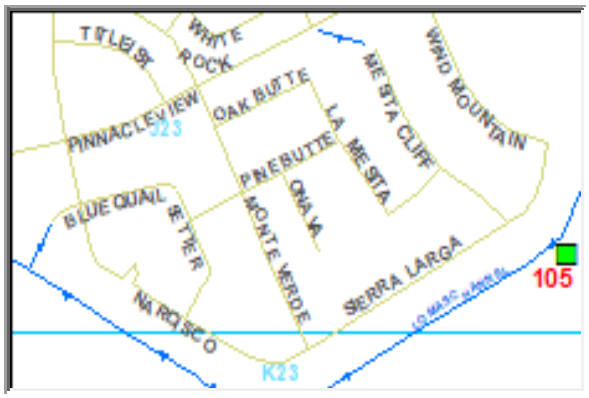
PondNo	103	CITY ZONE KEY	N-08
Location	MORRISSEY AND ANTLER TOOL SW	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	105
X_Link			

LADERA - 16A - NE UNSER - WESTERN NW



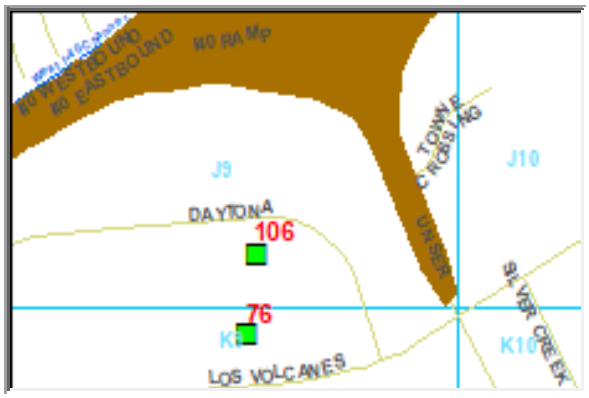
PondNo	104	CITY ZONE KEY	F-10
Location	LADERA - 16A - NE UNSER - WESTERN NW	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	106
X_Link			

GLENWOOD HILLS TRAINING HIKE



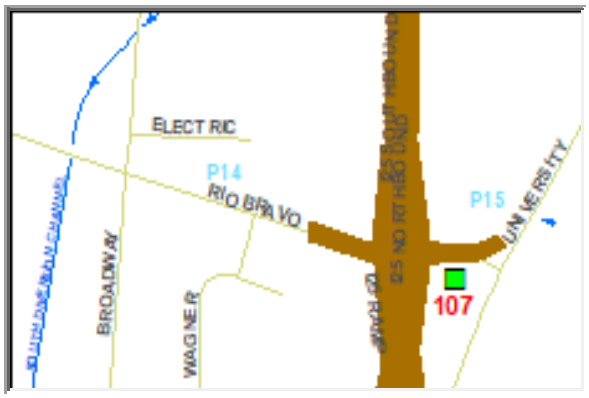
PondNo	105	CITY ZONE KEY	J-23
Location		CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	107
X_Link			

NE UNSER AND LOS VOLCANES - DAYTONA



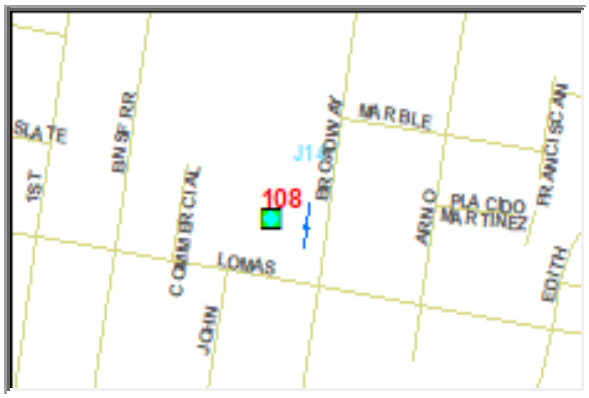
PondNo	106	CITY ZONE KEY	J-09
Location	NE UNSER AND LOS VOLCANES - DAYTONA	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	108
X_Link			

UNIVERSITY AND RIO BRAVO



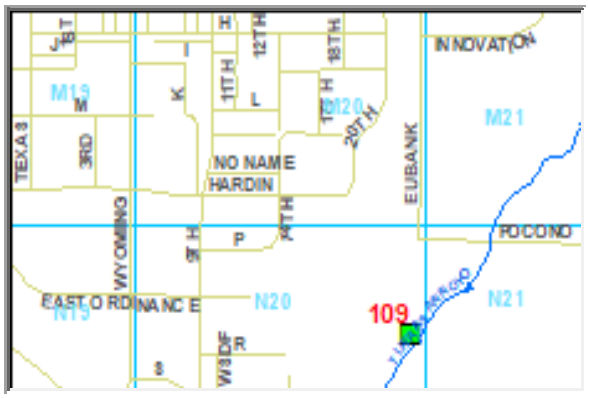
PondNo	107	CITY ZONE KEY	P-15
Location	UNIVERSITY AND RIO BRAVO	CITY QUAD	SE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	109
X_Link			

LOMAS AND BROADWAY POND



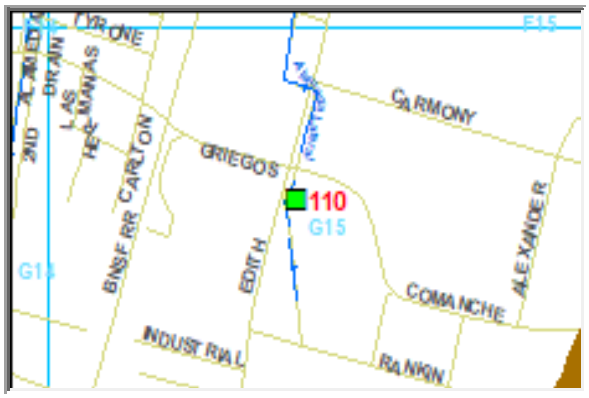
PondNo	108	CITY ZONE KEY	J-14
Location	LOMAS AND BROADWAY POND	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	110
X_Link			

TIJERAS-EUBANK OUTFALL-KAFB



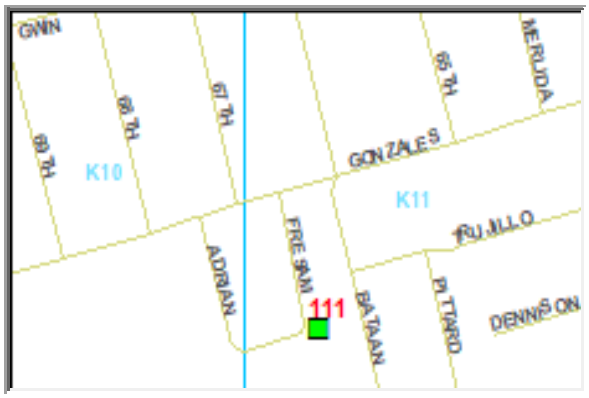
PondNo	109	CITY ZONE KEY	N-20
Location	TIJERAS-EUBANK OUTFALL-KAFB	CITY QUAD	SE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	111
X_Link			

EDITH-COMANCHE SOLIDWASET



PondNo	110	CITY ZONE KEY	G-15
Location	EDITH-COMANCHE SOLIDWASET	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	112
X_Link			

FRESHAM AND BATAAN WASMENT

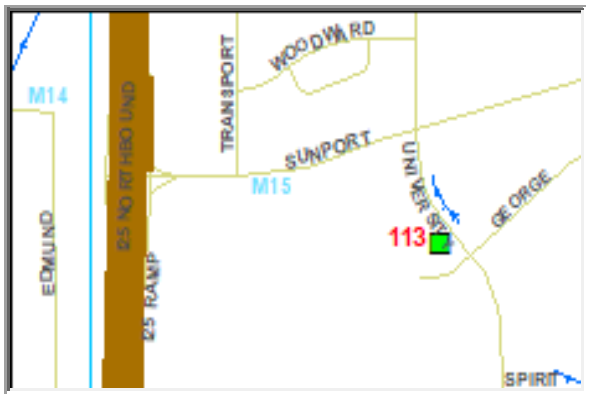


PondNo	111	CITY ZONE KEY	K-11
Location	538 fresam sw	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	113
X_Link			

I-40-NDC-MENAUL

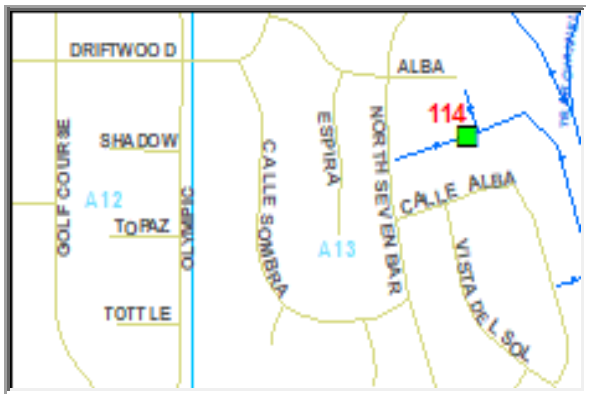
PondNo	112	CITY ZONE KEY	H-16
Location	2101 bryn mawr ne	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	114
X_Link			

SUNPORT AND UNIVERSITY AVIATION



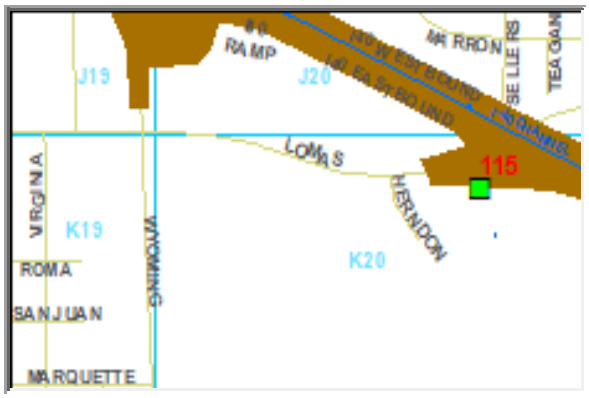
PondNo	113	CITY ZONE KEY	M-15
Location	SUNPORT AND UNIVERSITY AVIATION	CITY QUAD	SE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	115
X_Link			

SARAGOSSA and ALBA



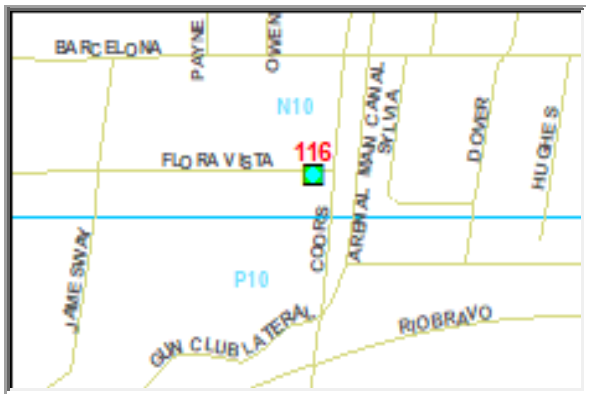
PondNo	114	CITY ZONE KEY	A-13
Location	SARAGOSSA and ALBA	CITY QUAD	NW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	116
X_Link			

I-40 and Lomas outfall



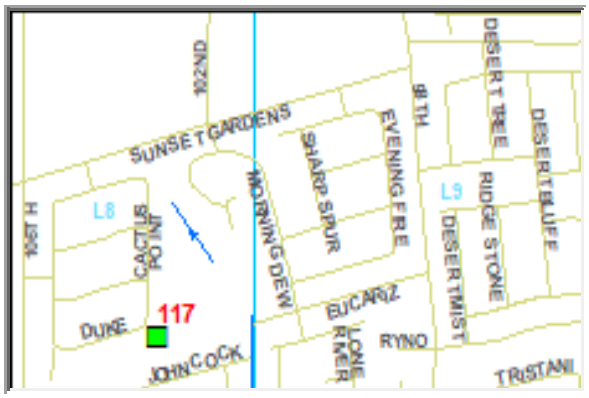
PondNo	115	CITY ZONE KEY	K-20
Location	I-40 and Lomas	CITY QUAD	NE
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	117
X_Link			

Flora Vista and Coors Infilteration Trench



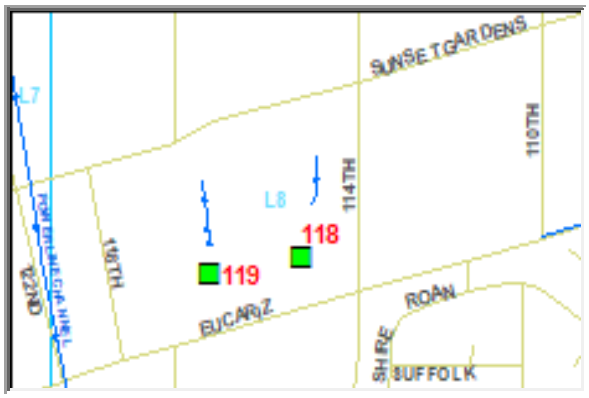
PondNo	116	CITY ZONE KEY	N-10
Location	Flora Vista and Coors	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	118
X_Link			

cactus point-duke-sunrise ranch west pond



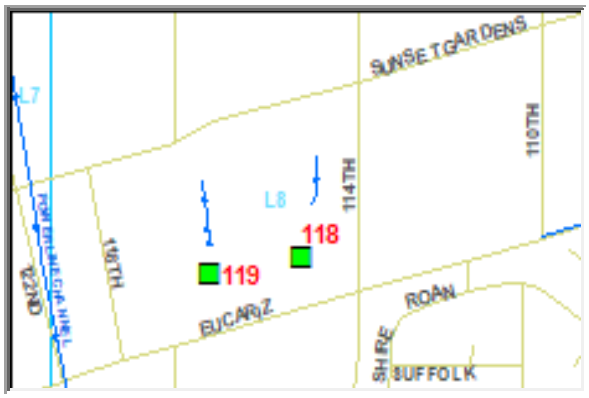
PondNo	117	CITY ZONE KEY	L-08
Location	cactus point-duke-sunrise ranch	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	119
X_Link			

fire academy-Eucariz-114 st sw



PondNo	118	CITY ZONE KEY	L-08
Location	Eucariz-114 st sw	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	120
X_Link			

SW area street Maintenance yard-Eucariz-118th sw

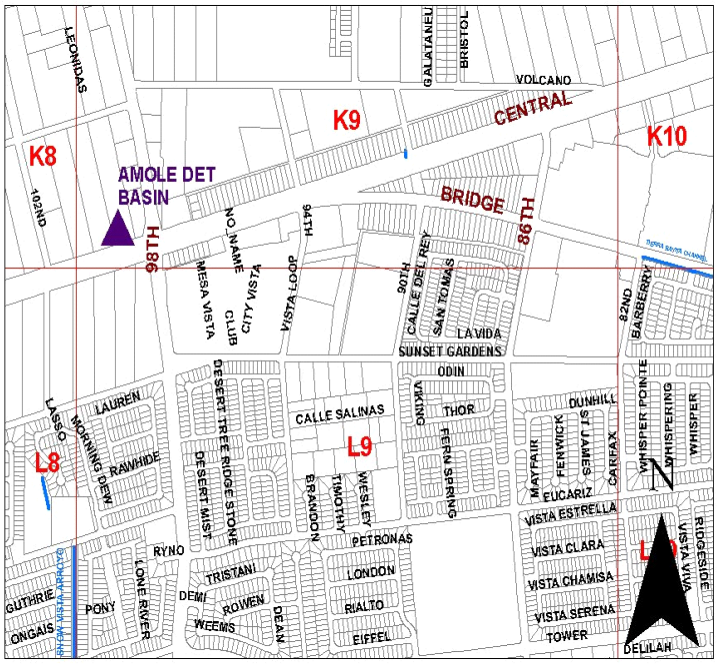


PondNo	119	CITY ZONE KEY	L-08
Location	Eucariz-118th sw	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	121
X_Link			

6801 calle cielo sw

PondNo	120	CITY ZONE KEY	M-11
Location	6801 calle cielo sw	CITY QUAD	SW
year built			
Area, Acre		LastMaintDate	
InletSource		OutletSource	
Note		ID	122
X_Link			

AMOLE DEL NORTE DETENTION DAM



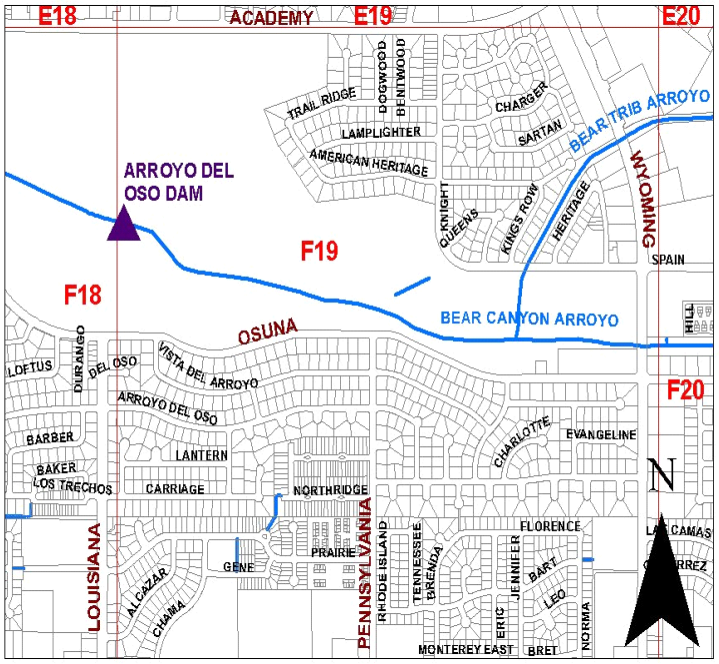
CITY ZONE KEY	K-09
CITY QUAD	NW
Year Built	1996
DATE LAST MAINTENANCE	2/3/2006
MAINTENANCE MONTH	DEC
FACILITY S.A.	16.41
C Y REMOVED	NA
COA Dam Engr.	RICHARD COSTALES
Last Insp. Date	12/8/2005
OSE Inspector	JAMES HEAD
Insp. Condition	SATISFACTORY
Design Storm Event	0.5 PMF
Dam Type	EARTHFILL/PITS
DamHazClass:	HIGH
Max Height (ft)	7.5
Dam Crest Elev	5215.5
OSE Action Items From Last Insp.	SEE LATEST ATTACHED OSE INSPECTION REPORT.
COA Notes to the File	NONE

NOTES

STRUCTURE IS ACTUALLY 2 SEPARATE BASINS WITH A CENTER DIVIDER. DATA SHOWN IS FOR SOUTH POND.

Dam Crest Length (ft)	632
Dam Crest Width (ft)	10
Slope of U.S. Face (H:V)	3:1
Slope of D. S. Face (H:V)	3:1
Pond/Pit Side Slope (H:V)	3:1
Drainage Area (Acres)	679
Capacity at Spillway Crest (Acre-ft)	77
Maximum Elevation of SDF (ft)	5215.4
Dead Storage Elevation (ft)	NA
Em. Spill. Type	SOIL CEMENT
Spillway Crest Elev (ft)	5212
Spillway Width (ft)	10
Spillway Length (ft)	398
Spillway Capacity (cfs)	7096
FREEBOARD,Orig. OSE, ft	0.1
FREEBOARD,FEMA,ft	3.5
OUTLET DESCRIP	36" DIA RCP WITH TRASH RACK & RESTRICTER
Conduit Size (in.)	36
Inlet Invert Elevation (ft)	5201
Flow Control Size (in.)	4"X30"
Flow Control Location	OUTLET-ORIFICE PLATE

ARROYO DEL OSO DETENTION DAM



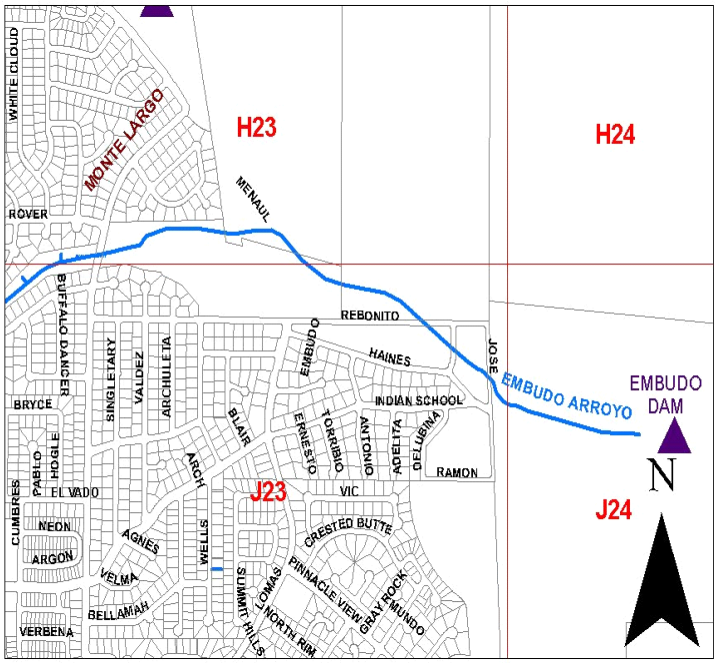
CITY ZONE KEY	F-19
CITY QUAD	NE
Year Built	1956
DATE LAST MAINTENANCE	11/14/2005
MAINTENANCE MONTH	NOV
FACILITY S.A.	72.8
C Y REMOVED	NA
COA Dam Engr.	JAME EISENBERG
Last Insp. Date	1/5/2006
OSE Inspector	S. CHAUDHARY
Insp. Condition	SATISFACTORY
Design Storm Event	1 PMF
Dam Type	ЯEBUILT EARTHFILL
DamHazClass:	HIGH
Max Height (ft)	38
Dam Crest Elev	5351
OSE Action Items From Last Insp.	SEE LATEST ATTACHED OSE INSPECTION REPORT.
COA Notes to the File	ON MARCH 15, 2002, LETTER SENT TO OSE REGARDING "RETAINING WALL" AND CERTIFICATION THAT THERE IS NO IMPACT TO THE TOE OF THE DAM.

NOTES

DAM WAS ORIGINALLY BUILT IN 1956 WITH GATED TOWER OUTLET WORKS. TOWER AND GATES WERE ELIMINATED IN 1981 RENOVATION.

Dam Crest Length (ft)	3061
Dam Crest Width (ft)	15
Slope of U.S. Face (H:V)	3:1
Slope of D. S. Face (H:V)	2:1
Pond/Pit Side Slope (H:V)	NA
Drainage Area (Acres)	9510
Capacity at Spillway Crest (Acre-ft)	325
Maximum Elevation of SDF (ft)	5350.8
Dead Storage Elevation (ft)	5351
Em. Spill. Type	CONC. DROP & CHUTE
Spillway Crest Elev (ft)	5339
Spillway Width (ft)	183
Spillway Length (ft)	165
Spillway Capacity (cfs)	36500
FREEBOARD,Orig. OSE, ft	0.6
FREEBOARD,FEMA,ft	12
OUTLET DESCRIP	CONCRETE BOX - 6' X (12-16') WIDE
Conduit Size (in.)	EE ABOVE
Inlet Invert Elevation (ft)	5321
Flow Control Size (in.)	NA
Flow Control Location	NA

EMBUDO DAM



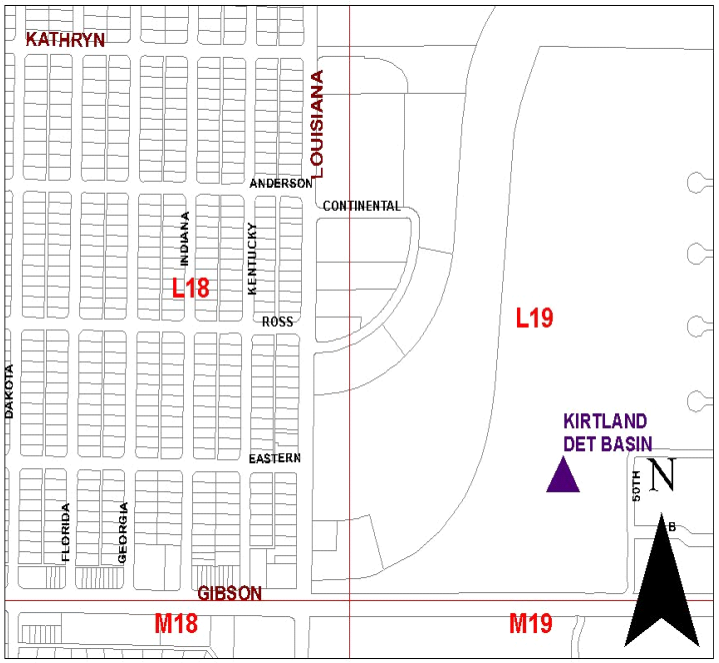
CITY ZONE KEY	J-24
CITY QUAD	NE
Year Built	1980
DATE LAST MAINTENANCE	12/6/2006
MAINTENANCE MONTH	NOV
FACILITY S.A.	15
C Y REMOVED	10
COA Dam Engr.	JAME EISENBERG
Last Insp. Date	1/5/2006
OSE Inspector	S. CHAUDHARY
Insp. Condition	SATISFACTORY
Design Storm Event	1 PMF
Dam Type	EARTH FILL
DamHazClass:	HIGH
Max Height (ft)	64
Dam Crest Elev	6335
OSE Action Items From Last Insp.	SEE LATEST ATTACHED OSE INSPECTION REPORT.
COA Notes to the File	REPORT DUE TO OSE BY MAY 1,2006 ON CORRECTIVE ACTIONS TAKEN.

NOTES

NONE

Dam Crest Length (ft)	1010
Dam Crest Width (ft)	18
Slope of U.S. Face (H:V)	3:1
Slope of D. S. Face (H:V)	3:1
Pond/Pit Side Slope (H:V)	NA
Drainage Area (Acres)	2381
Capacity at Spillway Crest (Acre-ft)	150
Maximum Elevation of SDF (ft)	6334.8
Dead Storage Elevation (ft)	6330
Em. Spill. Type	CONCRETE CHUTE
Spillway Crest Elev (ft)	6321.9
Spillway Width (ft)	120
Spillway Length (ft)	278
Spillway Capacity (cfs)	16840
FREEBOARD,Orig. OSE, ft	0.2
FREEBOARD,FEMA,ft	13.1
OUTLET DESCRIP	REINFORCED CONCRETE TOWER WITH PIPE CONDUIT
Conduit Size (in.)	48
Inlet Invert Elevation (ft)	6300
Flow Control Size (in.)	47
Flow Control Location	AT INLET TOWER

KIRTLAND AFB DETENTION DAM



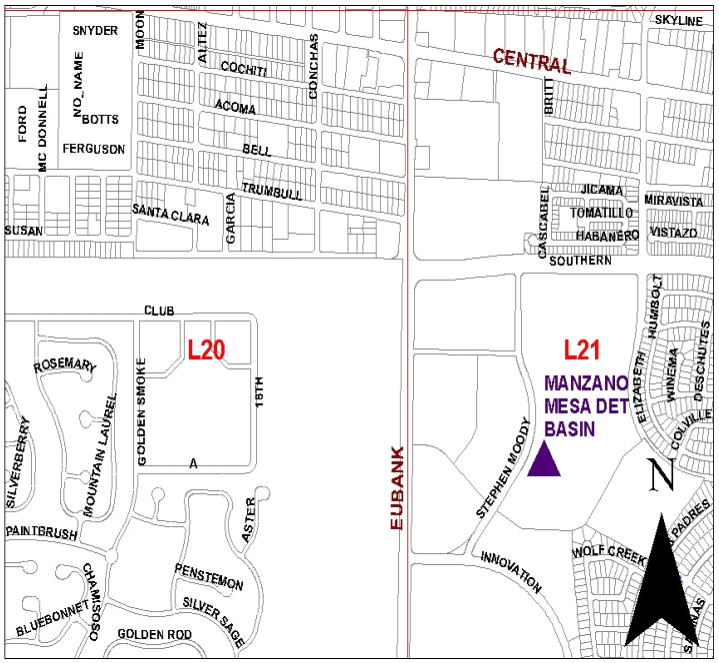
CITY ZONE KEY	L-19
CITY QUAD	SE
Year Built	1985
DATE LAST MAINTENANCE	12/14/2006
MAINTENANCE MONTH	NOV
FACILITY S.A.	22
C Y REMOVED	NA
COA Dam Engr.	ROLAND PENTTILA
Last Insp. Date	2/15/2006
OSE Inspector	S. CHAUDHARY
Insp. Condition	SATISFACTORY
Design Storm Event	1 PMF
Dam Type	EARTHFILL
DamHazClass:	HIGH
Max Height (ft)	9.2
Dam Crest Elev	5360.8
OSE Action Items From Last Insp.	SEE LATEST ATTACHED OSE INSPECTION REPORT.
COA Notes to the File	NEW TRASH RACK HAS BEEN DESIGNED AND WAS INSTALLED MARCH, 2006.

NOTES

ORIGINAL GATED STRUCTURE AT OUTLET HAS BEEN REMOVED. UTILITY CONTRACTORS BREACHED SECTION OF EMERGENCY SPILLWAY IN 1987. REPAIRS WERE MADE AND NO FURTHER EXCAVATION ACTIVITY HAS BEEN OBSERVED. PRINCIPAL SPILLWAY IS NOW UNGATED PIPE.

Dam Crest Length (ft)	2910
Dam Crest Width (ft)	20
Slope of U.S. Face (H:V)	4:1
Slope of D. S. Face (H:V)	3:1
Pond/Pit Side Slope (H:V)	3:1
Drainage Area (Acres)	650.24
Capacity at Spillway Crest (Acre-ft)	50.8
Maximum Elevation of SDF (ft)	5360
Dead Storage Elevation (ft)	5346.75
Em. Spill. Type	RE ENCLOSED RIPRAP
Spillway Crest Elev (ft)	5355.5
Spillway Width (ft)	250
Spillway Length (ft)	100
Spillway Capacity (cfs)	4636
FREEBOARD,Orig. OSE, ft	2
FREEBOARD,FEMA,ft	5.3
OUTLET DESCRIP	REINFORCED CONCRETE BOX WITH TRASH RACK
Conduit Size (in.)	30
Inlet Invert Elevation (ft)	5345.5
Flow Control Size (in.)	20
Flow Control Location	AT INLET STRUCTURE

MANZANO MESA DETENTION BASIN



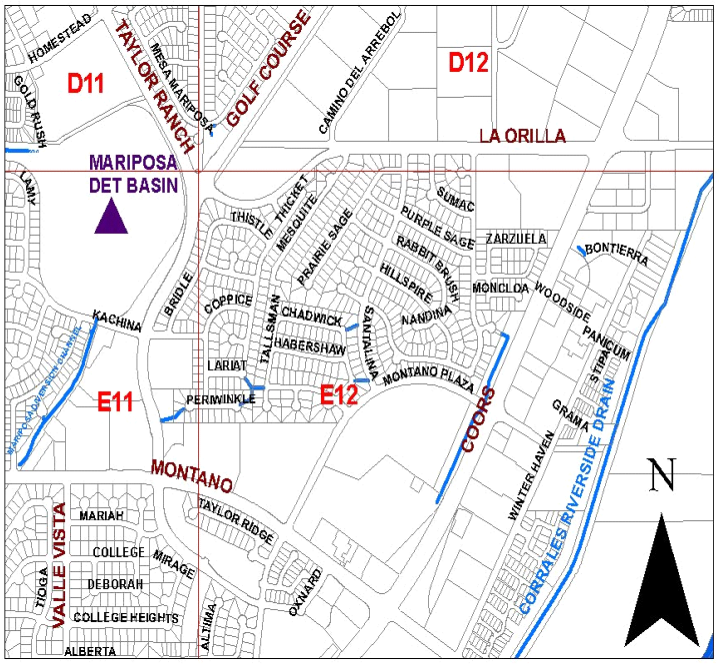
CITY ZONE KEY	L-21
CITY QUAD	SE
Year Built	2002
DATE LAST MAINTENANCE	11/29/2005
MAINTENANCE MONTH	DEC
FACILITY S.A.	12.2
C Y REMOVED	NA
COA Dam Engr.	ROLAND PENTTILA
Last Insp. Date	1/5/2006
OSE Inspector	S. CHAUDHARY
Insp. Condition	SATISFACTORY
Design Storm Event	100 YR
Dam Type	PIT/EARTHFILL
DamHazClass:	SIGNIFICANT
Max Height (ft)	3
Dam Crest Elev	5486
OSE Action Items From Last Insp.	SEE LATEST ATTACHED OSE INSPECTION REPORT. NECESSARY COMPLETION REPORT SENT TO SEO 2/06.
COA Notes to the File	CAPACITY OF STREET AND OVERLAND FLOW IN NEW STEPHEN MOODY DRIVE CALCULATED BY COA IN 2006 TO BE 300 CFS BEFORE ANY RUNOFF WOULD ENTER WESTWARD APARTMENT COMPLEX.

NOTES

NONE

Dam Crest Length (ft)	585
Dam Crest Width (ft)	7
Slope of U.S. Face (H:V)	3:1
Slope of D. S. Face (H:V)	3:1
Pond/Pit Side Slope (H:V)	NA
Drainage Area (Acres)	536
Capacity at Spillway Crest (Acre-ft)	37.9
Maximum Elevation of SDF (ft)	5485
Dead Storage Elevation (ft)	NA
Em. Spill. Type	CONCRETE WEIR
Spillway Crest Elev (ft)	5483
Spillway Width (ft)	7
Spillway Length (ft)	369
Spillway Capacity (cfs)	2169.4
FREEBOARD,Orig. OSE, ft	2.1
FREEBOARD,FEMA,ft	3
OUTLET DESCRIP	CONCRETE BEEHIVE BOX
Conduit Size (in.)	72
Inlet Invert Elevation (ft)	5465.56
Flow Control Size (in.)	48
Flow Control Location	OUTLET BEEHIVE

MARIPOSA DAM



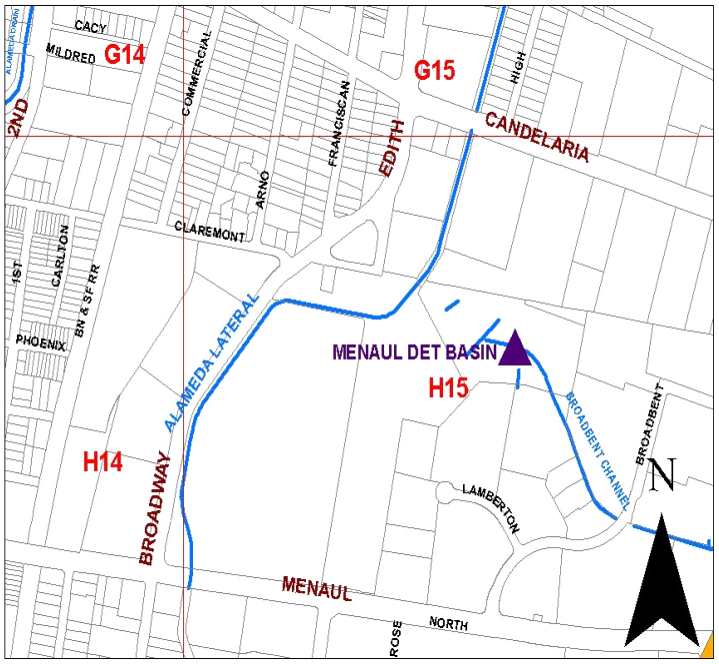
CITY ZONE KEY	E-11
CITY QUAD	NW
Year Built	1983
DATE LAST MAINTENANCE	1/30/2007
MAINTENANCE MONTH	NOV
FACILITY S.A.	48.11
C Y REMOVED	NA
COA Dam Engr.	JOHN CURTIN
Last Insp. Date	12/8/2005
OSE Inspector	JAMES HEAD
Insp. Condition	SATISFACTORY
Design Storm Event	1 PMF ?
Dam Type	EARTHFILL/PIT
DamHazClass:	HIGH
Max Height (ft)	19
Dam Crest Elev	5130
OSE Action Items From Last Insp.	SEE LATEST ATTACHED OSE INSPECTION REPORT.
COA Notes to the File	NONE

NOTES

NONE

Dam Crest Length (ft)	5150
Dam Crest Width (ft)	12
Slope of U.S. Face (H:V)	3:1
Slope of D. S. Face (H:V)	3:1
Pond/Pit Side Slope (H:V)	3:1
Drainage Area (Acres)	13600
Capacity at Spillway Crest (Acre-ft)	494
Maximum Elevation of SDF (ft)	5125.5
Dead Storage Elevation (ft)	NA
Em. Spill. Type	EMENT TREATED BASE
Spillway Crest Elev (ft)	5125.5
Spillway Width (ft)	47
Spillway Length (ft)	343
Spillway Capacity (cfs)	4500
FREEBOARD,Orig. OSE, ft	0.11
FREEBOARD,FEMA,ft	3.5
OUTLET DESCRIP	CONCRETE BOX CULVERT 8'X6'
Conduit Size (in.)	96"X72"
Inlet Invert Elevation (ft)	5096.98
Flow Control Size (in.)	NA
Flow Control Location	NA

MENAUL DETENTION DAM



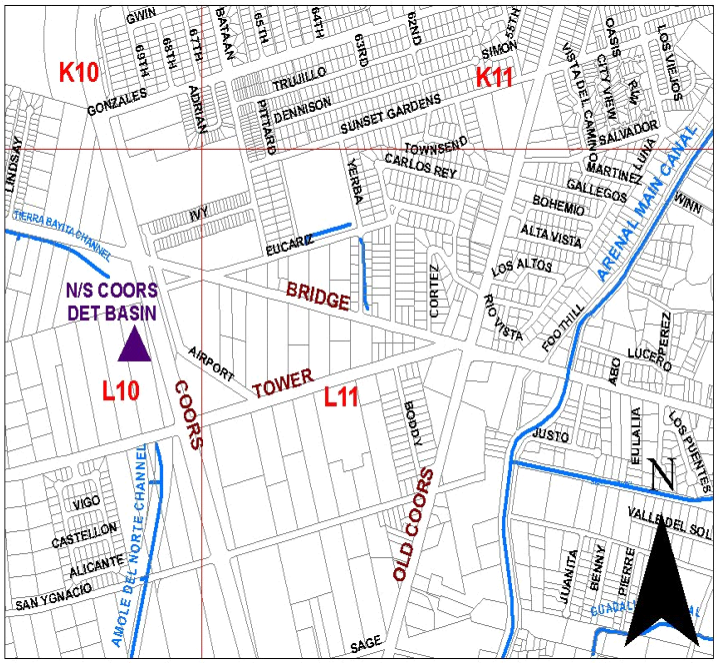
CITY ZONE KEY	H-15
CITY QUAD	NE
Year Built	1995
DATE LAST MAINTENANCE	1/17/2007
MAINTENANCE MONTH	JAN
FACILITY S.A.	8.22
C Y REMOVED	20
COA Dam Engr.	SERTIL KANBAR
Last Insp. Date	12/8/2005
OSE Inspector	JAMES HEAD
Insp. Condition	SATISFACTORY
Design Storm Event	0.5 PMF
Dam Type	EARTHFILL/PIT
DamHazClass:	HIGH
Max Height (ft)	12
Dam Crest Elev	5006
OSE Action Items From Last Insp.	SEE LATEST ATTACHED OSE INSPECTION REPORT.
COA Notes to the File	NONE

NOTES

HOODED INLET AND SAND FILTER AT OUTLET PIPE CONTROL FLOATABLES AND HEAVY METALS IN RUNOFF.

Dam Crest Length (ft)	80
Dam Crest Width (ft)	15
Slope of U.S. Face (H:V)	3:1
Slope of D. S. Face (H:V)	3:1
Pond/Pit Side Slope (H:V)	3:1
Drainage Area (Acres)	454
Capacity at Spillway Crest (Acre-ft)	68
Maximum Elevation of SDF (ft)	5003.63
Dead Storage Elevation (ft)	4982.6
Em. Spill. Type	CONCRETE CHUTE
Spillway Crest Elev (ft)	4998
Spillway Width (ft)	80
Spillway Length (ft)	80.5
Spillway Capacity (cfs)	4009
FREEBOARD,Orig. OSE, ft	2.37
FREEBOARD,FEMA,ft	8
OUTLET DESCRIP	HOODED CMP RISER
Conduit Size (in.)	24
Inlet Invert Elevation (ft)	4980.6
Flow Control Size (in.)	NA
Flow Control Location	NA

NORTH/SOUTH COORS DETENTION DAM



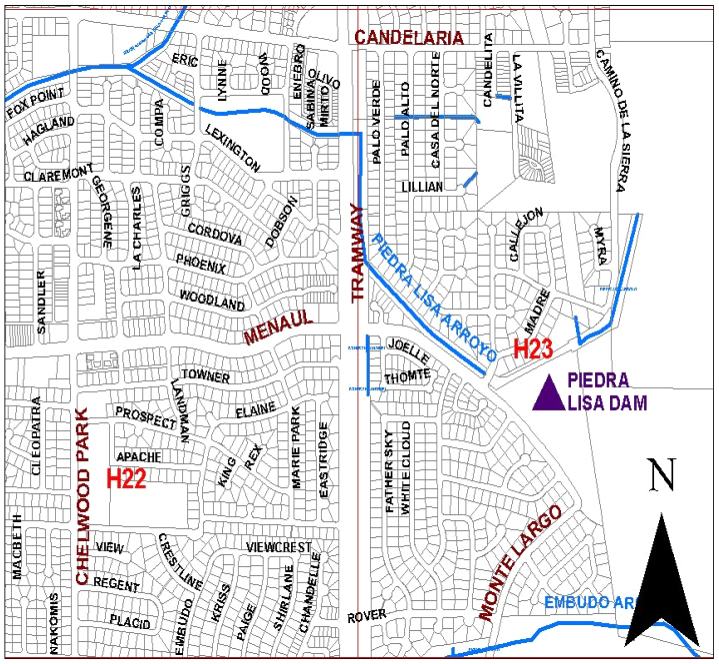
CITY ZONE KEY	L-10
CITY QUAD	SW
Year Built	1988
DATE LAST MAINTENANCE	12/5/2005
MAINTENANCE MONTH	NOV
FACILITY S.A.	8
C Y REMOVED	10
COA Dam Engr.	RICHARD COSTALES
Last Insp. Date	12/8/2005
OSE Inspector	JAMES HEAD
Insp. Condition	SATISFACTORY
Design Storm Event	0.5 PMF
Dam Type	EARTHFILL/PIT
DamHazClass:	HIGH
Max Height (ft)	19
Dam Crest Elev	5034
OSE Action Items From Last Insp.	SEE LATEST ATTACHED OSE INSPECTION REPORT.
COA Notes to the File	NONE

NOTES

NONE

Dam Crest Length (ft)	1800
Dam Crest Width (ft)	12
Slope of U.S. Face (H:V)	3:1
Slope of D. S. Face (H:V)	3:1
Pond/Pit Side Slope (H:V)	3:1
Drainage Area (Acres)	2611
Capacity at Spillway Crest (Acre-ft)	63.95
Maximum Elevation of SDF (ft)	5034.55
Dead Storage Elevation (ft)	NA
Em. Spill. Type	SOIL CEMENT
Spillway Crest Elev (ft)	5031
Spillway Width (ft)	12
Spillway Length (ft)	1350
Spillway Capacity (cfs)	17400
FREEBOARD,Orig. OSE, ft	0
FREEBOARD,FEMA,ft	3
OUTLET DESCRIP	3- 54" DIA. CONCRETE PIPES
Conduit Size (in.)	54
Inlet Invert Elevation (ft)	5018
Flow Control Size (in.)	NA
Flow Control Location	NA

PIEDRA LISA DETENTION DAM



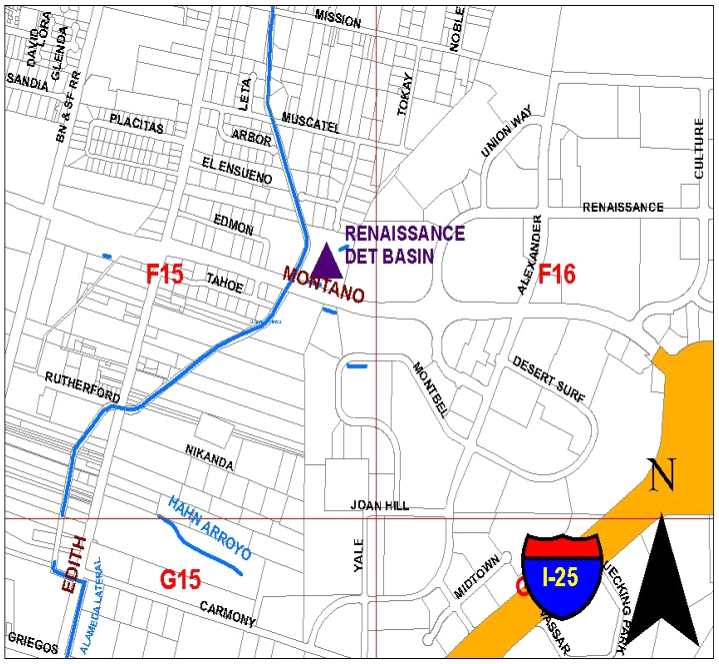
CITY ZONE KEY	H-23
CITY QUAD	NE
Year Built	1982
DATE LAST MAINTENANCE	12/5/2006
MAINTENANCE MONTH	NOV
FACILITY S.A.	8.08
C Y REMOVED	10
COA Dam Engr.	JAME EISENBERG
Last Insp. Date	1/5/2006
OSE Inspector	S. CHAUDHARY
Insp. Condition	SATISFACTORY
Design Storm Event	1 PMF
Dam Type	EARTH FILL
DamHazClass:	HIGH
Max Height (ft)	18
Dam Crest Elev	5928
OSE Action Items From Last Insp.	SEE LATEST ATTACHED OSE INSPECTION REPORT.
COA Notes to the File	NONE

NOTES

INSIDE OF OUTLET PIPELINE VIDEO TAPED IN 1996. OUTLET PIPE APPEARED TO BE IN GOOD CONDITION AT THAT TIME.

Dam Crest Length (ft)	889
Dam Crest Width (ft)	12
Slope of U.S. Face (H:V)	3:1
Slope of D. S. Face (H:V)	3:1
Pond/Pit Side Slope (H:V)	NA
Drainage Area (Acres)	378
Capacity at Spillway Crest (Acre-ft)	28
Maximum Elevation of SDF (ft)	5927.9
Dead Storage Elevation (ft)	5915
Em. Spill. Type	CONCRETE CHUTE
Spillway Crest Elev (ft)	5924.5
Spillway Width (ft)	220
Spillway Length (ft)	125
Spillway Capacity (cfs)	4973
FREEBOARD,Orig. OSE, ft	0
FREEBOARD,FEMA,ft	3.5
OUTLET DESCRIP	CONCRETE BOX W/ TRASH RACK
Conduit Size (in.)	30
Inlet Invert Elevation (ft)	5915
Flow Control Size (in.)	27
Flow Control Location	INLET BOX

RENAISSANCE DETENTION DAM



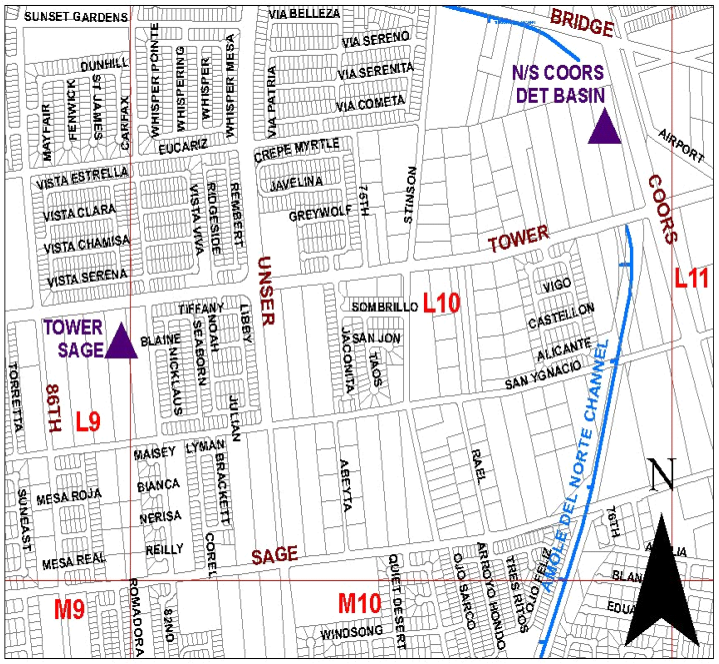
CITY ZONE KEY	F-15
CITY QUAD	NE
Year Built	1985
DATE LAST MAINTENANCE	12/7/2005
MAINTENANCE MONTH	NOV
FACILITY S.A.	3.71
C Y REMOVED	10
COA Dam Engr.	SERTIL KANBAR
Last Insp. Date	12/8/2005
OSE Inspector	JAMES HEAD
Insp. Condition	SATISFACTORY
Design Storm Event	1 PMF
Dam Type	EARTHFILL
DamHazClass:	HIGH
Max Height (ft)	15
Dam Crest Elev	5013.5
OSE Action Items From Last Insp.	SEE LATEST ATTACHED OSE INSPECTION REPORT.
COA Notes to the File	NEW TRASH RACK AND RISER INSTALLED 6/06. OUTLET PIPE JETTED CLEAN 7/06.

NOTES

PIPING FAILURE IN EAST ABUTMENT ALONG MONTANO REPAIRED IN 1987. OUTLET IS NOW UNGATED FLOW.

Dam Crest Length (ft)	1134
Dam Crest Width (ft)	12
Slope of U.S. Face (H:V)	3:1
Slope of D. S. Face (H:V)	2.5:1
Pond/Pit Side Slope (H:V)	3:1
Drainage Area (Acres)	264
Capacity at Spillway Crest (Acre-ft)	19.9
Maximum Elevation of SDF (ft)	5012.86
Dead Storage Elevation (ft)	NA
Em. Spill. Type	CONCRETE CHUTE
Spillway Crest Elev (ft)	5010.5
Spillway Width (ft)	100
Spillway Length (ft)	
Spillway Capacity (cfs)	1367
FREEBOARD,Orig. OSE, ft	0.64
FREEBOARD,FEMA,ft	3
OUTLET DESCRIP	PERFORATED STEEL RISER
Conduit Size (in.)	18
Inlet Invert Elevation (ft)	5001.5
Flow Control Size (in.)	24 (PERFORATED RISER)
Flow Control Location	OUTLET

TOWER/ SAGE DETENTION DAM



CITY ZONE KEY	L-09
CITY QUAD	SW
Year Built	2001
DATE LAST MAINTENANCE	12/6/2005
MAINTENANCE MONTH	DEC
FACILITY S.A.	1.75
C Y REMOVED	NA
COA Dam Engr.	RICHARD COSTALES
Last Insp. Date	12/8/2005
OSE Inspector	JAMES HEAD
Insp. Condition	SATISFACTORY
Design Storm Event	PMP
Dam Type	EARTHFILL/PIT
DamHazClass:	HIGH
Max Height (ft)	13.5
Dam Crest Elev	5093.5
OSE Action Items From Last Insp.	SEE LATEST ATTACHED OSE INSPECTION REPORT.
COA Notes to the File	NEW STRUCTURE

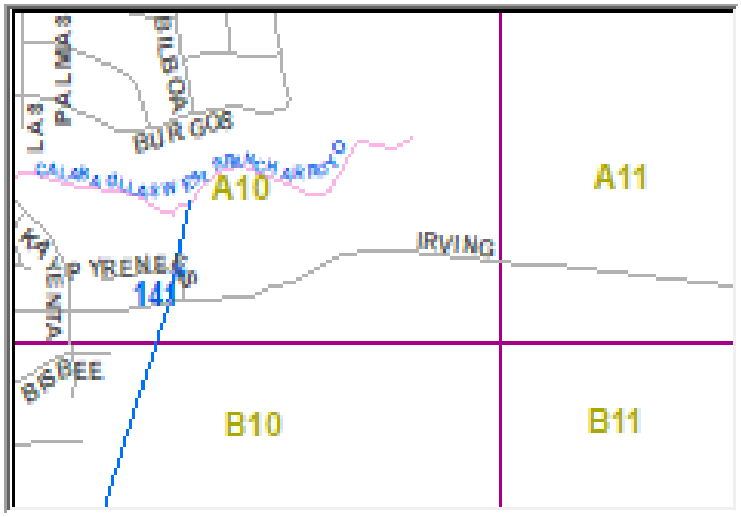
NOTES

ORIGINALLY CONSTRUCTED BY AMAFCA. BASEBALL FACILITY NOW OCCUPIES MAJOR PART OF STORAGE AREA OF DAM.

Dam Crest Length (ft)	800
Dam Crest Width (ft)	15
Slope of U.S. Face (H:V)	5:1
Slope of D. S. Face (H:V)	5:1
Pond/Pit Side Slope (H:V)	5:1
Drainage Area (Acres)	448
Capacity at Spillway Crest (Acre-ft)	56
Maximum Elevation of SDF (ft)	5093.1
Dead Storage Elevation (ft)	NA
Em. Spill. Type	SHOTCRETE
Spillway Crest Elev (ft)	5089.3
Spillway Width (ft)	15
Spillway Length (ft)	151
Spillway Capacity (cfs)	4856
FREEBOARD,Orig. OSE, ft	0.4
FREEBOARD,FEMA,ft	4.2
OUTLET DESCRIP	2 SURGE BEEHIVES
Conduit Size (in.)	36
Inlet Invert Elevation (ft)	5066.3
Flow Control Size (in.)	12"X15"
Flow Control Location	BEEHIVES

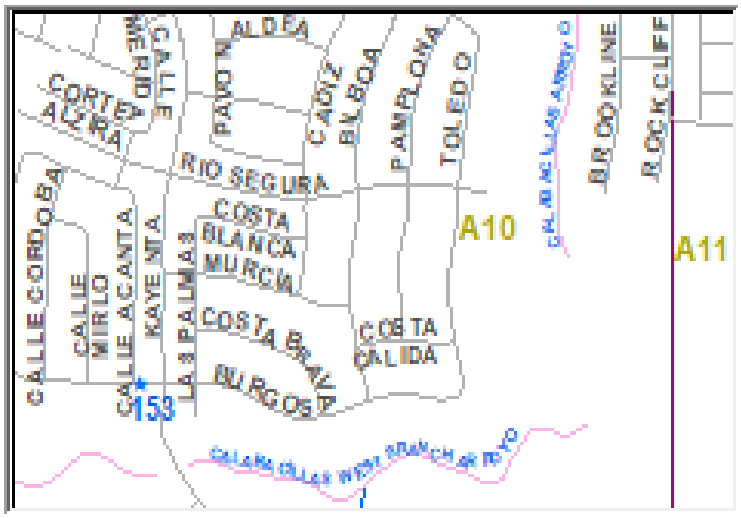
SWQ FEATURES

LOCATION	PYRENEES NW
STRUCTURE_NAME	SWQ-INLET



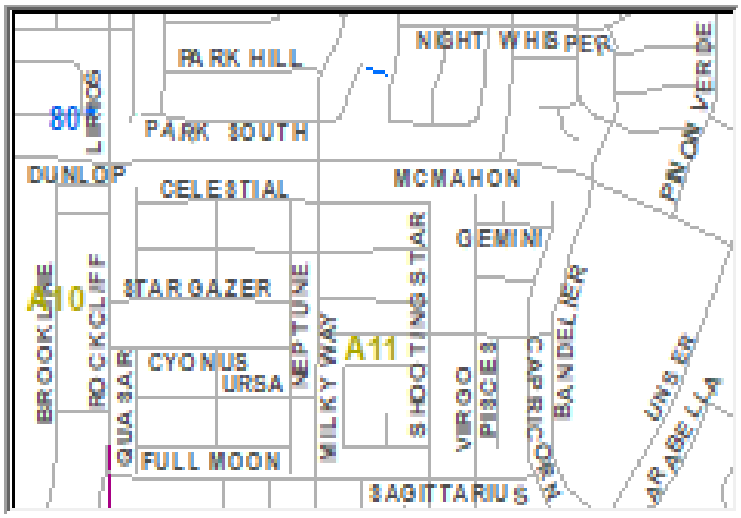
MAP_KEY	A10	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	722683	NUMBER	141

LOCATION	BURGOS-KAYENTA NW
STRUCTURE_NAME	SWQ-MH



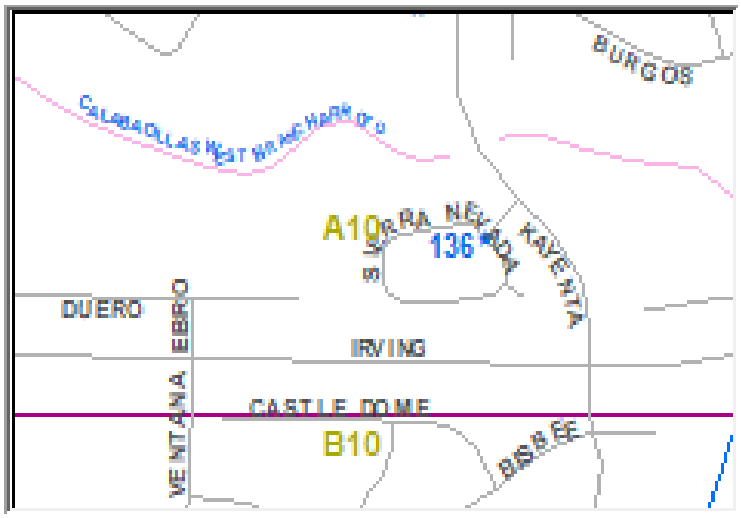
MAP_KEY	A10	City_Quad	NW
Year_Built	2004	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	684981	NUMBER	153

LOCATION	**6200 NUEVA ESPANA NW**
STRUCTURE_NAME	TRASH SCREEN



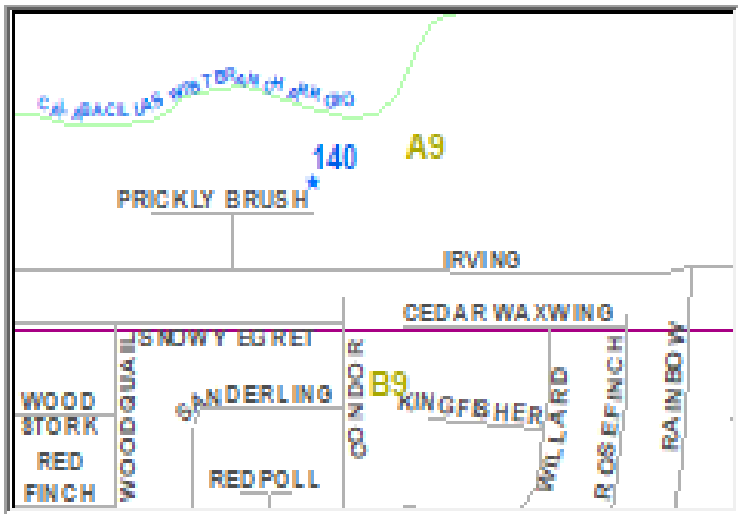
MAP_KEY	A10	City_Quad	NW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	EXPANDED METAL 3/4 IN 9 GAGE		
SWQ SIZE	8' X 25 IN HORIZ+12'X6 IN VERTICAL	cost	$695
PROJECT_NO	na-vendar	NUMBER	80

LOCATION	SIERRA NEVADA NW
STRUCTURE_NAME	SWQ-MH



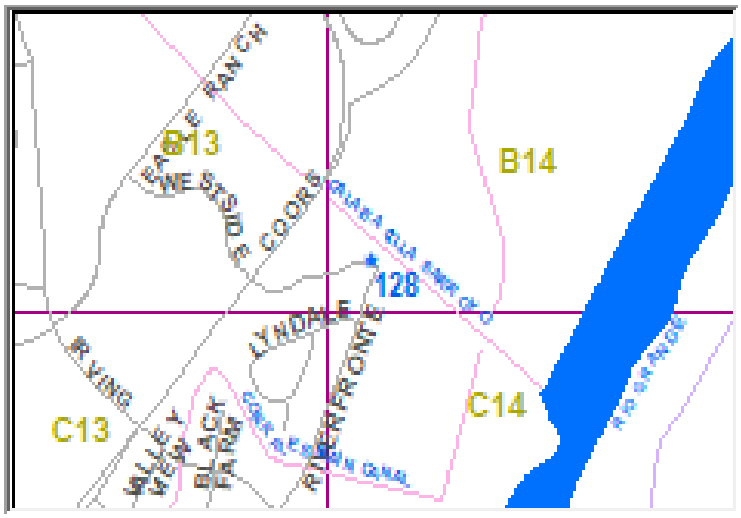
MAP_KEY	A10	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	722682	NUMBER	136

LOCATION	PRICKLY BRUSH
STRUCTURE_NAME	SWQ-MH



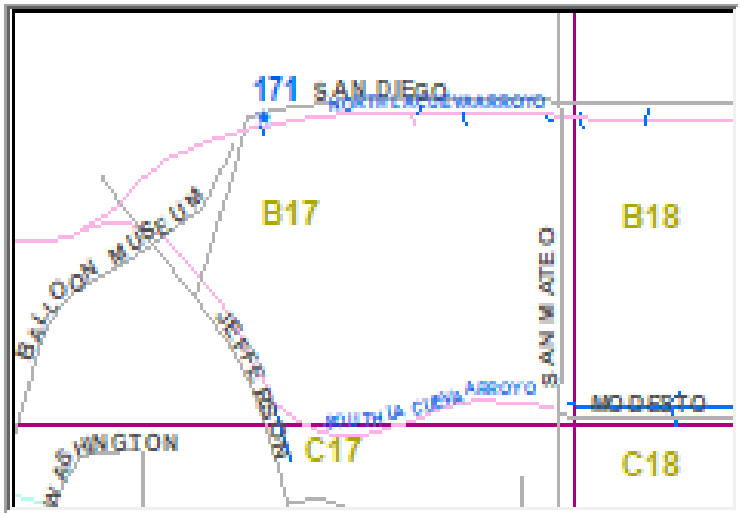
MAP_KEY	A9	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	793781	NUMBER	140

LOCATION	**WESTSIDE-RIVERF FRONT NW EAST OF COORS**
STRUCTURE_NAME	SWQ-INLET



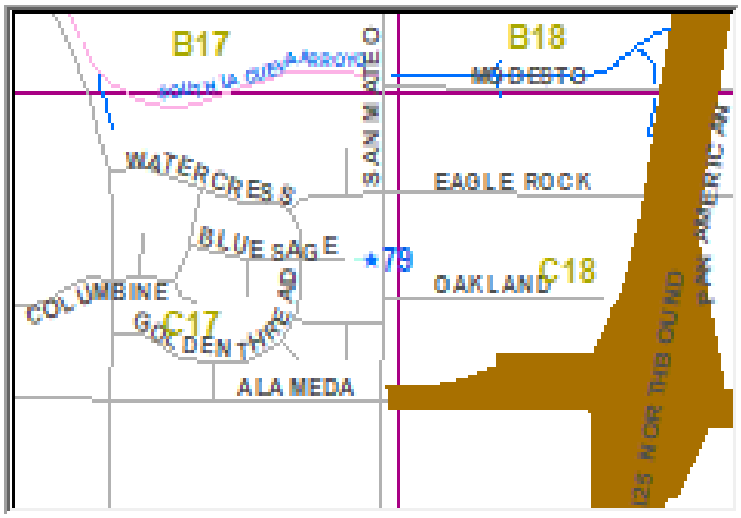
MAP_KEY	B14	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	732981	NUMBER	128

LOCATION	SAN DIEGO WEST OF SAN MATEO
STRUCTURE_NAME	SWQ-INLET



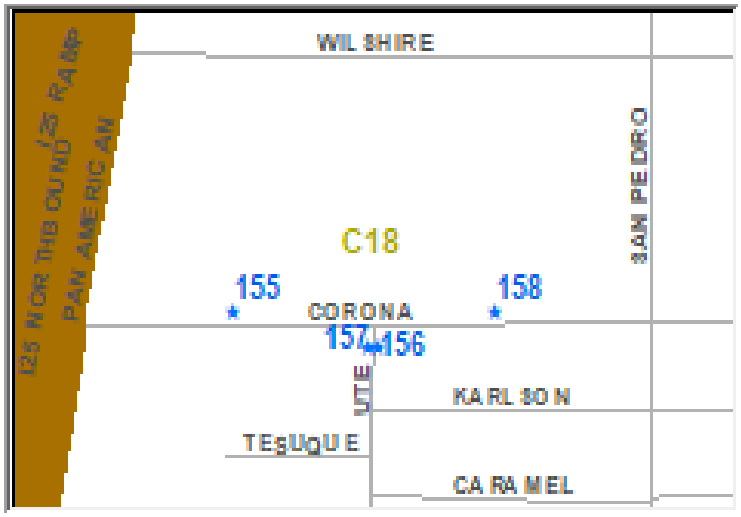
MAP_KEY	B17	City_Quad	NW
Year_Built	2004	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	707791	NUMBER	171

LOCATION	**5117 BLUE SAGE NE (AND SAN MATEO)**
STRUCTURE_NAME	SECURITY RACK



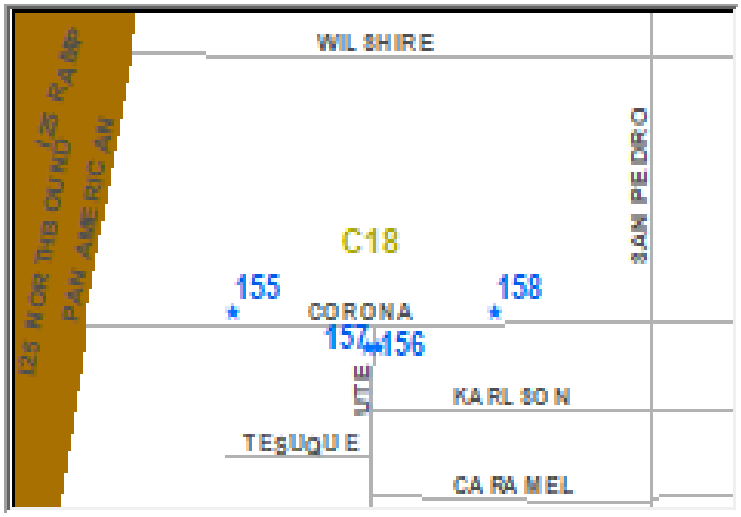
MAP_KEY	C17	City_Quad	NE
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	3 CMP SECURITY RACKS		
SWQ SIZE	24 IN DIA	cost	$1,535
PROJECT_NO		NUMBER	79

LOCATION	END OF CORONA
STRUCTURE_NAME	SWQ-INLET



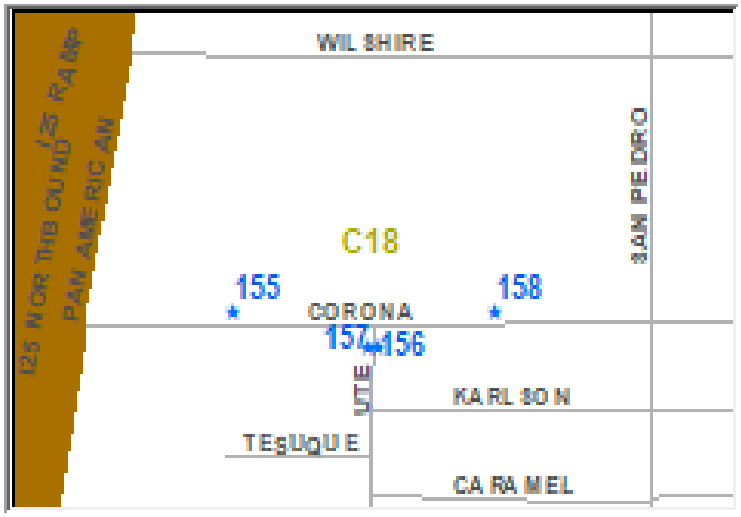
MAP_KEY	C18	City_Quad	NE
Year_Built	2003	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	674681	NUMBER	155

LOCATION	UTE SOUTH OF CORONA
STRUCTURE_NAME	SWQ-INLET



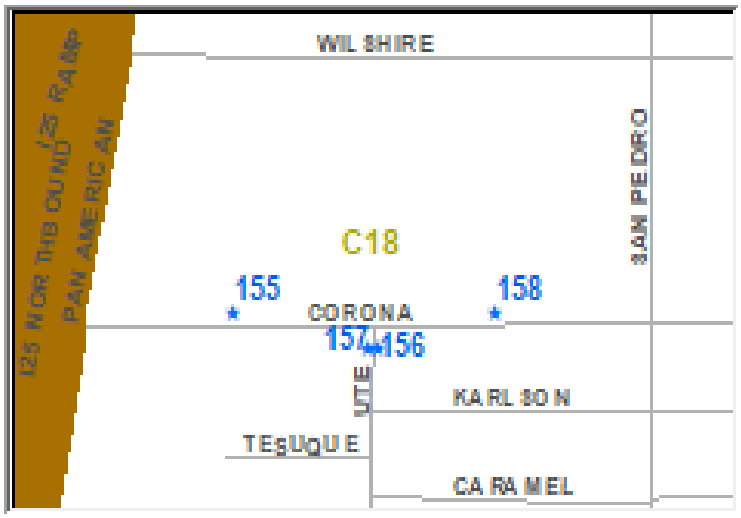
MAP_KEY	C18	City_Quad	NE
Year_Built	2003	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	674681	NUMBER	156

LOCATION	UTE SOUTH OF CORONA
STRUCTURE_NAME	SWQ-INLET



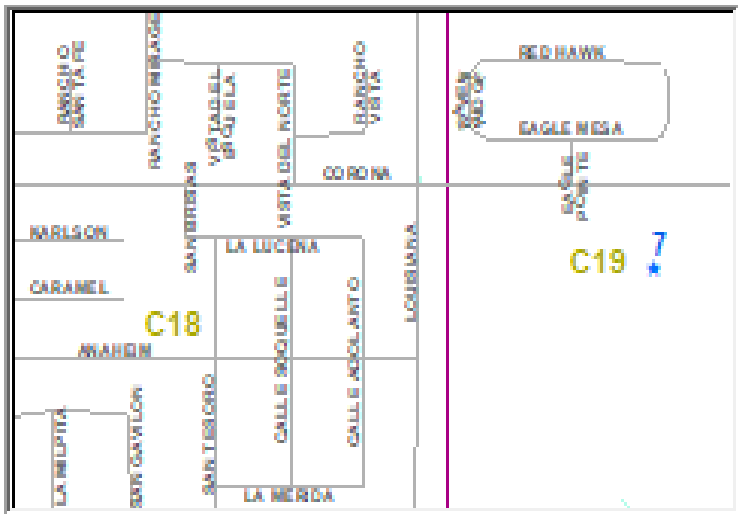
MAP_KEY	C18	City_Quad	NE
Year_Built	2003	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	674681	NUMBER	157

LOCATION	CORONA WEST OF SAN PEDRO
STRUCTURE_NAME	SWQ-INLET



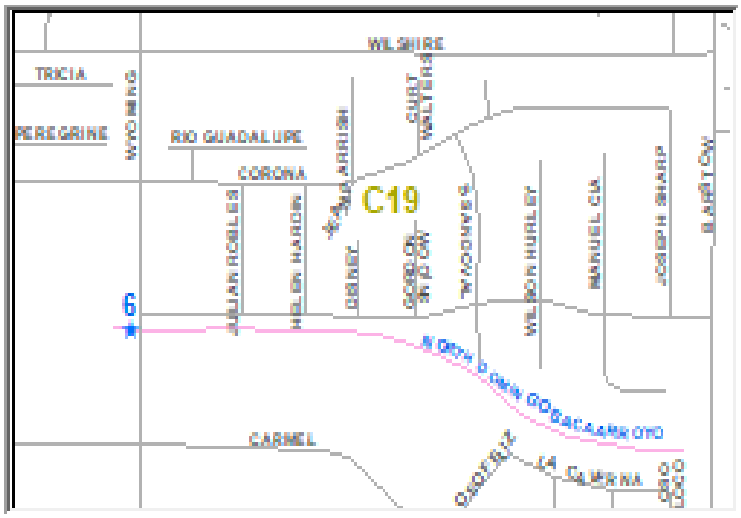
MAP_KEY	C18	City_Quad	NE
Year_Built	2003	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	674681	NUMBER	158

LOCATION	0.2 M SE LOUISIANA AND CORONA
STRUCTURE_NAME	



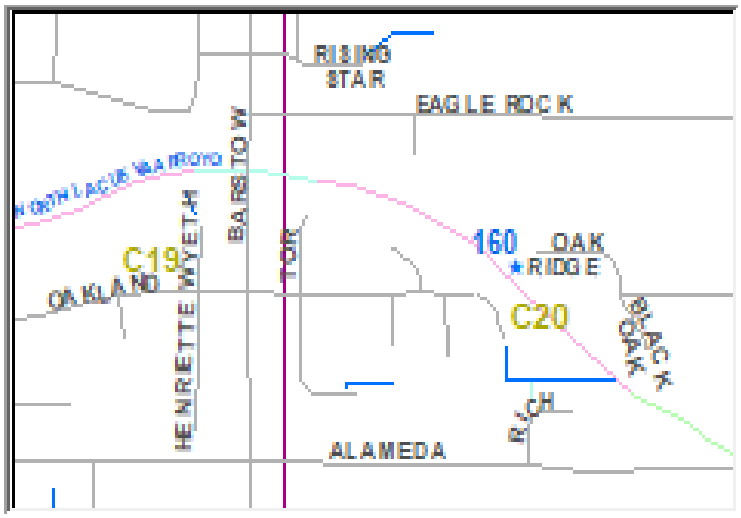
MAP_KEY	C19	City_Quad	NE
Year_Built	2006	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\00
NOTES	SECURITY RACK		
SWQ SIZE	21' W X 29' L	cost	
PROJECT_NO		NUMBER	7

LOCATION	WYOMING 0.25 M N PASEO DEL NORTE
STRUCTURE_NAME	



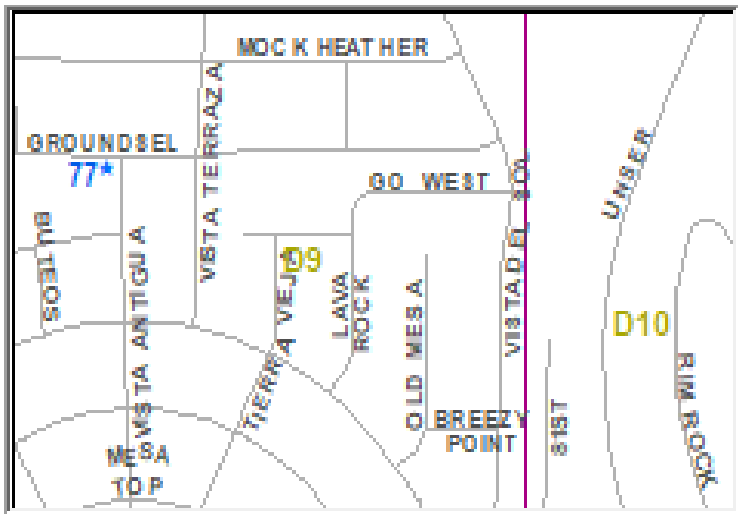
MAP_KEY	C19	City_Quad	NE
Year_Built	2006	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\00
NOTES	NEEDS SPECIAL ATTENTION		
SWQ SIZE	21' W X 29' L	cost	
PROJECT_NO		NUMBER	6

LOCATION	END OF OAK RIDGE
STRUCTURE_NAME	SWQ-MH



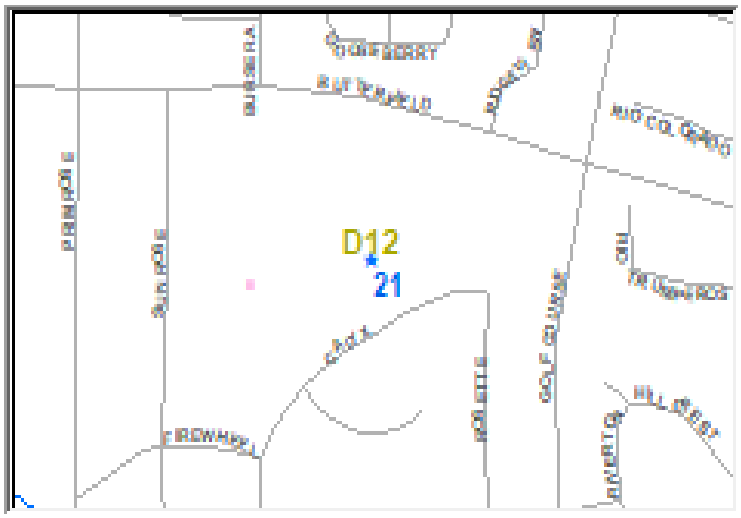
MAP_KEY	C20	City_Quad	NE
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	160

LOCATION	8501 GROUNDSEL NW
STRUCTURE_NAME	TRASH SCREEN



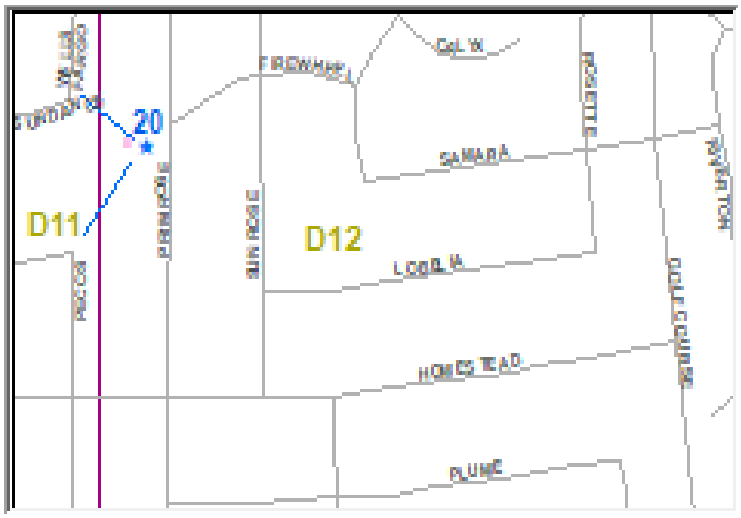
MAP_KEY	D09	City_Quad	NW
Year_Built	2016	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	3"X3" CLEAR OPENINGS-3/4" D BARS-INSTALLED BY ED ON 11-10-2016		
SWQ SIZE	19 W1X 48L X 53W2 AND 13H X 53W2 IN	cost	$1,678
PROJECT_NO		NUMBER	77

LOCATION	**0.2 M SW GOLF COURSE AND BUTTERFIELD**
STRUCTURE_NAME	



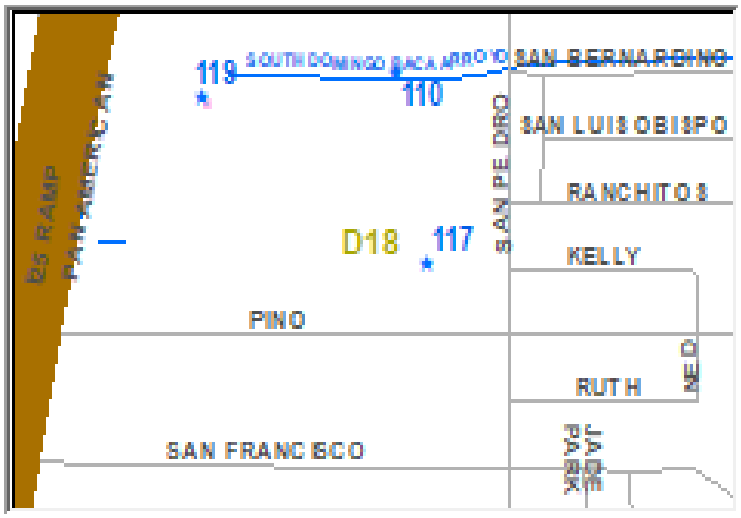
MAP_KEY	D12	City_Quad	NW
Year_Built	2005	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE BUTTERFIELD POND-PARK		
SWQ SIZE	10' W X 13' L	cost	
PROJECT_NO		NUMBER	21

LOCATION	**PRIMROSE AND FIREWHEEL**
STRUCTURE_NAME	



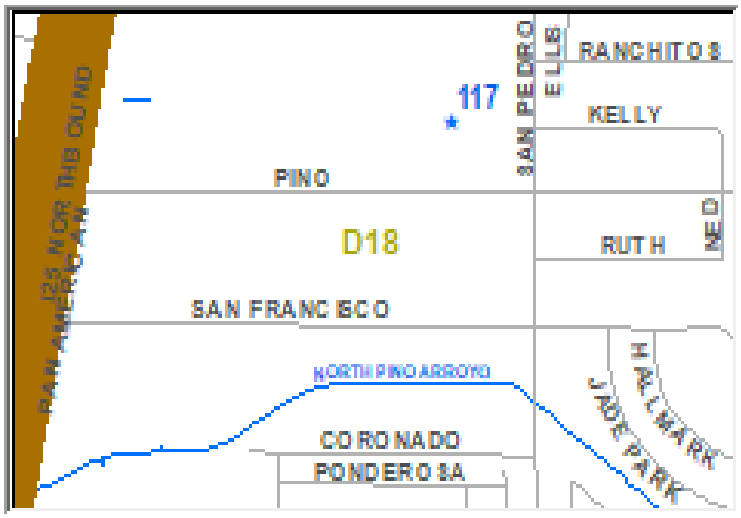
MAP_KEY	D12	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	SECURITY RACK, INSIDE PRIMROSE- FIREWHEEL POND		
SWQ SIZE	8' W X 8' L	cost	
PROJECT_NO		NUMBER	20

LOCATION	PINO YARD AT PINO AND SAN PEDRO
STRUCTURE_NAME	SWQF



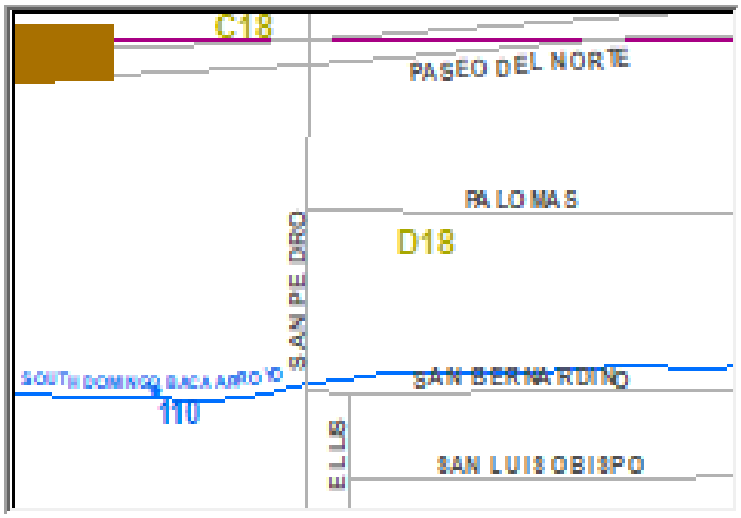
MAP_KEY	D18	City_Quad	NE
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	OIL SEPARATOR		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	119

LOCATION	**PINO YARD AT PINO AND SAN PEDRO**
STRUCTURE_NAME	SWQF



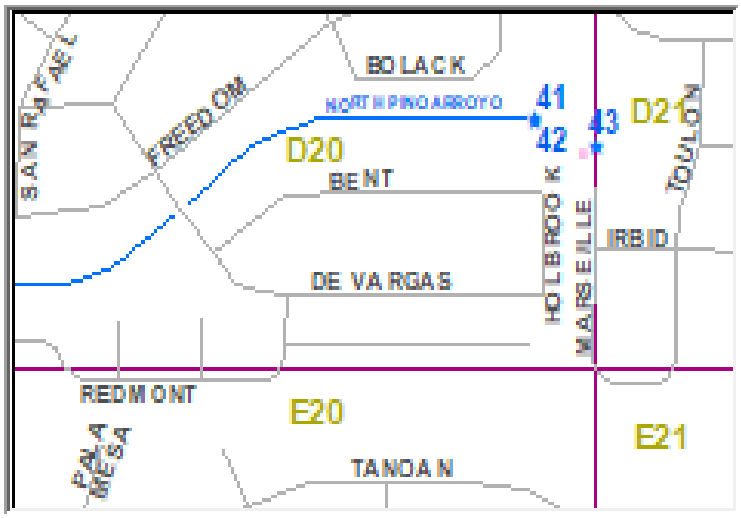
MAP_KEY	D18	City_Quad	NE
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	PERMEABLE PAVEMENT		
SWQ SIZE		cost	
PROJECT_NO	528000	NUMBER	117

LOCATION	TH DOMINGO BACA ARROYO-WEST OF SAN PE
STRUCTURE_NAME	BIO-SWALES



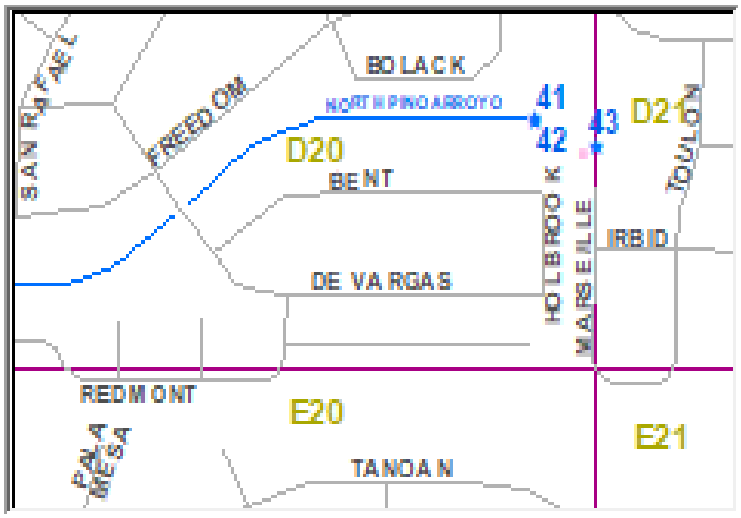
MAP_KEY	D18	City_Quad	NE
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	110

LOCATION	0.1 M SW QUINTESSENCE AND TOULON
STRUCTURE_NAME	



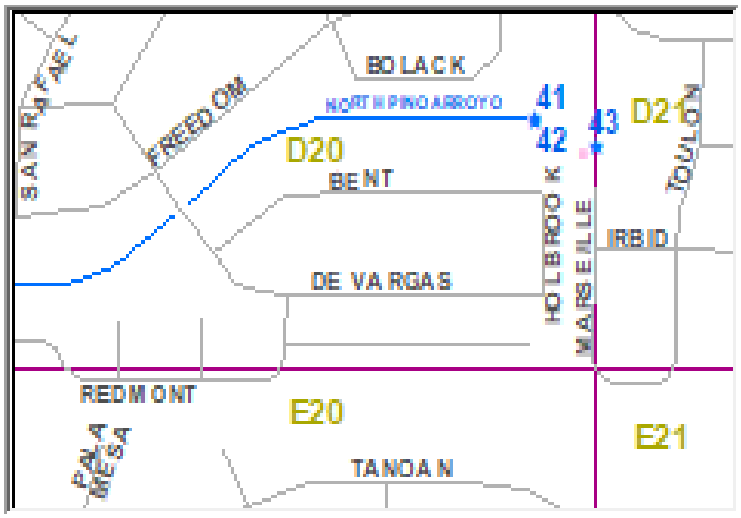
MAP_KEY	D20	City_Quad	NE
Year_Built	1998	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE THE QUINTESSENCE POND#3 (IT IS A PARK)		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	43

LOCATION	**0.1 M S HOLBROOK AND FREEDOM-SOUTH**
STRUCTURE_NAME	



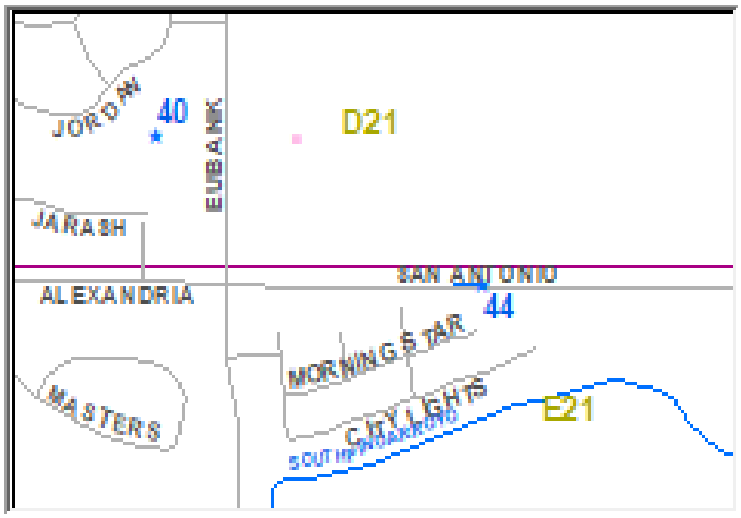
MAP_KEY	D20	City_Quad	NE
Year_Built	1998	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	SECURITY RACK, ADJACENT AT #41		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	42

LOCATION	0.1 M S HOLBROOK AND FREEDOM-NORTH
STRUCTURE_NAME	



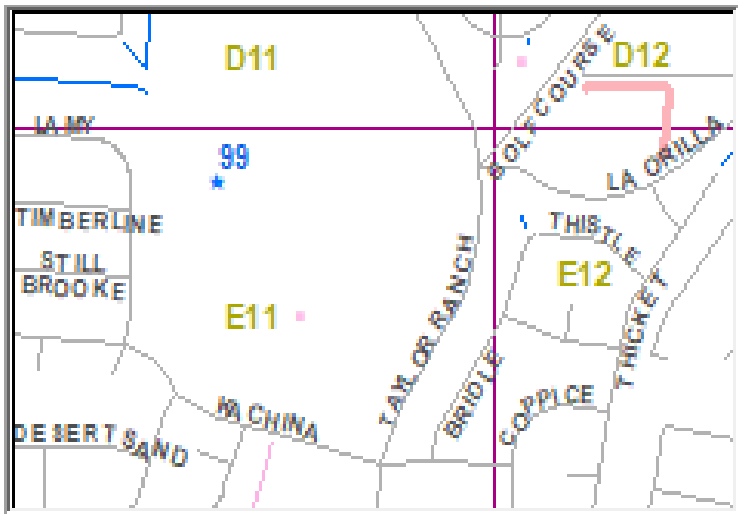
MAP_KEY	D20	City_Quad	NE
Year_Built	1998	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	SECURITY RACK, ADJACENT TO #42		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	41

LOCATION	NW EUBANK AND SANTA MONICA
STRUCTURE_NAME	



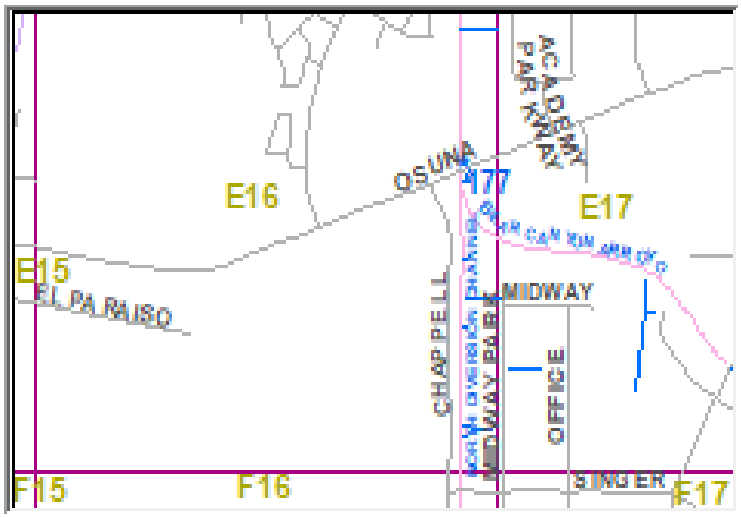
MAP_KEY	D21	City_Quad	NE
Year_Built	1998	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE THE QUINTESSENCE SUBDIV POND#2		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	40

LOCATION	**INSIDE MARIPOSA POND**
STRUCTURE_NAME	



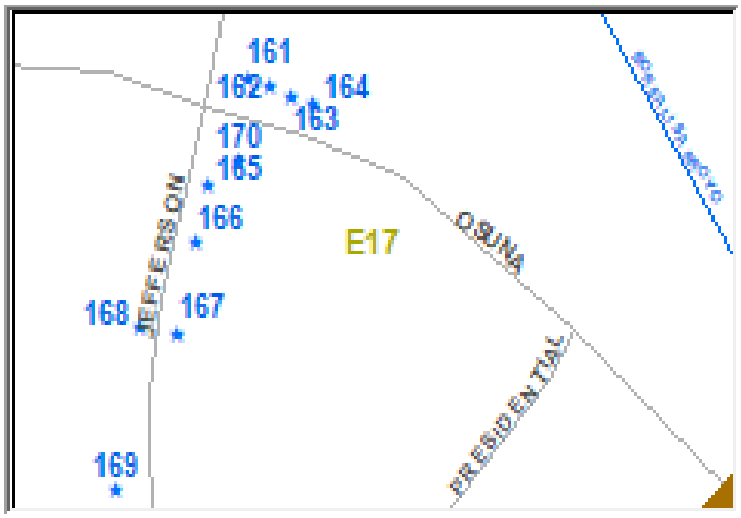
MAP_KEY	E11	City_Quad	NW
Year_Built	1994	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	PR# 400090		
SWQ SIZE	24 IN CMP	cost	
PROJECT_NO		NUMBER	99

LOCATION	OSUNA-NDC
STRUCTURE_NAME	SWQ-MH



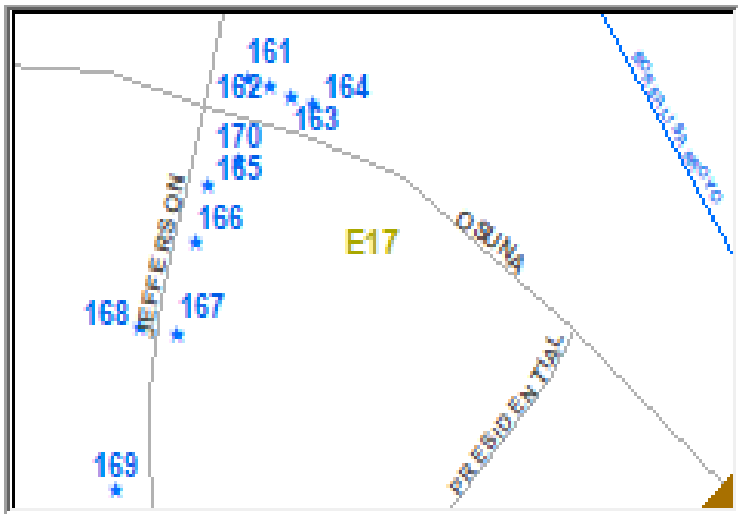
MAP_KEY	E16	City_Quad	NE
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	177

LOCATION	NE OF OSUNA AND JEFFERSON
STRUCTURE_NAME	SWQ-INLET



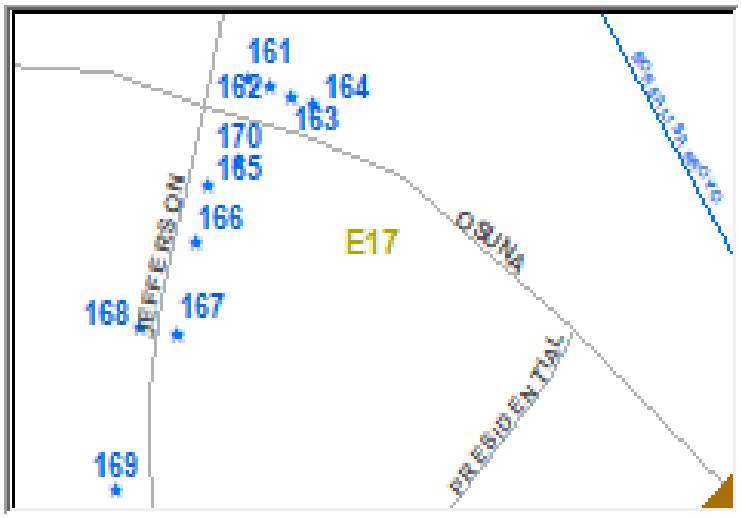
MAP_KEY	E17	City_Quad	NE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	547991	NUMBER	163

LOCATION	**SE OF OSUNA AND JEFFERSON**
STRUCTURE_NAME	SWQ-INLET



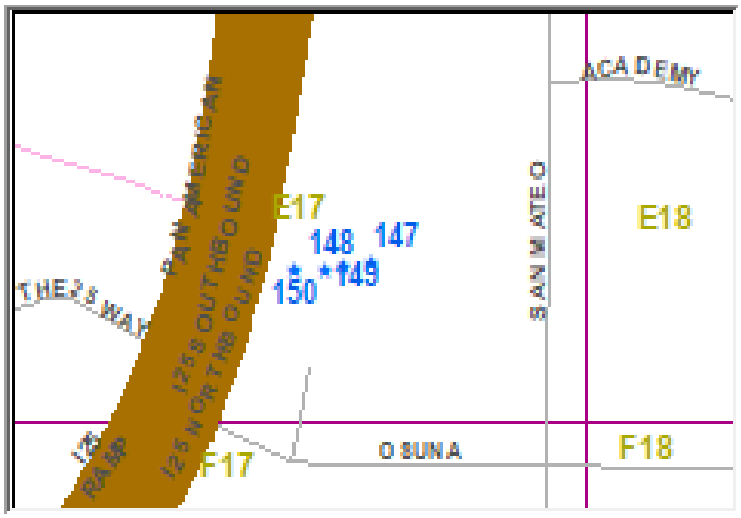
MAP_KEY	E17	City_Quad	NE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	547991	NUMBER	165

LOCATION	**JEFFERSON SOUTH OF OSUNA**
STRUCTURE_NAME	SWQ-INLET



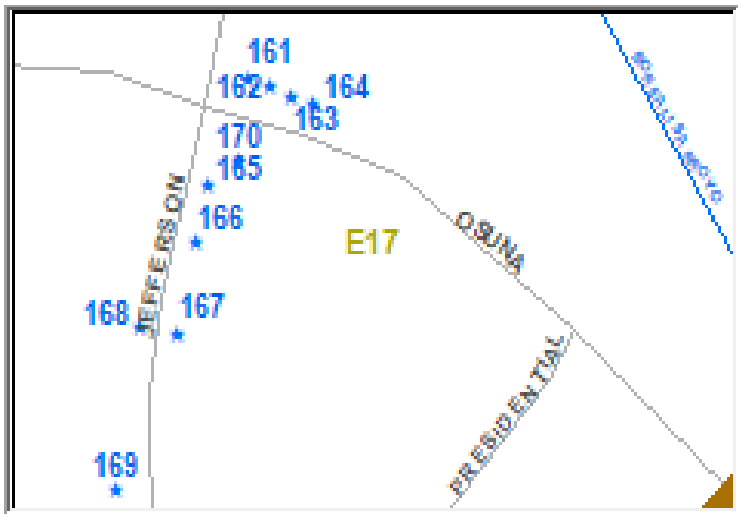
MAP_KEY	E17	City_Quad	NE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	547991	NUMBER	168

LOCATION	**OSUNA-SAN MATEO-I-25**
STRUCTURE_NAME	SWQ-MH



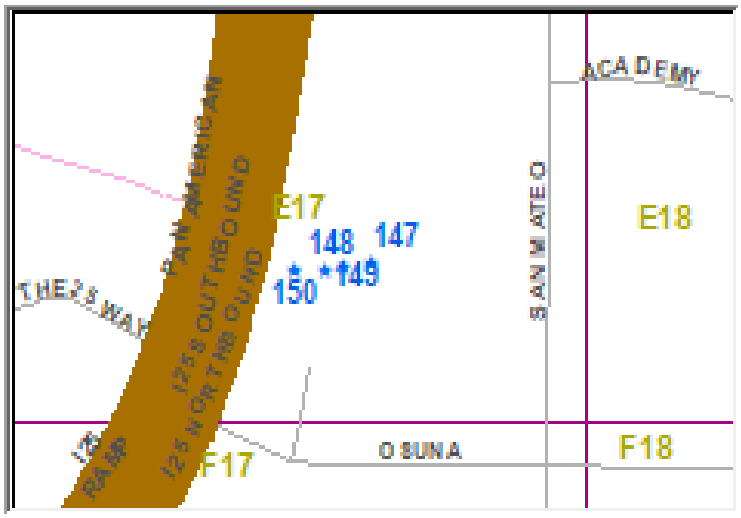
MAP_KEY	E17	City_Quad	NE
Year_Built	2006	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	723681	NUMBER	147

LOCATION	**SE OF OSUNA AND JEFFERSON**
STRUCTURE_NAME	SWQ-INLET



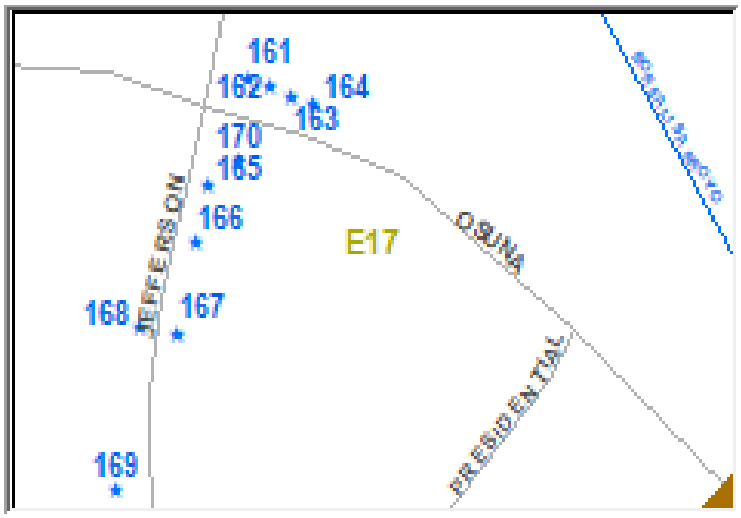
MAP_KEY	E17	City_Quad	NE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	547991	NUMBER	170

LOCATION	**OSUNA-SAN MATEO-I-25**
STRUCTURE_NAME	SWQ-MH



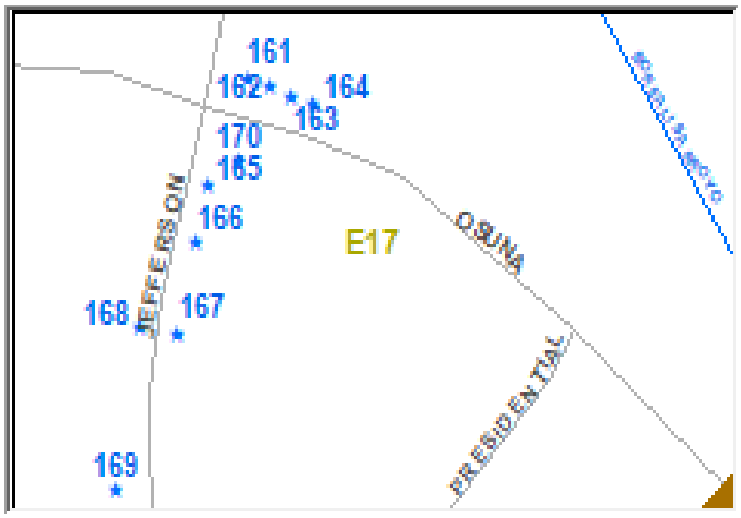
MAP_KEY	E17	City_Quad	NE
Year_Built	2006	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	723681	NUMBER	148

LOCATION	NE OF OSUNA AND JEFFERSON
STRUCTURE_NAME	SWQ-INLET



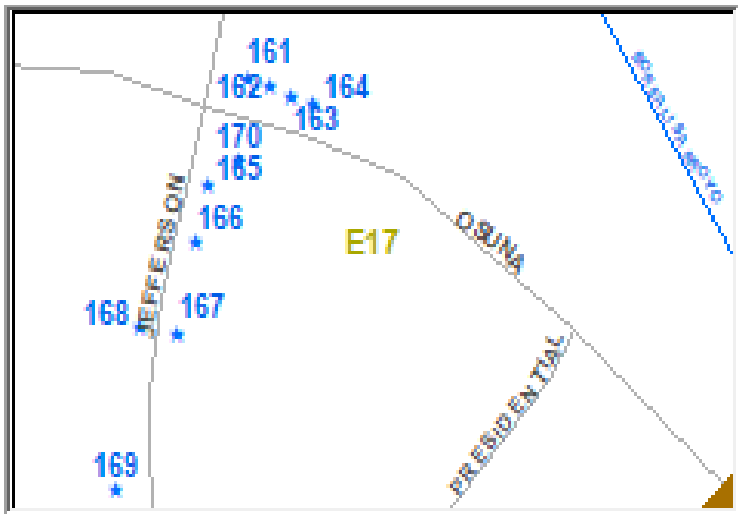
MAP_KEY	E17	City_Quad	NE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	547991	NUMBER	162

LOCATION	**JEFFERSON SOUTH OF OSUNA**
STRUCTURE_NAME	SWQ-INLET



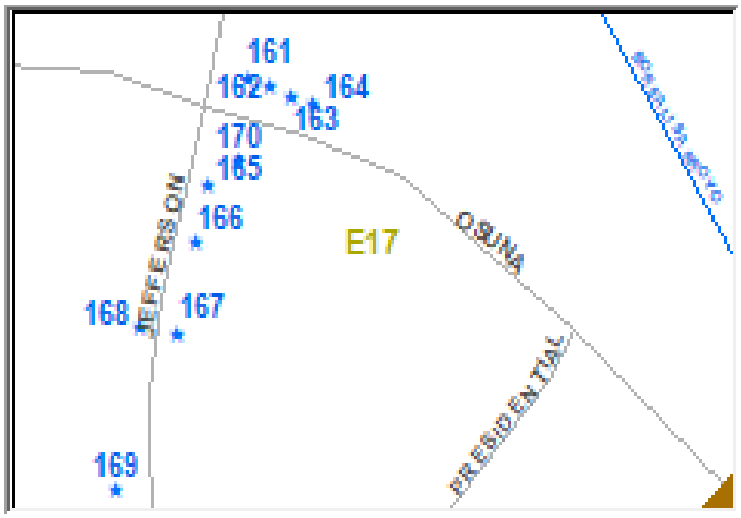
MAP_KEY	E17	City_Quad	NE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	547991	NUMBER	169

LOCATION	**SE OF OSUNA AND JEFFERSON**
STRUCTURE_NAME	SWQ-INLET



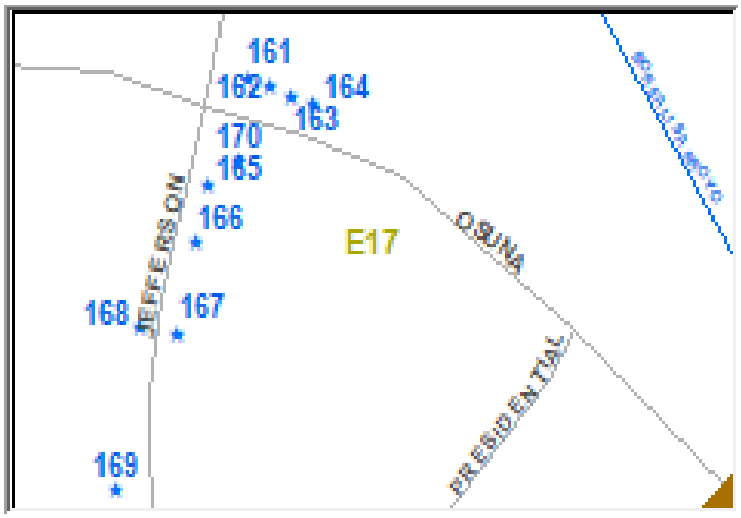
MAP_KEY	E17	City_Quad	NE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	547991	NUMBER	166

LOCATION	NE OF OSUNA AND JEFFERSON
STRUCTURE_NAME	SWQ-INLET



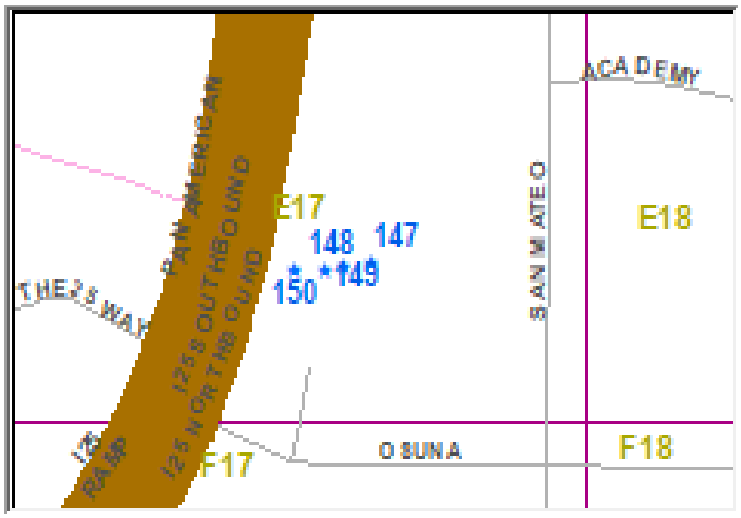
MAP_KEY	E17	City_Quad	NE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	547991	NUMBER	164

LOCATION	NE OF OSUNA AND JEFFERSON
STRUCTURE_NAME	SWQ-INLET



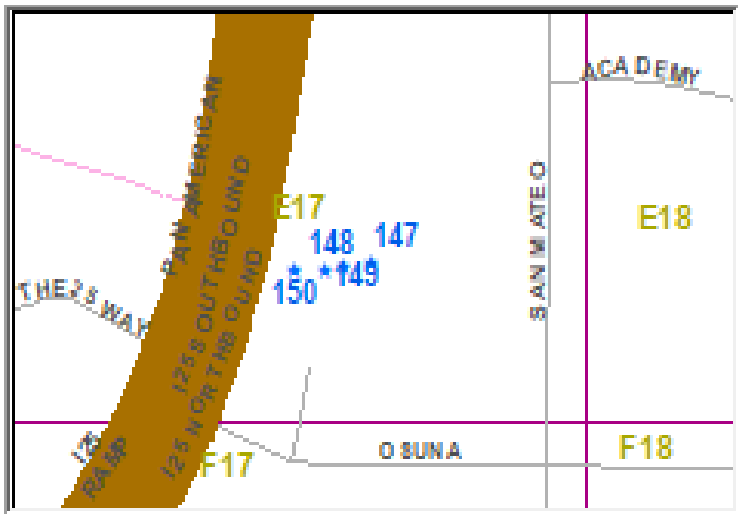
MAP_KEY	E17	City_Quad	NE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	547991	NUMBER	161

LOCATION	OSUNA-SAN MATEO-I-25
STRUCTURE_NAME	SWQ-MH



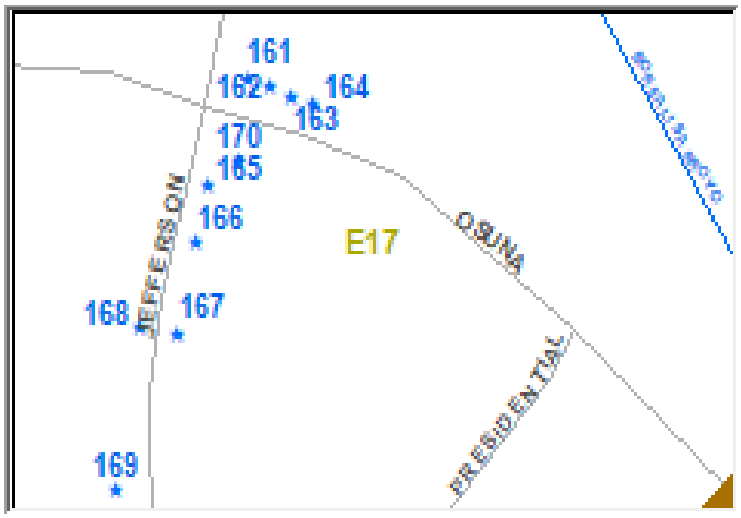
MAP_KEY	E17	City_Quad	NE
Year_Built	2006	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	723681	NUMBER	150

LOCATION	**OSUNA-SAN MATEO-I-25**
STRUCTURE_NAME	SWQ-MH



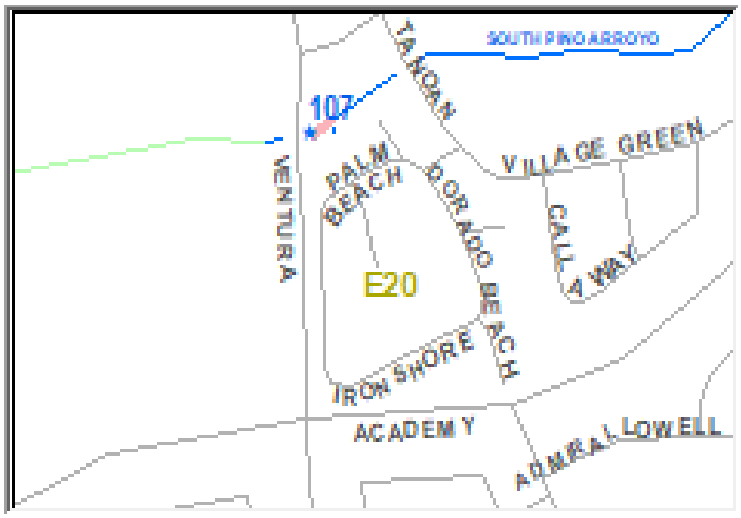
MAP_KEY	E17	City_Quad	NE
Year_Built	2006	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	723681	NUMBER	149

LOCATION	**JEFFERSON SOUTH OF OSUNA**
STRUCTURE_NAME	SWQ-INLET



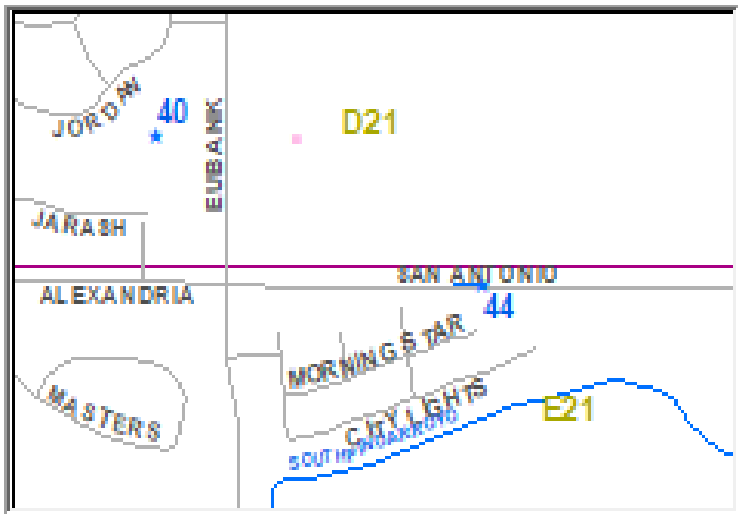
MAP_KEY	E17	City_Quad	NE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	547991	NUMBER	167

LOCATION	SOUTH PINO ARROYO AT VENTURA
STRUCTURE_NAME	SWQ STRUCTURE



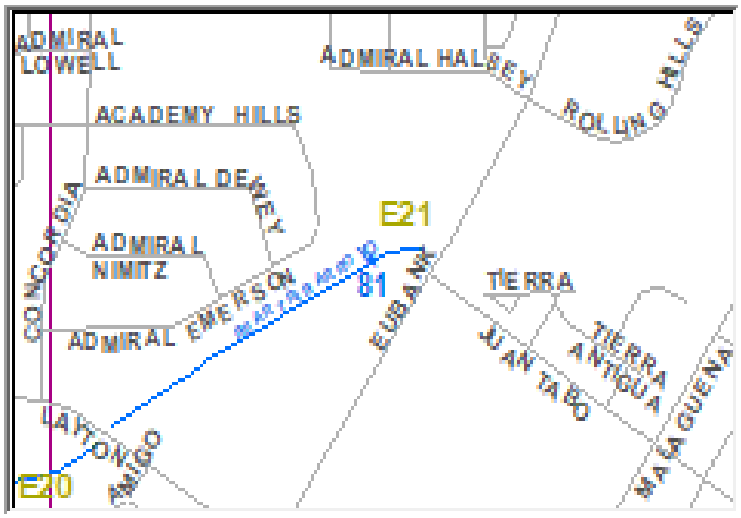
MAP_KEY	E20	City_Quad	NE
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	107

LOCATION	SAN ANTONIO 0.2 M E EUBANK
STRUCTURE_NAME	



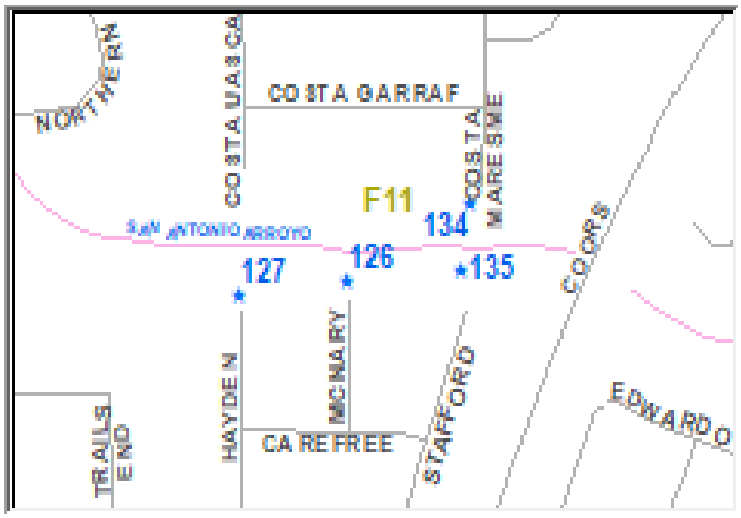
MAP_KEY	E21	City_Quad	NE
Year_Built	2006	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	SECURITY RACK		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	44

LOCATION	CADEMY HILLS PARK-EUBANK AND JUAN TAB
STRUCTURE_NAME	TRASH SCREEN



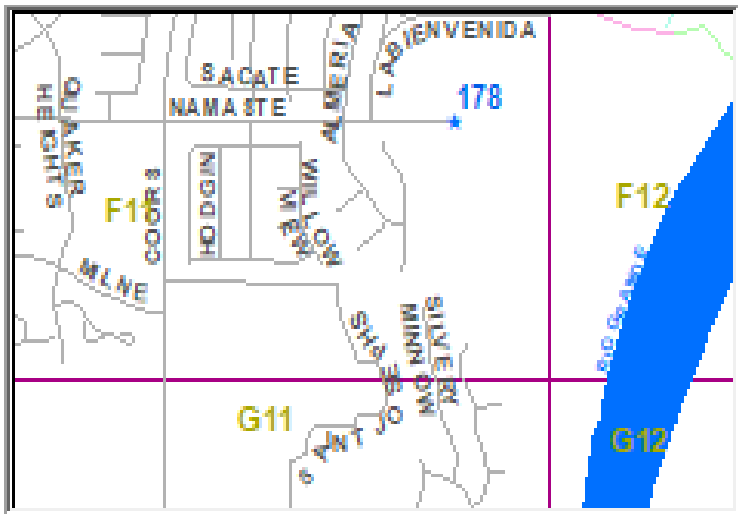
MAP_KEY	E21	City_Quad	NE
Year_Built	2016	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	6" SPACING, 3/4" BARS		
SWQ SIZE	2' W X 2' H X 8'L	cost	$1,923
PROJECT_NO		NUMBER	81

LOCATION	**COSTA MARESME**
STRUCTURE_NAME	SWQ-MH



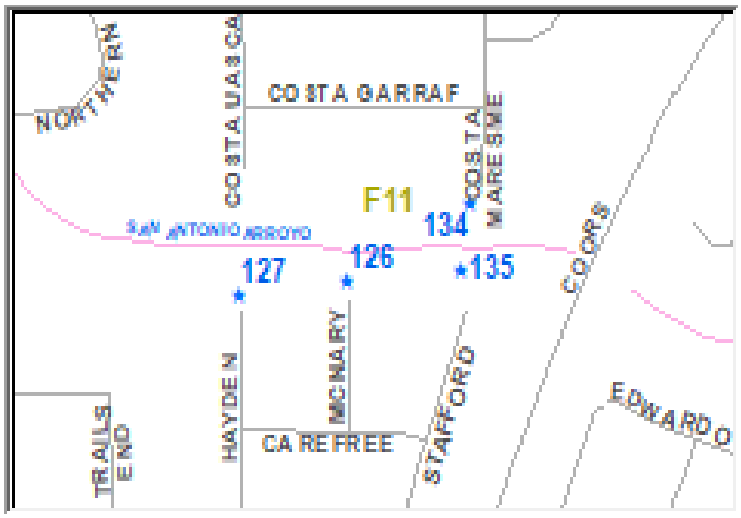
MAP_KEY	F11	City_Quad	NW
Year_Built	2008	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	791481	NUMBER	134

LOCATION	END OF NAMASTE-RIO GRANDE-SWQ-MH
STRUCTURE_NAME	SWQ-MH



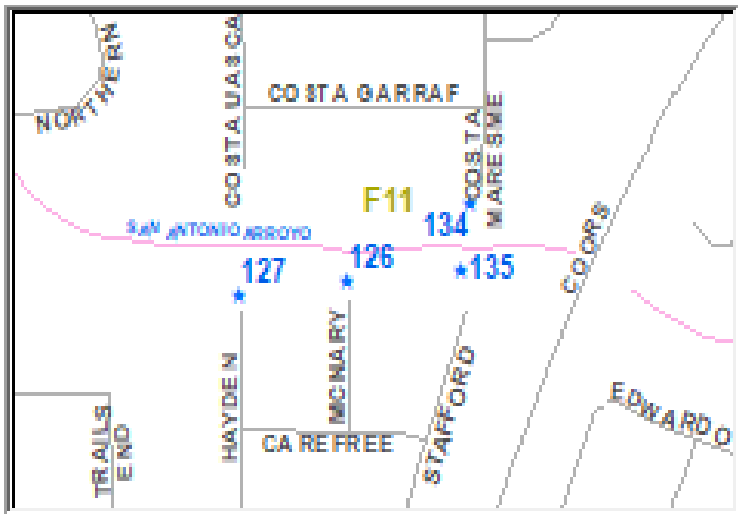
MAP_KEY	F11	City_Quad	NW
Year_Built	2004	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	699582	NUMBER	178

LOCATION	**END OF MCNARY**
STRUCTURE_NAME	SWQ-INLET



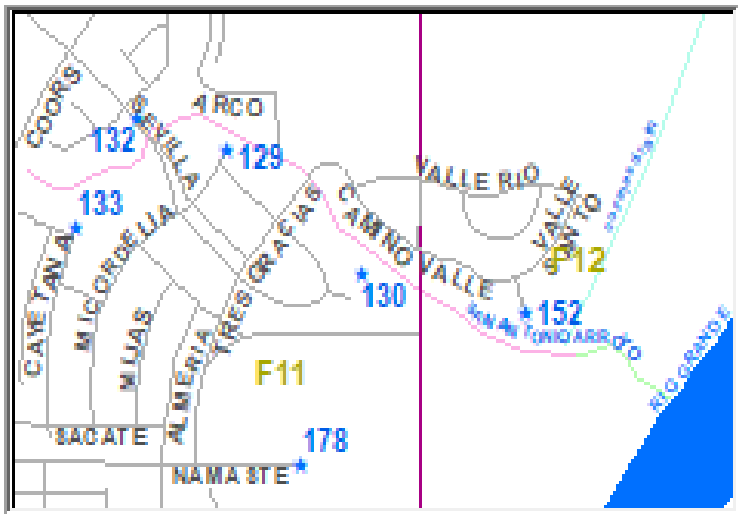
MAP_KEY	F11	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	WESTERN TRAILS SUBDIV		
SWQ SIZE		cost	
PROJECT_NO	700581	NUMBER	126

LOCATION	END OF HAYDEN
STRUCTURE_NAME	SWQ-INLET



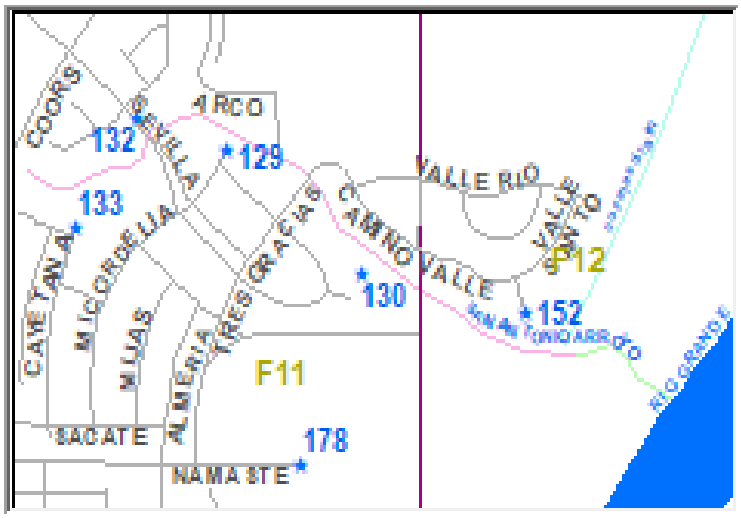
MAP_KEY	F11	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	700581	NUMBER	127

LOCATION	CORDELIA NW-EAST OF CORDELIA R/W BY ARI
STRUCTURE_NAME	SWQ-MH



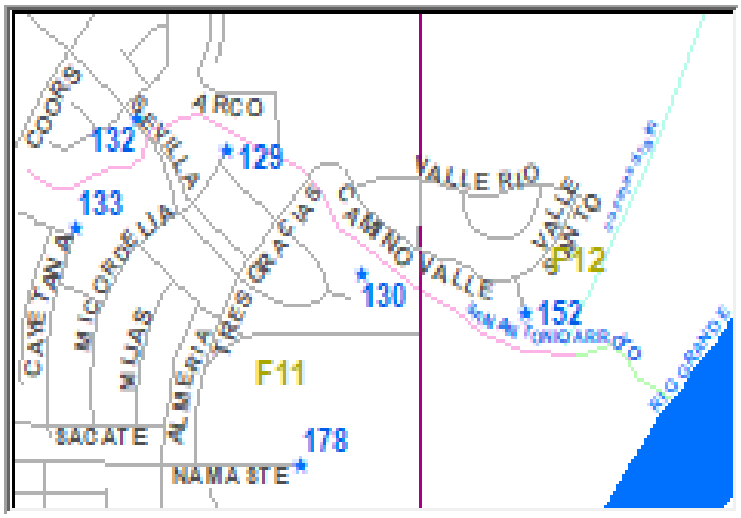
MAP_KEY	F11	City_Quad	NW
Year_Built	2009	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	730881	NUMBER	129

LOCATION	SEVILLA
STRUCTURE_NAME	SWQ-MH



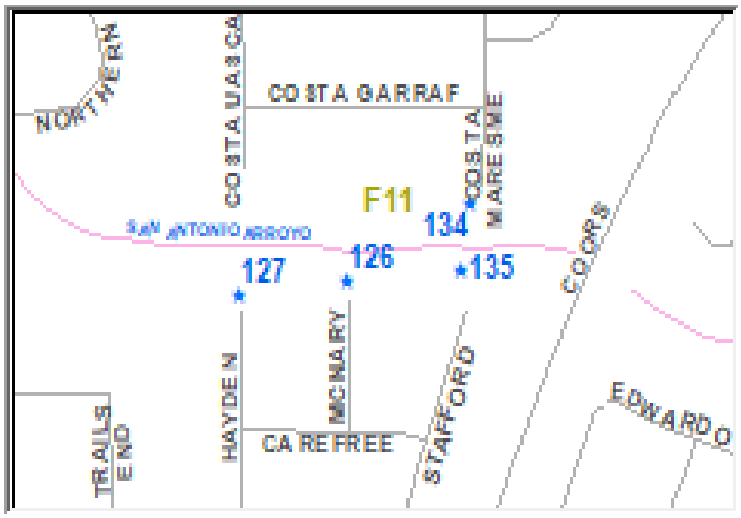
MAP_KEY	F11	City_Quad	NW
Year_Built	2009	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	730881	NUMBER	130

LOCATION	MONTE FRIO NORTH OF EDWARDO
STRUCTURE_NAME	SWQ-MH



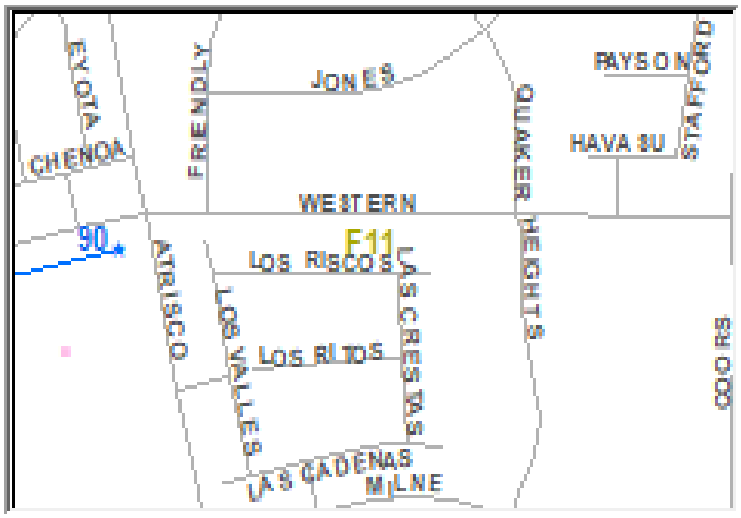
MAP_KEY	F11	City_Quad	NW
Year_Built	2009	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	730881	NUMBER	133

LOCATION	STAFFORD
STRUCTURE_NAME	SWQ-MH



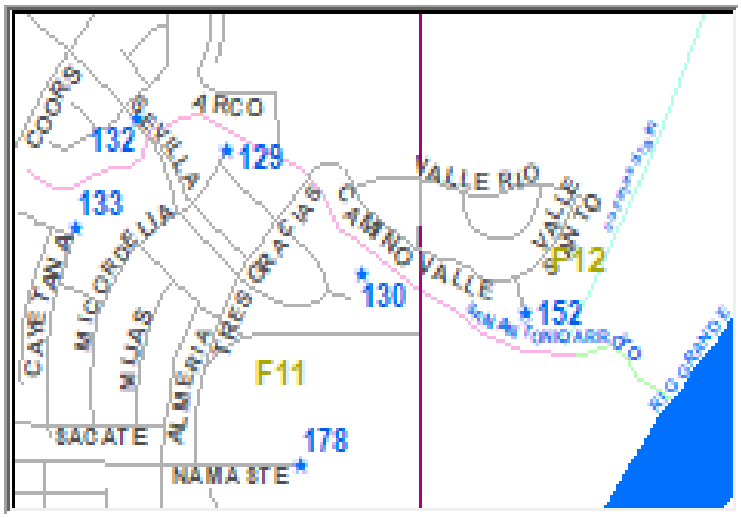
MAP_KEY	F11	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	700581	NUMBER	135

LOCATION	LADERA 16-AT ATRISCO AND WESTERN TRAIL
STRUCTURE_NAME	



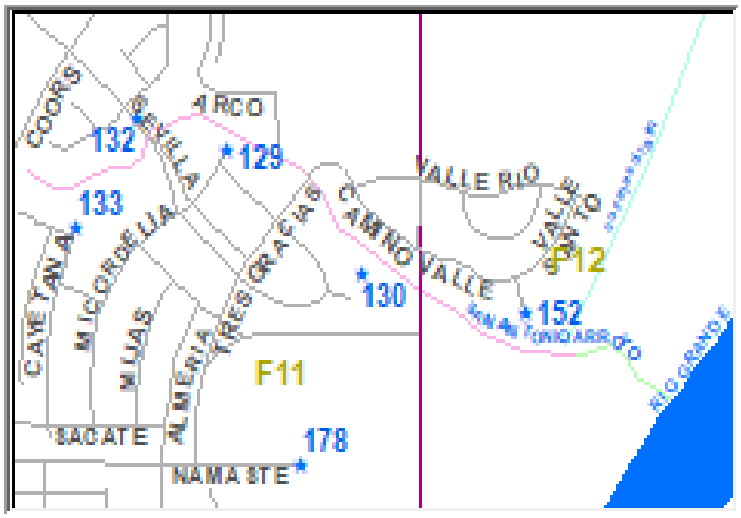
MAP_KEY	F11	City_Quad	NW
Year_Built	2013	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	Q100= 30 CFS		
SWQ SIZE	10' X 30' COVERED WITH 3/4" EXPANDED STEEL	cost	
PROJECT_NO		NUMBER	90

LOCATION	SEVLLA EAST OF CALLE ESPANA
STRUCTURE_NAME	SWQ-INLET



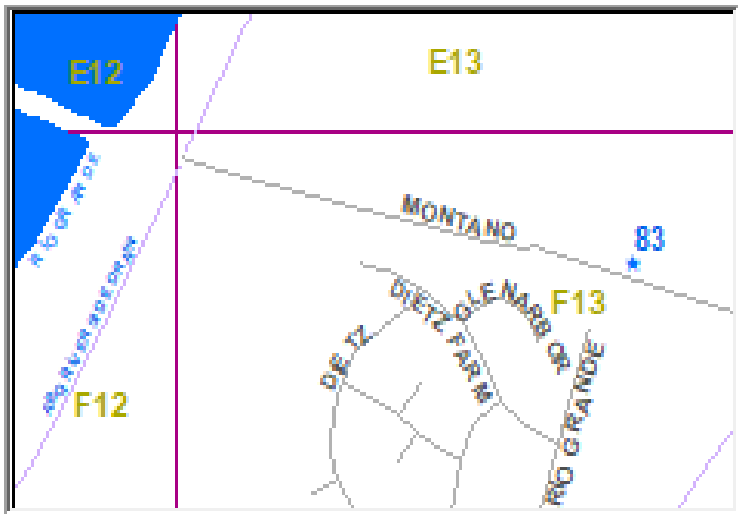
MAP_KEY	F11	City_Quad	NW
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	730881	NUMBER	132

LOCATION	**END OF VALLEBONITA**
STRUCTURE_NAME	SWQ-INLET



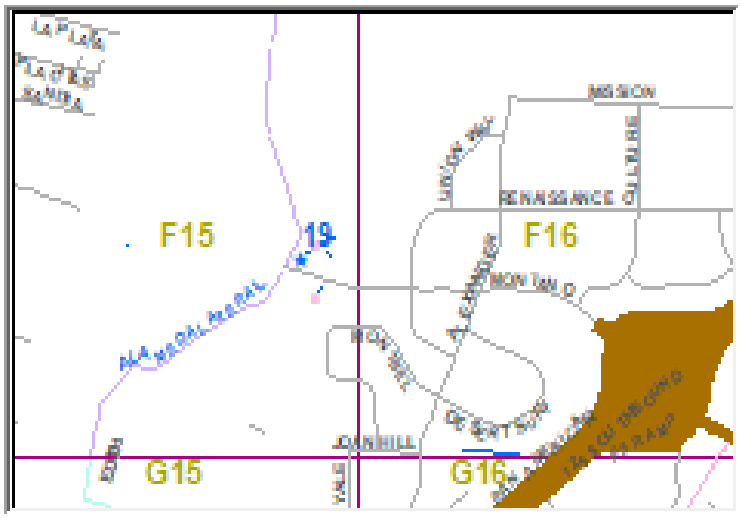
MAP_KEY	F12	City_Quad	NW
Year_Built	2006	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	730883	NUMBER	152

LOCATION	PS 47 RIO GRANDE BLVD - MONTANIO
STRUCTURE_NAME	



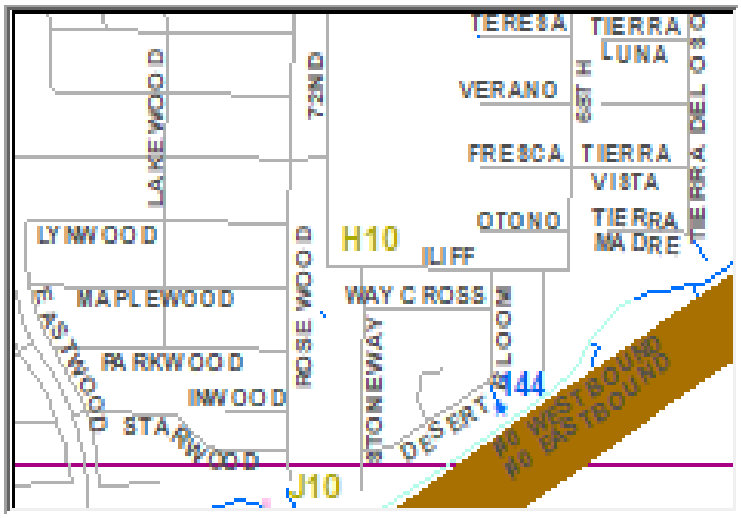
MAP_KEY	F13	City_Quad	NW
Year_Built	1995	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	83

LOCATION	0.25 M NE MONTANO AND EDITH
STRUCTURE_NAME	



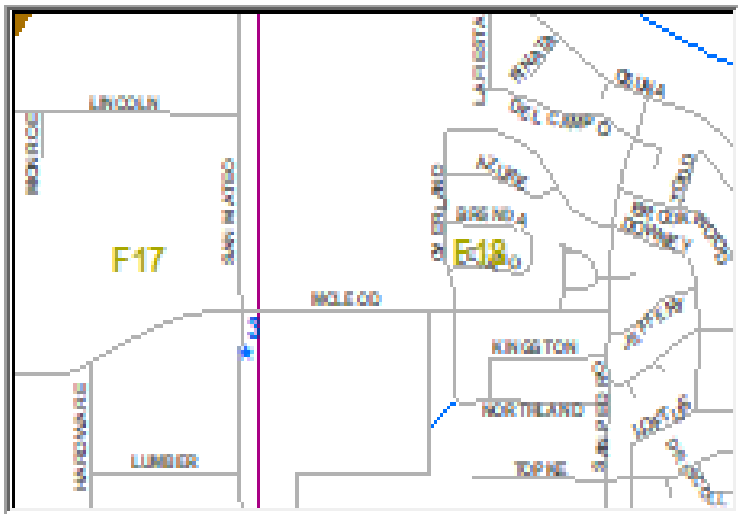
MAP_KEY	F15	City_Quad	NE
Year_Built	2006	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	NEED SPECIAL ATTENTION- INSIDE RENAISSANCE POND		
SWQ SIZE	10' W X 8' H X 10' L	cost	
PROJECT_NO		NUMBER	19

LOCATION	MONTANO-MONTBEL
STRUCTURE_NAME	PORTED RISER



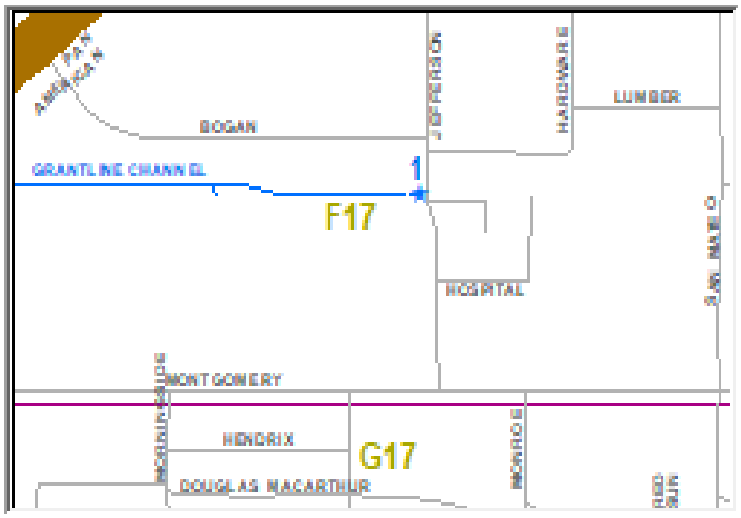
MAP_KEY	F15	City_Quad	NW
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	144

LOCATION	SAN MATEO 0.1 M S MCLEOD
STRUCTURE_NAME	



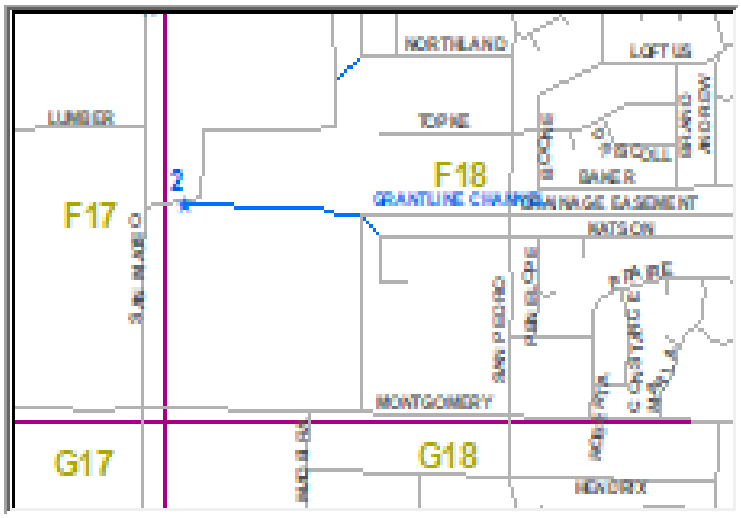
MAP_KEY	F17	City_Quad	NE
Year_Built	2005	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\00
NOTES	SECURITY RACK		
SWQ SIZE	15' W X 10' L	cost	
PROJECT_NO		NUMBER	3

LOCATION	JEFFERSON 0.25 M N MONTGOMERY
STRUCTURE_NAME	



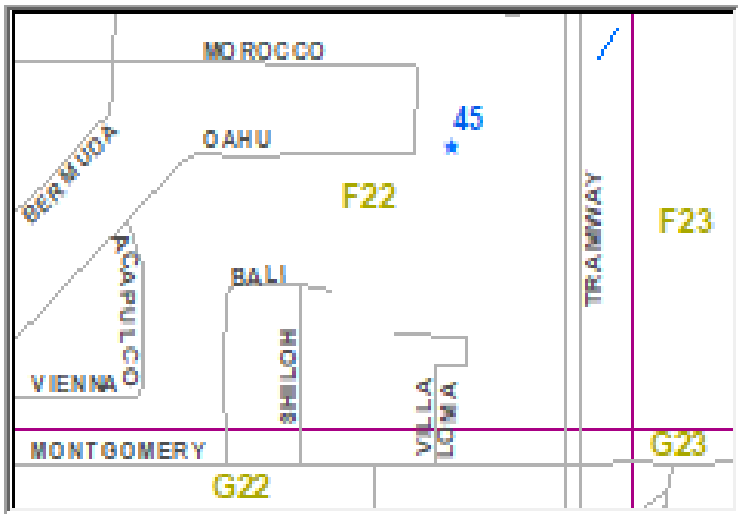
MAP_KEY	F17	City_Quad	NE
Year_Built	2005	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\00
NOTES	SECURITY RACK		
SWQ SIZE	12.5' W X 13.5' L	cost	
PROJECT_NO		NUMBER	1

LOCATION	SAN MATEO 0.25 M N MONGOMERY
STRUCTURE_NAME	



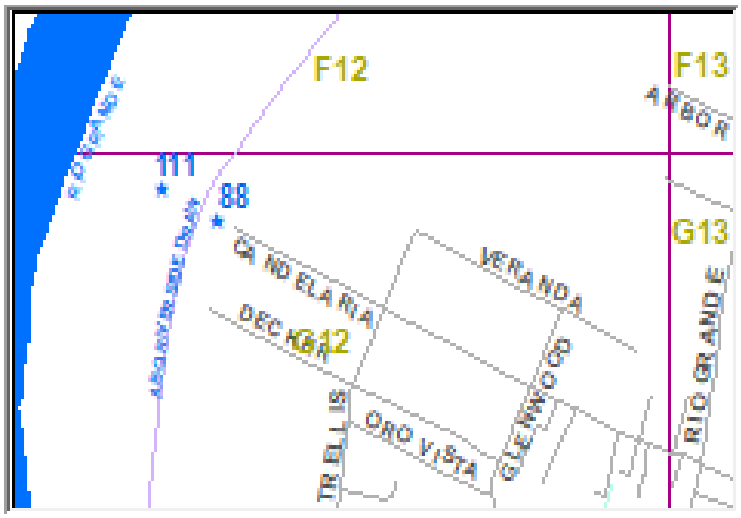
MAP_KEY	F18	City_Quad	NE
Year_Built	2005	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\00
NOTES	TRASH RACK		
SWQ SIZE	10' W X 21' L	cost	
PROJECT_NO		NUMBER	2

LOCATION	EASEMENT NEXT TO HOUSE# 4800 OAHU NE
STRUCTURE_NAME	



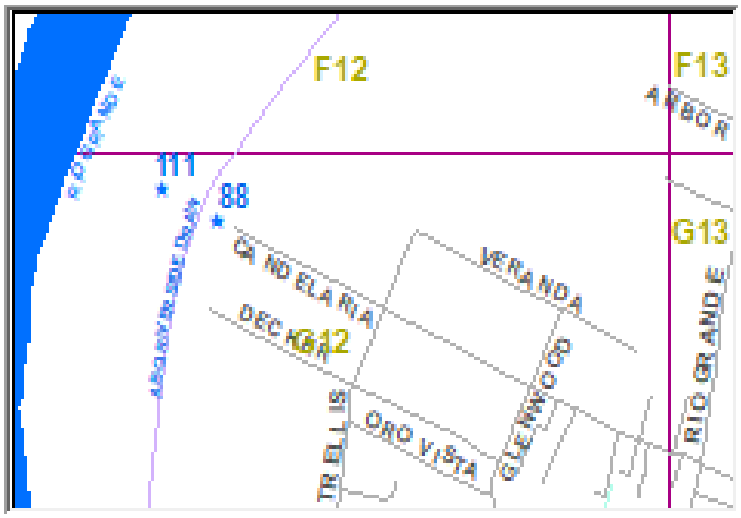
MAP_KEY	F22	City_Quad	NE
Year_Built	UNKNOWN	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	NEEDS SPECIAL ATTENTION		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	45

LOCATION	3001 CANDELARIA PS 40 OUTFALL
STRUCTURE_NAME	



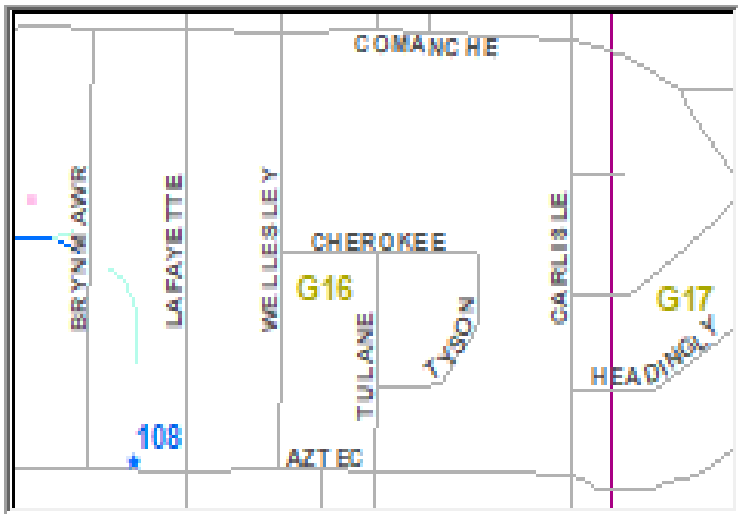
MAP_KEY	G12	City_Quad	NW
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	111

LOCATION	**3001 CANDELARIA NW PS 40**
STRUCTURE_NAME	



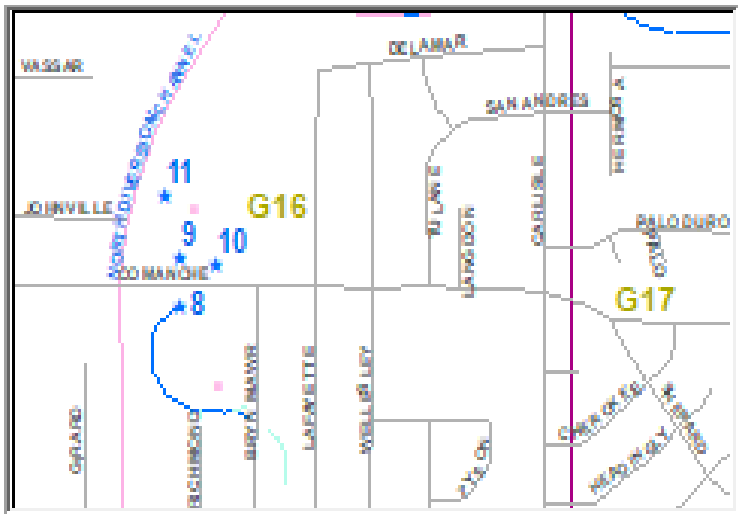
MAP_KEY	G12	City_Quad	NW
Year_Built	1965	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	88

LOCATION	**AZTEC AND BRYN MAWR NE**
STRUCTURE_NAME	2 SWQ INLETS



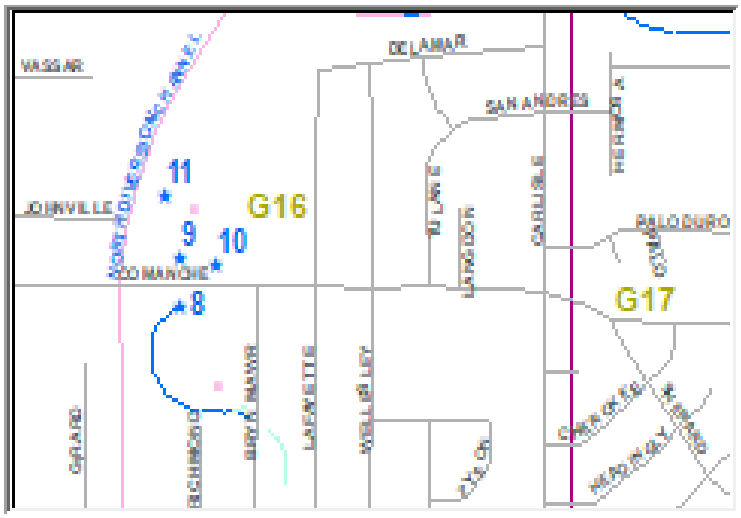
MAP_KEY	G16	City_Quad	NE
Year_Built	2017	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	784903	NUMBER	108

LOCATION	0.1 M SW COMANCHE AND BRYN MAWR
STRUCTURE_NAME	



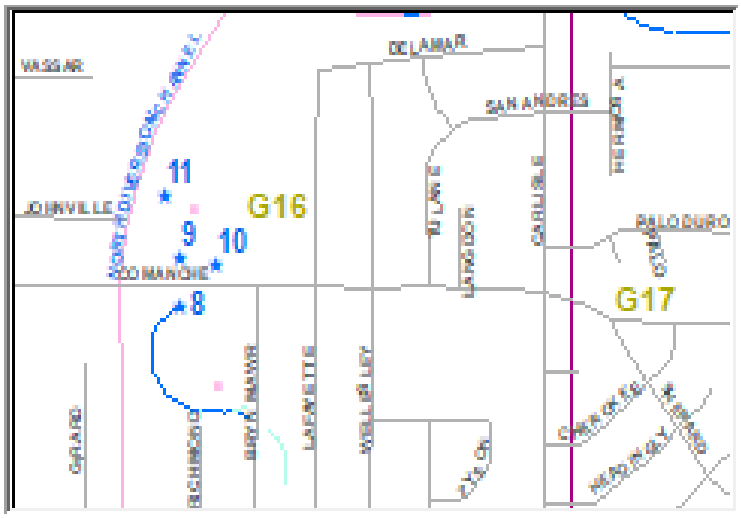
MAP_KEY	G16	City_Quad	NE
Year_Built	2005	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\00
NOTES	NEEDS SPECIAL ATTENTION-INSIDE LITTLE LEAGE PARK		
SWQ SIZE	8' W TOP X 15' BOTTOM X 10' L	cost	
PROJECT_NO		NUMBER	8

LOCATION	**0.15 M NW COMANCHE AND BRYN MAWR**
STRUCTURE_NAME	



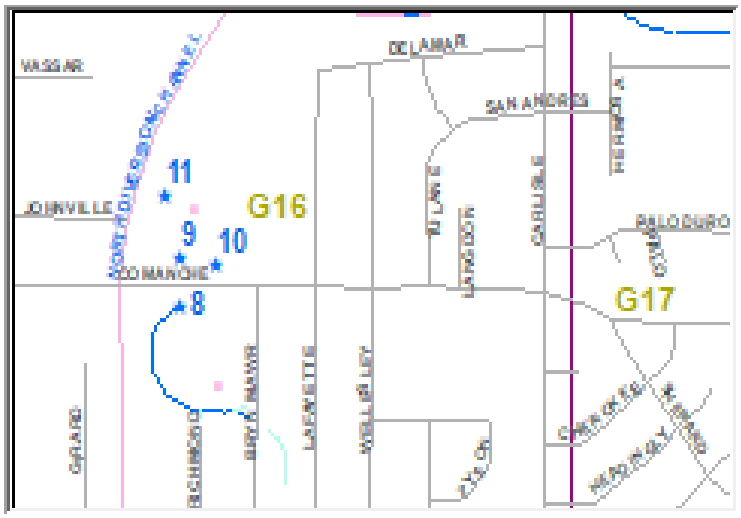
MAP_KEY	G16	City_Quad	NE
Year_Built	1967	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\01
NOTES	ENTRANCE TO PUMP STATION # 35		
SWQ SIZE	18' W X 8' H	cost	
PROJECT_NO		NUMBER	11

LOCATION	0.1 M NW COMANCHE AND BRYN MAWR
STRUCTURE_NAME	



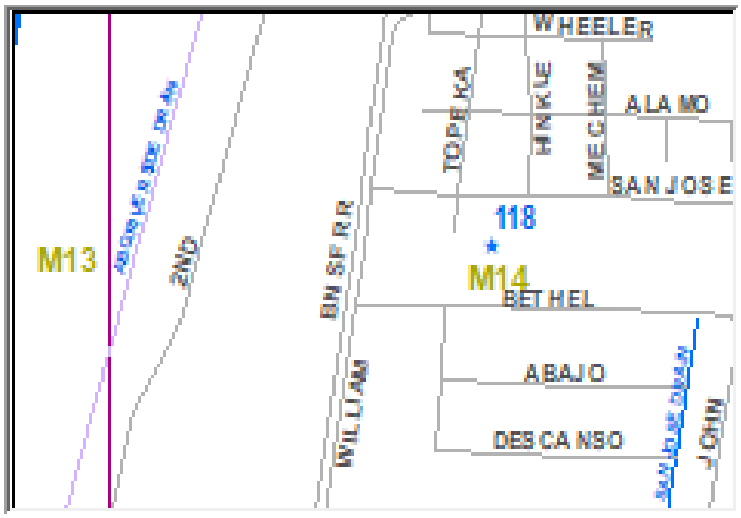
MAP_KEY	G16	City_Quad	NE
Year_Built	2005	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\01
NOTES	SECURITY RACK, INSIDE COMANCHE POND		
SWQ SIZE	8" W X 10' L	cost	
PROJECT_NO		NUMBER	10

LOCATION	0.2 M NW COMANCHE AND BRYN MAWR
STRUCTURE_NAME	



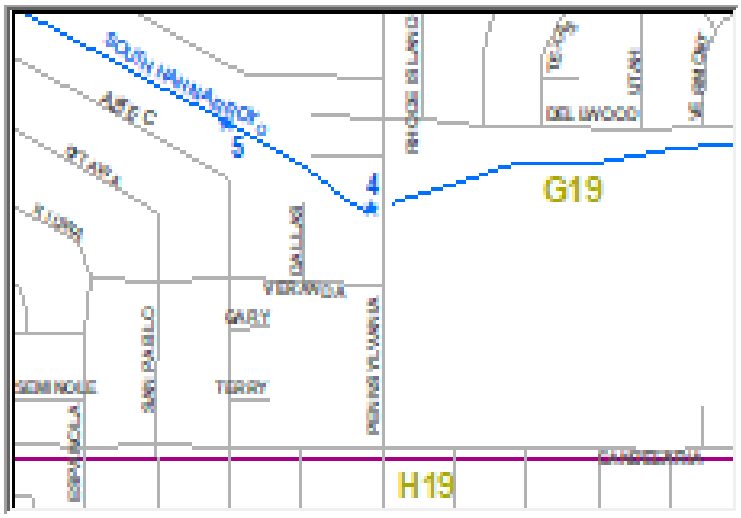
MAP_KEY	G16	City_Quad	NE
Year_Built	2005	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\00
NOTES	SECURITY RACK, INSIDE THE COMANCHE POND		
SWQ SIZE	8" W X 10' L	cost	
PROJECT_NO		NUMBER	9

LOCATION	**SAN JOSE PARK AT SAN JOSE AND TOPEKA SE**
STRUCTURE_NAME	SWQF



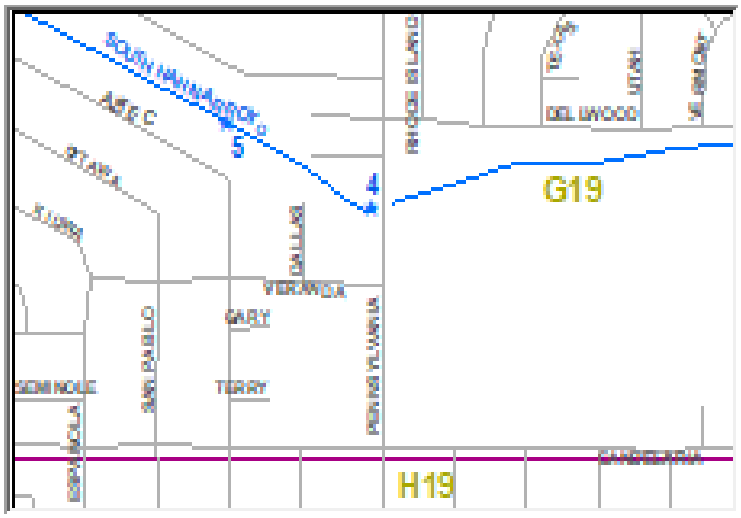
MAP_KEY	G16	City_Quad	SE
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	STC 2400 PRECAST CONCRETE STORMCEPTOR-STORMSEPTOR		
SWQ SIZE		cost	
PROJECT_NO	792602	NUMBER	118

LOCATION	AZTEC 0.1 M W PENSYLVANIA
STRUCTURE_NAME	



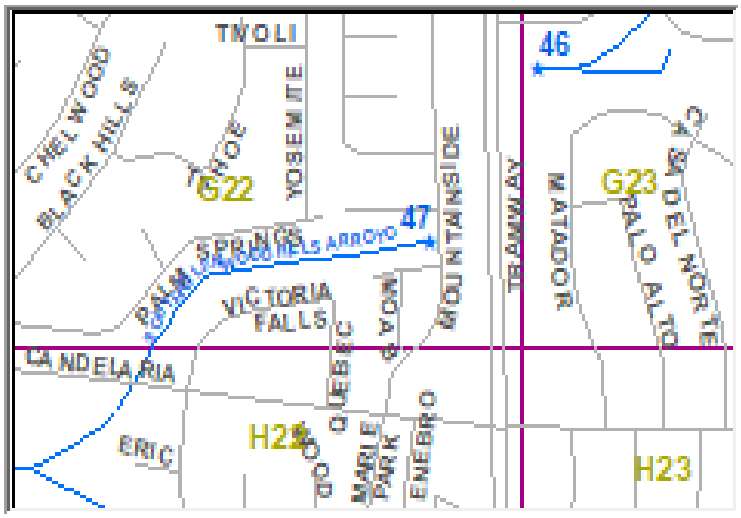
MAP_KEY	G19	City_Quad	NE
Year_Built	2005	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\00
NOTES	SECURITY RACK		
SWQ SIZE	9' TOP W X 18' BOTTOM W X 18' L	cost	
PROJECT_NO		NUMBER	5

LOCATION	PENNSYLVANIA 0.2 M N CANDELARIA
STRUCTURE_NAME	



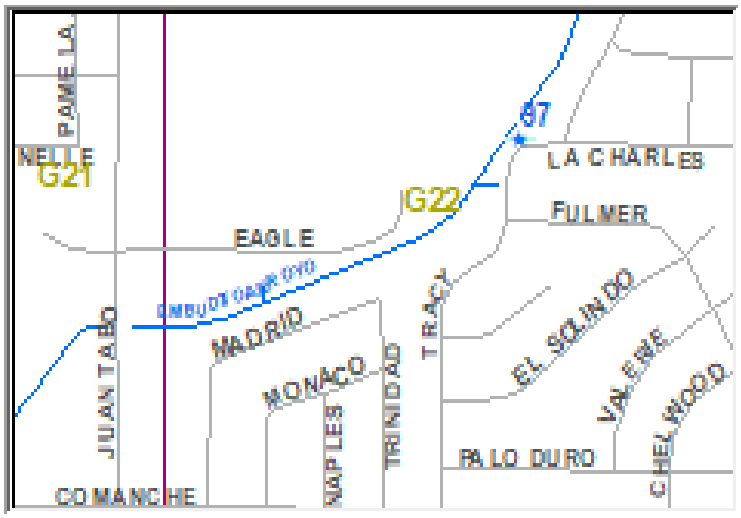
MAP_KEY	G19	City_Quad	NE
Year_Built	2005	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\00
NOTES	SECURITY RACK		
SWQ SIZE	10.5' W X 14' L	cost	
PROJECT_NO		NUMBER	4

LOCATION	TRAMWAY 0.1 M N CANDELARIA
STRUCTURE_NAME	



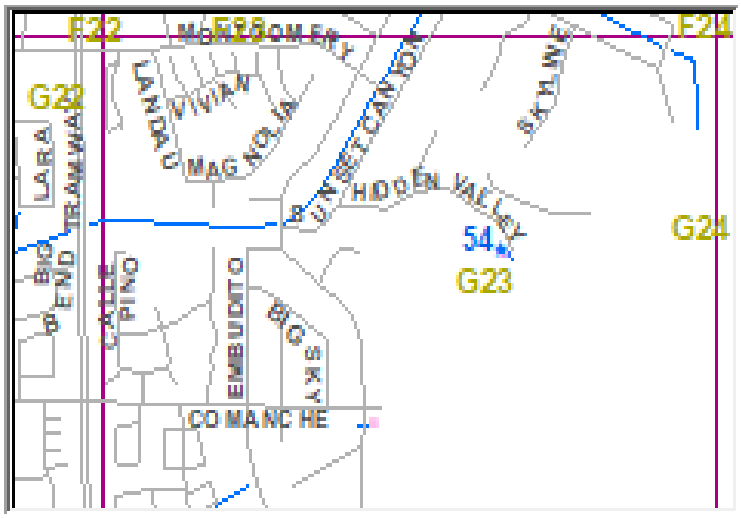
MAP_KEY	G22	City_Quad	NE
Year_Built	2004	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	SECURITY RACK		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	47

LOCATION	11805 LA CHARLES NE
STRUCTURE_NAME	SECURITY SCREEN



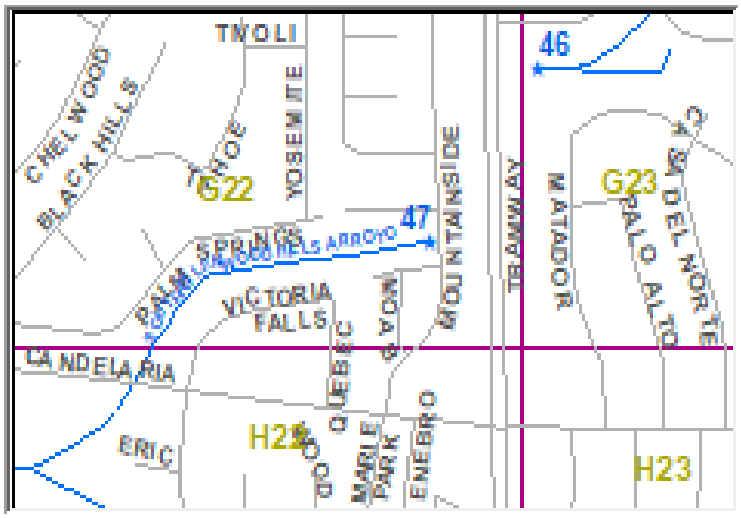
MAP_KEY	G22	City_Quad	NE
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE	48 IN DIA	cost	
PROJECT_NO		NUMBER	97

LOCATION	**0.1 M SE HIDDEN VALLEY AND DEER TRAIL**
STRUCTURE_NAME	



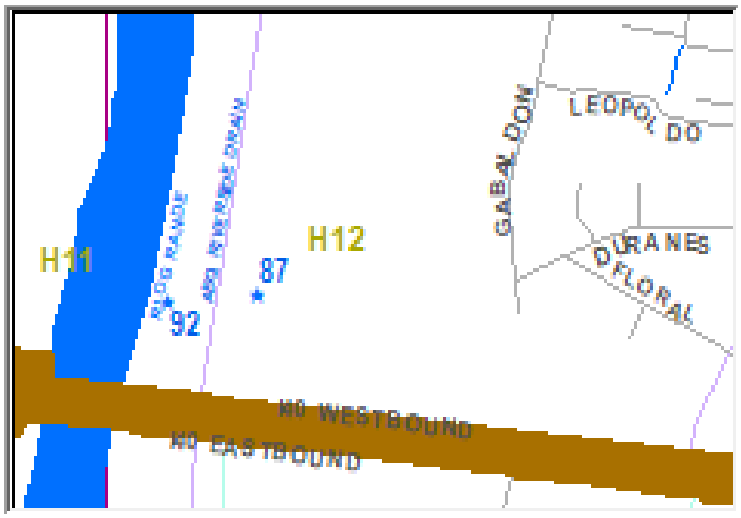
MAP_KEY	G23	City_Quad	NE
Year_Built	1975	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE THE HIDDEN VALLEY POND		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	54

LOCATION	TRAMWAY 0.25 M N CANDELARIA
STRUCTURE_NAME	



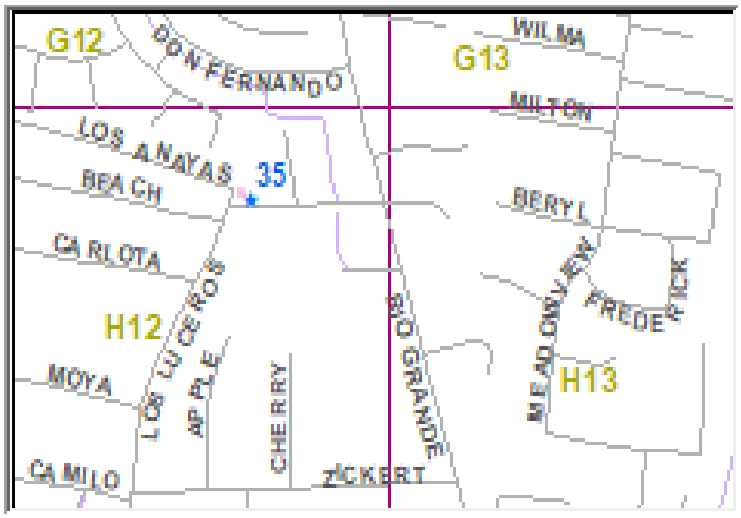
MAP_KEY	G23	City_Quad	NE
Year_Built	2004	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	46

LOCATION	3241 DURANES NW PS 30
STRUCTURE_NAME	



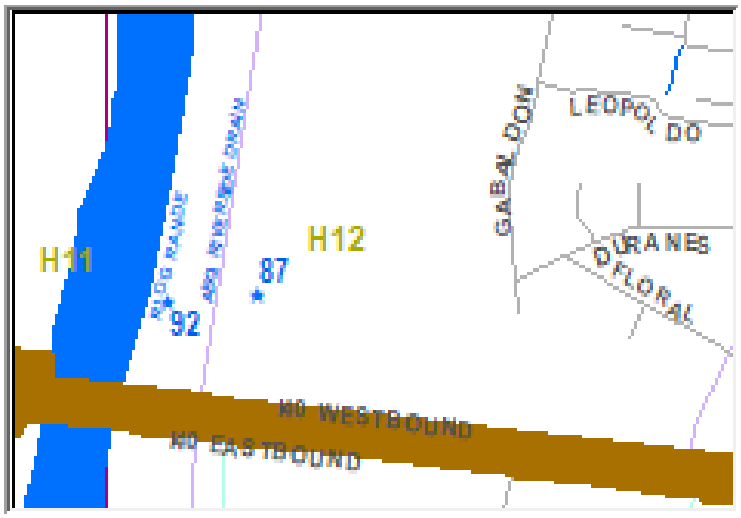
MAP_KEY	H12	City_Quad	NW
Year_Built	1965	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	87

LOCATION	LOS ANAYAS AND LOS LUCEROS
STRUCTURE_NAME	



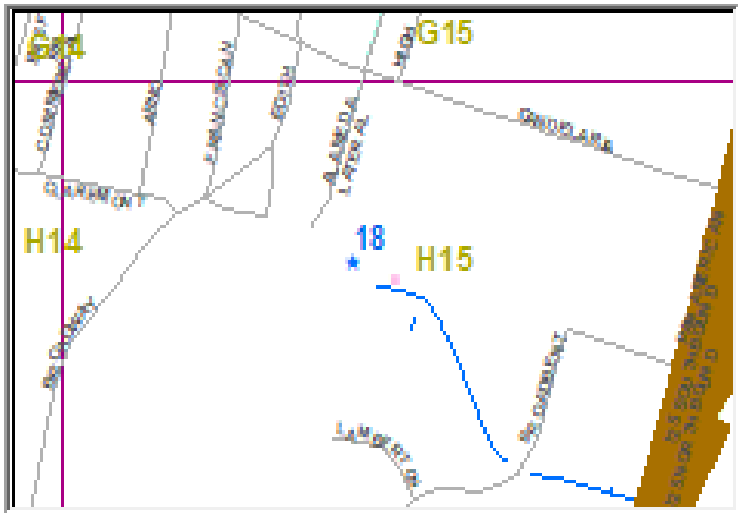
MAP_KEY	H12	City_Quad	NW
Year_Built	1990	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE THE POND		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	35

LOCATION	DURANCE PUMP-DISCGARGE PIPE
STRUCTURE_NAME	



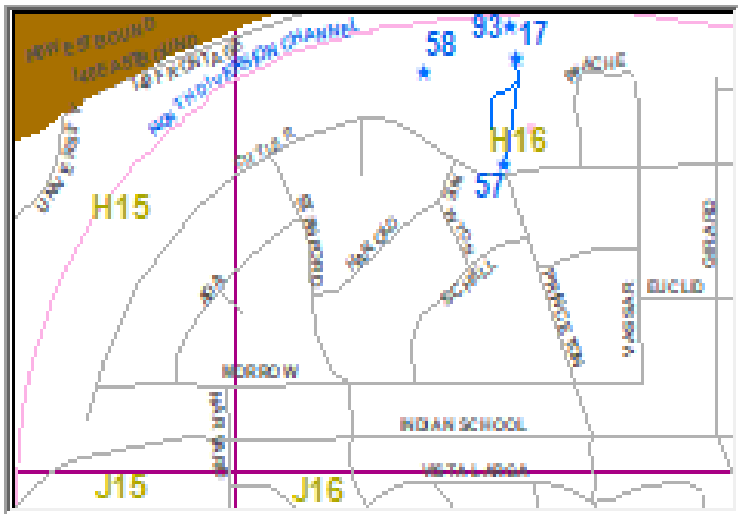
MAP_KEY	H12	City_Quad	NW
Year_Built	1962	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	PROJ-NO-08-622-62		
SWQ SIZE	48 IN D	cost	
PROJECT_NO		NUMBER	92

LOCATION	0.25 M SE CANDELARIA AND EDITH
STRUCTURE_NAME	



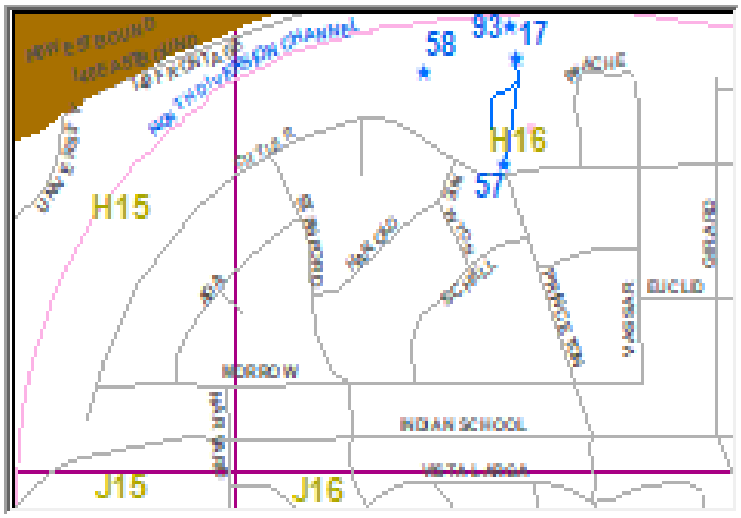
MAP_KEY	H15	City_Quad	NE
Year_Built	1995	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE MENAUL POND		
SWQ SIZE	8' W X 8' H X 8' L	cost	
PROJECT_NO		NUMBER	18

LOCATION	200 FT NORTH OF CUTLER AND PRINCETON NE
STRUCTURE_NAME	



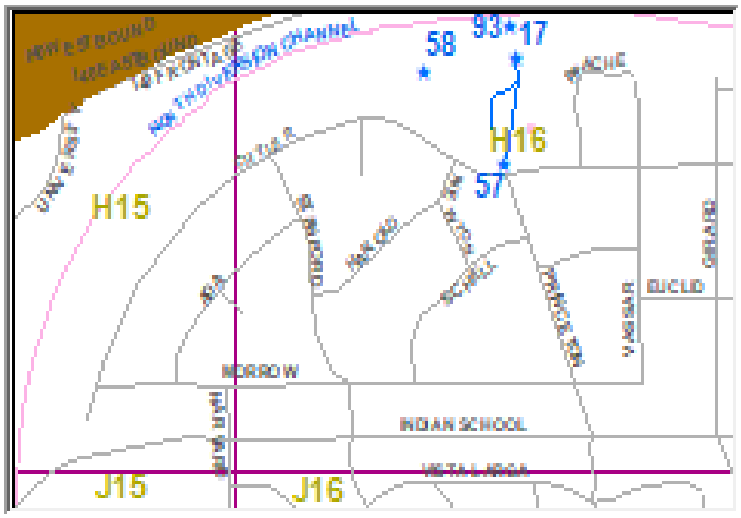
MAP_KEY	H16	City_Quad	NE
Year_Built	1969	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	POND ENTRANCE		
SWQ SIZE	10' W X 8' L	cost	
PROJECT_NO		NUMBER	58

LOCATION	**PRINCETON AND CUTLER**
STRUCTURE_NAME	



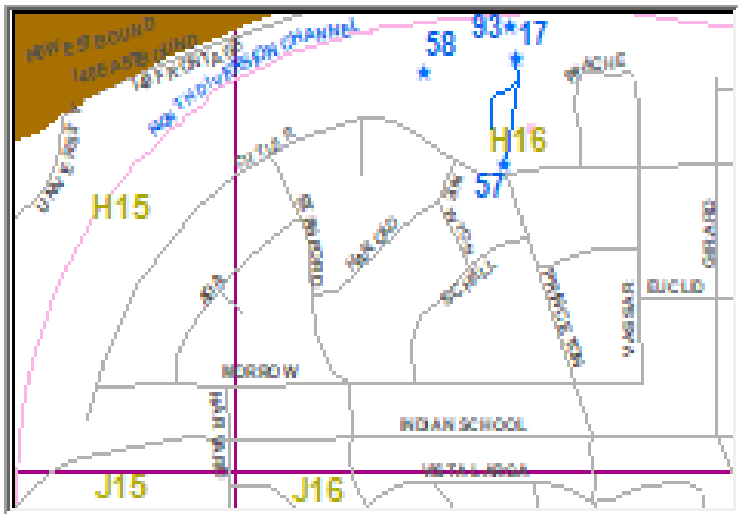
MAP_KEY	H16	City_Quad	NE
Year_Built	1970	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	POND ENTRANCE		
SWQ SIZE	25' W X 8' L	cost	
PROJECT_NO		NUMBER	57

LOCATION	PRINCTON PS DISCHARGE PIPES-4 PIPES
STRUCTURE_NAME	



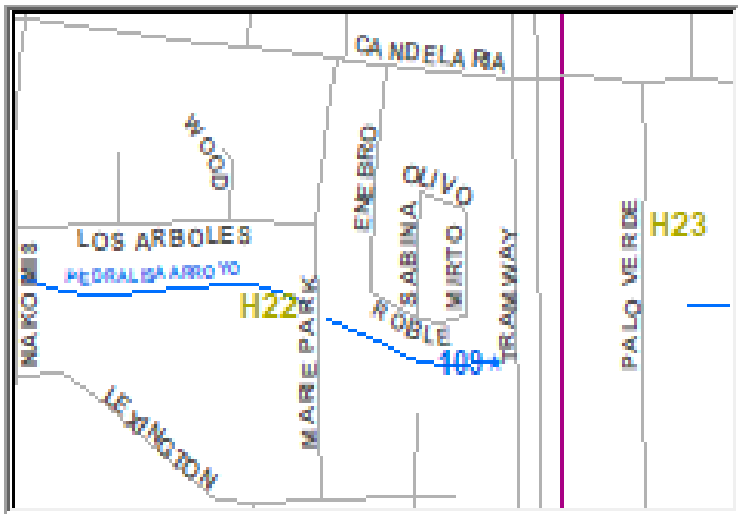
MAP_KEY	H16	City_Quad	NE
Year_Built	1970	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	SECURITY		
SWQ SIZE	4 AT 24 IN	cost	
PROJECT_NO		NUMBER	93

LOCATION	**CUTLER AND PRINCETON PS INLET**
STRUCTURE_NAME	



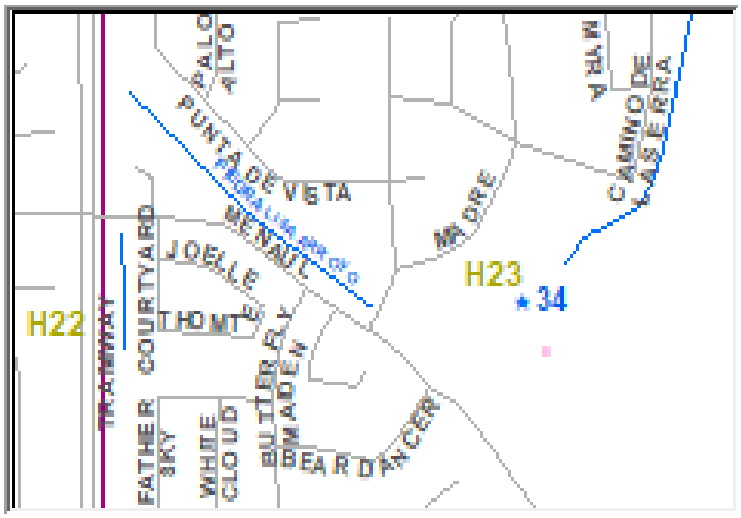
MAP_KEY	H16	City_Quad	NE
Year_Built	1970	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\01
NOTES	THIS IS A PUMP STATION #36 INSIDE THE PRINCETON POND		
SWQ SIZE	3 @ 10' W X 8' L	cost	
PROJECT_NO		NUMBER	17

LOCATION	PIEDRA LISA ARROYO AT TRAMWAY
STRUCTURE_NAME	PERMEABLE PAVERS



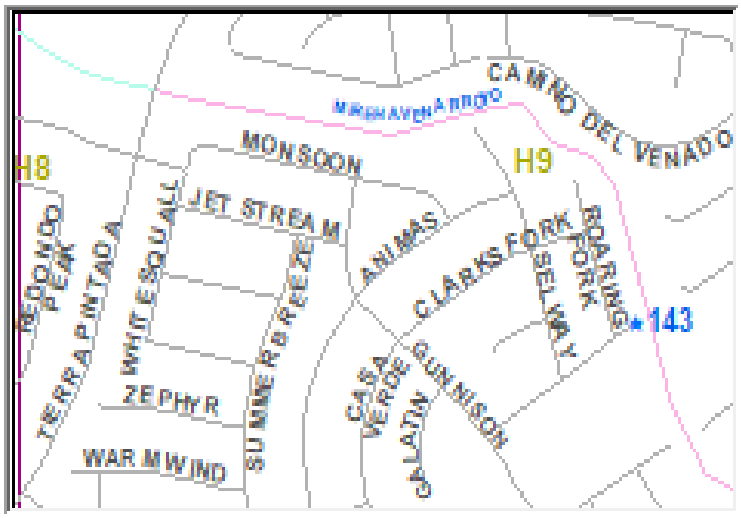
MAP_KEY	H22	City_Quad	NE
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	109

LOCATION	ALISA DAM AT 0.2 M NE MENAUL AND GAMB
STRUCTURE_NAME	



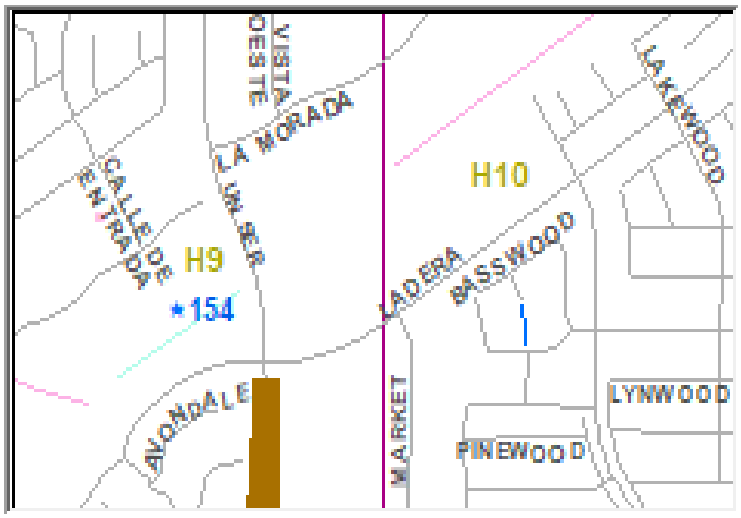
MAP_KEY	H23	City_Quad	NE
Year_Built	2013	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	LOCATED INSIDE PIEDRALISA DAM-PRINCIPAL SPILLWAY-440000		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	34

LOCATION	**END OF EAGLE RIVER**
STRUCTURE_NAME	SWQ-INLET



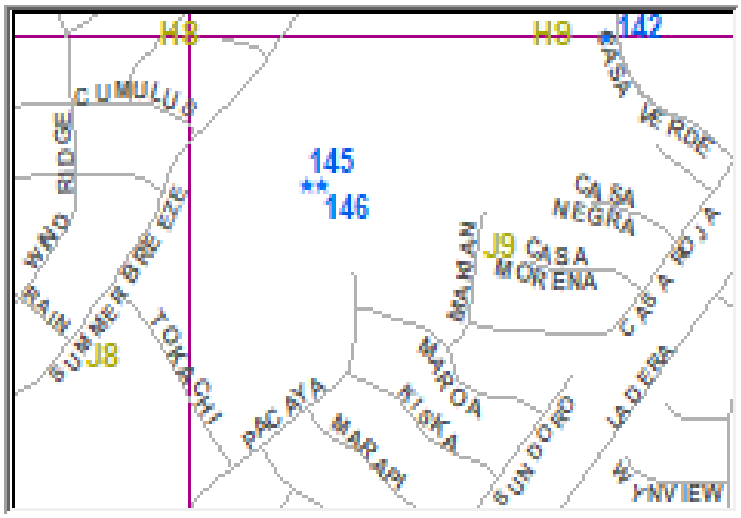
MAP_KEY	H9	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	545382	NUMBER	143

LOCATION	**LADERA**
STRUCTURE_NAME	SWQ-MH



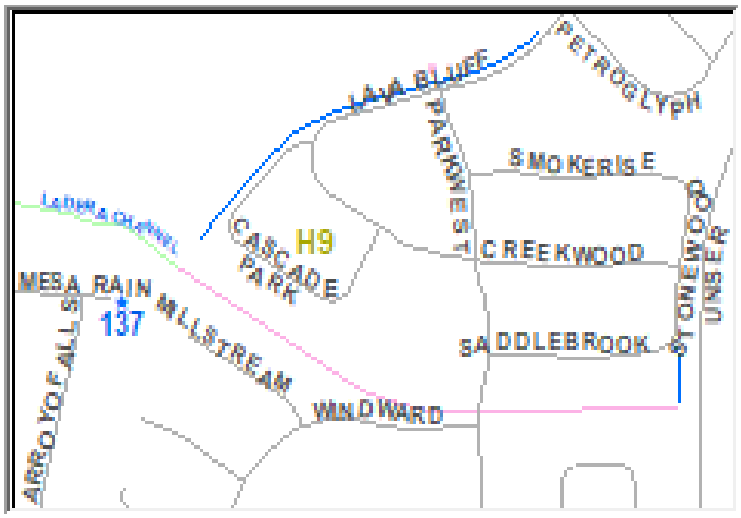
MAP_KEY	H9	City_Quad	NW
Year_Built	2004	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	691581	NUMBER	154

LOCATION	**CASA VERDE**
STRUCTURE_NAME	SWQ-MH



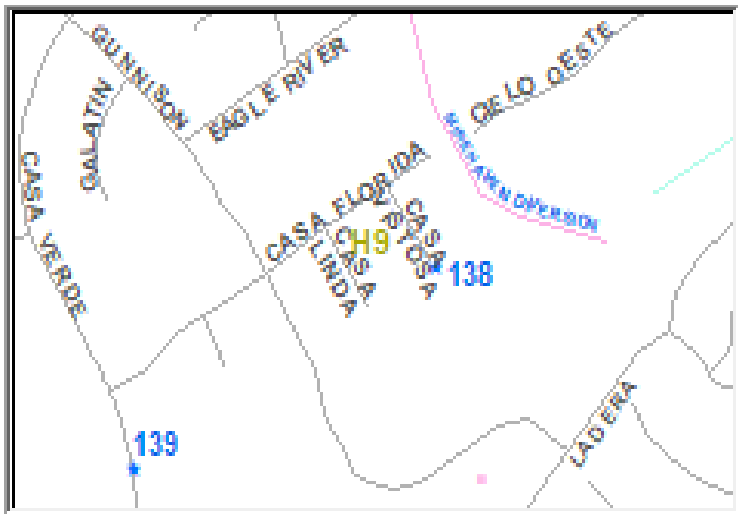
MAP_KEY	H9	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	650279	NUMBER	142

LOCATION	END OF MESA RAIN
STRUCTURE_NAME	SWQ-MH



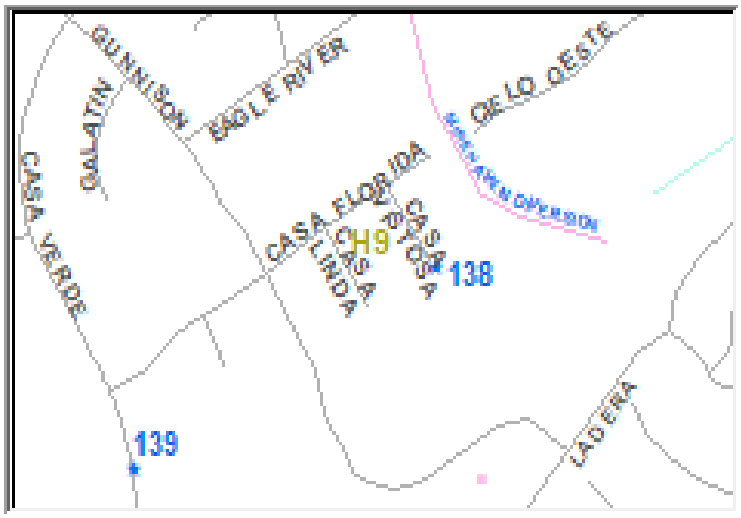
MAP_KEY	H9	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	742981	NUMBER	137

LOCATION	END OF CASA VISTOSA
STRUCTURE_NAME	SWQ-MH



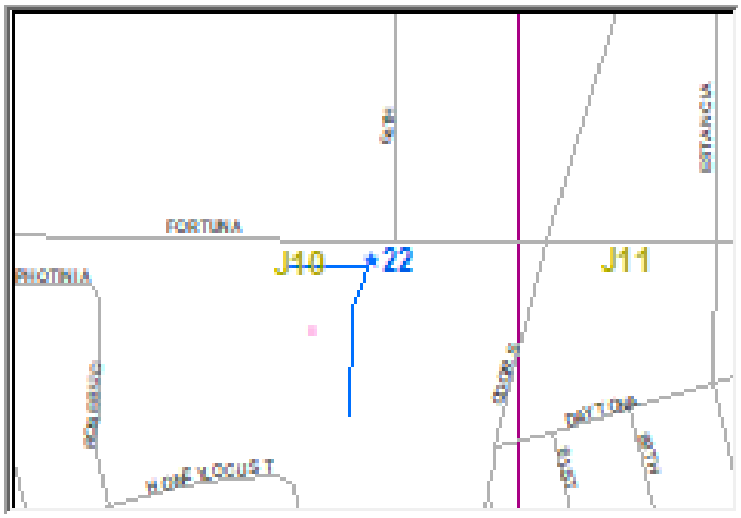
MAP_KEY	H9	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	138

LOCATION	CASA VERDE
STRUCTURE_NAME	SWQ-MH



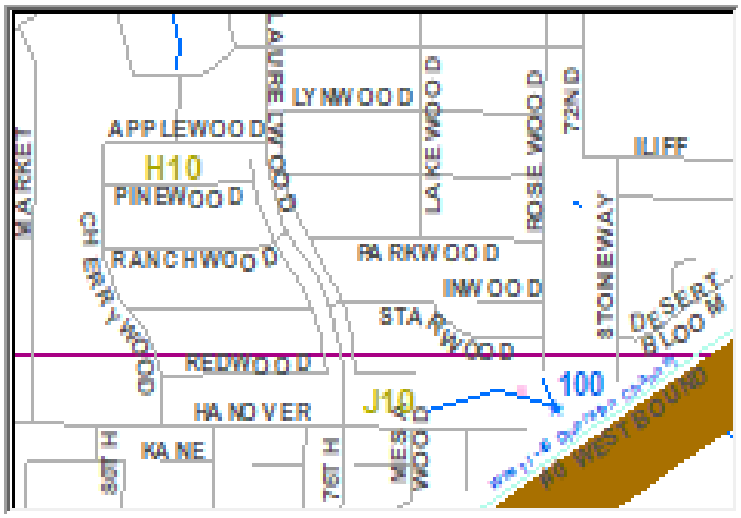
MAP_KEY	H9	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	671581	NUMBER	139

LOCATION	0.1 M SW COORS AND FORTUNA
STRUCTURE_NAME	



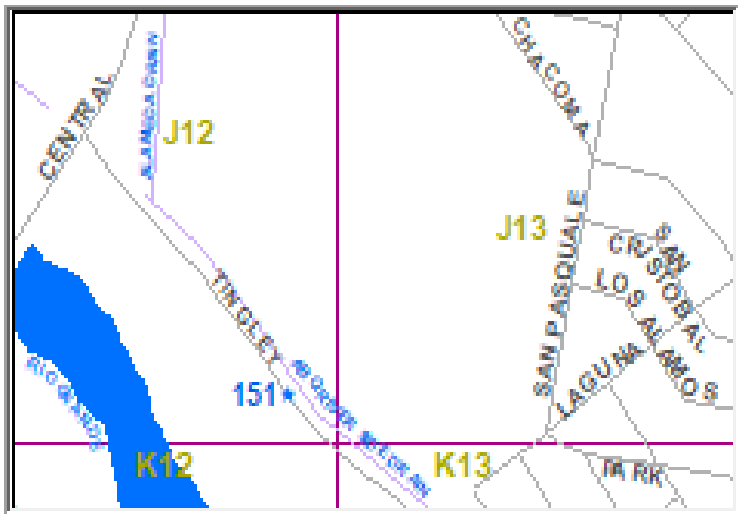
MAP_KEY	J10	City_Quad	NW
Year_Built	2004	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE WEST MESA POND		
SWQ SIZE	15' W X 15' L	cost	
PROJECT_NO		NUMBER	22

LOCATION	**LAURELWOOD POND**
STRUCTURE_NAME	



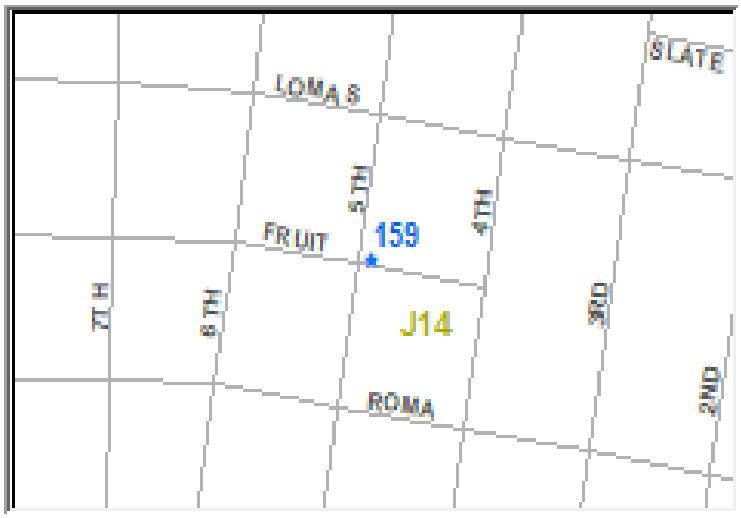
MAP_KEY	J10	City_Quad	NW
Year_Built	2006	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	PR# 699481		
SWQ SIZE	14' X 15' X 10' H POND RISER	cost	
PROJECT_NO		NUMBER	100

LOCATION	**TINGLEY-CENTRAL**
STRUCTURE_NAME	SWQ-INLET



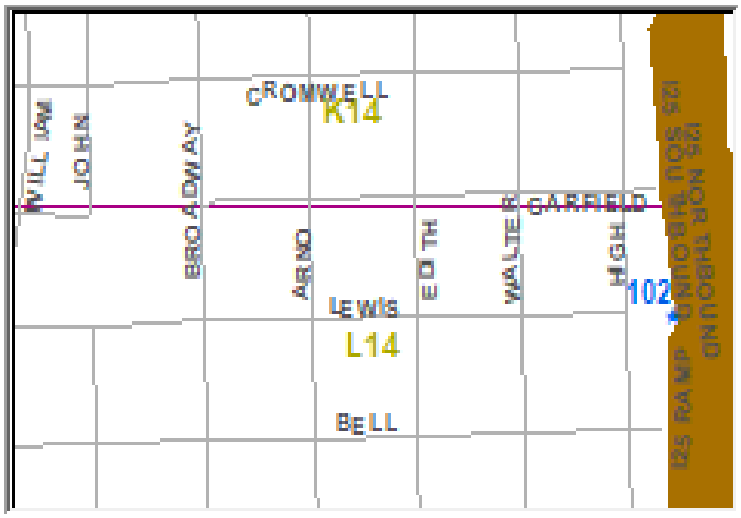
MAP_KEY	J12	City_Quad	SW
Year_Built	2006	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	701291	NUMBER	151

LOCATION	NE OF FRUIT AND 5TH
STRUCTURE_NAME	SWQ-INLET



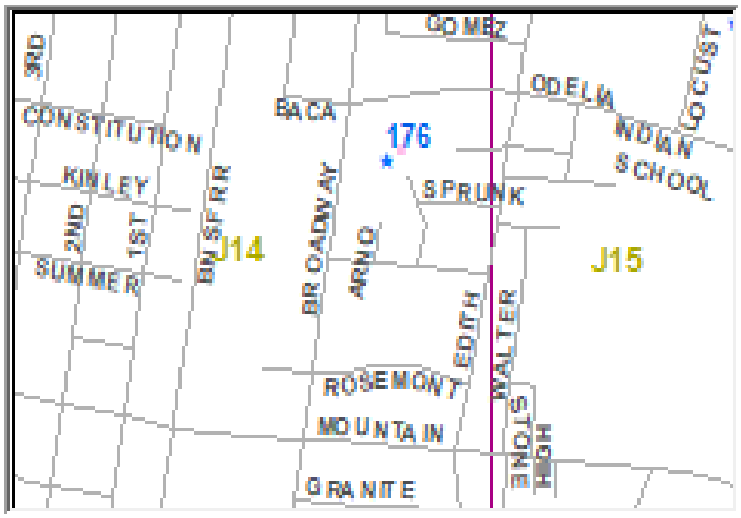
MAP_KEY	J14	City_Quad	NW
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	159

LOCATION	HIGH-LEWIS OUTLETS
STRUCTURE_NAME	



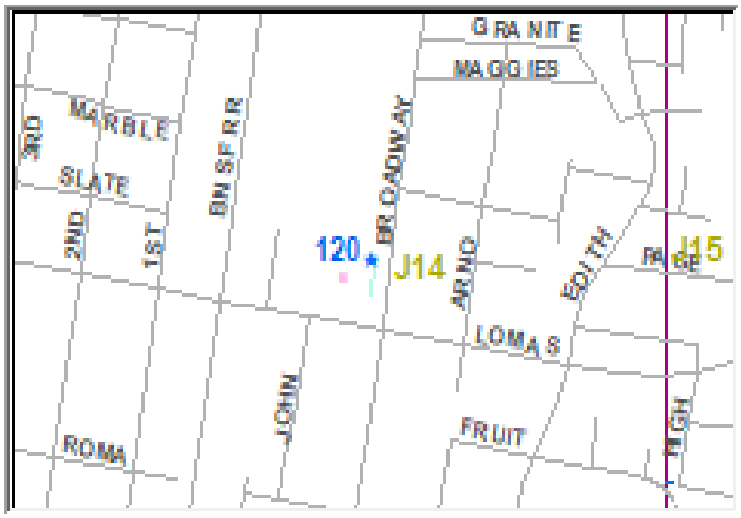
MAP_KEY	J14	City_Quad	SE
Year_Built	1970	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	SECURITY FOR NMDOT		
SWQ SIZE	2 @ 50 IN DIA RCP	cost	
PROJECT_NO		NUMBER	102

LOCATION	AQ POND-END OF FRANCISCAN
STRUCTURE_NAME	CONC-BOX



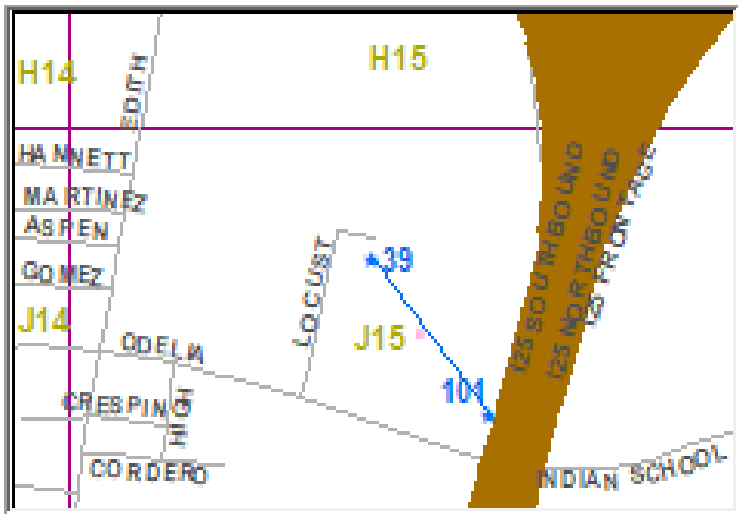
MAP_KEY	J14	City_Quad	NE
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	176

LOCATION	LOMAS-BROADWAY POND
STRUCTURE_NAME	CONC-BOX



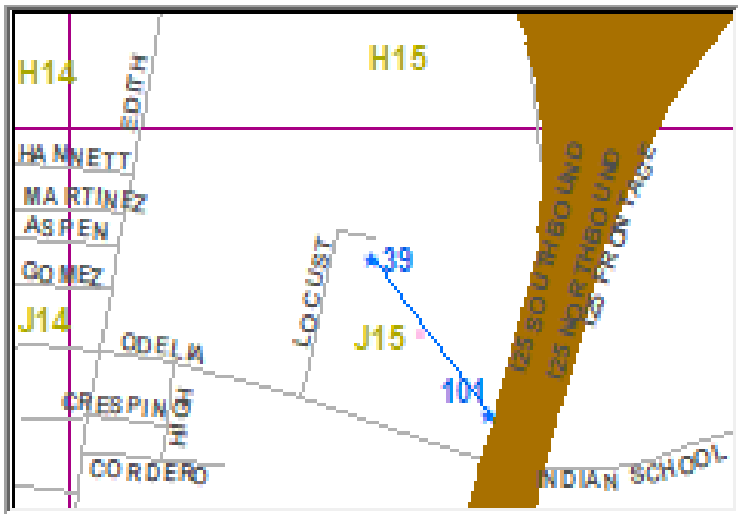
MAP_KEY	J14	City_Quad	NW
Year_Built	2009	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	796394	NUMBER	120

LOCATION	NE ODELIA AND LOCUST
STRUCTURE_NAME	



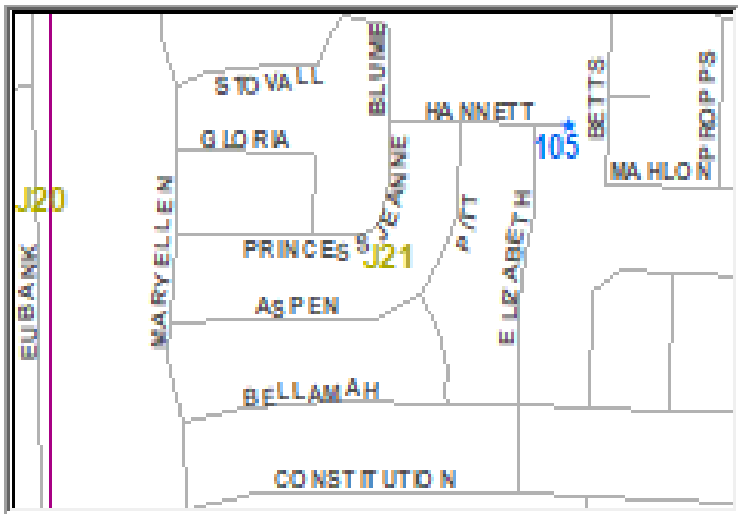
MAP_KEY	J15	City_Quad	NE
Year_Built	2013	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	NEED VERY SPECIAL ATTENTION-440004		
SWQ SIZE	5'D X 10' H WITH EXPANDED METAL MESH-ROLLED STEEL-1/2", 3/4", 1 1/2" OPENINGS	cost	
PROJECT_NO		NUMBER	39

LOCATION	ODELIA-I-25 TUNNELS
STRUCTURE_NAME	



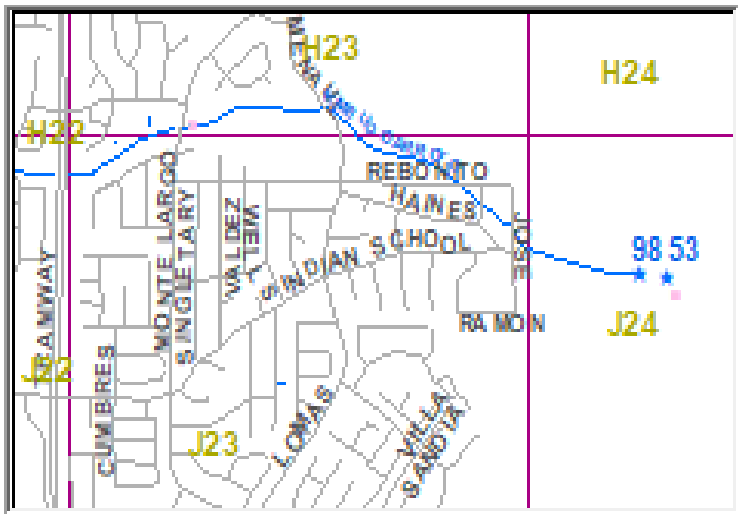
MAP_KEY	J15	City_Quad	NE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	3 RCP OF 70 IN DIA		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	101

LOCATION	1609 BETTS NE
STRUCTURE_NAME	SWQ MH



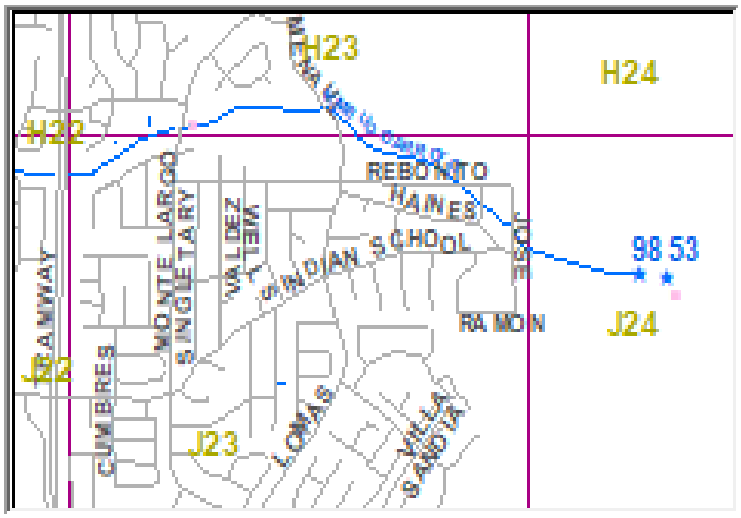
MAP_KEY	J21	City_Quad	NE
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	105

LOCATION	0.4 M E INDIAN SCHOOL AND HAINES
STRUCTURE_NAME	



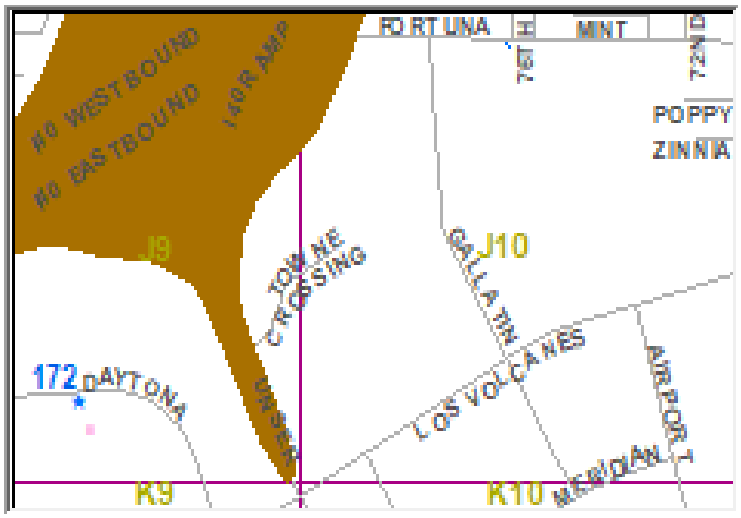
MAP_KEY	J24	City_Quad	NE
Year_Built	1979	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE EMBUDO DAM		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	53

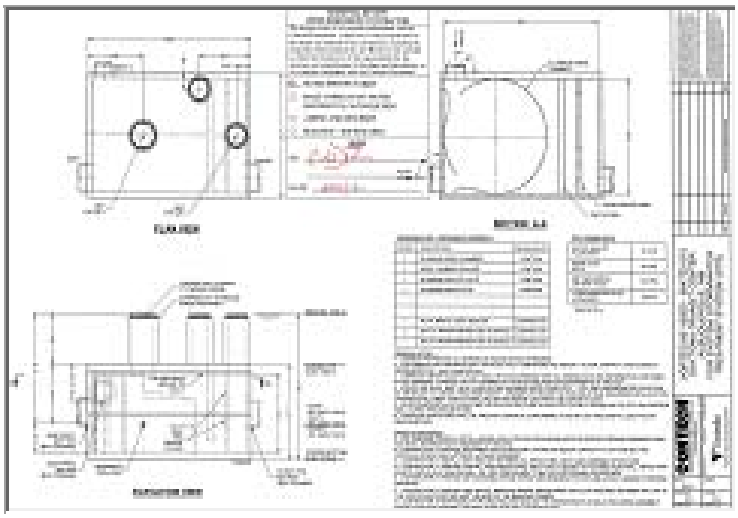
LOCATION	BUDO PRINCIPAL SPILLWAY PIPE-SECURITY RA
STRUCTURE_NAME	



MAP_KEY	J24	City_Quad	NE
Year_Built	1979	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	PR#800179		
SWQ SIZE	48 IN DIA	cost	
PROJECT_NO		NUMBER	98

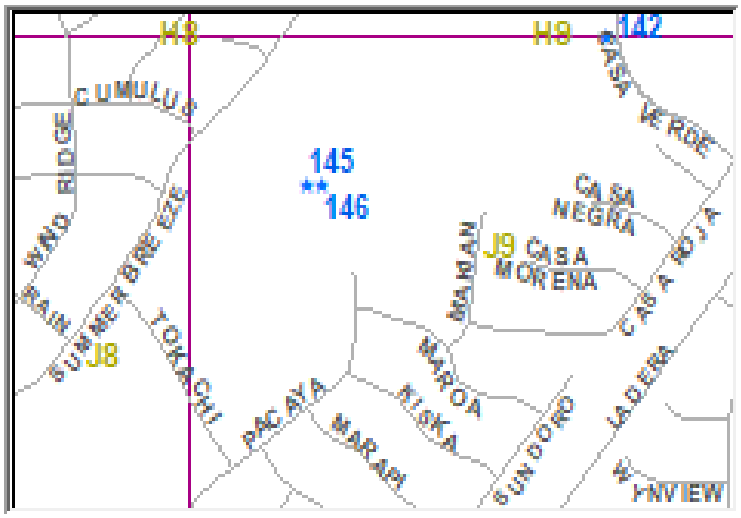
LOCATION	DAYTONA-LOS VOLCANES-UNSER
STRUCTURE_NAME	SWQF





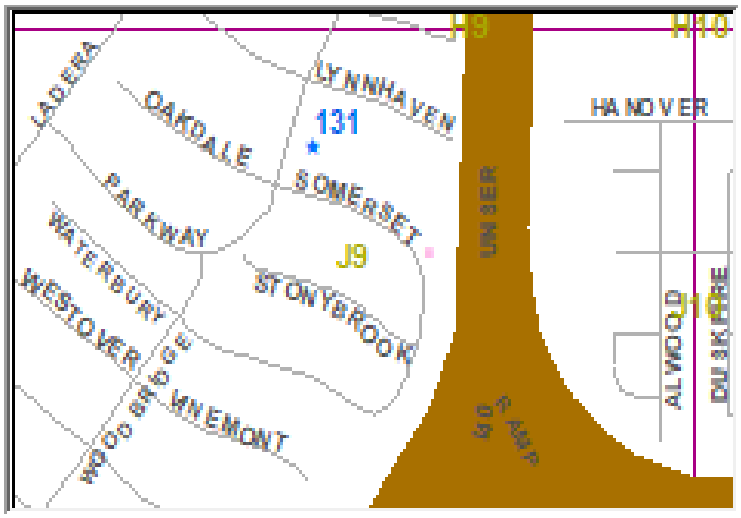
MAP_KEY	J9	City_Quad	NW
Year_Built	2017	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	TRASH RACK		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	172

LOCATION	SUMMER BREEZE-STORMCLOUD
STRUCTURE_NAME	SWQ-MH



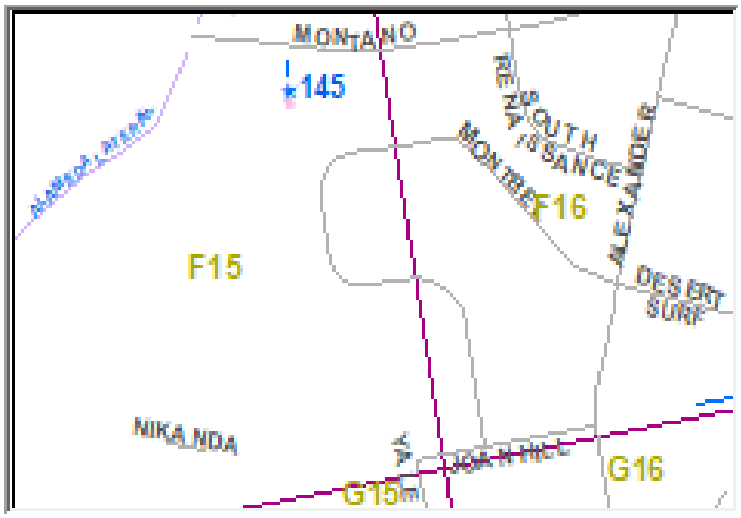
MAP_KEY	J9	City_Quad	NW
Year_Built	2007	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	650278	NUMBER	146

LOCATION	PARKWAY-LYNNHAVEN-SOMERSET NW
STRUCTURE_NAME	SWQ-MH



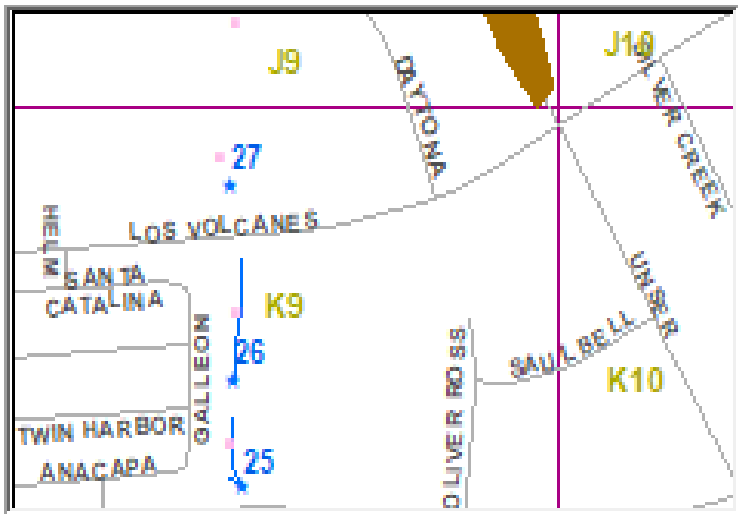
MAP_KEY	J9	City_Quad	NW
Year_Built	2009	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	691592	NUMBER	131

LOCATION	**MONTANO-MONTBEL**
STRUCTURE_NAME	PORTED RISER



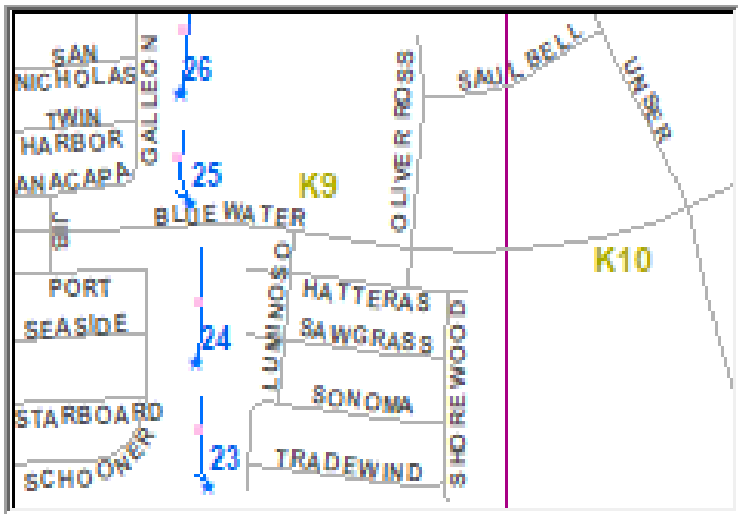
MAP_KEY	J9	City_Quad	NE
Year_Built	2007	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\14
NOTES	PORTED RISER		
SWQ SIZE		cost	
PROJECT_NO	650278	NUMBER	145

LOCATION	0.5 M NW UNSER AND BLUEWATER
STRUCTURE_NAME	



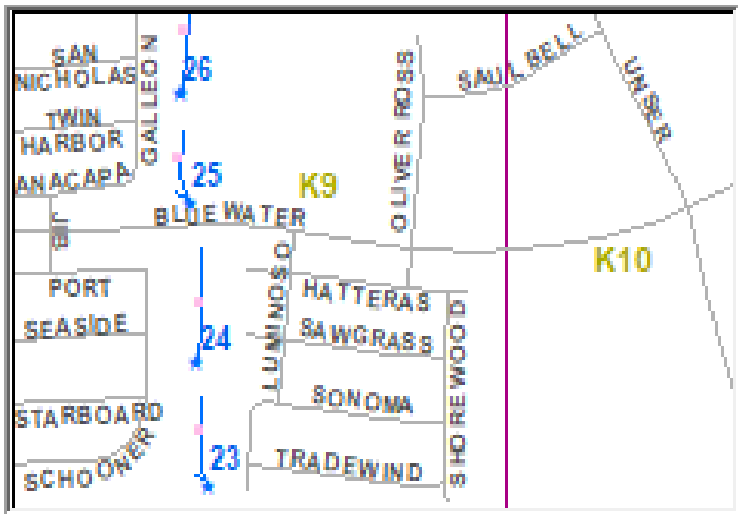
MAP_KEY	K09	City_Quad	NW
Year_Built	1996	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE UNSER DIV POND#5 (POND # 76)		
SWQ SIZE	12' W X 12' H X 12' L	cost	
PROJECT_NO		NUMBER	27

LOCATION	BLUEWATER 0.4 M W UNSER
STRUCTURE_NAME	



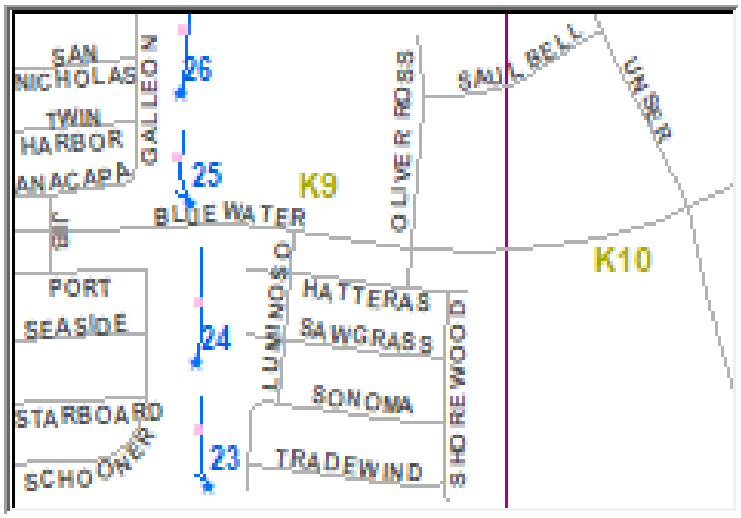
MAP_KEY	K09	City_Quad	NW
Year_Built	1996	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE UNSER DIV POND#3 (POND # 74)		
SWQ SIZE	12' W X 12' H X 12' L	cost	
PROJECT_NO		NUMBER	25

LOCATION	**0.5 M SW UNSER AND BLUEWATER**
STRUCTURE_NAME	



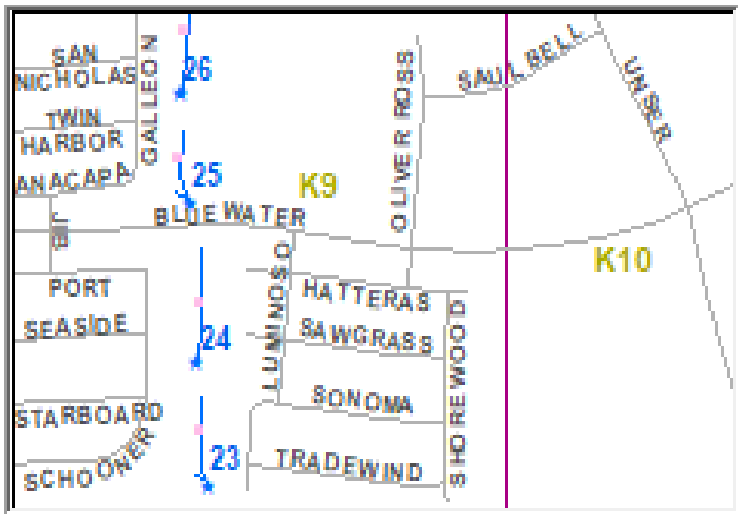
MAP_KEY	K09	City_Quad	NW
Year_Built	1996	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE UNSER DIV POND#1 (POND # 72)		
SWQ SIZE	12' W X 12' H X 12' L	cost	
PROJECT_NO		NUMBER	23

LOCATION	**0.4 M SW UNSER AND BLUEWATER**
STRUCTURE_NAME	



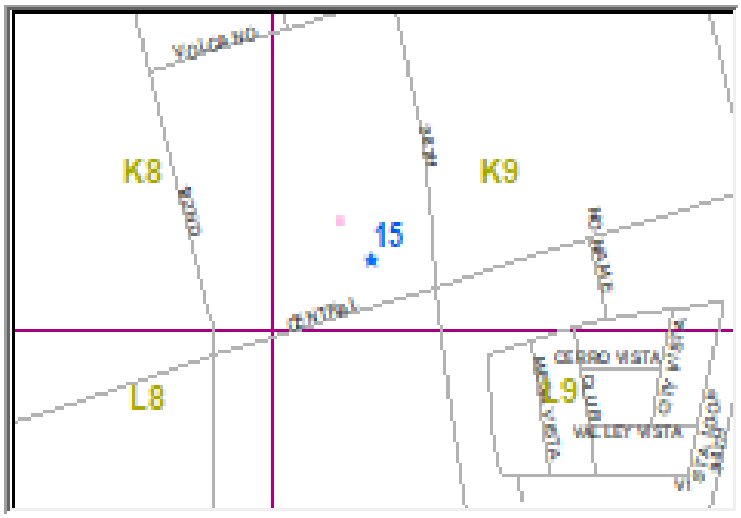
MAP_KEY	K09	City_Quad	NW
Year_Built	1996	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE UNSER DIV POND#2 (POND# 73)		
SWQ SIZE	12' W X 12' H X 12' L	cost	
PROJECT_NO		NUMBER	24

LOCATION	0.4 M NW UNSER AND BLUEWATER
STRUCTURE_NAME	



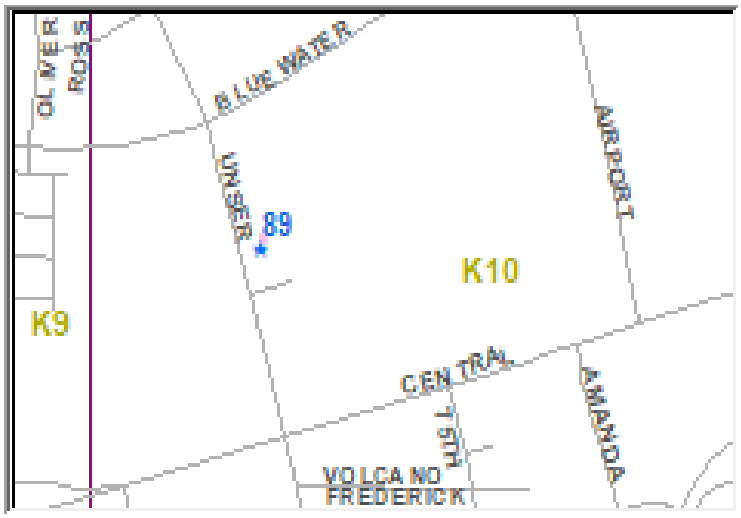
MAP_KEY	K09	City_Quad	NW
Year_Built	1996	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE UNSER DIV POND#4 (POND # 75)		
SWQ SIZE	12' W X 12' H X 12' L	cost	
PROJECT_NO		NUMBER	26

LOCATION	**0.1 M NW CENTRAL AND 98TH ST**
STRUCTURE_NAME	



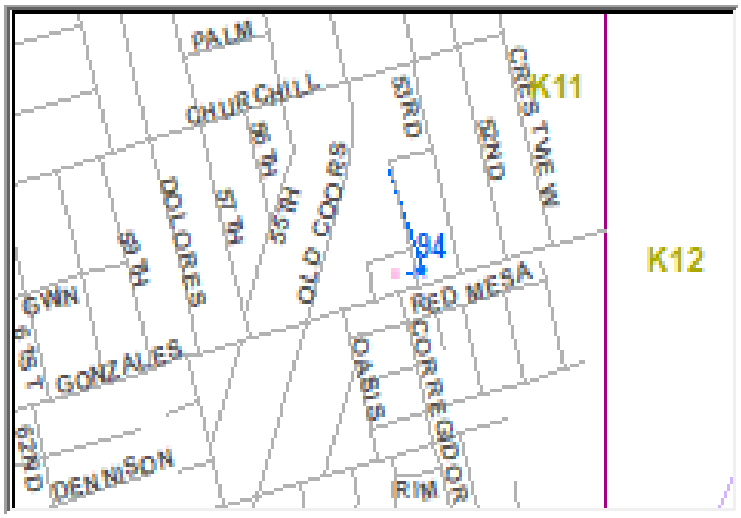
MAP_KEY	K09	City_Quad	NW
Year_Built	1998	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\01
NOTES	INSIDE AMOLE DETENTION DAM		
SWQ SIZE	25' W BOTTOM X 30' W TOP X 15' L	cost	
PROJECT_NO		NUMBER	15

LOCATION	UNSER & BLUEWATER
STRUCTURE_NAME	



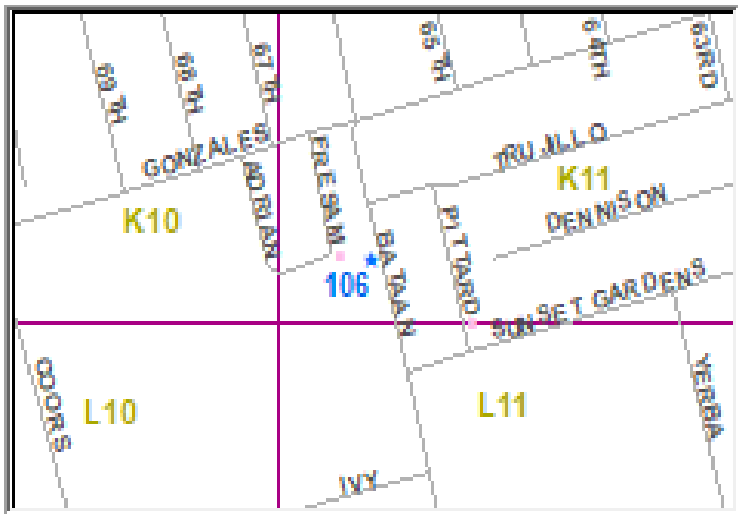
MAP_KEY	K10	City_Quad	NW
Year_Built	2014	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	89

LOCATION	GONZALEZ OUTLET PIPE
STRUCTURE_NAME	



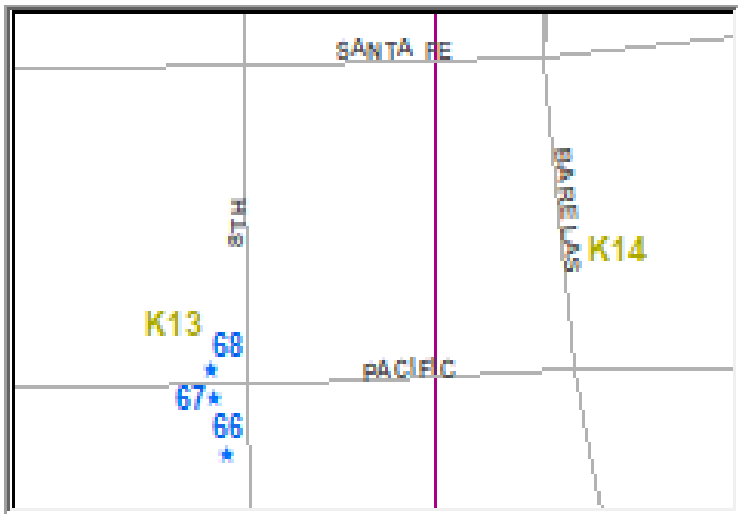
MAP_KEY	K11	City_Quad	SW
Year_Built	1995	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	94

LOCATION	600 FRESAM SW
STRUCTURE_NAME	PERMEABLE PAVEMENT



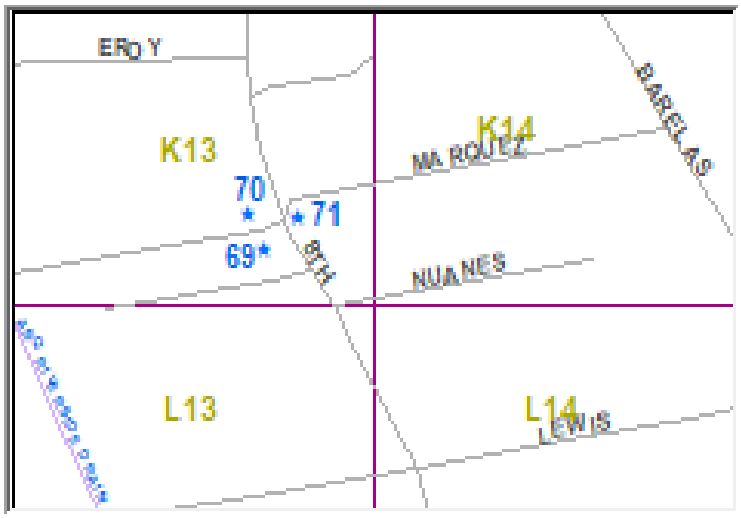
MAP_KEY	K11	City_Quad	SW
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	106

LOCATION	PACIFIC S OF 1017 8TH SW
STRUCTURE_NAME	INLETS WITH TRASH SCREEN



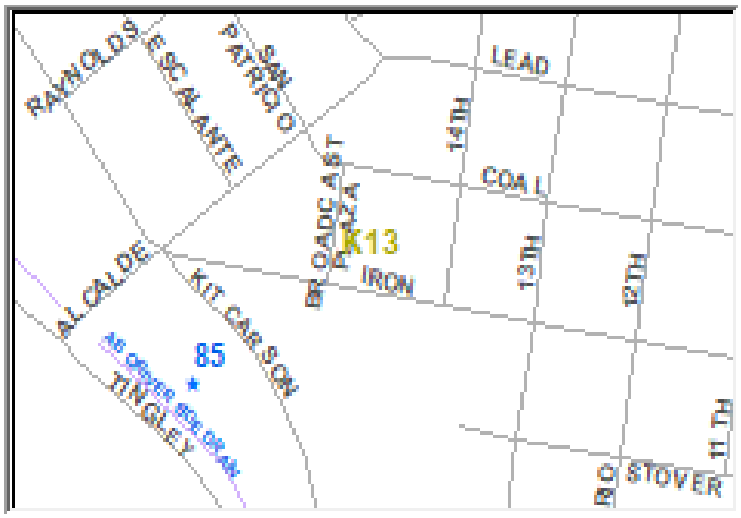
MAP_KEY	K13	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	68

LOCATION	806 MARQUEZ SW
STRUCTURE_NAME	INLETS WITH TRASH SCREEN



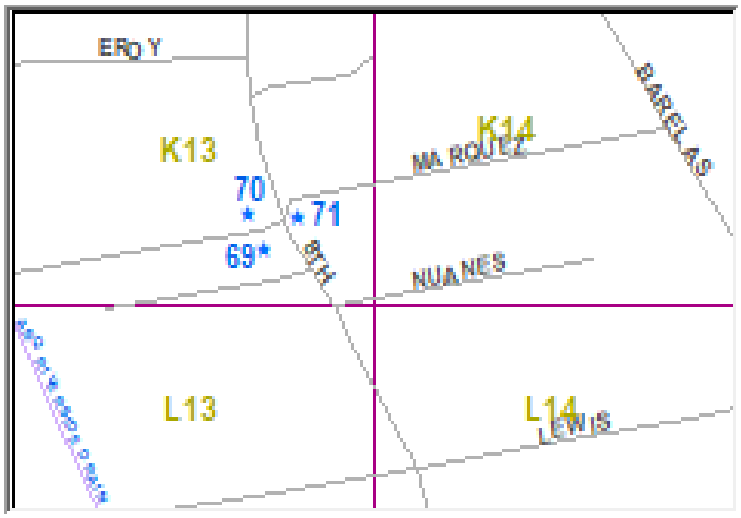
MAP_KEY	K13	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	69

LOCATION	900 ALCALDE SW PS 41 MECH BAR SCREEN
STRUCTURE_NAME	



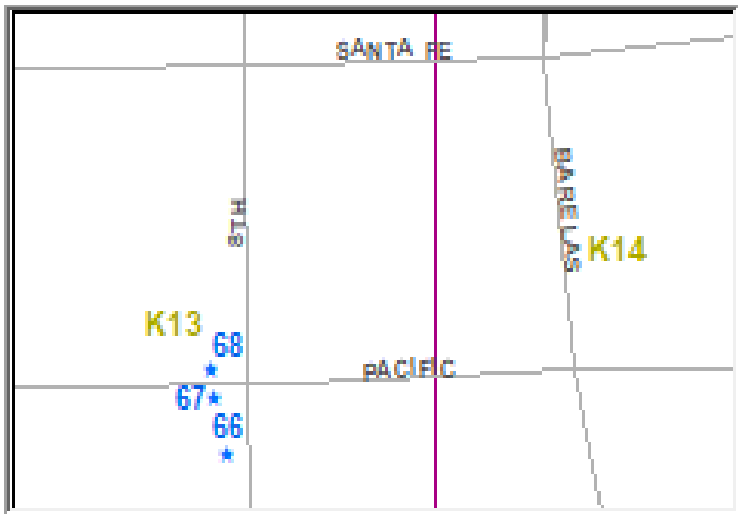
MAP_KEY	K13	City_Quad	SW
Year_Built	1995	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	85

LOCATION	**1304 8TH SW**
STRUCTURE_NAME	



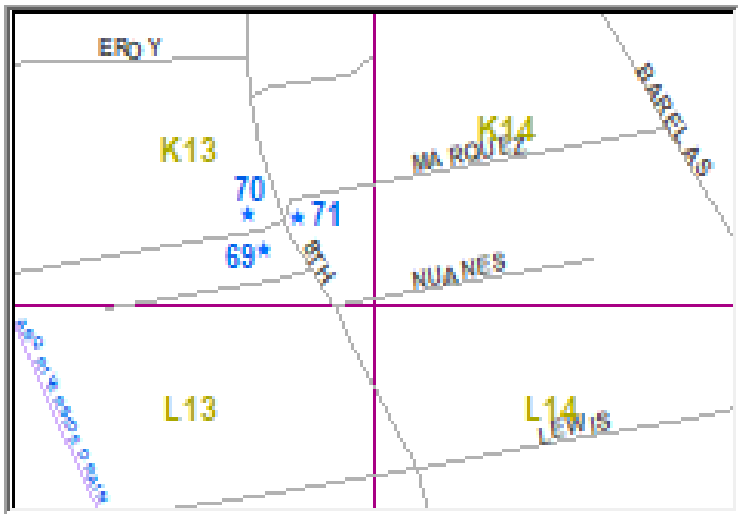
MAP_KEY	K13	City_Quad	SW
Year_Built	2014	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	71

LOCATION	8TH EAST OF 800 PACIFIC SW
STRUCTURE_NAME	INLETS WITH TRASH SCREEN



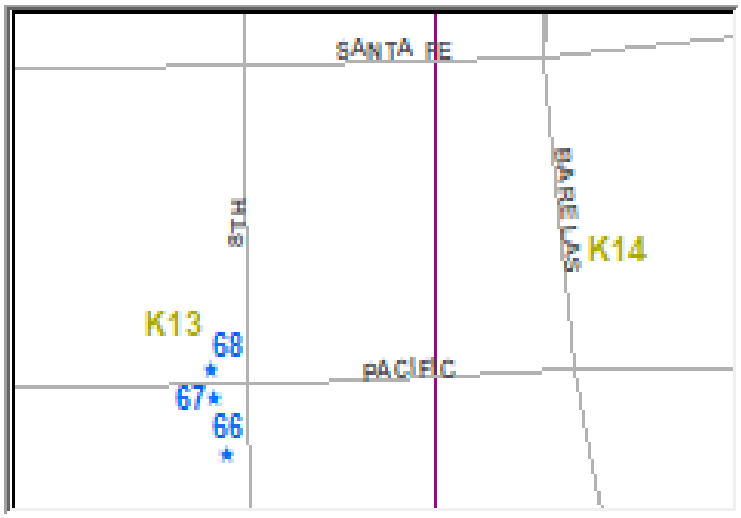
MAP_KEY	K13	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	66

LOCATION	**MARQUEZ SOUTH OF 1223 8TH SW**
STRUCTURE_NAME	INLET WITH TRASH SCREEN



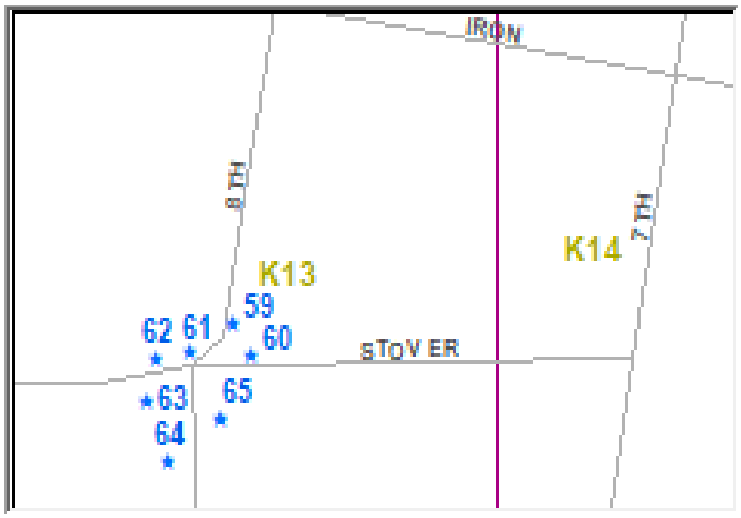
MAP_KEY	K13	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	70

LOCATION	800 PACIFIC SW
STRUCTURE_NAME	INLETS WITH TRASH SCREEN



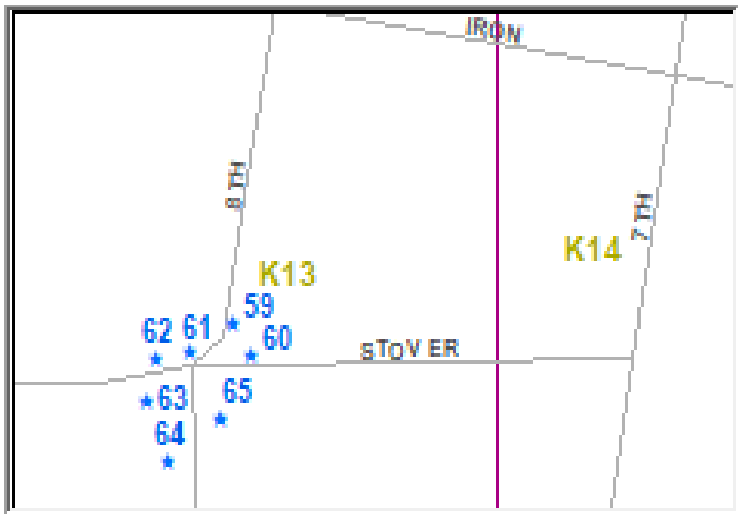
MAP_KEY	K13	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	67

LOCATION	8TH WEST OF 724 STOVER SW
STRUCTURE_NAME	INLETS WITH TRASH SCREEN



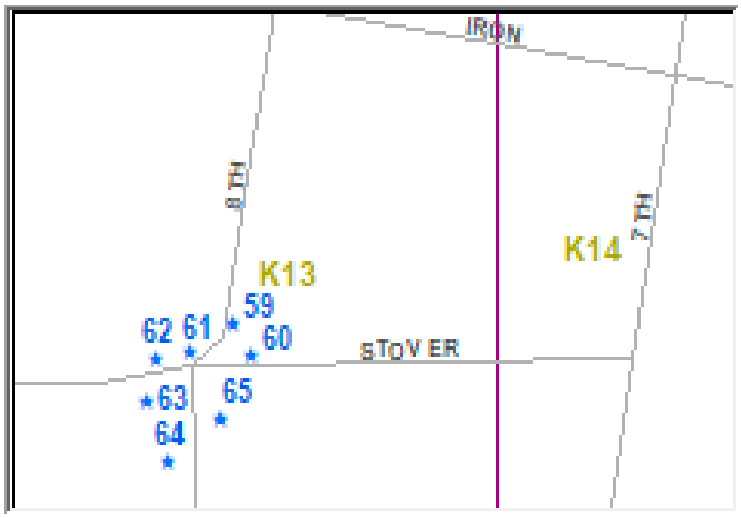
MAP_KEY	K13	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	65

LOCATION	8TH EAST OF 800 STOVER SW
STRUCTURE_NAME	INLETS WITH TRASH SCREEN



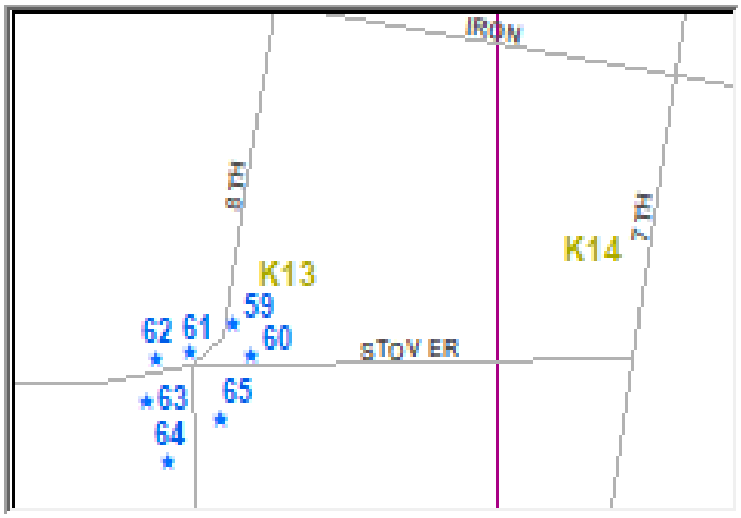
MAP_KEY	K13	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	64

LOCATION	800 STOVER SW
STRUCTURE_NAME	INLETS WITH TRASH SCREEN



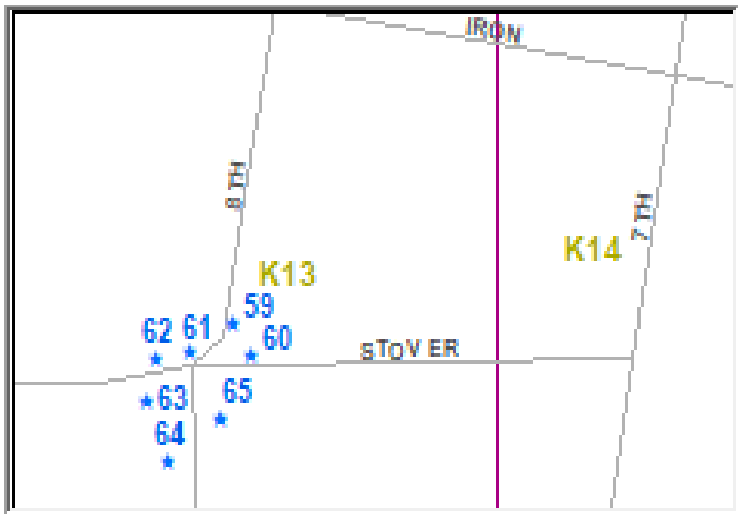
MAP_KEY	K13	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	63

LOCATION	801 STOVER SW
STRUCTURE_NAME	INLETS WITH TRASH SCREEN



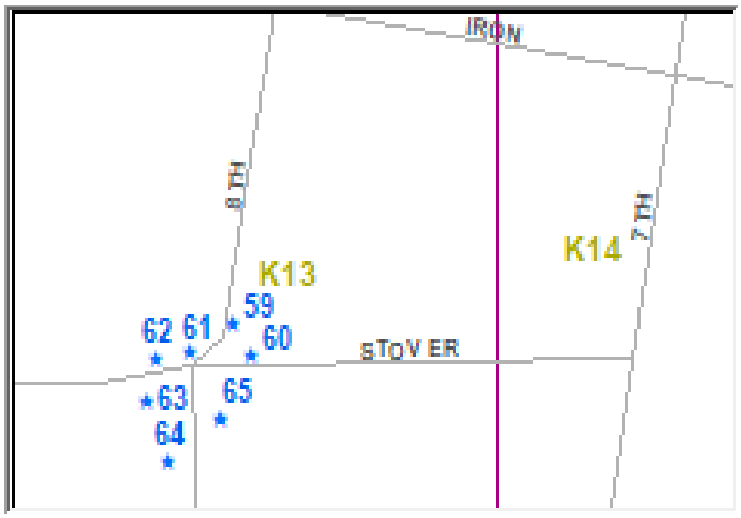
MAP_KEY	K13	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	62

LOCATION	8TH EAST OF 801 STOVER SW
STRUCTURE_NAME	INLETS WITH TRASH SCREEN



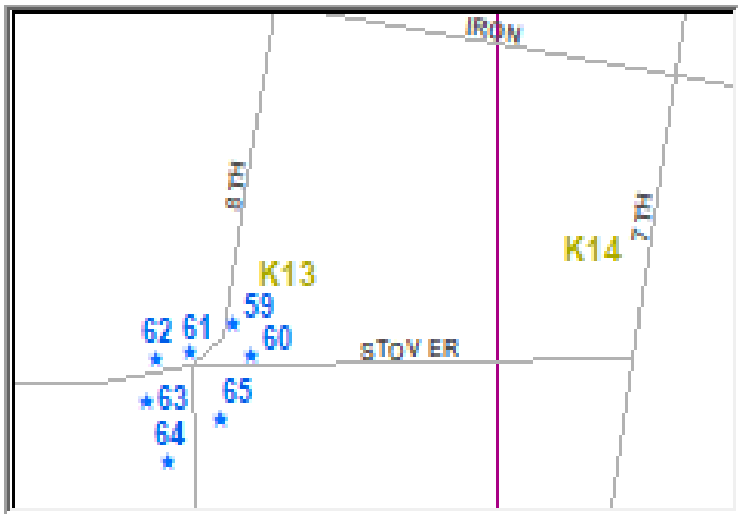
MAP_KEY	K13	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	61

LOCATION	8TH ST SW WEST OF 717 STOVER SW
STRUCTURE_NAME	INLETS WITH TRASH SCREEN



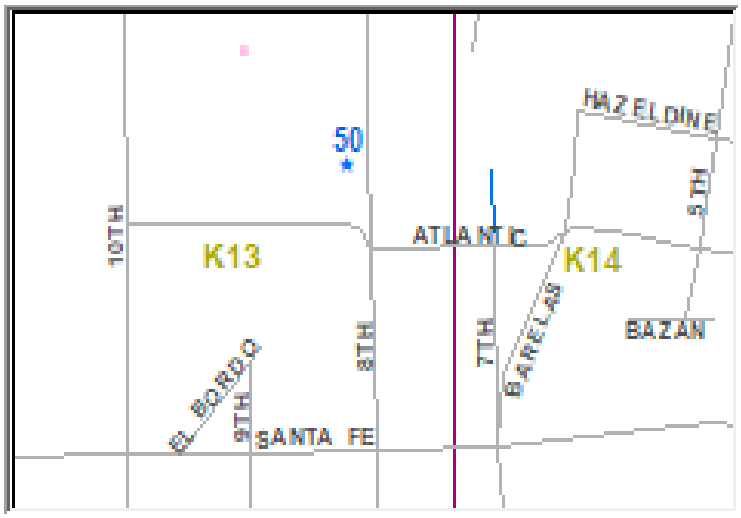
MAP_KEY	K13	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	60

LOCATION	8TH WEST OF 717 STOVER SW
STRUCTURE_NAME	INLETS WITH TRASH SCREEN



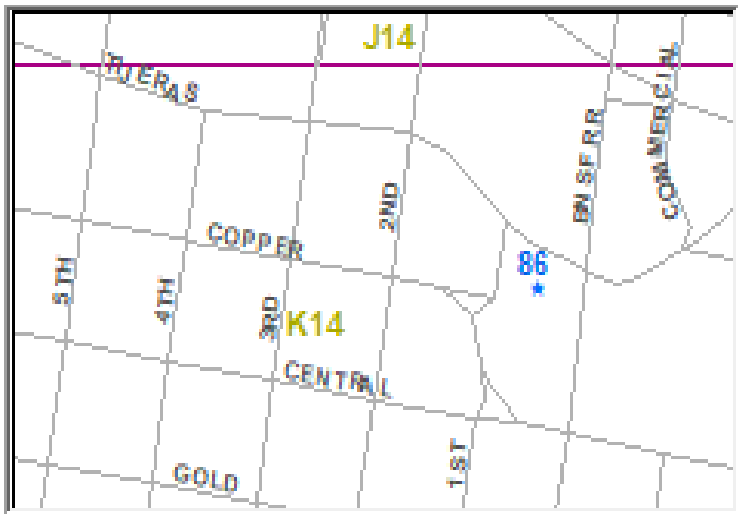
MAP_KEY	K13	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	$1,000
PROJECT_NO	648391	NUMBER	59

LOCATION	NW 8TH ST AND ATLANTIC
STRUCTURE_NAME	



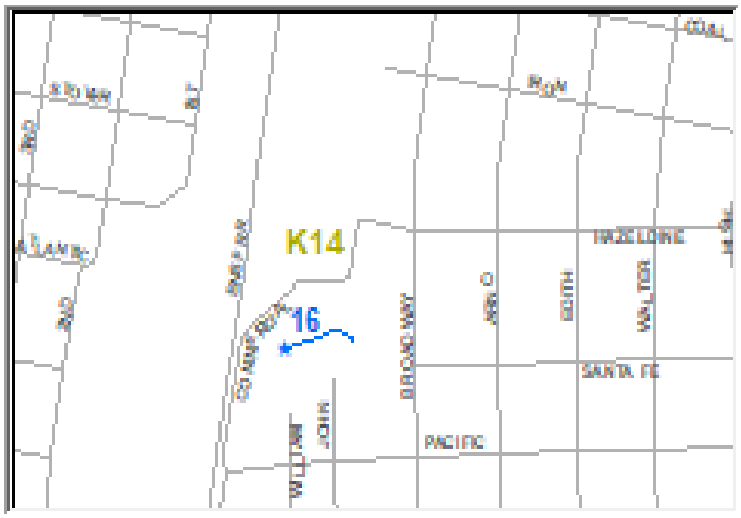
MAP_KEY	K13	City_Quad	SW
Year_Built	2008	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE TINGLEY PARK-DET POND		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	50

LOCATION	200 1ST ST NW PS 43
STRUCTURE_NAME	



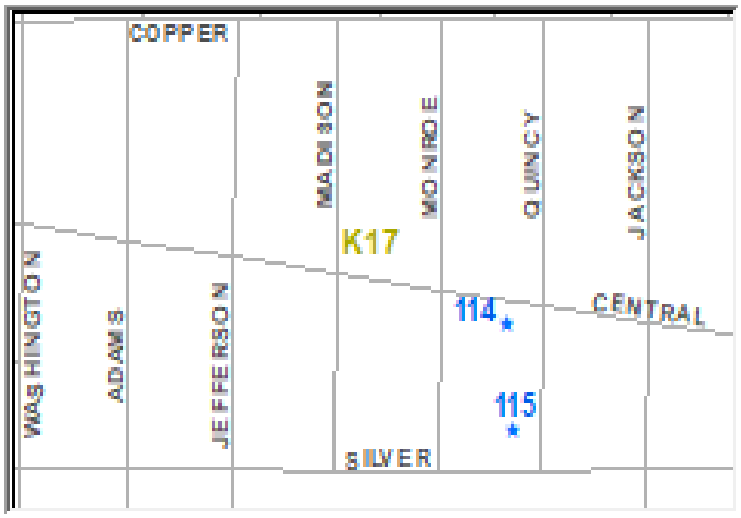
MAP_KEY	K14	City_Quad	NW
Year_Built	1995	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	86

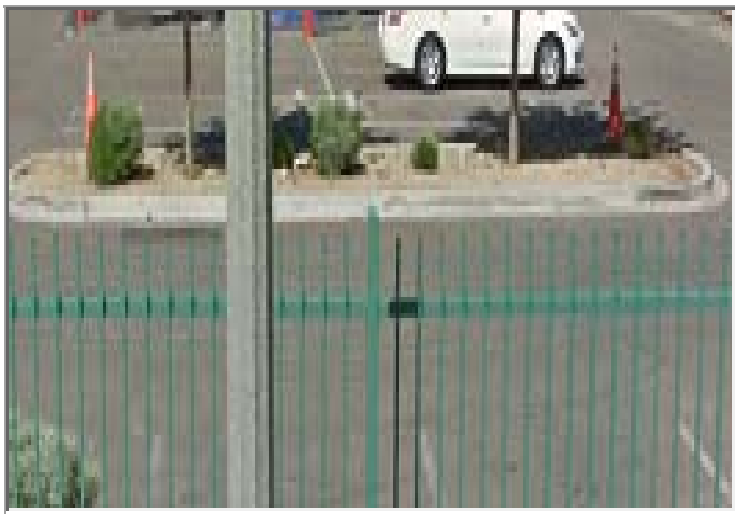
LOCATION	0.1 M SW BROADWAY AND HAZELDINE
STRUCTURE_NAME	



MAP_KEY	K14	City_Quad	SW
Year_Built	2003	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\01
NOTES	INSIDE SOUTH BROADWAY POND		
SWQ SIZE	15' W X 12' L	cost	
PROJECT_NO		NUMBER	16

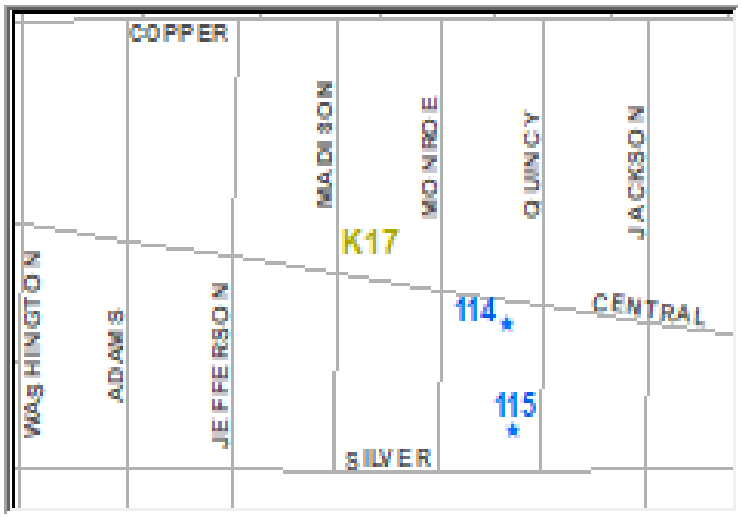
LOCATION	GHLAND SENIOR CENTER AT 131 MONROE ST
STRUCTURE_NAME	SWQF

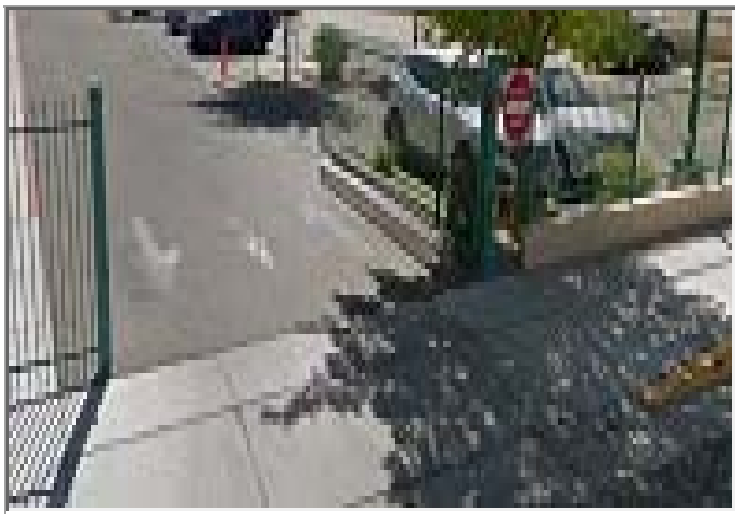




MAP_KEY	K17	City_Quad	NE
Year_Built	2016	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	BIO-SWELLS		
SWQ SIZE		cost	
PROJECT_NO	658802	NUMBER	115

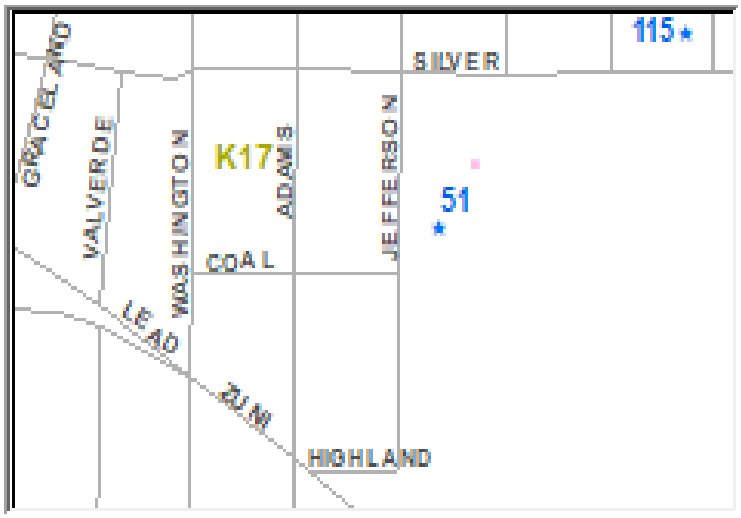
LOCATION	GHLAND SENIOR CENTER AT 131 MONROE ST
STRUCTURE_NAME	SWQF





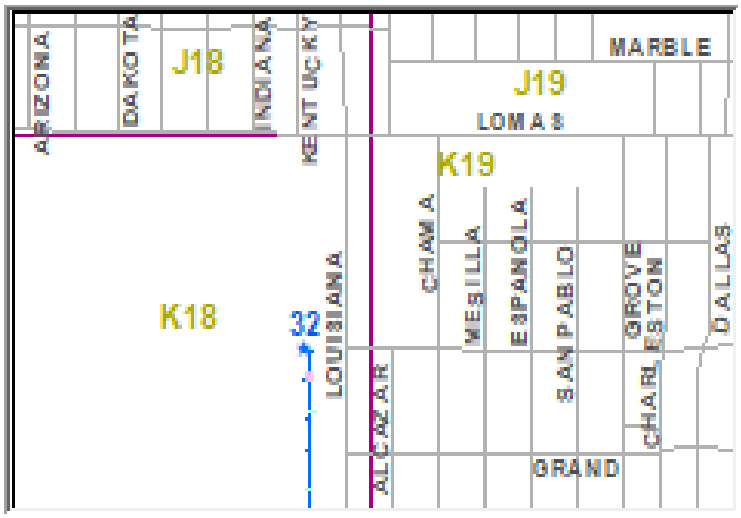
MAP_KEY	K17	City_Quad	NE
Year_Built	2016	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	PERMEABLE PAVEMENT		
SWQ SIZE		cost	
PROJECT_NO	658802	NUMBER	114

LOCATION	NE COAL AND JEFFERSON
STRUCTURE_NAME	



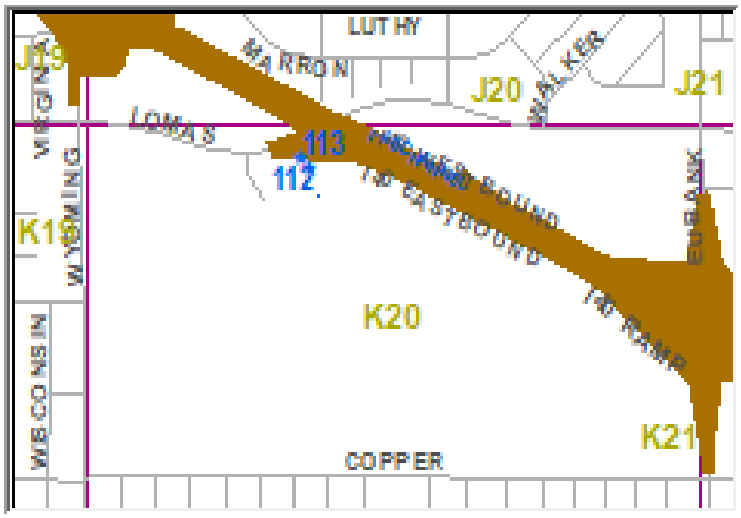
MAP_KEY	K17	City_Quad	SE
Year_Built	1985	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE HIGHLAND DET POND		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	51

LOCATION	**EXPO NM POND AT LOMAS AND LOUISIANA**
STRUCTURE_NAME	PORTED RISER



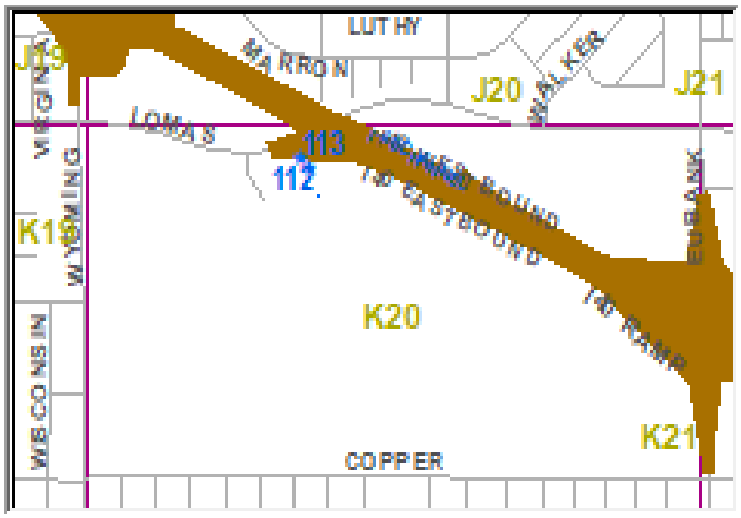
MAP_KEY	K18	City_Quad	NE
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	REPLACE OLD RACK-LOCATED INSIDE NM-EXPO (STATE TAIR GROUND)-730491		
SWQ SIZE		cost	
PROJECT_NO	730491	NUMBER	32

LOCATION	LOS ALTOS PARK AND ANIMAL SHELTER
STRUCTURE_NAME	SECURITY RACK



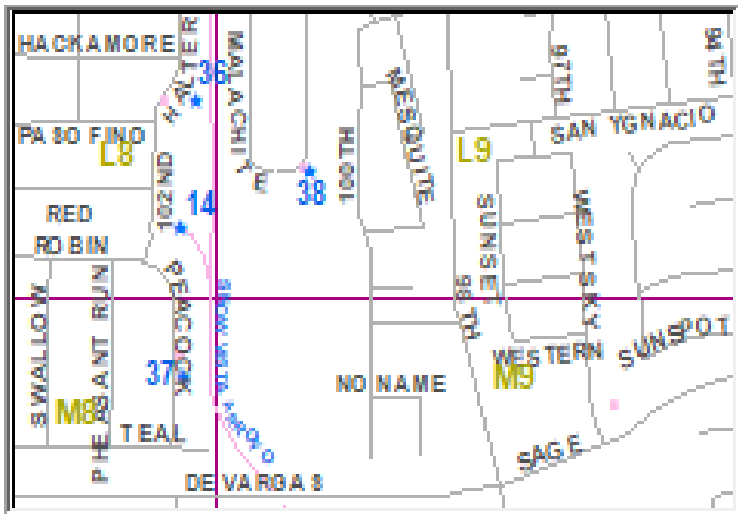
MAP_KEY	K20	City_Quad	NE
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	SECURITY		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	113

LOCATION	I-40-LOMAS-ANIMAL SHELTER
STRUCTURE_NAME	TRASH RACK



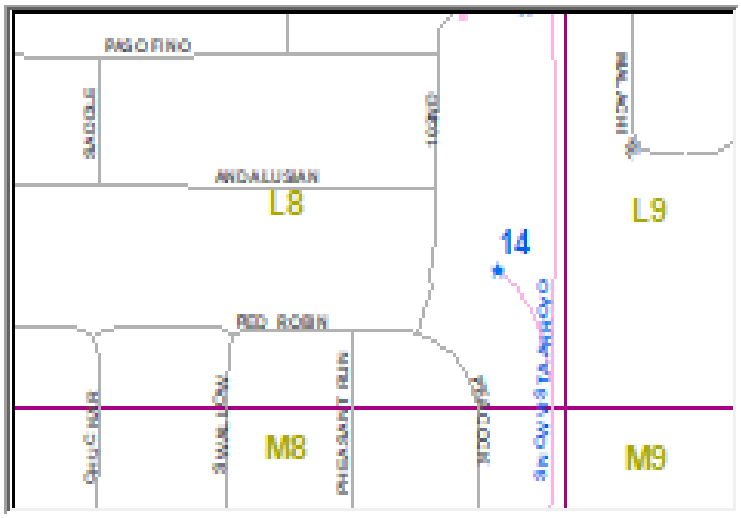
MAP_KEY	K20	City_Quad	NE
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	2 CBS EACH 7 FT H X 9 FT W TRASH RACK		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	112

LOCATION	SE HACKAMORE AND HALTER
STRUCTURE_NAME	



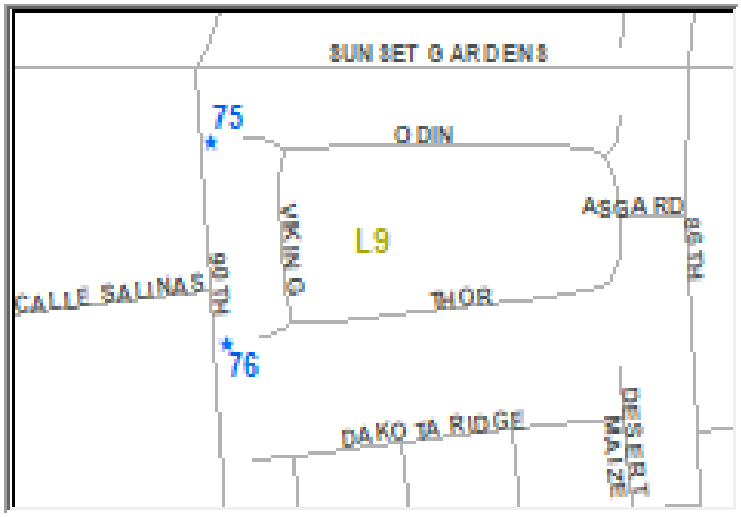
MAP_KEY	L08	City_Quad	SW
Year_Built	1996	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE THE POND		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	36

LOCATION	0.1 M NE 102ND ST AND PEACOCK
STRUCTURE_NAME	



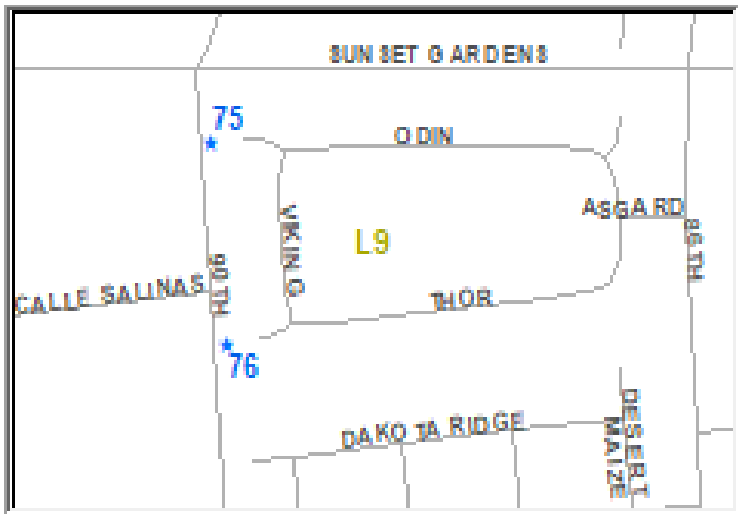
MAP_KEY	L08	City_Quad	SW
Year_Built	2005	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\01
NOTES	SECURITY RACK		
SWQ SIZE	11.5' W X 11' L	cost	
PROJECT_NO		NUMBER	14

LOCATION	TH ST SE, 150 FT SOUTH OF SUNSET GARDENS
STRUCTURE_NAME	TRASH SCREEN



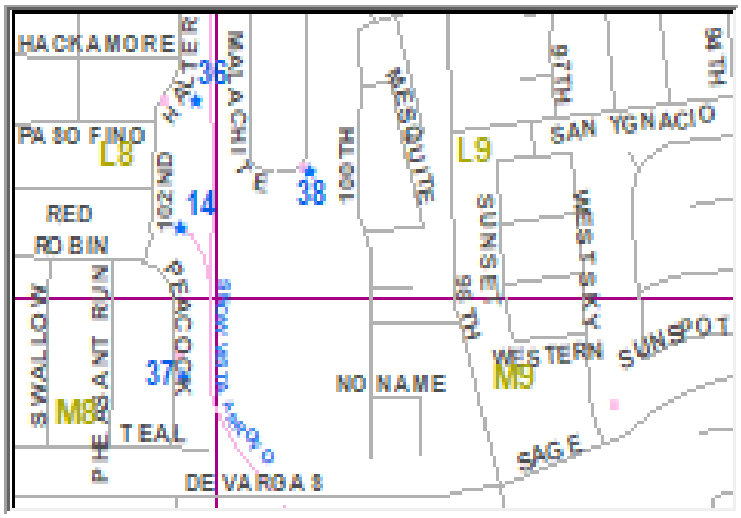
MAP_KEY	L09	City_Quad	SW
Year_Built	2016	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	3"X3" CLEAR OPENINGS-3/4" D BARS-5/8"X6" PLATE-INSTALLED BY ED ON 9-6-2016		
SWQ SIZE	3' X 16'	cost	$1,743
PROJECT_NO		NUMBER	75

LOCATION	TH ST SE, 550 FT SOUTH OF SUNSET GARDENS
STRUCTURE_NAME	TRASH SCREEN



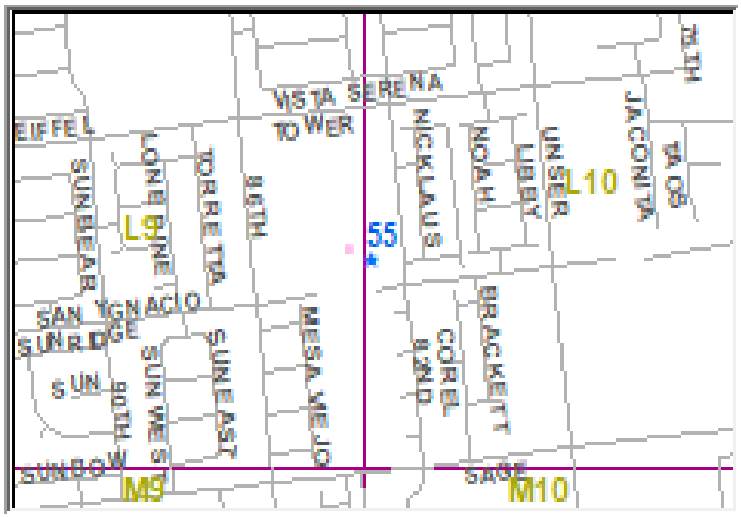
MAP_KEY	L09	City_Quad	SW
Year_Built	2016	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	3"X3" CLEAR OPENINGS-3/4" D BARS-5/8"X6" PLATE-INSTALLED BY ED ON 9-6-2016		
SWQ SIZE	3' X 16'	cost	$1,743
PROJECT_NO		NUMBER	76

LOCATION	TERRACOTTA AND MALACHITE
STRUCTURE_NAME	



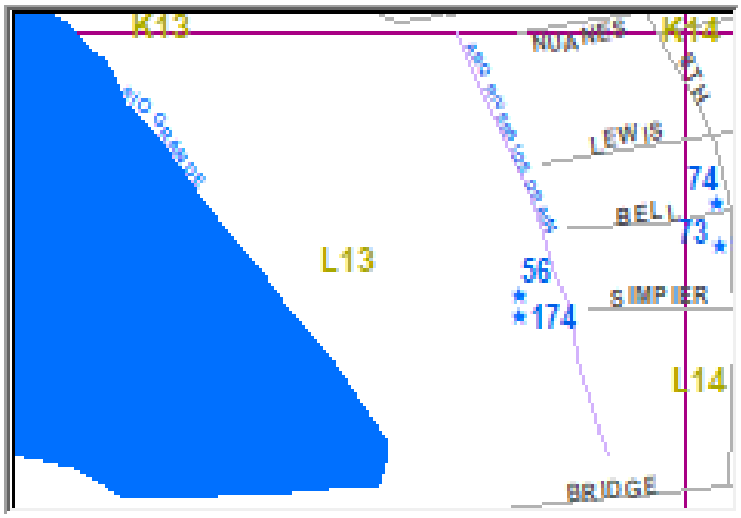
MAP_KEY	L09	City_Quad	SW
Year_Built	1997	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	LOCATED INSIDE THE POND		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	38

LOCATION	SE TOWER AND 86TH ST
STRUCTURE_NAME	



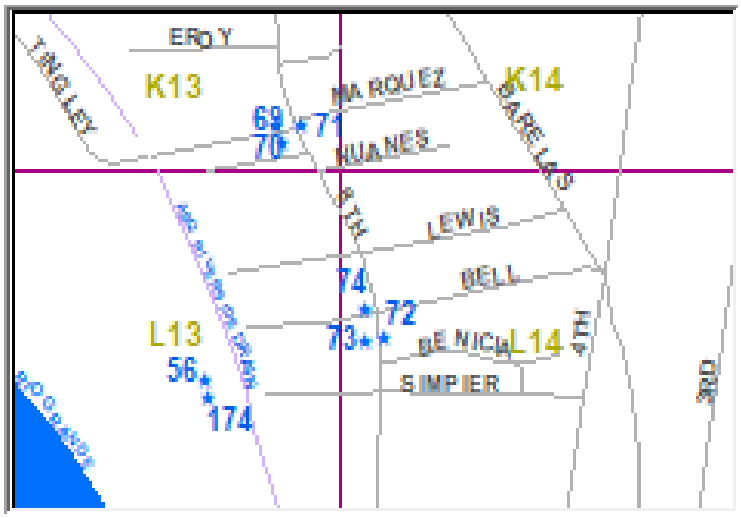
MAP_KEY	L10	City_Quad	SW
Year_Built	2003	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE THE TOWER-SAGE DET POND-PARK		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	55

LOCATION	BARELAS PS SCREEN
STRUCTURE_NAME	TRASH RACK



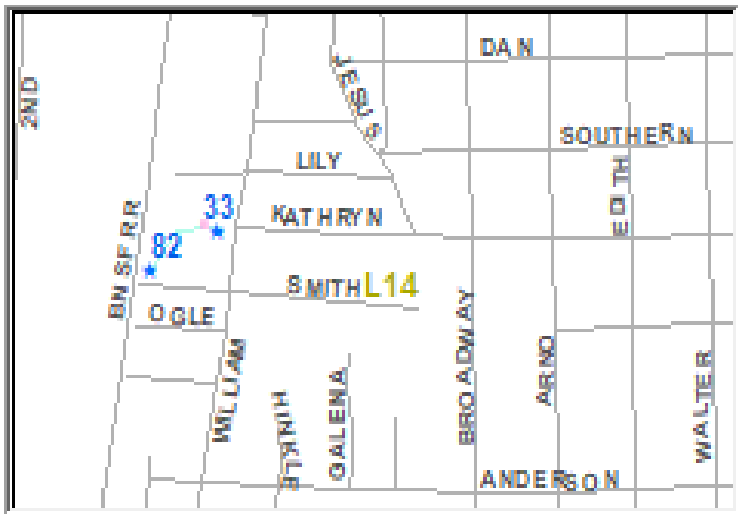
MAP_KEY	L13	City_Quad	SW
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	174

LOCATION	**0.2 M NW BRIDGE AND 8TH ST**
STRUCTURE_NAME	



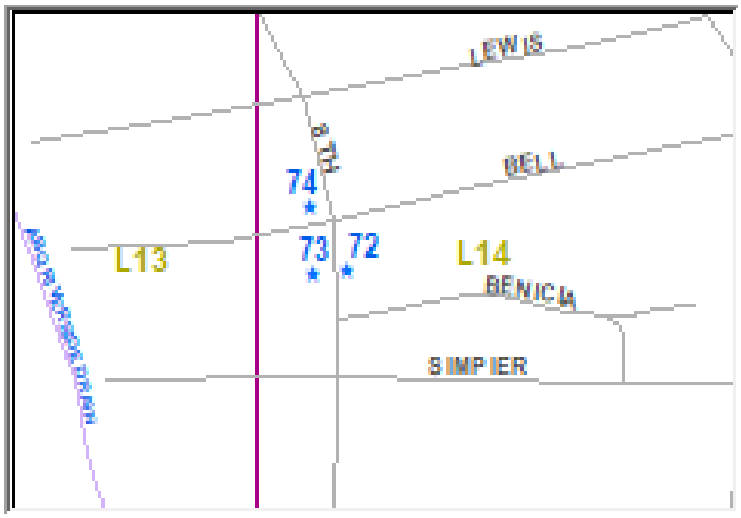
MAP_KEY	L13	City_Quad	SW
Year_Built	1961	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	DISCHARGE PIPES FROM BARELAS PUMP STATION		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	56

LOCATION	ORTED RISER INSIDE WILLIAM-KATHRYN PON
STRUCTURE_NAME	



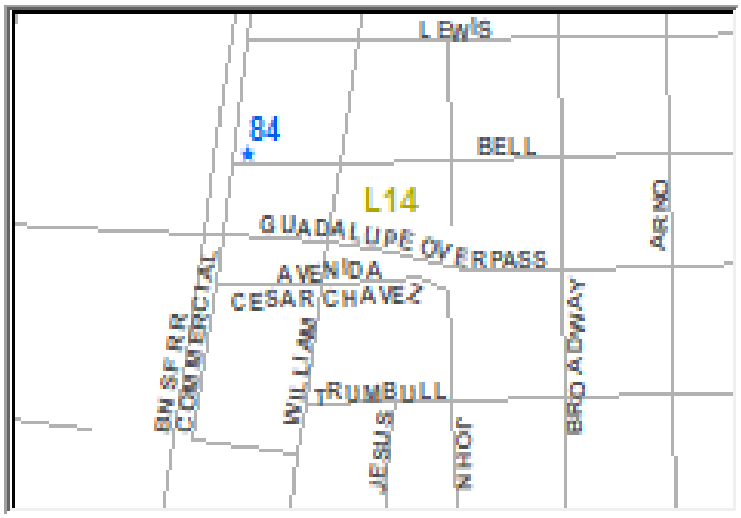
MAP_KEY	L14	City_Quad	SW
Year_Built	1995	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	82

LOCATION	**1407 8TH SW**
STRUCTURE_NAME	



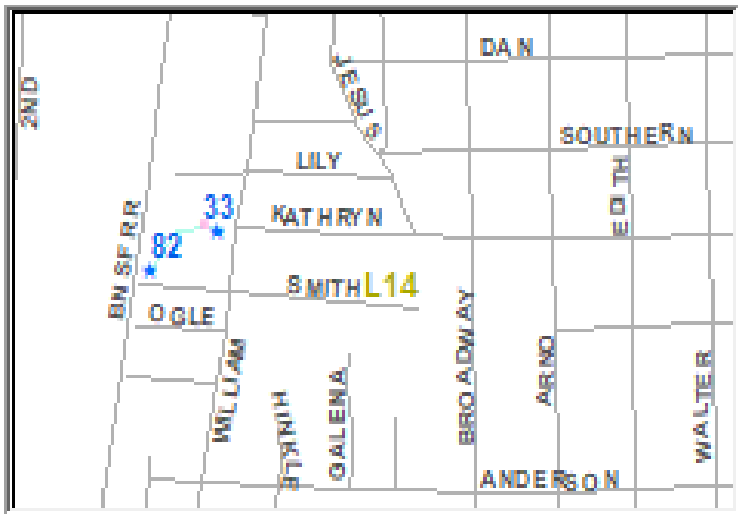
MAP_KEY	L14	City_Quad	SW
Year_Built	2014	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	74

LOCATION	. BELL AT COMMERCIAL-PS 37 MECH BAR SCRE
STRUCTURE_NAME	



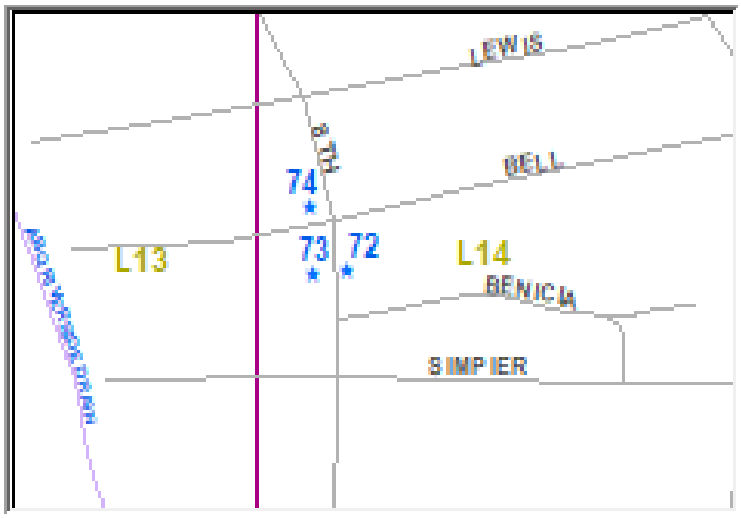
MAP_KEY	L14		City_Quad	SW	
Year_Built	1995	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack		
NOTES					
SWQ SIZE			cost		
PROJECT_NO			NUMBER	84	

LOCATION	WILLIAM AND KATHRYN
STRUCTURE_NAME	



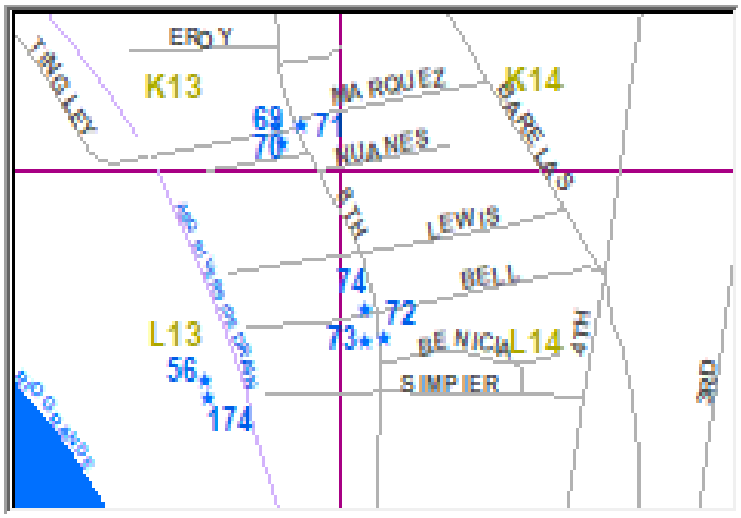
MAP_KEY	L14	City_Quad	SW
Year_Built	2004	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	2 SECURITY RACKS LOCATED INSIDE THE WILLIAM-KATHRYN POND (POND # 93)		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	33

LOCATION	**1412 8TH SW**
STRUCTURE_NAME	



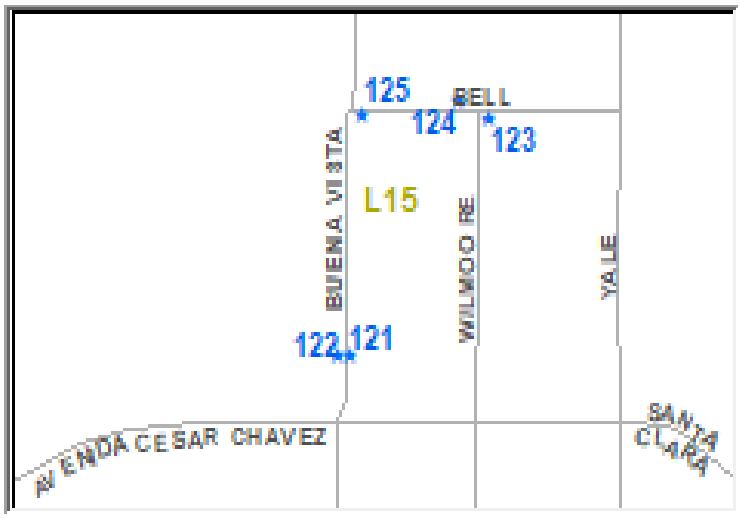
MAP_KEY	L14	City_Quad	SW
Year_Built	2014	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	72

LOCATION	**1411 8TH SW**
STRUCTURE_NAME	



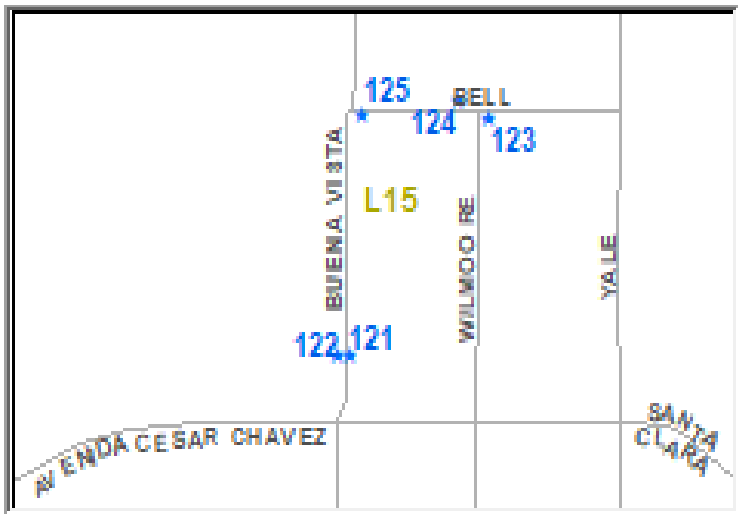
MAP_KEY	L14	City_Quad	SW
Year_Built	2014	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	648391	NUMBER	73

LOCATION	**BELL EAST OF BUENA VISTA**
STRUCTURE_NAME	SWQ-INLET



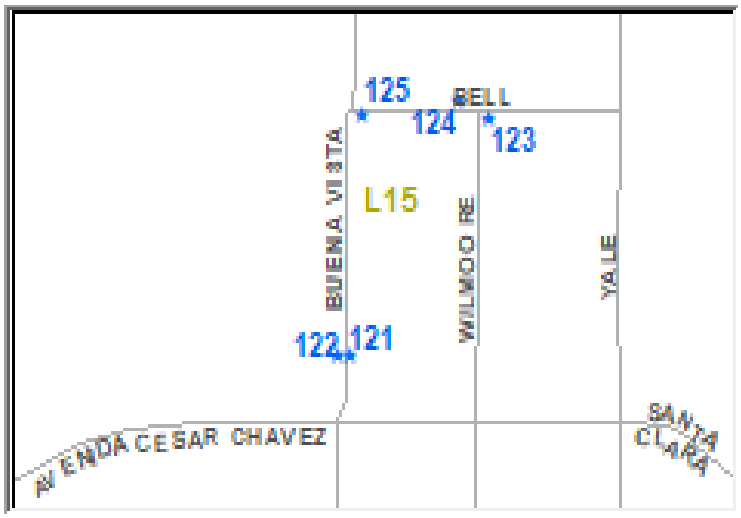
MAP_KEY	L15	City_Quad	NE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	452291	NUMBER	125

LOCATION	**BELL WEST OF WILMOORE**
STRUCTURE_NAME	SWQ-INLET



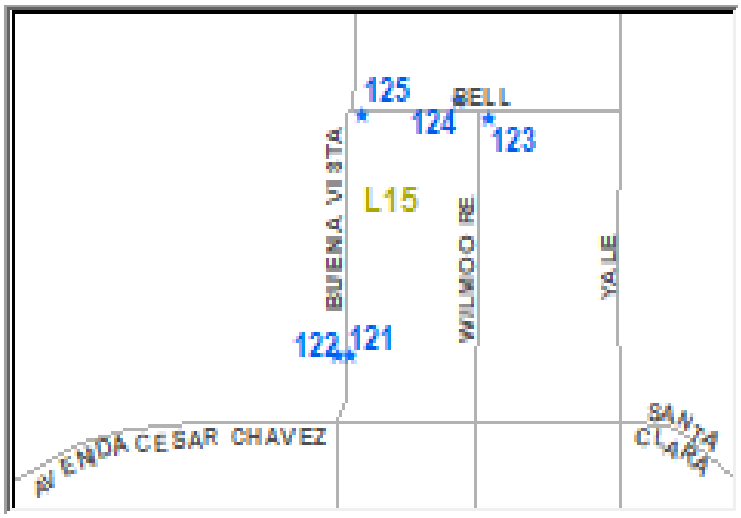
MAP_KEY	L15	City_Quad	SE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	452291	NUMBER	124

LOCATION	**BELL EAST OF WILMOORE**
STRUCTURE_NAME	SWQ-INLET



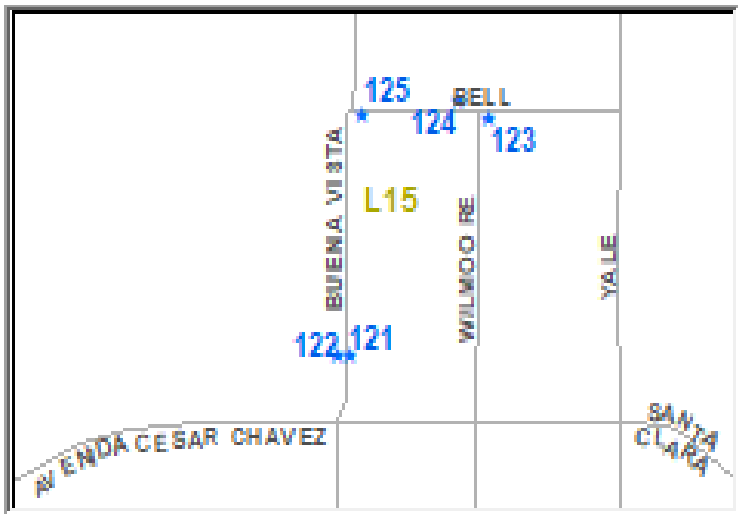
MAP_KEY	L15	City_Quad	SE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	452291	NUMBER	123

LOCATION	BUENA VISTA NORTH OF AVENIDA CESAR CHA
STRUCTURE_NAME	SWQ-INLET



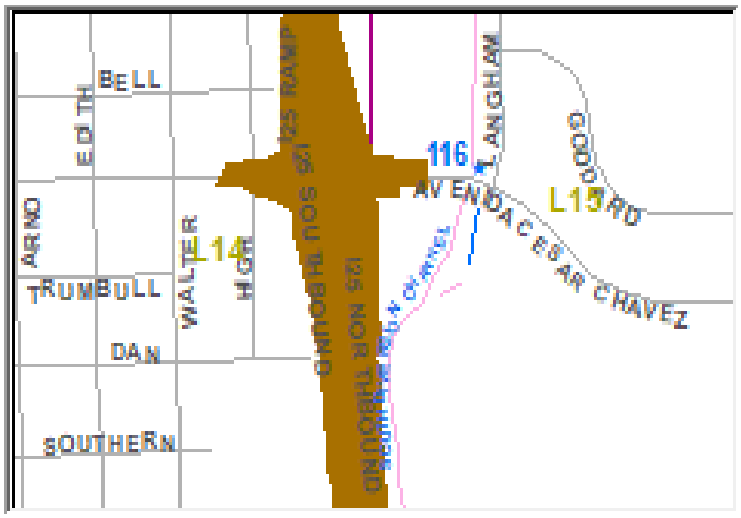
MAP_KEY	L15	City_Quad	SE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	452291	NUMBER	122

LOCATION	BUENA VISTA NORTH OF AVENIDA CESAR CHA
STRUCTURE_NAME	SWQ-INLET



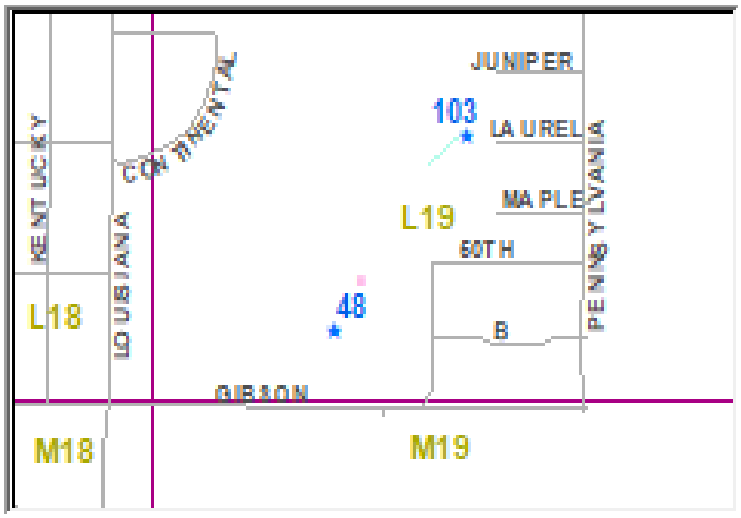
MAP_KEY	L15	City_Quad	SE
Year_Built	2012	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	452291	NUMBER	121

LOCATION	AVANIDA CEZAR CHAVEZ SE AT I-25
STRUCTURE_NAME	SWQ-MH



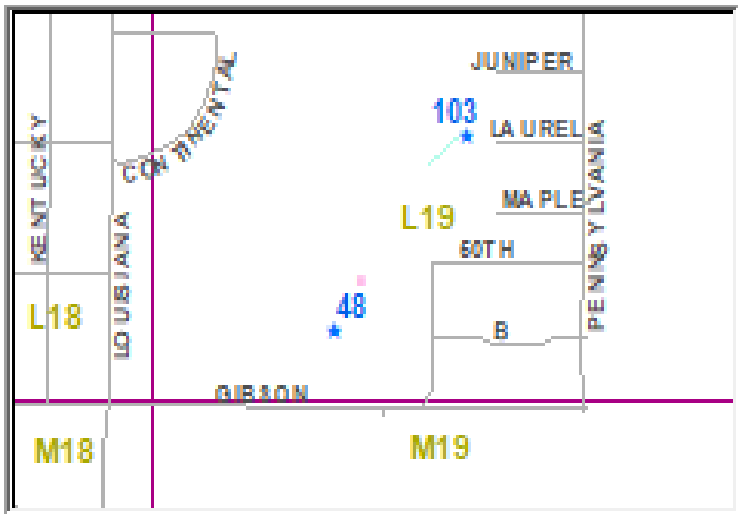
MAP_KEY	L15	City_Quad	NE
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO	501507	NUMBER	116

LOCATION	KAFB POND - NORTH INLETS
STRUCTURE_NAME	



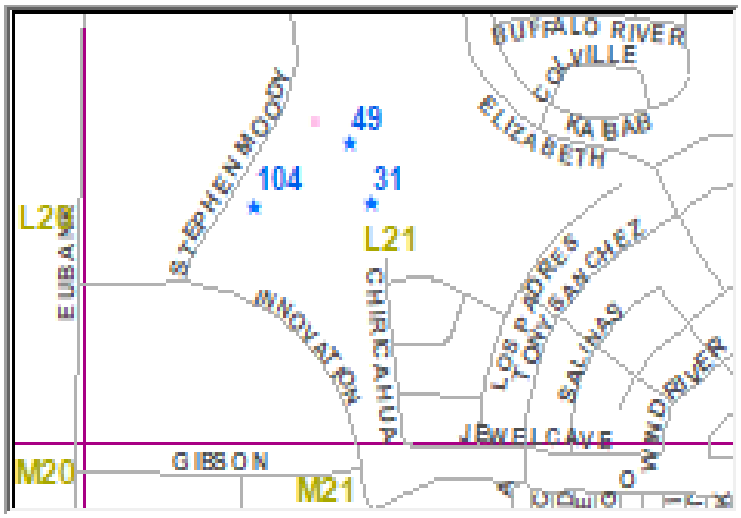
MAP_KEY	L19	City_Quad	SE
Year_Built	1985	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE	2 @ 40 IN	cost	
PROJECT_NO	167485	NUMBER	103

LOCATION	KAFB DET DAM AT LOUISIANA AND GIBSON
STRUCTURE_NAME	



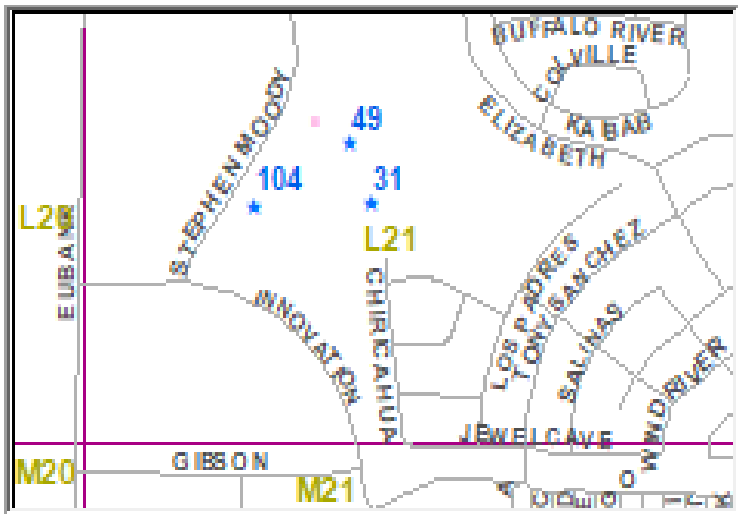
MAP_KEY	L19	City_Quad	SE
Year_Built	2006	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE KAFB DET DAM		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	48

LOCATION	0.5 M SE EUBANK AND SOUTHERN
STRUCTURE_NAME	



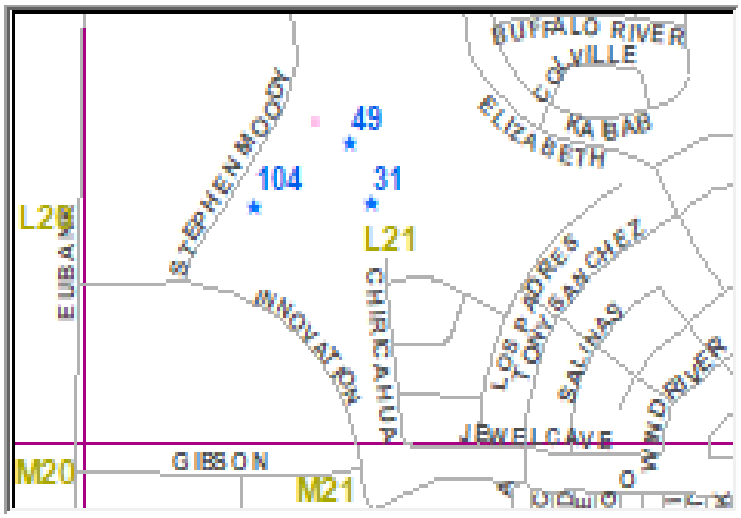
MAP_KEY	L21	City_Quad	SE
Year_Built	2001	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE MANZANO MESA DET. DAM		
SWQ SIZE	14' X 14' X8' L	cost	
PROJECT_NO		NUMBER	31

LOCATION	MANZANO MESA POND-NORTH RACK
STRUCTURE_NAME	



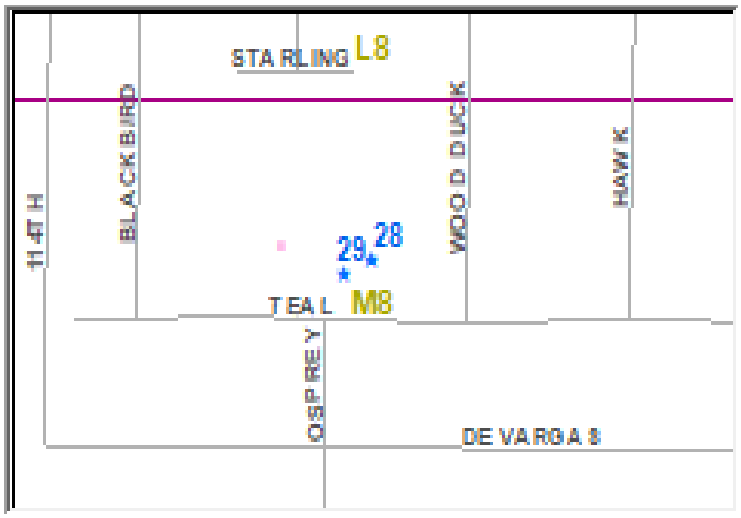
MAP_KEY	L21	City_Quad	SE
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	49

LOCATION	MANZANO MESA SOUTH ROUND TRASH RACK
STRUCTURE_NAME	STORMCEPTOR



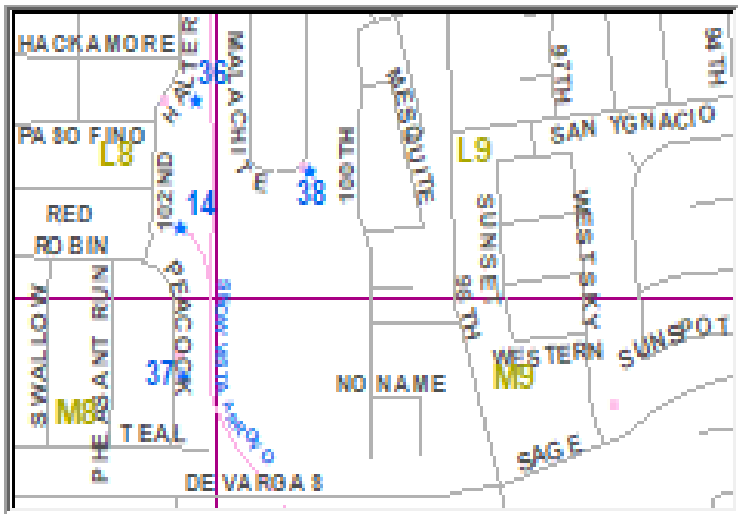
MAP_KEY	L21	City_Quad	SE
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	104

LOCATION	**TEAL AND OSPREY**
STRUCTURE_NAME	



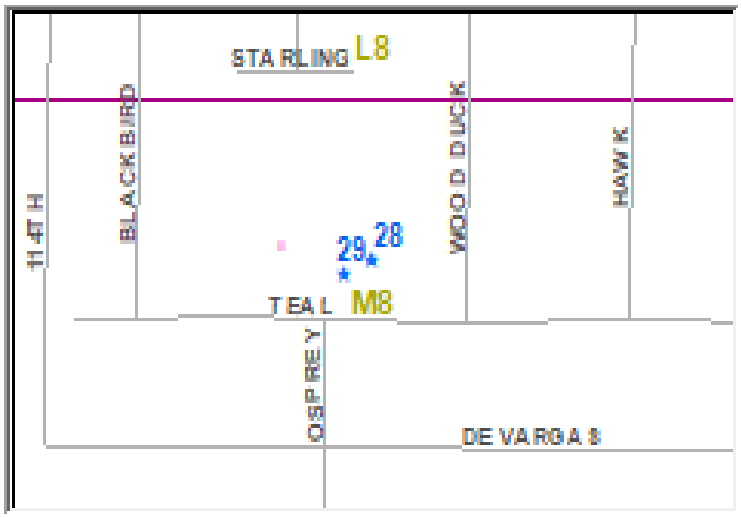
MAP_KEY	M08	City_Quad	SW
Year_Built	2005	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE THE PARK, SECURITY RACK		
SWQ SIZE	7' W X 8' L	cost	
PROJECT_NO		NUMBER	29

LOCATION	NE PEACOCK AND TEAL
STRUCTURE_NAME	



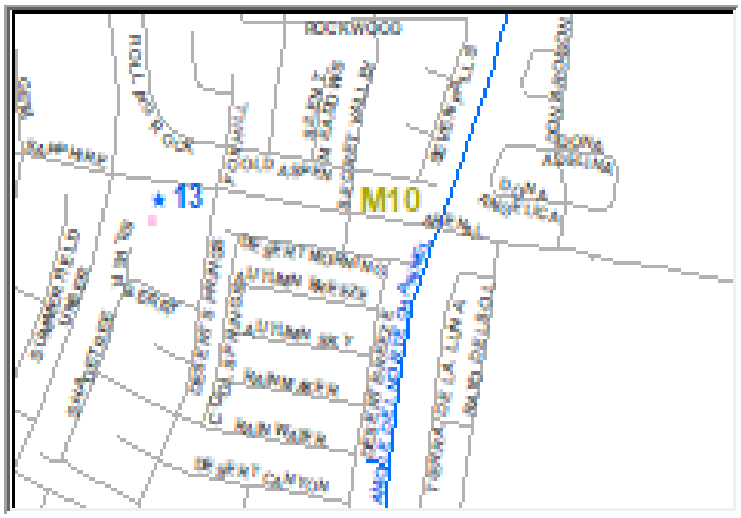
MAP_KEY	M08	City_Quad	SW
Year_Built	1999	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	LOCATED INDSIDE THE POND		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	37

LOCATION	TEAL AND OSPREY-SMALL
STRUCTURE_NAME	



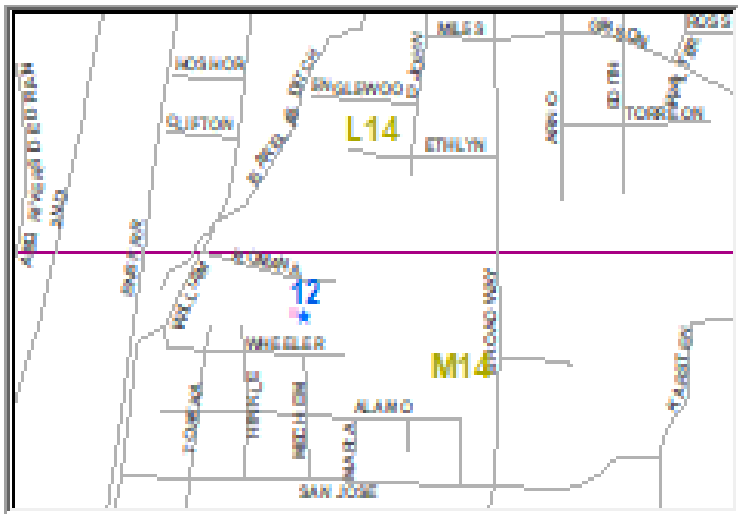
MAP_KEY	M08	City_Quad	SW
Year_Built	2005	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	SECURITY RACK, INSIDE THE PARK		
SWQ SIZE	5' W X 5' L	cost	
PROJECT_NO		NUMBER	28

LOCATION	0.1 M SE ARENAL AND UNSER
STRUCTURE_NAME	



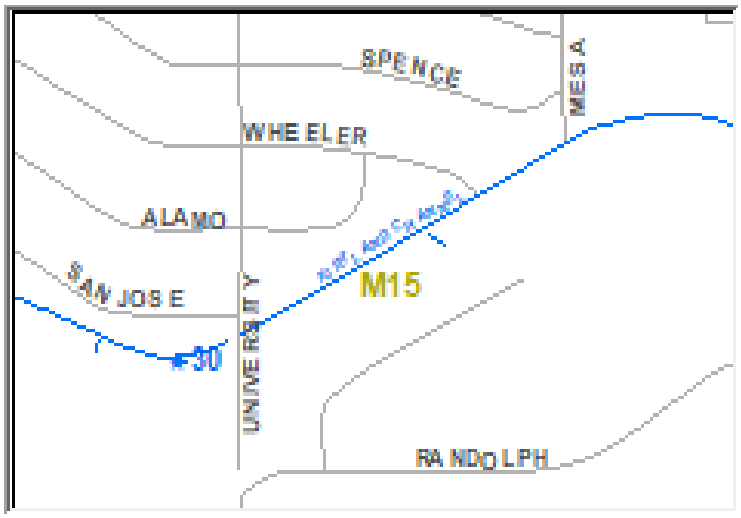
MAP_KEY	M10	City_Quad	SW
Year_Built	1979	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\01
NOTES	INSIDE ARENAL AND UNSER POND		
SWQ SIZE	15" W X 15' H	cost	
PROJECT_NO		NUMBER	13

LOCATION	MECHEM POND CONC-BOX
STRUCTURE_NAME	PORTED RISER



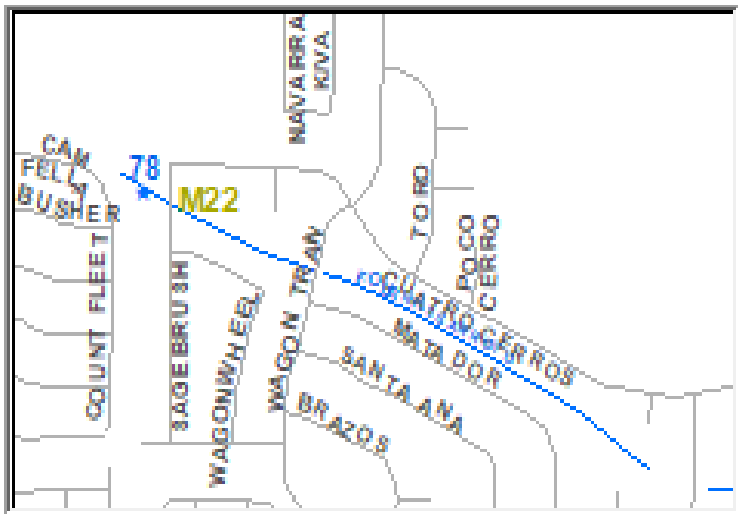
MAP_KEY	M14	City_Quad	SE
Year_Built	2015	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\01
NOTES	INSIDE MECHEM'S POND		
SWQ SIZE		cost	
PROJECT_NO	792602	NUMBER	12

LOCATION	0.1 M SW UNIVERSITY AND SAN JOSE
STRUCTURE_NAME	



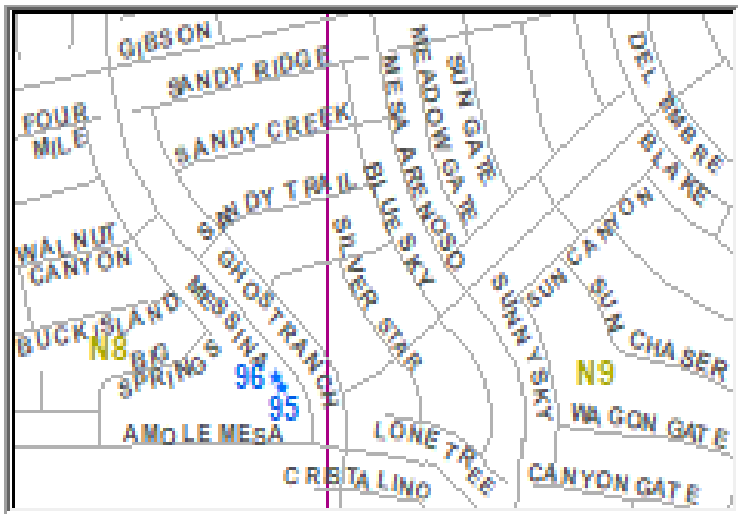
MAP_KEY	M15	City_Quad	SE
Year_Built	1967	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	SECURITY DOOR, NEED SPECIAL ATTENTION		
SWQ SIZE	66" DIA	cost	
PROJECT_NO		NUMBER	30

LOCATION	**FOUR HILLS ARROYO AT SAGE BRUSH**
STRUCTURE_NAME	TRASH SCREEN



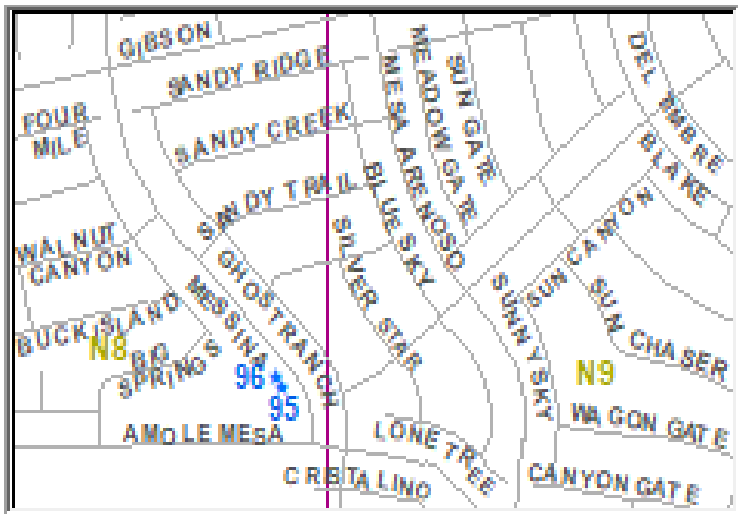
MAP_KEY	M22	City_Quad	SE
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	5 IN X 5 IN OC SPACING AND 15 DEG FROM HORIZ		
SWQ SIZE	22'W1X16'W2X11'L+ 22' WX 2'H VERTICAL	cost	
PROJECT_NO	756392	NUMBER	78

LOCATION	SIERRA SUNSET PARK-SOUTH 54 IN PIPE
STRUCTURE_NAME	TRASH SCREEN



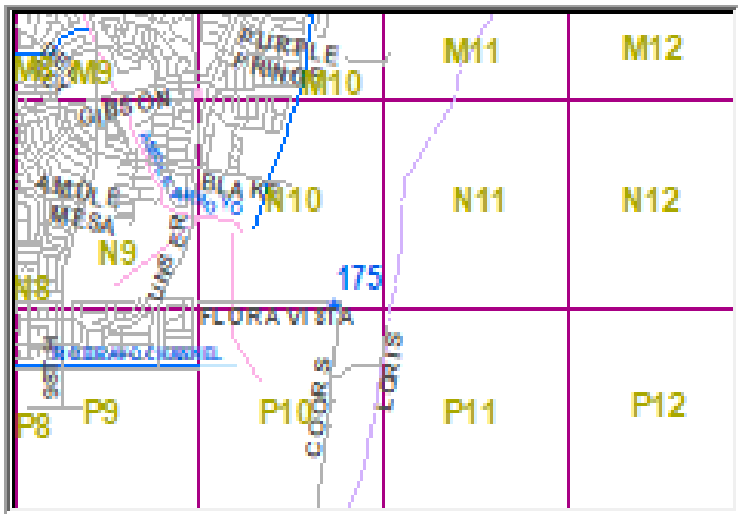
MAP_KEY	N08	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	95

LOCATION	SIERRA SUNSET PARK-NORTH 48 IN PIPE
STRUCTURE_NAME	TRASH SCREEN



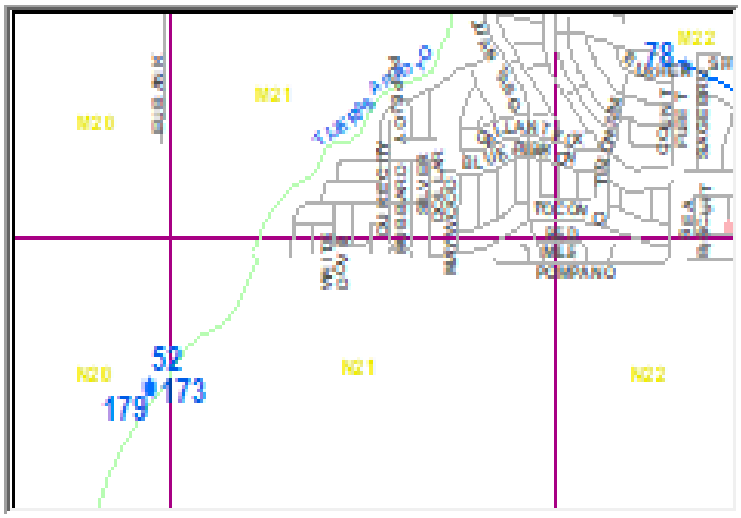
MAP_KEY	N08	City_Quad	SW
Year_Built	2015	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES			
SWQ SIZE		cost	
PROJECT_NO		NUMBER	96

LOCATION	**FLORA VISTA AND COORS**
STRUCTURE_NAME	SWQF



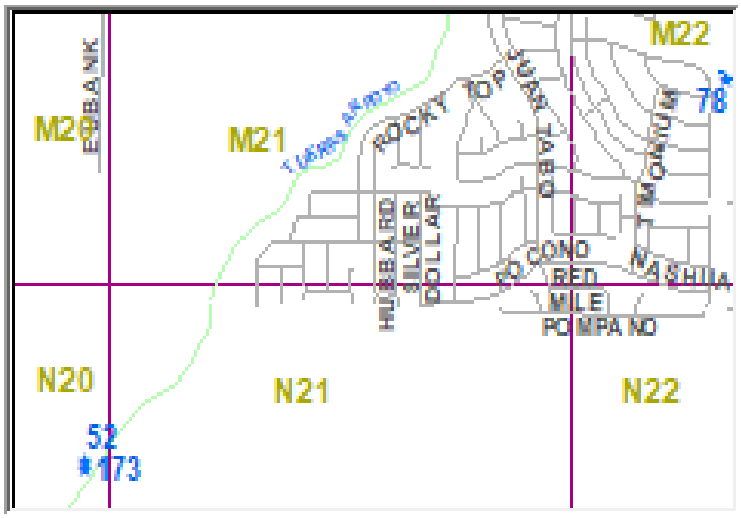
MAP_KEY	N10	City_Quad	SW
Year_Built	2014	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INFELTRATION TRENCH		
SWQ SIZE	36" PERMEATED CORRUGATED METAL PIPE OVER 7' X 26' GRAVEL BED	cost	
PROJECT_NO	736592	NUMBER	175

LOCATION	**EUBANK OUTFALL SWQF**
STRUCTURE_NAME	INFILTRATION BED



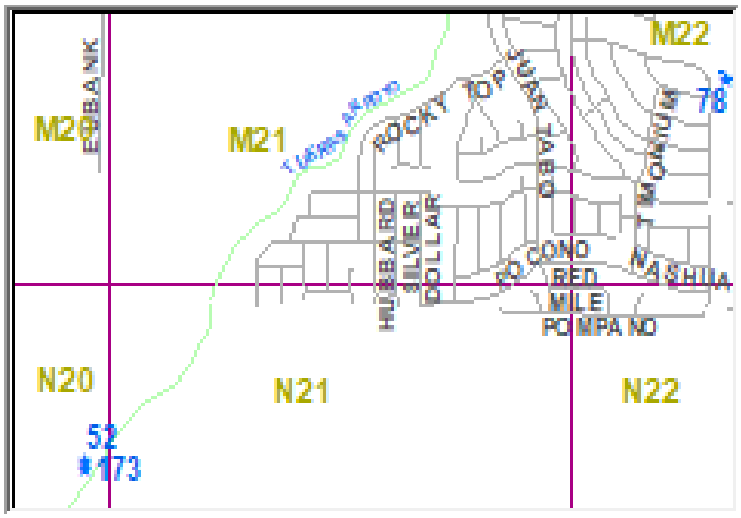
MAP_KEY	N20	City_Quad	NE
Year_Built	2019	link	X:\MD\SHARE\MD-Storm\Ponds-Trash Racks\TRASH_RACKS\17
NOTES			
SWQ SIZE	18'X40'X9" RINO MATTRESS GABION	cost	$34,874
PROJECT_NO	802402	NUMBER	179

LOCATION	**EUBANK OUTFALL AT TIJERAS ARROYO**
STRUCTURE_NAME	SWQF



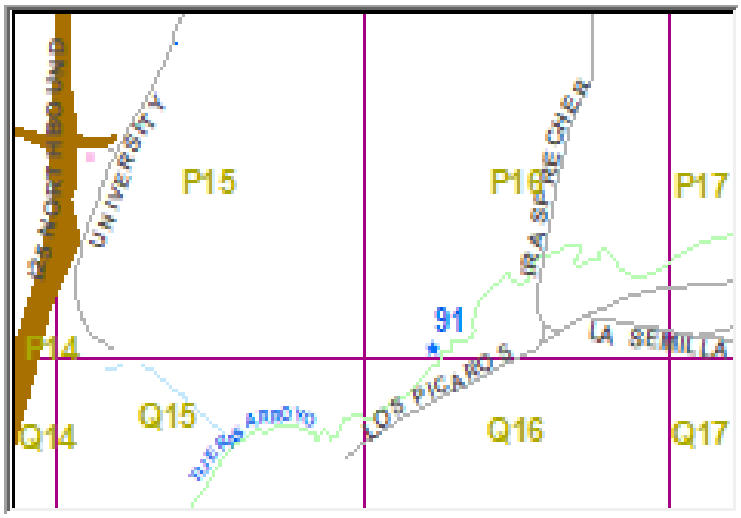
MAP_KEY	N20	City_Quad	NE
Year_Built		link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	REVERSE SLOPE OUTLET PIPES		
SWQ SIZE	6 HDPE PIPES OF 18 IN DIA AND 33 FT LONG	cost	
PROJECT_NO	479091	NUMBER	173

LOCATION	**EUBANK 1.25 M S GIBSON**
STRUCTURE_NAME	



MAP_KEY	N20	City_Quad	SE
Year_Built	2004	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSIDE KAFB		
SWQ SIZE		cost	
PROJECT_NO		NUMBER	52

LOCATION	AIRPORT-TIJERAS OUTFALL
STRUCTURE_NAME	SECURITY SCREEN



MAP_KEY	P16	City_Quad	SE
Year_Built	2013	link	\\coa.cabq.lcl\dfsroot\MD\SHARE\MD-Storm\Ponds-Trash Rack
NOTES	INSTALLED BY STREET MAINTENANCE AFTER A KOAT-TV REPORTING ON APRIL 25, 2013 THAT A MAN CAME OUT A MH INSIDE THE AIRPORT		
SWQ SIZE	9 FT DIA (108") , 6" X 6" C-C SCREEN	cost	$18,739
PROJECT_NO	901018	NUMBER	91

Attachment 7

Impervious Area

DRAINAGE FILE	PROJECT NAME/DES	APPROVAL SOUGHT	REVIEW DATE	ACRES IMP	WQ POND AT CO	IMP AREA - FEE IN LIEU (AC)	AMOUNT PAID FEE IN LIEU
A11D016	MCMAHON PROPERTY-KIDZ ACADEMY	CO PERM	01/17/19	1.05	TRUE		
A12D029	10509 STEWARD ST NW-REVISION	CO-PERM	11/15/18	0.18	FALSE		
A12D029	10509 STEWARD ST NW-REVISION	CO-PERM-R	11/20/18		FALSE		
A14D003A	MURPHY EXPRESS-ALAMEDA	CO-PERM	04/11/19	0.71	FALSE		
A14D003A	MURPHY EXPRESS-ALAMEDA	CO-TEMP	03/08/19		FALSE		
B11D010	PARADISE VIEW UNIVERSAL APARTMENTS-BULGO RD BUILDING 1&2	CO-PERM	09/20/18	0.60	TRUE		
B11D010	PARADISE VIEW UNIVERSAL APARTMENTS-BULGO RD BUILDING 3&4	CO-PERM	10/25/18		TRUE		
B11D010	PARADISE VIEW UNIVERSAL APARTMENTS-BULGO RD BUILDING 1&2	CO-PERM-R	09/27/18		TRUE		
B11D010	PARADISE VIEW UNIVERSAL APARTMENTS-BULGO RD-REVISION	ROFG	12/06/18		TRUE		
B14D004F	MACY'S EXTERIOR RENOVATION	CO-PERM	10/17/18	0.79	FALSE	0.79	$9,536.00
B18D001C	NORTHPOINT TOWNHOMES-BLDG 9	CO-PERM	07/11/18	7.41	FALSE		
B18D001C	NORTHPOINT TOWNHOMES-BLDG 8	CO-PERM	07/12/18		FALSE		
B18D001C	NORTHPOINT TOWNHOMES-BLDG 10	CO-PERM	07/27/18		FALSE		
B18D001C	NORTHPOINT TOWNHOMES-BLDG 12,13,14	CO-PERM	08/20/18		FALSE		
B18D001C	NORTHPOINT TOWNHOMES-BLDG 11	CO-PERM	09/19/18		FALSE		
B18D001C	NORTHPOINT TOWNHOMES-BLDG 18	CO-PERM	10/08/18		FALSE		
B18D001C	NORTHPOINT TOWNHOMES-BLDG 15	CO-PERM	10/15/18		FALSE		
B18D001C	NORTHPOINT TOWNHOMES-BLDG 16	CO-PERM	10/24/18		FALSE		
B18D001C	NORTHPOINT TOWNHOMES-BLDG 17	CO-PERM	10/25/18		FALSE		
B18D001C	NORTHPOINT TOWNHOMES	ROFG	10/25/18		FALSE		
B18D001C	NORTHPOINT TOWNHOMES	ROFG-R	10/31/18		FALSE		
B18D023	SUNDANCE CONSTRUCTION	ROFG, CO	03/05/19	0.59	FALSE		
B19D027	THE ESTATES @ GLENDALE UNIT 3	ROFG	01/04/19		FALSE		
C12D055	SMILES FOR KIDS DENTAL - 9211 EAGLE RANCH RD NW	CO-PERM-R	09/25/18	1.27	TRUE	0.02	$1,696.00
C13D027C	9401 BLACK FARMS LANE	CO	10/26/18	0.12	FALSE		
C16D006LL	INDUSTRIAL WATER ENGINEERING	CO-PERM	10/10/18	1.36	TRUE		
C16D006LL	INDUSTRIAL WATER ENGINEERING	CO-TEMP	09/19/18		TRUE		
C17D014A1	SILVER STAR AUTO HAUS	CO-PERM	04/09/19	1.00	TRUE		
C18D012	AMERICAN TOYOTA - 5995 ALAMEDA BLVD NE PHASE 1 SERVICE & PARTS	CO-PERM	04/17/19	8.57	FALSE		
C18D064B	LEGACY NAA APARTMENT BLDG 14 AND 15	CO-PERM	08/15/18		FALSE		
C18D064B	LEGACY NAA APARTMENT BLDG 13	CO-PERM	10/01/18		FALSE		
C18D064B	LEGACY NAA APARTMENT BLDG 10 & 12	CO-PERM	11/06/18		FALSE		
C18D064B	LEGACY NAA APARTMENT	ROFG	12/20/18	7.90	FALSE		
C18D064B	LEGACY NAA APARTMENT	ROFG-R	05/01/19		FALSE		
C19D004	LA CUEVA HS ISP WEIGHT ROOM RENOVATION & ADDITIONS - 7801 WILSHIRE AVE NE	CO-PERM	07/11/18	0.90	FALSE		

C19D004	LA CUEVA HS ISP WEIGHT ROOM RENOVATION & ADDITIONS - 7801 WILSHIRE AVE NE	CO-TEMP	07/11/18		FALSE		
C19D008	WECKS RESTAURANT 7301 PASEO Lot 9A-2	CO-PERM, ROFG	05/01/19	1.23	TRUE		
C19D008	WECKS RESTAURANT 7301 PASEO Lot 9A-2	CO-TEMP	04/25/19		TRUE		
C19D042A	ROHAN SUBDIVISION	ROFG	04/10/19		FALSE		
C19D065	ALLERGY CLINIC-7001 SIGNAL AVE.	CO-TEMP	05/20/19	1.01	FALSE		
C20D062	MARK 3S HOLLY DEVELOPMENT- WEST-REVISION	CO-TEMP	06/07/19	0.10	FALSE		
C20D073	JONES HOME-9000 ALAMEDA AVE NE	CO-PERM	10/19/18	0.15	FALSE		
C20D075	CARMEL RIDGE SUBDIVISION	ROFG-CONDITIONAL	07/13/18		FALSE		
D09D005	MONTECITO VISTAS UNITS 1 & 2	ROFG	08/01/18		FALSE		
D10D003B26	6209 PAPAGAYO NW *	CO-PERM	07/25/18	0.16	FALSE		
D10D003B26	6209 PAPAGAYO NW	CO-PERM-R	08/13/18		FALSE		
D10D003E35	6423 PICARDIA *	CO-PERM	06/12/19	0.17	FALSE		
D10D003F3	6424 PETIRROJO RD NW-REVISION	CO PERM	11/26/18		FALSE		
D10D003F9	6400 PETIRROJO RD NW	CO PERM	08/24/18	0.17	FALSE		
D10D003F9	6400 PETIRROJO RD NW *	CO PERM-R	09/04/18		FALSE		
D10D003G1P	6616 PETIRROJO RD NW	CO-PERM	10/25/18		FALSE		
D10D003G1P	6616 PETIRROJO RD NW	CO-PERM-R	10/30/18		FALSE		
D10D003G26A	7724 COMPASS DRIVE NW *	CO-PERM	05/29/19	0.17	FALSE		
D10D003I4	7904 AGUILA ST NW *	CO-PERM	07/23/18	0.17	FALSE		
D10D003J6	6600 PAPAGAYO RD NW	CO-PERM	01/24/19	0.17	FALSE		
D10D003J6	6600 PAPAGAYO RD NW	CO-PERM-R	02/01/19		FALSE		
D10D003J6	6600 PAPAGAYO RD NW	CO-PERM-R	02/15/19		FALSE		
D10D003M2A	6624 KIMMICK	CO PERM	01/28/19	0.17	FALSE		
D10D003M2B	6622 KIMMICK	CO-PERM	02/20/19		FALSE		
D10D003N5	8015 ALTO REY COURT NW	CO-PERM	08/02/18	0.17	FALSE		
D10D003N5	8015 ALTO REY COURT NW	CO-PERM	09/04/18		FALSE		
D10D003Q1	6444 PICARDIA	CO-PERM	03/15/19	0.16	FALSE		
D10D003Q17	6427 PETIRROJO RD NW	CO-PERM	11/09/18	0.17	FALSE		
D10D003Q5	6428 PICARDIA PL NW *	CO-PERM	04/08/19	0.17	FALSE		
D10D003T11	6509 VISTA DEL PRADO NW	CO-PERM	02/05/19	0.16	FALSE		
D10D003T7	6532 AZOR LANE NW	CO-PERM	12/03/18	0.16	FALSE		
D11D009B1	TAYLOR RANCH SELF STORAGE BLDG A - 5105 HOMESTEAD CIRCLE	CO-PERM	09/17/18	0.00	FALSE		
D11D009B2	TAYLOR RANCH SELF STORAGE BLDG. H	CO-PERM	06/05/19	0.60	TRUE		
D17D003N	EXPLORE ACADEMY	CO-PERM	12/21/18	0.23	TRUE		
D17D003N	EXPLORE ACADEMY	CO-TEMP	12/10/18		TRUE		
D18D056	PRESBYTERIAN SAN PEDRO FSED	CO-PERM	04/19/19		FALSE		
D18D056	PRESBYTERIAN SAN PEDRO FSED	CO-TEMP	03/27/19	5.66	FALSE		
D20D010B	CHRISTIAN BROTHERS AUTOMOTIVE - 8001 VENTURA NE	CO-PERM-R	07/11/18	0.71	FALSE		
D20D010C	O'REILLY AUTO PARTS	CO PERM	01/03/19	0.62	TRUE	0.02	$6,096.00
E05D002	DOUBLE EAGLE II AIRPORT HANGER FACILITY	CO-PERM	06/28/19	0.89	TRUE		

E10D027	BEEHIVE HOMES PHASE 1 - 6230 MONTANO RD NW	CO-PERM	10/09/18	0.70	TRUE		
E10D033	8004 VICTORIA DR NW	CO-PERM	10/09/18	0.17	FALSE		
E10D036	8012 VICTORIA DR NW	CO-PERM	04/25/19	0.17	FALSE		
E10D037	8009 VICTORIA DR. NW	CO-PERM-R	07/23/18	0.17	FALSE		
E10D042	5631 CINDER CONE	CO-PERM	09/27/18	0.17	FALSE		
E10D042	5631 CINDER CONE	CO-PERM-R	10/05/18		FALSE		
E10D045	6208 CASA BLANCA NW	CO	10/25/18	0.16	FALSE		
E10D048	7909 VICTORIA	CO-PERM	02/05/19	0.17	FALSE		
E11D005A	5205 MONTANO PLAZA	CO-PERM	01/03/19	0.25	FALSE		
E12D003F	SICILY PLAZA	CO-PERM	10/10/18	0.84	FALSE		
E12D003F	SICILY PLAZA	CO-PERM	10/26/18		FALSE		
E12D003F	SICILY PLAZA	CO-TEMP	10/16/18		FALSE		
E12D006G	O'REILLY AUTO PARTS	CO-TEMP	05/28/19	0.57	TRUE	0.014	$4,928.00
E12D015E	ANDALUCIA PHASE 2 - 5600 COORS BLVD NW BLDGS,E,F,G	CO-PERM	10/31/18	14.50	FALSE		
E12D015E1	ANDALUCIA PHASE 2 - 5600 COORS BLVD NW BLDG D	CO-PERM	10/31/18		FALSE		
E17D076A	STARBUCKS INDEPENDENCE SQUARE LOTS 1, 2 & 3	CO-PERM	09/24/18	0.39	FALSE		
E23D031	13420 OSAGE ORANGE	CO-PERM	05/09/19	0.87	FALSE		
F11D016	RAINTUNNEL CAR SPA - 5401 SEVILLA NW	CO-PERM	02/15/19	1.37	FALSE		
F14D039	McDONALDS-FASTRAX	CO-PERM	02/22/19		FALSE		
F14D055	BURGER KING	CO-PERM	11/30/18	0.51	FALSE		
F16D003B1	OSO BIO SYRINGE LINE - 4401 ALEXANDER BLVD	CO-PERM	04/10/19	0.10	FALSE		
F16D003B1	OSO BIO SYRINGE LINE - 4401 ALEXANDER BLVD	CO-TEMP	12/11/18		FALSE		
F16D003B1	OSO BIO SYRINGE LINE - 4401 ALEXANDER BLVD	CO-TEMP-R	03/07/19		FALSE		
F17D032	4936 PAN AMERICAN FREEWAY NE-REVISION	CO-PERM-R	07/19/18	4.33	TRUE	0.01	$408.00
F17D032	4936 PAN AMERICAN FREEWAY NE-REVISION	CO-TEMP	07/09/18		TRUE		
F17D094	ALBUQUERQUE CHRISTIAN SCHOOL	CO-PERM	01/16/19	0.33	FALSE		
F17D095B	COOL SPRINGZ TRAMPOLINE PARK	CO PERM	01/03/19	4.55	TRUE		
F18D012A	FRESENIUS	CO-PERM	07/16/18	0.60	TRUE		
F19D013C	LOS PASTORES SHOPPING CENTER-POND	ROFG-R	11/08/18	1.00	TRUE		
F23D013	13424 CEDARBROOK	CO-PERM	06/21/19	0.17	FALSE		
G11D038	3500 COORS BLVD NW (FAST TRACK)	CO-PERM	04/30/19	1.55	FALSE		
G13D034	1422 VAN CLEAVE RD NW	CO PERM	04/17/19	0.17	FALSE		
G14D090	417 HEADINGLY AVE NE	CO-PERM	12/18/18	0.09	TRUE		
G16D153	ARROYO VISTA APARTMENTS - BLDG. C-PHASE 3	CO-PERM	07/25/18	4.40	FALSE		
G16D153	ARROYO VISTA APARTMENTS - BLDG. D-PHASE 4	CO-PERM	09/04/18		FALSE		

G16D153	ARROYO VISTA APARTMENTS - BLDG. E-PHASE 5	CO-PERM	09/13/18		FALSE		
G16D153	ARROYO VISTA APARTMENTS - BLDG. PHASE 6	CO-PERM	10/19/18		FALSE		
G16D153	ARROYO VISTA APARTMENTS - BLDG. PHASE 6	CO-PERM-R	11/07/18		FALSE		
G18D048	!!!MONTGOMERY COMPLEX PROFESSIONAL DEVELOPMENT CTR AND PARKING DECK	CO-PERM	02/14/19	5.14	FALSE		
G18D048	!!!MONTGOMERY COMPLEX PROFESSIONAL DEVELOPMENT CTR AND PARKING DECK	CO-PERM-R	02/28/19		FALSE		
H09D017E	PULTE @ MIREHAVEN PH. 2	ROFG-R	10/26/18		FALSE		
H09D017F	DEL WEBB @ MIREHAVEN PH. 2B	ROFG	06/03/19		FALSE		
H09D022	MIREHAVEN ARROYO UNIT 4A	ROFG	01/14/19		TRUE		
H09D024A	BURGER KING	CO-PERM	01/23/19	0.61	TRUE		
H09D024A	BURGER KING-REVISION	CO-TEMP	12/24/18		TRUE		
H09D028	LADERA CROSSING SELF STORAGE	CO-PERM	04/05/19	1.12	TRUE		
H09D028	LADERA CROSSING SELF STORAGE	CO-TEMP	02/01/19		TRUE		
H10D031	LAS LOMITAS PLAZA	CO-PERM	08/28/18	0.86	TRUE	0.02	$6,160.00
H10D031	LAS LOMITAS PLAZA UNIT 2-BUILDING 1	CO-PERM	01/04/19		TRUE		
H10D031	LAS LOMITAS PLAZA UNIT 2-BUILDING 1	CO-TEMP	01/03/19		TRUE		
H13D025C	SAWMILL VILLAGE-PHASE 2-PHASE 1 BUILD-OUT	CO-PERM	01/29/19	1.85	TRUE		
H13D111	AVANYU PLAZA PHASE 2	CO-PERM	06/05/19		FALSE		
H14D107	BERNELL CHARTER SCHOOL - 2821 4TH ST	CO-PERM	04/04/19	0.65	FALSE		
H19D001	THE 24'S @ UPTOWN - 2424 LOUISIANA - FASTRAX	CO-PERM	03/29/19	0.30	TRUE	0.15	$1,160.00
H23D012B	VIGIL DWELLING UNITS - 12904 KACHINA PL NE	CO-PERM	12/21/18	0.00	FALSE		
J08D003A	APS NW K THRU 8 PROTOTYPE SCHOOL	CO-PERM	10/04/18	6.80	TRUE		
J13D098	CARSON RESIDENTIAL	CO-PERM	04/16/19	0.07	TRUE		
J18D046	MARBLE TOWNHOMES-REVISION	CO-PERM	12/18/18	0.97	FALSE		
J19D082A	HOLIDAY BOWL BUILDING ADDITION	CO-PERM	01/23/19	2.61	FALSE		
J19D082A	HOLIDAY BOWL BUILDING ADDITION-PHASE 1	CO-TEMP 30DAY	10/22/18		FALSE		
J19D082A	HOLIDAY BOWL BUILDING ADDITION-PHASE 1	CO-TEMP 60DAY	11/15/18		FALSE		
J20D039	ABQSELFSTORAGE.COM	CO-PERM	06/19/19	0.61	TRUE		
J22D027A	CALVARY CHRISTIAN ACADEMY GYM	CO-PERM	06/14/19	0.33	FALSE		
K09D026B	UTILITY TRAILER SALES	CO-PERM	02/06/19	2.03	FALSE		
K09D026B	UTILITY TRAILER SALES	CO-PERM-R	02/14/19		FALSE		
K10D009	VITALITY WORKS	CO-PERM	04/11/19	1.15	TRUE		
K10D017	COORS & CENTRAL	CO-PERM	06/05/19	0.76	FALSE		
K10D017	COORS & CENTRAL	CO-TEMP	05/22/19		FALSE		
K10D020D	PIZZA HUT	CO-PERM	02/11/19	0.32	TRUE		
K10D053	CENTRAL & UNSER TRANSIT (Fastrax)	CO-PERM	05/28/19	0.74	FALSE		

K10D053	CENTRAL & UNSER TRANSIT (Fastrax)	CO-TEMP	04/01/19		FALSE		
K11D047	SONIC DRIVE-IN	CO-PERM	11/15/18	0.21	FALSE		
K12D025	SUNSET FARM SUBDIVISION LOT 25P 1309 SUNSET GARDENS RD SW	CO-PERM	07/03/18	0.17	TRUE		
K12D025	SUNSET FARM SUBDIVISION LOT 26P 1305 SUNSET GARDENS RD SW	CO-PERM	07/03/18	0.17	TRUE		
K12D025	SUNSET FARM SUBDIVISION LOT 28-A-P1 - 308 LUIS SANCHEZ PL SW	CO-PERM	08/23/18	0.17	TRUE		
K13D013	STERLING DOWNTOWN CONDOS - 800 SILVER	CO-PERM	07/03/18	0.90	FALSE	0.09	$872.00
K13D034G	ALBUQUERQUE BIOPARK ZOO PENGUIN EXHIBIT-REVISION	CO-PERM	05/22/19	0.57	FALSE		
K13D075	CASITAS DE ALBUQUERQUE - 1016 LEAD	CO-PERM	02/22/19	0.07	FALSE		
K14D109	ONE CENTRAL-FINAL	CO-PERM	08/24/18	0.00	FALSE		
K14D109	ONE CENTRAL-FINAL	CO-PERM	08/28/18	0.00	FALSE		
K14D114	ORPHEUM COMMUNITY HUB	CO-PERM	05/03/19	0.31	FALSE		
K15D090	!!!211 MAPLE ST SE, BP-2018-0936	CO-PERM, ROFG	02/25/19	0.25	TRUE		
K17D021	HIGHLAND HS TITLE IX GYM - 4700 COAL AVE SE PHASE 1	CO-PERM	10/22/18		FALSE		
K17D021	HIGHLAND HS TITLE IX GYM - 4700 COAL AVE SE PHASE 2,4,5&6	CO-PERM	04/08/19		FALSE		
K17D021	HIGHLAND HS TITLE IX GYM - 4700 COAL AVE SE PHASE 1&3	CO-PERM	04/24/19		FALSE		
K17D021	HIGHLAND HS TITLE IX GYM - 4700 COAL AVE SE PHASE 1	CO-TEMP	08/17/18		FALSE		
K17D021	HIGHLAND HS TITLE IX GYM - 4700 COAL AVE SE PHASE 2	CO-TEMP	11/05/18		FALSE		
K17D021	HIGHLAND HS TITLE IX GYM - 4700 COAL AVE SE PHASE 4,5,6	CO-TEMP	01/18/19		FALSE		
K17D106	DE ANZA - 4301 CENTRAL-LOT 4	CO-PERM	05/14/19	1.76	FALSE	1.76	$12,574.40
K17D111	COPPER AVE. TOWHOUSE CONDOS - 3812 COPPER AVE NE	CO-PERM	12/11/18	0.15	FALSE		
K17D111	COPPER AVE. TOWHOUSE CONDOS - 3812 COPPER AVE NE	CO-PERM-R	01/09/19		FALSE		
K17D114	THE CAGE	CO-PERM	08/15/18	0.60	TRUE		
K17D114	THE CAGE	CO-TEMP	08/10/18		TRUE		
K19D043	ROUTE 66 PLAZA - 8521 CENTRAL AVE NE	CO-PERM	02/06/19	0.40	FALSE	0.32	$2,448.00
K19D152	FIESTA KIA AUTO GROUP LOT A-K, P-3, P-4 PARCEL 2	CO-PERM	04/24/19	2.10	FALSE	1.55	$11,703.00
K19D152	FIESTA KIA AUTO GROUP LOT A-K, P-3, P-4 PARCEL 2	CO-TEMP	04/12/19		FALSE		
K20D015	EASTSIDE RENOVATION OF KENNEL D CANINE FACILITIES	CO-PERM	07/13/18	0.25	TRUE		
K20D037	THE NEW LOS ALTOS POOL-REVISION	CO-PERM	03/01/19	0.07	FALSE		
K22D020	MANZANO HS GYMNASIUM - 12200 LOMAS BLVD	CO-PERM	12/21/18	7.04	TRUE		

K22D020	MANZANO HS GYMNASIUM - 12200 LOMAS BLVD	CO-TEMP	07/03/18		TRUE		
L14D026	NEXUS BLUE	CO-PERM	02/15/19	0.13	TRUE		
L15D049	GIBSON SHOPS, WIENERSCHNITZEL - 1400 GIBSON SE	CO-PERM	05/28/19		TRUE	0.72	$7,064.00
L15D049	GIBSON SHOPS - 1400 GIBSON SE FAMILY DOLLAR	CO-PERM	05/28/19	1.23	TRUE	0.51	$5,040.00
L15D049	GIBSON SHOPS - 1400 GIBSON SE FAMILY DOLLAR	CO-TEMP 30DAY	11/20/18		TRUE		
L18D047	FIRST NATIONS COMMUNITY HEALTHSOURCE - 5608 ZUNI SE, BUILDINGS A & B	CO-PERM	04/30/19		TRUE	0.22	$1,656.00
L18D047	FIRST NATIONS COMMUNITY HEALTHSOURCE - 5608 ZUNI SE, BUILDINGS A & B	CO-TEMP	03/07/19		TRUE		
L18D047A	FIRST NATION HEALTH INFRASTRUCTURE IMPROVMENTS BLDG C -5608 ZUNI	CO-PERM	04/30/19		TRUE		
L18D053	MCDONALDS- GIBSON	CO-PERM	08/02/18		FALSE		
L19D058	ANIMAL HUMANE PARK PHASE 1 - 615 WYOMING BLVD SE	CO-TEMP	04/23/19	0.83	TRUE		
L20D067	INNOVA PLAZA PHASE 2	CO-PERM	11/29/18	0.22	TRUE		
M14D012C2	PREMIER M.H. DISPLAY YARD -	CO-PERM	12/11/18	0.33	TRUE		
N09D013	LOS DIAMANTES SUBDIVISION	ROFG	08/17/18		FALSE		
N09D013	LOS DIAMANTES SUBDIVISION	ROFG-R	10/19/18		FALSE		

Total Impervious Area (AC)	Total Impervious Area - Payment-in-lieu (AC)	Total Payment-in-lieu
122.95	**6.19**	**$71,341.40**

Attachment 8

Map and Description of 311 Complaints

311 NPDES CALLS 7/1/2018 to 6/30 2019

311 Calls- Type

- Colord Liquid
- Carpet Cleaning
- Construction
- Cooking Grease
- Dog Poops
- Foul Odor
- Grey Water
- Hazardous Waste
- Leaves
- MSGP Permit
- Nusiance Water
- Oil
- Paint
- Power Wash
- Sediment
- Sewage
- Trash
- City Limits

0 1 2 4
Miles

N

WESTSIDE
MCMAHON
ELLISON
NM 528
COORS BLVD BYPASS
4TH
ROY
ALAMEDA
PASEO DEL NORTE
OSUNA
MONTANO
2ND
UNSER
COORS
RIO GRANDE
MONTGOMERY
WYOMING
EUBANK
JUAN TABO
TRAMWAY
CANDELARIA
MENAUL
LOMAS
SAN MATEO
LOUISIANA
MARTIN LUTHER KING
3RD
CENTRAL
LEAD
COAL
GUADALUPE OVERPASS
BROADWAY
BRIDGE
ISLETA
SUNPORT
98TH
SNOW VISTA
GIBSON
ZUNI

25
40

798 813 749 758 775 809 755 767 748 763 815 818 782 750 804 812 805 816 799 776 797 796 753 765 819 808 807 774 761 760 752 787 784 794 822 823 795 751 821 811 802 788 762 766 754 791 810 764 777 778 801 814 808 790 768 785 792 771 772 800 786 773 770 817 789 780 820 747 803 759 783 793

FY 2019 NPDES 311 CALLS

Address	813 STAGECOACH SE

Inspection Date	7/2/2018			Reporting_Date	7/2/2018
Customer	STEPHEN ANTHONY	SOURCE	WEB	311CASE_ID	NA
Customer_Ph	217-898-1581			e_mail	santhony@mailaps.org
X_Link		Complaint type	Oil	Inspector	GS
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	UNKNOWN			EVENT_ID	747
				is it in gis	-1

Complaint	A 1 GALLON BOTTLE OF MOTOR OIL IS IN THE GUTTER IN THE SOUTHERN SIDE OF THE ROAD, AND THE STREAM OF OIL IN THAT GUTTER INDICATES THE BOTTLE LIKELY WAS FULL. THE STREAM OF OIL GOES AT LEAST 20 FEET AND IS SEVERAL MILLIMETERS THICK, NOT JUST A SHEEN.
Field Observation	THERE WAS SOME OIL ALONG THE GUTTER
Initial Action	INSPECTOR COVERED THE OIL WITH ABSORBENT AND DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD

Address	ASSAIGI LABS AT 5930 MIDWAY PARK NE

Inspection Date	7/2/2018			Reporting_Date	7/2/2018
Customer	DOUGLAS JOHNSTO	SOURCE	311	311CASE_ID	180702-000606
Customer_Ph	563-4838			e_mail	doug@builderstrust.com
X_Link	X:\MUNICIPAL DE	Complaint type	Hazardous Waste	Inspector	JM
Facility_Contac	MANAGER			Facility_Ph_No	345-8964
Suspected_Facility	ASSAIGI LABS			EVENT_ID	748
is it in gis	-1				

Complaint	ASSAIGI LABS HAS SOME KIND OF CHEMICAL FLOWING DOWN FROM THE BACK END OF LOT TO THE CURB. (HORRIBLE SMELL)
Field Observation	THERE WAS BROWN COLORED WATER ALONG THE GUTTER COMING FROM THIS BUILDING. IT WAS THE FIRE LINE FLUSHING WATER WITH RUST STAIN.
Initial Action	INSPECTOR ASKED THE MANAGER TO CLEAN UP THE AREA AND DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS AREA

Address	**9724 BENTON NW**

Inspection Date	7/6/2018			Reporting_Date	7/6/2018
Customer	ANONYMOUS	SOURCE	311	311CASE_ID	180705-000898
Customer_Ph	NA			e_mail	na
X_Link		Complaint type	Oil	Inspector	JM
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	HOME			EVENT_ID	749
is it in gis	-1				

Complaint	OIL AND COOLANT BEING DUMPED TO STORM DRAINS
Field Observation	THERE WERE SEVERAL DRIED OIL SPOTS AT THIS LOCATION. THE RESIDENT DENIED DUMPING OIL INTO STORM DRAINS.
Initial Action	ALL THE OIL SPOTS WERE DRY, AND NO OIL ABSORBENT NEEDED. THE INSPECTOR DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD

Address	**7700 OSUNA NE**

Inspection Date	7/6/2018			Reporting_Date	7/6/2018
Customer	SAM DILLOW	SOURCE	311	311CASE_ID	180706-002952
Customer_Ph	296-1632			e_mail	NA
X_Link		Complaint type	Paint	Inspector	AG
Facility_Contac	RESIDENT			Facility_Ph_No	na
Suspected_Facility	HOME			EVENT_ID	750
is it in gis	-1				

Complaint	PAINT OR WHITE SUBSTANCE BEING POUR INTO THE GUTTER
Field Observation	THERE WERE SEVERAL WHITE DRY RESIDHES IN THE STREET. THE WHITE SUBSTANCE WAS GROUT THAT THE RESIDENT WASHED OFF HIS DRIVEWAY.
Initial Action	THE INSPECTROR ASKED THE RESIDENT TO SWEEP ALL THE WHITE RESIDUES IN THE STREET. THE INSPECTOR DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD

Address	EMBUDO ARROYO BETWEEN INDIAN SCHOOL AND MOON

Inspection Date	7/16/2018			Reporting_Date	7/16/2018
Customer	FRED DEGUIO	SOURCE	WEB	311CASE_ID	NA
Customer_Ph	293-0198			e_mail	fsdeguio@aol.com
X_Link		Complaint type	Trash	Inspector	AG
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	UNKNOWN			EVENT_ID	751
is it in gis	-1				

Complaint	TWO RECLINER CHAIRS AND A MATTRESS. IN THE EMBUDO ARROYO BETWEEN INDIAN SCHOOL AND MOON ST.
Field Observation	THE LISTED ITEMS WERE FOUND
Initial Action	FORWARDED TO ARROYO MAINTENANCE FOR CLEAN UP.

Address	7601 LAKEWOOD NW

Inspection Date	7/16/2018			Reporting_Date	7/16/2018
Customer	ANONYMOUS	SOURCE	311	311CASE_ID	180716-001926
Customer_Ph	NA			e_mail	na
X_Link		Complaint type	Oil	Inspector	AG
Facility_Contac	RESIDENT			Facility_Ph_No	na
Suspected_Facility	HOME			EVENT_ID	752
is it in gis	-1				

Complaint	OIL LEAK FROM VEHICLE
Field Observation	THERE WAS A PARKED JEEP LEAKING OIL AT THIS ADDRESS
Initial Action	THE INSPECTOR COVERED THE OIL SPOTS WITH ABSORBENE AND ASKED THE RESIDENT TO PLACE A PAN UNDER THE VEHICLE. ALSO HE DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD.

Address	7408 MESA DE ARENA NW

Inspection Date	7/23/2018			Reporting_Date	7/23/2018
Customer	ANONYMOUS	SOURCE	WEB	311CASE_ID	NA
Customer_Ph	NA			e_mail	anoneemas@yahoo.com
X_Link		Complaint type	Leaves	Inspector	AG
Facility_Contac	RESIDENT	Facility_Ph_No			na
Suspected_Facility	HOME	EVENT_ID	753	is it in gis	-1

Complaint	BRANCHES CUT FROM TREES AND BUSHES AT THE RESIDENCE LOCATED ON THE CORNER OF RONDA DE LECHUSAS NW AND MESA DE ARENA NW, WERE DUMPED BY THE OWNER INTO THE DRAINAGE CANAL IMMEDIATELY BEHIND THE RESIDENCE.
Field Observation	THERE WERE SEVERAL TREE BRANCHES BEHIND THE ADDRESS.
Initial Action	THE INSPECTOR ASKED THE RESIDENT TO PUT THEIR TREE BRANCHES INTO THE DUMPSTER.

Address	6TH AND FRUIT NW

Inspection Date	7/19/2018			Reporting_Date	7/19/2018
Customer	GARY SANDOVAL	SOURCE	DRIVE BY	311CASE_ID	NA
Customer_Ph	221-1605			e_mail	glsandoval@cabq.gov
X_Link		Complaint type	Construction	Inspector	GS
Facility_Contac	SUPERINTENDENT			Facility_Ph_No	761-9644
Suspected_Facility	TLC PLUMBING CO			EVENT_ID	754
is it in gis	-1				

Complaint	TLC WAS WASHING THE MUD INTO STORM DRAIN AT THIS LOCATION
Field Observation	TLC WAS WASHING THE MUD INTO STORM DRAIN AT THIS LOCATION
Initial Action	INSPECTOR ASKED THEM TO STOP WASHING THE MUD INTO THE STORM DRAINS. ALSO HE EMAILED A LETTER TO A TLC MANAGER AT MARAGON@TLCPLUMBING.COM. TLC RESPONDED THAT THEY INSTRUCTED THEIR CREW TO PLACE WATLES AROUND THE INLETS IN THE FUTURE.

Address	**9123 PALOMAS NE**

Inspection Date	7/21/2018			Reporting_Date	7/21/2018
Customer	SEECLICKFIX	SOURCE	311	311CASE_ID	180721-002055
Customer_Ph	NA			e_mail	highspeeding@comcast.net
X_Link		Complaint type	Oil	Inspector	AG
Facility_Contac	RESIDENT	Facility_Ph_No		na	
Suspected_Facility	HOME	EVENT_ID	755	is it in gis	-1

Complaint	HAZARDOUS WASTE (ENGINE OIL) LEAKING COPIOUS AMOUNTS OF OIL ONTO PUBLIC STREET WHICH FLOWS INTO PUBLIC SEWER, AND THEN TO THE RIO GRANDE RIVER. SPECIFICALLY, A YELLOW FORD F-350 CREW-CAB PICTURED CONTINUES TO LEAK OIL ON TO STREET. BEEN GOING ON FOR MONTH
Field Observation	A YELLOW FORD 350 WAS LEAKING OIL ON THE STREET AT THIS ADDRESS
Initial Action	THE RESIDENT MOVED THE VEHICLE TO HIS DRIVEWAY AND PLACED A PAN UNDER THE VEHICLE. ALSO THE INSPECTOR DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD.

Address	3924 3RD NW

Inspection Date	7/23/2018			Reporting_Date	7/23/2018
Customer	ANONYMOUS	SOURCE	311	311CASE_ID	180723-000640
Customer_Ph	NA			e_mail	na
X_Link		Complaint type	Oil	Inspector	JM
Facility_Contac	RESIDENT			Facility_Ph_No	na
Suspected_Facility	HOME			EVENT_ID	756
is it in gis	-1				

Complaint	MULTIPLE CARS BEING WORKED ON, OIL SPILLED IN STREET AND ON DRIVEWAYS
Field Observation	THERE WERE SEVERAL OIL SPOTS ON THE STREET.
Initial Action	INSPECTOR COVERED THE OIL SPOTS WITH ABSORBENT AND DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD.

Address	1613 54TH ST NW

Inspection Date	7/26/2018			Reporting_Date	7/26/2018
Customer	MARIE CAMPOS	SOURCE	311	311CASE_ID	180726-000897
Customer_Ph	485-3690			e_mail	na
X_Link		Complaint type	Oil	Inspector	AG
Facility_Contac	RESIDENT-CUSTOMER	Facility_Ph_No		485-3690	
Suspected_Facility	UNKNOWN	EVENT_ID	757	is it in gis	-1

Complaint	OIL DUMPED IN FRONT/NEAR 1613 54TH ST NW
Field Observation	THERE WERE OIL SPILLS ON THE SIDE WALK AND STREET AT THIS LOCATION. THE RESIDENT SAID THAT SOMEONE HAD VANDALIZED HER HOUSE LAST WEEK BY POURING MOTOR OIL
Initial Action	INSPECTOR COVERED THE OIL SPOTS WITH ABSORBENT AND DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD.

Address	GLENDALE EAST OF SAN PEDRO NE

Inspection Date	7/31/2018			Reporting_Date	7/31/2018
Customer	CURTIS CHERNE	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph	924-3420			e_mail	ccherne@cabq.gov
X_Link		Complaint type	Oil	Inspector	AG
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	UNKNOWN			EVENT_ID	758
is it in gis	-1				

Complaint	I NOTICED SOMEONE DROPPED OFF OIL CONTAINERS AND OTHER STUFF AT THIS LOCATION.
Field Observation	THERE WERE SEVERAL CONTAINERS OF USED OIL/UNKNOWN MATERIALS AT THIS LOCATION
Initial Action	REPORTED THIS CASE TO 311

Address	TIJERAS CANYON ARROYO AT 1800 SHADOW LEADER SE

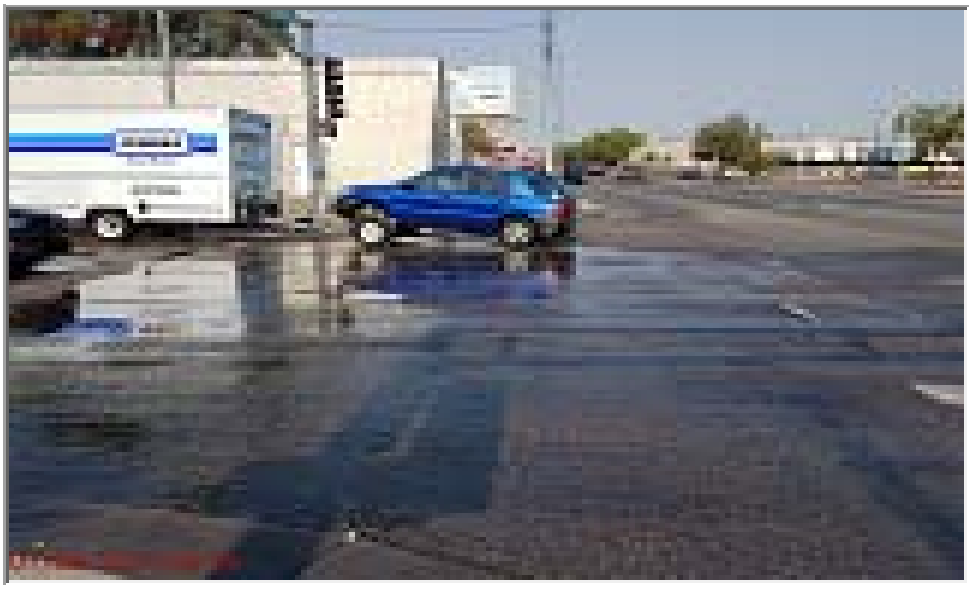
Inspection Date	7/31/2018			Reporting_Date	7/31/2018
Customer	SHELLIE EATON	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph	768-2774			e_mail	seaton@cabq.gov
X_Link		Complaint type	Construction	Inspector	BL
Facility_Contac	SUPERINTENDENT			Facility_Ph_No	263-9956
Suspected_Facility	FRANKLIN'S EARTH MOVING			EVENT_ID	759
is it in gis	-1				

Complaint	CONSTRUCTION SITE NEEDS TO FIX THEIR BMP
Field Observation	RUNNING STORMWATER FROM CONSTRUCTION SITE CAUSING ERROSION ALONG THE ARROYO
Initial Action	INSPECTOR ASKED THE SUPERINTENDENT TO FIX THEIR BMP AND STOP THE STORMWATER TO LEAVE THE SITE.

Address	RAMADA MIDTOWN HOTEL AT 2020 MENAUL NE

Inspection Date	8/1/2018			Reporting_Date	8/1/2018
Customer	ANTONIO GRIEGO	SOURCE	DRIVE BY	311CASE_ID	NA
Customer_Ph	221-0803			e_mail	agriego@cabq.gov
X_Link		Complaint type	Grey water	Inspector	AG
Facility_Contac	MANAGER OF HOTEL			Facility_Ph_No	884-2511
Suspected_Facility	RAMADA MIDTOWN HOTEL			EVENT_ID	760
is it in gis	-1				

Complaint	PUMPING OUT STORMWATER FROM GREASE TRAP TO THE STREET
Field Observation	THE SUPERVISOR WAS PUMPING OUT STORMWATER FROM GREASE TRAP TO THE STREET.
Initial Action	THE INSPECTOR ASKED THEM TO STOP PUMPING WATER TO THE STREET AND THEY DID STOP.



Address	**BUILDERS SOURCE APPLIANCE AT 308 MENAUL NE**

Inspection Date	8/2/2018			Reporting_Date	8/2/2018
Customer	JUSTIN MUNIZ	SOURCE	DRIVE BY	311CASE_ID	NA
Customer_Ph	250-2704			e_mail	jmuniz@cabq.gov
X_Link		Complaint type	Grey water	Inspector	JM
Facility_Contac	MANAGER			Facility_Ph_No	889-3001
Suspected_Facility	BUILDERS SOURCE APPLIANCE			EVENT_ID	761
is it in gis	-1				

Complaint	PUMPING OUT STORMWATER FROM LOADING DOCK THAT WAS FLOODED
Field Observation	LARGE AMOUNT OF WATER WAS COMING OUT FROM THIS BUSINESS
Initial Action	THE INSPECTOR ASKED THEM TO FIND AN ALTERNATIVE WAY TO DRAIN THEIR LOW SPOT AREAS.

Address	CASA LINDA APARTMENTS AT 565 59TH ST NW

Inspection Date	8/6/2018			Reporting_Date	8/6/2018
Customer	ANTONIO GRIEGO	SOURCE	DRIVE BY	311CASE_ID	NA
Customer_Ph	221-0803			e_mail	agriego@cabq.gov
X_Link		Complaint type	Grey water	Inspector	AG
Facility_Contac	MANAGER			Facility_Ph_No	856-0033
Suspected_Facility	CASA LINDA APARTMENTS			EVENT_ID	762
is it in gis	-1				

Complaint	WATER RUNING OUT OF THIS COMPLEX
Field Observation	WATER RUNING OUT OF THIS COMPLEX, IT WAS FROM A BROKEN AC
Initial Action	INSPECTOR ASKED THE MANAGER TO FIX THE PROBLEM

Address	JEFFERSON AT BEAR ARROYO

Inspection Date	8/17/2018			Reporting_Date	8/17/2018
Customer	JUSTIN MUNIZ	SOURCE	DRIVE BY	311CASE_ID	NA
Customer_Ph	250-2704			e_mail	
X_Link		Complaint type	Sewage	Inspector	JM
Facility_Contac	MANAGER			Facility_Ph_No	379-7451
Suspected_Facility	MCCREARY REAL ESTATE			EVENT_ID	763
is it in gis	-1				

Complaint	PRIVATE SANITARY SEWER OVERFLOW
Field Observation	SEWAGE WAS COMING OUT FROM THE INSPECTION VALVE LOCATED ON A PRIVATE PROPERTY.
Initial Action	THE MANAGER HIRED A PLUMBER AND HE FIXED THE PROBLEM.

Address	MOUNTAIN VISTA APARTMENTS AT 1501 TRAMWAY NE

Inspection Date	8/20/2018			Reporting_Date	8/20/2018
Customer	DON LUKENS	SOURCE	311	311CASE_ID	180820-000448
Customer_Ph	299-6936			e_mail	
X_Link		Complaint type	Grey water	Inspector	JM
Facility_Contac	MANAGER			Facility_Ph_No	340-3145
Suspected_Facility	MOUNTAIN VISTA APARTMENTS			EVENT_ID	764
is it in gis	-1				

Complaint	THE PAVEMENT IS COMING UP BECAUSE OF THE AMOUNT OF WATER BEING WASTED BY THE SIX TO EIGHT APARTMENT COMPLEXES IN THE AREA.
Field Observation	THERE WAS WATER FLOWING IN THE GUTTER ALONG NAKOMIS AT LOMAS.IT WAS COMING FROM THIS APARTMENT COMPLEX FROM BROKEN IRRIGATION SYSTEM.
Initial Action	THE MANAGER SAID THAT SHE WILL CALL HER LANDSCAPING CONTRACTOR TO FIX THE BROKEN LINES. ALSO WE REPORTED IT TO ABCWUA AS WASTED WATER.

Address	PRESBYTERIAN HEALHCARE AT 3121 BEACH NW

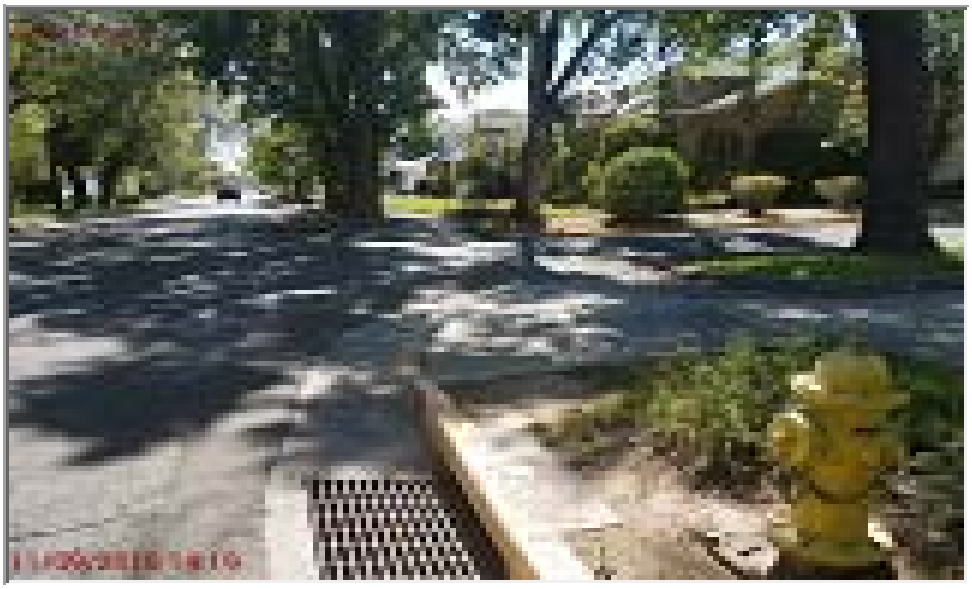
Inspection Date	8/29/2018			Reporting_Date	8/29/2018
Customer	NANETTE ROMERO	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph	269-0464			e_mail	nromero8@phs.org
X_Link		Complaint type	Dog Poops	Inspector	AG
Facility_Contac	NANETTE ROMERO			Facility_Ph_No	269-0464
Suspected_Facility	PRESBYTERIAN HEALHCARE			EVENT_ID	765
is it in gis	-1				

Complaint	I WAS WONDERING HOW I MAY OBTAIN POOP FAIRY SIGNS?
Field Observation	NA
Initial Action	INSPECTOR ANTONIO GRIEGO DELIVERED 4 SIGNS TO THIS ADDRESS

Address	ROMA AND 12TH ST NW

Inspection Date	8/30/2018			Reporting_Date	8/30/2018
Customer	TONI BEATTY	SOURCE	311	311CASE_ID	180830-002357
Customer_Ph	867-0574			e_mail	toni1731@hotmail.com
X_Link		Complaint type	Foul Odor	Inspector	AG
Facility_Contac	NA	Facility_Ph_No		na	
Suspected_Facility		EVENT_ID	766	is it in gis	-1

Complaint	BAD ODOR COMES FROM THE STORM DRAINS AT THIS AREA
Field Observation	THE INSPECTOR DID NOT DETECT ANY ODER COMING FROME THE INLETS AT THIS AREA
Initial Action	NO FURTHER ACTION IS NEEDED.



Address	9123 PALOMAS NE

Inspection Date	9/1/2018			Reporting_Date	9/1/2018
Customer	ANONYMOUS	SOURCE	WEB	311CASE_ID	NA
Customer_Ph	NA			e_mail	na
X_Link		Complaint type	Oil	Inspector	AG
Facility_Contac	RESIDENT			Facility_Ph_No	na
Suspected_Facility	HOME			EVENT_ID	767
is it in gis	-1				

Complaint	EXCESSIVE DIESEL FUEL AND OIL LEAKS ON RESIDENTIAL ROADWAY IN FRONT OF A RESIDENCE
Field Observation	THERE WAS A BIG OIL SPOT AT THIS LOCATION
Initial Action	THE INSPECTOR COVERED THE OIL SPOTS AND DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD

Address	AUI AT 500 59TH ST SW

Inspection Date	9/10/2018			Reporting_Date	9/10/2018
Customer	CHRISTINA ROMERO	SOURCE	311	311CASE_ID	180910-000920
Customer_Ph	301-0516			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Construction	Inspector	AG
Facility_Contac	SUPERVISOR			Facility_Ph_No	249-2150
Suspected_Facility	AUI			EVENT_ID	768
is it in gis	-1				

Complaint	DIRT FROM CONSTRUCTION WASHED INTO CURB/STREET
Field Observation	THERE WAS SIGNIFICANT AMOUNT OF SEDIMENT ON THE STREET COMIMG OUT FROM THIS CONSTRUCTION SITE
Initial Action	THE INSPECTOR ASKED THE SUPEVISOR OF THE CONSTRUCTION SAITE TO CLEN UP THE STREET AND REPLACE THE BMBS AROUND THE STORM INLETS.

Address	**10636 CAPRICORN NW**

Inspection Date	9/25/2018			Reporting_Date	9/24/2018
Customer	SEECLICKFIX	SOURCE	311	311CASE_ID	180924-000107
Customer_Ph	NA			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Hazardous Waste	Inspector	AG
Facility_Contac	UNKNOWN			Facility_Ph_No	na
Suspected_Facility	PUBLIC R/W			EVENT_ID	769
is it in gis	-1				

Complaint	HAZARDOUS WASTE DUMPED NEAR STORM DRAIN
Field Observation	THERE WERE TWO CONTAINERS OF USED OIL LEFT NEAR THIS INLET.
Initial Action	THE INSPECTOR TOOK THE CONTAINERS TO COA DISPOSAL SITE

Address	MOBIL HOME PARK AT 9000 TRUMBULL SE

Inspection Date	10/2/2018			Reporting_Date	10/1/2018
Customer	SEAN MONTOYA	SOURCE	311	311CASE_ID	181001-000138
Customer_Ph	388-6968			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Sewage	Inspector	AG
Facility_Contac	MANAGER			Facility_Ph_No	298-1061
Suspected_Facility	MOBIL HOME PARK			EVENT_ID	770
is it in gis	-1				

Complaint	WYOMING TERRACE MOBILE HOME PARK IS DUMPING RAW SEWAGE DOWN THE ROAD INTO THE GUTTERS
Field Observation	SEWAGE WAS OVERFLOWING OUT FROM THE PRIVATE SANITARY SEWER INSPECTION VALVE AND GOING OUT TO THE STREET
Initial Action	THE PARK MANAGER FIXED THE PLUGED SANITARY LINE AND CLEANED UP ALL THE CONTAMINATED STORM DRAINS. CLEAN HARBORS ENVIRONMENTAL SERVICES 238-2523 DID THE CLEAN UP WORK. THE COST WAS$10,575 AND PAID BY THE PARK OWNER.

Address	COLUMBIA BETWEEN KATHRYN & COAL

Inspection Date	10/9/2018			Reporting_Date	10/4/2018
Customer	ANONYMOUS	SOURCE	311	311CASE_ID	181004-001538
Customer_Ph	NA			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Oil	Inspector	AG
Facility_Contac	UNKNOWN			Facility_Ph_No	na
Suspected_Facility	PUBLIC R/W			EVENT_ID	771
is it in gis	-1				

Complaint	INLET CONTAMINATED WITH OIL
Field Observation	THERE WAS AN OIL STAIN IN AND AROUND THE INLET AND 1 GALLON CONTAINER OF USED MOTOR OIL
Initial Action	THE INSPECTOR COVERED THE OIL SPOTS, TOOK THE USED OIL FOR DISPOSAL, AND DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD.

Address	SUNSHINE APARTMENTS AT 1601 SUNSHINE TERRACE SE

Inspection Date	10/8/2018			Reporting_Date	10/6/2018
Customer	RACHEL PRETLOW	SOURCE	311	311CASE_ID	181006-001708
Customer_Ph	757-374-3916			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Construction	Inspector	AG
Facility_Contac	CONTRACTOR			Facility_Ph_No	na
Suspected_Facility	SUNSHINE APARTMENTS			EVENT_ID	772
is it in gis	-1				

Complaint	THE CALLER STATED THAT SHE HAD SEEN THIS HAPPENED ON THE EVENING OF 10/4/2018 AND NOTICED THE WHITE PAINT RUNNING DOWN WITH THE RAIN WATER.
Field Observation	A CONTRACTOR WAS DOING STUCCO WORK AT THIS APARTMENT COMPLEX AND WASHING HIS TOOLS DOWN THE STREET.
Initial Action	THE INSPECTOR ASKED HIM TO STOP WASHING HIS DIRTY TOOLS TO THE STREET AND TO CLEAN UP ALL THE AREA COVERED WITH STUCCO WASHINGS. ALSO HE GAVE HIM SOME POLLUTION PREVENTION BROCHURES.

Address	7226 CENTRAL SE

Inspection Date	10/16/2018			Reporting_Date	10/15/2018
Customer	LUIS SANCHEZ	SOURCE	311	311CASE_ID	181015-001828
Customer_Ph	615-2995			e_mail	
X_Link	X:\MUNICIPAL DE	Complaint type	Trash	Inspector	JM
Facility_Contac	UNKNOWN			Facility_Ph_No	na
Suspected_Facility	PUBLIC R/W			EVENT_ID	773
is it in gis	-1				

Complaint	REPORT OF PIECE OF WOOD GETTING PUT INTO STORM INLET
Field Observation	THERE WAS SOME WOOD DEBRIS THROWN IN STORM INLET.
Initial Action	THIS WILL BE REMOVED DURING THE REGULAR STORM LINE MAINTENANCE

Address	POND AT 111 CLAREMONT NE

Inspection Date	10/15/2018			Reporting_Date	10/11/2018
Customer	JOHNNY CHANDLER	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph	331-7729			e_mail	
X_Link	X:\MUNICIPAL DE	Complaint type	Trash	Inspector	JM
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	CITY POND			EVENT_ID	774
is it in gis	-1				

Complaint	THE POND NEEDS CLEAN UP
Field Observation	THERE WERE A LOT OF TRASH IN THE POND
Initial Action	ASKED ARROYO MAINTENANCE CREW TO CLEAN IT UP

Address	5808 CORONA NE

Inspection Date	10/18/2018			Reporting_Date	10/16/2018
Customer	ANONYMOUS	SOURCE	PH CALL	311CASE_ID	NA
Customer_Ph	NA			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Oil	Inspector	AG
Facility_Contac	RESIDENT			Facility_Ph_No	na
Suspected_Facility	HOMW			EVENT_ID	775
is it in gis	-1				

Complaint	A RESIDENT HAD CALLED AND STATED THAT A PERSON LIVING AT 5808 CORONA HAD ILLEGALLY DUMPED GASOLINE INTO THE STORM DRAIN.
Field Observation	THE INSPECTOR DID NOT DETECT THE ODOR OR PRESENCE OF GASOLINE IN THE INLET.ALSO, THE RESIDENT DENIED DUMPING ANY THING IN THE INLET.
Initial Action	PLACED NO DUMP SIGN ON THE INLET AND DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD.

Address	505 COMANCHE NE

Inspection Date	10/22/2018			Reporting_Date	10/22/2018
Customer	JOHN SAUNDERS	SOURCE	311	311CASE_ID	181022-001114
Customer_Ph	(909) 205-1039			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	MSGP Permit	Inspector	BL
Facility_Contac	JOHN SAUNDERS			Facility_Ph_No	(909) 205-1039
Suspected_Facility	BUSINESS			EVENT_ID	776
				is it in gis	-1

Complaint	QUASTIONS ABOUT LETTER THAT HE RECEIVED REGARDING MSGP PERMIT
Field Observation	QUASTIONS ABOUT LETTER THAT HE RECEIVED REGARDING MSGP PERMIT
Initial Action	THE INSPECTOR MEAT THE CUSTOMER AND EXPLAINED HOW TO APPLY FO THE PERMIT

Address	ALBUQUERQUE COUNTRY CLUB AT 601 LAGUNA SW

Inspection Date	10/31/2018			Reporting_Date	10/26/2018
Customer	SEECLICKFIX	SOURCE	311	311CASE_ID	181026-000730
Customer_Ph	NA			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Leaves	Inspector	JM
Facility_Contac	SUPERVISOR			Facility_Ph_No	na
Suspected_Facility	URBAN GROUND MAINTENANCE			EVENT_ID	777
				is it in gis	-1

Complaint	URBAN GROUND MAINTENANCE USED LEAF BLOWERS TO BLOW ALL OF THE LEAVES OFF OF THE YARD AND THE STREET AND INTO THE STORM DRAIN WHERE THEY LEFT IT. THIS IS WRONG !!! DO SOMETHING!
Field Observation	THERE WERE 3 INLETS THAT CLEARLY HAD LEAVES AND YARD DEBRIS INTENTIONALLY BLOWN INTO THEM.
Initial Action	UNABLE TO CONTACT THE LANDSCAPER. PLACED NO DUMP SIGNS ON THESE INLETS AND DISTRIBUTED POLLUTION PREVENTION BROVHURES AT THIS NEIGHBORHOOD.

Address	410 CENTRAL SW

Inspection Date	10/30/2018			Reporting_Date	10/29/2018
Customer	ANONYMOUS	SOURCE	WEB	311CASE_ID	NA
Customer_Ph	8429287			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Trash	Inspector	AG
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	STORM INLETS			EVENT_ID	778
				is it in gis	-1

Complaint	THE STORM DRAIN IS OVERFILLING WITH TRASH MADE 8 311 REQUEST
Field Observation	THE INLET WAS FULL OF TRASH
Initial Action	ASKED STORM CREW TO CLEAN UP THE INLET.DISTRIBUTED POLLUTION PREVENTION BROCHOURES AT THIS AREA

Address	UNITED PAINT & BODY AT 2401 4TH ST. NW

Inspection Date	10/31/2018			Reporting_Date	10/30/2018
Customer	HOLLY HUFFINES	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph	366-9985			e_mail	
X_Link	X:\MUNICIPAL DE	Complaint type	Grey water	Inspector	JM
Facility_Contac	OWNER			Facility_Ph_No	503-3527
Suspected_Facility	UNITED PAINT & BODY			EVENT_ID	779
is it in gis	-1				

Complaint	I SAW GRAY RUNOFF FROM THE SHOP COMING OUT OF BUILDING AND GOING DOWN SIDE OF THE STREET.
Field Observation	THE SHOPE WAS DISCHARGING THE FLOOR CLEANING WATER TO THE STREET THROUGH A HOLE IN THE WALL.
Initial Action	THE INSPECTOR ASKED THEM TO STOP DISCHARGING ANY WATER TO THE STREET. HE GAVE THEM A FEW POLLUTION PREVENTION BROCHOURES.

Address	XTREAM CLEAN CARPET AT 3419 CREST SE

Inspection Date	11/5/2018			Reporting_Date	11/2/2018
Customer	DANIEL MCGREGOR	SOURCE	311	311CASE_ID	181102-001742
Customer_Ph	206-4933			e_mail	dmcgregor@bernco.gov
X_Link	X:\MUNICIPAL DE	Complaint type	Carpet Cleaning	Inspector	AG
Facility_Contac	OWNER			Facility_Ph_No	848-1578
Suspected_Facility	XTREAM CLEAN CARPET			EVENT_ID	780
is it in gis	-1				

Complaint	A CARPET CLEANING TRUCK WAS DISCHARGING WATER IN THE STREET AND STORM DRAIN PH# 848-1578 IT WAS UNIT #12, WAS DRIVING DOWN GIBSON ALL THE WAY TO THE ADDRESS
Field Observation	NA
Initial Action	INSPECTOR ASKED THE OWNER TO STOP DUMPING ANY LIQUID INTO THE STREET OR STORM DRAINS.THE OWNER SAID THAT THEY HAD A BROKIN HOSE LEAKING WATER AND THEY WILL FIX IT.

Address	**1400 WILLIAM SE**

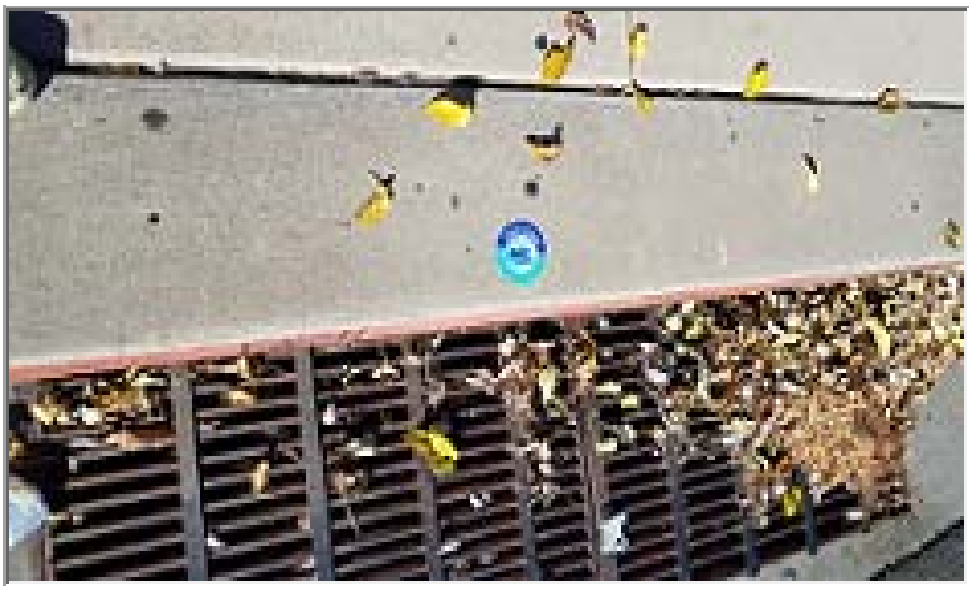
Inspection Date	11/5/2018			Reporting_Date	11/3/2018
Customer	JIMMY JARAMILLO	SOURCE	311	311CASE_ID	181103-000626
Customer_Ph	908-0549			e_mail	jimmyj91@gmail.com
X_Link	X:\MUNICIPAL DE	Complaint type	Trash	Inspector	AG
Facility_Contac	RESIDENT	Facility_Ph_No		na	
Suspected_Facility	HOME	EVENT_ID	781	is it in gis	-1

Complaint	THE HOME OWNER ON THE SOUTHEAST CORNER IS CLEANING HIS BUCKET WITH CEMENT INTO THE STORM DRAIN.
Field Observation	THE RESIDENT ADMITED DUMPING THEIR STUCOO BUCKET WASHINGS INTO THE INLET.
Initial Action	THE INSPECTOR PLACED NO DUMPING SIGN ON ALL THE 4 INLETS AT THIS INTERSECTION, ALSO HE DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD

Address	LA-Z-BOY FURNITURE AT 5004 SAN MATEO NE

Inspection Date	11/8/2018			Reporting_Date	11/8/2018
Customer	ANONYMOUS	SOURCE	PH CALL	311CASE_ID	NA
Customer_Ph				e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Leaves	Inspector	AG
Facility_Contac	SUPERVISOR			Facility_Ph_No	828-0198
Suspected_Facility	LAWN RANGERS LANDSCAPING			EVENT_ID	782
				is it in gis	-1

Complaint	LAWN RANGERS LANDSCAPING CO (828-0198) BLOWING LEAVES INTO THE STORM DRAIN INLET ON MCLEOD AROUND 10:30 TODAY TO CLEAN THE PARKING LOT.
Field Observation	THERE WERE LEAVES INSIDE OF THE STORM DRAIN AT THIS LOCATION.
Initial Action	THE INSPECTOR ASKED THE LANDSCAPING COMPANY NOT TO BLOW LEIVES IN TO STORM INLETS IN THE FUTURE.ALSO HE PLACED NO DUMPING SIGN ON THE ILLET.



Address	**11939 POCONO SE**

Inspection Date	11/15/2018			Reporting_Date	11/15/2018
Customer	ANONYMOUS	SOURCE	PH CALL	311CASE_ID	NA
Customer_Ph	NA			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Carpet Cleaning	Inspector	AG
Facility_Contac	MANAGER			Facility_Ph_No	352-5100
Suspected_Facility	STANLEY STEEMER			EVENT_ID	783
is it in gis	-1				

Complaint	WATER LEAKING FROM CARPET CLEANING VAN
Field Observation	THE OWNER SAID THAT THEY HAD PROBLEM WITH THE VALVE AND IT IS FIXED NOW
Initial Action	THE INSPICTOR ASKED THE BUSINESS OWNER TO STOP DUMPING ANY LIQUID INTO THE STREET.

Address	**WATABURGER AT 200 MENAUL NW**

Inspection Date	11/28/2018			Reporting_Date	11/27/2018
Customer	GONZALES SR, ARLO	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph	NA			e_mail	asgonzales@abcwua.org
X_Link	X:\MUNICIPAL DE	Complaint type	Sewage	Inspector	JM
Facility_Contac	MANAGER			Facility_Ph_No	242-3876
Suspected_Facility	WATABURGER RESTURANT			EVENT_ID	784
				is it in gis	-1

Complaint	SANITARY LINE AT THIS BUSINESS HAS BACKED UP AND THEY WERE UNABLE TO UNPLUG THE LINE.
Field Observation	THE PRIVIATE 4 IN SANITARY LINE FROM THIS BUSINESS WAS CONNECTED TO 15 IN STORM LINE
Initial Action	THE BUSINESS HIARED ROTO-ROOTER TO CONNECT THE PRIVATE SANITARY LINE TO THE 8 IN PUBLIC SANITARY LINE.IT WAS COMPLETED ON 12/5/2018.

Address	ARROYO ALONG BRIDGE BETWEEN UNSER AND COORS

Inspection Date	11/30/2018			Reporting_Date	11/29/2018
Customer	MARIA ARAGON	SOURCE	311	311CASE_ID	181129-001518
Customer_Ph	917-6483			e_mail	mariaydamian@gmail.com
X_Link	X:\MUNICIPAL DE	Complaint type	Sewage	Inspector	AG
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	CITY ARROYO			EVENT_ID	785
is it in gis	-1				

Complaint	WATER SMELLS LIKE SEWAGE AND IS BLACK ABD SLOWLY DRAINING
Field Observation	THERE WERE SOME ACCUMULATED LEAVES AND TRASH IN THE ARROYO
Initial Action	ASKED ARROYO MAINTAINANCE TO CLEAN IT UP.

Address	KENTUCKY AND ACOMA

Inspection Date	12/14/2018			Reporting_Date	12/14/2018
Customer	HOLLY KLING	SOURCE	311	311CASE_ID	181214-000500
Customer_Ph	459-1805			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Sewage	Inspector	AG
Facility_Contac	RV OWNER			Facility_Ph_No	na
Suspected_Facility	RV			EVENT_ID	786
is it in gis	-1				

Complaint	CITIZEN SAID SOMEONE IS LIVING IN AN RV ON KENTUCKY AND THEY ARE DUMPING THEIR SEWAGE WASTE IN THE CURB THAT GOES INTO THE STORM DRAIN.
Field Observation	THERE WAS NO INDICATION OF AN ILLICIT DISCHARGE. THE OWNER ALSO DENIED DISCHARGING ANY LIQUID TO STORM DRAIN.
Initial Action	THE INSPECTOR GAVE THE RV OWNER SOME OF THE POLLUTION PREVENTION BROCHURES

Address	**2415 ROSE NW**

Inspection Date	12/20/2018			Reporting_Date	12/17/2018
Customer	BARNEY MCCULLOC	SOURCE	311	311CASE_ID	181217-001700
Customer_Ph	604-7336			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Construction	Inspector	AG
Facility_Contac	SUPERVISOR			Facility_Ph_No	934-2234
Suspected_Facility	MICK RICH CONSTRUCTION			EVENT_ID	787
is it in gis	-1				

Complaint	THERE IS BLACK DEBRIS THAT A ROOFING COMPANY DUMPED INTO THE GUTTER AREA.
Field Observation	THE ROOFING CO LEFT DEBRIS AND DIRT ALONG THE GUTTER AT THIS AREA AFTER RE-ROOFING A BUSINESS AT THIS AREA.
Initial Action	THE ROOFING CO WENT BACK AND CLEANED UP THE AREA.

Address	TILES OF SANTA FE LOCATED AT 1100 3RD ST NW

Inspection Date	12/19/2018			Reporting_Date	12/19/2018
Customer	PAULA DODGE-KWA	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph				e_mail	
X_Link	X:\MUNICIPAL DE	Complaint type	Paint	Inspector	AG
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	TILES OF SANTA FE			EVENT_ID	788
is it in gis	-1				

Complaint	THE RUN OFF APPEARS TO BE CONTAMINATED.
Field Observation	RED DRY RESIDUE ALONG THE FENCE COMING FROM THIS BUSINESS.THE RED RESIDUE WAS FROM GRINDINGS OF CUTTING RED TILES.
Initial Action	NO ACTION

Address	EMERSON ELEMENTAREY AT 620 GEORGIA SE

Inspection Date	1/24/2019			Reporting_Date	12/10/2018
Customer	CARLOS TRUJILLO	SOURCE	311	311CASE_ID	181210-001228
Customer_Ph	506-4415			e_mail	trujillo_car@aps.edu
X_Link	X:\MUNICIPAL DE	Complaint type	Leaves	Inspector	BL
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	EMERSON ELEMENTAREY			EVENT_ID	789
is it in gis	-1				

Complaint	REQUEST TO INSTALL POOP FAIRY SIGNS AND DOGGY BAGS FOR PARK
Field Observation	NA
Initial Action	INSPECTOR POSTED TWO SIGNS AT THE PARK

Address	809 STOVER SW

Inspection Date	1/22/2019			Reporting_Date	1/19/2019
Customer	ANONYMOUS	SOURCE	WEB	311CASE_ID	NA
Customer_Ph	NA			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Leaves	Inspector	AG
Facility_Contac	RESIDENT			Facility_Ph_No	na
Suspected_Facility	HOME			EVENT_ID	790
is it in gis	-1				

Complaint	I DONT KNOW BUT I ASSUMING IT IS ANIMAL WAST BECAUSE THE PEOPLE WHO LIVE THERE ARE RUNNING A CAT PROGRAM WHERE IT SEEMS TO ME PEOPLE FROM ALL OVER COME TO GET THERE CATS SPAYED. THE OCCUPANTS ARE CLEANING AND WASHING CAT CAGES 24/7 . THE CURB IN FRONT OF
Field Observation	THE AREA WAS CLEAN AND DRY.NO EVIDENCE OF ANIMAL WASTE.THE RESIDENT DENIED DUMPING ANY THING TO THE STREET.
Initial Action	INSPECTOR ASKED THE RESIDENT NOT TO DUMP ANY CAGE WASHING WATER TO THE STREET. HE ALSO DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD.

Address	500 MARQUETTE NW

Inspection Date	2/12/2019			Reporting_Date	2/12/2019
Customer	BYRON LUERAS	SOURCE	DRIVE BY	311CASE_ID	NA
Customer_Ph	768-3882			e_mail	balueras@cabq.gov
X_Link	X:\MUNICIPAL DE	Complaint type	Leaves	Inspector	AG
Facility_Contac	SUPERVISOR			Facility_Ph_No	na
Suspected_Facility	HEADS UP LANDSCAPING			EVENT_ID	791
is it in gis	-1				

Complaint	BLOWING LEAVES IN TO STORM DRAIN INLET
Field Observation	NA
Initial Action	INSPECTOR SENT AN EMAIL TO THE LANDSCAPING MANAGEMENT INFORMING THEM OF THE INCIDENT ASKING THEN TO STOP THIS PRACTICE.

Address	CNM AT 900 UNIVERSITY SE

Inspection Date	2/12/2019			Reporting_Date	2/12/2019
Customer	ANONYMOUS	SOURCE	PH CALL	311CASE_ID	NA
Customer_Ph	NA			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Grey water	Inspector	BL
Facility_Contac	LANDSCAPE MANAGER			Facility_Ph_No	na
Suspected_Facility	PUBLIC R/W			EVENT_ID	792
is it in gis	-1				

Complaint	A CAR HIT WATER LINE AND THE WATER RUNNING IN THE STREET
Field Observation	WATER RUNNING TO THE STREET
Initial Action	THE INSPECTOR ASKED THE MANAGER TO FIX THE PROBLEM AS SOON AS POSSIBLE.

Address	WYOMING AND HARDIN SE

Inspection Date	3/7/2019			Reporting_Date	2/26/2019
Customer	TERRY GROOM	SOURCE	311	311CASE_ID	190226-000544
Customer_Ph	918-351-0356			e_mail	terry.groom.1.ctr@us.as.m
X_Link	X:\MUNICIPAL DE	Complaint type	MSGP Permit	Inspector	AG
Facility_Contac	TERRY GROOM			Facility_Ph_No	918-351-0356
Suspected_Facility	BUSINESS			EVENT_ID	793
is it in gis	-1				

Complaint	HAS QUASTION ABOUT A STORM WATER PROTECTION PLAN AT KAFB. CITIZEN WAS REFERRED BY ANNETTE MONTOYA.
Field Observation	NA
Initial Action	WE PROVIDED HER WITH THE REQUESTED INFO

Address	1813 GIRARD NE

Inspection Date	3/4/2019			Reporting_Date	2/15/2019
Customer	PAULINA AGUILERA-	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph	NA			e_mail	paguilera-eaton@abcwua.o
X_Link	X:\MUNICIPAL DE	Complaint type	Sewage	Inspector	AG
Facility_Contac	MANAGER			Facility_Ph_No	242-0989
Suspected_Facility	MADDOX MANAGEMENT			EVENT_ID	794
is it in gis	-1				

Complaint	PRIVATE SANITARY LINE OVERFLOW
Field Observation	THE SANITARY LINE HAS BEEN UNPLUGED AND NO OVERFLOW
Initial Action	THE MANAGER SAID THAT THEY WILL CLEAN UP THE AREA.

Address	WYOMING AND BELLEHAVEN NE

Inspection Date	3/5/2019			Reporting_Date	3/4/2019
Customer	DAVID WESSEL	SOURCE	311	311CASE_ID	190304-000964
Customer_Ph	261-0235			e_mail	dave2610235@aol.com
X_Link	X:\MUNICIPAL DE	Complaint type	Foul Odor	Inspector	AG
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	STORM INLET			EVENT_ID	795
is it in gis	-1				

Complaint	SMOKE COMING OUT OF THE STORM DRAIN
Field Observation	NO FIRE OR SMOKE EVIDENCE
Initial Action	NO ACTION

Address	1428 LAFAYETTE DR NE

Inspection Date	3/8/2019			Reporting_Date	3/5/2019
Customer	FRED ARAGON	SOURCE	311	311CASE_ID	190305-001097
Customer_Ph	450-5800			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Trash	Inspector	DD
Facility_Contac	FRED ARAGON	Facility_Ph_No		450-5800	
Suspected_Facility	HOME	EVENT_ID	796	is it in gis	-1

Complaint	HE HAS A SUGGESTION TO FIX THE DROP INLETS
Field Observation	HE IS SUGGESTING TO COVER INLETS WITH TRASH SCREEN TO PREVENT TRASH FROM ENTERING TO THE STORM DRAINS.
Initial Action	NA

Address	7709 SAN BENITO ST NW

Inspection Date	3/6/2019			Reporting_Date	3/5/2019
Customer	PHILLIP MARTINEZ	SOURCE	311	311CASE_ID	190305-001892
Customer_Ph	410-2412			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Oil	Inspector	AG
Facility_Contac	RESIDENT			Facility_Ph_No	na
Suspected_Facility	HOME			EVENT_ID	797
is it in gis	-1				

Complaint	THE OIL SPILL STARTED AT 7715 SAN BENITO ST NW DRAINING DOWN GUTTER OF ADDRESS GIVEN.
Field Observation	THERE WAS OIL SPILL AT THIS LOCATION ALONG THE CURB
Initial Action	THE INSPECTOR COVERED THE OIL WITH ABSORBENT. HE ALSO DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD

Address	ARROYO VILLA APARTMENTS AT 4701 IRVING NW

Inspection Date	3/14/2019			Reporting_Date	3/11/2019
Customer	EDIE WILDENSTEIN	SOURCE	311	311CASE_ID	190311-001257
Customer_Ph	239-9120			e_mail	edieosophy@gmail.com
X_Link	X:\MUNICIPAL DE	Complaint type	Cooking Grease	Inspector	AG
Facility_Contac	MANAGER			Facility_Ph_No	898-6719
Suspected_Facility	ARROYO VILLA APARTMENTS			EVENT_ID	798
is it in gis	-1				

Complaint	SOMEONE IS DUMPING OIL OR A SIMILAR SUBSTANCE IN THE ARROYO.
Field Observation	IT SEEMS LIKE A RESIDENT OF THE ARROYO VILLA APARTMENTS HAS BEEN THROWING AWAY COOKING GREASE OVER THE FENCE AND ONTO THE PARCEL DIRECTLY WEST OF BLDG #17.
Initial Action	THE MANAGER STATED THAT THEY WILL HAVE IT CLEANED UP IMMEDIATELY AND ENSURE THAT THIS DUMPING OF OILS WILL BE ADDRESSED TO THE RESIDENTS.

Address	4419 4TH ST NW

Inspection Date	3/20/2019			Reporting_Date	3/19/2019
Customer	MIKE ORTIZ	SOURCE	311	311CASE_ID	190319-002040
Customer_Ph	658-5121			e_mail	na
X_Link	X:\MUNICIPAL DE	Complaint type	Grey water	Inspector	AG
Facility_Contac	APARTMENT MANAGER			Facility_Ph_No	342-2787
Suspected_Facility	APARTMENT COMPLEX			EVENT_ID	799
is it in gis	-1				

Complaint	CALLER STATED THAT THE MAIDS WORKING AT THE ADDRESS PROVIDED IS DUMPING MOP WATER INTO THE GUTTER AND BELIEVES THOSE CHEMICALS ARE HARMFUL.
Field Observation	THERE WAS EVIDENCE OF DUMPING DIRTY WATER INTO THE GUTTER.
Initial Action	THE APARTMENT MANAGER STATED SHE WILL INFORM HER EMPLOYEES TO REFRAIN FROM DUMPING WATER IN THE STREET.THE INSPECTOR PLACED A NO DUMP SIGN ON THE INLET.

Address	GENEVA'S ARROYO-BUENA VISTA AND ROSS SE

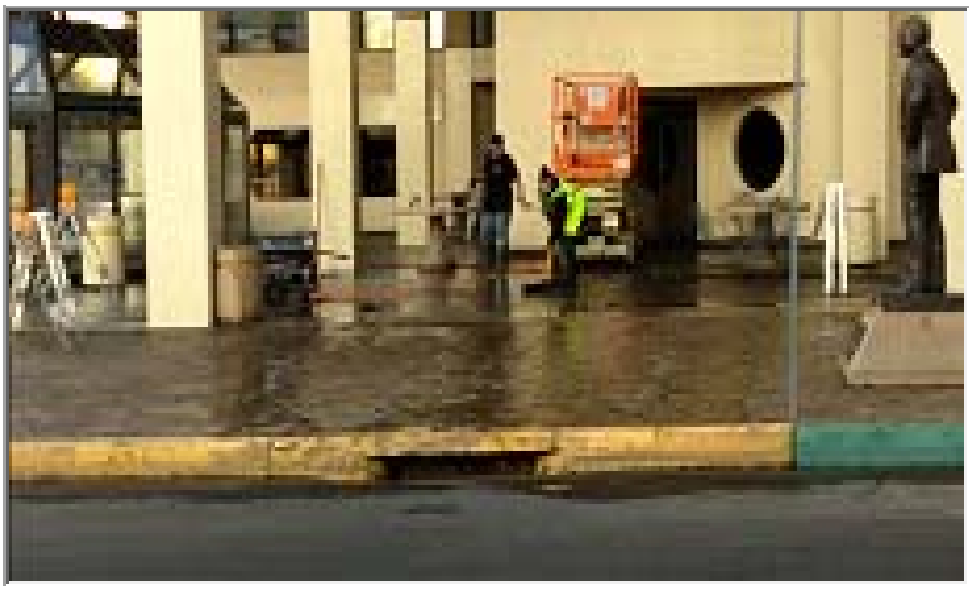
Inspection Date	3/11/2019			Reporting_Date	2/7/2019
Customer	ISABEL CABRERA	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph	NA			e_mail	isabel_f_cabrera_617@msn
X_Link	X:\MUNICIPAL DE	Complaint type	Trash	Inspector	DD
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	PUBLIC R/W			EVENT_ID	800
is it in gis	-1				

Complaint	OUR NEIGHBORHOOD REQUESTS THE REPLACEMENT OF THE SILT FENCE AT THE EAST SIDE OF THE ARROYO NEAR BUENA VISTA. IT KEEPS THE FUGITIVE DUST FROM THE ARROYO FROM COMING INTO THE NEIGHBORHOOD. IT WAS ESPECIALLY BAD YESTERDAY WITH THE HIGH WINDS.
Field Observation	SILT FENCE MAY NEED REPLACEMENT
Initial Action	REPLACING THE SILT FENCE IS AN OPTION.

Address	TIJERAS AND 3RD NW

Inspection Date	4/2/2019			Reporting_Date	4/2/2019
Customer	BYRON LUERAS	SOURCE	DRIVE BY	311CASE_ID	NA
Customer_Ph	768-3882			e_mail	balueras@cabq.gov
X_Link		Complaint type	Power Wash	Inspector	BL
Facility_Contac	SUPERVISOR			Facility_Ph_No	891-2345
Suspected_Facility	SERVPRO FIRE & WATER CLEANI			EVENT_ID	801
is it in gis	-1				

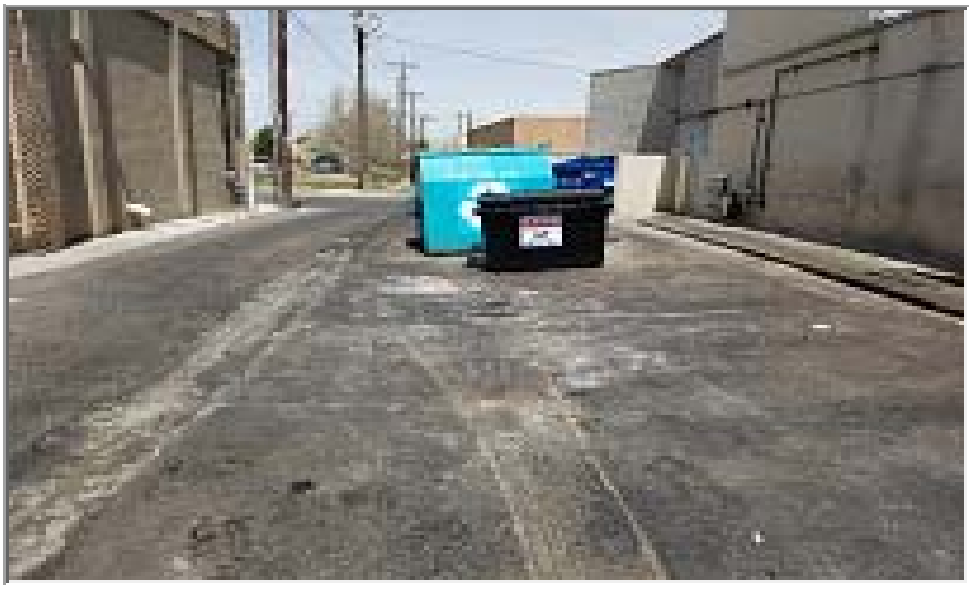
Complaint	POWER WASHING SIDEWALK
Field Observation	A FILMING CO WAS TRYING TO CLEAN UP THE SODEWALK
Initial Action	INSPECTOR ASKED THE WASHING COMPANY TO COLLECT THE WASHING WATER AND DISPOSE IT PROPERLY AND THEY DID.



Address	NM BEEF JERKY AT 1527 4TH ST NW

Inspection Date	4/2/2019			Reporting_Date	3/27/2019
Customer	KRQE TV STATION 1	SOURCE	TV	311CASE_ID	TV STORY
Customer_Ph	243-2285			e_mail	na
X_Link		Complaint type	Cooking Grease	Inspector	GS
Facility_Contac	OWNER			Facility_Ph_No	480-3653
Suspected_Facility	NM BEEF JERKY			EVENT_ID	802
is it in gis	-1				

Complaint	KRQE TV STORY ON DUMPING COOKING OIL AROUND DUMPESTER AT THIA LOCATION
Field Observation	THERE WAS A LOT OF GREASE AROUND THE DUMPSTER
Initial Action	INSPECTOR ASKED THE MANAGER TO CLEAN IT UP AND THEY DID



Address	CHALLEDON AND GIACOMO SE

Inspection Date	5/31/2019			Reporting_Date	5/24/2019
Customer	ANONYMOUS	SOURCE	311	311CASE_ID	190524-001340
Customer_Ph	NA			e_mail	na
X_Link		Complaint type	Oil	Inspector	AG
Facility_Contac	RESIDENT	Facility_Ph_No			
Suspected_Facility	HOME	EVENT_ID	803	is it in gis	-1

Complaint	THERE IS A HOUSE AT NORTHWEST CORNER OF LISTED ADDRESS THAT IS SPILLING DIESEL OIL THAT MAY REACH THE STORM DRAIN.
Field Observation	THERE WERE OIL STAINING ON THE ROAD AT THIS LOCATION
Initial Action	THE OIL SPOTS WERE COVERED WITH ABSORBENT. INSPECTOR DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS NEIGHBORHOOD

Address	FLAGSHIP FOOD GROUP AT 1700 DRSERT SURF CI NE

Inspection Date	4/19/2019			Reporting_Date	4/19/2019
Customer	ANTONIO GRIEGO	SOURCE	DRIVE BY	311CASE_ID	NA
Customer_Ph	221-0803			e_mail	agriego@cabq.gov
X_Link		Complaint type	Nusiance Water	Inspector	AG
Facility_Contac	MANAGER			Facility_Ph_No	920-1371
Suspected_Facility	FLAGSHIP FOOD GROUP			EVENT_ID	804
is it in gis	-1				

Complaint	WATER RUNING OUT OF THE FACILITY
Field Observation	WATER RUNING OUT OF THE FACILITY
Initial Action	WE SENT A LETTER TO THE COMPANY TO FIX THE VIOLATION

Address	CARLISLE SQUARE CONDOS HOA AT 4601 CARLISLE NE

Inspection Date	4/24/2019			Reporting_Date	4/21/2019
Customer	KARLA KELLEPOURE	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph	401-4453			e_mail	hirekarla@gmail.com
X_Link		Complaint type	Dog Poops	Inspector	BL
Facility_Contac	KARLA KELLEPOUREY			Facility_Ph_No	401-4453
Suspected_Facility	HOA			EVENT_ID	805
is it in gis	-1				

Complaint	I AM INTERESTED IN OBTAINING 5 TO 10 SIGNS FOR OUR CONDO COMMUNITY.
Field Observation	
Initial Action	INSPECTOR DELIVERED 20 SIGNS TO THE ADDRESS

Address	CAMP BOW WOW ON 3228 LOS ARBOLES AVE NE

Inspection Date	4/29/2019			Reporting_Date	4/25/2019
Customer	PAULINA AGUILERA-	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph	289-3155			e_mail	paguilera-eaton@abcwua.o
X_Link		Complaint type	Sewage	Inspector	AG
Facility_Contac	MANAGER			Facility_Ph_No	881-3647
Suspected_Facility	CAMP BOW WOW BUSINESS			EVENT_ID	806
is it in gis	-1				

Complaint	WANTED TO PUT A BUSINESS ON YOUR RADAR – CAMP BOW WOW ON 3228 LOS ARBOLES AVE NE. CALLER REPORTS THERE IS CONSTANTLY WATER IN THE GUTTER THAT SMELLS LIKE URINE. I'M PUTTING IT ON MY INSPECTION ROUTE TOO.
Field Observation	THE AREA WAS DRY BUT THERE WAS SOME DRY RESIDUE AT THIS LOCATION
Initial Action	INSPECTOR ASKED THE MANAGER TO KEEP THE ARE CLEAN AND DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS AREA.

Address	THE RETREAT APTS AT 3011 JANE PL NE

Inspection Date	5/3/2019			Reporting_Date	5/3/2019
Customer	ANTONIO GRIEGO	SOURCE	DRIVE BY	311CASE_ID	NA
Customer_Ph	221-0803			e_mail	agriego@cabq.gov
X_Link		Complaint type	Nusiance Water	Inspector	AG
Facility_Contac	MANAGER			Facility_Ph_No	299-4483
Suspected_Facility	THE RETREAT APTS			EVENT_ID	807
is it in gis	-1				

Complaint	SWIMMING POOL DRAINING TO STREET
Field Observation	SWIMMING POOL DRAINING TO STREET. THE WATER WAS NOT CHLORINATED.
Initial Action	IT WAS OKAY TO DISCHARGE.

Address	**14316 SOULA NE**

Inspection Date	5/3/2019			Reporting_Date	5/2/2019
Customer	SEECLICKFIX	SOURCE	311	311CASE_ID	190502-001452
Customer_Ph	NA			e_mail	na
X_Link		Complaint type	Construction	Inspector	GS
Facility_Contac	CONTRACTOR			Facility_Ph_No	639-0391
Suspected_Facility	HOME			EVENT_ID	808
is it in gis	-1				

Complaint	STUCCO WASHOUT INTO ROW AND STORM DRAINS- NPDES CONCERN
Field Observation	THERE WAS DRY GRAY RESIDUE ALONG THE GUTTER.THE CONCRETE TRUCK WASHED THEIR TOOLS ON THE STREET.
Initial Action	INSPECTOR ASKED THE HOMEOWNER TO CLEAN UP THE AREA AND NOT TO LET THE TRUCK DRIVERS TO CLEAN UP THEIR TOOLS IN THE STREET.

Address	VENTURA AND ALAMEDA

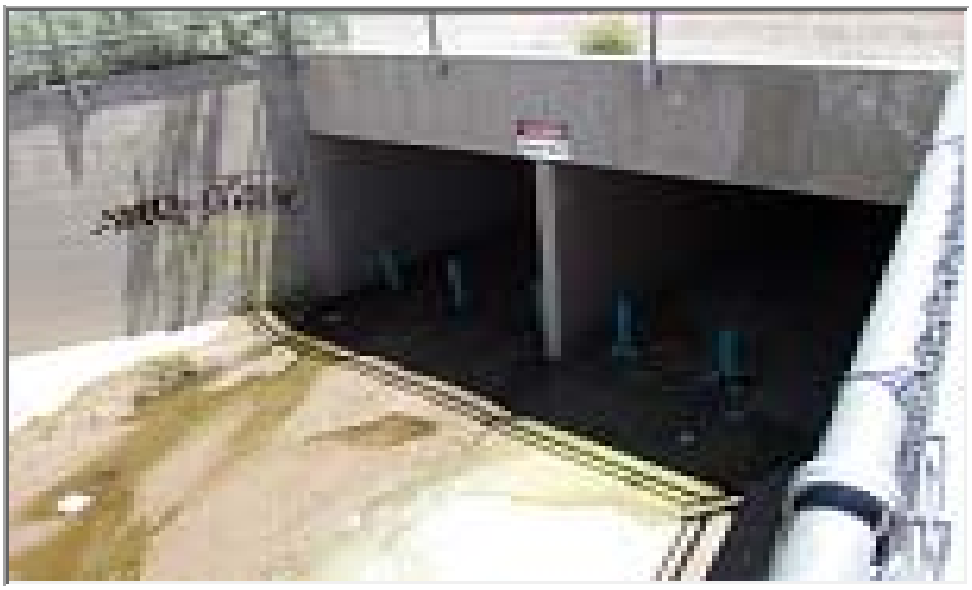
Inspection Date	5/7/2019			Reporting_Date	5/2/2019
Customer	KALI BRONSON	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph	848-1544			e_mail	kbronson@bernco.gov
X_Link		Complaint type	Construction	Inspector	GS
Facility_Contac	MANAGER-ROBERT MA			Facility_Ph_No	977-2202
Suspected_Facility	M3 COMMUNICATIONS			EVENT_ID	809
is it in gis	-1				

Complaint	A UTILITY COMPANY DISCHARGING WATER/MUD/DRILL CUTTINGS ALONG THE STREET FROM THE CITY TO COUNTY AREA.
Field Observation	M3 WAS DISCHARGING MUD FROM THEIR DRILLING OPERATION TO ALAMEDA.THE MUD WAS FLOWING FROM CITY SIDE ALONG ALAMEDA EAST OF VENTURATO TO COUNTY SIDE
Initial Action	THE INSPECTOR ASKED THEM TO STOP DISCHARGING THE MUD AND THEEY DID.

Address	NDC AT UNMH-YALE AND CAMINO DE SALUD NE

Inspection Date	5/6/2019			Reporting_Date	5/6/2019
Customer	TOMMY EVANS	SOURCE	EMAIL	311CASE_ID	NAEMAIL
Customer_Ph	277-0082			e_mail	tevansunm@unm.edu
X_Link		Complaint type	COLORD LIQUID	Inspector	AG
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	CHANNEL			EVENT_ID	810
is it in gis	-1				

Complaint	I NOTICED A YELLOWISH DISCHARGE FLOWING THROUGH THE CHANNEL AS FAR AS CAMPUS PAST INDIAN SCHOOL. THE DISCHARGE IS STILL FLOWING TODAY. I CHECKED UPSTREAM AT CAMPUS AND GIRARD AND THERE'S NOTHING. I DO NOT THINK THAT IT'S ANYTHING THAT UNM IS PRODUCING.
Field Observation	THE INSPECTOR WAS UNABLE TO FIND THE SOURCE OF FLOWING WATER, BUT HE THINKS IT COULD BE BIOLOGICAL FILM GROWTH ON THE BOTTOM OF THE CHANNEL.
Initial Action	WILL KEEP MONITERING IN THE FUTURE



Address	GRANITE PASSION AT 12TH ST AND BELLAMAH NW

Inspection Date	5/9/2019			Reporting_Date	5/6/2019
Customer	STEFAN WATSON	SOURCE	311	311CASE_ID	190506-001802
Customer_Ph	553-6582			e_mail	stefan.watson@gmail.com
X_Link		Complaint type	Sediment	Inspector	GS
Facility_Contac	MANAGER	Facility_Ph_No		242-1007	
Suspected_Facility	GRANITE PASSION	EVENT_ID	811	is it in gis	-1

Complaint	THERE ARE TWO GRANITE COMPANIES THAT ARE POURING SLUDGE DOWN THE STORM DRAINS
Field Observation	THERE WAS SLUDGE IN THE INLET
Initial Action	THE INSPECTOR ASKED THE MANAGER TO STOP DUMPING ANY SLUDGE INTO THE INLET.

Address	AZTEC GRADING AT 4601 CARLISLE NE

Inspection Date	5/10/2019			Reporting_Date	5/8/2019
Customer	ANONYMOUS	SOURCE	311	311CASE_ID	190508-001080
Customer_Ph	NA			e_mail	carlislesquareclubhouse@g
X_Link		Complaint type	Grey Water	Inspector	AG
Facility_Contac	MANAGER	Facility_Ph_No			265-3641
Suspected_Facility	AZTEC GRADING CO.	EVENT_ID	812	is it in gis	-1

Complaint	A WATER TRUCK DUMPING INTO CHANNEL
Field Observation	THE BUSINESS CONFIRMED TO THE INSPECTOR THAT THE TRUCK WAS THEIR'S
Initial Action	THE INSPECTOR ASKED THEM NOT TO DUMP IN THE FUTURE.

Address	BEGINNING STEPS DAYCARE AT 6521 PARADISE NW

Inspection Date	5/10/2019			Reporting_Date	5/9/2019
Customer	SEECLICKFIX	SOURCE	311	311CASE_ID	190509-001451
Customer_Ph	NA			e_mail	na
X_Link		Complaint type	Foul Odor	Inspector	AG
Facility_Contac	MANAGER	Facility_Ph_No		890-1435	
Suspected_Facility	BEGINNING STEPS DAYCARE	EVENT_ID	813	is it in gis	-1

Complaint	THERE IS SMELLS LIKE RAW SEWAGE IN THE BUILDING
Field Observation	THE INSPECTOR DID NOT OBSERVE OR SMALE ANY UNUSUALL THINGS.
Initial Action	THE INSPECTOR ASKED THEM TO CHECK WITH PLUMBING SYSTEM IF THEY SMALE ANY BAD ODORS.

Address	MCDONALDS AT 11824 LOMAS NE

Inspection Date	5/14/2019			Reporting_Date	5/14/2019
Customer	PAULINA AGUILERA-	SOURCE	EMAIL	311CASE_ID	NA
Customer_Ph	289-3155			e_mail	paguilera-eaton@abcwua.o
X_Link		Complaint type	Sewage	Inspector	GS
Facility_Contac	MANAGER			Facility_Ph_No	575-200-6149
Suspected_Facility	MCDONALDS BUSINESS			EVENT_ID	814
is it in gis	-1				

Complaint	SANITARY SEWER LINE PLUGED AND RUNING TO THE STREET
Field Observation	SANITARY SEWER LINE PLUGED AND RUNING TO THE STREET
Initial Action	THE INSPECTOR ASKED THE MANAGER TO FIX THE LINE AND CLEAN UP THE AREA. THEY DID FIX THE LINE AND CLEANED UP THE AREA WITHIN A FEW HOURS.

Address	ARRAY TECHNOLOGIES AT 3901 MIDWAY PL NE

Inspection Date	5/29/2019			Reporting_Date	5/14/2019
Customer	MARISA ABEYTA	SOURCE	WEB	311CASE_ID	NA
Customer_Ph	485 6451			e_mail	missy011644@gmail.com
X_Link		Complaint type	Trash	Inspector	AG
Facility_Contac	MANAGER			Facility_Ph_No	881-7567
Suspected_Facility	ARRAY TECHNOLOGIES			EVENT_ID	815
is it in gis	-1				

Complaint	PACKAGING AND TRASH FROM INDUSTRIAL COMPANY IN THE ARROYO
Field Observation	THERE WERE A LOT OF TRASH ALONG THE ARROYO
Initial Action	THE INSPECTOR ASKED THE MANAGER TO CLEAN UP THE AREA AND THEY DID.

Address	VAN CLEAVE AND GRANDE NW

Inspection Date	6/13/2019			Reporting_Date	6/12/2019
Customer	ANONYMOUS	SOURCE	311	311CASE_ID	190612-000299
Customer_Ph	NA			e_mail	na
X_Link		Complaint type	Sewage	Inspector	GS
Facility_Contac	RESIDENT			Facility_Ph_No	319-9999
Suspected_Facility	RV			EVENT_ID	816
is it in gis	-1				

Complaint	PROPERTY OWNER DUMPING SEWAGE INTO STORM DRAIN
Field Observation	THERE WAS WATER IN THE INLET. THE RESIDENT DENIED DUMPING SEWAGE IN TO THE INLET.
Initial Action	THE INSPECTOR DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS AREA

Address	MOON AND COCHITI NE

Inspection Date	6/14/2019			Reporting_Date	6/14/2019
Customer	WA	SOURCE	PH CALL	311CASE_ID	NA
Customer_Ph	NA			e_mail	
X_Link		Complaint type	Construction	Inspector	GS
Facility_Contac	MANAGER			Facility_Ph_No	na
Suspected_Facility	BUSINESS			EVENT_ID	817
is it in gis	-1				

Complaint	WASHING CONCRETE INTO THE STORM INLET
Field Observation	NO EVIDENCE OF ANY CEMENT IN THE INLET
Initial Action	INSPECTOR DISTRIBUTED POLLUTION PREVENTION BROCHURES AT THIS AREA

Address	ROADRUNNER FOOD BANK AT SINGER AND OFFICE NE

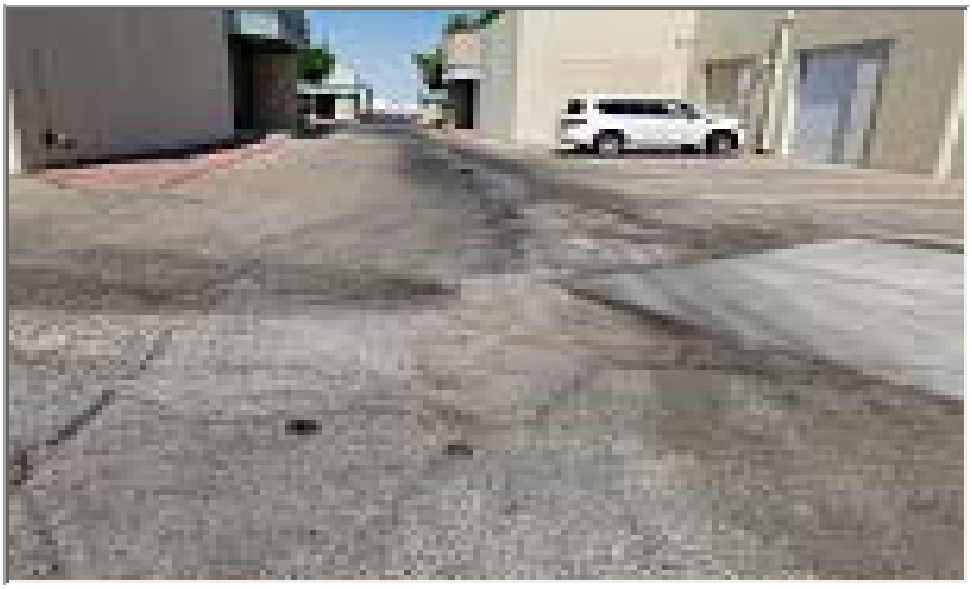
Inspection Date	6/17/2019			Reporting_Date	6/17/2019
Customer	HANS ESSER	SOURCE	311	311CASE_ID	190617-000435
Customer_Ph	244-6018			e_mail	na
X_Link		Complaint type	Cooking Grease	Inspector	AG
Facility_Contac	MANAGER			Facility_Ph_No	247-2052
Suspected_Facility	ROADRUNNER FOOD BANK			EVENT_ID	818
is it in gis	-1				

Complaint	ILLEGAL DUMPING IN STORM DRAIN -LIQUID WASTE FROM GREASE TRAP RUNNING DOWN GUTTER GOING TO GO INTO STORM DRAIN
Field Observation	THE RUNING LIQUID WAS COMING FROM THE DUMPESTER
Initial Action	ASKED THE MANAGER TO CLEAN UP THE AREA AND FIX THE DUMPESTER, AND THEY DID.

Address	SAUCED AT 3401 CANDELARIA NE

Inspection Date	6/25/2019			Reporting_Date	6/24/2019
Customer	ROONE FAIRBANKS	SOURCE	311	311CASE_ID	190624-002062
Customer_Ph	401-4742			e_mail	rfairbanks@mdirc.com
X_Link		Complaint type	Cooking Grease	Inspector	GS
Facility_Contac	MANAGER BRI GURULE			Facility_Ph_No	999-9406
Suspected_Facility	SAUCED RESTURANT			EVENT_ID	819
is it in gis	-1				

Complaint	DRAINING GREASE FROM SMOKER INTO STORM DRAINS
Field Observation	THERE WAS A LOT OF GREASE AT DUMPESTER AREA
Initial Action	INSPECTOR ASKED THE MANAGER TO CLEAN UP THE AREA AND FIX THEIR DUMPESTER. ALSO THE INSPECTOR PLACE NO DUMP SIGN ON THE INLET.



Address	RANCHO DEL CIELO AT 4801 GIBSON SE

Inspection Date	6/27/2019			Reporting_Date	6/25/2019
Customer	ANONYMOUS	SOURCE	311	311CASE_ID	190625-000624
Customer_Ph	NA			e_mail	
X_Link		Complaint type	Nusiance Water	Inspector	GS
Facility_Contac	MANAGER			Facility_Ph_No	346-5347
Suspected_Facility	RANCHO DEL CIELO APARTMENT			EVENT_ID	820
is it in gis	-1				

Complaint	RUNING WATER IN THE STREET
Field Observation	IT WAS A BROKEN IRRIGATION LINE
Initial Action	INSPECTOR ASKED THE MANAGER TO FIX THE LINE.

Address	CHELWOOD PARK AND INDIAN SCHOOL NE

Inspection Date	6/27/2019			Reporting_Date	6/20/2019
Customer	ANONYMOUS	SOURCE	WEB	311CASE_ID	WEB
Customer_Ph	NA			e_mail	na
X_Link		Complaint type	Trash	Inspector	GS
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	PUBLIC R/W			EVENT_ID	821
is it in gis	-1				

Complaint	BED COMFORTER, CLOTHING AND TRASH ACCUMULATING DAILY
Field Observation	NO INSPECTION
Initial Action	REPORTED TO 311 190627-001161

Address	SAN MATEO & CUTLER NE

Inspection Date	4/15/2019			Reporting_Date	4/12/2019
Customer	ANONYMOUS	SOURCE	311	311CASE_ID	190412-001739
Customer_Ph	NA			e_mail	
X_Link		Complaint type	Trash	Inspector	GS
Facility_Contac	NA			Facility_Ph_No	na
Suspected_Facility	STORM INLETS			EVENT_ID	822
is it in gis	-1				

Complaint	LARGE AMOUNT OF TRASH/ DEBRIS BEING DUMPED INTO THIS DRAIN/STORM INLET
Field Observation	UNABLE TO LOCATE THE DEBRIS
Initial Action	NO ACTION

Address	/INROCK TOWNE CENTER AT LOUISIANA AND INDIAN SCHOOL N

Inspection Date	7/2/2019			Reporting_Date	6/20/2019
Customer	CURTIS CHERNE	SOURCE	E-MAIL	311CASE_ID	NA
Customer_Ph				e_mail	
X_Link		Complaint type	Construction	Inspector	AG
Facility_Contac	OWNER			Facility_Ph_No	280-1730
Suspected_Facility	WINROCK PARTNERS			EVENT_ID	823
is it in gis	-1				

Complaint	CONSTRUCTION SITE HAS NO CGP (CONSTRUCTION GENERAL PERMIT).BLACK SLUDGE ON THE GROUND.
Field Observation	NO PERMIT WAS POSTED, NO INLET BMP, NO VEHICLE TRACKING CONTROL, AND BLACK SLUDGE OUTSIDE WORK AREA.
Initial Action	PLANNING DEPT SENT A VIOLATION LETTER TO THE OWNER/OPERATOR OF THE SITE

Attachment 9

Illicit Discharge Detection Elimination

Program Summary Report

2018 Summary Report

City of Albuquerque

Illicit Discharge Detection and Elimination Program

Prepared for **City of Albuquerque, New Mexico**

July 5, 2019

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1. Introduction

Daniel B. Stephens & Associates, Inc. (DBS&A) was retained by the City of Albuquerque (the City) to assist with completing requirements that are part of the Illicit Discharge Detection and Elimination (IDDE) Program. This report provides the results of activities related to the IDDE Program conducted from 2014 to 2018. The IDDE Program was developed as part of the requirements under Section 402(p)(3)(B)(ii) of the Clean Water Act (CWA) and the permit for municipal separate storm sewer systems (MS4) that was issued to the City in 2014.

DBS&A has conducted several tasks related to the IDDE Program, including assisting in identifying sources of illicit discharge for the purpose of eliminating, to the extent possible, contaminants that may enter the MS4 watershed, which is part of the Rio Grande Watershed. Methods for the project were developed, and inspections were conducted throughout the City's jurisdictional limits. Inspection results were entered into the City's VUEWorks software, a web-based, geospatially enabled asset and work management system. As part of the IDDE Program, the City is continuing to seek measures for improvement and implementation of the program. To that end, this report includes recommendations to improve the IDDE Program.

2. Background

2.1 Regulatory Requirements

2.1.1 U.S. Environmental Protection Agency

The CWA of 1987 requires National Pollutant Discharge Elimination System (NPDES) permits for the discharge of any pollutant or combination of pollutants into stormwater systems. Section 402(p)(3)(B)(ii) of the CWA requires that permits for MS4s shall include a requirement to effectively prohibit non-stormwater discharges identified as problematic. Emphasis is placed on the elimination of inappropriate connections to urban storm drains, which requires affected agencies to identify and locate sources of non-stormwater discharges into storm drains so that they may institute appropriate actions for their elimination.

The U.S. Environmental Protection Agency (EPA) administers the CWA and, as part of the Section 402 implementation, has issued permits to eligible MS4 operators. EPA issued watershed-based MS4 permit #NMR04A000 for the area "within the Middle Rio Grande Sub-Watersheds" located "fully or partially within the corporate boundary of the City of Albuquerque." The permit was issued to the City and any other eligible MS4 operators. Eligible MS4s other than the City include the following

- Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA)
- Southern Sandoval County Flood Control Authority (SSCAFCA)
- Eastern Sandoval County Flood Control Authority (ESCAFCA)
- New Mexico Department of Transportation (NMDOT) (District 3)
- University of New Mexico (UNM)
- Bernalillo County
- Sandoval County
- Sandia Laboratories (U.S. Department of Energy [DOE])
- Pueblo of Sandia
- Pueblo of Isleta

- Pueblo of Santa Ana
- Village of Corrales
- City of Rio Rancho
- Los Ranchos de Albuquerque
- Kirtland Air Force Base (KAFB)
- Town of Bernalillo
- State Fairgrounds/Expo New Mexico (EXPO)

The watershed-based MS4 permit replaced the City's NPDES permit (#NMS000101, issued May 2012), and became effective on December 22, 2014. The intent of the permit is to protect the quality of receiving waters, in this case the Rio Grande.

2.1.2 City of Albuquerque Drainage Ordinance and Stormwater Quality Ordinance

In addition to the watershed-based MS4 permit, the City has a stormwater quality ordinance (passed by the City Council on June 20, 2016) intended to regulate stormwater quality and prohibit illicit discharges into the City's stormwater drainage facilities. Implementation of the stormwater quality ordinance is the responsibility of the City's Stormwater Management Section.

The stormwater quality ordinance includes a summary of illicit discharges and connections, as well as allowable non-stormwater discharges. The ordinance also includes enforcement actions and penalties. A stormwater engineer appointed by the Director of the Department of Municipal Development is vested with the authority to enforce the ordinance. At any facility that discharges stormwater to the City's stormwater drainage facilities, the stormwater engineer may execute sampling, metering, monitoring, and any other reasonable method to enforce compliance with the ordinance.

2.2 Illicit Discharges

One of the primary components of the watershed-based MS4 permit is to address illicit discharges. The permit requires that co-permittees "develop, revise, implement, and enforce a program to detect and eliminate illicit discharges entering the MS4." Federal regulations define

an illicit discharge as “any discharge to an MS4 that is not composed entirely of stormwater,” with some exceptions. These exceptions include discharges from NPDES-permitted industrial sources and discharges from firefighting activities. Illicit discharges are considered “illicit” because MS4s are not designed to accept, process, or discharge such non-stormwater wastes (U.S. EPA, 2005).

Examples of illicit discharges are provided in Table 1.

2.3 Illicit Connections

An illicit connection is defined by the permit as “any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.” Some examples of illicit connections include the following:

- Sanitary sewer piping connected directly from a building to the storm sewer system
- A basement or shop floor drain connected to the storm sewer system
- A cross connection between the municipal sanitary sewer and the storm sewer system

Table 1. Potential Sources of Illicit Discharges

Land Use	Generating Site	Activity that Produces Discharge
Residential	• Apartments • Multi-family • Single-family detached	• Car washing • Driveway cleaning • Dumping/spills (e.g., leaf litter and RV/boat holding tank effluent) • Equipment washdown • Lawn/landscape watering • Septic system maintenance • Swimming pool discharges
Commercial	• Campgrounds/RV parks • Car dealers/rental car companies • Car washes • Commercial laundry/dry cleaning • Gas stations/auto repair shops • Marinas • Nurseries and garden centers • Oil change shops • Restaurants • Swimming pools	• Building maintenance (power washing) • Dumping/spills • Landscaping/grounds care (irrigation) • Outdoor fluid storage • Parking lot maintenance (power washing) • Vehicle fueling • Vehicle maintenance/repair • Vehicle washing • Washdown of greasy equipment and grease traps • All commercial activities
Industrial	• Auto recyclers • Beverages and brewing • Construction vehicle washouts • Distribution centers • Food processing • Garbage truck washouts • Marinas, boat building and repair • Metal plating operations • Paper and wood products • Petroleum storage and refining • Printing	• Industrial process water or rinse water • Loading and unloading area washdown • Outdoor material storage (fluids)
Institutional	• Cemeteries • Churches • Corporate campuses • Hospitals • Schools and universities	• Building maintenance (e.g., power washing) • Dumping/spills • Landscaping/grounds care (irrigation) • Parking lot maintenance (power washing) • Vehicle washing
Municipal	• Airports • Landfills • Maintenance depots • Municipal fleet storage areas • Ports • Public works yards • Streets and highways	• Building maintenance (power washing) • Dumping/spills • Landscaping/grounds care (irrigation) • Outdoor fluid storage • Parking lot maintenance (power washing) • Road maintenance • Spill prevention/response • Vehicle fueling • Vehicle maintenance/repair • Vehicle washing

Source: Brown et al., 2004

2.4 Authorized Non-Stormwater Discharges

The watershed-based MS4 permit (U.S. EPA, 2014) includes a description of authorized non-stormwater discharges, including the following:

- Potable water sources, including routine water line flushing
- Lawn, landscape, and other irrigation waters, provided all pesticides, herbicides, and fertilizers have been applied in accordance with approved manufacturing labeling and any applicable permits for discharges associated with pesticide, herbicide, and fertilizer application
- Diverted stream flows
- Rising groundwater
- Uncontaminated groundwater infiltration (as defined at 40 CFR §35.2005(20))
- Uncontaminated pumped groundwater
- Foundation and footing drains
- Air conditioning or compressor condensate
- Springs
- Water from crawl space pumps
- Individual residential car washing
- Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges
- Street wash waters that do not contain detergents and where no unremediated spills or leaks of toxic or hazardous materials have occurred
- Discharges or flows from firefighting activities (does not include discharges from firefighting training activities)
- Other similar occasional incidental non-stormwater discharges (e.g., non-commercial or charity car washes, etc.)

These discharges are not considered illicit, and therefore do not need to be addressed in the IDDE Program.

2.5 IDDE Program Status

The IDDE Program is implemented by the City to remain in compliance with the regulatory statutes and the MS4 permit as issued by EPA. To this end, the City has developed the IDDE Plan (DBS&A, 2016) to detect and address illicit discharges within its jurisdiction. The plan is the central component of the control measures required by the permit. Part I.D.5.e (i)(c) of the MS4 permit requires the permittee to "develop and implement a plan to detect and address non-stormwater discharges, including illegal dumping, to the MS4." The measures outlined in the plan have been implemented through 2018 and will be ongoing in 2019 and beyond.

3. Methods

The IDDE Plan was developed as a guidance document for staff for activities related to IDDE. The plan was also designed to be used as a training tool to outline methods of implementation to ensure all staff members follow the same procedures in responding to illicit discharge concerns (DBS&A, 2016).

The first step in implementation is to determine the areas most likely to contain illicit discharges and prioritize them based on an analysis of land use and other specific information. The following types of areas are more likely to generate potentially contaminated discharges (Brown et al., 2004):

- Locations where there have been repeated problems in the past. These could include areas with water quality data or where repeated complaints have been filed.
- Older areas of a community, which typically have a higher percentage of illegal connections. Deteriorating sewer pipes can lead to wastewater leaks from the sanitary lines.
- Commercial and industrial areas that tend to have a higher percentage of illicit discharges and higher-risk land uses (e.g., outdoor washing, disposal of food wastes, car fueling, repair, and washing, parking lot power washing, and poor dumpster management).
- Areas where large volumes of hazardous solids and/or liquids are stored.

3.1 Priority Area Determination

The City relies on local citizens, field staff, and inspections to detect potential problem areas quickly, so that they can be addressed before they cause significant water quality degradation. The City conducts dry weather screening, as well as inspections of industrial and high-risk facilities. The City also maps potential illicit discharge incidences based on data collected from the call center reporting system. Procedures outlined in the IDDE Plan assist the City in

determining priority areas where illicit discharges may be likely (DBS&A, 2016). The methods of identifying areas include the following:

- Using the Standard Industrial Classification (SIC) codes list to identify businesses with the potential for illicit discharges
- Visual observation at outfalls, with 37 outfalls screened annually
- Field testing for selected pollutant indicators (biochemical oxygen demand [BOD], total suspended solids [TSS], E. coli, oil and grease, nutrients, ammonia, potassium, and surfactants).
- Citizen complaints reporting and documentation
- Interdepartmental or interagency referral
- Other routine MS4 inspection activities

3.2 Inspections

Screening of the sites that were identified for required five-year screening were completed with the assistance of City contractors. CDM Smith, LLC was responsible for screening large industrial and high-risk facilities. DBS&A was contracted by the City to conduct inspections of the smaller facilities.

3.2.1 Industrial and High-Risk Facilities

The City's MS4 permit establishes three categories of activities required relative to industrial and high-risk runoff:

- Identify facilities and perform inspections
- Assess current monitoring and proposed monitoring
- Establish and implement control measures

The City's approach to evaluating industrial and high-risk facilities addresses all three of these categories (CDM, 2013). The first step was to identify industrial and high-risk facilities in Albuquerque and conduct site inspections for those facilities that were judged to have a high or moderate potential to contribute substantial pollutant loading. As part of the inspections, the current monitoring was checked for compliance with the Multi-Sector General Permit (MSGP). Finally, best management practices (BMPs) were assessed for effectiveness as part of the site inspections.

3.2.2 Smaller Facilities

The City provided DBS&A with a 2015 business database that contained properties with the associated SIC code. The SIC is a system for classifying industries by a four-digit code used by government agencies to classify industry areas. The City's VUEWorks software contained only properties in the 2015 business database, and other businesses could not be added by DBS&A to the software. Because the VUEWorks software was used to permanently store all inspection data, any businesses observed during field events that were not included in the City's VUEWorks software could not be inspected. These businesses could have been opened after 2015 or may have incorrect SIC codes assigned.

The smaller facility listings provided by the City were compiled into a database, downloaded into the DBS&A geographic information system (GIS) system, and mapped for field use. The maps were split into City quadrants and lists developed with the facility name, address, and other pertinent information. The maps created for field use are provided as Figures 1 through 4.

DBS&A field crews reviewed the sites to be inspected with the project manager, and prepared for the site visits by compiling the following materials:

- Informational brochures for distribution to the site owner or manager
- Inspection questionnaire for collecting data regarding site operations and BMPs
- Reference materials, including IDDE Plan and stormwater quality ordinance

DBS&A field crews usually approached the facility without contacting the business beforehand. An introduction was made upon arrival at the facility describing the purpose of the visit, and educational brochures (Appendix A) were given to the contact. Using a standard inspection questionnaire (Appendix A), current information was gathered, including the business contact (usually owner or manager), type of operations conducted at the site, and BMPs used by the business. A visual inspection was then conducted with the owner or manager of all areas of the business where any potential illicit discharge could occur. At the end of the inspection, DBS&A reviewed the questionnaire and findings and discussed BMPs with the site contact. BMP discussions were focused on how hazardous materials/oils were stored and handled, and suggestions for improvements were provided.

Once the site visit was completed, the inspection forms were scanned and the data from the completed forms were entered into the City's VUEworks software, a GIS-based mapping system that allows information to be accessed by address or area, or filtered for various purposes. While scanned into the project folder, the inspection form was not attached to the VUEworks software.

3.3 Follow-Up Actions

The permit requires that the entire jurisdiction of the entity be screened at least once every 5 years, and once a year for areas identified as high-priority. As defined by the permit, high-priority areas include "any area where there is ongoing evidence of illicit discharges or dumping, or where there are citizen complaints on more than five (5) separate events within twelve (12) months."

If a potential illicit discharge is observed at a facility (e.g., improperly stored used oil drums, staining, evidence of past spills) or once the source of an illicit discharge has been identified, the property owner and/or operator is notified of the problem, and the appropriate educational materials and/or a copy of the stormwater quality ordinance is provided. A site inspection is conducted and the resulting information is entered into the City's VUEworks software. If there is a potential illicit discharge observed during a routine facility inspection, field investigation staff

may return to the facility to verify that the recommended action has been taken by the facility to mitigate the problem.

Removing the source of the discharge is a critical component in the IDDE Program. Corrective actions are to be taken by the City. The response will vary depending on the type, location, frequency, severity, and source of illicit discharge. The City will have several options available to address a specific discharge. The preferred approach to address illicit discharge problems is to pursue voluntary compliance through property owner or responsible party education. Business operators and property owners are often not aware of the existence of illicit connections or activities on their properties that may constitute an illegal discharge. Providing the responsible party with information about the connection or operation, the environmental consequences, and suggestions on how to remedy the problem may be sufficient to secure voluntary compliance. The City will conduct follow-up site visits to verify that the recommended action has been taken by the facility.

3.4 Enforcement

If needed, enforcement procedures are to be implemented as detailed in the IDDE Plan (DBS&A, 2016). When voluntary compliance does not produce the desired result, the City is required to pursue follow-up enforcement action, including enforcement escalation procedures for recalcitrant or repeat offenders. The City may issue a notice of violation to any person who violates any provision of the ordinance. Any person who violates any provision of the ordinance is guilty of a petty misdemeanor and may incur penalties (DBS&A, 2016). Enforcement is part of the regulatory requirements for the MS4 permit, as well as the City's stormwater quality ordinance.

3.5 Program Evaluation

As part of the MS4 permit requirements, the City will evaluate and assess the effectiveness of the IDDE Program. The program requires coordination with adjacent municipalities and/or state, tribal, or federal regulatory agencies to address situations where investigations indicate that the illicit discharge originates outside the MS4 jurisdiction.

4. Program Results

The IDDE Program results discussed in this section apply to the MS4 permit issued by EPA in 2014. While the City has had programs in place under the previously issued NPDES permit, this summary report is for 2014 through 2018. The City has been developing and implementing the current IDDE Program since the MS4 permit was issued in 2014.

4.1 Inspections

4.1.1 Outfall Inspections

Within the City's stormwater drainage system, there are 25 outfalls that drain to the Rio Grande, 5 of which are screened during wet weather monitoring. Following the City's assessment of the subwatersheds and existing industries within the Albuquerque metropolitan permit area, 17 dry weather screening locations were selected for monitoring, for a total of 37 outfalls. These locations are screened annually in November and December.

4.1.2 Facility Inspections

A database of smaller facilities to be inspected was developed and mapped using the methods described in Section 3. Large facilities that are required to have discharge permits were inspected by CDM Smith, Inc.; the results of those inspections are therefore not included in this report.

DBS&A was assigned inspections of smaller facilities within the City. Inspections of these facilities were completed in early 2018 for the entire jurisdiction. The list of facilities was subdivided into geographic groups that were prioritized by their potential for illicit discharge. The following categories of small facilities were inspected by trained DBS&A field crews:

- Automotive repair
- Other automotive-related businesses (e.g., body repair and paint shop)
- Engine repair (e.g., hydraulics, diesel engines, truck repair)

- Carpet cleaners
- Lawn care and miscellaneous (e.g., boat repair)

A total of 921 businesses were listed by the City for inspection. The list contained 792 auto-related businesses (repair, body shops), 91 carpet cleaners, 29 engine repair facilities, and 9 lawn care and miscellaneous.

DBS&A completed inspections at 402 businesses, as follows:

- 380 auto-related businesses
- 11 engine repair facilities
- 7 carpet cleaners
- 4 lawn care and miscellaneous

Table 2 compares the results of completed inspections to lists developed for field inspections and provided to DBS&A crews. It should be noted that while not every business listed was inspected, every business on the list was investigated and the status of the business was determined for feasibility of conducting an inspection. The field lists containing notes regarding the status of each business listing are provided in Appendix B.

Table 2. Total Businesses vs. Businesses Investigated

Business Type	Total Businesses Listed for Inspection	Actual Completed Inspections	Percentage of Businesses with Completed Inspections Relative to Total Businesses Listed
Auto-related	792	380	48%
Engine repair	29	11	38%
Carpet cleaners	91	7	8%
Lawn care and miscellaneous	9	4	44%
Total	921	402	44%

Inspections included an interview with the owner or manager, as well as visual inspection of all areas where there was a potential for discharge to the storm drain system. Appendix C provides photographs showing examples of the findings from the inspections.

The most common types of issues noted during the inspections included the following:

- No secondary containment was provided for waste oils and coolant.
- Many dumpsters provided by the City had no lids or plugs. DBS&A encouraged the business owner to contact the City to obtain a new dumpster.
- Dumpsters with lids were not kept closed. DBS&A encouraged shop owners to keep dumpsters closed, particularly when it was raining or when they closed for the day.
- Scrap metals were stored outdoors without any cover or secondary containment.
- Oil staining was noted in outside lots or around waste tanks. Staining observed was typically minor. As part of the inspection discussion of BMPs, DBS&A encouraged owners to use drip pans and pouring devices to safely transfer waste oils to tanks. Additionally, field inspectors would look for and discuss various options of oil absorbent materials for cleaning up spills.
- Some shops had 55-gallon oil drums stored indoors without secondary containment. To a lesser extent, some shops were not disposing of waste oils as frequently as was needed, as some waste oil tanks were full or close to overflowing.
- Many shops do not keep safety data sheets, and some owners did not know what they are.
- Storm drains were clean, but many were not labeled “no dumping, drains to river.” Others were labeled, but were difficult to read because the paint was wearing off.
- It was uncommon to spray for pests and weeds, but of the shops that did, most had no certification or training, and only used over-the-counter, small-quantity containers of chemicals.

- Very few shops use deicing materials; if they do, it is used only a few times a year and small quantities are stored in closets.

- Many shops do not keep a formal spill response plan posted and current in their shop. Their response was typically that as a small shop they do not see a need for the plan; they simply verbalize methods to contain spills to their employees.

Some of the lists compiled for inspections contained sites that were outside of the City's jurisdiction. The City/County boundaries were not always clearly defined, such as parts of the South Valley that are within the County. Some inspections were therefore completed outside of the City boundaries. Once it was realized that inspections were being conducted in County jurisdictions, the lists were pulled and recompiled to include only City jurisdictions. The inspections were saved, and are available to the County for use in their MS4 permit if needed.

5. Conclusion and Recommendations

The IDDE Program is multi-faceted and ongoing. As part of the MS4 permit requirements, the program is to be evaluated and assessed for effectiveness. One of the purposes of this summary report is to assist in evaluation of the program up to this point in time, particularly as it applies to inspections that were conducted through 2018.

5.1 Conclusions

5.1.1 Inspection Tools

The tools used for the inspections included distribution of informational brochures to business owners or managers to assist in explaining the purpose of the inspection and to give credence to the inspectors. This tool is very effective, in that it also provides an educational tool to bring to the forefront the impacts of business operations to surface waters. Another tool is the questionnaire provided to inspectors for gathering data and guiding the inspections. This tool is a very important aspect of the inspection; however, some parts of the questionnaire were not applicable or appropriate. The questionnaire was developed in a different state, where conditions are different and some types of discharges may be more prevalent. Some of the questions therefore do not apply to the Albuquerque area. For instance, there are at least two questions referring to use of deicers. In general, businesses in Albuquerque do not have a need to use deicing materials frequently, and most facilities interviewed stated that they seldom used any. If any was stored, it was kept in small quantities in a closet.

Some of the questions are more appropriate to large facilities. For example, smaller shops do not have large-scale landscaping maintenance at their property and do not use large quantities of herbicides or pesticides. One section of the questionnaire refers to training or certification for handling these chemicals; for small shops, the owners do not have any need for training or certification, as they would use only small quantities of over-the-counter herbicides or pesticides. Most shops either have a landlord who maintains landscaping or they pull weeds themselves, as they have no formal landscaping on their property.

5.1.2 Listed Facilities vs. Actual Inspections

One of the most notable results of the inspections of smaller facilities was the percentage of actual inspections completed relative to the total number of businesses on the list to be inspected. Inspections of facilities, especially smaller facilities that are typically not regulated or permitted, is a very useful tool in gathering data for the City to evaluate and update the IDDE Program. Inspections are valuable for providing educational outreach to facilities with the potential of impacting the MS4 by raising awareness of how their operations can impact the watershed. However, there was a sizeable gap in the ability to reach a listed business and perform the inspection. Based on field data for each site, the reasons for the lack of inspections are discussed in the following subsections.

5.1.2.1 Auto-Related

The bulk of inspections at smaller facilities were for auto-related businesses. In the initial inspections, this amounted to any auto-related operation regardless of the potential for illicit discharge. The list of businesses included auto repair shops, oil change and other maintenance service shops, satellite car rental facilities, car washes, body repair and painting, window tinting, and auto emissions facilities. All of these categories were included on the lists and subdivided in geographic groups for the field. After visiting many of the businesses in the first geographic group, it became apparent that two of the categories—auto emissions and window tinting—had very little potential for illicit discharge. These two categories were subsequently removed from the inspection list. The gap between inspections actually completed and total businesses was driven in part by the elimination of these two categories. In other instances, the lack of completed inspections was due to residential addresses being given for the business or the listing being outdated and not reflecting that the business had moved or gone out of business.

For the businesses that were inspected, the overall inspection program appeared to be very useful. The biggest benefit was to be able to meet with owners and managers to have one-on-one discussions about their BMPs. The inspections thus provide a mechanism for educational outreach, making the owners and managers aware of how their operations can impact the receiving waters (Rio Grande). The business owners and managers also had an opportunity to

receive advice on improvements to their BMPs. It is also useful to the City to provide updated data on business operations for future management.

During the field work, crews were able to visually observe the businesses of the area, and it was observed that some businesses operating as an auto-related business were not on the developed lists. In addition, some of the owners of inspected businesses were able to provide information on neighboring business operations and whether they had observed illegal discharges. This underscores the importance of ground-truthing and provides the City with a tool to compare data obtained through other sources, such as the SIC lists. It appeared that sites that were not on the inspection list would be prime locations to target for inspections, especially if they are businesses that are not documented or otherwise monitored.

At times, DBS&A field crews encountered some resistance when approaching businesses for inspections. Most of this resistance was due to owners or managers being too busy to provide the 20 to 30 minutes required to complete an inspection. While it sometimes took several attempts, DBS&A crews were able to reschedule and complete inspections. In a few cases, resistance was encountered because DBS&A's authority to conduct an inspection was questioned. In these situations, DBS&A turned the site information over to the City, and City personnel followed up and conducted the inspection. In a very select few cases, there was open hostility expressed toward any government oversight at businesses. Again, in these cases, the sites were turned over to the City to respond. Most auto shops were very accommodating and interested in ensuring that they were practicing safe handling of their oils and hazardous materials.

A potential issue commonly raised by owners was the cost of waste oil disposal. Many owners stated that it used to be profitable for them to call a disposal service to pick up their waste oil, as they would get paid for the oil. The procedure has changed, however, and most, if not all, shop owners now have to pay the disposal service. None of the owners stated that it had changed their methods of disposal; however, it is an observation to keep in mind. Many small shops with smaller quantities of waste oil stated that they dispose of their oil by taking it to auto parts stores such as AutoZone and O'Reilly's, as these businesses will accept any waste oil brought to

them. This is a very valuable service for the businesses to offer; their collection of waste oil from small businesses and private citizens likely prevents some illicit discharges.

5.1.2.2 Engine Repair

This category included businesses such as large truck repair, diesel engine repair, or hydraulic equipment repair. The percentage of businesses in this category that were on the list but not inspected was due to residential listings for the business address.

No major issues were noted at the sites inspected for this category.

5.1.2.3 Carpet Cleaners

Carpet cleaning businesses had, by far, the lowest percentage of actual inspections conducted. The primary reason for the lack of facility inspections was that businesses were registered to residential addresses. Approximately 77 percent of businesses listed as carpet cleaners were registered to residential addresses. To a lesser degree, many of the carpet cleaners were not found at the addresses listed, as they had moved or closed.

Of the cleaners inspected, no major issues were found and the business owners were conscientious about proper storage and disposal of their wastewater. One business owner remarked that it was difficult for a business that is “following the rules” to compete with carpet cleaners that operate out of their homes and mobile vans, in that many of these businesses dispose of wastewater illegally, in a manner that cannot be monitored.

5.1.2.4 Lawn Care and Miscellaneous

The list for this category consisted of two lawn equipment service facilities and seven miscellaneous sites (boat dealers, boat sales and service, bus repair, and oil well service). The five businesses not inspected were listed at residential addresses.

No major issues were noted.

5.2 Recommendations

The IDDE Program's implementation has been in conformance with EPA requirements under CWA Section 402 and the City's drainage ordinance and stormwater quality ordinance. While the City's implementation of the IDDE Program has seen success, it has also provided an opportunity to see where improvements can be made. Based on the experience gained from inspections of small facilities, DBS&A has the following recommendations:

- Obtain a more current business property list. As detailed in Section 3.2, the City provided DBS&A with a 2015 business database that contained properties with associated SIC codes. The City's VUEWorks software contained only properties in the 2015 business database, and businesses could not be added to the software. Because VUEWorks was used to manage inspection data, any businesses not included in VUEWorks could not be inspected because the field data could not be recorded in the VUEWorks software.

- Implement measures for conducting inspections of businesses not listed on the provided business property list or otherwise tracked and monitored. Measures could include instructing field crews conducting inspections to observe businesses in the surrounding area and document any businesses that are not on the list provided. Build a separate list of unlisted businesses that were observed by field crews and include them in inspections. Implement a mechanism for adding these businesses into VUEWorks.

- As part of the requirements of obtaining or renewing a business license, require that the address of the actual business operation, not just residential addresses, be provided, so that inspections can be completed where operations are being conducted.

- Based on the difficulty of tracking carpet cleaning businesses or other mobile businesses, it is recommended that a mechanism be implemented to educate potential business owners and enforce proper disposal to any business that applies for a business license. In addition to providing educational outreach to new businesses, an inspection requirement should be included for operations that use mobile units (e.g., carpet cleaners) or operate out of a residence as part of business license renewals.

- Implement an ongoing program that will replace dumpsters in poor condition with new City dumpsters that are property outfitted with lids and plugs.

- Update the questionnaire used for inspections to be more regional to Albuquerque and more appropriate to small shops. Eliminate redundant questions and streamline the questionnaire where possible.

- Build a partnership with auto parts stores such as Auto Zone and O'Reilly's that are providing the valuable service of allowing waste oil to be brought to their stores for disposal. The service these stores provide helps small shops (as well as private citizens) that may otherwise struggle financially to dispose of their waste oils properly. The City should ensure that this service continues.

- Improve VUEworks to include a mechanism for attaching the scanned field inspection form to the business database.

- Continue to conduct inspections at least every 5 years.

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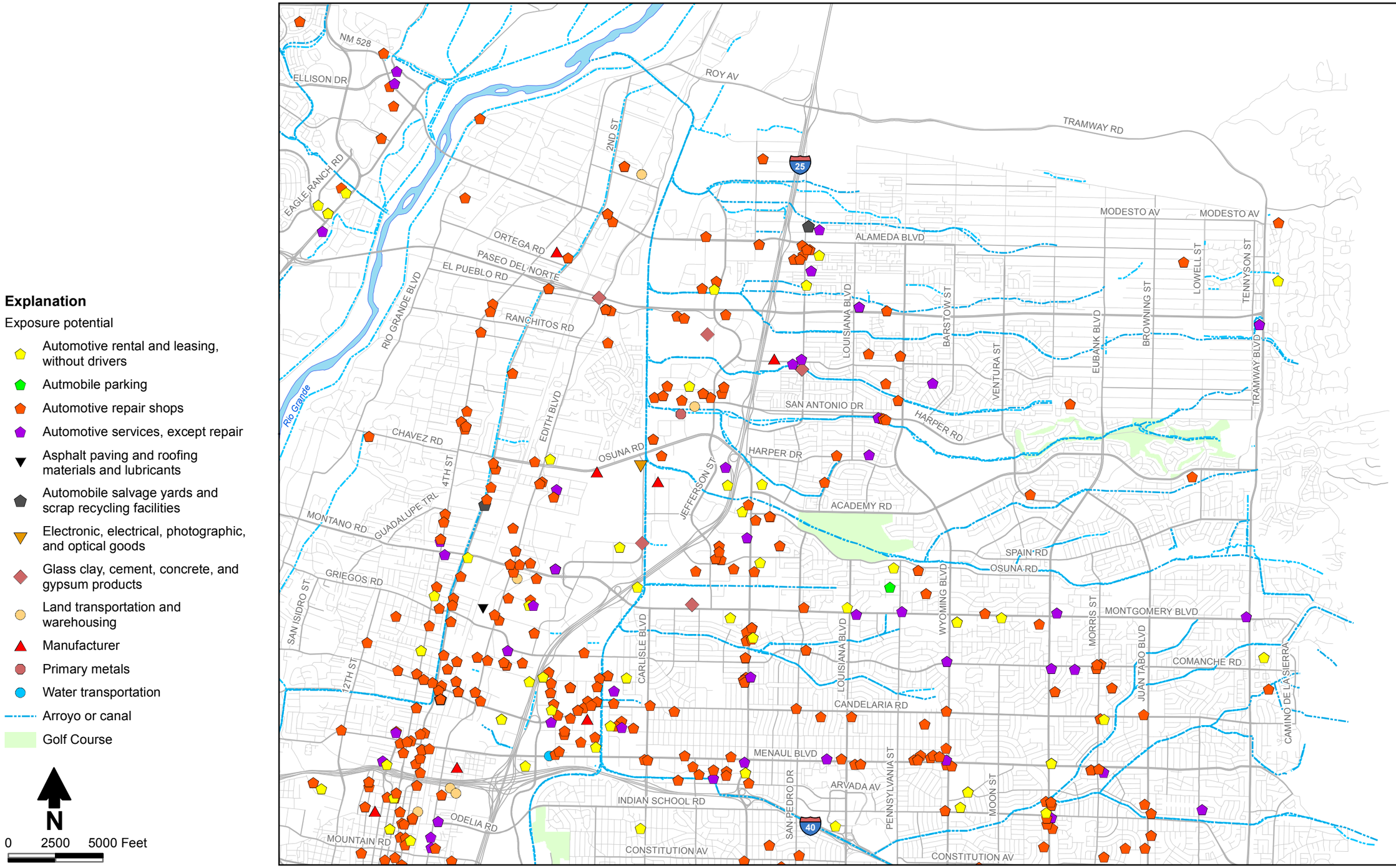
Figures



Explanation

Exposure potential

- Automotive rental and leasing, without drivers
- Autmobile parking
- Automotive repair shops
- Automotive services, except repair
- Asphalt paving and roofing materials and lubricants
- Automobile salvage yards and scrap recycling facilities
- Electronic, electrical, photographic, and optical goods
- Glass clay, cement, concrete, and gypsum products
- Land transportation and warehousing
- Manufacturer
- Primary metals
- Water transportation
- Arroyo or canal
- Golf Course

N

0 2500 5000 Feet

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Daniel B. Stephens & Associates, Inc.
2/11/2016
WR14.0049

CITY OF ALBUQUERQUE

High Exposure Potential - Northeast

Figure 1

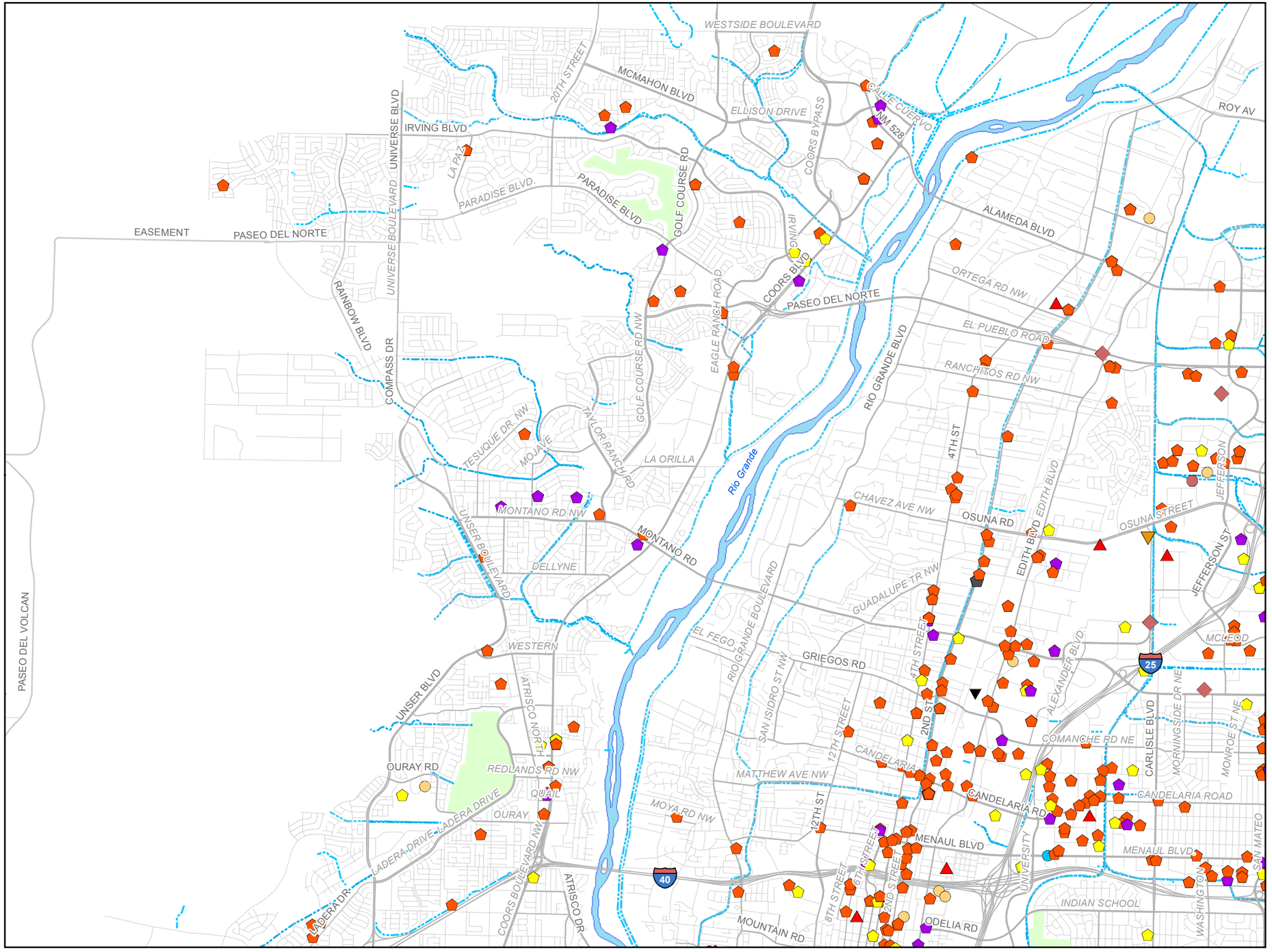
Explanation

Exposure potential

- Automotive rental and leasing, without drivers
- Automotive repair shops
- Automotive services, except repair
- Asphalt paving and roofing materials and lubricants
- Automobile salvage yards and scrap recycling facilities
- Electronic, electrical, photographic, and optical goods
- Glass clay, cement, concrete, and gypsum products
- Land transportation and warehousing
- Manufacturer
- Primary metals
- Water transportation
- Carwashes
- Arroyo or canal
- Golf Course

N

0 2500 5000 Feet



CITY OF ALBUQUERQUE

High Exposure Potential - Northwest

Figure 2

Daniel B. Stephens & Associates, Inc.

2/11/2016

WR14.0049

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Explanation

Exposure potential

- Automotive rental and leasing, without drivers
- Autmobile parking
- Automotive repair shops
- Automotive services, except repair
- Asphalt paving and roofing materials and lubricants
- Automobile salvage yards and scrap recycling facilities
- Land transportation and warehousing
- Manufacturer
- Primary metals
- Ship and boat building or repairing yards, transportation equipment, industrial or commercial machinery
- Water transportation
- Arroyo or canal
- Golf Course
- Military Installation

N

0 2500 5000 Feet

Daniel B. Stephens & Associates, Inc.
2/11/2016

WR14.0049

CITY OF ALBUQUERQUE

High Exposure Potential - Southeast

Figure 3

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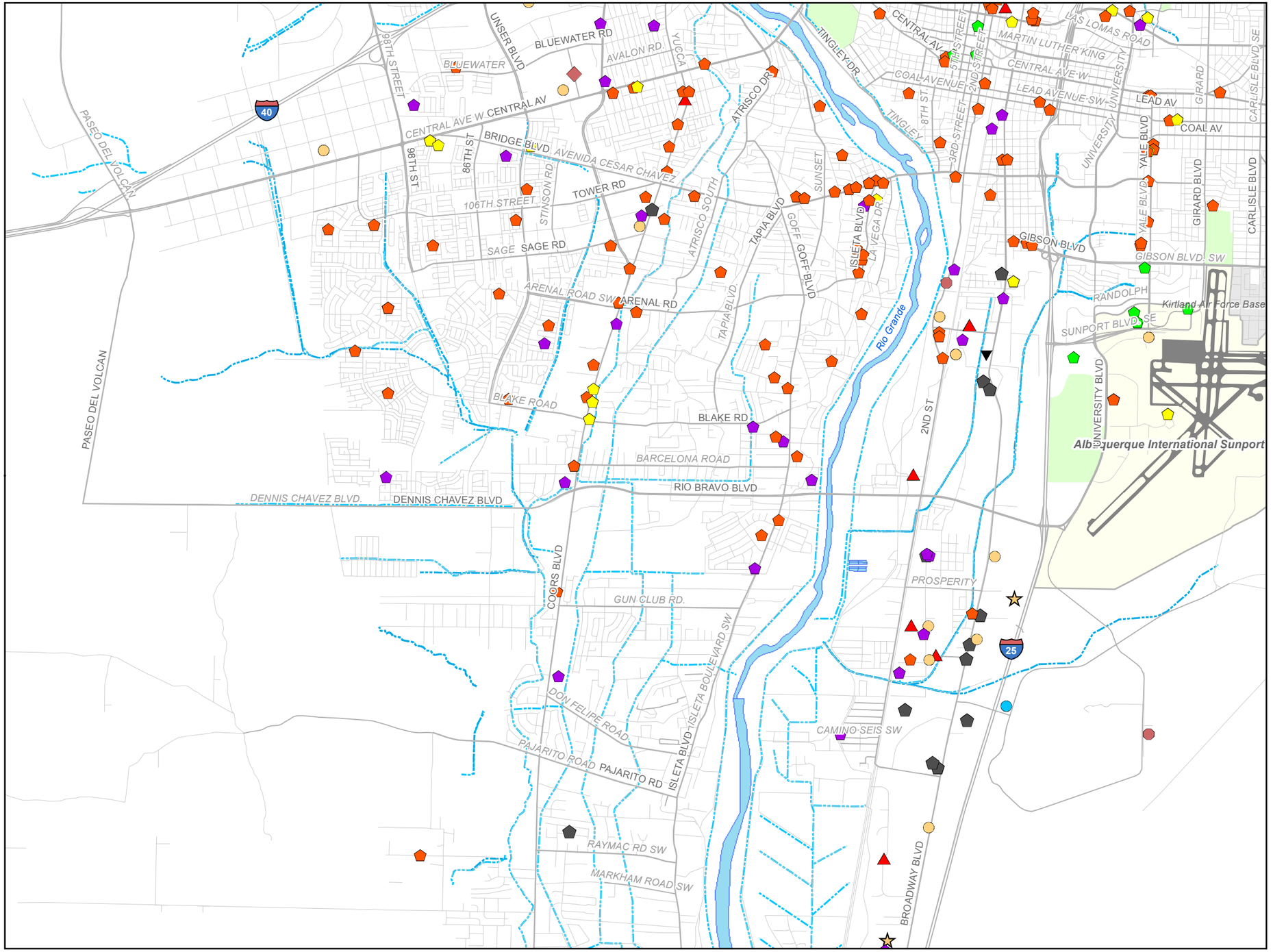
Explanation

Exposure potential

- Automotive rental and leasing, without drivers
- Autmobile parking
- Automotive repair shops
- Automotive services, except repair
- Asphalt paving and roofing materials and lubricants
- Automobile salvage yards and scrap recycling facilities
- Glass clay, cement, concrete, and gypsum products
- Land transportation and warehousing
- Manufacturer
- Primary metals
- Ship and boat building or repairing yards, transportation equipment, industrial or commercial machinery
- Water transportation
- Arroyo or canal
- Golf Course
- Military Installation

N

0 2500 5000 Feet



CITY OF ALBUQUERQUE

High Exposure Potential - Southwest

Figure 4

Daniel B. Stephens & Associates, Inc.
2/11/2016 WR14.0049

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Appendix A

Inspection Brochures and Questionnaire

What is stormwater runoff?

Stormwater runoff is water from rain or melting snow that flows over the land instead of seeping into the ground. In Albuquerque, runoff eventually flows into the Rio Grande.

What is polluted runoff?

Runoff can pick up and carry trash, debris and many substances that pollute water. Some substances in the runoff — such as pesticides, fertilizers, oil and soap, dirt, pet waste, grass clippings and leaves — are the result of human carelessness and can harm the Rio Grande.

What can the average person do to help?

There are many actions an individual can take to help prevent the pollution of stormwater runoff. Most can be done right at home.

For example, pet waste contributes significantly to pollution of the river – picking up after your pets, wrapping the waste in plastic and disposing of it in the garbage can help. In addition, it's important to repair cars so they don't leak fluids, and to wash them on grass or at a carwash.

Keep fertilizer, as well as leaves and grass clippings, out of streets and gutters. Avoid littering of any kind – even cigarette butts – especially near a storm drain. Keep lawn and household chemicals sealed tightly and in a place where rain cannot reach them. Dispose of old or unwanted chemicals at household hazardous waste collection sites or events.

To learn more ways you can help, visit our website at **www.keeptheriogrand.org.**

Mid Rio Grande Stormwater Quality Team

www.keeptheriogrand.org

Our Mid Rio Grande Stormwater Quality Team Partners

The Stormwater Quality Team was formed in 2004 to educate individuals and businesses about how to reduce stormwater pollution by keeping trash and other pollution out of our stormwater system. The team includes:

- Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA)
- Bernalillo County
- City of Albuquerque
- Ciudad Soil and Water Conservation District
- New Mexico Department of Transportation
- Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA)
- University of New Mexico

You can become a Stormwater Quality Team partner too!

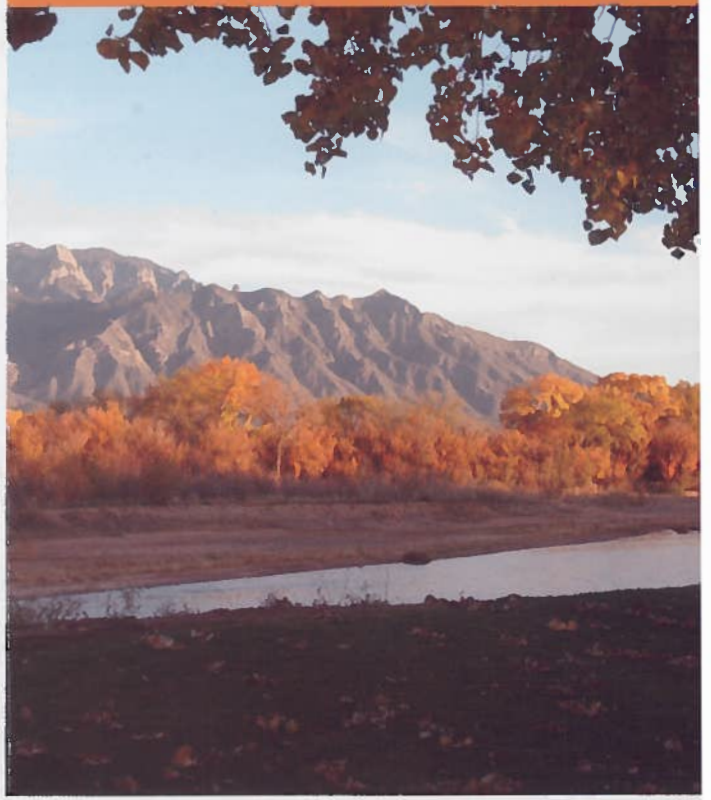
Visit our website today
www.keeptheriogrand.org

AMAFCA

THE UNIVERSITY of NEW MEXICO

New Mexico DEPARTMENT OF TRANSPORTATION

Help reduce stormwater pollution to...
Keep the Rio Grand!



Mid Rio Grande Stormwater Quality Team

www.keeptheriogrand.org

Mid Rio Grande
Stormwater Quality Team
www.keeptheriogrand.org

How stormwater runoff finds its way to the Rio Grande

Stormwater that does not seep into the ground drains directly into the river through a system of pipes, channels and arroyos.

Storm inlets are found in neighborhoods and other locations citywide. Grass clippings, leaves, pet waste, trash and other debris can wash into a storm inlet, which flows into the city's 722 miles of storm drains.

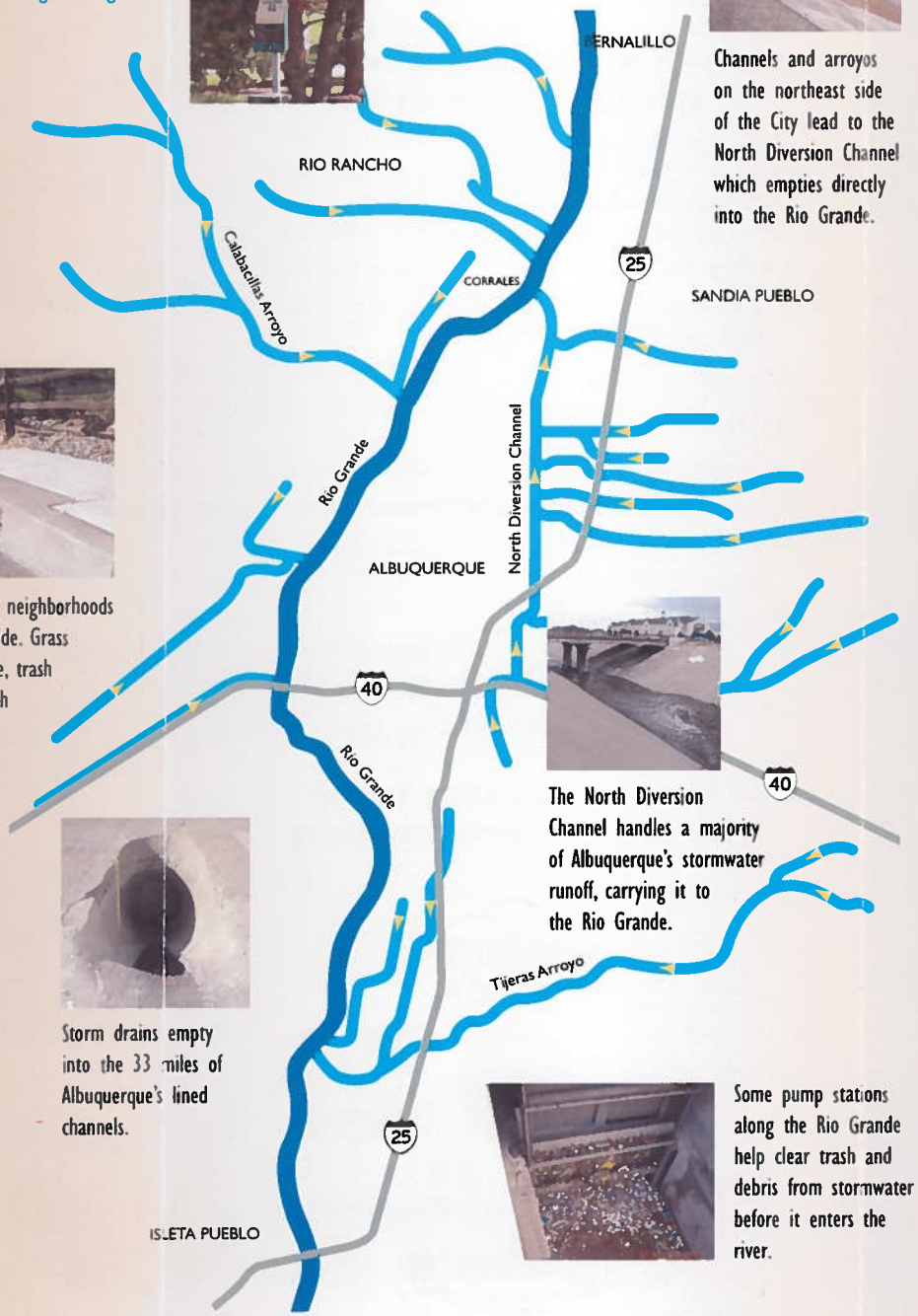
Picking up after your pet can help reduce bacterial pollution getting to the Rio Grande.

Channels and arroyos on the northeast side of the City lead to the North Diversion Channel which empties directly into the Rio Grande.

The North Diversion Channel handles a majority of Albuquerque's stormwater runoff, carrying it to the Rio Grande.

Storm drains empty into the 33 miles of Albuquerque's lined channels.

Some pump stations along the Rio Grande help clear trash and debris from stormwater before it enters the river.



Numbers

Within Albuquerque's 190 square miles, there are approximately:

- **722 Miles of Storm Pipes**
- **33 Miles of Lined Channels**
- **18 Miles of Unlined Arroyos**
- **12,300 Storm Manholes**
- **16,100 Storm Inlets**

Stormwater Pollutants

Here are common stormwater pollutants and their potential sources:

- **Pet Waste and Other Organic Matter –** Uncollected animal waste can contribute high levels of potentially disease-causing bacteria that are carried into the river by stormwater. Please pick up after your pets! Sources of organic matter also include leaves and grass clippings.
- **Garbage and Litter –** Cigarette butts, plastic bags, fast food containers, or Styrofoam® peanuts or other packing materials tossed into streets or storm inlets are transported by stormwater, clogging channels and threatening wildlife.
- **Sediments –** One of the largest components of pollutants produced in Albuquerque, sediment is caused by erosion of exposed soil and is a major concern in construction areas. Other pollutants can attach to sediment and get carried into the river.
- **Nutrients –** Phosphorus and nitrogen are nutrients often associated with stormwater runoff; they can cause algae overgrowth in streams and lakes. Nutrients can come from landscape fertilizing (commercial and residential), car washing detergents and badly maintained septic systems.
- **Oil and Grease –** Traffic and other transportation activities leave oil, grease and lubricating agents on hard surfaces that are easily transported by stormwater.
- **Toxic Substances –** Fertilizers, pesticides, herbicides and hydrocarbons such as gasoline and coolant can get into and be transported by stormwater runoff.
- **Heavy Metals –** Copper, lead, zinc, mercury, chromium, cadmium and other metals are often found in stormwater runoff polluted by batteries, paints, motor oil and other items.

Inspection Contacts

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Chad Johannesen - Project Lead
cjohannesen@dbstephens.com

City of Albuquerque
Department of Municipal Development
P.O. Box 1293
Room 301
Albuquerque, NM 87103
505-768-3654
Kathy Verhage- Senior Engineer
kverhage@cabq.gov

Learn More...

For more information on the City of Albuquerque's joint effort to prevent stormwater pollution visit:

www.keeptheriogrand.org

www.cabq.gov/municipaldevelopment/our-department/engineering/storm-water-management

City of Albuquerque Stormwater Ordinance

www.cabq.gov/municipaldevelopment/documents/cs-o-16enacted.pdf

Authorized Non-Stormwater Discharges

The following non-stormwater discharges are authorized under the City of Albuquerque MS4 permit unless determined to be significant contributors of pollutants to the municipal separate storm sewer system.

- Potable water sources, including routine water line flushing
- Lawn, landscape, and other irrigation waters provided all pesticides, herbicides and fertilizers have been applied in accordance with approved manufacturing labeling
- Air conditioning or compressor condensate
- Foundation and footing drains
- Water from crawl space pumps
- Dechlorinated swimming pool discharges
- Individual residential car washing
- Street wash waters that do not contain detergents and where no un-remediated spills or leaks of toxic or hazardous materials have occurred
- Discharges or flows from firefighting activities
- Diverted stream flows
- Rising ground waters
- Uncontaminated pumped groundwater
- Springs
- Flows from riparian habitats and wetlands
- Other similar occasional incidental non-stormwater discharges (e.g. non-commercial or charity car washes, etc.)

Illicit Discharge Detection and Elimination Program

Why Storm Water Management Should Be Important to You

http://www.cabq.gov/city-photos/CityImage_0000_Rio%20Grande%20Photo%20Credit_%20Bill%20Tondreau%20.jpg/image_view_fullscreen

Storm water is a leading source of pollution in the Rio Grande. The City of Albuquerque is dedicated to educating individuals and businesses on how to reduce stormwater pollution through

Prevention.

What is Storm Water?

Storm water is water from precipitation that flows across the ground and pavement when it rains or when snow and ice melt. The water seeps into the ground or drains into what we call storm sewers. These are the drains you see at street corners or at low points on the sides of your streets. Collectively, the draining water is called storm water runoff and is a concern to us in commercial and industrial sites as well as your neighborhood because of the pollutants it carries.

Where Does the Storm Water go?

Storm water that does not seep into the ground, drains into the city stormwater drainage system, also known as the MS4; a network of curbs, curb inlets, pipes, ditches and other man-made structures that receive stormwater runoff from the land and direct it to Rio Grande. Substances that enter the storm drain system are not treated at all! Anything poured into a gutter or a storm drain, such as used motor oil or antifreeze, flows directly to the Rio Grande!

Why is Stormwater Important to You?

The City of Albuquerque MS4 permit REQUIRES industrial and commercial facilities, which are most at risk of discharging a significant amount of pollutants to the county's MS4, to identify and control potential pollutants. The City of Albuquerque has enacted a stormwater ordinance for the purpose of regulating stormwater quality and prohibiting illicit discharges into the City's stormwater drainage facilities.

Activities that can discharge pollutants include:

- Vehicle and Equipment Maintenance, Cleaning and Storage
- Outdoor Handling, Storage and Disposal of Waste and Materials
- Fuel Storage and Delivery
- Building and Grounds Maintenance

When it rains, pollutants such as litter, oil, grit, and chemicals are carried by water runoff to the stormwater drains, which lead directly to the Rio Grande. Once these pollutants are in the water, they may have harmful environmental and health impacts, including **contaminating drinking water sources** and **impacting water quality** for fish and other aquatic life.

How are *WE* going to Prevent Storm Water Pollution?

The City of Albuquerque has implemented an illicit discharge detection and elimination (IDDE) inspection program. The goal of this program is to assist commercial and industrial facilities in the City to implement and maintain BMPs or best management that minimize the discharge of pollutants into the MS4. Inspections will follow this timeline:

During the Inspection

- An inspector will come to your site to observe your facility's stormwater drainage system and to check compliance with the City of Albuquerque MS4 permit.
- The inspector will also observe outdoor structural controls and BMPs to ensure proper operation and effectiveness of pollutant reduction.
- The inspector will then review results and goes over compliance options with facility owner or representative.

After Your Inspection

- The inspector will send a copy of the inspection report to the facility owner or representative.
- The facility owner or representative can request advice or instruction on any corrective actions.
- The facility owner or representative will need to provide a brief follow-up with any corrective actions.

Here are some of the many **PERKS** of the IDDE inspection program:

1. It's ***FREE***!
2. Inspections can potentially ***save time and money*** by helping you prevent spills and pollution.
3. There are ***no penalty fees*** with inspection findings; we are here to provide facility specific guidance and advice for MS4 permit compliance.
4. The BMPs can ***help you become compliant*** with the City's MS4 permit.

Partnering With:

City of Albuquerque

Storm Water Pollution Prevention Inspection Form

FACILITY INFORMATION				ID:	
INDUSTRIAL FACILITY NAME:			FACILITY TYPE:		
ADDRESS:			FACILITY CONTACT:		
CITY:	STATE:	ZIP:	PHONE:		
CONTACT PERSON(S) AND TITLE(S):			EMAIL:		
	PHONE:		EMAIL:		
	PHONE:		EMAIL:		

AUDITOR INFORMATION		
LEAD AUDITOR:	SITE VISIT TIME:	SITE VISIT DATE:
AUDITOR:		

FACILITY ACTIVITIES				STORED ONSITE CHEMICALS			
Activity	**Yes**	**No**	**Subcontract to:**	**Material**	**Quantity**	**Container**	**Stormwater Exposure?**
Maintenance							
Equipment Maintenance							
Vehicle Maintenance							
Other Maintenance							
Painting							
Equipment Painting/Stripping							
Vehicle Painting/Stripping							
Other Painting/Stripping							
Cleaning							
Vehicle Washing							
Equipment Degrease/Washing							
Other Washing							
Storage							
Oil & Haz Chemical Storage							
Vehicle Storage							
Equipment Storage							
Salt/Sidewalk Deicers							
Handling & Disposal of Waste & Materials							
Haz-Mat/Waste Generation							
Solid Waste Generation							
Pet/Animal Waste							
Fuel Storage and Delivery							
Vehicle Fueling							
Equipment Fueling							
Fuel Storage							
Tanks (UST/AST)							
Building and Grounds Maintenance							
Floor Wash Down							
Landscape Maintenance							
Pest / Weed Control							
Sidewalk/Pavement Anti-icing							
Other							

Pollutant Impacts:

Sediment ☐ Nutrients ☐ Bacteria/Viruses ☐ Oil/Grease ☐ Metals ☐ Organics ☐ Pesticides ☐

Gross Pollutants ☐ Vector Production ☐ Oxygen Demanding Substances ☐

1.0 DOCUMENTATION		Comments
Facility Inspections and Maintenance Documentation		
1.1 Facility-Specific SWPPP Available	☐ YES ☐ NO ☐ SUB	
1.2 Facility Map Available	☐ YES ☐ NO	
1.3 Has submitted a NOI and has NPDES Tracking No (Status of Permitting).		
1.4 Retain waste generation and disposal documentation	☐ YES ☐ NO ☐ DOC	
1.5 Activities inspected for non-stormwater discharges	☐ YES ☐ NO ☐ DOC	
1.6 Routine Facility Inspections Performed	☐ YES ☐ NO ☐ DOC	
1.7 Other (Submission of Annual Report to EPA):		
Training		
1.8 Stormwater training for all applicable employees	☐ YES ☐ NO ☐ DOC	
1.9 Waste management training	☐ YES ☐ NO ☐ DOC	
1.10 Fuel spill response training	☐ YES ☐ NO ☐ DOC	
1.11 Herb/Pesticide Appliction Certification/Training	☐ YES ☐ NO ☐ DOC	
1.12 Other:	☐ YES ☐ NO ☐ DOC	
Other Documentation		
1.13 Do you have cumulative 1,320 aboveground fuel/oil storage? If yes, do you have an SPCC Plan? Date of Plan?	☐ YES ☐ NO ☐ DOC	
REQUIRED ACTION(S): ☐ NONE		

2.0 GENERAL HOUSEKEEPING		
2.1 Exposed areas clean and orderly	☐ YES ☐ NO	
2.2 Biodegradable or less hazardous products used where possible? (i.e. citrus based products)	☐ YES ☐ NO	
2.3 Material inventory limited	☐ YES ☐ NO	
2.4 Signs posted near outdoor hose bibs listing use restrictions	☐ YES ☐ NO	
REQUIRED ACTION(S): ☐ NONE		

3.0 SPILL PREVENTION		
3.1 Spill Response Plan posted & current	☐ YES ☐ NO	
3.2 Spill kits located where spills are probable to occur	☐ YES ☐ NO	
3.3 Spill kits stocked with appropriate materials	☐ YES ☐ NO	
3.4 Spill(s) or staining observed	☐ YES ☐ NO	
3.5 Drip pans/ spill mats/ booms used	☐ YES ☐ NO	
3.6 Collected spill materials properly disposed	☐ YES ☐ NO	
3.7 Spill History	☐ YES ☐ NO	
REQUIRED ACTION(S): ☐ NONE		

4.0 MAINTENANCE ACTIVITIES ☐ SUB:			**Comments**
4.1 Performed indoors or under storm resistant cover when practical	☐ YES	☐ NO	
4.2 Performed away from storm drains or drains covered	☐ YES	☐ NO	
4.3 Parts cleaning & degreasing performed indoors or under cover	☐ YES	☐ NO	
4.4 Designated areas for temp tanker/materials truck parking	☐ YES	☐ NO	
4.5 Exposure to run-on & run-off minimized	☐ YES	☐ NO	
4.6 Oil, grease, solvents, batteries, etc. recycled	☐ YES	☐ NO	
4.7 Other:	☐ YES	☐ NO	

REQUIRED ACTION(S):

☐ NONE

5.0 FUEL STORAGE AND DELIVERY			**Comments**
5.1 "No Topping Off" signs present at vehicle fueling station	☐ YES	☐ NO	
5.2 Fueling tanks fitted with monitoring and alarm equip	☐ YES	☐ NO	
5.3 Fueling tanks fitted with breakaway hose connections	☐ YES	☐ NO	
5.4 Accidental releases blocked from reaching storm drains	☐ YES	☐ NO	
5.5 Equipment fueled in designated areas	☐ YES	☐ NO	
5.6 Other:	☐ YES	☐ NO	

REQUIRED ACTION(S):

6.0 HAZARDOUS WASTE/MATERIAL STORAGE AREAS			
6.1 Mat'ls stored indoors and away from exit doors or under storm-resistant cover when practical	☐ YES	☐ NO	
6.2 Outdoor materials stored and handled in paved areas	☐ YES	☐ NO	
6.3 Contained by berms, secondary containment, etc.	☐ YES	☐ NO	
6.4 Secondary containment adequately sized	☐ YES	☐ NO	
6.5 Containers clearly labeled and appropriate	☐ YES	☐ NO	
6.6 Liquids dispensed from upright drums w/ hand pumps	☐ YES	☐ NO	
6.7 Signage posted indicating materials being stored	☐ YES	☐ NO	
6.8 MSDS available	☐ YES	☐ NO	
6.9 Bone yard(s) present	☐ YES	☐ NO	

REQUIRED ACTION(S):

☐ NONE

7.0SOLID WASTE ☐ YES ☐ NO ☐ SUB:			
7.1 Waste and unusable material disposed of properly	☐ YES	☐ NO	
7.2 Garbage collection area properly maintained	☐ YES	☐ NO	
7.3 Dumpster drains equipped with plugs	☐ YES	☐ NO	
7.4 Dumpster lids closed	☐ YES	☐ NO	

REQUIRED ACTION(S):

☐ NONE

8.0 BUILDING & GROUNDS MAINTENANCE				Comments
Building Maintenance	☐ YES	☐ NO	☐ SUB:	
8.1 Building maintenance waste disposed of properly		☐ YES	☐ NO	
8.2 Interior floor cleaning water properly disposed		☐ YES	☐ NO	
8.3 Indoor oil/water separator maintenanced		☐ YES	☐ NO	
8.4 Fire fighting foam deluge system tested and maintained, if applicable		☐ YES	☐ NO	
8.5 Other:		☐ YES	☐ NO	
Grounds Maintenance	☐ YES	☐ NO	☐ SUB:	
8.6 Landscaping waste properly disposed		☐ YES	☐ NO	
8.7 Exterior ground surfaces cleaned properly		☐ YES	☐ NO	
8.8 Use of pesticide, herbicide and fertilizer minimized		☐ YES	☐ NO	
8.9 Records for pesticide/herbicide use?		☐ YES	☐ NO	
8.10 Landscaping provided for erosion control		☐ YES	☐ NO	
8.11 Outdoor oil/water separator maintenanced		☐ YES	☐ NO	
8.12 Other:		☐ YES	☐ NO	
Storm Drains				
8.13 Storm drains clean and free of debris		☐ YES	☐ NO	
8.14 Storm drains labeled "no dumping, drains to river"		☐ YES	☐ NO	
8.15 Stormwater control devices maintained (e.g., hay bales, basins)		☐ YES	☐ NO	
8.16 Catch basins clean and maintained		☐ YES	☐ NO	
8.17 Other:		☐ YES	☐ NO	
REQUIRED ACTION(S): ☐ NONE				

9.0 SIDEWALK / ROAD DEICING			
9.1 Does tenant perform sidewalk deicing?	☐ YES	☐ NO	
9.2 Does tenant perform roadway deicing?	☐ YES	☐ NO	
9.3 Salt storage areas are protected from stormwater?	☐ YES	☐ NO	
9.4 Tracks annual volume of salt used?	☐ YES	☐ NO	
REQUIRED ACTION(S): ☐ NONE			

10.0 NON-STORMWATER DISCHARGES OBSERVED			
10.1 Evidence of illicit discharges and improper disposal (i.e. wash waters, waste water, chemicals, etc)	☐ YES	☐ NO	
10.2 Irrigation runoff	☐ YES	☐ NO	
10.3 Building condensation	☐ YES	☐ NO	
10.4 Other (NPDES permits):	☐ YES	☐ NO	
REQUIRED ACTION(S): ☐ NONE			

11.0 MISCELLANEOUS WASTES	☐ YES	☐ NO	☐ SUB:	
11.1 Animal wastes generated		☐ YES	☐ NO	
11.2 Kitchen/food wastes generated		☐ YES	☐ NO	
11.3 Waste removed on a regular basis		☐ YES	☐ NO	
11.4 Other:		☐ YES	☐ NO	
REQUIRED ACTION(S): ☐ NONE				

12.0 VEHICLE AND EQUIPMENT CLEANING

Wash the following? (3.1)	Dry-Wash	WET-WASH		Other / Comment
		Inside	Outside in Permitted Area	
Vehicles ☐ YES ☐ NO ☐ SUB:				
Equipment ☐ YES ☐ NO ☐ SUB:				
Other: ☐ YES ☐ NO ☐ SUB				

Washing areas permitted ☐ YES ☐ NO

13.0 VEHICLE AND EQUIPMENT STORAGE

Store the following? (4.1)	Inside	OUTSIDE		Other / Comment
		Under Cover	Away from Drains	
Vehicles ☐ YES ☐ NO ☐ SUB				
Equipment ☐ YES ☐ NO ☐ SUB				
Other: ☐ YES ☐ NO ☐ SUB				

Storage areas maintained ☐ YES ☐ NO

14.0 DESCRIPTION OF STORM WATER DRAINAGE

15.0 DESCRIPTION OF EXISTING STRUCTURAL BMPS AND CONDITION

INSPECTION SUMMARY

Major Non-Compliances Issues (Immediate threat to stormwater)

Minor Non-Compliance Issues (potential threat to stormwater/documentation)

INSPECTOR SIGNATURE		Time Complete	Contact Initials
Name:	Signature:		

Appendix B

Field Lists of Businesses

Asset Object ID

Inspection Group 1

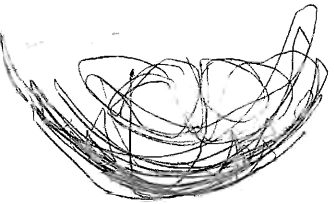
FacilityName	Location	SIC CODE	SIC Descrip	CONTACT NAME	PHONE	LOC ZIP	LOC CITY	FACILITY CONTACT	PHONE2	ID	Inspection Group	
CORONADO AUTO RECYCLERS INC	9320 SAN PEDRO DR NE	5015	AUTOMOBILE PARTS-USED & REBUILT (WHLS)	RICH LOUCKS	505-821-0440	87113	ALBUQUERQUE	Rick	505-821-0440	NE-386	Group 1	
BUDGET TRUCK RENTAL	6216 SIGNAL AVE NE	751303	TRUCK RENTING & LEASING			87113	ALBUQUERQUE	111616024	E	NE-392	Group 1	39838
ALBUQUERQUE BRAKE & ALIGNMENT	5701 WILSHIRE AVE NE	753903	WHEEL ALIGNMENT-FRAME & AXLE SVC-AUTO	LISA BATES		87113	ALBUQUERQUE			NE-572	Group 1	
BACA AUTOMOTIVE SPECIALISTS	6013 SIGNAL AVE NE # 7	753801	AUTOMOBILE REPAIRING & SERVICE	DAN BACA		87113	ALBUQUERQUE	111616022	L	NE-493	Group 1	25711
C T TOWING	6301 OAKLAND AVE NE # A	754901	WRECKER SERVICE	BILL SMITH		87113	ALBUQUERQUE	111616023	L	NE-613	Group 1	26184
EMPIRE ENGINES INC	8700 SAN PEDRO DR NE	753810	ENGINES-REBUILDING & EXCHANGING,			87113	ALBUQUERQUE	111616019	L	NE-563	Group 1	28698
MAURERS COLLISION	8661 SAN PEDRO DR NE ✓	753201	AUTOMOBILE BODY-REPAIRING & PAINTING	KIRK MAURER		87113	ALBUQUERQUE	111616025	J	NE-440	Group 1	28686
MEINEKE CAR CARE CTR	8721 SAN PEDRO DR NE ✓	753801	AUTOMOBILE REPAIRING & SERVICE			87113	ALBUQUERQUE	111616018	J	NE-537	Group 1	28740
SOUTHWEST RETREAD CTR	5901 WILSHIRE AVE NE	753401	TIRE-RETREADING & REPAIRING	ROB DOUGHERTY		87113	ALBUQUERQUE	111616026	E	NE-454	Group 1	~~25182~~ 25492
SOUTHWEST ROVERS	8700 SAN PEDRO DR NE	753801	AUTOMOBILE REPAIRING & SERVICE	ROBERT DASSLER		87113	ALBUQUERQUE	111616020	L	NE-551	Group 1	28699

9000 Pan American Fwy NE — 111616028 E — 39881

5601 Wilshire Ave NE - Fincham — 111616027 J — 25182

5700 Toyo Plus — 111616021 L — 40329

Back



Inspection Group 1

FacilityName	Location	SIC CODE	SIC Descrip	CONTACT NAME	PHONE	LOC ZIP	LOC CITY	FACILITY CONTACT	PHONE2	ID	Inspection Group
CORONADO AUTO RECYCLERS INC	9320 SAN PEDRO DR NE	5015	AUTOMOBILE PARTS-USED & REBUILT (WHLS)	RICH LOUCKS	505-821-0440	87113	ALBUQUERQUE	Rick	505-821-0440	NE-386	Group 1
~~BUDGET TRUCK RENTAL~~	~~6216 SIGNAL AVE NE~~	~~751303~~	~~TRUCK RENTING & LEASING~~			~~87113~~	~~ALBUQUERQUE~~			~~NE-392~~	~~Group 1~~
ALBUQUERQUE BRAKE & ALIGNMENT	5701 WILSHIRE AVE NE	753903	WHEEL ALIGNMENT-FRAME & AXLE SVC-AUTO	LISA BATES		87113	ALBUQUERQUE			NE-572	Group 1
BACA AUTOMOTIVE SPECIALISTS	6013 SIGNAL AVE NE # 7	753801	AUTOMOBILE REPAIRING & SERVICE	DAN BACA		87113	ALBUQUERQUE			NE-493	Group 1
C T TOWING	6301 OAKLAND AVE NE # A	754901	WRECKER SERVICE	BILL SMITH		87113	ALBUQUERQUE			NE-613	Group 1
EMPIRE ENGINES INC	8700 SAN PEDRO DR NE	753810	ENGINES-REBUILDING & EXCHANGING			87113	ALBUQUERQUE			NE-563	Group 1
MAURERS COLLISION	8661 SAN PEDRO DR NE	753201	AUTOMOBILE BODY-REPAIRING & PAINTING	KIRK MAURER		87113	ALBUQUERQUE			NE-440	Group 1
MEINEKE CAR CARE CTR	8721 SAN PEDRO DR NE	753801	AUTOMOBILE REPAIRING & SERVICE			87113	ALBUQUERQUE			NE-537	Group 1
SOUTHWEST RETREAD CTR	5901 WILSHIRE AVE NE	753401	TIRE-RETREADING & REPAIRING	ROB DOUGHERTY		87113	ALBUQUERQUE			NE-454	Group 1
SOUTHWEST ROVERS	8700 SAN PEDRO DR NE	753801	AUTOMOBILE REPAIRING & SERVICE	ROBERT DASSLER		87113	ALBUQUERQUE			NE-551	Group 1

Mak Towing 6301 Oakland NE – not on the list, why?

Inspection Group 2

Facility Name	Location	SIC CODE	SIC Descrip	CONTACT NAME	PHONE	LOC ZIP	LOC CITY	FACILITY CONTACT	PHONE2	ID	Inspection Group
FIRESTONE COMPLETE AUTO CARE	7401 PASEO DEL NORTE NE	753801	AUTOMOBILE REPAIRING & SERVICE	STEVE MUSCATO		87113	ALBUQUERQUE	27134		NE-515	Group 2
~~RED BENCH ASSET RECOVERY~~	~~8501 RANCHO DEL CERRO DR NE~~	~~754901~~	~~WRECKER SERVICE~~	~~ROGER CARMAN~~		~~87113~~	~~ALBUQUERQUE~~			~~NE-620~~	~~Group 2~~
~~U-HAUL NEIGHBORHOOD DEALER~~	~~8310 SAN PEDRO DR NE # A~~	~~751303~~	~~TRUCK RENTING & LEASING~~	~~JAYMES TEASLEY~~		~~87113~~	~~ALBUQUERQUE~~		~~800-468-4285~~	~~NE-404~~	~~Group 2~~
√ JIFFY LUBE	8120 LOUISIANA BLVD NE	754903	AUTOMOBILE LUBRICATION SERVICE			87113	ALBUQUERQUE	27840		NE-637	Group 2
√ TECHNA GLASS	8120 LOUISIANA BLVD NE	754903	AUTOMOBILE LUBRICATION SERVICE			87113	ALBUQUERQUE		877-258-4873	NE-638	Group 2

1117160631
~~Not in Use~~
1117160570
11

Inspection Group 3

FacilityName	Location	SIC_CODE	SIC_Descrip	CONTACT_NAME	PHONE	LOC_ZIP	LOC_CITY	FACILITY_CONTACT	PHONE2	EMAIL	ID
~~HYDRA-CRETE INC~~	~~6125 CORONADO AVE NE~~	~~3272~~	~~CONCRETE PRODS-EX BLOCK & BRICK (MFRS)~~	~~DAVID MC CORMICK~~	~~505-797-9205~~	~~87109-4654~~	~~ALBUQUERQUE~~	~~<Null>~~	~~505-797-9205~~	~~HCI@q.com~~	~~NE-134~~
~~SPECIALTY MANUFACTURING INC~~	~~5601 SAN FRANCISCO RD NE~~	~~3441~~	~~TOWERS (MFRS)~~		~~505-823-0186~~	~~87109-4603~~	~~ALBUQUERQUE~~	~~Pat Barr~~	~~F 505-823-0186~~	~~patbarr@wirelesscomponent~~	~~NE-141~~
~~FLASH AUTOMOTIVE~~	~~7621 WYOMING BLVD NE~~	~~753801~~	~~AUTOMOBILE REPAIRING & SERVICE~~			~~87109~~	~~ALBUQUERQUE~~				~~NE-480~~
~~D-MART WINDOW TINTING~~	~~7700 LOMA DEL NORTE RD NE~~	~~753601~~	~~GLASS COATING & TINTING~~	~~DANIEL R MARTIN~~		~~87109~~	~~ALBUQUERQUE~~				~~NE-456~~
✓ DEARHOLT AUTO CARE	7201 WYOMING BLVD NE	753801	AUTOMOBILE REPAIRING & SERVICE	JIM DEARHOLT		87109	ALBUQUERQUE				NE-504
✓ DUGGER'S METRO ROAD SVC	7601 SAN PEDRO DR NE	754901	WRECKER SERVICE	VANCE DUGGER		87109	ALBUQUERQUE		866-823-9696		NE-614
✓ INDEPENDENT PDR SPECIALISTS	7621 WYOMING BLVD NE	753201	AUTOMOBILE BODY REPAIRING & PAINTING	HOWARD SIMKINS		87109	ALBUQUERQUE				NE-436
✓ MOVING ON	7509 CAPULIN RD NE	754901	WRECKER SERVICE	TOM LYNCH		87109	ALBUQUERQUE				NE-617
NEW MEXICO STATE RECOVERY	6110 SAN FRANCISCO RD NE	754901	WRECKER SERVICE	ANTHONY GARCIA		87109	ALBUQUERQUE	locked 11/28/16			NE-618
PETER'S MINIVAN REPAIR	7637 BROWNING RD NE	753801	AUTOMOBILE REPAIRING & SERVICE	PETER MERVINI		87109	ALBUQUERQUE				NE-546

BACK NEXT WK (11-30/12-1)

RESIDENCE

onsite 11/22/16 offices closed maybe perm. closed hard to say @ M/F

11/22/16 call to schedule

not a car business residence

✓

mobile home residence

2 lots

(2) lots

Inspection Group 4

complete

FacilityName	Location	SIC_CODE	SIC_Descrip	CONTACT_NAME	PHONE	LOC_ZIP	LOC_CITY	FACILITY_CONTACT	PHONE2	EMAIL	ID
BRAKE MASTERS	7300 SAN ANTONIO DR NE	753914	BRAKE SERVICE	ROCKY VILLAGOMEZ		87109	ALBUQUERQUE				NE-578
DENTMATIST	6208 DUNGAN ST NE	753201	AUTOMOBILE BODY REPAIRING & PAINTING	GARY BALKO		87109	ALBUQUERQUE				NE-433
~~HERTZ RENT A CAR~~	~~6300 SAN MATEO BLVD NE # A~~	~~751401~~	~~AUTOMOBILE RENTING~~	JOE VALENCIA		~~87109~~	~~ALBUQUERQUE~~		~~800-654-3131~~		~~NE-418~~
JIFFY LUBE	7200 SAN ANTONIO DR NE	754903	AUTOMOBILE LUBRICATION SERVICE	KEITH STEWARD		87109	ALBUQUERQUE				NE-630
NM DIESEL POWER AUTOMOTIVE	7320 SAN ANTONIO DR NE	753801	AUTOMOBILE REPAIRING & SERVICE	DONNIE POHL		87109	ALBUQUERQUE				NE-542
PERFORMANCE AUTO PAINT	6801 HARPER DR NE	753201	AUTOMOBILE BODY REPAIRING & PAINTING	NICK BARRY		87109	ALBUQUERQUE				NE-442
PREMIER TIRE & SVC	7340 SAN ANTONIO DR NE	753801	AUTOMOBILE REPAIRING & SERVICE	JACK JAEGER		87109	ALBUQUERQUE				NE-549
SANDIA TOWING	7212 CHRISTY AVE NE	754901	WRECKER SERVICE	LUKE RUFFINO		87109	ALBUQUERQUE				NE-622

~~3 remaining as of 11/22/16~~

4

Inspection Group 4

complete

FacilityName	Location	SIC_CODE	SIC_Descrip	CONTACT_NAME	PHONE	LOC_ZIP	LOC_CITY	FACILITY_CONTACT	PHONE2	EMAIL	ID
BRAKE MASTERS	7300 SAN ANTONIO DR NE	753914	BRAKE SERVICE	ROCKY VILLAGOMEZ		87109	ALBUQUERQUE				NE-578
~~DENTMATIST~~ RESIDENCE	~~6208 DUNGAN ST NE~~	753201	AUTOMOBILE BODY-REPAIRING & PAINTING	GARY BALKO		87109	ALBUQUERQUE				NE-433
~~HERTZ RENT A CAR~~	~~6300 SAN MATEO BLVD NE # A~~	~~751401~~	~~AUTOMOBILE RENTING~~	JOE VALENCIA		~~87109~~	~~ALBUQUERQUE~~		~~800-654-3131~~		~~NE-418~~ OK
JIFFY LUBE	7200 SAN ANTONIO DR NE	754903	AUTOMOBILE LUBRICATION SERVICE	KEITH STEWARD		87109	ALBUQUERQUE				NE-630
NM DIESEL POWER AUTOMOTIVE	7320 SAN ANTONIO DR NE	753801	AUTOMOBILE REPAIRING & SERVICE	DONNIE POHL		87109	ALBUQUERQUE				NE-542
~~PERFORMANCE AUTO PAINT~~ RESIDENCE	~~6801 HARPER DR NE~~	753201	AUTOMOBILE BODY-REPAIRING & PAINTING	NICK BARRY		87109	ALBUQUERQUE				NE-442
PREMIER TIRE & SVC	7340 SAN ANTONIO DR NE	753801	AUTOMOBILE REPAIRING & SERVICE	JACK JAEGER		87109	ALBUQUERQUE				NE-549
~~SANDIA TOWING~~ RESIDENCE	~~7212 CHRISTY AVE NE~~	754901	WRECKER SERVICE	LUKE RUFFINO		87109	ALBUQUERQUE				NE-622

11/22/16 ✓ 11/22/16 ✓ 11/22/16 ✓

3 remaining as of 11/22/16

Inspection Group 5

OUT OF BUSINESS

FacilityName	Location	SIC_CODE	SIC_Descrip	CONTACT_NAME	PHONE	LOC_ZIP	LOC_CITY	FACILITY_CONTACT	PHONE2	EMAIL	ID
ALBUQUERQUE KWIK LUBE	7849 TRAMWAY BLVD NE	754903	AUTOMOBILE LUBRICATION SERVICE	GEORGE BURNELL		87122	ALBUQUERQUE				NE-623
CODYS CAR CARE INC	9320 FARRAGUT DR NE	753801	AUTOMOBILE REPAIRING & SERVICE			87111	ALBUQUERQUE				NE-479
ABC WINDSHIELD REPAIR	11600 ACADEMY RD NE # 4824	753819	AUTOMOBILE REPAIRING & SERVICE-MOBILE	BRUCE ALTMAN		87111	ALBUQUERQUE				NE-568
BATES MOTOR HOME RENTAL	790 TRAMWAY LN NE # 9B	751901	RECREATIONAL VEHICLES-RENTING & LEASING	ROB LYDICK		87122	ALBUQUERQUE				NE-420
DROP OF COLOR LLC	10004 PETRA CT NE	753201	AUTOMOBILE BODY REPAIRING & PAINTING			87122	ALBUQUERQUE				NE-434
TRADON INC	11600 SIGNAL AVE NE	753801	AUTOMOBILE REPAIRING & SERVICE			87122	ALBUQUERQUE				NE-554
VALVOLINE INSTANT OIL CHANGE	7849 TRAMWAY BLVD NE	754903	AUTOMOBILE LUBRICATION SERVICE	TIM PRICE		87122	ALBUQUERQUE				NE-635
ROCKSTAR WINDSHIELD REPAIR	720-4 TRAMWAY LN NE	753602	AUTOMOBILE GLASS-SERVICE & INSTALLATION			87122	ALBUQUERQUE				NE-468

RESIDENCE

1 IPS

1 BJ

Inspection Group 6 A

FacilityName	Location	SIC_CODE	SIC_Descrip	CONTACT_NAME	PHONE	LOC_ZIP	LOC_CITY	FACILITY_CONTACT	PHONE2	EMAIL	ID
ENTERPRISE RENT-A-CAR	9104 MONTGOMERY BLVD NE	751401	AUTOMOBILE RENTING	JIMMY ROMERO		87111	ALBUQUERQUE		888-305-8051		NE-416
FIRESTONE COMPLETE AUTO CARE	9500 MONTGOMERY BLVD NE	753801	AUTOMOBILE REPAIRING & SERVICE	STEVE MUSCATO		87111	ALBUQUERQUE				NE-516
KEY TRANSMISSIONS	8900 LAGRIMA DE ORO RD NE	753701	TRANSMISSIONS-AUTOMOBILE	DAVE ARNOLD		87111	ALBUQUERQUE				NE-469
PETE'S AUTO CARE	4410 WYOMING BLVD NE # P	753801	AUTOMOBILE REPAIRING & SERVICE	PETER H GOLDBERG		87111	ALBUQUERQUE				NE-544
U-HAUL NEIGHBORHOOD DEALER	4410 WYOMING BLVD NE	751303	TRUCK RENTING & LEASING			87111	ALBUQUERQUE		800-468-4285		NE-403
VALVOLINE INSTANT OIL CHANGE	9801 MONTGOMERY BLVD NE	754903	AUTOMOBILE LUBRICATION SERVICE	CONRAD BEGAY		87111	ALBUQUERQUE				NE-636
WHALE OF A WASH	12515 MONTGOMERY BLVD NE	754908	AUTOMOBILE INSPECTION STATIONS-NEW/USED	SHERI WIBLE		87111	ALBUQUERQUE				NE-642

go back Monday

Residential

go back

Sue

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6

Inspection Group 7

FacilityName	Location	SIC_CODE	SIC_Descrip	CONTACT_NAME	PHONE	LOC_ZIP	LOC_CITY	FACILITY_CONTACT	PHONE2	EMAIL	ID
BRAKE MASTERS	4900 SAN MATEO BLVD NE	753914	BRAKE SERVICE	KEN WESSELL	<Null>	87109	ALBUQUERQUE	<Null>		<Null>	NE-577
DENTMASTERS OF NEW MEXICO INC	4800 OVERLAND ST NE	753201	AUTOMOBILE BODY-REPAIRING & PAINTING	SCOTT HINKLE	<Null>	87109	ALBUQUERQUE	<Null>		<Null>	NE-432
ENTERPRISE RENT-A-CAR	5000 SAN MATEO BLVD NE # B	751401	AUTOMOBILE RENTING	BRIAN VERPLOEGH	<Null>	87109	ALBUQUERQUE	<Null>	888-305-8051	<Null>	NE-415
EXTREME AUTO GLASS	4721 JENNIFER DR NE	753602	AUTOMOBILE GLASS-SERVICE & INSTALLATION	RANDY DURAN	<Null>	87109	ALBUQUERQUE	<Null>		<Null>	NE-465
JIFFY LUBE	4100 PENNSYLVANIA ST NE	754903	AUTOMOBILE LUBRICATION SERVICE	ERIC MONTOYA	<Null>	87109	ALBUQUERQUE	<Null>		<Null>	NE-628
OLD TOWN PARKING	7432 NORTHRIDGE AVE NE	752102	PARKING STATIONS & GARAGES		<Null>	87109	ALBUQUERQUE	<Null>		<Null>	NE-423

Res - 3
Bus - 3

3 Res
4 Bus

GROUP 6 8 cmg

IDDE inspections

South of Paseo to Montgomery. East of San Mateo

Label	Location	Asset ID	Date	Inspectors
ADEAL AUTO REPAIR	6011B SAN FRANCISCO RD NE	11661	2/13/17	
ALAMO RENT-A-CAR LLC	6001 SAN MATEO BLVD NE # E1	33621	Not at this address.	
ALBUQUERQUE RIDES	• 5804 LOST DUTCHMAN AVE NE	37259	ADDRESS IS RESIDENCE	
AUTO EXPERIENCE — NMSTATE RECOVERY (SEE GROUP 3. LOCKED BUSINESS)	6110 SAN FRANCISCO RD NE	33729		
CENTURY AUTOMOTIVE SVC CORP	10555 MONTGOMERY BLVD NE # 120	37443	ADDRESS IS OFFICE COMPLEX	12/2/16 JK
COLOR ALL OF NEW MEXICO (NOT LISTED ON IDDE)	11005 SPAIN RD NE	37491	ADDRESS IS OFFICE COMPLEX	12/2
CRESTLINE AUTOMOTIVE GROUP	" • 5203 JUAN TABO BLVD NE # 2E	37525	" "	" "
DENNIS MANGAN MECHANIC (in Tanoan)	• 11617 WOODMAR LA NE	37562 12/2	ADDRESS IS RESIDENTIAL (TANOAN)	12/2 JK
FIRESTONE COMPLETE AUTO CARE	6300 SAN MATEO BLVD NE # L	12248	11/29	LH JK
GOOD YEAR	6201 MONTGOMERY BLVD NE	34208	12/1	JK
GOODYEAR	7340 SAN ANTONIO DR NE — ALREADY DONE	34210	DONE IN PREVIOUS GROUP	12/2 JK
JOHN DAVID PETERS MECHANIC	7424 ARROYO DEL OSO AVE NE	34363	11/29	LH JK
MASTER MECHANIC DIAGNOSTICS	7120 WYOMING BLVD NE # 342	34547	THIS ADDRESS IS A STRIP MALL & BUSINESS NOT LOCATED THERE	JK 12/2
METRO ROAD SVC	6201 SAN FRANCISCO RD NE	12062	2/13/17	LIKELY PART OF DUGGERS LOT. JK
MIDAS AUTO SVC EXPERTS	6021 SAN MATEO BLVD NE	11665	11/29	LH JK
N P EXPRESS CARE	• 6000 CORTADERIA ST NE # 2202	38093	GATED APARTMENT COMPLEX	12/2 JK
NORTHSIDE AUTO REPAIR	7601A SAN PEDRO DR NE	45810	Dugger's Metro cmg 2/14/17	one truck parked, mainly self storage.
PENSKE TRUCK RENTAL	5220 SAN MATEO BLVD NE	10343		
QUIC TRANSMISSION & AUTOMTV	9417 TASCO DR NE	38246	11/29	LH JK
S K N AUTOMOTIVE	6804 RANCHITOS RD NE	34905	11/29	LH JK
SEWELL COLLISION	5404 COLLEENS WAY NE	38371	12/7	JK RESIDENCE
SOUTHWEST TRANSMISSION-AUTO	8100 WYOMING BLVD NE # M4 — ADDRESS IS A UPS STORE IN STRIP MALL	40295		12/2 JK
TINT CO	5836 OSUNA RD NE # B	11241	11/29	LH JK
TRADE CENTER AUTOMOTIVE INC	1847 TRAMWAY TERRACE LOOP NE — ADDRESS IS A RESIDENCE	43868		12/2
~~U-HAUL NEIGHBORHOOD DEALER~~	7330 SAN ANTONIO DR NE — ALREADY DONE (CHEVRON)	13752	12/7	JK
U-HAUL NEIGHBORHOOD DEALER	7201 WYOMING BLVD NE	13598	Dearholt — went there 11/28	LH JK
VALVOLINE INSTANT OIL CHANGE	5223 SAN MATEO BLVD NE	10345	11/29	LH JK
VALVOLINE INSTANT OIL CHANGE	5901 WYOMING BLVD NE # J	35195	11/29	LH JK — UPS Store
WHISKEY GARAGE	8604 SAN FRANCISCO RD NE	35247	11/29	LH JK
ZIA TRANSPORTATION SVC LLC	5404 MONTGOMERY BLVD NE	45695	11/29	LH JK — Res.

Complete: 5
Not complete: 4
Res: 18
Already complete: 2

11/29/201611:30 AM
S:\Projects\WR14.0049.01_COA_Stormwater\Docs\IDDE\IDDE sampling inspections\Update_gis\IDDE NE San Mateo Montg

Group 7 - San Mateo to Indian School

Asset ID	Location	Label	Date Inspected	Inspector
28954	8918 CANDELARIA RD NE	K T T MOTOR — RESIDENCE	12/7/16	JK
30003	9719 CANDELARIA RD NE	SUPER GLASS WINDSHIELD REPAIR — IS NOW A POST OFFICE IN NEW BUILDING		
16539	10500 CANDELARIA RD NE	U-HAUL NEIGHBORHOOD DEALER NOT THERE	12/7/16	JK
17406	11209 CANDELARIA RD NE	FOOTHILLS COLLISION REPAIR	12/7/16	
17843	12000 CANDELARIA RD NE	BUDGET TRUCK RENTAL — IS NOW CLIMATE CONTROL STORAGE	12/7/16	JK
36397	2625 CARDENAS DR NE	MICHAEL TIBITOSKI MECHANIC RES		
24969	5329 COMANCHE RD NE	VEHICLE QUALIFICATION SVC RESIDENCE	12/7/16	JK
16356	10340 COMANCHE RD NE	MECHANIC THE INC	12/7/16	JK
19705	1720 EUBANK BLVD NE	QUIK CHECK CORP NOT THERE - AUTO GLASS	12/8/16	JK
19880	1836 EUBANK BLVD NE	MCKINNEY MOTOR CO	12/8/16	JK
39236	1900 EUBANK BLVD NE	M A A AUTO REPAIR & PAINT	12/8/16	JK
19937	1901 EUBANK BLVD NE	U-HAUL MOVING & STORAGE	12/8/16	JK
20157	2005 EUBANK BLVD NE	JUST BRAKES	12/8/16	JK
38680	2347 EUBANK BLVD NE	ALBUQUERQUE AUTO CORRECTIONS RETAIL IS NOW "RIO RICO ROLLING ROS"	12/8	JK
22841	3640 EUBANK BLVD NE	JIFFY LUBE	12/8/16	JK
37890	3600 EUBANK BLVD NE # 5C	K & K ROADSIDE LLC APARTMENT/RESIDENCE	12/8/16	JK
19916	1900 EUBANK BLVD NE # A	SPEEDLAB IS NOW MAR AUTO REPAIR	12/8/16	JK
19917	1900 EUBANK BLVD NE # B C	A ABOVE & BEYOND AUTO GLASS	12/8/16	JK
22760	3613 INCA ST NE	PREMIER TOWING RESIDENCE	12/8/16	JK
28572	8531 INDIAN SCHOOL RD NE	PENSKE TRUCK RENTAL SELF-STORAGE	12/13/16	JK
30201	9906 INDIAN SCHOOL RD NE	AUTO GLASS NOW	12/13/16	JK
19820	1812 JUAN TABO BLVD NE	MEINEKE CAR CARE CTR		
21742	2925 JUAN TABO BLVD NE	GET'ER DONE AUTOMOTIVE	17	CJ
39154	1925 JUAN TABO BLVD NE # 223	JOHN'S SMALL ENGINE SVC Strip mall - closed		CJ
36460	2400 LOUISIANA BLVD NE	NATIONAL CAR RENTAL INC FED X	12/13/16	JK
26331	6417 MENAUL BLVD NE	VALVOLINE INSTANT OIL CHANGE	12/13/16	JK
12796	6701 MENAUL BLVD NE	FIRESTONE COMPLETE AUTO CARE	12/13/16	JK
13157	7000 MENAUL BLVD NE OK	MIDAS AUTO SVC EXPERTS IS NOW K & N MOBILE	12/13/16	JK
35863	7121 MENAUL BLVD NE	ELICIT AUTOMOTIVE SVC — IS NOW CASTROS CARSENS BODY WORK	12/12	JK
14303	7905 MENAUL BLVD NE	HOMETOWN AUTOMOTIVE & TIRE	12/12/16	JK
16411	10400 MENAUL BLVD NE	WHEEL ALIGN IT II	12/12/16	JK
16590	10508 MENAUL BLVD NE	JIFFY LUBE	12/12/16	JK
16280	10300 MENAUL BLVD NE # 10	QUIC TRANSMISSION & AUTOMTV HOSTILE	12/12/16	JK
16282	10300 MENAUL BLVD NE # 4	DOWN THE ROAD MOTORS — COME BACK FRIDAY	12/12/16	CJ
22842	3640 MORRIS ST NE	MORRIS COMANCHE AUTOMOTIVE SVC	3 . 17	CJ
46100	3701 MORRIS ST NE	MORRIS & COMANCHE AUTO SVC		
28923	8911 NORTHEASTERN BL NE # A106	SUPER TECH AUTO SVC — APT COMPLEX		
28585	8591 NORTHEASTERN BLVD NE	ENTERPRISE — Car Crafters		
5613	3001 SAN PEDRO DR NE	KEITH'S COMPLETE AUTO REPAIR	17	CJ
5127	2730 SAN PEDRO DR NE # H	GCS AUTOMOTIVE — Vin # Service - NA		
29080	9013 SHOSHONE RD NE	STAYWELL Health company — Res		
38930	10909 TOWNER AVE NE	DUSTIN FOX MECHANIC Res?		
4627	2515 UTAH ST NE	CATALINE AUTOMOTIVE	1/18/17	cmj
5179	2800 UTAH ST NE	CJS AUTO REPAIR RES ✓		
4592	2508 VERMONT ST NE	BEE LINE AUTOMOTIVE INC	1/18/17	cmj
4638	2517 VIRGINIA ST NE	JAPANESE CAR CARE	1/18/17	cmj
35492	2527 VIRGINIA ST NE # J	AUTOSTAR SUPERSTORES Strip MALL		
20887	2315 WISCONSIN ST NE	T M'S AUTO COLLISION REPAIR	1/13/17	cmj
19789	1801 WYOMING BLVD NE	BRAD'S AUTO REPAIR	12/13/16	JK
20763	2247 WYOMING BLVD NE	BRAKE MASTERS	1/18/17	cmj
20839	2301 WYOMING BLVD NE	JIFFY LUBE	1/13/17	cmj
20988	2401 WYOMING BLVD NE	LEE'S AUTOMOTIVE SVC LLC	1/13/17	cmj
21455	2701 WYOMING BLVD NE	WYOMING SERVICE CTR	1/13/17	CJ
22479	3316 WYOMING BLVD NE	JEFFS AUTO REPAIR — APT COMPLEX	1/13/17	CJ
22741	3601 WYOMING BLVD NE	SHELL RAPID LUBE	1/13/17	CJ
38250	3601 WYOMING BLVD NE	R & R FOR YOUR CAR LLC — Not operating	1/13/17	cmj

GROUP FOR 12/7/16

12/8

Auto Depot - infront of Bee line

2016 closed/Res: Inspected

2017 closed Res/changed (10) Inspected. (13)

Res: (23) Complete (30)

Group 10					
AssetID	Company	Address	Date Inspected	Inspector	Notes
4622	COMMERCIAL TRUCK & TRAILER	2513 COMANCHE RD NE		JK X	IS NOW NATIONAL RESTAURANT SUPPLY
4830	PITTSBURGH GLASS WORKS	2621 COMANCHE RD NE	1/27/17	JK X	
4328	DACCO TRANSMISSION PARTS	2420 COMANCHE RD NE # B5		JK X	IS NOW IPS TACTICAL
9330	ALCOLOCK-NEW MEXICO	4800 HARDWARE DR NE # B	1/27/17	JK X	
9453	MVD COMMERCIAL VEHICLE EXPRESS	4809 JEFFERSON ST NE	1/27/17	JK X	NO DISCHARGES, OFFICE ONLY
44835	AMERICAN COLLISION & TOWING	4815 JEFFERSON ST NE		JK X	IS NOW AC/ABADY AUTO INC?
9546	TINT & TRIM FACTORY	4900 JEFFERSON ST NE # D	1/27/17	JK X	
9649	AZ AUTOMOTIVE INC	4932 JEFFERSON ST NW	1/26/17	JK X	
9228	MAACO *	4701 MCLEOD RD NE	1/31/17	JK X	
9311	AVIS RENT A CAR	4770 MONTGOMERY BLVD NE # C113	1/30/17	JK X	
9314	ENTERPRISE RENT-A-CAR	4740 PAN AMERICAN EAST FWY NE		Y	Not @ location
35739	D DAE RECOVERY	4809 PONDEROSA AVE NE		X	ADDRESS IS RESIDENCE
7562	JUST BRAKES	3913 SAN MATEO BLVD NE	1/30/17	JK X	
23345	U-HAUL MOVING-STGE AT SN MATEO	4020 SAN MATEO BLVD NE	1/30/17	JK Y	
37027	U-HAUL TRAILER HITCH SUPER CTR	4020 SAN MATEO BLVD NE			
8326	DR J'S AUTO CLINIC	4201 SAN MATEO BLVD NE		JK	IS NOW BIG BROS/SISTER DONATION CTR.
23588	TECHNA GLASS	4220 SAN MATEO BLVD NE	1/30/17	JK	
8405	JIFFY LUBE	4220 SAN MATEO BLVD NE			
9557	BRAKE MASTERS	4900 SAN MATEO BLVD NE			

* COME BACK TUES, WEDS. MID-DAY

Check to see if this was already done (I'm pretty sure it was!) -JK

4/2/12

NOT @ location IRS: 11 20
closed: 4
Changed Business: IIII 9
Inspected. HHT-HH
15

Group 11					
AssetID	Company	Address	Date Inspected	Inspector	Notes
4127	A ONE COLLISION	2370 AZTEC RD NE	1/31/17	JK	
4128	SILVER STAR AUTO HAUS	2370 AZTEC RD NE			
~~4493~~ 2/16/17	PHILIP & SONS MECHANIC & TIRE	2501 AZTEC RD NE			
6199	U-HAUL NEIGHBORHOOD DEALER	3201 AZTEC RD NE	—	JK	IS NOW AZTEC STORAGE (STORAGE UNITS)
6929	NEW MEXICO GEAR & CLUTCH	3512 BRYN MAWR DR NE	1/31/17	JK	
6958	MTS MOBILE TRUCK REPAIR SVC	3521 BRYN MAWR DR NE	—	JK	IS NOW PANAVISION NM
5270	R H B INC — AMERICAN AUTO CLINIC	2825 CANDELARIA RD COME BACK	1/31/17	JK	
31320	7 DAYS AUTO GLASS	2007 CANDELARIA RD NE	1/31/17	JK	~~#~~ IS NOW PHO 79 VIET. RESTAURANT
3352	INTERSTATE AUTO — OTERO'S TIRE SHOP	2101 CANDELARIA RD NE	—		IS NOW TIRE SHOP
3353	MORALES TINT	2101 CANDELARIA RD NE	—		
4573	PERFORMANCE RADIATOR	2505 CANDELARIA RD NE	1/31/17	JK	
5271	AMERICAN AUTO CLINIC	2825 CANDELARIA RD NE	2/7/17	JK	
6294	NEW MEXICO TINT	3219 CANDELARIA RD NE	2/2/17	JK	
21855	TINT MASTERS INC	3000 CARLISLE BLVD NE	2/2/17	JK	
31312	~~24 7 AUTO GLASS~~	2001 CANDELARIA RD NE	2/2/17		#ADDRESS IS MOTEL 1
6354	WORLDWIDE AUTOMOTIVE INC OLD	3232 GIRARD BLVD NE	2/3/17	JK	
6807	TOM QUIRK AUTOMOTIVE	3434 GIRARD BLVD NE	2/3/17	JK	
10128	JIM'S FINE CAR SVC & PARTS	5110 HEADINGLY AVE NE	2/8/17	JK	
35335	A1 SPEEDY TOWING	3402 MONTCLAIRE DR NE			Residence
21801	T & D ENTERPRISES LLC	2937 MORNINGSIDE DR NE			Residence
6912	`	3502 PAN AMERICAN FWY NE			
31390	~~AMERCO~~	~~3101 PRINCETON DR NE~~	1/31/17		NOT FOUND
5878	U-HAUL MOVING-STGE AT	3103 PRINCETON DR NE	1/31/17	JK	
36249	L & M EMISSIONS	2930 SAN MATEO BLVD NE	2/2/17	JK	EMISSIONS & GAS STATION
6480	FASTEST EMISSIONS	3310 SAN MATEO BLVD NE CLOSED	~~2/2/17~~	JK	EMISSIONS BLDG ONLY
22474	~~WEST MESA AUTO CRAFTS INC~~	3315 SAN MATEO BLVD NE	2/2/17	JK	BUSINESS IS CENTURY LINK
6547	J & K AUTO	~~3325~~ SAN MATEO BLVD NE	2/3/17	JK	
46556	J K AUTOMOTIVE LLC	3331 SAN MATEO BLVD NE			
6349	DIETER'S GERMAN CAR SPECLSTS	3230 VASSAR DR NE	2/6/17	JK	
32532	VALDIVIESO AUTO REPAIR	3621 WELLESLEY DR NE # B			Residence

2/2/17

NOT FOUND - Res: 1 1
Closed:
Changed Business: |||| 4
Inspected: ++++ 4
9

Group 12					
AssetID	Company	Address	Date Inspected	Inspector	Notes
35316	~~7 DAYS AUTO GLASS~~	2500 CARLISLE BLVD NE	—		
4709	FIRESTONE COMPLETE AUTO CARE	2536 CARLISLE BLVD NE	2/6/17 ✓	JK	SEE ATTACHED NOTE
3451	UNITED TRANSMISSIONS	2118 CLAREMONT AVE NE	2/7/17	JK	
6327	FIVE STAR TOWING	3229 CLAREMONT AVE NE	2/7/17	JK	
6687	SOUTHWEST COLLISION CRAFTSMEN	3401 CLAREMONT AVE NE	2/7/17 ✓ 2/9/17	JK	~~COME BACK~~
3165	~~DESERT REFLECTIONS WINDOW TINT~~	2019 MENAUL BLVD NE			
5275	DR J'S TRANSMISSIONS	2827 GIRARD BLVD NE	2/7/17 ✓ 2/9/17	JK	~~COME BACK~~
4278	KNITTLE'S TOWING INC	2412 JEFFERSON ST NE	2/7/17	JK	
4379	~~MOVING ON~~	~~2428 JEFFERSON ST NE~~	2/7/17	JK	IS NOW MAC CONSTRUCTION
6285	ALBUQUERQUE AUTO TECH	3216 LOS ARBOLES AVE NE	2/7/17	JK	
4583	PERFECTION AUTO CRAFT	2505 MADISON ST NE	2/8/17	JK	
32339	~~SAME DAY AUTO GLASS REPAIR~~	2020 MENAUL BLVD NE	—		
3389	~~LUCKY STRIPES & SIGNS INC~~	2107 MENAUL BLVD NE	—		
31432	~~AUTO GLASS OPEN 7 DAYS~~	2108 MENAUL BLVD NE	—		
31882	~~INSURANCE CLAIMS AUTO GLASS~~	2120 MENAUL BLVD NE	—		
4424	~~TINT N WRAPS~~	2440 MENAUL BLVD NE	—		
4770	~~U-HAUL~~ →	2601 MENAUL BLVD NE	—	JK	2/10/17 IS NOW DLB U-SELL-IT Vehicles Storage
6946	~~EXPRESS EMISSIONS TESTING~~	3520 MENAUL BLVD NE	—		
7551	BILL & MIKE'S AUTOMOTIVE	3910 MENAUL BLVD NE	2/7/17	JK	
8126	MASTERS TOUCH AUTOMOTIVE	4113 MENAUL BLVD NE	2/6/17	JK	
9603	~~PETE'S GARAGE~~ ZIA AUTO SALES & REPAIR →	4907 MENAUL BLVD NE	2/14/17	JK	2/10/17 COME BACK
2808	~~ALL AROUND WINDOW TINTING~~	1915 MENAUL BLVD NE # 7	—		
4263	MASTERTECH AUTO →	2408 MORNINGSIDE DR NE	2/9/17	JK	
4287	TRANSTAR INDUSTRIES INC	2415 PHOENIX AVE NE	2/7/17	JK	
32569	WILSON'S U JOINT & DRIVE SHAFT	2230 PHOENIX AVE NE # C	2/7/17 ✓ 2/9/17	JK	~~COME BACK~~
8819	DAVE'S GARAGE S OF Menaul WASHINGTON TO PROSPECT →	4410 PROSPECT AVE NE	2/9/17	JK	
4383	~~GARAGE AUTO WORKS~~	2429 QUINCY ST NE	2/10/17	JK	NOT THERE, IS NOW SUITE OF BUSINESSES
4584	BOBBY JOE'S AUTO SVC →	2505 QUINCY ST NE	2/10/17	JK	
4485	~~ASAP AUTO GLASS & DETAILING~~	2500 SAN MATEO BLVD NE	—		
4688	~~QUICK CHECK EMISSIONS TESTING~~	2529 SAN MATEO BLVD NE	—		
4983	AFFORDABLE TIRE & SVC	2703 SAN MATEO BLVD NE			DID NOT GO ON 2/10 BECAUSE THEY COOKED VERY BUSY! GO BACK
35753	~~DATA MECHANICS~~	2717 SAN MATEO BLVD NE ←	IN STRIP MALL —	JK	NOW AMERICAN EAGLE 2/10/17
4188	ALL IN THE WRIST AUTO REPAIR	2400 SAN MATEO PL NE	2/14/17	JK	
4189	BOB RAUGHT AUTO REPAIR	2400 SAN MATEO PL NE	"	JK	
19941	~~INSURANCE CLAIMS AUTO GLASS~~	1901 UNIVERSITY BLVD NE	—		
2754	AVIS RENT A CAR *	1901 UNIVERSITY BLVD NE	—		

* OFFICE IN HOTEL, STORE RENTAL CARS IN HOTEL PARKING LOT. - NO DISCHARGE POTENTIAL

Group 12					
AssetID	Company	Address	Date Inspected	Inspector	Notes
19941	INSURANCE CLAIMS AUTO GLASS	1901 UNIVERSITY BLVD NE			Hotel
2754	AVIS RENT A CAR	1901 UNIVERSITY BLVD NE			Hotel
2808	ALL AROUND WINDOW TINTING	1915 MENAUL BLVD NE # 7			
31432	AUTO GLASS OPEN 7 DAYS	2108 MENAUL BLVD NE			Not shown in Google Maps
3165	DESERT REFLECTIONS WINDOW TINT	2019 MENAUL BLVD NE			2111 Suite B, Menaul Blvd
31882	INSURANCE CLAIMS AUTO GLASS	2120 MENAUL BLVD NE			Not shown in google maps
32339	SAME DAY AUTO GLASS REPAIR	2020 MENAUL BLVD NE			Hotel
32569	WILSON'S U JOINT & DRIVE SHAFT	2230 PHOENIX AVE NE # C			
3389	LUCKY STRIPES & SIGNS INC	2107 MENAUL BLVD NE			
3451	UNITED TRANSMISSIONS	2118 CLAREMONT AVE NE			
35316	7 DAYS AUTO GLASS	2500 CARLISLE BLVD NE			Hotel
35753	DATA MECHANICS	2717 SAN MATEO BLVD NE			Not shown in Google Maps
4188	ALL IN THE WRIST AUTO REPAIR	2400 SAN MATEO PL NE			
4189	BOB RAUGHT AUTO REPAIR	2400 SAN MATEO PL NE			
4263	MASTERTECH AUTO	2408 MORNINGSIDE DR NE			
4278	KNITTLE'S TOWING INC	2412 JEFFERSON ST NE			
4287	TRANSTAR INDUSTRIES INC	2415 PHOENIX AVE NE			
4379	MOVING ON	2428 JEFFERSON ST NE			
4383	GARAGE AUTO WORKS	2429 QUINCY ST NE			
4424	TINT N WRAPS	2440 MENAUL BLVD NE			
4485	ASAP AUTO GLASS & DETAILING	2500 SAN MATEO BLVD NE			
4583	PERFECTION AUTO CRAFT	2505 MADISON ST NE			
4584	BOBBY JOE'S AUTO SVC	2505 QUINCY ST NE			
4688	QUICK CHECK EMISSIONS TESTING	2529 SAN MATEO BLVD NE			Not shown in google maps ✓
4709	FIRESTONE COMPLETE AUTO CARE	2536 CARLISLE BLVD NE			
4770	U-HAUL	2601 MENAUL BLVD NE			Affordable Auto + Truck connection
4983	AFFORDABLE TIRE & SVC	2703 SAN MATEO BLVD NE			
5275	DR J'S TRANSMISSIONS	2827 GIRARD BLVD NE			
6285	ALBUQUERQUE AUTO TECH	3216 LOS ARBOLES AVE NE			
6327	FIVE STAR TOWING	3229 CLAREMONT AVE NE			
6687	SOUTHWEST COLLISION CRAFTSMEN	3401 CLAREMONT AVE NE			
6946	EXPRESS EMISSIONS TESTING	3520 MENAUL BLVD NE			
7551	BILL & MIKE'S AUTOMOTIVE	3910 MENAUL BLVD NE			
8126	MASTERS TOUCH AUTOMOTIVE	4113 MENAUL BLVD NE			
8819	DAVE'S GARAGE	4410 PROSPECT AVE NE			
9603	PETE'S GARAGE	4907 MENAUL BLVD NE			Zia Automotive Repair

Group 13					
AssetID	Company	Address	Date Inspected	Inspector	Notes
16183	A J'S AUTO RESTORATION	10210 EDEN CT NE			Residential
17120	VALVOLINE INSTANT OIL CHANGE	1101 JUAN TABO BLVD NE	2/15/17	A. Lewis	
17461	HINNEN CORP (Midas)	1129 JUAN TABO BLVD NE	2/15/17	A. Lewis	Midas
17613	CLASSIC CUSTOM COLLISION	11509 PRINCESS JEANNE AVE NE			Residential
17835	BRAKE MASTERS	1200 JUAN TABO BLVD NE	2/14/17	J. K	
17836	WALKER RADIATOR	1200 JUAN TABO BLVD NE	2/14/17	A. LEWIS	
18148	UNITED TRANSMISSIONS INC	1228 JUAN TABO BLVD NE # B	2/15/17	A. Lewis	
18240	ALL PRO TOWING & RECOVERY INC	12412 CONEJO RD NE			Residential
18500	ABC EXPRESS EMISSIONS	1300 JUAN TABO BLVD NE # D			Emissions
18635	DON'S AUTO & SVC CTR	1314 WYOMING BLVD NE	2/14/17	E. Bastian	
18699	2020 BLIND CUSTOMS	13228 SKYVIEW AVE NE			Residential
19182	FIRESTONE COMPLETE AUTO CARE	1501 JUAN TABO BLVD NE	2/14/17	E. Bastian	
19379	JIFFY LUBE	1600 JUAN TABO BLVD NE	2/14/17	JK	
19883	BACA FABRICATION RESTORATION	184 MONTE ALTO PL NE			Residential
26291	HARLOW'S COMPLETE AUTOMOTIVE	640 JUAN TABO BLVD NE	2/21/17	JK	
26897	AUTO REPAIR COLOR CREATIONS	708 LANDMAN PL NE			Residential
27500	BUDGET RENT A CAR	800 JUAN TABO BLVD NE	2/15/17	A. Lewis	Rental Agency
27504	QUIK CHECK CORP	800 JUAN TABO BLVD NE			Strip Mall
29661	ENTERPRISE RENT-A-CAR	9433 LOMAS BLVD NE	2/15/17	E. Bastian	Rental Agency
39128	J & R SPECIALIZED AUTO	1220 EUBANK BLVD NE # B			Big Brothers
39570	STEVIE RENO MECHANIC	11208 BELLAMAH AVE NE			Residential
44280	J & A AUTOMOTIVE TOUCH UP	701 JEWEL PL NE			Residential
44457	NEW MEXICO ALLIANCE AUTO SVC	701 VISTA ABAJO DR NE			Residential
44669	TRUTECH AUTOMOTIVE & FLEET	800 CHELWOOD PARK BLVD NE # C			Residential
46269	FASTTEST EMISSIONS	950 EUBANK BLVD NE			Emissions

+ 15826 STEEL LIZARD OFFROAD, 10025 ACOMA RD SE

Group 14

AssetID	Company	Address	Date Inspected	Inspector	Notes
15952	KINETIC IMPROVEMENT	10108 COCHITI RD SE	2/16/17	JK	~~Residential~~ VACANT BUSINESS
NEED 2 15969	HOTTIES AUTO REPAIR	10110 ACOMA RD SE	2/16/17	JK	NO SIGN FOR IN'S BUSINESS; APPEAR TO BE DOING PAINTING W/NO PAINT BOOTH
16106	KLC AUTO BODY & DETAIL	10200 BELL AVE SE			CAR TIME AUTO SALES?
16418	ANTON'S AUTO HAUS	10401 CENTRAL AVE NE	2/16/17	JK	
16734	U-HAUL NEIGHBORHOOD DEALER	10625 CENTRAL AVE NE	2/16/17	JK	
16759	~~DUKE CITY AUTOMOTIVE SVC~~ (WILL BE) GOOD SCARE	10700 CENTRAL AVE SE	~~2/20~~ 2/22		*MAYBE COME BACK IN MONTH +
16967	JEFFS SAAB SHOP	10908 ACOMA RD SE	2/22/17	EB	
17307	GILSON'S AUTO BODY SHOP	11120 CENTRAL AVE SE	2/21/17	JK	
17362	EAGLE TOWING LLC + Randy's	11200 CENTRAL AVE SE	2/21/17	EB/JK	
17392	~~A-B-C EXPRESS EMISSIONS~~	~~11201 HERMAN ROSER AVE SE~~	—	—	emissions
17500	AA-GREG'S TOWING	11316 COCHITI RD SE	2/23/17	JK	~~come back~~ ✓
17524	A-1 FRAME REPAIR	11404 COCHITI RD SE			Come back
17537 Lobo	~~ALLSTATE~~ TOWING INC	11412 CENTRAL AVE SE	2/21/17	EB	
17546	~~L & H MOBILE AUTOMOTIVE SVC~~	~~11417 LINN AVE NE # S6~~			Mobile Home Park NOT Business
17605	BODYWORKS BY R & C	11505 CENTRAL AVE NE	2/21/17*		*COME BACK
17959	HANS WITTLERS AUTOMOTIVE SVC	121 ELIZABETH ST NE	2/22/17	EB	
17993	ALLEN'S AUTOMOTIVE INC	12115 CENTRAL AVE NE	*2/21/17		*COME BACK
18226	CRUISE AMERICA RV RENTALS	12400 SKYLINE RD NE	2/21/17	No Inspection	Rental KOA RV Park
18346 Victory	~~MARBRISE~~ AUTO REPAIR INC	12609 CENTRAL AVE NE	2/21/17	JK	
18420	EAST CENTRAL TIRE	12831 CENTRAL AVE NE	*2/21/17		*COME BACK
18653	~~BONO AUTO GLASS~~	~~13170 CENTRAL AVE SE~~	—	—	Glass
18802	VALVOLINE INSTANT OIL CHANGE	13440 WENONAH AVE SE	2/22/17	JK	
20764	ONE STOP AUTOMOTIVE	225 EUBANK BLVD NE	2/22/17	JK	
20945	Q T CAR CARE	239 JUAN TABO BLVD NE	2/15/17	B. Bashion	
21109 ABQ	~~DELTECH~~ AUTOMOTIVE LLC	248 MURIEL ST NE	2/16/17	JK	
21981	A ALBUQUERQUE TOWING	305 CONCHAS ST SE	2/21/17	EB	
22341	TAZ AUTO REPAIR	325 MURIEL ST NE	~~2/16/17~~ 2/21* 2/23/17	EB	*~~COME BACK NEXT WEEK~~ 10 YRS. ✓
22571	YEARWOOD PERFORMANCE CTR	341 EUBANK BLVD NE	PARTS ONLY		
23314	EAST CENTRAL AUTO WRECKING	401 CONCHAS ST SE	2/22/17	EB	*~~come back~~
23485	ABQ TRANSMISSION	416 SHIRLEY ST NE			
23571	DANS AUTOMOTIVE	421 EUBANK BLVD NE	2/22/17	EB	
24461	QUANZ ADVANCED AUTO CARE EAST	501 PAISANO ST NE	2/21/17	EB	
24550	~~ERNESTO'S BODY SHOP~~	~~508 MARTHA ST NE~~			Residential
24612	ADVANTAGE AUTOMOTIVE REPAIR	511 PAISANO ST NE	2/21/17	EB	
27687	~~AUTO TRIM DESIGN OF NEW MEXICO~~	~~808 SUZANNE LA SE~~			Residential
43915	~~24 7 AUTO GLASS~~	~~12901 CENTRAL AVE NE~~	—	—	Glass

Group 14

AssetID	Company	Address	Date Inspected	Inspector	Notes
44082	CRAIG'S WORLD AUTOMOTIVE	10200 BELL AVE SE			
44106	~~DANIEL CHAPMAN MECHANIC~~	~~539 STAGECOACH RD SE~~	—	—	Residential
44107	DANLAR COLLISION & GLASS	221 DORADO PL SE	3/22/17	EB	
44138	~~DYNAMIC AUTO SOLUTIONS~~	~~700 EUBANK BLVD SE # 1424~~	—	—	Residential
44164	~~ENTERPRISE RENT A CAR~~ IS SAME AS 9873 GARZA	501 PAISANO ST NE	—		Rental
44183	F & D AUTOMOTIVE PAINT & BO	1212 WAGON TRAIN DR SE			
44201	FOUR HILLS TURBO CLOSED	12830 CENTRAL AVE SE	2/21/17 closed.		CLOSED Permanently
44223	~~GIOVANNI ALEXANDER MECHANIC~~	~~1131 LOS PADRES ST SE~~	—	—	Residential
44299	JOHN BERLING MECHANIC	809 RIO ARRIBA AVE SE			Residential
44568	~~SAME DAY AUTO GLASS REPAIR~~	~~13139 CENTRAL AVE NE~~	—	—	Glass
44655	~~TOKYO JOE'S~~ AUTOMOTIVE	305 CONCHAS ST SE	2/23/17	JK/EB	
44675	~~U HAUL CO~~ RV Storage Closed	~~12830 CENTRAL AVE SE~~	Closed 2/21/17		Rental closed
9873	~~GARZA COLLISION~~ IS NOW QUARA	501 PAISANO ST NE	2/21/17	EB	

Not on List
Auto Repair
Need Inspection?

Duke City Garage 12035 Central

Central Tire + Auto Performance 11401 Central

Freedom Auto Sales 11421 Central
(Auto detail + repair) (292-2044)

Henry's Auto Service
11300 Linn NE (433-3384)

Group 15

AssetID	Company	Address	Date Inspected	Inspector	Notes
10337	D C M AUTOMOTIVE	522 ALCAZAR ST NE	—	—	Residential
1090	JULIAN'S AUTO REPAIR	121 WISCONSIN ST NE	3/30/17	MZ/EB	closed
1191	~~TOOMEY'S AUTO REPAIR~~	122 UTAH ST NE	3/27/17	MZ/EB	Closed / Now Trailer Supply
1269	ALBUQUERQUE EMISSIONS TESTING	123 SAN PABLO ST NE # 101	—	—	Emissions
1270	F & G AUTO REPAIR	123 SAN PABLO ST NE # 8	3/29/17	MZ/EB	closed
1272	BEAR NUT UPHOLSTERY	123 TENNESSEE ST NE # B	3/27/17	EB/MZ	moved
13083	CAMPOS TIRE SHOP	6916 ZUNI RD SE	3/28/17	MZ/EB	
13167	ALL AROUND WINDOW TINTING	7001 COCHITI RD SE	—	—	Tint
13169	COCHITI AUTO REPAIR	7001 COCHITI RD SE	3/27/17	EB/MZ	
13170	WINDOW FILM EXPERTS	7001 COCHITI RD SE	—	—	tint
13593	COLLISION 1 BODY SHOP	7201 LOMAS BLVD NE	2/28/17	AL + JK	
13935	ZAMORA'S PAINT & BODY	7517 ZUNI RD SE	3/28/17	MZ/EB	
13937	SANDIA MUFFLER	7519 CENTRAL AVE NE	3/29/17	MZ/EB	
13973	ROUTE 66 SVC CTR	7522 CENTRAL AVE SE	3/29/17	EB/MZ	
14122	~~POOR BOYS AUTO REPAIR~~ Horse Power	7710 CENTRAL AVE SE	3/29/17	EB/MZ	Autodetail/Horse Power, No inspection required
14147	AUTOMOTIVE TECHNOLOGIES	7727 ZUNI RD SE	3/28/17	EB/MZ	Tire shop
14241	~~ENTERPRISE RENT-A-CAR~~	7833 LOMAS BLVD NE # A	IS NOW USED CAR LOT		Rental
14263	DEPENDABLE AUTO REPAIR	7900 CENTRAL AVE SE	3/28/17 8:15	EB/MZ	
3/24/17 14291	QUALITY COLLISION REPAIR	~~7901 LOMAS BLVD NE~~ Also Tennessee	= SAME BUSINESS, IS A LARGE COMPLEX		
14299	TOYO AUTO SVC INC	7901 ZUNI RD SE	3/28/17	MZ/EB	
14587	BUSTED KNUCKLE AUTOMOTIVE	8117 CENTRAL AVE NE	3/28/17	MZ/EB	
14588	OLD SKOOL AUTO REPAIR	8117 CENTRAL AVE NE	3/28/17	MZ EB	SAME AS Busted Knuckle
14696	FEDERATED FLEET & AUTOMTV SVC	8207 CENTRAL AVE NE	3/28/17	MZ/EB	
14858	SUPER 6 TOKYO AUTO SVC INC	8500 CENTRAL AVE SE	3/29/17	EB/MZ	
14862	RETRO PAINT & BODY	8506 TRUMBULL AVE SE	3/29/17	MZ/EB	
14873	FOUR LS AUTOMOTIVE	8516 TRUMBULL AVE SE	3/29/17		
14886	IVY PAINT & BODY	8602 CENTRAL AVE SE	3/29/17	EB/MZ	
15767	UNIVERSAL TIRE	10001 SOUTHERN AVE SE # E			
15805	COLLISION MASTERS	10012 COCHITI RD SE # B	3/29/17	MZ/EB	
15826	STEEL LIZARD OFFROAD	10025 ACOMA RD SE	3/30/17	MZ/EB	2nd/Alameda Moving
15940	DESERT SHADE TINT & SHADES	10101 BELL AVE SE	—	—	Tint
1596	GASOLINE ALLEY	138 TENNESSEE ST NE	3/27/17	MZ/EB	
17242	FAST LANE	111 WYOMING BLVD SE	3/29/17	MZ/EB	
1864	EAST MESA AUTO ELECTRIC	145 WISCONSIN ST NE	3/27/17	EB/MZ	
18816	TOM'S RECREATIONAL VEHICLE SVC	136 MOON ST NE	3/30/17	MZ/EB	
1890	MIKE'S AUTO REPAIR	150 VIRGINIA ST NE	3/27/17	EB/MZ	
20592	AUTOMOTIVE HEAD EXCHANGE	218 WYOMING BLVD NE	2/28/17	JK & AL	

Group 15

AssetID	Company	Address	Date Inspected	Inspector	Notes
21909	JAVIS AUTO CARE	301 WYOMING BLVD NE	3/24/17	EB/MZ	Permanently Closed
21981	A ALBUQUERQUE TOWING	305 CONCHAS ST SE	—	—	GROUP 14
23314	EAST CENTRAL AUTO WRECKING	401 CONCHAS ST SE	—	—	
24561	A DISCOUNT TOWING	509 WYOMING BLVD SE			
24686	A B Q AUTO REPAIR	515 WYOMING BLVD SE # F			
247	A REAL MUFFLER SHOP	101 VIRGINIA ST NE	3/27/17	EB/MZ	
24863	FANTASTIC VANS Vantastic	525 WYOMING BLVD NE	3/24/17	EB/MZ	
25608	U-HAUL NEIGHBORHOOD DEALER	600 WYOMING BLVD SE			
25787	DOCTOR JAG MASTER OF MASTERS	610 GENERAL PATCH ST SE # A			Motiva/morning
27050	BUDGET NATIONWIDE TRANS INC	725 WYOMING BLVD NE	3/27/17	MZ/EB	
27310	WOODY'S PAINT & BODY SHOP	7700 LOMAS BLVD NE	*3/24/17	MZ	*NEED 2
27869	FIRESTONE COMPLETE AUTO CARE	8157 GIBSON BLVD SE			
28846	TAMERLANE Return 3/30/17	8820 SUSAN AVE SE # 1	3/30/17	MZ/EB	Moved
28849	ABQ TINT PROS	8820 SUSAN AVE SE # 2D	—	—	Tint
28854	BODY MASTER	8840 SUSAN AVE SE	3/29/17	MZ/EB.	
29598	JAY WALTON AUTOMOTIVE	9401 CENTRAL AVE NE	3/2/17	JK	
29769	MATSCO TRANSMISSIONS & AUTO	9517 CENTRAL AVE NE	*3/2, 3/28,		*COME BACK
29887	ALL SEASONS TINT & ALARM	9617 CENTRAL AVE NE # B	—	—	Tint
29889	STREET TOYS CUSTOM & COLLISION	9617 CENTRAL AVE SE	3/28/17	EB/MZ	Closed
29900	BODY SHOP	9618 1/2 COCHITI RD SE	3/29/17	MZ/EB.	
30001	HODGES AUTOMOTIVE REPAIR	9718 TRUMBULL AVE SE	3/29/17	EB/MZ	
30114	BODYCRAFT AUTOBODY	9809 COCHITI RD SE	3/30/17	MZ/EB	BRAHS BSI Solutions
30169	BUDLONG MOTORSPORTS	9900 TRUMBULL AVE SE	3/29/17		
30244	~~A-1 S FOR ACTIVE PAINT & BODY~~ ARC	9920 TRUMBULL AVE SE	3/29/17	EB/MZ	
30446	MACY'S TOWING LLC	8401 ZUNI RD SE	3/29/17	EB/MZ	
32790	CLASSIC TOYS AUTO PAINT & BODY	112 VERMONT ST NE	3/27/17	MZ/EB	Residence/PermClosed
32791	CLARK'S AUTO CARE	113 TEXAS ST NE	—	—	Not A Business.
32874	DUKE CITY AUTO BODY Return Thurs	121 TENNESSEE ST NE			
32928	FRANK E Z PAINT & ~~BODY WORKS~~	~~123 SAN PABLO ST NE~~ # 5	3/29/17	MZ/EB	closed
33043	J R S AUTOMOTIVE	632 LOUISIANA BLVD SE			
33159	~~MCNALLS AUTO REPAIR~~ Invisible	123 SAN PABLO ST NE # 6	3/29/17	EB/MZ.	
33218	NMIADA	608 CHAMA ST NE	3/27/17	EB/MZ	~~Do~~ ~~Office~~ Only
33242	ONTINERO'S BODY SHOP –	6912 ACOMA RD SE	3/30/17	MZ/EB	MGM
33281	RBM AUTOMOTIVE	119 DALLAS ST NE	3/28/2017	MZ/EB	
33419	SUPERIOR CUSTOMS AUTOMTV 341-3719	115 TEXAS ST NE	*come back		
33450	TINT GUY	7615 CHICO RD NE	—	—	Tint
33492	V TECH	300 CHARLESTON ST SE	3/28/17	MZ-EB.	Review For Annual Visits

Monthlies

Group 15

AssetID	Company	Address	Date Inspected	Inspector	Notes
33533	X STREAM AUTO IMPROVEMENTS	509 LOUISIANA BLVD SE # 47	3/30/17	MZ/EB	No Business
35967	GARCIA AUTOMOTIVE GROUP	8201 LOMAS BLVD NE			
36681	QUALITY COLLISION REPAIR	815 TENNESEE ST	3/28/17 ~~3/28/17~~	JC/JK	~~ACCOMENBANK~~
2 ~~3~~ 43930	A ~~OK TOWING & RECOVERY SVC~~	502 GENERAL PATCH ST SE	3/30/17	MZ/EB	BullFrog - closed
43984	AMERICAN HOLIDAY RV	9999 CENTRAL AVE NE			
44020	BLANCO'S AUTO REPAIR	10000 TRUMBULL AVE SE	3/30/17		Moved
3 ~~2~~ 44063	CINEMA VEHICLE SVC	608 GENERAL CHENNAULT ST SE	3/30/17	MZ/EB	
44165	ENTERPRISE RENT-A-CAR	9401 CENTRAL AVE NE	—	—	Rental
4 44184	F & S TRANSMISSIONS	121 GENERAL PATCH ST NE	3/30/17	MZ/EB	NOW F+G Auto
44376	M & M TIRES SHOP	210 WYOMING BLVD NE	2/28/17	JK/AC	CLOSED, ONLY OPEN AFTER 5
44631	SUSPENSION SPECIALIST AUTO	10000 TRUMBULL AVE SE	3/30/17	MZ/EB	Moved
44637	T & L AUTOMOTIVE LLC	111 WYOMING BLVD SE			
44640	TACTICAL APPLICATION VEHICLES	9920 TRUMBULL AVE SE # 2	3/29/17	MZ/EB	
44655	TOKYO JOE'S AUTOMOTIVE	305 CONCHAS ST SE	—	—	In Group 14 V see ABQ Towing
→ 44689	VICTOR SOLESKY MECHANIC	525 WYOMING BLVD NE	3/24/17	EB/MZ	Same As Fantastic Vans
45802	PRECISION AUTO INSPECTION	7301 CENTRAL AVE NE	3/28/17	EB/MZ	Now Recarnation
45943	AUTOMOTIVE SPECIALISTS	135 WYOMING BLVD NE			
— 46233	MACYS TOWING LLC	8401 ZUNI RD SE	3/29/17	EB/MZ listed	twice w/2 Assist ID (#30446)
— 46440	RECARNATION RENTAL CAR & TITLE	7301 CENTRAL AVE NE	3/28/17	EB/MZ	Rental
5830	TRANG'S AUTOMOTIVE	309 ALCAZAR ST SE	3/28/17	EB/MZ	
— 752	ELITE RIDES AUTOMTV REPAIR CTR	112 VERMONT ST NE	3/27/17	EB/MZ	Residence/P. closed
— 753	PARRA'S PAINTING BODY SHOP	112 VERMONT ST NE	3/27/17	EB/MZ	Residence/P. closed
— 754	M & M AUTO REPAIRS	112 VIRGINIA ST NE	3/27/17	EB/MZ	
— 957	ALBUQUERQUE RADIATOR SVC	119 TENNESSEE ST NE	3/27/17	MZ/EB	
9877	SOUTHWEST SPEED	501 SAN PABLO ST NE	—	—	Residential

Boarded Window

Notify Chad/City Regarding VTech + F+G Auto

Blancos + Suspension moved To 1021? Trumbell Zone-14 completed unknown?

Bud Long ~~Moved~~ moved to Susan St.

Group 16 - COA IDDE

AssetID	Company	Address	Date Inspected	Inspector	Notes
12315	NOBLE AUTOMOTIVE SVC	6319 ACOMA RD SE	4/19/17	EB/JK	
33283	REBEL CUSTOMS AUTOMTV REPAIR	6320 ACOMA RD SE	4/19/17	EB/JK	
2745	RICK'S AUTO REPAIR	1901 ALVARADO DR NE	4/28/17	" "	
3671	MTS MOBILE TRUCK REPAIR SVC	2201 BUENA VISTA DR SE	5/8/17	MZ	Office/Ball Aerospace
~~6718~~	~~SHADE TREE CUSTOMS & CAFE~~	~~3407 CENTRAL AVE NE~~			Non existent
~~9088~~	~~FIRESTONE COMPLETE AUTO CARE~~	~~4601 CENTRAL AVE NE~~	5/5/17	MZ/DD	
~~12751~~	~~ALTERNATIVE AUTOMOTIVE REPAIR~~	~~6616 CENTRAL AVE SE~~	4/19/17	EB/JK	Closed. Now A1s upholstery
14647	SHOP AUTOMOTIVE LLC	820 COAL AVE SE			Return
~~10487~~	~~S & H SPEED & CUSTOM~~	~~5312 COAL AVE SE~~			
~~33319~~	~~S & H SPEED & CUSTOMS~~	~~5312 COAL AVE SE~~			
~~10725~~	~~AUTOMOTIVE PAINT SUPPLY~~	~~5500 COAL AVE SE~~	5/8/17	DD/MZ	New English Color
46414	D W S BADASS CUSTOMS	6405 COCHITI RD SE	4/20/17	AL/EB	Permanently closed
45766	RETRO PAINT & BODY	6405 COCHITI RD SE	4/20/17	AL/EB	Permanatly Closed
46411	CASTRO'S BODY SHOP	331 FLORIDA ST SE	4/19/17	EB/JK	Closed. Now a Jewelry Store
10881	SOLITAIRE CUSTOMS	5600 GIBSON BLVD SE	4/20/17	EB/AL	Apartment complex
11133	BRAKE MASTERS	5749 GIBSON BLVD SE	4/20/17	EB/AL	
11210	JIFFY LUBE	5812 GIBSON BLVD SE	4/20/17	EB/AL	
815	SACCO AUTOMOTIVE	1131 INDIANA ST SE	4/20/17	EB/AL	
~~4249~~	~~PADILLA'S AUTOMOTIVE SVC~~	~~2405 LEAD AVE SE~~			Perm Closed
~~8765~~	~~JIM'S AUTOMOTIVE~~	~~4401 LEAD AVE SE~~	5/5/17		
46404	AUTO 1 KUSTOMZ	6429 LINN AVE NE	5/8/17	MZ	PERM CLOSED
1415	CAR STOP TOWING SVC	1301 LOMAS BLVD NE	4/26/17	EB/JK	
2141	~~CARSTAR AUTO BODY REPAIR EXP~~ GALLES	1601 LOMAS BLVD NE	4/26/17	" "	
8090	NORTHEAST AUTO ELECTRIC INC	4101 LOMAS BLVD NE	4/28/17	" " AL/MB	~~Come back~~
23870	Noblecars ~~NOB HILL~~ COMPLETE AUTO & AC	4505 LOMAS BLVD NE	5/3/17 ~~4/26/17~~	~~JK/~~EB	~~Come back~~
9435	JIFFY LUBE	4802 LOMAS BLVD NE	4/24/17	EB/JK	
9490	C & S QUALITY AUTOMTV REPAIR	4815 LOMAS BLVD NE	4/24/17	JK/EB	
9908	DANNY'S AUTO SVC	5018 LOMAS BLVD NE	4/26/17	JK/EB	
45776	AAMCO TRANSMISSIONS	6629 LOMAS BLVD NE	4/26/17	" "	
10403	MASTERCRAFT AUTOMOTIVE	528 MADISON ST NE	4/24/17	EB/JK	
21702	~~CORONA'S TOWING~~	~~2908 MULBERRY ST SE~~	5/8/17	MZ	Residence
~~1394~~	~~ENCHANTMENT AUTO COLLISION RPR~~	130 PALOMAS DR NE	5/5/17	MZ/DD	Carcrafters
~~18491~~	~~HOFFMANTOWN BODY SHOP INC~~	130 PALOMAS DR NE			Now
30500	DUKE CITY GARAGE	2001 RANDOLPH RD SE # B	5/8/17	MZ	~~Carcrafters~~ American Auto Upholstery
~~875~~	~~HOUSE OF COVERS~~	~~115 RICHMOND DR NE~~			
~~2983~~	~~C O VO AUTOMOTIVE~~	~~2001 RIDGECREST DR SE~~			Closed Perm
~~3120~~	~~VO C O'S AUTOMOTIVE~~	~~2010 RIDGECREST DR SE~~			Closed Perm
3525	UPTOWN ~~AUTO REPAIR~~ LLC	2133 SAINT CYR AVE SE	5.19.17	MZ/CS	
~~5450~~	~~JERRY'S CUSTOM MARINE & AUTO~~	~~2921 SAN JOAQUIN AVE SE~~			Res
618	SAN MATEO AUTOMOTIVE	1109 SAN MATEO BLVD NE	5/3/17	AL/MB	
1039	JIFFY LUBE	1201 SAN MATEO BLVD NE	Done	?	
2452	FERRARI CUSTOM	1717 SAN MATEO BLVD NE	4/28/17	tint no inspection EB/JK	
19000	DUKE CITY DENT	1417 SAN MATEO BLVD NE # A	4/28/17	No Inspection EB/JK	
~~13639~~	~~ULTIMATE TOUCH UP PAINT & BODY~~	~~722 SAN MATEO BLVD SE~~	5/5/17	DD/MB	come back
13754	FAST ACTION AUTO	734 SAN MATEO BLVD SE	5/3/17	AL/MB	
14540	DISCOUNT RADIATOR & EXHAUST	807 SAN MATEO BLVD SE			come back
1536	START RECYCLING	1325 SAN MATEO BLVD SE	~~AL~~ 5/3/17	AL/MB	
1687	A-PLUS AUTOMOTIVE	1408 SAN MATEO BLVD SE	5/3/17	AL/MB	
33491	V M P	1425 SAN MATEO BLVD SE	5/3/17	AL/MB	
6006	DENT ERASERS	315 SAN PEDRO DR NE			
6008	ROC LA LU AUTO REPAIR SHOP	315 SAN PEDRO DR NE	4/20/17	EB/AL	
6475	RAY'S CAR CARE	331 SAN PEDRO DR NE	4/20/17	EB/AL	
6595	CLASSIC PAINT & BODY	333 SAN PEDRO DR NE	4/20/17	EB/AL	
6731	AUTO CLINIC & TRANSMISSIONS	341 SAN PEDRO DR NE	5/8/17	MZ	~~Come back~~ 5/8 MZ
2570	FOREIGN AIDE INC	1800 SAN PEDRO DR NE	4/28/17	EB/JK	
3460	~~PLAINS AUTO REPAIR & REFRIG~~ Auto 1	212 SAN PEDRO DR SE	4/20/17	AL/EB	now Auto One
3461	SPEEDY TOW & RECOVERY	212 SAN PEDRO DR SE	4/20/17	AL/EB	nonexistent
6246	MONTOYA'S PAINT & BODY	321 SAN PEDRO DR SE	4/20/17	AL/EB	
1339	HALE'S AUTOMOTIVE & TRIM	125 VALENCIA DR NE # D	5.19.17	MZ/CS	Perm closed
1700	MR B'S PAINT & BODY	1410 VALENCIA DR SE	4/25/17	JK/EB	
2693	~~TONY'S RECREATIONAL VEHICLE~~	1831 WILMOORE DR SE	5.19.17	MZ/CS	
8240	DUKE CITY BODY REBUILDING	418 YALE BLVD SE			Return
1716	Alders Son	1413 San Mateo	4/28/17	JK/EB	Jerk!

Group 16 - COA IDDE

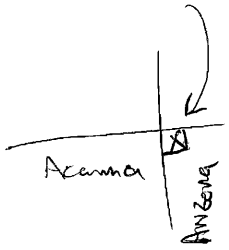
9789	SUPER TECH AUTO SVC	500 YALE BLVD SE	~~EB~~ MT/AL	6/7/17	perm closed
30459	D S J AUTO SVC	1117 YALE BLVD SE	MT/AL	6/7/17	
2153	SANDIA COLLISION	1601 YALE BLVD SE	MT/AL	6/7/17	
31295	YALE AUTO	1713 YALE BLVD SE	MT/AL	6/7/17	Perm. closed.
11923	~~ROUTE 66 PAINT & BODY~~	6127 ZUNI RD SE	EB/AL	4/20/17	
11954	~~MAACO~~	6147 ZUNI RD SE	EB/AL	4/20/17	Closed perm.
12710	HOGAN'S AUTO ELECTRIC	6601 ZUNI RD SE	EB/AL	4/20/17	closed perm.
12744	~~WALT'S TOP SHOP INC~~	6611 ZUNI RD SE	EB/AL	4/20/17	

Shops not included in city ~~listing~~ database.

① Mogel 319 Florida Automotive

② Fix 'N' Paint
collision repair and auto painting
6327 ~~Edith~~ cochiti rd se, ABQ 87108
505 200 2892

③ Auto Contracter collision repair
6318 Acoma



③ Red's Automotive
~~312~~ 312 Dakota St SE
505-256-1962

④ Premier collision center
4107 Comas
505-266-8828

~~Alders San~~
Alders San
1413 San Mateo NE
completed Inspection
add to list!

Group 17 - COA IDDE
1 of 2

AssetID	Company	Address	Date Inspected ReturnDate?	Closed/Ownership Change /Moved/Residential	Not Applicable Tint/Rentals/Emissions/Interior/Other	Notes
10828	ENTERPRISE RENT-A-CAR	5522 2ND ST NW	See note		Rental	Rental
11667	P J'S CLASSIC STOP	6022 2ND ST NW	6/14/17			Have city contact ★, could not locate.
45740	J TANNY'S AUTO TRIM	6204 2ND ST NW	6/14/17			AC
32249	QUALITY SOURCE AUTOMOTIVE	6345 2ND ST NW	6/14/17			AC
32128	NEW MEXICO AUTOMTV CONSLTNG	7424 2ND ST NW	6/14/17			AC
13938	NORTH VALLEY AUTO REPAIR	7516-B 2ND ST NW	6/14/17		Rental	Rental
14069	U-HAUL NEIGHBORHOOD DEALER	7625 2ND ST NW				
41419	SONSHINE COLLISION	8506 2ND ST NW	6/22/17			go back. AC
28819	CHRISTIAN'S AUTOMOTIVE SSPNSNS	8811 2ND ST NW	6/14/17			AC
12209	BROOKS AUTO REPAIR CORP	6300 2ND ST NW # B	6/14/17			AC
11057	JIFFY LUBE	5701 4TH ST NW	6/14/17			AC. Appears perm. closed
11071	MBS MUFFLER & BRAKE SPEC	5705 4TH ST NW	6/14/17			AC. Does not exist
32070	MEINEKE CAR CARE CTR	5705 4TH ST NW	6/14/17			AC
11524	DON BROWN PARTS & AUTOMOTIVE	6001 4TH ST NW	6/14/17			AC
12824	GERMAN MOTORWERKE	6712 4TH ST NW	6/22/17			CS - MZ
12825	LUIS AUTO REPAIR	6714 4TH ST NW #D	6/9/17			CS - MZ
12923	C A TRANSMISSIONS INC	6777 4TH ST NW	6/9/17			MZ
12925	G & T AUTO SVC INC	6798 4TH ST NW	6/8/17			MZ
14107	DON BROWN PARTS	7702 4TH ST NW	6/8/17			
27466	ENCHANTMENT AUTO SVC	7940 4TH ST NW	6/22/17	6/16 - Early week Robber		6/8 Return. AC
28027	ALBUQUERQUE AUTOMOTIVE	8223 4TH ST NW	6.8.17			MZ
40406	A B Q AUTOMOTIVE LLC	8223 4TH ST NW	6/16/17			CS/AL
12828	FAT MAX CUSTOM	6714 4TH ST NW # C	6/22/17			CS/LH
19226	JIFFY LUBE	151 ALAMEDA BLVD NW	6/2/17	Business changed — Not open yet Come back in August/Fall	Rental Maintenance Other	CS/LH
24729	~~ENTERPRISE RENT-A-CAR~~ Auto Solutions	5200 ALAMEDA BLVD NE	6/2/17			CS-LH
24730	~~MHO OF NEW MEXICO~~	5200 ALAMEDA BLVD NE				
23878	A Z AUTOMOTIVE INC	4509 ALAMEDA BLVD NE # A	6/14/17	Currently Indian Motorcycle Ⓐ	~~Glass~~ Collision	AC. CS/LH
16086	DANLAR COLLISION & GLASS	102 ALAMEDA BLVD NW	6/2/17		Residential	AC
16255	GREENE GARAGE LLC	1028 CAMINO DEL RIO NW	6/22/17			
14854	AL'S BODY SHOP	846 CHAVEZ RD NW	6/16/17			
10707	AA AUTO & AIR COND & LUBE TOO	5450 EDITH BLVD NE	6/8/17			MZ
32326	S & S AUTOMOTIVE INC	5450 EDITH BLVD NE	6/8/17	moved 10804 Central closed		MZ
10945	ROADRUNNER TRANSMISSIONS	5601 EDITH BLVD NE	6/7/17			AL/MZ
11099	DOX AUTO REPAIR	5721 EDITH BLVD NE	6.8.17			AL/MZ
32370	SERVICEONE AUTOBODY REPAIR	6436 EDITH BLVD NE	6.8.17	ZIA Ag consulting closed		MZ
12450	SERVICE ONE AUTO BODY REPAIR	6446 EDITH BLVD NE	6.6.17	closed		MZ
12143	TWISTED METAL PAINT & BODY	6224 EDITH BLVD NE # E	6.8.17	closed - Rio Rancho		MZ
8588	CROWN COACHWORKS	431 EDMON RD NE	6/17/17			MZ/AL
7132	COLONIAL AUTO GLASS	3700 HAWKINS ST NE			Glass	
7229	COMMERCIAL RADIATOR CO	3725 HAWKINS ST NE	6/15/17			AL. Does not exist
7930	WILLIAMS SCOTSMAN	4015 HAWKINS ST NE	6/15/17		Rentals? Ⓑ	AC
9251	AFFORDABLE AUTOMOTIVE	4709 HAWKINS ST NE	6/22/17	? emp		schedule comeback AL.
9252	TOYO MASTERS INC	4709 HAWKINS ST NE	6/22/17	? emp		schedule comeback AL.

National Diesel Mechanical Service 6714 4th St # D

Nat Diesel Mach Service St E

Ⓐ Currently Indian Motorcycle employees says building will be Automotive repair facility. Now is Motorcycle dealer no repairs onsite

Ⓑ Williams Scotsman does building/construction work. Not an auto facility

5 per on Paperwork for site

Group 17 - COA IDDE
2 of 2

AssetID	Company	Address	Date Inspected / ReturnDate?	Closed/Ownership Change /Moved/Residential	Not Applicable: Tint/Rentals/Emissions/Interior/Other	Notes
9333	M & G COLLISION	4800 HAWKINS ST NE	6/15/17			AL. Does not exist
8737	NEW MEXICO CAR CARE	4400 HAWKINS ST NE # C	6/15/17	? sheet ?		AL
7221	ADVANCED TEAM AUTOMOTIVE	3720 HAWKINS ST NE # B	6/15/17	? sheet ?		AL
7275	SNAP PRECISION	3768 HAWKINS ST NE # B Prestige Granite	6/15/17			AL. Does not exist AL
27533	SANTA FE TOW	8000 JACS LA NE	6/19/17	? sheet ?		
28139	U-HAUL NEIGHBORHOOD DEALER	8301 JEFFERSON ST NE			Rentals	
28203	FLASH AUTOMOTIVE INC	8333 JEFFERSON ST NE	6/19/17			AL
9366	OREGON CITY AUTO GLASS	4801 LANG AVE NE			Glass	
34245	HARNESS MECHANIC	4801 LANG AVE NE # 110	6/22/17			AL/EB. Office complex
27435	GO AUTO	7911 LAS LOMITAS NE # B	6/22/17			~~Left~~ DENIED ENTRY Go back
27398	STREET CUSTOM BODY SHOP	7900 LORRAINE CT NE # A				
1904	RYDER	1500 MISSION AVE NE			Rentals	
8001	M N AUTO SHIPPING	405 MONTANO RD	6/23/17		Other	Does not exist
11481	CAR CRAFTERS	600 MONTANO RD NE	6/7/17			AL/MZ
8005	ACCESS ONE AUTO GLASS	405 MONTANO RD NE # 2	6/23/17		GLASS REPAIR	→
11482	HERTZ RENT A CAR	600 MONTANO RD NE # A			Rentals	
6647	E-Z EMISSIONS	340 MONTANO RD NW			Emmissions	
11483	ENTERPRISE RENT-A-CAR	600 MONTANO RD NW			Rental	
24818	DISCOUNT TOWING	521 NIAGARA RD NE	6/23/17			AL/EB. Residential
5675	MILO'S AUTOMOTIVE	301 OSUNA RD NE	6/9/17	Gone Mistranpo		Visit 6/9 - Return
22748	COX TIRE & AUTO Cox	3605 OSUNA RD NE	6/9/17			
✓ 7141	COMMERCIAL VAN INTERIORS	3700 OSUNA RD NE # 506	6/9/17		Interiors	CS/MZ
39990	HAYMES RECOVERY	2401 PAN AMERICAN FWY NE # 2	6/23/17			AL/EB. Residential
34265	HERTZ RENT A CAR	6001 PAN AMERICAN WEST FWY NE			Rentals	
46088	CAMPOS QUALITY CARE	322 PASEO DEL NORTE NE	6/16/17			AL/CS
46089	RTO CENTER	322 PASEO DEL NORTE NE	6/16/17			AL
46090	FIBER WORKS INC	326 PASEO DEL NORTE NE	6/16/17			AL.
27420	ALBUQUERQUE CLASSICS	7901 RANCHITOS LOOP NE # A	6/19/17			AL
15803	CORDOVA'S KREATIONZ	10011 RIVERSIDE RD NW	6/19/17		Residential	AL Residential
41322	RIO GRAND SVC CO	413 ROBIN MEADOW ST NW	6/19/17			AL Residential ©
✓ 40341	TRANSMISSION & DISTRIBUTION	9550 SAN MATEO BLVD NE # G	6/2/17		Office	~~Transmission~~ Eng & Surveying
✓ 24780	~~GE~~ AUTOMATION SVC	5201 VENICE AVE NE	6/2/17	~~Not found~~ No automotive in area		CS & LH Go back Wed, 6/28
28148	MIKES TRANSMISSIONS	8301 WASHINGTON ST NE # 6				

© RIO GRANDE SVC CO address is residential, without access to property (fence) Property has a tow truck on site.

Group 18

AssetID	Company	Address	Date Inspected ReturnDate?	Closed/Ownership Change/Moved/Residential	Not Applicable: Tint/Rentals/Emissions/Interior/Other	Notes
7467	OVERALL SERVICES	3900 12TH ST NW				
7468	WAYNES AUTOMOTIVE	3900 12TH ST NW				
3350	MAACO	2101 1ST ST NW	6/26/17			EB/AC. Permanently closed.
4231	EURO BODY FX	2403 1ST ST NW	6/26/17			EB/AC
4664	STATEWIDE RECOVERY	2524 1ST ST NW	6/26/17			AC/EB
6650	AUTO SPECIALTY SVC SHOP	3400 2ND ST NE				
21025	DUKE CITY AUTOMOTIVE	2415 2ND ST NW	6/26/17			AC/EB DNE
4648	PEREZ COLLISION CTR	2520 2ND ST NW				go back
5024	EASLEY AUTOMOTIVE	2713 2ND ST NW	6/26/17	Residential?		DNE. Call to make sure. Does not appear to be a business.
31525	CAMS STROKED & SPOKED	2717 2ND ST NW	6/26/17			
6652	SOUTHWEST RADIATOR	3400 2ND ST NW				
32175	ON SITE OIL CHANGE	3508 2ND ST NW	6/26/17			EB/AC DNE. Data in shop.
7073	ABQ COLLISION & BODY SHOP	3610 2ND ST NW	6/26/17			EB/AC
7933	JIMMYS AUTO REPAIR	4016 2ND ST NW	6/26/17			AC/EB
32338	SAM'S AUTO & DIESEL Chavez Data wrong	4516 2ND ST NW	6/26/17			AC/EB
8975	DO-U-RIGHT AUTO	4516 2ND ST NW	6/26/17			AC/EB
31514	BY THE BOOK DIESEL MECHANICS	4716 2ND ST NW	6/30/17			AC. Moved
9433	BY THE BOOK DIESEL & AUTOMTV	4802 2ND ST NW	6/30/17			AC
9434	R P M AUTOMOTIVE	4802 2ND ST NW	6/30/17			AC DNE
9535	A & S AUTO CARE INC	4900 2ND ST NW	8/23/17			go back AC/JK
10292	JOHNNY 5 AUTOMOTIVE	5202 2ND ST NW	6/26/17			AC/EB DNE
4087	U-HAUL NEIGHBORHOOD DEALER	2329 4TH ST NW				AC/CS DNE
6893	GCR TIRES & SVC	3501 4TH ST NW	6/20/17			AC/CS
7781	U-HAUL NEIGHBORHOOD DEALER	4001 4TH ST NW			Rentals	
8288	NEIGHBORHOOD TRANSMISSION SVC	4201 4TH ST NW	6/23/17			AC/CS
31873	~~IN & OUT AUTOMOTIVE~~ Racer motive	4500 4TH ST NW	6/23/17			AC/CS
9605	U-HAUL	4908 4TH ST NW			Rentals	
9901	HIGH TECH AUTOMOTIVE LLC	5016 4TH ST NW				go back
3729	U-HAUL	2201-6TH NW			Rentals	
3669	U-HAUL	2201 6TH ST NW			Rentals	
4861	PAYLESS TOWING	2627 6TH ST NW	6/30/17		Tows only	AC. CS Ⓐ
947	CARMERS BODY SHOP	119 AZTEC RD NW				go back
31832	HIGH TECH AUTOMOTIVE	2825 BROADBENT PKWY NE				
10304	~~PAINT SHOP~~ Brewer	521 CANDELARIA RD NE	6/23/17			Paint Shop DNE
1611	PENSKE TRUCK RENTAL	1400 CANDELARIA RD NE			Rentals	
2075	U-HAUL NEIGHBORHOOD DEALER	1540 CANDELARIA RD NE			Rentals	
1331	ULTIMATE PERFORMANCE LLC	125 CANDELARIA RD NW	6/23/17			AC/CS
5811	MOTOR MACHINE	307 CANDELARIA RD NW	6/23/17			AC/CS
26923	HOFFMANTOWN BODY SHOP INC Car crafted	702 CARMONY LA NE	6/23/17			EB/AC
13286	ENTERPRISE RENT-A-CAR	702 CARMONY LN NE			Rentals	Car starters
9702	ACTION ALIGNMENT & EXHAUST ~~towing only~~	500 CARMONY LN NE # B	6/23/17			Come back 6/26
32323	RYDER TRUCK RENTAL INC	601 COMANCHE RD NE			Rentals	
7195	AUTO BODY CONCEPTS	3708 COMMERCIAL ST NE				go back. Moving letter
4053	MITCHELL AUTOMOTIVE & MACHINE	2317 EDITH BLVD NE	6/26/17			AC/EB. DNE
7360	HAROLDS BODY REPAIR	3811 EDITH BLVD NE	6/26/17			AC/EB
7943	SEMI TRAILER TRUCK REFRIG EQPT	4019 EDITH BLVD NE	6/26/17			AC/EB DNE
8215	LOID'S RIDES	4150 EDITH BLVD NE	6/26/17			AC/EB
9562	NEW MEXICO FLEET DESIGN	4901 EDITH BLVD NE	6/23/17			AC/EB
10197	J & B TRAILER RENTAL LLC	5150 EDITH BLVD NE			Rentals	
31625	DANNY BALLYS CUSTOMS	4019 EDITH BLVD NE # 1	6/26/17			AC/EB. DNE
5668	RIO GRANDE AUTOMOTIVE	301 GRIEGOS RD NW				
466	DISCOUNT TOWING & COLLISION	109 HEADINGLY AVE NW				
31358	ALBUQUERQUE AUTOWORKS	3632 HIGH ST NE				
2537	ERNIE'S AUTO GLASS & WINDOW	1750 INDIAN SCHOOL RD NW # 33			Window	
5765	G H AUTOMOTIVE COLLISION	303 MENAUL BLVD NW				go back
5814	AFFORDABLE TIRE & REPAIR	307 MENAUL BLVD NW	6/30/17			AC/CS
8220	INTERCITY TRUCK & TRAILER RPR	416 MENAUL BLVD NW				go back
14449	DDL SERVICE	801 NIKANDA RD NE				
14513	TNC RECOVERY	804 NIKANDA RD NE				
6912	JACKSSONS TRAILERS	3502 PAN AMERICAN FWY NE			other	
6904	BUDGET RENT A CAR	3501 PAN AMERICAN FWY NE # B			Rental	
8112	SEMI TRUCK & TRAILER TIRES RPR	411 RANKIN RD NE	6/30/17			CS/AC. DNE
12010	FLEET MAINTENANCE INC	620 RANKIN RD NE	6/30/17			CS/AC
13304	DUKE CITY CUSTOMS AUTO & TIRE	704 RANKIN RD NE				
45274	TONY'S TIRE SHOP	1416 RIO GRANDE BLVD NW				
21426	AUTO GLASS OPEN 7 DAYS	2700 RIO GRANDE BLVD NW			Glass	

Ⓐ Payless towing. Talked to Leonard Grossman, Business does no servicing, cleaning, or Storing.

ArcView

Group 19

AssetID	Company	Address	Date Inspected · ReturnDate?	Closed/Ownership Change /Moved/Residential	Not Applicable: Tint/Rentals/Emissions /Interior/Other	Notes
46023	TRANMISIONES AUTOMATICAS	2201 1/2 BROADWAY BLVD SE	8.4.17	closed		CS/mt
45720	BOSS TOWING & REPOSSESSION	6005 1/2 CENTRAL AVE NW				
15070	DANLAR COLLISION INC	915 1ST ST NW				go back
45254	INVINCEABLE AUTOMOTIVE	1308 1ST ST NW	7/7/17	closed		AL CS
2212	ANDERSON AUTOMOTIVE MACHINE	1613 1ST ST NW	7/7/17			~~go back~~ CS/AL
2229	SHEFLONES AUTO	1617 1ST ST NW	7/5/17			AL
6097	GREYHOUND BUS LINES	320 1ST ST SW				
197	RALLY RIDER CUSTOMS	1006 20TH ST NW	7/31/17	residential		CES
18262	FREE MOBILE SVC AUTO GLASS	125 2ND ST NW	7/5/17			DNE. AL
14947	SPECIAL EFFECTS	901 2ND ST NW	7/31/17			~~go back~~ CES
249	MCBRIDE'S SPRING & WELDING	1010 2ND ST NW	7/5/17			JAL
18953	JAMES BURRIS AUTOMOTIVE REPAIR	1410 2ND ST NW	7/5/17			AL
2118	EDWARDS ENGINES INC	1601 2ND ST NW	7/5/17			~~go back~~. AC
2314	AUTOMOTIVE MACHINE SVC INC	1645 2ND ST NW	7/5/17	other		Done as industrial Site
12151	AMADOR BROTHERS WHEEL ALGNMNT	624 2ND ST SW	7/12/17			CES
20906	MACK RECOVERY	2325 2ND ST SW	8.4.17			MZ/CS
4096	DIAMOND BODY SHOP	2331 2ND ST SW	8.4.17			MB/CS
4609	BUDGET TOWING CO	2510 2ND ST SW	8.4.17	closed		MZ/CS
5803	CHARLY'S PAINT & BODY	3054 2ND ST SW				
27860	TALLER MECANICO JUANITO	816 3RD ST NW				go back
185	RIGHT WAY COLLISION	1004 3RD ST NW	~~7/5/17~~ 7/5/17	closed? cny		DNE? gates locked. no AC. 5-4
1647	INDEPENDENT SERVICE INC	1401 3RD ST NW	7/5/17			~~go back~~. JAL
3017	CENTRAL PARKING SYSTEM	201 3RD ST NW # 1	7/31/17	parking ~~garages~~ parking garages		CES
6248	CENTRAL PARKING SYSTEM	321 4TH ST NW	7/31/17			CES
15071	ADVANCED AUTOTECH	915 4TH ST NW	7/5/17			AL
1608	CENTRAL PAINT & BODY SHOP	1400 4TH ST NW	7/5/17			AL
1648	DVL AUTOMOTIVE REPAIR	1401 4TH ST NW	7/6/17			AL
1649	U-HAUL NEIGHBORHOOD DEALER	1401 4TH ST NW			Rental	AL
19373	AUTO INSPECTION SVC	1600 4TH ST NW	7/7/17			go back. AC
2763	ABQ FLEET AUTO SVC	1903 4TH ST NW # A	7/6/17			AL
2645	VENEGAS & SONS AUTO UPHOLSTERY	1815 4TH ST NW # C	7/6/17		extension	AL
14428	CENTRAL PARKING SYSTEM	801 5TH ST NW				
799	AERO COLOURS INC	113 6TH ST NW				
801	PARK-IT PLACE	113 6TH ST NW # B				
19530	PRECISION AUTO ENHANCEMENT	1529 7TH ST NW	7/6/17			DNE. Now Rio Grande machine shop. Closed.
2796	PILSNER FLEET MAINTENANCE	1915 7TH ST NW	7/6/17			AL.
2812	STATKUS ENGINES SVC CTR	1917 7TH ST NW				go back

Group 19

AssetID	Company	Address	Date Inspected · ReturnDate?	Closed/Ownership Change /Moved/Residential	Not Applicable: Tint/Rentals/Emissions /Interior/Other	Notes
14558	A B Q HOND MASTERS	810 ARNO ST NE	7/5/17			AL
14756	KEITH'S WHEEL ALIGNMENT	828 ARNO ST NE				?
5521	PERFECTION AUTO REPAIR	300 ASPEN AVE NW				Come back 8/4/17
2368	NEW MEXICO HOTROD CO	1701 ASPEN AVE NW	7/6/17			AL.
5522	SKINNER'S	300 ASPEN AVE NW # B				
1297	SEMI TRUCK & TRAILER REPAIR	1239 BELLAMAH AVE NW	7/7/17			CS/AL. DNE
18582	ON-SITE OIL CHANGE	1310 BROADWAY BLVD NE	7/14/17			CS/AL
741	ALBERT'S TRANSMISSIONS	1119 BROADWAY BLVD SE	7/6/17			AL
781	RAY'S AUTOMOTIVE	1124 BROADWAY BLVD SE	7/6/17			AL
20645	MORALES TINT LLC	2201 BROADWAY BLVD SE	8/4/17		Tint	CS/MZ
20646	SAN PEDRO AUTO MOBILE	2201 BROADWAY BLVD SE	8/4/17	closed		MZ/CS
4729	U-HAUL NEIGHBORHOOD DEALER	2600 BROADWAY BLVD SE				
45431	TOWN & COUNTRY TOWING	2800 BROADWAY BLVD SE				
13257	FIRESTONE COMPLETE AUTO CARE	701 CENTRAL AVE NW	7/21/17			CES
20985	XTREME AUTO & DIESEL REPAIR	2401 CENTRAL AVE NW	7/7/17			CS/AL
4216	ARROWHEAD COLLISION closed	2401 CENTRAL AVE NW		closed/moved		CS/AL
20991	TRANSMISSION SPECIALTIES moved	2403 CENTRAL AVE NW		closed/moved		CS/AL
4232	A A A DISCOUNT MUFFLERS	2403 CENTRAL AVE NW	7/7/17			CS/AL
4233	U-HAUL NEIGHBORHOOD DEALER	2403 CENTRAL AVE NW		closed		CS/AL
13123	DOWNTOWN TIRE & AUTOMOTIVE SVC	700 CENTRAL AVE SW				T-Th best-go back
16093	24 7 AUTO GLASS	1020 CENTRAL AVE SW				
26974	PLANT OIL POWERED DIESEL FUEL	716 COMMERCIAL ST SE	7/21/17	closed		CES
3631	CENTRAL PARKING SYSTEM	220 COPPER AVE NW				
7652	CENTRAL PARKING SYSTEM	400 COPPER AVE NW				
333	ULTIMATE AUTO GLASS	1019 EDITH BLVD NE				
13491	B & G AUTO REPAIR	715 GIBSON BLVD SE	8/4/17			CS/MZ
45819	REFLECTIVE AUTO COLLISION	813 GIBSON BLVD SE	8/4/17			MZ/CS
46231	TRANSMISSION EXPRESS	834 GIBSON BLVD SE # D	8/4/17	closed Pacm		MZ/CS
80	MORGANS AUTO GLASS	100 GOLD AVE SW	7/21/17	closed		CES
27497	DAVIS EQUIPMENT SVC	800 GOLD AVE SW	7/21/17	closed - Attorneys office		CES
4884	EYEBALL CUSTOMS	2637 GRANITE AVE NW	7/7/17			AL/CS. Residential
10361	RIO GRANDE FOAM INC	524 HAINES AVE NW # A	7/7/17		Interior	AL/CS. Not an auto business.
5945	INDEPENDENT VEHICLE SVC INC	312 KINLEY AVE NW	7/7/17			~~Not~~ AL
975	ENTERPRISE RENT-A-CAR	120 LOMAS BLVD NE			Rental	
8173	JEFF'S PAINT & BODY	413 LOMAS BLVD NE	7/14/17			AL/CS
3091	LEONARD TIRE & AUTOMOTIVE	201 LOMAS BLVD NW	7/14/17			AL/CS
19511	~~MOVIE MOVERS INC~~ Statham Engines	1623 LOS TOMASES DR NW	7/28/17	moved		CES

? check if completed.

Group 19

AssetID	Company	Address	Date Inspected - ReturnDate?	Closed/Ownership Change /Moved/Residential	Not Applicable: Tint/Rentals/Emissions /Interior/Other	Notes
23585	BEN WADE AUTOMOTIVE	422 MARBLE AVE NE	7/28/17	closed		CES
9732	CENTRAL PARKING SYSTEM	500 MARQUETTE AVE NW	7/28/17	commercial bldg/parking garage		CES
5837	PERFORMANCE CONNECTION	309 MCKNIGHT AVE NE	7/28/17			CES
1261	REEDY TIRE CO	123 MOUNTAIN RD NW	7/4/17			CS/AL
45400	TRANSMISSION SPECIALTIES	2501 NEW YORK AVE NW				return 7/31
22019	INSURANCE CLAIMS AUTO GLASS	310 RIO GRANDE BLVD NW	7/28/17	residential		CES
161	OLD TOWN TIRE & AUTOMOTIVE SVC	1001 RIO GRANDE BLVD NW	7/28/17			CES
7975	TOBY'S BODY & CUSTOM SHOP	403 ROSEMONT AVE NE	7/28/17	Residential		CES
15589	KRUISE KONTROL	100 SILVER AVE SW # 224	7/21/17	Residential-Apts		CES
3857	COLLISION MASTERS OF NM	223 SOUTHERN AVE SE	8.4.17	Residence Dogs - SENDCITY		CS/MT
6398	HERTZ RENT A CAR	330 TIJERAS AVE NW				
788	MARTINEZ PAINTING & BODY SHOP	1126 WALTER ST NE				go back.
1892	TAVENNERS TOWING	150 WOODWARD AVE SE	8.4.17	Closed		CS/MT
998	REYNOLDS AUTO SVC	120 WOODWARD AVE SW	8.4.17			MT/CS

Brothers complete Autocare
826 Gibson SE

Group 20

1 of 1

Company	Address	Date Inspected - ReturnDate?	Closed/Ownership Change /Moved/Residential	Not Applicable: Tint/Rentals/Emissions/Interior/Other	Notes
VANGO LLC	1715 57TH ST NW # B	—	Closed?		AC
JIFFY LUBE	3520 CALLE CUERVO NW	—	Closed?		AC
S O S TOWING LLC	6324 CALLE TESORO NW	—	Residential		AC
AAMCO TRANSMISSIONS	6632 CAMINITO COORS NW	8/17/17			AC
SLIPPING TRANNY FIX	6632 CAMINITO COORS NW	—			AC
HONEST-1 AUTO CARE	6641 CAMINITO COORS NW	8/17/17			AC
CAMPING WORLD OF ALBUQUERQUE	14303 CENTRAL AVE NW	8/23/17			AC/JK
ACTION TOWING & TRUCK MOBILE	15225 CENTRAL AVE NW	—	Residential		AC/JK
FIRESTONE COMPLETE AUTO CARE	2631 COORS BLVD NW	8/17/17			AC
JIFFY LUBE	2915 COORS BLVD NW	8/23/17			Go Back, JK. AC
BRAKE MASTERS	2925 COORS BLVD NW	8/17/17			AC
JIFFY LUBE	3540 COORS BLVD NW	8/17/17			AC
VALVOLINE INSTANT OIL CHANGE	5801 COORS BLVD NW	8/17/17			AC
JIFFY LUBE	9386 COORS BLVD NW	8/16/17			AC
COLLISION ONE	9733 COORS BLVD NW	8/16/17			AC
GROUP 1 AUTOMOTIVE INC	9733 COORS BLVD NW	8/16/17			AC
SEARS AUTO CTR	10129 COORS BLVD NW	8/16/17			AC
FIRESTONE COMPLETE AUTO CARE	10151 COORS BLVD NW	8/16/17			AC
FIRESTONE COMPLETE AUTO CARE	2631 CORRES BLVD NW	—	other		AC
QUANZ ADVANCED AUTO CARE	9111 EAGLE RANCH RD NW	Lanz			go back
CAR ER	9620 EAGLE RANCH RD NW	8/17/17			Jak
WESTSIDE TOWING	6732 GLEASON AVE NW	—	Residential		AC
QUEST DIAGNOSTICS	10511 GOLF COURSE BLVD NE	—	other Medical		AC/JK
VALVOLINE INSTANT OIL CHANGE	9501 GOLF COURSE RD NW	8/25/17			JK/AC
CROWN COACHWORKS	4627 GREENE ST NW	Send city			JK/AC Restore
SANTINO'S CLASSIC BODY SHOP	4801 IRVING BLVD NW	—	Residential		AC
GLENNS AUTO REPAIR	10401 LA PAZ DR NW	—	Residential		AC
ALL TIME ROADSIDE SVC	6304 LAMY ST NW	—	Residential		AC
POP IT OUT DENT REPAIR	4908 MIKELL CT NW	—	Residential		AC
JUST BRAKES	4311 MONTANO RD NW	8/25/17			AC/JK
PETE THE DENT GUY	6266 NARDOS RD NW	—	Residential		AC
NEXT LEVEL CUSTOMZ	5812 NIGHT SHADOW AVE NW	—	Residential		AC
JIFFY LUBE	3601 NM 528 NW	8/18/17			AC
BRAKE MASTERS	3616 NM 528 NW	8/18/17			AC
MIDAS AUTO SVC EXPERTS	3711 NM 528 NW	8/18/17			AC
PARADISE HILLS CHEVRON	5647 PARADISE BLVD NW	8/28/17			AC
RESCUE TOWING	4204 RANCHO GRANDE PL NW	—	Residential		AC
M M AUTO	7632 RICHMOND HILL RD NW	—	Residential		AC
DUKE CITY AUTOMOTIVES	5224 RIDGE ROCK AVE NW	—	Residential		AC
A & M TOWING	9136 SABINAL DR NW	—	Residential		AC
A & M TOWING	7816 SEVEN SPRINGS RD NW	—	Residential		AC
TNT TOUCH UP INC	6451 SHIPROCK CT ?				
COYOTE AUTO & BODY LLC	10209 SNOWFLAKE CT NW	—	Residential		AC
INTERNATIONAL DENT OF N M	10835 STONEBROOK PL NW	—	Residential		AC
NM CUSTOM GARAGE	4101 STOWE RD NW	—	Residential		AC
DON CHLAMERS CAR CARE CTR LLC	3777 THE AMERICAN RD NW # 200	—	other		AC other complex
DENT WORKS	10524 TUSCANY DR NW	—	Residential		AC
HOWARD G HUDSON MECHANIC	7911 VICTORIA DR NW	—	Residential		AC
SNAP PRECISION	4420 WESTRIDGE CT NW	—	Residential		AC
COLLISION ONE	4330 WESTSIDE DR NW # A	—	other		AC

~~Steve Dent~~ !

if ~~quanz~~ Thurs or friday

a adam@quanz.com

GROUP 21

AssetID	Company	Address	Date Inspected	Return required (too busy, etc.)	Site Status (active, closed, moved, residential)	Notes
15924	CLOVERS TOWING	1010 64TH ST NW	8/29/17		MOVED	NO BUSINESS AT 1010 64th GOOGLE SHOWS IT IN RIO RANCHO
43073	JOE MANZANARES MECHANIC	1501 86TH ST SW				
[illegible]	P G R AUTO GLASS	1001 AIRWAY RD SW # C	9/29/17		Resid	
29092	JAC MOBILE GENERAL MECHANIC	9023 ANACAPA AVE NW	8/29/17		RESID.	
5201	AUTO PERFORMANCE ENGINEERING	2804 ARENAL RD SW				
1324	AS N SONS MOBILE TIRE SVC	1248 ATRISCO DR SW	9/29/17		Resid.	
3279	MGB SPECIALIST-ALBUQUERQUE	206 ATRISCO DR SW				
14529	U-HAUL	805 ATRISCO DR SW	9/29/17		Resid.	
30223	MTS MOBILE TRUCK REPAIR SVC	9911 AVALON RD NW	8/29/17			not found
2675	CHICHOS BRINCOLINES	1824 BLAKE RD SW	8/31/17		RES.	
17453	DIESEL DOCTOR SVC INC	1127 BODDY RD SW				~~2~~ need 2 people
1454	~~ALBUQUERQUE PRO TINT~~ ALLIANCE GLASS & MIRROR	1309 BRIDGE BLVD SW	8/31/17	—	GLASS ONLY	
2091	~~TRILLO TIRES~~ JT TIRES	1575 BRIDGE BLVD SW	8/31/17	—	—	
4785	~~J & R COLLISON~~ Mile High Collision	2606 BRIDGE BLVD SW	10/11/17			CES/JK maybe need 2
27315	~~BUDGET TRUCK RENTAL~~ GLOBAL STORAGE	7701 BRIDGE BLVD SW	8/31/17	—	STORAGE FACILITY	ONLY
14762	MR G'S PAINT & BODY II	830 BRIDGE BLVD SW	10/11/17			CES/JK
14952	C & L TRANSMISSION	901 BRIDGE BLVD SW	10/11/17			CES/JK
15155	PRICE TRANSMISSIONS	925 BRIDGE BLVD SW	10/12/17	X		in early AM (9:00)
23665	A1 MOBILE TIRE SVC	431 BRISTLEBRUSH ST SW	8/30/17		Residential	
42744	2 AMIGOS TOWING	2851 BUTCH CASSIDY DR SW	8/29		RES.	
46695	SANDOVAL TOWING	4501 CAMINO BELLO SW	8/29/17			no such address GOOGLE SEARCH: NO SAND. TOWING
[illegible]	PRO'S COLLISION	6115 CENTRAL AVE NW	8/29/17	Yes, 9/1/17		
11833	~~PIT STOP III~~	6102 CENTRAL AVE SW	8/29/17	—	—	GAS STATION/FOOD MART ONLY
11891	~~J B ELECTRIC MECHANIC~~ ~~WEST CENTRAL TIRE SHOP~~	6120 CENTRAL AVE SW	8/29/17	—	CLOSED	WCTS CLOSED PROPERTY IS FOR RENT
12438	H D TIRE SHOP TIRE DISPOSAL	6430 CENTRAL AVE SW	8/30/17			ok
12437	EZ EMISSIONS	6430 CENTRAL AVE SW	8/30/17		NA - Transmissions	

GROUP 21

AssetID	Company	Address	Date Inspected	Return required (too busy, etc.)	Site Status (active, closed, moved, residential)	Notes
29302	PENSKE TRUCK RENTAL	9200 CENTRAL AVE SW	8/30/17		Closed	See paperwork for details.
29567	U-HAUL NEIGHBORHOOD DEALER	9400 CENTRAL AVE SW	8/30/17		NA - Rental	Same address as M&S Transmissions
29566	M & S TRANSMISSIONS	9400 CENTRAL AVE SW	8/30/17			NA
17822	JIFFY LUBE	120 COORS BLVD NW	8/29/17			
23928	~~FASTEST EMISSIONS~~	455 COORS BLVD NW	8/29/17	—	—	Emissions testing only.
45966	WESSKOTE INC	1504 COORS BLVD SW	8/29/17			
19890	TRANSMISIONES EL CO	1847 COORS BLVD SW				
19992	BIG BOY EMISSIONS	1920 COORS BLVD SW				
20986	PERFORMANCE PLUS INC	2401 COORS BLVD SW				
21491	BRAKES UNLIMITED	2712 COORS BLVD SW				
21492	U-HAUL MOVING & STORAGE	2712 COORS BLVD SW				
46062	BERNALILLO MOTORS & TOWING LLC	2720 COORS BLVD SW				
22309	JOY JOY'S AUTO EMISSIONS	3231 COORS BLVD SW				
22037	WESTSIDE AUTOMOTIVE & ALIGN	3101 COORS BLVD SW # A				
~~1797~~	BLACK MOUNTAIN LUBE INC	1422 CORFIELD PL SW	9/29/17		Resid.	
~~27352~~	BY THE BOOK DIESEL & AUTO RPR	7804 CREPE MYRTLE RD SW	10/16/17		RESID.	
~~42766~~	A1 MOBILE TIRE SVC LLC	3029 DATUM ST SW	10/16/17		RES.	
27771	BRUCKNER NATIONA LEASE	8101 DAYTONA PL NW	8/30/17			Services Heavy duty trucks
~~43854~~	TNT CAR CARE CTR	3301 DELFORADO DR SW	10/16/17		RES.	
23623	ALVARADOS TOWING	427 DESERT CACTUS DR SW	8/29/17	—	RESID.	
~~18674~~	HALCON AUTO ELECTRIC	1309 DIAMOND PL SW	10/16/17		RESID	
18738	ICEBERG RENTALS	13300 FRONTAGE RD SW				8/30: Go back. Appt better. 10/17 CALLED, NOT COOPERATIVE AS NOT IN CITY.
15204	CORTEZ COLLISION	936 GATEWOOD AVE SW	10/16/17		RES.?	2 people, think is res. just driveway to ✓
43061	J R B AUTO TRANSPORT LLC	10651 GENTRY LA SW	10/16/17		RES?	NEED TO VERIFY
~~46696~~	ULTIMATE TOUCH UP PAINT & BODY	11123 GOLDFINCH CT SW	10/16/17		RES	LIKELY RES, BUT NO STREET SIGNS ON GE.
~~15835~~	RIVAS RESTORATION	10705 GUADIANA PL SW	10/16/17		RES.	

Old car wash on Sunbeam - alleged illegal business w/oil dumping.
just west of Isleta.

GROUP 21

AssetID	Company	Address	Date Inspected	Return required (too busy, etc.)	Site Status (active, closed, moved, residential)	Notes
1482	SOUTHWEST COMPLETE MOBILE	1312 HALL CT SW	10/2/17		resid.	
42824	ARMADA TOWING SVC	7020 HUSEMAN PL SW				
25305	~~24 7 AUTO GLASS~~	~~5712 ILIFF RD NW~~			NOT REQ'D.	AUTO GLASS BUS.
2771	D & M AUTOMOTIVE LLC	1906 ISLETA BLVD SW	10/17/17	Yes, BY COA		NOT COOPERATIVE SEE OF STORY ISLETA go back
2772	U-HAUL NEIGHBORHOOD DEALER	1906 ISLETA BLVD SW				
3840	SOUTHWEST AUTOMOTIVE PAINTS	2222 ISLETA BLVD SW	10/2/17			CES
4066	BLUE CASTLE ALIGNMENT SHOP	2321 ISLETA BLVD SW	9/29/17			CES
20899	~~AUTO BUTLER MOBILE OIL CHANGES~~ Kikers Elect	2323 ISLETA BLVD SW	10/2/17			CES
45450	PIT STOP TRANSMISSION	305 ISLETA BLVD SW	10/6/17	Yes		come back south of Bridge
13262	PHIL'S AUTO SVC	701 ISLETA BLVD SW	10/6/17			CES/JK
45793	ACME RADIATOR SVC	715 ISLETA BLVD SW	10/6/17			CES/JK
14849	EL GALLO LLANTERA & AUTOMOTIVE	843 ISLETA BLVD SW	10/6/17			" "
3852	WIZARD AUTOMOTIVE	2228 KELLY RD SW				RESIDENCE THAT KEEPS TRUCKS
29221	D A 1 SHOP	9123 LOCURA PL SW	10/10/17		RES.	
2690	ROAD RUNNER TOWING	1830 MAE AVE SW	10/10/17		RES.	
46690	MIKE'S MOBILE AUTO REPAIR	701 MALACHITE DR SW	8/30/17		Residential	
30249	SANDOVAL AUTO & 24 HR ROAD SVC	9924 MARLBOROUGH AVE SW	10/10/17		RESID.	
27117	EXPRESS GLOBAL SYSTEM	7400 MERIDIAN PL NW # C	8/30/17		NA – Strictly a freight business (e.g. filling trucks). No auto servicing.	
42890	FAT RUBENS AUTO	121 OLD COORS DR SW	10/11/17		Building	no longer there
20893	ROADRUNNER TRANSMISSIONS	232 OLD COORS DR SW	10/11/17			COME BACK 10/12
46211	Carretas ~~PETES AUTO MACHINE SVC~~	749 OLD COORS DR SW	10/11/17		Tire shop	
29523	ROUTE 66 AUTO RV MOBILE REPAIR	932 OLD COORS DR SW	10/11/17			
42923	CRUZ'S MULTIPLE TRANSMISSIONS	754 OLD COORS DR SW # D	10/11/17			Come back 10/12 afternoon
2458	DAVID FLORES MOBILE AUTO SVC	1719 PATTON RD SW	10/7/17		Resid	
10723	J & R TOWING	5417 PUNTA ALTA ROAD AVE E NW	8/30/17		Residential	
27216	DANIEL'S ROAD SVC	7504 PURPLE CONE RD SW # S	10/10/17		RESID.	

GROUP 21

AssetID	Company	Address	Date Inspected	Return required (too busy, etc.)	Site Status (active, closed, moved, residential)	Notes
22468	MADRID TOWING SVC	3310 SAN YGNACIO RD SW				Vacant?
2321	LOPEZ AUTO REPAIR	1650 SHADYSIDE DR SW	10/2/17		resid.	
~~21863~~	TRIPLE S TINTING SHOP	3001 SNIPES RD SW	10/16/17		RES.	
43343	TADS AUTOMOTIVE REPAIR	904 SUNRISE DR SW	8/30/17		Res. dentral	
24511	ET MOBILE TRUCK SVC	5044 VALLE DEL SOL RD NW # D	8/30/17		Res dential	
29160	AUTO GLASS JR	9101 VOLCANO RD NW # 22	10/16/17			LIKELY RESID. - Vant
21556	BOB KOLLAR ENT	2753 WENDELL RD SW				" " "
24870	A A MOBILE SVC	528 WHISPER POINTE ST SW	8/30/17		Res. dentral	Tow truck parked at residence.
~~21867~~	T N T TOUCH UP	3003 YUMA RD SW	10/17/17		RES.	

Group 22

AssetID	Company	Address	Date Inspected - ReturnDate?	Closed/Ownership Change /Moved/Residential	Not Applicable Tint/Rentals/Emissions/Interior/Other	Notes
22098	DADS AUTOMOTIVE	312 CAMINO DOS SW			NA	OUTSIDE CITY LIMITS
23652	PERFECTION AUTO & TRUCK LLC	4301 COORS BLVD SW				
24670	HI TECH TOWING	5145 COORS BLVD SW				
25023	MR C J'S TOWING	5405 2ND ST SW				
25718	U-HAUL NEIGHBORHOOD DEALER	6016 ISLETA BLVD SW			Rentals	
25884	U-HAUL NEIGHBORHOOD DEALER	6120 COORS BLVD SW # A			Rentals	
30666	J L S PARKING ENFORCEMENT	5650 UNIVERSITY BLVD SE			NA - OTHER	
412	BONE'S TOWING & SALVAGE	105 DALE AVE SE			NA	OUTSIDE CITY LIMITS
413	BONES TOWING	105 DALE AVE SE				
42900	CLEAR VIEW HEADLIGHT RSTRTN	5115 JENNIE RD SW				
45632	A AMERICAN TOWERS	4747 WILLIAMS ST SE				
45832	NEW MEXICO TOWING INC	8705 BROADWAY BLVD SE				
45833	VALLEY IMPOUND INC	8705 BROADWAY BLVD SE				
46130	ABC TOWING	4609 BROADWAY BLVD SE				
46144	LEO'S TOWING	4747 WILLIAMS ST SE				
46155	H P R CUSTOM NEW MEXICO	5026 BROADWAY BLVD SE				
470	RICHARDS DUMP TRUCK SVC	11 CAMINO DEL SIERRA				
474	BEST MOBILE SVC	11 QUAIL HOLLOW DR				
4979	NO COAST KUSTOMS	2701 VALLE GRANDE RD SW				
5972	GOTCHA COVERED TOWING	313 1/2 MITCHELL AVE SE				
631	M C DIESEL	111 BARR AVE SE				
7949	QUALITY LUBE LLC	4019 ISLETA BLVD SW				
9076	J & G AUTO	4601 BROADWAY BLVD SE				
9218	BACAS DIESEL SVC	4701 BROADWAY BLVD SE # A				
9483	ACE TOWING & RECOVERY	4813 WILLIAMS ST SE # B				

Engine

name	address	zip	phone	description	Notes	Completed on
AARDVARK LAWN SVC	9628 MESSERVY AVE NE	87109-6403	553-9974	LAWN MOWERS	Residential (GSV)	2/13/18
ABE'S K & S SVC CTR	7521 MENAUL BLVD NE	87110-3637	884-6262	ENGINES-GASOLINE	completed	2/14/18
ALBUQUERQUE'S BEST EQUIPMENT	2401 1ST ST NW	87102-1061	842-8400	ENGINES-GASOLINE	completed	2/22/18
ALLSTATE HYDRAULICS	3225 VASSAR DR NE	87107-2021	884-3100	HYDRAULIC EQUIPMENT-REPAIRING	Completed	2/14/18
~~BANES~~ LUBADRAULIC MAC Hydraulic Lub	3515 PRINCETON DR NE # B	87199-2035	884-1515	HYDRAULIC EQUIPMENT REPAIRING	Visited 2/14/18, asked to come back at later date. See (1) below. completed	2/22/18
CENTRAL MOTIVE POWER INC	3740 PRINCETON DR NE # B	87107-4219	884-2525	ENGINES-DIESEL (WHLS)	completed	2/14/18
CUMMINS ROCKY MOUNTAIN LLC	1921 BROADWAY BLVD NE	87102-1554	247-2441	ENGINES-DIESEL (WHLS)	completed	2/22/18
HOSE & HYDRAULICS INC	2824 VASSAR DR NE	87107-1804	884-1939	HYDRAULIC EQUIPMENT REPAIRING	completed	2/14/18
HYDRAULICS & PNEUMATICS INC	3207 CLAREMONT AVE NE	87107-1940	884-1110	HYDRAULIC EQUIPMENT REPAIRING	completed	2/14/18
JUICY'S HYDRAULIC SVC & SALES	3625 HIGH ST NE	87107-2101	345-5438	HYDRAULIC EQUIPMENT & SUPPLIES (WHLS)	Completed	2/22/18
LITTLEFOOT TABLETOP FOUNTAIN	10601 PASO FINO PL SW	87121-8964	833-3542	ENGINES-NATURAL GAS	Residential (GSV)	2/13/18
SOUTHWEST SEAL & SUPPLY CORP	3825 OSUNA RD NE # 6	87109-4454	889-8828	HYDRAULIC EQUIPMENT & SUPPLIES (WHLS)	NA: Retail store hoses + accessories	2/14/18

(1) Wayne called 2/15/18 and left a message. He wants to do inspection, but want to be present. Call first to see if he's around to set up time. 3515 PRINCETON N.E.

*LIST IS INCLD W/ENGINE LIST, SO WILL INCLUDE W/TOTAL FOR "ENGINE REPAIR" CATEGORIES (1/18/19)

Repair Shops						
name	address	zip	phone	description	Notes	Completed on
2 BROTHER'S GLASS GLAZING	925 CAROL ST NE	87112-5303	977-3558	REPAIR SHOPS & RELATED SERVICES NEC	Residential home	2/14/18
ALL BRANDS AUTO TRUCK REPAIR	7817 VISTA DEL ARROYO AVE NE	87109-3027	514-9134	TRUCK-REPAIRING & SERVICE	Residential (GSV)	2/13/18
BRUNO'S MERCEDES REPAIR	8701 VINEYARD RIDGE RD NE	87122-2625	797-1257	REPAIR SHOPS & RELATED SERVICES NEC	Residential (GSV)	2/13/18
D & M MARINE	2123 MENAUL BLVD NE # A	87107-1745	884-2628	BOAT DEALERS SALES & SERVICE	No longer open sheet metal	2/23/18
DALES TRUCK SVC INC	9916 BELLEVUE ST NW	87114-4113	891-9379	TRUCK-REPAIRING & SERVICE	Residential (Google Street View)	2/13/18
DANLAR COLLISION & GLASS	4950 JEFFERSON ST NE	87109-2307	888-1542	TRUCK-REPAIRING & SERVICE	Now Hogan's Automotive Complete	2/23/18
DIESEL PARTICULATE FILTERS	1701 ASPEN AVE NW	87104-2212	247-4222	TRUCK-REPAIRING & SERVICE	Now Independent Radiator Service Corporation Complete	2/23/18
DNE POWER GENERATION	3750 HAWKINS ST NE	87109-4511	897-5767	REPAIR SHOPS & RELATED SERVICES NEC	Now enviro-services	2/14/18
DUKE CITY MOWER	9120 MESCALERO RD NE	87111-4648	550-8121	REPAIR SHOPS & RELATED SERVICES NEC	Residential (GSV)	2/13/18
HOME SOLUTIONS INC	300 56TH ST NW	87105-1931	247-6778	REPAIR SHOPS & RELATED SERVICES NEC	No longer a shop. Looks like a church	2/23/18
JS ELECTRONICS	11404 MARQUETTE AVE NE	87123-1242	293-6070	REPAIR SHOPS & RELATED SERVICES NEC	Residential home	2/14/18
MEL MULLER REPAIR	9500 MONTGOMERY BLVD NE # 117	87111-2564	293-5625	REPAIR SHOPS & RELATED SERVICES NEC	No longer open. Office complex.	2/14/18
MIKE'S SERVICES INC	10710 BENITO ST SW	87121-8207	203-3438	REPAIR SHOPS & RELATED SERVICES NEC	Residential (GSV)	2/13/18
MR MACHINE	8804 SUNRIDGE RD SW	87121-9438	353-7040	REPAIR SHOPS & RELATED SERVICES NEC	Residential (GSV)	2/13/18
R & R MAINTENANCE SVC	5016 SOONER TRL NW	87120-2837	922-8774	REPAIR SHOPS & RELATED SERVICES NEC	Residential (GSV)	2/13/18
REPAIR FORCE	4821 CENTRAL AVE NW	87105-1715	508-5374	REPAIR SHOPS & RELATED SERVICES NEC	No longer open now a storage facility	2/23/18
ROCK CREEK REPAIR & REMOVAL	10904 TANZANITE DR NW	87114-1853	697-7505	REPAIR SHOPS & RELATED SERVICES NEC	Residential (Google Street View)	2/13/18

Independent Radiator Service

* 29 TOTAL

11 Inspected

CARPET CLEANING

name	address	zip	phone	description	Notes	Completed on
A & E CHEM-DRY	9408 TRAVILLA DR NW	87114-3619	897-3112	CARPET & RUG CLEANERS	residential	
A PLUS CARPET CLEANING	723 IRON AVE SE Coal + Elm downtown	87102-3942	319-0487	CARPET & RUG CLEANERS	residential	
A QUALITY CARPET ALBUQUERQUE	1111 MAJOR AVE NW	87107-2454	342-9100	CARPET & RUG CLEANERS	residential	
ABES CARPET CARE	6216 SUMMERWOOD RD NW	87120-6105	352-0899	CARPET & RUG CLEANERS	Residential	
ABOVE & BEYOND CARPET CARE LLC	5001 CENTRAL AVE NW Coors sof I-40	87105-1754	839-8551	CARPET & RUG CLEANERS	IS NOW SCUBA EQUIP PLACE	
ADVANCED CARPET CARE	1601 HAINES PL NE	87112-3963	275-9066	CARPET & RUG CLEANERS	residential	
AFFORDABLE CARPET	3600 MENAUL BLVD NE I-40/carlile	87110-2848	988-9848	CARPET & RUG CLEANERS	Walgreens now	
ALBUQUERQUE CLEANER CARPET CAR	9204 SHONE ST SW	87121-8841	459-1521	CARPET & RUG CLEANERS	residential	
ALBUQUERQUE HOUSECARE	5409 MARIPOSA DR NW	87120-2347	252-3204	CARPET & RUG CLEANERS	residential	3/5/18
ALBUQUERQUE MINI MAID	6200 COORS BLVD NW # A1	87120-2794	898-4254	CARPET & RUG CLEANERS	closed not a carpet cleaner	3/5/18
ALBUQUERQUE PROFESSIONAL CRPT	7743 SAN BENITO ST NW	87192-0623	822-7927	CARPET & RUG CLEANERS	residential	
ALEX RAMOS CARPET CLEANING	2201 DRY GULCH ST SW	87121-8888	839-2647	CARPET & RUG CLEANERS	residential	
AMAZON CARPET CLEANING	334 CHAMA ST NE	87108-2023	804-1760	CARPET & RUG CLEANERS	residential	
AUTHORIZED CARPET CLEANING	5603 BOSQUE VISTA DR NE	87111-8067	275-9055	CARPET & RUG CLEANERS	residential	
BEAR CARPET INC	~~3400 GIRARD BLVD NE~~	87107-1929	888-1166	CARPET & RUG REPAIRING	~~3205~~ Claremont Ave NE I-40/ nearest area	3205 Call own cr to schedu 3/5/18
BELL CARPET CLEANING SPECS	6422 LAMY ST NW	87120-4632	823-9565	CARPET & RUG CLEANERS	residence	
BELL CARPET CLEANING SPECS	8415 PLYMOUTH ROCK RD NE	87109-5035	823-9565	CARPET & RUG CLEANERS	residence 3/5	
BEST DEAL CARPET CLEANING	3900 TULANE DR NE # 24	87107-4553	872-4681	CARPET & RUG CLEANERS	APARTMENTS	
BEST WAY CARPET CARE	921 HERMOSA DR NE	87190-3693	344-1616	CARPET & RUG CLEANERS	residential	
BLUE CHEM CLEANING & RSTRTN	3712 TODOS SANTOS ST NW	87120-3646	203-6687	CARPET & RUG REPAIRING	residential	
BULLSEYE CARPET & GLASS	3901 BRYAN AVE NW	87114-5213	897-4117	CARPET & RUG CLEANERS	Residential	3/5/18

CARPET CLEANING

name	address	zip	phone	description	Notes	Completed on
CHAVEZ CARPET CLEANING	10633 EASY ST NW	87114-5416	480-7608	CARPET & RUG CLEANERS	residential	
CHAVEZ CARPET SVC	11113 RIO PUERCO TRL SW	87121-8263	831-9390	CARPET & RUG CLEANERS	residential	
CHEM-DRY ALL AMERICAN	7208 COULSON DR NE	87109-5456	828-9789	CARPET & RUG CLEANERS	residence 3/5/18	
CHEMDRY ERICKSON	5505 VISTA SANDIA NE	87111-5782	294-4002	CARPET & RUG REPAIRING	residential	
CHEM-DRY OF NEW MEXICO	9440 SAN MATEO BLVD NE # J	87113-2434	988-5405	CARPET & RUG CLEANERS	call to schedule with Glenn Complete	3/8/18
CHRISTY'S CARPET CLEANING	1801 MORNINGRISE PL SE	87108-4519	256-9436	CARPET & RUG CLEANERS	residential	
CLEAN ASSURANCE CARPET CARE	12908 MARVA PL SE	87181-1643	271-9285	CARPET & RUG CLEANERS	residential	
CLEAN WORLD ENTERPRISES LLC	5600 MCLEOD RD NE # V San mateo	87109-2416	830-5777	CARPET & RUG CLEANERS	Closed	3/5/18
CLEANCO CARPET CARE	6900 ZINNIA PL NW	87121-9565	264-0504	CARPET & RUG CLEANERS	residential	
DAN CARE CARPET TILE	7900 LORRAINE CT NE # G	87113-1559	890-6500	CARPET & RUG CLEANERS	completed	2/28/18
DONE RITE CARPET CLEANING	805 FITZGERALD RD NW	87107-2437	344-2661	CARPET & RUG CLEANERS	residential	
DONELL'S CARPET CARE	221 HANOSH CT SE # 2	87123-3655	332-9427	CARPET & RUG CLEANERS	residential	
DRY TECH CARPET CARE	2270 WYOMING BLVD NE menaul	87112-2675	275-1145	CARPET & RUG CLEANERS	closed	3/5/18
DRY-TECH CARPET CARE	1208 SAN PEDRO DR NE # 222	87110-6726	275-1145	CARPET & RUG CLEANERS	mail storage	
DUKE CITY CARPET CLEANING	3426 EASTERN AVE SE # 1	87106-2481	266-0677	CARPET & RUG CLEANERS	by resident	3/8/18
DUKE CITY CHEM-DRY	6912 ACOMA RD SE Taos llc	87108-3156	292-7459	CARPET & RUG CLEANERS	Complete	3/8/18
ELMERS CARPET CLEANING & JAN	1405 GERALD AVE SE	87106-5028	247-0343	CARPET & RUG CLEANERS	residential	
EXCEL CARPET & UPHOLSTERY	7009 PROSPECT AVE NE # 101 menaul/louisiana	87110-4320	888-7212	CARPET & RUG CLEANERS	mail to this location only no longer ~~business~~ in	business
EXCEL CARPET & UPHOLSTERY CLNG	7009 PROSPECT AVE NE	87110-4331	888-7212	CARPET & RUG CLEANERS	residential	
FIBERTECH CARPET CARE	2904 MESILLA ST NE	87110-3544	881-6394	CARPET & RUG CLEANERS	residential	
FIRST CHOICE FLOORING	3919 SUNDROP PL NW	87048-1637	463-6382	CARPET & RUG REPAIRING	residential	
FOUR STAR CARPET & UPHOLSTERY	4700 BUTTERFIELD TRL NW	87120-2851	298-2537	CARPET & RUG CLEANERS	residential	3/5/18
GRIME BUSTERS	7621 WYOMING BLVD NE San Antonio	87109-5373	828-2288	CARPET & RUG CLEANERS	residential	
HAQQ ENTERPRISES LLC	6318 BISBEE PL NW	87114-3738	710-6083	CARPET & RUG CLEANERS	residential	
IMMACULATE CARPET CLEANING	5328 MONTGOMERY BLVD NE # 4210	87109-1361	712-8100	CARPET & RUG CLEANERS	residential	
JAYD CARPET CLEANING	6717 CLEGHORN RD NW	87120-4926	831-1125	CARPET & RUG CLEANERS	residential	
JC CLEANING SVC	4532 CAPRI CT NW	87114-3474	459-8735	CARPET & RUG CLEANERS	residential	
K C'S CARPET CLEANING	5415 MARIPOSA DR NW	87120-2347	897-3441	CARPET & RUG CLEANERS	residential	3/5/18

CARPET CLEANING

name	address	zip	phone	description	Notes	Completed on
KEEP IT KLEEN CARPET & TILE	3905 DESERT SAGE CT NW	87120-4099	977-2133	CARPET & RUG CLEANERS	residential	
KNADJIAN'S ORIENTAL RUGS	1418 CENTRAL AVE SE	87106-4802	247-0195	CARPET & RUG REPAIRING	Not at this location as of 3/5/18 Closed	3/5/18
LOPEZ CARPET CLEANING	4806 HEADINGLY AVE NE	87110-1809	203-6770	CARPET & RUG CLEANERS	residential	
M & C CLEANING SVC	717 COAL AVE SE # D downtown	87102-3963	459-8735	CARPET & RUG CLEANERS	could not locate suite D 3/12/18 Suite C appears to be a business but no sign and didn't answer	
MANNNING S CARPET CLEANING	5012 COSTA MARESME DR NW	87120-5788	977-3289	CARPET & RUG CLEANERS	Residential	3/5/18
MC KENNEY'S BRIGHT SHINE	11204 LOVE AVE NE	87112-5565	299-7222	CARPET & RUG CLEANERS	residential	
MONTANO CARPET CLEANING SVC	6540 LAMY ST NW	87120-4635	659-4348	CARPET & RUG CLEANERS	Residential	
MR J'S CHEM-DRY	8201 GOLF COURSE RD NW #D3-161	87120-5842	899-8199	CARPET & RUG CLEANERS	Paseo + Golf Course UPS store / closed	3/5/18
MR STEAMER CARPETCLEANING	3250 COORS BLVD NW # B2	87120-1270	833-1085	CARPET & RUG CLEANERS	Coors no longer @ [illegible] might	3/5/18
MY CARPET CLEANER	829 DAKOTA ST SE	87198-0033	250-2618	CARPET & RUG CLEANERS	residential	
OXI FRESH CARPET CLEANING	9201 LONA LN NE	87111-1618	999-1313	CARPET & RUG CLEANERS	residential	
PEDRO'S CARPET CLEANING	9116 SABINAL DR NW	87114-4569	417-9618	CARPET & RUG CLEANERS	residential	
PIONEERS IN CARPET CLEANING	5323 APOLLO DR NW	87120-5711	898-4620	CARPET & RUG CLEANERS	residential	3/5/18
POWER PLUS CARPET CLEANING	4311 RANCHO GRANDE PL NW	87120-5342	243-4013	CARPET & RUG CLEANERS	residential	
POWER PLUS CARPET CLEANING	9004 SUNFISH AVE SW	87121-9460	831-1101	CARPET & RUG CLEANERS	residential	
PRECISE CARPET CARE	7215 SAN BENITO ST NW	87035-2987	821-4414	CARPET & RUG CLEANERS	residential	
PREMIERE RESTORATION	7701 BRIAR RIDGE AVE NW	87114-3737	890-0899	CARPET & RUG CLEANERS	residential	
PRO CLEAN INC	821 RANKIN RD NE	87107-2113	344-3242	CARPET & RUG CLEANERS	No longer in business	3/12/18 new Supervisor Stormwater Services
PROFESSIONAL SOLUTIONS	14228 MOCHO AVE NE	87123-1820	720-5194	CARPET & RUG REPAIRING	residential	
PRO-TECH CARPET SVC	3167 SAN MATEO BLVD NE # 238 considered	87110-1921	292-9060	CARPET & RUG CLEANERS	~~not at this~~ closed	3/5/18
R J'S CARPET CLEANING	7200 WINANS DR NE	87109-4882	934-7581	CARPET & RUG CLEANERS	residence	
R J'S CARPET CLEANING	2702 5TH ST NW	87107-1328	342-4677	CARPET & RUG CLEANERS	residence.	
RELIABLE CARPET MAINTENANCE	4343 BRYAN AVE NW	87114-5462	898-5647	CARPET & RUG CLEANERS	residential	
ROCKY MOUNTAIN CARPET CLEANING	1219 MARTIN LUTHER KING JR AVE	87106-4701	577-6528	CARPET & RUG CLEANERS	residential	
SANDIA CARPET & UPHOLSTERY	1427 GRIEGOS RD NW	87107-3367	573-0523	CARPET & RUG CLEANERS	residential	
SANDMAN	6416 SAGE POINT CT NE	87111-8197	712-3584	CARPET & RUG CLEANERS	residential	
SANI CARE	6115 MENAUL BLVD NE San Pedro	87110-3319	884-4420	CARPET & RUG CLEANERS	Scheduled for Thursday 3/8 complete	3/8/18
SERAFIAN'S ORIENTAL RUGS	1421 WYOMING BLVD NE	87112-3849	255-2694	CARPET & RUG CLEANERS	Completed	3/5/18

CARPET CLEANING

name	address	zip	phone	description	Notes	Completed on
SOUTHWEST STEAMERS	9208 UPPER MEADOW AVE SW	87121-5364	227-6562	CARPET & RUG CLEANERS	residential	
SPOTLESS CARPET CLEANING	5328 MONTGOMERY BLVD NE # 4210	87109-1361	507-1058	CARPET & RUG CLEANERS	apartment	
STANLEY STEEMER CARPET CLEANER	8601 PASEO ALAMEDA NE # A	87113-1544	352-5100	CARPET & RUG CLEANERS	closed	3/5/18
STAR CLEANING SVC	6308 CORTE ALZIRA NW	87114-4988	717-6308	CARPET & RUG CLEANERS	residential	
STEAMATIC OF ALBUQUERQUE	8508 PASEO ALAMEDA NE	87113-1547	883-7766	CARPET & RUG CLEANERS	Call to schedule	
STUART & CO CARPET CLEANING	518 VASSAR DR SE # C	87106-2835	268-5220	CARPET & RUG CLEANERS	residential (?)	
TEXTIVAL RUG & TEXTILE WRKSHP	2300 BUENA VISTA DR SE # 122	87106-4348	242-9889	CARPET & RUG REPAIRING	completed	3/12/18
ULTIMATE CARPET CARE	7401 SAN PEDRO DR NE # 23	87109-4619	604-1110	CARPET & RUG CLEANERS	residential	
VALPRO CARPET CARE	10235 RED ROBIN RD SW	87121-8188	831-9217	CARPET & RUG CLEANERS	residential	
XTRA CLEAN	1312 WHEELER AVE SE	87106-5020	506-7834	CARPET & RUG CLEANERS	residential	
XTREME CARPET CLEANING	5933 EUCARIZ AVE SW	87121-3351	321-8137	CARPET & RUG CLEANERS	residential	
XTREME CLEAN LLC	4009 MENAUL BLVD	87110.0	221-6440	CARPET & RUG CLEANERS	Carlie/I-40 area Closed 3/5 ✓ No longer this business	
XTREME CLEAN LLC	8715 ASHTON PL NE	87122-2687	796-0505	CARPET & RUG CLEANERS	residential	
YHWHS FINE DESIGN	9700 CENTRAL AVE SW # 1	87121-7631	315-5257	CARPET & RUG CLEANERS	Motel mops Closed	3/12/18

Four Seasons Cleaning 5600 McLeod site B 254-2180 Wood + carpet not on list but should be.

Lawn Care

name	address	zip	phone	description	Notes	Completed on
ANGEL'S LAWN SVC & LAWNMOWER	143 OLD COORS DR SW # B	87121-2487	831 7012	LAWN MOWERS-SHARPENING & REPAIRING	Call Angel for visit	✓ (was completed last available date)
FRANK'S POWER EQUIPMENT	5310 SAN MATEO BLVD NE # B	87109-6320	872-2535	LAWN MOWERS	Completed	2/23/18

Total 9

Comp 4

Misc							
	name	address	zip	phone	description	Notes	Completed on
/	C S MFG INC	4208 BALLOON PARK RD NE	87109-5801	344-3560	OIL WELL SERVICES	office building complete No fluids onsite,	2/23/18
/	LIGHTNING MARINE INC	6213 JEFFERY AVE NE	87109-2801	980-7336	BOAT DEALERS SALES & SERVICE	Residence	2/23/18
/	PRESAILEDPARTS	1524 SAN CLEMENTE AVE NW	87107-3426	797-8909	BOAT PART USED & REBUILT (MFRS)	Residence	2/23/18
/	R & S POWERSPORTS GROUP	1425 WYOMING BLVD NE	87112-3849	293-1880	BOAT DEALERS SALES & SERVICE	complete	2/23/18
/	TAYLOR MARINE INC	4908 HAWKINS ST NE	87109-4344	344-3586	BOAT DEALERS SALES & SERVICE	~~Call first for stock~~ Complete	2/28/18
/	TNM & O COACHES INC	300 2ND ST SW	87102-3306	242-4998	BUSES-REPAIRING & SERVICE	Residence	2/23/18
/	WESTERN BOAT STORE & PROP SHOP	7308 BANGOR AVE NW	87120-3509	345-6920	BOAT REPAIRING	Residential	2/13/18

Appendix C

Photographs

1. Staining at a drain that connects to storm drain system

2. Example of outdoor storage: covered drums and tank in good condition but no secondary containment

3. Example of business using some BMPs, with room for improvement by covering drums and adding pumping secondary containment

4. Example of outdoor storage tanks that are in good condition and under cover, but with staining still visible from oil transfers

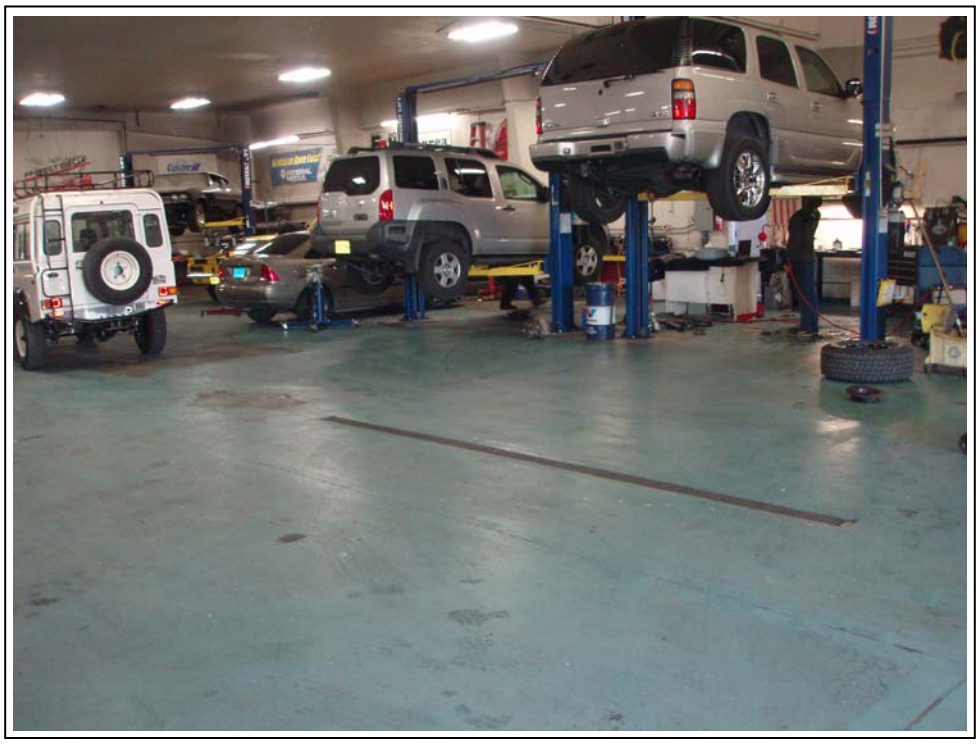
5. Example of outdoor storage

6. Waste fluids stored indoors, covered and on secondary containment

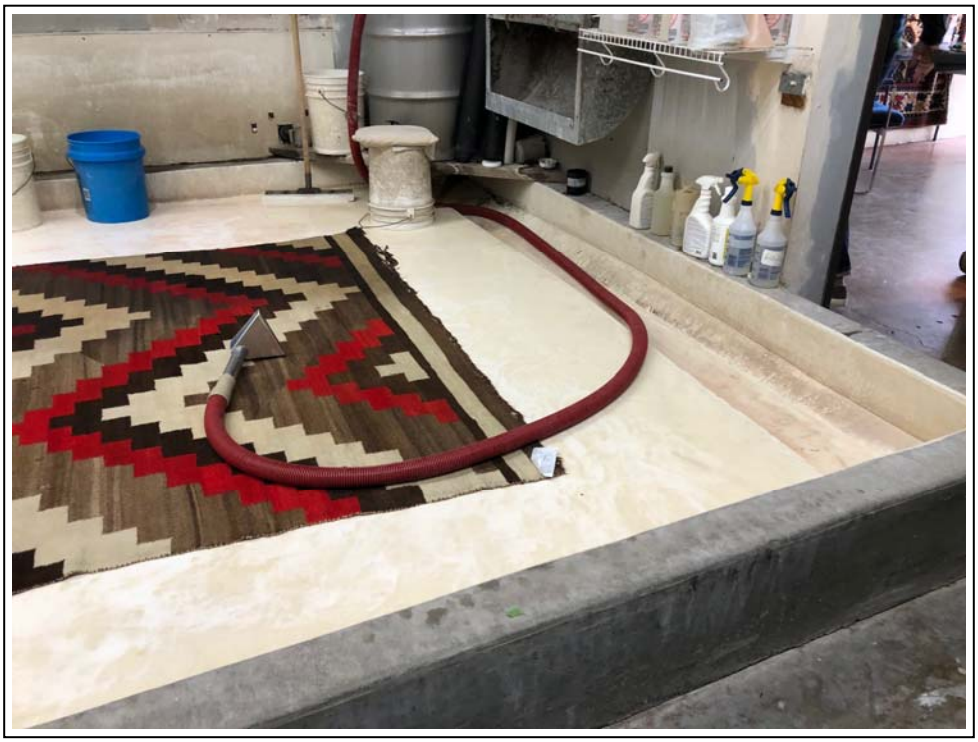
7. Example of bone yard and outdoor storage tank

8. Parts stored in uncovered outdoor bin

9. Example of oil-water separator in garage



10. Garage interior with drain for capturing runoff



11. Example of legitimate carpet cleaner with indoor secondary containment and drain to SAS

Attachment 10

Dry Weather Screening Results

Dry Weather Screening 2019 Locatrion Map

CORRALES
RIO RANCHO
LOS RANCHOS
ALBUQUERQUE
UNINCORPORATED AREAS

NORTH DIVERSION CHANNEL
TIJERAS ARROYO
NORTH PINO ARROYO
BLACK ARROYO

Miles: 0 0.5 1 2 3 4

DRY WEATHER OUTFALLS SCREENING
TABLE OF CONTENTS

Dry Weather Screening of the Outfalls

LOCATION	SAN JOSE DRAIN AT WOODWARD SE						
OUTFALL_NO	1	QUAD	SE	GRID	M-14	SAMPLED	☐
DATE_INSP	1/15/2019	TIME	2:15	Inspected by	AG		
WEATHER	PARTLY CLOUDY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	NA	OBSERV GROSS POLLUTANT	NA				
Source of Flow	NA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\1-M1	Lab					
AIR_TEMP_F	39	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	BROADWAY POND INFLOW CHANNEL						
OUTFALL_NO	2	QUAD	SE	GRID	K-14	SAMPLED	☑
DATE_INSP	2/7/2019	TIME	11:15			Inspected by	SK
WEATHER	SUNNY	flow	YES			FLOW_CFS	0.01
APPEARANCE	clear	OBSERV GROSS POLLUTANT		no			
Source of Flow	cooling tower of lovelac hospital						
link	..\..\311_SWQ_Complaints\2019\Outfalls\2-K1			Lab	HALL Environmental Analysis		

AIR_TEMP_F	38	Lab_Report	1902292
WATER_TEMP_F	38.3		
pH	8.25	E_coli_Coliform_mpn/100ml	214.2
CONDUCTIVITY_Umos/cm	960	Oil_Grease_mg/l	< 9.4
BOD_mg/l	10.0	Ammonia_mg/l	<1.0
COD_mg/l	<10.0	Nitrite_NO2_mg/l	<0.1
TSS_mg/l	< 4.0	Nitrate_NO3_mg/l	0.66
TDS_mg/l	620	Phosphorus_total_mg/l_P	0.79

LOCATION	MENAUL POND INFLOW CHANNEL						
OUTFALL_NO	3	QUAD	NE	GRID	H-15	SAMPLED	☐
DATE_INSP	1/9/2019	TIME	11:45	Inspected by	GS		
WEATHER	CLEAR/SUNNY	flow	NO FLOW	FLOW_CFS			
APPEARANCE	NA	OBSERV GROSS POLLUTANT					
Source of Flow	NA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\3-H1	Lab					
AIR_TEMP_F	41	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	BARELAS PUMPING PLANT INFLOW						
OUTFALL_NO	4	QUAD	SW	GRID	L-13	SAMPLED	☑
DATE_INSP	2/7/2019	TIME	10:30			Inspected by	SK
WEATHER	SUNNY	flow	YES			FLOW_CFS	0.1
APPEARANCE	clear	OBSERV GROSS POLLUTANT			no		
Source of Flow	Ground water infiltration						
link	..\..\311_SWQ_Complaints\2019\Outfalls\4-L13			Lab	HALL Environmental Analysis		

AIR_TEMP_F	38	Lab_Report	1902292
WATER_TEMP_F	41.5		
pH	8.22	E_coli_Coliform_mpn/100ml	488.4
CONDUCTIVITY_Umos/cm	730	Oil_Grease_mg/l	< 9.9
BOD_mg/l	10	Ammonia_mg/l	< 1.0
COD_mg/l	<10.0	Nitrite_NO2_mg/l	< 0.1
TSS_mg/l	<4.0	Nitrate_NO3_mg/l	0.29
TDS_mg/l	488	Phosphorus_total_mg/l_P	0.17

LOCATION	KIRTLAND CHANNEL AT MULBERRY NE						
OUTFALL_NO	5	QUAD	SE	GRID	M-15	SAMPLED	☐
DATE_INSP	1/9/2019	TIME	12:45			Inspected by	GS
WEATHER	SUNNY	flow	NO FLOW			FLOW_CFS	0
APPEARANCE	NA	OBSERV GROSS POLLUTANT		na			
Source of Flow	NA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\5-M1			Lab			
AIR_TEMP_F	44			Lab_Report			
WATER_TEMP_F							
pH				E_coli_Coliform_mpn/100ml			
CONDUCTIVITY_Umos/cm				Oil_Grease_mg/l			
BOD_mg/l				Ammonia_mg/l			
COD_mg/l				Nitrite_NO2_mg/l			
TSS_mg/l				Nitrate_NO3_mg/l			
TDS_mg/l				Phosphorus_total_mg/l_P			

LOCATION	SAN ANTONIO ARROYO AT RIO GRANDE						
OUTFALL_NO	6	QUAD	NW	GRID	F-12	SAMPLED	☐
DATE_INSP	1/24/2019	TIME	9:45	Inspected by	AG		
WEATHER	SUNNY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	NA	OBSERV GROSS POLLUTANT	na				
Source of Flow	nA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\6-F1	Lab					
AIR_TEMP_F	38	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	CALABACILLAS ARROYO AT RIO GRANDE						
OUTFALL_NO	7	QUAD	NW	GRID	C-14	SAMPLED	☐
DATE_INSP	1/22/2019	TIME	2:00	Inspected by	GS		
WEATHER	PARTLY CLOUDY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	NA	OBSERV GROSS POLLUTANT	na				
Source of Flow	NA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\7-C1	Lab					
AIR_TEMP_F	42	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	HAHN ARROYO AT CARLISLE NE						
OUTFALL_NO	8	QUAD	NE	GRID	G-16	SAMPLED	☐
DATE_INSP	1/8/2019	TIME	2:10	Inspected by	GS		
WEATHER	SUNNY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	NA	OBSERV GROSS POLLUTANT	na				
Source of Flow	NA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\8-G1	Lab					
AIR_TEMP_F	45	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	EMBUDO AT PENNSYLVANIA SOUTH OF MENUAL NE						
OUTFALL_NO	9	QUAD	NE	GRID	J-19	SAMPLED	☐
DATE_INSP	1/9/2019	TIME	12:30			Inspected by	GS
WEATHER	SUNNY/CLEAR	flow	NO FLOW			FLOW_CFS	0
APPEARANCE	NA	OBSERV GROSS POLLUTANT		na			
Source of Flow	NA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\9-J19			Lab			
AIR_TEMP_F	44			Lab_Report			
WATER_TEMP_F							
pH				E_coli_Coliform_mpn/100ml			
CONDUCTIVITY_Umos/cm				Oil_Grease_mg/l			
BOD_mg/l				Ammonia_mg/l			
COD_mg/l				Nitrite_NO2_mg/l			
TSS_mg/l				Nitrate_NO3_mg/l			
TDS_mg/l				Phosphorus_total_mg/l_P			

LOCATION	HIGHLANDS SYSTEM OUTFALL AT UNM HOSPI

OUTFALL_NO	10	QUAD	NE	GRID	J-16	SAMPLED	☐
DATE_INSP	1/22/2019	TIME	11:00			Inspected by	AG
WEATHER	OVERCAST	flow	NO FLOW			FLOW_CFS	0
APPEARANCE	NA	OBSERV GROSS POLLUTANT		na			
Source of Flow		NA					
link	..\..\311_SWQ_Complaints\2019\Outfalls\10-J1			Lab			
AIR_TEMP_F	38			Lab_Report			
WATER_TEMP_F							

pH		E_coli_Coliform_mpn/100ml	
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l	
BOD_mg/l		Ammonia_mg/l	
COD_mg/l		Nitrite_NO2_mg/l	
TSS_mg/l		Nitrate_NO3_mg/l	
TDS_mg/l		Phosphorus_total_mg/l_P	

LOCATION	BEAR CANYON ARROYO AT NDC						
OUTFALL_NO	11	QUAD	NE	GRID	G-16	SAMPLED	☐
DATE_INSP	1/8/2019	TIME	1:30	Inspected by	AG		
WEATHER	SUNNY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	NA	OBSERV GROSS POLLUTANT	na				
Source of Flow	NA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\11-G	Lab					
AIR_TEMP_F	45	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	SOUTH PINO ARROYO AT WASHINGTON NE						
OUTFALL_NO	12	QUAD	NE	GRID	D-17	SAMPLED	☐
DATE_INSP	1/16/2019	TIME	11:40	Inspected by	AG		
WEATHER	PARTLY CLOUDY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	NA	OBSERV GROSS POLLUTANT	na				
Source of Flow	NA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\12-E	Lab					
AIR_TEMP_F	42	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	NORTH PINO ARROYO AT NDC						
OUTFALL_NO	13	QUAD	NE	GRID	D-17	SAMPLED	☐
DATE_INSP	1/8/2019	TIME	1:05	Inspected by	AG		
WEATHER	SUNNY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	NA	OBSERV GROSS POLLUTANT	na				
Source of Flow	NA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\13-D	Lab					
AIR_TEMP_F	45	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	**SOUTH DOMINGO BACA ARROYO AT WASHINGTON NE**

OUTFALL_NO	**14**	QUAD	NE	GRID	C-17	SAMPLED	☑
DATE_INSP	2/8/2019	TIME	10:00	Inspected by	SK		
WEATHER	PARTLY CLOUDY	flow	YES	FLOW_CFS	0.2		
APPEARANCE	clear	OBSERV GROSS POLLUTANT	no				
Source of Flow	water well washing at coronadel 1 well site						
link	..\..\311_SWQ_Complaints\2019\Outfalls\14-C	Lab	HALL Environmental Analysis				

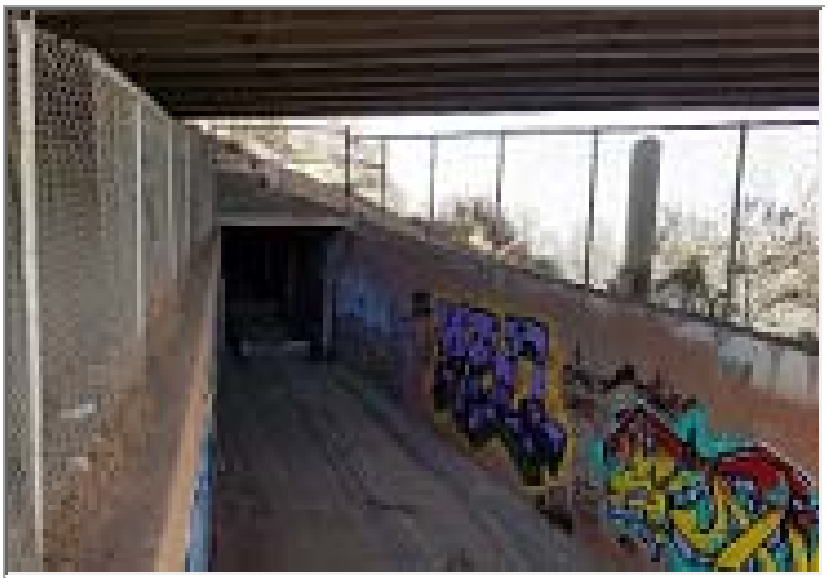
AIR_TEMP_F	40	Lab_Report	1902354
WATER_TEMP_F	40.6		
pH	8.22	E_coli_Coliform_mpn/100ml	5.2
CONDUCTIVITY_Umos/cm	460	Oil_Grease_mg/l	<9.63
BOD_mg/l	6.9	Ammonia_mg/l	<0.1
COD_mg/l	10.4	Nitrite_NO2_mg/l	<0.1
TSS_mg/l	<4.0	Nitrate_NO3_mg/l	0.29
TDS_mg/l	305	Phosphorus_total_mg/l_P	<0.1

LOCATION	AMOLE DEL NORTE CHANNEL AT BLAKE RD SW

OUTFALL_NO	15	QUAD	SW	GRID	N-10	SAMPLED	☑
DATE_INSP	2/7/2019	TIME	2:10			Inspected by	SK
WEATHER	SUNNY	flow	YES			FLOW_CFS	0.01
APPEARANCE	clear	OBSERV GROSS POLLUTANT		none			
Source of Flow	irrigation water from tower park and a church						
link	..\..\311_SWQ_Complaints\2019\Outfalls\15-L1			Lab	Hall Environmental Analysis		

AIR_TEMP_F	42	Lab_Report	1902321
WATER_TEMP_F	44.8		
pH	8.25	E_coli_Coliform_mpn/100ml	2.0
CONDUCTIVITY_Umos/cm	510	Oil_Grease_mg/l	<9.6
BOD_mg/l	<2.0	Ammonia_mg/l	<1.0
COD_mg/l	21.9	Nitrite_NO2_mg/l	<0.1
TSS_mg/l	<4.0	Nitrate_NO3_mg/l	1.2
TDS_mg/l	369	Phosphorus_total_mg/l_P	0.025

LOCATION	WEST BLUFF NW OUTFALL AT RIO GRANDE						
OUTFALL_NO	16	QUAD	NW	GRID	H-11	SAMPLED	☐
DATE_INSP	1/25/2019	TIME	1:30	Inspected by	GS		
WEATHER	SUNNY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	NA	OBSERV GROSS POLLUTANT	na				
Source of Flow	NA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\16_H	Lab					
AIR_TEMP_F	48	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					



LOCATION	SNOW VISTA ARROYO AT SAGE SW						
OUTFALL_NO	17	QUAD	SW	GRID	M-09	SAMPLED	☐
DATE_INSP	1/29/2019	TIME	12:00			Inspected by	AG
WEATHER	PARTLY CLOUDY	flow	NO FLOW			FLOW_CFS	0
APPEARANCE	NA	OBSERV GROSS POLLUTANT		na			
Source of Flow	NA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\17-M			Lab			
AIR_TEMP_F	36			Lab_Report			
WATER_TEMP_F							
pH				E_coli_Coliform_mpn/100ml			
CONDUCTIVITY_Umos/cm				Oil_Grease_mg/l			
BOD_mg/l				Ammonia_mg/l			
COD_mg/l				Nitrite_NO2_mg/l			
TSS_mg/l				Nitrate_NO3_mg/l			
TDS_mg/l				Phosphorus_total_mg/l_P			

LOCATION	MONTANO EAST OF COORS NW						
OUTFALL_NO	18	QUAD	NW	GRID	E-12	SAMPLED	☐
DATE_INSP	1/22/2019	TIME	1:40	Inspected by	GS		
WEATHER	PARTLY CLOUDY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	naNA	OBSERV GROSS POLLUTANT	NA				
Source of Flow	NA						
link	..\..\311_SWQ_Complaints\2019\Outfalls\18-E	Lab					
AIR_TEMP_F	42	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	MONTANO NW PS-47 WEST OF RIO GRANDE BLVD						
OUTFALL_NO	19	QUAD	NW	GRID	F-12	SAMPLED	☐
DATE_INSP	1/16/2019	TIME	1:20			Inspected by	AG
WEATHER	CLOUDY	flow	NO FLOW			FLOW_CFS	0
APPEARANCE	NA	OBSERV GROSS POLLUTANT		NA			
Source of Flow		NA					
link	..\..\311_SWQ_Complaints\2019\Outfalls\19-F			Lab			
AIR_TEMP_F	52			Lab_Report			
WATER_TEMP_F							
pH				E_coli_Coliform_mpn/100ml			
CONDUCTIVITY_Umos/cm				Oil_Grease_mg/l			
BOD_mg/l				Ammonia_mg/l			
COD_mg/l				Nitrite_NO2_mg/l			
TSS_mg/l				Nitrate_NO3_mg/l			
TDS_mg/l				Phosphorus_total_mg/l_P			

LOCATION	**CANDELARIA NW PS-40 AT RIO GRANDE**

OUTFALL_NO	**20**	QUAD	NW	GRID	G-12	SAMPLED	☐
DATE_INSP	1/22/2019	TIME	12:45			Inspected by	AG
WEATHER	CLOUDY	flow	NO FLOW			FLOW_CFS	0
APPEARANCE	NA	OBSERV GROSS POLLUTANT		NA			
Source of Flow		NA					
link	..\..\311_SWQ_Complaints\2019\Outfalls\20-G			Lab			
AIR_TEMP_F	40			Lab_Report			
WATER_TEMP_F							

pH		E_coli_Coliform_mpn/100ml	
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l	
BOD_mg/l		Ammonia_mg/l	
COD_mg/l		Nitrite_NO2_mg/l	
TSS_mg/l		Nitrate_NO3_mg/l	
TDS_mg/l		Phosphorus_total_mg/l_P	

LOCATION	NAMASTE AND COORS NW
OUTFALL_NO	21
QUAD	NW
GRID	F-11
SAMPLED	☐
DATE_INSP	1/24/2019
TIME	9:30
Inspected by	AG
WEATHER	SUNNY
flow	NO FLOW
FLOW_CFS	0
APPEARANCE	NA
OBSERV GROSS POLLUTANT	NA
Source of Flow	NA
link	..\..\311_SWQ_Complaints\2019\Outfalls\21-F
Lab	
AIR_TEMP_F	38
Lab_Report	
WATER_TEMP_F	
pH	
E_coli_Coliform_mpn/100ml	
CONDUCTIVITY_Umos/cm	
Oil_Grease_mg/l	
BOD_mg/l	
Ammonia_mg/l	
COD_mg/l	
Nitrite_NO2_mg/l	
TSS_mg/l	
Nitrate_NO3_mg/l	
TDS_mg/l	
Phosphorus_total_mg/l_P	

LOCATION	**SNOW GOOSE AT OXBOW BLUFF NW**

OUTFALL_NO	**22**	QUAD	NW	GRID	G-11	SAMPLED	☐
DATE_INSP	2/5/2019	TIME	11:00			Inspected by	GS
WEATHER	PARTLY CLOUDY	flow	NO FLOW			FLOW_CFS	0
APPEARANCE	NA	OBSERV GROSS POLLUTANT		NA			
Source of Flow		NA					
link	..\..\311_SWQ_Complaints\2019\Outfalls\22-G			Lab			

AIR_TEMP_F	54	Lab_Report	
WATER_TEMP_F			
pH		E_coli_Coliform_mpn/100ml	
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l	
BOD_mg/l		Ammonia_mg/l	
COD_mg/l		Nitrite_NO2_mg/l	
TSS_mg/l		Nitrate_NO3_mg/l	
TDS_mg/l		Phosphorus_total_mg/l_P	

LOCATION	SEQUOIA NW AT RIO GRANDE						
OUTFALL_NO	23	QUAD	NW	GRID	G-11	SAMPLED	☐
DATE_INSP	2/21/2019	TIME	8:10	Inspected by	AG		
WEATHER	CLOUDY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	na	OBSERV GROSS POLLUTANT	na				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\23-G	Lab					
AIR_TEMP_F	34	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	REDLANDS - GRANDE VISTA NW						
OUTFALL_NO	24	QUAD	NW	GRID	G-12	SAMPLED	☐
DATE_INSP	2/12/2019	TIME	3:25	Inspected by	AG		
WEATHER	SUNNY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	na	OBSERV GROSS POLLUTANT	na				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\24-G	Lab					
AIR_TEMP_F	48	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	PASEO DEL REY - OURAY - VISTA GRANDE NW						
OUTFALL_NO	25	QUAD	NW	GRID	H-11	SAMPLED	☐
DATE_INSP	2/5/2019	TIME	11:45	Inspected by	GS		
WEATHER	PARTLY CLOUDY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	na	OBSERV GROSS POLLUTANT	NA				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\25-H	Lab					
AIR_TEMP_F	56	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	DURANES NW PS AT RIO GRANDE						
OUTFALL_NO	26	QUAD	NW	GRID	H-12	SAMPLED	☐
DATE_INSP	1/22/2019	TIME	10:30	Inspected by	AG		
WEATHER	CLOUDY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	na	OBSERV GROSS POLLUTANT	NA				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\26-H	Lab					
AIR_TEMP_F	37	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	CALLE DEL VISTA-ATRISCO NW						
OUTFALL_NO	27	QUAD	NW	GRID	H-11	SAMPLED	☐
DATE_INSP	1/25/2019	TIME	12:50	Inspected by	GS		
WEATHER	SUNNY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	na	OBSERV GROSS POLLUTANT	na				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\27-H	Lab					
AIR_TEMP_F	48	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	WESTCLIFFE AND JOSEPHINE NW						
OUTFALL_NO	28	QUAD	NW	GRID	H-12	SAMPLED	☐
DATE_INSP	2/4/2019	TIME	1:00	Inspected by	GS		
WEATHER	CLOUDY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	na	OBSERV GROSS POLLUTANT	na				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\28-H	Lab					
AIR_TEMP_F	58	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	SAN JOSE DRAIN AT RIO BRAVO SW

OUTFALL_NO	29	QUAD	SW	GRID	P-13	SAMPLED	☐
DATE_INSP	1/15/2019	TIME	1:50	Inspected by	AG		
WEATHER	PARTLY CLOUDY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	na	OBSERV GROSS POLLUTANT	na				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\29-P	Lab					
AIR_TEMP_F	39	Lab_Report					
WATER_TEMP_F							

pH		E_coli_Coliform_mpn/100ml	
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l	
BOD_mg/l		Ammonia_mg/l	
COD_mg/l		Nitrite_NO2_mg/l	
TSS_mg/l		Nitrate_NO3_mg/l	
TDS_mg/l		Phosphorus_total_mg/l_P	

LOCATION	ATRISCO-ATRISCO PL-RIVERVIEW NW						
OUTFALL_NO	30	QUAD	NW	GRID	J-11	SAMPLED	☐
DATE_INSP	2/5/2019	TIME	12:30	Inspected by	GS		
WEATHER	PARTLY CLOUDY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	na	OBSERV GROSS POLLUTANT	na				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\30-J1	Lab					
AIR_TEMP_F	58	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	LABAJADA-ATRISCO-NORTH 30 IN PIPE						
OUTFALL_NO	31	QUAD	NW	GRID	J-11	SAMPLED	☐
DATE_INSP	2/5/2019	TIME	12:45			Inspected by	GS
WEATHER	PARTLY CLOUDY	flow	NO FLOW			FLOW_CFS	0
APPEARANCE	na	OBSERV GROSS POLLUTANT	na				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\31-J1	Lab					
AIR_TEMP_F	58	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	LABAJADA-ATRISCO-SOUTH 36 IN PIPE						
OUTFALL_NO	32	QUAD	NW	GRID	J-11	SAMPLED	☐
DATE_INSP	2/5/2019	TIME	12:45			Inspected by	
WEATHER	PARTLY CLOUDY	flow	NO FLOW			FLOW_CFS	0
APPEARANCE	na	OBSERV GROSS POLLUTANT	na				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\32_J	Lab					
AIR_TEMP_F	58	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	CENTRAL-SUNSET-OSAGE PS-44 TWO PIPES 36 AND 42 IN						
OUTFALL_NO	33	QUAD	NW	GRID	J-12	SAMPLED	☐
DATE_INSP	1/29/2019	TIME	2:00	Inspected by	AG		
WEATHER	PARTLY CLOUDY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	na	OBSERV GROSS POLLUTANT	na				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\33 an	Lab					
AIR_TEMP_F	42	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	CENTRAL-SUNSET-OSAGE NW PS-44-6 IN PIPE
OUTFALL_NO	34
QUAD	NW
GRID	J-12
SAMPLED	☑
DATE_INSP	1/7/2019
TIME	1:40
Inspected by	SK
WEATHER	SUNNY
flow	YES
FLOW_CFS	0.1
APPEARANCE	clear
OBSERV GROSS POLLUTANT	no
Source of Flow	ground water infiltration
link	..\..\311_SWQ_Complaints\2019\Outfalls\33 an
Lab	Hall Environmental Analysis
AIR_TEMP_F	42
Lab_Report	1902321
WATER_TEMP_F	41.1
pH	7.93
E_coli_Coliform_mpn/100ml	307.6
CONDUCTIVITY_Umos/cm	570
Oil_Grease_mg/l	<9.71
BOD_mg/l	<2.0
Ammonia_mg/l	<1.0
COD_mg/l	14.2
Nitrite_NO2_mg/l	<0.1
TSS_mg/l	<4
Nitrate_NO3_mg/l	<0.1
TDS_mg/l	375
Phosphorus_total_mg/l_P	<0.1

LOCATION	**ALCALDE SW PS-41 AT RIO GRANDE**

OUTFALL_NO	**35**	QUAD	SW	GRID	K-13	SAMPLED	☐
DATE_INSP	1/22/2019	TIME	1:20			Inspected by	GS
WEATHER	CLOUDY	flow	NO FLOW			FLOW_CFS	0
APPEARANCE	NA	OBSERV GROSS POLLUTANT		na			
Source of Flow		na					
link	..\..\311_SWQ_Complaints\2019\Outfalls\35-K			Lab			
AIR_TEMP_F	36			Lab_Report			
WATER_TEMP_F							

pH		E_coli_Coliform_mpn/100ml	
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l	
BOD_mg/l		Ammonia_mg/l	
COD_mg/l		Nitrite_NO2_mg/l	
TSS_mg/l		Nitrate_NO3_mg/l	
TDS_mg/l		Phosphorus_total_mg/l_P	

LOCATION	NDC AT EDITH NE
OUTFALL_NO	36
QUAD	NE
GRID	A-17
SAMPLED	☑
DATE_INSP	1/8/2019
TIME	9:30
Inspected by	SK
WEATHER	SUNNY
flow	YES
FLOW_CFS	0.1
APPEARANCE	clear
OBSERV GROSS POLLUTANT	no
Source of Flow	water wells and irrigation lines leak
link	..\..\311_SWQ_Complaints\2019\Outfalls\36-C
Lab	HALL Environmental Analysis
AIR_TEMP_F	40
Lab_Report	1902354
WATER_TEMP_F	37
pH	8.36
E_coli_Coliform_mpn/100ml	< 1
CONDUCTIVITY_Umos/cm	460
Oil_Grease_mg/l	<9.77
BOD_mg/l	5.0
Ammonia_mg/l	< 1.0
COD_mg/l	43.1
Nitrite_NO2_mg/l	< 0.1
TSS_mg/l	7.0
Nitrate_NO3_mg/l	0.19
TDS_mg/l	305
Phosphorus_total_mg/l_P	0.11

LOCATION	TIJERAS ARROYO AT 2ND ST SW						
OUTFALL_NO	37	QUAD	SW	GRID	Q-12	SAMPLED	☐
DATE_INSP	1/15/2019	TIME	1:00	Inspected by	AG		
WEATHER	SUNNY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	na	OBSERV GROSS POLLUTANT	na				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\37-Q	Lab					
AIR_TEMP_F	39	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	MIRANDELA BY PUEBLO PARK SE OF COORS AND MONTANO NW						
OUTFALL_NO	38	QUAD	NW	GRID	E12	SAMPLED	☐
DATE_INSP	1/29/2019	TIME	1:15	Inspected by	AG		
WEATHER	PARTLY CLOUDY	flow	NO FLOW	FLOW_CFS	0		
APPEARANCE	na	OBSERV GROSS POLLUTANT	na				
Source of Flow	na						
link	..\..\311_SWQ_Complaints\2019\Outfalls\38 an	Lab					
AIR_TEMP_F	39	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l					
BOD_mg/l		Ammonia_mg/l					
COD_mg/l		Nitrite_NO2_mg/l					
TSS_mg/l		Nitrate_NO3_mg/l					
TDS_mg/l		Phosphorus_total_mg/l_P					

LOCATION	**BOSQUE SCHOOL AND MIRANDELA SE OF COORS AND MONTANO NW**

OUTFALL_NO	**39**	QUAD	NW	GRID	E12	SAMPLED	☐
DATE_INSP	1/29/2019	TIME	1:20			Inspected by	AG
WEATHER	PARTLY CLOUDY	flow	NO FLOW			FLOW_CFS	0
APPEARANCE	na	OBSERV GROSS POLLUTANT		na			
Source of Flow		na					
link	..\..\311_SWQ_Complaints\2019\Outfalls\38 an	Lab					
AIR_TEMP_F	39	Lab_Report					
WATER_TEMP_F							

pH		E_coli_Coliform_mpn/100ml	
CONDUCTIVITY_Umos/cm		Oil_Grease_mg/l	
BOD_mg/l		Ammonia_mg/l	
COD_mg/l		Nitrite_NO2_mg/l	
TSS_mg/l		Nitrate_NO3_mg/l	
TDS_mg/l		Phosphorus_total_mg/l_P	

Attachment 11

Industrial High Risk Visual Monitoring Results

Weston Solutions, Inc.
3840 Commons Ave. NE
Albuquerque, NM 87109
505-837-6520 Fax 505-837-6595
www.westonsolutions.com

May 6, 2019

Ms. Kathy Verhage, P.E.
Department of Municipal Development - Storm Drainage Design
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

REFERENCE: PROJECT NO. 8010 CITYWIDE ON-CALL NPDES AND MS4 ENGINEERING SUPPORT SERVICES 1st QUARTER 2019 UPDATE FOR TASK 19 VISUAL STORM WATER INSPECTIONS

Dear Ms. Verhage:

This letter describes the results of the 2019 Quarter 1 (January 1 through March 31) Visual Storm Water Inspections for ten City of Albuquerque (City) facilities that are subject to the requirements of the U.S. Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer System (MS4) Permit and the Multi Sector General Permit for Storm Water Discharges Associated with Industrial Activity (MSGP) at City-owned facilities. The purpose of this memo is to document the City's compliance with the requirements for quarterly stormwater monitoring. To comply with the MS4 and MSGP's requirements for stormwater monitoring, the City tasked Weston Solutions to perform the quarterly visual inspections in order to identify potential impacted stormwater discharges at the 10 City-owned facilities. The following facilities meet the definition of an industrial facility in the MSGP based on audits of City-owned facilities performed between 2012 and 2019.

- Arroyo Del Oso Golf Course
- Balloon Fiesta Park and Golf Training Center
- Albuquerque BioPark Zoo
- Fire Department Mechanic Shop
- 4th Street Fuel Station
- Pino Yards Complex
- Street Maintenance Satellite #2
- 6th Street Park Management
- Eagle Rock Convenience Center
- Edith Yards Maintenance Facility

Figure 1 identifies these facilities along with the Weston inspection team responsible for inspecting each facility outfall.

Figure 1: Facility Site Locations

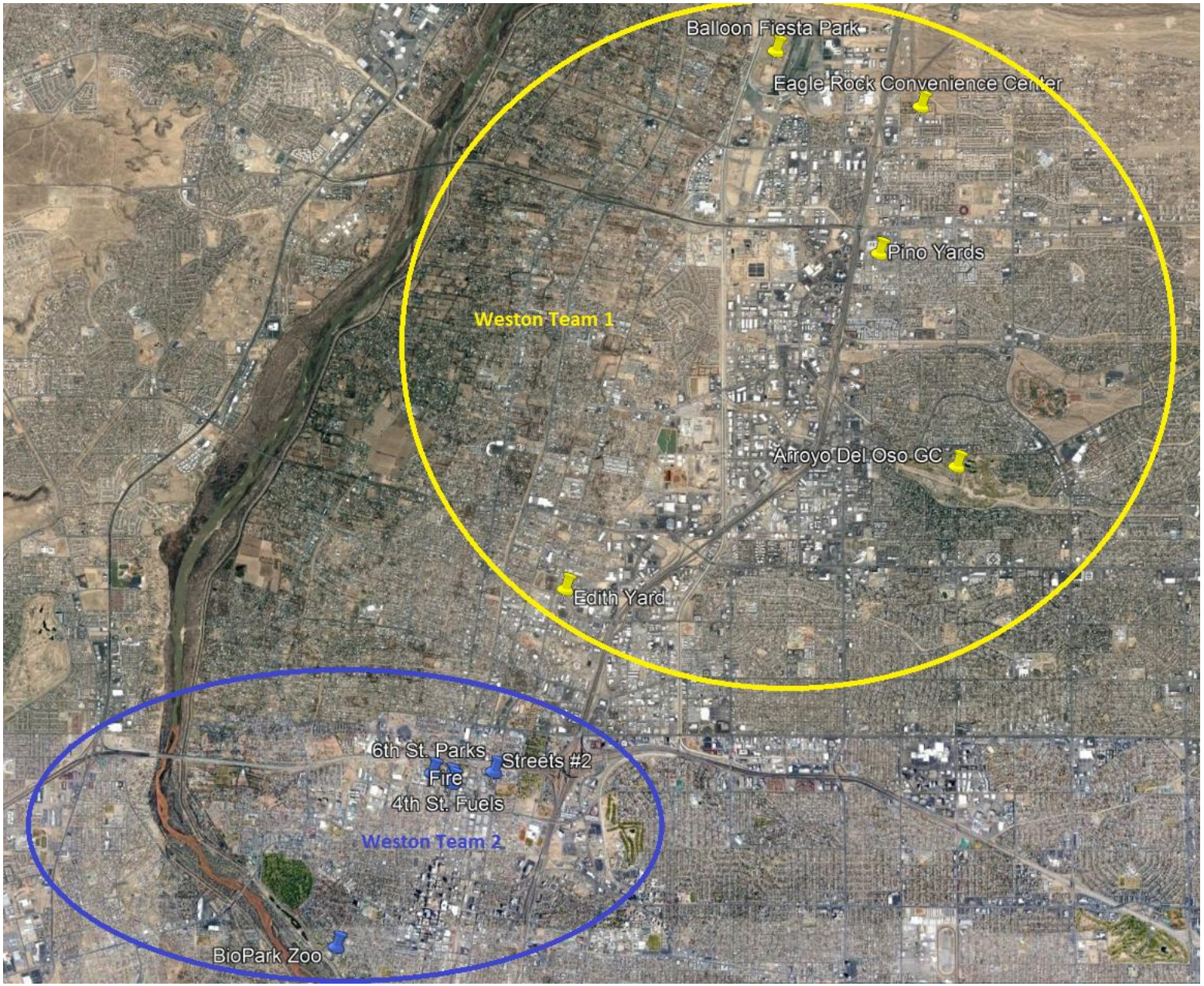


Table 1 summarizes the inspection status during the 4th Quarter of 2018.

Table 1: Outfall ID and Designees Site	Outfall ID	2019 Quarter 1 Status
Weston Team 1		
Balloon Fiesta Park and Golf Training Center	BFP1	Visited, dry-no sample
	BFP2	Visited, dry-no sample
	BFP3	Visited, dry-no sample
	BFP4	Visited, dry-no sample
	BFP5	Visited, dry-no sample
Pino Yards Complex	PY1	Site not visited
	PY2	Site not visited
	PY3	Site not visited
Arroyo Del Oso Golf Course	ADO1	Visited, dry-no sample
	ADO2	Sample collected
Eagle Rock Convenience Center	ER01	Sample collected
	ER02	Visited, dry-no sample
	ER03	Visited, dry-no sample
ABQ BioPark Zoo	BP1	Site not visited
Weston Team 2		
4th Street Fuel Station	FS1	Visited, dry-no sample
Fire Department Mechanic Shop	FM1	Sample collected
	FM2	Visited, dry-no sample
Street Maintenance Satellite #2	SS2	Visited, dry-no sample
Edith Yards Maintenance Facility	EY01	Visited, dry-no sample
	EY02	Sample collected
	EY03	Visited, dry-no sample
6th Street Park Management	6PM1	Visited, dry-no sample

The facilities identified as "Site not visited" were not inspected since no qualifying storm events occurred during the quarter.

Background

The MSGP establishes requirements for monitoring the quality of stormwater discharges depending on the nature of activities performed at the various industrial facilities. Although benchmark monitoring is not required, the MSGP does require quarterly visual inspection of stormwater quality. Visual inspection consists of the collection of grab samples from each outfall (subject to demonstration of substantially identical outfalls) and examination for the presence of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, or other indicators of stormwater pollution.

The following criteria regarding the precipitation event must be met for a visual inspection of stormwater to occur:

- During daylight hours
- Within 30 minutes of start of storm water discharge (or as soon as practicable thereafter)
- At least 72 hours after the previous storm water discharge event

Weston follows the City's existing stormwater monitoring protocol outlining the locations and descriptions of all outfalls to be monitored. The protocol identifies contact persons at each facility for use in notifying City personnel when members of the stormwater monitoring team are mobilizing to that location. A standard visual assessment form is used by all staff to document the inspection activities.

Quarter 1 Monitoring Results

The results from the 1st Quarter 2019 visual inspections including monitoring reports and photo logs can be found in the Attachment A. From January 1 – March 31, 2019 the following occurred:

- Weston Sites Group 1 mobilized three times during the quarter to collect samples from storm events on February 14th, February 19th and March 11th 2019. Visual samples were collected from two of the 14 outfalls that fall under Group 1.
- Weston Sites Group 2 mobilized once during the quarter to collect samples from a storm event on February 19, 2019. All outfalls were visited but only two visual samples were collected from the eight outfalls over the course of the one mobilization, all other outfalls were dry.

Although there were several recordable precipitation events through this period, the vast majority did not meet the criteria for visual sampling since they occurred in the early evening, overnight or on weekends. Many sites received no rain due to the localized nature of the storms that did occur. Non qualifying event data is provided in Attachment B.

Any outfalls not inspected in the 1st Quarter will be addressed during Quarter 2 of 2019 pending suitable weather conditions.

Observed Problems

No problems were observed during this reporting period.

We appreciate the opportunity to provide professional consulting services to you and we look forward to assisting you in the next quarter. Please contact Sarah Luckie at (720) 937-5905 (Sarah.Luckie@WestonSolutions.com) or Brad Sumrall at (505) 837-6566 (Brad.Sumrall@WestonSolutions.com) if you have any questions or need additional information.

Sincerely,
WESTON SOLUTIONS, INC.

L. Brad Sumrall, P.E.
Albuquerque Operations Manager

Enclosures:

ATTACHMENT A: Q1 INSPECTION FORMS AND PHOTO LOGS

ATTACHMENT B: NON-QUALIFYING EVENT DATA

ATTACHMENT A: Q1 INSPECTION FORMS AND PHOTO LOGS

STREETS SATELLITE #2

City of Albuquerque
Street Maintenance Satellite #2

Quarterly Visual Monitoring of
Storm Water Outfall Discharges

☒ Q1 ☐ Q2 ☐ Q3 ☐ Q4

Date: 2/19/19
Time: 1135
Inspector: Andrew Brenner
Signature: Andrew F Brenner

Weather: Cold, partly cloudy
Storm Precip:
Last 72 Hour Precip: no
Photo: yes

Outfall ID:	SS2
Flow Observed:	☒ Yes ☒ No (NFB)
Description of Monitoring Site:	low flow
Flow Estimate (include units and method of estimation) :	< 1 cfs
Other Observations:	—
Color (Describe):	—
Turbidity:	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque
Floating Solids:	☐ Yes ☐ No
Suspended Solids:	☐ Yes ☐ No
Settled Solids:	☐ Yes ☐ No
Sheen Present:	☐ Yes ☐ No
Odor:	☐ Yes ☐ No
Foam Present:	☐ Yes ☐ No
Describe:	—

Additional Comments: ☒ (NFB) minimal flow not enough to collect a sample

WESTON SOLUTIONS

Date:	2/19/2019
Event:	MS4 Visual Storm Water Monitoring
Inspector:	Andrew Brenner - Weston

CITY OF ALBUQUERQUE
STORM WATER MONITORING PHOTOGRAPH LOG

Street Maintenance Satellite #2	
	

PINO YARDS

BALLOON FIESTA PARK/ GOLF TRAINING CENTER

City of Albuquerque

Balloon Fiesta Park and Golf Training Center

Quarterly Visual Monitoring of
Storm Water Outfall Discharges

☒ Q1 ☐ Q2 ☐ Q3 ☐ Q4

Date: 2/14/19
Time: 4:00 pm
Inspector: David Cooper
Signature: David Cooper

Weather: Light Rain
Storm Precip: Yes
Last 72 Hour Precip: No
Photo: Yes

Outfall ID:	BFP1	BFP2	BFP3
Flow Observed:	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
Description of Monitoring Site:	Manhole/Drop Inlet	Manhole/Drop Inlet	Concrete Apron
Flow Estimate (include units and method of estimation) :	<1 cfs	<1 cfs	<1 cfs
Other Observations:	Not enough to grab sample	Not enough to grab sample	Not enough to grab sample
Color (Describe):			
Turbidity:	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque
Floating Solids:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Suspended Solids:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Settled Solids:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Sheen Present:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Odor:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Foam Present:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Describe:			

Additional Comments: At office and on radar, appeared to be enough rain to capture samples. Rain disputed by the time I arrived at the outfalls.

City of Albuquerque

Balloon Fiesta Park and Golf Training Center

Quarterly Visual Monitoring of
Storm Water Outfall Discharges

☒ Q1 ☐ Q2 ☐ Q3 ☐ Q4

Date:	2/14/19	Weather:	Light Rain
Time:	4:00 pm	Storm Precip:	Yes
Inspector:	David Cooper	Last 72 Hour Precip:	NO
Signature:	David Cooper	Photo:	Yes

Outfall ID:	BFP4	BFP5
Flow Observed:	☐ Yes ☒ No	☐ Yes ☒ No
Description of Monitoring Site:	Concrete Apron	Concrete Apron and Valley Gutter
Flow Estimate (include units and method of estimation) :	< 1 cfs	< 1 cfs
Other Observations:	Not enough to grab sample	Not enough to grab sample
Color (Describe):		
Turbidity:	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque
Floating Solids:	☐ Yes ☐ No	☐ Yes ☐ No
Suspended Solids:	☐ Yes ☐ No	☐ Yes ☐ No
Settled Solids:	☐ Yes ☐ No	☐ Yes ☐ No
Sheen Present:	☐ Yes ☐ No	☐ Yes ☐ No
Odor:	☐ Yes ☐ No	☐ Yes ☐ No
Foam Present:	☐ Yes ☐ No	☐ Yes ☐ No
Describe:		

Additional Comments: At office and on radar, appeared to be enough rain to capture a sample. Rain dissipated by the time I arrived at the outfalls.

WESTON SOLUTIONS

Date:	2/14/2019
Event:	MS4 Visual Storm Water Monitoring
Inspector:	Davis “Sonny” Cooper - Weston

CITY OF ALBUQUERQUE
STORM WATER MONITORING PHOTOGRAPH LOG

Balloon Fiesta Park	
	
	

Balloon Fiesta Park	
	
	

ARROYO DEL OSO GOLF COURSE

City of Albuquerque
Arroyo Del Oso Golf Course

Quarterly Visual Monitoring of
Storm Water Outfall Discharges

[X] Q1 [ ] Q2 [ ] Q3 [ ] Q4

Date: 2/19/19
Time: 10 32 AM
Inspector: Brad Sumrall
Signature: J Brad Sumrall

Weather: Overcast, rain
Storm Precip: ≈ 0.05 inch
Last 72 Hour Precip: —
Photo: yes

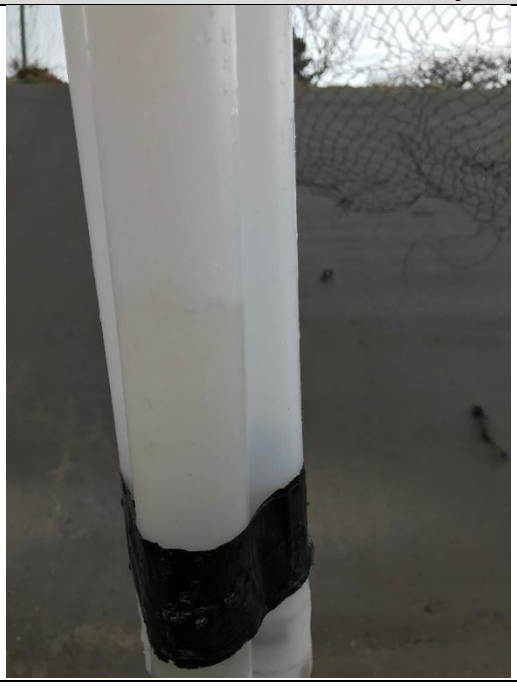
Outfall ID:	ADO1	ADO2
Flow Observed:	[ ] Yes [X] No	[X] Yes [ ] No
Description of Monitoring Site:	earthen channel	Concrete Channel
Flow Estimate (include units and method of estimation) :	No flow	< 1 cfs visual
Other Observations:	—	—
Color (Describe):	—	slightly gray
Turbidity:	[ ] Clear [ ] Slightly Cloudy [ ] Very Cloudy [ ] Opaque	[ ] Clear [X] Slightly Cloudy [ ] Very Cloudy [ ] Opaque
Floating Solids:	[ ] Yes [ ] No	[ ] Yes [X] No
Suspended Solids:	[ ] Yes [ ] No	[X] Yes [ ] No
Settled Solids:	[ ] Yes [ ] No	[X] Yes [ ] No
Sheen Present:	[ ] Yes [ ] No	[ ] Yes [X] No
Odor:	[ ] Yes [ ] No	[ ] Yes [X] No
Foam Present:	[ ] Yes [ ] No	[X] Yes [ ] No
Describe:		mild foaming

Additional Comments: Low flow observed Concentration of floatables and sediment within channel

Form re-written due to water damage

Date:	2/19/2019
Event:	MS4 Visual Storm Water Monitoring
Inspector:	Brad Sumrall - Weston

CITY OF ALBUQUERQUE
STORM WATER MONITORING PHOTOGRAPH LOG

Arroyo Del Oso Golf Course	
	
	

FIRE DEPARTMENT MECHANIC

City of Albuquerque
Fire Department Mechanic Shop

Quarterly Visual Monitoring of
Storm Water Outfall Discharges

☒ Q1 ☐ Q2 ☐ Q3 ☐ Q4

Date: 2/19/19
Time: 1144
Inspector: Andrew Brenner
Signature: Andrew F Brenner

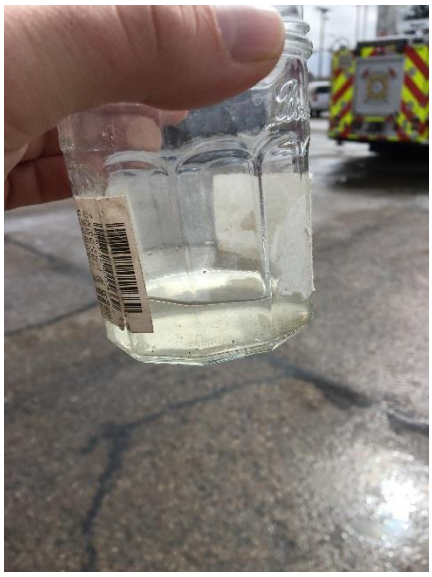
Weather: Cold, partly cloudy
Storm Precip:
Last 72 Hour Precip: no
Photo: yes

Outfall ID:	FM1	FM2
Flow Observed:	☒ Yes ☐ No	☐ Yes ☒ No
Description of Monitoring Site:	flow was less than 1cfs, mostly behind wattle	—
Flow Estimate (include units and method of estimation) :	<1cfs	—
Other Observations:	~~N/A~~ minor quantity of floating solids observed	—
Color (Describe):	clear	—
Turbidity:	☒ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque
Floating Solids:	☒ Yes ☐ No	☐ Yes ☐ No
Suspended Solids:	☐ Yes ☒ No	☐ Yes ☐ No
Settled Solids:	☐ Yes ☒ No	☐ Yes ☐ No
Sheen Present:	☐ Yes ☒ No	☐ Yes ☐ No
Odor:	☐ Yes ☒ No	☐ Yes ☐ No
Foam Present:	☐ Yes ☒ No	☐ Yes ☐ No
Describe:		—

Additional Comments:

Date:	2/19/2019
Event:	MS4 Visual Storm Water Monitoring
Inspector:	Andrew Brenner - Weston

CITY OF ALBUQUERQUE
STORM WATER MONITORING PHOTOGRAPH LOG

Fire Department Mechanic Shop	
	
	

4TH STREET FUELS

City of Albuquerque
4th Street Fuel Station

Quarterly Visual Monitoring of
Storm Water Outfall Discharges

☒ Q1 ☐ Q2 ☐ Q3 ☐ Q4

Date: 2/19/19
Time: 1141
Inspector: Andrew Brenner
Signature: Andrew F Brenner

Weather: Cold, partly cloudy
Storm Precip:
Last 72 Hour Precip: no
Photo: yes

Outfall ID:	FS1
Flow Observed:	☐ Yes ☒ No
Description of Monitoring Site:	no runoff
Flow Estimate (include units and method of estimation) :	—
Other Observations:	—
Color (Describe):	—
Turbidity:	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque
Floating Solids:	☐ Yes ☐ No
Suspended Solids:	☐ Yes ☐ No
Settled Solids:	☐ Yes ☐ No
Sheen Present:	☐ Yes ☐ No
Odor:	☐ Yes ☐ No
Foam Present:	☐ Yes ☐ No
Describe:	—

Additional Comments:

Date:	2/19/2019
Event:	MS4 Visual Storm Water Monitoring
Inspector:	Andrew Brenner - Weston

CITY OF ALBUQUERQUE
STORM WATER MONITORING PHOTOGRAPH LOG

4th Street Fuel Station	
	

ABQ BIOPARK ZOO

6TH STREET PARKS MANAGEMENT

City of Albuquerque

6th Street Park Management

Quarterly Visual Monitoring of
Storm Water Outfall Discharges

☒ Q1 ☐ Q2 ☐ Q3 ☐ Q4

Date: 2/19/19
Time: 1148
Inspector: Andrew Brenner
Signature: Andrew Brenner

Weather: Cold, partly cloudy
Storm Precip:
Last 72 Hour Precip: no
Photo: yes

Outfall ID:	6PM1
Flow Observed:	☐ Yes ☒ No
Description of Monitoring Site:	puddles of melted snow w/ no runoff
Flow Estimate (include units and method of estimation) :	—
Other Observations:	—
Color (Describe):	—
Turbidity:	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque
Floating Solids:	☐ Yes ☐ No
Suspended Solids:	☐ Yes ☐ No
Settled Solids:	☐ Yes ☐ No
Sheen Present:	☐ Yes ☐ No
Odor:	☐ Yes ☐ No
Foam Present:	☐ Yes ☐ No
Describe:	—

Additional Comments:

WESTON SOLUTIONS

Date:	2/19/2019
Event:	MS4 Visual Storm Water Monitoring
Inspector:	Andrew Brenner - Weston

CITY OF ALBUQUERQUE
STORM WATER MONITORING PHOTOGRAPH LOG

6th Street Park Management	
	

EAGLE ROCK CONVENIENCE CENTER

City of Albuquerque Solid Waste Management Department

Eagle Rock Convenience Center

Quarterly Visual Monitoring of
Storm Water Outfall Discharges

☒Q1 ☐Q2 ☐Q3 ☐Q4

Date: 3/11/2019 **Weather:** Rain

Time: 10:17 am **Storm Precip:** ≈0.21 inch

Inspector: Sonny Cooper **Last 72 hour Precip:** —

*ER01/ER02 must be alternated every quarter **Photo Name:** yes

Signature Sonny Cooper

Outfall ID:	**ER02 / ER01 (circle one)**	**ER03**
Flow Observed:	☒Yes ☐No	☐Yes ☒No
Description of Monitoring Site:	—	—
Flow Estimate (include units and method of estimation):	< 1 cfs visual	trickle
Other Observations:	—	not enough flow to sample
Color (describe):	light brown	—
Turbidity:	☐Clear ☐Slightly Cloudy ☒Very Cloudy ☐Opaque	☐Clear ☐Slightly Cloudy ☐Very Cloudy ☐Opaque
Floating Solids:	☐Yes ☒No	☐Yes ☐No
Suspended Solids:	☒Yes ☐No	☐Yes ☐No
Settled Solids:	☒Yes ☐No	☐Yes ☐No
Sheen Present:	☒Yes ☐No	☐Yes ☐No
Odor:	☐Yes ☒No	☐Yes ☐No
Foam Present:	☐Yes ☒No	☐Yes ☐No
Probable sources of observed stormwater contamination, if any:	very slight sheen	

Additional Comments: Form re-written due to water damage

CDM Smith

Date:	2/19/2019
Event:	MS4 Visual Storm Water Monitoring
Inspector:	Sonny Cooper - Weston

CITY OF ALBUQUERQUE
STORM WATER MONITORING PHOTOGRAPH LOG

Eagle Rock	
	
	

EDITH YARD

City of Albuquerque Solid Waste Management Department

Edith Yards Maintenance Facility

Quarterly Visual Monitoring of

Storm Water Outfall Discharges

☒ Q1 ☐ Q2 ☐ Q3 ☐ Q4

Date: 2/19/19

Time: 1037

Inspector: Andrew Brenner

Signature: Andrew F Brenner

Weather: Cold, cloudy

Storm Precip:

Last 72 Hour Precip: no

Photo: yes

Outfall ID:	EY01	EY02	EY03
Flow Observed:	☐ Yes ☒ No	☒ Yes ☐ No	☐ Yes ☒ No
Description of Monitoring Site:	—	runoff from snow melt	—
Flow Estimate (include units and method of estimation) :	—	<1 cfs	—
Other Observations:	—	most of the snow on the pavement had melted	—
Color (Describe):	—	black/gray	—
Turbidity:	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque	☒ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☒ Opaque	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque
Floating Solids:	☐ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☐ No
Suspended Solids:	☐ Yes ☐ No	☒ Yes ☐ No	☐ Yes ☐ No
Settled Solids:	☐ Yes ☐ No	☒ Yes ☐ No	☐ Yes ☐ No
Sheen Present:	☐ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☐ No
Odor:	☐ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☐ No
Foam Present:	☐ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☐ No
Describe:	—	minor quantity of settled solids. Color appeared to be from suspended solids	—

Additional Comments:

WESTON SOLUTIONS

Date:	2/19/2019
Event:	MS4 Visual Storm Water Monitoring
Inspector:	Andrew Brenner - Weston

CITY OF ALBUQUERQUE
STORM WATER MONITORING PHOTOGRAPH LOG

Edith Yards Maintenance Facility	
	
	

ATTACHMENT B: NON-QUALIFYING DATA

Albuquerque, NM

Albuquerque International Sunport

10:25 AM MDT on April 01, 2019 (GMT -0600)

Weather History for KABQ - January, 2019

From:

January

1

2019

To:

March

31

2019

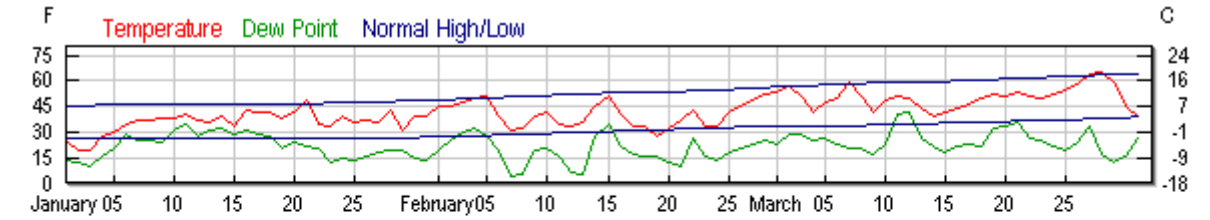
Get History

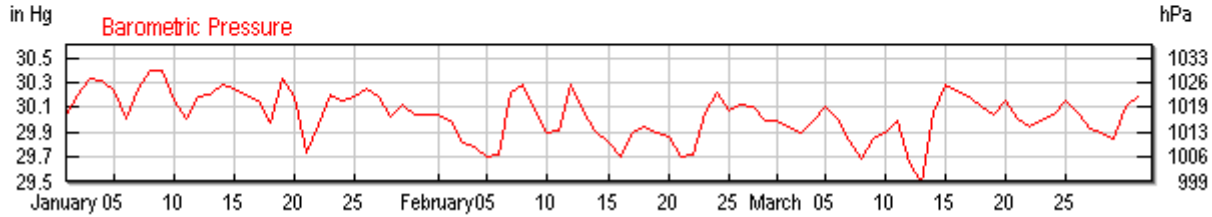
Daily | Weekly | Monthly | **Custom**

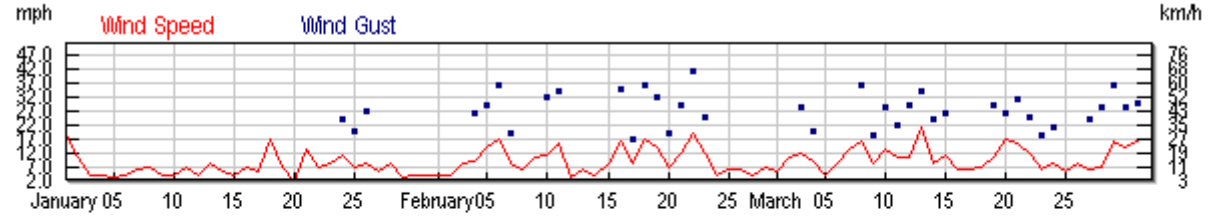
	Max	Avg	Min	Sum
Temperature				
Max Temperature	**79** °F	**53** °F	**29** °F	
Mean Temperature	**65** °F	**42** °F	**20** °F	
Min Temperature	**51** °F	**31** °F	**7** °F	
Degree Days				

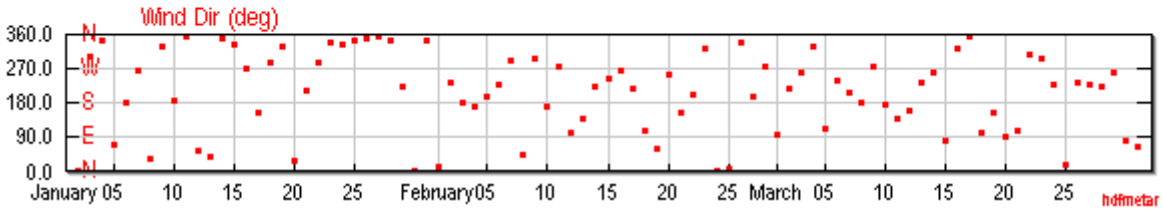
	Max	Avg	Min	Sum
Heating Degree Days (base 65)	45	23	0	2040
Cooling Degree Days (base 65)	0	0	0	0
Growing Degree Days (base 50)	15	1	0	83
Dew Point				
Dew Point	**48** °F	**22** °F	**-5** °F	
Precipitation				
Precipitation	**0.34** in	**0.02** in	**0.00** in	**1.75** in
Snowdepth	**3.0** in	**0.1** in	**0.0** in	-
Wind				
Wind	**53** mph	**9** mph	**0** mph	
Gust Wind	**69** mph	**28** mph	**16** mph	
Sea Level Pressure				
Sea Level Pressure	**30.49** in	**30.04** in	**29.38** in	

Custom Weather History Graph









Search for Another Location

Airport or City:

KABQ

Submit

Weather History & Observations

2019	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
Jan	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	

2019	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	34	25	15	18	14	9	92	75	57	30.22	30.04	29.86	10	4	0	38	18	46	0.06	Fog , Snow
	29	20	11	17	12	7	84	71	58	30.29	30.21	30.08	10	10	7	20	10	23	0.00	Fog
	33	20	7	14	10	3	83	62	41	30.40	30.33	30.26	10	10	10	12	4	15	0.00	
	42	28	13	22	16	8	81	61	41	30.40	30.31	30.22	10	10	10	13	4	14	0.00	
	41	30	19	27	21	15	84	65	46	30.32	30.24	30.14	10	10	10	10	3	13	0.00	
	40	35	30	35	29	25	92	73	54	30.13	30.01	29.94	10	10	5	14	4	17	0.01	Rain
	48	37	25	27	25	22	92	67	42	30.32	30.26	30.17	10	10	10	14	6	19	0.00	
	49	37	25	28	25	22	85	62	39	30.47	30.40	30.32	10	10	10	18	7	22	0.00	
	48	38	27	30	24	21	76	57	38	30.49	30.40	30.28	10	10	10	9	4	10	T	
	46	38	30	38	31	25	100	75	49	30.28	30.16	30.04	10	8	2	13	4	14	0.14	Rain
	45	41	37	38	35	27	100	80	59	30.10	30.01	29.93	10	5	0	21	7	24	0.18	Fog , Rain
	46	37	28	30	28	26	92	73	53	30.27	30.18	30.10	10	10	10	15	4	17	0.00	
	38	36	33	34	31	26	100	82	64	30.30	30.21	30.13	10	8	1	17	8	21	0.08	Fog , Rain , Snow
	47	40	33	35	32	28	96	78	60	30.38	30.29	30.22	10	10	10	13	5	15	T	
	40	34	27	33	29	24	96	83	70	30.33	30.25	30.19	10	10	7	10	4	12	0.00	
	55	43	30	36	31	28	96	67	38	30.27	30.20	30.12	10	9	5	20	7	24	0.00	Fog
	54	42	29	32	29	26	92	64	35	30.30	30.16	30.02	10	10	10	13	5	16	0.00	
	48	42	36	38	28	19	82	58	34	30.25	29.98	29.85	10	10	6	41	17	52	0.05	Rain , Snow
	48	38	27	23	21	19	75	55	34	30.43	30.34	30.25	10	10	10	14	7	19	0.00	
	54	42	30	28	24	21	69	51	32	30.33	30.19	30.01	10	10	10	9	2	12	0.00	
	63	49	35	26	22	16	64	41	17	29.96	29.73	29.47	10	10	10	32	13	42	0.00	
	39	35	30	26	21	15	78	63	47	30.22	29.96	29.66	10	10	2	14	7	18	T	Snow
	43	34	25	14	12	10	55	41	27	30.32	30.20	30.10	10	10	10	18	8	24	0.00	

2019	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	49	39	28	18	15	13	49	38	26	30.24	30.16	30.09	10	10	10	24	11	29	0.00	
	47	36	24	16	14	9	68	45	21	30.25	30.19	30.15	10	10	10	18	7	23	0.00	
	49	37	24	18	16	14	68	47	26	30.35	30.25	30.16	10	10	10	24	8	32	0.00	
	50	36	21	21	18	15	74	52	29	30.35	30.19	29.98	10	10	10	15	5	20	0.00	
	55	43	31	22	19	10	59	39	18	30.19	30.03	29.96	10	10	10	26	8	32	0.00	
	39	31	23	21	19	17	81	63	44	30.20	30.12	30.04	10	10	10	9	3	11	0.00	
	51	39	26	21	15	11	75	48	21	30.13	30.04	29.96	10	10	10	16	4	18	0.00	
	57	39	21	17	13	8	62	41	19	30.14	30.04	29.97	10	10	10	14	4	18	0.00	

2019	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
Feb	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
	58	45	32	23	19	14	51	38	24	30.14	30.04	29.96	10	10	10	12	4	14	0.00	
	59	45	30	28	25	21	69	51	32	30.10	29.99	29.88	10	10	10	8	4	13	0.00	
	61	48	34	34	30	23	75	51	26	29.91	29.82	29.69	10	10	10	24	8	29	0.00	
	63	50	36	37	32	28	76	54	32	29.88	29.79	29.68	10	10	10	24	9	30	0.00	
	61	51	41	39	28	15	83	50	17	29.76	29.70	29.61	10	10	10	29	14	40	0.00	
	51	39	27	34	20	6	70	46	22	29.96	29.72	29.62	10	10	8	36	17	45	0.02	Rain
	40	31	21	18	4	-5	74	45	16	30.37	30.22	29.97	10	10	9	24	8	29	T	
	47	32	17	13	5	2	54	36	17	30.39	30.28	30.15	10	10	10	14	6	17	0.00	
	52	39	25	24	19	13	62	47	32	30.23	30.07	29.93	10	10	10	28	10	35	0.00	
	54	42	30	33	21	12	85	54	22	30.01	29.90	29.80	10	10	10	29	11	35	0.00	
	43	35	27	29	16	6	89	58	27	30.22	29.91	29.72	10	10	10	35	15	48	T	
	49	34	18	9	6	2	56	36	15	30.40	30.29	30.22	10	10	10	9	3	12	0.00	
	46	36	25	10	5	2	46	32	18	30.21	30.07	29.95	10	10	10	15	6	17	0.00	

2019	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	53	45	37	43	28	9	92	58	24	30.01	29.92	29.78	10	8	1	12	4	13	0.12	Rain
	59	51	42	42	35	29	96	65	33	29.93	29.82	29.73	10	10	2	24	8	29	T	
	49	41	32	32	22	9	65	46	27	29.81	29.71	29.64	10	10	10	37	16	51	T	
	43	33	23	23	17	7	74	48	22	29.96	29.89	29.82	10	10	10	23	8	32	T	Snow
	41	33	25	19	16	13	68	53	37	30.01	29.94	29.86	10	10	10	37	17	45	0.00	
	35	28	20	21	16	9	84	61	38	29.96	29.89	29.80	10	7	0	31	14	38	0.02	Snow
	41	32	22	16	12	8	68	47	25	29.98	29.86	29.76	10	10	10	21	7	25	0.00	
	48	37	26	15	10	3	63	39	15	29.80	29.71	29.63	10	10	10	28	12	36	0.00	
	55	43	30	32	26	15	100	64	28	29.81	29.72	29.55	10	6	0	41	19	50	0.34	Fog , Snow
	41	34	27	22	16	9	78	50	23	30.33	30.06	29.74	10	10	10	28	12	35	0.00	
	46	33	19	21	14	9	62	45	28	30.34	30.22	30.13	10	10	10	10	4	13	0.00	
	56	42	27	21	18	17	63	41	19	30.14	30.08	29.88	10	10	10	12	6	14	0.00	
	61	45	29	34	21	18	70	45	19	30.22	30.13	30.06	10	10	10	21	6	25	0.00	
	63	49	35	26	23	21	56	39	21	30.20	30.10	29.96	10	10	10	15	4	19	0.00	
	67	52	36	28	25	21	59	40	20	30.14	30.00	29.86	10	10	10	25	7	32	0.00	

2019	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
Mar	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
	65	53	41	28	23	14	53	35	17	30.11	30.00	29.88	10	10	10	15	5	18	0.00	
	67	57	46	37	29	19	61	43	24	30.07	29.95	29.81	10	10	10	39	10	47	T	
	63	51	38	34	29	25	56	41	25	30.03	29.89	29.73	10	10	10	28	12	34	0.00	
	58	42	26	31	25	19	75	52	28	30.13	29.99	29.88	10	10	10	22	9	25	0.00	
	62	48	33	32	27	23	89	55	21	30.26	30.11	30.03	10	10	10	12	4	15	0.00	
	69	50	31	26	23	20	66	41	16	30.16	30.01	29.88	10	10	10	18	8	26	0.00	Fog

2019	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	72	59	45	28	21	10	45	28	11	29.96	29.83	29.72	10	10	6	40	13	54	0.00	
	66	51	35	34	21	11	65	39	12	29.80	29.68	29.48	10	10	6	53	16	69	T	
	55	42	29	21	17	12	64	42	19	29.99	29.85	29.73	10	10	10	21	8	30	0.00	
	62	49	35	36	23	14	61	40	19	29.96	29.90	29.83	10	10	10	26	13	32	0.00	
	59	51	42	47	41	35	93	75	57	30.12	29.99	29.90	10	10	6	26	10	31	0.21	Rain
	62	50	38	48	42	36	93	72	51	29.93	29.66	29.43	10	9	5	30	10	52	0.32	Rain , Thunderstorm
	50	44	37	37	26	17	85	57	29	29.78	29.50	29.38	10	10	8	41	21	52	0.00	Rain
	46	39	32	28	22	19	70	54	37	30.28	30.06	29.79	10	10	6	20	8	24	T	Snow
	52	42	31	21	18	15	63	45	27	30.39	30.28	30.19	10	10	10	23	11	29	0.00	
	56	44	32	25	22	18	63	46	28	30.30	30.23	30.15	10	10	10	14	6	17	0.00	
	60	47	33	28	23	13	69	43	17	30.30	30.19	30.08	10	10	10	12	6	13	0.00	
	61	50	39	26	22	14	59	38	17	30.26	30.11	30.02	10	10	10	20	7	24	0.00	
	60	52	43	42	32	25	71	50	29	30.12	30.05	29.99	10	10	10	26	10	32	0.04	
	60	51	41	36	34	32	70	53	36	30.24	30.15	30.08	10	10	10	25	17	31	0.00	
	60	53	45	42	36	31	77	57	37	30.11	30.01	29.88	10	10	7	31	15	40	0.04	Rain , Thunderstorm
	59	51	43	40	27	12	76	47	17	30.02	29.94	29.87	10	10	8	28	12	34	T	Rain , Thunderstorm
	64	50	36	28	25	20	64	42	19	30.08	29.99	29.90	10	10	10	18	6	21	0.00	
	66	52	38	28	22	12	64	38	12	30.15	30.05	29.97	10	10	10	20	8	23	0.00	
	69	55	41	22	19	16	43	28	13	30.24	30.16	30.09	10	10	10	12	5	16	0.00	
	74	58	41	36	24	16	39	28	17	30.19	30.06	29.95	10	10	10	21	8	25	0.00	
	77	64	51	44	33	16	66	40	14	30.01	29.93	29.84	10	10	10	21	6	25	0.00	
	79	65	51	26	17	8	38	23	7	29.99	29.89	29.79	10	10	10	29	7	36	0.00	

2019	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	72	59	45	19	12	5	29	19	8	29.96	29.85	29.71	10	10	10	38	16	46	0.00	
	55	45	34	24	16	8	41	32	22	30.23	30.10	29.96	10	10	10	29	14	36	0.00	
	47	40	33	34	27	20	92	65	38	30.25	30.19	30.07	10	9	3	28	16	40	0.12	Rain , Snow

Albuquerque, NM

Albuquerque International Sunport

1:51 PM MST on February 25, 2019 (GMT -0700)

Weather History for KABQ - February, 2019

February

6

2019

View

Wednesday, February 6, 2019

Daily | Weekly | Monthly | Custom

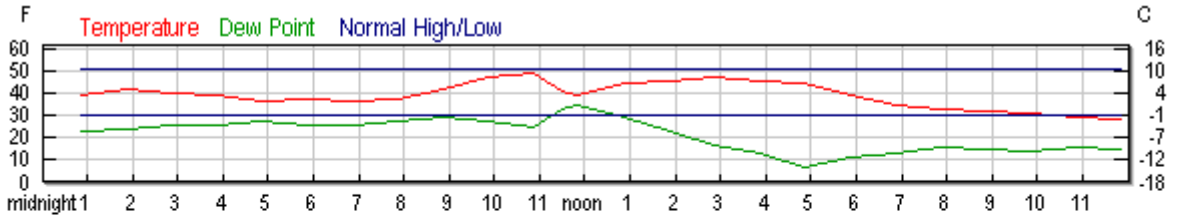
	Actual	Average	Record
Temperature			
Mean Temperature	**39** °F	-	
Max Temperature	**51** °F	-	- ()
Min Temperature	**27** °F	-	- ()
Degree Days			
Heating Degree Days	26		
Month to date heating degree days	112		
Moisture			
Dew Point	**20** °F		
Average Humidity	46		

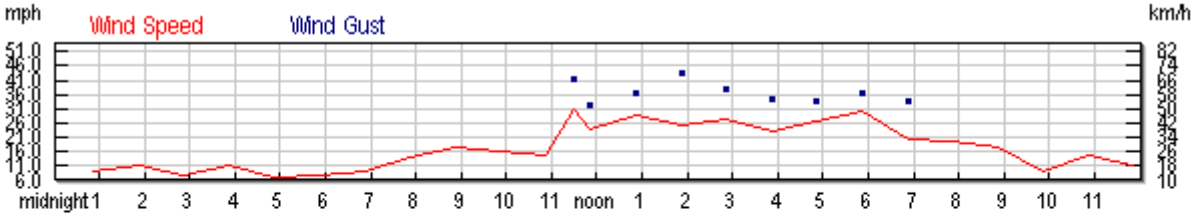
	Actual	Average	Record
Maximum Humidity	70		
Minimum Humidity	22		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.02		
Year to date precipitation	0.54		
Snow			
Snow	**T** in	-	- ()
Month to date snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.72** in		
Wind			
Wind Speed	**17** mph (SW)		
Max Wind Speed	**36** mph		
Max Gust Speed	**45** mph		
Visibility	**10** miles		
Events	Rain		

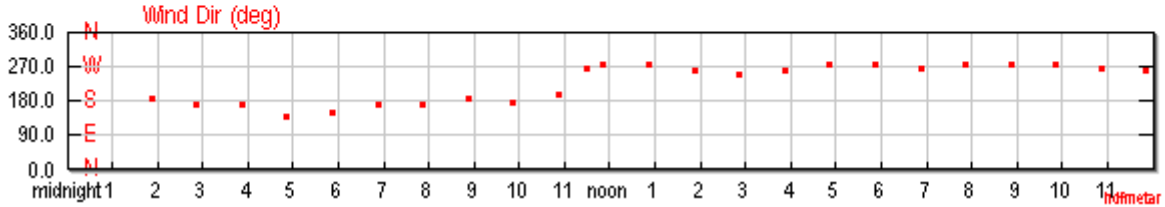
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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KABQ

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Astronomy

Feb. 06, 2019	**Rise**	**Set**
Actual Time	7:01 AM MST	5:40 PM MST

Feb. 06, 2019	Rise	Set
Civil Twilight	6:35 AM MST	6:06 PM MST
Nautical Twilight	6:04 AM MST	6:36 PM MST
Astronomical Twilight	5:35 AM MST	7:06 PM MST
Moon	8:14 AM MST (2/6)	7:27 PM MST (2/6)
Length of Visible Light	11h 31m	
Length of Day	10h 38m	

Waxing Crescent, 3% of the Moon is Illuminated

Feb 6	Feb 12	Feb 19	Feb 26	Mar 6
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**37.9** °F	**31.5** °F	**21.9** °F	53%	**29.70** in	**10.0** mi	SSE	**9.2** mph	-	N/A		Partly Cloudy
1:52 AM	**41.0** °F	**34.3** °F	**23.0** °F	49%	**29.68** in	**10.0** mi	South	**11.5** mph	-	N/A		Partly Cloudy
2:52 AM	**39.0** °F	**33.4** °F	**25.0** °F	57%	**29.67** in	**10.0** mi	South	**8.1** mph	-	N/A		Partly Cloudy
3:52 AM	**37.9** °F	**30.5** °F	**25.0** °F	60%	**29.66** in	**10.0** mi	South	**11.5** mph	-	N/A		Partly Cloudy
4:52 AM	**35.1** °F	**29.3** °F	**26.1** °F	70%	**29.67** in	**10.0** mi	SE	**6.9** mph	-	N/A		Partly Cloudy
5:52 AM	**36.0** °F	**29.6** °F	**25.0** °F	64%	**29.67** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Clear
6:52 AM	**35.1** °F	**27.9** °F	**25.0** °F	67%	**29.69** in	**10.0** mi	South	**9.2** mph	-	N/A		Partly Cloudy
7:52 AM	**36.0** °F	**27.1** °F	**26.1** °F	67%	**29.69** in	**10.0** mi	South	**13.8** mph	-	N/A		Partly Cloudy
8:52 AM	**41.0** °F	**32.5** °F	**28.0** °F	60%	**29.67** in	**10.0** mi	South	**17.3** mph	-	N/A		Partly Cloudy

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**46.0** °F	**39.3** °F	**26.1** °F	46%	**29.65** in	**10.0** mi	South	**16.1** mph	-	N/A		Partly Cloudy
10:52 AM	**48.0** °F	-	**24.1** °F	39%	**29.62** in	**10.0** mi	SSW	**15.0** mph	**25.3** mph	N/A		Mostly Cloudy
11:29 AM	**39.9** °F	**28.2** °F	**32.0** °F	73%	**29.73** in	**8.0** mi	West	**31.1** mph	**41.4** mph	**0.00** in	Rain	Light Hail
11:52 AM	**37.9** °F	**26.8** °F	**34.0** °F	86%	**29.69** in	**8.0** mi	West	**24.2** mph	**32.2** mph	**0.02** in	Rain	Light Rain
12:52 PM	**43.0** °F	**32.7** °F	**28.0** °F	56%	**29.66** in	**10.0** mi	West	**28.8** mph	**36.8** mph	**0.00** in		Mostly Cloudy
1:52 PM	**44.1** °F	**34.8** °F	**21.9** °F	42%	**29.63** in	**10.0** mi	West	**25.3** mph	**43.7** mph	N/A		Partly Cloudy
2:52 PM	**46.0** °F	**37.0** °F	**16.0** °F	30%	**29.63** in	**10.0** mi	WSW	**27.6** mph	**38.0** mph	N/A		Scattered Clouds
3:52 PM	**44.1** °F	**35.2** °F	**12.0** °F	27%	**29.66** in	**10.0** mi	West	**23.0** mph	**34.5** mph	N/A		Mostly Cloudy
4:52 PM	**43.0** °F	**33.1** °F	**6.1** °F	22%	**29.70** in	**10.0** mi	West	**26.5** mph	**33.4** mph	N/A		Mostly Cloudy
5:52 PM	**37.9** °F	**25.7** °F	**10.0** °F	32%	**29.76** in	**10.0** mi	West	**29.9** mph	**36.8** mph	N/A		Mostly Cloudy
6:52 PM	**34.0** °F	**22.4** °F	**12.0** °F	40%	**29.81** in	**10.0** mi	West	**20.7** mph	**33.4** mph	N/A		Scattered Clouds
7:52 PM	**32.0** °F	**20.1** °F	**15.1** °F	50%	**29.85** in	**10.0** mi	West	**19.6** mph	-	N/A		Partly Cloudy
8:52 PM	**30.9** °F	**19.4** °F	**14.0** °F	50%	**29.88** in	**10.0** mi	West	**17.3** mph	-	N/A		Partly Cloudy
9:52 PM	**30.0** °F	**21.7** °F	**12.9** °F	49%	**29.88** in	**10.0** mi	West	**9.2** mph	-	N/A		Partly Cloudy
10:52 PM	**28.0** °F	**16.5** °F	**15.1** °F	58%	**29.90** in	**10.0** mi	West	**15.0** mph	-	N/A		Mostly Cloudy
11:52 PM	**27.0** °F	**16.7** °F	**14.0** °F	58%	**29.96** in	**10.0** mi	West	**11.5** mph	-	N/A		Mostly Cloudy

Albuquerque, NM

Albuquerque International Sunport

11:58 AM MST on February 25, 2019 (GMT -0700)

Weather History for KABQ - January, 2019

January

6

2019

View
Sunday, January 6, 2019

Daily | Weekly | Monthly | Custom

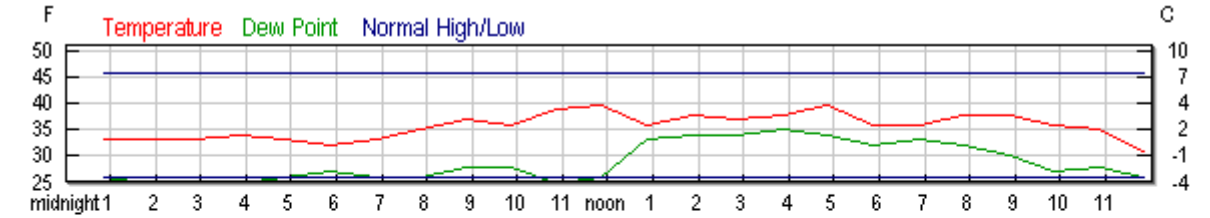
	Actual	Average	Record
Temperature			
Mean Temperature	**35** °F	-	
Max Temperature	**40** °F	-	- ()
Min Temperature	**30** °F	-	- ()
Degree Days			
Heating Degree Days	30		
Month to date heating degree days	232		
Moisture			
Dew Point	**29** °F		
Average Humidity	73		

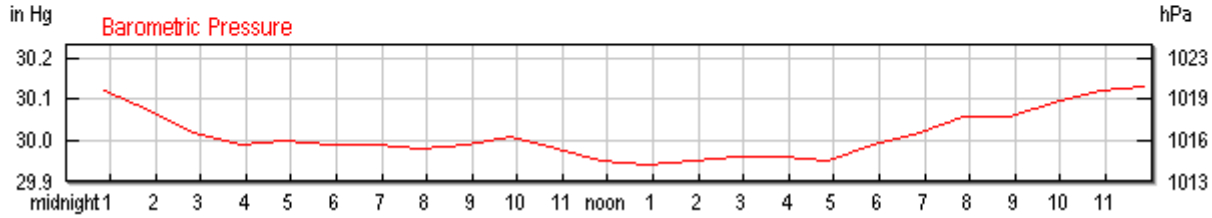
	Actual	Average	Record
Maximum Humidity	92		
Minimum Humidity	54		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.07		
Year to date precipitation	0.07		
Snow			
Snow	**T** in	-	- ()
Month to date snowfall	2.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.01** in		
Wind			
Wind Speed	**4** mph (South)		
Max Wind Speed	**14** mph		
Max Gust Speed	**17** mph		
Visibility	**10** miles		
Events	Rain		

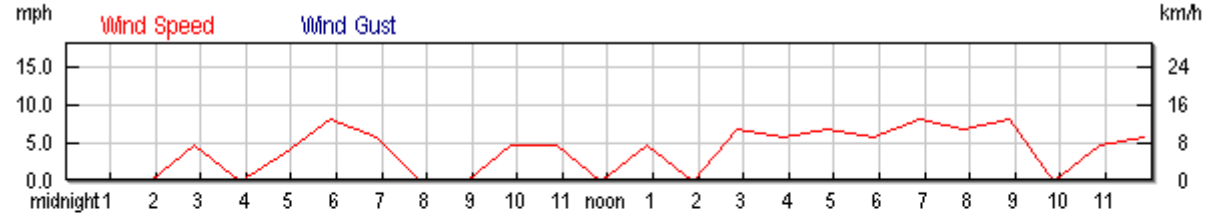
T = Trace of Precipitation, MM = Missing Value

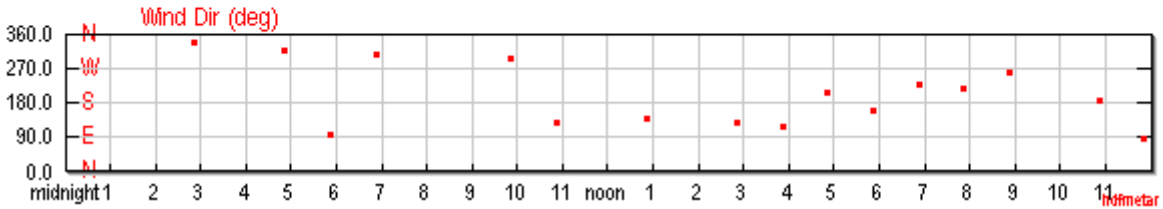
Source: NWS Daily Summary

Daily Weather History Graph









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Astronomy

Jan. 06, 2019	Rise	Set
Actual Time	7:15 AM MST	5:09 PM MST

Jan. 06, 2019	Rise	Set
Civil Twilight	6:47 AM MST	5:37 PM MST
Nautical Twilight	6:15 AM MST	6:09 PM MST
Astronomical Twilight	5:45 AM MST	6:39 PM MST
Moon	7:41 AM MST (1/6)	5:55 PM MST (1/6)
Length of Visible Light	10h 50m	
Length of Day	9h 54m	

New Moon, 0% of the Moon is Illuminated

Jan 6	Jan 13	Jan 20	Jan 27	Feb 4
New Moon	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**33.1** °F	-	**26.1** °F	75%	**30.12** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
1:52 AM	**33.1** °F	-	**25.0** °F	72%	**30.07** in	**10.0** mi	Calm	Calm	-	**0.00** in		Mostly Cloudy
2:52 AM	**33.1** °F	**28.7** °F	**25.0** °F	72%	**30.02** in	**10.0** mi	NNW	**4.6** mph	-	**0.00** in		Overcast
3:52 AM	**34.0** °F	-	**25.0** °F	70%	**29.99** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
4:52 AM	**33.1** °F	**30.0** °F	**26.1** °F	75%	**30.00** in	**10.0** mi	NW	**3.5** mph	-	N/A		Overcast
5:52 AM	**32.0** °F	**24.8** °F	**27.0** °F	82%	**29.99** in	**10.0** mi	East	**8.1** mph	-	N/A		Overcast
6:52 AM	**33.1** °F	**27.7** °F	**26.1** °F	75%	**29.99** in	**10.0** mi	NW	**5.8** mph	-	N/A		Overcast
7:52 AM	**35.1** °F	-	**26.1** °F	70%	**29.98** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
8:52 AM	**37.0** °F	-	**28.0** °F	70%	**29.99** in	**10.0** mi	Calm	Calm	-	N/A		Overcast

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**36.0** °F	**32.1** °F	**28.0** °F	73%	**30.01** in	**10.0** mi	WNW	**4.6** mph	-	N/A		Overcast
10:52 AM	**39.0** °F	**35.7** °F	**25.0** °F	57%	**29.98** in	**10.0** mi	SE	**4.6** mph	-	**0.00** in		Overcast
11:52 AM	**39.9** °F	-	**26.1** °F	58%	**29.95** in	**5.0** mi	Calm	Calm	-	**0.00** in	Rain	Light Rain
12:52 PM	**36.0** °F	**32.1** °F	**33.1** °F	89%	**29.94** in	**7.0** mi	SE	**4.6** mph	-	**0.01** in	Rain	Light Rain
1:52 PM	**37.9** °F	-	**34.0** °F	86%	**29.95** in	**8.0** mi	Calm	Calm	-	**0.00** in	Rain	Light Rain
2:52 PM	**37.0** °F	**31.6** °F	**34.0** °F	89%	**29.96** in	**10.0** mi	SE	**6.9** mph	-	**0.00** in		Mostly Cloudy
3:52 PM	**37.9** °F	**33.5** °F	**35.1** °F	89%	**29.96** in	**10.0** mi	ESE	**5.8** mph	-	N/A		Mostly Cloudy
4:52 PM	**39.9** °F	**35.1** °F	**34.0** °F	79%	**29.95** in	**10.0** mi	SSW	**6.9** mph	-	N/A		Scattered Clouds
5:52 PM	**36.0** °F	**31.1** °F	**32.0** °F	86%	**29.99** in	**10.0** mi	SSE	**5.8** mph	-	N/A		Scattered Clouds
6:52 PM	**36.0** °F	**29.6** °F	**33.1** °F	89%	**30.02** in	**10.0** mi	SW	**8.1** mph	-	N/A		Mostly Cloudy
7:52 PM	**37.9** °F	**32.7** °F	**32.0** °F	79%	**30.06** in	**10.0** mi	SW	**6.9** mph	-	N/A		Mostly Cloudy
8:52 PM	**37.9** °F	**32.1** °F	**30.0** °F	73%	**30.06** in	**10.0** mi	West	**8.1** mph	-	N/A		Partly Cloudy
9:52 PM	**36.0** °F	-	**27.0** °F	70%	**30.09** in	**10.0** mi	Calm	Calm	-	N/A		Partly Cloudy
10:52 PM	**35.1** °F	**31.0** °F	**28.0** °F	76%	**30.12** in	**10.0** mi	South	**4.6** mph	-	N/A		Partly Cloudy
11:52 PM	**30.9** °F	**25.2** °F	**26.1** °F	82%	**30.13** in	**10.0** mi	East	**5.8** mph	-	N/A		Partly Cloudy

Albuquerque, NM

Albuquerque International Sunport

12:02 PM MST on February 25, 2019 (GMT -0700)

Weather History for KABQ - January, 2019

January

10

2019

View

Thursday, January 10, 2019

Daily | Weekly | Monthly | Custom

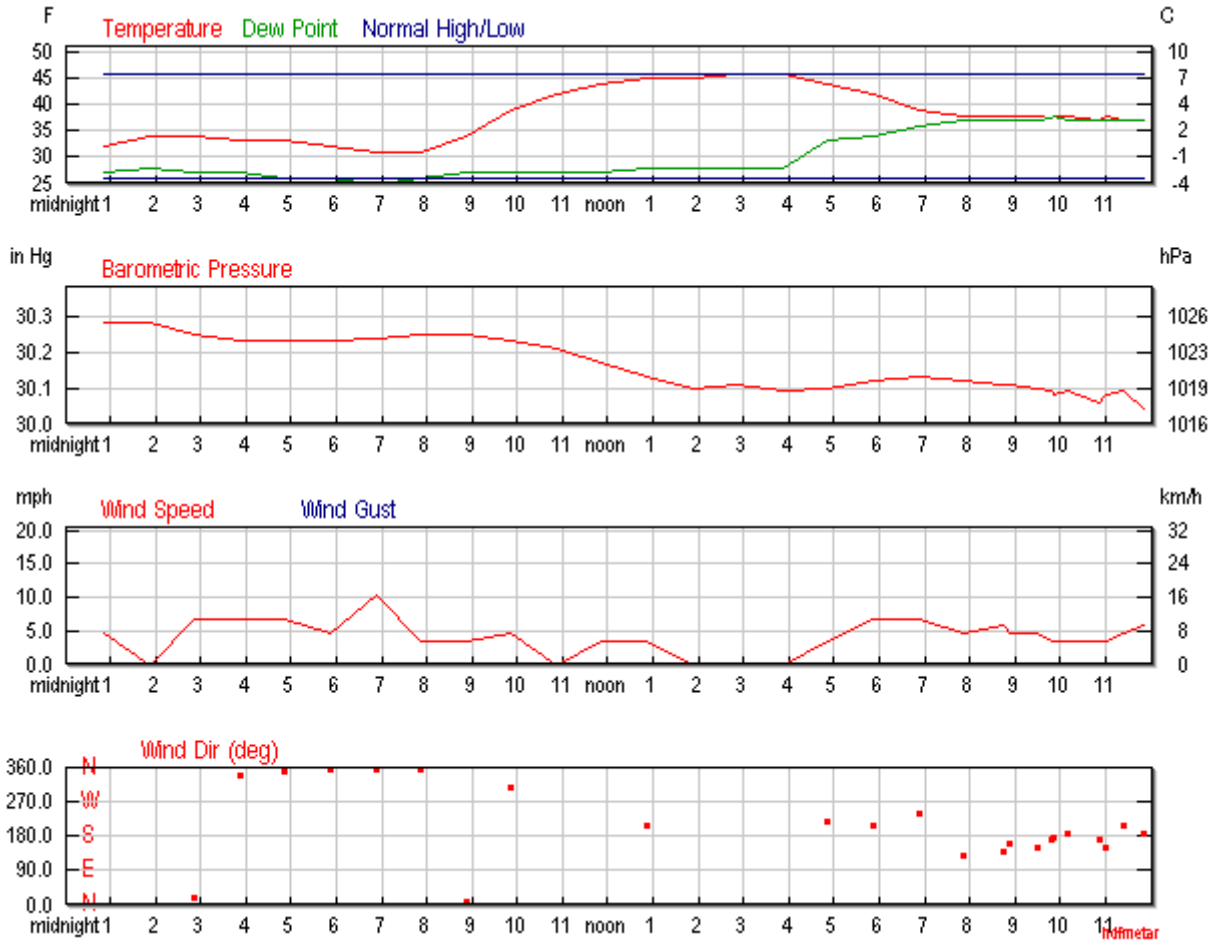
	Actual	Average	Record
Temperature			
Mean Temperature	**38** °F	-	
Max Temperature	**46** °F	-	- ()
Min Temperature	**30** °F	-	- ()
Degree Days			
Heating Degree Days	27		
Month to date heating degree days	342		
Moisture			
Dew Point	**31** °F		
Average Humidity	75		

	Actual	Average	Record
Maximum Humidity	100		
Minimum Humidity	49		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.21		
Year to date precipitation	0.21		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	2.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.16** in		
Wind			
Wind Speed	**4** mph (South)		
Max Wind Speed	**13** mph		
Max Gust Speed	**14** mph		
Visibility	**8** miles		
Events	Rain		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Jan. 10, 2019	**Rise**	**Set**
Actual Time	7:14 AM MST	5:13 PM MST

Jan. 10, 2019	Rise	Set
Civil Twilight	6:47 AM MST	5:40 PM MST
Nautical Twilight	6:15 AM MST	6:12 PM MST
Astronomical Twilight	5:45 AM MST	6:42 PM MST
Moon	10:12 AM MST (1/10)	9:33 PM MST (1/10)
Length of Visible Light	10h 53m	
Length of Day	9h 58m	

Waxing Crescent, 19% of the Moon is Illuminated

Jan 10	Jan 13	Jan 20	Jan 27	Feb 4
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**32.0** °F	**27.5** °F	**27.0** °F	82%	**30.28** in	**10.0** mi	SSE	**4.6** mph	-	N/A		Mostly Cloudy
1:52 AM	**34.0** °F	-	**28.0** °F	79%	**30.28** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
2:52 AM	**34.0** °F	**28.0** °F	**27.0** °F	75%	**30.25** in	**10.0** mi	NNE	**6.9** mph	-	N/A		Scattered Clouds
3:52 AM	**33.1** °F	**26.9** °F	**27.0** °F	78%	**30.23** in	**10.0** mi	NNW	**6.9** mph	-	N/A		Scattered Clouds
4:52 AM	**33.1** °F	**26.9** °F	**26.1** °F	75%	**30.23** in	**10.0** mi	North	**6.9** mph	-	N/A		Partly Cloudy
5:52 AM	**32.0** °F	**27.5** °F	**26.1** °F	79%	**30.23** in	**10.0** mi	North	**4.6** mph	-	N/A		Mostly Cloudy
6:52 AM	**30.9** °F	**22.2** °F	**25.0** °F	79%	**30.24** in	**10.0** mi	North	**10.4** mph	-	N/A		Mostly Cloudy
7:52 AM	**30.9** °F	**27.5** °F	**26.1** °F	82%	**30.25** in	**10.0** mi	North	**3.5** mph	-	N/A		Mostly Cloudy
8:52 AM	**34.0** °F	**31.0** °F	**27.0** °F	75%	**30.25** in	**10.0** mi	North	**3.5** mph	-	N/A		Mostly Cloudy

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**39.0** °F	**35.7** °F	**27.0** °F	62%	**30.23** in	**10.0** mi	NW	**4.6** mph	-	N/A		Mostly Cloudy
10:52 AM	**42.1** °F	-	**27.0** °F	55%	**30.21** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
11:52 AM	**44.1** °F	**42.5** °F	**27.0** °F	51%	**30.17** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Mostly Cloudy
12:52 PM	**45.0** °F	**43.5** °F	**28.0** °F	52%	**30.13** in	**10.0** mi	SSW	**3.5** mph	-	N/A		Mostly Cloudy
1:52 PM	**45.0** °F	-	**28.0** °F	52%	**30.10** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
2:52 PM	**46.0** °F	-	**28.0** °F	50%	**30.11** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
3:52 PM	**46.0** °F	-	**28.0** °F	50%	**30.09** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
4:52 PM	**44.1** °F	**42.5** °F	**33.1** °F	65%	**30.10** in	**9.0** mi	SW	**3.5** mph	-	**0.01** in	Rain	Light Rain
5:52 PM	**42.1** °F	**37.7** °F	**34.0** °F	73%	**30.12** in	**10.0** mi	SSW	**6.9** mph	-	**0.00** in	Rain	Light Rain
6:52 PM	**39.0** °F	**34.0** °F	**36.0** °F	89%	**30.13** in	**9.0** mi	WSW	**6.9** mph	-	**0.01** in	Rain	Light Rain
7:52 PM	**37.9** °F	**34.4** °F	**37.0** °F	97%	**30.12** in	**6.0** mi	SE	**4.6** mph	-	**0.01** in	Rain	Light Rain
8:44 PM	**37.9** °F	**33.5** °F	**37.0** °F	97%	**30.11** in	**4.0** mi	SE	**5.8** mph	-	**0.02** in	Rain	Light Rain
8:52 PM	**37.9** °F	**34.4** °F	**37.0** °F	97%	**30.11** in	**5.0** mi	SSE	**4.6** mph	-	**0.03** in	Rain	Light Rain
9:29 PM	**37.9** °F	**34.4** °F	**37.0** °F	97%	**30.10** in	**3.0** mi	SSE	**4.6** mph	-	**0.01** in	Rain	Light Rain
9:48 PM	**37.4** °F	**34.9** °F	**37.4** °F	100%	**30.09** in	**2.0** mi	South	**3.5** mph	-	**0.02** in	Rain	Light Rain
9:52 PM	**37.9** °F	**35.5** °F	**37.9** °F	100%	**30.08** in	**2.0** mi	South	**3.5** mph	-	**0.02** in	Rain	Light Rain
10:09 PM	**37.9** °F	**35.5** °F	**37.0** °F	97%	**30.09** in	**2.0** mi	South	**3.5** mph	-	**0.01** in	Rain	Light Rain
10:52 PM	**37.0** °F	**34.5** °F	**37.0** °F	100%	**30.06** in	**3.0** mi	South	**3.5** mph	-	**0.03** in	Rain	Light Rain
10:59 PM	**37.9** °F	**35.5** °F	**37.0** °F	97%	**30.08** in	**3.0** mi	SSE	**3.5** mph	-	**0.00** in	Rain	Light Rain
11:24 PM	**37.0** °F	**33.3** °F	**37.0** °F	100%	**30.09** in	**4.0** mi	SSW	**4.6** mph	-	**0.01** in	Rain	Light Rain
11:52 PM	**37.0** °F	**32.4** °F	**37.0** °F	100%	**30.04** in	**3.0** mi	South	**5.8** mph	-	**0.02** in	Rain	Light Rain

Albuquerque, NM

Albuquerque International Sunport

12:17 PM MST on February 25, 2019 (GMT -0700)

Weather History for KABQ - January, 2019

January

11

2019

View

Friday, January 11, 2019

Daily | Weekly | Monthly | Custom

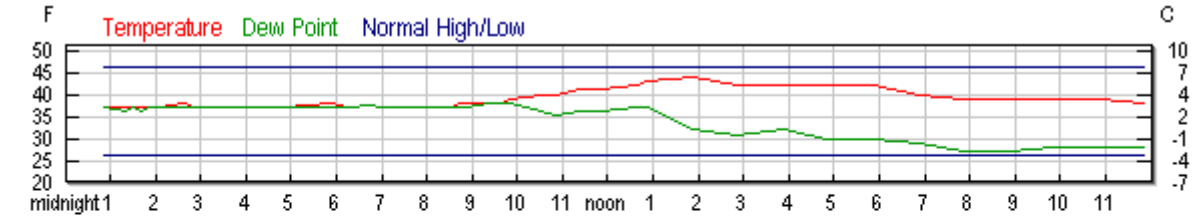
	Actual	Average	Record
Temperature			
Mean Temperature	**41** °F	-	
Max Temperature	**45** °F	-	- ()
Min Temperature	**37** °F	-	- ()
Degree Days			
Heating Degree Days	24		
Month to date heating degree days	366		
Moisture			
Dew Point	**35** °F		
Average Humidity	80		

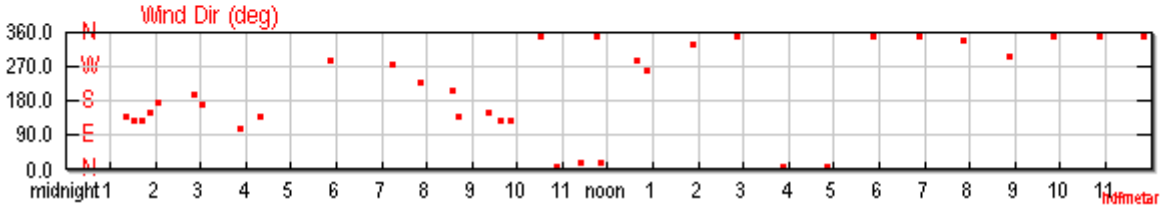
	Actual	Average	Record
Maximum Humidity	100		
Minimum Humidity	59		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.39		
Year to date precipitation	0.39		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	2.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.01** in		
Wind			
Wind Speed	**7** mph (North)		
Max Wind Speed	**21** mph		
Max Gust Speed	**24** mph		
Visibility	**5** miles		
Events	Fog , Rain		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph





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Airport or City:

KABQ

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Astronomy

Jan. 11, 2019	Rise	Set
Actual Time	7:14 AM MST	5:14 PM MST

Jan. 11, 2019	Rise	Set
Civil Twilight	6:47 AM MST	5:41 PM MST
Nautical Twilight	6:15 AM MST	6:13 PM MST
Astronomical Twilight	5:45 AM MST	6:43 PM MST
Moon	10:42 AM MST (1/11)	10:28 PM MST (1/11)
Length of Visible Light	10h 54m	
Length of Day	9h 59m	

Waxing Crescent, 27% of the Moon is Illuminated

Jan 11	Jan 13	Jan 20	Jan 27	Feb 4
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**37.0** °F	**34.5** °F	**37.0** °F	100%	**30.01** in	**4.0** mi	South	**3.5** mph	-	**0.05** in	Rain	Light Rain
1:21 AM	**37.0** °F	**31.6** °F	**36.0** °F	96%	**30.04** in	**1.8** mi	SE	**6.9** mph	-	**0.01** in	Rain	Light Rain
1:32 AM	**37.0** °F	**31.0** °F	**37.0** °F	100%	**30.04** in	**0.8** mi	SE	**8.1** mph	-	**0.01** in		Overcast
1:43 AM	**37.0** °F	**31.6** °F	**36.0** °F	96%	**30.03** in	**2.0** mi	SE	**6.9** mph	-	**0.01** in		Overcast
1:52 AM	**37.0** °F	**32.4** °F	**37.0** °F	100%	**30.01** in	**1.5** mi	SSE	**5.8** mph	-	**0.01** in	Rain	Light Rain
2:03 AM	**37.0** °F	**32.4** °F	**37.0** °F	100%	**30.04** in	**2.5** mi	South	**5.8** mph	-	**0.00** in	Rain	Light Rain
2:39 AM	**37.9** °F	-	**37.0** °F	97%	**30.04** in	**3.0** mi	Calm	Calm	-	**0.01** in	Rain	Light Rain
2:52 AM	**37.0** °F	**32.4** °F	**37.0** °F	100%	**29.99** in	**3.0** mi	SSW	**5.8** mph	-	**0.02** in	Rain	Light Rain
3:02 AM	**37.0** °F	**32.4** °F	**37.0** °F	100%	**30.02** in	**1.8** mi	South	**5.8** mph	-	**0.01** in	Rain	Light Rain

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
3:52 AM	37.0 °F	33.3 °F	37.0 °F	100%	29.96 in	1.2 mi	ESE	4.6 mph	-	0.02 in	Rain	Light Rain
4:18 AM	37.0 °F	33.3 °F	37.0 °F	100%	30.00 in	3.0 mi	SE	4.6 mph	-	0.00 in		Mist
4:52 AM	37.0 °F	-	37.0 °F	100%	29.96 in	5.0 mi	Calm	Calm	-	0.00 in	Rain	Light Rain
5:52 AM	37.9 °F	35.5 °F	37.0 °F	97%	29.97 in	4.0 mi	WNW	3.5 mph	-	0.02 in		Overcast
6:17 AM	37.0 °F	-	37.0 °F	100%	30.00 in	2.5 mi	Calm	Calm	-	0.01 in	Rain	Light Rain
6:46 AM	37.4 °F	-	37.4 °F	100%	30.00 in	1.5 mi	Calm	Calm	-	0.02 in	Rain	Light Rain
6:50 AM	37.4 °F	-	37.4 °F	100%	30.00 in	2.0 mi	Calm	Calm	-	0.02 in	Rain	Light Rain
6:52 AM	37.0 °F	-	37.0 °F	100%	29.99 in	2.5 mi	Calm	Calm	-	0.02 in	Rain	Light Rain
7:14 AM	37.0 °F	34.5 °F	37.0 °F	100%	30.00 in	4.0 mi	West	3.5 mph	-	0.00 in		Overcast
7:29 AM	37.0 °F	-	37.0 °F	100%	29.99 in	1.5 mi	Calm	Calm	-	0.00 in	Rain	Light Rain
7:36 AM	37.0 °F	-	37.0 °F	100%	30.00 in	0.5 mi	Calm	Calm	-	0.00 in	Rain	Light Rain
7:52 AM	37.0 °F	34.5 °F	37.0 °F	100%	29.99 in	0.5 mi	SW	3.5 mph	-	0.00 in		Overcast
8:04 AM	37.0 °F	-	37.0 °F	100%	30.00 in	0.5 mi	Calm	Calm	-	N/A		Overcast
8:33 AM	37.0 °F	34.5 °F	37.0 °F	100%	30.01 in	0.2 mi	SSW	3.5 mph	-	0.00 in	Fog , Rain	Light Rain
8:42 AM	37.9 °F	35.5 °F	37.0 °F	97%	30.02 in	0.2 mi	SE	3.5 mph	-	0.01 in	Fog , Rain	Light Rain
8:52 AM	37.9 °F	-	37.0 °F	97%	30.01 in	0.5 mi	Calm	Calm	-	0.01 in	Fog , Rain	Light Rain
9:23 AM	37.9 °F	32.7 °F	37.9 °F	100%	30.03 in	2.5 mi	SSE	6.9 mph	-	0.01 in	Rain	Light Rain
9:37 AM	37.9 °F	33.5 °F	37.9 °F	100%	30.03 in	3.0 mi	SE	5.8 mph	-	0.02 in	Rain	Light Rain
9:52 AM	39.0 °F	34.0 °F	37.9 °F	96%	30.01 in	3.0 mi	SE	6.9 mph	-	0.02 in		Overcast
10:30 AM	39.9 °F	34.5 °F	36.0 °F	86%	30.04 in	6.0 mi	North	8.1 mph	-	0.02 in	Rain	Light Rain
10:52 AM	39.9 °F	35.1 °F	35.1 °F	83%	30.01 in	10.0 mi	North	6.9 mph	-	0.02 in	Rain	Light Rain
11:25 AM	41.0 °F	36.4 °F	36.0 °F	82%	30.01 in	10.0 mi	NNE	6.9 mph	-	0.00 in		Overcast
11:45 AM	41.0 °F	39.0 °F	36.0 °F	82%	30.00 in	10.0 mi	North	3.5 mph	-	0.00 in		Overcast

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
11:52 AM	**41.0** °F	**39.0** °F	**36.0** °F	82%	**29.97** in	**10.0** mi	NNE	**3.5** mph	-	**0.00** in		Overcast
12:38 PM	**42.1** °F	**37.7** °F	**37.0** °F	82%	**29.97** in	**10.0** mi	WNW	**6.9** mph	-	N/A		Mostly Cloudy
12:52 PM	**43.0** °F	**38.8** °F	**37.0** °F	80%	**29.94** in	**10.0** mi	West	**6.9** mph	-	N/A		Mostly Cloudy
1:52 PM	**44.1** °F	**37.1** °F	**32.0** °F	63%	**29.93** in	**10.0** mi	NNW	**15.0** mph	**23.0** mph	N/A		Mostly Cloudy
2:52 PM	**42.1** °F	**35.2** °F	**30.9** °F	65%	**29.95** in	**10.0** mi	North	**12.7** mph	-	N/A		Mostly Cloudy
3:52 PM	**42.1** °F	**35.7** °F	**32.0** °F	67%	**29.96** in	**10.0** mi	North	**11.5** mph	-	N/A		Mostly Cloudy
4:52 PM	**42.1** °F	**35.7** °F	**30.0** °F	62%	**29.98** in	**10.0** mi	North	**11.5** mph	-	N/A		Mostly Cloudy
5:52 PM	**42.1** °F	**35.7** °F	**30.0** °F	62%	**30.01** in	**10.0** mi	North	**11.5** mph	-	N/A		Mostly Cloudy
6:52 PM	**39.9** °F	**32.9** °F	**28.9** °F	65%	**30.03** in	**10.0** mi	North	**11.5** mph	-	N/A		Scattered Clouds
7:52 PM	**39.0** °F	**31.0** °F	**27.0** °F	62%	**30.05** in	**10.0** mi	NNW	**13.8** mph	-	N/A		Scattered Clouds
8:52 PM	**39.0** °F	**31.8** °F	**27.0** °F	62%	**30.07** in	**10.0** mi	WNW	**11.5** mph	-	N/A		Overcast
9:52 PM	**39.0** °F	**34.0** °F	**28.0** °F	65%	**30.10** in	**10.0** mi	North	**6.9** mph	-	N/A		Overcast
10:52 PM	**39.0** °F	**32.3** °F	**28.0** °F	65%	**30.10** in	**10.0** mi	North	**10.4** mph	-	N/A		Overcast
11:52 PM	**37.9** °F	**32.1** °F	**28.0** °F	68%	**30.10** in	**10.0** mi	North	**8.1** mph	-	N/A		Mostly Cloudy

Albuquerque, NM

Albuquerque International Sunport

12:17 PM MST on February 25, 2019 (GMT -0700)

Weather History for KABQ - January, 2019

January

13

2019

View
Sunday, January 13, 2019

Daily | Weekly | Monthly | Custom

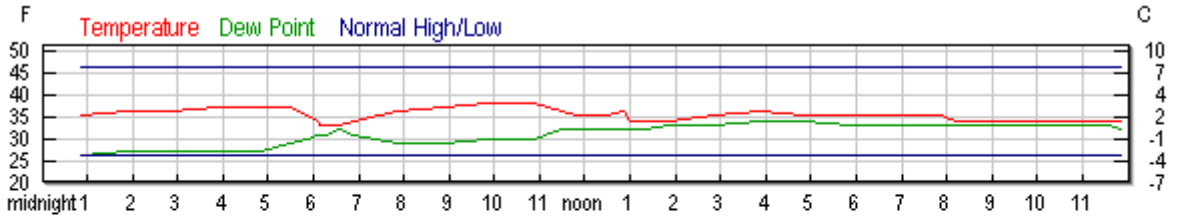
	Actual	Average	Record
Temperature			
Mean Temperature	**36** °F	-	
Max Temperature	**38** °F	-	- ()
Min Temperature	**33** °F	-	- ()
Degree Days			
Heating Degree Days	29		
Month to date heating degree days	423		
Moisture			
Dew Point	**31** °F		
Average Humidity	82		

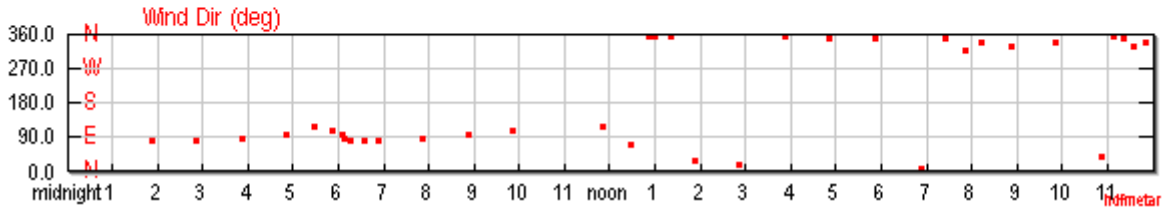
	Actual	Average	Record
Maximum Humidity	100		
Minimum Humidity	64		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.47		
Year to date precipitation	0.47		
Snow			
Snow	**T** in	-	- ()
Month to date snowfall	2.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.21** in		
Wind			
Wind Speed	**8** mph (NE)		
Max Wind Speed	**17** mph		
Max Gust Speed	**21** mph		
Visibility	**8** miles		
Events	Fog , Rain , Snow		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph





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KABQ

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Astronomy

Jan. 13, 2019	Rise	Set
Actual Time	7:14 AM MST	5:15 PM MST

Jan. 13, 2019	Rise	Set
Civil Twilight	6:46 AM MST	5:43 PM MST
Nautical Twilight	6:15 AM MST	6:14 PM MST
Astronomical Twilight	5:45 AM MST	6:45 PM MST
Moon	11:41 AM MST (1/13)	No Moon Set
Length of Visible Light	10h 56m	
Length of Day	10h 01m	

Waxing Crescent, 45% of the Moon is Illuminated

Jan 13	Jan 13	Jan 20	Jan 27	Feb 4
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**35.1** °F	**27.9** °F	**26.1** °F	70%	**30.15** in	**10.0** mi	East	**9.2** mph	-	N/A		Mostly Cloudy
1:52 AM	**36.0** °F	**28.0** °F	**27.0** °F	70%	**30.15** in	**10.0** mi	East	**11.5** mph	-	N/A		Overcast
2:52 AM	**36.0** °F	**26.7** °F	**27.0** °F	70%	**30.15** in	**10.0** mi	East	**15.0** mph	-	N/A		Mostly Cloudy
3:52 AM	**37.0** °F	**27.7** °F	**27.0** °F	67%	**30.13** in	**10.0** mi	East	**16.1** mph	-	N/A		Overcast
4:52 AM	**37.0** °F	**29.3** °F	**27.0** °F	67%	**30.14** in	**10.0** mi	East	**11.5** mph	-	N/A		Overcast
5:27 AM	**37.0** °F	**28.5** °F	**28.9** °F	73%	**30.19** in	**10.0** mi	ESE	**13.8** mph	-	**0.00** in		Overcast
5:52 AM	**35.1** °F	**27.4** °F	**30.0** °F	82%	**30.17** in	**7.0** mi	ESE	**10.4** mph	-	**0.01** in	Snow	Light Snow
6:05 AM	**34.0** °F	**27.2** °F	**30.9** °F	89%	**30.19** in	**2.0** mi	East	**8.1** mph	-	**0.00** in	Snow	Light Snow
6:07 AM	**33.1** °F	**26.1** °F	**30.9** °F	92%	**30.18** in	**1.8** mi	East	**8.1** mph	-	**0.00** in	Snow	Light Snow

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
6:17 AM	33.1 °F	24.9 °F	30.9 °F	92%	30.18 in	3.0 mi	East	10.4 mph	-	0.01 in	Snow	Light Snow
6:34 AM	33.1 °F	26.1 °F	32.0 °F	96%	30.18 in	9.0 mi	East	8.1 mph	-	0.01 in		Overcast
6:52 AM	34.0 °F	28.0 °F	30.9 °F	89%	30.17 in	9.0 mi	East	6.9 mph	-	0.01 in	Snow	Light Snow
7:52 AM	36.0 °F	28.0 °F	28.9 °F	76%	30.17 in	10.0 mi	East	11.5 mph	-	0.00 in		Overcast
8:52 AM	37.0 °F	31.0 °F	28.9 °F	73%	30.18 in	10.0 mi	East	8.1 mph	-	0.00 in		Overcast
9:52 AM	37.9 °F	34.4 °F	30.0 °F	73%	30.20 in	10.0 mi	ESE	4.6 mph	-	N/A		Overcast
10:52 AM	37.9 °F	-	30.0 °F	73%	30.20 in	10.0 mi	Calm	Calm	-	0.00 in		Overcast
11:29 AM	36.0 °F	32.1 °F	32.0 °F	86%	30.21 in	10.0 mi	Variable	4.6 mph	-	0.00 in	Rain	Light Rain
11:52 AM	35.1 °F	29.3 °F	32.0 °F	89%	30.20 in	5.0 mi	ESE	6.9 mph	-	0.00 in	Rain , Snow	Light Rain
12:27 PM	35.1 °F	28.6 °F	32.0 °F	89%	30.18 in	10.0 mi	ENE	8.1 mph	-	0.01 in	Rain	Light Rain
12:52 PM	36.0 °F	31.1 °F	32.0 °F	86%	30.18 in	8.0 mi	North	5.8 mph	-	0.01 in		Overcast
1:00 PM	34.0 °F	28.0 °F	32.0 °F	92%	30.18 in	9.0 mi	North	6.9 mph	-	0.00 in	Rain , Snow	Light Rain
1:22 PM	34.0 °F	27.2 °F	32.0 °F	92%	30.17 in	1.0 mi	North	8.1 mph	-	0.00 in	Snow	Light Snow
1:52 PM	34.0 °F	28.0 °F	33.1 °F	96%	30.19 in	2.0 mi	NNE	6.9 mph	-	0.01 in	Rain , Snow	Light Rain
2:52 PM	35.1 °F	29.3 °F	33.1 °F	92%	30.19 in	3.0 mi	NNE	6.9 mph	-	0.02 in	Snow	Light Snow
3:52 PM	36.0 °F	31.1 °F	34.0 °F	93%	30.20 in	10.0 mi	North	5.8 mph	-	0.00 in		Overcast
4:52 PM	35.1 °F	29.3 °F	34.0 °F	96%	30.22 in	10.0 mi	North	6.9 mph	-	0.00 in		Overcast
5:52 PM	35.1 °F	29.3 °F	33.1 °F	92%	30.24 in	10.0 mi	North	6.9 mph	-	0.00 in		Overcast
6:52 PM	35.1 °F	30.1 °F	33.1 °F	92%	30.26 in	8.0 mi	North	5.8 mph	-	0.00 in	Rain	Light Rain
7:25 PM	35.1 °F	31.0 °F	33.1 °F	92%	30.25 in	8.0 mi	North	4.6 mph	-	0.01 in		Light Drizzle
7:52 PM	35.1 °F	29.3 °F	33.1 °F	92%	30.26 in	10.0 mi	NW	6.9 mph	-	0.01 in		Mostly Cloudy
8:12 PM	34.0 °F	28.8 °F	33.1 °F	96%	30.25 in	10.0 mi	NNW	5.8 mph	-	N/A	Fog	Patches of Fog
8:52 PM	34.0 °F	28.0 °F	33.1 °F	96%	30.27 in	9.0 mi	NNW	6.9 mph	-	N/A	Fog	Overcast

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 PM	**34.0** °F	**26.6** °F	**33.1** °F	96%	**30.29** in	**10.0** mi	NNW	**9.2** mph	-	**0.00** in		Light Drizzle
10:52 PM	**34.0** °F	**28.8** °F	**33.1** °F	96%	**30.30** in	**7.0** mi	NE	**5.8** mph	-	**0.01** in	Rain	Light Rain
11:09 PM	**34.0** °F	**29.8** °F	**33.1** °F	96%	**30.29** in	**10.0** mi	North	**4.6** mph	-	**0.00** in		Light Drizzle
11:22 PM	**34.0** °F	**29.8** °F	**33.1** °F	96%	**30.29** in	**10.0** mi	North	**4.6** mph	-	**0.00** in		Light Drizzle
11:36 PM	**34.0** °F	**28.0** °F	**33.1** °F	96%	**30.28** in	**10.0** mi	NNW	**6.9** mph	-	**0.00** in		Overcast
11:52 PM	**34.0** °F	**28.0** °F	**32.0** °F	92%	**30.30** in	**10.0** mi	NNW	**6.9** mph	-	**0.00** in		Light Drizzle

Albuquerque, NM

Albuquerque International Sunport

12:20 PM MST on February 25, 2019 (GMT -0700)

Weather History for KABQ - January, 2019

January

18

2019

View

Friday, January 18, 2019

Daily | Weekly | Monthly | Custom

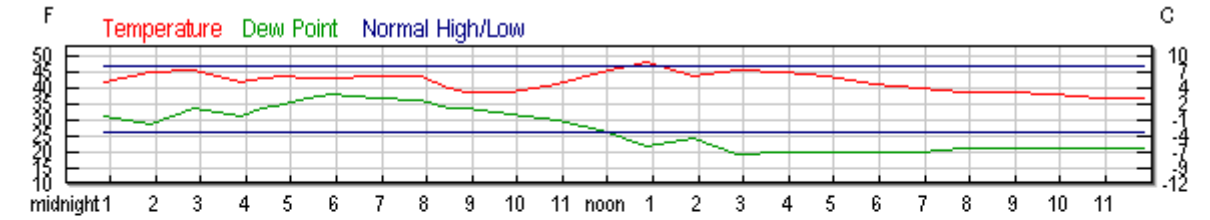
	Actual	Average	Record
Temperature			
Mean Temperature	**42** °F	-	
Max Temperature	**48** °F	-	- ()
Min Temperature	**36** °F	-	- ()
Degree Days			
Heating Degree Days	23		
Month to date heating degree days	547		
Moisture			
Dew Point	**28** °F		
Average Humidity	58		

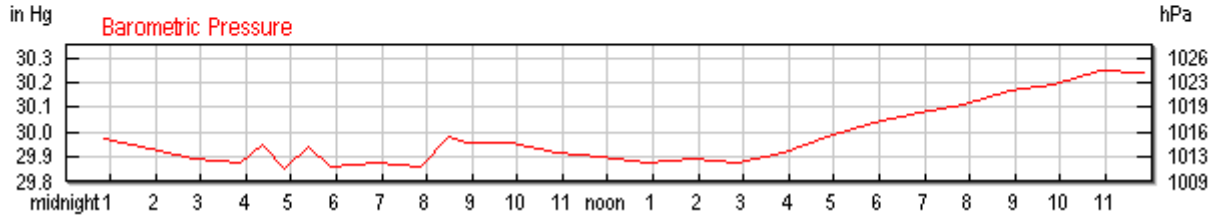
	Actual	Average	Record
Maximum Humidity	82		
Minimum Humidity	34		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.52		
Year to date precipitation	0.52		
Snow			
Snow	**T** in	-	- ()
Month to date snowfall	2.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.98** in		
Wind			
Wind Speed	**17** mph (WNW)		
Max Wind Speed	**41** mph		
Max Gust Speed	**52** mph		
Visibility	**10** miles		
Events	Rain , Snow		

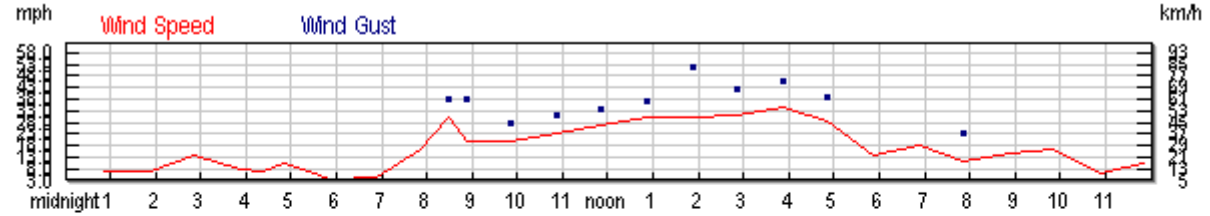
T = Trace of Precipitation, MM = Missing Value

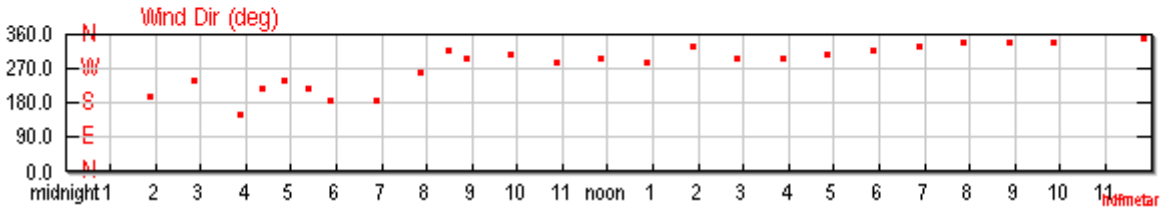
Source: NWS Daily Summary

Daily Weather History Graph









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Astronomy

Jan. 18, 2019	**Rise**	**Set**
Actual Time	7:13 AM MST	5:20 PM MST

Jan. 18, 2019	Rise	Set
Civil Twilight	6:45 AM MST	5:48 PM MST
Nautical Twilight	6:14 AM MST	6:19 PM MST
Astronomical Twilight	5:44 AM MST	6:49 PM MST
Moon	2:59 PM MST (1/18)	4:33 AM MST (1/18)
Length of Visible Light	11h 02m	
Length of Day	10h 07m	

Waxing Gibbous, 92% of the Moon is Illuminated

Jan 18	Jan 20	Jan 27	Feb 4	Feb 12
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**42.1** °F	**37.7** °F	**30.9** °F	65%	**29.97** in	**10.0** mi	ESE	**6.9** mph	-	N/A		Overcast
1:52 AM	**45.0** °F	**41.2** °F	**28.9** °F	53%	**29.93** in	**10.0** mi	SSW	**6.9** mph	-	N/A		Overcast
2:52 AM	**46.0** °F	**39.9** °F	**34.0** °F	63%	**29.89** in	**10.0** mi	WSW	**13.8** mph	-	N/A		Overcast
3:52 AM	**42.1** °F	**37.1** °F	**30.9** °F	65%	**29.88** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Overcast
4:21 AM	**43.0** °F	**38.8** °F	**34.0** °F	71%	**29.95** in	**8.0** mi	SW	**6.9** mph	-	**0.01** in	Rain	Light Rain
4:52 AM	**44.1** °F	**38.6** °F	**35.1** °F	71%	**29.85** in	**10.0** mi	WSW	**10.4** mph	-	**0.02** in		Overcast
5:24 AM	**43.0** °F	**38.8** °F	**37.0** °F	80%	**29.94** in	**10.0** mi	SW	**6.9** mph	-	**0.00** in		Overcast
5:52 AM	**43.0** °F	**41.3** °F	**37.9** °F	82%	**29.86** in	**10.0** mi	South	**3.5** mph	-	**0.00** in		Overcast
6:52 AM	**44.1** °F	**41.5** °F	**37.0** °F	76%	**29.88** in	**10.0** mi	South	**4.6** mph	-	N/A		Overcast

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
7:52 AM	44.1 °F	36.8 °F	36.0 °F	73%	29.86 in	10.0 mi	West	16.1 mph	27.6 mph	0.00 in	Rain	Light Rain
8:28 AM	39.9 °F	28.4 °F	34.0 °F	79%	29.98 in	8.0 mi	NW	29.9 mph	38.0 mph	0.00 in	Rain	Light Rain
8:52 AM	39.0 °F	29.3 °F	34.0 °F	82%	29.96 in	6.0 mi	WNW	19.6 mph	38.0 mph	0.02 in	Rain	Light Rain
9:52 AM	39.0 °F	29.3 °F	32.0 °F	76%	29.96 in	10.0 mi	NW	19.6 mph	27.6 mph	0.01 in		Overcast
10:52 AM	41.0 °F	31.1 °F	30.0 °F	65%	29.92 in	10.0 mi	WNW	23.0 mph	31.1 mph	N/A		Mostly Cloudy
11:52 AM	45.0 °F	35.8 °F	27.0 °F	49%	29.90 in	10.0 mi	WNW	26.5 mph	33.4 mph	N/A		Mostly Cloudy
12:52 PM	48.0 °F	-	21.9 °F	36%	29.88 in	10.0 mi	WNW	29.9 mph	36.8 mph	N/A		Partly Cloudy
1:52 PM	44.1 °F	34.0 °F	24.1 °F	45%	29.89 in	10.0 mi	NNW	29.9 mph	51.8 mph	0.00 in		Unknown
2:52 PM	46.0 °F	36.5 °F	19.0 °F	34%	29.88 in	10.0 mi	WNW	31.1 mph	42.6 mph	0.00 in		Partly Cloudy
3:52 PM	45.0 °F	34.6 °F	19.9 °F	37%	29.92 in	10.0 mi	WNW	34.5 mph	46.0 mph	N/A		Partly Cloudy
4:52 PM	44.1 °F	34.2 °F	19.9 °F	38%	29.98 in	10.0 mi	NW	28.8 mph	39.1 mph	N/A		Scattered Clouds
5:52 PM	41.0 °F	33.5 °F	19.9 °F	43%	30.04 in	10.0 mi	NW	13.8 mph	-	N/A		Scattered Clouds
6:52 PM	39.9 °F	30.8 °F	19.9 °F	45%	30.08 in	10.0 mi	NNW	18.4 mph	25.3 mph	N/A		Partly Cloudy
7:52 PM	39.0 °F	31.8 °F	21.0 °F	49%	30.11 in	10.0 mi	NNW	11.5 mph	23.0 mph	N/A		Partly Cloudy
8:52 PM	39.0 °F	30.6 °F	21.0 °F	49%	30.17 in	10.0 mi	NNW	15.0 mph	-	N/A		Partly Cloudy
9:52 PM	37.9 °F	28.9 °F	21.0 °F	51%	30.19 in	10.0 mi	NNW	16.1 mph	21.9 mph	N/A		Partly Cloudy
10:52 PM	37.0 °F	32.4 °F	21.0 °F	52%	30.25 in	10.0 mi	Variable	5.8 mph	-	N/A		Partly Cloudy
11:52 PM	37.0 °F	29.8 °F	21.0 °F	52%	30.24 in	10.0 mi	North	10.4 mph	-	N/A		Partly Cloudy

Albuquerque, NM

Albuquerque International Sunport

12:21 PM MST on February 25, 2019 (GMT -0700)

Weather History for KABQ - January, 2019

January

22

2019

View

Tuesday, January 22, 2019

Daily | Weekly | Monthly | Custom

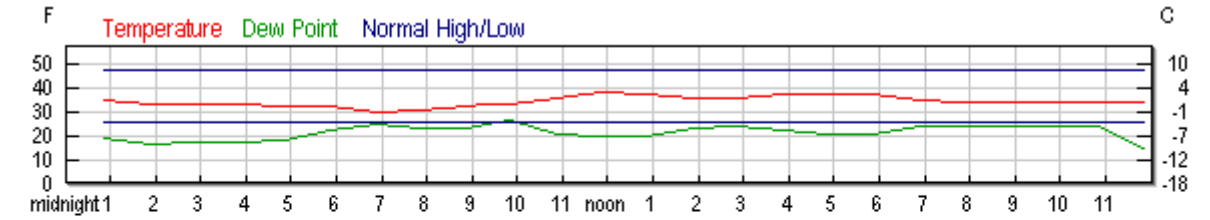
	Actual	Average	Record
Temperature			
Mean Temperature	**35** °F	-	
Max Temperature	**39** °F	-	- ()
Min Temperature	**30** °F	-	- ()
Degree Days			
Heating Degree Days	30		
Month to date heating degree days	643		
Moisture			
Dew Point	**21** °F		
Average Humidity	63		

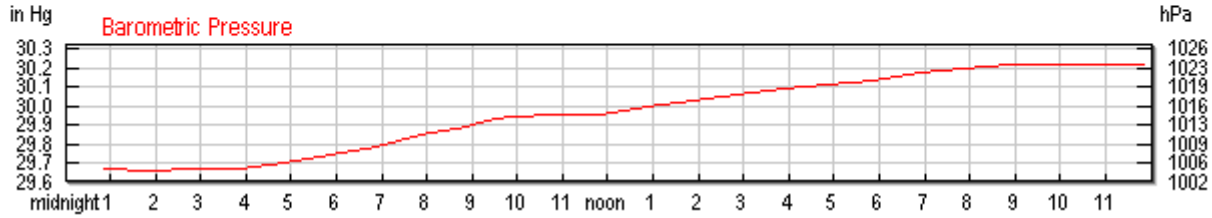
	Actual	Average	Record
Maximum Humidity	78		
Minimum Humidity	47		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.52		
Year to date precipitation	0.52		
Snow			
Snow	**T** in	-	- ()
Month to date snowfall	2.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.96** in		
Wind			
Wind Speed	**7** mph (WNW)		
Max Wind Speed	**14** mph		
Max Gust Speed	**18** mph		
Visibility	**10** miles		
Events	Snow		

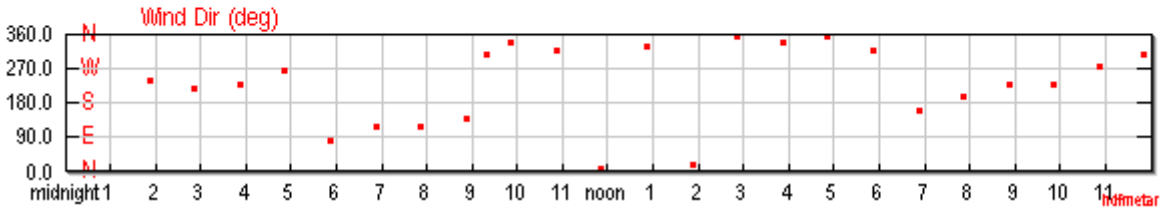
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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Astronomy

Jan. 22, 2019	**Rise**	**Set**
Actual Time	7:11 AM MST	5:24 PM MST

Jan. 22, 2019	Rise	Set
Civil Twilight	6:44 AM MST	5:52 PM MST
Nautical Twilight	6:13 AM MST	6:22 PM MST
Astronomical Twilight	5:43 AM MST	6:52 PM MST
Moon	7:27 PM MST (1/22)	8:28 AM MST (1/22)
Length of Visible Light	11h 07m	
Length of Day	10h 13m	

Waning Gibbous, 96% of the Moon is Illuminated

Jan 22	Jan 27	Feb 4	Feb 12	Feb 19
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**35.1** °F	**29.3** °F	**19.0** °F	52%	**29.67** in	**10.0** mi	WSW	**6.9** mph	-	N/A		Scattered Clouds
1:52 AM	**33.1** °F	**25.5** °F	**16.0** °F	50%	**29.66** in	**10.0** mi	WSW	**9.2** mph	-	N/A		Partly Cloudy
2:52 AM	**33.1** °F	**26.1** °F	**17.1** °F	52%	**29.67** in	**10.0** mi	SW	**8.1** mph	-	N/A		Mostly Cloudy
3:52 AM	**33.1** °F	**26.9** °F	**17.1** °F	52%	**29.67** in	**10.0** mi	SW	**6.9** mph	-	N/A		Overcast
4:52 AM	**32.0** °F	**25.6** °F	**18.0** °F	56%	**29.70** in	**10.0** mi	West	**6.9** mph	-	N/A		Mostly Cloudy
5:52 AM	**32.0** °F	**23.6** °F	**21.9** °F	66%	**29.74** in	**10.0** mi	East	**10.4** mph	-	N/A		Overcast
6:52 AM	**30.0** °F	**22.4** °F	**25.0** °F	82%	**29.79** in	**10.0** mi	ESE	**8.1** mph	-	N/A		Overcast
7:52 AM	**30.9** °F	**25.2** °F	**23.0** °F	72%	**29.85** in	**10.0** mi	ESE	**5.8** mph	-	N/A		Mostly Cloudy
8:52 AM	**32.0** °F	**26.4** °F	**23.0** °F	69%	**29.89** in	**9.0** mi	SE	**5.8** mph	-	**0.00** in	Snow	Light Snow

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:18 AM	33.1 °F	26.1 °F	25.0 °F	72%	29.92 in	2.0 mi	NW	8.1 mph	-	0.00 in	Snow	Light Snow
9:52 AM	33.1 °F	30.0 °F	26.1 °F	75%	29.94 in	9.0 mi	NNW	3.5 mph	-	0.00 in	Snow	Light Snow
10:52 AM	36.0 °F	29.0 °F	21.0 °F	55%	29.95 in	10.0 mi	NW	9.2 mph	-	0.00 in		Mostly Cloudy
11:52 AM	37.9 °F	34.4 °F	19.9 °F	48%	29.96 in	10.0 mi	North	4.6 mph	-	N/A		Mostly Cloudy
12:52 PM	37.0 °F	30.4 °F	19.9 °F	50%	30.00 in	10.0 mi	NNW	9.2 mph	-	N/A		Overcast
1:52 PM	36.0 °F	29.6 °F	23.0 °F	59%	30.03 in	10.0 mi	NNE	8.1 mph	-	N/A		Overcast
2:52 PM	36.0 °F	29.0 °F	24.1 °F	62%	30.06 in	10.0 mi	North	9.2 mph	-	0.00 in		Overcast
3:52 PM	37.0 °F	31.6 °F	21.9 °F	54%	30.09 in	10.0 mi	NNW	6.9 mph	-	N/A		Overcast
4:52 PM	37.0 °F	31.0 °F	21.0 °F	52%	30.11 in	10.0 mi	North	8.1 mph	-	N/A		Mostly Cloudy
5:52 PM	37.0 °F	31.6 °F	21.0 °F	52%	30.14 in	10.0 mi	NW	6.9 mph	-	N/A		Mostly Cloudy
6:52 PM	35.1 °F	29.3 °F	24.1 °F	64%	30.18 in	10.0 mi	SSE	6.9 mph	-	N/A		Mostly Cloudy
7:52 PM	34.0 °F	28.8 °F	24.1 °F	67%	30.20 in	10.0 mi	SSW	5.8 mph	-	N/A		Overcast
8:52 PM	34.0 °F	29.8 °F	24.1 °F	67%	30.22 in	10.0 mi	SW	4.6 mph	-	N/A		Mostly Cloudy
9:52 PM	34.0 °F	31.0 °F	24.1 °F	67%	30.22 in	10.0 mi	SW	3.5 mph	-	N/A		Mostly Cloudy
10:52 PM	34.0 °F	29.8 °F	24.1 °F	67%	30.22 in	10.0 mi	West	4.6 mph	-	N/A		Mostly Cloudy
11:52 PM	34.0 °F	27.2 °F	15.1 °F	46%	30.22 in	10.0 mi	NW	8.1 mph	-	N/A		Mostly Cloudy

Albuquerque, NM

Albuquerque International Sunport

1:51 PM MST on February 25, 2019 (GMT -0700)

Weather History for KABQ - February, 2019

February

6

2019

View

Wednesday, February 6, 2019

Daily | Weekly | Monthly | Custom

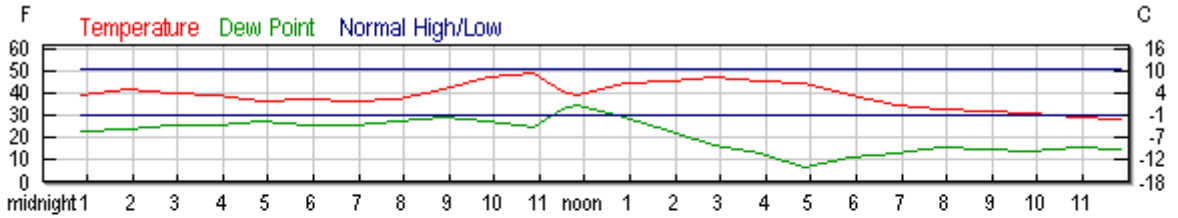
	Actual	Average	Record
Temperature			
Mean Temperature	**39** °F	-	
Max Temperature	**51** °F	-	- ()
Min Temperature	**27** °F	-	- ()
Degree Days			
Heating Degree Days	26		
Month to date heating degree days	112		
Moisture			
Dew Point	**20** °F		
Average Humidity	46		

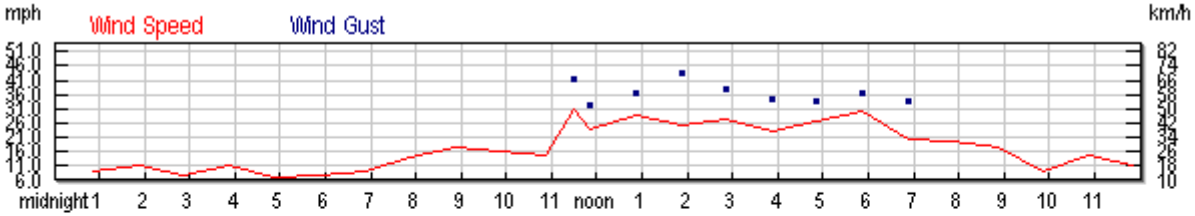
	Actual	Average	Record
Maximum Humidity	70		
Minimum Humidity	22		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.02		
Year to date precipitation	0.54		
Snow			
Snow	**T** in	-	- ()
Month to date snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.72** in		
Wind			
Wind Speed	**17** mph (SW)		
Max Wind Speed	**36** mph		
Max Gust Speed	**45** mph		
Visibility	**10** miles		
Events	Rain		

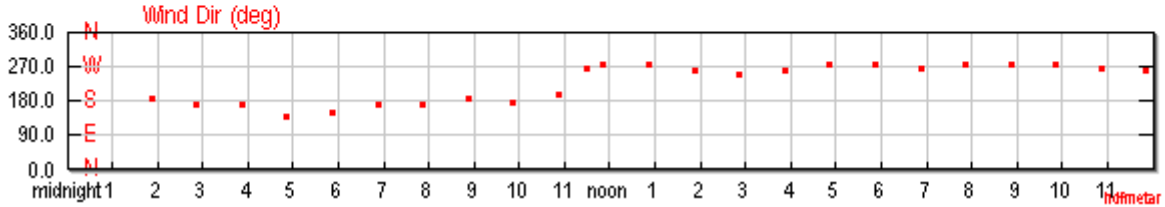
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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Astronomy

Feb. 06, 2019	**Rise**	**Set**
Actual Time	7:01 AM MST	5:40 PM MST

Feb. 06, 2019	Rise	Set
Civil Twilight	6:35 AM MST	6:06 PM MST
Nautical Twilight	6:04 AM MST	6:36 PM MST
Astronomical Twilight	5:35 AM MST	7:06 PM MST
Moon	8:14 AM MST (2/6)	7:27 PM MST (2/6)
Length of Visible Light	11h 31m	
Length of Day	10h 38m	

Waxing Crescent, 3% of the Moon is Illuminated

Feb 6	Feb 12	Feb 19	Feb 26	Mar 6
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**37.9** °F	**31.5** °F	**21.9** °F	53%	**29.70** in	**10.0** mi	SSE	**9.2** mph	-	N/A		Partly Cloudy
1:52 AM	**41.0** °F	**34.3** °F	**23.0** °F	49%	**29.68** in	**10.0** mi	South	**11.5** mph	-	N/A		Partly Cloudy
2:52 AM	**39.0** °F	**33.4** °F	**25.0** °F	57%	**29.67** in	**10.0** mi	South	**8.1** mph	-	N/A		Partly Cloudy
3:52 AM	**37.9** °F	**30.5** °F	**25.0** °F	60%	**29.66** in	**10.0** mi	South	**11.5** mph	-	N/A		Partly Cloudy
4:52 AM	**35.1** °F	**29.3** °F	**26.1** °F	70%	**29.67** in	**10.0** mi	SE	**6.9** mph	-	N/A		Partly Cloudy
5:52 AM	**36.0** °F	**29.6** °F	**25.0** °F	64%	**29.67** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Clear
6:52 AM	**35.1** °F	**27.9** °F	**25.0** °F	67%	**29.69** in	**10.0** mi	South	**9.2** mph	-	N/A		Partly Cloudy
7:52 AM	**36.0** °F	**27.1** °F	**26.1** °F	67%	**29.69** in	**10.0** mi	South	**13.8** mph	-	N/A		Partly Cloudy
8:52 AM	**41.0** °F	**32.5** °F	**28.0** °F	60%	**29.67** in	**10.0** mi	South	**17.3** mph	-	N/A		Partly Cloudy

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**46.0** °F	**39.3** °F	**26.1** °F	46%	**29.65** in	**10.0** mi	South	**16.1** mph	-	N/A		Partly Cloudy
10:52 AM	**48.0** °F	-	**24.1** °F	39%	**29.62** in	**10.0** mi	SSW	**15.0** mph	**25.3** mph	N/A		Mostly Cloudy
11:29 AM	**39.9** °F	**28.2** °F	**32.0** °F	73%	**29.73** in	**8.0** mi	West	**31.1** mph	**41.4** mph	**0.00** in	Rain	Light Hail
11:52 AM	**37.9** °F	**26.8** °F	**34.0** °F	86%	**29.69** in	**8.0** mi	West	**24.2** mph	**32.2** mph	**0.02** in	Rain	Light Rain
12:52 PM	**43.0** °F	**32.7** °F	**28.0** °F	56%	**29.66** in	**10.0** mi	West	**28.8** mph	**36.8** mph	**0.00** in		Mostly Cloudy
1:52 PM	**44.1** °F	**34.8** °F	**21.9** °F	42%	**29.63** in	**10.0** mi	West	**25.3** mph	**43.7** mph	N/A		Partly Cloudy
2:52 PM	**46.0** °F	**37.0** °F	**16.0** °F	30%	**29.63** in	**10.0** mi	WSW	**27.6** mph	**38.0** mph	N/A		Scattered Clouds
3:52 PM	**44.1** °F	**35.2** °F	**12.0** °F	27%	**29.66** in	**10.0** mi	West	**23.0** mph	**34.5** mph	N/A		Mostly Cloudy
4:52 PM	**43.0** °F	**33.1** °F	**6.1** °F	22%	**29.70** in	**10.0** mi	West	**26.5** mph	**33.4** mph	N/A		Mostly Cloudy
5:52 PM	**37.9** °F	**25.7** °F	**10.0** °F	32%	**29.76** in	**10.0** mi	West	**29.9** mph	**36.8** mph	N/A		Mostly Cloudy
6:52 PM	**34.0** °F	**22.4** °F	**12.0** °F	40%	**29.81** in	**10.0** mi	West	**20.7** mph	**33.4** mph	N/A		Scattered Clouds
7:52 PM	**32.0** °F	**20.1** °F	**15.1** °F	50%	**29.85** in	**10.0** mi	West	**19.6** mph	-	N/A		Partly Cloudy
8:52 PM	**30.9** °F	**19.4** °F	**14.0** °F	50%	**29.88** in	**10.0** mi	West	**17.3** mph	-	N/A		Partly Cloudy
9:52 PM	**30.0** °F	**21.7** °F	**12.9** °F	49%	**29.88** in	**10.0** mi	West	**9.2** mph	-	N/A		Partly Cloudy
10:52 PM	**28.0** °F	**16.5** °F	**15.1** °F	58%	**29.90** in	**10.0** mi	West	**15.0** mph	-	N/A		Mostly Cloudy
11:52 PM	**27.0** °F	**16.7** °F	**14.0** °F	58%	**29.96** in	**10.0** mi	West	**11.5** mph	-	N/A		Mostly Cloudy

Albuquerque, NM

Albuquerque International Sunport

1:57 PM MST on February 25, 2019 (GMT -0700)

Weather History for KABQ - February, 2019

February

14

2019

View

Thursday, February 14, 2019

Daily | Weekly | Monthly | Custom

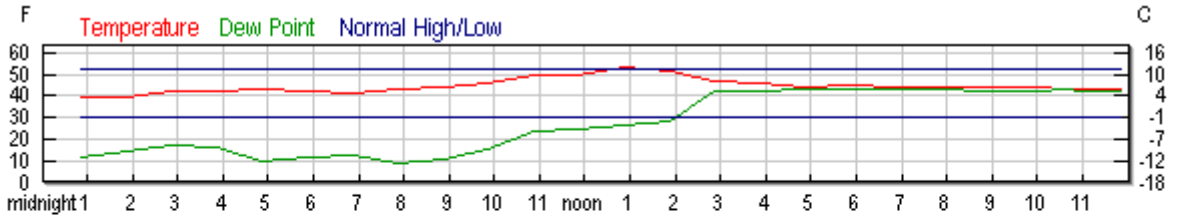
	Actual	Average	Record
Temperature			
Mean Temperature	**45** °F	-	
Max Temperature	**53** °F	-	- ()
Min Temperature	**37** °F	-	- ()
Degree Days			
Heating Degree Days	20		
Month to date heating degree days	338		
Moisture			
Dew Point	**28** °F		
Average Humidity	58		

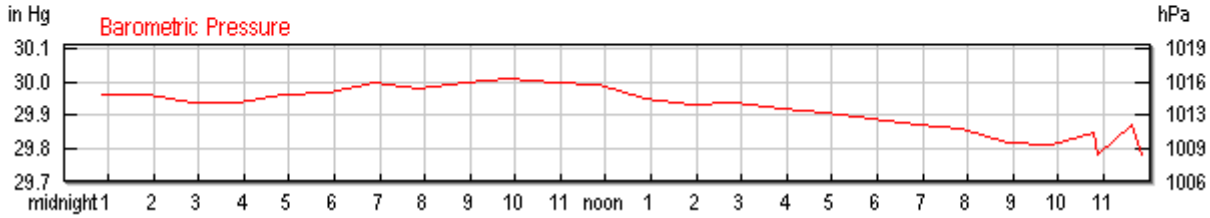
	Actual	Average	Record
Maximum Humidity	92		
Minimum Humidity	24		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.14		
Year to date precipitation	0.66		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.92** in		
Wind			
Wind Speed	**4** mph (SW)		
Max Wind Speed	**12** mph		
Max Gust Speed	**13** mph		
Visibility	**8** miles		
Events	Rain		

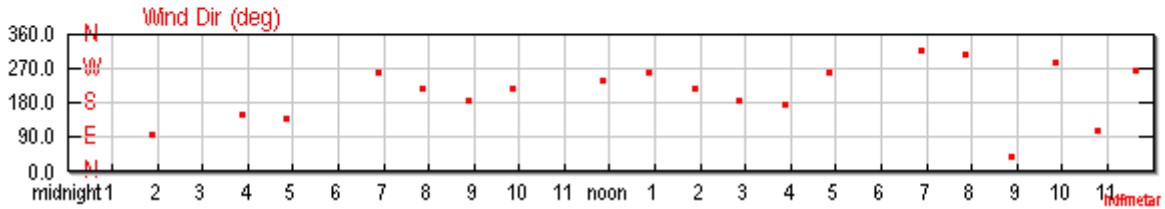
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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Astronomy

Feb. 14, 2019	**Rise**	**Set**
Actual Time	6:53 AM MST	5:48 PM MST

Feb. 14, 2019	Rise	Set
Civil Twilight	6:27 AM MST	6:13 PM MST
Nautical Twilight	5:57 AM MST	6:43 PM MST
Astronomical Twilight	5:28 AM MST	7:13 PM MST
Moon	12:45 PM MST (2/14)	2:14 AM MST (2/14)
Length of Visible Light	11h 46m	
Length of Day	10h 54m	

Waxing Gibbous, 70% of the Moon is Illuminated

Feb 14	Feb 19	Feb 26	Mar 6	Mar 14
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**39.9** °F	-	**12.0** °F	32%	**29.96** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
1:52 AM	**39.0** °F	**34.0** °F	**14.0** °F	36%	**29.96** in	**10.0** mi	East	**6.9** mph	-	N/A		Overcast
2:52 AM	**42.1** °F	-	**17.1** °F	37%	**29.94** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
3:52 AM	**42.1** °F	**37.7** °F	**16.0** °F	35%	**29.94** in	**10.0** mi	SSE	**6.9** mph	-	N/A		Overcast
4:52 AM	**43.0** °F	**38.2** °F	**10.0** °F	26%	**29.96** in	**10.0** mi	SE	**8.1** mph	-	N/A		Overcast
5:52 AM	**42.1** °F	-	**12.0** °F	29%	**29.97** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
6:52 AM	**41.0** °F	**37.1** °F	**12.9** °F	32%	**30.00** in	**10.0** mi	West	**5.8** mph	-	N/A		Overcast
7:52 AM	**43.0** °F	**40.3** °F	**9.0** °F	25%	**29.98** in	**10.0** mi	SW	**4.6** mph	-	N/A		Overcast
8:52 AM	**44.1** °F	**40.8** °F	**10.9** °F	26%	**30.00** in	**10.0** mi	South	**5.8** mph	-	N/A		Overcast

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**46.0** °F	**42.5** °F	**15.1** °F	29%	**30.01** in	**10.0** mi	SW	**6.9** mph	-	N/A		Overcast
10:52 AM	**50.0** °F	-	**24.1** °F	36%	**30.00** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
11:52 AM	**50.0** °F	-	**25.0** °F	38%	**29.99** in	**10.0** mi	WSW	**4.6** mph	-	N/A		Overcast
12:52 PM	**53.1** °F	-	**26.1** °F	35%	**29.95** in	**10.0** mi	West	**3.5** mph	-	N/A		Overcast
1:52 PM	**51.1** °F	-	**28.0** °F	41%	**29.93** in	**10.0** mi	SW	**3.5** mph	-	**0.00** in	Rain	Light Rain
2:52 PM	**46.9** °F	-	**42.1** °F	83%	**29.94** in	**8.0** mi	South	**9.2** mph	-	**0.02** in	Rain	Light Rain
3:52 PM	**46.0** °F	**42.5** °F	**42.1** °F	86%	**29.92** in	**4.0** mi	South	**6.9** mph	-	**0.03** in	Rain	Light Rain
4:52 PM	**44.1** °F	**42.5** °F	**43.0** °F	96%	**29.91** in	**7.0** mi	West	**3.5** mph	-	**0.03** in	Rain	Light Rain
5:52 PM	**45.0** °F	-	**43.0** °F	93%	**29.89** in	**10.0** mi	Calm	Calm	-	**0.02** in	Rain	Light Rain
6:52 PM	**44.1** °F	**41.5** °F	**43.0** °F	96%	**29.87** in	**10.0** mi	NW	**4.6** mph	-	**0.01** in		Overcast
7:52 PM	**44.1** °F	**41.5** °F	**43.0** °F	96%	**29.86** in	**10.0** mi	NW	**4.6** mph	-	N/A		Overcast
8:52 PM	**44.1** °F	**41.5** °F	**42.1** °F	93%	**29.82** in	**10.0** mi	NE	**4.6** mph	-	**0.00** in	Rain	Light Rain
9:52 PM	**44.1** °F	**42.5** °F	**42.1** °F	93%	**29.81** in	**9.0** mi	WNW	**3.5** mph	-	**0.00** in	Rain	Light Rain
10:47 PM	**42.8** °F	**41.1** °F	**42.8** °F	100%	**29.85** in	**3.0** mi	ESE	**3.5** mph	-	**0.00** in		Overcast
10:52 PM	**43.0** °F	-	**42.1** °F	97%	**29.78** in	**3.0** mi	Calm	Calm	-	**0.00** in		Overcast
11:37 PM	**43.0** °F	**41.3** °F	**42.1** °F	97%	**29.87** in	**1.0** mi	West	**3.5** mph	-	**0.00** in	Rain	Light Rain
11:52 PM	**43.0** °F	-	**42.1** °F	97%	**29.78** in	**1.0** mi	Calm	Calm	-	**0.00** in	Rain	Light Rain

Albuquerque, NM

Albuquerque International Sunport

1:58 PM MST on February 25, 2019 (GMT -0700)

Weather History for KABQ - February, 2019

February

17

2019

View

Sunday, February 17, 2019

Daily | Weekly | Monthly | Custom

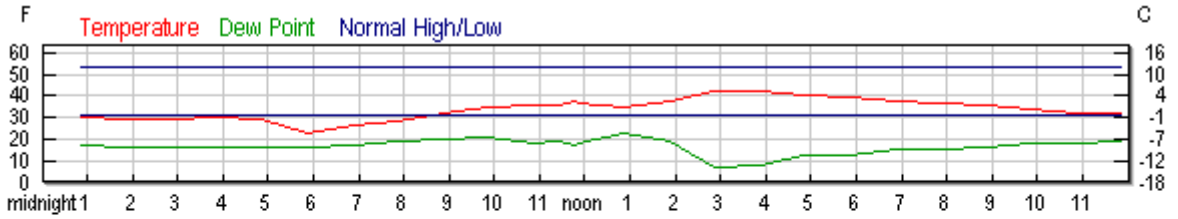
	Actual	Average	Record
Temperature			
Mean Temperature	**33** °F	-	
Max Temperature	**43** °F	-	- ()
Min Temperature	**23** °F	-	- ()
Degree Days			
Heating Degree Days	32		
Month to date heating degree days	408		
Moisture			
Dew Point	**17** °F		
Average Humidity	48		

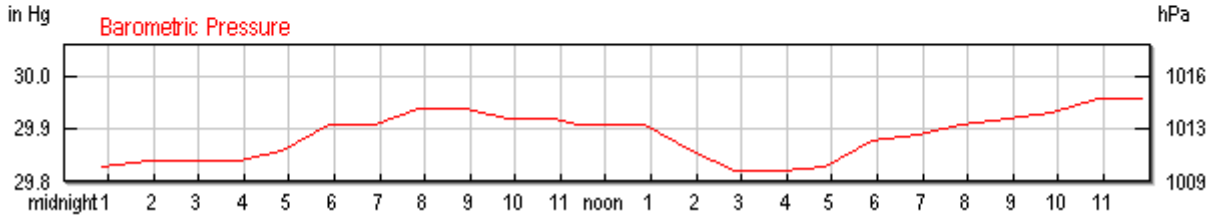
	Actual	Average	Record
Maximum Humidity	74		
Minimum Humidity	22		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.14		
Year to date precipitation	0.66		
Snow			
Snow	**T** in	-	- ()
Month to date snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.89** in		
Wind			
Wind Speed	**8** mph (SW)		
Max Wind Speed	**23** mph		
Max Gust Speed	**32** mph		
Visibility	**10** miles		
Events	Snow		

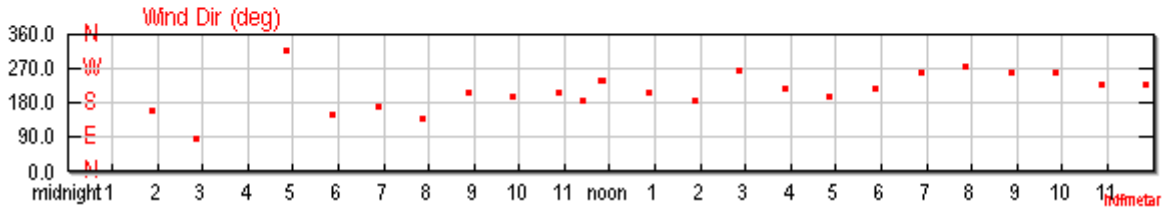
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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Feb. 17, 2019	**Rise**	**Set**
Actual Time	6:50 AM MST	5:50 PM MST

Feb. 17, 2019	Rise	Set
Civil Twilight	6:24 AM MST	6:16 PM MST
Nautical Twilight	5:54 AM MST	6:46 PM MST
Astronomical Twilight	5:25 AM MST	7:15 PM MST
Moon	3:48 PM MST (2/17)	5:20 AM MST (2/17)
Length of Visible Light	11h 52m	
Length of Day	11h 00m	

Waxing Gibbous, 95% of the Moon is Illuminated

Feb 17	Feb 19	Feb 26	Mar 6	Mar 14
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**30.0** °F	**25.2** °F	**17.1** °F	59%	**29.83** in	**10.0** mi	WSW	**4.6** mph	-	N/A		Partly Cloudy
1:52 AM	**28.9** °F	**21.9** °F	**16.0** °F	58%	**29.84** in	**10.0** mi	SSE	**6.9** mph	-	N/A		Partly Cloudy
2:52 AM	**28.9** °F	**25.2** °F	**16.0** °F	58%	**29.84** in	**10.0** mi	East	**3.5** mph	-	N/A		Scattered Clouds
3:52 AM	**30.0** °F	-	**16.0** °F	56%	**29.84** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
4:52 AM	**28.9** °F	**25.2** °F	**16.0** °F	58%	**29.86** in	**10.0** mi	NW	**3.5** mph	-	N/A		Mostly Cloudy
5:52 AM	**23.0** °F	**18.4** °F	**16.0** °F	74%	**29.91** in	**10.0** mi	SSE	**3.5** mph	-	N/A		Clear
6:52 AM	**26.1** °F	**21.9** °F	**17.1** °F	69%	**29.91** in	**10.0** mi	South	**3.5** mph	-	N/A		Scattered Clouds
7:52 AM	**28.0** °F	**20.8** °F	**19.0** °F	69%	**29.94** in	**10.0** mi	SE	**6.9** mph	-	N/A		Partly Cloudy
8:52 AM	**32.0** °F	**27.5** °F	**19.9** °F	61%	**29.94** in	**10.0** mi	SSW	**4.6** mph	-	N/A		Partly Cloudy

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**35.1** °F	**27.9** °F	**21.0** °F	57%	**29.92** in	**10.0** mi	SSW	**9.2** mph	-	N/A		Scattered Clouds
10:52 AM	**36.0** °F	**28.0** °F	**18.0** °F	48%	**29.92** in	**10.0** mi	SSW	**11.5** mph	-	N/A		Mostly Cloudy
11:23 AM	**36.0** °F	**27.1** °F	**19.0** °F	50%	**29.91** in	**10.0** mi	South	**13.8** mph	-	**0.00** in	Snow	Light Snow
11:48 AM	**37.4** °F	**30.3** °F	**17.6** °F	45%	**29.91** in	**10.0** mi	WSW	**10.4** mph	-	**0.00** in		Mostly Cloudy
11:52 AM	**37.0** °F	**31.0** °F	**18.0** °F	46%	**29.91** in	**10.0** mi	WSW	**8.1** mph	-	**0.00** in		Mostly Cloudy
12:52 PM	**35.1** °F	**26.4** °F	**23.0** °F	61%	**29.91** in	**10.0** mi	SSW	**12.7** mph	-	N/A		Mostly Cloudy
1:52 PM	**37.9** °F	**30.0** °F	**19.0** °F	47%	**29.86** in	**10.0** mi	South	**12.7** mph	**17.3** mph	N/A		Mostly Cloudy
2:52 PM	**42.1** °F	**33.9** °F	**7.0** °F	24%	**29.82** in	**10.0** mi	West	**17.3** mph	-	N/A		Mostly Cloudy
3:52 PM	**42.1** °F	**33.1** °F	**8.1** °F	25%	**29.82** in	**10.0** mi	SW	**20.7** mph	-	N/A		Mostly Cloudy
4:52 PM	**39.9** °F	**33.4** °F	**12.9** °F	33%	**29.83** in	**10.0** mi	SSW	**10.4** mph	-	N/A		Scattered Clouds
5:52 PM	**39.0** °F	**34.8** °F	**12.9** °F	34%	**29.88** in	**10.0** mi	SW	**5.8** mph	-	N/A		Mostly Cloudy
6:52 PM	**37.9** °F	**32.1** °F	**15.1** °F	39%	**29.89** in	**10.0** mi	West	**8.1** mph	-	N/A		Mostly Cloudy
7:52 PM	**37.0** °F	**29.3** °F	**15.1** °F	41%	**29.91** in	**10.0** mi	West	**11.5** mph	-	N/A		Mostly Cloudy
8:52 PM	**36.0** °F	**26.7** °F	**16.0** °F	44%	**29.92** in	**10.0** mi	West	**15.0** mph	-	**0.00** in		Mostly Cloudy
9:52 PM	**34.0** °F	**26.0** °F	**18.0** °F	52%	**29.93** in	**10.0** mi	West	**10.4** mph	-	N/A		Mostly Cloudy
10:52 PM	**32.0** °F	**27.5** °F	**18.0** °F	56%	**29.96** in	**10.0** mi	SW	**4.6** mph	-	N/A		Scattered Clouds
11:52 PM	**32.0** °F	**24.8** °F	**19.0** °F	59%	**29.96** in	**10.0** mi	SW	**8.1** mph	-	N/A		Scattered Clouds

Albuquerque, NM

Albuquerque International Sunport

1:59 PM MST on February 25, 2019 (GMT -0700)

Weather History for KABQ - February, 2019

February

19

2019

View

Tuesday, February 19, 2019

Daily | Weekly | Monthly | Custom

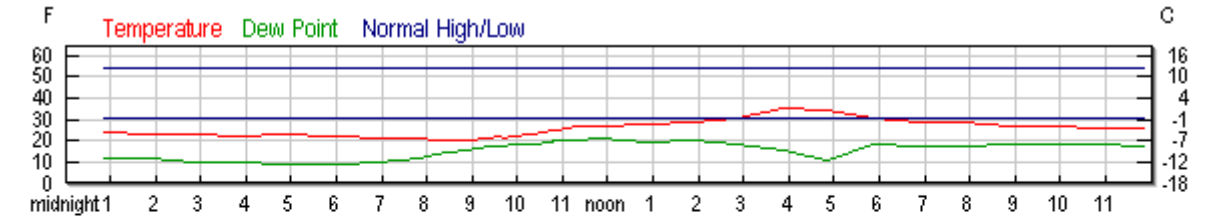
	Actual	Average	Record
Temperature			
Mean Temperature	**28** °F	-	
Max Temperature	**35** °F	-	- ()
Min Temperature	**20** °F	-	- ()
Degree Days			
Heating Degree Days	37		
Month to date heating degree days	477		
Moisture			
Dew Point	**16** °F		
Average Humidity	61		

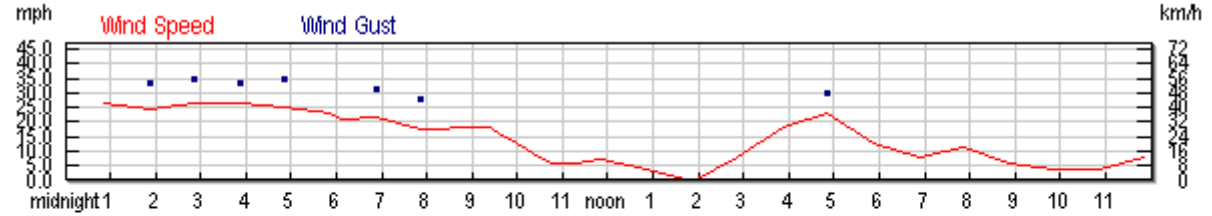
	Actual	Average	Record
Maximum Humidity	84		
Minimum Humidity	38		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.16		
Year to date precipitation	0.68		
Snow			
Snow	**0.60** in	-	- ()
Month to date snowfall	0.6		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.89** in		
Wind			
Wind Speed	**14** mph (ENE)		
Max Wind Speed	**31** mph		
Max Gust Speed	**38** mph		
Visibility	**7** miles		
Events	Snow		

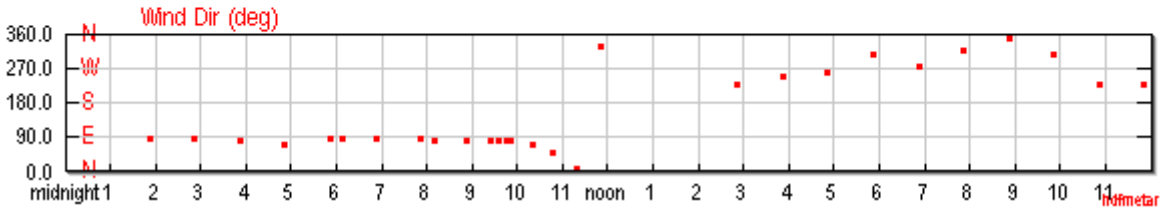
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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Submit

Astronomy

Feb. 19, 2019	**Rise**	**Set**
Actual Time	6:48 AM MST	5:52 PM MST

Feb. 19, 2019	Rise	Set
Civil Twilight	6:22 AM MST	6:18 PM MST
Nautical Twilight	5:52 AM MST	6:48 PM MST
Astronomical Twilight	5:23 AM MST	7:17 PM MST
Moon	6:13 PM MST (2/19)	7:00 AM MST (2/19)
Length of Visible Light	11h 56m	
Length of Day	11h 04m	

Full, 100% of the Moon is Illuminated

Feb 19	Feb 26	Mar 6	Mar 14	Mar 20
Full	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**24.1** °F	**7.7** °F	**12.0** °F	60%	**29.88** in	**10.0** mi	East	**26.5** mph	**36.8** mph	N/A		Mostly Cloudy
1:52 AM	**23.0** °F	**6.9** °F	**12.0** °F	63%	**29.88** in	**10.0** mi	East	**24.2** mph	**33.4** mph	N/A		Scattered Clouds
2:52 AM	**23.0** °F	**6.3** °F	**10.0** °F	58%	**29.87** in	**10.0** mi	East	**26.5** mph	**34.5** mph	N/A		Mostly Cloudy
3:52 AM	**21.9** °F	**4.8** °F	**10.0** °F	60%	**29.87** in	**10.0** mi	East	**26.5** mph	**33.4** mph	N/A		Mostly Cloudy
4:52 AM	**23.0** °F	**6.6** °F	**9.0** °F	55%	**29.90** in	**10.0** mi	ENE	**25.3** mph	**34.5** mph	N/A		Overcast
5:52 AM	**21.9** °F	**5.8** °F	**9.0** °F	58%	**29.91** in	**10.0** mi	East	**23.0** mph	-	**0.00** in		Overcast
6:07 AM	**21.9** °F	**6.5** °F	**9.0** °F	58%	**29.85** in	**9.0** mi	East	**20.7** mph	**27.6** mph	**0.00** in	Snow	Light Snow
6:52 AM	**21.0** °F	**5.0** °F	**10.0** °F	63%	**29.92** in	**6.0** mi	East	**21.9** mph	**31.1** mph	**0.00** in	Snow	Light Snow
7:52 AM	**21.0** °F	**6.6** °F	**12.0** °F	68%	**29.94** in	**0.5** mi	East	**17.3** mph	**27.6** mph	**0.00** in	Snow	Light Snow

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
8:10 AM	19.9 °F	5.2 °F	14.0 °F	78%	29.86 in	0.5 mi	East	17.3 mph	-	0.00 in	Snow	Light Snow
8:52 AM	19.9 °F	4.8 °F	16.0 °F	85%	29.96 in	0.5 mi	East	18.4 mph	-	0.01 in	Snow	Snow
9:25 AM	21.0 °F	6.2 °F	17.1 °F	85%	29.87 in	0.5 mi	East	18.4 mph	-	0.01 in	Snow	Light Snow
9:36 AM	21.9 °F	8.2 °F	17.1 °F	82%	29.87 in	2.0 mi	East	16.1 mph	-	0.01 in	Snow	Light Snow
9:47 AM	21.2 °F	7.8 °F	17.6 °F	86%	29.87 in	2.0 mi	East	15.0 mph	-	0.01 in	Snow	Light Snow
9:52 AM	21.9 °F	9.2 °F	18.0 °F	85%	29.96 in	2.0 mi	East	13.8 mph	-	0.01 in	Snow	Light Snow
10:20 AM	23.0 °F	13.1 °F	18.0 °F	81%	29.87 in	1.0 mi	ENE	9.2 mph	-	0.00 in	Snow	Light Snow
10:47 AM	24.8 °F	17.9 °F	19.4 °F	80%	29.86 in	2.0 mi	NE	5.8 mph	-	0.00 in	Snow	Light Snow
10:48 AM	25.0 °F	18.1 °F	19.9 °F	81%	29.93 in	2.0 mi	Variable	5.8 mph	-	0.00 in	Snow	Light Snow
10:52 AM	25.0 °F	18.1 °F	19.9 °F	81%	29.93 in	2.0 mi	Variable	5.8 mph	-	0.00 in	Snow	Light Snow
11:19 AM	27.0 °F	20.5 °F	19.9 °F	75%	29.85 in	5.0 mi	North	5.8 mph	-	0.00 in	Snow	Light Snow
11:52 AM	27.0 °F	19.5 °F	21.0 °F	78%	29.91 in	10.0 mi	NNW	6.9 mph	-	0.00 in		Mostly Cloudy
12:52 PM	28.0 °F	24.2 °F	19.0 °F	69%	29.88 in	10.0 mi	Variable	3.5 mph	-	N/A		Overcast
1:52 PM	28.9 °F	-	19.9 °F	69%	29.86 in	10.0 mi	Calm	Calm	-	N/A		Mostly Cloudy
2:52 PM	30.9 °F	23.5 °F	18.0 °F	59%	29.83 in	10.0 mi	SW	8.1 mph	-	N/A		Mostly Cloudy
3:52 PM	35.1 °F	24.5 °F	16.0 °F	46%	29.80 in	10.0 mi	WSW	18.4 mph	26.5 mph	N/A		Mostly Cloudy
4:52 PM	34.0 °F	21.8 °F	10.9 °F	38%	29.81 in	10.0 mi	West	23.0 mph	29.9 mph	N/A		Mostly Cloudy
5:52 PM	30.9 °F	21.2 °F	18.0 °F	59%	29.84 in	10.0 mi	NW	12.7 mph	-	N/A		Mostly Cloudy
6:52 PM	28.9 °F	21.1 °F	17.1 °F	61%	29.88 in	10.0 mi	West	8.1 mph	-	N/A		Scattered Clouds
7:52 PM	28.9 °F	19.2 °F	17.1 °F	61%	29.89 in	10.0 mi	NW	11.5 mph	-	N/A		Partly Cloudy
8:52 PM	27.0 °F	20.5 °F	18.0 °F	69%	29.92 in	10.0 mi	North	5.8 mph	-	N/A		Scattered Clouds
9:52 PM	27.0 °F	23.0 °F	18.0 °F	69%	29.92 in	10.0 mi	NW	3.5 mph	-	N/A		Mostly Cloudy
10:52 PM	26.1 °F	21.9 °F	18.0 °F	71%	29.92 in	10.0 mi	SW	3.5 mph	-	N/A		Mostly Cloudy

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
11:52 PM	**26.1** °F	**17.6** °F	**17.1** °F	69%	**29.92** in	**10.0** mi	SW	**8.1** mph	-	N/A		Mostly Cloudy

Albuquerque, NM

Albuquerque International Sunport

1:59 PM MST on February 25, 2019 (GMT -0700)

Weather History for KABQ - February, 2019

February

22

2019

View

Friday, February 22, 2019

Daily | Weekly | Monthly | Custom

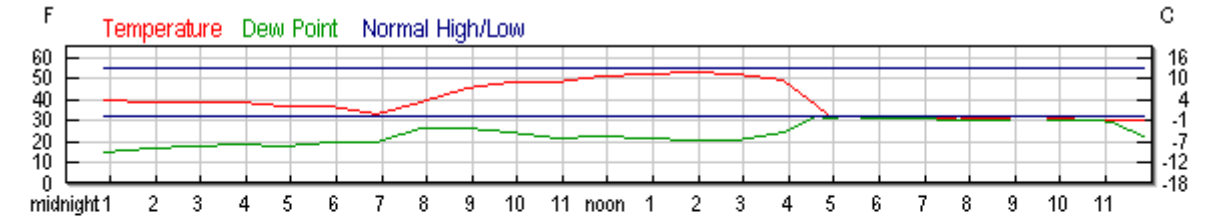
	Actual	Average	Record
Temperature			
Mean Temperature	**43** °F	-	
Max Temperature	**55** °F	-	- ()
Min Temperature	**30** °F	-	- ()
Degree Days			
Heating Degree Days	22		
Month to date heating degree days	560		
Moisture			
Dew Point	**26** °F		
Average Humidity	64		

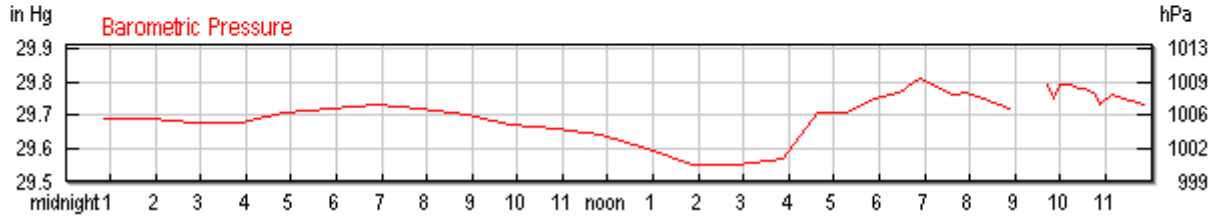
	Actual	Average	Record
Maximum Humidity	100		
Minimum Humidity	28		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.50		
Year to date precipitation	1.02		
Snow			
Snow	**3.60** in	-	- ()
Month to date snowfall	4.2		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.72** in		
Wind			
Wind Speed	**19** mph (SSW)		
Max Wind Speed	**41** mph		
Max Gust Speed	**50** mph		
Visibility	**6** miles		
Events	Fog , Snow		

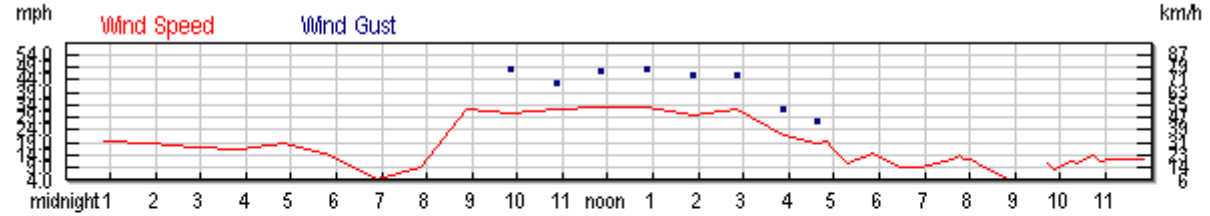
T = Trace of Precipitation, MM = Missing Value

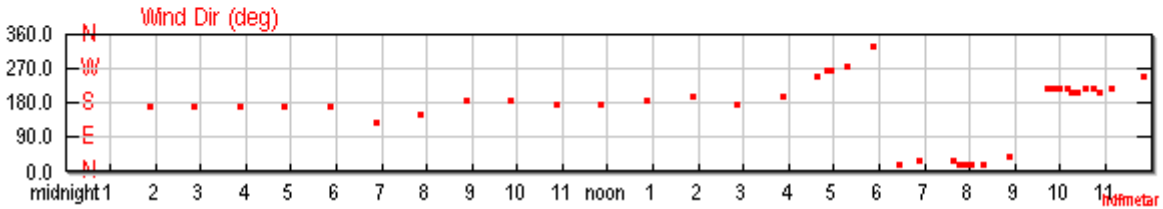
Source: NWS Daily Summary

Daily Weather History Graph









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Airport or City:

KABQ

Submit

Astronomy

Feb. 22, 2019	**Rise**	**Set**
Actual Time	6:44 AM MST	5:55 PM MST

Feb. 22, 2019	Rise	Set
Civil Twilight	6:19 AM MST	6:21 PM MST
Nautical Twilight	5:49 AM MST	6:50 PM MST
Astronomical Twilight	5:20 AM MST	7:20 PM MST
Moon	9:42 PM MST (2/22)	8:57 AM MST (2/22)
Length of Visible Light	12h 02m	
Length of Day	11h 10m	

Waning Gibbous, 86% of the Moon is Illuminated

Feb 22	Feb 26	Mar 6	Mar 14	Mar 20
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**39.9** °F	**30.5** °F	**15.1** °F	36%	**29.69** in	**10.0** mi	South	**19.6** mph	-	N/A		Partly Cloudy
1:52 AM	**39.0** °F	**29.6** °F	**17.1** °F	41%	**29.69** in	**10.0** mi	South	**18.4** mph	-	N/A		Partly Cloudy
2:52 AM	**39.0** °F	**29.9** °F	**18.0** °F	43%	**29.68** in	**10.0** mi	South	**17.3** mph	-	N/A		Partly Cloudy
3:52 AM	**39.0** °F	**30.3** °F	**19.0** °F	45%	**29.68** in	**10.0** mi	South	**16.1** mph	-	N/A		Partly Cloudy
4:52 AM	**37.0** °F	**27.0** °F	**18.0** °F	46%	**29.71** in	**10.0** mi	South	**18.4** mph	-	N/A		Scattered Clouds
5:52 AM	**37.0** °F	**28.5** °F	**19.9** °F	50%	**29.72** in	**10.0** mi	South	**13.8** mph	-	N/A		Partly Cloudy
6:52 AM	**33.1** °F	**28.7** °F	**19.9** °F	59%	**29.73** in	**10.0** mi	SE	**4.6** mph	-	N/A		Scattered Clouds
7:52 AM	**39.0** °F	**32.8** °F	**26.1** °F	60%	**29.72** in	**10.0** mi	SSE	**9.2** mph	-	N/A		Scattered Clouds
8:52 AM	**45.0** °F	**34.9** °F	**26.1** °F	48%	**29.70** in	**10.0** mi	South	**32.2** mph	**44.9** mph	N/A		Partly Cloudy

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	48.0 °F	-	24.1 °F	39%	29.67 in	10.0 mi	South	31.1 mph	48.3 mph	N/A		Partly Cloudy
10:52 AM	48.0 °F	-	21.9 °F	36%	29.66 in	10.0 mi	South	32.2 mph	42.6 mph	N/A		Mostly Cloudy
11:52 AM	51.1 °F	-	23.0 °F	33%	29.64 in	10.0 mi	South	33.4 mph	47.2 mph	N/A		Mostly Cloudy
12:52 PM	52.0 °F	-	21.9 °F	31%	29.60 in	10.0 mi	South	33.4 mph	48.3 mph	N/A		Mostly Cloudy
1:52 PM	53.1 °F	-	21.0 °F	29%	29.55 in	10.0 mi	SSW	29.9 mph	46.0 mph	N/A		Scattered Clouds
2:52 PM	52.0 °F	-	21.0 °F	30%	29.55 in	10.0 mi	South	32.2 mph	46.0 mph	N/A		Mostly Cloudy
3:52 PM	48.9 °F	-	24.1 °F	38%	29.57 in	10.0 mi	SSW	21.9 mph	32.2 mph	N/A		Overcast
4:38 PM	37.0 °F	27.0 °F	32.0 °F	82%	29.71 in	7.0 mi	WSW	18.4 mph	27.6 mph	0.00 in	Snow	Light Snow
4:52 PM	33.1 °F	21.5 °F	30.9 °F	92%	29.71 in	0.5 mi	West	19.6 mph	-	0.03 in	Fog , Snow	Snow
4:56 PM	32.0 °F	20.8 °F	30.9 °F	96%	29.71 in	0.2 mi	West	17.3 mph	-	0.01 in	Fog , Snow	Heavy Snow
5:18 PM	32.0 °F	23.6 °F	32.0 °F	100%	29.71 in	0.5 mi	West	10.4 mph	-	0.05 in	Fog , Snow	Snow
5:52 PM	32.0 °F	21.6 °F	30.9 °F	96%	29.75 in	0.8 mi	NNW	15.0 mph	24.2 mph	0.10 in	Snow	Light Snow
6:26 PM	32.0 °F	24.2 °F	30.9 °F	96%	29.77 in	0.5 mi	NNE	9.2 mph	-	0.07 in	Fog , Snow	Snow
6:52 PM	30.9 °F	22.8 °F	30.9 °F	100%	29.81 in	0.5 mi	NNE	9.2 mph	-	0.13 in	Fog , Snow	Snow
7:38 PM	30.9 °F	21.2 °F	30.0 °F	96%	29.76 in	1.0 mi	NNE	12.7 mph	-	0.08 in	Snow	Light Snow
7:47 PM	30.2 °F	19.8 °F	30.2 °F	100%	29.76 in	1.8 mi	NNE	13.8 mph	-	0.08 in	Snow	Light Snow
7:52 PM	30.9 °F	21.2 °F	30.0 °F	96%	29.77 in	1.8 mi	NNE	12.7 mph	-	0.08 in	Snow	Light Snow
7:56 PM	30.9 °F	21.2 °F	30.0 °F	96%	29.77 in	2.0 mi	NNE	12.7 mph	-	0.00 in	Snow	Light Snow
8:02 PM	30.9 °F	21.2 °F	30.0 °F	96%	29.76 in	3.0 mi	NNE	12.7 mph	-	0.00 in	Snow	Light Snow
8:17 PM	30.9 °F	22.8 °F	30.0 °F	96%	29.75 in	5.0 mi	NNE	9.2 mph	-	0.00 in	Snow	Light Snow
8:52 PM	30.9 °F	26.2 °F	30.0 °F	96%	29.72 in	10.0 mi	NE	4.6 mph	-	0.00 in		Overcast
9:10 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown
9:44 PM	30.9 °F	22.2 °F	30.0 °F	96%	29.79 in	1.8 mi	SW	10.4 mph	-	0.00 in	Snow	Light Snow

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 PM	**30.9** °F	**23.5** °F	**30.0** °F	96%	**29.75** in	**2.0** mi	SW	**8.1** mph	-	**0.00** in		Overcast
10:00 PM	**30.9** °F	**22.8** °F	**30.0** °F	96%	**29.79** in	**1.0** mi	SW	**9.2** mph	-	N/A		Overcast
10:10 PM	**30.9** °F	**22.2** °F	**30.0** °F	96%	**29.79** in	**1.0** mi	SW	**10.4** mph	-	N/A		Overcast
10:15 PM	**30.9** °F	**21.7** °F	**30.0** °F	96%	**29.79** in	**2.5** mi	SSW	**11.5** mph	-	N/A		Overcast
10:22 PM	**30.0** °F	**21.1** °F	**30.0** °F	100%	**29.78** in	**5.0** mi	SSW	**10.4** mph	-	N/A		Overcast
10:33 PM	**30.0** °F	**20.0** °F	**30.0** °F	100%	**29.78** in	**1.8** mi	SW	**12.7** mph	-	N/A		Overcast
10:44 PM	**30.0** °F	**19.5** °F	**30.0** °F	100%	**29.77** in	**3.0** mi	SW	**13.8** mph	-	N/A		Overcast
10:52 PM	**30.0** °F	**20.5** °F	**30.0** °F	100%	**29.73** in	**6.0** mi	SSW	**11.5** mph	-	N/A		Overcast
11:07 PM	**30.0** °F	**20.0** °F	**28.9** °F	96%	**29.76** in	**10.0** mi	SW	**12.7** mph	-	N/A		Mostly Cloudy
11:52 PM	**30.0** °F	**20.0** °F	**23.0** °F	75%	**29.73** in	**10.0** mi	WSW	**12.7** mph	-	N/A		Mostly Cloudy

Albuquerque, NM

Albuquerque International Sunport

1:19 PM MDT on March 14, 2019 (GMT -0600)

Weather History for KABQ - March, 2019

March

11

2019

View

Monday, March 11, 2019

Daily | Weekly | Monthly | Custom

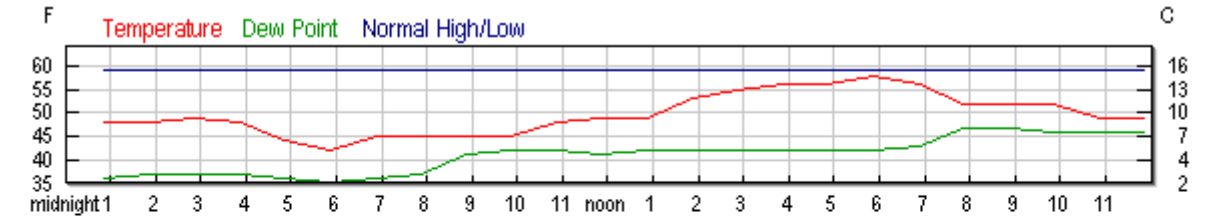
	Actual	Average	Record
Temperature			
Mean Temperature	**51** °F	-	
Max Temperature	**59** °F	-	- ()
Min Temperature	**42** °F	-	- ()
Degree Days			
Heating Degree Days	14		
Month to date heating degree days	162		
Moisture			
Dew Point	**41** °F		
Average Humidity	75		

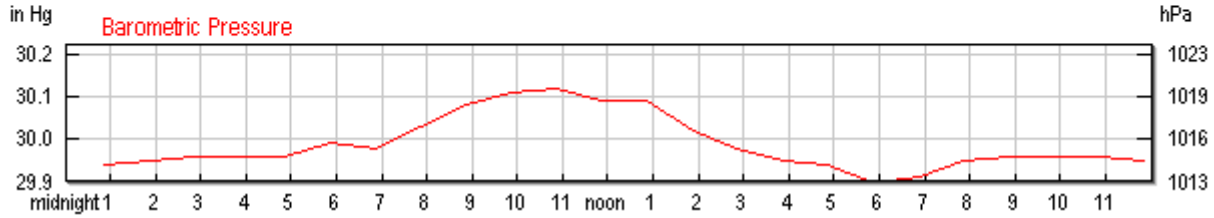
	Actual	Average	Record
Maximum Humidity	93		
Minimum Humidity	57		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.21		
Year to date precipitation	1.23		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.99** in		
Wind			
Wind Speed	**10** mph (SE)		
Max Wind Speed	**26** mph		
Max Gust Speed	**31** mph		
Visibility	**10** miles		
Events	Rain		

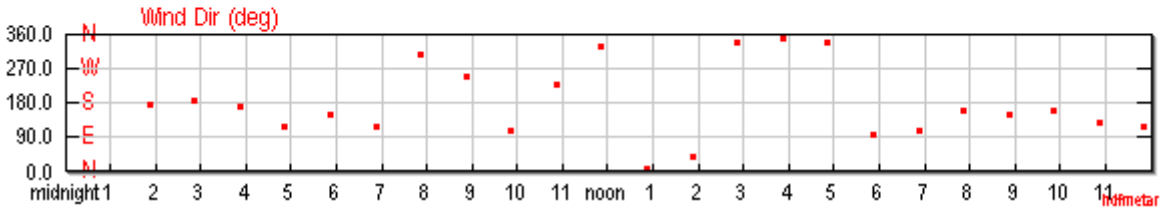
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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KABQ

Submit

Astronomy

Mar. 11, 2019	**Rise**	**Set**
Actual Time	7:22 AM MDT	7:10 PM MDT

Mar. 11, 2019	Rise	Set
Civil Twilight	6:57 AM MDT	7:35 PM MDT
Nautical Twilight	6:28 AM MDT	8:05 PM MDT
Astronomical Twilight	5:58 AM MDT	8:34 PM MDT
Moon	10:20 AM MDT (3/11)	No Moon Set
Length of Visible Light	12h 38m	
Length of Day	11h 47m	

Waxing Crescent, 23% of the Moon is Illuminated

Mar 11	Mar 14	Mar 20	Mar 27	Apr 5
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**48.0** °F	-	**36.0** °F	63%	**29.94** in	**10.0** mi	South	**20.7** mph	-	N/A		Scattered Clouds
1:52 AM	**48.0** °F	-	**37.0** °F	66%	**29.95** in	**10.0** mi	South	**16.1** mph	-	N/A		Mostly Cloudy
2:52 AM	**48.9** °F	-	**37.0** °F	64%	**29.96** in	**10.0** mi	South	**12.7** mph	-	N/A		Scattered Clouds
3:52 AM	**48.0** °F	-	**37.0** °F	66%	**29.96** in	**10.0** mi	South	**12.7** mph	-	N/A		Overcast
4:52 AM	**44.1** °F	**40.1** °F	**36.0** °F	73%	**29.96** in	**10.0** mi	ESE	**6.9** mph	-	N/A		Scattered Clouds
5:52 AM	**42.1** °F	**37.7** °F	**35.1** °F	76%	**29.99** in	**10.0** mi	SSE	**6.9** mph	-	**0.00** in		Mostly Cloudy
6:52 AM	**45.0** °F	**41.2** °F	**36.0** °F	71%	**29.98** in	**10.0** mi	ESE	**6.9** mph	-	N/A		Mostly Cloudy
7:52 AM	**45.0** °F	**41.8** °F	**37.0** °F	74%	**30.03** in	**10.0** mi	NW	**5.8** mph	-	N/A		Overcast
8:52 AM	**45.0** °F	**41.8** °F	**41.0** °F	86%	**30.08** in	**6.0** mi	WSW	**5.8** mph	-	**0.01** in	Rain	Light Rain

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**45.0** °F	**40.1** °F	**42.1** °F	90%	**30.11** in	**10.0** mi	ESE	**9.2** mph	-	**0.05** in	Rain	Light Rain
10:52 AM	**48.0** °F	-	**42.1** °F	80%	**30.12** in	**10.0** mi	SW	**3.5** mph	-	**0.02** in	Rain	Light Rain
11:52 AM	**48.9** °F	-	**41.0** °F	74%	**30.09** in	**10.0** mi	NNW	**6.9** mph	-	**0.00** in		Overcast
12:52 PM	**48.9** °F	-	**42.1** °F	77%	**30.09** in	**10.0** mi	North	**5.8** mph	-	**0.02** in		Mostly Cloudy
1:52 PM	**53.1** °F	-	**42.1** °F	66%	**30.02** in	**10.0** mi	NE	**10.4** mph	-	N/A		Scattered Clouds
2:52 PM	**55.0** °F	-	**42.1** °F	62%	**29.98** in	**10.0** mi	NNW	**12.7** mph	-	N/A		Mostly Cloudy
3:52 PM	**55.9** °F	-	**42.1** °F	60%	**29.95** in	**10.0** mi	North	**12.7** mph	-	N/A		Mostly Cloudy
4:52 PM	**55.9** °F	-	**42.1** °F	60%	**29.94** in	**10.0** mi	NNW	**10.4** mph	**21.9** mph	N/A		Mostly Cloudy
5:52 PM	**57.9** °F	-	**42.1** °F	56%	**29.90** in	**10.0** mi	East	**16.1** mph	-	N/A		Scattered Clouds
6:52 PM	**55.9** °F	-	**43.0** °F	62%	**29.91** in	**10.0** mi	ESE	**16.1** mph	-	N/A		Mostly Cloudy
7:52 PM	**52.0** °F	-	**46.9** °F	83%	**29.95** in	**8.0** mi	SSE	**5.8** mph	-	**0.04** in	Rain	Light Rain
8:52 PM	**52.0** °F	-	**46.9** °F	83%	**29.96** in	**10.0** mi	SSE	**11.5** mph	-	**0.00** in		Mostly Cloudy
9:52 PM	**52.0** °F	-	**46.0** °F	80%	**29.96** in	**10.0** mi	SSE	**16.1** mph	-	**0.00** in	Rain	Light Rain
10:52 PM	**48.9** °F	-	**46.0** °F	90%	**29.96** in	**10.0** mi	SE	**11.5** mph	-	**0.06** in	Rain	Light Rain
11:52 PM	**48.9** °F	-	**46.0** °F	90%	**29.95** in	**10.0** mi	ESE	**8.1** mph	-	**0.01** in		Overcast

Albuquerque, NM

Albuquerque International Sunport

2:20 PM MDT on March 14, 2019 (GMT -0600)

Weather History for KABQ - March, 2019

March

12

2019

View
Tuesday, March 12, 2019

Daily | Weekly | Monthly | Custom

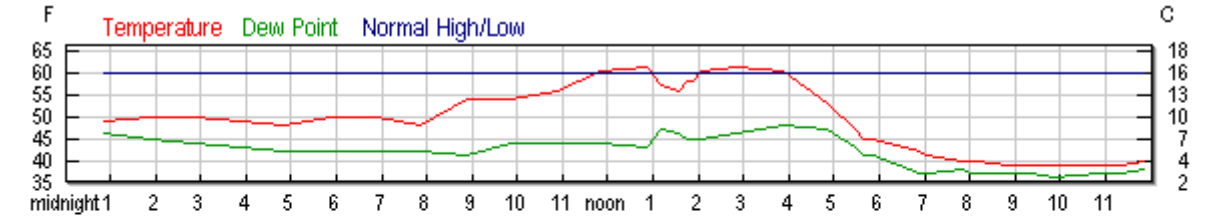
	Actual	Average	Record
Temperature			
Mean Temperature	**50** °F	-	
Max Temperature	**62** °F	-	- ()
Min Temperature	**38** °F	-	- ()
Degree Days			
Heating Degree Days	15		
Month to date heating degree days	177		
Moisture			
Dew Point	**42** °F		
Average Humidity	72		

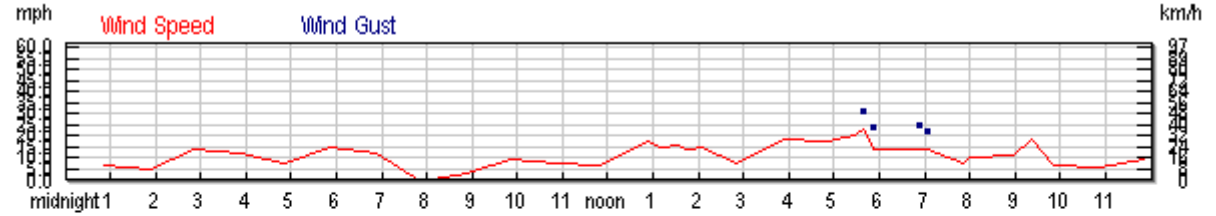
	Actual	Average	Record
Maximum Humidity	93		
Minimum Humidity	51		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.53		
Year to date precipitation	1.55		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.66** in		
Wind			
Wind Speed	**10** mph (SSE)		
Max Wind Speed	**30** mph		
Max Gust Speed	**52** mph		
Visibility	**9** miles		
Events	Rain , Thunderstorm		

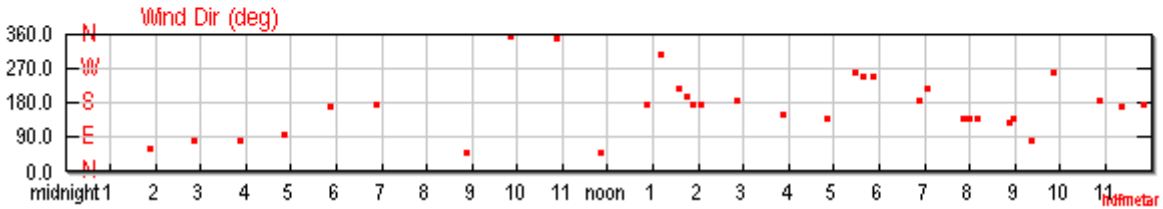
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Mar. 12, 2019	**Rise**	**Set**
Actual Time	7:21 AM MDT	7:11 PM MDT

Mar. 12, 2019	Rise	Set
Civil Twilight	6:56 AM MDT	7:36 PM MDT
Nautical Twilight	6:26 AM MDT	8:06 PM MDT
Astronomical Twilight	5:57 AM MDT	8:35 PM MDT
Moon	10:57 AM MDT (3/12)	12:03 AM MDT (3/12)
Length of Visible Light	12h 40m	
Length of Day	11h 50m	

Waxing Crescent, 32% of the Moon is Illuminated

Mar 12	Mar 14	Mar 20	Mar 27	Apr 5
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**48.9** °F	-	**46.0** °F	90%	**29.93** in	**10.0** mi	East	**6.9** mph	-	N/A		Overcast
1:52 AM	**50.0** °F	-	**45.0** °F	83%	**29.88** in	**10.0** mi	ENE	**4.6** mph	-	N/A		Mostly Cloudy
2:52 AM	**50.0** °F	-	**44.1** °F	80%	**29.88** in	**10.0** mi	East	**13.8** mph	-	N/A		Overcast
3:52 AM	**48.9** °F	-	**43.0** °F	80%	**29.85** in	**10.0** mi	East	**12.7** mph	-	N/A		Mostly Cloudy
4:52 AM	**48.0** °F	-	**42.1** °F	80%	**29.83** in	**10.0** mi	East	**8.1** mph	-	N/A		Partly Cloudy
5:52 AM	**50.0** °F	-	**42.1** °F	74%	**29.83** in	**10.0** mi	South	**15.0** mph	-	N/A		Mostly Cloudy
6:52 AM	**50.0** °F	-	**42.1** °F	74%	**29.83** in	**10.0** mi	South	**12.7** mph	-	N/A		Mostly Cloudy
7:52 AM	**48.0** °F	-	**42.1** °F	80%	**29.82** in	**10.0** mi	Calm	Calm	-	N/A		Scattered Clouds
8:52 AM	**54.0** °F	-	**41.0** °F	62%	**29.77** in	**10.0** mi	NE	**3.5** mph	-	N/A		Partly Cloudy

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	54.0 °F	-	44.1 °F	69%	29.73 in	10.0 mi	North	9.2 mph	-	N/A		Mostly Cloudy
10:52 AM	55.9 °F	-	44.1 °F	64%	29.71 in	10.0 mi	North	8.1 mph	-	N/A		Mostly Cloudy
11:52 AM	60.1 °F	-	44.1 °F	55%	29.63 in	10.0 mi	NE	6.9 mph	-	N/A		Mostly Cloudy
12:52 PM	61.0 °F	-	43.0 °F	52%	29.57 in	10.0 mi	South	17.3 mph	24.2 mph	N/A		Overcast
1:10 PM	57.0 °F	-	46.9 °F	69%	29.70 in	10.0 mi	NW	15.0 mph	-	0.00 in	Thunderstorm	Overcast
1:34 PM	55.9 °F	-	46.0 °F	69%	29.70 in	10.0 mi	SW	16.1 mph	23.0 mph	0.06 in	Rain , Thunderstorm	Light Thunderstorms and Rain
1:44 PM	57.9 °F	-	45.0 °F	62%	29.69 in	10.0 mi	SSW	13.8 mph	-	0.06 in	Rain , Thunderstorm	Light Rain
1:52 PM	57.9 °F	-	45.0 °F	62%	29.53 in	10.0 mi	South	13.8 mph	-	0.06 in	Thunderstorm	Overcast
2:03 PM	60.1 °F	-	45.0 °F	57%	29.64 in	10.0 mi	South	15.0 mph	-	N/A		Overcast
2:52 PM	61.0 °F	-	46.0 °F	58%	29.44 in	10.0 mi	South	8.1 mph	-	0.00 in		Overcast
3:52 PM	60.1 °F	-	48.0 °F	64%	29.43 in	10.0 mi	SSE	18.4 mph	-	0.00 in		Overcast
4:52 PM	53.1 °F	-	46.9 °F	80%	29.46 in	5.0 mi	SE	17.3 mph	-	0.01 in	Rain	Heavy Rain
5:27 PM	46.9 °F	-	43.0 °F	86%	29.62 in	6.0 mi	West	20.7 mph	51.8 mph	0.03 in	Rain	Rain
5:38 PM	45.0 °F	36.4 °F	41.0 °F	86%	29.63 in	5.0 mi	WSW	23.0 mph	31.1 mph	0.05 in	Rain	Light Rain
5:52 PM	45.0 °F	38.5 °F	41.0 °F	86%	29.52 in	7.0 mi	WSW	13.8 mph	24.2 mph	0.07 in	Rain	Light Rain
6:52 PM	42.1 °F	34.9 °F	37.0 °F	82%	29.65 in	10.0 mi	South	13.8 mph	25.3 mph	0.02 in	Rain	Light Rain
7:03 PM	41.0 °F	33.5 °F	37.0 °F	86%	29.74 in	10.0 mi	SW	13.8 mph	21.9 mph	0.00 in	Rain	Light Rain
7:52 PM	39.9 °F	34.5 °F	37.9 °F	93%	29.63 in	7.0 mi	SE	8.1 mph	-	0.13 in	Rain	Light Rain
7:59 PM	39.9 °F	33.4 °F	37.0 °F	89%	29.70 in	7.0 mi	SE	10.4 mph	-	0.00 in	Rain	Light Rain
8:10 PM	39.9 °F	33.4 °F	37.0 °F	89%	29.70 in	10.0 mi	SE	10.4 mph	-	0.00 in	Rain	Light Rain
8:52 PM	39.0 °F	31.8 °F	37.0 °F	93%	29.60 in	10.0 mi	SE	11.5 mph	-	0.01 in	Rain	Light Rain
8:59 PM	39.0 °F	31.8 °F	37.0 °F	93%	29.68 in	10.0 mi	SE	11.5 mph	-	0.01 in	Rain	Light Rain

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:21 PM	**39.0** °F	**29.6** °F	**37.0** °F	93%	**29.61** in	**10.0** mi	East	**18.4** mph	-	**0.01** in		Overcast
9:52 PM	**39.0** °F	**34.0** °F	**36.0** °F	89%	**29.50** in	**10.0** mi	West	**6.9** mph	-	**0.01** in		Mostly Cloudy
10:52 PM	**39.0** °F	**34.8** °F	**37.0** °F	93%	**29.50** in	**10.0** mi	South	**5.8** mph	-	**0.00** in	Rain	Light Rain
11:22 PM	**39.0** °F	**33.4** °F	**37.0** °F	93%	**29.61** in	**10.0** mi	South	**8.1** mph	-	**0.00** in	Rain	Light Rain
11:52 PM	**39.9** °F	**33.9** °F	**37.9** °F	93%	**29.47** in	**10.0** mi	South	**9.2** mph	-	**0.01** in	Rain	Light Rain

Albuquerque, NM

Albuquerque International Sunport

2:22 PM MDT on March 14, 2019 (GMT -0600)

Weather History for KABQ - March, 2019

March

13

2019

View
Wednesday, March 13, 2019

Daily | Weekly | Monthly | Custom

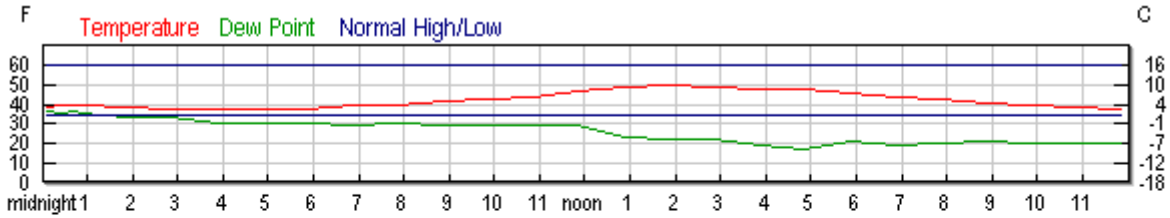
	Actual	Average	Record
Temperature			
Mean Temperature	**44** °F	-	
Max Temperature	**50** °F	-	- ()
Min Temperature	**37** °F	-	- ()
Degree Days			
Heating Degree Days	21		
Month to date heating degree days	198		
Moisture			
Dew Point	**26** °F		
Average Humidity	57		

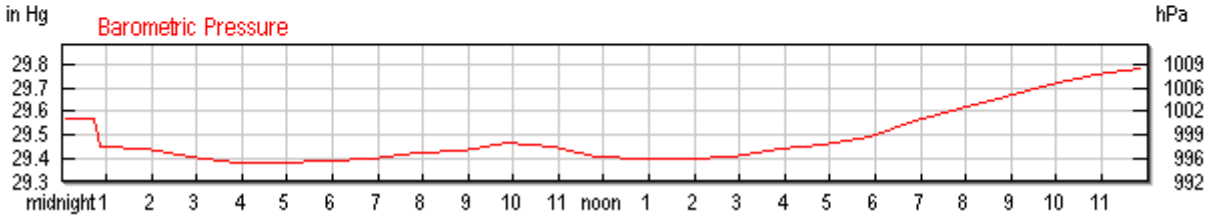
	Actual	Average	Record
Maximum Humidity	85		
Minimum Humidity	29		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.53		
Year to date precipitation	1.55		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.50** in		
Wind			
Wind Speed	**21** mph (WSW)		
Max Wind Speed	**41** mph		
Max Gust Speed	**52** mph		
Visibility	**10** miles		
Events	Rain		

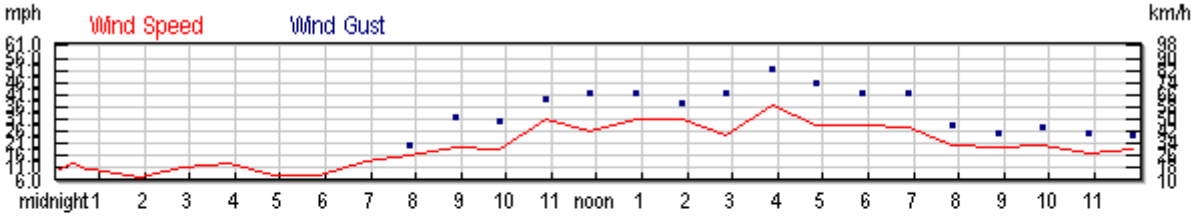
T = Trace of Precipitation, MM = Missing Value

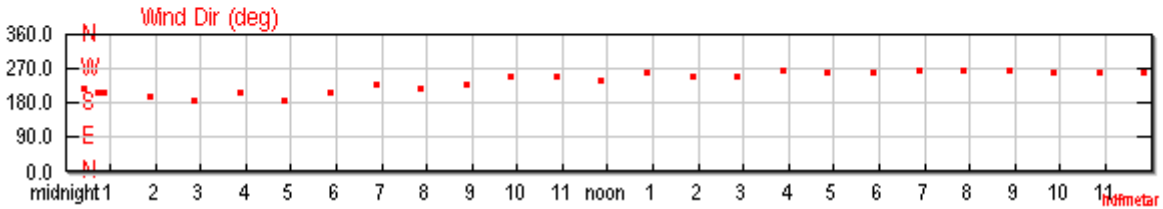
Source: NWS Daily Summary

Daily Weather History Graph









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KABQ

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Astronomy

Mar. 13, 2019	**Rise**	**Set**
Actual Time	7:20 AM MDT	7:12 PM MDT

Mar. 13, 2019	Rise	Set
Civil Twilight	6:54 AM MDT	7:37 PM MDT
Nautical Twilight	6:25 AM MDT	8:06 PM MDT
Astronomical Twilight	5:55 AM MDT	8:36 PM MDT
Moon	11:39 AM MDT (3/13)	1:05 AM MDT (3/13)
Length of Visible Light	12h 42m	
Length of Day	11h 52m	

Waxing Crescent, 43% of the Moon is Illuminated

Mar 13	Mar 14	Mar 20	Mar 27	Apr 5
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:06 AM	**39.0** °F	**32.3** °F	**37.0** °F	93%	**29.57** in	**8.0** mi	South	**10.4** mph	-	**0.00** in	Rain	Light Rain
12:26 AM	**39.9** °F	**32.5** °F	**36.0** °F	86%	**29.57** in	**8.0** mi	SW	**12.7** mph	**31.1** mph	**0.00** in		Mostly Cloudy
12:45 AM	**39.9** °F	**33.4** °F	**37.0** °F	89%	**29.57** in	**8.0** mi	SSW	**10.4** mph	-	**0.00** in		Mostly Cloudy
12:52 AM	**39.9** °F	**33.4** °F	**36.0** °F	86%	**29.45** in	**10.0** mi	SSW	**10.4** mph	-	**0.00** in		Mostly Cloudy
1:52 AM	**39.0** °F	**34.0** °F	**33.1** °F	79%	**29.44** in	**10.0** mi	SSW	**6.9** mph	-	N/A		Mostly Cloudy
2:52 AM	**37.9** °F	**30.5** °F	**33.1** °F	83%	**29.41** in	**10.0** mi	South	**11.5** mph	-	N/A		Overcast
3:52 AM	**37.9** °F	**30.0** °F	**30.9** °F	76%	**29.38** in	**10.0** mi	SSW	**12.7** mph	-	N/A		Overcast
4:52 AM	**37.9** °F	**32.1** °F	**30.0** °F	73%	**29.38** in	**10.0** mi	South	**8.1** mph	-	N/A		Overcast
5:52 AM	**37.9** °F	**32.1** °F	**30.0** °F	73%	**29.39** in	**10.0** mi	SSW	**8.1** mph	-	N/A		Overcast

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
6:52 AM	**39.9** °F	**32.1** °F	**28.9** °F	65%	**29.40** in	**10.0** mi	SW	**13.8** mph	**21.9** mph	N/A		Mostly Cloudy
7:52 AM	**39.9** °F	**31.4** °F	**30.0** °F	68%	**29.42** in	**10.0** mi	SW	**16.1** mph	**20.7** mph	N/A		Mostly Cloudy
8:52 AM	**42.1** °F	**33.3** °F	**28.9** °F	60%	**29.43** in	**10.0** mi	SW	**19.6** mph	**32.2** mph	N/A		Mostly Cloudy
9:52 AM	**43.0** °F	**34.8** °F	**28.9** °F	58%	**29.47** in	**10.0** mi	WSW	**18.4** mph	**29.9** mph	N/A		Overcast
10:52 AM	**44.1** °F	**33.8** °F	**28.9** °F	55%	**29.45** in	**10.0** mi	WSW	**31.1** mph	**39.1** mph	N/A		Mostly Cloudy
11:52 AM	**46.9** °F	-	**28.9** °F	50%	**29.41** in	**10.0** mi	WSW	**26.5** mph	**41.4** mph	N/A		Scattered Clouds
12:52 PM	**48.9** °F	-	**23.0** °F	36%	**29.40** in	**10.0** mi	West	**31.1** mph	**41.4** mph	N/A		Scattered Clouds
1:52 PM	**50.0** °F	-	**21.9** °F	33%	**29.40** in	**10.0** mi	WSW	**31.1** mph	**38.0** mph	N/A		Scattered Clouds
2:52 PM	**48.9** °F	-	**21.9** °F	35%	**29.41** in	**10.0** mi	WSW	**24.2** mph	**41.4** mph	N/A		Mostly Cloudy
3:52 PM	**48.0** °F	-	**19.0** °F	32%	**29.44** in	**10.0** mi	West	**36.8** mph	**51.8** mph	N/A		Mostly Cloudy
4:52 PM	**48.0** °F	-	**17.1** °F	29%	**29.46** in	**10.0** mi	West	**28.8** mph	**46.0** mph	N/A		Scattered Clouds
5:52 PM	**46.0** °F	**36.9** °F	**21.0** °F	37%	**29.49** in	**10.0** mi	West	**28.8** mph	**41.4** mph	N/A		Mostly Cloudy
6:52 PM	**44.1** °F	**34.4** °F	**19.0** °F	37%	**29.56** in	**10.0** mi	West	**27.6** mph	**41.4** mph	N/A		Mostly Cloudy
7:52 PM	**43.0** °F	**34.2** °F	**19.9** °F	40%	**29.61** in	**10.0** mi	West	**20.7** mph	**28.8** mph	N/A		Mostly Cloudy
8:52 PM	**41.0** °F	**31.9** °F	**21.0** °F	45%	**29.66** in	**10.0** mi	West	**19.6** mph	**25.3** mph	N/A		Overcast
9:52 PM	**39.9** °F	**30.2** °F	**19.9** °F	45%	**29.71** in	**10.0** mi	West	**20.7** mph	**27.6** mph	N/A		Mostly Cloudy
10:52 PM	**39.0** °F	**29.9** °F	**19.9** °F	46%	**29.76** in	**10.0** mi	West	**17.3** mph	**25.3** mph	N/A		Overcast
11:52 PM	**37.9** °F	**28.2** °F	**19.9** °F	48%	**29.78** in	**10.0** mi	West	**18.4** mph	**24.2** mph	N/A		Mostly Cloudy

Albuquerque, NM

Albuquerque International Sunport

3:34 PM MDT on March 22, 2019 (GMT -0600)

Weather History for KABQ - March, 2019

March

21

2019

View
Thursday, March 21, 2019

Daily | Weekly | Monthly | Custom

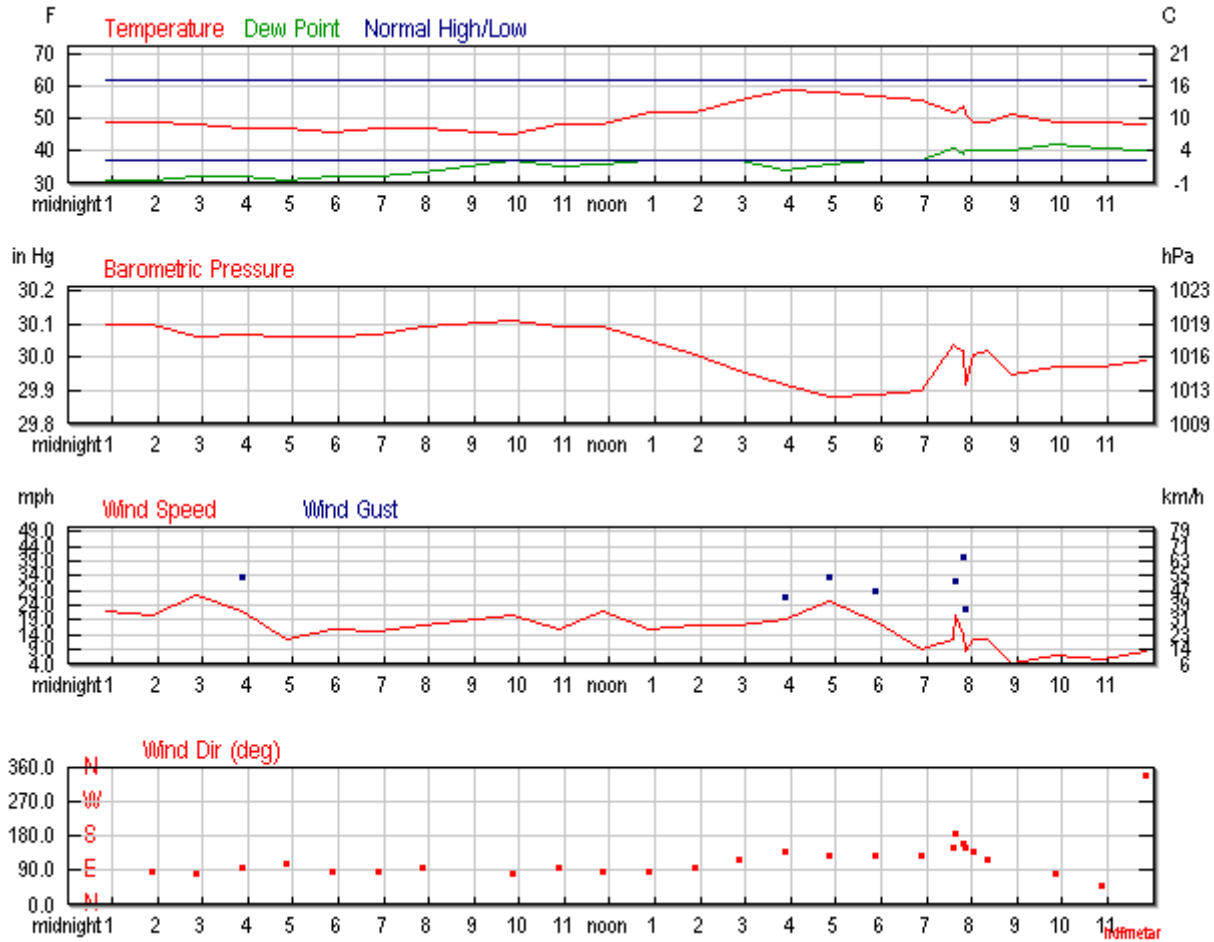
	Actual	Average	Record
Temperature			
Mean Temperature	**53** °F	-	
Max Temperature	**60** °F	-	- ()
Min Temperature	**45** °F	-	- ()
Degree Days			
Heating Degree Days	12		
Month to date heating degree days	340		
Growing Degree Days	2 (Base 50)		
Moisture			
Dew Point	**36** °F		

	Actual	Average	Record
Average Humidity	57		
Maximum Humidity	77		
Minimum Humidity	37		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.61		
Year to date precipitation	1.63		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.01** in		
Wind			
Wind Speed	**15** mph (ESE)		
Max Wind Speed	**31** mph		
Max Gust Speed	**40** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Mar. 21, 2019	**Rise**	**Set**
Actual Time	7:08 AM MDT	7:18 PM MDT

Mar. 21, 2019	Rise	Set
Civil Twilight	6:43 AM MDT	7:44 PM MDT
Nautical Twilight	6:14 AM MDT	8:13 PM MDT
Astronomical Twilight	5:44 AM MDT	8:43 PM MDT
Moon	8:19 PM MDT (3/21)	7:50 AM MDT (3/21)
Length of Visible Light	13h 00m	
Length of Day	12h 09m	

Full, 99% of the Moon is Illuminated

Mar 21	Mar 27	Apr 5	Apr 12	Apr 19
Full	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**48.9** °F	-	**30.9** °F	50%	**30.10** in	**10.0** mi	East	**21.9** mph	-	N/A		Mostly Cloudy
1:52 AM	**48.9** °F	-	**30.9** °F	50%	**30.10** in	**10.0** mi	East	**20.7** mph	-	N/A		Mostly Cloudy
2:52 AM	**48.0** °F	-	**32.0** °F	54%	**30.06** in	**10.0** mi	East	**27.6** mph	**35.7** mph	N/A		Mostly Cloudy
3:52 AM	**46.9** °F	-	**32.0** °F	56%	**30.07** in	**10.0** mi	East	**21.9** mph	**33.4** mph	N/A		Mostly Cloudy
4:52 AM	**46.9** °F	-	**30.9** °F	54%	**30.06** in	**10.0** mi	ESE	**12.7** mph	-	N/A		Overcast
5:52 AM	**46.0** °F	**39.3** °F	**32.0** °F	58%	**30.06** in	**10.0** mi	East	**16.1** mph	-	N/A		Overcast
6:52 AM	**46.9** °F	-	**32.0** °F	56%	**30.07** in	**10.0** mi	East	**15.0** mph	-	N/A		Overcast
7:52 AM	**46.9** °F	-	**33.1** °F	59%	**30.09** in	**10.0** mi	East	**17.3** mph	-	N/A		Overcast
9:52 AM	**45.0** °F	**36.9** °F	**37.0** °F	74%	**30.11** in	**10.0** mi	East	**20.7** mph	-	**0.00** in		Overcast

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
10:52 AM	**48.0** °F	-	**35.1** °F	61%	**30.09** in	**10.0** mi	East	**16.1** mph	-	N/A		Overcast
11:52 AM	**48.0** °F	-	**36.0** °F	63%	**30.09** in	**10.0** mi	East	**21.9** mph	-	N/A		Overcast
12:52 PM	**52.0** °F	-	**37.0** °F	57%	**30.05** in	**10.0** mi	East	**16.1** mph	-	N/A		Mostly Cloudy
1:52 PM	**52.0** °F	-	**37.0** °F	57%	**30.01** in	**10.0** mi	East	**17.3** mph	-	N/A		Overcast
2:52 PM	**55.9** °F	-	**37.0** °F	49%	**29.96** in	**10.0** mi	ESE	**17.3** mph	**27.6** mph	N/A		Overcast
3:52 PM	**59.0** °F	-	**34.0** °F	39%	**29.92** in	**10.0** mi	SE	**19.6** mph	**26.5** mph	N/A		Mostly Cloudy
4:52 PM	**57.9** °F	-	**36.0** °F	44%	**29.88** in	**10.0** mi	SE	**25.3** mph	**33.4** mph	N/A		Mostly Cloudy
5:52 PM	**57.0** °F	-	**37.0** °F	47%	**29.89** in	**10.0** mi	SE	**18.4** mph	**28.8** mph	N/A		Mostly Cloudy
6:52 PM	**55.9** °F	-	**37.0** °F	49%	**29.90** in	**10.0** mi	SE	**9.2** mph	-	N/A		Overcast
7:35 PM	**52.0** °F	-	**41.0** °F	66%	**30.04** in	**10.0** mi	SSE	**12.7** mph	**26.5** mph	**0.01** in	Rain , Thunderstorm	Light Rain
7:37 PM	**52.0** °F	-	**41.0** °F	66%	**30.03** in	**10.0** mi	South	**20.7** mph	**32.2** mph	**0.01** in	Rain , Thunderstorm	Light Thunderstorms and Rain
7:49 PM	**53.6** °F	-	**39.2** °F	58%	**30.02** in	**7.0** mi	SSE	**13.8** mph	**40.3** mph	**0.04** in	Rain , Thunderstorm	Light Thunderstorms and Rain
7:52 PM	**51.1** °F	-	**39.9** °F	66%	**29.92** in	**10.0** mi	SSE	**8.1** mph	**23.0** mph	**0.04** in	Rain , Thunderstorm	Light Thunderstorms and Rain
8:01 PM	**48.9** °F	-	**39.9** °F	71%	**30.01** in	**10.0** mi	SE	**12.7** mph	-	**0.00** in	Thunderstorm	Mostly Cloudy
8:22 PM	**48.9** °F	-	**39.9** °F	71%	**30.02** in	**10.0** mi	ESE	**12.7** mph	-	**0.00** in		Mostly Cloudy
8:52 PM	**51.1** °F	-	**39.9** °F	66%	**29.95** in	**10.0** mi	Variable	**4.6** mph	-	**0.00** in		Mostly Cloudy
9:52 PM	**48.9** °F	-	**42.1** °F	77%	**29.97** in	**10.0** mi	East	**6.9** mph	-	N/A		Overcast
10:52 PM	**48.9** °F	-	**41.0** °F	74%	**29.97** in	**10.0** mi	NE	**5.8** mph	-	N/A		Overcast
11:52 PM	**48.0** °F	-	**39.9** °F	74%	**29.99** in	**10.0** mi	NNW	**8.1** mph	-	N/A		Overcast

Albuquerque, NM

Albuquerque International Sunport

4:01 PM MDT on March 29, 2019 (GMT -0600)

Weather History for KABQ - March, 2019

March

22

2019

View
Friday, March 22, 2019

Daily | Weekly | Monthly | Custom

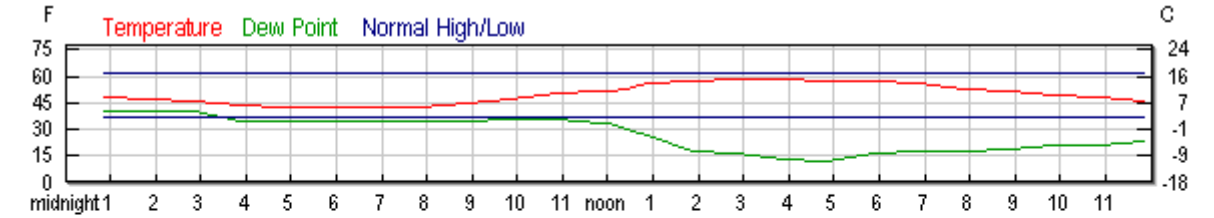
	Actual	Average	Record
Temperature			
Mean Temperature	**51** °F	-	
Max Temperature	**59** °F	-	- ()
Min Temperature	**43** °F	-	- ()
Degree Days			
Heating Degree Days	14		
Month to date heating degree days	354		
Growing Degree Days	1 (Base 50)		
Moisture			
Dew Point	**27** °F		

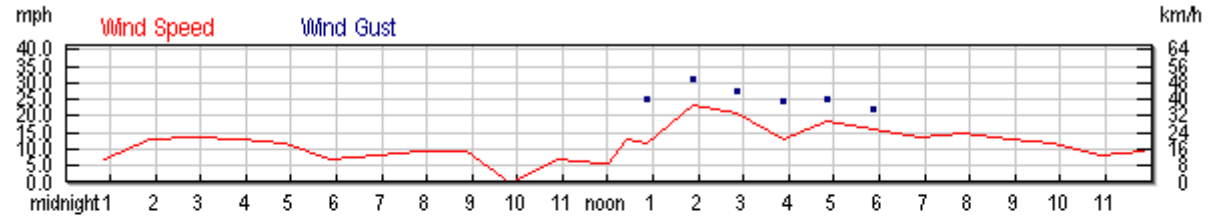
	Actual	Average	Record
Average Humidity	47		
Maximum Humidity	76		
Minimum Humidity	17		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.61		
Year to date precipitation	1.63		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.94** in		
Wind			
Wind Speed	**12** mph (NW)		
Max Wind Speed	**28** mph		
Max Gust Speed	**34** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

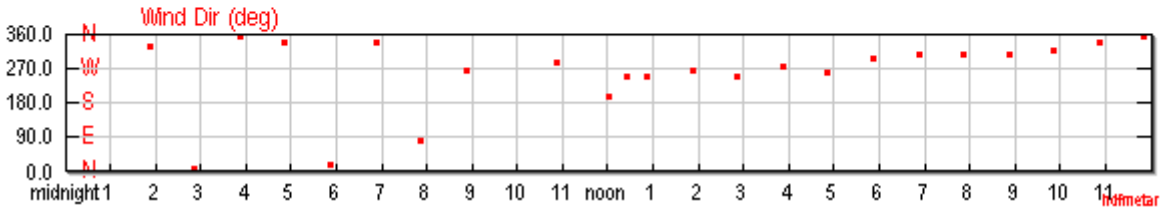
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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Airport or City:

KABQ

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Astronomy

Mar. 22, 2019	**Rise**	**Set**
Actual Time	7:07 AM MDT	7:19 PM MDT

Mar. 22, 2019	Rise	Set
Civil Twilight	6:42 AM MDT	7:44 PM MDT
Nautical Twilight	6:12 AM MDT	8:14 PM MDT
Astronomical Twilight	5:42 AM MDT	8:44 PM MDT
Moon	9:27 PM MDT (3/22)	8:26 AM MDT (3/22)
Length of Visible Light	13h 02m	
Length of Day	12h 12m	

Waning Gibbous, 96% of the Moon is Illuminated

Mar 22	Mar 27	Apr 5	Apr 12	Apr 19
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**48.0** °F	-	**39.9** °F	74%	**29.99** in	**10.0** mi	North	**6.9** mph	-	N/A		Overcast
1:52 AM	**46.9** °F	-	**39.9** °F	77%	**29.99** in	**10.0** mi	NNW	**12.7** mph	-	N/A		Overcast
2:52 AM	**46.0** °F	**39.9** °F	**39.9** °F	79%	**29.96** in	**10.0** mi	North	**13.8** mph	-	N/A		Overcast
3:52 AM	**44.1** °F	**37.7** °F	**34.0** °F	68%	**29.93** in	**10.0** mi	North	**12.7** mph	-	N/A		Overcast
4:52 AM	**43.0** °F	**36.8** °F	**35.1** °F	74%	**29.93** in	**8.0** mi	NNW	**11.5** mph	-	**0.00** in		Light Drizzle
5:52 AM	**43.0** °F	**38.8** °F	**35.1** °F	74%	**29.91** in	**10.0** mi	NNE	**6.9** mph	-	**0.00** in		Overcast
6:52 AM	**43.0** °F	**38.2** °F	**34.0** °F	71%	**29.91** in	**10.0** mi	NNW	**8.1** mph	-	N/A		Mostly Cloudy
7:52 AM	**43.0** °F	**37.7** °F	**35.1** °F	74%	**29.93** in	**10.0** mi	East	**9.2** mph	-	N/A		Overcast
8:52 AM	**45.0** °F	**40.1** °F	**35.1** °F	68%	**29.94** in	**10.0** mi	West	**9.2** mph	-	N/A		Mostly Cloudy

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**46.9** °F	-	**36.0** °F	66%	**29.96** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
10:52 AM	**50.0** °F	-	**36.0** °F	59%	**29.94** in	**10.0** mi	WNW	**6.9** mph	-	N/A		Scattered Clouds
11:52 AM	**51.1** °F	-	**33.1** °F	50%	**29.92** in	**10.0** mi	Variable	**5.8** mph	-	**0.00** in	Rain	Light Rain
12:01 PM	**51.1** °F	-	**33.1** °F	50%	**30.02** in	**10.0** mi	SSW	**5.8** mph	-	**0.00** in	Rain , Thunderstorm	Light Thunderstorms and Rain
12:24 PM	**53.1** °F	-	**30.0** °F	41%	**30.02** in	**10.0** mi	WSW	**12.7** mph	**24.2** mph	**0.00** in		Mostly Cloudy
12:52 PM	**55.9** °F	-	**27.0** °F	33%	**29.89** in	**10.0** mi	WSW	**11.5** mph	**25.3** mph	**0.00** in		Scattered Clouds
1:52 PM	**57.0** °F	-	**17.1** °F	21%	**29.89** in	**10.0** mi	West	**23.0** mph	**31.1** mph	N/A		Scattered Clouds
2:52 PM	**57.9** °F	-	**16.0** °F	19%	**29.88** in	**10.0** mi	WSW	**20.7** mph	**27.6** mph	N/A		Partly Cloudy
3:52 PM	**57.9** °F	-	**12.9** °F	17%	**29.88** in	**10.0** mi	West	**12.7** mph	**24.2** mph	N/A		Scattered Clouds
4:52 PM	**57.0** °F	-	**12.0** °F	17%	**29.87** in	**10.0** mi	West	**18.4** mph	**25.3** mph	N/A		Mostly Cloudy
5:52 PM	**57.0** °F	-	**16.0** °F	20%	**29.88** in	**10.0** mi	WNW	**16.1** mph	**21.9** mph	N/A		Mostly Cloudy
6:52 PM	**55.9** °F	-	**18.0** °F	23%	**29.90** in	**10.0** mi	NW	**13.8** mph	-	N/A		Mostly Cloudy
7:52 PM	**53.1** °F	-	**18.0** °F	25%	**29.94** in	**10.0** mi	NW	**15.0** mph	-	N/A		Scattered Clouds
8:52 PM	**51.1** °F	-	**19.0** °F	28%	**29.97** in	**10.0** mi	NW	**12.7** mph	**18.4** mph	N/A		Mostly Cloudy
9:52 PM	**48.9** °F	-	**21.0** °F	33%	**29.99** in	**10.0** mi	NW	**11.5** mph	-	N/A		Scattered Clouds
10:52 PM	**48.0** °F	-	**21.0** °F	34%	**30.00** in	**10.0** mi	NNW	**8.1** mph	-	N/A		Partly Cloudy
11:52 PM	**46.0** °F	**41.4** °F	**23.0** °F	40%	**30.00** in	**10.0** mi	North	**9.2** mph	-	N/A		Partly Cloudy

Albuquerque, NM

Albuquerque International Sunport

10:09 AM MDT on April 01, 2019 (GMT -0600)

Weather History for KABQ - March, 2019

March

31

2019

View

Sunday, March 31, 2019

Daily | Weekly | Monthly | Custom

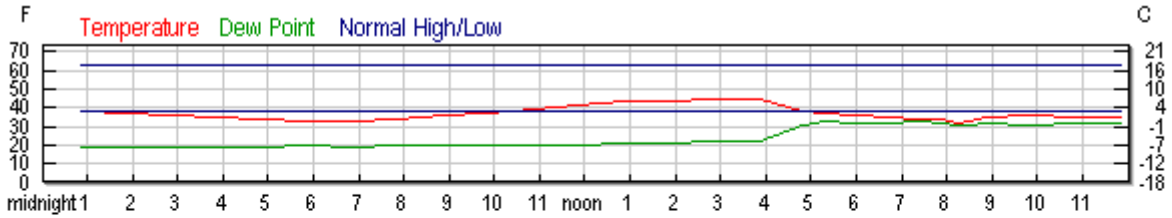
	Actual	Average	Record
Temperature			
Mean Temperature	**40** °F	-	
Max Temperature	**47** °F	-	- ()
Min Temperature	**33** °F	-	- ()
Degree Days			
Heating Degree Days	25		
Month to date heating degree days	451		
Moisture			
Dew Point	**27** °F		
Average Humidity	65		

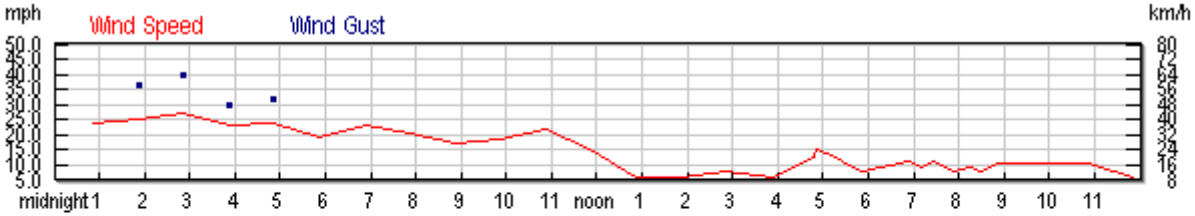
	Actual	Average	Record
Maximum Humidity	92		
Minimum Humidity	38		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.73		
Year to date precipitation	1.75		
Snow			
Snow	**T** in	-	- ()
Month to date snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.19** in		
Wind			
Wind Speed	**16** mph (ENE)		
Max Wind Speed	**28** mph		
Max Gust Speed	**40** mph		
Visibility	**9** miles		
Events	Rain , Snow		

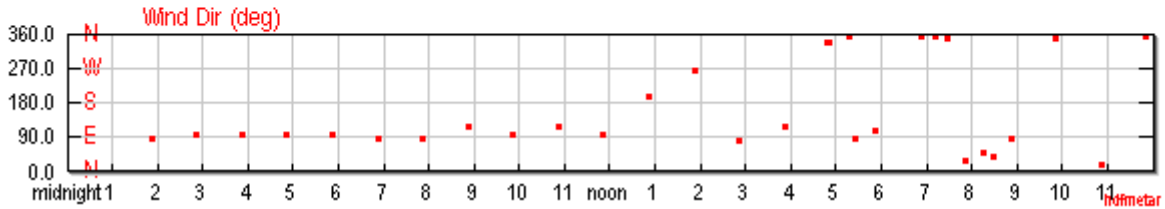
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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Astronomy

Mar. 31, 2019	**Rise**	**Set**
Actual Time	6:54 AM MDT	7:26 PM MDT

Mar. 31, 2019	Rise	Set
Civil Twilight	6:29 AM MDT	7:52 PM MDT
Nautical Twilight	5:59 AM MDT	8:22 PM MDT
Astronomical Twilight	5:29 AM MDT	8:52 PM MDT
Moon	4:41 AM MDT (3/31)	3:20 PM MDT (3/31)
Length of Visible Light	13h 22m	
Length of Day	12h 32m	

Waning Crescent, 19% of the Moon is Illuminated

Mar 31	Apr 5	Apr 12	Apr 19	Apr 26
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**39.0** °F	**28.3** °F	**19.9** °F	46%	**30.21** in	**10.0** mi	East	**24.2** mph	**35.7** mph	N/A		Mostly Cloudy
1:52 AM	**37.9** °F	**26.6** °F	**19.9** °F	48%	**30.19** in	**10.0** mi	East	**25.3** mph	**36.8** mph	N/A		Partly Cloudy
2:52 AM	**37.0** °F	**24.9** °F	**19.9** °F	50%	**30.18** in	**10.0** mi	East	**27.6** mph	**40.3** mph	N/A		Partly Cloudy
3:52 AM	**36.0** °F	**24.4** °F	**19.9** °F	52%	**30.18** in	**10.0** mi	East	**23.0** mph	**29.9** mph	N/A		Partly Cloudy
4:52 AM	**35.1** °F	**23.0** °F	**19.9** °F	54%	**30.17** in	**10.0** mi	East	**24.2** mph	**32.2** mph	N/A		Clear
5:52 AM	**34.0** °F	**22.7** °F	**21.0** °F	59%	**30.20** in	**10.0** mi	East	**19.6** mph	-	N/A		Partly Cloudy
6:52 AM	**34.0** °F	**21.8** °F	**19.9** °F	56%	**30.21** in	**10.0** mi	East	**23.0** mph	-	N/A		Scattered Clouds
7:52 AM	**35.1** °F	**23.8** °F	**21.0** °F	57%	**30.24** in	**10.0** mi	East	**20.7** mph	**28.8** mph	N/A		Mostly Cloudy
8:52 AM	**37.0** °F	**27.4** °F	**21.0** °F	52%	**30.24** in	**10.0** mi	ESE	**17.3** mph	-	N/A		Overcast

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**37.9** °F	**28.2** °F	**21.0** °F	51%	**30.25** in	**10.0** mi	East	**18.4** mph	**24.2** mph	N/A		Overcast
10:52 AM	**39.9** °F	**30.0** °F	**21.0** °F	47%	**30.23** in	**10.0** mi	ESE	**21.9** mph	-	N/A		Overcast
11:52 AM	**42.1** °F	**34.5** °F	**21.0** °F	43%	**30.19** in	**10.0** mi	East	**15.0** mph	**23.0** mph	N/A		Overcast
12:52 PM	**44.1** °F	**40.8** °F	**21.9** °F	42%	**30.16** in	**10.0** mi	SSW	**5.8** mph	-	N/A		Overcast
1:52 PM	**44.1** °F	**40.8** °F	**21.9** °F	42%	**30.14** in	**10.0** mi	West	**5.8** mph	-	N/A		Overcast
2:52 PM	**46.0** °F	**41.9** °F	**23.0** °F	40%	**30.08** in	**10.0** mi	East	**8.1** mph	**17.3** mph	N/A		Overcast
3:52 PM	**46.0** °F	**43.1** °F	**23.0** °F	40%	**30.07** in	**10.0** mi	ESE	**5.8** mph	-	N/A		Overcast
4:47 PM	**39.2** °F	**31.6** °F	**32.0** °F	75%	**30.15** in	**8.0** mi	NNW	**12.7** mph	-	**0.00** in	Rain	Light Rain
4:52 PM	**39.0** °F	**30.6** °F	**32.0** °F	76%	**30.15** in	**8.0** mi	NNW	**15.0** mph	-	**0.00** in	Rain	Light Rain
5:17 PM	**37.9** °F	**30.0** °F	**34.0** °F	86%	**30.15** in	**10.0** mi	North	**12.7** mph	-	**0.00** in	Rain	Light Rain
5:25 PM	**37.9** °F	**30.5** °F	**34.0** °F	86%	**30.16** in	**10.0** mi	East	**11.5** mph	-	**0.00** in	Rain	Light Rain
5:52 PM	**37.0** °F	**31.0** °F	**33.1** °F	86%	**30.17** in	**10.0** mi	ESE	**8.1** mph	-	**0.00** in	Rain	Light Rain
6:52 PM	**36.0** °F	**28.0** °F	**33.1** °F	89%	**30.19** in	**6.0** mi	North	**11.5** mph	-	**0.02** in	Rain	Light Rain
7:12 PM	**35.1** °F	**27.9** °F	**34.0** °F	96%	**30.18** in	**6.0** mi	North	**9.2** mph	-	**0.01** in	Rain	Light Rain
7:28 PM	**35.1** °F	**26.9** °F	**34.0** °F	96%	**30.19** in	**6.0** mi	North	**11.5** mph	-	**0.03** in	Rain	Light Rain
7:52 PM	**35.1** °F	**28.6** °F	**33.1** °F	92%	**30.21** in	**7.0** mi	NNE	**8.1** mph	-	**0.05** in	Rain , Snow	Light Rain
8:16 PM	**33.1** °F	**25.5** °F	**32.0** °F	96%	**30.19** in	**3.0** mi	NE	**9.2** mph	-	**0.03** in	Rain , Snow	Light Rain
8:28 PM	**34.0** °F	**27.2** °F	**32.0** °F	92%	**30.20** in	**5.0** mi	NE	**8.1** mph	-	**0.05** in	Rain , Snow	Light Rain
8:52 PM	**36.0** °F	**28.5** °F	**33.1** °F	89%	**30.22** in	**9.0** mi	East	**10.4** mph	-	**0.05** in	Rain	Light Rain
9:52 PM	**37.0** °F	**29.8** °F	**32.0** °F	82%	**30.22** in	**10.0** mi	North	**10.4** mph	-	**0.00** in		Mostly Cloudy
10:52 PM	**36.0** °F	**28.5** °F	**33.1** °F	89%	**30.23** in	**10.0** mi	NNE	**10.4** mph	-	N/A		Mostly Cloudy
11:52 PM	**36.0** °F	**31.1** °F	**33.1** °F	89%	**30.23** in	**10.0** mi	North	**5.8** mph	-	N/A		Mostly Cloudy

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August 16, 2019

Ms. Shellie Eaton, PE
Senior Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

Subject: Visual Stormwater Monitoring at the City of Albuquerque Facilities
Second Quarter 2019
CDM Smith Project No: 0668-229726.VISUAL MONITORING

Dear Ms. Eaton:

CDM Smith Inc. (CDM Smith) performed visual stormwater monitoring activities at select City of Albuquerque (CABQ) outfalls during the Second Quarter 2019. **Table 1** identifies the CABQ facilities for which CDM Smith is responsible for conducting quarterly visual monitoring. Monthly precipitation data from Weather Underground (WU; Albuquerque International Sunport Station) for the Second Quarter 2019 (April through June) is included in **Attachment A**. Daily weather reports for days when precipitation was observed (based on WU data) are included in **Attachment B**. The events with measurable precipitation occurring during this time are summarized in **Table2**.

Table 1 - City of Albuquerque Facilities - CDM Smith Quarterly Visual Monitoring

Zone	City of Albuquerque Facility
Zone 1	Los Altos Golf Course
	Lomas Fuel Station
	Arroyo Street Maintenance
	Street Satellite #1
	Los Altos Trails Parks Management
	Los Altos Parks Management
Zone 2	Daytona Transit Center
	Ladera Golf Course
	Streets Satellite #3
	Don Reservoir Convenience Center
Zone 3	Puerto del Sol Golf Course
	Yale Transit Center
Zone 4	Montessa Park Open Space
	Montessa Park Convenience Center

Second Quarter 2019 Precipitation Events (April - June)

Date	Event Start Time	Storm Duration	Total Precipitation	Notes
4/12/2019	3:00 PM	3 hr	0.03 in	Light rainfall from 3 - 4:30 PM, drizzle from 4-6 PM. Not enough rainfall to accumulate runoff. Samples were not collected.
4/17/2019	**2:00 PM**	**7 hr**	**0.58 in**	**Light rainfall began early in the morning and ended around 7:30 AM. Not enough rainfall to produce runoff at sites. Heavy rainfall began in the afternoon around 2 PM. Samples were collected in all zones at this time.**
4/22/2019	7:00 PM	4 hr	0.36 in	Heavy rain in the evening throughout the city. Non-qualifying event due to event falling outside of normal operating hours. Samples were not collected.
4/23/2019	10:00 PM	2 hrs	0.04 in	Light rainfall starting around 10 PM. Not enough rainfall to accumulate runoff. Non-qualifying event due to event falling outside of normal operating hours. Samples were not collected.
5/10/2019	**7:00 AM**	**7 hrs**	**0.19**	**Light rain started in the early morning, heavier rain started around 8 am. Samples were collected in all zones.**
5/11/2019	4:00 PM	1 hr	0.01	Light drizzle in the afternoon. Not enough rainfall to accumulate runoff, not a qualifying event. Samples were not collected
5/20/2019	4:00 PM	4 hrs	0.04	Light rainfall starting around 4 PM. Not enough rainfall accumulated before normal operation hours. Non-qualifying event due to event falling outside of normal operating hours and not enough rainfall.
6/3/2019	10:30 AM	1 hr	0.01	Light drizzle in the morning. Not enough rainfall to accumulate runoff, not a qualifying event. Samples were not collected
6/4/2019	10:30 AM	1 hr	0.02	Light drizzle in the morning. Not enough rainfall to accumulate runoff, not a qualifying event. Samples were not collected
6/17/2019	10:30 AM	0.5 hr	0.01	Light drizzle in the morning. Not enough rainfall to accumulate runoff, not a qualifying event. Samples were not collected
6/27/2019	3:30 PM	1 hr	0.04	Light rain in near the airport and south Albuquerque. Not enough rainfall to accumulate runoff, not a qualifying event. Samples were not collected.

Note: Shaded rows indicate a non-qualifying event. Events in bold text indicate qualifying events. Any events with a total accumulation of 0.00" or T (Trace) were not included in this table. Storm Duration is based on hourly weather data. All weather data was sourced from Weather Underground

Certain criteria regarding the precipitation event must be met to qualify as an assessment event. Visual assessment of stormwater must occur:

- Within 30 minutes of the start of stormwater discharge (or as soon as practicable thereafter); and
- At least 72 hours after the previous stormwater discharge event.

An additional limitation on the timing of sampling activities within the CABQ is described in the City's Storm Water Management Plan (SWMP, December 2016). Section 13.3.1.2 of the SWMP limits sampling to normal business hours – Monday through Friday, 7:30 am to 5:00 pm and not required on the following observed holidays: Thanksgiving Day and Christmas Day through New Year's Day. Therefore, storm events that occur outside of normal business hours or on a holiday are not considered qualifying events.

As seen in **Table 2**, of the 11 precipitation events with measurable precipitation that occurred in the Second Quarter of 2019, only two events (4/17/2019 and 5/10/2019) were considered qualifying per the criteria listed above. Furthermore, based on CDM Smith's past visual monitoring experience for CABQ facilities, stormwater discharges from facilities typically does not occur for precipitation events of less than 0.1 inches of measurable rainfall. There was only one event in the second quarter with precipitation greater than 0.1 inch of measurable rainfall that did not meet all the qualifying criteria for an assessment to take place.

CDM Smith's subcontractor, Bohannan Houston, Inc. (BHI) mobilized to all Zones on 4/17/2019 and 5/10/2019 to perform visual stormwater monitoring inspections at facility outfalls during precipitation events. As identified in **Table 3**, which summarizes Calendar Year 2019 visual stormwater monitoring, 10 of the 21 outfalls were monitored during the Second Quarter of 2019.

Table 3 - Calendar Year 2019 Visual Stormwater Monitoring

Zone	Facility	Outfalls	Quarter 1[1]	Quarter 2	Quarter 3	Quarter 4	Events Remaining[2]
1	Los Altos Golf Course	LA1	✓	✓			2
		LA2	✓	✓			2
	Lomas Fuel Station	L1	✓	✓			2
	Arroyo Street Maintenance	AM1	✓	✓			2
	Street Satellite #1	SS1A	-	✓			3
		SS1B	✓	✓			2
	Los Altos Trails Parks Management	LAM1	✓	✓			2
	Los Altos Parks Management	LAP1	-	-			4
2	Daytona Transit Center	D1	-	✓✓			2
		D2	✓	✓			2
	Ladera Golf Course	LGC1	-	-			4
		LGC2	-	-			4
	Streets Satellite #3	SS3	-	✓✓			2
	Don Reservoir Convenience Center	DR01	-	✓✓			2

Table 3 - Calendar Year 2019 Visual Stormwater Monitoring

Zone	Facility	Outfalls	Quarter 1[1]	Quarter 2	Quarter 3	Quarter 4	Events Remaining[2]
3	Puerto del Sol Golf Course	PDS1	-	✓			3
		PDS2	-	✓✓			2
	Yale Transit Center	Y1	✓	✓			2
4	Montessa Park Open Space	MP1	✓	✓			2
		MP2	-	✓			3
	Montessa Park Convenience Center	MP01	✓	✓			3
		MP02	-	✓			2

Notes:
1. A "✓" indicates that a visual monitoring event was performed for the indicated outfall during the calendar quarter, "✓✓" indicates two visual monitoring events were performed during the quarter.
2. This column indicates the number of events remaining for Calendar Year 2019.

Visual Monitoring observations for each of the eighteen outfalls observed during April 17th and May 10th, 2019 are summarized below. Photographs of the visual monitoring samples are included in **Attachment D**.

- **Outfall LA1** (Los Altos Golf Course) is a concrete culvert discharging into riprap and vegetation before entering the storm drain channel. *Sampling Event 4/17/2019*: The outfall was inspected under steady flow conditions. A grab sample was collected from the standing water at the facility outfall. The sample was grey/green in color, very cloudy, contained floating, suspended, and settled solids, and had a slightly rotten egg (sulfur) smell. No sheen or foam was present in the sample.
- **Outfall LA2** (Los Altos Golf Course) collects runoff from the Los Altos Golf Course fueling, maintenance, and storage areas before discharging through the lowest ground elevation on the west of the facility premises. *Sampling Event 4/17/2019*: The outfall was inspected under no-flow conditions, but standing water was present at the outfall. The sample collected from the standing water was off white, slightly cloudy, and contained floating, suspended, and settled solids.
- **Outfall L1** (Lomas Fuel Station) collects runoff from the CABQ fueling station, before discharging through the lowest ground elevation on the northwest of the facility premises. *Sampling Event 4/17/2019*: The outfall was inspected under no-flow conditions. A grab sample was collected from a pool of standing water in near proximity of the outfall. The sample was dark grey to black in color, opaque, with suspended and settled solids present. Foam was observed in the sample, but no sheen or odor was observed.
- **Outfall AM1** (Arroyo Maintenance) is a culvert draining from the parking lot, located on the northwest corner of the facility, discharging to Altez Street. The outfall is surrounded by a waddle on the inside of the facility fence. *Sampling Event 4/17/2019*: The outfall was inspected under no flow conditions, but water was observed ponding in the street. The sample collected

from the standing water was light tan, slightly cloudy (nearly clear), and contained no solids. No sheen, odor, or foam was observed.

- **SS1A** (Street Satellite #1 A) is a wattle around a 4ft x 4ft gate that drains a parking lot. *Sampling Event 5/10/2019*: At the time of inspection, the outfall had ~2ft of water surrounding it at a depth of ~ 2in. The sample collected was light tan, slightly cloudy, and had floating, suspended, and settled solids in it. An oil sheen and foam were present in the sample. No odor was observed.
- **SS1B** (Street Satellite #1 B) is a wattle around a 4ft x 4ft gate near a covered structure that drains a parking lot. *Sampling Event 5/10/2019*: A 5ft by 10ft puddle of water had accumulated around the wattle at the time of inspection. The water was ~1in deep and was slowly dripping through the grate into the storm drain. The collected sample was dark grey, very cloudy, and contained suspended and settled solids. No sheen, odor, or foam was present.
- **Outfall LAM1** (Los Altos Trails Parks Management) is a storm drain which collects runoff from the facility parking lot area before discharging to the arroyo and storm drain channel on the northeast corner of the facility premises. *Sampling Event 4/17/2019*: The outfall was inspected under very low- flow conditions. The sample was light tan, slightly cloudy, and contained suspended and settled solids. A sheen was present in the sample.
- **Outfall D1** (Daytona Westside) is a storm drain manhole which collects runoff from the employee parking area. *Sampling Event 4/17/2019*: At the time of the sampling event, the flow was ~1-2 cfs. The collected sample was clear with no floating or settled solids and some suspended solids. No sheen, odor, or foam was present. *Sampling Event 5/10/2019*: At the time of the second sampling event, a flow of ~1 cfs was observed. The collected sample was clear with no floating or suspended solids. Settled solids were observed. No sheen, odor, or foam was present.
- **Outfall D2** (Daytona Westside) is a storm drain manhole which collects runoff from the bus parking lot and maintenance building areas. *Sampling Event 4/17/2019*: A bus was parked over the D2 outfall manhole cover and a sample was obtained from the gutter adjacent to the outfall. The sample was clear with no additional observations.
- **Outfall LGC1** (Ladera Golf Course) is a concrete riser on the north end of the golf course that drains a stormwater detention pond. *Sampling Event 5/10/2019*: The site was inspected under no-flow conditions, but water had puddled in the arroyo. A sample of the standing water was collected. The sample was brown, opaque, with settled solids present.
- **Outfall LCG2** (Ladera Golf Course) is a runoff point before stormwater from the parking area enters the golf course pond. *Sampling Event 5/10/2019*: The site was inspected under no-flow conditions, but water had puddled in the arroyo. A sample of the standing water was collected. The sample was slightly grey, slightly cloudy, with no additional observations.
- **SS3** (Streets Satellite #3) is a concrete spill way that discharges into a stormwater detention pond. *Sampling Event 4/17/2019*: At the time of sampling, the pond appeared ~30% full and

contained some debris and garbage near the outfall. The sample was taken under low flow conditions. The collected sample was grey-brown in color, slightly colored, and contained suspended solids. Foam was present in the sample and no sheen or odor was observed. Additionally, the wattle at the site may need to be moved or replaced in the future as it appears degraded. *Sampling Event 5/10/2019*: At the time of the second sampling event, the sample was taken under low flow conditions. The sample was clear with a slight grey hue, slightly cloudy, with suspended and settled solids present. A sheen, odor, and foam were all present in this sample. Additionally, it was noted that the wattle is no longer serving its purpose at this site.

- **Outfall DR01** (Don Reservoir Convenience Center) is an inlet on the east side of the property that drains the vehicle storage area and all solid and hazardous municipal waste collection/storage areas. *Sampling Event 4/17/2019*: The inspection occurred during low flow conditions. The collected sample was grey-brown in color, very cloudy, and contained suspended solids with no additional observations. *Sampling Event 5/10/2019*: The second inspection occurred during very low flow conditions. The collected sample was grey, very cloudy, and had suspended solids. Trash was observed in the collection reservoir during both sampling events.
- **Outfall Y1** (Yale Transit Center) is a grate leading to a storm drain which collects runoff from the bus parking lot and maintenance building areas. *Sampling Event 4/17/2019*: The outfall was observed under steady flow conditions. The sample was light tan and slightly cloudy with suspended solids. No additional observations. *Sampling Event 5/10/2019*: The outfall was observed under steady flow conditions. The collected sample was light brown, very cloudy, with suspended and settled solids present. A sheen and foam were both present.
- **PDS1** (Puerto del Sol Golf Course) is a grated inlet that drains the north-east corner of the golf course. *Sampling Event 4/17/2019*: The sample was collected under low flow conditions. The collected sample was light brown, very cloudy, with suspended and settled solids. No additional observations.
- **PDS2** (Puerto del Sol Golf Course) is a grated inlet that drains the east end of the golf course and the parking area. *Sampling Event 4/17/2019*: The sample was collected under low flow conditions. The collected sample was light brown, slightly cloudy, with suspended solids. No additional observations. *Sampling Event 5/10/2019*: The sample was collected under low flow conditions. The collected sample was light brown, very cloudy, with floating, suspended, and settled solids present. A sheen was also present. No additional observations.
- **Outfall MP1** (Montessa Park Open Space) is a metal culvert collecting runoff from the facility parking lot and warehouse areas before discharging to the Tijeras Arroyo located on the northeast of the facility premises. *Sampling Event 4/17/2019*: The outfall was inspected under flow conditions. The sample was muddy in color and slightly cloudy with no additional observations.

- **Outfall MP2** (Montessa Park Open Space) is a metal pipe/concrete culvert collecting runoff from the entire facility before discharging into the Tijeras Arroyo. *Sampling Event 4/17/2019*: The outfall was inspected under flow conditions. The sample was muddy brown in color and slightly cloudy with no additional observations.
- **Outfall MP01** (Montessa Park Convenience Center) is a lowest-elevation point on the premises which collects runoff from the waste transfer and storage areas before discharging to Los Picaros Road. *Sampling Event 4/17/2019*: The outfall was inspected under low flow conditions. The sample was brown and muddy and very cloudy with no additional observations.

CDM Smith appreciates the opportunity of providing environmental consulting services to the CABQ. Please contact CDM Smith at (505) 243-3200 if you have any questions or comments regarding this report.

Sincerely,

Kelsey Bicknell
Project Engineer
CDM Smith Inc.

Dacia Tucholke
Project Manager
CDM Smith Inc.

Attachments:

A – Monthly Precipitation Summary for Second Quarter 2019 (Weather Underground, April 1, 2019 to June 30, 2019)
B – Daily Weather Reports for Precipitation Events Occurring in Second Quarter 2019 (Weather Underground)
C – Visual Stormwater Monitoring Inspection Forms
D – Stormwater Monitoring Sampling Photographs

ATTACHMENT A

MONTHLY PRECIPITATION SUMMARY FOR SECOND QUARTER 2019 (WEATHER UNDERGROUND, APRIL 1, 2019 TO JUNE 30, 2019)

Temperature (° F)	Max	Average	Min	Sum
Min Temperature	54	45	32	-

Precipitation (Inches)	Max	Average	Min	Sum
Precipitation	0.58	0.04	0	1.01

Dew Point (° F)	Max	Average	Min	Sum
Dew Point	48	28	6	-

Daily Observations APRIL 2019 (Albuquerque International Sunport)

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipation (in)		
Apr	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min
1	57	45	32	33	31	28	96	-	35	12	-	0	30.27	-	30.03	-	0.00	-
2	67	53	38	31	26	22	64	-	18	18	-	0	30.02	-	29.78	-	0.00	-
3	60	54	47	33	27	21	46	-	24	30	-	0	29.98	-	29.8	-	0.00	-
4	66	52	37	31	28	24	70	-	22	15	-	0	30.13	-	29.92	-	0.00	-
5	69	57	44	30	22	17	45	-	14	21	-	0	29.94	-	29.77	-	0.00	-
6	68	55	41	27	25	23	51	-	19	22	-	0	29.92	-	29.81	-	0.00	-
7	75	60	45	32	26	19	53	-	13	20	-	0	30.09	-	29.94	-	0.00	-
8	79	63	46	24	20	17	32	-	11	21	-	0	30.11	-	29.94	-	0.00	-
9	83	64	45	24	19	10	42	-	6	30	-	0	29.97	-	29.61	-	0.00	-

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipation (in)	
10	64	54	43	28	19	6	49	-	11	49	-	9	29.68	-	29.38	-	0.00	-
11	54	48	41	25	20	13	51	-	19	33	-	5	29.72	-	29.63	-	0.00	-
12	55	45	35	35	25	16	70	-	28	18	-	0	29.78	-	29.65	-	0.03	-
13	58	47	36	35	31	26	85	-	32	23	-	0	29.96	-	29.78	-	0.00	-
14	74	54	33	33	22	10	82	-	9	26	-	0	30.02	-	29.76	-	0.00	-
15	77	61	44	23	15	6	40	-	7	20	-	0	29.9	-	29.69	-	0.00	-
16	72	59	46	29	22	16	31	-	16	26	-	0	29.81	-	29.64	-	0.00	-
17	59	52	44	46	42	30	93	-	33	24	-	0	30.07	-	29.65	-	0.58	-
18	71	57	42	44	36	20	100	-	17	25	-	0	30.21	-	29.96	-	0.00	-
19	76	62	47	36	31	24	65	-	16	22	-	0	30.29	-	29.92	-	0.00	-
20	82	67	51	36	25	16	44	-	9	31	-	0	29.94	-	29.61	-	0.00	-
21	76	64	52	28	24	21	38	-	13	22	-	0	29.82	-	29.7	-	0.00	-
22	69	58	46	48	36	26	93	-	27	45	-	0	30.14	-	29.83	-	0.36	-
23	61	54	46	47	43	39	86	-	57	24	-	4	30.13	-	29.93	-	0.04	-
24	72	57	42	44	39	29	96	-	22	15	-	0	30.02	-	29.8	-	0.00	-
25	79	64	48	42	36	28	63	-	16	22	-	0	30.2	-	29.84	-	0.00	-
26	77	67	56	45	41	34	66	-	21	36	-	0	30.03	-	29.76	-	0.00	-
27	81	67	52	38	30	18	54	-	11	23	-	0	29.88	-	29.66	-	0.00	-
28	82	67	51	36	25	15	47	-	9	26	-	0	29.82	-	29.61	-	0.00	-

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipation (in)	
29	76	64	52	41	32	24	55	-	18	36	-	0	29.94	-	29.68	-	0.00	-
30	69	60	51	43	35	28	71	-	24	35	-	4	29.88	-	29.68	-	0.00	-

Temperature (° F)	Max	Average	Min	Sum
Min Temperature	51	46	38	-

Precipitation (Inches)	Max	Average	Min	Sum
Precipitation	0.19	0.01	0	0.24

Dew Point (° F)	Max	Average	Min	Sum
Dew Point	47	29	9	-

Daily Observations MAY 2019 (Albuquerque International Sunport)

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipation (in)		
May	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min
1	76	62	48	34	29	20	50	-	12	25	-	0	29.88	-	29.72	-	0.00	-
2	76	62	47	36	27	17	54	-	13	24	-	0	29.96	-	29.72	-	0.00	-
3	75	64	52	26	18	9	32	-	9	18	-	4	29.89	-	29.76	-	0.00	-
4	78	64	50	34	21	12	41	-	11	16	-	4	29.89	-	29.7	-	0.00	-
5	81	66	50	29	22	14	41	-	8	18	-	0	29.8	-	29.63	-	0.00	-
6	81	66	50	27	20	10	38	-	8	29	-	0	29.8	-	29.65	-	0.00	-
7	74	62	50	40	25	18	59	-	13	38	-	0	29.84	-	29.58	-	0.00	-
8	67	55	43	41	37	33	71	-	32	25	-	0	29.81	-	29.63	-	0.00	-
9	65	55	45	40	37	34	76	-	31	33	-	4	29.92	-	29.75	-	0.00	-

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipation (in)	
10	51	46	41	41	38	36	82	-	63	30	-	0	30.04	-	29.88	-	0.19	-
11	66	56	46	47	42	39	86	-	40	18	-	0	29.99	-	29.79	-	0.01	-
12	72	58	44	44	40	30	86	-	26	26	-	0	30.01	-	29.79	-	0.00	-
13	79	63	47	42	37	29	76	-	16	14	-	0	29.96	-	29.79	-	0.00	-
14	83	68	53	41	35	26	55	-	13	18	-	0	29.96	-	29.82	-	0.00	-
15	84	70	55	41	35	28	51	-	14	18	-	0	29.96	-	29.77	-	0.00	-
16	85	71	57	39	32	25	36	-	14	31	-	0	29.84	-	29.54	-	0.00	-
17	75	65	55	30	23	12	32	-	11	31	-	0	29.82	-	29.52	-	0.00	-
18	71	59	46	33	22	13	58	-	11	25	-	5	29.82	-	29.71	-	0.00	-
19	71	58	45	27	22	18	38	-	14	40	-	0	29.85	-	29.61	-	0.00	-
20	66	54	41	40	30	22	83	-	19	32	-	4	29.78	-	29.46	-	0.04	-
21	64	51	38	32	28	21	70	-	20	30	-	4	29.71	-	29.48	-	0.00	-
22	79	60	40	32	26	19	62	-	12	31	-	0	29.73	-	29.5	-	0.00	-
23	75	64	53	31	24	14	38	-	11	45	-	0	29.89	-	29.62	-	0.00	-
24	75	58	40	28	23	19	45	-	13	15	-	0	29.98	-	29.75	-	0.00	-
25	84	68	51	25	20	14	35	-	8	28	-	0	29.95	-	29.69	-	0.00	-
26	83	68	53	44	26	17	27	-	11	46	-	4	29.97	-	29.64	-	0.00	-
27	80	64	47	24	18	10	35	-	8	37	-	0	29.79	-	29.55	-	0.00	-
28	73	60	46	28	26	20	49	-	15	21	-	0	29.84	-	29.65	-	0.00	-

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipation (in)	
29	76	65	54	36	28	22	41	-	14	24	-	4	29.98	-	29.7	-	0.00 -
30	78	67	56	43	37	27	57	-	16	40	-	0	30.07	-	29.84	-	0.00 -
31	82	67	51	45	37	28	63	-	15	20	-	0	30.13	-	29.81	-	0.00 -

Temperature (° F)	Max	Average	Min	Sum
Min Temperature	77	66	52	-
Precipitation (Inches)	Max	Average	Min	Sum
Precipitation	0.02	0	0	0.04
Dew Point (° F)	Max	Average	Min	Sum
Dew Point	54	39	12	-

Daily Observations JUNE 2019 (Albuquerque International Sunport)

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipation (in)		
Jun	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min
1	81	72	62	52	44	33	52	-	26	35	-	0	30.07	-	29.75	-	0.00	-
2	82	70	58	54	49	33	72	-	37	36	-	0	30	-	29.76	-	0.00	-
3	86	73	60	54	45	29	72	-	14	33	-	0	30.02	-	29.7	-	0.01	-
4	82	69	55	51	44	25	62	-	13	30	-	0	30.15	-	29.8	-	0.02	-
5	77	66	54	47	42	35	72	-	23	17	-	0	29.97	-	29.83	-	0.00	-
6	87	72	56	44	40	34	62	-	15	14	-	0	29.94	-	29.75	-	0.00	-
7	90	75	59	45	37	23	52	-	10	23	-	0	29.83	-	29.63	-	0.00	-
8	90	76	62	38	31	19	36	-	9	16	-	4	29.84	-	29.72	-	0.00	-
9	88	73	57	45	32	18	44	-	12	38	-	0	30.15	-	29.84	-	0.00	-

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipation (in)	
10	77	66	55	49	40	32	64	-	31	35	-	4	30.35	-	30.14	-	0.00	-
11	90	73	55	51	39	23	72	-	10	25	-	0	30.19	-	29.87	-	0.00	-
12	86	75	63	41	37	26	40	-	17	36	-	0	30.06	-	29.89	-	0.00	-
14	93	80	66	48	30	12	44	-	5	25	-	6	30.02	-	29.61	-	0.00	-
15	86	72	57	0	0	0	39	-	11	22	-	0	0	-	0	-	0.00	-
16	88	74	60	0	0	0	56	-	15	22	-	0	0	-	0	-	0.00	-
17	85	74	63	0	0	0	63	-	24	32	-	0	0	-	0	-	0.01	-
18	90	71	52	0	0	0	67	-	8	30	-	0	0	-	0	-	0.00	-
20	93	77	60	0	0	0	28	-	8	23	-	0	0	-	0	-	0.00	-
21	92	76	59	0	0	0	22	-	5	25	-	0	0	-	0	-	0.00	-
22	86	73	59	0	0	0	27	-	11	32	-	0	0	-	0	-	0.00	-
23	81	70	59	0	0	0	43	-	8	23	-	0	0	-	0	-	0.00	-
24	86	70	54	0	0	0	25	-	10	14	-	0	0	-	0	-	0.00	-
25	91	74	56	0	0	0	26	-	8	16	-	0	0	-	0	-	0.00	-

ATTACHMENT B

DAILY WEATHER REPORTS FOR PRECIPITATION EVENTS OCCURRING IN SECOND QUARTER 2019 (WEATHER UNDERGROUND)

Elev **0** **35.05** °N, **106.61** °W

Albuquerque International Sunport, New Mexico

48° ALBUQUERQUE INTERNATIONAL SUNPORT STATION (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-4-23?CM_VEN=LOCALWX_PWSDASH) | CHANGE

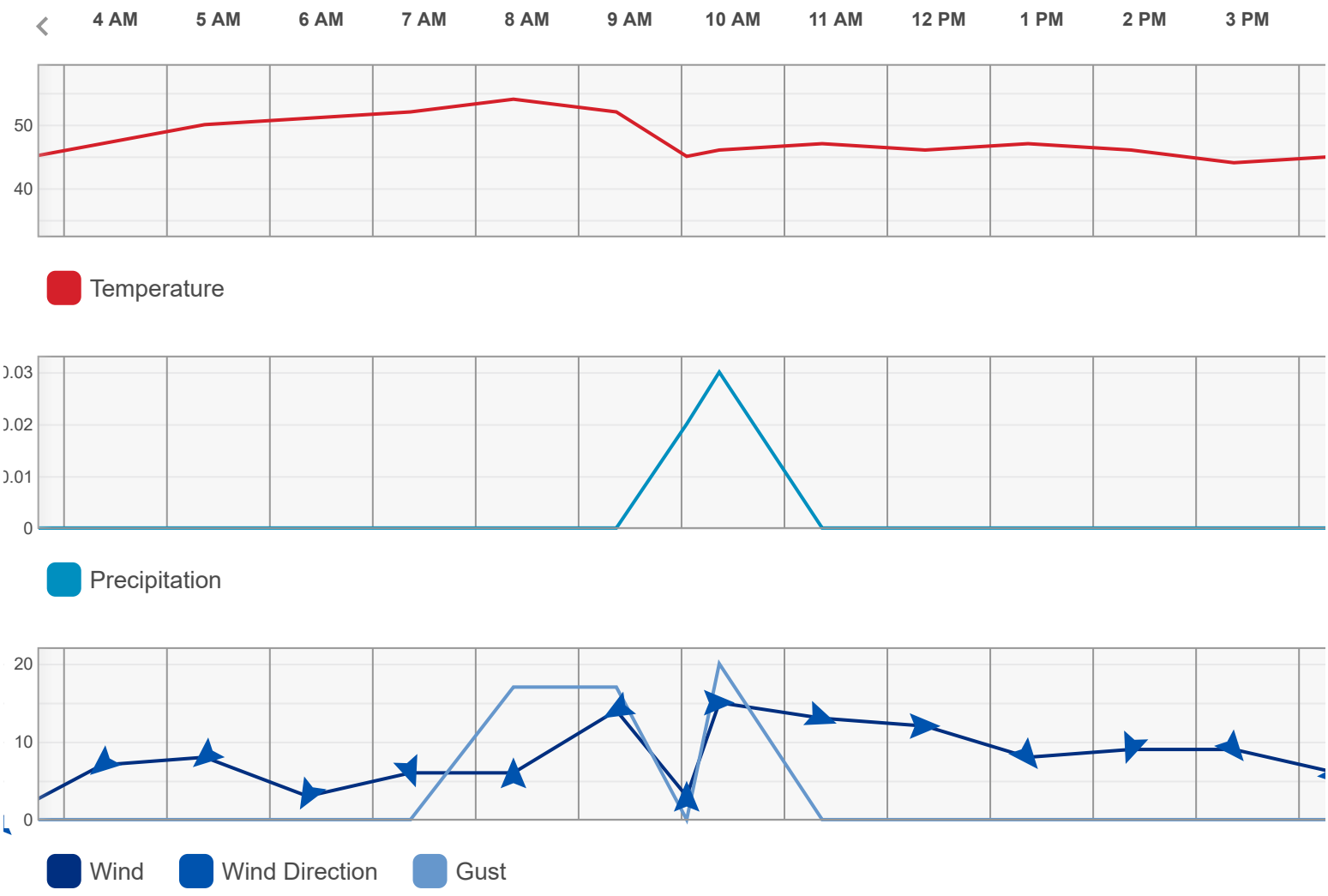
HISTORY (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-4-23)

- TODAY (/WEATHER/US/NM/ALBUQUERQUE/KNMALBUQ11)
- HOURLY (/HOURLY/US/NM/ALBUQUERQUE/KNMALBUQ11)
- 10-DAY (/FORECAST/US/NM/ALBUQUERQUE/KNMALBUQ11)
- CALENDAR (/CALENDAR/US/NM/ALBUQUERQUE/KABQ/DATE/2019-4)
- HISTORY (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-4-23)
- WUNDERMAP (/WUNDERMAP?LAT=35.05&LON=-106.61)

Daily Weekly Monthly

April 12 2019 View

APRIL 12, 2019



Summary

Temperature (° F)	Actual	Historic Avg.	Record
High Temp	55	68	84
Low Temp	35	42	21
Day Average Temp	45	55	-

Precipitation (Inches)	Actual	Historic Avg.	Record
Precipitation	0.03	0.02	0.49
Month to Date	0.03	0.25	-
Year to Date	1.78	1.68	-

Degree Days (° F)	Actual	Historic Avg.	Record

Temperature (° F)	Actual	Historic Avg.	Record
Heating Degree Days	20	10	-
HDD Month to Date	130	142	-
HDD Since July 1	3949	3969	-
Cooling Degree Days	0	0	-
CDD Month to Date	0	0	-
CDD Year to Date	0	0	-
Growing Degree Days	0	-	-
Dew Point (° F)	Actual	Historic Avg.	Record
Dew Point	25	-	-
High	35	-	-
Low	16	-	-
Average	25	-	-
Wind (MPH)	Actual	Historic Avg.	Record
Max Wind Speed	18	-	-
Visibility	10	-	-
Sea Level Pressure (Hg)	Actual	Historic Avg.	Record
Sea Level Pressure	29.78	-	-
Astronomy	Day Length	Rise	Set
Actual Time	12h 57m	6:39 AM	7:37 PM
Civil Twilight		6:13 AM	8:02 PM
Nautical Twilight		5:42 AM	8:33 PM
Astronomical Twilight		5:11 AM	9:05 PM
Moon: waxing half first qtr		12:15 PM	2:00 AM

Daily Observations

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum
6:52 PM	44 ° F	18 ° F	35 %	WNW	3 mph	0 mph	24.5 in	0.0 in	0.0 in
7:52 PM	44 ° F	16 ° F	32 %	CALM	0 mph	0 mph	24.5 in	0.0 in	0.0 in
8:52 PM	36 ° F	17 ° F	46 %	ESE	3 mph	0 mph	24.5 in	0.0 in	0.0 in
9:52 PM	39 ° F	18 ° F	43 %	E	5 mph	0 mph	24.5 in	0.0 in	0.0 in
10:52 PM	39 ° F	19 ° F	45 %	ESE	5 mph	0 mph	24.5 in	0.0 in	0.0 in
11:52 PM	37 ° F	18 ° F	46 %	CALM	0 mph	0 mph	24.5 in	0.0 in	0.0 in
12:52 AM	37 ° F	18 ° F	46 %	CALM	0 mph	0 mph	24.5 in	0.0 in	0.0 in
1:52 AM	41 ° F	19 ° F	41 %	N	5 mph	0 mph	24.5 in	0.0 in	0.0 in
2:52 AM	44 ° F	20 ° F	38 %	CALM	0 mph	0 mph	24.5 in	0.0 in	0.0 in
3:52 AM	47 ° F	22 ° F	37 %	SW	7 mph	0 mph	24.5 in	0.0 in	0.0 in
4:52 AM	50 ° F	22 ° F	33 %	SW	8 mph	0 mph	24.5 in	0.0 in	0.0 in
5:52 AM	51 ° F	22 ° F	32 %	SSW	3 mph	0 mph	24.5 in	0.0 in	0.0 in
6:52 AM	52 ° F	20 ° F	28 %	SSE	6 mph	0 mph	24.4 in	0.0 in	0.0 in
7:52 AM	54 ° F	21 ° F	28 %	VAR	6 mph	17 mph	24.4 in	0.0 in	0.0 in
8:52 AM	52 ° F	23 ° F	32 %	WSW	14 mph	17 mph	24.4 in	0.0 in	0.0 in
9:33 AM	45 ° F	31 ° F	58 %	VAR	3 mph	0 mph	24.4 in	0.0 in	0.0 in
9:52 AM	46 ° F	35 ° F	66 %	E	15 mph	20 mph	24.4 in	0.0 in	0.0 in
10:52 AM	47 ° F	35 ° F	63 %	ESE	13 mph	0 mph	24.4 in	0.0 in	0.0 in
11:52 AM	46 ° F	34 ° F	63 %	E	12 mph	0 mph	24.4 in	0.0 in	0.0 in
12:52 PM	47 ° F	33 ° F	59 %	SE	8 mph	0 mph	24.5 in	0.0 in	0.0 in
1:52 PM	46 ° F	33 ° F	61 %	SSW	9 mph	0 mph	24.5 in	0.0 in	0.0 in
2:52 PM	44 ° F	34 ° F	68 %	SE	9 mph	0 mph	24.5 in	0.0 in	0.0 in
3:52 PM	45 ° F	34 ° F	65 %	NE	6 mph	0 mph	24.5 in	0.0 in	0.0 in
4:52 PM	44 ° F	34 ° F	68 %	E	13 mph	0 mph	24.5 in	0.0 in	0.0 in
5:52 PM	42 ° F	34 ° F	73 %	E	7 mph	0 mph	24.5 in	0.0 in	0.0 in

PRECIP RATE
0in/Hr

PRECIP TOTAL
0.02in

UNAVAILABLE

ASSOCIATED WEBCAM

THERE IS NO ASSOCIATED WEBCAM WITH THIS STATION

Weather History for KNMALBUQ648 APRIL 17, 2019

Previous | Daily Mode | April | 17 | 2019 | **View** | Next

Summary

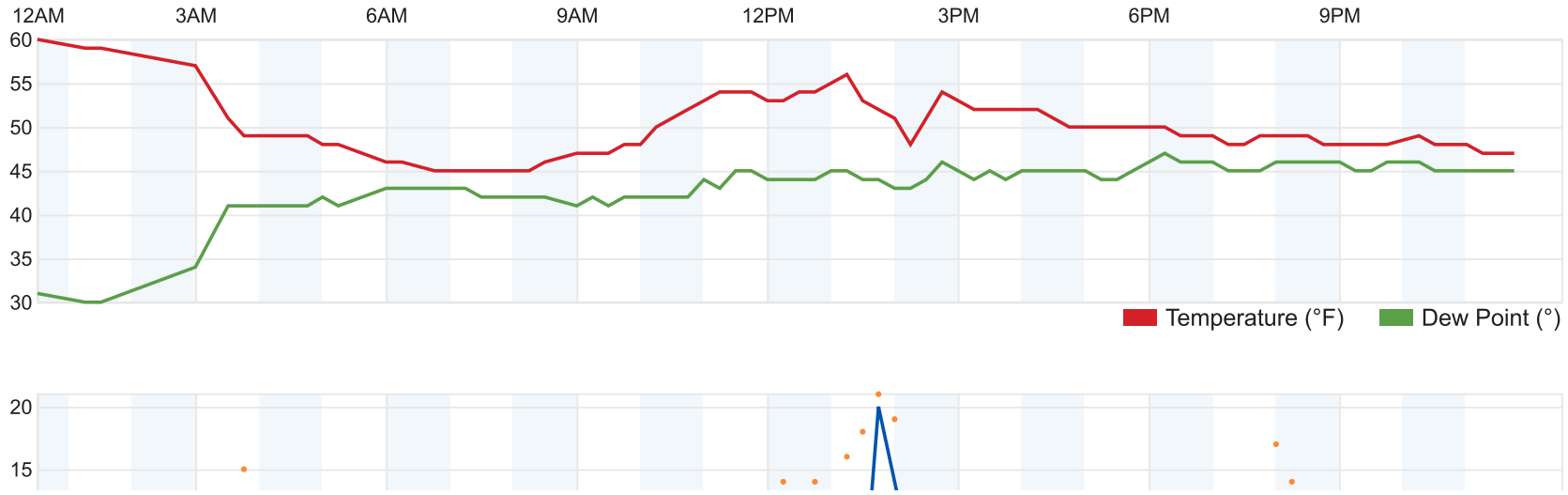
April 17, 2019

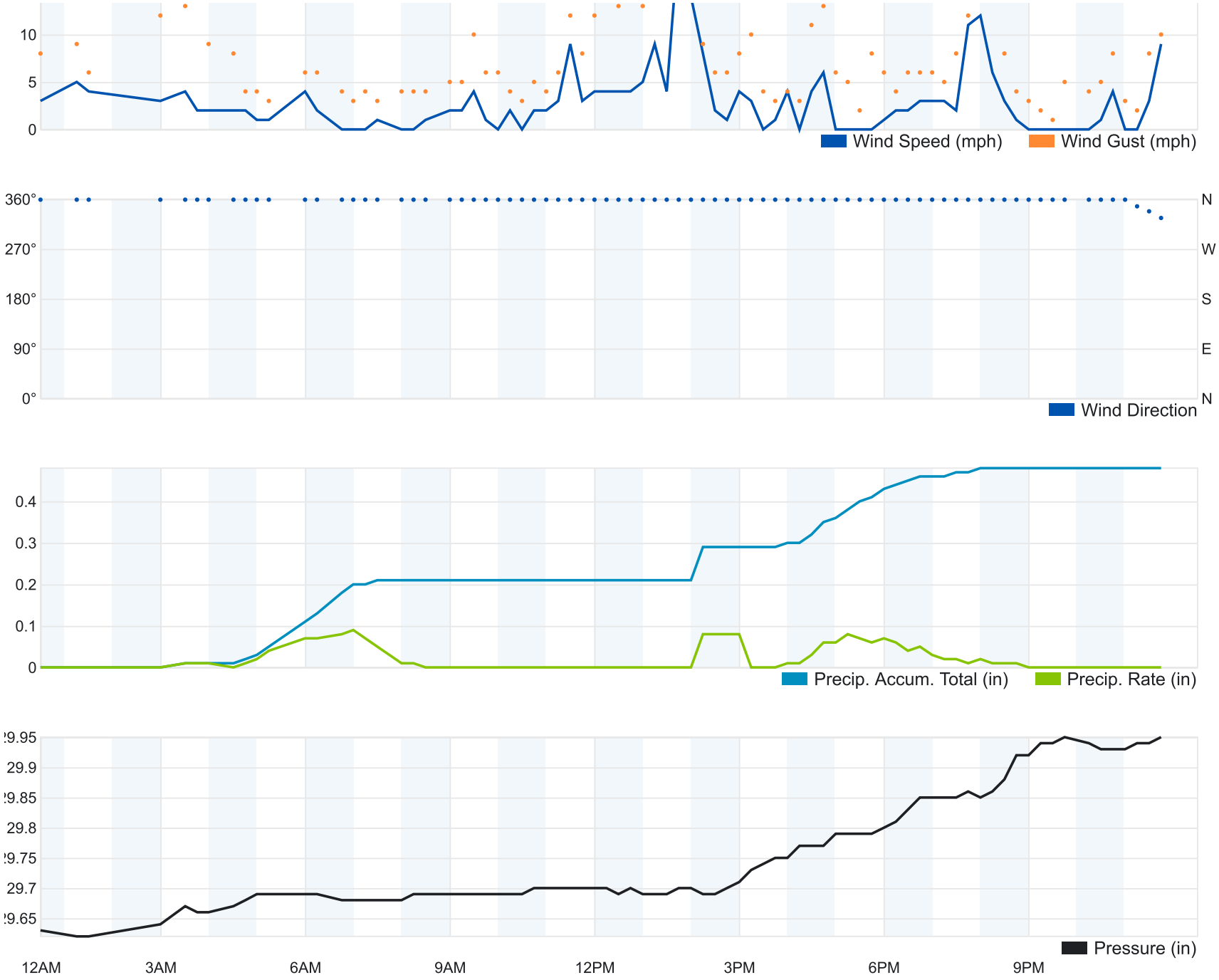
	High	Low	Average
Temperature	**60** °F	**45** °F	**50** °F
Dew Point	**47** °F	**30** °F	**43** °F
Humidity	**91** %	**33** %	**79** %
Precipitation	**0.48** in	--	--

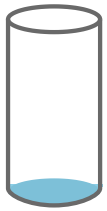
	High	Low	Average
Wind Speed	**20.0** mph	**0.0** mph	**3.0** mph
Wind Gust	**21.0** mph	--	**7.0** mph
Wind Direction	--	--	
Pressure	**29.95** in	**29.62** in	--

Graph Table

April 17, 2019




10
5
0
Wind Speed (mph)
Wind Gust (mph)
360°
270°
180°
90°
0°
N
W
S
E
N
Wind Direction
0.4
0.3
0.2
0.1
0
Precip. Accum. Total (in)
Precip. Rate (in)
29.95
29.9
29.85
29.8
29.75
29.7
29.65
Pressure (in)
12AM
3AM
6AM
9AM
12PM
3PM
6PM
9PM



PRECIP RATE
0in/Hr

PRECIP TOTAL
0.02in

UNAVAILABLE

ASSOCIATED WEBCAM

THERE IS NO ASSOCIATED WEBCAM WITH THIS STATION

APRIL 22, 2019

Storm event was considered non-qualifying due to it occurring outside of normal hours of operation.

Weather History for KNMALBUQ648

Previous | Daily Mode | April | 22 | 2019 | **View** | Next

Summary

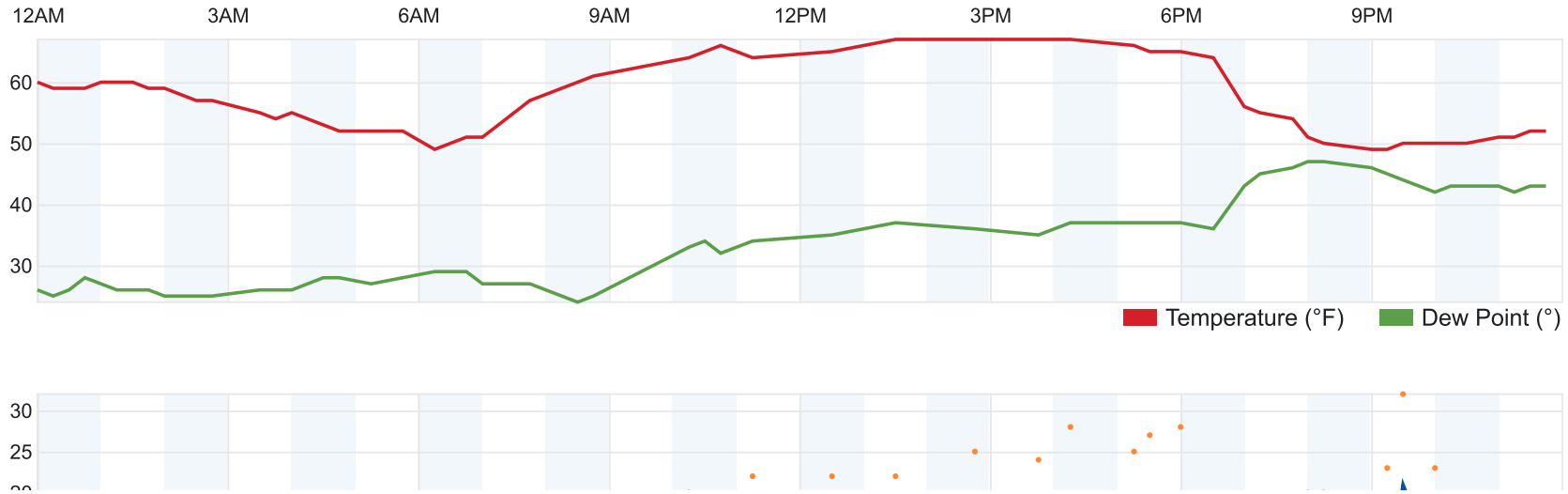
April 22, 2019

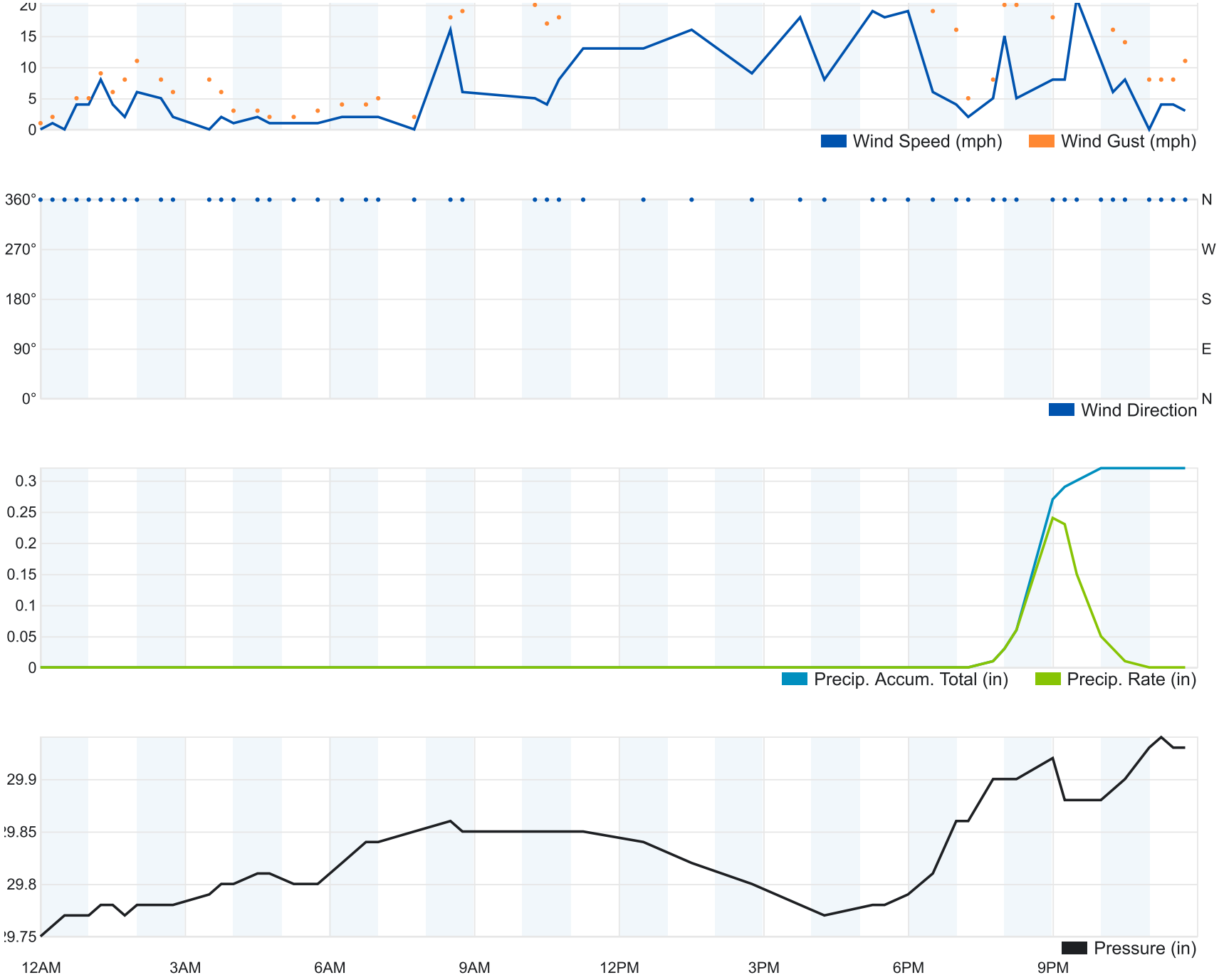
	High	Low	Average
Temperature	**67** °F	**49** °F	**57** °F
Dew Point	**47** °F	**24** °F	**34** °F
Humidity	**89** %	**25** %	**45** %
Precipitation	**0.32** in	**--**	**--**

	High	Low	Average
Wind Speed	**21.0** mph	**0.0** mph	**6.0** mph
Wind Gust	**32.0** mph	--	**13.0** mph
Wind Direction	**--**	**--**	
Pressure	**29.94** in	**29.75** in	**--**

Graph Table

April 22, 2019




20
15
10
5
0
Wind Speed (mph)
Wind Gust (mph)
360°
270°
180°
90°
0°
N
W
S
E
N
Wind Direction
0.3
0.25
0.2
0.15
0.1
0.05
0
Precip. Accum. Total (in)
Precip. Rate (in)
29.9
29.85
29.8
29.75
Pressure (in)
12AM
3AM
6AM
9AM
12PM
3PM
6PM
9PM

Elev **0** **35.05** °N, **106.61** °W

Albuquerque International Sunport, New Mexico

59° ALBUQUERQUE INTERNATIONAL SUNPORT STATION (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-4-25?CM_VEN=LOCALWX_PWSDASH) | CHANGE

HISTORY (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-4-25)

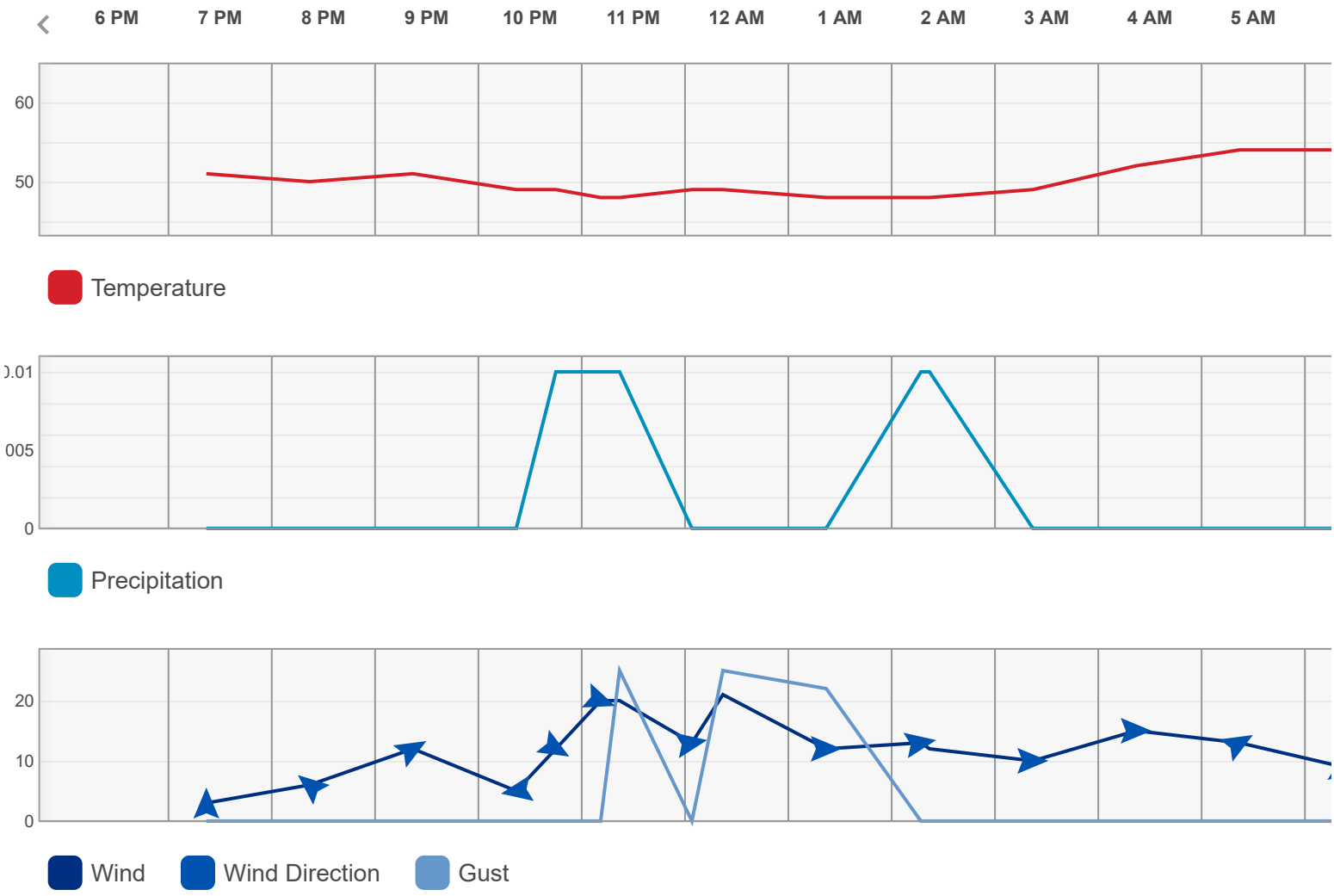
- TODAY (/WEATHER/US/NM/ALBUQUERQUE/KNMALBUQ648)
- HOURLY (/HOURLY/US/NM/ALBUQUERQUE/KNMALBUQ648)
- 10-DAY (/FORECAST/US/NM/ALBUQUERQUE/KNMALBUQ648)
- CALENDAR (/CALENDAR/US/NM/ALBUQUERQUE/KABQ/DATE/2019-4)
- HISTORY (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-4-25)
- WUNDERMAP (/WUNDERMAP?LAT=35.05&LON=-106.61)

Daily | Weekly | Monthly

April | 23 | 2019 | View

APRIL 23, 2019

Storm event was considered non-qualifying due to the lack of precipitation (less than 0.01 in, cumulative 0.04 in). The storm also occurred outside of normal operating hours.



Summary

Temperature (° F)	Actual	Historic Avg.	Record
High Temp	61	71	85
Low Temp	46	45	24
Day Average Temp	54	58	-

Precipitation (Inches)	Actual	Historic Avg.	Record
Precipitation	0.04	0.02	1.32
Month to Date	1.01	0.49	-
Year to Date	2.76	1.92	-

Degree Days (° F)	Actual	Historic Avg.	Record

Temperature (° F)	Actual	Historic Avg.	Record
Heating Degree Days	11	7	-
HDD Month to Date	212	235	-
HDD Since July 1	4031	4062	-
Cooling Degree Days	0	0	-
CDD Month to Date	2	0	-
CDD Year to Date	2	0	-
Growing Degree Days	4	-	-

Dew Point (° F)	Actual	Historic Avg.	Record
Dew Point	43	-	-
High	47	-	-
Low	39	-	-
Average	43	-	-

Wind (MPH)	Actual	Historic Avg.	Record
Max Wind Speed	24	-	-
Visibility	10	-	-

Sea Level Pressure (Hg)	Actual	Historic Avg.	Record
Sea Level Pressure	30.13	-	-

Astronomy	Day Length	Rise	Set
Actual Time	13h 20m	6:25 AM	7:45 PM
Civil Twilight		5:59 AM	8:12 PM
Nautical Twilight		5:27 AM	8:44 PM
Astronomical Twilight		4:54 AM	9:17 PM
Moon: waning crescent		-	-

Daily Observations

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum
6:52 PM	51 ° F	41 ° F	68 %	VAR	3 mph	0 mph	24.7 in	0.0 in	0.0 in
7:52 PM	50 ° F	44 ° F	80 %	NW	6 mph	0 mph	24.7 in	0.0 in	0.0 in
8:52 PM	51 ° F	40 ° F	66 %	ENE	12 mph	0 mph	24.7 in	0.0 in	0.0 in
9:52 PM	49 ° F	45 ° F	86 %	W	5 mph	0 mph	24.7 in	0.0 in	0.0 in
10:15 PM	49 ° F	43 ° F	80 %	ESE	12 mph	0 mph	24.7 in	0.0 in	0.0 in
10:41 PM	48 ° F	40 ° F	74 %	ESE	20 mph	0 mph	24.7 in	0.0 in	0.0 in
10:52 PM	48 ° F	39 ° F	71 %	ESE	20 mph	25 mph	24.7 in	0.0 in	0.0 in
11:34 PM	49 ° F	43 ° F	80 %	E	13 mph	0 mph	24.7 in	0.0 in	0.0 in
11:52 PM	49 ° F	39 ° F	69 %	E	21 mph	25 mph	24.7 in	0.0 in	0.4 in
12:52 AM	48 ° F	39 ° F	71 %	E	12 mph	22 mph	24.7 in	0.0 in	0.0 in
1:47 AM	48 ° F	43 ° F	82 %	E	13 mph	0 mph	24.7 in	0.0 in	0.0 in
1:52 AM	48 ° F	42 ° F	80 %	E	12 mph	0 mph	24.7 in	0.0 in	0.0 in
2:52 AM	49 ° F	42 ° F	77 %	E	10 mph	0 mph	24.7 in	0.0 in	0.0 in
3:52 AM	52 ° F	43 ° F	71 %	E	15 mph	0 mph	24.8 in	0.0 in	0.0 in
4:52 AM	54 ° F	43 ° F	66 %	ENE	13 mph	0 mph	24.8 in	0.0 in	0.0 in
5:52 AM	54 ° F	44 ° F	69 %	N	9 mph	0 mph	24.7 in	0.0 in	0.0 in
6:52 AM	52 ° F	47 ° F	83 %	WNW	9 mph	0 mph	24.7 in	0.0 in	0.0 in
7:52 AM	54 ° F	46 ° F	75 %	N	8 mph	0 mph	24.7 in	0.0 in	0.0 in
8:52 AM	58 ° F	46 ° F	65 %	N	9 mph	0 mph	24.7 in	0.0 in	0.0 in
9:52 AM	59 ° F	44 ° F	58 %	NNW	13 mph	0 mph	24.7 in	0.0 in	0.0 in
10:52 AM	59 ° F	44 ° F	58 %	E	21 mph	0 mph	24.7 in	0.0 in	0.0 in
11:52 AM	58 ° F	43 ° F	58 %	E	17 mph	26 mph	24.7 in	0.0 in	0.0 in
12:52 PM	55 ° F	43 ° F	64 %	E	20 mph	0 mph	24.7 in	0.0 in	0.0 in
1:52 PM	53 ° F	41 ° F	64 %	E	15 mph	0 mph	24.7 in	0.0 in	0.0 in
2:52 PM	49 ° F	44 ° F	83 %	SW	8 mph	0 mph	24.7 in	0.0 in	0.0 in
3:52 PM	48 ° F	44 ° F	86 %	ESE	12 mph	0 mph	24.7 in	0.0 in	0.0 in
4:52 PM	48 ° F	44 ° F	86 %	W	5 mph	0 mph	24.7 in	0.0 in	0.0 in
5:52 PM	48 ° F	44 ° F	86 %	NW	7 mph	0 mph	24.7 in	0.0 in	0.0 in

THERE IS NO ASSOCIATED WEBCAM WITH THIS STATION

Weather History for KNMALBUQ648 MAY 10, 2019

Daily Mode | May | 10 | 2019

Previous **View** Next

Summary

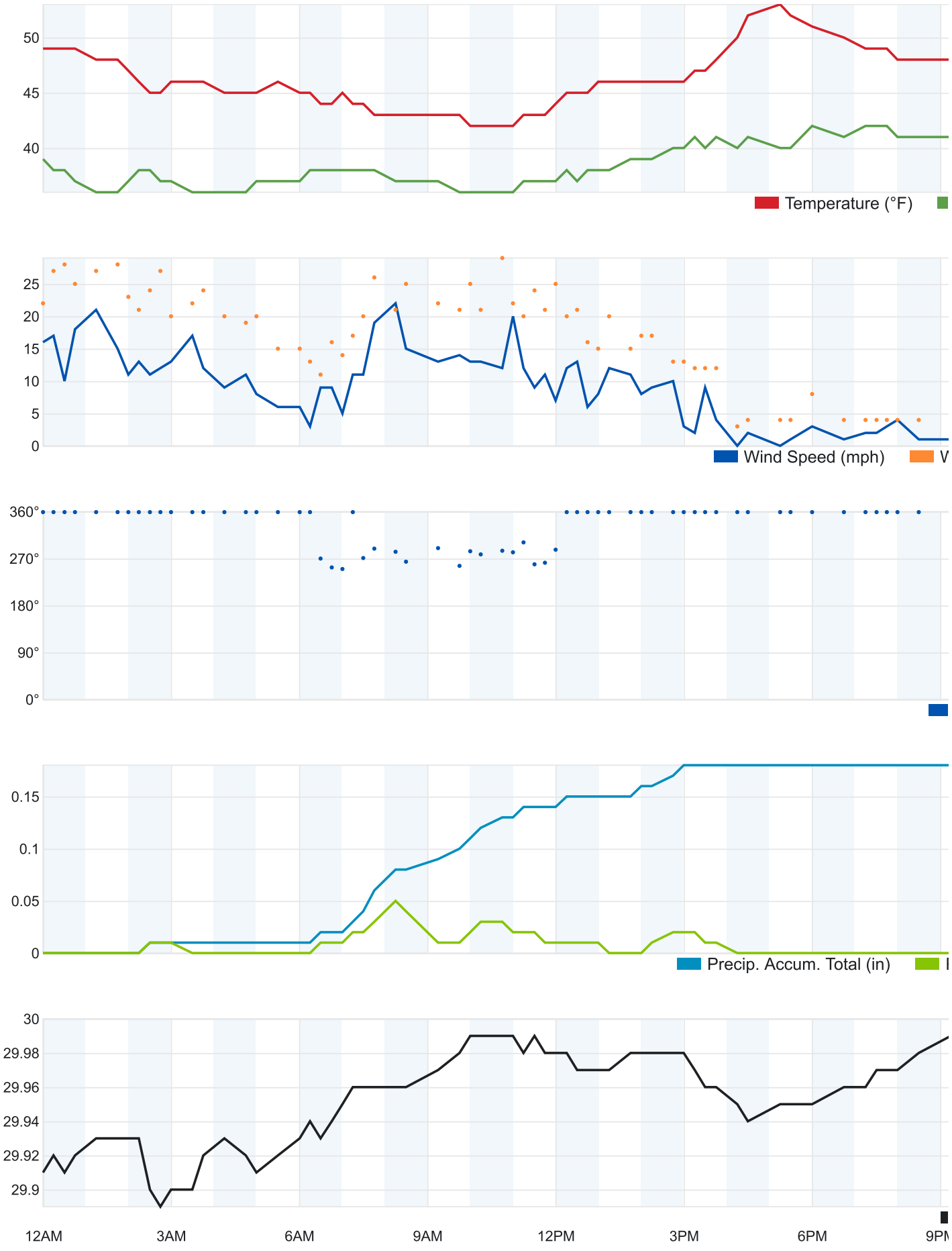
May 10, 2019

	High	Low	Average
Temperature	**53** °F	**42** °F	**46** °F
Dew Point	**42** °F	**36** °F	**39** °F
Humidity	**81** %	**62** %	**74** %
Precipitation	**0.18** in	--	--

	High	Low	Average
Wind Speed	**22.0** mph	**0.0** mph	**8.0** mph
Wind Gust	**29.0** mph	--	**16.0** mph
Wind Direction	--	--	**NNW**
Pressure	**30.00** in	**29.89** in	--

Graph Table

May 10, 2019


50
45
40
Temperature (°F)
25
20
15
10
5
0
Wind Speed (mph)
360°
270°
180°
90°
0°
0.15
0.1
0.05
0
Precip. Accum. Total (in)
30
29.98
29.96
29.94
29.92
29.9
12AM
3AM
6AM
9AM
12PM
3PM
6PM

35.05 °N, **106.61** °W

Albuquerque International Sunport, New Mexico ★

81° ALBUQUERQUE INTERNATIONAL SUNPORT STATION (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6-27?CM_VEN=LOCALWX_PWSDASH) | CHANGE

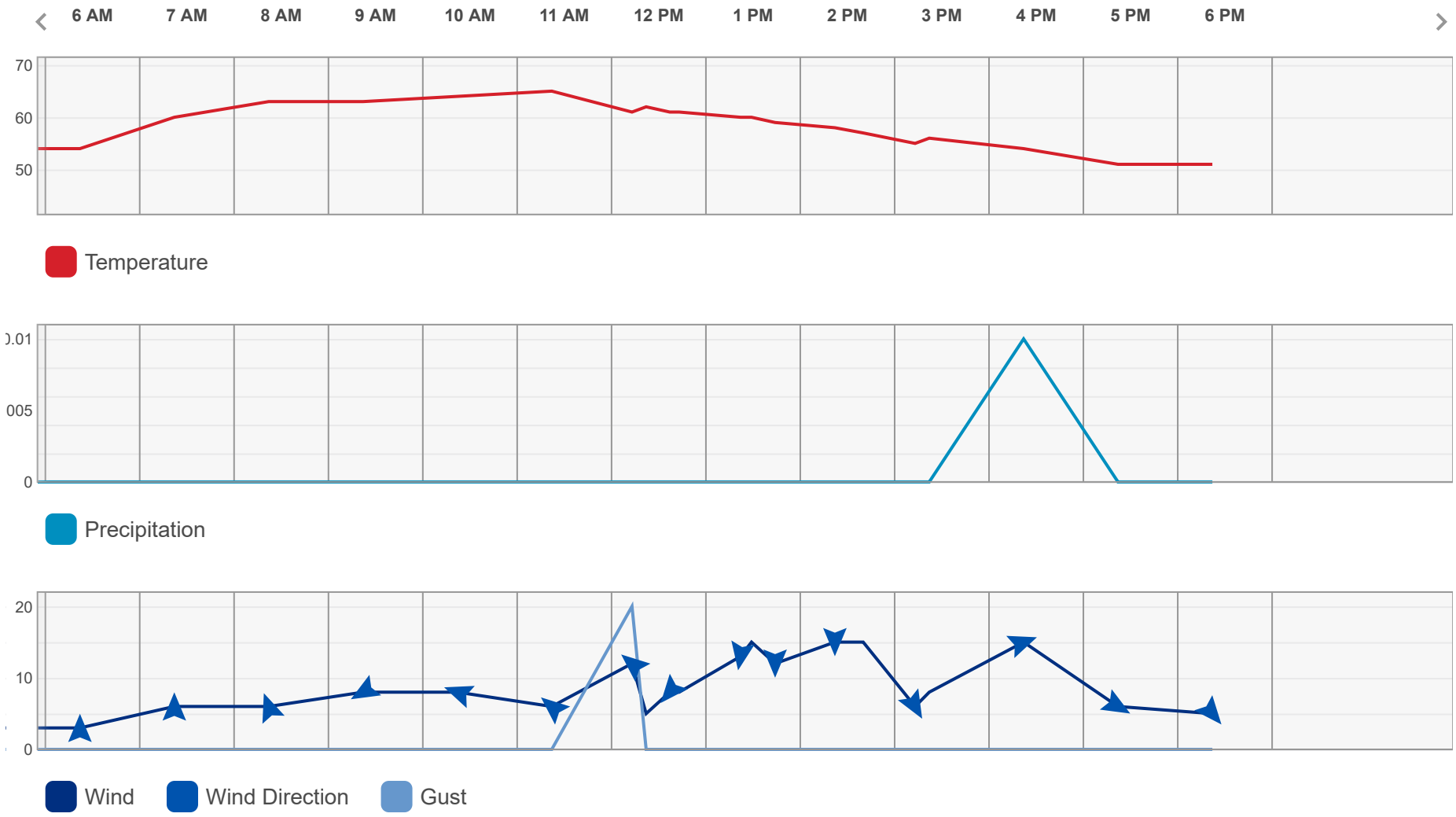
HISTORY (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6-27)

- TODAY (/WEATHER/US/NM/ALBUQUERQUE/KNMALBUQ648)
- HOURLY (/HOURLY/US/NM/ALBUQUERQUE/KNMALBUQ648)
- 10-DAY (/FORECAST/US/NM/ALBUQUERQUE/KNMALBUQ648)
- CALENDAR (/CALENDAR/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6)
- HISTORY (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6-27)
- WUNDERMAP (/WUNDERMAP?LAT=35.05&LON=-106.61)

MAY 11, 2019

Daily Weekly Monthly

May **11** **2019** View



Summary

Temperature (° F)	Actual	Historic Avg.	Record
High Temp	66	77	92
Low Temp	46	51	30

Temperature (° F)	Actual	Historic Avg.	Record
Day Average Temp	56	64	-
Precipitation (Inches)	Actual	Historic Avg.	Record
Precipitation	0.01	0.02	0.72
Month to Date	0.2	0.18	-
Year to Date	2.96	2.22	-
Degree Days (° F)	Actual	Historic Avg.	Record
Heating Degree Days	9	3	-
HDD Month to Date	59	42	-
HDD Since July 1	4105	4146	-
Cooling Degree Days	0	2	-
CDD Month to Date	2	15	-
CDD Year to Date	10	22	-
Growing Degree Days	4	-	-
Dew Point (° F)	Actual	Historic Avg.	Record
Dew Point	42	-	-
High	47	-	-
Low	39	-	-
Average	42	-	-

Temperature (° F)	Actual	Historic Avg.	Record
Wind (MPH)	Actual	Historic Avg.	Record
Max Wind Speed	18	-	-
Visibility	10	-	-
Sea Level Pressure (Hg)	Actual	Historic Avg.	Record
Sea Level Pressure	29.99	-	-
Astronomy	Day Length	Rise	Set
Actual Time	13h 53m	6:07 AM	8:00 PM
Civil Twilight		5:39 AM	8:28 PM
Nautical Twilight		5:05 AM	9:02 PM
Astronomical Twilight		4:30 AM	9:38 PM
Moon: waxing crescent		12:18 PM	1:43 AM

Daily Observations

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum	Condition
6:52 PM	47 ° F	41 ° F	80 %	CALM	0 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
7:52 PM	46 ° F	41 ° F	83 %	N	5 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
8:52 PM	46 ° F	42 ° F	86 %	CALM	0 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
9:52 PM	47 ° F	42 ° F	83 %	CALM	0 mph	0 mph	24.6 in	0.0 in	0.0 in	Cloudy
10:52 PM	46 ° F	42 ° F	86 %	W	3 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
11:52 PM	46 ° F	42 ° F	86 %	CALM	0 mph	0 mph	24.7 in	0.0 in	0.2 in	Cloudy
12:52 AM	47 ° F	42 ° F	83 %	WNW	3 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum	Condition
1:52 AM	48 ° F	42 ° F	80 %	CALM	0 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
2:52 AM	49 ° F	42 ° F	77 %	CALM	0 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
3:52 AM	50 ° F	42 ° F	74 %	CALM	0 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
4:52 AM	54 ° F	43 ° F	66 %	VAR	3 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
5:52 AM	54 ° F	43 ° F	66 %	VAR	3 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
6:52 AM	60 ° F	43 ° F	53 %	VAR	6 mph	0 mph	24.6 in	0.0 in	0.0 in	Partly Cloudy
7:52 AM	63 ° F	41 ° F	45 %	NNW	6 mph	0 mph	24.6 in	0.0 in	0.0 in	Partly Cloudy
8:52 AM	63 ° F	40 ° F	43 %	WSW	8 mph	0 mph	24.6 in	0.0 in	0.0 in	Mostly Cloudy
9:52 AM	64 ° F	43 ° F	46 %	WNW	8 mph	0 mph	24.6 in	0.0 in	0.0 in	Mostly Cloudy
10:52 AM	65 ° F	39 ° F	39 %	NW	6 mph	0 mph	24.6 in	0.0 in	0.0 in	Mostly Cloudy
11:43 AM	61 ° F	47 ° F	60 %	NW	12 mph	20 mph	24.6 in	0.0 in	0.0 in	T-Storm
11:52 AM	62 ° F	42 ° F	48 %	WNW	5 mph	0 mph	24.6 in	0.0 in	0.0 in	Light Rain
12:07 PM	61 ° F	44 ° F	54 %	SW	8 mph	0 mph	24.6 in	0.0 in	0.0 in	Thunder in the Vicinity
12:13 PM	61 ° F	42 ° F	50 %	SSW	8 mph	0 mph	24.6 in	0.0 in	0.0 in	Thunder
12:52 PM	60 ° F	42 ° F	51 %	S	13 mph	0 mph	24.6 in	0.0 in	0.0 in	Thunder
12:59 PM	60 ° F	40 ° F	47 %	S	15 mph	0 mph	24.6 in	0.0 in	0.0 in	Thunder in the Vicinity
1:14 PM	59 ° F	41 ° F	51 %	S	12 mph	0 mph	24.6 in	0.0 in	0.0 in	Mostly Cloudy
1:52 PM	58 ° F	43 ° F	58 %	S	15 mph	0 mph	24.6 in	0.0 in	0.0 in	Cloudy
2:10 PM	57 ° F	42 ° F	57 %	S	15 mph	0 mph	24.6 in	0.0 in	0.0 in	Thunder in the Vicinity
2:43 PM	55 ° F	42 ° F	62 %	SSE	6 mph	0 mph	24.6 in	0.0 in	0.0 in	Mostly Cloudy
2:52 PM	56 ° F	44 ° F	64 %	ESE	8 mph	0 mph	24.6 in	0.0 in	0.0 in	Cloudy
3:52 PM	54 ° F	46 ° F	75 %	ENE	15 mph	0 mph	24.6 in	0.0 in	0.0 in	Cloudy
4:52 PM	51 ° F	44 ° F	77 %	ESE	6 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
5:52 PM	51 ° F	44 ° F	77 %	SE	5 mph	0 mph	24.7 in	0.0 in	0.0 in	Partly Cloudy

THERE IS NO ASSOCIATED WEBCAM WITH THIS STATION

MAY 20, 2019

Samples were not collected during this storm event. This storm passed through Zones 1-3 but only produced significant runoff in Zone 1 (>0.1 in).
Zone 1 was complete for Quarters 1 and 2 prior to this storm event (with the exception of LAP1 which will likely never receive runoff and SS1A which was inaccessible due to operation hours).

Weather History for KNMALBUQ648

Daily Mode | May | 20 | 2019

Previous **View** Next

Summary

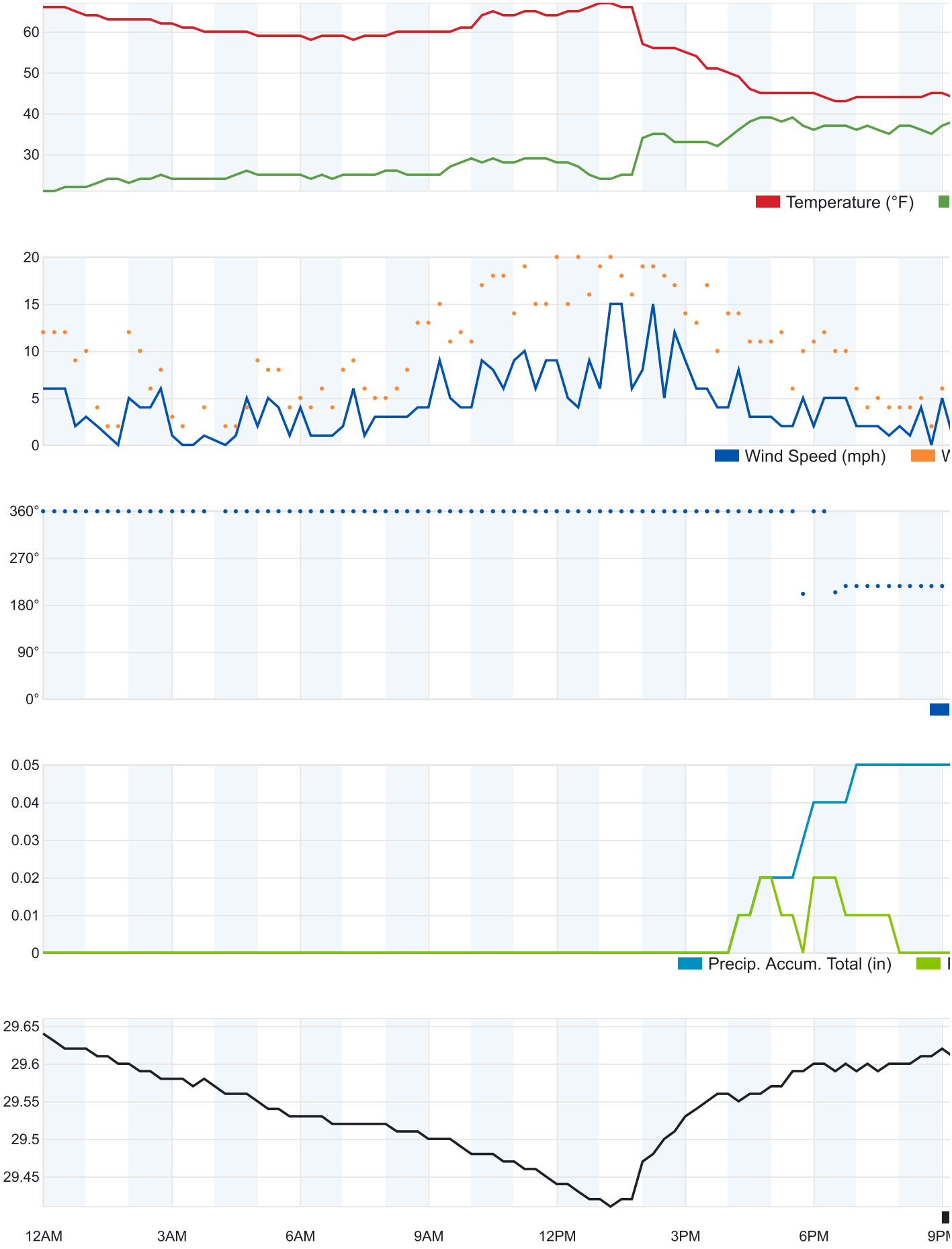
May 20, 2019

	High	Low	Average
Temperature	**67** °F	**42** °F	**55** °F
Dew Point	**39** °F	**21** °F	**30** °F
Humidity	**84** %	**18** %	**43** %
Precipitation	**0.05** in	--	--

	High	Low	Average
Wind Speed	**15.0** mph	**0.0** mph	**4.0** mph
Wind Gust	**20.0** mph	--	**10.0** mph
Wind Direction	--	--	
Pressure	**29.66** in	**29.41** in	--

Graph Table

May 20, 2019


60
50
40
30
Temperature (°F)
20
15
10
5
0
Wind Speed (mph)
360°
270°
180°
90°
0°
0.05
0.04
0.03
0.02
0.01
0
Precip. Accum. Total (in)
29.65
29.6
29.55
29.5
29.45
12AM
3AM
6AM
9AM
12PM
3PM
6PM

35.05 °N, **106.61** °W

Albuquerque International Sunport, New Mexico ★

81° ALBUQUERQUE INTERNATIONAL SUNPORT STATION (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6-27?CM_VEN=LOCALWX_PWSDASH) | CHANGE

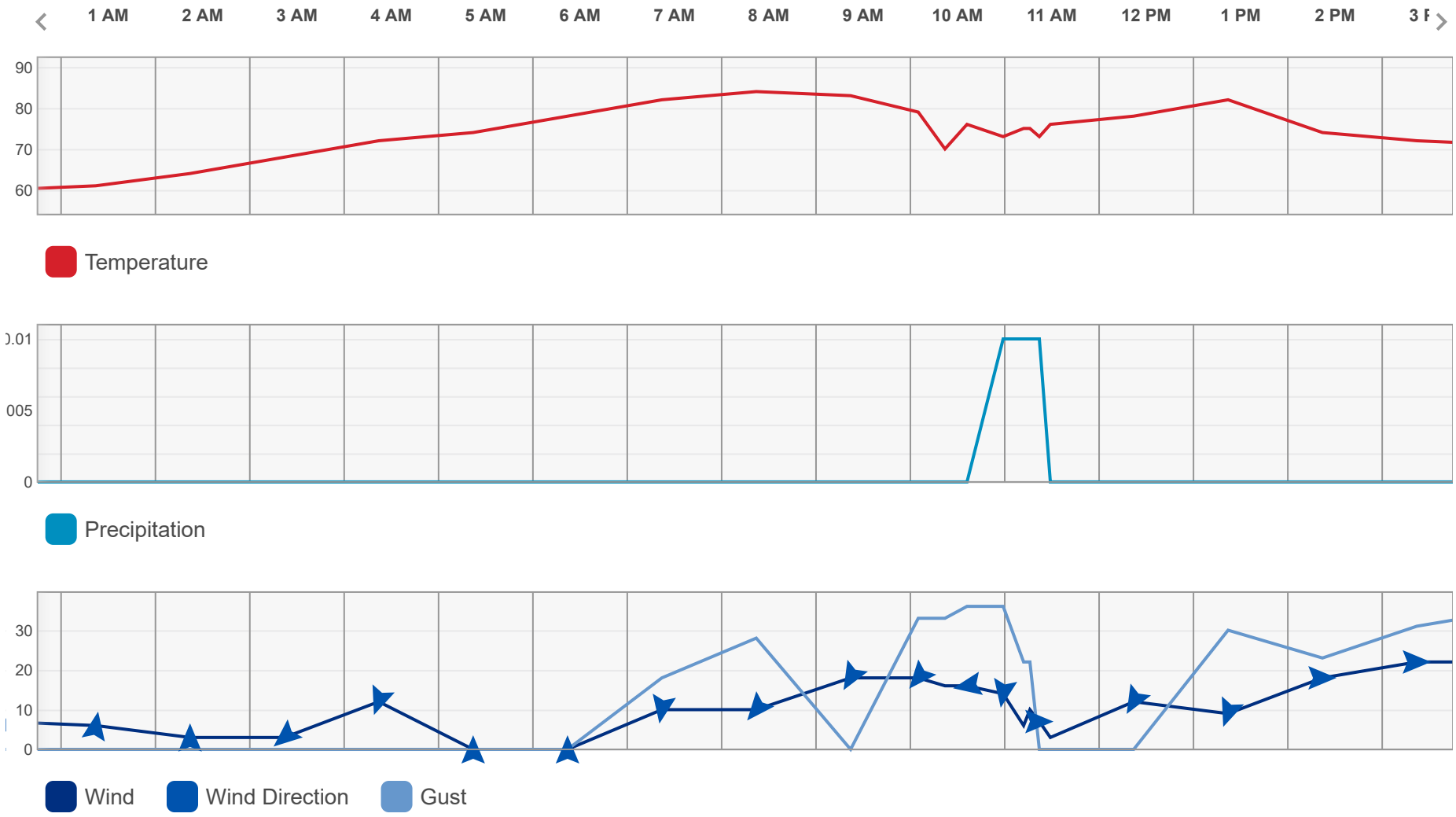
HISTORY (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6-27)

- TODAY (/WEATHER/US/NM/ALBUQUERQUE/KNMALBUQ648)
- HOURLY (/HOURLY/US/NM/ALBUQUERQUE/KNMALBUQ648)
- 10-DAY (/FORECAST/US/NM/ALBUQUERQUE/KNMALBUQ648)
- CALENDAR (/CALENDAR/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6)
- HISTORY (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6-27)
- WUNDERMAP (/WUNDERMAP?LAT=35.05&LON=-106.61)

June 3, 2019

Daily | Weekly | Monthly

June | 3 | 2019 | View



Summary

Temperature (° F)	Actual	Historic Avg.	Record
High Temp	86	85	97
Low Temp	60	58	35

Temperature (° F)	Actual	Historic Avg.	Record
Day Average Temp	73	71	-
Precipitation (Inches)	Actual	Historic Avg.	Record
Precipitation	0.01	0.02	0.57
Month to Date	0.01	0.05	-
Year to Date	3.01	2.59	-
Degree Days (° F)	Actual	Historic Avg.	Record
Heating Degree Days	0	0	-
HDD Month to Date	0	0	-
HDD Since July 1	4171	4175	-
Cooling Degree Days	8	7	-
CDD Month to Date	20	19	-
CDD Year to Date	54	117	-
Growing Degree Days	23	-	-
Dew Point (° F)	Actual	Historic Avg.	Record
Dew Point	45	-	-
High	54	-	-
Low	29	-	-
Average	45	-	-

Temperature (° F)	Actual	Historic Avg.	Record
Wind (MPH)	Actual	Historic Avg.	Record
Max Wind Speed	33	-	-
Visibility	10	-	-
Sea Level Pressure (Hg)	Actual	Historic Avg.	Record
Sea Level Pressure	30.02	-	-
Astronomy	Day Length	Rise	Set
Actual Time	14h 23m	5:54 AM	8:17 PM
Civil Twilight		5:25 AM	8:46 PM
Nautical Twilight		4:49 AM	9:22 PM
Astronomical Twilight		4:09 AM	10:02 PM
Moon: new moon		6:14 AM	8:45 PM

Daily Observations

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum	Condition
6:52 PM	66 ° F	54 ° F	65 %	E	12 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
7:52 PM	66 ° F	54 ° F	65 %	E	15 mph	0 mph	24.7 in	0.0 in	0.0 in	Partly Cloudy
8:52 PM	63 ° F	54 ° F	72 %	VAR	3 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
9:52 PM	61 ° F	49 ° F	64 %	NE	7 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
10:52 PM	61 ° F	50 ° F	67 %	NNW	7 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
11:52 PM	60 ° F	49 ° F	67 %	N	7 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
12:52 AM	61 ° F	50 ° F	67 %	N	6 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum	Condition
1:52 AM	64 ° F	51 ° F	63 %	N	3 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
2:52 AM	68 ° F	51 ° F	55 %	SW	3 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
3:52 AM	72 ° F	50 ° F	46 %	SSW	12 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
4:52 AM	74 ° F	51 ° F	45 %	CALM	0 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
5:52 AM	78 ° F	51 ° F	39 %		0 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
6:52 AM	82 ° F	47 ° F	29 %	S	10 mph	18 mph	24.7 in	0.0 in	0.0 in	Fair
7:52 AM	84 ° F	43 ° F	24 %	SW	10 mph	28 mph	24.7 in	0.0 in	0.0 in	Partly Cloudy
8:52 AM	83 ° F	38 ° F	20 %	SSW	18 mph	0 mph	24.6 in	0.0 in	0.0 in	Mostly Cloudy
9:35 AM	79 ° F	37 ° F	22 %	SW	18 mph	33 mph	24.6 in	0.0 in	0.0 in	Light Rain with Thunder
9:52 AM	70 ° F	46 ° F	42 %	WSW	16 mph	33 mph	24.6 in	0.0 in	0.0 in	T-Storm
10:06 AM	76 ° F	39 ° F	26 %	W	16 mph	36 mph	24.6 in	0.0 in	0.0 in	T-Storm
10:29 AM	73 ° F	39 ° F	29 %	S	14 mph	36 mph	24.6 in	0.0 in	0.0 in	Light Rain with Thunder
10:42 AM	75 ° F	41 ° F	29 %	VAR	6 mph	22 mph	24.6 in	0.0 in	0.0 in	Thunder
10:46 AM	75 ° F	43 ° F	31 %	SSE	10 mph	22 mph	24.6 in	0.0 in	0.0 in	Thunder in the Vicinity
10:52 AM	73 ° F	44 ° F	35 %	E	7 mph	0 mph	24.6 in	0.0 in	0.0 in	Thunder in the Vicinity
10:59 AM	76 ° F	41 ° F	29 %	VAR	3 mph	0 mph	24.6 in	0.0 in	0.0 in	Mostly Cloudy
11:52 AM	78 ° F	37 ° F	23 %	SSW	12 mph	0 mph	24.6 in	0.0 in	0.0 in	Mostly Cloudy
12:52 PM	82 ° F	29 ° F	14 %	SSW	9 mph	30 mph	24.6 in	0.0 in	0.0 in	Mostly Cloudy
1:52 PM	74 ° F	41 ° F	30 %	E	18 mph	23 mph	24.6 in	0.0 in	0.0 in	Partly Cloudy
2:52 PM	72 ° F	42 ° F	34 %	E	22 mph	31 mph	24.6 in	0.0 in	0.0 in	Partly Cloudy / Windy
3:52 PM	71 ° F	43 ° F	36 %	E	22 mph	35 mph	24.6 in	0.0 in	0.0 in	Partly Cloudy / Windy
4:52 PM	68 ° F	43 ° F	40 %	E	23 mph	35 mph	24.7 in	0.0 in	0.0 in	Partly Cloudy / Windy
5:52 PM	67 ° F	42 ° F	40 %	ESE	15 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair

(/)

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Albuquerque, NM (weather/us/nm/albuquerque/35.08,-106.65) Albuquerque, NM (weather/us/nm/albuquerque/35.05,-106.61)

35.05 °N, **106.61** °W

Albuquerque International Sunport, New Mexico ★

81° ALBUQUERQUE INTERNATIONAL SUNPORT STATION (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6-27?CM_VEN=LOCALWX_PWSDASH) | CHANGE

HISTORY (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6-27)

- TODAY (/WEATHER/US/NM/ALBUQUERQUE/KNMALBUQ648)
- HOURLY (/HOURLY/US/NM/ALBUQUERQUE/KNMALBUQ648)
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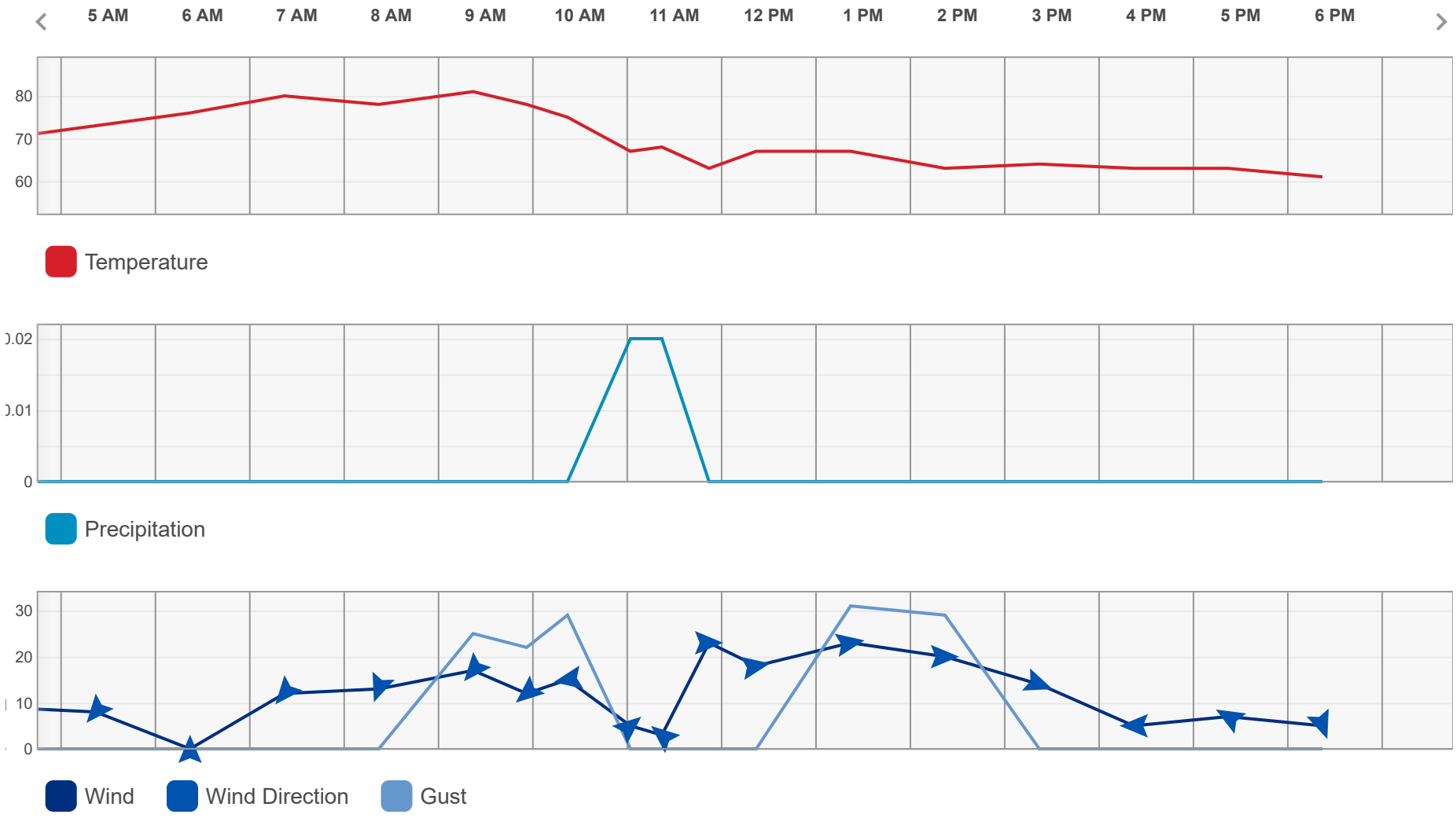
- CALENDAR (/CALENDAR/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6)
- HISTORY (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6-27)
- WUNDERMAP (/WUNDERMAP?LAT=35.05&LON=-106.61)

June 4, 2019

Daily Weekly Monthly

June **4** **2019** View



Summary

Temperature (° F)	Actual	Historic Avg.	Record
High Temp	82	85	96
Low Temp	55	58	39

Temperature (° F)	Actual	Historic Avg.	Record
Day Average Temp	69	72	-
Precipitation (Inches)	Actual	Historic Avg.	Record
Precipitation	0.02	0.01	1.55
Month to Date	0.03	0.06	-
Year to Date	3.03	2.6	-
Degree Days (° F)	Actual	Historic Avg.	Record
Heating Degree Days	0	0	-
HDD Month to Date	0	0	-
HDD Since July 1	4171	4175	-
Cooling Degree Days	4	7	-
CDD Month to Date	24	26	-
CDD Year to Date	58	124	-
Growing Degree Days	20	-	-
Dew Point (° F)	Actual	Historic Avg.	Record
Dew Point	44	-	-
High	51	-	-
Low	25	-	-
Average	44	-	-

Temperature (° F)	Actual	Historic Avg.	Record
Wind (MPH)	Actual	Historic Avg.	Record
Max Wind Speed	30	-	-
Visibility	10	-	-
Sea Level Pressure (Hg)	Actual	Historic Avg.	Record
Sea Level Pressure	30.15	-	-
Astronomy	Day Length	Rise	Set
Actual Time	14h 23m	5:54 AM	8:18 PM
Civil Twilight		5:24 AM	8:47 PM
Nautical Twilight		4:48 AM	9:23 PM
Astronomical Twilight		4:09 AM	10:03 PM
Moon: waxing crescent		7:04 AM	9:48 PM

Daily Observations

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum	Condition
6:52 PM	65 ° F	43 ° F	45 %	SE	9 mph	0 mph	24.7 in	0.0 in	0.0 in	Partly Cloudy
7:52 PM	63 ° F	43 ° F	48 %	NNE	3 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
8:52 PM	63 ° F	44 ° F	50 %	NNE	8 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
9:52 PM	62 ° F	42 ° F	48 %	NNW	3 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
10:52 PM	60 ° F	44 ° F	55 %	N	10 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
11:52 PM	58 ° F	44 ° F	60 %	NNE	8 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
12:52 AM	59 ° F	44 ° F	58 %	VAR	5 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum	Condition
1:52 AM	66 ° F	46 ° F	48 %	CALM	0 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
2:52 AM	68 ° F	47 ° F	47 %	W	3 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
3:52 AM	70 ° F	47 ° F	44 %	SSW	9 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
4:52 AM	73 ° F	48 ° F	41 %	SW	8 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
5:52 AM	76 ° F	47 ° F	36 %	CALM	0 mph	0 mph	24.7 in	0.0 in	0.0 in	Fair
6:52 AM	80 ° F	46 ° F	30 %	SW	12 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
7:52 AM	78 ° F	46 ° F	32 %	SSW	13 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
8:52 AM	81 ° F	25 ° F	13 %	SW	17 mph	25 mph	24.7 in	0.0 in	0.0 in	Cloudy
9:26 AM	78 ° F	32 ° F	19 %	SW	12 mph	22 mph	24.7 in	0.0 in	0.0 in	Thunder in the Vicinity
9:52 AM	75 ° F	33 ° F	22 %	W	15 mph	29 mph	24.7 in	0.0 in	0.0 in	Thunder
10:32 AM	67 ° F	47 ° F	49 %	NE	5 mph	0 mph	24.8 in	0.0 in	0.0 in	T-Storm
10:52 AM	68 ° F	43 ° F	40 %	NW	3 mph	0 mph	24.8 in	0.0 in	0.0 in	Mostly Cloudy
11:22 AM	63 ° F	51 ° F	65 %	E	23 mph	0 mph	24.7 in	0.0 in	0.0 in	Light Rain / Windy
11:52 AM	67 ° F	46 ° F	47 %	E	18 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
12:52 PM	67 ° F	44 ° F	44 %	E	23 mph	31 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy / Windy
1:52 PM	63 ° F	45 ° F	52 %	E	20 mph	29 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
2:52 PM	64 ° F	43 ° F	46 %	ESE	14 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
3:52 PM	63 ° F	44 ° F	50 %	W	5 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
4:52 PM	63 ° F	44 ° F	50 %	WNW	7 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
5:52 PM	61 ° F	44 ° F	54 %	SSE	5 mph	0 mph	24.7 in	0.0 in	0.0 in	Partly Cloudy

35.05 °N, **106.61** °W

Albuquerque International Sunport, New Mexico ★

81° ALBUQUERQUE INTERNATIONAL SUNPORT STATION (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6-27?CM_VEN=LOCALWX_PWSDASH) | CHANGE

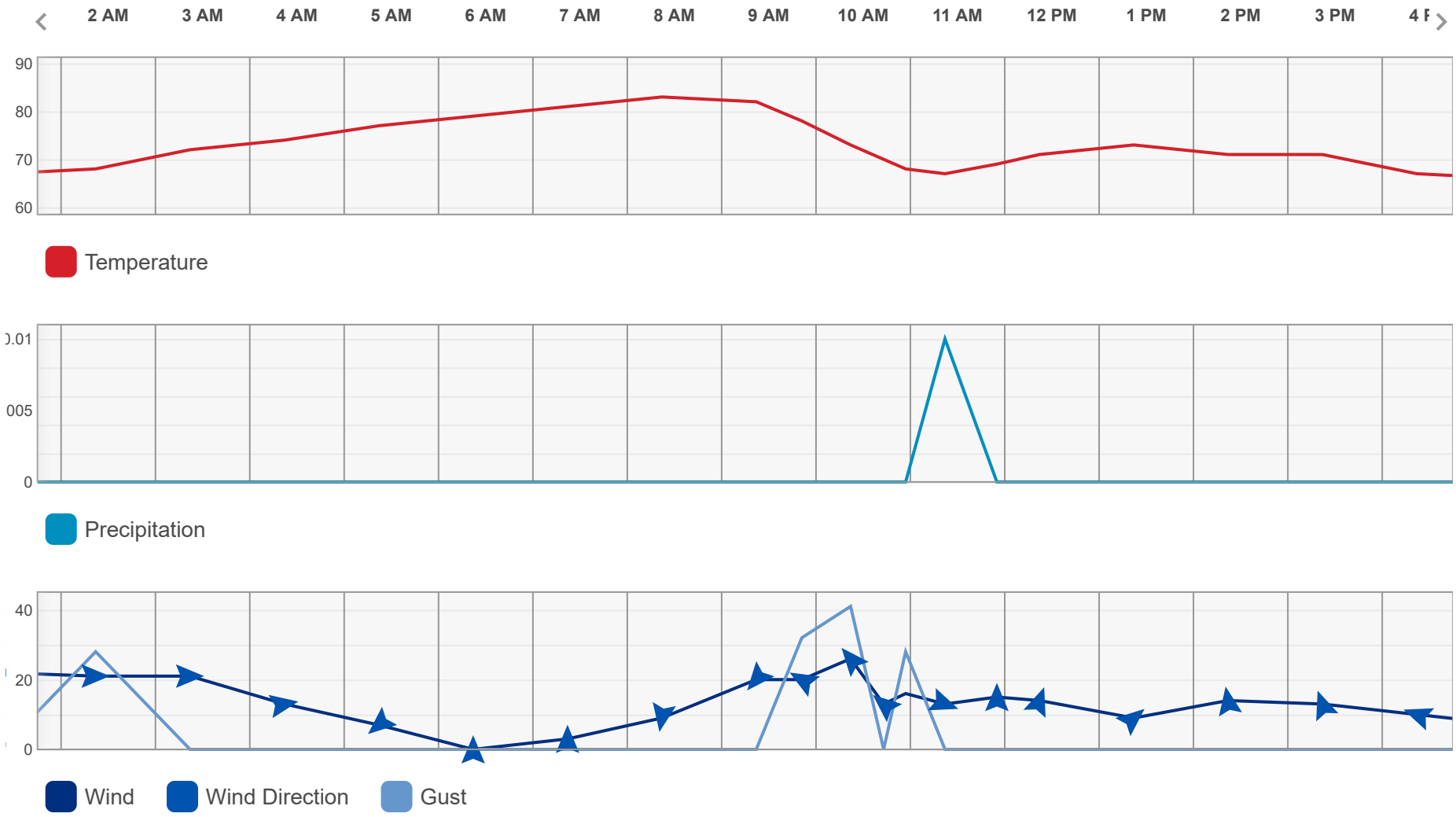
HISTORY (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6-27)

- TODAY (/WEATHER/US/NM/ALBUQUERQUE/KNMALBUQ648)
- HOURLY (/HOURLY/US/NM/ALBUQUERQUE/KNMALBUQ648)
- 10-DAY (/FORECAST/US/NM/ALBUQUERQUE/KNMALBUQ648)
- CALENDAR (/CALENDAR/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6)
- HISTORY (/HISTORY/DAILY/US/NM/ALBUQUERQUE/KABQ/DATE/2019-6-27)
- WUNDERMAP (/WUNDERMAP?LAT=35.05&LON=-106.61)

June 17, 2019

Daily Weekly Monthly

June **17** **2019** View



Summary

Temperature (° F)	Actual	Historic Avg.	Record
High Temp	85	89	101
Low Temp	63	62	45

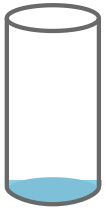
Temperature (° F)	Actual	Historic Avg.	Record
Day Average Temp	74	76	-
Precipitation (Inches)	Actual	Historic Avg.	Record
Precipitation	0.01	0.02	1.91
Month to Date	0.04	0.27	-
Year to Date	3.04	2.81	-
Degree Days (° F)	Actual	Historic Avg.	Record
Heating Degree Days	0	0	-
HDD Month to Date	0	0	-
HDD Since July 1	4171	4175	-
Cooling Degree Days	9	11	-
CDD Month to Date	133	143	-
CDD Year to Date	167	241	-
Growing Degree Days	0	-	-
Dew Point (° F)	Actual	Historic Avg.	Record
Dew Point	0	-	-
High	0	-	-
Low	0	-	-
Average	0	-	-

Temperature (° F)	Actual	Historic Avg.	Record
Wind (MPH)	Actual	Historic Avg.	Record
Max Wind Speed	32	-	-
Visibility	0	-	-
Sea Level Pressure (Hg)	Actual	Historic Avg.	Record
Sea Level Pressure	0	-	-
Astronomy	Day Length	Rise	Set
Actual Time	14h 30m	5:53 AM	8:23 PM
Civil Twilight		5:23 AM	8:53 PM
Nautical Twilight		4:46 AM	9:30 PM
Astronomical Twilight		4:06 AM	10:11 PM
Moon: waning gibbous		8:54 PM	6:10 AM

Daily Observations

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum	Condition
6:52 PM	73 ° F	46 ° F	38 %	NE	10 mph	25 mph	24.7 in	0.0 in	0.0 in	Cloudy
7:52 PM	71 ° F	47 ° F	42 %	E	17 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
8:52 PM	69 ° F	48 ° F	47 %	E	23 mph	29 mph	24.7 in	0.0 in	0.0 in	Cloudy / Windy
9:52 PM	69 ° F	49 ° F	49 %	NW	6 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
10:52 PM	69 ° F	48 ° F	47 %	E	17 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
11:52 PM	67 ° F	50 ° F	54 %	E	18 mph	26 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
12:52 AM	67 ° F	51 ° F	57 %	E	22 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy / Windy

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum	Condition
1:52 AM	68 ° F	52 ° F	56 %	E	21 mph	28 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy / Windy
2:52 AM	72 ° F	52 ° F	49 %	E	21 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy / Windy
3:52 AM	74 ° F	51 ° F	45 %	E	13 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
4:52 AM	77 ° F	49 ° F	37 %	SW	7 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
5:52 AM	79 ° F	47 ° F	32 %	CALM	0 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
6:52 AM	81 ° F	46 ° F	29 %	VAR	3 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
7:52 AM	83 ° F	43 ° F	24 %	S	9 mph	0 mph	24.6 in	0.0 in	0.0 in	Mostly Cloudy
8:52 AM	82 ° F	44 ° F	26 %	SW	20 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
9:21 AM	78 ° F	40 ° F	25 %	WNW	20 mph	32 mph	24.7 in	0.0 in	0.0 in	Cloudy
9:52 AM	73 ° F	44 ° F	35 %	NW	26 mph	41 mph	24.7 in	0.0 in	0.0 in	Light Rain / Windy
10:13 AM	70 ° F	48 ° F	46 %	NW	13 mph	0 mph	24.7 in	0.0 in	0.0 in	T-Storm
10:27 AM	68 ° F	51 ° F	55 %	SW	16 mph	28 mph	24.8 in	0.0 in	0.0 in	Light Rain
10:52 AM	67 ° F	53 ° F	61 %	ESE	13 mph	0 mph	24.7 in	0.0 in	0.0 in	Light Rain
11:25 AM	69 ° F	48 ° F	47 %	N	15 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
11:52 AM	71 ° F	48 ° F	44 %	NNE	14 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
12:52 PM	73 ° F	42 ° F	33 %	NE	9 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
1:52 PM	71 ° F	45 ° F	39 %	N	14 mph	0 mph	24.7 in	0.0 in	0.0 in	Cloudy
2:52 PM	71 ° F	44 ° F	38 %	NNW	13 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
3:52 PM	67 ° F	47 ° F	49 %	WNW	10 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
4:52 PM	66 ° F	46 ° F	48 %	NNW	7 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy
5:52 PM	65 ° F	46 ° F	50 %	CALM	0 mph	0 mph	24.7 in	0.0 in	0.0 in	Mostly Cloudy



PRECIP RATE
0in/Hr

PRECIP TOTAL
0.04in

UNAVAILABLE

ASSOCIATED WEBCAM

THERE IS NO ASSOCIATED WEBCAM WITH THIS STATION

Weather History for KNMALBUQ648

June 27, 2019

Previous | Daily Mode | June | 27 | 2019 | **View** | Next

Summary

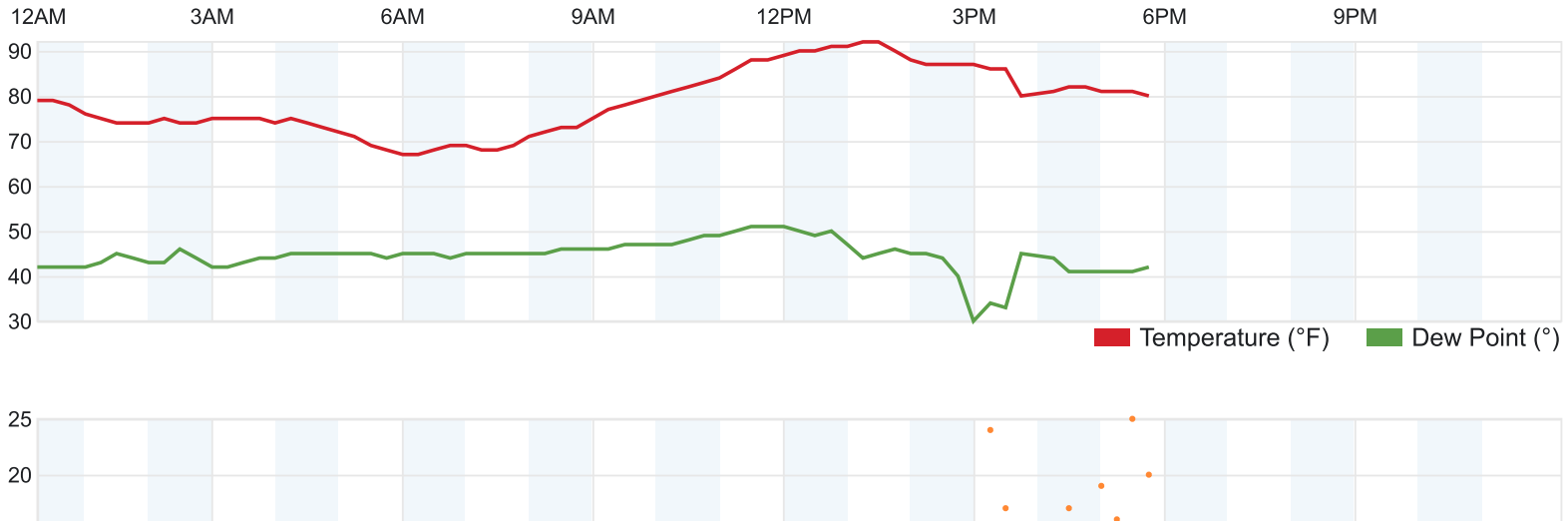
June 27, 2019

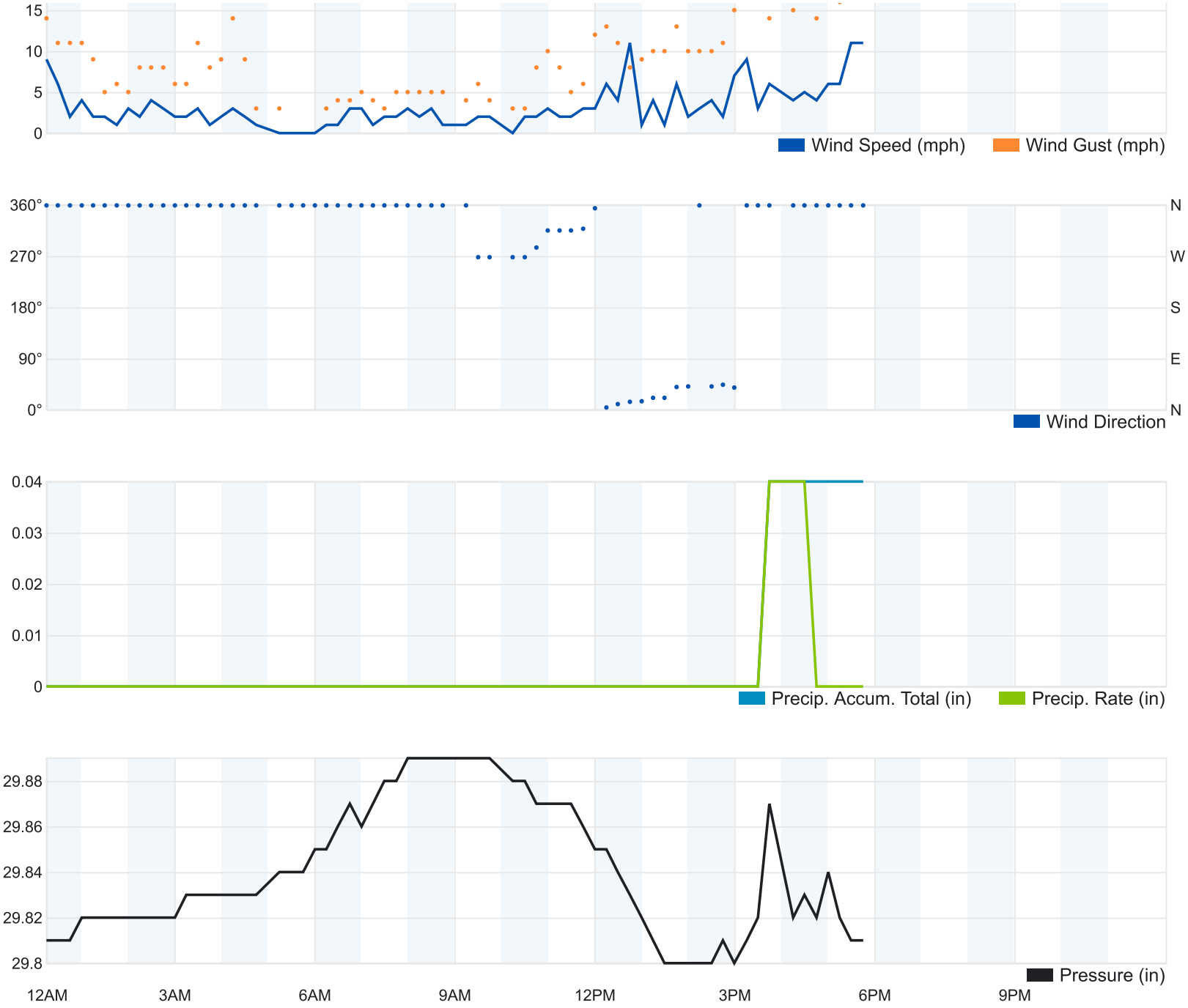
	High	Low	Average
Temperature	**92** °F	**67** °F	**79** °F
Dew Point	**51** °F	**30** °F	**44** °F
Humidity	**45** %	**13** %	**30** %
Precipitation	**0.04** in	--	--

	High	Low	Average
Wind Speed	**11.0** mph	**0.0** mph	**3.0** mph
Wind Gust	**24.0** mph	--	**9.0** mph
Wind Direction	--	--	**North**
Pressure	**29.89** in	**29.80** in	--

Graph Table

June 27, 2019




15
10
5
0
Wind Speed (mph)
Wind Gust (mph)
360°
270°
180°
90°
0°
N
W
S
E
N
Wind Direction
0.04
0.03
0.02
0.01
0
Precip. Accum. Total (in)
Precip. Rate (in)
29.88
29.86
29.84
29.82
29.8
Pressure (in)
12AM
3AM
6AM
9AM
12PM
3PM
6PM
9PM

ATTACHMENT C

VISUAL MONITORING INSPECTION FORMS

City of Albuquerque

Facility: Zone 1

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 ~~o~~ Q2 o Q3 o Q4

Date: 4/17/2019
Time: 2:35 - 2:50pm
Inspector: Angie Baccigalupa

Weather: light sprinkles
Storm Precip: 0.29 in
Last 72 hour Precip: None
Photo:

Outfall ID:	LA2	LA1	L1 - fueling station
Flow Observed:	o Yes o No	o Yes o No	o Yes ~~o~~ No
Description of Monitoring Site:	low area @ Golf course	8ft culvert	No flow - just standing water 2ft x 3ft ↑↓ fueling station low area
Flow Estimate (include units and method of estimation):	no flow - standing water sandy, light	steady flow 6" deep 12ft wide	
Other Observations:		trash and debris floating odor present	dark grey/black silty bubbles/foam
Color (describe):	light cream	Grey/Green	dark Grey
Turbidity:	o Clear ~~o~~ Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy ~~o~~ Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy ~~o~~ Opaque
Floating Solids:	~~o~~ Yes o No	~~o~~ Yes o No	o Yes o No
Suspended Solids:	~~o~~ Yes o No	~~o~~ Yes o No	~~o~~ Yes o No
Settled Solids:	~~o~~ Yes o No	~~o~~ Yes o No	~~o~~ Yes o No
Sheen Present:	o Yes ~~o~~ No	o Yes o No	o Yes ~~o~~ No
Odor:	o Yes ~~o~~ No	~~o~~ Yes o No	o Yes ~~o~~ No
Foam Present:	o Yes ~~o~~ No	o Yes o No	~~o~~ Yes o No
Describe:	light sandy almost clear but still opaque	Slight rotten egg smell	dark, opaque foam present fine dark grey suspended solids

Additional Comments:

City of Albuquerque

Facility: Zone 1

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 o Q2 o Q3 o Q4

Date: 3-3-13 pm

Time: 4/17/2019

Inspector: Angie Bacigalupa

Weather: No rain - Storm passed

Storm Precip: 0.29 in

Last 72 hour Precip: None

Photo:

Outfall ID:	LAM 1	LAP 1	AM 1
Flow Observed:	(Yes) o No	o Yes o No	o Yes (No)
Description of Monitoring Site:	Iron grate w/ small channel	16" Concrete Culvert	Culvert w/ waddle inside facility drains to street
Flow Estimate (include units and method of estimation):	Small amount of flow to grate, storm mostly passed already	no flow through culvert obs. waddles made or hay observed at site. Some pending in dirt surrounding, some foam present in that water but hard to tell US source	no flow, but ponding in street @ US of waddle
Other Observations:	Sheen,		
Color (describe):	light cream/tan		very light tan
Turbidity:	(Clear) o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque	(Clear) o Slightly Cloudy o Very Cloudy o Opaque
Floating Solids:	o Yes (No)	o Yes o No	o Yes (No)
Suspended Solids:	(Yes) o No	o Yes o No	(Yes) (No)
Settled Solids:	o Yes (No)	o Yes o No	o Yes (No)
Sheen Present:	(Yes) o No	o Yes o No	o Yes (No)
Odor:	o Yes o No	o Yes o No	o Yes o No
Foam Present:	o Yes o No	o Yes o No	o Yes (No)
Describe:	rainbow sheen observed in flow - slightly cloudy		very light, nearly clear. tan/yellow color.

Additional Comments:

City of Albuquerque

Facility: Zone 1

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 o Q2 o Q3 o Q4

Date: 3:20pm

Time: 4/17/2019

Inspector: Angie Bacigalupa

Weather: light sprinkles

Storm Precip: 0.29 in

Last 72 hour Precip: None

Photo:

Facility closed

Outfall ID:	SS 1B	SS 1A	
Flow Observed:	o Yes o No	o Yes o No	o Yes o No
Description of Monitoring Site:	Waddles inside of fence was closed. Maintenance Satellite #1 wasn't able to obtain samples		
Flow Estimate (include units and method of estimation):	No flow observed but ponding around waddle seen	No flow & no ponding observed	
Other Observations:			
Color (describe):			
Turbidity:	o Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque
Floating Solids:	o Yes o No	o Yes o No	o Yes o No
Suspended Solids:	o Yes o No	o Yes o No	o Yes o No
Settled Solids:	o Yes o No	o Yes o No	o Yes o No
Sheen Present:	o Yes o No	o Yes o No	o Yes o No
Odor:	o Yes o No	o Yes o No	o Yes o No
Foam Present:	o Yes o No	o Yes o No	o Yes o No
Describe:			

Additional Comments:

City of Albuquerque

Facility: Streets Satellite #3 - Zone 2

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 ø Q2 o Q3 o Q4

Date: 4-17-2019

Time: 4:27 PM

Inspector: Charles Wilson

Weather: Raining

Storm Precip: 0.45 in

Last 72 hour Precip: None

Photo:

Outfall ID:	SS3					
Flow Observed:	ø Yes	o No	o Yes	o No	o Yes	o No
Description of Monitoring Site:	- Downstream reservoir looked to be 30% full. - Some trash and mud near outfall - Sample collected after Wattle.					
Flow Estimate (include units and method of estimation):	- Water was ponding at wattle and then discharging down the concrete outfall. Discharge Approx: ~0.1 cfs					
Other Observations:	- Wattle at site looked to be new but did not look to be firmly placed.					
Color (describe):	· Grey-Brown Color					
Turbidity:	o Clear ø Slightly Cloudy o Very Cloudy o Opaque		o Clear o Slightly Cloudy o Very Cloudy o Opaque		o Clear o Slightly Cloudy o Very Cloudy o Opaque	
Floating Solids:	o Yes	ø No	o Yes	o No	o Yes	o No
Suspended Solids:	ø Yes	o No	o Yes	o No	o Yes	o No
Settled Solids:	o Yes	ø No	o Yes	o No	o Yes	o No
Sheen Present:	o Yes	ø No	o Yes	o No	o Yes	o No
Odor:	o Yes	ø No	o Yes	o No	o Yes	o No
Foam Present:	ø Yes	o No	o Yes	o No	o Yes	o No
Describe:	- Foam was present at puddled area near wattle. - Some suspended solids in sample (Dirt) - Semi transparent					

Additional Comments: The wattle appears ~~flimsy~~ flimsy. During a previous site visit the wattle had separated. While it was serving as a good barrier for this visit it may need to be better situated in the future.

City of Albuquerque

Facility: Zone 2 Don Reservoir Convenience Center

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 ø Q2 o Q3 o Q4

Date: 4/17/2019
Time: 4:20 PM
Inspector: Charles Wilson

Weather: Raining
Storm Precip: 0.45 in
Last 72 hour Precip: None
Photo:

Outfall ID:	DR 01		
Flow Observed:	ø Yes o No	o Yes o No	o Yes o No
Description of Monitoring Site:	- Sheet flow along the concrete outflow		
Flow Estimate (include units and method of estimation):	~0.2 CFS Flow was trickling down outfall		
Other Observations:	- Trash observed in reservoir - Reservoir looked to be 10% Full - Muddy Site conditions		
Color (describe):	- Grey-Brown Color		
Turbidity:	o Clear o Slightly Cloudy ø Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque
Floating Solids:	ø Yes ø No	o Yes o No	o Yes o No
Suspended Solids:	ø Yes o No	o Yes o No	o Yes o No
Settled Solids:	o Yes ø No	o Yes o No	o Yes o No
Sheen Present:	o Yes ø No	o Yes o No	o Yes o No
Odor:	o Yes ø No	o Yes o No	o Yes o No
Foam Present:	o Yes ø No	o Yes o No	o Yes o No
Describe:	- Brown color but still semi-transparent - Tiny brown suspended solids		

Additional Comments:

City of Albuquerque

Facility: Daytona Transit Center - Zone 2

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 ø Q2 o Q3 o Q4

Date: 4/17/2019 **Weather:** Raining

Time: 4:50 PM **Storm Precip:** 0.45 in

Inspector: Charles Wilson **Last 72 hour Precip:** None

Photo:

	Outfall ID: D1	Outfall ID: D2	Outfall ID: D2 - (Supplemental Sample at Gutter near MH)
Flow Observed:	ø Yes o No	ø Yes o No	ø Yes o No
Description of Monitoring Site:	- Moderate Rainfall During Monitoring - Site area was very wet		
Flow Estimate (include units and method of estimation):	~1-2 CFS Flow was Moving quickly	3-5 cfs Fast moving Flow	~0.1 cfs Flow Depth at gutter was ~1/2" at its deepest
Other Observations:		MH was accessible during this visit	
Color (describe):	Clear	- Slight brown tint	clear
Turbidity:	ø Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear ø Slightly Cloudy o Very Cloudy o Opaque	ø Clear o Slightly Cloudy o Very Cloudy o Opaque
Floating Solids:	o Yes ø No	o Yes ø No	o Yes ø No
Suspended Solids:	ø Yes o No	o Yes ø No	o Yes ø No
Settled Solids:	o Yes ø No	ø Yes o No	o Yes ø No
Sheen Present:	o Yes ø No	o Yes ø No	o Yes ø No
Odor:	o Yes ø No	o Yes ø No	o Yes ø No
Foam Present:	o Yes ø No	o Yes ø No	o Yes ø No
Describe:	- Tiny White & Brown Suspended Solids - Earthy smell	- Tiny brown solids Settled at bottom	

Additional Comments:

City of Albuquerque

Facility: Zone 3

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 ● Q2 o Q3 o Q4

Date: 4/17/19

Time: 7:15 AM

Inspector:

Weather: raining

Storm Precip: 0.44 in

Last 72 hour Precip: None

Photo:

Outfall ID:	Y1	PDS2	PDS1
Flow Observed:	✓Yes o No	✓Yes o No	✓Yes o No
Description of Monitoring Site:	inlet in Transit facility	grated inlet concrete channel w/ ponding before inlet	grated inlet large concrete channel w/ ponding before drop into inlet
Flow Estimate (include units and method of estimation):	steady flow several cfs	very slight flow, dripping into inlet	heavy flow
Other Observations:			
Color (describe):	lt. tan slightly murky	light brown	light tan
Turbidity:	o Clear ✓ Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy ● Very Cloudy o Opaque	o Clear ● Slightly Cloudy o Very Cloudy o Opaque
Floating Solids:	o Yes ● No	o Yes ● No	o Yes ● No
Suspended Solids:	● Yes o No	● Yes o No	● Yes o No
Settled Solids:	o Yes ● No	● Yes o No	o Yes ● No
Sheen Present:	o Yes ● No	o Yes ● No	o Yes ● No
Odor:	o Yes ● No	o Yes ● No	o Yes ● No
Foam Present:	o Yes ● No	o Yes ● No	o Yes ● No
Describe:	some asphalt sediment suspended	Dirt and sand present	Dirt & Sand particles

Additional Comments:

City of Albuquerque

Facility: Montessa Park

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 ☒ Q2 o Q3 o Q4

Date: 4/17/19 **Weather:** Cloudy / Sprinkling

Time: 3:00 **Storm Precip:** 0.41 in

Inspector: Diana Baltazar **Last 72 hour Precip:** None

Photo:

	Open Space	Open Space	MP02
Outfall ID:	MP2	MP1	
Flow Observed:	☒ Yes o No	☒ Yes o No	☒ Yes o No
Description of Monitoring Site:	• debris in pipe • small discharge from pipe	• Muddy • Discharge in arroyo Came from only this source, no flow from upstream	• Trash & Debris & • Sediment along curb
Flow Estimate (include units and method of estimation):	Flow	Flow	• Small Flow
Other Observations:	Storm has passed	Storm has passed	Storm has passed
Color (describe):	brown cloudy	cloudy muddy	dark muddy cloud
Turbidity:	o Clear ☒ Slightly Cloudy o Very Cloudy o Opaque	o Clear ☒ Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy ☒ Very Cloudy o Opaque
Floating Solids:	o Yes ☒ No	o Yes ☒ No	o Yes ☒ No
Suspended Solids:	o Yes ☒ No	o Yes ☒ No	o Yes ☒ No
Settled Solids:	o Yes ☒ No	o Yes ☒ No	o Yes ☒ No
Sheen Present:	o Yes ☒ No	o Yes ☒ No	o Yes ☒ No
Odor:	o Yes ☒ No	o Yes ☒ No	☒ Yes o No
Foam Present:	o Yes ☒ No	o Yes ☒ No	o Yes ☒ No
Describe:			"Fishey" smell more like trashy smell

Additional Comments:

City of Albuquerque

Facility: Montessa Park

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 ☒ Q2 o Q3 o Q4

Date: 4/17/19 **Weather:** Cloudy

Time: 3:30 **Storm Precip:** 0.41 in

Inspector: Diana Baltazar **Last 72 hour Precip:** None

Photo:

Outfall ID:	MP01		
Flow Observed:	☒ Yes o No	o Yes o No	o Yes o No
Description of Monitoring Site:	Flow from south of facility		
Flow Estimate (include units and method of estimation):	☒ Small Flow		
Other Observations:	Storm has passed		
Color (describe):	dark muddy Cloud		
Turbidity:	o Clear o Slightly Cloudy ☒ Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque
Floating Solids:	o Yes ☒ No	o Yes o No	o Yes o No
Suspended Solids:	o Yes ☒ No	o Yes o No	o Yes o No
Settled Solids:	o Yes ☒ No	o Yes o No	o Yes o No
Sheen Present:	o Yes ☒ No	o Yes o No	o Yes o No
Odor:	o Yes ☒ No	o Yes o No	o Yes o No
Foam Present:	o Yes ☒ No	o Yes o No	o Yes o No
Describe:			

Additional Comments:

City of Albuquerque

Facility: Zone 1 - Los Altos park mgmt

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 (o Q2) o Q3 o Q4

Date: 5/10/2019

Time: 9:15am

Inspector: Angie Bacigalupa

Weather: light rain on site

Storm Precip: 0.16 in

Last 72 hour Precip: None

Photo: See attached

Los Altos Park Management

Outfall ID:	LAP1		
Flow Observed:	o Yes ☒ No	o Yes o No	o Yes o No
Description of Monitoring Site:	16" Concrete Culvert		
Flow Estimate (include units and method of estimation):	no flow observed at culvert FALSE START		
Other Observations:	Site has straw waddles along perimeter that might limit flow through culvert		
Color (describe):			
Turbidity:	o Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque
Floating Solids:	o Yes o No	o Yes o No	o Yes o No
Suspended Solids:	o Yes o No	o Yes o No	o Yes o No
Settled Solids:	o Yes o No	o Yes o No	o Yes o No
Sheen Present:	o Yes o No	o Yes o No	o Yes o No
Odor:	o Yes o No	o Yes o No	o Yes o No
Foam Present:	o Yes o No	o Yes o No	o Yes o No
Describe:			

Additional Comments:

City of Albuquerque

Facility: Zone 1 - St. Satellite 1

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 (o Q2) o Q3 o Q4

Date: 5/10/2019
Time: 9:00 am
Inspector: Angie Bacigalupa

Weather: light rain @ site
Storm Precip: 0.16 in
Last 72 hour Precip: None
Photo: See attached

Outfall ID:	SS1A				SS1B	
Flow Observed:	☒ Yes	o No	o Yes	o No	☒ Yes	o No
Description of Monitoring Site:	4'x4' waddle North end of parking				4'x4' waddle by covered structure	
Flow Estimate (include units and method of estimation):	2' of water around entire waddle, 2" deep max, medium flow to waddle, light drip through to grate. Oil sheen present in flow				5'x10' of water around waddle, ~1" deep uniform medium flow to waddle light drip through to grate.	
Other Observations:					very cloudy, dark color, heavy concentration	
Color (describe):	light cream/tan				dark grey/charcoal	
Turbidity:	o Clear ☒ Slightly Cloudy o Very Cloudy o Opaque		o Clear o Slightly Cloudy o Very Cloudy o Opaque		o Clear o Slightly Cloudy ☒ Very Cloudy o Opaque	
Floating Solids:	☒ Yes	o No	o Yes	o No	o Yes	☒ No
Suspended Solids:	☒ Yes	o No	o Yes	o No	☒ Yes	o No
Settled Solids:	☒ Yes	o No	o Yes	o No	☒ Yes	o No
Sheen Present:	☒ Yes	o No	o Yes	o No	o Yes	☒ No
Odor:	o Yes	☒ No	o Yes	o No	o Yes	☒ No
Foam Present:	☒ Yes	o No	o Yes	o No	o Yes	☒ No
Describe:	Oil Sheen Sheet in ponding outside waddle, parked vehicles & const equipment observed nearby - possible source - slight foam bubbles observed.				light dirt odor/no odor heavy concentration of dark grey/black sediment but no sheen or foam	
Additional Comments:	Sample was light cream/tan, opaque no odor/very slight dirt smell				no observed source of contamination	
	Sample Taken				Sample Taken	

City of Albuquerque

Facility: Ladera Golf Course - Zone 2

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 ø Q2 o Q3 o Q4

Date: 5-10-2019 **Weather:** Light Rain (45°F)

Time: 9:10 AM **Storm Precip:** 0.27 in

Inspector: Charles Wilson **Last 72 hour Precip:** None

Photo: Attached

Outfall ID:	LGC1			LGC1 (Extra)			LGC2	
Flow Observed:	o Yes	ø No		o Yes	ø No		o Yes	ø No
Description of Monitoring Site:	False Start - Collected sample from upstream of Concrete Riser			False Start - Collected sample along sidewalk that is upstream (North) of riser.			False Start - No runoff observed from Pavement & Building area. - Sample was taken from the Parking Lot outlet that feeds the pond.	
Flow Estimate (include units and method of estimation):	No Flow - Water was puddled up in Arroyo			- No Flow - water was puddled up at low spot in Sidewalk			- Small trickle observed Approx. 0.01 cfs	
Other Observations:								
Color (describe):	[redacted] Brown Color [redacted]			light Brown			Slight Gray Color	
Turbidity:	o Clear ø ~~Slightly Cloudy~~ o Very Cloudy ø Opaque			o Clear o Slightly Cloudy ø Very Cloudy o Opaque			o Clear ø Slightly Cloudy o Very Cloudy o Opaque	
Floating Solids:	o Yes	ø No		ø Yes	o No		o Yes	ø No
Suspended Solids:	o Yes	ø No		ø Yes	o No		o Yes	ø No
Settled Solids:	ø Yes	o No		ø Yes	o No		o Yes	ø No
Sheen Present:	o Yes	ø No		o Yes	ø No		o Yes	ø No
Odor:	o Yes	ø No		o Yes	ø No		o Yes	ø No
Foam Present:	o Yes	ø No		o Yes	ø No		o Yes	ø No
Describe:	False Start Sample contained very muddy water			- A few foam bubbles were present in puddle - Plant/Soil pieces in Sample				

Additional Comments: LGC1 - Concrete Riser was primarily dry and contained a lot of trash and Plant Debris.
- The reservoir itself that features the concrete riser was muddy but did not contain any ponded water.

City of Albuquerque

Facility: Daytona Transit Center - Zone 2

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 ø Q2 o Q3 o Q4

Date: 5-10-2019 **Weather:** Light Rain (45°F)

Time: 10:00 AM **Storm Precip:** 0.27 in

Inspector: Charles Wilson **Last 72 hour Precip:** None

Photo: Attached

Outfall ID:	D1	D2	
Flow Observed:	ø Yes o No	o Yes o No	o Yes o No
Description of Monitoring Site:	- Site area was wet - Opened Manhole - Flow was moving at Approx 3-5 fps.	Sample Not Needed	
Flow Estimate (include units and method of estimation):	Approx 1 cfs observed		
Other Observations:	Manhole and site area were clean		
Color (describe):	- Clear		
Turbidity:	ø Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque
Floating Solids:	o Yes ø No	o Yes o No	o Yes o No
Suspended Solids:	o Yes ø No	o Yes o No	o Yes o No
Settled Solids:	ø Yes o No	o Yes o No	o Yes o No
Sheen Present:	o Yes ø No	o Yes o No	o Yes o No
Odor:	o Yes ø No	o Yes o No	o Yes o No
Foam Present:	o Yes ø No	o Yes o No	o Yes o No
Describe:	- A small amount of black/brown specks settled at bottom		

Additional Comments: N/A

City of Albuquerque

Facility: Dan Reservoir Convenience Center - Zone 2

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 ø Q2 o Q3 o Q4

Date: 5-10-2019

Time: 10:10AM

Inspector: Charles Wilson

Weather: Light Rain (45°F)

Storm Precip: 0.27 in

Last 72 hour Precip: None

Photo: Attached

Outfall ID:	DR01					
Flow Observed:	ø Yes	o No	o Yes	o No	o Yes	o No
Description of Monitoring Site:	- Slight sheet flow along concrete outflow that feeds reservoir - Reservoir Approx 5% full					
Flow Estimate (include units and method of estimation):	- Flow was trickling - Approx .05 cfs					
Other Observations:	Trash observed in Reservoir					
Color (describe):	Grey, Murky Color					
Turbidity:	o Clear o Slightly Cloudy ø Very Cloudy o Opaque		o Clear o Slightly Cloudy o Very Cloudy o Opaque		o Clear o Slightly Cloudy o Very Cloudy o Opaque	
Floating Solids:	o Yes	ø No	o Yes	o No	o Yes	o No
Suspended Solids:	ø Yes	o No	o Yes	o No	o Yes	o No
Settled Solids:	o Yes	ø No	o Yes	o No	o Yes	o No
Sheen Present:	o Yes	ø No	o Yes	o No	o Yes	o No
Odor:	o Yes	ø No	o Yes	o No	o Yes	o No
Foam Present:	o Yes	ø No	o Yes	o No	o Yes	o No
Describe:	- Some [redacted] soil specks [redacted] suspended in sample					

Additional Comments: N/A

City of Albuquerque

Facility: Streets Satellite # 3-Zone 2

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 ø Q2 o Q3 o Q4

Date: 5-10-2019

Time: 10:19 AM

Inspector: Charles Wilson

Weather: Light Rain (45° F)

Storm Precip: 0.27 in

Last 72 hour Precip: None

Photo: Attached

Outfall ID:	SS3					
Flow Observed:	ø Yes	o No	o Yes	o No	o Yes	o No
Description of Monitoring Site:	- Sample taken downstream of wattle barrier - Wattle barrier was disconnected - Water was ponding at wattle - Some Mud					
Flow Estimate (include units and method of estimation):	- 2 inflows from the North and south were meeting at outfall. Small Trickle of flow Outfall Flow Approx. 0.1 cfs					
Other Observations:						
Color (describe):	Clear, w/ Slight Gray Hue					
Turbidity:	o Clear ø Slightly Cloudy o Very Cloudy o Opaque		o Clear o Slightly Cloudy o Very Cloudy o Opaque		o Clear o Slightly Cloudy o Very Cloudy o Opaque	
Floating Solids:	o Yes	ø No	o Yes	o No	o Yes	o No
Suspended Solids:	ø Yes	o No	o Yes	o No	o Yes	o No
Settled Solids:	ø Yes	o No	o Yes	o No	o Yes	o No
Sheen Present:	ø Yes	o No	o Yes	o No	o Yes	o No
Odor:	ø Yes	o No	o Yes	o No	o Yes	o No
Foam Present:	ø Yes	o No	o Yes	o No	o Yes	o No
Describe:	- Strong earthy odor - Some soil / specks were suspended & Settled in Sample					

Additional Comments:

- Wattle at site is not serving as a continuous barrier
- The inflow coming from the north direction had a distinct white, glossy contaminant in its flow Path. Contaminant source is unknown but may have been coming from several Street Sweeper (Whirlwind) vehicles parked upstream.
- Puddled water at wattle had a glossy top layer, or sheen, and featured small segments of white foam.

City of Albuquerque

Facility: Puerto del Sol Golf Course (PDS2, PDS1)

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
● Q1 o Q2 o Q3 o Q4

Date: 5/10/19
Time: 8:30 am
Inspector: Melanie Meroni

Weather: Raining
Storm Precip: 0.17 in
Last 72 hour Precip: None
Photo: See attached

Outfall ID:	PDS2	PDS1	
Flow Observed:	● Yes o No	o Yes ● No	o Yes o No
Description of Monitoring Site:	grated inlet, ponding	grated inlet, debris & trash present	
Flow Estimate (include units and method of estimation):	1" by 1" flow - very light / slow	no flow	
Other Observations:	dripping into inlet	possible light flow/ ponding behind gate- inaccessable	
Color (describe):	light brown		
Turbidity:	o Clear o Slightly Cloudy ● Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque
Floating Solids:	● Yes o No	o Yes o No	o Yes o No
Suspended Solids:	● Yes o No	o Yes o No	o Yes o No
Settled Solids:	● Yes o No	o Yes o No	o Yes o No
Sheen Present:	● Yes o No	o Yes o No	o Yes o No
Odor:	o Yes ● No	o Yes o No	o Yes o No
Foam Present:	o Yes ● No	o Yes o No	o Yes o No
Describe:	grass, sticks & sand in sample - sheen present	no sample taken	

Additional Comments: sample collected

City of Albuquerque

Facility: Y1 - Yale Transit Center

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
● Q1 o Q2 o Q3 o Q4

Date: 5/10/19 **Weather:** Raining

Time: 9:00 am **Storm Precip:** 0.17 in

Inspector: Melanie Maroni **Last 72 hour Precip:** None

Photo: See attached

Outfall ID:	Y1		
Flow Observed:	● Yes o No	o Yes o No	o Yes o No
Description of Monitoring Site:	Inlet in Transit Center - 10 buses present		
Flow Estimate (include units and method of estimation):	1" by 3', steady flow		
Other Observations:	Flow along entire fence line		
Color (describe):	light brown		
Turbidity:	o Clear o Slightly Cloudy ● Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque
Floating Solids:	o Yes ● No	o Yes o No	o Yes o No
Suspended Solids:	● Yes o No	o Yes o No	o Yes o No
Settled Solids:	● Yes o No	o Yes o No	o Yes o No
Sheen Present:	● Yes o No	o Yes o No	o Yes o No
Odor:	o Yes ● No	o Yes o No	o Yes o No
Foam Present:	● Yes o No	o Yes o No	o Yes o No
Describe:	Foamy when shaken, dirt, gravel & sheen		

Additional Comments: Sample collected

City of Albuquerque

Facility: Montessa Park Open Space

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 X Q2 o Q3 o Q4

Date: 5/10/19
Time: 9:30
Inspector: Diana Baltazar

Weather: Sprinkling / Cloudy
Storm Precip: 0.17 in
Last 72 hour Precip: None
Photo: See attached

Outfall ID:	MP2		
Flow Observed:	X Yes o No	o Yes o No	o Yes o No
Description of Monitoring Site:	Flowing through culvert.		
Flow Estimate (include units and method of estimation):	Flow in arroyo from culvert approx. 1/2" deep & 1'-1/2" ± wide		
Other Observations:	There was some flow in arroyo from upstream source		
Color (describe):	N/A		
Turbidity:	o Clear o Slightly Cloudy o Very Cloudy o Opaque N/A	o Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque
Floating Solids:	o Yes o No	o Yes o No	o Yes o No
Suspended Solids:	o Yes o No	o Yes o No	o Yes o No
Settled Solids:	o Yes N/A o No	o Yes o No	o Yes o No
Sheen Present:	o Yes o No	o Yes o No	o Yes o No
Odor:	o Yes o No	o Yes o No	o Yes o No
Foam Present:	o Yes o No	o Yes o No	o Yes o No
Describe:	Did not sample * MH access to culvert, is nearby		

Additional Comments: Culvert hangs in mid-air approx. 10 ft. high from bottom of arroyo. The steep side to access arroyo becomes very slick when wet, making it difficult to climb down & to climb out. The surrounding area on top of arroyo where the culvert outfalls is surrounded by jagged concrete & exposed rebar.
* There is a MH 10'-20' from the culvert outlet where stormwater could be sampled.

City of Albuquerque

Facility: Montessa Park Convenience Center

Quarterly Visual Monitoring of
Storm Water Outfall Discharges
o Q1 x Q2 o Q3 o Q4

Date: 5-10-19

Time: 9:30 AM

Inspector: Diana Baltazar

Weather: Sprikling/cloudy

Storm Precip: 0.17 in

Last 72 hour Precip: None

Photo: See attached

Outfall ID:	MP02		
Flow Observed:	o Yes x No	o Yes o No	o Yes o No
Description of Monitoring Site:	No flow on degsinated point of collection		
Flow Estimate (include units and method of estimation):	No Flow		
Other Observations:	Flow in ditch 1/2" deep x 3" wide. Dispersed puddling/flow on east side of facility		See note above.
Color (describe):	N/A		
Turbidity:	o Clear N/A o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque	o Clear o Slightly Cloudy o Very Cloudy o Opaque
Floating Solids:	o Yes o No	o Yes o No	o Yes o No
Suspended Solids:	o Yes o No	o Yes o No	o Yes o No
Settled Solids:	o Yes N/A o No	o Yes o No	o Yes o No
Sheen Present:	o Yes o No	o Yes o No	o Yes o No
Odor:	o Yes o No	o Yes o No	o Yes o No
Foam Present:	o Yes o No	o Yes o No	o Yes o No
Describe:	False Start. No Sample Collected		

Additional Comments: Runoff patterns do not follow expected patterns for this facility/ outfall. Flow travels to the northeast corner of the site, ponds in a dirt area, then slowly disperses into the roadside ditch.

ATTACHMENT D

STORMWATER MONITORING SAMPLING PHOTOGRAPHS

Second Quarter 2019 (April 17th, 2019)
Stormwater Monitoring Sample Photographs
City of Albuquerque Facilities

Photograph 1: Outfall LA1.

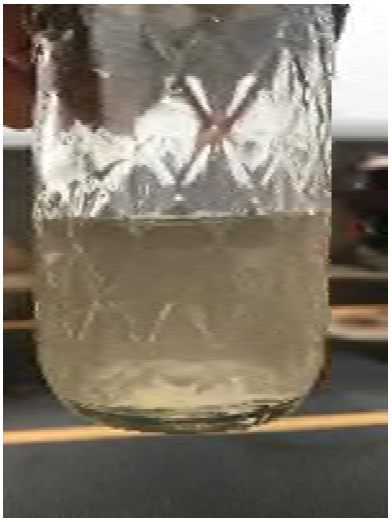
Photograph 2: Outfall LA2.

Photograph 3: Outfall L1.

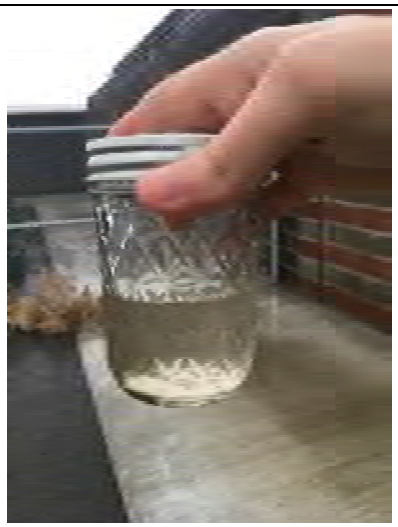
Photograph 4: Outfall AM1.

Second Quarter 2019 (April 17th, 2019)
Stormwater Monitoring Sample Photographs
City of Albuquerque Facilities

Photograph 5: Outfall D1



Photograph 6: Outfall D2

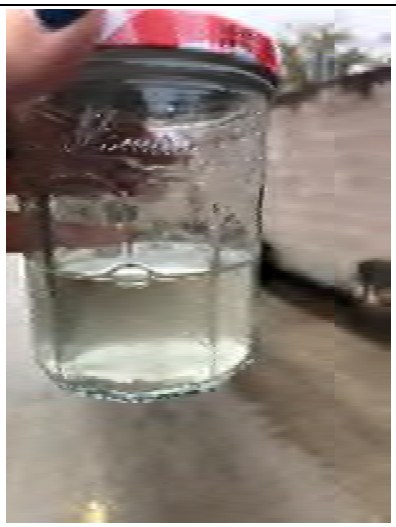


Photograph 7: Outfall gutter near D2

Photograph 8: Outfall SS3

Second Quarter 2019 (April 17th, 2019)
Stormwater Monitoring Sample Photographs
City of Albuquerque Facilities

Photograph 9: Outfall DR01.



Photograph 10: Outfall Y1

Photograph 11: Outfall PDS 1

Photograph 12: Outfall PDS 1

Second Quarter 2019 (April 17th, 2019)
Stormwater Monitoring Sample Photographs
City of Albuquerque Facilities

Photograph 13: Outfall MP01.

Photograph 14: Outfall MP02

Photograph 15: Outfall MP1

Photograph 16: Outfall MP2

Second Quarter 2019 (May 10th, 2019)
Stormwater Monitoring Sample Photographs
City of Albuquerque Facilities

Photograph 1: Outfall SS1A

Photograph 2: Sheen at SS1A

Photograph 3: Outfall SS1B

Photograph 4: Outfall D1

Second Quarter 2019 (May 10th, 2019)
Stormwater Monitoring Sample Photographs
City of Albuquerque Facilities

Photograph 5: Outfall DR01

Photograph 6: Outfall PDS2

Photograph 7: Outfall Y1

Weston Solutions, Inc.
3840 Commons Ave. NE
Albuquerque, NM 87109
505-837-6520 Fax 505-837-6595
www.westonsolutions.com

October 10, 2018

Ms. Kathy Verhage, P.E.
Department of Municipal Development - Storm Drainage Design
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Reference: PROJECT NO. 8010 CITYWIDE ON-CALL NPDES AND MS4 ENGINEERING SUPPORT SERVICES 3rd QUARTER 2018 UPDATE FOR TASK 19 VISUAL STORM WATER INSPECTIONS

Dear Ms. Verhage:

This Memo describes the results of the 2018 Quarter 3 (July 1 through September 30) Visual Storm Water Inspections for 10 City of Albuquerque (City) facilities. This evaluation and memo has been prepared to address the requirements of the U.S. Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer System (MS4) Permit issued to the City in 2014 and the Multi Sector General Permit for Storm Water Discharges Associated with Industrial Activity (MSGP) at City-owned facilities. The purpose of this memo is to document the City's compliance with the requirements for quarterly stormwater monitoring.

To comply with the MS4 and MSGP's requirements for stormwater monitoring, the City tasked Weston Solutions with performing quarterly visual stormwater monitoring at 10 City-owned facilities. These facilities meet the definition of an industrial facility in the MSGP based on audits of City-owned facilities performed between 2012 and 2018. The following facilities are monitored using visual inspection methods to identify potential impacted stormwater discharges. Locations of these facilities are shown in Figure 1 with additional detail information provided in Table 1. Several facilities were not inspected during the second quarter as few qualifying storm events occurred during the quarter. The facility list and status of monitoring are shown below:

- Arroyo Del Oso Golf Course (Visited, one sample collected)
- Balloon Fiesta Park and Golf Training Center (Facility not visited)
- Albuquerque BioPark Zoo (Facility not visited)
- Fire Department Mechanic Shop (Facility not visited)
- 4th Street Fuel Station (Facility not visited)
- Pino Yards Complex (Facility not visited)
- Street Maintenance Satellite #2 (Facility not visited)
- 6th Street Park Management (Facility not visited)
- Eagle Rock Convenience Center (Facility not visited)
- Edith Yards Maintenance Facility (Facility not visited)

Figure 1 shows the outfall identification names along with the inspection team responsible for monitoring the particular outfall.

Figure 1: Facility Site Locations

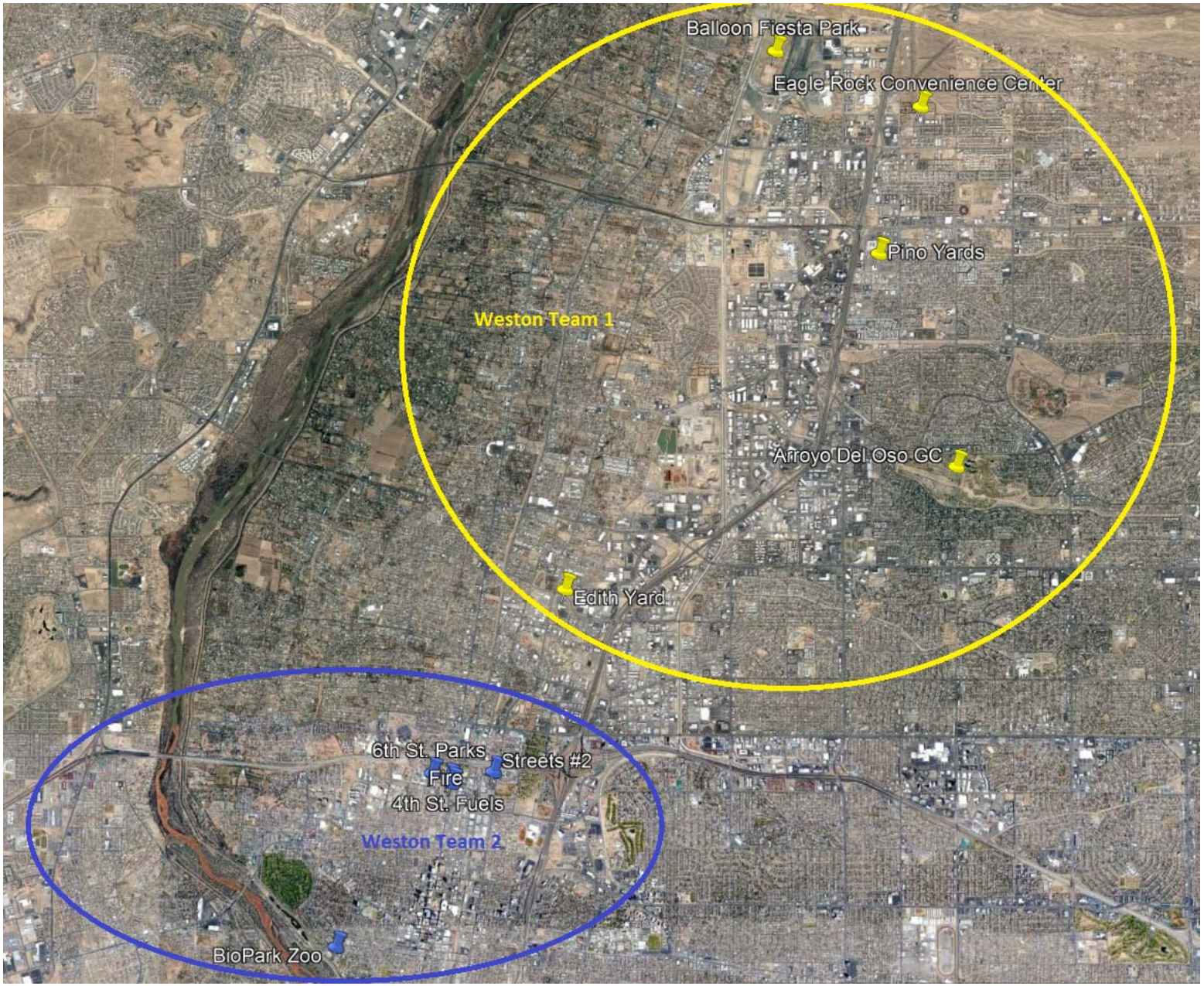


Table 1: Outfall ID and Designees

Site	Outfall ID	2018 Q3 Status
Weston 1		
Balloon Fiesta Park and Golf Training Center	BFP1	Site not visited
	BFP2	Site not visited
	BFP3	Site not visited
	BFP4	Site not visited
	BFP5	Site not visited
Pino Yards Complex	PY1	Site not visited
	PY2	Site not visited
	PY3	Site not visited
Arroyo Del Oso Golf Course	ADO1	Visited, one sample collected from one outfall.
	ADO2	Site not visited
Eagle Rock Convenience Center	ER01	Site not visited
	ER02	Site not visited
	ER03	Site not visited
ABQ BioPark Zoo	BP1	Site not visited
Weston 2		
4th Street Fuel Station	FS1	Site not visited
Fire Department Mechanic Shop	FM1	Site not visited
	FM2	Site not visited
Street Maintenance Satellite #2	SS2	Site not visited
Edith Yards Maintenance Facility	EY01	Site not visited
	EY02	Site not visited
	EY03	Site not visited
6th Street Park Management	6PM1	Site not visited

Background

The MSGP establishes requirements for monitoring the quality of stormwater discharges depending on the nature of activities performed at the various industrial facilities. Although benchmark monitoring is not required, the MSGP does require quarterly visual assessment of stormwater quality. Visual assessment consists of the collection of grab samples from each outfall (subject to demonstration of substantially identical outfalls) and examination for the presence of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, or other indicators of stormwater pollution.

Certain criteria regarding the precipitation event must be met for an assessment event. Visual assessment of stormwater must occur:

- During daylight hours
- Within 30 minutes of start of storm water discharge (or as soon as practicable thereafter)
- At least 72 hours after the previous storm water discharge event

Weston follows the City's existing stormwater monitoring protocol outlining the locations and descriptions of all outfalls to be monitored. The protocol identifies contact persons at each facility for use in notifying City personnel when members of the stormwater monitoring team are mobilizing to that location. A standard visual assessment form is used by all staff to document the monitoring activities.

Quarter 3 Monitoring Results

The 3rd Quarter sampling period ran from July 1 to September 30, 2018.

- Weston Sites Group 1 mobilized onel time during the quarter to collect samples from storm events. Visual samples were collected from one out of 14 outfalls over the course of the one mobilization. One sample was collected from Arroyo del Oso Golf Course.
- Weston Sites Group 2 did not mobilize during the quarter to collect samples from storm events. No Visual samples were collected from the 8 outfalls.

Although there were several recordable precipitation events through this quarterly monitoring period, the vast majority occurred in the early evening, overnight or on weekends. Therefore, Weston personnel were not able to access the sites during standard operating hours.

The monitoring reports and photo logs from Weston Sites Groups 1 and 2 can be found in the Appendix. Any outfalls not monitored in Quarter 3 will be made up during Quarter 4 of 2018 pending suitable weather conditions.

Observed Problems

Results from the Quarter 3 Visual Inspections can be found in the Appendix. One of 10 facilities were observed during the 3rd Quarter. As noted above, the 3rd Quarter experienced only three storm events that produced measurable runoff and met the daylight conditions, two of these events occurred on a Saturday. Many sites received no rain due to the localized nature of the storms that did occur. Any facilities or outfalls that did not produce a sample in Quarter 3, 2018 will be made up in the coming months.

We appreciate the opportunity to provide professional consulting services to you and we look forward to assisting you in the next quarter. Please contact

Sarah Luckie at (720) 937-5905 (Sarah.Luckie@WestonSolutions.com) or Brad Sumrall at (505) 837-6566 (Brad.Sumrall@WestonSolutions.com) if you have any questions or need additional information.

Sincerely,
WESTON SOLUTIONS, INC.

L. Brad Sumrall, PE
Albuquerque Operations Manager

APPENDIX

ATTACHMENT A: Q3 INSPECTION FORMS AND PHOTO LOGS

ATTACHMENT B: NON-QUALIFYING EVENT DATA

ATTACHMENT A: Q3 INSPECTION FORMS AND PHOTO LOGS

STREETS SATELLITE #2

PINO YARDS

BALLOON FIESTA PARK/ GOLF TRAINING CENTER

ARROYO DEL OSO GOLF COURSE

City of Albuquerque

Arroyo Del Oso Golf Course

Quarterly Visual Monitoring of
Storm Water Outfall Discharges

☐ Q1 ☐ Q2 ☒ Q3 ☐ Q4

Date: 9/19/18
Time: 6:30 pm
Inspector: David "Sonny" Cooper
Signature: David Cooper

Weather: Overcast
Storm Precip: Upstream of watershed
Last 72 Hour Precip: None
Photo: Yes

Outfall ID:	ADO1	ADO2
Flow Observed:	☒ Yes ☐ No	☐ Yes ☒ No
Description of Monitoring Site:	Pedestrian Bridge	
Flow Estimate (include units and method of estimation) :	≈ 5-10 cfs	
Other Observations:	Leading edge of flow from upstream	
Color (Describe):	Very Light Brown	
Turbidity:	☐ Clear ☒ Slightly Cloudy ☐ Very Cloudy ☐ Opaque	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque
Floating Solids:	☒ Yes ☐ No	☐ Yes ☐ No
Suspended Solids:	☒ Yes ☐ No	☐ Yes ☐ No
Settled Solids:	☒ Yes ☐ No	☐ Yes ☐ No
Sheen Present:	☐ Yes ☒ No	☐ Yes ☐ No
Odor:	☐ Yes ☒ No	☐ Yes ☐ No
Foam Present:	☐ Yes ☒ No	☐ Yes ☐ No
Describe:		

Additional Comments:

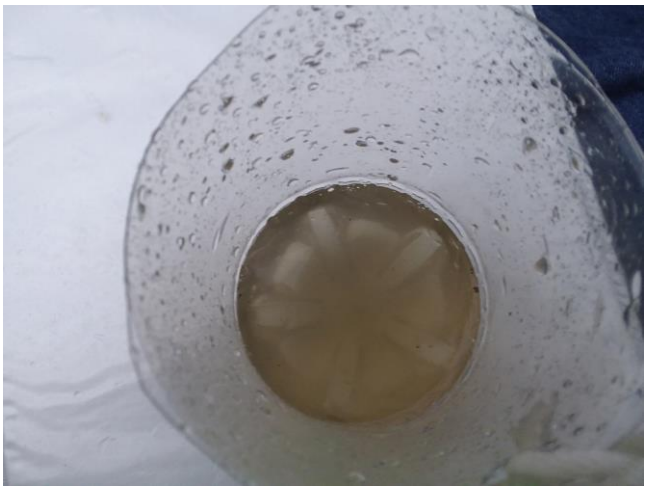
WESTON SOLUTIONS

Date: September 19, 2018

Event: MS4 Stormwater Visual Inspection

Inspector: Sonny Cooper (Weston)

CITY OF ALBUQUERQUE
STORM WATER MONITORING PHOTOGRAPH LOG

Arroyo Del Oso Golf Course	
	
	

FIRE DEPARTMENT MECHANIC

4TH STREET FUELS

ABQ BIOPARK ZOO

6TH STREET PARKS MANAGEMENT

EAGLE ROCK CONVENIENCE CENTER

EDITH YARD

ATTACHMENT B: NON-QUALIFYING MEMO

Albuquerque, NM

Albuquerque International Sunport

5:09 PM MDT on October 02, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

From:

July

1

2018

To:

September

30

2018

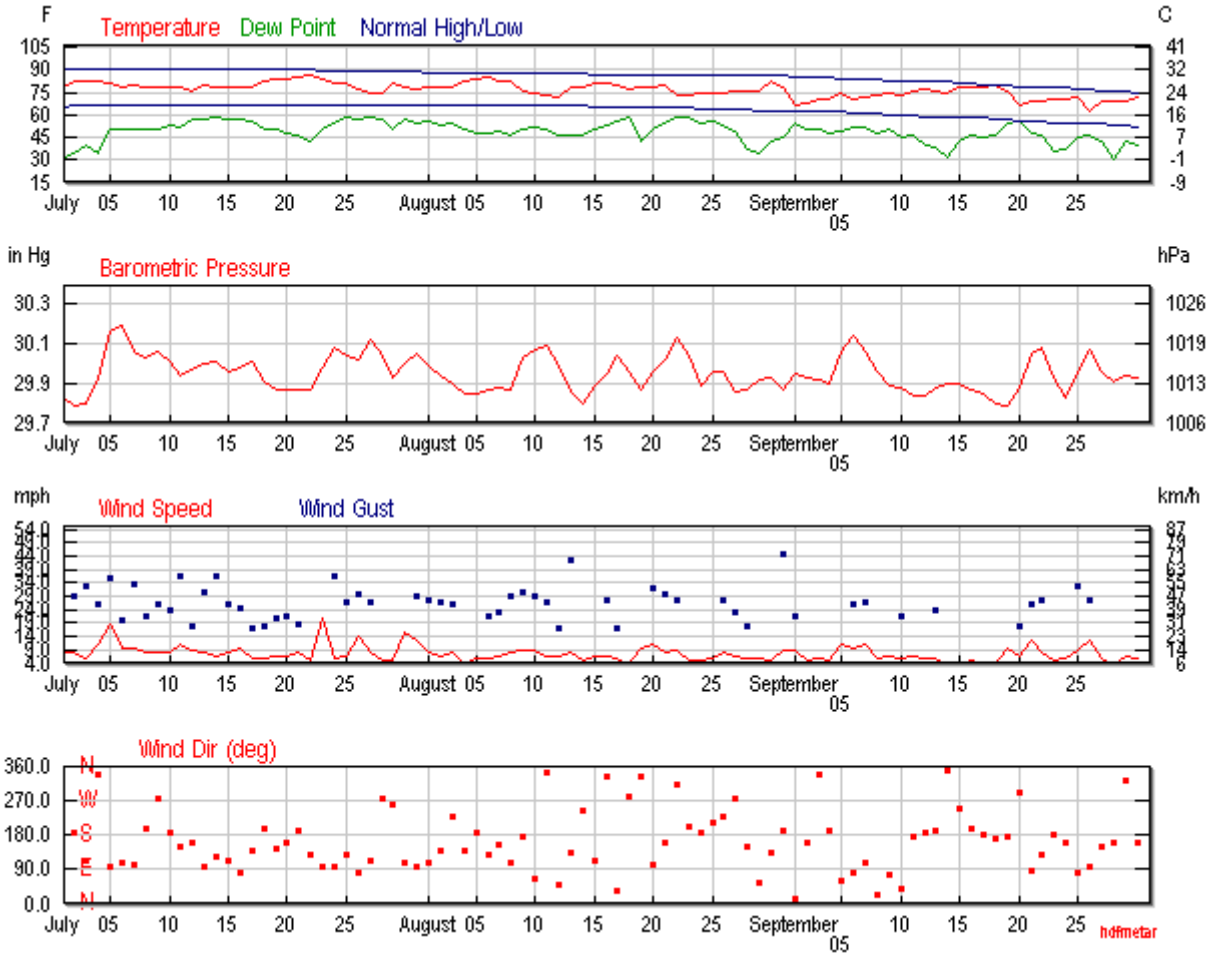
Get History

Daily | Weekly | Monthly | **Custom**

	Max	Avg	Min	Sum
Temperature				
Max Temperature	**100** °F	**89** °F	**73** °F	
Mean Temperature	**86** °F	**77** °F	**63** °F	
Min Temperature	**73** °F	**64** °F	**51** °F	
Degree Days				

	Max	Avg	Min	Sum
Heating Degree Days (base 65)	2	0	0	2
Cooling Degree Days (base 65)	21	12	0	1091
Growing Degree Days (base 50)	36	26	13	2422
Dew Point				
Dew Point	**65** °F	**49** °F	**18** °F	
Precipitation				
Precipitation	**0.62** in	**0.05** in	**0.00** in	**4.00** in
Snowdepth	**0.0** in	**0.0** in	**0.0** in	-
Wind				
Wind	**44** mph	**8** mph	**0** mph	
Gust Wind	**66** mph	**27** mph	**16** mph	
Sea Level Pressure				
Sea Level Pressure	**30.44** in	**29.95** in	**29.59** in	

Custom Weather History Graph



Search for Another Location

Airport or City:

KABQ

Submit

Weather History & Observations

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
Jul	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	93	79	64	47	32	25	38	24	10	30.12	29.83	29.76	10	10	10	23	8	28	0.00	
	96	83	69	44	35	28	36	23	10	29.87	29.79	29.68	10	10	10	24	8	29	0.00	
	94	82	69	51	40	28	51	31	10	29.85	29.80	29.75	10	10	7	32	6	44	0.00	
	93	82	70	49	35	29	35	24	13	30.02	29.92	29.82	10	10	10	29	11	38	0.00	
	91	81	71	55	50	46	46	36	26	30.44	30.16	30.03	10	9	2	41	19	51	0.03	Rain
	88	79	69	55	51	45	57	42	26	30.32	30.19	30.06	10	10	10	20	10	23	0.00	
	92	80	68	55	50	41	57	39	21	30.24	30.06	29.91	10	10	10	40	10	51	0.00	Thunderstorm
	89	78	67	55	51	47	58	41	24	30.30	30.03	29.88	10	10	10	18	8	25	T	Rain , Thunderstorm
	90	79	67	56	51	39	63	41	18	30.27	30.06	29.97	10	10	10	25	8	32	0.00	
	89	79	68	55	53	51	57	42	27	30.12	30.01	29.87	10	10	10	23	8	29	0.00	
	91	79	66	57	52	46	63	44	24	30.09	29.94	29.78	10	9	4	39	11	46	0.00	Thunderstorm
	85	76	67	62	57	53	68	51	34	30.24	29.97	29.88	10	10	10	18	9	24	0.01	Rain , Thunderstorm
	92	80	67	63	57	51	76	52	28	30.25	30.00	29.88	10	10	8	26	8	32	0.03	Rain , Thunderstorm
	90	79	67	65	59	54	68	50	31	30.18	30.01	29.85	10	9	1	32	7	39	0.62	Rain , Thunderstorm
	90	78	65	63	57	51	87	58	29	30.21	29.96	29.81	10	10	10	24	8	27	T	Rain , Thunderstorm
	88	78	67	61	57	53	73	54	34	30.21	29.98	29.91	10	10	10	30	10	37	T	Rain , Thunderstorm
	90	79	67	62	56	47	76	50	24	30.28	30.01	29.89	10	10	10	18	6	20	0.00	Thunderstorm
	96	83	69	54	51	45	53	36	19	30.00	29.91	29.82	10	10	10	18	6	22	0.00	
	98	84	70	54	50	44	57	37	17	30.12	29.87	29.76	10	10	10	18	7	25	0.00	Thunderstorm
	98	84	70	52	48	38	49	31	13	30.14	29.87	29.77	10	10	10	28	7	32	0.00	

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	98	85	71	53	47	37	53	33	13	29.94	29.87	29.79	10	10	10	17	8	20	0.00	
	100	86	71	50	43	34	41	26	10	29.95	29.87	29.79	10	10	10	13	5	17	0.00	
	98	84	69	60	51	43	64	41	18	30.39	29.98	29.82	10	10	6	39	21	51	T	Rain , Thunderstorm
	94	81	67	65	54	48	66	44	22	30.37	30.08	29.92	10	10	5	44	6	53	0.18	Rain , Thunderstorm
	94	81	67	63	58	52	73	49	24	30.40	30.04	29.86	10	10	4	28	7	35	0.12	Rain , Thunderstorm
	90	77	64	62	57	53	68	51	34	30.32	30.02	29.86	10	9	2	39	14	46	0.53	Rain , Thunderstorm
	87	75	63	61	58	53	87	60	32	30.37	30.12	29.94	10	9	2	32	8	40	0.56	Rain , Thunderstorm
	86	74	61	60	57	52	93	64	34	30.14	30.04	29.94	10	10	10	12	5	20	0.00	
	94	81	68	56	51	39	61	39	16	30.01	29.93	29.83	10	10	10	14	5	17	0.00	
	89	78	67	61	57	51	76	55	34	30.26	30.00	29.86	10	10	2	43	16	52	0.11	Rain , Hail , Thunderstorm
	88	77	66	59	55	49	68	49	29	30.29	30.05	29.91	10	10	8	31	13	40	0.02	Rain , Thunderstorm

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
Aug	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
	92	79	66	62	56	50	73	49	25	30.24	29.99	29.81	10	10	5	33	8	39	0.12	Rain , Thunderstorm
	92	79	66	58	53	48	68	46	23	30.14	29.94	29.80	10	10	10	28	7	41	0.02	Rain , Thunderstorm
	89	78	66	59	55	50	78	54	29	30.13	29.90	29.79	10	10	10	22	8	26	T	Rain , Thunderstorm
	96	82	68	58	50	35	68	41	13	29.95	29.85	29.76	10	10	10	14	4	16	0.00	
	95	84	73	54	48	40	46	32	17	30.11	29.85	29.78	10	10	10	18	6	23	0.00	

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	98	85	72	54	48	37	49	31	13	30.17	29.87	29.75	10	10	10	22	6	27	T	Rain , Thunderstorm
	96	82	68	53	49	43	53	36	18	30.11	29.88	29.76	10	10	9	22	7	32	T	Rain , Thunderstorm
	95	82	69	53	47	31	49	30	11	29.96	29.87	29.76	10	10	10	30	8	36	0.00	
	89	76	63	58	51	44	78	51	24	30.35	30.03	29.87	10	10	10	32	9	40	0.11	Rain , Thunderstorm
	84	75	65	56	52	43	73	49	24	30.28	30.07	29.95	10	10	10	30	9	38	T	Rain , Thunderstorm
	85	73	60	57	50	47	65	47	29	30.26	30.09	29.95	10	10	6	33	7	47	0.28	Rain , Thunderstorm
	84	72	59	50	46	42	65	45	24	30.09	29.99	29.86	10	10	10	15	7	19	0.00	
	92	78	64	54	47	36	59	37	15	30.02	29.86	29.70	10	10	10	44	8	57	T	Thunderstorm
	93	78	63	51	46	38	60	38	16	29.87	29.80	29.72	10	10	10	12	5	15	0.00	
	92	81	69	55	51	45	57	39	21	30.11	29.89	29.78	10	10	10	31	7	40	0.00	Thunderstorm
	92	81	69	58	53	46	66	45	23	30.19	29.95	29.85	10	10	10	25	7	31	T	
	92	80	67	64	56	48	73	50	26	30.28	30.04	29.91	10	10	7	29	6	36	0.09	Rain , Thunderstorm
	88	77	65	62	58	53	93	62	31	30.10	29.96	29.80	10	10	10	13	4	18	0.00	
	92	78	63	55	43	23	72	40	8	29.95	29.87	29.78	10	9	4	32	10	42	0.00	
	89	78	66	57	50	42	66	44	21	30.06	29.96	29.88	10	10	10	29	11	41	0.00	
	91	80	69	58	54	49	66	47	27	30.30	30.02	29.91	10	10	6	30	8	39	T	Rain , Thunderstorm
	83	73	63	62	58	52	87	62	36	30.32	30.13	30.01	10	9	2	38	9	50	0.27	Rain , Thunderstorm
	84	73	62	61	58	54	93	65	37	30.29	30.04	29.88	10	10	7	14	5	17	0.00	
	86	75	63	58	54	49	73	51	29	29.94	29.89	29.80	10	10	10	24	5	30	0.00	

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	87	75	62	61	56	51	73	52	30	30.22	29.96	29.83	10	10	10	24	6	31	0.03	Rain , Thunderstorm
	89	75	60	58	53	48	84	56	27	30.17	29.96	29.82	10	10	10	28	8	37	T	Rain , Thunderstorm
	90	76	62	54	49	41	67	44	21	30.15	29.86	29.74	10	10	10	23	7	28	0.00	Thunderstorm
	90	76	61	43	37	27	46	29	11	29.93	29.87	29.81	10	10	10	17	6	24	0.00	
	91	76	61	43	35	32	32	23	13	30.01	29.92	29.86	10	10	10	15	6	19	0.00	
	93	82	70	50	43	36	44	30	15	30.22	29.93	29.81	10	10	10	21	5	26	0.00	
	91	78	65	56	45	40	44	32	19	30.16	29.87	29.71	10	10	6	44	9	66	0.03	Rain , Thunderstorm

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
Sep	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
	73	66	59	58	54	48	90	69	47	30.22	29.95	29.80	10	10	5	23	9	29	0.20	Rain , Thunderstorm
	79	68	57	53	51	47	80	57	33	30.16	29.93	29.84	10	10	10	22	5	25	0.00	Rain , Thunderstorm
	80	71	61	54	51	46	78	55	32	30.15	29.92	29.83	10	10	10	17	6	22	0.00	Thunderstorm
	83	71	59	52	48	45	75	51	26	29.96	29.90	29.83	10	10	10	18	5	22	0.00	
	87	75	62	54	49	38	67	43	19	30.35	30.06	29.94	10	10	10	40	11	49	T	Rain , Thunderstorm
	80	71	62	55	52	47	72	53	33	30.28	30.14	30.02	10	10	10	29	10	34	0.00	Thunderstorm
	84	72	59	58	52	46	78	53	27	30.20	30.06	29.94	10	10	10	28	11	33	T	Rain , Thunderstorm
	86	73	59	52	48	44	72	49	25	30.08	29.96	29.83	10	10	10	21	6	23	0.00	
	89	75	60	57	50	41	69	44	19	30.13	29.89	29.74	10	10	7	29	7	38	0.31	Rain , Thunderstorm
	88	73	58	50	45	36	72	44	16	29.99	29.88	29.78	10	10	10	20	6	22	0.00	
	90	76	62	51	46	42	60	41	21	29.94	29.84	29.76	10	10	10	22	7	25	0.00	

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	90	77	63	47	40	31	56	34	12	30.02	29.84	29.75	10	10	10	18	6	24	0.00	
	90	76	61	41	38	35	40	28	16	30.08	29.88	29.81	10	10	10	21	6	29	0.00	
	90	75	60	41	32	25	37	24	10	29.99	29.90	29.83	10	10	10	13	4	16	0.00	
	91	78	64	52	42	33	49	32	15	29.99	29.90	29.81	10	10	10	12	4	17	0.00	
	91	79	67	53	46	40	53	35	17	29.96	29.87	29.78	10	10	10	17	5	21	0.00	
	92	79	66	54	45	35	58	37	15	29.94	29.85	29.77	10	10	10	10	4	13	0.00	
	92	80	67	57	46	37	57	37	16	29.92	29.80	29.70	10	10	10	14	4	18	0.00	
	89	76	63	60	54	45	93	59	24	30.04	29.79	29.59	10	10	5	26	10	32	0.11	Rain , Thunderstorm
	75	67	59	61	56	48	90	66	41	30.07	29.88	29.75	10	9	6	17	7	21	0.07	Rain
	80	69	57	54	48	43	78	53	28	30.16	30.05	29.93	10	10	10	26	13	33	0.00	
	80	69	58	51	47	42	77	54	30	30.19	30.08	29.97	10	10	10	25	8	31	0.00	
	83	70	56	45	36	22	55	33	11	30.04	29.93	29.83	10	10	10	14	5	17	0.00	
	85	71	57	40	37	32	43	31	18	29.92	29.83	29.73	10	10	10	15	6	20	0.00	
	85	72	59	56	45	39	84	53	22	30.22	29.95	29.78	10	10	2	38	9	44	0.14	Rain , Thunderstorm
	73	63	53	51	46	41	72	57	41	30.17	30.07	30.00	10	10	10	30	13	36	0.01	
	83	69	54	53	42	30	86	51	15	30.06	29.96	29.83	10	10	10	12	6	17	0.00	
	86	69	51	43	31	18	46	27	8	29.99	29.91	29.83	10	10	10	16	4	21	0.00	
	84	69	53	46	42	38	71	45	19	30.04	29.94	29.86	10	10	10	14	7	17	0.00	
	85	72	58	42	40	37	51	35	19	30.09	29.93	29.85	10	10	10	16	6	21	0.00	

Albuquerque, NM

Albuquerque International Sunport

12:36 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

5

2018

View
Thursday, July 5, 2018

Daily | Weekly | Monthly | Custom

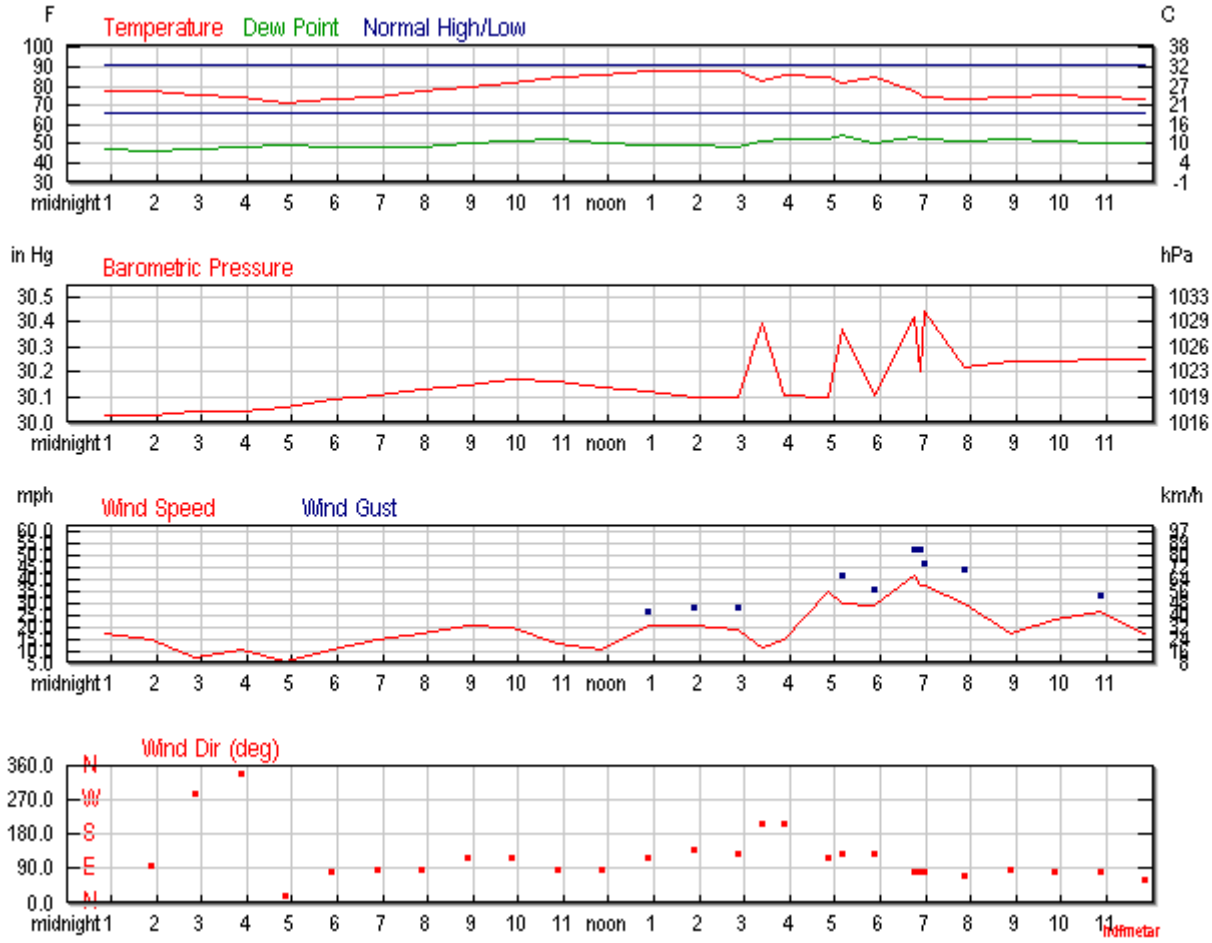
	Actual	Average	Record
Temperature			
Mean Temperature	**81** °F	-	
Max Temperature	**91** °F	-	- ()
Min Temperature	**71** °F	-	- ()
Cooling Degree Days	16		
Month to date cooling degree days	82		
Year to date cooling degree days	700		
Since 1 June cooling degree days	504		
Growing Degree Days	32 (Base 50)		
Moisture			
Dew Point	**50** °F		
Average Humidity	36		
Maximum Humidity	46		
Minimum Humidity	26		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.03		

	Actual	Average	Record
Year to date precipitation	2.27		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.16** in		
Wind			
Wind Speed	**19** mph (East)		
Max Wind Speed	**41** mph		
Max Gust Speed	**51** mph		
Visibility	**9** miles		
Events	Rain		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Jul. 05, 2018	**Rise**	**Set**
Actual Time	5:57 AM MDT	8:24 PM MDT
Civil Twilight	5:28 AM MDT	8:53 PM MDT
Nautical Twilight	4:52 AM MDT	9:29 PM MDT
Astronomical Twilight	4:12 AM MDT	10:09 PM MDT
Moon	12:34 AM MDT (7/5)	12:40 PM MDT (7/5)
Length of Visible Light	15h 24m	
Length of Day	14h 26m	

Waning Gibbous, 56% of the Moon is Illuminated

Jul 5	Jul 6	Jul 12	Jul 19	Jul 27
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Co
12:52 AM	**77.0** °F	-	**46.9** °F	34%	**30.03** in	**10.0** mi	East	**17.3** mph	**28.8** mph	N/A		Mc Clc
1:52 AM	**77.0** °F	-	**46.0** °F	33%	**30.03** in	**10.0** mi	East	**15.0** mph	-	N/A		Mc Clc
2:52 AM	**75.9** °F	-	**46.9** °F	36%	**30.04** in	**10.0** mi	WNW	**6.9** mph	-	N/A		Sc Clc
3:52 AM	**73.9** °F	-	**48.0** °F	40%	**30.04** in	**10.0** mi	NNW	**10.4** mph	-	N/A		Pa Clc
4:52 AM	**71.1** °F	-	**48.9** °F	45%	**30.06** in	**10.0** mi	NNE	**5.8** mph	-	N/A		Sc Clc
5:52 AM	**73.0** °F	-	**48.0** °F	41%	**30.09** in	**10.0** mi	East	**10.4** mph	-	N/A		Sc Clc
6:52 AM	**73.9** °F	-	**48.0** °F	40%	**30.11** in	**10.0** mi	East	**15.0** mph	-	N/A		Sc Clc
7:52 AM	**77.0** °F	-	**48.0** °F	36%	**30.13** in	**10.0** mi	East	**17.3** mph	-	N/A		Sc Clc
8:52 AM	**80.1** °F	-	**50.0** °F	35%	**30.15** in	**10.0** mi	ESE	**20.7** mph	-	N/A		Mc Clc
9:52 AM	**82.0** °F	-	**51.1** °F	34%	**30.17** in	**10.0** mi	ESE	**19.6** mph	-	N/A		Pa Clc
10:52 AM	**84.9** °F	-	**52.0** °F	32%	**30.16** in	**10.0** mi	East	**12.7** mph	-	N/A		Sc Clc
11:52 AM	**86.0** °F	-	**50.0** °F	29%	**30.14** in	**10.0** mi	East	**10.4** mph	**19.6** mph	N/A		Mc Clc
12:52 PM	**88.0** °F	-	**48.9** °F	26%	**30.12** in	**10.0** mi	ESE	**20.7** mph	**26.5** mph	N/A		Mc Clc
1:52 PM	**88.0** °F	-	**48.9** °F	26%	**30.10** in	**10.0** mi	SE	**20.7** mph	**27.6** mph	**0.03** in		Sc Clc
2:52 PM	**88.0** °F	-	**48.0** °F	25%	**30.10** in	**10.0** mi	SE	**18.4** mph	**27.6** mph	N/A		Mc Clc
3:22 PM	**82.9** °F	-	**51.1** °F	33%	**30.39** in	**10.0** mi	SSW	**11.5** mph	-	N/A		Mc Clc
3:52 PM	**86.0** °F	-	**52.0** °F	31%	**30.11** in	**10.0** mi	SSW	**15.0** mph	-	N/A		Mc Clc

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Co
4:52 PM	**84.9** °F	-	**52.0** °F	32%	**30.10** in	**4.0** mi	ESE	**34.5** mph	**40.3** mph	N/A		Ha
5:10 PM	**82.0** °F	**81.4** °F	**55.0** °F	39%	**30.37** in	**6.0** mi	SE	**29.9** mph	**41.4** mph	N/A		Ha
5:52 PM	**84.9** °F	-	**50.0** °F	30%	**30.11** in	**10.0** mi	SE	**28.8** mph	**35.7** mph	N/A		Mc Clc
6:45 PM	**77.0** °F	-	**53.1** °F	43%	**30.42** in	**1.8** mi	East	**41.4** mph	**51.8** mph	N/A		Wi Du
6:52 PM	**75.0** °F	-	**52.0** °F	44%	**30.20** in	**1.5** mi	East	**36.8** mph	**51.8** mph	N/A		Wi Du
6:58 PM	**73.9** °F	-	**52.0** °F	46%	**30.44** in	**4.0** mi	East	**36.8** mph	**46.0** mph	N/A		Wi Du
7:52 PM	**73.0** °F	-	**51.1** °F	46%	**30.22** in	**10.0** mi	ENE	**29.9** mph	**43.7** mph	N/A		Mc Clc
8:52 PM	**73.9** °F	-	**52.0** °F	46%	**30.24** in	**10.0** mi	East	**17.3** mph	-	**0.00** in	Rain	Lig
9:52 PM	**75.0** °F	-	**51.1** °F	43%	**30.24** in	**10.0** mi	East	**23.0** mph	**31.1** mph	**0.00** in		Mc Clc
10:52 PM	**73.9** °F	-	**50.0** °F	43%	**30.25** in	**10.0** mi	East	**26.5** mph	**33.4** mph	N/A		Mc Clc
11:52 PM	**73.0** °F	-	**50.0** °F	44%	**30.25** in	**10.0** mi	ENE	**17.3** mph	-	N/A		Mc Clc

Albuquerque, NM

Albuquerque International Sunport

12:45 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

7

2018

View

Saturday, July 7, 2018

Daily | Weekly | Monthly | Custom

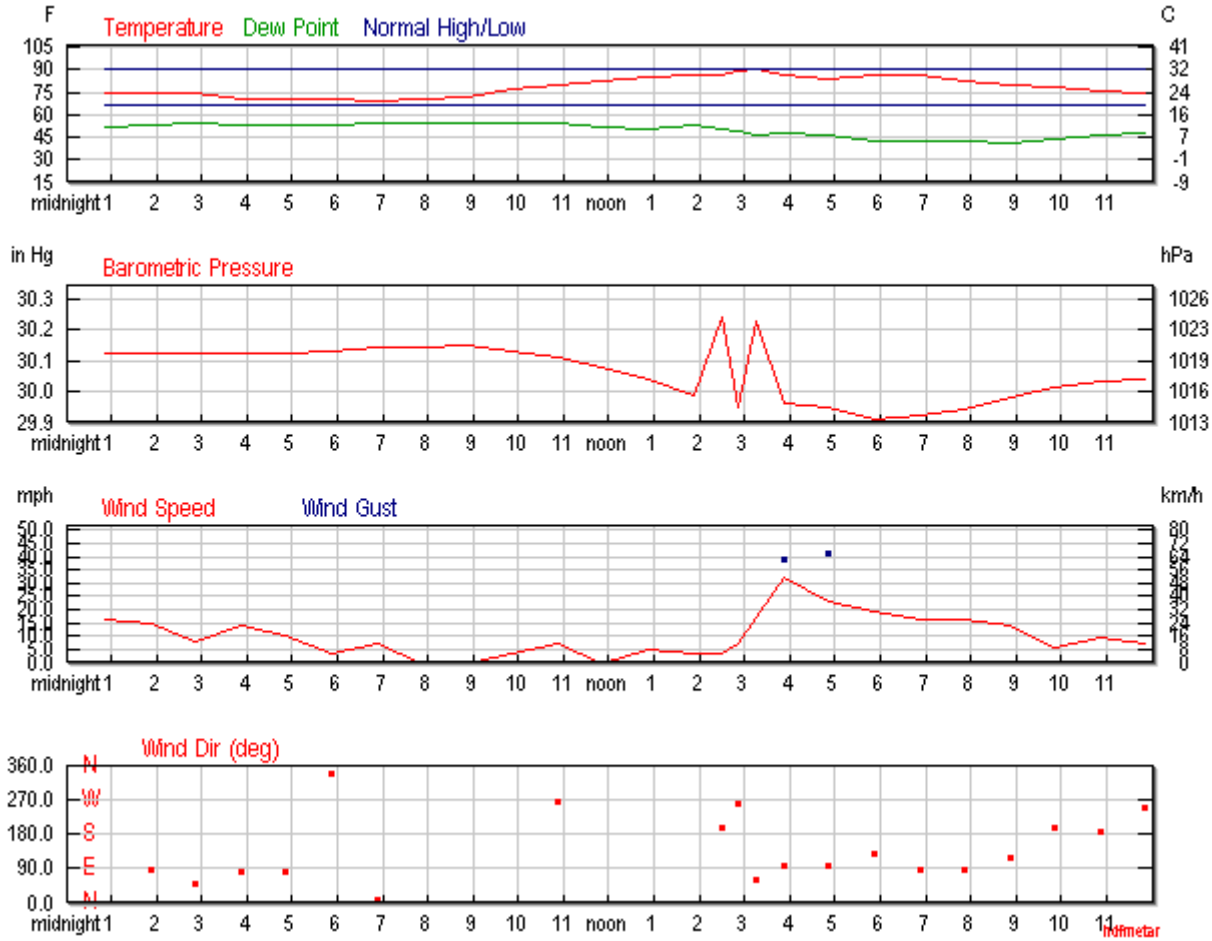
	Actual	Average	Record
Temperature			
Mean Temperature	**80** °F	-	
Max Temperature	**92** °F	-	- ()
Min Temperature	**68** °F	-	- ()
Cooling Degree Days	15		
Month to date cooling degree days	111		
Year to date cooling degree days	729		
Since 1 June cooling degree days	533		
Growing Degree Days	30 (Base 50)		
Moisture			
Dew Point	**50** °F		
Average Humidity	39		
Maximum Humidity	57		
Minimum Humidity	21		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.03		

	Actual	Average	Record
Year to date precipitation	2.27		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.06** in		
Wind			
Wind Speed	**10** mph (East)		
Max Wind Speed	**40** mph		
Max Gust Speed	**51** mph		
Visibility	**10** miles		
Events	Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Jul. 07, 2018	**Rise**	**Set**
Actual Time	5:59 AM MDT	8:23 PM MDT
Civil Twilight	5:29 AM MDT	8:52 PM MDT
Nautical Twilight	4:53 AM MDT	9:29 PM MDT
Astronomical Twilight	4:13 AM MDT	10:08 PM MDT
Moon	1:38 AM MDT (7/7)	2:40 PM MDT (7/7)
Length of Visible Light	15h 23m	
Length of Day	14h 24m	

Waning Crescent, 35% of the Moon is Illuminated

Jul 7	Jul 12	Jul 19	Jul 27	Aug 4
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**75.0** °F	-	**52.0** °F	44%	**30.12** in	**10.0** mi	East	**16.1** mph	-	N/A	
1:52 AM	**73.9** °F	-	**53.1** °F	48%	**30.12** in	**10.0** mi	East	**15.0** mph	-	N/A	
2:52 AM	**73.9** °F	-	**54.0** °F	50%	**30.12** in	**10.0** mi	NE	**8.1** mph	-	N/A	
3:52 AM	**71.1** °F	-	**53.1** °F	53%	**30.12** in	**10.0** mi	East	**13.8** mph	-	N/A	
4:52 AM	**70.0** °F	-	**53.1** °F	55%	**30.12** in	**10.0** mi	East	**10.4** mph	-	N/A	
5:52 AM	**70.0** °F	-	**53.1** °F	55%	**30.13** in	**10.0** mi	NNW	**3.5** mph	-	N/A	
6:52 AM	**69.1** °F	-	**54.0** °F	58%	**30.14** in	**10.0** mi	North	**6.9** mph	-	N/A	
7:52 AM	**71.1** °F	-	**55.0** °F	57%	**30.14** in	**10.0** mi	Calm	Calm	-	N/A	
8:52 AM	**72.0** °F	-	**55.0** °F	55%	**30.15** in	**10.0** mi	Calm	Calm	-	N/A	
9:52 AM	**77.0** °F	-	**55.0** °F	47%	**30.13** in	**10.0** mi	Variable	**3.5** mph	-	N/A	
10:52 AM	**80.1** °F	**80.0** °F	**54.0** °F	40%	**30.11** in	**10.0** mi	West	**6.9** mph	-	N/A	
11:52 AM	**82.9** °F	-	**52.0** °F	34%	**30.08** in	**10.0** mi	Calm	Calm	-	N/A	
12:52 PM	**84.9** °F	-	**51.1** °F	31%	**30.04** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
1:52 PM	**87.1** °F	**84.9** °F	**53.1** °F	31%	**29.99** in	**10.0** mi	Variable	**3.5** mph	-	N/A	
2:31 PM	**87.1** °F	-	**50.0** °F	28%	**30.24** in	**10.0** mi	SSW	**3.5** mph	-	N/A	Thunderstor
2:52 PM	**89.1** °F	-	**48.9** °F	25%	**29.95** in	**10.0** mi	West	**6.9** mph	-	N/A	Thunderstor
3:16 PM	**91.0** °F	-	**46.9** °F	22%	**30.23** in	**10.0** mi	ENE	**17.3** mph	**23.0** mph	N/A	Thunderstor

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
3:52 PM	**86.0** °F	-	**48.0** °F	27%	**29.96** in	**10.0** mi	East	**32.2** mph	**39.1** mph	N/A	
4:52 PM	**84.0** °F	-	**46.0** °F	26%	**29.95** in	**10.0** mi	East	**23.0** mph	**41.4** mph	N/A	
5:52 PM	**87.1** °F	-	**43.0** °F	21%	**29.91** in	**10.0** mi	SE	**19.6** mph	-	N/A	
6:52 PM	**86.0** °F	-	**42.1** °F	21%	**29.92** in	**10.0** mi	East	**16.1** mph	-	N/A	
7:52 PM	**82.9** °F	-	**43.0** °F	24%	**29.94** in	**10.0** mi	East	**16.1** mph	-	N/A	
8:52 PM	**80.1** °F	-	**41.0** °F	25%	**29.98** in	**10.0** mi	ESE	**13.8** mph	-	N/A	
9:52 PM	**78.1** °F	-	**44.1** °F	30%	**30.01** in	**10.0** mi	SSW	**5.8** mph	-	N/A	
10:52 PM	**75.9** °F	-	**46.9** °F	36%	**30.03** in	**10.0** mi	South	**9.2** mph	-	N/A	
11:52 PM	**75.0** °F	-	**48.0** °F	38%	**30.04** in	**10.0** mi	WSW	**6.9** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

1:10 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

8

2018

View
Sunday, July 8, 2018

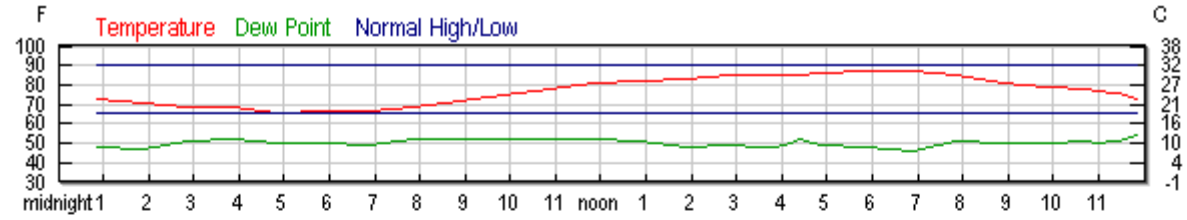
Daily | Weekly | Monthly | Custom

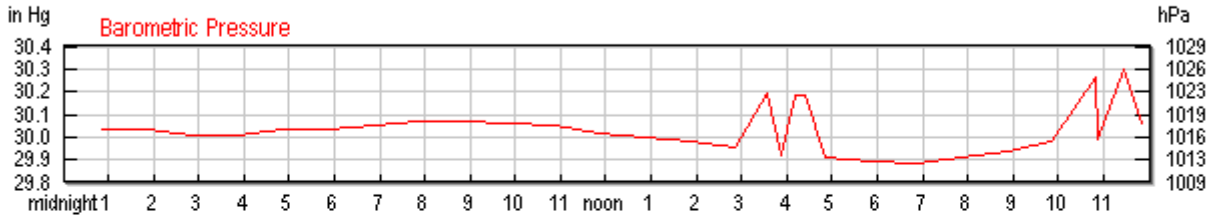
	Actual	Average	Record
Temperature			
Mean Temperature	**78** °F	-	
Max Temperature	**89** °F	-	- ()
Min Temperature	**67** °F	-	- ()
Cooling Degree Days	13		
Month to date cooling degree days	124		
Year to date cooling degree days	742		
Since 1 June cooling degree days	546		
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**51** °F		
Average Humidity	41		
Maximum Humidity	58		
Minimum Humidity	24		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.03		

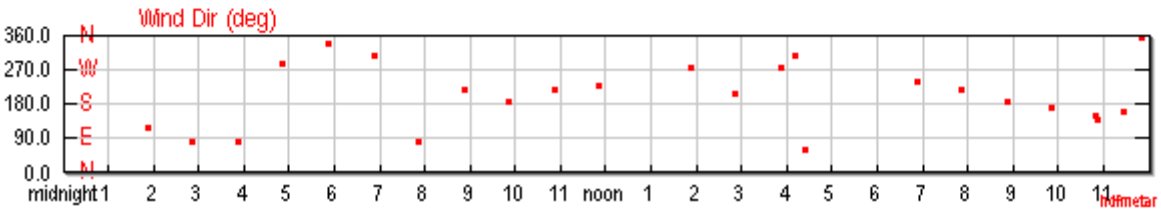
	Actual	Average	Record
Year to date precipitation	2.27		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.03** in		
Wind			
Wind Speed	**8** mph (SSW)		
Max Wind Speed	**18** mph		
Max Gust Speed	**25** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph







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Airport or City:

KABQ

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Astronomy

Jul. 08, 2018	**Rise**	**Set**
Actual Time	5:59 AM MDT	8:23 PM MDT
Civil Twilight	5:30 AM MDT	8:52 PM MDT
Nautical Twilight	4:54 AM MDT	9:28 PM MDT
Astronomical Twilight	4:14 AM MDT	10:08 PM MDT
Moon	2:13 AM MDT (7/8)	3:44 PM MDT (7/8)
Length of Visible Light	15h 22m	
Length of Day	14h 23m	

Waning Crescent, 25% of the Moon is Illuminated

Jul 8	Jul 12	Jul 19	Jul 27	Aug 4
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**73.9** °F	-	**48.9** °F	41%	**30.03** in	**10.0** mi	ENE	**4.6** mph	-	N/A	
1:52 AM	**72.0** °F	-	**48.0** °F	43%	**30.03** in	**10.0** mi	ESE	**4.6** mph	-	N/A	
2:52 AM	**70.0** °F	-	**52.0** °F	53%	**30.01** in	**10.0** mi	East	**10.4** mph	-	N/A	
3:52 AM	**70.0** °F	-	**53.1** °F	55%	**30.01** in	**10.0** mi	East	**16.1** mph	-	N/A	
4:52 AM	**66.9** °F	-	**51.1** °F	57%	**30.03** in	**10.0** mi	WNW	**3.5** mph	-	N/A	
5:52 AM	**68.0** °F	-	**51.1** °F	55%	**30.03** in	**10.0** mi	NNW	**4.6** mph	-	N/A	
6:52 AM	**68.0** °F	-	**50.0** °F	52%	**30.05** in	**10.0** mi	NW	**3.5** mph	-	N/A	
7:52 AM	**70.0** °F	-	**53.1** °F	55%	**30.07** in	**10.0** mi	East	**3.5** mph	-	N/A	
8:52 AM	**73.0** °F	-	**53.1** °F	49%	**30.07** in	**10.0** mi	SW	**3.5** mph	-	N/A	
9:52 AM	**75.9** °F	-	**53.1** °F	45%	**30.06** in	**10.0** mi	South	**9.2** mph	-	N/A	
10:52 AM	**79.0** °F	-	**53.1** °F	40%	**30.05** in	**10.0** mi	SW	**10.4** mph	-	N/A	
11:52 AM	**82.0** °F	**81.2** °F	**53.1** °F	37%	**30.02** in	**10.0** mi	SW	**9.2** mph	-	N/A	
12:52 PM	**82.9** °F	-	**52.0** °F	34%	**30.00** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
1:52 PM	**84.0** °F	-	**48.9** °F	29%	**29.98** in	**10.0** mi	West	**11.5** mph	-	N/A	
2:52 PM	**86.0** °F	-	**50.0** °F	29%	**29.95** in	**10.0** mi	SSW	**6.9** mph	-	**0.00** in	
3:34 PM	**86.0** °F	-	**48.9** °F	28%	**30.19** in	**10.0** mi	Calm	Calm	-	N/A	Thunderstor
3:52 PM	**86.0** °F	-	**48.9** °F	28%	**29.92** in	**10.0** mi	West	**9.2** mph	-	N/A	Thunderstor

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
4:12 PM	**86.0** °F	-	**51.1** °F	30%	**30.18** in	**10.0** mi	NW	**5.8** mph	-	**0.00** in	Rain
4:25 PM	**86.0** °F	**84.0** °F	**53.1** °F	32%	**30.18** in	**10.0** mi	ENE	**9.2** mph	-	**0.00** in	Rain , Thunderstor
4:52 PM	**87.1** °F	-	**50.0** °F	28%	**29.91** in	**10.0** mi	Calm	Calm	-	**0.00** in	
5:52 PM	**88.0** °F	-	**48.9** °F	26%	**29.89** in	**10.0** mi	Calm	Calm	-	N/A	
6:52 PM	**88.0** °F	-	**46.9** °F	24%	**29.88** in	**10.0** mi	WSW	**5.8** mph	-	N/A	
7:52 PM	**86.0** °F	-	**52.0** °F	31%	**29.91** in	**10.0** mi	SW	**13.8** mph	**21.9** mph	N/A	
8:52 PM	**82.0** °F	-	**51.1** °F	34%	**29.94** in	**10.0** mi	South	**16.1** mph	-	N/A	
9:52 PM	**80.1** °F	-	**51.1** °F	36%	**29.98** in	**10.0** mi	South	**11.5** mph	-	N/A	
10:49 PM	**78.8** °F	-	**51.8** °F	39%	**30.26** in	**10.0** mi	SSE	**11.5** mph	-	N/A	Thunderstor
10:52 PM	**78.1** °F	-	**51.1** °F	39%	**29.99** in	**10.0** mi	SE	**10.4** mph	-	N/A	Thunderstor
11:26 PM	**77.0** °F	-	**52.0** °F	42%	**30.30** in	**10.0** mi	SSE	**4.6** mph	-	N/A	
11:52 PM	**73.9** °F	-	**55.0** °F	52%	**30.06** in	**10.0** mi	North	**15.0** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

1:11 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

11

2018

View

Wednesday, July 11, 2018

Daily | Weekly | Monthly | Custom

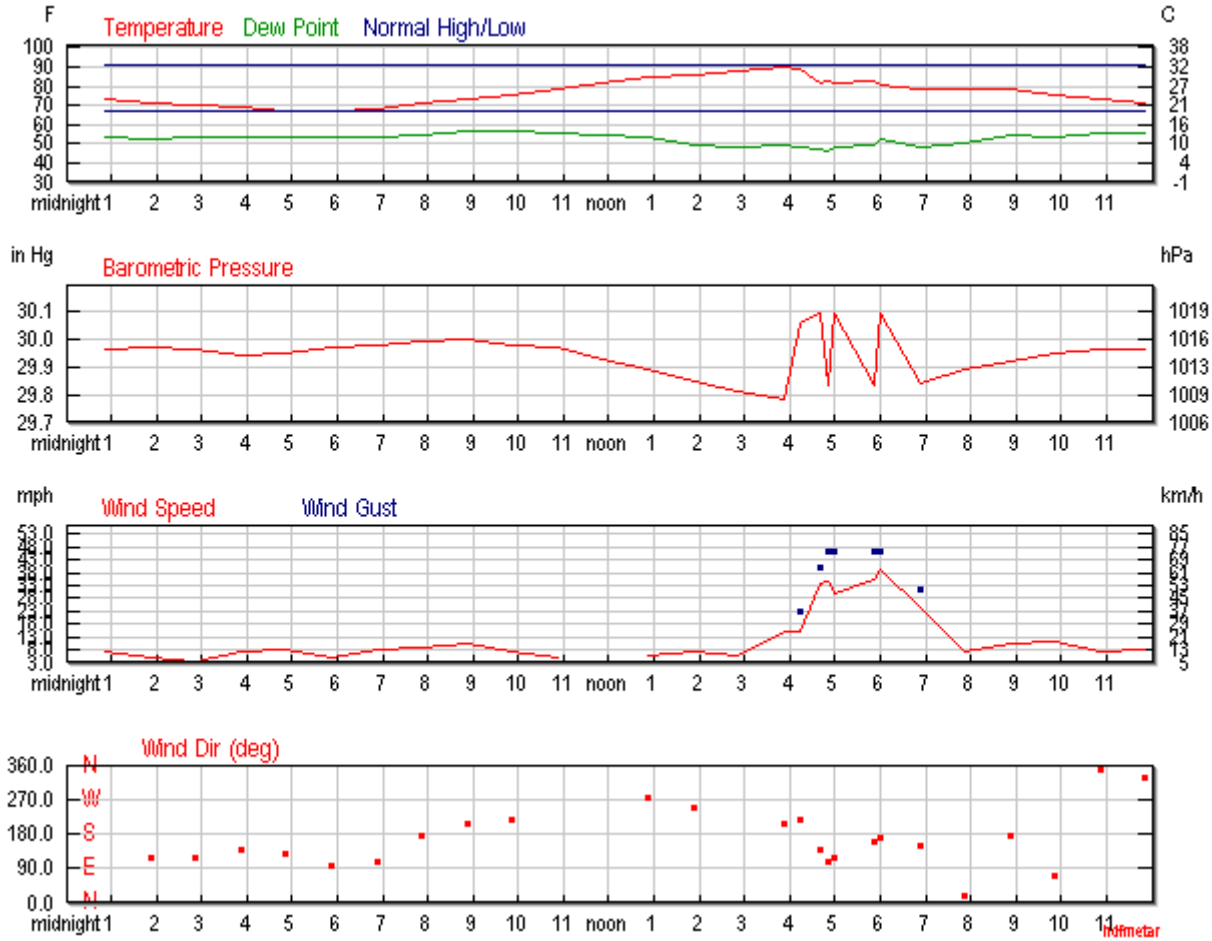
	Actual	Average	Record
Temperature			
Mean Temperature	**79** °F	-	
Max Temperature	**91** °F	-	- ()
Min Temperature	**66** °F	-	- ()
Cooling Degree Days	14		
Month to date cooling degree days	166		
Year to date cooling degree days	784		
Since 1 June cooling degree days	588		
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**52** °F		
Average Humidity	44		
Maximum Humidity	63		
Minimum Humidity	24		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.03		

	Actual	Average	Record
Year to date precipitation	2.27		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.94** in		
Wind			
Wind Speed	**11** mph (SSE)		
Max Wind Speed	**39** mph		
Max Gust Speed	**46** mph		
Visibility	**9** miles		
Events	Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Jul. 11, 2018	**Rise**	**Set**
Actual Time	6:01 AM MDT	8:22 PM MDT
Civil Twilight	5:32 AM MDT	8:51 PM MDT
Nautical Twilight	4:56 AM MDT	9:27 PM MDT
Astronomical Twilight	4:16 AM MDT	10:06 PM MDT
Moon	4:31 AM MDT (7/11)	7:06 PM MDT (7/11)
Length of Visible Light	15h 19m	
Length of Day	14h 21m	

Waning Crescent, 3% of the Moon is Illuminated

Jul 11	Jul 12	Jul 19	Jul 27	Aug 4
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**73.0** °F	-	**53.1** °F	49%	**29.96** in	**10.0** mi	SSE	**6.9** mph	-	N/A	
1:52 AM	**71.1** °F	-	**52.0** °F	51%	**29.97** in	**10.0** mi	ESE	**4.6** mph	-	N/A	
2:52 AM	**70.0** °F	-	**53.1** °F	55%	**29.96** in	**10.0** mi	ESE	**3.5** mph	-	N/A	
3:52 AM	**69.1** °F	-	**54.0** °F	58%	**29.94** in	**10.0** mi	SE	**6.9** mph	-	N/A	
4:52 AM	**66.9** °F	-	**53.1** °F	61%	**29.95** in	**10.0** mi	SE	**8.1** mph	-	N/A	
5:52 AM	**66.9** °F	-	**53.1** °F	61%	**29.97** in	**10.0** mi	East	**4.6** mph	-	N/A	
6:52 AM	**68.0** °F	-	**54.0** °F	61%	**29.98** in	**10.0** mi	ESE	**8.1** mph	-	N/A	
7:52 AM	**71.1** °F	-	**55.0** °F	57%	**29.99** in	**10.0** mi	South	**9.2** mph	-	N/A	
8:52 AM	**73.0** °F	-	**57.0** °F	57%	**30.00** in	**10.0** mi	SSW	**10.4** mph	-	N/A	
9:52 AM	**75.0** °F	-	**57.0** °F	53%	**29.98** in	**10.0** mi	SW	**6.9** mph	-	N/A	
10:52 AM	**78.1** °F	-	**55.9** °F	46%	**29.97** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
11:52 AM	**82.0** °F	**81.4** °F	**55.0** °F	39%	**29.93** in	**10.0** mi	North	-	-	N/A	
12:52 PM	**84.9** °F	**83.2** °F	**53.1** °F	33%	**29.89** in	**10.0** mi	West	**5.8** mph	-	N/A	
1:52 PM	**86.0** °F	-	**48.9** °F	28%	**29.85** in	**10.0** mi	WSW	**6.9** mph	-	N/A	
2:52 PM	**88.0** °F	-	**48.0** °F	25%	**29.81** in	**10.0** mi	Variable	**5.8** mph	-	N/A	
3:52 PM	**90.0** °F	-	**48.9** °F	24%	**29.78** in	**10.0** mi	SSW	**15.0** mph	**19.6** mph	N/A	
4:15 PM	**89.1** °F	-	**48.0** °F	24%	**30.06** in	**10.0** mi	SW	**15.0** mph	**23.0** mph	N/A	Thunderstor

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
4:39 PM	**82.0** °F	-	**46.9** °F	29%	**30.09** in	**6.0** mi	SE	**33.4** mph	**40.3** mph	N/A	Thunderstor
4:52 PM	**82.9** °F	-	**46.0** °F	27%	**29.83** in	**7.0** mi	ESE	**34.5** mph	**46.0** mph	N/A	Thunderstor
4:59 PM	**82.0** °F	-	**48.0** °F	30%	**30.09** in	**5.0** mi	ESE	**29.9** mph	**46.0** mph	N/A	Thunderstor
5:52 PM	**82.9** °F	-	**48.9** °F	31%	**29.83** in	**9.0** mi	SSE	**35.7** mph	**46.0** mph	N/A	Thunderstor
5:59 PM	**81.0** °F	-	**52.0** °F	36%	**30.09** in	**4.0** mi	South	**39.1** mph	**46.0** mph	N/A	
6:52 PM	**79.0** °F	-	**48.0** °F	34%	**29.84** in	**10.0** mi	SSE	**24.2** mph	**31.1** mph	N/A	
7:52 PM	**78.1** °F	-	**50.0** °F	37%	**29.89** in	**10.0** mi	NNE	**6.9** mph	-	N/A	
8:52 PM	**78.1** °F	-	**55.0** °F	45%	**29.92** in	**10.0** mi	South	**10.4** mph	-	N/A	
9:52 PM	**75.9** °F	-	**53.1** °F	45%	**29.95** in	**10.0** mi	ENE	**11.5** mph	-	N/A	
10:52 PM	**73.0** °F	-	**55.9** °F	55%	**29.96** in	**10.0** mi	North	**6.9** mph	-	N/A	
11:52 PM	**71.1** °F	-	**55.9** °F	59%	**29.96** in	**10.0** mi	NNW	**8.1** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

1:19 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

12

2018

View
Thursday, July 12, 2018

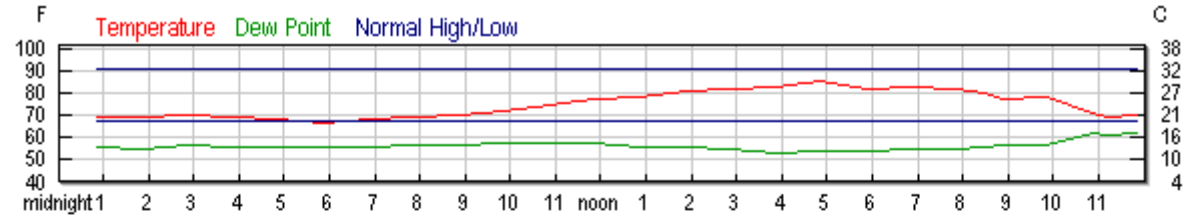
Daily | Weekly | Monthly | Custom

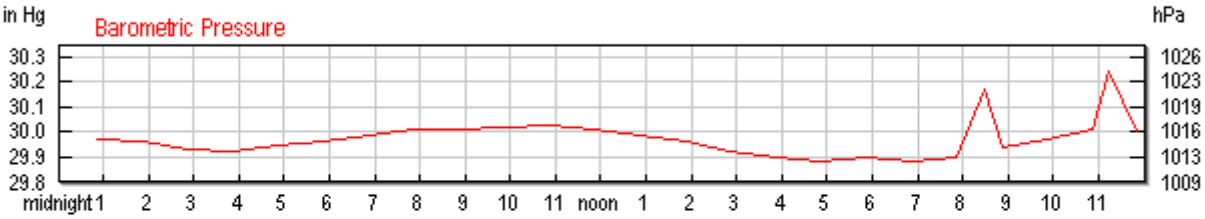
	Actual	Average	Record
Temperature			
Mean Temperature	**76** °F	-	
Max Temperature	**85** °F	-	- ()
Min Temperature	**67** °F	-	- ()
Cooling Degree Days	11		
Month to date cooling degree days	177		
Year to date cooling degree days	795		
Since 1 June cooling degree days	599		
Growing Degree Days	25 (Base 50)		
Moisture			
Dew Point	**57** °F		
Average Humidity	51		
Maximum Humidity	68		
Minimum Humidity	34		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.04		

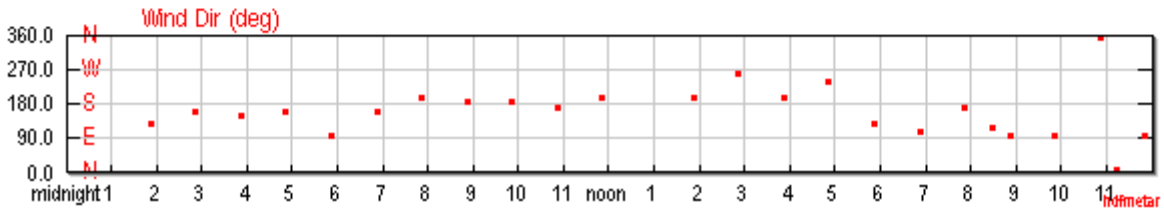
	Actual	Average	Record
Year to date precipitation	2.28		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.97** in		
Wind			
Wind Speed	**9** mph (SSE)		
Max Wind Speed	**18** mph		
Max Gust Speed	**24** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph







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KABQ

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Astronomy

Jul. 12, 2018	**Rise**	**Set**
Actual Time	6:01 AM MDT	8:22 PM MDT
Civil Twilight	5:32 AM MDT	8:51 PM MDT
Nautical Twilight	4:56 AM MDT	9:26 PM MDT
Astronomical Twilight	4:17 AM MDT	10:05 PM MDT
Moon	5:31 AM MDT (7/12)	8:09 PM MDT (7/12)
Length of Visible Light	15h 18m	
Length of Day	14h 20m	

Waning Crescent, 0% of the Moon is Illuminated

Jul 12	Jul 12	Jul 19	Jul 27	Aug 4
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**69.1** °F	-	**55.9** °F	63%	**29.97** in	**10.0** mi	WNW	**3.5** mph	-	N/A	
1:52 AM	**69.1** °F	-	**55.0** °F	61%	**29.96** in	**10.0** mi	SE	**5.8** mph	-	N/A	
2:52 AM	**70.0** °F	-	**57.0** °F	63%	**29.93** in	**10.0** mi	SSE	**11.5** mph	-	N/A	
3:52 AM	**69.1** °F	-	**55.9** °F	63%	**29.92** in	**10.0** mi	SSE	**9.2** mph	-	N/A	
4:52 AM	**68.0** °F	-	**55.9** °F	65%	**29.95** in	**10.0** mi	SSE	**5.8** mph	-	N/A	
5:52 AM	**66.9** °F	-	**55.9** °F	68%	**29.96** in	**10.0** mi	East	**3.5** mph	-	N/A	
6:52 AM	**68.0** °F	-	**55.9** °F	65%	**29.99** in	**10.0** mi	SSE	**3.5** mph	-	N/A	
7:52 AM	**69.1** °F	-	**57.0** °F	65%	**30.01** in	**10.0** mi	SSW	**8.1** mph	-	N/A	
8:52 AM	**70.0** °F	-	**57.0** °F	63%	**30.01** in	**10.0** mi	South	**11.5** mph	-	N/A	
9:52 AM	**72.0** °F	-	**57.9** °F	61%	**30.02** in	**10.0** mi	South	**9.2** mph	-	N/A	
10:52 AM	**75.0** °F	-	**57.9** °F	55%	**30.03** in	**10.0** mi	South	**12.7** mph	-	N/A	
11:52 AM	**77.0** °F	-	**57.9** °F	52%	**30.01** in	**10.0** mi	SSW	**11.5** mph	**16.1** mph	N/A	
12:52 PM	**78.1** °F	-	**55.9** °F	46%	**29.99** in	**10.0** mi	Variable	**3.5** mph	**18.4** mph	N/A	
1:52 PM	**81.0** °F	**80.8** °F	**55.9** °F	42%	**29.96** in	**10.0** mi	SSW	**5.8** mph	-	N/A	
2:52 PM	**82.0** °F	**81.4** °F	**55.0** °F	39%	**29.92** in	**10.0** mi	West	**5.8** mph	-	N/A	
3:52 PM	**82.9** °F	**81.8** °F	**53.1** °F	36%	**29.90** in	**10.0** mi	SSW	**4.6** mph	-	N/A	
4:52 PM	**84.9** °F	**83.3** °F	**54.0** °F	34%	**29.88** in	**10.0** mi	WSW	**10.4** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
5:52 PM	**82.0** °F	**81.3** °F	**54.0** °F	38%	**29.90** in	**10.0** mi	SE	**11.5** mph	**20.7** mph	N/A	
6:52 PM	**82.9** °F	**82.0** °F	**55.0** °F	38%	**29.88** in	**10.0** mi	ESE	**11.5** mph	-	N/A	
7:52 PM	**82.0** °F	**81.4** °F	**55.0** °F	39%	**29.90** in	**10.0** mi	South	**11.5** mph	-	N/A	
8:30 PM	**80.1** °F	**80.2** °F	**55.9** °F	43%	**30.17** in	**10.0** mi	ESE	**13.8** mph	-	N/A	
8:52 PM	**77.0** °F	-	**57.0** °F	50%	**29.94** in	**10.0** mi	East	**10.4** mph	-	N/A	
9:52 PM	**78.1** °F	-	**57.0** °F	48%	**29.97** in	**10.0** mi	East	**4.6** mph	-	N/A	
10:52 PM	**71.1** °F	-	**62.1** °F	73%	**30.01** in	**10.0** mi	North	**15.0** mph	-	**0.01** in	Rain , Thunderstor
11:13 PM	**69.1** °F	-	**61.0** °F	75%	**30.24** in	**10.0** mi	North	**11.5** mph	-	**0.00** in	Rain
11:52 PM	**70.0** °F	-	**62.1** °F	76%	**30.00** in	**10.0** mi	East	**5.8** mph	-	**0.00** in	Rain

Albuquerque, NM

Albuquerque International Sunport

1:24 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

13

2018

View
Friday, July 13, 2018

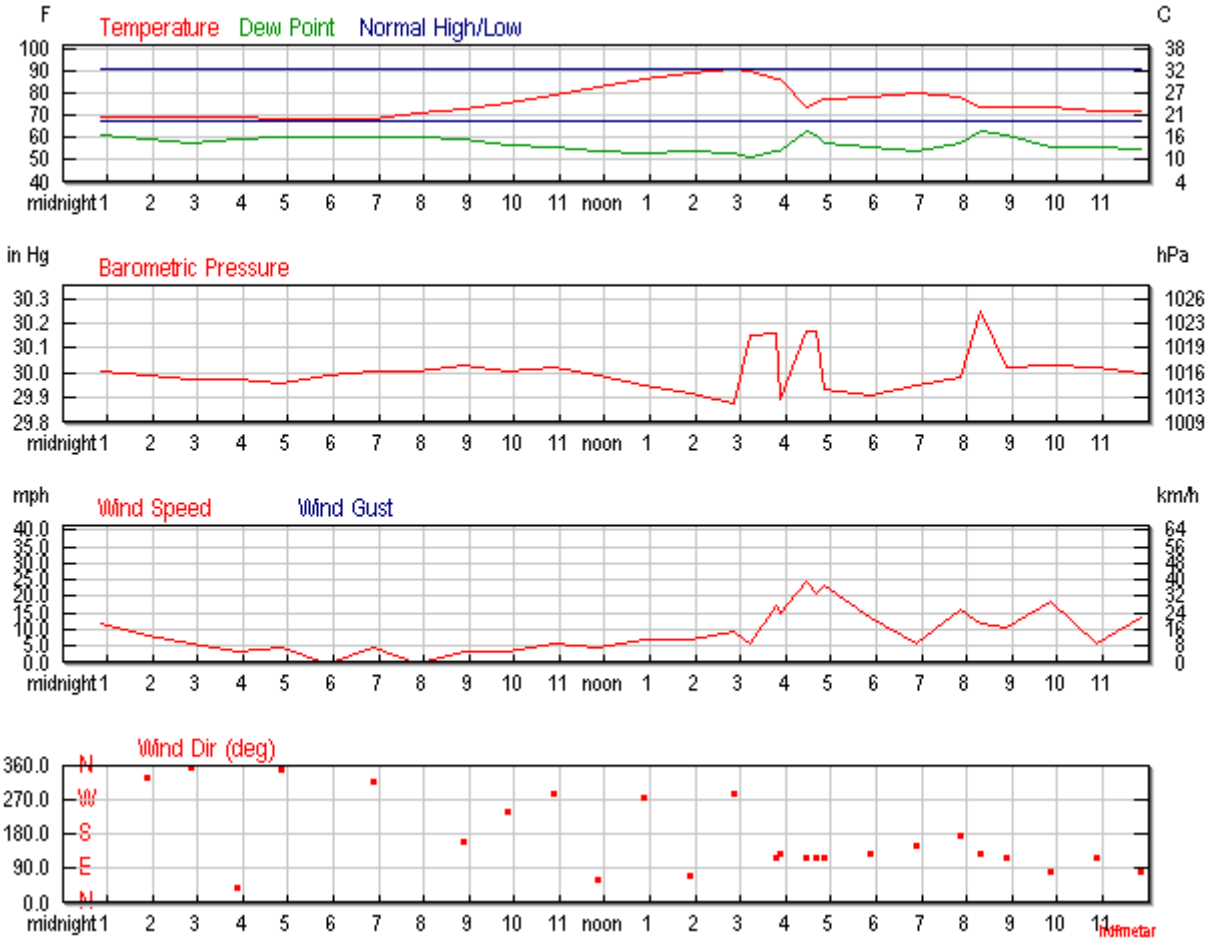
Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**80** °F	-	
Max Temperature	**92** °F	-	- ()
Min Temperature	**67** °F	-	- ()
Cooling Degree Days	15		
Month to date cooling degree days	192		
Year to date cooling degree days	810		
Since 1 June cooling degree days	614		
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**57** °F		
Average Humidity	52		
Maximum Humidity	76		
Minimum Humidity	28		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.07		

	Actual	Average	Record
Year to date precipitation	2.31		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.00** in		
Wind			
Wind Speed	**8** mph (East)		
Max Wind Speed	**26** mph		
Max Gust Speed	**32** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph



Search for Another Location

Airport or City:

KABQ

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Astronomy

Jul. 13, 2018	**Rise**	**Set**
Actual Time	6:02 AM MDT	8:21 PM MDT
Civil Twilight	5:33 AM MDT	8:50 PM MDT
Nautical Twilight	4:57 AM MDT	9:26 PM MDT
Astronomical Twilight	4:18 AM MDT	10:05 PM MDT
Moon	6:38 AM MDT (7/13)	9:06 PM MDT (7/13)
Length of Visible Light	15h 17m	
Length of Day	14h 19m	

New Moon, 1% of the Moon is Illuminated

Jul 13	Jul 19	Jul 27	Aug 4	Aug 11
New Moon	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**69.1** °F	-	**61.0** °F	75%	**30.01** in	**10.0** mi	North	**11.5** mph	-	**0.00** in	
1:52 AM	**69.1** °F	-	**59.0** °F	70%	**29.99** in	**10.0** mi	NNW	**8.1** mph	-	N/A	
2:52 AM	**69.1** °F	-	**57.9** °F	68%	**29.97** in	**10.0** mi	North	**5.8** mph	-	N/A	
3:52 AM	**69.1** °F	-	**59.0** °F	70%	**29.97** in	**10.0** mi	NE	**3.5** mph	-	N/A	
4:52 AM	**68.0** °F	-	**60.1** °F	76%	**29.96** in	**10.0** mi	North	**4.6** mph	-	N/A	
5:52 AM	**68.0** °F	-	**60.1** °F	76%	**29.99** in	**10.0** mi	Calm	Calm	-	N/A	
6:52 AM	**68.0** °F	-	**60.1** °F	76%	**30.01** in	**10.0** mi	NW	**4.6** mph	-	N/A	
7:52 AM	**71.1** °F	-	**60.1** °F	68%	**30.01** in	**10.0** mi	Calm	Calm	-	N/A	
8:52 AM	**73.0** °F	-	**59.0** °F	61%	**30.03** in	**10.0** mi	SSE	**3.5** mph	-	N/A	
9:52 AM	**75.9** °F	-	**57.0** °F	52%	**30.01** in	**10.0** mi	WSW	**3.5** mph	-	N/A	
10:52 AM	**79.0** °F	-	**55.9** °F	45%	**30.02** in	**10.0** mi	WNW	**5.8** mph	-	N/A	
11:52 AM	**82.9** °F	**81.9** °F	**54.0** °F	37%	**29.99** in	**10.0** mi	ENE	**4.6** mph	-	N/A	
12:52 PM	**86.0** °F	**84.0** °F	**53.1** °F	32%	**29.95** in	**10.0** mi	West	**6.9** mph	-	N/A	
1:52 PM	**89.1** °F	**86.9** °F	**54.0** °F	30%	**29.92** in	**10.0** mi	ENE	**6.9** mph	-	N/A	
2:52 PM	**91.0** °F	**88.5** °F	**53.1** °F	27%	**29.88** in	**10.0** mi	WNW	**9.2** mph	-	N/A	
3:12 PM	**90.0** °F	-	**51.1** °F	26%	**30.15** in	**10.0** mi	Variable	**5.8** mph	-	N/A	Thunderstor
3:48 PM	**86.0** °F	**84.2** °F	**53.6** °F	33%	**30.16** in	**10.0** mi	ESE	**17.3** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
3:52 PM	**86.0** °F	**84.2** °F	**54.0** °F	33%	**29.89** in	**10.0** mi	SE	**15.0** mph	-	N/A	
4:26 PM	**73.9** °F	-	**63.0** °F	68%	**30.17** in	**9.0** mi	ESE	**24.2** mph	-	**0.02** in	Rain , Thunderstor
4:41 PM	**75.9** °F	-	**61.0** °F	60%	**30.17** in	**10.0** mi	ESE	**20.7** mph	-	**0.02** in	Rain , Thunderstor
4:52 PM	**77.0** °F	-	**57.9** °F	52%	**29.93** in	**10.0** mi	ESE	**23.0** mph	**31.1** mph	**0.02** in	
5:52 PM	**78.1** °F	-	**55.9** °F	46%	**29.91** in	**10.0** mi	SE	**13.8** mph	-	N/A	
6:52 PM	**80.1** °F	**80.0** °F	**54.0** °F	40%	**29.95** in	**10.0** mi	SSE	**5.8** mph	-	N/A	
7:52 PM	**78.1** °F	-	**57.9** °F	50%	**29.98** in	**10.0** mi	South	**16.1** mph	-	N/A	
8:19 PM	**73.9** °F	-	**63.0** °F	68%	**30.25** in	**8.0** mi	SE	**11.5** mph	-	**0.01** in	Rain
8:52 PM	**73.9** °F	-	**61.0** °F	64%	**30.02** in	**10.0** mi	ESE	**10.4** mph	-	**0.01** in	
9:52 PM	**73.9** °F	-	**55.9** °F	53%	**30.03** in	**10.0** mi	East	**18.4** mph	-	N/A	
10:52 PM	**72.0** °F	-	**55.9** °F	57%	**30.02** in	**10.0** mi	ESE	**5.8** mph	-	**0.00** in	
11:52 PM	**72.0** °F	-	**55.0** °F	55%	**30.00** in	**10.0** mi	East	**13.8** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

1:27 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

14

2018

View

Saturday, July 14, 2018

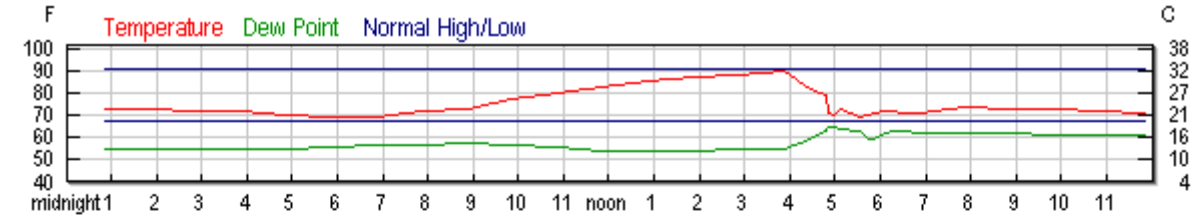
Daily | Weekly | Monthly | Custom

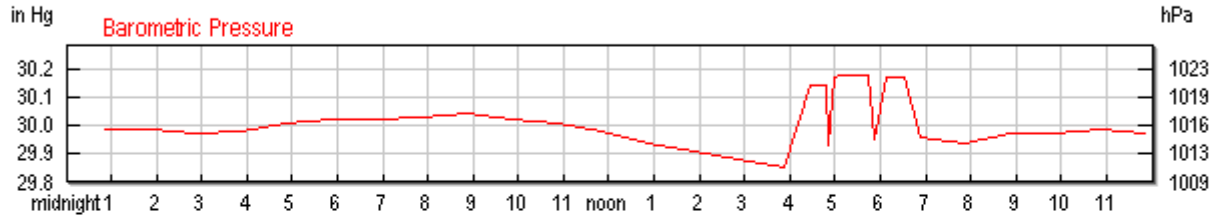
	Actual	Average	Record
Temperature			
Mean Temperature	**79** °F	-	
Max Temperature	**90** °F	-	- ()
Min Temperature	**67** °F	-	- ()
Cooling Degree Days	14		
Month to date cooling degree days	206		
Year to date cooling degree days	824		
Since 1 June cooling degree days	628		
Growing Degree Days	29 (Base 50)		
Moisture			
Dew Point	**59** °F		
Average Humidity	50		
Maximum Humidity	68		
Minimum Humidity	31		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.69		

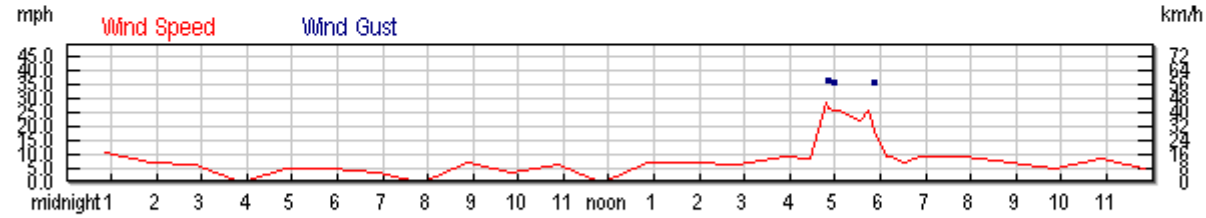
	Actual	Average	Record
Year to date precipitation	2.93		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.01** in		
Wind			
Wind Speed	**7** mph (SE)		
Max Wind Speed	**32** mph		
Max Gust Speed	**39** mph		
Visibility	**9** miles		
Events	Rain , Thunderstorm		

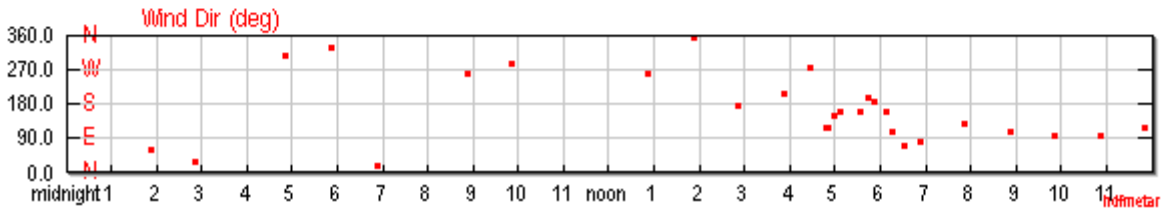
T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph









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Astronomy

Jul. 14, 2018	**Rise**	**Set**
Actual Time	6:03 AM MDT	8:21 PM MDT
Civil Twilight	5:34 AM MDT	8:50 PM MDT
Nautical Twilight	4:58 AM MDT	9:25 PM MDT
Astronomical Twilight	4:19 AM MDT	10:04 PM MDT
Moon	7:48 AM MDT (7/14)	9:56 PM MDT (7/14)
Length of Visible Light	15h 16m	
Length of Day	14h 18m	

Waxing Crescent, 4% of the Moon is Illuminated

Jul 14	Jul 19	Jul 27	Aug 4	Aug 11
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**73.0** °F	-	**55.0** °F	53%	**29.99** in	**10.0** mi	East	**10.4** mph	-	N/A	
1:52 AM	**73.0** °F	-	**55.0** °F	53%	**29.99** in	**10.0** mi	ENE	**6.9** mph	-	N/A	
2:52 AM	**72.0** °F	-	**55.0** °F	55%	**29.97** in	**10.0** mi	NNE	**5.8** mph	-	N/A	
3:52 AM	**72.0** °F	-	**55.0** °F	55%	**29.98** in	**10.0** mi	Calm	Calm	-	N/A	
4:52 AM	**70.0** °F	-	**55.0** °F	59%	**30.01** in	**10.0** mi	NW	**4.6** mph	-	N/A	
5:52 AM	**69.1** °F	-	**55.9** °F	63%	**30.02** in	**10.0** mi	NNW	**4.6** mph	-	N/A	
6:52 AM	**69.1** °F	-	**57.0** °F	65%	**30.02** in	**10.0** mi	NNE	**3.5** mph	-	N/A	
7:52 AM	**72.0** °F	-	**57.0** °F	59%	**30.03** in	**10.0** mi	Calm	Calm	-	N/A	
8:52 AM	**73.0** °F	-	**57.9** °F	59%	**30.04** in	**10.0** mi	West	**6.9** mph	-	N/A	
9:52 AM	**77.0** °F	-	**57.0** °F	50%	**30.02** in	**10.0** mi	WNW	**3.5** mph	-	N/A	
10:52 AM	**80.1** °F	**80.2** °F	**55.9** °F	43%	**30.01** in	**10.0** mi	Variable	**5.8** mph	-	N/A	
11:52 AM	**82.9** °F	**81.9** °F	**54.0** °F	37%	**29.98** in	**10.0** mi	Calm	Calm	-	N/A	
12:52 PM	**84.9** °F	**83.3** °F	**54.0** °F	34%	**29.94** in	**10.0** mi	West	**6.9** mph	-	N/A	
1:52 PM	**87.1** °F	**85.1** °F	**54.0** °F	32%	**29.91** in	**10.0** mi	North	**6.9** mph	-	N/A	
2:52 PM	**88.0** °F	**86.1** °F	**55.0** °F	32%	**29.88** in	**10.0** mi	South	**5.8** mph	-	N/A	
3:52 PM	**90.0** °F	**87.9** °F	**55.0** °F	30%	**29.85** in	**10.0** mi	SSW	**9.2** mph	-	N/A	
4:26 PM	**82.0** °F	**82.1** °F	**59.0** °F	45%	**30.14** in	**10.0** mi	West	**8.1** mph	-	**0.05** in	Rain , Thunderstor

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
4:47 PM	**78.8** °F	-	**62.6** °F	57%	**30.14** in	**2.0** mi	ESE	**28.8** mph	**36.8** mph	**0.07** in	Rain , Thunderstor
4:52 PM	**71.1** °F	-	**64.9** °F	81%	**29.93** in	**2.0** mi	ESE	**26.5** mph	**36.8** mph	**0.12** in	Rain , Thunderstor
4:58 PM	**70.0** °F	-	**64.9** °F	84%	**30.17** in	**1.0** mi	SSE	**25.3** mph	**35.7** mph	**0.20** in	Rain , Thunderstor
5:07 PM	**73.0** °F	-	**64.0** °F	73%	**30.18** in	**2.0** mi	SSE	**25.3** mph	-	**0.37** in	Rain , Thunderstor
5:33 PM	**69.1** °F	-	**63.0** °F	81%	**30.18** in	**5.0** mi	SSE	**21.9** mph	-	**0.47** in	Rain , Thunderstor
5:45 PM	**70.0** °F	-	**59.0** °F	68%	**30.18** in	**5.0** mi	SSW	**25.3** mph	**39.1** mph	**0.48** in	Rain , Thunderstor
5:52 PM	**71.1** °F	-	**59.0** °F	66%	**29.95** in	**10.0** mi	South	**18.4** mph	**35.7** mph	**0.49** in	Rain , Thunderstor
6:08 PM	**72.0** °F	-	**62.1** °F	71%	**30.17** in	**10.0** mi	SSE	**9.2** mph	-	**0.01** in	
6:17 PM	**72.0** °F	-	**63.0** °F	73%	**30.17** in	**10.0** mi	ESE	**9.2** mph	-	**0.01** in	Thunderstor
6:32 PM	**71.1** °F	-	**63.0** °F	75%	**30.17** in	**10.0** mi	ENE	**6.9** mph	-	**0.01** in	
6:52 PM	**71.1** °F	-	**62.1** °F	73%	**29.96** in	**10.0** mi	East	**9.2** mph	-	**0.01** in	
7:52 PM	**73.9** °F	-	**62.1** °F	66%	**29.94** in	**10.0** mi	SE	**9.2** mph	-	N/A	
8:52 PM	**73.0** °F	-	**62.1** °F	68%	**29.97** in	**10.0** mi	ESE	**6.9** mph	-	N/A	
9:52 PM	**73.0** °F	-	**61.0** °F	66%	**29.97** in	**10.0** mi	East	**4.6** mph	-	N/A	
10:52 PM	**72.0** °F	-	**61.0** °F	68%	**29.99** in	**10.0** mi	East	**8.1** mph	-	N/A	
11:52 PM	**71.1** °F	-	**61.0** °F	70%	**29.97** in	**10.0** mi	ESE	**4.6** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

1:28 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

15

2018

View
Sunday, July 15, 2018

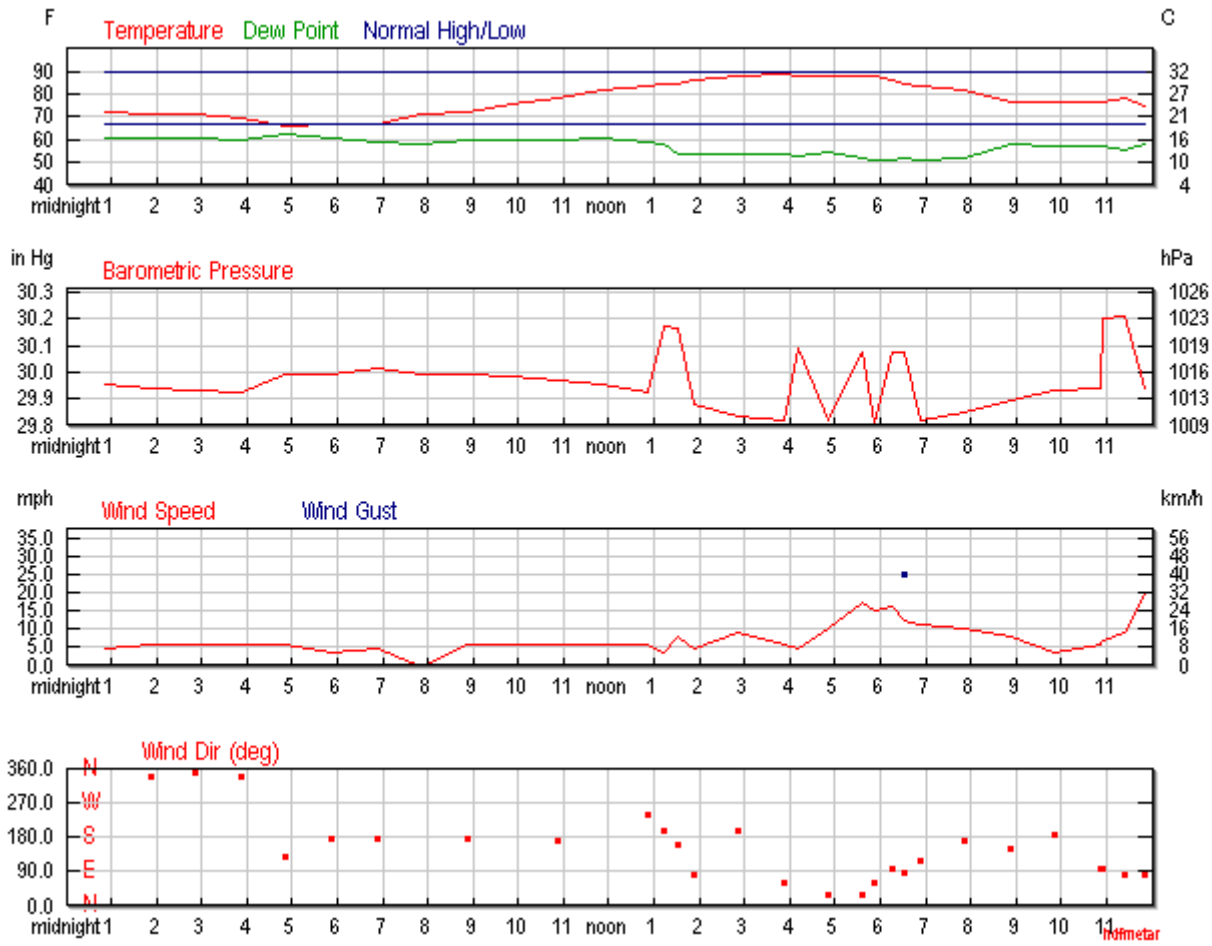
Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**78** °F	-	
Max Temperature	**90** °F	-	- ()
Min Temperature	**65** °F	-	- ()
Cooling Degree Days	13		
Month to date cooling degree days	219		
Year to date cooling degree days	837		
Since 1 June cooling degree days	641		
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**57** °F		
Average Humidity	58		
Maximum Humidity	87		
Minimum Humidity	29		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.69		

	Actual	Average	Record
Year to date precipitation	2.93		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.96** in		
Wind			
Wind Speed	**8** mph (ESE)		
Max Wind Speed	**24** mph		
Max Gust Speed	**27** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph



Search for Another Location

Airport or City:

KABQ

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Astronomy

Jul. 15, 2018	**Rise**	**Set**
Actual Time	6:03 AM MDT	8:20 PM MDT
Civil Twilight	5:34 AM MDT	8:49 PM MDT
Nautical Twilight	4:59 AM MDT	9:25 PM MDT
Astronomical Twilight	4:20 AM MDT	10:03 PM MDT
Moon	8:58 AM MDT (7/15)	10:40 PM MDT (7/15)
Length of Visible Light	15h 14m	
Length of Day	14h 17m	

Waxing Crescent, 10% of the Moon is Illuminated

Jul 15	Jul 19	Jul 27	Aug 4	Aug 11
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**72.0** °F	-	**61.0** °F	68%	**29.95** in	**10.0** mi	North	**4.6** mph	-	N/A	
1:52 AM	**71.1** °F	-	**61.0** °F	70%	**29.94** in	**10.0** mi	NNW	**5.8** mph	-	N/A	
2:52 AM	**71.1** °F	-	**61.0** °F	70%	**29.93** in	**10.0** mi	North	**5.8** mph	-	N/A	
3:52 AM	**70.0** °F	-	**60.1** °F	71%	**29.92** in	**10.0** mi	NNW	**5.8** mph	-	N/A	
4:52 AM	**66.0** °F	-	**63.0** °F	90%	**29.99** in	**10.0** mi	SE	**5.8** mph	-	N/A	
5:52 AM	**66.9** °F	-	**61.0** °F	81%	**29.99** in	**10.0** mi	South	**3.5** mph	-	N/A	
6:52 AM	**66.9** °F	-	**59.0** °F	76%	**30.01** in	**10.0** mi	South	**4.6** mph	-	N/A	
7:52 AM	**71.1** °F	-	**57.9** °F	63%	**29.99** in	**10.0** mi	Calm	Calm	-	N/A	
8:52 AM	**72.0** °F	-	**60.1** °F	66%	**29.99** in	**10.0** mi	South	**5.8** mph	-	N/A	
9:52 AM	**75.9** °F	-	**60.1** °F	58%	**29.98** in	**10.0** mi	Variable	**5.8** mph	-	N/A	
10:52 AM	**78.1** °F	-	**60.1** °F	54%	**29.97** in	**10.0** mi	South	**5.8** mph	-	N/A	
11:52 AM	**82.0** °F	**82.7** °F	**61.0** °F	49%	**29.95** in	**10.0** mi	Variable	**5.8** mph	-	N/A	
12:52 PM	**84.0** °F	**83.8** °F	**59.0** °F	43%	**29.92** in	**10.0** mi	WSW	**5.8** mph	-	N/A	
1:12 PM	**84.9** °F	**84.2** °F	**57.9** °F	40%	**30.17** in	**10.0** mi	SSW	**3.5** mph	-	N/A	Thunderstor
1:32 PM	**84.9** °F	**83.3** °F	**54.0** °F	34%	**30.16** in	**10.0** mi	SSE	**8.1** mph	-	N/A	
1:52 PM	**86.0** °F	**84.2** °F	**54.0** °F	33%	**29.88** in	**10.0** mi	East	**4.6** mph	-	N/A	
2:52 PM	**88.0** °F	**85.9** °F	**54.0** °F	31%	**29.83** in	**10.0** mi	SSW	**9.2** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
3:52 PM	**89.1** °F	**86.9** °F	**54.0** °F	30%	**29.82** in	**10.0** mi	ENE	**5.8** mph	-	N/A	
4:10 PM	**88.0** °F	**85.7** °F	**53.1** °F	30%	**30.09** in	**10.0** mi	Variable	**4.6** mph	-	N/A	Thunderstor
4:52 PM	**88.0** °F	**86.1** °F	**55.0** °F	32%	**29.82** in	**10.0** mi	NNE	**10.4** mph	-	N/A	Thunderstor
5:37 PM	**88.0** °F	-	**52.0** °F	29%	**30.07** in	**10.0** mi	NNE	**17.3** mph	-	N/A	Thunderstor
5:52 PM	**88.0** °F	-	**51.1** °F	28%	**29.81** in	**10.0** mi	ENE	**15.0** mph	-	N/A	Thunderstor
6:16 PM	**86.0** °F	-	**51.1** °F	30%	**30.07** in	**10.0** mi	East	**16.1** mph	**27.6** mph	**0.00** in	Thunderstor
6:31 PM	**84.9** °F	-	**52.0** °F	32%	**30.07** in	**10.0** mi	East	**12.7** mph	**25.3** mph	**0.00** in	
6:52 PM	**84.0** °F	-	**51.1** °F	32%	**29.82** in	**10.0** mi	ESE	**11.5** mph	-	**0.00** in	
7:52 PM	**82.0** °F	-	**52.0** °F	35%	**29.85** in	**10.0** mi	South	**10.4** mph	-	N/A	
8:52 PM	**77.0** °F	-	**57.9** °F	52%	**29.89** in	**10.0** mi	SSE	**8.1** mph	-	N/A	
9:52 PM	**77.0** °F	-	**57.0** °F	50%	**29.93** in	**10.0** mi	South	**3.5** mph	-	N/A	
10:52 PM	**77.0** °F	-	**57.0** °F	50%	**29.94** in	**10.0** mi	East	**5.8** mph	-	N/A	
10:56 PM	**77.0** °F	-	**57.0** °F	50%	**30.20** in	**10.0** mi	East	**6.9** mph	-	N/A	Thunderstor
11:25 PM	**78.1** °F	-	**55.9** °F	46%	**30.21** in	**10.0** mi	East	**9.2** mph	-	N/A	Thunderstor
11:52 PM	**75.0** °F	-	**57.9** °F	55%	**29.94** in	**10.0** mi	East	**19.6** mph	-	**0.00** in	Rain , Thunderstor

Albuquerque, NM

Albuquerque International Sunport

1:35 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

16

2018

View

Monday, July 16, 2018

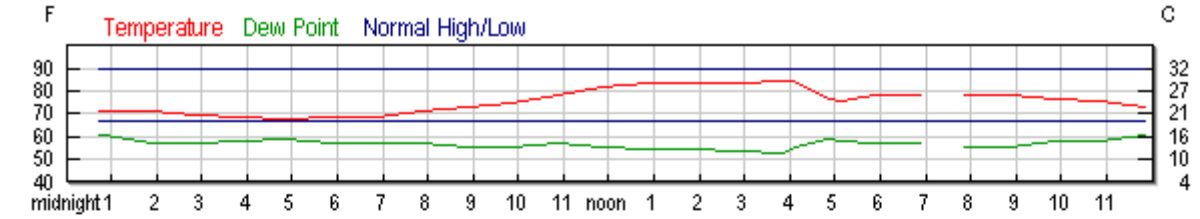
Daily | Weekly | Monthly | Custom

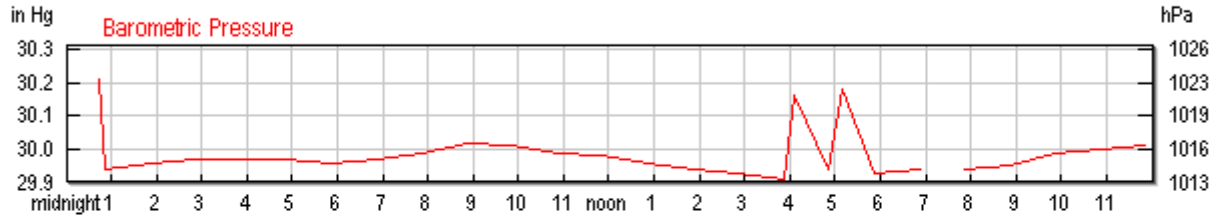
	Actual	Average	Record
Temperature			
Mean Temperature	**78** °F	-	
Max Temperature	**88** °F	-	- ()
Min Temperature	**67** °F	-	- ()
Cooling Degree Days	13		
Month to date cooling degree days	232		
Year to date cooling degree days	850		
Since 1 June cooling degree days	654		
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**57** °F		
Average Humidity	54		
Maximum Humidity	73		
Minimum Humidity	34		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.69		

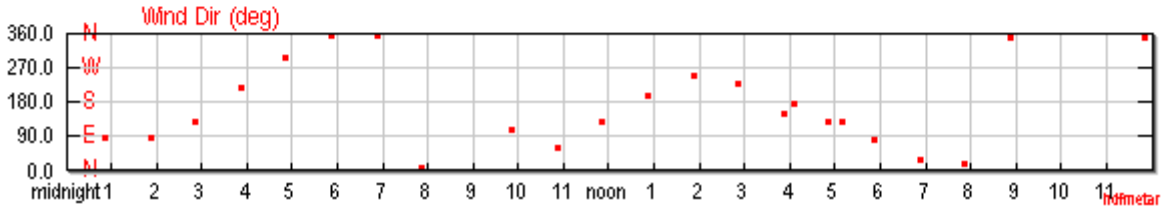
	Actual	Average	Record
Year to date precipitation	2.93		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.98** in		
Wind			
Wind Speed	**10** mph (East)		
Max Wind Speed	**30** mph		
Max Gust Speed	**37** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph







Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Jul. 16, 2018	**Rise**	**Set**
Actual Time	6:04 AM MDT	8:20 PM MDT
Civil Twilight	5:35 AM MDT	8:49 PM MDT
Nautical Twilight	5:00 AM MDT	9:24 PM MDT
Astronomical Twilight	4:21 AM MDT	10:03 PM MDT
Moon	10:07 AM MDT (7/16)	11:19 PM MDT (7/16)
Length of Visible Light	15h 13m	
Length of Day	14h 15m	

Waxing Crescent, 18% of the Moon is Illuminated

Jul 16	Jul 19	Jul 27	Aug 4	Aug 11
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:43 AM	**71.1** °F	-	**61.0** °F	70%	**30.21** in	**10.0** mi	East	**19.6** mph	-	**0.00** in	Rain
12:52 AM	**71.1** °F	-	**61.0** °F	70%	**29.94** in	**10.0** mi	East	**20.7** mph	-	**0.00** in	Rain
1:52 AM	**71.1** °F	-	**57.0** °F	61%	**29.96** in	**10.0** mi	East	**21.9** mph	**29.9** mph	**0.00** in	
2:52 AM	**70.0** °F	-	**57.0** °F	63%	**29.97** in	**10.0** mi	SE	**10.4** mph	-	N/A	
3:52 AM	**69.1** °F	-	**57.9** °F	68%	**29.97** in	**10.0** mi	SW	**9.2** mph	-	N/A	
4:52 AM	**68.0** °F	-	**59.0** °F	73%	**29.97** in	**10.0** mi	WNW	**5.8** mph	-	N/A	
5:52 AM	**69.1** °F	-	**57.0** °F	65%	**29.96** in	**10.0** mi	North	**3.5** mph	-	N/A	
6:52 AM	**69.1** °F	-	**57.0** °F	65%	**29.97** in	**10.0** mi	North	**9.2** mph	-	N/A	
7:52 AM	**71.1** °F	-	**57.0** °F	61%	**29.99** in	**10.0** mi	North	**4.6** mph	-	N/A	
8:52 AM	**73.0** °F	-	**55.9** °F	55%	**30.02** in	**10.0** mi	Variable	**3.5** mph	-	N/A	
9:52 AM	**75.0** °F	-	**55.9** °F	51%	**30.01** in	**10.0** mi	ESE	**10.4** mph	-	N/A	
10:52 AM	**78.1** °F	-	**57.0** °F	48%	**29.99** in	**10.0** mi	ENE	**8.1** mph	-	N/A	
11:52 AM	**82.0** °F	**81.6** °F	**55.9** °F	41%	**29.98** in	**10.0** mi	SE	**10.4** mph	-	N/A	
12:52 PM	**84.0** °F	**82.9** °F	**55.0** °F	37%	**29.96** in	**10.0** mi	SSW	**11.5** mph	-	N/A	
1:52 PM	**84.0** °F	**82.9** °F	**55.0** °F	37%	**29.94** in	**10.0** mi	WSW	**10.4** mph	-	N/A	
2:52 PM	**84.0** °F	**82.6** °F	**54.0** °F	35%	**29.93** in	**10.0** mi	SW	**8.1** mph	-	**0.00** in	
3:52 PM	**84.9** °F	**83.2** °F	**53.1** °F	33%	**29.91** in	**10.0** mi	SSE	**18.4** mph	**21.9** mph	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
4:05 PM	**84.9** °F	**83.7** °F	**55.9** °F	37%	**30.16** in	**10.0** mi	South	**17.3** mph	**23.0** mph	N/A	Thunderstor
4:52 PM	**77.0** °F	-	**59.0** °F	54%	**29.94** in	**10.0** mi	SE	**26.5** mph	-	N/A	Thunderstor
5:09 PM	**75.9** °F	-	**57.9** °F	54%	**30.18** in	**10.0** mi	SE	**19.6** mph	-	**0.00** in	Rain
5:52 PM	**78.1** °F	-	**57.0** °F	48%	**29.93** in	**10.0** mi	East	**12.7** mph	-	**0.00** in	
6:52 PM	**78.1** °F	-	**57.0** °F	48%	**29.94** in	**10.0** mi	NNE	**12.7** mph	-	**0.00** in	
7:42 PM	-	-	-	N/A%	-	-	North	-	-	N/A	
7:52 PM	**78.1** °F	-	**55.9** °F	46%	**29.94** in	**10.0** mi	NNE	**9.2** mph	-	N/A	
8:52 PM	**78.1** °F	-	**55.9** °F	46%	**29.95** in	**10.0** mi	North	**8.1** mph	-	N/A	
9:52 PM	**77.0** °F	-	**57.9** °F	52%	**29.99** in	**10.0** mi	Variable	**3.5** mph	-	N/A	
10:52 PM	**75.9** °F	-	**57.9** °F	54%	**30.00** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
11:52 PM	**73.0** °F	-	**61.0** °F	66%	**30.01** in	**10.0** mi	North	**5.8** mph	-	**0.00** in	

Albuquerque, NM

Albuquerque International Sunport

1:38 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

17

2018

View
Tuesday, July 17, 2018

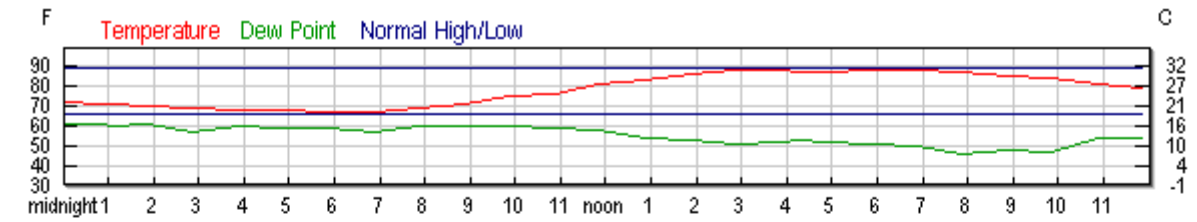
Daily | Weekly | Monthly | Custom

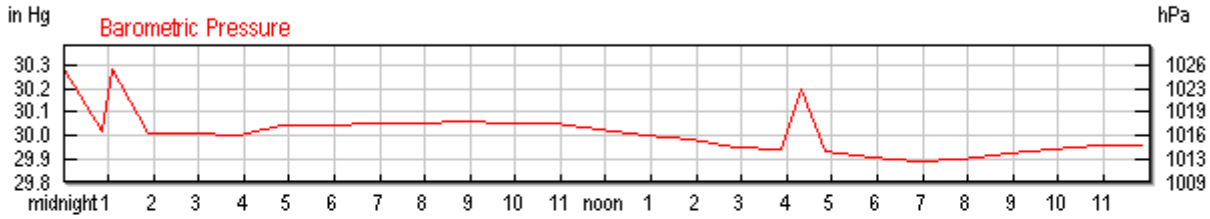
	Actual	Average	Record
Temperature			
Mean Temperature	**79** °F	-	
Max Temperature	**90** °F	-	- ()
Min Temperature	**67** °F	-	- ()
Cooling Degree Days	14		
Month to date cooling degree days	246		
Year to date cooling degree days	864		
Since 1 June cooling degree days	668		
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**56** °F		
Average Humidity	50		
Maximum Humidity	76		
Minimum Humidity	24		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.69		

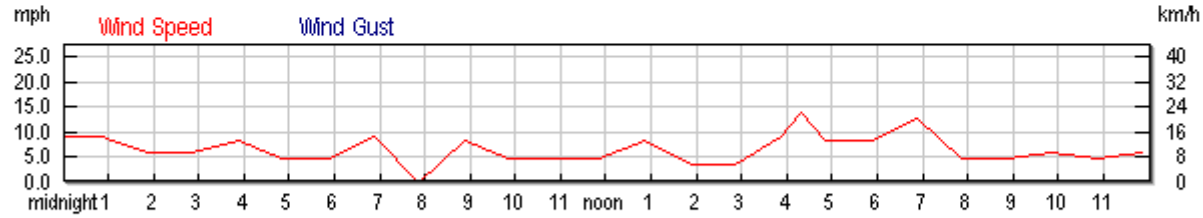
	Actual	Average	Record
Year to date precipitation	2.93		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.01** in		
Wind			
Wind Speed	**6** mph (SE)		
Max Wind Speed	**18** mph		
Max Gust Speed	**20** mph		
Visibility	**10** miles		
Events	Thunderstorm		

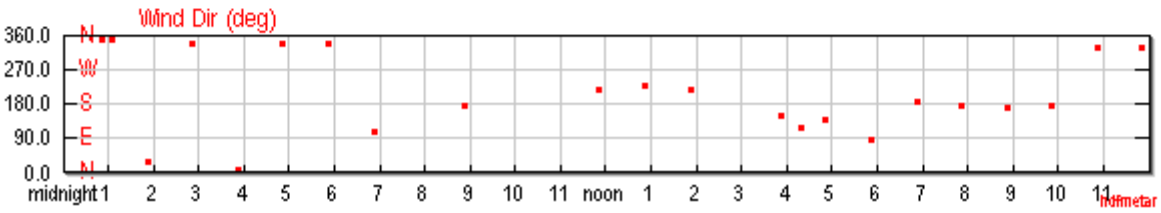
T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph









Search for Another Location

Airport or City:

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Astronomy

Jul. 17, 2018	**Rise**	**Set**
Actual Time	6:05 AM MDT	8:19 PM MDT
Civil Twilight	5:36 AM MDT	8:48 PM MDT
Nautical Twilight	5:00 AM MDT	9:23 PM MDT
Astronomical Twilight	4:22 AM MDT	10:02 PM MDT
Moon	11:14 AM MDT (7/17)	11:55 PM MDT (7/17)
Length of Visible Light	15h 12m	
Length of Day	14h 14m	

Waxing Crescent, 28% of the Moon is Illuminated

Jul 17	Jul 19	Jul 27	Aug 4	Aug 11
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:02 AM	**73.0** °F	-	**62.1** °F	68%	**30.28** in	**10.0** mi	North	**9.2** mph	-	N/A	Thunderstor
12:52 AM	**72.0** °F	-	**62.1** °F	71%	**30.02** in	**10.0** mi	North	**9.2** mph	-	N/A	Thunderstor
1:05 AM	**72.0** °F	-	**61.0** °F	68%	**30.28** in	**10.0** mi	North	**8.1** mph	-	N/A	
1:52 AM	**71.1** °F	-	**62.1** °F	73%	**30.01** in	**10.0** mi	NNE	**5.8** mph	-	N/A	
2:52 AM	**70.0** °F	-	**57.9** °F	65%	**30.01** in	**10.0** mi	NNW	**5.8** mph	-	N/A	
3:52 AM	**69.1** °F	-	**61.0** °F	75%	**30.00** in	**10.0** mi	North	**8.1** mph	-	N/A	
4:52 AM	**69.1** °F	-	**60.1** °F	73%	**30.04** in	**10.0** mi	NNW	**4.6** mph	-	N/A	
5:52 AM	**68.0** °F	-	**60.1** °F	76%	**30.04** in	**10.0** mi	NNW	**4.6** mph	-	N/A	
6:52 AM	**68.0** °F	-	**57.9** °F	70%	**30.05** in	**10.0** mi	ESE	**9.2** mph	-	N/A	
7:52 AM	**70.0** °F	-	**61.0** °F	73%	**30.05** in	**10.0** mi	Calm	Calm	-	N/A	
8:52 AM	**72.0** °F	-	**61.0** °F	68%	**30.06** in	**10.0** mi	South	**8.1** mph	-	N/A	
9:52 AM	**75.9** °F	-	**61.0** °F	60%	**30.05** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
10:52 AM	**77.0** °F	-	**60.1** °F	56%	**30.05** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
11:52 AM	**82.0** °F	**82.1** °F	**59.0** °F	45%	**30.03** in	**10.0** mi	SW	**4.6** mph	-	N/A	
12:52 PM	**84.0** °F	**82.9** °F	**55.0** °F	37%	**30.00** in	**10.0** mi	SW	**8.1** mph	-	N/A	
1:52 PM	**87.1** °F	**85.1** °F	**54.0** °F	32%	**29.98** in	**10.0** mi	SW	**3.5** mph	-	N/A	
2:52 PM	**89.1** °F	-	**52.0** °F	28%	**29.95** in	**10.0** mi	Variable	**3.5** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
3:52 PM	**89.1** °F	**86.7** °F	**53.1** °F	29%	**29.94** in	**10.0** mi	SSE	**9.2** mph	-	N/A	
4:18 PM	**88.0** °F	**85.9** °F	**54.0** °F	31%	**30.20** in	**10.0** mi	ESE	**13.8** mph	-	N/A	
4:52 PM	**88.0** °F	**85.7** °F	**53.1** °F	30%	**29.93** in	**10.0** mi	SE	**8.1** mph	-	N/A	
5:52 PM	**89.1** °F	-	**52.0** °F	28%	**29.91** in	**10.0** mi	East	**8.1** mph	-	N/A	
6:52 PM	**89.1** °F	-	**51.1** °F	27%	**29.89** in	**10.0** mi	South	**12.7** mph	**17.3** mph	N/A	
7:52 PM	**88.0** °F	-	**46.9** °F	24%	**29.90** in	**10.0** mi	South	**4.6** mph	-	N/A	
8:52 PM	**86.0** °F	-	**48.9** °F	28%	**29.92** in	**10.0** mi	South	**4.6** mph	-	N/A	
9:52 PM	**84.9** °F	-	**48.0** °F	28%	**29.94** in	**10.0** mi	South	**5.8** mph	-	N/A	
10:52 PM	**82.0** °F	**81.4** °F	**55.0** °F	39%	**29.96** in	**10.0** mi	NNW	**4.6** mph	-	N/A	
11:52 PM	**80.1** °F	**80.1** °F	**55.0** °F	42%	**29.96** in	**10.0** mi	NNW	**5.8** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

1:40 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

19

2018

View

Thursday, July 19, 2018

Daily | Weekly | Monthly | Custom

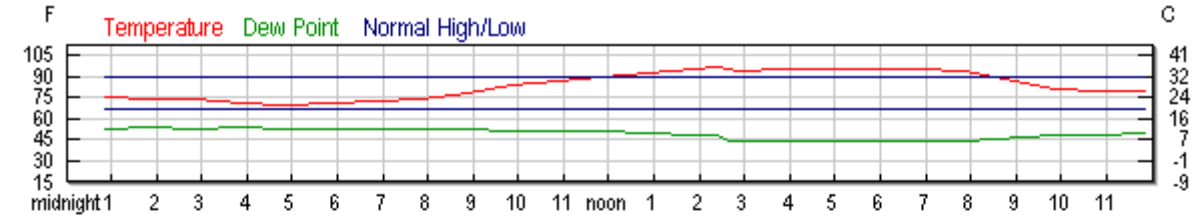
	Actual	Average	Record
Temperature			
Mean Temperature	**84** °F	-	
Max Temperature	**98** °F	-	- ()
Min Temperature	**70** °F	-	- ()
Cooling Degree Days	19		
Month to date cooling degree days	283		
Year to date cooling degree days	901		
Since 1 June cooling degree days	705		
Growing Degree Days	34 (Base 50)		
Moisture			
Dew Point	**50** °F		
Average Humidity	37		
Maximum Humidity	57		
Minimum Humidity	17		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.69		

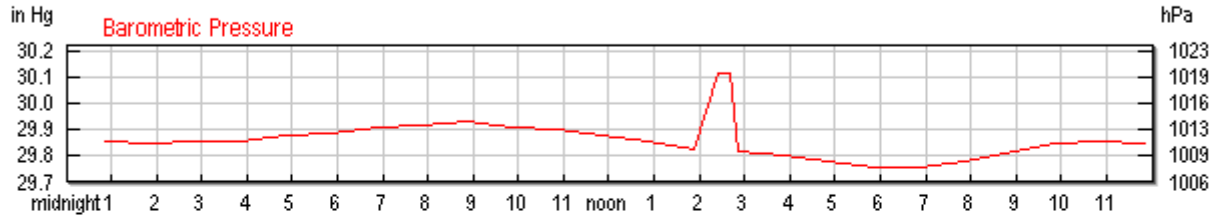
	Actual	Average	Record
Year to date precipitation	2.93		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.87** in		
Wind			
Wind Speed	**7** mph (SE)		
Max Wind Speed	**18** mph		
Max Gust Speed	**25** mph		
Visibility	**10** miles		
Events	Thunderstorm		

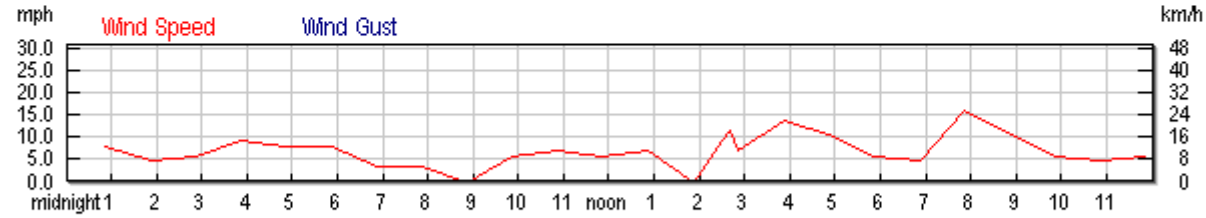
T = Trace of Precipitation, MM = Missing Value

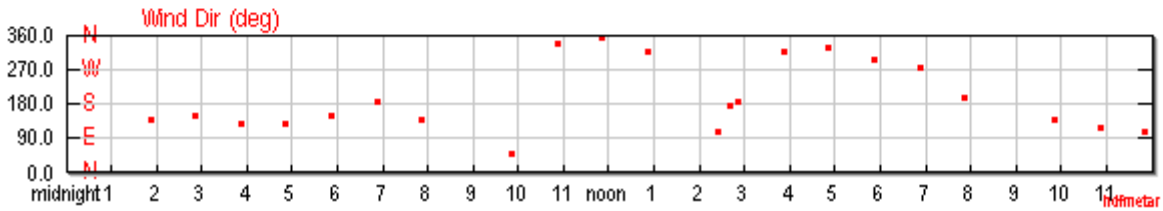
Source: NWS Daily Summary

Daily Weather History Graph









Search for Another Location

Airport or City:

KABQ

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Astronomy

Jul. 19, 2018	**Rise**	**Set**
Actual Time	6:06 AM MDT	8:18 PM MDT
Civil Twilight	5:37 AM MDT	8:47 PM MDT
Nautical Twilight	5:02 AM MDT	9:22 PM MDT
Astronomical Twilight	4:24 AM MDT	10:00 PM MDT
Moon	1:19 PM MDT (7/19)	12:29 AM MDT (7/19)
Length of Visible Light	15h 09m	
Length of Day	14h 12m	

Waxing Crescent, 49% of the Moon is Illuminated

Jul 19	Jul 19	Jul 27	Aug 4	Aug 11
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Condit
12:52 AM	**75.9** °F	**53.1** °F	45%	**29.86** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Scatter Clouds
1:52 AM	**73.9** °F	**54.0** °F	50%	**29.85** in	**10.0** mi	SE	**4.6** mph	-	N/A		Scatter Clouds
2:52 AM	**73.9** °F	**53.1** °F	48%	**29.86** in	**10.0** mi	SSE	**5.8** mph	-	N/A		Scatter Clouds
3:52 AM	**71.1** °F	**54.0** °F	55%	**29.86** in	**10.0** mi	SE	**9.2** mph	-	N/A		Scatter Clouds
4:52 AM	**70.0** °F	**53.1** °F	55%	**29.88** in	**10.0** mi	SE	**8.1** mph	-	N/A		Mostly Cloudy
5:52 AM	**71.1** °F	**53.1** °F	53%	**29.89** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Scatter Clouds
6:52 AM	**73.0** °F	**53.1** °F	49%	**29.91** in	**10.0** mi	South	**3.5** mph	-	N/A		Mostly Cloudy
7:52 AM	**73.9** °F	**53.1** °F	48%	**29.92** in	**10.0** mi	SE	**3.5** mph	-	N/A		Scatter Clouds
8:52 AM	**79.0** °F	**53.1** °F	40%	**29.93** in	**10.0** mi	Calm	Calm	-	N/A		Partly Cloudy
9:52 AM	**84.0** °F	**52.0** °F	33%	**29.91** in	**10.0** mi	NE	**5.8** mph	-	N/A		Partly Cloudy
10:52 AM	**87.1** °F	**51.1** °F	29%	**29.90** in	**10.0** mi	NNW	**6.9** mph	-	N/A		Partly Cloudy
11:52 AM	**90.0** °F	**51.1** °F	26%	**29.88** in	**10.0** mi	North	**5.8** mph	-	N/A		Partly Cloudy
12:52 PM	**93.0** °F	**50.0** °F	23%	**29.86** in	**10.0** mi	NW	**6.9** mph	-	N/A		Partly Cloudy
1:52 PM	**95.0** °F	**48.9** °F	21%	**29.83** in	**10.0** mi	Calm	Calm	-	N/A		Scatter Clouds
2:26 PM	**97.0** °F	**48.0** °F	19%	**30.12** in	**10.0** mi	ESE	**8.1** mph	-	N/A	Thunderstorm	Scatter Clouds
2:41 PM	**96.1** °F	**45.0** °F	17%	**30.12** in	**10.0** mi	South	**11.5** mph	**20.7** mph	N/A		Mostly Cloudy
2:52 PM	**93.9** °F	**44.1** °F	18%	**29.82** in	**10.0** mi	South	**6.9** mph	-	N/A		Mostly Cloudy

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Condit
3:52 PM	**95.0** °F	**45.0** °F	18%	**29.80** in	**10.0** mi	NW	**13.8** mph	-	N/A		Mostly Cloudy
4:52 PM	**95.0** °F	**45.0** °F	18%	**29.78** in	**10.0** mi	NNW	**10.4** mph	-	N/A		Mostly Cloudy
5:52 PM	**96.1** °F	**45.0** °F	17%	**29.76** in	**10.0** mi	WNW	**5.8** mph	-	N/A		Mostly Cloudy
6:52 PM	**95.0** °F	**44.1** °F	17%	**29.76** in	**10.0** mi	West	**4.6** mph	-	N/A		Mostly Cloudy
7:52 PM	**93.9** °F	**45.0** °F	18%	**29.78** in	**10.0** mi	SSW	**16.1** mph	-	N/A		Mostly Cloudy
9:52 PM	**82.0** °F	**48.0** °F	30%	**29.85** in	**10.0** mi	SE	**5.8** mph	-	N/A		Mostly Cloudy
10:52 PM	**80.1** °F	**48.9** °F	34%	**29.86** in	**10.0** mi	ESE	**4.6** mph	-	N/A		Scatter Clouds
11:52 PM	**80.1** °F	**50.0** °F	35%	**29.85** in	**10.0** mi	ESE	**5.8** mph	-	N/A		Scatter Clouds

Albuquerque, NM

Albuquerque International Sunport

1:44 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

23

2018

View

Monday, July 23, 2018

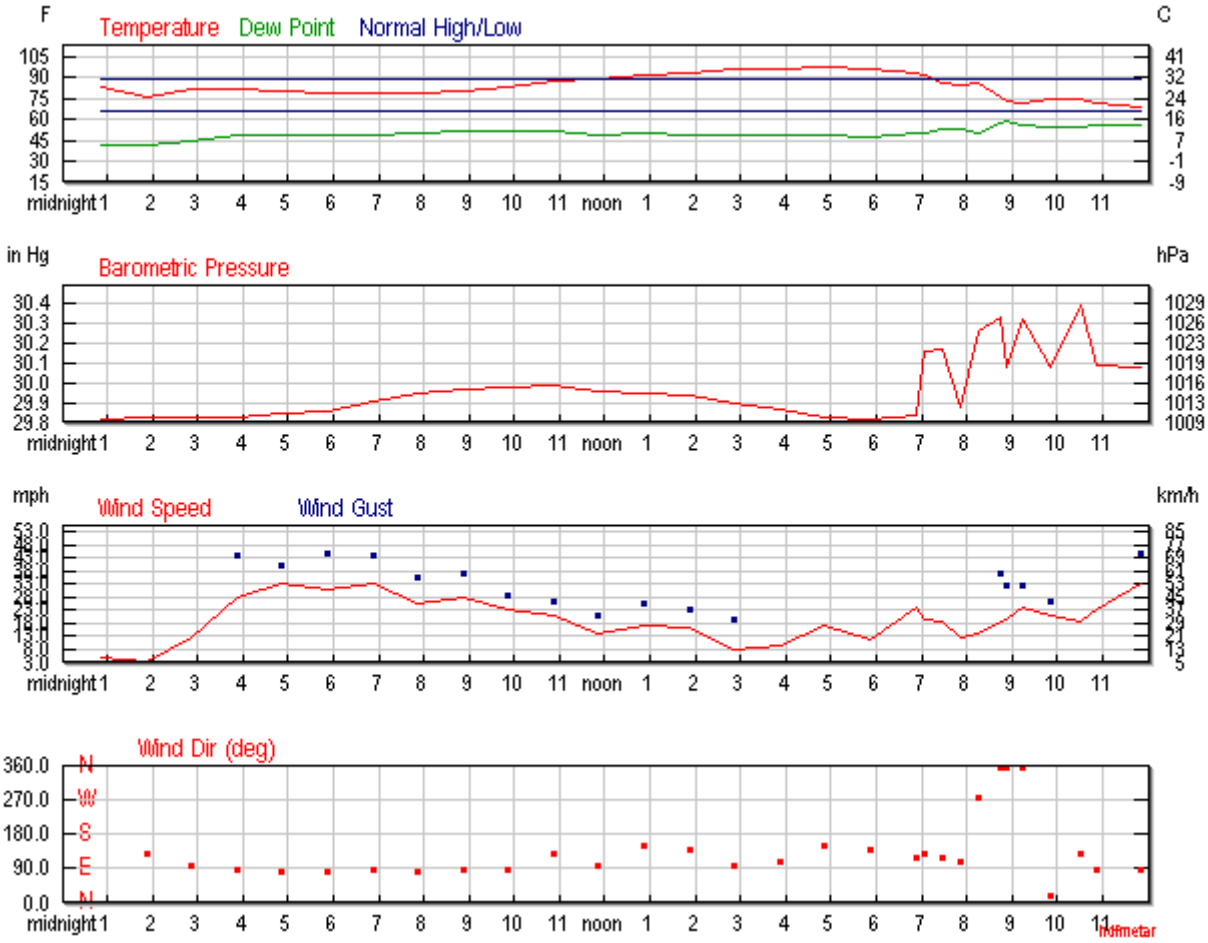
Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**84** °F	-	
Max Temperature	**98** °F	-	- ()
Min Temperature	**69** °F	-	- ()
Cooling Degree Days	19		
Month to date cooling degree days	362		
Year to date cooling degree days	980		
Since 1 June cooling degree days	784		
Growing Degree Days	33 (Base 50)		
Moisture			
Dew Point	**51** °F		
Average Humidity	41		
Maximum Humidity	64		
Minimum Humidity	18		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.69		

	Actual	Average	Record
Year to date precipitation	2.93		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.98** in		
Wind			
Wind Speed	**21** mph (East)		
Max Wind Speed	**39** mph		
Max Gust Speed	**51** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph



Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Jul. 23, 2018	**Rise**	**Set**
Actual Time	6:09 AM MDT	8:16 PM MDT
Civil Twilight	5:40 AM MDT	8:44 PM MDT
Nautical Twilight	5:06 AM MDT	9:19 PM MDT
Astronomical Twilight	4:28 AM MDT	9:56 PM MDT
Moon	5:08 PM MDT (7/23)	2:51 AM MDT (7/23)
Length of Visible Light	15h 03m	
Length of Day	14h 07m	

Waxing Gibbous, 85% of the Moon is Illuminated

Jul 23	Jul 27	Aug 4	Aug 11	Aug 18
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**84.2** °F	-	**42.8** °F	23%	**29.82** in	**10.0** mi	NW	**4.6** mph	-	N/A	
1:52 AM	**77.0** °F	-	**42.8** °F	29%	**29.83** in	**10.0** mi	SE	**3.5** mph	-	N/A	
2:52 AM	**82.4** °F	-	**44.6** °F	26%	**29.83** in	**10.0** mi	East	**12.7** mph	**21.9** mph	N/A	
3:52 AM	**82.0** °F	-	**50.0** °F	33%	**29.83** in	**8.0** mi	East	**27.6** mph	**43.7** mph	N/A	
4:52 AM	**81.0** °F	-	**50.0** °F	34%	**29.85** in	**10.0** mi	East	**33.4** mph	**40.3** mph	N/A	
5:52 AM	**80.1** °F	-	**50.0** °F	35%	**29.86** in	**10.0** mi	East	**31.1** mph	**44.9** mph	N/A	
6:52 AM	**79.0** °F	-	**50.0** °F	36%	**29.91** in	**10.0** mi	East	**33.4** mph	**43.7** mph	N/A	
7:52 AM	**80.1** °F	-	**51.1** °F	36%	**29.95** in	**10.0** mi	East	**25.3** mph	**35.7** mph	N/A	
8:52 AM	**81.0** °F	-	**52.0** °F	36%	**29.97** in	**10.0** mi	East	**27.6** mph	**36.8** mph	N/A	
9:52 AM	**84.0** °F	-	**52.0** °F	33%	**29.98** in	**10.0** mi	East	**23.0** mph	**28.8** mph	N/A	
10:52 AM	**88.0** °F	-	**52.0** °F	29%	**29.99** in	**10.0** mi	SE	**20.7** mph	**26.5** mph	N/A	
11:52 AM	**90.0** °F	-	**50.0** °F	25%	**29.96** in	**10.0** mi	East	**13.8** mph	**20.7** mph	N/A	
12:52 PM	**91.9** °F	-	**51.1** °F	25%	**29.95** in	**10.0** mi	SSE	**17.3** mph	**25.3** mph	N/A	
1:52 PM	**93.9** °F	-	**50.0** °F	22%	**29.94** in	**10.0** mi	SE	**16.1** mph	**23.0** mph	N/A	
2:52 PM	**96.1** °F	-	**50.0** °F	21%	**29.90** in	**10.0** mi	East	**8.1** mph	**19.6** mph	N/A	
3:52 PM	**96.1** °F	-	**48.9** °F	20%	**29.87** in	**10.0** mi	ESE	**9.2** mph	-	N/A	
4:52 PM	**98.1** °F	-	**48.9** °F	19%	**29.83** in	**10.0** mi	SSE	**17.3** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
5:52 PM	**97.0** °F	-	**48.0** °F	19%	**29.82** in	**10.0** mi	SE	**11.5** mph	-	N/A	
6:52 PM	**93.9** °F	-	**51.1** °F	23%	**29.84** in	**10.0** mi	ESE	**24.2** mph	-	N/A	
7:04 PM	**91.9** °F	-	**51.1** °F	25%	**30.16** in	**10.0** mi	SE	**19.6** mph	-	N/A	Thunderstorm
7:29 PM	**86.0** °F	**84.2** °F	**54.0** °F	33%	**30.17** in	**10.0** mi	ESE	**18.4** mph	-	N/A	
7:52 PM	**84.9** °F	**83.2** °F	**53.1** °F	33%	**29.88** in	**10.0** mi	ESE	**12.7** mph	-	N/A	
8:15 PM	**86.0** °F	-	**51.1** °F	30%	**30.26** in	**6.0** mi	West	**13.8** mph	**23.0** mph	N/A	Thunderstorm
8:45 PM	**75.9** °F	-	**57.9** °F	54%	**30.33** in	**9.0** mi	North	**18.4** mph	**36.8** mph	**0.00** in	Rain , Thunderstorm
8:52 PM	**73.9** °F	-	**60.1** °F	62%	**30.08** in	**10.0** mi	North	**19.6** mph	**32.2** mph	**0.00** in	Thunderstorm
9:15 PM	**73.0** °F	-	**57.0** °F	57%	**30.32** in	**10.0** mi	North	**24.2** mph	**32.2** mph	N/A	
9:52 PM	**75.0** °F	-	**55.0** °F	50%	**30.08** in	**10.0** mi	NNE	**20.7** mph	**26.5** mph	N/A	
10:31 PM	**75.2** °F	-	**55.4** °F	50%	**30.39** in	**10.0** mi	SE	**18.4** mph	-	N/A	
10:52 PM	**73.0** °F	-	**57.0** °F	57%	**30.09** in	**10.0** mi	East	**23.0** mph	**32.2** mph	**0.00** in	Rain
11:52 PM	**69.1** °F	-	**57.0** °F	65%	**30.08** in	**10.0** mi	East	**33.4** mph	**44.9** mph	**0.00** in	

Albuquerque, NM

Albuquerque International Sunport

1:47 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

24

2018

View
Tuesday, July 24, 2018

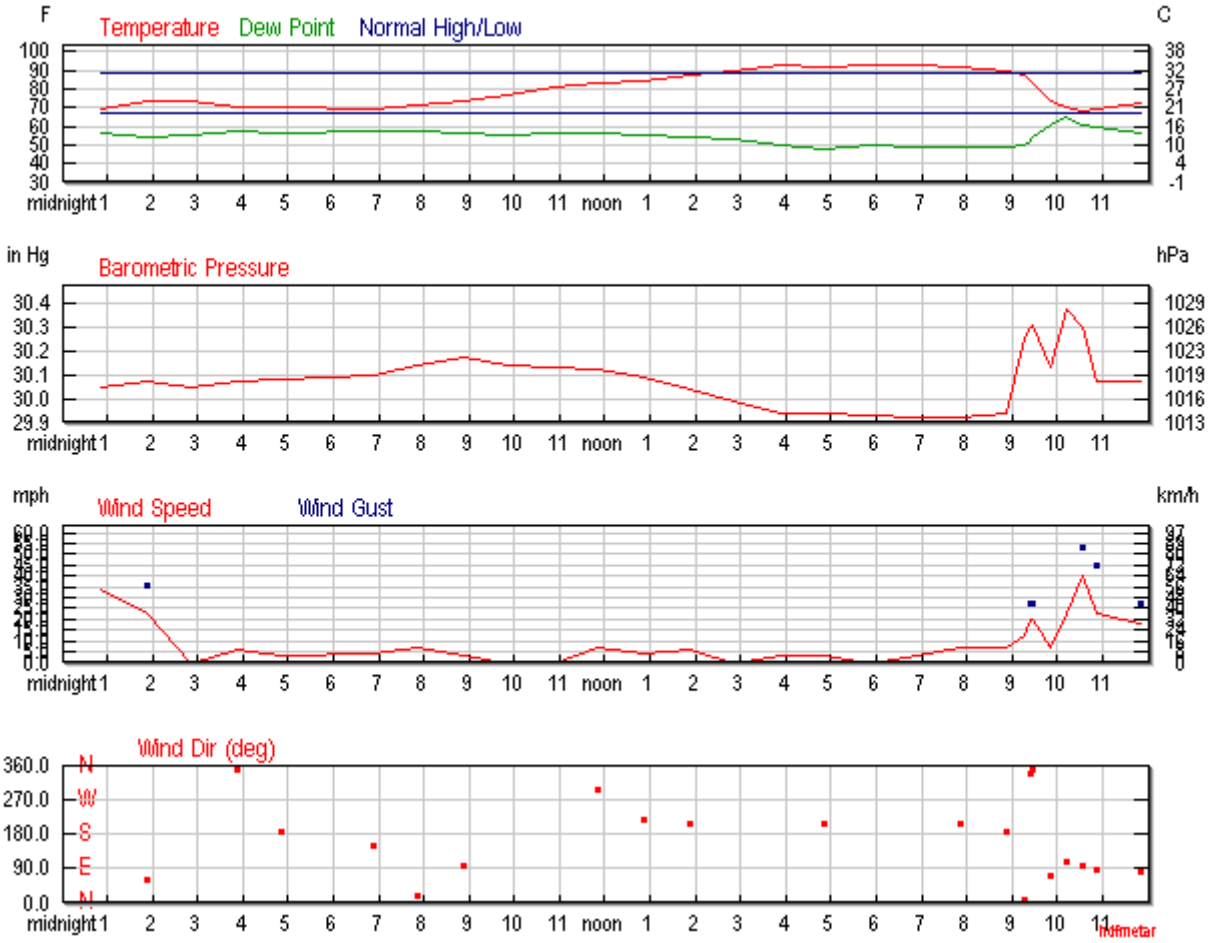
Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**81** °F	-	
Max Temperature	**94** °F	-	- ()
Min Temperature	**67** °F	-	- ()
Cooling Degree Days	16		
Month to date cooling degree days	378		
Year to date cooling degree days	996		
Since 1 June cooling degree days	800		
Growing Degree Days	30 (Base 50)		
Moisture			
Dew Point	**54** °F		
Average Humidity	44		
Maximum Humidity	66		
Minimum Humidity	22		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.87		

	Actual	Average	Record
Year to date precipitation	3.11		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.08** in		
Wind			
Wind Speed	**6** mph (East)		
Max Wind Speed	**44** mph		
Max Gust Speed	**53** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph



Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Jul. 24, 2018	**Rise**	**Set**
Actual Time	6:09 AM MDT	8:15 PM MDT
Civil Twilight	5:41 AM MDT	8:43 PM MDT
Nautical Twilight	5:06 AM MDT	9:18 PM MDT
Astronomical Twilight	4:29 AM MDT	9:55 PM MDT
Moon	6:01 PM MDT (7/24)	3:33 AM MDT (7/24)
Length of Visible Light	15h 02m	
Length of Day	14h 05m	

Waxing Gibbous, 92% of the Moon is Illuminated

Jul 24	Jul 27	Aug 4	Aug 11	Aug 18
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**69.1** °F	-	**55.9** °F	63%	**30.05** in	**10.0** mi	East	**33.4** mph	**49.5** mph	N/A	
1:52 AM	**73.0** °F	-	**54.0** °F	51%	**30.07** in	**10.0** mi	ENE	**23.0** mph	**35.7** mph	N/A	
2:52 AM	**73.0** °F	-	**55.0** °F	53%	**30.05** in	**10.0** mi	Calm	Calm	-	N/A	
3:52 AM	**70.0** °F	-	**57.0** °F	63%	**30.07** in	**10.0** mi	North	**5.8** mph	-	N/A	
4:52 AM	**70.0** °F	-	**55.9** °F	61%	**30.08** in	**10.0** mi	South	**3.5** mph	-	N/A	
6:52 AM	**69.1** °F	-	**57.0** °F	65%	**30.10** in	**10.0** mi	SSE	**4.6** mph	-	N/A	
7:52 AM	**71.1** °F	-	**57.9** °F	63%	**30.14** in	**10.0** mi	NNE	**6.9** mph	-	N/A	
8:52 AM	**73.0** °F	-	**55.9** °F	55%	**30.17** in	**10.0** mi	East	**3.5** mph	-	N/A	
9:52 AM	**77.0** °F	-	**55.0** °F	47%	**30.14** in	**10.0** mi	Calm	Calm	-	N/A	
10:52 AM	**81.0** °F	**80.8** °F	**55.9** °F	42%	**30.13** in	**10.0** mi	Calm	Calm	-	N/A	
11:52 AM	**82.9** °F	**82.1** °F	**55.9** °F	39%	**30.12** in	**10.0** mi	WNW	**6.9** mph	-	N/A	
12:52 PM	**84.0** °F	**82.9** °F	**55.0** °F	37%	**30.09** in	**10.0** mi	SW	**4.6** mph	-	N/A	
1:52 PM	**87.1** °F	**85.1** °F	**54.0** °F	32%	**30.04** in	**10.0** mi	SSW	**5.8** mph	-	N/A	
2:52 PM	**89.1** °F	**86.7** °F	**53.1** °F	29%	**29.99** in	**10.0** mi	Calm	Calm	-	N/A	
3:52 PM	**93.0** °F	-	**50.0** °F	23%	**29.94** in	**10.0** mi	Variable	**3.5** mph	-	N/A	
4:52 PM	**91.9** °F	-	**48.0** °F	22%	**29.94** in	**10.0** mi	SSW	**3.5** mph	-	N/A	
5:52 PM	**93.0** °F	-	**50.0** °F	23%	**29.93** in	**10.0** mi	Calm	Calm	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
6:52 PM	**93.0** °F	-	**48.9** °F	22%	**29.92** in	**10.0** mi	Variable	**3.5** mph	-	N/A	
7:52 PM	**91.9** °F	-	**48.9** °F	23%	**29.92** in	**10.0** mi	SSW	**6.9** mph	-	N/A	
8:52 PM	**90.0** °F	-	**48.9** °F	24%	**29.94** in	**10.0** mi	South	**6.9** mph	-	N/A	
9:16 PM	**87.1** °F	-	**50.0** °F	28%	**30.26** in	**10.0** mi	North	**12.7** mph	**35.7** mph	N/A	Thunderstor
9:25 PM	**84.0** °F	-	**52.0** °F	33%	**30.30** in	**10.0** mi	NNW	**19.6** mph	**27.6** mph	N/A	Thunderstor
9:27 PM	**82.9** °F	**81.9** °F	**54.0** °F	37%	**30.31** in	**10.0** mi	North	**19.6** mph	**27.6** mph	**0.00** in	Rain , Thunderstor
9:52 PM	**73.0** °F	-	**60.1** °F	64%	**30.13** in	**5.0** mi	ENE	**6.9** mph	-	**0.18** in	Rain , Thunderstor
10:12 PM	**70.0** °F	-	**64.9** °F	84%	**30.37** in	**10.0** mi	ESE	**23.0** mph	**28.8** mph	**0.00** in	Rain , Thunderstor
10:34 PM	**68.0** °F	-	**61.0** °F	78%	**30.30** in	**10.0** mi	East	**40.3** mph	**52.9** mph	**0.00** in	Rain
10:52 PM	**69.1** °F	-	**59.0** °F	70%	**30.07** in	**10.0** mi	East	**23.0** mph	**44.9** mph	**0.00** in	
11:52 PM	**72.0** °F	-	**55.9** °F	57%	**30.07** in	**10.0** mi	East	**18.4** mph	**27.6** mph	N/A	

Albuquerque, NM

Albuquerque International Sunport

1:55 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

25

2018

View

Wednesday, July 25, 2018

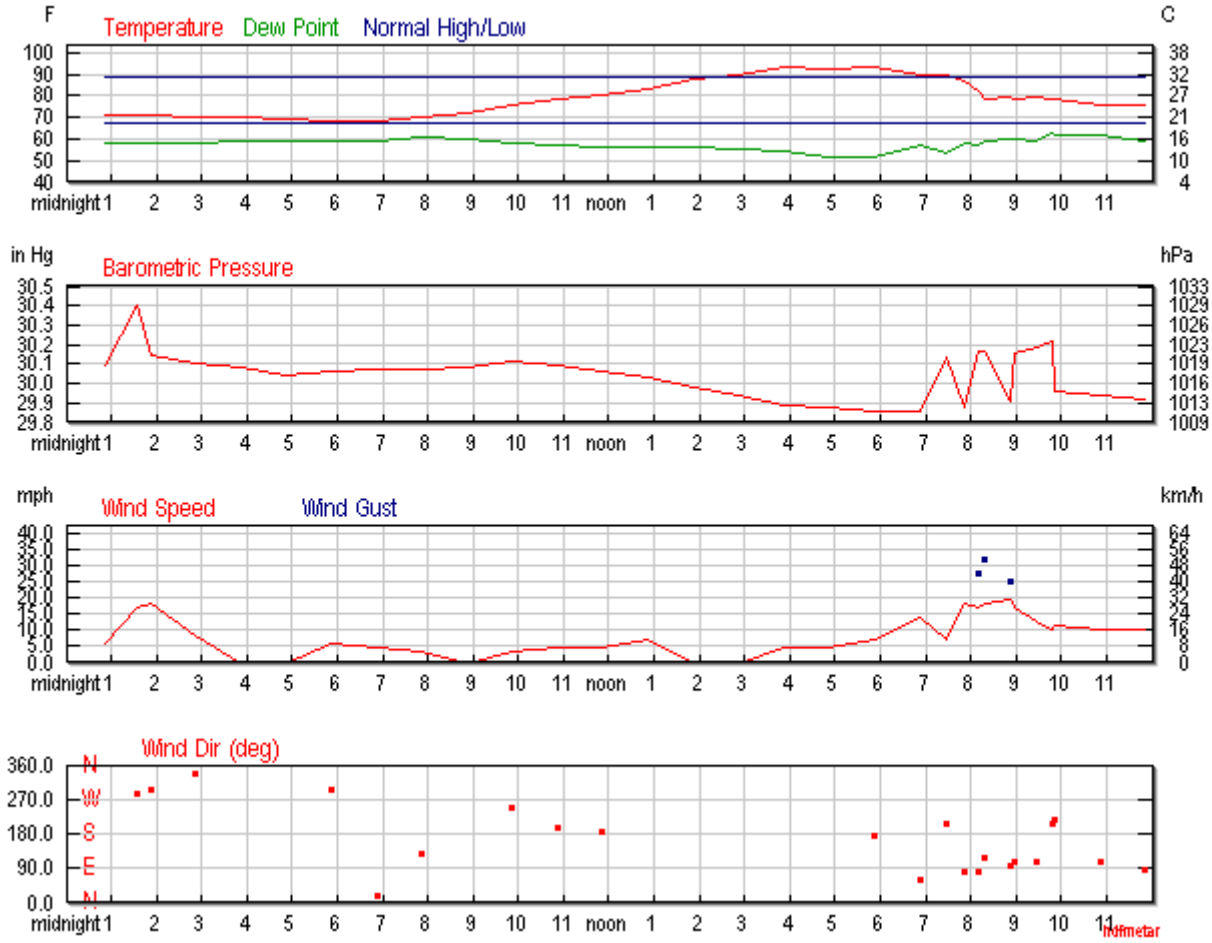
Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**81** °F	-	
Max Temperature	**94** °F	-	- ()
Min Temperature	**67** °F	-	- ()
Cooling Degree Days	16		
Month to date cooling degree days	394		
Year to date cooling degree days	1012		
Since 1 June cooling degree days	816		
Growing Degree Days	30 (Base 50)		
Moisture			
Dew Point	**58** °F		
Average Humidity	49		
Maximum Humidity	73		
Minimum Humidity	24		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.99		

	Actual	Average	Record
Year to date precipitation	3.23		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.04** in		
Wind			
Wind Speed	**7** mph (SE)		
Max Wind Speed	**28** mph		
Max Gust Speed	**35** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph



Search for Another Location

Airport or City:

KABQ

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Astronomy

Jul. 25, 2018	**Rise**	**Set**
Actual Time	6:10 AM MDT	8:14 PM MDT
Civil Twilight	5:42 AM MDT	8:43 PM MDT
Nautical Twilight	5:07 AM MDT	9:17 PM MDT
Astronomical Twilight	4:30 AM MDT	9:54 PM MDT
Moon	6:50 PM MDT (7/25)	4:18 AM MDT (7/25)
Length of Visible Light	15h 00m	
Length of Day	14h 04m	

Waxing Gibbous, 96% of the Moon is Illuminated

Jul 25	Jul 27	Aug 4	Aug 11	Aug 18
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**71.1** °F	-	**57.9** °F	63%	**30.09** in	**10.0** mi	East	**5.8** mph	-	N/A	
1:34 AM	**71.1** °F	-	**57.9** °F	63%	**30.40** in	**10.0** mi	WNW	**17.3** mph	-	N/A	
1:52 AM	**71.1** °F	-	**57.9** °F	63%	**30.14** in	**10.0** mi	WNW	**18.4** mph	-	N/A	
2:52 AM	**70.0** °F	-	**57.9** °F	65%	**30.10** in	**10.0** mi	NNW	**8.1** mph	-	**0.00** in	
3:52 AM	**70.0** °F	-	**59.0** °F	68%	**30.08** in	**10.0** mi	Calm	Calm	-	N/A	
4:52 AM	**69.1** °F	-	**59.0** °F	70%	**30.04** in	**10.0** mi	Calm	Calm	-	**0.00** in	
5:52 AM	**68.0** °F	-	**59.0** °F	73%	**30.06** in	**10.0** mi	WNW	**5.8** mph	-	N/A	
6:52 AM	**68.0** °F	-	**59.0** °F	73%	**30.07** in	**10.0** mi	NNE	**4.6** mph	-	N/A	
7:52 AM	**70.0** °F	-	**61.0** °F	73%	**30.07** in	**10.0** mi	SE	**3.5** mph	-	N/A	
8:52 AM	**72.0** °F	-	**60.1** °F	66%	**30.08** in	**10.0** mi	Calm	Calm	-	N/A	
9:52 AM	**75.9** °F	-	**57.9** °F	54%	**30.11** in	**10.0** mi	WSW	**3.5** mph	-	N/A	
10:52 AM	**78.1** °F	-	**57.0** °F	48%	**30.09** in	**10.0** mi	SSW	**4.6** mph	-	N/A	
11:52 AM	**80.1** °F	**80.2** °F	**55.9** °F	43%	**30.06** in	**10.0** mi	South	**4.6** mph	-	N/A	
12:52 PM	**82.9** °F	**82.1** °F	**55.9** °F	39%	**30.03** in	**10.0** mi	Variable	**6.9** mph	-	N/A	
1:52 PM	**88.0** °F	**86.5** °F	**55.9** °F	34%	**29.98** in	**10.0** mi	Calm	Calm	-	N/A	
2:52 PM	**90.0** °F	**87.9** °F	**55.0** °F	30%	**29.94** in	**10.0** mi	Calm	Calm	-	N/A	
3:52 PM	**93.0** °F	**90.8** °F	**54.0** °F	27%	**29.89** in	**10.0** mi	Variable	**4.6** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
4:52 PM	**91.9** °F	-	**52.0** °F	26%	**29.88** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
5:52 PM	**93.0** °F	-	**52.0** °F	25%	**29.86** in	**10.0** mi	South	**6.9** mph	-	N/A	
6:52 PM	**90.0** °F	**88.6** °F	**57.0** °F	33%	**29.86** in	**10.0** mi	ENE	**13.8** mph	**25.3** mph	**0.00** in	Rain
7:27 PM	**90.0** °F	**87.5** °F	**53.1** °F	28%	**30.13** in	**10.0** mi	SSW	**6.9** mph	-	**0.01** in	Thunderstor
7:52 PM	**87.1** °F	**86.1** °F	**57.9** °F	37%	**29.88** in	**10.0** mi	East	**18.4** mph	**25.3** mph	**0.01** in	Thunderstor
8:10 PM	**82.0** °F	**81.7** °F	**57.0** °F	42%	**30.17** in	**9.0** mi	East	**17.3** mph	**27.6** mph	**0.00** in	Rain , Thunderstor
8:18 PM	**78.1** °F	-	**59.0** °F	52%	**30.17** in	**4.0** mi	ESE	**18.4** mph	**32.2** mph	**0.09** in	Rain , Thunderstor
8:52 PM	**79.0** °F	-	**60.1** °F	52%	**29.91** in	**10.0** mi	East	**19.6** mph	**25.3** mph	**0.10** in	Thunderstor
8:58 PM	**78.1** °F	-	**60.1** °F	54%	**30.16** in	**10.0** mi	ESE	**17.3** mph	-	N/A	
9:28 PM	**79.0** °F	-	**59.0** °F	50%	**30.19** in	**10.0** mi	ESE	**12.7** mph	-	N/A	Thunderstor
9:49 PM	**78.8** °F	-	**62.6** °F	57%	**30.22** in	**10.0** mi	SSW	**10.4** mph	-	**0.01** in	Rain , Thunderstor
9:52 PM	**78.1** °F	-	**62.1** °F	58%	**29.96** in	**10.0** mi	SW	**11.5** mph	-	**0.01** in	Rain , Thunderstor
10:52 PM	**75.9** °F	-	**62.1** °F	62%	**29.94** in	**10.0** mi	ESE	**10.4** mph	-	**0.00** in	
11:52 PM	**75.9** °F	-	**59.0** °F	56%	**29.92** in	**10.0** mi	East	**10.4** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

2:08 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

26

2018

View

Thursday, July 26, 2018

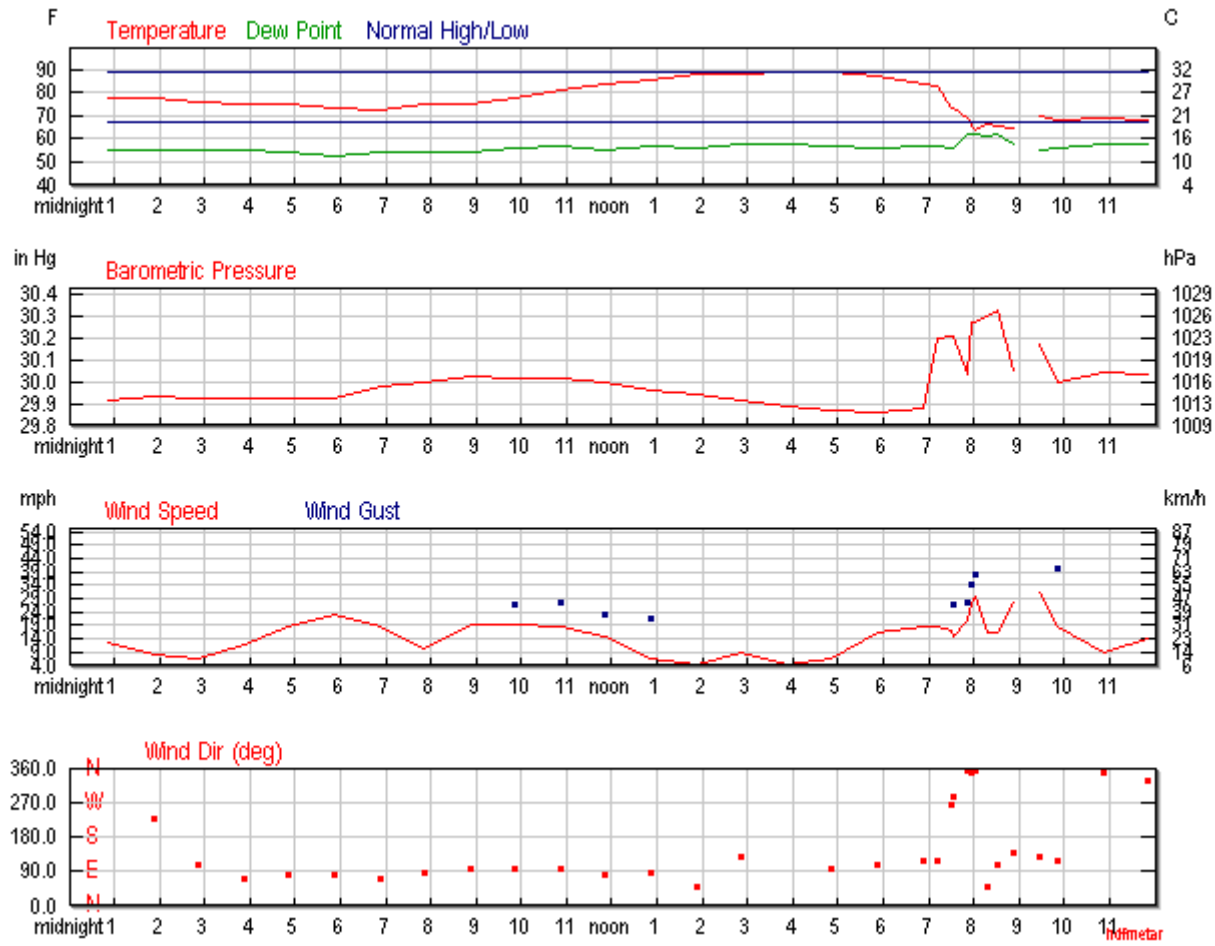
Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**77** °F	-	
Max Temperature	**90** °F	-	- ()
Min Temperature	**64** °F	-	- ()
Cooling Degree Days	12		
Month to date cooling degree days	406		
Year to date cooling degree days	1024		
Since 1 June cooling degree days	828		
Growing Degree Days	27 (Base 50)		
Moisture			
Dew Point	**57** °F		
Average Humidity	51		
Maximum Humidity	68		
Minimum Humidity	34		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	1.52		

	Actual	Average	Record
Year to date precipitation	3.76		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.02** in		
Wind			
Wind Speed	**14** mph (East)		
Max Wind Speed	**39** mph		
Max Gust Speed	**46** mph		
Visibility	**9** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph



Search for Another Location

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Astronomy

Jul. 26, 2018	**Rise**	**Set**
Actual Time	6:11 AM MDT	8:14 PM MDT
Civil Twilight	5:43 AM MDT	8:42 PM MDT
Nautical Twilight	5:08 AM MDT	9:16 PM MDT
Astronomical Twilight	4:31 AM MDT	9:53 PM MDT
Moon	7:36 PM MDT (7/26)	5:07 AM MDT (7/26)
Length of Visible Light	14h 59m	
Length of Day	14h 02m	

Waxing Gibbous, 99% of the Moon is Illuminated

Jul 26	Jul 27	Aug 4	Aug 11	Aug 18
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**78.1** °F	-	**55.0** °F	45%	**29.91** in	**10.0** mi	ENE	**12.7** mph	-	N/A	
1:52 AM	**78.1** °F	-	**55.0** °F	45%	**29.93** in	**10.0** mi	SW	**8.1** mph	-	N/A	
2:52 AM	**75.9** °F	-	**55.0** °F	48%	**29.92** in	**10.0** mi	ESE	**6.9** mph	-	N/A	
3:52 AM	**75.0** °F	-	**55.0** °F	50%	**29.92** in	**10.0** mi	ENE	**11.5** mph	-	N/A	
4:52 AM	**75.0** °F	-	**54.0** °F	48%	**29.92** in	**10.0** mi	East	**18.4** mph	-	N/A	
5:52 AM	**73.9** °F	-	**53.1** °F	48%	**29.92** in	**10.0** mi	East	**23.0** mph	**32.2** mph	N/A	
6:52 AM	**73.0** °F	-	**54.0** °F	51%	**29.98** in	**10.0** mi	ENE	**18.4** mph	-	N/A	
7:52 AM	**75.0** °F	-	**54.0** °F	48%	**30.00** in	**10.0** mi	East	**10.4** mph	-	N/A	
8:52 AM	**75.0** °F	-	**54.0** °F	48%	**30.02** in	**10.0** mi	East	**19.6** mph	**29.9** mph	N/A	
9:52 AM	**78.1** °F	-	**55.9** °F	46%	**30.01** in	**10.0** mi	East	**19.6** mph	**26.5** mph	N/A	
10:52 AM	**81.0** °F	**81.0** °F	**57.0** °F	44%	**30.01** in	**10.0** mi	East	**18.4** mph	**27.6** mph	N/A	
11:52 AM	**84.0** °F	**82.9** °F	**55.0** °F	37%	**30.00** in	**10.0** mi	East	**15.0** mph	**23.0** mph	N/A	
12:52 PM	**86.0** °F	**84.9** °F	**57.0** °F	37%	**29.96** in	**10.0** mi	East	**6.9** mph	**21.9** mph	N/A	
1:52 PM	**88.0** °F	**86.5** °F	**55.9** °F	34%	**29.94** in	**10.0** mi	NE	**4.6** mph	-	N/A	
2:52 PM	**88.0** °F	**86.9** °F	**57.9** °F	36%	**29.91** in	**10.0** mi	SE	**9.2** mph	-	N/A	
3:52 PM	**89.1** °F	**88.0** °F	**57.9** °F	35%	**29.89** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
4:52 PM	**89.1** °F	**87.7** °F	**57.0** °F	34%	**29.87** in	**10.0** mi	East	**6.9** mph	**20.7** mph	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
5:52 PM	**87.1** °F	**85.7** °F	**55.9** °F	35%	**29.86** in	**10.0** mi	ESE	**16.1** mph	-	N/A	
6:52 PM	**84.0** °F	**83.3** °F	**57.0** °F	40%	**29.88** in	**10.0** mi	ESE	**18.4** mph	-	N/A	
7:13 PM	**82.9** °F	**82.4** °F	**57.0** °F	41%	**30.20** in	**10.0** mi	ESE	**18.4** mph	-	N/A	Thunderstor
7:30 PM	**73.9** °F	-	**55.9** °F	53%	**30.21** in	**10.0** mi	West	**17.3** mph	**26.5** mph	N/A	Thunderstor
7:33 PM	**73.9** °F	-	**55.9** °F	53%	**30.21** in	**10.0** mi	WNW	**15.0** mph	**26.5** mph	N/A	Thunderstor
7:52 PM	**69.1** °F	-	**62.1** °F	78%	**30.03** in	**7.0** mi	North	**20.7** mph	**27.6** mph	**0.02** in	Rain , Thunderstor
7:56 PM	**66.0** °F	-	**62.1** °F	87%	**30.27** in	**2.5** mi	North	**26.5** mph	**34.5** mph	**0.02** in	Rain , Thunderstor
8:03 PM	**64.0** °F	-	**62.1** °F	93%	**30.27** in	**1.5** mi	North	**29.9** mph	**38.0** mph	**0.12** in	Rain , Thunderstor
8:19 PM	**66.9** °F	-	**61.0** °F	81%	**30.30** in	**2.0** mi	NE	**16.1** mph	-	**0.38** in	Rain , Thunderstor
8:31 PM	**66.0** °F	-	**62.1** °F	87%	**30.32** in	**5.0** mi	ESE	**16.1** mph	-	**0.49** in	Rain , Thunderstor
8:52 PM	**64.9** °F	-	**57.9** °F	78%	**30.05** in	**10.0** mi	SE	**27.6** mph	-	**0.51** in	Rain , Thunderstor
8:54 PM	-	-	-	N/A%	-	-	North	-	-	N/A	
9:26 PM	**70.0** °F	-	**55.0** °F	59%	**30.17** in	**10.0** mi	SE	**31.1** mph	**44.9** mph	**0.00** in	Rain
9:52 PM	**68.0** °F	-	**55.9** °F	65%	**30.00** in	**10.0** mi	ESE	**18.4** mph	**40.3** mph	**0.00** in	
10:52 PM	**69.1** °F	-	**57.9** °F	68%	**30.04** in	**10.0** mi	North	**9.2** mph	-	N/A	
11:52 PM	**68.0** °F	-	**57.9** °F	70%	**30.03** in	**10.0** mi	NNW	**13.8** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

2:09 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

27

2018

View

Friday, July 27, 2018

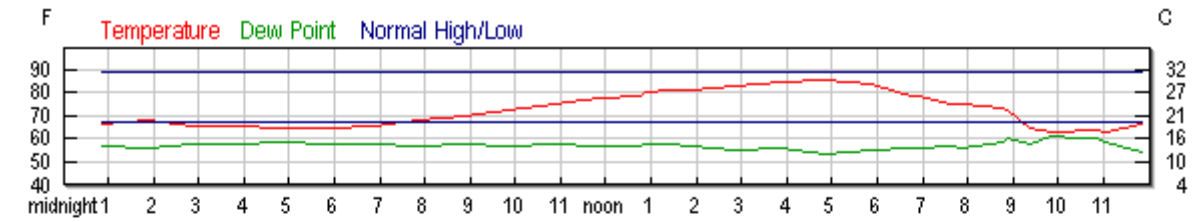
Daily | Weekly | Monthly | Custom

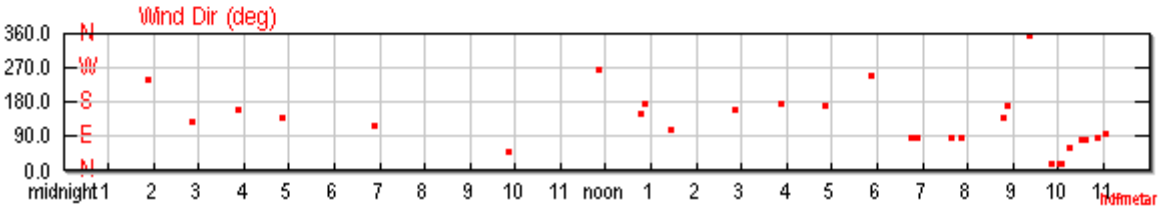
	Actual	Average	Record
Temperature			
Mean Temperature	**75** °F	-	
Max Temperature	**87** °F	-	- ()
Min Temperature	**63** °F	-	- ()
Cooling Degree Days	10		
Month to date cooling degree days	416		
Year to date cooling degree days	1034		
Since 1 June cooling degree days	838		
Growing Degree Days	25 (Base 50)		
Moisture			
Dew Point	**58** °F		
Average Humidity	60		
Maximum Humidity	87		
Minimum Humidity	32		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	2.08		

	Actual	Average	Record
Year to date precipitation	4.32		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.12** in		
Wind			
Wind Speed	**8** mph (ESE)		
Max Wind Speed	**32** mph		
Max Gust Speed	**40** mph		
Visibility	**9** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph





Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Jul. 27, 2018	**Rise**	**Set**
Actual Time	6:12 AM MDT	8:13 PM MDT
Civil Twilight	5:43 AM MDT	8:41 PM MDT
Nautical Twilight	5:09 AM MDT	9:15 PM MDT
Astronomical Twilight	4:32 AM MDT	9:52 PM MDT
Moon	8:18 PM MDT (7/27)	5:58 AM MDT (7/27)
Length of Visible Light	14h 57m	
Length of Day	14h 01m	

Full, 100% of the Moon is Illuminated

Jul 27	Jul 27	Aug 4	Aug 11	Aug 18
Full	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**66.9** °F	-	**57.0** °F	70%	**30.05** in	**10.0** mi	WNW	**6.9** mph	-	N/A	
1:52 AM	**68.0** °F	-	**55.9** °F	65%	**30.05** in	**10.0** mi	WSW	**4.6** mph	-	N/A	
2:52 AM	**66.0** °F	-	**57.9** °F	75%	**30.05** in	**10.0** mi	SE	**5.8** mph	-	N/A	
3:52 AM	**66.0** °F	-	**57.9** °F	75%	**30.04** in	**10.0** mi	SSE	**5.8** mph	-	N/A	
4:52 AM	**64.9** °F	-	**59.0** °F	81%	**30.04** in	**10.0** mi	SE	**3.5** mph	-	N/A	
5:52 AM	**64.9** °F	-	**57.9** °F	78%	**30.05** in	**10.0** mi	Calm	Calm	-	N/A	
6:52 AM	**66.0** °F	-	**57.9** °F	75%	**30.08** in	**10.0** mi	ESE	**3.5** mph	-	N/A	
7:52 AM	**68.0** °F	-	**57.0** °F	68%	**30.12** in	**10.0** mi	Calm	Calm	-	N/A	
8:52 AM	**70.0** °F	-	**57.9** °F	65%	**30.13** in	**10.0** mi	Calm	Calm	-	N/A	
9:52 AM	**73.0** °F	-	**57.0** °F	57%	**30.11** in	**10.0** mi	NE	**5.8** mph	-	N/A	
10:52 AM	**75.0** °F	-	**57.9** °F	55%	**30.10** in	**10.0** mi	Variable	**3.5** mph	-	N/A	
11:52 AM	**78.1** °F	-	**57.0** °F	48%	**30.09** in	**10.0** mi	West	**4.6** mph	-	N/A	
12:47 PM	**78.8** °F	-	**57.2** °F	47%	**30.30** in	**10.0** mi	SSE	**5.8** mph	-	N/A	Thunderstor
12:52 PM	**80.1** °F	**80.6** °F	**57.9** °F	47%	**30.06** in	**10.0** mi	South	**6.9** mph	-	N/A	Thunderstor
1:26 PM	**81.0** °F	**81.1** °F	**57.9** °F	45%	**30.29** in	**10.0** mi	ESE	**4.6** mph	-	N/A	
1:52 PM	**81.0** °F	**81.0** °F	**57.0** °F	44%	**30.03** in	**10.0** mi	Variable	**5.8** mph	-	N/A	
2:52 PM	**82.9** °F	**82.0** °F	**55.0** °F	38%	**30.00** in	**10.0** mi	SSE	**8.1** mph	**17.3** mph	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
3:52 PM	**84.9** °F	**83.7** °F	**55.9** °F	37%	**29.96** in	**10.0** mi	South	**11.5** mph	**20.7** mph	N/A	
4:52 PM	**86.0** °F	**84.0** °F	**53.1** °F	32%	**29.95** in	**10.0** mi	South	**13.8** mph	**20.7** mph	N/A	
5:52 PM	**84.0** °F	**82.9** °F	**55.0** °F	37%	**29.94** in	**10.0** mi	WSW	**8.1** mph	-	N/A	
6:44 PM	**79.0** °F	-	**55.9** °F	45%	**30.20** in	**9.0** mi	East	**21.9** mph	**35.7** mph	N/A	
6:52 PM	**79.0** °F	-	**55.9** °F	45%	**29.96** in	**10.0** mi	East	**23.0** mph	**31.1** mph	N/A	
7:39 PM	**75.0** °F	-	**57.0** °F	53%	**30.22** in	**10.0** mi	East	**18.4** mph	**27.6** mph	N/A	Thunderstor
7:52 PM	**75.0** °F	-	**55.9** °F	51%	**30.00** in	**10.0** mi	East	**21.9** mph	**26.5** mph	N/A	Thunderstor
8:47 PM	**73.4** °F	-	**59.0** °F	61%	**30.24** in	**10.0** mi	SE	**10.4** mph	-	**0.00** in	Thunderstor
8:52 PM	**73.0** °F	-	**60.1** °F	64%	**30.02** in	**10.0** mi	South	**6.9** mph	-	**0.00** in	Rain , Thunderstor
9:23 PM	**64.9** °F	-	**57.9** °F	78%	**30.31** in	**10.0** mi	North	**21.9** mph	**40.3** mph	**0.00** in	Rain , Thunderstor
9:52 PM	**63.0** °F	-	**61.0** °F	93%	**30.15** in	**4.0** mi	NNE	**17.3** mph	-	**0.11** in	Rain , Thunderstor
10:02 PM	**63.0** °F	-	**61.0** °F	93%	**30.36** in	**2.5** mi	NNE	**16.1** mph	-	**0.13** in	Rain , Thunderstor
10:05 PM	**63.0** °F	-	**61.0** °F	93%	**30.36** in	**2.5** mi	NNE	**17.3** mph	-	**0.16** in	Rain , Thunderstor
10:16 PM	**63.0** °F	-	**60.1** °F	90%	**30.37** in	**6.0** mi	ENE	**17.3** mph	-	**0.20** in	Rain , Thunderstor
10:30 PM	**64.0** °F	-	**60.1** °F	87%	**30.37** in	**9.0** mi	East	**19.6** mph	-	**0.22** in	Rain , Thunderstor
10:37 PM	**64.0** °F	-	**60.1** °F	87%	**30.37** in	**6.0** mi	East	**18.4** mph	-	**0.24** in	Rain , Thunderstor
10:52 PM	**64.0** °F	-	**60.1** °F	87%	**30.15** in	**5.0** mi	East	**19.6** mph	-	**0.28** in	Rain , Thunderstor
11:02 PM	**63.0** °F	-	**59.0** °F	87%	**30.35** in	**4.0** mi	East	**16.1** mph	-	**0.05** in	Rain
11:52 PM	**66.9** °F	-	**54.0** °F	63%	**30.05** in	**10.0** mi	Calm	Calm	-	**0.17** in	

Albuquerque, NM

Albuquerque International Sunport

2:11 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

30

2018

View

Monday, July 30, 2018

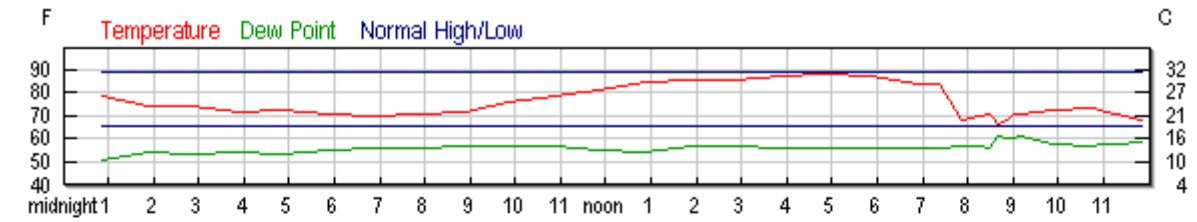
Daily | Weekly | Monthly | Custom

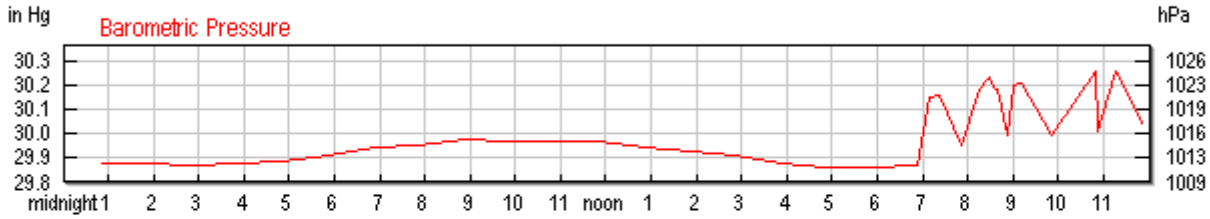
	Actual	Average	Record
Temperature			
Mean Temperature	**78** °F	-	
Max Temperature	**89** °F	-	- ()
Min Temperature	**67** °F	-	- ()
Cooling Degree Days	13		
Month to date cooling degree days	454		
Year to date cooling degree days	1072		
Since 1 June cooling degree days	876		
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**57** °F		
Average Humidity	55		
Maximum Humidity	76		
Minimum Humidity	34		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	2.19		

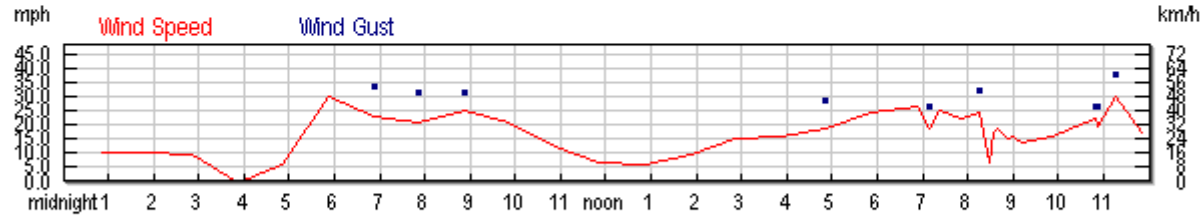
	Actual	Average	Record
Year to date precipitation	4.43		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.00** in		
Wind			
Wind Speed	**16** mph (ESE)		
Max Wind Speed	**43** mph		
Max Gust Speed	**52** mph		
Visibility	**10** miles		
Events	Rain , Hail , Thunderstorm		

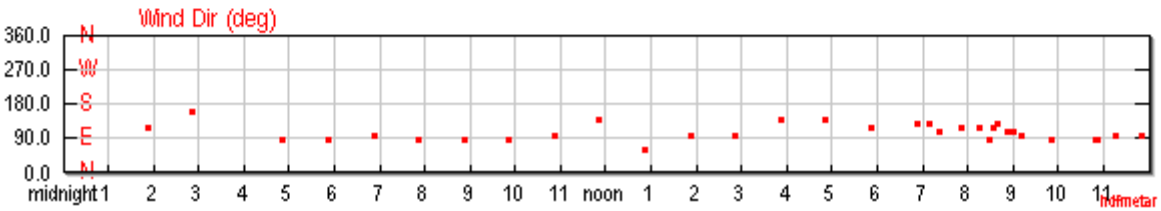
T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph









Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Jul. 30, 2018	**Rise**	**Set**
Actual Time	6:14 AM MDT	8:10 PM MDT
Civil Twilight	5:46 AM MDT	8:38 PM MDT
Nautical Twilight	5:12 AM MDT	9:12 PM MDT
Astronomical Twilight	4:36 AM MDT	9:48 PM MDT
Moon	10:05 PM MDT (7/30)	8:42 AM MDT (7/30)
Length of Visible Light	14h 52m	
Length of Day	13h 56m	

Waning Gibbous, 92% of the Moon is Illuminated

Jul 30	Aug 4	Aug 11	Aug 18	Aug 26
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**79.0** °F	-	**51.1** °F	38%	**29.88** in	**10.0** mi	South	**10.4** mph	-	N/A	
1:52 AM	**73.9** °F	-	**54.0** °F	50%	**29.88** in	**10.0** mi	ESE	**10.4** mph	-	N/A	
2:52 AM	**73.9** °F	-	**53.1** °F	48%	**29.87** in	**10.0** mi	SSE	**9.2** mph	-	N/A	
3:52 AM	**72.0** °F	-	**54.0** °F	53%	**29.88** in	**10.0** mi	Calm	Calm	-	N/A	
4:52 AM	**73.0** °F	-	**53.1** °F	49%	**29.89** in	**10.0** mi	East	**5.8** mph	-	N/A	
5:52 AM	**71.1** °F	-	**55.0** °F	57%	**29.91** in	**10.0** mi	East	**29.9** mph	**38.0** mph	N/A	
6:52 AM	**70.0** °F	-	**55.9** °F	61%	**29.94** in	**10.0** mi	East	**23.0** mph	**33.4** mph	N/A	
7:52 AM	**71.1** °F	-	**55.9** °F	59%	**29.95** in	**10.0** mi	East	**20.7** mph	**31.1** mph	N/A	
8:52 AM	**72.0** °F	-	**57.0** °F	59%	**29.98** in	**10.0** mi	East	**25.3** mph	**31.1** mph	N/A	
9:52 AM	**75.9** °F	-	**57.0** °F	52%	**29.97** in	**10.0** mi	East	**20.7** mph	-	N/A	
10:52 AM	**79.0** °F	-	**57.0** °F	47%	**29.97** in	**10.0** mi	East	**12.7** mph	**23.0** mph	N/A	
11:52 AM	**81.0** °F	**80.7** °F	**55.0** °F	41%	**29.97** in	**10.0** mi	SE	**6.9** mph	-	N/A	
12:52 PM	**84.9** °F	**83.3** °F	**54.0** °F	34%	**29.94** in	**10.0** mi	ENE	**5.8** mph	-	N/A	
1:52 PM	**86.0** °F	**84.9** °F	**57.0** °F	37%	**29.93** in	**10.0** mi	East	**9.2** mph	-	N/A	
2:52 PM	**86.0** °F	**84.9** °F	**57.0** °F	37%	**29.91** in	**10.0** mi	East	**15.0** mph	-	N/A	
3:52 PM	**87.1** °F	**85.7** °F	**55.9** °F	35%	**29.88** in	**10.0** mi	SE	**16.1** mph	**21.9** mph	N/A	
4:52 PM	**88.0** °F	**86.5** °F	**55.9** °F	34%	**29.86** in	**10.0** mi	SE	**18.4** mph	**28.8** mph	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
5:52 PM	**87.1** °F	**85.7** °F	**55.9** °F	35%	**29.86** in	**10.0** mi	ESE	**24.2** mph	-	N/A	
6:52 PM	**84.0** °F	**83.0** °F	**55.9** °F	38%	**29.87** in	**10.0** mi	SE	**26.5** mph	**33.4** mph	N/A	
7:09 PM	**84.0** °F	**83.0** °F	**55.9** °F	38%	**30.15** in	**10.0** mi	SE	**18.4** mph	**26.5** mph	N/A	Thunderstorm
7:23 PM	**84.0** °F	**83.0** °F	**55.9** °F	38%	**30.16** in	**10.0** mi	ESE	**25.3** mph	-	N/A	Thunderstorm
7:52 PM	**68.0** °F	-	**57.0** °F	68%	**29.95** in	**10.0** mi	ESE	**21.9** mph	**34.5** mph	N/A	Thunderstorm
8:16 PM	**70.0** °F	-	**57.0** °F	63%	**30.18** in	**10.0** mi	ESE	**24.2** mph	**32.2** mph	N/A	Thunderstorm
8:28 PM	**71.1** °F	-	**55.9** °F	59%	**30.23** in	**10.0** mi	East	**6.9** mph	-	**0.00** in	Hail , Thunderstorm
8:34 PM	**69.1** °F	-	**59.0** °F	70%	**30.19** in	**2.0** mi	ESE	**17.3** mph	-	**0.01** in	Rain , Hail , Thunderstorm
8:39 PM	**66.9** °F	-	**61.0** °F	81%	**30.18** in	**4.0** mi	SE	**18.4** mph	-	**0.10** in	Rain , Thunderstorm
8:52 PM	**68.0** °F	-	**60.1** °F	76%	**29.99** in	**10.0** mi	ESE	**15.0** mph	-	**0.11** in	Thunderstorm
9:01 PM	**71.1** °F	-	**60.1** °F	68%	**30.20** in	**10.0** mi	ESE	**16.1** mph	-	N/A	Thunderstorm
9:11 PM	**71.1** °F	-	**61.0** °F	70%	**30.21** in	**10.0** mi	East	**13.8** mph	-	N/A	
9:52 PM	**73.0** °F	-	**57.9** °F	59%	**29.99** in	**10.0** mi	East	**16.1** mph	**28.8** mph	N/A	
10:50 PM	**73.4** °F	-	**57.2** °F	57%	**30.26** in	**10.0** mi	East	**21.9** mph	**26.5** mph	N/A	Thunderstorm
10:52 PM	**73.0** °F	-	**57.9** °F	59%	**30.01** in	**10.0** mi	East	**19.6** mph	**26.5** mph	N/A	Thunderstorm
11:15 PM	**71.1** °F	-	**57.9** °F	63%	**30.26** in	**10.0** mi	East	**29.9** mph	**38.0** mph	**0.00** in	Rain , Thunderstorm
11:52 PM	**68.0** °F	-	**59.0** °F	73%	**30.04** in	**10.0** mi	East	**17.3** mph	-	**0.00** in	Rain , Thunderstorm

Albuquerque, NM

Albuquerque International Sunport

2:13 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - July, 2018

July

31

2018

View
Tuesday, July 31, 2018

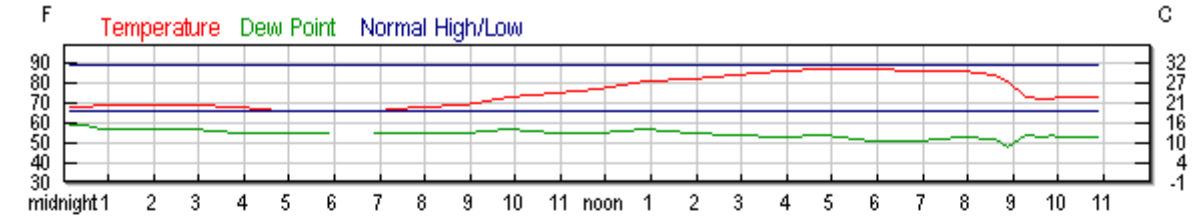
Daily | Weekly | Monthly | Custom

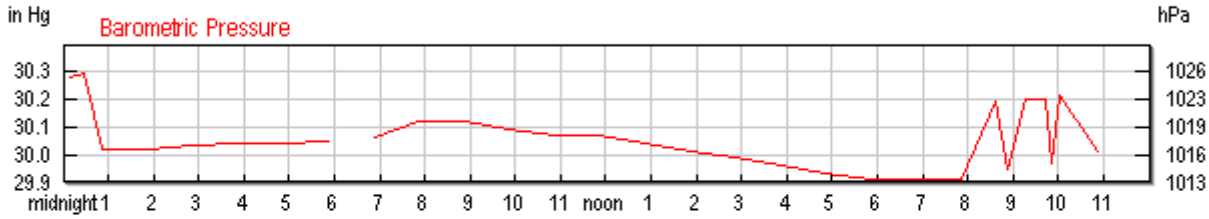
	Actual	Average	Record
Temperature			
Mean Temperature	**77** °F	-	
Max Temperature	**88** °F	-	- ()
Min Temperature	**66** °F	-	- ()
Cooling Degree Days	12		
Month to date cooling degree days	466		
Year to date cooling degree days	1084		
Since 1 June cooling degree days	888		
Growing Degree Days	27 (Base 50)		
Moisture			
Dew Point	**55** °F		
Average Humidity	49		
Maximum Humidity	68		
Minimum Humidity	29		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	2.21		

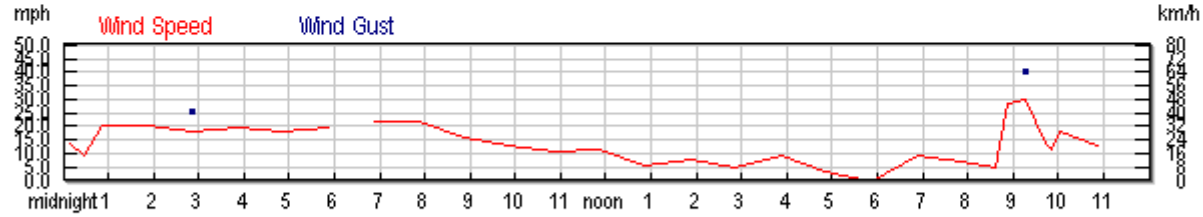
	Actual	Average	Record
Year to date precipitation	4.45		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.05** in		
Wind			
Wind Speed	**13** mph (East)		
Max Wind Speed	**31** mph		
Max Gust Speed	**40** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

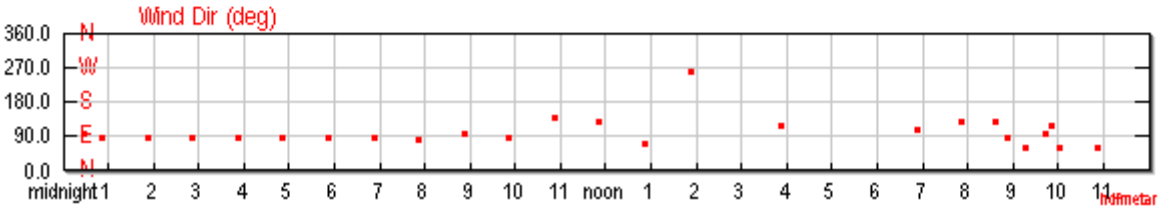
T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph









Search for Another Location

Airport or City:

KABQ

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Astronomy

Jul. 31, 2018	**Rise**	**Set**
Actual Time	6:15 AM MDT	8:10 PM MDT
Civil Twilight	5:47 AM MDT	8:37 PM MDT
Nautical Twilight	5:13 AM MDT	9:11 PM MDT
Astronomical Twilight	4:37 AM MDT	9:47 PM MDT
Moon	10:36 PM MDT (7/31)	9:37 AM MDT (7/31)
Length of Visible Light	14h 50m	
Length of Day	13h 54m	

Waning Gibbous, 87% of the Moon is Illuminated

Jul 31	Aug 4	Aug 11	Aug 18	Aug 26
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:09 AM	**68.0** °F	-	**59.0** °F	73%	**30.28** in	**10.0** mi	East	**13.8** mph	-	**0.00** in	Thunderstor
12:28 AM	**68.0** °F	-	**59.0** °F	73%	**30.29** in	**10.0** mi	East	**9.2** mph	-	**0.00** in	
12:52 AM	**69.1** °F	-	**57.9** °F	68%	**30.02** in	**10.0** mi	East	**20.7** mph	-	**0.00** in	
1:52 AM	**69.1** °F	-	**57.0** °F	65%	**30.02** in	**10.0** mi	East	**20.7** mph	**25.3** mph	N/A	
2:52 AM	**69.1** °F	-	**57.0** °F	65%	**30.03** in	**10.0** mi	East	**18.4** mph	**25.3** mph	N/A	
3:52 AM	**68.0** °F	-	**55.9** °F	65%	**30.04** in	**10.0** mi	East	**19.6** mph	-	N/A	
4:52 AM	**66.9** °F	-	**55.9** °F	68%	**30.04** in	**10.0** mi	East	**18.4** mph	-	N/A	
5:52 AM	**66.9** °F	-	**55.0** °F	66%	**30.05** in	**10.0** mi	East	**19.6** mph	-	N/A	
6:20 AM	-	-	-	N/A%	-	-	North	-	-	N/A	
6:52 AM	**66.0** °F	-	**55.0** °F	68%	**30.06** in	**10.0** mi	East	**21.9** mph	**26.5** mph	N/A	
7:52 AM	**68.0** °F	-	**55.9** °F	65%	**30.12** in	**10.0** mi	East	**21.9** mph	-	N/A	
8:52 AM	**69.1** °F	-	**55.9** °F	63%	**30.12** in	**10.0** mi	East	**16.1** mph	**26.5** mph	N/A	
9:52 AM	**73.0** °F	-	**57.0** °F	57%	**30.09** in	**10.0** mi	East	**12.7** mph	-	N/A	
10:52 AM	**75.9** °F	-	**55.9** °F	50%	**30.07** in	**10.0** mi	SE	**10.4** mph	-	N/A	
11:52 AM	**77.0** °F	-	**55.9** °F	48%	**30.07** in	**10.0** mi	SE	**11.5** mph	-	N/A	
12:52 PM	**81.0** °F	**81.0** °F	**57.0** °F	44%	**30.04** in	**10.0** mi	ENE	**5.8** mph	-	N/A	
1:52 PM	**82.9** °F	**82.0** °F	**55.0** °F	38%	**30.01** in	**10.0** mi	West	**8.1** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
2:52 PM	**84.0** °F	**82.6** °F	**54.0** °F	35%	**29.99** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
3:52 PM	**86.0** °F	**84.0** °F	**53.1** °F	32%	**29.96** in	**10.0** mi	ESE	**9.2** mph	-	N/A	
4:52 PM	**87.1** °F	**85.1** °F	**54.0** °F	32%	**29.93** in	**10.0** mi	Variable	**3.5** mph	-	N/A	
5:52 PM	**87.1** °F	-	**51.1** °F	29%	**29.91** in	**10.0** mi	Calm	Calm	-	N/A	
6:52 PM	**86.0** °F	-	**51.1** °F	30%	**29.91** in	**10.0** mi	ESE	**9.2** mph	-	N/A	
7:52 PM	**86.0** °F	**84.0** °F	**53.1** °F	32%	**29.91** in	**10.0** mi	SE	**6.9** mph	-	N/A	
8:37 PM	**84.0** °F	-	**52.0** °F	33%	**30.19** in	**10.0** mi	SE	**4.6** mph	-	N/A	Thunderstor
8:52 PM	**81.0** °F	-	**48.9** °F	33%	**29.95** in	**10.0** mi	East	**28.8** mph	**38.0** mph	N/A	Thunderstor
9:16 PM	**73.9** °F	-	**54.0** °F	50%	**30.20** in	**8.0** mi	ENE	**29.9** mph	**40.3** mph	**0.01** in	Rain , Thunderstor
9:43 PM	**72.0** °F	-	**53.1** °F	51%	**30.20** in	**10.0** mi	East	**13.8** mph	-	**0.02** in	Thunderstor
9:52 PM	**72.0** °F	-	**54.0** °F	53%	**29.97** in	**10.0** mi	ESE	**11.5** mph	-	**0.02** in	Thunderstor
10:02 PM	**73.0** °F	-	**53.1** °F	49%	**30.21** in	**10.0** mi	ENE	**18.4** mph	**23.0** mph	N/A	
10:52 PM	**73.9** °F	-	**53.1** °F	48%	**30.01** in	**10.0** mi	ENE	**12.7** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

2:15 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

1

2018

View
Wednesday, August 1, 2018

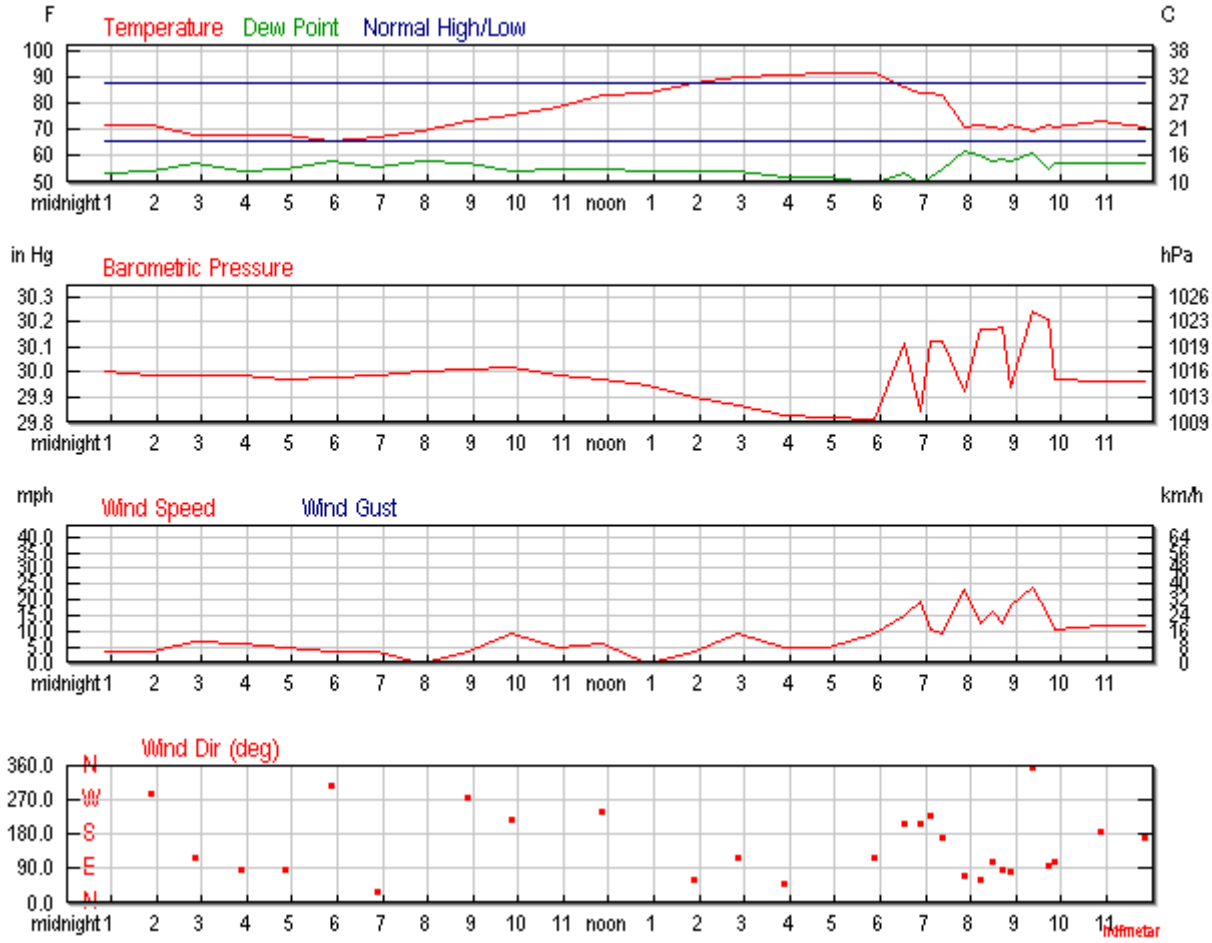
Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**79** °F	-	
Max Temperature	**92** °F	-	- ()
Min Temperature	**66** °F	-	- ()
Cooling Degree Days	14		
Month to date cooling degree days	14		
Year to date cooling degree days	1098		
Since 1 June cooling degree days	902		
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**56** °F		
Average Humidity	49		
Maximum Humidity	73		
Minimum Humidity	25		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.12		

	Actual	Average	Record
Year to date precipitation	4.57		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.99** in		
Wind			
Wind Speed	**8** mph (ESE)		
Max Wind Speed	**33** mph		
Max Gust Speed	**39** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph



Search for Another Location

Airport or City:

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Astronomy

Aug. 01, 2018	**Rise**	**Set**
Actual Time	6:15 AM MDT	8:09 PM MDT
Civil Twilight	5:48 AM MDT	8:36 PM MDT
Nautical Twilight	5:14 AM MDT	9:10 PM MDT
Astronomical Twilight	4:38 AM MDT	9:46 PM MDT
Moon	11:07 PM MDT (8/1)	10:34 AM MDT (8/1)
Length of Visible Light	14h 48m	
Length of Day	13h 53m	

Waning Gibbous, 79% of the Moon is Illuminated

Aug 1	Aug 4	Aug 11	Aug 18	Aug 26
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**72.0** °F	-	**53.1** °F	51%	**30.00** in	**10.0** mi	North	**3.5** mph	-	N/A	
1:52 AM	**72.0** °F	-	**54.0** °F	53%	**29.99** in	**10.0** mi	WNW	**3.5** mph	-	N/A	
2:52 AM	**68.0** °F	-	**57.0** °F	68%	**29.99** in	**10.0** mi	ESE	**6.9** mph	-	N/A	
3:52 AM	**68.0** °F	-	**54.0** °F	61%	**29.99** in	**10.0** mi	East	**5.8** mph	-	N/A	
4:52 AM	**68.0** °F	-	**55.0** °F	63%	**29.97** in	**10.0** mi	East	**4.6** mph	-	N/A	
5:52 AM	**66.0** °F	-	**57.9** °F	75%	**29.98** in	**10.0** mi	NW	**3.5** mph	-	N/A	
6:52 AM	**66.9** °F	-	**55.9** °F	68%	**29.99** in	**10.0** mi	NNE	**3.5** mph	-	N/A	
7:52 AM	**69.1** °F	-	**57.9** °F	68%	**30.00** in	**10.0** mi	Calm	Calm	-	N/A	
8:52 AM	**73.0** °F	-	**57.0** °F	57%	**30.01** in	**10.0** mi	West	**3.5** mph	-	N/A	
9:52 AM	**75.9** °F	-	**54.0** °F	46%	**30.02** in	**10.0** mi	SW	**9.2** mph	-	N/A	
10:52 AM	**79.0** °F	-	**55.0** °F	44%	**29.99** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
11:52 AM	**82.9** °F	**82.0** °F	**55.0** °F	38%	**29.97** in	**10.0** mi	WSW	**5.8** mph	-	N/A	
12:52 PM	**84.0** °F	**82.6** °F	**54.0** °F	35%	**29.95** in	**10.0** mi	Calm	Calm	-	N/A	
1:52 PM	**88.0** °F	**85.9** °F	**54.0** °F	31%	**29.90** in	**10.0** mi	ENE	**3.5** mph	-	N/A	
2:52 PM	**90.0** °F	**87.7** °F	**54.0** °F	29%	**29.87** in	**10.0** mi	ESE	**9.2** mph	-	N/A	
3:52 PM	**91.0** °F	-	**52.0** °F	26%	**29.83** in	**10.0** mi	NE	**4.6** mph	-	N/A	
4:52 PM	**91.9** °F	-	**52.0** °F	26%	**29.82** in	**10.0** mi	Variable	**4.6** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
5:52 PM	**91.9** °F	-	**50.0** °F	24%	**29.81** in	**10.0** mi	ESE	**9.2** mph	-	N/A	
6:31 PM	**86.0** °F	**84.0** °F	**53.1** °F	32%	**30.11** in	**10.0** mi	SSW	**15.0** mph	**28.8** mph	N/A	
6:52 PM	**84.0** °F	-	**50.0** °F	31%	**29.84** in	**10.0** mi	SSW	**19.6** mph	-	N/A	
7:07 PM	**84.0** °F	-	**52.0** °F	33%	**30.12** in	**10.0** mi	SW	**10.4** mph	-	N/A	Thunderstor
7:23 PM	**82.9** °F	**82.0** °F	**55.0** °F	38%	**30.12** in	**10.0** mi	South	**9.2** mph	-	**0.00** in	Rain , Thunderstor
7:52 PM	**71.1** °F	-	**62.1** °F	73%	**29.92** in	**7.0** mi	ENE	**23.0** mph	-	**0.00** in	Rain , Thunderstor
8:13 PM	**72.0** °F	-	**60.1** °F	66%	**30.17** in	**10.0** mi	ENE	**12.7** mph	**21.9** mph	**0.02** in	Thunderstor
8:30 PM	**71.1** °F	-	**57.9** °F	63%	**30.17** in	**10.0** mi	ESE	**16.1** mph	-	**0.02** in	Thunderstor
8:43 PM	**70.0** °F	-	**59.0** °F	68%	**30.18** in	**10.0** mi	East	**12.7** mph	-	**0.02** in	
8:52 PM	**72.0** °F	-	**57.9** °F	61%	**29.94** in	**10.0** mi	East	**18.4** mph	-	**0.02** in	
9:21 PM	**69.1** °F	-	**61.0** °F	75%	**30.24** in	**5.0** mi	North	**24.2** mph	**33.4** mph	**0.02** in	Rain , Thunderstor
9:42 PM	**72.0** °F	-	**55.0** °F	55%	**30.21** in	**9.0** mi	East	**15.0** mph	-	**0.10** in	Rain , Thunderstor
9:52 PM	**71.1** °F	-	**57.0** °F	61%	**29.97** in	**10.0** mi	ESE	**10.4** mph	-	**0.10** in	
10:52 PM	**73.0** °F	-	**57.0** °F	57%	**29.96** in	**10.0** mi	South	**11.5** mph	-	N/A	
11:52 PM	**71.1** °F	-	**57.0** °F	61%	**29.96** in	**10.0** mi	South	**11.5** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

2:17 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

2

2018

View
Thursday, August 2, 2018

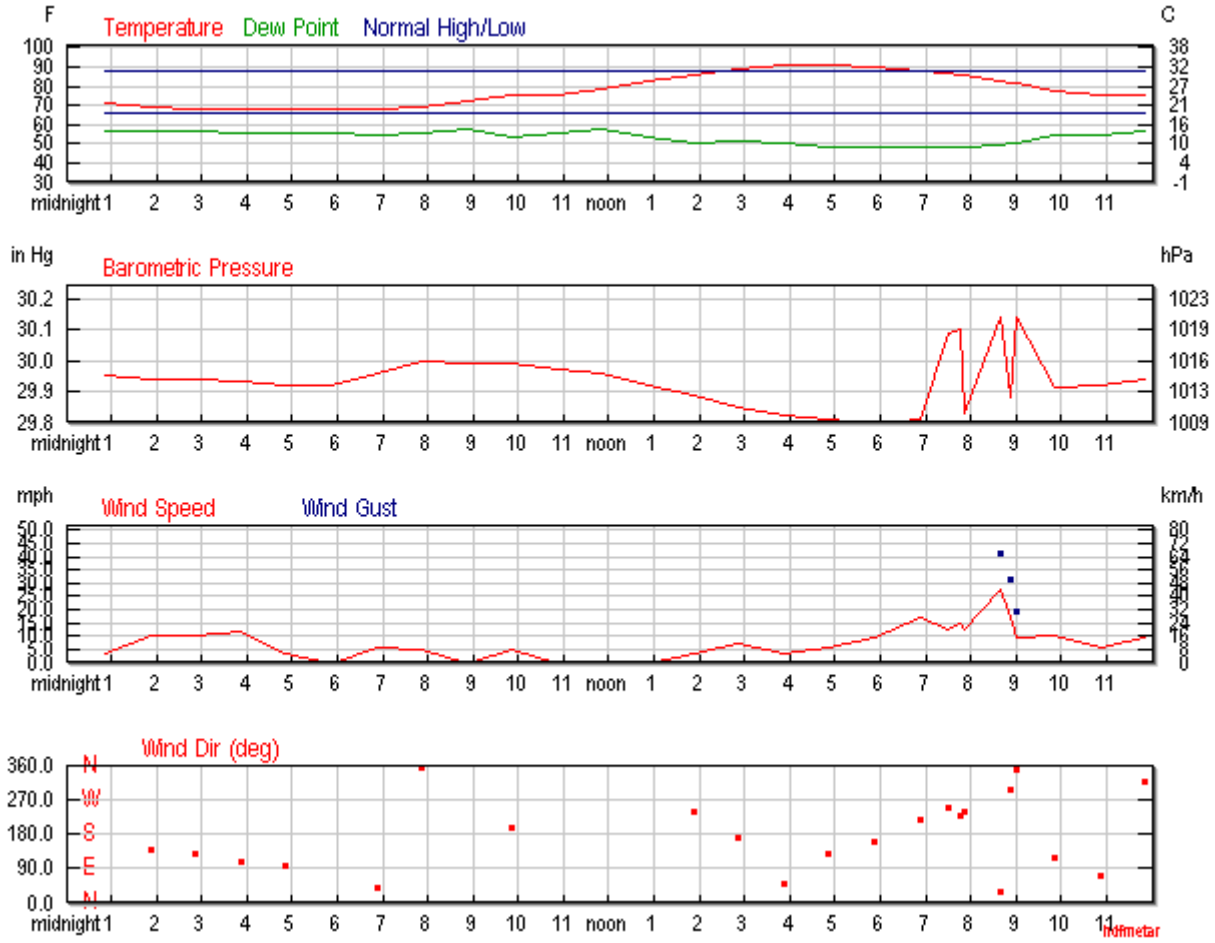
Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**79** °F	-	
Max Temperature	**92** °F	-	- ()
Min Temperature	**66** °F	-	- ()
Cooling Degree Days	14		
Month to date cooling degree days	28		
Year to date cooling degree days	1112		
Since 1 June cooling degree days	916		
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**53** °F		
Average Humidity	46		
Maximum Humidity	68		
Minimum Humidity	23		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.14		

	Actual	Average	Record
Year to date precipitation	4.59		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.94** in		
Wind			
Wind Speed	**7** mph (SE)		
Max Wind Speed	**28** mph		
Max Gust Speed	**41** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Aug. 02, 2018	**Rise**	**Set**
Actual Time	6:16 AM MDT	8:08 PM MDT
Civil Twilight	5:48 AM MDT	8:35 PM MDT
Nautical Twilight	5:15 AM MDT	9:09 PM MDT
Astronomical Twilight	4:39 AM MDT	9:45 PM MDT
Moon	11:39 PM MDT (8/2)	11:31 AM MDT (8/2)
Length of Visible Light	14h 47m	
Length of Day	13h 51m	

Waning Gibbous, 70% of the Moon is Illuminated

Aug 2	Aug 4	Aug 11	Aug 18	Aug 26
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**71.1** °F	-	**57.0** °F	61%	**29.95** in	**10.0** mi	SE	**3.5** mph	-	N/A	
1:52 AM	**69.1** °F	-	**57.0** °F	65%	**29.94** in	**10.0** mi	SE	**10.4** mph	-	N/A	
2:52 AM	**68.0** °F	-	**57.0** °F	68%	**29.94** in	**10.0** mi	SE	**10.4** mph	-	N/A	
3:52 AM	**68.0** °F	-	**55.9** °F	65%	**29.93** in	**10.0** mi	ESE	**11.5** mph	-	N/A	
4:52 AM	**68.0** °F	-	**55.9** °F	65%	**29.92** in	**10.0** mi	East	**3.5** mph	-	N/A	
5:52 AM	**68.0** °F	-	**55.9** °F	65%	**29.92** in	**10.0** mi	Calm	Calm	-	N/A	
6:52 AM	**68.0** °F	-	**55.0** °F	63%	**29.96** in	**10.0** mi	NE	**5.8** mph	-	N/A	
7:52 AM	**69.1** °F	-	**55.9** °F	63%	**30.00** in	**10.0** mi	North	**4.6** mph	-	N/A	
8:52 AM	**72.0** °F	-	**57.9** °F	61%	**29.99** in	**10.0** mi	Calm	Calm	-	N/A	
9:52 AM	**75.0** °F	-	**54.0** °F	48%	**29.99** in	**10.0** mi	SSW	**4.6** mph	-	N/A	
10:52 AM	**75.9** °F	-	**55.9** °F	50%	**29.97** in	**10.0** mi	Calm	Calm	-	N/A	
11:52 AM	**78.1** °F	-	**57.9** °F	50%	**29.96** in	**10.0** mi	Calm	Calm	-	N/A	
12:52 PM	**82.9** °F	**81.9** °F	**54.0** °F	37%	**29.92** in	**10.0** mi	Calm	Calm	-	N/A	
1:52 PM	**86.0** °F	-	**50.0** °F	29%	**29.89** in	**10.0** mi	WSW	**3.5** mph	-	N/A	
2:52 PM	**89.1** °F	-	**51.1** °F	27%	**29.85** in	**10.0** mi	South	**6.9** mph	-	N/A	
3:52 PM	**91.0** °F	-	**50.0** °F	24%	**29.82** in	**10.0** mi	NE	**3.5** mph	-	N/A	
4:52 PM	**91.0** °F	-	**48.0** °F	23%	**29.81** in	**10.0** mi	SE	**5.8** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
5:52 PM	**90.0** °F	-	**48.0** °F	24%	**29.80** in	**10.0** mi	SSE	**9.2** mph	-	N/A	
6:52 PM	**88.0** °F	-	**48.0** °F	25%	**29.81** in	**10.0** mi	SW	**17.3** mph	-	N/A	
7:31 PM	**87.1** °F	-	**48.0** °F	26%	**30.09** in	**10.0** mi	WSW	**12.7** mph	**23.0** mph	N/A	Thunderstorm
7:46 PM	**86.0** °F	-	**48.2** °F	27%	**30.10** in	**10.0** mi	SW	**15.0** mph	-	N/A	Thunderstorm
7:52 PM	**86.0** °F	-	**48.0** °F	27%	**29.83** in	**10.0** mi	WSW	**12.7** mph	**21.9** mph	N/A	Thunderstorm
8:40 PM	**82.9** °F	-	**48.9** °F	31%	**30.14** in	**10.0** mi	NNE	**27.6** mph	**41.4** mph	N/A	Thunderstorm
8:52 PM	**82.0** °F	-	**50.0** °F	33%	**29.88** in	**10.0** mi	WNW	**17.3** mph	**31.1** mph	**0.00** in	Rain , Thunderstorm
9:01 PM	**82.0** °F	-	**50.0** °F	33%	**30.14** in	**10.0** mi	North	**9.2** mph	**19.6** mph	**0.00** in	Rain
9:52 PM	**77.0** °F	-	**55.0** °F	47%	**29.91** in	**10.0** mi	ESE	**10.4** mph	-	**0.00** in	
10:52 PM	**75.9** °F	-	**55.0** °F	48%	**29.92** in	**10.0** mi	ENE	**5.8** mph	-	N/A	
11:52 PM	**75.0** °F	-	**57.0** °F	53%	**29.94** in	**10.0** mi	NW	**9.2** mph	-	**0.00** in	Rain

Albuquerque, NM

Albuquerque International Sunport

2:18 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

3

2018

View

Friday, August 3, 2018

Daily | Weekly | Monthly | Custom

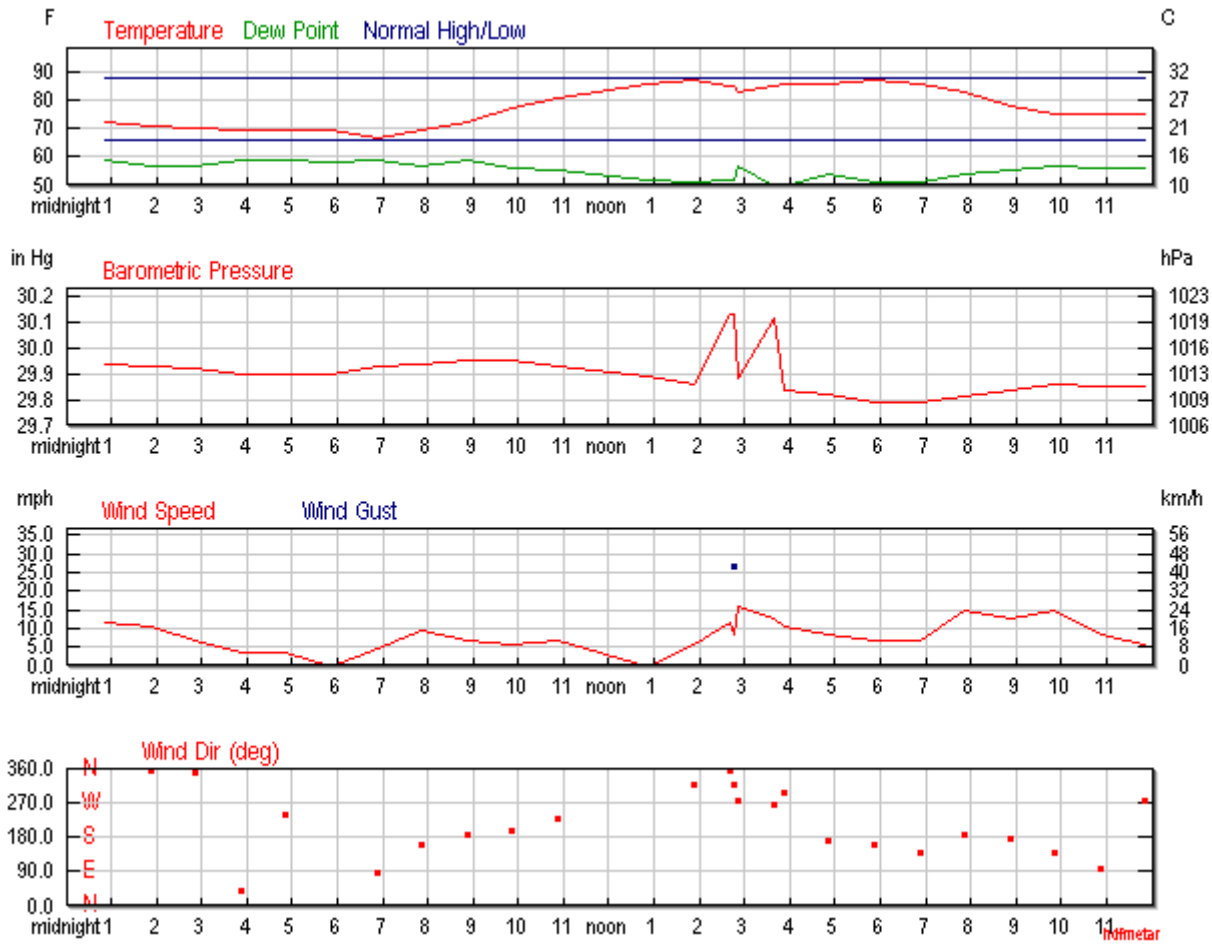
	Actual	Average	Record
Temperature			
Mean Temperature	**78** °F	-	
Max Temperature	**89** °F	-	- ()
Min Temperature	**66** °F	-	- ()
Cooling Degree Days	13		
Month to date cooling degree days	41		
Year to date cooling degree days	1125		
Since 1 June cooling degree days	929		
Growing Degree Days	27 (Base 50)		
Moisture			
Dew Point	**55** °F		
Average Humidity	54		
Maximum Humidity	78		
Minimum Humidity	29		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.14		

	Actual	Average	Record
Year to date precipitation	4.59		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.90** in		
Wind			
Wind Speed	**8** mph (SW)		
Max Wind Speed	**22** mph		
Max Gust Speed	**26** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Aug. 03, 2018	**Rise**	**Set**
Actual Time	6:17 AM MDT	8:07 PM MDT
Civil Twilight	5:49 AM MDT	8:34 PM MDT
Nautical Twilight	5:16 AM MDT	9:08 PM MDT
Astronomical Twilight	4:40 AM MDT	9:43 PM MDT
Moon	No Moon Rise	12:30 PM MDT (8/3)
Length of Visible Light	14h 45m	
Length of Day	13h 50m	

Waning Gibbous, 61% of the Moon is Illuminated

Aug 3	Aug 4	Aug 11	Aug 18	Aug 26
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**72.0** °F	-	**59.0** °F	64%	**29.94** in	**10.0** mi	NNW	**11.5** mph	-	**0.02** in	
1:52 AM	**71.1** °F	-	**57.0** °F	61%	**29.93** in	**10.0** mi	North	**10.4** mph	-	N/A	
2:52 AM	**70.0** °F	-	**57.0** °F	63%	**29.92** in	**10.0** mi	North	**6.9** mph	-	N/A	
3:52 AM	**69.1** °F	-	**59.0** °F	70%	**29.90** in	**10.0** mi	NE	**3.5** mph	-	N/A	
4:52 AM	**69.1** °F	-	**59.0** °F	70%	**29.90** in	**10.0** mi	WSW	**3.5** mph	-	N/A	
5:52 AM	**69.1** °F	-	**57.9** °F	68%	**29.90** in	**10.0** mi	Calm	Calm	-	N/A	
6:52 AM	**66.9** °F	-	**59.0** °F	76%	**29.93** in	**10.0** mi	East	**4.6** mph	-	N/A	
7:52 AM	**69.1** °F	-	**57.0** °F	65%	**29.94** in	**10.0** mi	SSE	**9.2** mph	-	N/A	
8:52 AM	**72.0** °F	-	**59.0** °F	64%	**29.95** in	**10.0** mi	South	**6.9** mph	-	N/A	
9:52 AM	**77.0** °F	-	**55.9** °F	48%	**29.95** in	**10.0** mi	SSW	**5.8** mph	-	N/A	
10:52 AM	**81.0** °F	**80.7** °F	**55.0** °F	41%	**29.93** in	**10.0** mi	SW	**6.9** mph	-	N/A	
12:52 PM	**86.0** °F	-	**52.0** °F	31%	**29.89** in	**10.0** mi	Calm	Calm	-	N/A	
1:52 PM	**87.1** °F	-	**51.1** °F	29%	**29.86** in	**10.0** mi	NW	**5.8** mph	-	N/A	
2:41 PM	**84.9** °F	-	**52.0** °F	32%	**30.13** in	**10.0** mi	North	**11.5** mph	**26.5** mph	N/A	Thunderstorm
2:45 PM	**84.9** °F	-	**52.0** °F	32%	**30.13** in	**10.0** mi	NW	**8.1** mph	**26.5** mph	N/A	Thunderstorm
2:52 PM	**82.9** °F	**82.4** °F	**57.0** °F	41%	**29.88** in	**10.0** mi	West	**16.1** mph	-	**0.00** in	Rain , Thunderstorm
3:39 PM	**84.9** °F	-	**50.0** °F	30%	**30.12** in	**10.0** mi	West	**12.7** mph	-	**0.00** in	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
3:52 PM	**86.0** °F	-	**50.0** °F	29%	**29.84** in	**10.0** mi	WNW	**10.4** mph	-	**0.00** in	
4:52 PM	**86.0** °F	**84.2** °F	**54.0** °F	33%	**29.82** in	**10.0** mi	South	**8.1** mph	-	N/A	
5:52 PM	**87.1** °F	-	**51.1** °F	29%	**29.79** in	**10.0** mi	SSE	**6.9** mph	-	N/A	
6:52 PM	**86.0** °F	-	**51.1** °F	30%	**29.79** in	**10.0** mi	SE	**6.9** mph	-	N/A	
7:52 PM	**82.9** °F	**81.9** °F	**54.0** °F	37%	**29.81** in	**10.0** mi	South	**15.0** mph	-	N/A	
8:52 PM	**78.1** °F	-	**55.0** °F	45%	**29.84** in	**10.0** mi	South	**12.7** mph	-	N/A	
9:52 PM	**75.0** °F	-	**57.0** °F	53%	**29.86** in	**10.0** mi	SE	**15.0** mph	-	N/A	
10:52 PM	**75.0** °F	-	**55.9** °F	51%	**29.85** in	**10.0** mi	East	**8.1** mph	-	N/A	
11:52 PM	**75.0** °F	-	**55.9** °F	51%	**29.85** in	**10.0** mi	West	**5.8** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

2:20 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

6

2018

View
Monday, August 6, 2018

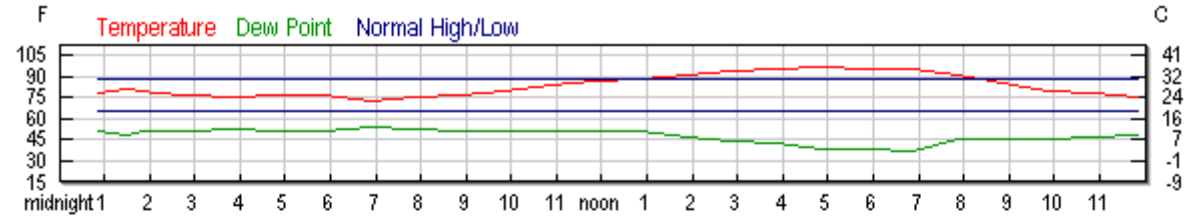
Daily | Weekly | Monthly | Custom

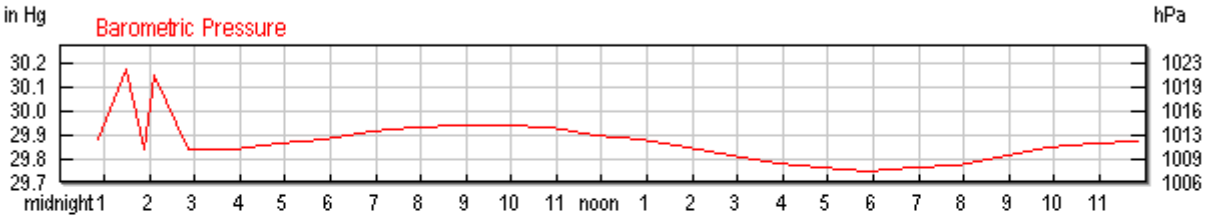
	Actual	Average	Record
Temperature			
Mean Temperature	**85** °F	-	
Max Temperature	**98** °F	-	- ()
Min Temperature	**72** °F	-	- ()
Cooling Degree Days	20		
Month to date cooling degree days	97		
Year to date cooling degree days	1181		
Since 1 June cooling degree days	985		
Growing Degree Days	35 (Base 50)		
Moisture			
Dew Point	**48** °F		
Average Humidity	31		
Maximum Humidity	49		
Minimum Humidity	13		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.14		

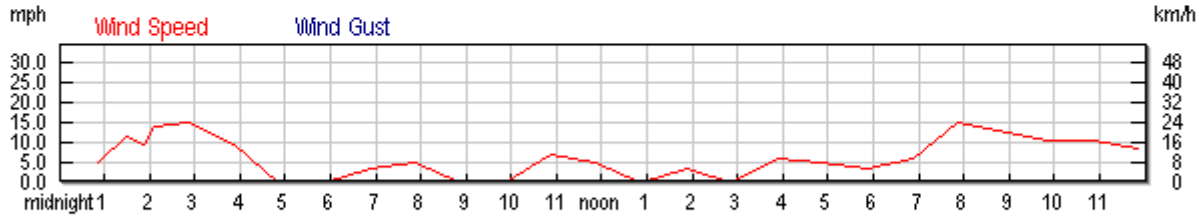
	Actual	Average	Record
Year to date precipitation	4.59		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.87** in		
Wind			
Wind Speed	**6** mph (SE)		
Max Wind Speed	**22** mph		
Max Gust Speed	**27** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

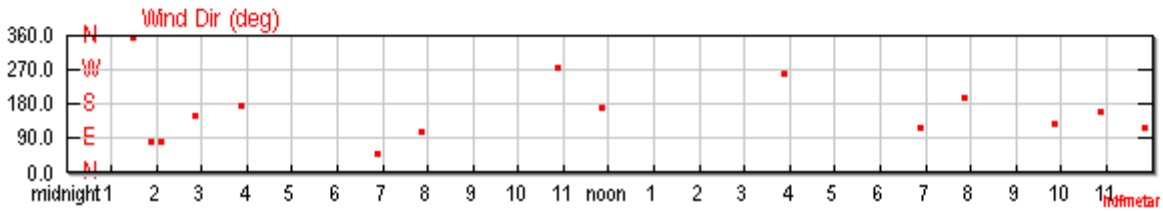
T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph









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Astronomy

Aug. 06, 2018	**Rise**	**Set**
Actual Time	6:19 AM MDT	8:04 PM MDT
Civil Twilight	5:52 AM MDT	8:31 PM MDT
Nautical Twilight	5:19 AM MDT	9:04 PM MDT
Astronomical Twilight	4:43 AM MDT	9:39 PM MDT
Moon	1:30 AM MDT (8/6)	3:40 PM MDT (8/6)
Length of Visible Light	14h 39m	
Length of Day	13h 44m	

Waning Crescent, 29% of the Moon is Illuminated

Aug 6	Aug 11	Aug 18	Aug 26	Sep 2
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
12:52 AM	**79.0** °F	**51.1** °F	38%	**29.88** in	**10.0** mi	NNW	**4.6** mph	-	N/A		Over
1:29 AM	**81.0** °F	**48.9** °F	33%	**30.17** in	**10.0** mi	North	**11.5** mph	**19.6** mph	N/A	Thunderstorm	Over
1:52 AM	**80.1** °F	**52.0** °F	38%	**29.84** in	**10.0** mi	East	**9.2** mph	-	**0.00** in	Rain , Thunderstorm	Light
2:06 AM	**79.0** °F	**51.1** °F	38%	**30.15** in	**10.0** mi	East	**13.8** mph	-	**0.00** in	Rain	Light
2:52 AM	**77.0** °F	**51.1** °F	40%	**29.84** in	**10.0** mi	SSE	**15.0** mph	-	**0.00** in		Most Clou
3:52 AM	**75.9** °F	**53.1** °F	45%	**29.84** in	**10.0** mi	South	**9.2** mph	-	N/A		Most Clou
4:52 AM	**77.0** °F	**52.0** °F	42%	**29.86** in	**10.0** mi	Calm	Calm	-	N/A		Scatt Clou
5:52 AM	**77.0** °F	**51.1** °F	40%	**29.88** in	**10.0** mi	Calm	Calm	-	N/A		Scatt Clou
6:52 AM	**73.0** °F	**54.0** °F	51%	**29.91** in	**10.0** mi	NE	**3.5** mph	-	N/A		Scatt Clou
7:52 AM	**75.0** °F	**53.1** °F	46%	**29.93** in	**10.0** mi	ESE	**4.6** mph	-	N/A		Scatt Clou
8:52 AM	**77.0** °F	**52.0** °F	42%	**29.94** in	**10.0** mi	Calm	Calm	-	N/A		Scatt Clou
9:52 AM	**80.1** °F	**51.1** °F	36%	**29.94** in	**10.0** mi	Calm	Calm	-	N/A		Most Clou
10:52 AM	**84.0** °F	**51.1** °F	32%	**29.93** in	**10.0** mi	West	**6.9** mph	-	N/A		Scatt Clou
11:52 AM	**87.1** °F	**52.0** °F	30%	**29.90** in	**10.0** mi	South	**4.6** mph	-	N/A		Scatt Clou
12:52 PM	**89.1** °F	**52.0** °F	28%	**29.88** in	**10.0** mi	Calm	Calm	-	N/A		Scatt Clou
1:52 PM	**91.0** °F	**46.9** °F	22%	**29.85** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Scatt Clou
2:52 PM	**93.9** °F	**44.1** °F	18%	**29.81** in	**10.0** mi	Calm	Calm	-	N/A		Scatt Clou

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
3:52 PM	**95.0** °F	**43.0** °F	17%	**29.78** in	**10.0** mi	West	**5.8** mph	-	N/A		Scatt Cloud
4:52 PM	**97.0** °F	**37.9** °F	13%	**29.76** in	**10.0** mi	Variable	**4.6** mph	-	N/A		Scatt Cloud
5:52 PM	**96.1** °F	**37.9** °F	13%	**29.75** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Scatt Cloud
6:52 PM	**95.0** °F	**37.0** °F	13%	**29.76** in	**10.0** mi	ESE	**5.8** mph	-	N/A		Scatt Cloud
7:52 PM	**91.0** °F	**45.0** °F	20%	**29.77** in	**10.0** mi	SSW	**15.0** mph	**24.2** mph	N/A		Scatt Cloud
9:52 PM	**80.1** °F	**45.0** °F	29%	**29.85** in	**10.0** mi	SE	**10.4** mph	-	N/A		Partly Cloud
10:52 PM	**79.0** °F	**46.9** °F	32%	**29.86** in	**10.0** mi	SSE	**10.4** mph	-	N/A		Partly Cloud
11:52 PM	**75.9** °F	**48.9** °F	38%	**29.87** in	**10.0** mi	ESE	**8.1** mph	-	N/A		Partly Cloud

Albuquerque, NM

Albuquerque International Sunport

2:21 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

7

2018

View
Tuesday, August 7, 2018

Daily | Weekly | Monthly | Custom

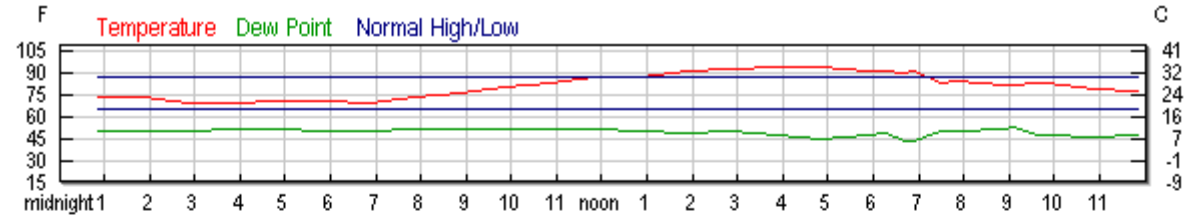
	Actual	Average	Record
Temperature			
Mean Temperature	**82** °F	-	
Max Temperature	**96** °F	-	- ()
Min Temperature	**68** °F	-	- ()
Cooling Degree Days	17		
Month to date cooling degree days	114		
Year to date cooling degree days	1198		
Since 1 June cooling degree days	1002		
Growing Degree Days	32 (Base 50)		
Moisture			
Dew Point	**49** °F		
Average Humidity	36		
Maximum Humidity	53		
Minimum Humidity	18		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.14		

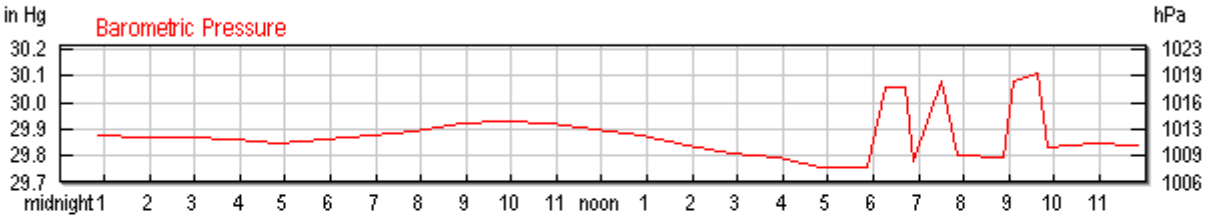
	Actual	Average	Record
Year to date precipitation	4.59		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.88** in		
Wind			
Wind Speed	**7** mph (SSE)		
Max Wind Speed	**22** mph		
Max Gust Speed	**32** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

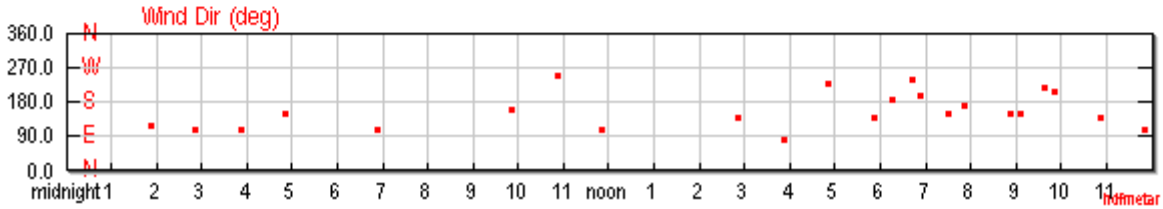
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Aug. 07, 2018	**Rise**	**Set**
Actual Time	6:20 AM MDT	8:03 PM MDT
Civil Twilight	5:53 AM MDT	8:30 PM MDT
Nautical Twilight	5:19 AM MDT	9:03 PM MDT
Astronomical Twilight	4:44 AM MDT	9:38 PM MDT
Moon	2:17 AM MDT (8/7)	4:45 PM MDT (8/7)
Length of Visible Light	14h 37m	
Length of Day	13h 43m	

Waning Crescent, 19% of the Moon is Illuminated

Aug 7	Aug 11	Aug 18	Aug 26	Sep 2
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**73.9** °F	-	**50.0** °F	43%	**29.88** in	**10.0** mi	SE	**6.9** mph	-	N/A	
1:52 AM	**73.9** °F	-	**50.0** °F	43%	**29.87** in	**10.0** mi	ESE	**9.2** mph	-	N/A	
2:52 AM	**70.0** °F	-	**50.0** °F	49%	**29.87** in	**10.0** mi	ESE	**6.9** mph	-	N/A	
3:52 AM	**70.0** °F	-	**51.1** °F	51%	**29.86** in	**10.0** mi	ESE	**9.2** mph	-	N/A	
4:52 AM	**71.1** °F	-	**51.1** °F	49%	**29.85** in	**10.0** mi	SSE	**5.8** mph	-	N/A	
5:52 AM	**71.1** °F	-	**50.0** °F	47%	**29.86** in	**10.0** mi	Calm	Calm	-	N/A	
6:52 AM	**69.8** °F	-	**50.0** °F	49%	**29.88** in	**10.0** mi	ESE	**3.5** mph	-	N/A	
7:52 AM	**73.4** °F	-	**51.8** °F	47%	**29.89** in	**10.0** mi	Calm	Calm	-	N/A	
8:52 AM	**77.0** °F	-	**51.1** °F	40%	**29.92** in	**10.0** mi	Calm	Calm	-	N/A	
9:52 AM	**81.0** °F	-	**52.0** °F	36%	**29.93** in	**10.0** mi	SSE	**5.8** mph	-	N/A	
10:52 AM	**84.0** °F	-	**52.0** °F	33%	**29.92** in	**10.0** mi	WSW	**6.9** mph	-	N/A	
11:52 AM	**88.0** °F	-	**51.1** °F	28%	**29.90** in	**10.0** mi	ESE	**9.2** mph	-	N/A	
12:52 PM	**88.0** °F	-	**50.0** °F	27%	**29.88** in	**10.0** mi	Calm	Calm	-	N/A	
1:52 PM	**91.9** °F	-	**48.9** °F	23%	**29.84** in	**10.0** mi	Variable	**6.9** mph	-	N/A	
2:52 PM	**93.0** °F	-	**50.0** °F	23%	**29.81** in	**10.0** mi	SE	**8.1** mph	-	N/A	
3:52 PM	**93.9** °F	-	**46.9** °F	20%	**29.79** in	**10.0** mi	East	**5.8** mph	-	N/A	
4:52 PM	**93.9** °F	-	**45.0** °F	18%	**29.76** in	**10.0** mi	SW	**6.9** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
5:52 PM	**91.9** °F	-	**46.9** °F	21%	**29.76** in	**10.0** mi	SE	**17.3** mph	**21.9** mph	N/A	
6:15 PM	**91.0** °F	-	**48.9** °F	23%	**30.06** in	**10.0** mi	South	**17.3** mph	-	N/A	Thunderstor
6:43 PM	**90.0** °F	-	**43.0** °F	19%	**30.06** in	**10.0** mi	WSW	**9.2** mph	**27.6** mph	**0.00** in	Rain , Thunderstor
6:52 PM	**91.0** °F	-	**43.0** °F	19%	**29.78** in	**10.0** mi	SSW	**15.0** mph	**20.7** mph	**0.00** in	Thunderstor
7:31 PM	**84.0** °F	-	**50.0** °F	31%	**30.08** in	**9.0** mi	SSE	**16.1** mph	-	N/A	Thunderstor
7:52 PM	**84.9** °F	-	**50.0** °F	30%	**29.80** in	**10.0** mi	South	**6.9** mph	-	N/A	Thunderstor
8:52 PM	**82.0** °F	-	**52.0** °F	35%	**29.79** in	**10.0** mi	SSE	**12.7** mph	-	N/A	Thunderstor
9:05 PM	**82.0** °F	**81.2** °F	**53.1** °F	37%	**30.08** in	**10.0** mi	SSE	**15.0** mph	-	N/A	
9:38 PM	**82.9** °F	-	**48.0** °F	29%	**30.11** in	**10.0** mi	SW	**15.0** mph	-	N/A	
9:52 PM	**82.9** °F	-	**48.0** °F	29%	**29.83** in	**10.0** mi	SSW	**12.7** mph	-	N/A	
10:52 PM	**79.0** °F	-	**46.0** °F	31%	**29.85** in	**10.0** mi	SE	**8.1** mph	-	N/A	
11:52 PM	**78.1** °F	-	**48.0** °F	35%	**29.84** in	**10.0** mi	ESE	**6.9** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

2:23 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

9

2018

View
Thursday, August 9, 2018

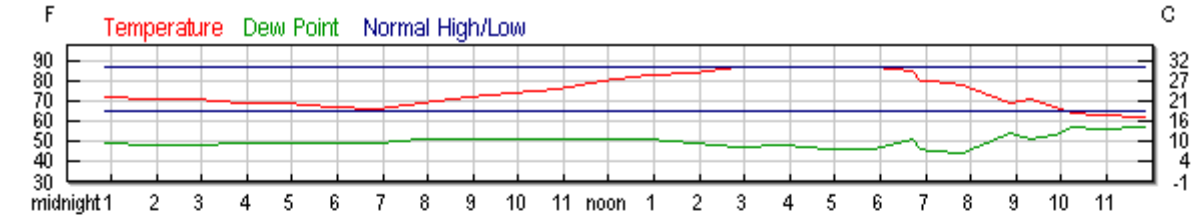
Daily | Weekly | Monthly | Custom

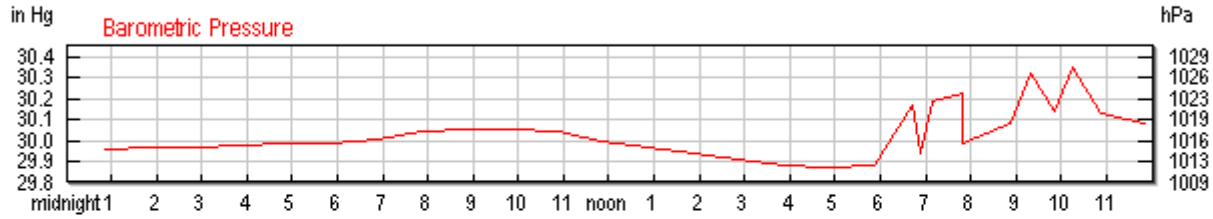
	Actual	Average	Record
Temperature			
Mean Temperature	**76** °F	-	
Max Temperature	**89** °F	-	- ()
Min Temperature	**63** °F	-	- ()
Cooling Degree Days	11		
Month to date cooling degree days	142		
Year to date cooling degree days	1226		
Since 1 June cooling degree days	1030		
Growing Degree Days	26 (Base 50)		
Moisture			
Dew Point	**51** °F		
Average Humidity	51		
Maximum Humidity	78		
Minimum Humidity	24		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.25		

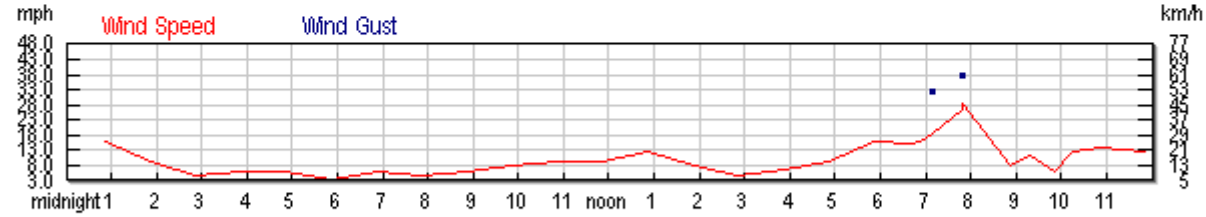
	Actual	Average	Record
Year to date precipitation	4.70		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.03** in		
Wind			
Wind Speed	**9** mph (South)		
Max Wind Speed	**32** mph		
Max Gust Speed	**40** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

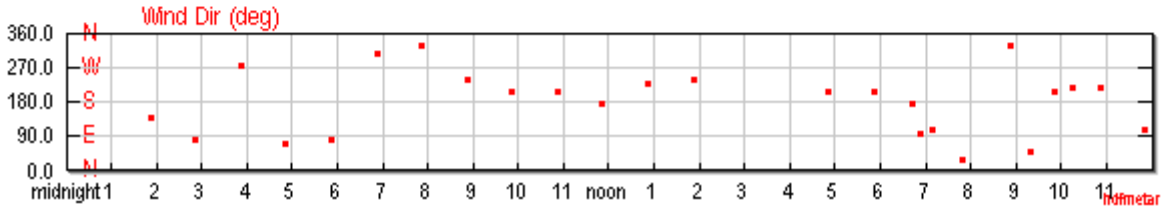
T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph









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Astronomy

Aug. 09, 2018	**Rise**	**Set**
Actual Time	6:21 AM MDT	8:01 PM MDT
Civil Twilight	5:54 AM MDT	8:28 PM MDT
Nautical Twilight	5:21 AM MDT	9:01 PM MDT
Astronomical Twilight	4:47 AM MDT	9:35 PM MDT
Moon	4:14 AM MDT (8/9)	6:49 PM MDT (8/9)
Length of Visible Light	14h 33m	
Length of Day	13h 39m	

Waning Crescent, 4% of the Moon is Illuminated

Aug 9	Aug 11	Aug 18	Aug 26	Sep 2
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
12:52 AM	**73.0** °F	**50.0** °F	44%	**29.96** in	**10.0** mi	East	**16.1** mph	-	N/A		Over
1:52 AM	**72.0** °F	**48.9** °F	44%	**29.97** in	**10.0** mi	SE	**9.2** mph	-	N/A		Over
2:52 AM	**72.0** °F	**48.9** °F	44%	**29.97** in	**10.0** mi	East	**4.6** mph	-	N/A		Most Cloud
3:52 AM	**69.1** °F	**50.0** °F	51%	**29.98** in	**10.0** mi	West	**5.8** mph	-	N/A		Scatt Cloud
4:52 AM	**69.1** °F	**50.0** °F	51%	**29.99** in	**10.0** mi	ENE	**5.8** mph	-	N/A		Most Cloud
5:52 AM	**68.0** °F	**50.0** °F	52%	**29.99** in	**10.0** mi	East	**3.5** mph	-	N/A		Scatt Cloud
6:52 AM	**66.9** °F	**50.0** °F	54%	**30.01** in	**10.0** mi	NW	**5.8** mph	-	N/A		Most Cloud
7:52 AM	**69.1** °F	**51.1** °F	53%	**30.04** in	**10.0** mi	NNW	**4.6** mph	-	N/A		Most Cloud
8:52 AM	**73.0** °F	**51.1** °F	46%	**30.05** in	**10.0** mi	WSW	**5.8** mph	-	N/A		Scatt Cloud
9:52 AM	**75.0** °F	**51.1** °F	43%	**30.05** in	**10.0** mi	SSW	**8.1** mph	-	N/A		Partly
10:52 AM	**77.0** °F	**51.1** °F	40%	**30.04** in	**10.0** mi	SSW	**9.2** mph	-	N/A		Partly
11:52 AM	**81.0** °F	**51.1** °F	35%	**30.00** in	**10.0** mi	South	**9.2** mph	-	N/A		Partly
12:52 PM	**84.0** °F	**51.1** °F	32%	**29.97** in	**10.0** mi	SW	**12.7** mph	-	N/A		Partly
1:52 PM	**84.9** °F	**50.0** °F	30%	**29.94** in	**10.0** mi	WSW	**8.1** mph	-	N/A		Partly
2:52 PM	**87.1** °F	**48.0** °F	26%	**29.91** in	**10.0** mi	Variable	**4.6** mph	-	N/A		Partly
3:52 PM	**88.0** °F	**48.9** °F	26%	**29.88** in	**10.0** mi	Variable	**6.9** mph	**18.4** mph	N/A		Scatt Cloud
4:52 PM	**88.0** °F	**46.9** °F	24%	**29.87** in	**10.0** mi	SSW	**9.2** mph	-	N/A		Scatt Cloud

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
5:52 PM	**87.1** °F	**46.9** °F	25%	**29.88** in	**10.0** mi	SSW	**16.1** mph	-	N/A		Most Cloud
6:43 PM	**86.0** °F	**51.1** °F	30%	**30.17** in	**10.0** mi	South	**15.0** mph	-	N/A	Thunderstorm	Most Cloud
6:52 PM	**81.0** °F	**46.9** °F	30%	**29.94** in	**10.0** mi	East	**16.1** mph	**26.5** mph	N/A	Thunderstorm	Most Cloud
7:09 PM	**81.0** °F	**46.0** °F	29%	**30.19** in	**10.0** mi	ESE	**18.4** mph	**32.2** mph	N/A		Most Cloud
7:48 PM	**78.8** °F	**44.6** °F	30%	**30.23** in	**10.0** mi	NNE	**26.5** mph	**38.0** mph	N/A	Thunderstorm	Thun
7:49 PM	**78.1** °F	**44.1** °F	30%	**29.99** in	**10.0** mi	NNE	**28.8** mph	**38.0** mph	N/A	Thunderstorm	Thun
8:52 PM	**70.0** °F	**55.0** °F	59%	**30.08** in	**10.0** mi	NNW	**8.1** mph	-	**0.09** in	Rain , Thunderstorm	Light
9:18 PM	**72.0** °F	**52.0** °F	49%	**30.32** in	**10.0** mi	NE	**11.5** mph	-	**0.00** in	Rain	Light
9:52 PM	**68.0** °F	**54.0** °F	61%	**30.14** in	**10.0** mi	SSW	**5.8** mph	-	**0.00** in	Rain	Light
10:14 PM	**64.9** °F	**57.9** °F	78%	**30.35** in	**10.0** mi	SW	**12.7** mph	-	**0.02** in	Rain	Light
10:52 PM	**64.0** °F	**57.0** °F	78%	**30.13** in	**10.0** mi	SW	**13.8** mph	-	**0.02** in	Rain	Light
11:52 PM	**63.0** °F	**57.9** °F	84%	**30.08** in	**10.0** mi	ESE	**12.7** mph	-	**0.00** in		Over

Albuquerque, NM

Albuquerque International Sunport

2:30 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

10

2018

View
Friday, August 10, 2018

Daily | Weekly | Monthly | Custom

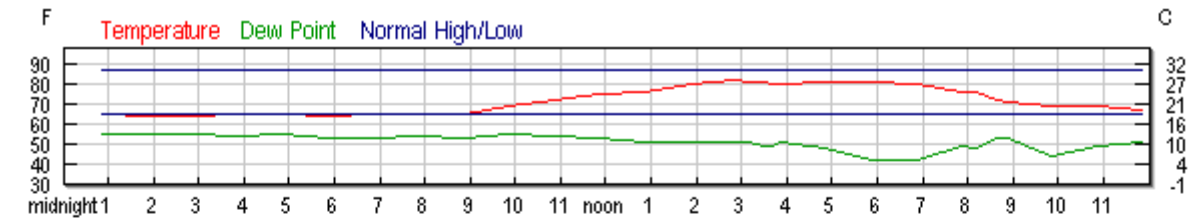
	Actual	Average	Record
Temperature			
Mean Temperature	**75** °F	-	
Max Temperature	**84** °F	-	- ()
Min Temperature	**65** °F	-	- ()
Cooling Degree Days	10		
Month to date cooling degree days	152		
Year to date cooling degree days	1236		
Since 1 June cooling degree days	1040		
Growing Degree Days	23 (Base 50)		
Moisture			
Dew Point	**52** °F		
Average Humidity	49		
Maximum Humidity	73		
Minimum Humidity	24		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.25		

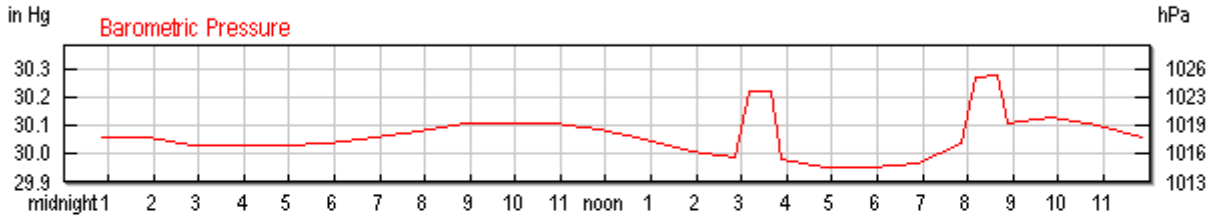
	Actual	Average	Record
Year to date precipitation	4.70		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.07** in		
Wind			
Wind Speed	**9** mph (ENE)		
Max Wind Speed	**30** mph		
Max Gust Speed	**38** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

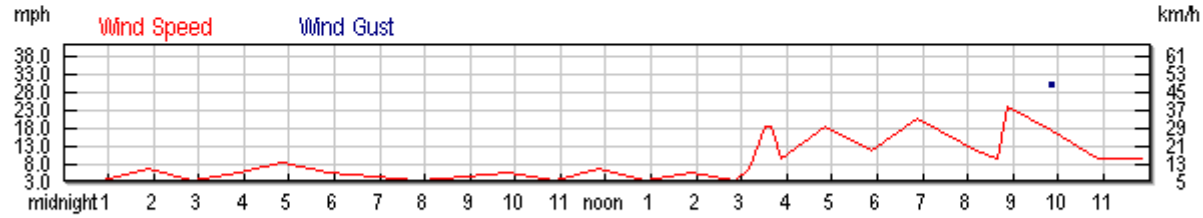
T = Trace of Precipitation, MM = Missing Value

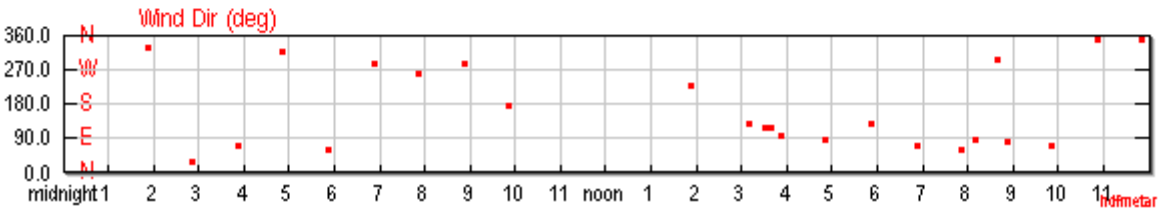
Source: NWS Daily Summary

Daily Weather History Graph









Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Aug. 10, 2018	**Rise**	**Set**
Actual Time	6:22 AM MDT	8:00 PM MDT
Civil Twilight	5:55 AM MDT	8:27 PM MDT
Nautical Twilight	5:22 AM MDT	9:00 PM MDT
Astronomical Twilight	4:48 AM MDT	9:34 PM MDT
Moon	5:22 AM MDT (8/10)	7:43 PM MDT (8/10)
Length of Visible Light	14h 31m	
Length of Day	13h 37m	

Waning Crescent, 1% of the Moon is Illuminated

Aug 10	Aug 11	Aug 18	Aug 26	Sep 2
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
12:52 AM	**66.0** °F	**55.9** °F	70%	**30.06** in	**10.0** mi	SE	**3.5** mph	-	N/A		Over
1:52 AM	**64.9** °F	**55.9** °F	73%	**30.06** in	**10.0** mi	NNW	**6.9** mph	-	N/A		Over
2:52 AM	**64.9** °F	**55.9** °F	73%	**30.03** in	**10.0** mi	NNE	**3.5** mph	-	N/A		Over
3:52 AM	**66.0** °F	**55.0** °F	68%	**30.03** in	**10.0** mi	ENE	**5.8** mph	-	N/A		Over
4:52 AM	**66.0** °F	**55.9** °F	70%	**30.03** in	**10.0** mi	NW	**8.1** mph	-	N/A		Over
5:52 AM	**64.9** °F	**54.0** °F	68%	**30.04** in	**10.0** mi	ENE	**5.8** mph	-	N/A		Over
6:52 AM	**66.0** °F	**53.1** °F	63%	**30.06** in	**10.0** mi	WNW	**4.6** mph	-	N/A		Most Clou
7:52 AM	**66.0** °F	**55.0** °F	68%	**30.08** in	**10.0** mi	West	**3.5** mph	-	N/A		Most Clou
8:52 AM	**66.0** °F	**54.0** °F	65%	**30.11** in	**10.0** mi	WNW	**4.6** mph	-	N/A		Most Clou
9:52 AM	**69.1** °F	**55.9** °F	63%	**30.11** in	**10.0** mi	South	**5.8** mph	-	N/A		Scatt Clou
10:52 AM	**73.0** °F	**55.0** °F	53%	**30.11** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Scatt Clou
11:52 AM	**75.9** °F	**54.0** °F	46%	**30.09** in	**10.0** mi	Variable	**6.9** mph	-	N/A		Scatt Clou
12:52 PM	**77.0** °F	**52.0** °F	42%	**30.05** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Scatt Clou
1:52 PM	**80.1** °F	**52.0** °F	38%	**30.01** in	**10.0** mi	SW	**5.8** mph	-	N/A		Scatt Clou
2:52 PM	**82.9** °F	**52.0** °F	34%	**29.99** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Scatt Clou
3:10 PM	**82.0** °F	**51.1** °F	34%	**30.22** in	**10.0** mi	SE	**6.9** mph	-	N/A	Thunderstorm	Thun
3:31 PM	**82.0** °F	**50.0** °F	33%	**30.22** in	**10.0** mi	ESE	**18.4** mph	**25.3** mph	N/A	Thunderstorm	Most Clou

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
3:39 PM	**80.1** °F	**50.0** °F	35%	**30.22** in	**10.0** mi	ESE	**18.4** mph	-	N/A		Most Cloud
3:52 PM	**81.0** °F	**51.1** °F	35%	**29.98** in	**10.0** mi	East	**9.2** mph	-	N/A		Scatt Cloud
4:52 PM	**82.0** °F	**48.9** °F	31%	**29.95** in	**10.0** mi	East	**18.4** mph	-	N/A		Scatt Cloud
5:52 PM	**82.0** °F	**43.0** °F	25%	**29.95** in	**10.0** mi	SE	**11.5** mph	-	N/A		Scatt Cloud
6:52 PM	**81.0** °F	**43.0** °F	26%	**29.97** in	**10.0** mi	ENE	**20.7** mph	-	N/A		Most Cloud
7:52 PM	**77.0** °F	**50.0** °F	39%	**30.04** in	**10.0** mi	ENE	**13.8** mph	-	**0.00** in	Rain	Light
8:10 PM	**77.0** °F	**48.9** °F	37%	**30.27** in	**10.0** mi	East	**11.5** mph	-	**0.00** in		Most Cloud
8:39 PM	**73.0** °F	**53.1** °F	49%	**30.28** in	**10.0** mi	WNW	**9.2** mph	-	**0.00** in	Rain	Light
8:52 PM	**71.1** °F	**53.1** °F	53%	**30.11** in	**10.0** mi	East	**24.2** mph	**31.1** mph	**0.00** in	Rain	Light
9:52 PM	**69.1** °F	**45.0** °F	42%	**30.13** in	**10.0** mi	ENE	**17.3** mph	**29.9** mph	**0.00** in		Most Cloud
10:52 PM	**69.1** °F	**50.0** °F	51%	**30.10** in	**10.0** mi	North	**9.2** mph	-	N/A		Most Cloud
11:52 PM	**68.0** °F	**51.1** °F	55%	**30.06** in	**10.0** mi	North	**9.2** mph	-	N/A		Most Cloud

Albuquerque, NM

Albuquerque International Sunport

2:37 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

11

2018

View
Saturday, August 11, 2018

Daily | Weekly | Monthly | Custom

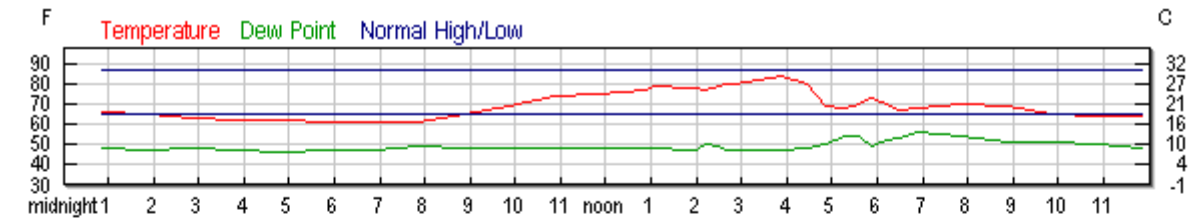
	Actual	Average	Record
Temperature			
Mean Temperature	**73** °F	-	
Max Temperature	**85** °F	-	- ()
Min Temperature	**60** °F	-	- ()
Cooling Degree Days	8		
Month to date cooling degree days	160		
Year to date cooling degree days	1244		
Since 1 June cooling degree days	1048		
Growing Degree Days	23 (Base 50)		
Moisture			
Dew Point	**50** °F		
Average Humidity	47		
Maximum Humidity	65		
Minimum Humidity	29		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.53		

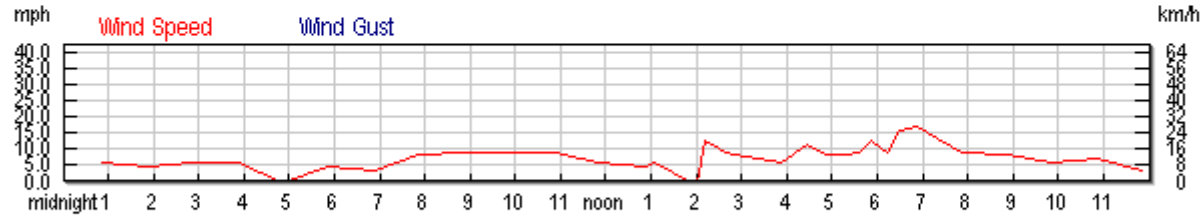
	Actual	Average	Record
Year to date precipitation	4.98		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.09** in		
Wind			
Wind Speed	**7** mph (NNW)		
Max Wind Speed	**33** mph		
Max Gust Speed	**47** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

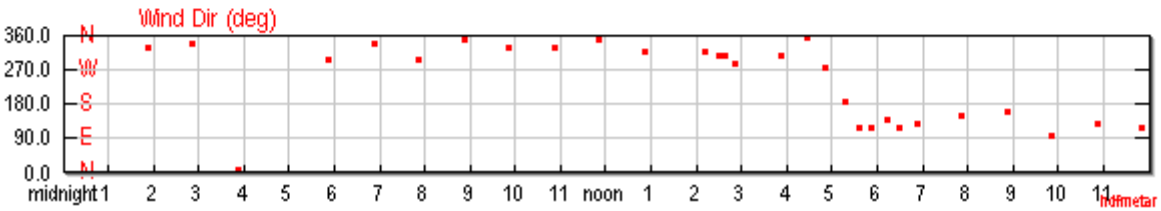
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







Search for Another Location

Airport or City:

KABQ

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Astronomy

Aug. 11, 2018	**Rise**	**Set**
Actual Time	6:23 AM MDT	7:59 PM MDT
Civil Twilight	5:56 AM MDT	8:26 PM MDT
Nautical Twilight	5:23 AM MDT	8:58 PM MDT
Astronomical Twilight	4:49 AM MDT	9:32 PM MDT
Moon	6:33 AM MDT (8/11)	8:30 PM MDT (8/11)
Length of Visible Light	14h 29m	
Length of Day	13h 35m	

New Moon, 0% of the Moon is Illuminated

Aug 11	Aug 18	Aug 26	Sep 2	Sep 9
New Moon	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
12:52 AM	**66.9** °F	**48.9** °F	52%	**30.07** in	**10.0** mi	ENE	**5.8** mph	-	N/A		Most
1:52 AM	**66.0** °F	**48.0** °F	52%	**30.05** in	**10.0** mi	NNW	**4.6** mph	-	N/A		Most
2:52 AM	**64.0** °F	**48.9** °F	58%	**30.04** in	**10.0** mi	NNW	**5.8** mph	-	N/A		Scatt Cloud
3:52 AM	**63.0** °F	**48.0** °F	58%	**30.05** in	**10.0** mi	North	**5.8** mph	-	N/A		Partly
4:52 AM	**63.0** °F	**46.9** °F	56%	**30.05** in	**10.0** mi	Calm	Calm	-	N/A		Partly
5:52 AM	**62.1** °F	**48.0** °F	60%	**30.07** in	**10.0** mi	WNW	**4.6** mph	-	N/A		Over
6:52 AM	**62.1** °F	**48.0** °F	60%	**30.08** in	**10.0** mi	NNW	**3.5** mph	-	N/A		Most
7:52 AM	**62.1** °F	**50.0** °F	65%	**30.10** in	**10.0** mi	WNW	**8.1** mph	-	N/A		Most
8:52 AM	**66.0** °F	**48.9** °F	54%	**30.11** in	**10.0** mi	North	**9.2** mph	-	N/A		Partly
9:52 AM	**70.0** °F	**48.9** °F	47%	**30.11** in	**10.0** mi	NNW	**9.2** mph	-	N/A		Partly
10:52 AM	**75.0** °F	**48.9** °F	40%	**30.08** in	**10.0** mi	NNW	**9.2** mph	-	N/A		Scatt Cloud
11:52 AM	**75.9** °F	**48.9** °F	38%	**30.07** in	**10.0** mi	North	**5.8** mph	-	N/A		Most
12:52 PM	**78.1** °F	**48.9** °F	36%	**30.04** in	**10.0** mi	NW	**4.6** mph	-	N/A	Thunderstorm	Scatt Cloud
1:06 PM	**80.1** °F	**48.9** °F	34%	**30.26** in	**10.0** mi	Variable	**5.8** mph	-	N/A		Scatt Cloud
1:52 PM	**79.0** °F	**48.0** °F	34%	**30.01** in	**10.0** mi	Calm	Calm	-	**0.00** in		Most
2:00 PM	**79.0** °F	**48.0** °F	34%	**30.24** in	**10.0** mi	Calm	Calm	-	N/A	Thunderstorm	Thun
2:12 PM	**78.1** °F	**51.1** °F	39%	**30.24** in	**10.0** mi	NW	**12.7** mph	-	N/A	Thunderstorm	Most

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
2:29 PM	**80.1** °F	**50.0** °F	35%	**30.23** in	**10.0** mi	NW	**10.4** mph	-	N/A		Most
2:38 PM	**81.0** °F	**48.0** °F	31%	**30.22** in	**10.0** mi	NW	**9.2** mph	-	N/A	Thunderstorm	Most
2:52 PM	**81.0** °F	**48.0** °F	31%	**29.98** in	**10.0** mi	WNW	**8.1** mph	-	N/A		Most
3:52 PM	**84.9** °F	**48.0** °F	28%	**29.95** in	**10.0** mi	NW	**5.8** mph	-	N/A		Most
4:26 PM	**81.0** °F	**48.9** °F	33%	**30.18** in	**10.0** mi	North	**11.5** mph	-	**0.00** in	Rain , Thunderstorm	Light Thun and F
4:52 PM	**70.0** °F	**51.1** °F	51%	**30.00** in	**6.0** mi	West	**8.1** mph	**32.2** mph	**0.26** in	Rain , Thunderstorm	Light Thun and F
5:18 PM	**69.1** °F	**55.0** °F	61%	**30.20** in	**10.0** mi	South	**8.1** mph	-	**0.01** in	Thunderstorm	Most
5:35 PM	**71.1** °F	**55.0** °F	57%	**30.21** in	**10.0** mi	ESE	**9.2** mph	-	**0.01** in	Rain	Light
5:52 PM	**73.9** °F	**50.0** °F	43%	**30.00** in	**10.0** mi	ESE	**12.7** mph	**21.9** mph	**0.02** in	Rain	Light
6:12 PM	**71.1** °F	**53.1** °F	53%	**30.20** in	**10.0** mi	SE	**9.2** mph	-	**0.00** in	Thunderstorm	Most
6:30 PM	**68.0** °F	**54.0** °F	61%	**30.19** in	**10.0** mi	ESE	**16.1** mph	-	**0.00** in		Most
6:52 PM	**69.1** °F	**57.0** °F	65%	**30.00** in	**10.0** mi	SE	**17.3** mph	-	**0.00** in		Most
7:52 PM	**71.1** °F	**55.0** °F	57%	**30.01** in	**10.0** mi	SSE	**9.2** mph	-	N/A		Most
8:52 PM	**70.0** °F	**52.0** °F	53%	**30.04** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Most
9:52 PM	**66.0** °F	**52.0** °F	60%	**30.07** in	**10.0** mi	East	**5.8** mph	-	N/A		Scatt Clou
10:52 PM	**64.9** °F	**51.1** °F	61%	**30.07** in	**10.0** mi	SE	**6.9** mph	-	N/A		Partly
11:52 PM	**64.9** °F	**48.9** °F	56%	**30.07** in	**10.0** mi	ESE	**3.5** mph	-	N/A		Partly

Albuquerque, NM

Albuquerque International Sunport

2:52 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

13

2018

View

Monday, August 13, 2018

Daily | Weekly | Monthly | Custom

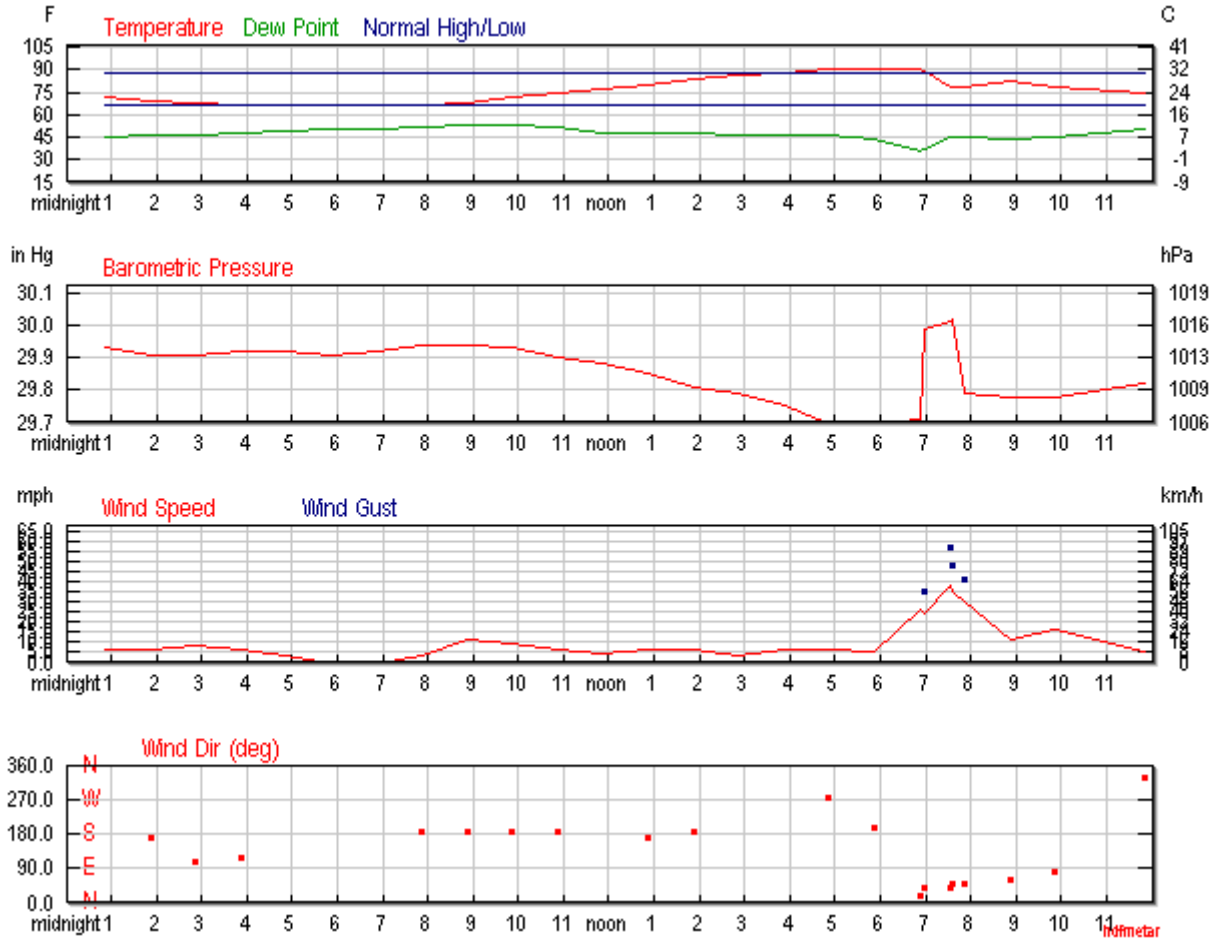
	Actual	Average	Record
Temperature			
Mean Temperature	**78** °F	-	
Max Temperature	**92** °F	-	- ()
Min Temperature	**64** °F	-	- ()
Cooling Degree Days	13		
Month to date cooling degree days	180		
Year to date cooling degree days	1264		
Since 1 June cooling degree days	1068		
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**47** °F		
Average Humidity	37		
Maximum Humidity	59		
Minimum Humidity	15		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.53		

	Actual	Average	Record
Year to date precipitation	4.98		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.86** in		
Wind			
Wind Speed	**8** mph (SE)		
Max Wind Speed	**44** mph		
Max Gust Speed	**57** mph		
Visibility	**10** miles		
Events	Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Aug. 13, 2018	**Rise**	**Set**
Actual Time	6:24 AM MDT	7:57 PM MDT
Civil Twilight	5:57 AM MDT	8:23 PM MDT
Nautical Twilight	5:25 AM MDT	8:56 PM MDT
Astronomical Twilight	4:51 AM MDT	9:30 PM MDT
Moon	8:54 AM MDT (8/13)	9:51 PM MDT (8/13)
Length of Visible Light	14h 25m	
Length of Day	13h 32m	

Waxing Crescent, 8% of the Moon is Illuminated

Aug 13	Aug 18	Aug 26	Sep 2	Sep 9
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
12:52 AM	**72.0** °F	**45.0** °F	38%	**29.93** in	**10.0** mi	SSW	**6.9** mph	-	N/A		Over
1:52 AM	**69.1** °F	**46.0** °F	44%	**29.91** in	**10.0** mi	South	**6.9** mph	-	N/A		Most Cloud
2:52 AM	**68.0** °F	**46.9** °F	47%	**29.91** in	**10.0** mi	ESE	**8.1** mph	-	N/A		Scatt Cloud
3:52 AM	**66.0** °F	**48.0** °F	52%	**29.92** in	**10.0** mi	ESE	**6.9** mph	-	N/A		Partly Cloud
4:52 AM	**66.0** °F	**48.9** °F	54%	**29.92** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Clear
5:52 AM	**66.0** °F	**50.0** °F	56%	**29.91** in	**10.0** mi	Calm	Calm	-	N/A		Clear
6:52 AM	**66.2** °F	**50.0** °F	56%	**29.92** in	**10.0** mi	Calm	Calm	-	N/A		Partly Cloud
7:52 AM	**66.2** °F	**51.8** °F	60%	**29.94** in	**10.0** mi	South	**3.5** mph	-	N/A		Scatt Cloud
8:52 AM	**68.0** °F	**53.6** °F	60%	**29.94** in	**10.0** mi	South	**11.5** mph	-	N/A		Partly Cloud
9:52 AM	**71.6** °F	**53.6** °F	53%	**29.93** in	**10.0** mi	South	**9.2** mph	-	N/A		Partly Cloud
10:52 AM	**75.2** °F	**51.8** °F	44%	**29.90** in	**10.0** mi	South	**6.9** mph	-	N/A		Partly Cloud
11:52 AM	**77.0** °F	**48.2** °F	36%	**29.88** in	**10.0** mi	Variable	**4.6** mph	-	N/A		Partly Cloud
12:52 PM	**80.1** °F	**48.0** °F	32%	**29.85** in	**10.0** mi	South	**6.9** mph	-	N/A		Partly Cloud
1:52 PM	**84.0** °F	**48.0** °F	28%	**29.81** in	**10.0** mi	South	**6.9** mph	-	N/A		Partly Cloud
2:52 PM	**86.0** °F	**46.9** °F	26%	**29.79** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Partly Cloud
3:52 PM	**88.0** °F	**46.0** °F	23%	**29.75** in	**10.0** mi	Variable	**6.9** mph	-	N/A		Partly Cloud
4:52 PM	**91.0** °F	**46.0** °F	21%	**29.70** in	**10.0** mi	West	**6.9** mph	-	N/A		Scatt Cloud

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
5:52 PM	**90.0** °F	**44.1** °F	20%	**29.70** in	**10.0** mi	SSW	**5.8** mph	-	N/A		Scatt Cloud
6:52 PM	**90.0** °F	**36.0** °F	15%	**29.71** in	**10.0** mi	NNE	**26.5** mph	**33.4** mph	N/A		Most Cloud
6:59 PM	**89.1** °F	**37.0** °F	16%	**29.99** in	**10.0** mi	NE	**24.2** mph	**35.7** mph	N/A	Thunderstorm	Most Cloud
7:34 PM	**79.0** °F	**45.0** °F	30%	**30.01** in	**10.0** mi	NE	**38.0** mph	**57.5** mph	**0.00** in		Most Cloud
7:36 PM	**79.0** °F	**45.0** °F	30%	**30.02** in	**10.0** mi	NE	**35.7** mph	**48.3** mph	**0.00** in	Thunderstorm	Most Cloud
7:52 PM	**79.0** °F	**45.0** °F	30%	**29.79** in	**10.0** mi	NE	**29.9** mph	**41.4** mph	**0.00** in		Most Cloud
8:52 PM	**82.0** °F	**44.1** °F	26%	**29.78** in	**10.0** mi	ENE	**11.5** mph	-	**0.00** in		Most Cloud
9:52 PM	**78.1** °F	**45.0** °F	31%	**29.78** in	**10.0** mi	East	**16.1** mph	-	N/A		Scatt Cloud
11:52 PM	**73.9** °F	**50.0** °F	43%	**29.82** in	**10.0** mi	NNW	**5.8** mph	-	N/A		Scatt Cloud

Albuquerque, NM

Albuquerque International Sunport

2:59 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

15

2018

View

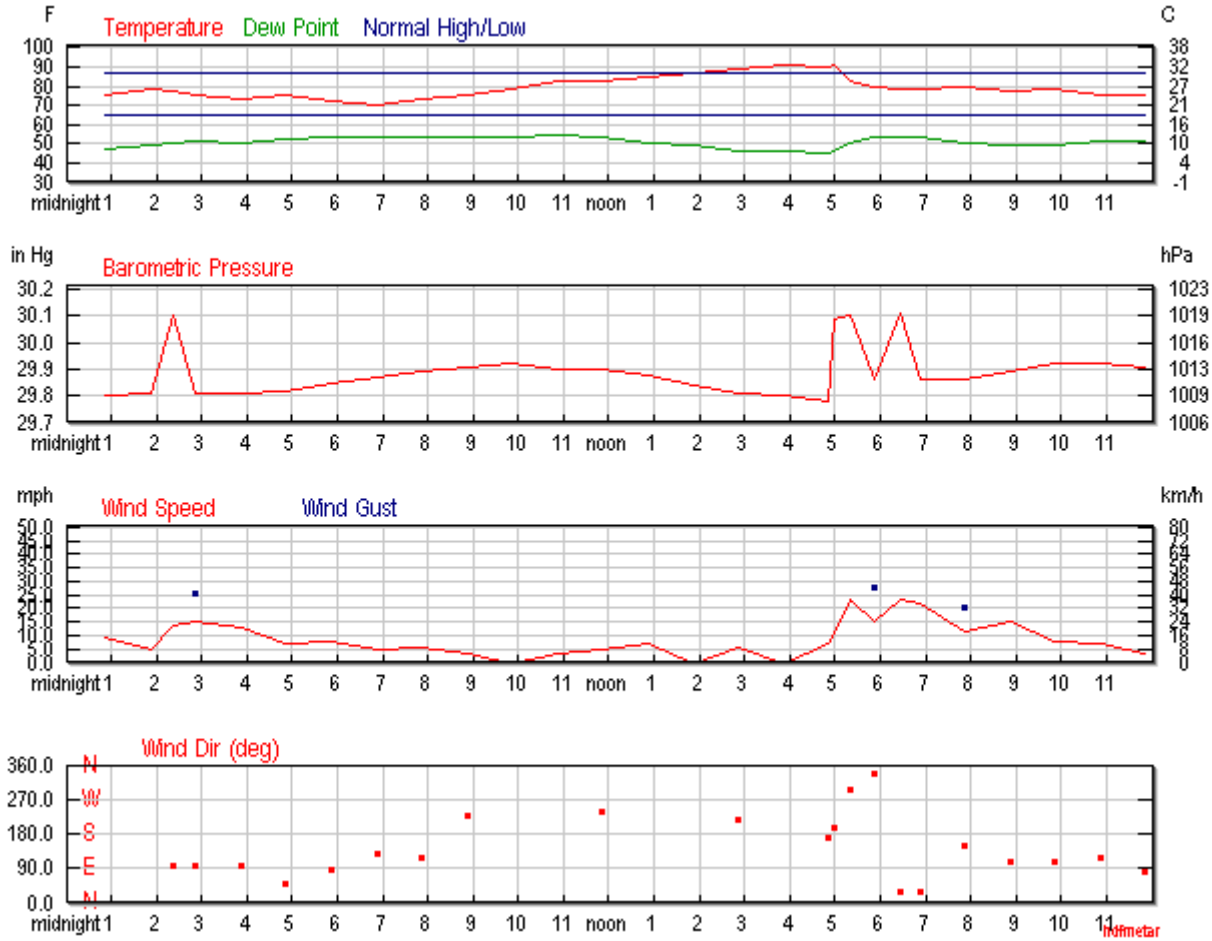
Wednesday, August 15, 2018

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**81** °F	-	
Max Temperature	**92** °F	-	- ()
Min Temperature	**69** °F	-	- ()
Cooling Degree Days	16		
Month to date cooling degree days	209		
Year to date cooling degree days	1293		
Since 1 June cooling degree days	1097		
Growing Degree Days	30 (Base 50)		
Moisture			
Dew Point	**51** °F		
Average Humidity	39		
Maximum Humidity	57		
Minimum Humidity	21		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.53		

	Actual	Average	Record
Year to date precipitation	4.98		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.89** in		
Wind			
Wind Speed	**7** mph (ESE)		
Max Wind Speed	**31** mph		
Max Gust Speed	**40** mph		
Visibility	**10** miles		
Events	Thunderstorm		
T = Trace of Precipitation, MM = Missing Value		Source: NWS Daily Summary	

Daily Weather History Graph



Search for Another Location

Airport or City:

KABQ

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Astronomy

Aug. 15, 2018	**Rise**	**Set**
Actual Time	6:26 AM MDT	7:54 PM MDT
Civil Twilight	5:59 AM MDT	8:21 PM MDT
Nautical Twilight	5:27 AM MDT	8:53 PM MDT
Astronomical Twilight	4:53 AM MDT	9:27 PM MDT
Moon	11:06 AM MDT (8/15)	11:02 PM MDT (8/15)
Length of Visible Light	14h 21m	
Length of Day	13h 28m	

Waxing Crescent, 24% of the Moon is Illuminated

Aug 15	Aug 18	Aug 26	Sep 2	Sep 9
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**75.9** °F	-	**46.9** °F	36%	**29.80** in	**10.0** mi	ESE	**9.2** mph	-	N/A	
1:52 AM	**78.1** °F	-	**48.9** °F	36%	**29.81** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
2:21 AM	**77.0** °F	-	**50.0** °F	39%	**30.10** in	**10.0** mi	East	**13.8** mph	**27.6** mph	N/A	
2:52 AM	**75.9** °F	-	**51.1** °F	42%	**29.81** in	**10.0** mi	East	**15.0** mph	**25.3** mph	N/A	
3:52 AM	**73.0** °F	-	**50.0** °F	44%	**29.81** in	**10.0** mi	East	**12.7** mph	-	N/A	
4:52 AM	**75.0** °F	-	**52.0** °F	44%	**29.82** in	**10.0** mi	NE	**6.9** mph	-	N/A	
5:52 AM	**72.0** °F	-	**53.1** °F	51%	**29.85** in	**10.0** mi	East	**8.1** mph	-	N/A	
6:52 AM	**70.0** °F	-	**53.1** °F	55%	**29.87** in	**10.0** mi	SE	**4.6** mph	-	N/A	
7:52 AM	**73.0** °F	-	**53.1** °F	49%	**29.89** in	**10.0** mi	ESE	**5.8** mph	-	N/A	
8:52 AM	**75.0** °F	-	**53.1** °F	46%	**29.91** in	**10.0** mi	SW	**3.5** mph	-	N/A	
9:52 AM	**78.1** °F	-	**53.1** °F	42%	**29.92** in	**10.0** mi	Calm	Calm	-	N/A	
10:52 AM	**82.9** °F	**82.0** °F	**55.0** °F	38%	**29.90** in	**10.0** mi	Variable	**3.5** mph	-	N/A	
11:52 AM	**82.9** °F	**81.8** °F	**53.1** °F	36%	**29.90** in	**10.0** mi	WSW	**4.6** mph	-	N/A	
12:52 PM	**84.9** °F	-	**50.0** °F	30%	**29.88** in	**10.0** mi	Variable	**6.9** mph	-	N/A	
1:52 PM	**87.1** °F	-	**48.9** °F	27%	**29.84** in	**10.0** mi	Calm	Calm	-	N/A	
2:52 PM	**89.1** °F	-	**46.0** °F	22%	**29.81** in	**10.0** mi	SW	**5.8** mph	-	N/A	
3:52 PM	**91.0** °F	-	**46.0** °F	21%	**29.80** in	**10.0** mi	Calm	Calm	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
4:52 PM	**90.0** °F	-	**45.0** °F	21%	**29.78** in	**10.0** mi	South	**6.9** mph	-	N/A	
5:00 PM	**91.0** °F	-	**46.0** °F	21%	**30.09** in	**10.0** mi	SSW	**10.4** mph	-	N/A	Thunderstor
5:21 PM	**82.9** °F	-	**50.0** °F	32%	**30.10** in	**10.0** mi	WNW	**23.0** mph	**40.3** mph	N/A	Thunderstor
5:52 PM	**80.1** °F	**79.9** °F	**53.1** °F	39%	**29.86** in	**10.0** mi	NNW	**15.0** mph	**27.6** mph	N/A	Thunderstor
6:26 PM	**79.0** °F	-	**54.0** °F	42%	**30.11** in	**10.0** mi	NNE	**23.0** mph	-	N/A	
6:52 PM	**78.1** °F	-	**54.0** °F	43%	**29.86** in	**10.0** mi	NNE	**21.9** mph	**28.8** mph	N/A	
7:52 PM	**80.1** °F	-	**50.0** °F	35%	**29.86** in	**10.0** mi	SSE	**11.5** mph	**20.7** mph	N/A	
8:52 PM	**77.0** °F	-	**48.9** °F	37%	**29.89** in	**10.0** mi	ESE	**15.0** mph	-	N/A	
9:52 PM	**78.1** °F	-	**48.9** °F	36%	**29.92** in	**10.0** mi	ESE	**8.1** mph	-	N/A	
10:52 PM	**75.9** °F	-	**51.1** °F	42%	**29.92** in	**10.0** mi	ESE	**6.9** mph	-	N/A	
11:52 PM	**75.9** °F	-	**51.1** °F	42%	**29.91** in	**10.0** mi	East	**3.5** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

3:04 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

17

2018

View

Friday, August 17, 2018

Daily | Weekly | Monthly | Custom

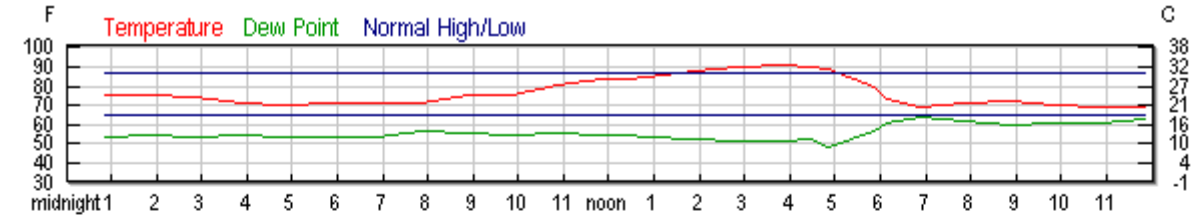
	Actual	Average	Record
Temperature			
Mean Temperature	**80** °F	-	
Max Temperature	**92** °F	-	- ()
Min Temperature	**67** °F	-	- ()
Cooling Degree Days	15		
Month to date cooling degree days	240		
Year to date cooling degree days	1324		
Since 1 June cooling degree days	1128		
Growing Degree Days	30 (Base 50)		
Moisture			
Dew Point	**56** °F		
Average Humidity	50		
Maximum Humidity	73		
Minimum Humidity	26		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.62		

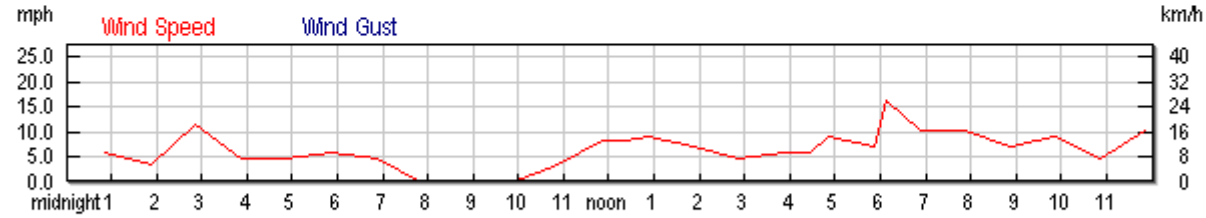
	Actual	Average	Record
Year to date precipitation	5.07		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.04** in		
Wind			
Wind Speed	**6** mph (NNE)		
Max Wind Speed	**29** mph		
Max Gust Speed	**36** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

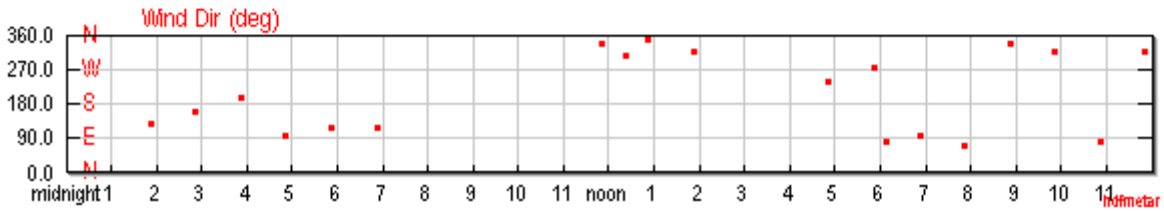
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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Airport or City:

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Astronomy

Aug. 17, 2018	**Rise**	**Set**
Actual Time	6:27 AM MDT	7:52 PM MDT
Civil Twilight	6:01 AM MDT	8:18 PM MDT
Nautical Twilight	5:29 AM MDT	8:50 PM MDT
Astronomical Twilight	4:55 AM MDT	9:24 PM MDT
Moon	1:09 PM MDT (8/17)	No Moon Set
Length of Visible Light	14h 17m	
Length of Day	13h 24m	

Waxing Crescent, 44% of the Moon is Illuminated

Aug 17	Aug 18	Aug 26	Sep 2	Sep 9
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**75.0** °F	-	**54.0** °F	48%	**30.01** in	**10.0** mi	North	**5.8** mph	-	N/A	
1:52 AM	**75.0** °F	-	**55.0** °F	50%	**29.99** in	**10.0** mi	SE	**3.5** mph	-	N/A	
2:52 AM	**73.9** °F	-	**54.0** °F	50%	**29.99** in	**10.0** mi	SSE	**11.5** mph	**17.3** mph	N/A	
3:52 AM	**71.1** °F	-	**55.0** °F	57%	**30.00** in	**10.0** mi	SSW	**4.6** mph	-	N/A	
4:52 AM	**70.0** °F	-	**54.0** °F	57%	**30.00** in	**10.0** mi	East	**4.6** mph	-	N/A	
5:52 AM	**71.1** °F	-	**54.0** °F	55%	**30.01** in	**10.0** mi	ESE	**5.8** mph	-	N/A	
6:52 AM	**71.1** °F	-	**54.0** °F	55%	**30.03** in	**10.0** mi	ESE	**4.6** mph	-	N/A	
7:52 AM	**71.1** °F	-	**57.0** °F	61%	**30.05** in	**10.0** mi	Calm	Calm	-	N/A	
8:52 AM	**75.0** °F	-	**55.9** °F	51%	**30.05** in	**10.0** mi	Calm	Calm	-	N/A	
9:52 AM	**75.9** °F	-	**55.0** °F	48%	**30.06** in	**10.0** mi	Calm	Calm	-	N/A	
10:52 AM	**81.0** °F	**80.8** °F	**55.9** °F	42%	**30.05** in	**10.0** mi	Variable	**3.5** mph	-	N/A	
11:52 AM	**84.0** °F	**82.9** °F	**55.0** °F	37%	**30.02** in	**10.0** mi	NNW	**8.1** mph	-	N/A	Thunderstor
12:23 PM	**84.0** °F	**82.9** °F	**55.0** °F	37%	**30.28** in	**10.0** mi	NW	**8.1** mph	-	N/A	
12:52 PM	**84.9** °F	**83.3** °F	**54.0** °F	34%	**29.99** in	**10.0** mi	North	**9.2** mph	-	N/A	
1:52 PM	**88.0** °F	-	**52.0** °F	29%	**29.96** in	**10.0** mi	NW	**6.9** mph	-	N/A	
2:52 PM	**90.0** °F	-	**51.1** °F	26%	**29.93** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
3:52 PM	**91.0** °F	-	**51.1** °F	25%	**29.91** in	**10.0** mi	Variable	**5.8** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
4:27 PM	**90.0** °F	-	**52.0** °F	27%	**30.19** in	**10.0** mi	Variable	**5.8** mph	-	N/A	Thunderstor
4:52 PM	**89.1** °F	-	**48.0** °F	24%	**29.91** in	**10.0** mi	WSW	**9.2** mph	-	N/A	Thunderstor
5:52 PM	**80.1** °F	**80.4** °F	**57.0** °F	45%	**30.01** in	**10.0** mi	West	**6.9** mph	-	**0.00** in	Rain , Thunderstor
6:08 PM	**73.0** °F	-	**61.0** °F	66%	**30.27** in	**7.0** mi	East	**16.1** mph	-	**0.01** in	Rain
6:52 PM	**69.1** °F	-	**64.0** °F	84%	**30.06** in	**9.0** mi	East	**10.4** mph	-	**0.09** in	Rain
7:52 PM	**71.1** °F	-	**62.1** °F	73%	**30.05** in	**10.0** mi	ENE	**10.4** mph	-	**0.00** in	
8:52 PM	**72.0** °F	-	**60.1** °F	66%	**30.07** in	**10.0** mi	NNW	**6.9** mph	-	**0.00** in	Rain
9:52 PM	**70.0** °F	-	**61.0** °F	73%	**30.09** in	**10.0** mi	NW	**9.2** mph	-	**0.00** in	Rain
10:52 PM	**69.1** °F	-	**61.0** °F	75%	**30.07** in	**10.0** mi	East	**4.6** mph	-	**0.00** in	Rain
11:52 PM	**69.1** °F	-	**63.0** °F	81%	**30.06** in	**10.0** mi	NW	**10.4** mph	-	**0.00** in	

Albuquerque, NM

Albuquerque International Sunport

3:06 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

21

2018

View
Tuesday, August 21, 2018

Daily | Weekly | Monthly | Custom

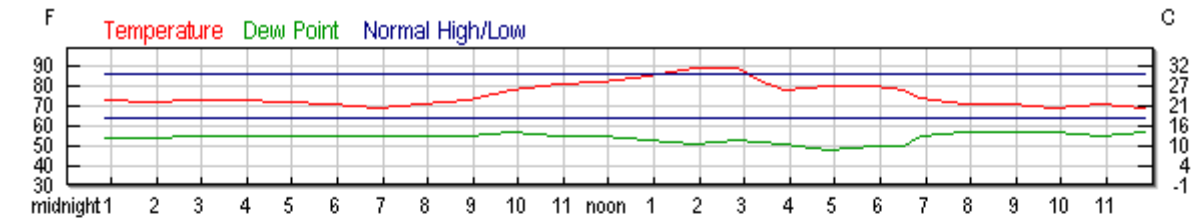
	Actual	Average	Record
Temperature			
Mean Temperature	**80** °F	-	
Max Temperature	**91** °F	-	- ()
Min Temperature	**69** °F	-	- ()
Cooling Degree Days	15		
Month to date cooling degree days	293		
Year to date cooling degree days	1377		
Since 1 June cooling degree days	1181		
Growing Degree Days	30 (Base 50)		
Moisture			
Dew Point	**54** °F		
Average Humidity	47		
Maximum Humidity	66		
Minimum Humidity	27		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.62		

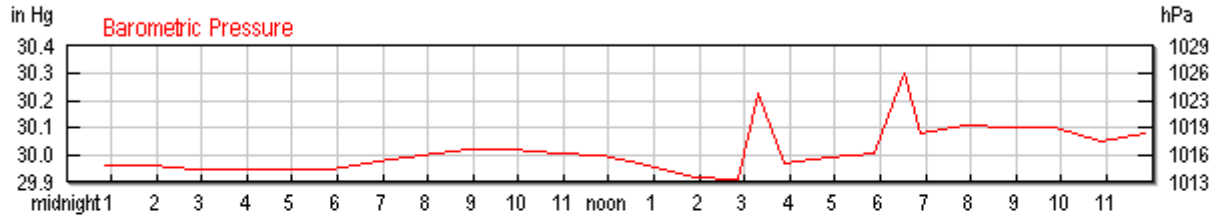
	Actual	Average	Record
Year to date precipitation	5.07		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.02** in		
Wind			
Wind Speed	**8** mph (SSE)		
Max Wind Speed	**30** mph		
Max Gust Speed	**39** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

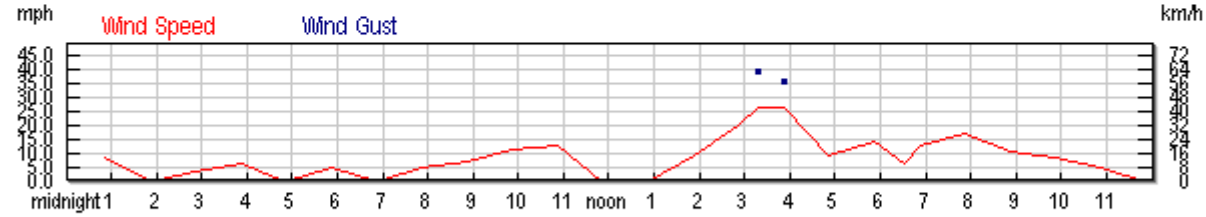
T = Trace of Precipitation, MM = Missing Value

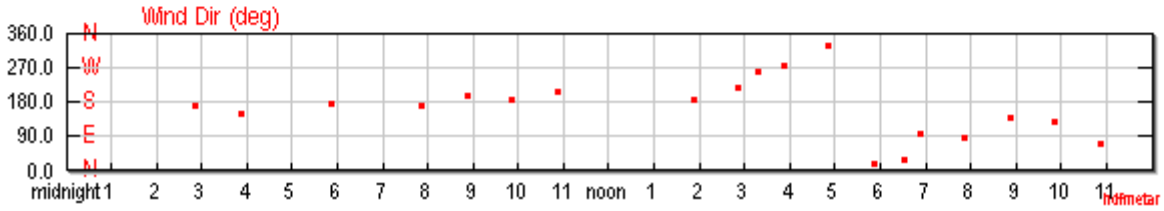
Source: NWS Daily Summary

Daily Weather History Graph









Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Aug. 21, 2018	**Rise**	**Set**
Actual Time	6:31 AM MDT	7:47 PM MDT
Civil Twilight	6:04 AM MDT	8:13 PM MDT
Nautical Twilight	5:32 AM MDT	8:45 PM MDT
Astronomical Twilight	5:00 AM MDT	9:18 PM MDT
Moon	4:47 PM MDT (8/21)	2:16 AM MDT (8/21)
Length of Visible Light	14h 09m	
Length of Day	13h 16m	

Waxing Gibbous, 81% of the Moon is Illuminated

Aug 21	Aug 26	Sep 2	Sep 9	Sep 16
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**73.9** °F	-	**54.0** °F	50%	**29.96** in	**10.0** mi	ESE	**8.1** mph	-	N/A	
1:52 AM	**73.0** °F	-	**54.0** °F	51%	**29.96** in	**10.0** mi	Calm	Calm	-	N/A	
2:52 AM	**73.9** °F	-	**55.0** °F	52%	**29.95** in	**10.0** mi	South	**3.5** mph	-	N/A	
3:52 AM	**73.9** °F	-	**55.0** °F	52%	**29.95** in	**10.0** mi	SSE	**5.8** mph	-	N/A	
4:52 AM	**73.0** °F	-	**55.0** °F	53%	**29.95** in	**10.0** mi	Calm	Calm	-	N/A	
5:52 AM	**72.0** °F	-	**55.0** °F	55%	**29.95** in	**10.0** mi	South	**4.6** mph	-	N/A	
6:52 AM	**70.0** °F	-	**55.0** °F	59%	**29.98** in	**10.0** mi	Calm	Calm	-	N/A	
7:52 AM	**71.1** °F	-	**55.0** °F	57%	**30.00** in	**10.0** mi	South	**4.6** mph	-	N/A	
8:52 AM	**73.9** °F	-	**55.9** °F	53%	**30.02** in	**10.0** mi	SSW	**6.9** mph	-	N/A	
9:52 AM	**78.1** °F	-	**57.0** °F	48%	**30.02** in	**10.0** mi	South	**11.5** mph	-	N/A	
10:52 AM	**82.0** °F	**81.4** °F	**55.0** °F	39%	**30.01** in	**10.0** mi	SSW	**12.7** mph	**18.4** mph	N/A	
11:52 AM	**82.9** °F	**82.0** °F	**55.0** °F	38%	**30.00** in	**10.0** mi	Calm	Calm	-	N/A	
12:52 PM	**86.0** °F	**84.0** °F	**53.1** °F	32%	**29.96** in	**10.0** mi	Calm	Calm	-	N/A	
1:52 PM	**89.1** °F	-	**51.1** °F	27%	**29.92** in	**10.0** mi	South	**9.2** mph	-	N/A	
2:52 PM	**89.1** °F	**86.7** °F	**53.1** °F	29%	**29.91** in	**10.0** mi	SW	**19.6** mph	**27.6** mph	N/A	
3:19 PM	**84.0** °F	-	**52.0** °F	33%	**30.23** in	**6.0** mi	West	**26.5** mph	**39.1** mph	N/A	
3:52 PM	**79.0** °F	-	**51.1** °F	38%	**29.97** in	**10.0** mi	West	**26.5** mph	**35.7** mph	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
4:52 PM	**81.0** °F	-	**48.9** °F	33%	**29.99** in	**10.0** mi	NNW	**9.2** mph	-	N/A	
5:52 PM	**80.1** °F	-	**50.0** °F	35%	**30.01** in	**10.0** mi	NNE	**13.8** mph	-	N/A	
6:32 PM	**78.1** °F	-	**50.0** °F	37%	**30.30** in	**10.0** mi	NNE	**5.8** mph	-	**0.00** in	Rain , Thunderstorm
6:52 PM	**75.0** °F	-	**55.0** °F	50%	**30.08** in	**10.0** mi	East	**12.7** mph	-	**0.00** in	
7:52 PM	**71.1** °F	-	**57.0** °F	61%	**30.11** in	**10.0** mi	East	**17.3** mph	-	N/A	
8:52 PM	**71.1** °F	-	**57.0** °F	61%	**30.10** in	**10.0** mi	SE	**10.4** mph	-	**0.00** in	Rain
9:52 PM	**69.1** °F	-	**57.9** °F	68%	**30.10** in	**10.0** mi	SE	**8.1** mph	-	**0.00** in	
10:52 PM	**72.0** °F	-	**55.9** °F	57%	**30.05** in	**10.0** mi	ENE	**4.6** mph	-	N/A	
11:52 PM	**70.0** °F	-	**57.0** °F	63%	**30.08** in	**10.0** mi	Calm	Calm	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

3:10 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

22

2018

View

Wednesday, August 22, 2018

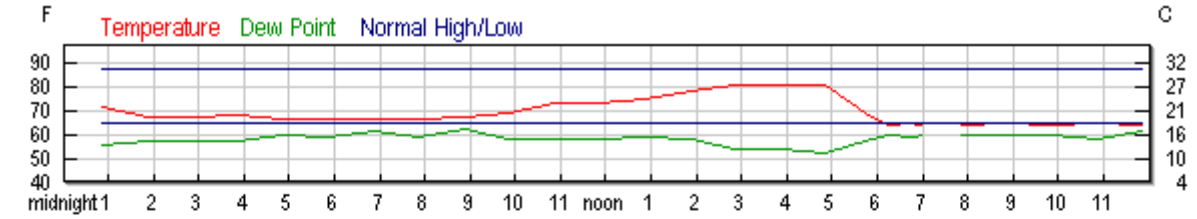
Daily | Weekly | Monthly | Custom

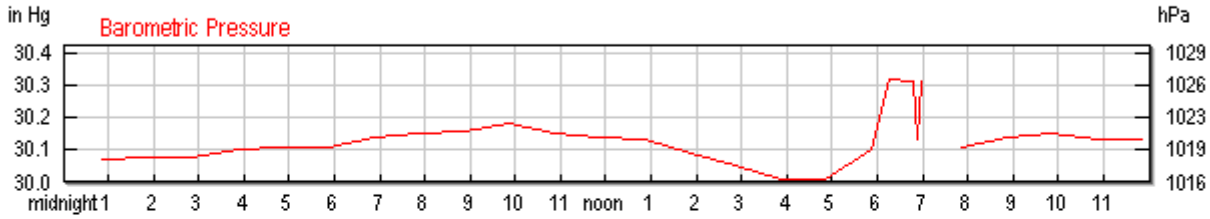
	Actual	Average	Record
Temperature			
Mean Temperature	**73** °F	-	
Max Temperature	**83** °F	-	- ()
Min Temperature	**63** °F	-	- ()
Cooling Degree Days	8		
Month to date cooling degree days	301		
Year to date cooling degree days	1385		
Since 1 June cooling degree days	1189		
Growing Degree Days	23 (Base 50)		
Moisture			
Dew Point	**58** °F		
Average Humidity	62		
Maximum Humidity	87		
Minimum Humidity	36		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.89		

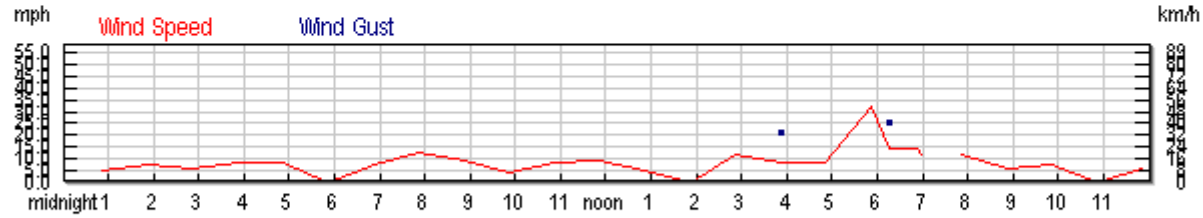
	Actual	Average	Record
Year to date precipitation	5.34		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.13** in		
Wind			
Wind Speed	**9** mph (NW)		
Max Wind Speed	**38** mph		
Max Gust Speed	**50** mph		
Visibility	**9** miles		
Events	Rain , Thunderstorm		

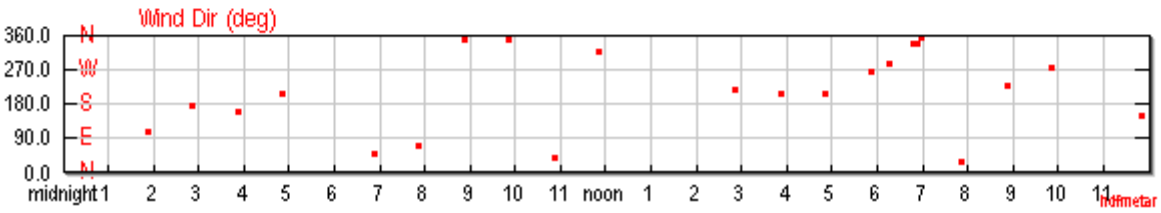
T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph









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Airport or City:

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Astronomy

Aug. 22, 2018	**Rise**	**Set**
Actual Time	6:31 AM MDT	7:46 PM MDT
Civil Twilight	6:05 AM MDT	8:12 PM MDT
Nautical Twilight	5:33 AM MDT	8:43 PM MDT
Astronomical Twilight	5:01 AM MDT	9:16 PM MDT
Moon	5:34 PM MDT (8/22)	3:03 AM MDT (8/22)
Length of Visible Light	14h 07m	
Length of Day	13h 14m	

Waxing Gibbous, 88% of the Moon is Illuminated

Aug 22	Aug 26	Sep 2	Sep 9	Sep 16
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**71.1** °F	-	**55.9** °F	59%	**30.07** in	**10.0** mi	NE	**4.6** mph	-	N/A	
1:52 AM	**66.9** °F	-	**57.0** °F	70%	**30.08** in	**10.0** mi	ESE	**6.9** mph	-	N/A	
2:52 AM	**66.9** °F	-	**57.0** °F	70%	**30.08** in	**10.0** mi	South	**5.8** mph	-	**0.00** in	
3:52 AM	**68.0** °F	-	**57.0** °F	68%	**30.10** in	**10.0** mi	SSE	**8.1** mph	-	**0.00** in	Rain
4:52 AM	**66.0** °F	-	**60.1** °F	81%	**30.11** in	**10.0** mi	SSW	**8.1** mph	-	**0.00** in	
5:52 AM	**66.0** °F	-	**59.0** °F	78%	**30.11** in	**10.0** mi	Calm	Calm	-	**0.00** in	
6:52 AM	**66.0** °F	-	**61.0** °F	84%	**30.14** in	**8.0** mi	NE	**6.9** mph	-	**0.05** in	
7:52 AM	**66.0** °F	-	**59.0** °F	78%	**30.15** in	**8.0** mi	ENE	**12.7** mph	-	**0.01** in	
8:52 AM	**66.9** °F	-	**62.1** °F	84%	**30.16** in	**10.0** mi	North	**9.2** mph	-	N/A	
9:52 AM	**69.1** °F	-	**57.9** °F	68%	**30.18** in	**10.0** mi	North	**3.5** mph	-	N/A	
10:52 AM	**73.0** °F	-	**57.9** °F	59%	**30.15** in	**10.0** mi	NE	**8.1** mph	-	N/A	
11:52 AM	**73.0** °F	-	**57.9** °F	59%	**30.14** in	**10.0** mi	NW	**9.2** mph	-	N/A	
12:52 PM	**75.0** °F	-	**59.0** °F	57%	**30.13** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
1:52 PM	**78.1** °F	-	**57.9** °F	50%	**30.09** in	**10.0** mi	Calm	Calm	-	N/A	
2:52 PM	**81.0** °F	**80.5** °F	**54.0** °F	39%	**30.05** in	**10.0** mi	SW	**11.5** mph	**18.4** mph	N/A	
3:52 PM	**81.0** °F	**80.5** °F	**54.0** °F	39%	**30.01** in	**10.0** mi	SSW	**8.1** mph	**20.7** mph	N/A	
4:52 PM	**81.0** °F	-	**52.0** °F	36%	**30.01** in	**10.0** mi	SSW	**8.1** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
5:52 PM	**66.9** °F	-	**57.9** °F	73%	**30.10** in	**10.0** mi	West	**32.2** mph	**48.3** mph	**0.00** in	Rain , Thunderstor
6:15 PM	**64.0** °F	-	**60.1** °F	87%	**30.32** in	**2.5** mi	WNW	**13.8** mph	**25.3** mph	**0.04** in	Rain , Thunderstor
6:49 PM	**64.4** °F	-	**59.0** °F	83%	**30.31** in	**5.0** mi	NNW	**13.8** mph	-	**0.17** in	Rain , Thunderstor
6:52 PM	**64.0** °F	-	**59.0** °F	84%	**30.13** in	**6.0** mi	NNW	**13.8** mph	-	**0.18** in	Rain , Thunderstor
6:58 PM	**64.0** °F	-	**60.1** °F	87%	**30.31** in	**6.0** mi	North	**11.5** mph	-	**0.02** in	Rain
7:39 PM	-	-	-	N/A%	-	-	North	-	-	N/A	
7:52 PM	**64.0** °F	-	**60.1** °F	87%	**30.11** in	**10.0** mi	NNE	**11.5** mph	-	**0.03** in	
8:52 PM	**64.9** °F	-	**60.1** °F	84%	**30.14** in	**10.0** mi	SW	**5.8** mph	-	N/A	
9:52 PM	**64.0** °F	-	**60.1** °F	87%	**30.15** in	**10.0** mi	West	**6.9** mph	-	N/A	
10:52 PM	**64.9** °F	-	**57.9** °F	78%	**30.13** in	**10.0** mi	Calm	Calm	-	N/A	
11:52 PM	**64.0** °F	-	**61.0** °F	90%	**30.13** in	**10.0** mi	SSE	**5.8** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

3:23 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

25

2018

View

Saturday, August 25, 2018

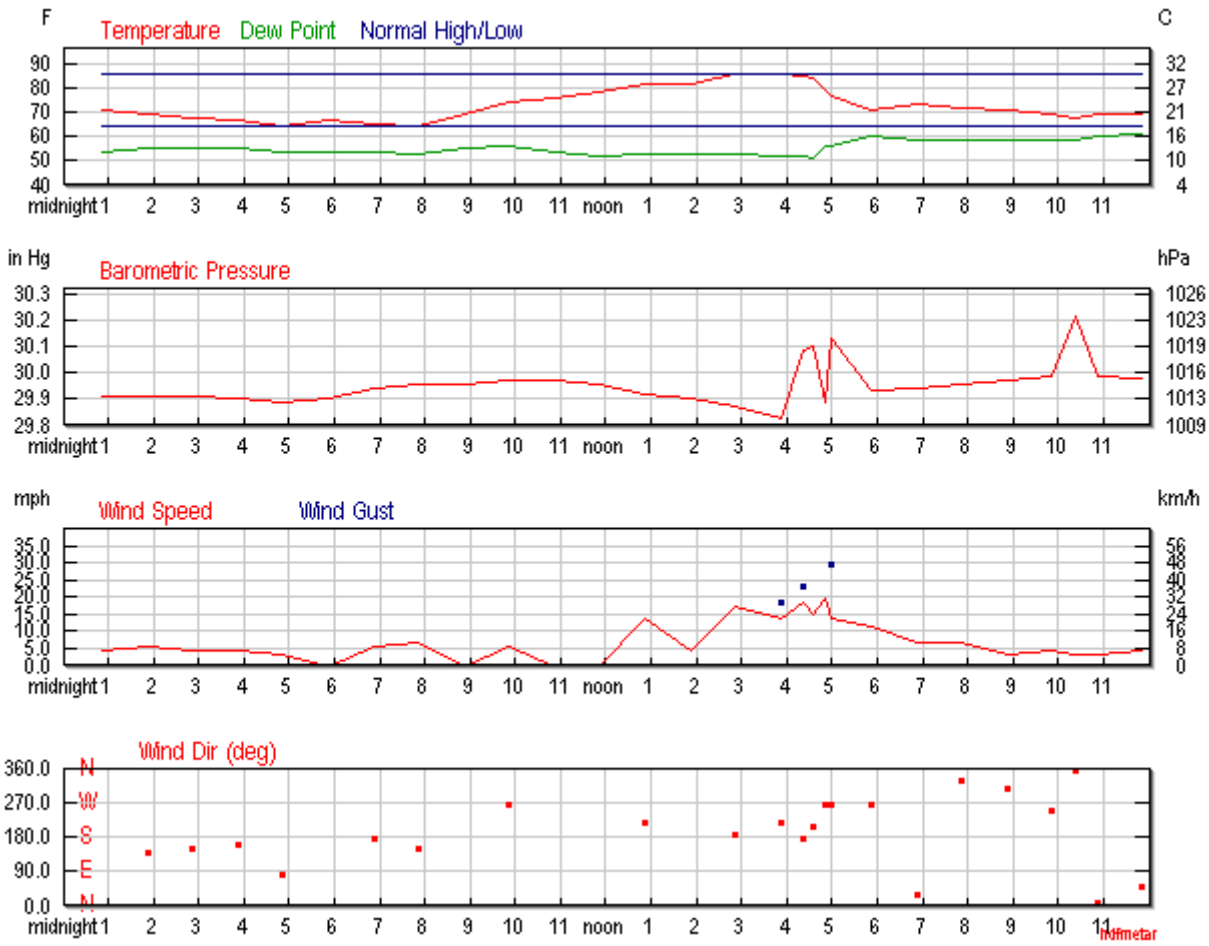
Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**75** °F	-	
Max Temperature	**87** °F	-	- ()
Min Temperature	**62** °F	-	- ()
Cooling Degree Days	10		
Month to date cooling degree days	329		
Year to date cooling degree days	1413		
Since 1 June cooling degree days	1217		
Growing Degree Days	24 (Base 50)		
Moisture			
Dew Point	**56** °F		
Average Humidity	52		
Maximum Humidity	73		
Minimum Humidity	30		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.92		

	Actual	Average	Record
Year to date precipitation	5.37		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.96** in		
Wind			
Wind Speed	**6** mph (SW)		
Max Wind Speed	**24** mph		
Max Gust Speed	**31** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Aug. 25, 2018	**Rise**	**Set**
Actual Time	6:34 AM MDT	7:42 PM MDT
Civil Twilight	6:07 AM MDT	8:08 PM MDT
Nautical Twilight	5:36 AM MDT	8:39 PM MDT
Astronomical Twilight	5:04 AM MDT	9:11 PM MDT
Moon	7:33 PM MDT (8/25)	5:41 AM MDT (8/25)
Length of Visible Light	14h 00m	
Length of Day	13h 08m	

Waxing Gibbous, 99% of the Moon is Illuminated

Aug 25	Aug 26	Sep 2	Sep 9	Sep 16
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**71.1** °F	-	**54.0** °F	55%	**29.91** in	**10.0** mi	SSE	**4.6** mph	-	N/A	
1:52 AM	**69.1** °F	-	**55.0** °F	61%	**29.91** in	**10.0** mi	SE	**5.8** mph	-	N/A	
2:52 AM	**68.0** °F	-	**55.0** °F	63%	**29.91** in	**10.0** mi	SSE	**4.6** mph	-	N/A	
3:52 AM	**66.9** °F	-	**55.0** °F	66%	**29.90** in	**10.0** mi	SSE	**4.6** mph	-	N/A	
4:52 AM	**64.0** °F	-	**54.0** °F	70%	**29.89** in	**10.0** mi	East	**3.5** mph	-	N/A	
5:52 AM	**66.9** °F	-	**54.0** °F	63%	**29.90** in	**10.0** mi	Calm	Calm	-	N/A	
6:52 AM	**64.9** °F	-	**54.0** °F	68%	**29.94** in	**10.0** mi	South	**5.8** mph	-	N/A	
7:52 AM	**64.0** °F	-	**53.1** °F	67%	**29.96** in	**10.0** mi	SSE	**6.9** mph	-	N/A	
8:52 AM	**69.1** °F	-	**55.0** °F	61%	**29.96** in	**10.0** mi	Calm	Calm	-	N/A	
9:52 AM	**73.9** °F	-	**55.9** °F	53%	**29.97** in	**10.0** mi	West	**5.8** mph	-	N/A	
10:52 AM	**75.9** °F	-	**54.0** °F	46%	**29.97** in	**10.0** mi	Calm	Calm	-	N/A	
11:52 AM	**78.1** °F	-	**52.0** °F	40%	**29.96** in	**10.0** mi	Calm	Calm	-	N/A	
12:52 PM	**82.0** °F	**81.2** °F	**53.1** °F	37%	**29.92** in	**10.0** mi	SW	**13.8** mph	**19.6** mph	N/A	
1:52 PM	**82.0** °F	**81.2** °F	**53.1** °F	37%	**29.90** in	**10.0** mi	Variable	**4.6** mph	-	N/A	
2:52 PM	**86.0** °F	**84.0** °F	**53.1** °F	32%	**29.87** in	**10.0** mi	South	**17.3** mph	**23.0** mph	N/A	
3:52 PM	**86.0** °F	-	**52.0** °F	31%	**29.83** in	**10.0** mi	SW	**13.8** mph	**18.4** mph	N/A	
4:21 PM	**84.9** °F	-	**52.0** °F	32%	**30.09** in	**10.0** mi	South	**18.4** mph	**23.0** mph	N/A	Thunderstor

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
4:34 PM	**84.0** °F	-	**51.1** °F	32%	**30.10** in	**10.0** mi	SSW	**15.0** mph	-	N/A	Thunderstor
4:52 PM	**79.0** °F	-	**55.9** °F	45%	**29.89** in	**10.0** mi	West	**19.6** mph	**28.8** mph	N/A	Thunderstor
4:59 PM	**77.0** °F	-	**55.9** °F	48%	**30.13** in	**10.0** mi	West	**13.8** mph	**29.9** mph	N/A	Thunderstor
5:52 PM	**71.1** °F	-	**60.1** °F	68%	**29.93** in	**10.0** mi	West	**11.5** mph	-	**0.03** in	Rain
6:52 PM	**73.0** °F	-	**59.0** °F	61%	**29.94** in	**10.0** mi	NNE	**6.9** mph	-	**0.00** in	
7:52 PM	**72.0** °F	-	**59.0** °F	64%	**29.96** in	**10.0** mi	NNW	**6.9** mph	-	N/A	
8:52 PM	**71.1** °F	-	**59.0** °F	66%	**29.97** in	**10.0** mi	NW	**3.5** mph	-	N/A	
9:52 PM	**69.1** °F	-	**59.0** °F	70%	**29.99** in	**10.0** mi	WSW	**4.6** mph	-	N/A	
10:22 PM	**68.0** °F	-	**59.0** °F	73%	**30.22** in	**10.0** mi	North	**3.5** mph	-	N/A	
10:52 PM	**69.1** °F	-	**60.1** °F	73%	**29.99** in	**10.0** mi	North	**3.5** mph	-	N/A	
11:52 PM	**69.1** °F	-	**61.0** °F	75%	**29.98** in	**10.0** mi	NE	**4.6** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

3:25 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

26

2018

View
Sunday, August 26, 2018

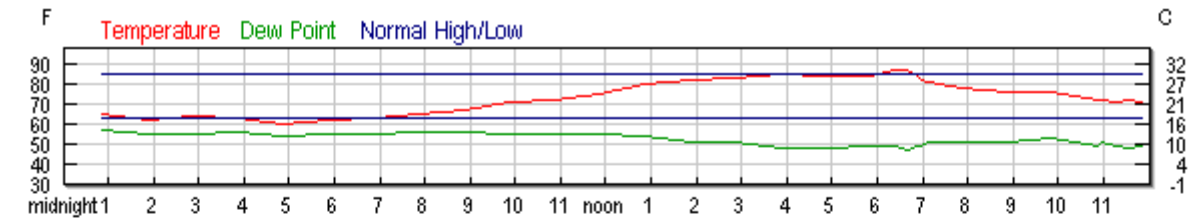
Daily | Weekly | Monthly | Custom

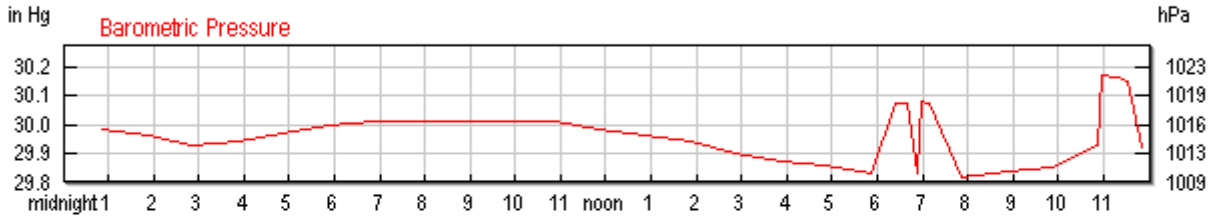
	Actual	Average	Record
Temperature			
Mean Temperature	**75** °F	-	
Max Temperature	**89** °F	-	- ()
Min Temperature	**60** °F	-	- ()
Cooling Degree Days	10		
Month to date cooling degree days	339		
Year to date cooling degree days	1423		
Since 1 June cooling degree days	1227		
Growing Degree Days	26 (Base 50)		
Moisture			
Dew Point	**53** °F		
Average Humidity	56		
Maximum Humidity	84		
Minimum Humidity	27		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.92		

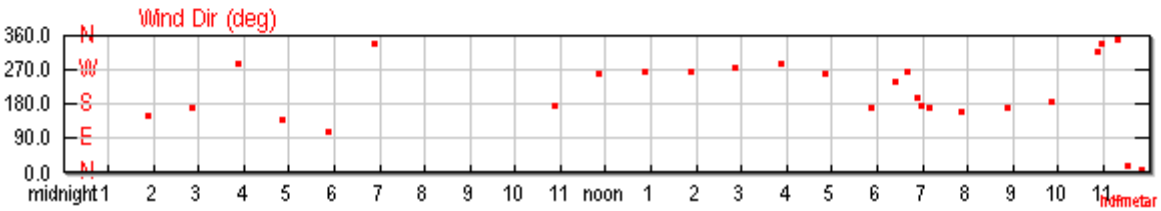
	Actual	Average	Record
Year to date precipitation	5.37		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.96** in		
Wind			
Wind Speed	**8** mph (SW)		
Max Wind Speed	**28** mph		
Max Gust Speed	**37** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph







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Astronomy

Aug. 26, 2018	**Rise**	**Set**
Actual Time	6:34 AM MDT	7:41 PM MDT
Civil Twilight	6:08 AM MDT	8:07 PM MDT
Nautical Twilight	5:37 AM MDT	8:38 PM MDT
Astronomical Twilight	5:05 AM MDT	9:10 PM MDT
Moon	8:07 PM MDT (8/26)	6:36 AM MDT (8/26)
Length of Visible Light	13h 58m	
Length of Day	13h 06m	

Full, 100% of the Moon is Illuminated

Aug 26	Sep 2	Sep 9	Sep 16	Sep 24
Full	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:52 AM	**66.0** °F	-	**57.9** °F	75%	**29.98** in	**10.0** mi	South	**6.9** mph	-	N/A	
1:52 AM	**63.0** °F	-	**55.9** °F	78%	**29.96** in	**10.0** mi	SSE	**6.9** mph	-	N/A	
2:52 AM	**64.9** °F	-	**55.9** °F	73%	**29.93** in	**10.0** mi	South	**8.1** mph	-	N/A	
3:52 AM	**64.0** °F	-	**57.0** °F	78%	**29.94** in	**10.0** mi	WNW	**3.5** mph	-	N/A	
4:52 AM	**61.0** °F	-	**55.0** °F	81%	**29.97** in	**10.0** mi	SE	**6.9** mph	-	N/A	
5:52 AM	**62.1** °F	-	**55.9** °F	80%	**30.00** in	**10.0** mi	ESE	**3.5** mph	-	N/A	
6:52 AM	**64.0** °F	-	**55.9** °F	75%	**30.01** in	**10.0** mi	NNW	**3.5** mph	-	N/A	
7:52 AM	**66.0** °F	-	**57.0** °F	73%	**30.01** in	**10.0** mi	Calm	Calm	-	N/A	
8:52 AM	**68.0** °F	-	**57.0** °F	68%	**30.01** in	**10.0** mi	Variable	**3.5** mph	-	N/A	
9:52 AM	**72.0** °F	-	**55.9** °F	57%	**30.01** in	**10.0** mi	Calm	Calm	-	N/A	
10:52 AM	**73.0** °F	-	**55.9** °F	55%	**30.01** in	**10.0** mi	South	**4.6** mph	-	N/A	
11:52 AM	**75.9** °F	-	**55.9** °F	50%	**29.98** in	**10.0** mi	West	**8.1** mph	-	N/A	
12:52 PM	**80.1** °F	**80.1** °F	**55.0** °F	42%	**29.96** in	**10.0** mi	West	**5.8** mph	-	N/A	
1:52 PM	**82.9** °F	-	**51.1** °F	33%	**29.94** in	**10.0** mi	West	**13.8** mph	**19.6** mph	N/A	
2:52 PM	**84.0** °F	-	**52.0** °F	33%	**29.90** in	**10.0** mi	West	**4.6** mph	-	N/A	
3:52 PM	**86.0** °F	-	**48.9** °F	28%	**29.87** in	**10.0** mi	WNW	**11.5** mph	-	N/A	
4:52 PM	**84.9** °F	-	**48.9** °F	29%	**29.86** in	**10.0** mi	West	**8.1** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
5:52 PM	**84.9** °F	-	**50.0** °F	30%	**29.83** in	**10.0** mi	South	**5.8** mph	-	N/A	
6:23 PM	**87.1** °F	-	**50.0** °F	28%	**30.07** in	**10.0** mi	WSW	**3.5** mph	-	N/A	Thunderstor
6:40 PM	**88.0** °F	-	**48.0** °F	25%	**30.07** in	**10.0** mi	West	**11.5** mph	-	N/A	Thunderstor
6:52 PM	**84.9** °F	-	**50.0** °F	30%	**29.83** in	**10.0** mi	SSW	**24.2** mph	**33.4** mph	N/A	Thunderstor
6:59 PM	**82.9** °F	-	**50.0** °F	32%	**30.08** in	**10.0** mi	South	**19.6** mph	**33.4** mph	N/A	Thunderstor
7:10 PM	**82.0** °F	-	**51.1** °F	34%	**30.07** in	**10.0** mi	South	**17.3** mph	-	N/A	
7:52 PM	**79.0** °F	-	**52.0** °F	39%	**29.82** in	**10.0** mi	SSE	**8.1** mph	-	N/A	
8:52 PM	**77.0** °F	-	**52.0** °F	42%	**29.84** in	**10.0** mi	South	**10.4** mph	-	N/A	
9:52 PM	**77.0** °F	-	**54.0** °F	45%	**29.85** in	**10.0** mi	South	**6.9** mph	-	N/A	
10:52 PM	**73.0** °F	-	**50.0** °F	44%	**29.93** in	**10.0** mi	NW	**21.9** mph	**36.8** mph	**0.00** in	Rain
10:58 PM	**73.0** °F	-	**51.1** °F	46%	**30.17** in	**10.0** mi	NNW	**16.1** mph	**25.3** mph	**0.00** in	
11:20 PM	**72.0** °F	-	**50.0** °F	46%	**30.16** in	**10.0** mi	North	**15.0** mph	-	**0.00** in	Thunderstor
11:32 PM	**73.0** °F	-	**48.9** °F	42%	**30.15** in	**10.0** mi	NNE	**17.3** mph	**27.6** mph	**0.00** in	Thunderstor
11:52 PM	**72.0** °F	-	**50.0** °F	46%	**29.92** in	**10.0** mi	North	**17.3** mph	**23.0** mph	**0.00** in	Thunderstor

Albuquerque, NM

Albuquerque International Sunport

3:29 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

27

2018

View

Monday, August 27, 2018

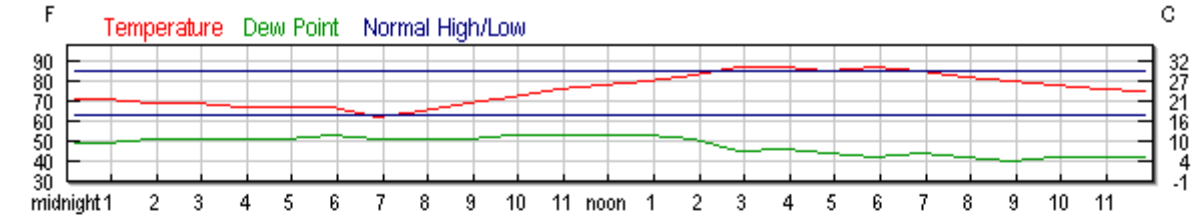
Daily | Weekly | Monthly | Custom

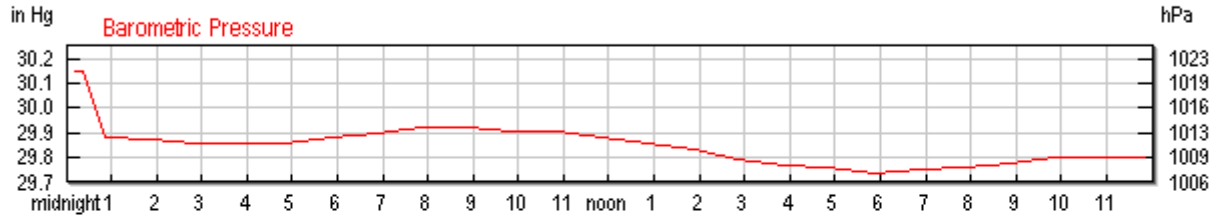
	Actual	Average	Record
Temperature			
Mean Temperature	**76** °F	-	
Max Temperature	**90** °F	-	- ()
Min Temperature	**62** °F	-	- ()
Cooling Degree Days	11		
Month to date cooling degree days	350		
Year to date cooling degree days	1434		
Since 1 June cooling degree days	1238		
Growing Degree Days	26 (Base 50)		
Moisture			
Dew Point	**49** °F		
Average Humidity	44		
Maximum Humidity	67		
Minimum Humidity	21		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.92		

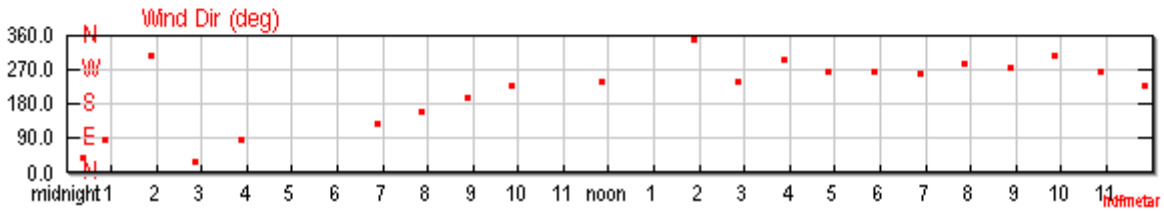
	Actual	Average	Record
Year to date precipitation	5.37		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.86** in		
Wind			
Wind Speed	**7** mph (West)		
Max Wind Speed	**23** mph		
Max Gust Speed	**28** mph		
Visibility	**10** miles		
Events	Thunderstorm		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph







Search for Another Location

Airport or City:

KABQ

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Astronomy

Aug. 27, 2018	**Rise**	**Set**
Actual Time	6:35 AM MDT	7:39 PM MDT
Civil Twilight	6:09 AM MDT	8:05 PM MDT
Nautical Twilight	5:38 AM MDT	8:36 PM MDT
Astronomical Twilight	5:06 AM MDT	9:08 PM MDT
Moon	8:39 PM MDT (8/27)	7:33 AM MDT (8/27)
Length of Visible Light	13h 56m	
Length of Day	13h 04m	

Full, 98% of the Moon is Illuminated

Aug 27	Sep 2	Sep 9	Sep 16	Sep 24
Full	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
12:11 AM	**72.0** °F	-	**50.0** °F	46%	**30.15** in	**10.0** mi	North	**12.7** mph	**24.2** mph	N/A	Thunderstor
12:23 AM	**71.1** °F	-	**50.0** °F	47%	**30.15** in	**10.0** mi	NE	**15.0** mph	**21.9** mph	N/A	
12:52 AM	**71.1** °F	-	**50.0** °F	47%	**29.88** in	**10.0** mi	East	**6.9** mph	-	N/A	
1:52 AM	**69.1** °F	-	**51.1** °F	53%	**29.87** in	**10.0** mi	NW	**8.1** mph	-	N/A	
2:52 AM	**69.1** °F	-	**51.1** °F	53%	**29.86** in	**10.0** mi	NNE	**3.5** mph	-	N/A	
3:52 AM	**68.0** °F	-	**52.0** °F	56%	**29.86** in	**10.0** mi	East	**3.5** mph	-	N/A	
4:52 AM	**68.0** °F	-	**52.0** °F	56%	**29.86** in	**10.0** mi	Calm	Calm	-	N/A	
5:52 AM	**68.0** °F	-	**53.1** °F	59%	**29.88** in	**10.0** mi	Calm	Calm	-	N/A	
6:52 AM	**63.0** °F	-	**51.1** °F	65%	**29.90** in	**10.0** mi	SE	**5.8** mph	-	N/A	
7:52 AM	**66.0** °F	-	**52.0** °F	60%	**29.92** in	**10.0** mi	SSE	**4.6** mph	-	N/A	
8:52 AM	**70.0** °F	-	**52.0** °F	53%	**29.92** in	**10.0** mi	SSW	**4.6** mph	-	N/A	
9:52 AM	**73.0** °F	-	**53.1** °F	49%	**29.91** in	**10.0** mi	SW	**3.5** mph	-	N/A	
10:52 AM	**77.0** °F	-	**53.1** °F	43%	**29.91** in	**10.0** mi	Variable	**5.8** mph	-	N/A	
11:52 AM	**79.0** °F	-	**54.0** °F	42%	**29.88** in	**10.0** mi	WSW	**6.9** mph	-	N/A	
12:52 PM	**81.0** °F	**80.4** °F	**53.1** °F	38%	**29.86** in	**10.0** mi	Variable	**5.8** mph	-	N/A	
1:52 PM	**84.0** °F	-	**51.1** °F	32%	**29.83** in	**10.0** mi	North	**8.1** mph	-	N/A	
2:52 PM	**88.0** °F	-	**46.0** °F	23%	**29.79** in	**10.0** mi	WSW	**16.1** mph	**26.5** mph	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
3:52 PM	**87.1** °F	-	**46.9** °F	25%	**29.77** in	**10.0** mi	WNW	**15.0** mph	**18.4** mph	N/A	
4:52 PM	**86.0** °F	-	**45.0** °F	24%	**29.76** in	**10.0** mi	West	**12.7** mph	-	N/A	
5:52 PM	**88.0** °F	-	**43.0** °F	21%	**29.74** in	**10.0** mi	West	**16.1** mph	**23.0** mph	N/A	
6:52 PM	**86.0** °F	-	**44.1** °F	23%	**29.75** in	**10.0** mi	West	**11.5** mph	-	N/A	
7:52 PM	**82.9** °F	-	**43.0** °F	24%	**29.76** in	**10.0** mi	WNW	**11.5** mph	-	N/A	
8:52 PM	**81.0** °F	-	**41.0** °F	24%	**29.78** in	**10.0** mi	West	**10.4** mph	-	N/A	
9:52 PM	**79.0** °F	-	**42.1** °F	27%	**29.80** in	**10.0** mi	NW	**8.1** mph	-	N/A	
10:52 PM	**77.0** °F	-	**43.0** °F	30%	**29.80** in	**10.0** mi	West	**4.6** mph	-	N/A	
11:52 PM	**75.9** °F	-	**42.1** °F	30%	**29.80** in	**10.0** mi	SW	**3.5** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

3:31 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - August, 2018

August

31

2018

View

Friday, August 31, 2018

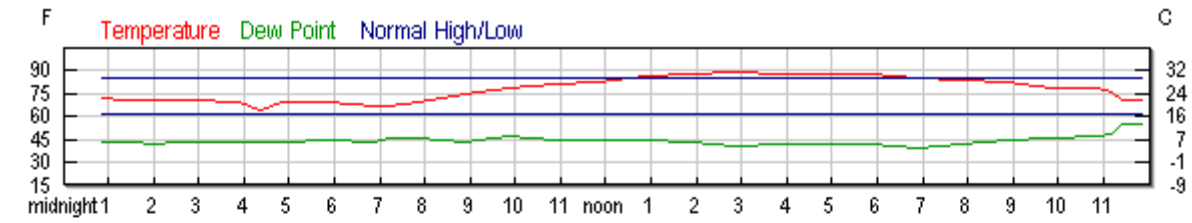
Daily | Weekly | Monthly | Custom

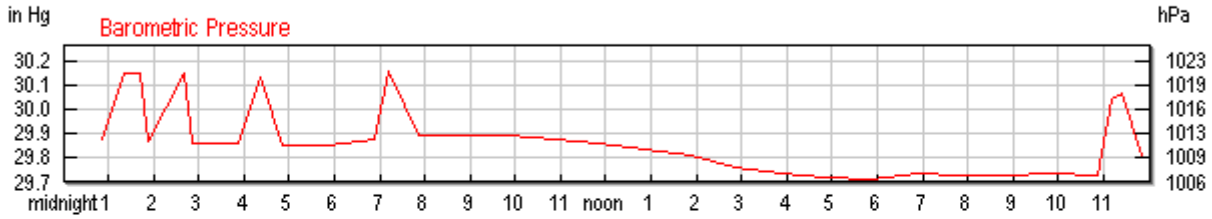
	Actual	Average	Record
Temperature			
Mean Temperature	**78** °F	-	
Max Temperature	**91** °F	-	- ()
Min Temperature	**65** °F	-	- ()
Cooling Degree Days	13		
Month to date cooling degree days	402		
Year to date cooling degree days	1486		
Since 1 June cooling degree days	1290		
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**45** °F		
Average Humidity	32		
Maximum Humidity	44		
Minimum Humidity	19		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.95		

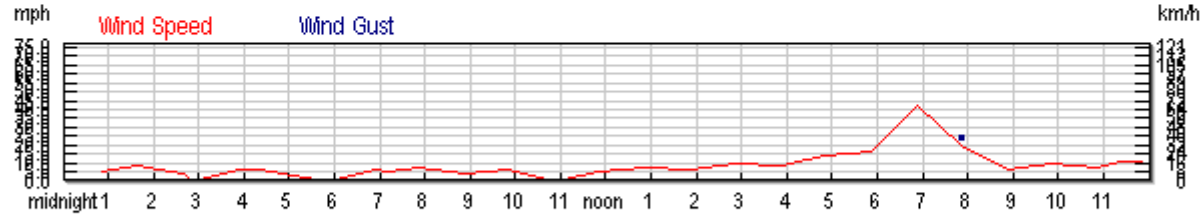
	Actual	Average	Record
Year to date precipitation	5.40		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Since 1 June snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.87** in		
Wind			
Wind Speed	**9** mph (SSW)		
Max Wind Speed	**44** mph		
Max Gust Speed	**66** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

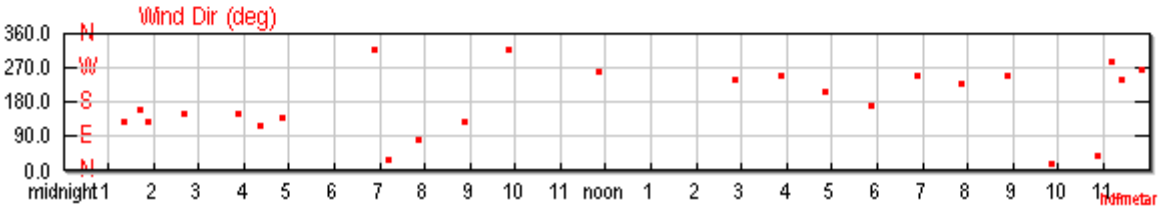
T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

Daily Weather History Graph









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Astronomy

Aug. 31, 2018	**Rise**	**Set**
Actual Time	6:38 AM MDT	7:34 PM MDT
Civil Twilight	6:12 AM MDT	8:00 PM MDT
Nautical Twilight	5:41 AM MDT	8:30 PM MDT
Astronomical Twilight	5:10 AM MDT	9:02 PM MDT
Moon	10:48 PM MDT (8/31)	11:24 AM MDT (8/31)
Length of Visible Light	13h 47m	
Length of Day	12h 55m	

Waning Gibbous, 75% of the Moon is Illuminated

Aug 31	Sep 2	Sep 9	Sep 16	Sep 24
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
12:52 AM	**73.0** °F	**44.1** °F	35%	**29.88** in	**10.0** mi	SSE	**4.6** mph	-	N/A		Most Cloud
1:21 AM	**71.6** °F	**44.6** °F	38%	**30.15** in	**10.0** mi	SE	**6.9** mph	-	N/A		Scatt Cloud
1:42 AM	**71.6** °F	**44.6** °F	38%	**30.15** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Scatt Cloud
1:52 AM	**71.6** °F	**42.8** °F	35%	**29.87** in	**10.0** mi	SE	**6.9** mph	-	N/A		Scatt Cloud
2:40 AM	**71.6** °F	**44.6** °F	38%	**30.15** in	**10.0** mi	SSE	**3.5** mph	-	N/A		Scatt Cloud
2:52 AM	**71.6** °F	**44.6** °F	38%	**29.86** in	**10.0** mi	Calm	Calm	-	N/A		Scatt Cloud
3:52 AM	**69.8** °F	**44.6** °F	40%	**29.86** in	**10.0** mi	SSE	**5.8** mph	-	N/A		Scatt Cloud
4:23 AM	**64.9** °F	**44.1** °F	47%	**30.13** in	**10.0** mi	ESE	**5.8** mph	-	N/A		Partly Cloud
4:52 AM	**70.0** °F	**44.1** °F	39%	**29.85** in	**10.0** mi	SE	**3.5** mph	-	N/A		Partly Cloud
5:52 AM	**70.0** °F	**45.0** °F	41%	**29.85** in	**10.0** mi	Calm	Calm	-	N/A		Scatt Cloud
6:52 AM	**68.0** °F	**44.1** °F	42%	**29.88** in	**10.0** mi	NW	**5.8** mph	-	N/A		Scatt Cloud
7:13 AM	**68.0** °F	**46.4** °F	46%	**30.16** in	**10.0** mi	NNE	**4.6** mph	-	N/A		Scatt Cloud
7:52 AM	**69.8** °F	**46.4** °F	43%	**29.89** in	**10.0** mi	East	**6.9** mph	-	N/A		Scatt Cloud
8:52 AM	**75.2** °F	**44.6** °F	34%	**29.89** in	**10.0** mi	SE	**3.5** mph	-	N/A		Partly Cloud
9:52 AM	**78.8** °F	**48.2** °F	34%	**29.89** in	**10.0** mi	NW	**5.8** mph	-	N/A		Scatt Cloud
10:52 AM	**82.0** °F	**46.0** °F	28%	**29.88** in	**10.0** mi	Calm	Calm	-	N/A		Scatt Cloud
11:52 AM	**84.0** °F	**46.0** °F	26%	**29.86** in	**10.0** mi	West	**4.6** mph	-	N/A		Partly Cloud

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
12:52 PM	**87.1** °F	**45.0** °F	23%	**29.84** in	**10.0** mi	Variable	**6.9** mph	-	N/A		Partly Cloud
1:52 PM	**88.0** °F	**44.1** °F	22%	**29.81** in	**10.0** mi	Variable	**5.8** mph	-	N/A		Scatt Cloud
2:52 PM	**90.0** °F	**41.0** °F	18%	**29.76** in	**10.0** mi	WSW	**9.2** mph	-	N/A		Scatt Cloud
3:52 PM	**88.0** °F	**43.0** °F	21%	**29.74** in	**10.0** mi	WSW	**8.1** mph	-	N/A		Most Cloud
4:52 PM	**89.1** °F	**43.0** °F	20%	**29.72** in	**10.0** mi	SSW	**13.8** mph	-	N/A		Most Cloud
5:52 PM	**88.0** °F	**43.0** °F	21%	**29.71** in	**10.0** mi	South	**16.1** mph	-	N/A		Most Cloud
6:52 PM	**86.0** °F	**39.9** °F	20%	**29.74** in	**6.0** mi	WSW	**42.6** mph	**66.7** mph	N/A		Haze
7:52 PM	**84.9** °F	**43.0** °F	23%	**29.73** in	**10.0** mi	SW	**19.6** mph	**24.2** mph	**0.00** in		Most Cloud
8:52 PM	**82.9** °F	**45.0** °F	26%	**29.73** in	**10.0** mi	WSW	**5.8** mph	-	N/A		Most Cloud
9:52 PM	**80.1** °F	**46.9** °F	31%	**29.74** in	**10.0** mi	NNE	**9.2** mph	-	N/A		Scatt Cloud
10:52 PM	**79.0** °F	**48.0** °F	34%	**29.73** in	**10.0** mi	NE	**6.9** mph	-	N/A		Scatt Cloud
11:10 PM	**77.0** °F	**48.9** °F	37%	**30.04** in	**10.0** mi	WNW	**9.2** mph	-	N/A	Thunderstorm	Most Cloud
11:25 PM	**72.0** °F	**55.9** °F	57%	**30.07** in	**6.0** mi	WSW	**10.4** mph	-	**0.02** in	Rain	Heav
11:52 PM	**72.0** °F	**55.9** °F	57%	**29.81** in	**10.0** mi	West	**10.4** mph	-	**0.03** in	Rain	Light

Albuquerque, NM

Albuquerque International Sunport

3:35 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - September, 2018

September

1

2018

View

Saturday, September 1, 2018

Daily | Weekly | Monthly | Custom

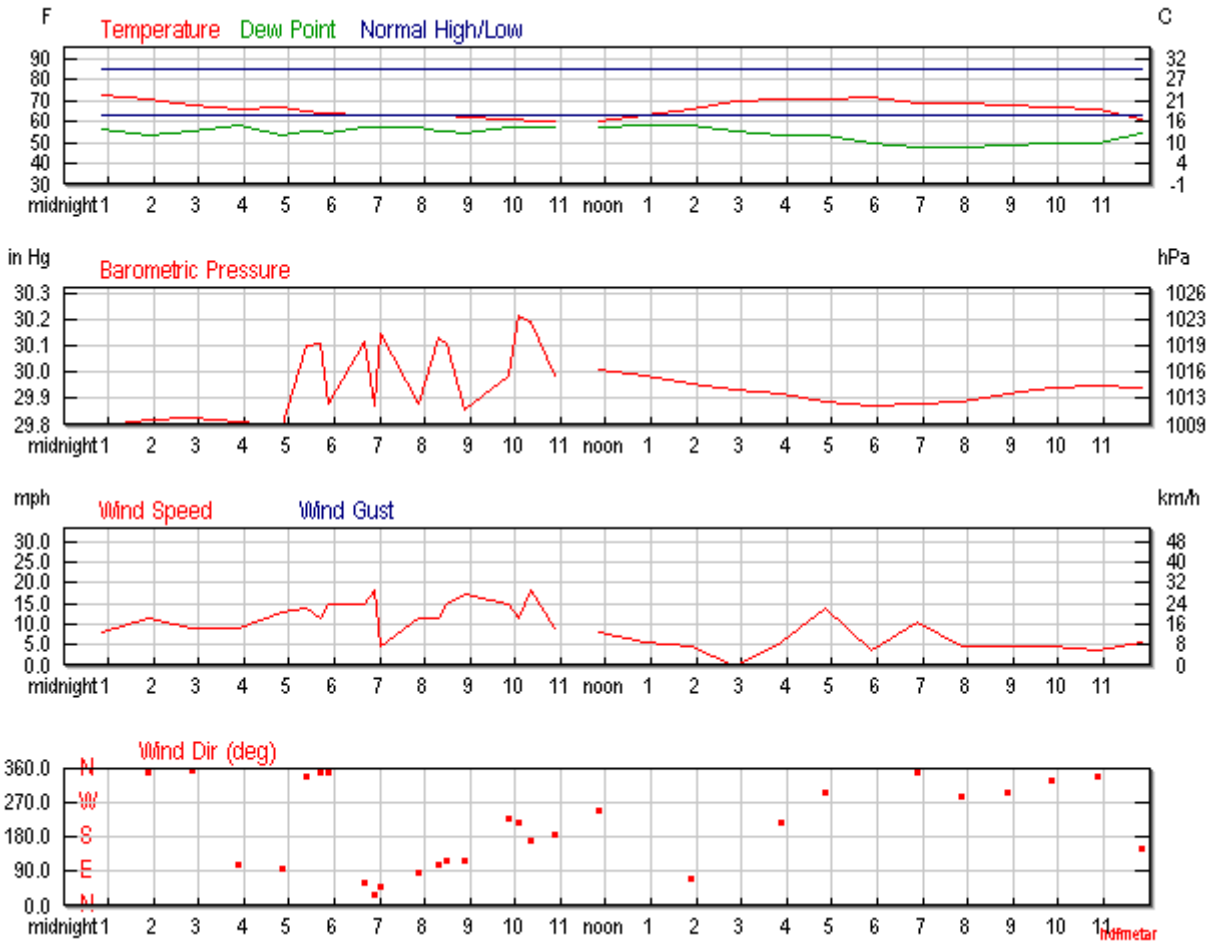
	Actual	Average	Record
Temperature			
Mean Temperature	**66** °F	-	
Max Temperature	**73** °F	-	- ()
Min Temperature	**59** °F	-	- ()
Cooling Degree Days	1		
Month to date cooling degree days	1		
Year to date cooling degree days	1487		
Growing Degree Days	18 (Base 50)		
Moisture			
Dew Point	**54** °F		
Average Humidity	69		
Maximum Humidity	90		
Minimum Humidity	47		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.20		
Year to date precipitation	5.60		

	Actual	Average	Record
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.95** in		
Wind			
Wind Speed	**9** mph (NNE)		
Max Wind Speed	**23** mph		
Max Gust Speed	**29** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



Search for Another Location

Airport or City:

KABQ

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Astronomy

Sep. 01, 2018	**Rise**	**Set**
Actual Time	6:39 AM MDT	7:33 PM MDT
Civil Twilight	6:13 AM MDT	7:58 PM MDT
Nautical Twilight	5:42 AM MDT	8:29 PM MDT
Astronomical Twilight	5:11 AM MDT	9:00 PM MDT
Moon	11:27 PM MDT (9/1)	12:26 PM MDT (9/1)
Length of Visible Light	13h 45m	
Length of Day	12h 53m	

Waning Gibbous, 65% of the Moon is Illuminated

Sep 1	Sep 2	Sep 9	Sep 16	Sep 24
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	**Temp.**	**Dew Point**	**Humidity**	**Pressure**	**Visibility**	**Wind Dir**	**Wind Speed**	**Gust Speed**	**Precip**	**Events**	**Cond**
12:52 AM	**73.0** °F	**55.9** °F	55%	**29.80** in	**10.0** mi	NNW	**8.1** mph	-	**0.00** in		Over
1:52 AM	**71.1** °F	**53.1** °F	53%	**29.82** in	**10.0** mi	North	**11.5** mph	-	**0.00** in		Over
2:52 AM	**68.0** °F	**55.0** °F	63%	**29.83** in	**10.0** mi	North	**9.2** mph	-	**0.00** in		Over
3:52 AM	**66.0** °F	**57.9** °F	75%	**29.81** in	**10.0** mi	ESE	**9.2** mph	-	**0.00** in	Rain	Light
4:52 AM	**66.9** °F	**53.1** °F	61%	**29.80** in	**10.0** mi	East	**12.7** mph	-	**0.00** in		Most
5:22 AM	**64.9** °F	**55.0** °F	70%	**30.10** in	**10.0** mi	NNW	**13.8** mph	-	N/A		Over

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
5:42 AM	**64.0** °F	**55.0** °F	73%	**30.11** in	**10.0** mi	North	**11.5** mph	-	N/A	Thunderstorm	Thun
5:52 AM	**64.0** °F	**54.0** °F	70%	**29.88** in	**10.0** mi	North	**15.0** mph	**21.9** mph	N/A	Thunderstorm	Thun
6:40 AM	**63.0** °F	**57.0** °F	81%	**30.12** in	**10.0** mi	ENE	**15.0** mph	-	**0.06** in		Most
6:52 AM	**63.0** °F	**57.0** °F	81%	**29.87** in	**10.0** mi	NNE	**18.4** mph	**23.0** mph	**0.06** in		Most
7:01 AM	**63.0** °F	**57.0** °F	81%	**30.15** in	**10.0** mi	NE	**4.6** mph	-	**0.00** in	Rain , Thunderstorm	Light Thun and F
7:52 AM	**63.0** °F	**57.0** °F	81%	**29.88** in	**10.0** mi	East	**11.5** mph	-	**0.08** in	Rain , Thunderstorm	Light Thun and F
8:19 AM	**63.0** °F	**55.0** °F	75%	**30.13** in	**10.0** mi	ESE	**11.5** mph	-	**0.01** in	Rain , Thunderstorm	Light
8:29 AM	**63.0** °F	**55.0** °F	75%	**30.11** in	**10.0** mi	ESE	**15.0** mph	-	**0.01** in	Rain , Thunderstorm	Light Thun and F
8:52 AM	**62.1** °F	**54.0** °F	75%	**29.86** in	**10.0** mi	ESE	**17.3** mph	-	**0.01** in	Rain , Thunderstorm	Light
9:52 AM	**61.0** °F	**57.0** °F	87%	**29.99** in	**5.0** mi	SW	**15.0** mph	-	**0.03** in	Rain	Rain
10:05 AM	**61.0** °F	**57.0** °F	87%	**30.22** in	**10.0** mi	SW	**11.5** mph	-	**0.02** in	Rain , Thunderstorm	Light
10:20 AM	**60.1** °F	**57.0** °F	90%	**30.19** in	**10.0** mi	South	**18.4** mph	-	**0.02** in	Rain	Light
10:52 AM	**60.1** °F	**57.0** °F	90%	**29.99** in	**10.0** mi	South	**9.2** mph	-	**0.02** in		Most
11:02 AM	-	-	N/A%	-	-	North	-	-	N/A		Unkn
11:52 AM	**60.1** °F	**57.0** °F	90%	**30.01** in	**10.0** mi	WSW	**8.1** mph	-	N/A		Most
12:52 PM	**63.0** °F	**57.9** °F	84%	**29.99** in	**10.0** mi	Variable	**5.8** mph	-	N/A		Most
1:52 PM	**66.0** °F	**57.9** °F	75%	**29.96** in	**10.0** mi	ENE	**4.6** mph	-	N/A		Most
2:52 PM	**70.0** °F	**55.0** °F	59%	**29.93** in	**10.0** mi	Calm	Calm	-	N/A		Most
3:52 PM	**71.1** °F	**53.1** °F	53%	**29.92** in	**10.0** mi	SW	**5.8** mph	-	N/A		Most
4:52 PM	**71.1** °F	**53.1** °F	53%	**29.89** in	**10.0** mi	WNW	**13.8** mph	-	N/A		Most

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
5:52 PM	**72.0** °F	**50.0** °F	46%	**29.87** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Most
6:52 PM	**69.1** °F	**48.0** °F	47%	**29.88** in	**10.0** mi	North	**10.4** mph	-	N/A		Most
7:52 PM	**69.1** °F	**48.0** °F	47%	**29.89** in	**10.0** mi	WNW	**4.6** mph	-	N/A		Most
8:52 PM	**68.0** °F	**48.9** °F	50%	**29.92** in	**10.0** mi	WNW	**4.6** mph	-	N/A		Most
9:52 PM	**66.9** °F	**50.0** °F	54%	**29.94** in	**10.0** mi	NNW	**4.6** mph	-	N/A		Most
10:52 PM	**66.0** °F	**50.0** °F	56%	**29.95** in	**10.0** mi	NNW	**3.5** mph	-	N/A		Scatt Cloud
11:52 PM	**61.0** °F	**54.0** °F	78%	**29.94** in	**10.0** mi	SSE	**5.8** mph	-	N/A		Scatt Cloud

Albuquerque, NM

Albuquerque International Sunport

3:38 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - September, 2018

September

2

2018

View
Sunday, September 2, 2018

Daily | Weekly | Monthly | Custom

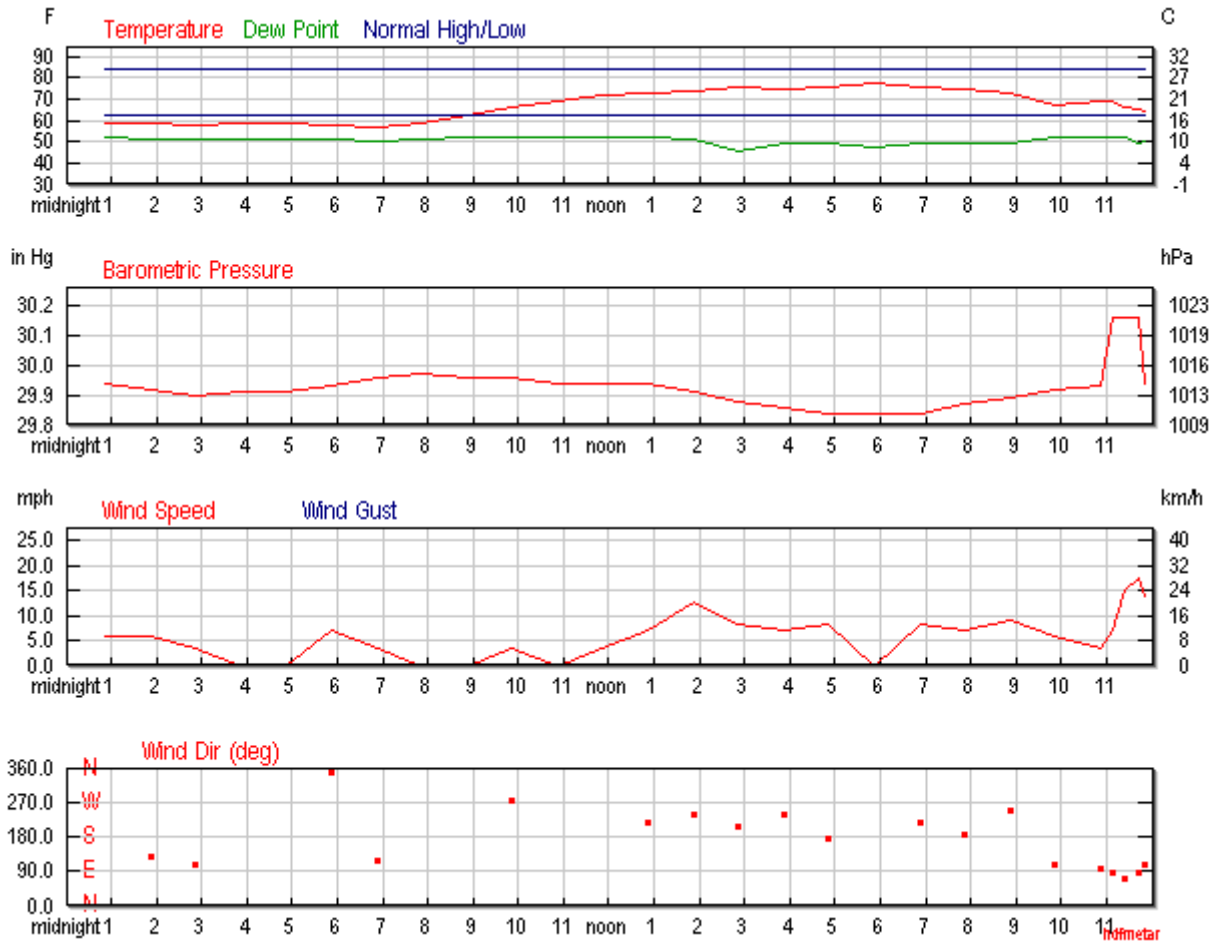
	Actual	Average	Record
Temperature			
Mean Temperature	**68** °F	-	
Max Temperature	**79** °F	-	- ()
Min Temperature	**57** °F	-	- ()
Cooling Degree Days	3		
Month to date cooling degree days	4		
Year to date cooling degree days	1490		
Growing Degree Days	18 (Base 50)		
Moisture			
Dew Point	**51** °F		
Average Humidity	57		
Maximum Humidity	80		
Minimum Humidity	33		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.20		
Year to date precipitation	5.60		

	Actual	Average	Record
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.93** in		
Wind			
Wind Speed	**5** mph (SSE)		
Max Wind Speed	**22** mph		
Max Gust Speed	**25** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Sep. 02, 2018	**Rise**	**Set**
Actual Time	6:39 AM MDT	7:31 PM MDT
Civil Twilight	6:14 AM MDT	7:57 PM MDT
Nautical Twilight	5:43 AM MDT	8:27 PM MDT
Astronomical Twilight	5:12 AM MDT	8:59 PM MDT
Moon	No Moon Rise	1:29 PM MDT (9/2)
Length of Visible Light	13h 43m	
Length of Day	12h 51m	

Waning Gibbous, 54% of the Moon is Illuminated

Sep 2	Sep 2	Sep 9	Sep 16	Sep 24
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	**Temp.**	**Dew Point**	**Humidity**	**Pressure**	**Visibility**	**Wind Dir**	**Wind Speed**	**Gust Speed**	**Precip**	**Events**	**Conditi**
12:52 AM	**60.1** °F	**53.1** °F	78%	**29.94** in	**10.0** mi	South	**5.8** mph	-	N/A		Mostly Cloudy
1:52 AM	**60.1** °F	**52.0** °F	75%	**29.92** in	**10.0** mi	SE	**5.8** mph	-	N/A		Mostly Cloudy
2:52 AM	**59.0** °F	**52.0** °F	78%	**29.90** in	**10.0** mi	ESE	**3.5** mph	-	N/A		Mostly Cloudy
3:52 AM	**60.1** °F	**52.0** °F	75%	**29.91** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
4:52 AM	**60.1** °F	**52.0** °F	75%	**29.91** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
5:52 AM	**59.0** °F	**52.0** °F	78%	**29.93** in	**10.0** mi	North	**6.9** mph	-	N/A		Mostly Cloudy

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditi
6:52 AM	**57.9** °F	**51.1** °F	78%	**29.96** in	**10.0** mi	ESE	**3.5** mph	-	N/A		Mostly Cloudy
7:52 AM	**60.1** °F	**52.0** °F	75%	**29.97** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
8:52 AM	**63.0** °F	**53.1** °F	70%	**29.96** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
9:52 AM	**66.9** °F	**53.1** °F	61%	**29.96** in	**10.0** mi	West	**3.5** mph	-	N/A		Scattere Clouds
10:52 AM	**70.0** °F	**53.1** °F	55%	**29.94** in	**10.0** mi	Calm	Calm	-	N/A		Scattere Clouds
11:52 AM	**73.0** °F	**53.1** °F	49%	**29.94** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Mostly Cloudy
12:52 PM	**73.9** °F	**53.1** °F	48%	**29.94** in	**10.0** mi	SW	**6.9** mph	-	N/A		Mostly Cloudy
1:52 PM	**75.0** °F	**52.0** °F	44%	**29.91** in	**10.0** mi	WSW	**12.7** mph	-	N/A		Mostly Cloudy
2:52 PM	**77.0** °F	**46.9** °F	34%	**29.88** in	**10.0** mi	SSW	**8.1** mph	-	N/A		Mostly Cloudy
3:52 PM	**75.9** °F	**50.0** °F	40%	**29.86** in	**10.0** mi	WSW	**6.9** mph	-	N/A		Mostly Cloudy
4:52 PM	**77.0** °F	**50.0** °F	39%	**29.84** in	**10.0** mi	South	**8.1** mph	-	N/A		Mostly Cloudy
5:52 PM	**78.1** °F	**48.0** °F	35%	**29.84** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
6:52 PM	**77.0** °F	**50.0** °F	39%	**29.84** in	**10.0** mi	SW	**8.1** mph	-	N/A		Mostly Cloudy
7:52 PM	**75.9** °F	**50.0** °F	40%	**29.87** in	**10.0** mi	South	**6.9** mph	-	N/A		Mostly Cloudy
8:52 PM	**73.9** °F	**50.0** °F	43%	**29.89** in	**10.0** mi	WSW	**9.2** mph	-	N/A		Scattere Clouds
9:52 PM	**68.0** °F	**53.1** °F	59%	**29.92** in	**10.0** mi	ESE	**5.8** mph	-	N/A		Scattere Clouds
10:52 PM	**70.0** °F	**53.1** °F	55%	**29.93** in	**10.0** mi	East	**3.5** mph	-	N/A	Thunderstorm	Mostly Cloudy
11:07 PM	**70.0** °F	**53.1** °F	55%	**30.16** in	**10.0** mi	East	**6.9** mph	-	N/A	Thunderstorm	Thunde
11:25 PM	**66.9** °F	**53.1** °F	61%	**30.16** in	**10.0** mi	ENE	**15.0** mph	-	N/A		Mostly Cloudy
11:42 PM	**66.0** °F	**50.0** °F	56%	**30.16** in	**10.0** mi	East	**17.3** mph	-	N/A	Thunderstorm	Thunde
11:52 PM	**64.9** °F	**51.1** °F	61%	**29.94** in	**10.0** mi	ESE	**13.8** mph	-	N/A	Thunderstorm	Thunde

Albuquerque, NM

Albuquerque International Sunport

3:38 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - September, 2018

September

3

2018

View

Monday, September 3, 2018

Daily | Weekly | Monthly | Custom

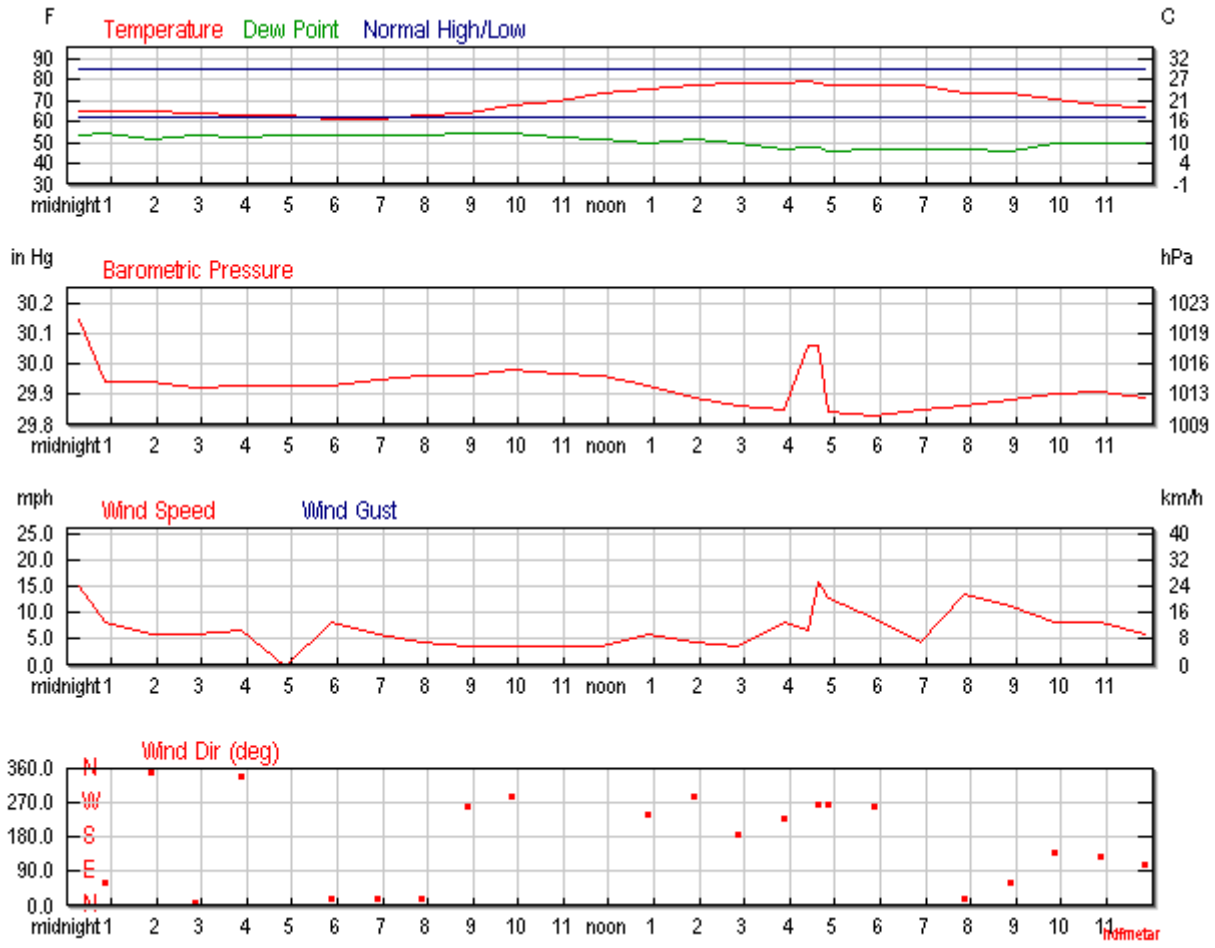
	Actual	Average	Record
Temperature			
Mean Temperature	**71** °F	-	
Max Temperature	**80** °F	-	- ()
Min Temperature	**61** °F	-	- ()
Cooling Degree Days	6		
Month to date cooling degree days	10		
Year to date cooling degree days	1496		
Growing Degree Days	20 (Base 50)		
Moisture			
Dew Point	**51** °F		
Average Humidity	55		
Maximum Humidity	78		
Minimum Humidity	32		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.20		
Year to date precipitation	5.60		

	Actual	Average	Record
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.92** in		
Wind			
Wind Speed	**6** mph (NNW)		
Max Wind Speed	**17** mph		
Max Gust Speed	**22** mph		
Visibility	**10** miles		
Events	Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Airport or City:

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Astronomy

Sep. 03, 2018	**Rise**	**Set**
Actual Time	6:40 AM MDT	7:30 PM MDT
Civil Twilight	6:14 AM MDT	7:55 PM MDT
Nautical Twilight	5:44 AM MDT	8:26 PM MDT
Astronomical Twilight	5:13 AM MDT	8:57 PM MDT
Moon	12:11 AM MDT (9/3)	2:33 PM MDT (9/3)
Length of Visible Light	13h 41m	
Length of Day	12h 49m	

Last Quarter, 43% of the Moon is Illuminated

Sep 3	Sep 9	Sep 16	Sep 24	Oct 2
Last Quarter	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	**Temp.**	**Dew Point**	**Humidity**	**Pressure**	**Visibility**	**Wind Dir**	**Wind Speed**	**Gust Speed**	**Precip**	**Events**	**Conditi**
12:16 AM	**64.9** °F	**53.1** °F	65%	**30.15** in	**10.0** mi	ENE	**15.0** mph	-	N/A		Scattere Clouds
12:52 AM	**64.9** °F	**54.0** °F	68%	**29.94** in	**10.0** mi	ENE	**8.1** mph	-	N/A		Scattere Clouds
1:52 AM	**64.9** °F	**51.1** °F	61%	**29.94** in	**10.0** mi	North	**5.8** mph	-	N/A		Mostly Cloudy
2:52 AM	**64.0** °F	**53.1** °F	67%	**29.92** in	**10.0** mi	North	**5.8** mph	-	N/A		Mostly Cloudy
3:52 AM	**63.0** °F	**52.0** °F	67%	**29.93** in	**10.0** mi	NNW	**6.9** mph	-	N/A		Mostly Cloudy
4:52 AM	**63.0** °F	**53.1** °F	70%	**29.93** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditi
5:52 AM	**61.0** °F	**53.1** °F	75%	**29.93** in	**10.0** mi	NNE	**8.1** mph	-	N/A		Mostly Cloudy
6:52 AM	**61.0** °F	**53.1** °F	75%	**29.95** in	**10.0** mi	NNE	**5.8** mph	-	N/A		Mostly Cloudy
7:52 AM	**63.0** °F	**53.1** °F	70%	**29.96** in	**10.0** mi	NNE	**4.6** mph	-	N/A		Mostly Cloudy
8:52 AM	**64.0** °F	**54.0** °F	70%	**29.96** in	**10.0** mi	West	**3.5** mph	-	N/A		Mostly Cloudy
9:52 AM	**68.0** °F	**54.0** °F	61%	**29.98** in	**10.0** mi	WNW	**3.5** mph	-	N/A		Mostly Cloudy
10:52 AM	**70.0** °F	**52.0** °F	53%	**29.97** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Mostly Cloudy
11:52 AM	**73.9** °F	**51.1** °F	45%	**29.96** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Mostly Cloudy
12:52 PM	**75.0** °F	**50.0** °F	41%	**29.93** in	**10.0** mi	WSW	**5.8** mph	-	N/A		Mostly Cloudy
1:52 PM	**77.0** °F	**51.1** °F	40%	**29.89** in	**10.0** mi	WNW	**4.6** mph	-	N/A		Mostly Cloudy
2:52 PM	**78.1** °F	**50.0** °F	37%	**29.86** in	**10.0** mi	South	**3.5** mph	-	N/A		Mostly Cloudy
3:52 PM	**78.1** °F	**46.9** °F	33%	**29.85** in	**10.0** mi	SW	**8.1** mph	-	N/A		Mostly Cloudy
4:25 PM	**79.0** °F	**48.0** °F	34%	**30.06** in	**10.0** mi	Variable	**6.9** mph	-	N/A	Thunderstorm	Mostly Cloudy
4:37 PM	**78.1** °F	**48.0** °F	35%	**30.06** in	**10.0** mi	West	**16.1** mph	-	N/A		Mostly Cloudy
4:52 PM	**77.0** °F	**46.0** °F	33%	**29.84** in	**10.0** mi	West	**12.7** mph	-	N/A		Mostly Cloudy
5:52 PM	**77.0** °F	**46.9** °F	34%	**29.83** in	**10.0** mi	West	**9.2** mph	-	N/A		Mostly Cloudy
6:52 PM	**77.0** °F	**46.9** °F	34%	**29.85** in	**10.0** mi	Variable	**4.6** mph	-	N/A		Mostly Cloudy
7:52 PM	**73.9** °F	**46.9** °F	38%	**29.86** in	**10.0** mi	NNE	**13.8** mph	-	N/A		Mostly Cloudy
8:52 PM	**73.9** °F	**46.0** °F	37%	**29.88** in	**10.0** mi	ENE	**11.5** mph	-	N/A		Mostly Cloudy
9:52 PM	**71.1** °F	**50.0** °F	47%	**29.90** in	**10.0** mi	SE	**8.1** mph	-	N/A		Mostly Cloudy
10:52 PM	**68.0** °F	**50.0** °F	52%	**29.91** in	**10.0** mi	SE	**8.1** mph	-	N/A		Mostly Cloudy
11:52 PM	**66.9** °F	**50.0** °F	54%	**29.89** in	**10.0** mi	ESE	**5.8** mph	-	N/A		Scattere Clouds

Albuquerque, NM

Albuquerque International Sunport

3:39 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - September, 2018

September

5

2018

View

Wednesday, September 5, 2018

Daily | Weekly | Monthly | Custom

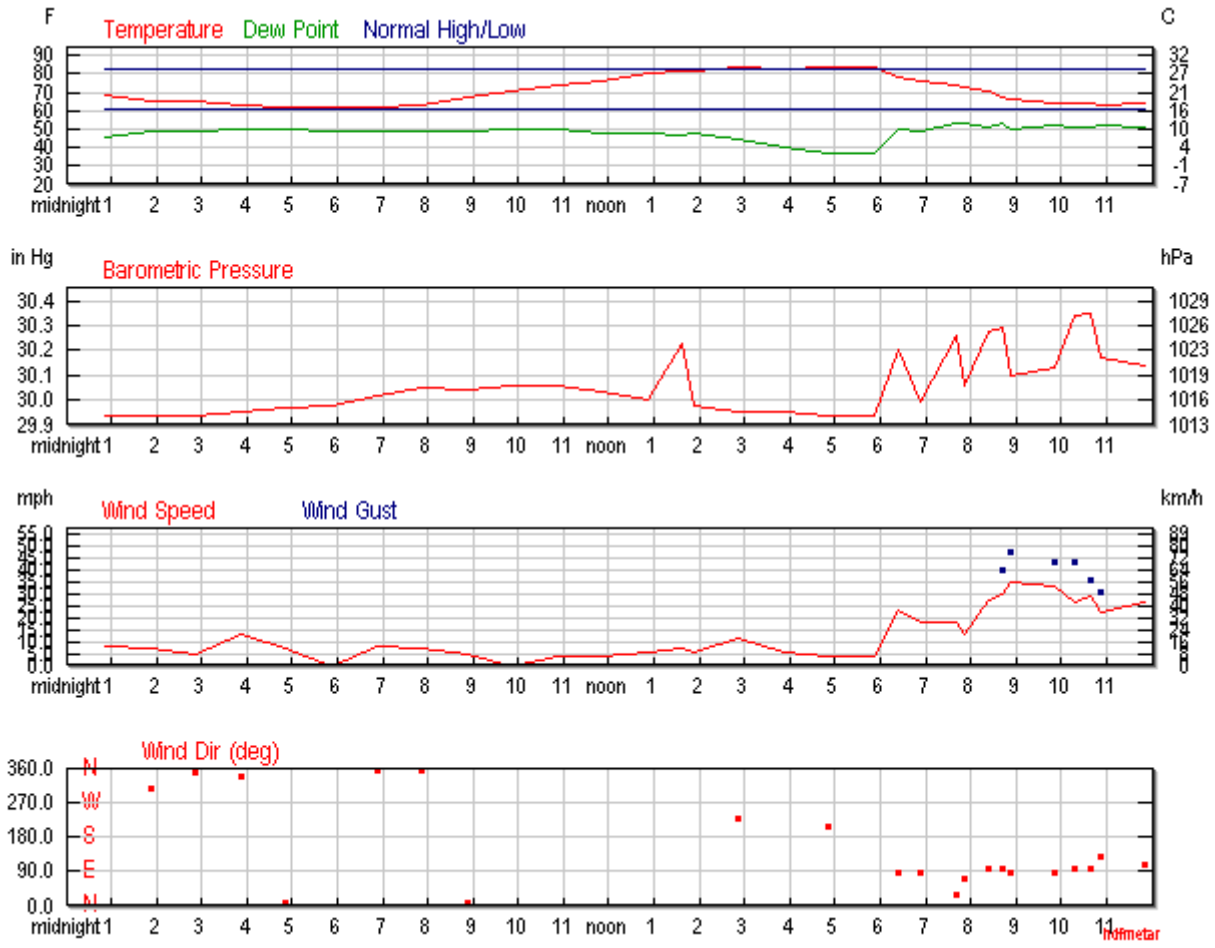
	Actual	Average	Record
Temperature			
Mean Temperature	**75** °F	-	
Max Temperature	**87** °F	-	- ()
Min Temperature	**62** °F	-	- ()
Cooling Degree Days	10		
Month to date cooling degree days	26		
Year to date cooling degree days	1512		
Growing Degree Days	24 (Base 50)		
Moisture			
Dew Point	**49** °F		
Average Humidity	43		
Maximum Humidity	67		
Minimum Humidity	19		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.20		
Year to date precipitation	5.60		

	Actual	Average	Record
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.06** in		
Wind			
Wind Speed	**11** mph (ENE)		
Max Wind Speed	**40** mph		
Max Gust Speed	**49** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Sep. 05, 2018	**Rise**	**Set**
Actual Time	6:42 AM MDT	7:27 PM MDT
Civil Twilight	6:16 AM MDT	7:53 PM MDT
Nautical Twilight	5:46 AM MDT	8:23 PM MDT
Astronomical Twilight	5:14 AM MDT	8:54 PM MDT
Moon	1:58 AM MDT (9/5)	4:35 PM MDT (9/5)
Length of Visible Light	13h 36m	
Length of Day	12h 45m	

Waning Crescent, 22% of the Moon is Illuminated

Sep 5	Sep 9	Sep 16	Sep 24	Oct 2
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	**Temp.**	**Dew Point**	**Humidity**	**Pressure**	**Visibility**	**Wind Dir**	**Wind Speed**	**Gust Speed**	**Precip**	**Events**	**Cond**
12:52 AM	**69.1** °F	**46.9** °F	45%	**29.94** in	**10.0** mi	NE	**8.1** mph	-	N/A		Most
1:52 AM	**66.0** °F	**50.0** °F	56%	**29.94** in	**10.0** mi	NW	**6.9** mph	-	N/A		Most
2:52 AM	**66.0** °F	**50.0** °F	56%	**29.94** in	**10.0** mi	North	**4.6** mph	-	N/A		Partly
3:52 AM	**64.0** °F	**51.1** °F	63%	**29.95** in	**10.0** mi	NNW	**12.7** mph	-	N/A		Partly
4:52 AM	**63.0** °F	**51.1** °F	65%	**29.97** in	**10.0** mi	North	**6.9** mph	-	N/A		Partly
5:52 AM	**63.0** °F	**50.0** °F	63%	**29.98** in	**10.0** mi	Calm	Calm	-	N/A		Clear

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
6:52 AM	**63.0** °F	**50.0** °F	63%	**30.02** in	**10.0** mi	North	**8.1** mph	-	N/A		Partly
7:52 AM	**64.0** °F	**50.0** °F	60%	**30.05** in	**10.0** mi	North	**6.9** mph	-	N/A		Partly
8:52 AM	**68.0** °F	**50.0** °F	52%	**30.04** in	**10.0** mi	North	**4.6** mph	-	N/A		Partly
9:52 AM	**72.0** °F	**51.1** °F	48%	**30.06** in	**10.0** mi	Calm	Calm	-	N/A		Partly
10:52 AM	**75.0** °F	**51.1** °F	43%	**30.06** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Scatt Cloud
11:52 AM	**77.0** °F	**48.9** °F	37%	**30.03** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Scatt Cloud
12:52 PM	**81.0** °F	**48.9** °F	33%	**30.00** in	**10.0** mi	Variable	**5.8** mph	-	N/A		Partly
1:37 PM	**82.9** °F	**48.0** °F	29%	**30.23** in	**10.0** mi	Variable	**6.9** mph	-	N/A		Partly
1:52 PM	**82.9** °F	**48.9** °F	31%	**29.98** in	**10.0** mi	Variable	**5.8** mph	-	N/A		Partly
2:52 PM	**84.9** °F	**45.0** °F	25%	**29.95** in	**10.0** mi	SW	**11.5** mph	-	N/A		Partly
3:52 PM	**84.0** °F	**41.0** °F	22%	**29.95** in	**10.0** mi	Variable	**5.8** mph	-	N/A		Scatt Cloud
4:52 PM	**84.9** °F	**37.9** °F	19%	**29.94** in	**10.0** mi	SSW	**3.5** mph	-	N/A		Most
5:52 PM	**84.9** °F	**37.9** °F	19%	**29.94** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Scatt Cloud
6:25 PM	**79.0** °F	**51.1** °F	38%	**30.20** in	**10.0** mi	East	**23.0** mph	**29.9** mph	N/A		Most
6:52 PM	**77.0** °F	**50.0** °F	39%	**29.99** in	**10.0** mi	East	**18.4** mph	-	N/A		Most
7:40 PM	**75.0** °F	**54.0** °F	48%	**30.26** in	**10.0** mi	NNE	**18.4** mph	**24.2** mph	**0.00** in	Rain	Light
7:52 PM	**73.9** °F	**54.0** °F	50%	**30.06** in	**10.0** mi	ENE	**12.7** mph	-	**0.00** in	Rain , Thunderstorm	Light Thun and F
8:23 PM	**72.0** °F	**52.0** °F	49%	**30.28** in	**10.0** mi	East	**27.6** mph	**36.8** mph	**0.00** in	Thunderstorm	Most
8:41 PM	**68.0** °F	**54.0** °F	61%	**30.29** in	**10.0** mi	East	**29.9** mph	**40.3** mph	**0.00** in		Most
8:52 PM	**66.9** °F	**51.1** °F	57%	**30.10** in	**10.0** mi	East	**34.5** mph	**47.2** mph	**0.00** in		Most

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
9:52 PM	**64.9** °F	**53.1** °F	65%	**30.13** in	**10.0** mi	East	**33.4** mph	**43.7** mph	N/A		Most
10:19 PM	**64.9** °F	**52.0** °F	63%	**30.34** in	**10.0** mi	East	**26.5** mph	**43.7** mph	**0.00** in	Thunderstorm	Most
10:39 PM	**64.9** °F	**52.0** °F	63%	**30.35** in	**10.0** mi	East	**28.8** mph	**35.7** mph	**0.00** in	Rain	Light
10:52 PM	**64.0** °F	**53.1** °F	67%	**30.17** in	**10.0** mi	SE	**21.9** mph	**31.1** mph	**0.00** in		Over
11:52 PM	**64.9** °F	**52.0** °F	63%	**30.14** in	**10.0** mi	ESE	**26.5** mph	-	N/A		Over

Albuquerque, NM

Albuquerque International Sunport

3:40 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - September, 2018

September

6

2018

View

Thursday, September 6, 2018

Daily | Weekly | Monthly | Custom

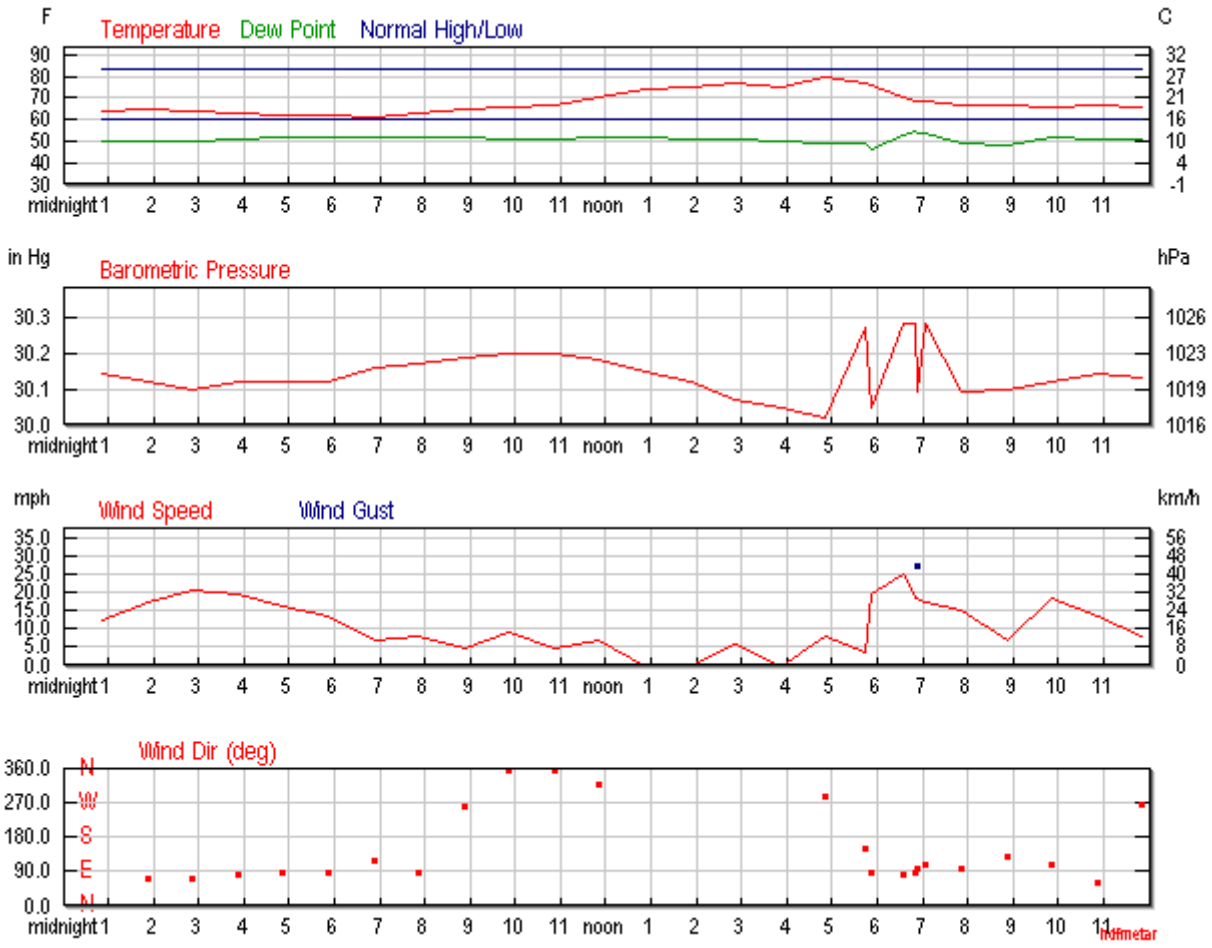
	Actual	Average	Record
Temperature			
Mean Temperature	**71** °F	-	
Max Temperature	**80** °F	-	- ()
Min Temperature	**62** °F	-	- ()
Cooling Degree Days	6		
Month to date cooling degree days	32		
Year to date cooling degree days	1518		
Growing Degree Days	21 (Base 50)		
Moisture			
Dew Point	**52** °F		
Average Humidity	53		
Maximum Humidity	72		
Minimum Humidity	33		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.20		
Year to date precipitation	5.60		

	Actual	Average	Record
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.14** in		
Wind			
Wind Speed	**10** mph (East)		
Max Wind Speed	**29** mph		
Max Gust Speed	**34** mph		
Visibility	**10** miles		
Events	Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Sep. 06, 2018	**Rise**	**Set**
Actual Time	6:42 AM MDT	7:26 PM MDT
Civil Twilight	6:17 AM MDT	7:51 PM MDT
Nautical Twilight	5:46 AM MDT	8:21 PM MDT
Astronomical Twilight	5:15 AM MDT	8:52 PM MDT
Moon	3:01 AM MDT (9/6)	5:30 PM MDT (9/6)
Length of Visible Light	13h 34m	
Length of Day	12h 43m	

Waning Crescent, 13% of the Moon is Illuminated

Sep 6	Sep 9	Sep 16	Sep 24	Oct 2
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	**Temp.**	**Dew Point**	**Humidity**	**Pressure**	**Visibility**	**Wind Dir**	**Wind Speed**	**Gust Speed**	**Precip**	**Events**	**Cond**
12:52 AM	**64.9** °F	**51.1** °F	61%	**30.14** in	**10.0** mi	East	**12.7** mph	**21.9** mph	N/A		Over
1:52 AM	**66.0** °F	**51.1** °F	59%	**30.12** in	**10.0** mi	ENE	**17.3** mph	-	N/A		Over
2:52 AM	**64.9** °F	**51.1** °F	61%	**30.10** in	**10.0** mi	ENE	**20.7** mph	-	N/A		Over
3:52 AM	**64.0** °F	**52.0** °F	65%	**30.12** in	**10.0** mi	East	**19.6** mph	-	N/A		Most Cloud
4:52 AM	**63.0** °F	**53.1** °F	70%	**30.12** in	**10.0** mi	East	**16.1** mph	-	N/A		Over
5:52 AM	**63.0** °F	**53.1** °F	70%	**30.12** in	**10.0** mi	East	**13.8** mph	-	N/A		Most Cloud

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
6:52 AM	**62.1** °F	**53.1** °F	72%	**30.16** in	**10.0** mi	ESE	**6.9** mph	-	N/A		Over
7:52 AM	**64.0** °F	**53.1** °F	67%	**30.17** in	**10.0** mi	East	**8.1** mph	-	N/A		Most Cloud
8:52 AM	**66.0** °F	**53.1** °F	63%	**30.19** in	**10.0** mi	West	**4.6** mph	-	N/A		Over
9:52 AM	**66.9** °F	**52.0** °F	59%	**30.20** in	**10.0** mi	North	**9.2** mph	-	N/A		Over
10:52 AM	**68.0** °F	**52.0** °F	56%	**30.20** in	**10.0** mi	North	**4.6** mph	-	N/A		Over
11:52 AM	**71.1** °F	**53.1** °F	53%	**30.18** in	**10.0** mi	NW	**6.9** mph	-	N/A		Over
12:52 PM	**75.0** °F	**53.1** °F	46%	**30.15** in	**10.0** mi	Calm	Calm	-	N/A		Most Cloud
1:52 PM	**75.9** °F	**52.0** °F	43%	**30.12** in	**10.0** mi	Calm	Calm	-	N/A		Most Cloud
2:52 PM	**78.1** °F	**52.0** °F	40%	**30.07** in	**10.0** mi	Variable	**5.8** mph	-	N/A		Most Cloud
3:52 PM	**75.9** °F	**51.1** °F	42%	**30.05** in	**10.0** mi	Calm	Calm	-	N/A		Scatt Cloud
4:52 PM	**80.1** °F	**50.0** °F	35%	**30.02** in	**10.0** mi	WNW	**8.1** mph	-	N/A		Most Cloud
5:43 PM	**78.1** °F	**50.0** °F	37%	**30.27** in	**10.0** mi	SSE	**3.5** mph	-	N/A	Thunderstorm	Most Cloud
5:52 PM	**77.0** °F	**46.9** °F	34%	**30.05** in	**10.0** mi	East	**19.6** mph	**27.6** mph	N/A	Thunderstorm	Most Cloud
6:35 PM	**71.1** °F	**54.0** °F	55%	**30.28** in	**10.0** mi	East	**25.3** mph	-	N/A	Thunderstorm	Thun
6:50 PM	**69.8** °F	**55.4** °F	60%	**30.28** in	**10.0** mi	East	**18.4** mph	**27.6** mph	N/A	Thunderstorm	Most Cloud
6:52 PM	**69.1** °F	**55.0** °F	61%	**30.09** in	**10.0** mi	East	**18.4** mph	**27.6** mph	N/A	Thunderstorm	Most Cloud
7:04 PM	**69.1** °F	**55.0** °F	61%	**30.28** in	**10.0** mi	ESE	**17.3** mph	-	N/A		Most Cloud
7:52 PM	**68.0** °F	**50.0** °F	52%	**30.09** in	**10.0** mi	East	**15.0** mph	-	N/A		Scatt Cloud
8:52 PM	**68.0** °F	**48.9** °F	50%	**30.10** in	**10.0** mi	SE	**6.9** mph	-	N/A		Scatt Cloud
9:52 PM	**66.9** °F	**53.1** °F	61%	**30.12** in	**10.0** mi	ESE	**18.4** mph	**24.2** mph	N/A		Scatt Cloud
10:52 PM	**68.0** °F	**52.0** °F	56%	**30.14** in	**10.0** mi	ENE	**13.8** mph	-	N/A		Scatt Cloud

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
11:52 PM	**66.9** °F	**52.0** °F	59%	**30.13** in	**10.0** mi	West	**8.1** mph	-	N/A		Most Cloud

Albuquerque, NM

Albuquerque International Sunport

3:41 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - September, 2018

September

7

2018

View

Friday, September 7, 2018

Daily | Weekly | Monthly | Custom

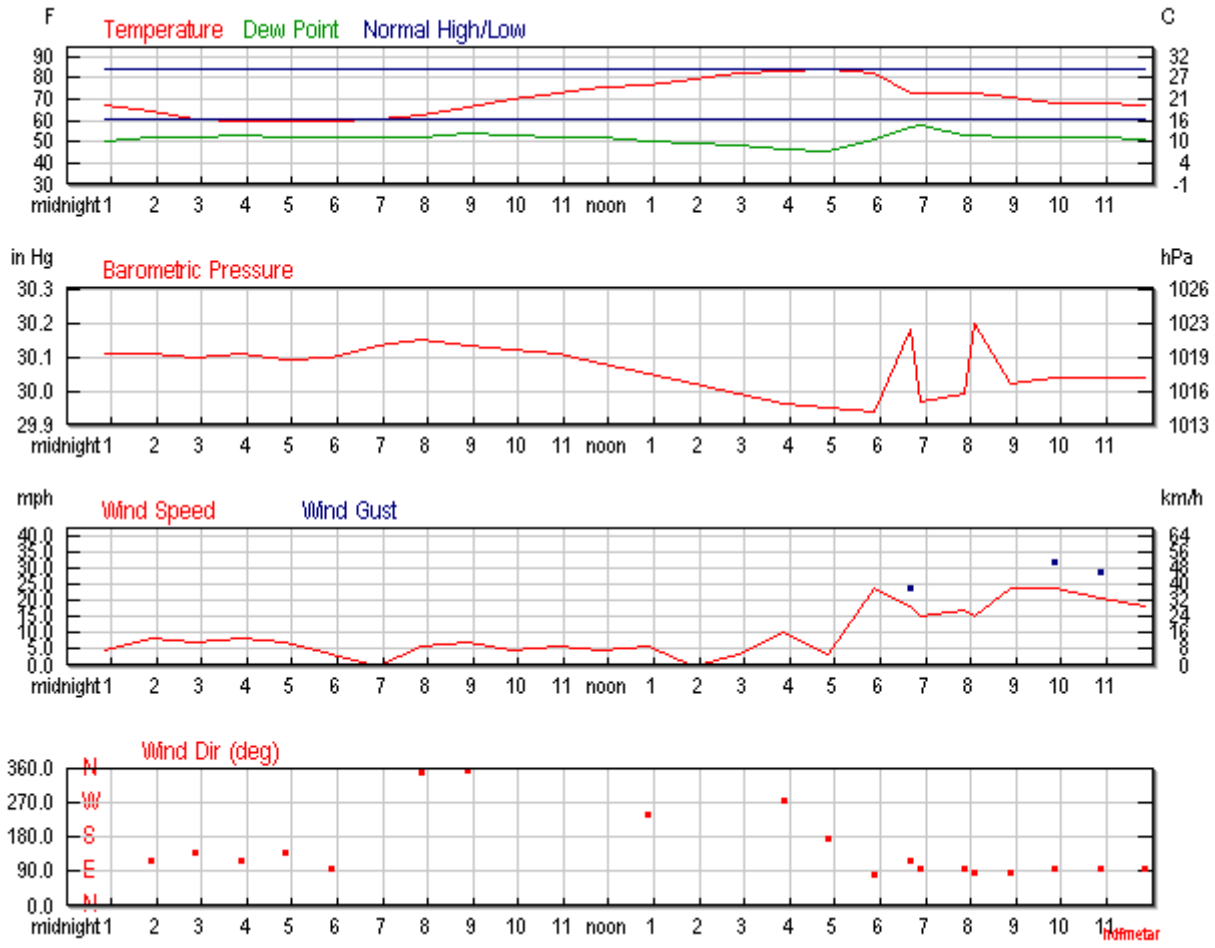
	Actual	Average	Record
Temperature			
Mean Temperature	**72** °F	-	
Max Temperature	**84** °F	-	- ()
Min Temperature	**59** °F	-	- ()
Cooling Degree Days	7		
Month to date cooling degree days	39		
Year to date cooling degree days	1525		
Growing Degree Days	22 (Base 50)		
Moisture			
Dew Point	**52** °F		
Average Humidity	53		
Maximum Humidity	78		
Minimum Humidity	27		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.20		
Year to date precipitation	5.60		

	Actual	Average	Record
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.06** in		
Wind			
Wind Speed	**11** mph (ESE)		
Max Wind Speed	**28** mph		
Max Gust Speed	**33** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Sep. 07, 2018	**Rise**	**Set**
Actual Time	6:43 AM MDT	7:24 PM MDT
Civil Twilight	6:17 AM MDT	7:50 PM MDT
Nautical Twilight	5:47 AM MDT	8:20 PM MDT
Astronomical Twilight	5:16 AM MDT	8:51 PM MDT
Moon	4:09 AM MDT (9/7)	6:19 PM MDT (9/7)
Length of Visible Light	13h 32m	
Length of Day	12h 41m	

Waning Crescent, 6% of the Moon is Illuminated

Sep 7	Sep 9	Sep 16	Sep 24	Oct 2
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	**Temp.**	**Dew Point**	**Humidity**	**Pressure**	**Visibility**	**Wind Dir**	**Wind Speed**	**Gust Speed**	**Precip**	**Events**	**Cond**
12:52 AM	**66.9** °F	**50.0** °F	54%	**30.11** in	**10.0** mi	WSW	**4.6** mph	-	N/A		Most Cloud
1:52 AM	**64.0** °F	**52.0** °F	65%	**30.11** in	**10.0** mi	ESE	**8.1** mph	-	N/A		Scatt Cloud
2:52 AM	**61.0** °F	**52.0** °F	72%	**30.10** in	**10.0** mi	SE	**6.9** mph	-	N/A		Partly Cloud
3:52 AM	**60.1** °F	**53.1** °F	78%	**30.11** in	**10.0** mi	ESE	**8.1** mph	-	N/A		Scatt Cloud
4:52 AM	**60.1** °F	**52.0** °F	75%	**30.09** in	**10.0** mi	SE	**6.9** mph	-	N/A		Most Cloud
5:52 AM	**60.1** °F	**52.0** °F	75%	**30.10** in	**10.0** mi	East	**3.5** mph	-	N/A		Partly Cloud

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
6:52 AM	**61.0** °F	**52.0** °F	72%	**30.13** in	**10.0** mi	Calm	Calm	-	N/A		Partly Cloud
7:52 AM	**62.6** °F	**51.8** °F	68%	**30.15** in	**10.0** mi	North	**5.8** mph	-	N/A		Partly Cloud
8:52 AM	**66.2** °F	**53.6** °F	64%	**30.13** in	**10.0** mi	North	**6.9** mph	-	N/A		Partly Cloud
9:52 AM	**70.0** °F	**53.1** °F	55%	**30.12** in	**10.0** mi	Variable	**4.6** mph	-	N/A		Partly Cloud
10:52 AM	**73.0** °F	**52.0** °F	48%	**30.11** in	**10.0** mi	Variable	**5.8** mph	-	N/A		Partly Cloud
11:52 AM	**75.9** °F	**52.0** °F	43%	**30.08** in	**10.0** mi	Variable	**4.6** mph	-	N/A		Partly Cloud
12:52 PM	**77.0** °F	**50.0** °F	39%	**30.05** in	**10.0** mi	WSW	**5.8** mph	-	N/A		Partly Cloud
1:52 PM	**79.0** °F	**48.9** °F	35%	**30.02** in	**10.0** mi	Calm	Calm	-	N/A		Partly Cloud
2:52 PM	**82.0** °F	**48.0** °F	30%	**29.99** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Partly Cloud
3:52 PM	**82.9** °F	**46.9** °F	28%	**29.96** in	**10.0** mi	West	**10.4** mph	**16.1** mph	N/A		Scatt Cloud
4:52 PM	**84.0** °F	**46.0** °F	26%	**29.95** in	**10.0** mi	South	**3.5** mph	-	N/A		Scatt Cloud
5:52 PM	**82.0** °F	**51.1** °F	34%	**29.94** in	**10.0** mi	East	**24.2** mph	**28.8** mph	N/A		Scatt Cloud
6:41 PM	**73.0** °F	**57.0** °F	57%	**30.18** in	**10.0** mi	ESE	**18.4** mph	**24.2** mph	**0.00** in	Rain , Thunderstorm	Light
6:52 PM	**73.0** °F	**57.9** °F	59%	**29.97** in	**10.0** mi	East	**15.0** mph	-	**0.00** in	Thunderstorm	Most Cloud
7:52 PM	**73.0** °F	**53.1** °F	49%	**29.99** in	**10.0** mi	East	**17.3** mph	-	N/A	Thunderstorm	Scatt Cloud
8:04 PM	**73.0** °F	**53.1** °F	49%	**30.20** in	**10.0** mi	East	**15.0** mph	-	N/A		Scatt Cloud
8:52 PM	**71.1** °F	**52.0** °F	51%	**30.02** in	**10.0** mi	East	**24.2** mph	**31.1** mph	N/A		Most Cloud
9:52 PM	**68.0** °F	**52.0** °F	56%	**30.04** in	**10.0** mi	East	**24.2** mph	**32.2** mph	N/A		Most Cloud
10:52 PM	**68.0** °F	**52.0** °F	56%	**30.04** in	**10.0** mi	East	**20.7** mph	**28.8** mph	N/A		Most Cloud
11:52 PM	**66.9** °F	**51.1** °F	57%	**30.04** in	**10.0** mi	East	**18.4** mph	-	N/A		Scatt Cloud

Albuquerque, NM

Albuquerque International Sunport

3:42 PM MDT on September 18, 2018 (GMT -0600)

Weather History for KABQ - September, 2018

September

9

2018

View
Sunday, September 9, 2018

Daily | Weekly | Monthly | Custom

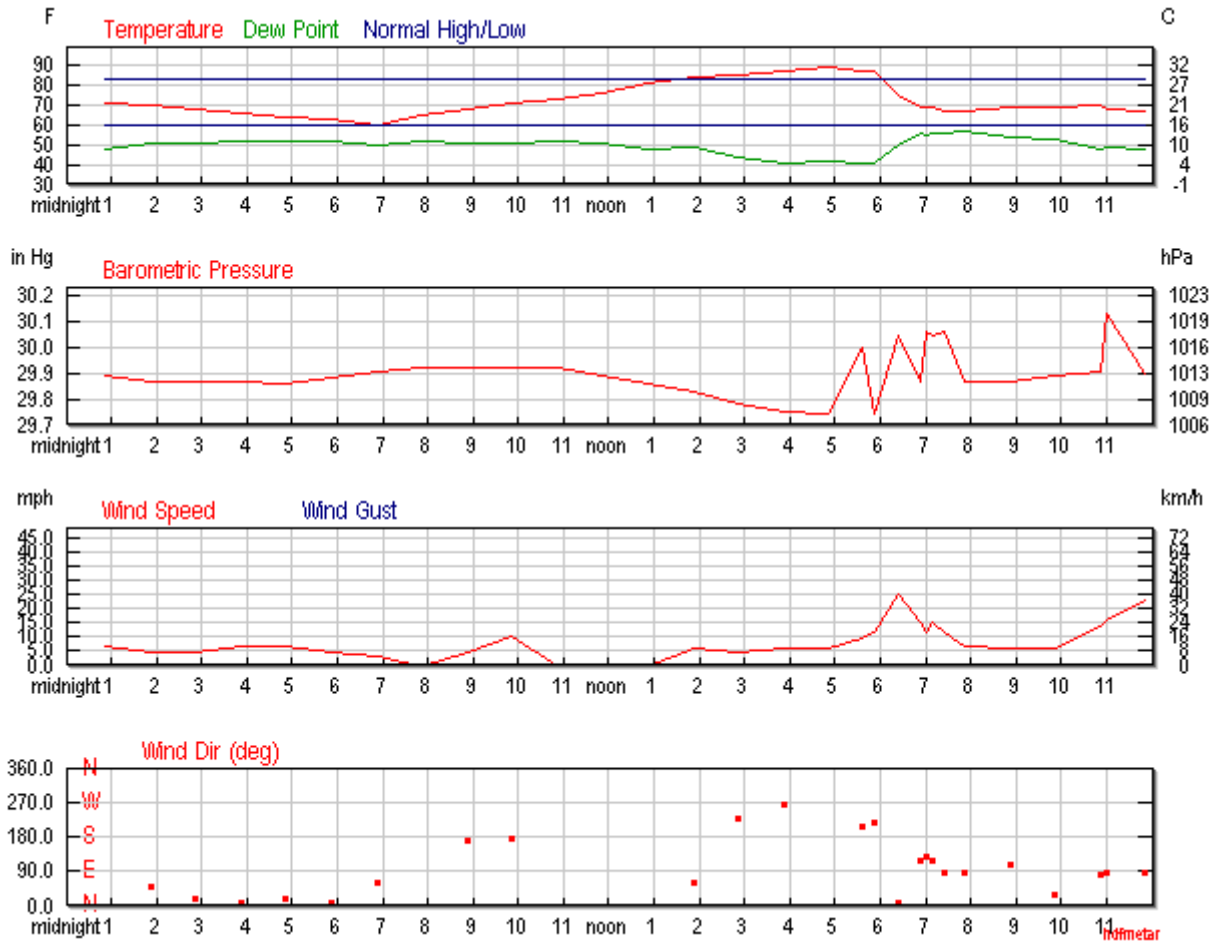
	Actual	Average	Record
Temperature			
Mean Temperature	**75** °F	-	
Max Temperature	**89** °F	-	- ()
Min Temperature	**60** °F	-	- ()
Cooling Degree Days	10		
Month to date cooling degree days	57		
Year to date cooling degree days	1543		
Growing Degree Days	24 (Base 50)		
Moisture			
Dew Point	**50** °F		
Average Humidity	44		
Maximum Humidity	69		
Minimum Humidity	19		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.51		
Year to date precipitation	5.91		

	Actual	Average	Record
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.89** in		
Wind			
Wind Speed	**7** mph (ENE)		
Max Wind Speed	**29** mph		
Max Gust Speed	**38** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Astronomy

Sep. 09, 2018	**Rise**	**Set**
Actual Time	6:45 AM MDT	7:21 PM MDT
Civil Twilight	6:19 AM MDT	7:47 PM MDT
Nautical Twilight	5:49 AM MDT	8:17 PM MDT
Astronomical Twilight	5:18 AM MDT	8:48 PM MDT
Moon	6:30 AM MDT (9/9)	7:43 PM MDT (9/9)
Length of Visible Light	13h 27m	
Length of Day	12h 36m	

New Moon, 0% of the Moon is Illuminated

Sep 9	Sep 9	Sep 16	Sep 24	Oct 2
New Moon	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	**Temp.**	**Dew Point**	**Humidity**	**Pressure**	**Visibility**	**Wind Dir**	**Wind Speed**	**Gust Speed**	**Precip**	**Events**	**Cond**
12:52 AM	**71.1** °F	**48.0** °F	44%	**29.89** in	**10.0** mi	North	**6.9** mph	-	N/A		Clear
1:52 AM	**70.0** °F	**51.1** °F	51%	**29.87** in	**10.0** mi	NE	**4.6** mph	-	N/A		Clear
2:52 AM	**68.0** °F	**51.1** °F	55%	**29.87** in	**10.0** mi	NNE	**4.6** mph	-	N/A		Clear
3:52 AM	**66.0** °F	**52.0** °F	60%	**29.87** in	**10.0** mi	North	**6.9** mph	-	N/A		Clear
4:52 AM	**64.0** °F	**52.0** °F	65%	**29.86** in	**10.0** mi	NNE	**6.9** mph	-	N/A		Clear
5:52 AM	**63.0** °F	**52.0** °F	67%	**29.88** in	**10.0** mi	North	**4.6** mph	-	N/A		Clear

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
6:52 AM	**60.1** °F	**50.0** °F	69%	**29.91** in	**10.0** mi	ENE	**3.5** mph	-	N/A		Partly
7:52 AM	**64.9** °F	**52.0** °F	63%	**29.92** in	**10.0** mi	Calm	Calm	-	N/A		Partly
8:52 AM	**68.0** °F	**51.1** °F	55%	**29.92** in	**10.0** mi	South	**4.6** mph	-	N/A		Partly
9:52 AM	**71.1** °F	**51.1** °F	49%	**29.92** in	**10.0** mi	South	**10.4** mph	-	N/A		Partly
10:52 AM	**73.0** °F	**52.0** °F	48%	**29.92** in	**10.0** mi	Calm	Calm	-	N/A		Partly
11:52 AM	**75.9** °F	**51.1** °F	42%	**29.89** in	**10.0** mi	Calm	Calm	-	N/A		Partly
12:52 PM	**81.0** °F	**48.0** °F	31%	**29.86** in	**10.0** mi	Calm	Calm	-	N/A		Partly
1:52 PM	**84.0** °F	**48.9** °F	29%	**29.83** in	**10.0** mi	ENE	**5.8** mph	-	N/A		Partly
2:52 PM	**84.9** °F	**44.1** °F	24%	**29.78** in	**10.0** mi	SW	**4.6** mph	-	N/A		Scatt Cloud
3:52 PM	**87.1** °F	**41.0** °F	20%	**29.75** in	**10.0** mi	West	**5.8** mph	-	N/A		Scatt Cloud
4:52 PM	**89.1** °F	**42.1** °F	19%	**29.74** in	**10.0** mi	Variable	**5.8** mph	-	N/A		Scatt Cloud
5:37 PM	**87.1** °F	**41.0** °F	20%	**30.00** in	**10.0** mi	SSW	**9.2** mph	-	N/A	Thunderstorm	Scatt Cloud
5:52 PM	**87.1** °F	**41.0** °F	20%	**29.74** in	**10.0** mi	SW	**11.5** mph	-	N/A	Thunderstorm	Scatt Cloud
6:24 PM	**75.2** °F	**50.0** °F	41%	**30.05** in	**9.0** mi	North	**25.3** mph	**38.0** mph	**0.00** in	Rain , Thunderstorm	Light Thun and F
6:52 PM	**69.1** °F	**55.9** °F	63%	**29.87** in	**7.0** mi	ESE	**15.0** mph	-	**0.30** in	Rain , Thunderstorm	Light Thun and F
7:02 PM	**69.1** °F	**55.0** °F	61%	**30.06** in	**10.0** mi	SE	**11.5** mph	-	**0.00** in	Rain , Thunderstorm	Light Thun and F
7:08 PM	**69.1** °F	**55.9** °F	63%	**30.05** in	**10.0** mi	ESE	**15.0** mph	**19.6** mph	**0.01** in	Rain , Thunderstorm	Light
7:26 PM	**66.9** °F	**55.9** °F	68%	**30.06** in	**10.0** mi	East	**11.5** mph	-	**0.01** in		Most
7:52 PM	**66.9** °F	**57.0** °F	70%	**29.87** in	**10.0** mi	East	**6.9** mph	-	**0.01** in		Most
8:52 PM	**69.1** °F	**54.0** °F	58%	**29.87** in	**10.0** mi	ESE	**5.8** mph	-	N/A		Scatt Cloud

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
9:52 PM	**69.1** °F	**53.1** °F	57%	**29.89** in	**10.0** mi	NNE	**5.8** mph	-	N/A		Scatt Cloud
10:52 PM	**70.0** °F	**48.0** °F	46%	**29.91** in	**10.0** mi	East	**13.8** mph	**20.7** mph	N/A		Partly
11:01 PM	**68.0** °F	**48.9** °F	50%	**30.13** in	**10.0** mi	East	**16.1** mph	-	N/A		Partly
11:52 PM	**66.9** °F	**48.0** °F	51%	**29.90** in	**10.0** mi	East	**23.0** mph	**31.1** mph	N/A		Partly

Albuquerque, NM

Albuquerque International Sunport

1:47 PM MDT on September 21, 2018 (GMT -0600)

Weather History for KABQ - September, 2018

September

19

2018

View

Wednesday, September 19, 2018

Daily | Weekly | Monthly | Custom

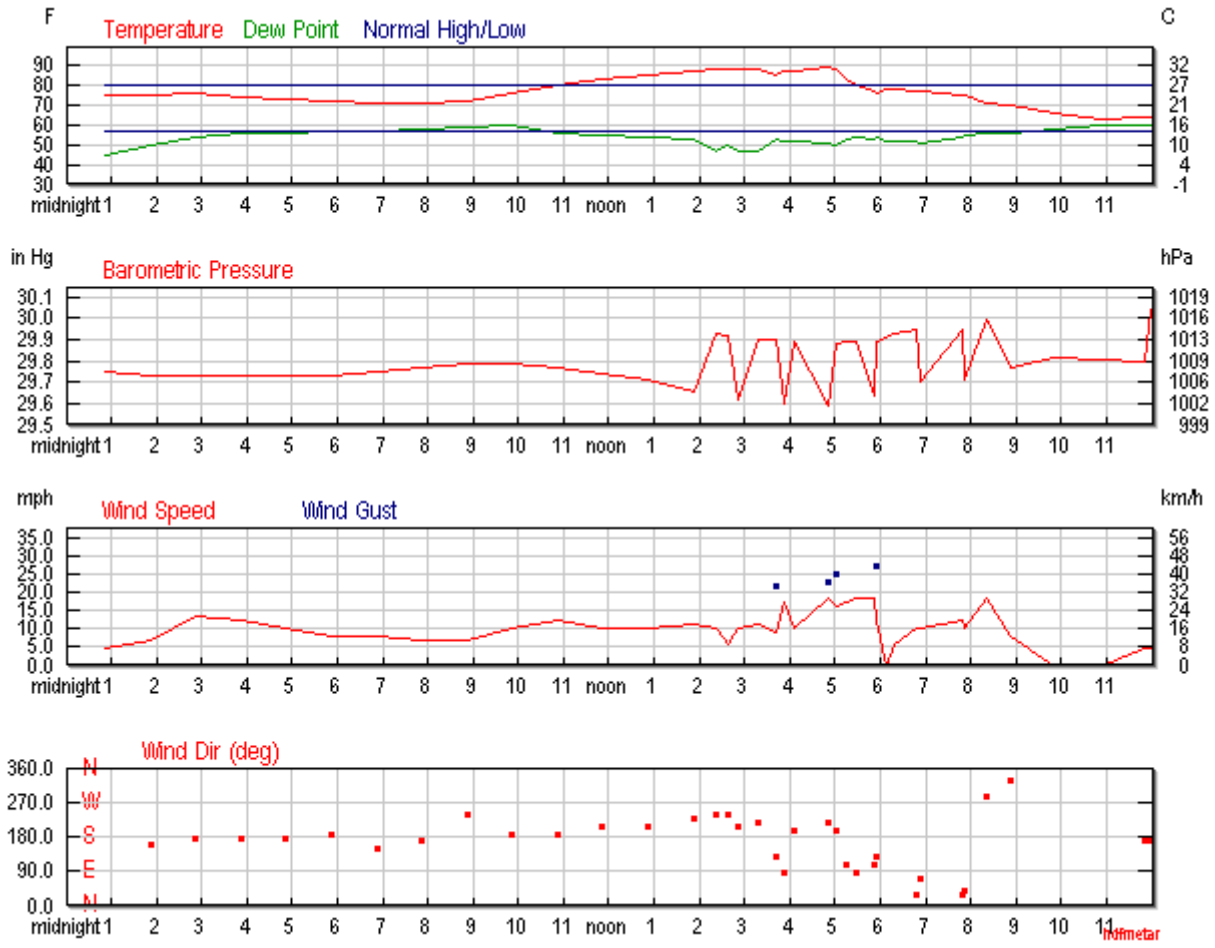
	Actual	Average	Record
Temperature			
Mean Temperature	**76** °F	-	
Max Temperature	**89** °F	-	- ()
Min Temperature	**63** °F	-	- ()
Cooling Degree Days	11		
Month to date cooling degree days	176		
Year to date cooling degree days	1662		
Growing Degree Days	26 (Base 50)		
Moisture			
Dew Point	**54** °F		
Average Humidity	59		
Maximum Humidity	93		
Minimum Humidity	24		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.62		
Year to date precipitation	6.02		

	Actual	Average	Record
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.79** in		
Wind			
Wind Speed	**10** mph (South)		
Max Wind Speed	**26** mph		
Max Gust Speed	**32** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Sep. 19, 2018	**Rise**	**Set**
Actual Time	6:52 AM MDT	7:07 PM MDT
Civil Twilight	6:26 AM MDT	7:32 PM MDT
Nautical Twilight	5:57 AM MDT	8:02 PM MDT
Astronomical Twilight	5:27 AM MDT	8:32 PM MDT
Moon	4:15 PM MDT (9/19)	1:47 AM MDT (9/19)
Length of Visible Light	13h 05m	
Length of Day	12h 15m	

Waxing Gibbous, 75% of the Moon is Illuminated

Sep 19	Sep 24	Oct 2	Oct 8	Oct 16
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MDT)	**Temp.**	**Heat Index**	**Dew Point**	**Humidity**	**Pressure**	**Visibility**	**Wind Dir**	**Wind Speed**	**Gust Speed**	**Precip**	**Events**
12:52 AM	**75.0** °F	-	**45.0** °F	34%	**29.75** in	**10.0** mi	ESE	**4.6** mph	-	N/A	
1:52 AM	**75.0** °F	-	**50.0** °F	41%	**29.73** in	**10.0** mi	SSE	**6.9** mph	-	N/A	
2:52 AM	**75.9** °F	-	**54.0** °F	46%	**29.73** in	**10.0** mi	South	**13.8** mph	-	N/A	
3:52 AM	**73.9** °F	-	**55.9** °F	53%	**29.73** in	**10.0** mi	South	**12.7** mph	-	N/A	
4:52 AM	**73.0** °F	-	**55.9** °F	55%	**29.73** in	**10.0** mi	South	**10.4** mph	-	N/A	
5:52 AM	**72.0** °F	-	**57.0** °F	59%	**29.73** in	**10.0** mi	South	**8.1** mph	-	N/A	

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
6:52 AM	**71.1** °F	-	**57.0** °F	61%	**29.75** in	**10.0** mi	SSE	**8.1** mph	-	N/A	
7:52 AM	**71.1** °F	-	**57.9** °F	63%	**29.77** in	**10.0** mi	South	**6.9** mph	-	N/A	
8:52 AM	**72.0** °F	-	**59.0** °F	64%	**29.79** in	**10.0** mi	WSW	**6.9** mph	-	N/A	
9:52 AM	**75.9** °F	-	**60.1** °F	58%	**29.79** in	**10.0** mi	South	**10.4** mph	-	N/A	
10:52 AM	**80.1** °F	**80.2** °F	**55.9** °F	43%	**29.77** in	**10.0** mi	South	**12.7** mph	-	N/A	
11:52 AM	**82.9** °F	**82.0** °F	**55.0** °F	38%	**29.74** in	**10.0** mi	SSW	**10.4** mph	**16.1** mph	N/A	
12:52 PM	**84.9** °F	**83.3** °F	**54.0** °F	34%	**29.71** in	**10.0** mi	SSW	**10.4** mph	-	N/A	
1:52 PM	**87.1** °F	**84.9** °F	**53.1** °F	31%	**29.66** in	**10.0** mi	SW	**11.5** mph	-	N/A	
2:23 PM	**88.0** °F	-	**46.9** °F	24%	**29.93** in	**10.0** mi	WSW	**10.4** mph	**19.6** mph	N/A	Thunderstor
2:38 PM	**88.0** °F	-	**50.0** °F	27%	**29.92** in	**10.0** mi	WSW	**5.8** mph	-	N/A	
2:52 PM	**88.0** °F	-	**46.9** °F	24%	**29.62** in	**10.0** mi	SSW	**10.4** mph	-	N/A	
3:17 PM	**88.0** °F	-	**46.9** °F	24%	**29.90** in	**10.0** mi	SW	**11.5** mph	**18.4** mph	N/A	Thunderstor
3:42 PM	**84.9** °F	**83.2** °F	**53.1** °F	33%	**29.90** in	**10.0** mi	SE	**9.2** mph	**21.9** mph	N/A	Thunderstor
3:52 PM	**87.1** °F	-	**52.0** °F	30%	**29.60** in	**10.0** mi	East	**17.3** mph	-	N/A	
4:07 PM	**87.1** °F	-	**52.0** °F	30%	**29.89** in	**10.0** mi	SSW	**10.4** mph	**21.9** mph	N/A	
4:52 PM	**89.1** °F	-	**51.1** °F	27%	**29.59** in	**10.0** mi	SW	**18.4** mph	**23.0** mph	N/A	Thunderstor
5:02 PM	**88.0** °F	-	**50.0** °F	27%	**29.88** in	**10.0** mi	SSW	**16.1** mph	**25.3** mph	N/A	Thunderstor
5:16 PM	**82.9** °F	**81.8** °F	**53.1** °F	36%	**29.89** in	**10.0** mi	ESE	**17.3** mph	-	N/A	Thunderstor
5:28 PM	**80.1** °F	**80.0** °F	**54.0** °F	40%	**29.89** in	**10.0** mi	East	**18.4** mph	-	N/A	Thunderstor
5:52 PM	**77.0** °F	-	**53.1** °F	43%	**29.64** in	**10.0** mi	ESE	**18.4** mph	**27.6** mph	N/A	Thunderstor
5:55 PM	**75.9** °F	-	**54.0** °F	46%	**29.89** in	**10.0** mi	SE	**12.7** mph	**27.6** mph	N/A	Thunderstor

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events
6:07 PM	**78.1** °F	-	**52.0** °F	40%	**29.91** in	**10.0** mi	Calm	Calm	-	N/A	Thunderstor
6:18 PM	**78.1** °F	-	**52.0** °F	40%	**29.93** in	**10.0** mi	Variable	**5.8** mph	-	N/A	Thunderstor
6:48 PM	**77.0** °F	-	**51.8** °F	41%	**29.95** in	**10.0** mi	NNE	**10.4** mph	-	N/A	
6:52 PM	**77.0** °F	-	**51.1** °F	40%	**29.70** in	**10.0** mi	ENE	**10.4** mph	-	N/A	
7:48 PM	**75.2** °F	-	**53.6** °F	47%	**29.95** in	**10.0** mi	NNE	**12.7** mph	-	N/A	Thunderstor
7:52 PM	**75.0** °F	-	**55.0** °F	50%	**29.71** in	**10.0** mi	NE	**10.4** mph	-	N/A	Thunderstor
8:21 PM	**71.1** °F	-	**55.9** °F	59%	**29.99** in	**10.0** mi	WNW	**18.4** mph	-	N/A	Thunderstor
8:52 PM	**70.0** °F	-	**55.9** °F	61%	**29.77** in	**10.0** mi	NNW	**8.1** mph	-	N/A	
9:52 PM	**66.0** °F	-	**57.9** °F	75%	**29.82** in	**5.0** mi	Calm	Calm	-	**0.03** in	Rain
10:52 PM	**63.0** °F	-	**60.1** °F	90%	**29.81** in	**9.0** mi	Calm	Calm	-	**0.08** in	Rain
11:52 PM	**64.0** °F	-	**60.1** °F	87%	**29.80** in	**10.0** mi	South	**4.6** mph	-	**0.00** in	
11:58 PM	**64.0** °F	-	**60.1** °F	87%	**30.04** in	**10.0** mi	South	**4.6** mph	-	N/A	

Albuquerque, NM

Albuquerque International Sunport

1:48 PM MDT on September 21, 2018 (GMT -0600)

Weather History for KABQ - September, 2018

September

20

2018

View
Thursday, September 20, 2018

Daily | Weekly | Monthly | Custom

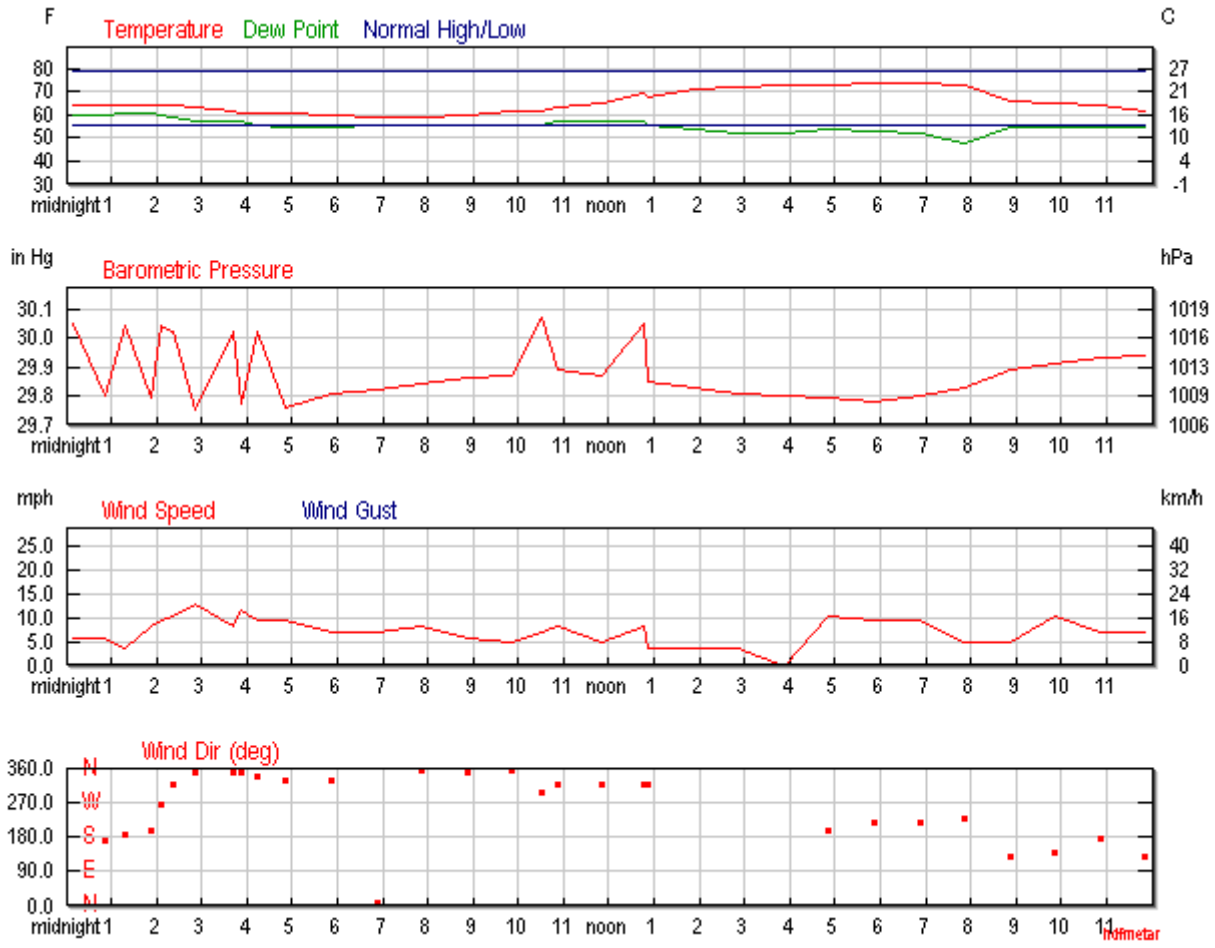
	Actual	Average	Record
Temperature			
Mean Temperature	**67** °F	-	
Max Temperature	**75** °F	-	- ()
Min Temperature	**59** °F	-	- ()
Cooling Degree Days	2		
Month to date cooling degree days	178		
Year to date cooling degree days	1664		
Growing Degree Days	17 (Base 50)		
Moisture			
Dew Point	**56** °F		
Average Humidity	66		
Maximum Humidity	90		
Minimum Humidity	41		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.69		
Year to date precipitation	6.09		

	Actual	Average	Record
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.88** in		
Wind			
Wind Speed	**7** mph (WNW)		
Max Wind Speed	**17** mph		
Max Gust Speed	**21** mph		
Visibility	**9** miles		
Events	Rain		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



Search for Another Location

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KABQ

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Astronomy

Sep. 20, 2018	**Rise**	**Set**
Actual Time	6:53 AM MDT	7:05 PM MDT
Civil Twilight	6:27 AM MDT	7:31 PM MDT
Nautical Twilight	5:58 AM MDT	8:00 PM MDT
Astronomical Twilight	5:28 AM MDT	8:30 PM MDT
Moon	4:56 PM MDT (9/20)	2:39 AM MDT (9/20)
Length of Visible Light	13h 03m	
Length of Day	12h 12m	

Waxing Gibbous, 83% of the Moon is Illuminated

Sep 20	Sep 24	Oct 2	Oct 8	Oct 16
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MDT)	**Temp.**	**Dew Point**	**Humidity**	**Pressure**	**Visibility**	**Wind Dir**	**Wind Speed**	**Gust Speed**	**Precip**	**Events**	**Conditions**
12:09 AM	**64.0** °F	**60.1** °F	87%	**30.05** in	**10.0** mi	SSW	**5.8** mph	-	N/A		Mostly Cloudy
12:52 AM	**64.0** °F	**60.1** °F	87%	**29.80** in	**10.0** mi	South	**5.8** mph	-	N/A		Overcast
1:19 AM	**64.0** °F	**61.0** °F	90%	**30.04** in	**10.0** mi	South	**3.5** mph	-	**0.00** in	Rain	Light Rain
1:52 AM	**64.0** °F	**61.0** °F	90%	**29.79** in	**8.0** mi	SSW	**8.1** mph	-	**0.02** in	Rain	Light Rain
2:05 AM	**64.0** °F	**60.1** °F	87%	**30.04** in	**6.0** mi	West	**9.2** mph	-	**0.00** in	Rain	Light Rain
2:22 AM	**64.0** °F	**59.0** °F	84%	**30.02** in	**8.0** mi	NW	**10.4** mph	-	**0.00** in	Rain	Light Rain

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
2:52 AM	**63.0** °F	**57.0** °F	81%	**29.75** in	**10.0** mi	North	**12.7** mph	-	**0.00** in	Rain	Light Rain
3:42 AM	**62.1** °F	**57.0** °F	84%	**30.02** in	**8.0** mi	North	**8.1** mph	-	**0.00** in	Rain	Light Rain
3:52 AM	**61.0** °F	**57.0** °F	87%	**29.77** in	**8.0** mi	North	**11.5** mph	-	**0.00** in	Rain	Light Rain
4:13 AM	**61.0** °F	**55.9** °F	83%	**30.02** in	**8.0** mi	NNW	**9.2** mph	**18.4** mph	**0.00** in	Rain	Light Rain
4:52 AM	**61.0** °F	**55.0** °F	81%	**29.76** in	**8.0** mi	NNW	**9.2** mph	-	**0.00** in	Rain	Light Rain
5:52 AM	**60.1** °F	**55.0** °F	83%	**29.81** in	**7.0** mi	NNW	**6.9** mph	-	**0.01** in	Rain	Light Rain
6:52 AM	**59.0** °F	**55.9** °F	90%	**29.82** in	**8.0** mi	North	**6.9** mph	-	**0.01** in	Rain	Light Rain
7:52 AM	**59.0** °F	**55.9** °F	90%	**29.84** in	**6.0** mi	North	**8.1** mph	-	**0.03** in	Rain	Light Rain
8:52 AM	**60.1** °F	**55.9** °F	86%	**29.86** in	**10.0** mi	North	**5.8** mph	-	**0.00** in		Overcast
9:52 AM	**62.1** °F	**55.9** °F	80%	**29.87** in	**10.0** mi	North	**4.6** mph	-	N/A		Overcast
10:30 AM	**62.1** °F	**55.9** °F	80%	**30.07** in	**10.0** mi	WNW	**6.9** mph	-	N/A		Mostly Cloudy
10:52 AM	**63.0** °F	**57.0** °F	81%	**29.89** in	**10.0** mi	NW	**8.1** mph	-	N/A		Mostly Cloudy
11:52 AM	**64.9** °F	**57.0** °F	75%	**29.87** in	**10.0** mi	NW	**4.6** mph	-	N/A		Overcast
12:47 PM	**69.8** °F	**57.2** °F	64%	**30.05** in	**10.0** mi	NW	**8.1** mph	-	N/A		Mostly Cloudy
12:52 PM	**68.0** °F	**55.9** °F	65%	**29.85** in	**10.0** mi	NW	**3.5** mph	-	N/A		Mostly Cloudy
1:52 PM	**71.1** °F	**54.0** °F	55%	**29.83** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Mostly Cloudy
2:52 PM	**72.0** °F	**52.0** °F	49%	**29.81** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Mostly Cloudy
3:52 PM	**73.0** °F	**52.0** °F	48%	**29.80** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
4:52 PM	**73.0** °F	**54.0** °F	51%	**29.79** in	**10.0** mi	SSW	**10.4** mph	-	N/A		Mostly Cloudy
5:52 PM	**73.9** °F	**53.1** °F	48%	**29.78** in	**10.0** mi	SW	**9.2** mph	-	N/A		Mostly Cloudy
6:52 PM	**73.9** °F	**52.0** °F	46%	**29.80** in	**10.0** mi	SW	**9.2** mph	-	N/A		Scattered Clouds

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
7:52 PM	**73.0** °F	**48.0** °F	41%	**29.83** in	**10.0** mi	SW	**4.6** mph	-	N/A		Scattered Clouds
8:52 PM	**66.0** °F	**55.0** °F	68%	**29.89** in	**10.0** mi	SE	**4.6** mph	-	N/A		Partly Cloudy
9:52 PM	**64.9** °F	**55.0** °F	70%	**29.91** in	**10.0** mi	SE	**10.4** mph	-	N/A		Clear
10:52 PM	**64.0** °F	**55.0** °F	73%	**29.93** in	**10.0** mi	South	**6.9** mph	-	N/A		Clear
11:52 PM	**62.1** °F	**55.0** °F	78%	**29.94** in	**10.0** mi	SE	**6.9** mph	-	N/A		Clear

Albuquerque, NM

Albuquerque International Sunport

9:10 AM MDT on September 26, 2018 (GMT -0600)

Weather History for KABQ - September, 2018

September

25

2018

View
Tuesday, September 25, 2018

Daily | Weekly | Monthly | Custom

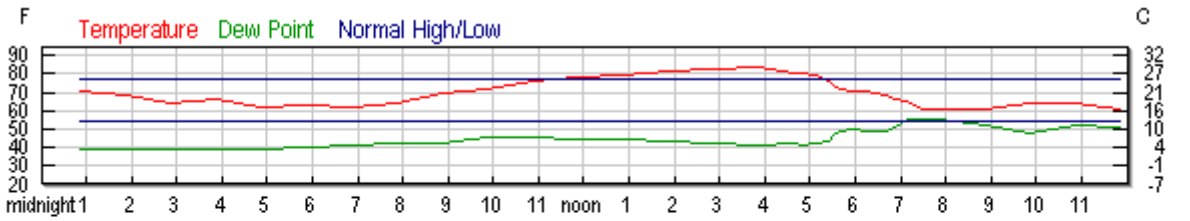
	Actual	Average	Record
Temperature			
Mean Temperature	**72** °F	-	
Max Temperature	**85** °F	-	- ()
Min Temperature	**59** °F	-	- ()
Cooling Degree Days	7		
Month to date cooling degree days	204		
Year to date cooling degree days	1690		
Growing Degree Days	22 (Base 50)		
Moisture			
Dew Point	**45** °F		
Average Humidity	53		
Maximum Humidity	84		
Minimum Humidity	22		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.83		
Year to date precipitation	6.23		

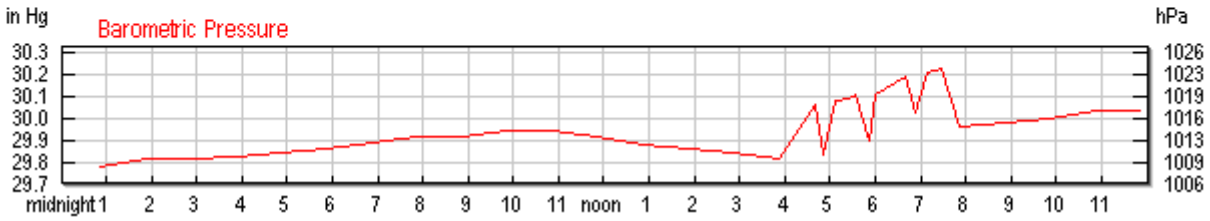
	Actual	Average	Record
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.95** in		
Wind			
Wind Speed	**9** mph (East)		
Max Wind Speed	**38** mph		
Max Gust Speed	**44** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

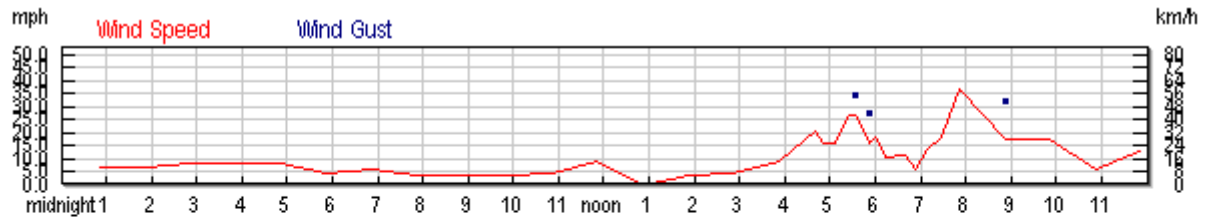
T = Trace of Precipitation, MM = Missing Value

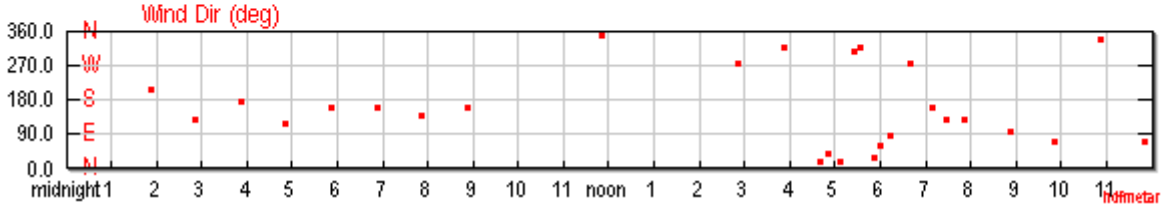
Source: NWS Daily Summary

Daily Weather History Graph









Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Sep. 25, 2018	**Rise**	**Set**
Actual Time	6:56 AM MDT	6:58 PM MDT
Civil Twilight	6:31 AM MDT	7:24 PM MDT
Nautical Twilight	6:02 AM MDT	7:53 PM MDT
Astronomical Twilight	5:32 AM MDT	8:23 PM MDT
Moon	7:44 PM MDT (9/25)	7:20 AM MDT (9/25)
Length of Visible Light	12h 52m	
Length of Day	12h 02m	

Full, 100% of the Moon is Illuminated

Sep 25	Oct 2	Oct 8	Oct 16	Oct 24
Full	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	**Temp.**	**Dew Point**	**Humidity**	**Pressure**	**Visibility**	**Wind Dir**	**Wind Speed**	**Gust Speed**	**Precip**	**Events**	**Cond**
12:52 AM	**71.1** °F	**39.0** °F	31%	**29.78** in	**10.0** mi	NNE	**6.9** mph	-	N/A		Partly
1:52 AM	**68.0** °F	**39.0** °F	35%	**29.81** in	**10.0** mi	SSW	**6.9** mph	-	N/A		Scatt Cloud
2:52 AM	**64.0** °F	**39.0** °F	40%	**29.81** in	**10.0** mi	SE	**8.1** mph	-	N/A		Over
3:52 AM	**66.0** °F	**39.0** °F	37%	**29.82** in	**10.0** mi	South	**8.1** mph	-	N/A		Most
4:52 AM	**62.1** °F	**39.0** °F	43%	**29.84** in	**10.0** mi	ESE	**8.1** mph	-	N/A		Most
5:52 AM	**63.0** °F	**39.9** °F	43%	**29.86** in	**10.0** mi	SSE	**4.6** mph	-	N/A		Scatt Cloud

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
6:52 AM	**62.1** °F	**41.0** °F	46%	**29.89** in	**10.0** mi	SSE	**5.8** mph	-	N/A		Scatt Cloud
7:52 AM	**64.0** °F	**42.1** °F	45%	**29.91** in	**10.0** mi	SE	**3.5** mph	-	N/A		Most
8:52 AM	**70.0** °F	**42.1** °F	36%	**29.91** in	**10.0** mi	SSE	**3.5** mph	-	N/A		Most
9:52 AM	**72.0** °F	**46.0** °F	40%	**29.94** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Scatt Cloud
10:52 AM	**75.9** °F	**46.0** °F	35%	**29.94** in	**10.0** mi	Variable	**4.6** mph	-	N/A		Partly
11:52 AM	**78.1** °F	**45.0** °F	31%	**29.91** in	**10.0** mi	North	**9.2** mph	-	N/A		Scatt Cloud
12:52 PM	**79.0** °F	**44.1** °F	29%	**29.88** in	**10.0** mi	Calm	Calm	-	N/A		Scatt Cloud
1:52 PM	**82.0** °F	**43.0** °F	25%	**29.86** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Scatt Cloud
2:52 PM	**82.9** °F	**42.1** °F	24%	**29.84** in	**10.0** mi	West	**4.6** mph	-	N/A		Partly
3:52 PM	**84.0** °F	**41.0** °F	22%	**29.81** in	**10.0** mi	NW	**9.2** mph	-	N/A		Most
4:39 PM	**80.1** °F	**42.1** °F	26%	**30.06** in	**10.0** mi	NNE	**20.7** mph	**26.5** mph	N/A		Most
4:52 PM	**80.1** °F	**41.0** °F	25%	**29.83** in	**10.0** mi	NE	**16.1** mph	-	N/A		Most
5:08 PM	**79.0** °F	**42.1** °F	27%	**30.08** in	**10.0** mi	NNE	**16.1** mph	-	**0.00** in	Rain , Thunderstorm	Light Thun and F
5:26 PM	**75.9** °F	**43.0** °F	31%	**30.09** in	**2.5** mi	NW	**26.5** mph	**34.5** mph	**0.00** in	Rain , Thunderstorm	Light Thun and F
5:33 PM	**73.0** °F	**48.0** °F	41%	**30.11** in	**5.0** mi	NW	**26.5** mph	**34.5** mph	**0.00** in	Rain , Thunderstorm	Light Thun and F
5:52 PM	**71.1** °F	**50.0** °F	47%	**29.90** in	**10.0** mi	NNE	**16.1** mph	**27.6** mph	**0.05** in	Rain , Thunderstorm	Light Thun and F
6:01 PM	**71.1** °F	**50.0** °F	47%	**30.11** in	**10.0** mi	ENE	**18.4** mph	-	**0.00** in	Rain , Thunderstorm	Light Thun and F
6:13 PM	**71.1** °F	**48.9** °F	45%	**30.13** in	**10.0** mi	East	**10.4** mph	-	**0.00** in	Thunderstorm	Most
6:40 PM	**68.0** °F	**48.9** °F	50%	**30.19** in	**10.0** mi	West	**11.5** mph	-	**0.00** in		Over

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Cond
6:52 PM	**66.0** °F	**51.1** °F	59%	**30.02** in	**10.0** mi	Variable	**5.8** mph	-	**0.00** in	Rain	Light
7:08 PM	**64.9** °F	**55.9** °F	73%	**30.21** in	**10.0** mi	SSE	**13.8** mph	-	**0.01** in	Rain , Thunderstorm	Light
7:29 PM	**61.0** °F	**55.0** °F	81%	**30.22** in	**7.0** mi	SE	**18.4** mph	-	**0.03** in	Rain	Rain
7:52 PM	**61.0** °F	**55.0** °F	81%	**29.96** in	**8.0** mi	SE	**36.8** mph	**42.6** mph	**0.09** in	Rain	Light
8:52 PM	**61.0** °F	**52.0** °F	72%	**29.98** in	**10.0** mi	East	**17.3** mph	**32.2** mph	**0.00** in		Most
9:52 PM	**64.0** °F	**48.0** °F	56%	**30.00** in	**10.0** mi	ENE	**17.3** mph	-	N/A		Most
10:52 PM	**64.0** °F	**52.0** °F	65%	**30.03** in	**10.0** mi	NNW	**5.8** mph	-	**0.00** in		Most
11:52 PM	**61.0** °F	**51.1** °F	70%	**30.03** in	**10.0** mi	ENE	**12.7** mph	-	**0.00** in		Most

Weston Solutions, Inc.
3840 Commons Ave. NE
Albuquerque, NM 87109
505-837-6520 Fax 505-837-6595
www.westonsolutions.com

February 6, 2019

Ms. Kathy Verhage, P.E.
Department of Municipal Development - Storm Drainage Design
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

REFERENCE: PROJECT NO. 8010 CITYWIDE ON-CALL NPDES AND MS4 ENGINEERING SUPPORT SERVICES 4th QUARTER 2018 UPDATE FOR TASK 19 VISUAL STORM WATER INSPECTIONS

Dear Ms. Verhage:

This letter describes the results of the 2018 Quarter 4 (October 1 through December 31) Visual Storm Water Inspections for ten City of Albuquerque (City) facilities that are subject to the requirements of the U.S. Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer System (MS4) Permit and the Multi Sector General Permit for Storm Water Discharges Associated with Industrial Activity (MSGP) at City-owned facilities. The purpose of this memo is to document the City's compliance with the requirements for quarterly stormwater monitoring. To comply with the MS4 and MSGP's requirements for stormwater monitoring, the City tasked Weston Solutions to perform the quarterly visual inspections in order to identify potential impacted stormwater discharges at the 10 City-owned facilities. The following facilities meet the definition of an industrial facility in the MSGP based on audits of City-owned facilities performed between 2012 and 2018.

- Arroyo Del Oso Golf Course
- Balloon Fiesta Park and Golf Training Center
- Albuquerque BioPark Zoo
- Fire Department Mechanic Shop
- 4th Street Fuel Station
- Pino Yards Complex
- Street Maintenance Satellite #2
- 6th Street Park Management
- Eagle Rock Convenience Center
- Edith Yards Maintenance Facility

Figure 1 identifies these facilities along with the Weston inspection team responsible for inspecting each facility outfall.

Figure 1: Facility Site Locations

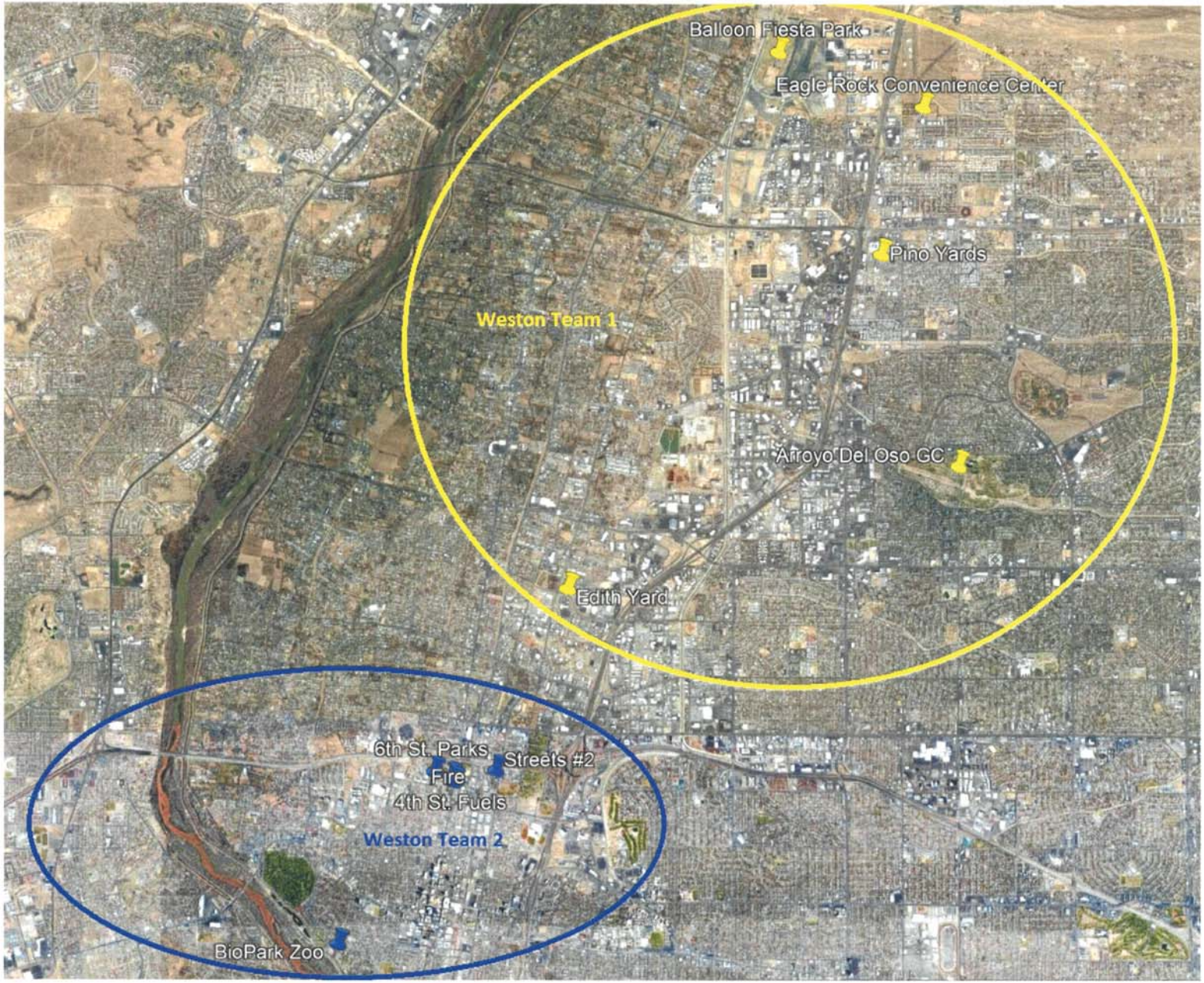


Table 1 summarizes the inspection status during the 4th Quarter of 2018.

Table 1: Outfall ID and Designees	Outfall ID	2018 Quarter 4 Status
Weston Team 1		
Balloon Fiesta Park and Golf Training Center	BFP1	Site not visited
	BFP2	Site not visited
	BFP3	Site not visited
	BFP4	Site not visited
	BFP5	Site not visited
Pino Yards Complex	PY1	Site not visited
	PY2	Site not visited
	PY3	Site not visited
Arroyo Del Oso Golf Course	ADO1	Site not visited
	ADO2	Site not visited
Eagle Rock Convenience Center	ER01	Site not visited
	ER02	Site not visited
	ER03	Site not visited
ABQ BioPark Zoo	BP1	Site not visited
Weston Team 2		
4th Street Fuel Station	FS1	Site not visited
Fire Department Mechanic Shop	FM1	Site not visited
	FM2	Site not visited
Street Maintenance Satellite #2	SS2	Site not visited
Edith Yards Maintenance Facility	EY01	Visited, dry-no sample
	EY02	Visited, dry-no sample
	EY03	Visited, dry-no sample
6th Street Park Management	6PM1	Site not visited

The facilities identified as "Site not visited" were not inspected since no qualifying storm events occurred during the quarter.

Background

The MSGP establishes requirements for monitoring the quality of stormwater discharges depending on the nature of activities performed at the various industrial facilities. Although benchmark monitoring is not required, the MSGP does require quarterly visual inspection of stormwater quality. Visual inspection consists of the collection of grab samples from each outfall (subject to demonstration of substantially identical outfalls) and examination for the presence of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, or other indicators of stormwater pollution.

The following criteria regarding the precipitation event must be met for a visual inspection of stormwater to occur:

- During daylight hours
- Within 30 minutes of start of storm water discharge (or as soon as practicable thereafter)
- At least 72 hours after the previous storm water discharge event

Weston follows the City's existing stormwater monitoring protocol outlining the locations and descriptions of all outfalls to be monitored. The protocol identifies contact persons at each facility for use in notifying City personnel when members of the stormwater monitoring team are mobilizing to that location. A standard visual assessment form is used by all staff to document the inspection activities.

Quarter 4 Monitoring Results

The results from the 4th Quarter 2018 visual inspections including monitoring reports and photo logs can be found in the Attachment A. From October 1 to December 31, 2018 the following occurred.

- Weston Sites Group 1 did not mobilize during the quarter. No visual samples were collected from the 14 outfalls that fall under Group 1.
- Weston Sites Group 2 mobilized once during the quarter to collect samples from a storm event on October 2, 2018. The Edith Yards Maintenance Facility was visited and found to be dry. No visual samples were collected from any of the eight outfalls over the course of the one mobilization.

Although there were several recordable precipitation events through this period, the vast majority did not meet the criteria for visual sampling since they occurred in the early evening, overnight or on weekends. Many sites received no rain due to the localized nature of the storms that did occur. Two storm events produced measurable runoff and met the conditions for visual sampling however, they occurred on consecutive days invalidating the second day due to the 72 hour criteria described above. Non qualifying event data is provided in Attachment B

Any outfalls not inspected in the 4th Quarter will be addressed during Quarter 1 of 2019 pending suitable weather conditions.

Observed Problems

No problems were observed during this reporting period.

We appreciate the opportunity to provide professional consulting services to you and we look forward to assisting you in the next quarter. Please contact Sarah Luckie at (720) 937-5905 (Sarah.Luckie@WestonSolutions.com) or Brad Sumrall at (505) 837-6566 (Brad.Sumrall@WestonSolutions.com) if you have any questions or need additional information.

Sincerely,
WESTON SOLUTIONS, INC.

L. Brad Sumrall, P.E.
Albuquerque Operations Manager

Enclosures:

ATTACHMENT A: Q4 INSPECTION FORMS AND PHOTO LOGS

ATTACHMENT B: NON-QUALIFYING PRECIPITATION EVENT DATA

ATTACHMENT A: Q4 INSPECTION FORMS AND PHOTO LOGS

STREETS SATELLITE #2

PINO YARDS

BALLOON FIESTA PARK/ GOLF TRAINING CENTER

ARROYO DEL OSO GOLF COURSE

FIRE DEPARTMENT MECHANIC

4TH STREET FUELS

ABQ BIOPARK ZOO

6TH STREET PARKS MANAGEMENT

EAGLE ROCK CONVENIENCE CENTER

EDITH YARD

City of Albuquerque Solid Waste Management Department

Edith Yards Maintenance Facility

Quarterly Visual Monitoring of

Storm Water Outfall Discharges

☐ Q1 ☐ Q2 ☒ Q3 ☐ Q4

Date: 10/2/18

Time: 4:00 pm

Inspector: David "Sonny" Cooper

Signature: [signature]

Weather: Light Rain

Storm Precip: Yes

Last 72 Hour Precip: None

Photo: Yes

Outfall ID:	EY01	EY02	EY03
Flow Observed:	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
Description of Monitoring Site:	Detention Pond, no flow	Round drop grate, no flow	Rectangular grate, no flow
Flow Estimate (include units and method of estimation) :	—	—	—
Other Observations:			
Color (Describe):			
Turbidity:	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque	☐ Clear ☐ Slightly Cloudy ☐ Very Cloudy ☐ Opaque
Floating Solids:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Suspended Solids:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Settled Solids:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Sheen Present:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Odor:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Foam Present:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Describe:			

Additional Comments: _____

WESTON SOLUTIONS

Date:	10/2/2018
Event:	MS4 Visual Storm Water Monitoring
Inspector:	Davis “Sonny” Cooper - Weston

CITY OF ALBUQUERQUE
STORM WATER MONITORING PHOTOGRAPH LOG

Edith Yard

Outfall EY01

Outfall EY02

Outfall EY03

ATTACHMENT B: NON-QUALIFYING PRECIPITATION EVENT DATA

Albuquerque, NM

Albuquerque International Sunport

10:41 AM MST on January 14, 2019 (GMT -0700)

Weather History for KABQ - October, 2018

From:

October

1

2018

To:

December

31

2018

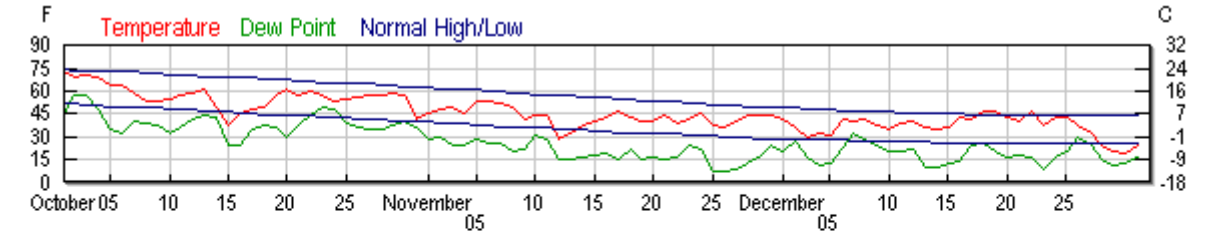
Get History

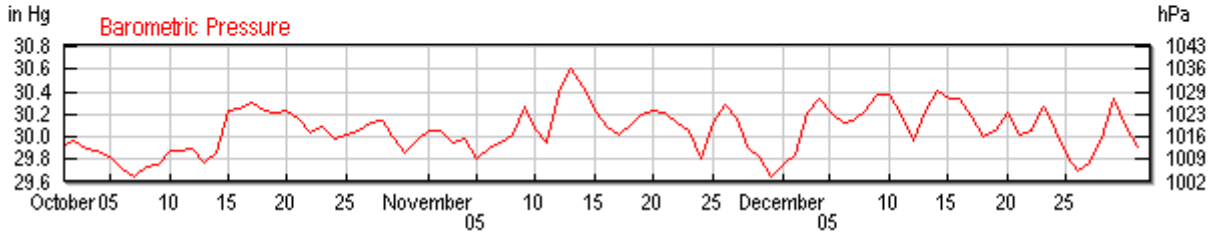
Daily | Weekly | Monthly | **Custom**

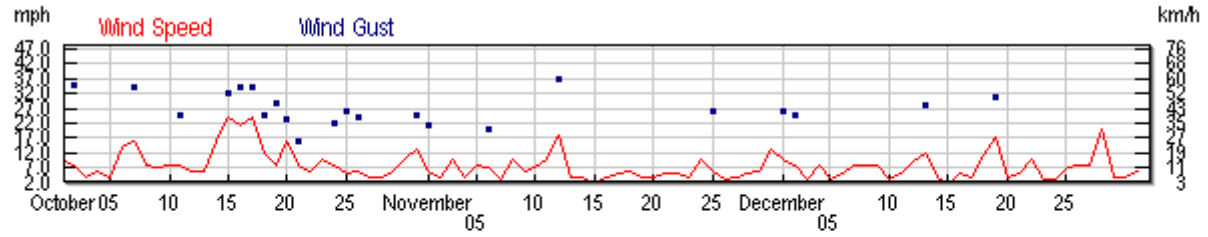
	Max	Avg	Min	Sum
Temperature				
Max Temperature	**85** °F	**56** °F	**29** °F	
Mean Temperature	**73** °F	**46** °F	**19** °F	
Min Temperature	**61** °F	**35** °F	**8** °F	
Degree Days				

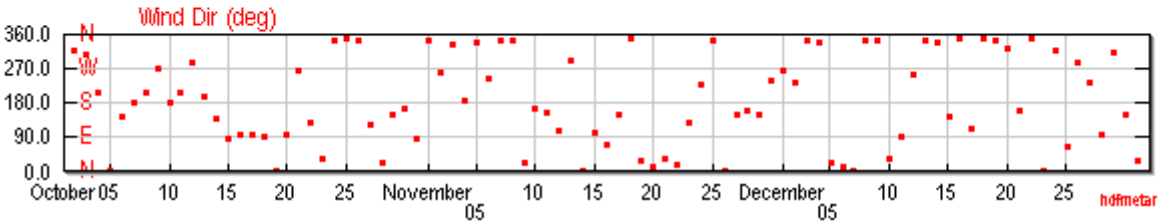
	Max	Avg	Min	Sum
Heating Degree Days (base 65)	46	19	0	1777
Cooling Degree Days (base 65)	8	0	0	23
Growing Degree Days (base 50)	24	3	0	258
Dew Point				
Dew Point	**61** °F	**26** °F	**1** °F	
Precipitation				
Precipitation	**0.85** in	**0.03** in	**0.00** in	**2.48** in
Snowdepth	**0.0** in	**0.0** in	**0.0** in	-
Wind				
Wind	**40** mph	**8** mph	**0** mph	
Gust Wind	**50** mph	**27** mph	**16** mph	
Sea Level Pressure				
Sea Level Pressure	**30.69** in	**30.06** in	**29.53** in	

Custom Weather History Graph









Search for Another Location

Airport or City:

KABQ

Submit

Weather History & Observations

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
Oct	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	85	73	61	55	44	36	55	39	23	30.16	29.93	29.85	10	10	10	20	9	26	0.03	Rain , Thunderstorm
	80	70	60	59	57	52	90	68	45	30.21	29.96	29.85	10	10	6	35	8	42	0.02	Rain , Thunderstorm
	82	71	59	61	57	51	93	64	34	30.08	29.89	29.81	10	10	10	17	4	21	0.02	Thunderstorm
	81	69	57	58	48	39	87	57	26	29.97	29.87	29.78	10	10	10	17	6	20	0.00	
	78	64	50	41	35	26	63	40	16	29.90	29.82	29.73	10	10	10	14	4	19	0.00	
	79	64	49	38	32	25	50	32	14	29.82	29.72	29.61	10	10	10	30	14	37	0.00	
	72	59	46	47	41	31	86	58	30	29.84	29.65	29.53	10	10	10	36	16	45	0.15	Rain , Thunderstorm
	62	54	46	45	39	28	93	61	29	29.91	29.74	29.68	10	10	10	17	8	20	0.02	Rain
	59	53	47	41	38	34	82	61	40	29.84	29.76	29.70	10	10	8	18	7	23	0.02	Rain , Thunderstorm
	67	55	42	37	33	29	76	50	24	30.00	29.88	29.82	10	10	10	21	8	29	0.00	
	70	57	43	43	37	31	62	47	31	29.96	29.88	29.81	10	10	10	26	8	33	T	
	68	59	50	47	42	38	72	53	34	29.96	29.89	29.82	10	10	10	15	6	20	0.00	
	71	61	50	48	45	39	83	58	33	30.00	29.77	29.67	10	10	10	17	6	22	0.00	
	61	50	39	51	43	29	89	71	53	30.08	29.85	29.69	10	10	10	32	16	38	0.02	Rain
	42	38	33	28	25	22	64	57	50	30.30	30.24	30.08	10	10	9	31	24	39	T	
	53	46	39	31	25	21	62	49	35	30.30	30.25	30.16	10	10	10	37	21	45	T	
	53	48	43	37	35	31	71	63	54	30.37	30.31	30.27	10	10	10	39	24	49	0.00	
	53	50	46	41	38	36	71	63	54	30.30	30.24	30.18	10	10	10	24	12	29	0.00	
	68	57	45	42	37	28	77	51	24	30.32	30.21	30.12	10	10	10	24	8	29	0.00	
	70	62	54	33	30	27	40	31	21	30.32	30.23	30.17	10	10	10	24	16	29	0.00	
	67	57	47	43	38	32	61	50	39	30.28	30.16	30.04	10	10	10	15	8	20	0.00	

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	69	60	51	46	44	41	71	56	40	30.09	30.03	29.96	10	10	10	16	6	20	0.00	
	63	57	50	52	49	46	100	80	60	30.22	30.09	29.98	10	8	2	23	10	29	0.85	Fog , Rain , Thunderstorm
	60	54	48	50	48	45	100	84	67	30.11	29.99	29.91	10	7	2	17	8	23	0.51	Rain
	65	55	44	45	39	32	93	62	30	30.12	30.01	29.95	10	10	10	21	5	26	0.00	
	67	56	45	39	36	32	76	54	31	30.14	30.06	30.01	10	10	10	15	6	24	0.00	
	68	57	45	40	35	33	65	47	29	30.19	30.12	30.05	10	10	10	9	4	11	0.00	
	72	58	43	39	35	30	70	46	22	30.25	30.14	30.06	10	10	10	13	4	14	0.00	
	72	59	45	41	38	34	76	52	27	30.13	30.00	29.89	10	10	10	12	6	15	0.00	
	67	57	47	46	40	35	86	59	32	29.97	29.86	29.75	10	9	3	37	10	46	0.24	Rain , Thunderstorm
	47	42	36	43	37	33	92	79	65	30.07	29.97	29.83	10	10	5	25	13	29	0.11	Rain

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
Nov	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
	57	46	35	33	28	20	92	58	23	30.13	30.05	29.99	10	10	10	21	6	25	0.00	
	61	48	35	34	30	27	75	54	32	30.18	30.05	29.92	10	10	10	12	4	15	0.00	
	60	50	40	34	25	17	73	46	19	30.05	29.94	29.84	10	10	10	25	10	32	0.00	
	58	46	33	28	24	18	70	46	22	30.11	29.98	29.81	10	10	10	13	4	17	0.00	
	66	54	42	33	28	22	58	39	20	29.88	29.81	29.74	10	10	10	21	8	26	0.00	
	69	54	38	31	26	22	59	39	18	29.98	29.90	29.82	10	10	10	18	7	24	0.00	
	64	52	40	31	26	18	59	40	20	30.04	29.94	29.86	10	10	10	10	3	13	0.00	
	61	50	38	35	21	2	85	50	15	30.25	30.02	29.91	10	10	10	24	10	30	0.00	
	53	42	31	28	22	8	70	48	25	30.35	30.26	30.19	10	10	10	14	6	16	0.00	
	55	44	32	35	31	26	82	62	41	30.23	30.07	29.91	10	10	10	16	7	19	0.00	

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	57	44	31	34	28	20	85	56	26	30.13	29.94	29.79	10	10	7	28	10	34	T	Snow
	36	29	22	21	15	11	69	52	35	30.60	30.40	30.13	10	10	9	40	18	50	T	Snow
	45	32	19	17	15	13	77	52	27	30.69	30.61	30.54	10	10	10	10	4	14	0.00	
	51	38	24	19	17	14	68	46	24	30.58	30.44	30.31	10	10	10	10	4	13	0.00	
	57	41	25	20	18	16	74	47	20	30.35	30.23	30.12	10	10	10	8	2	9	0.00	
	57	43	29	22	19	17	69	45	21	30.21	30.09	29.99	10	10	10	10	4	14	0.00	
	58	47	35	16	15	13	44	31	17	30.11	30.02	29.95	10	10	10	10	5	12	0.00	
	54	43	31	27	22	12	85	56	26	30.19	30.10	30.03	10	10	10	13	6	17	0.00	
	54	40	26	19	15	14	53	38	22	30.26	30.19	30.12	10	10	10	14	4	15	0.00	
	52	41	29	19	16	13	58	40	21	30.33	30.24	30.17	10	10	10	12	4	14	0.00	
	58	45	32	18	15	9	51	34	16	30.30	30.22	30.15	10	10	10	13	5	15	0.00	
	45	39	32	23	17	11	56	45	33	30.23	30.12	30.02	10	10	10	15	5	18	T	
	55	42	29	29	25	22	85	59	32	30.17	30.06	29.97	10	10	10	12	4	13	0.00	
	63	46	28	26	22	11	69	45	20	29.96	29.81	29.62	10	10	10	37	10	50	T	
	47	38	29	10	7	3	43	30	17	30.28	30.13	29.94	10	10	10	24	6	29	0.00	
	49	37	25	11	7	5	50	34	18	30.37	30.28	30.22	10	10	10	10	3	13	0.00	
	53	41	28	10	8	5	39	28	16	30.28	30.16	30.02	10	10	10	10	4	13	0.00	
	60	44	28	17	13	8	43	30	17	30.05	29.92	29.81	10	10	10	14	5	16	0.00	
	57	45	33	21	16	12	44	31	17	29.94	29.82	29.66	10	10	10	14	6	16	0.00	
	49	44	39	29	25	19	64	48	31	29.74	29.64	29.55	10	10	10	30	13	36	T	

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
Dec	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
	50	42	33	27	21	13	70	47	24	29.80	29.76	29.70	10	10	10	26	10	33	0.00	

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	45	37	28	35	27	16	100	73	45	30.08	29.84	29.74	10	8	1	26	8	33	0.07	Rain , Snow
	40	30	20	21	17	14	81	61	40	30.30	30.21	30.10	10	10	10	8	3	10	0.00	
	42	32	22	16	11	1	65	43	21	30.40	30.33	30.26	10	10	10	16	8	20	0.00	
	41	31	20	16	13	11	68	51	33	30.32	30.22	30.13	10	10	10	10	3	13	0.00	
	54	42	29	34	23	15	70	55	39	30.22	30.13	30.05	10	10	10	14	5	17	T	Rain
	48	40	32	37	33	27	89	76	62	30.19	30.14	30.08	10	10	7	21	8	24	0.01	Rain
	49	42	35	31	29	26	82	64	46	30.32	30.23	30.15	10	10	10	17	8	23	0.00	
	48	38	27	28	25	22	78	58	37	30.43	30.38	30.31	10	10	10	20	8	28	0.00	
	47	35	23	24	20	15	81	56	31	30.47	30.37	30.28	10	10	10	9	3	12	0.00	
	47	39	30	22	20	19	63	49	34	30.28	30.19	30.10	10	10	10	13	5	15	0.00	
	56	40	23	30	22	17	75	53	30	30.12	29.97	29.78	10	10	7	39	9	48	T	Fog
	45	37	29	16	10	6	49	36	22	30.38	30.23	29.92	10	10	10	32	12	40	0.00	
	48	35	21	12	10	8	55	38	21	30.50	30.41	30.35	10	10	10	9	4	11	0.00	
	46	36	26	15	13	11	57	41	25	30.39	30.33	30.25	10	10	10	8	2	10	0.00	
	55	43	30	17	14	12	47	35	22	30.42	30.34	30.25	10	10	10	16	5	21	0.00	
	50	42	33	34	24	17	73	52	31	30.29	30.18	30.05	10	10	10	13	4	14	0.00	
	56	47	38	34	26	22	79	55	30	30.06	30.00	29.91	10	10	10	25	11	33	T	
	56	47	37	24	20	16	52	37	22	30.17	30.05	29.97	10	10	10	35	17	44	0.00	
	55	43	31	18	16	15	49	35	20	30.31	30.21	30.14	10	10	10	15	4	19	0.00	
	56	41	26	22	18	15	63	43	22	30.12	30.02	29.91	10	10	10	12	5	13	0.00	
	60	47	33	22	16	7	52	35	17	30.23	30.06	29.94	10	10	10	26	10	34	0.00	
	50	38	25	11	8	7	46	32	18	30.37	30.26	30.17	10	10	10	13	3	16	0.00	
	57	43	28	21	16	10	48	37	26	30.16	30.06	29.93	10	10	10	10	3	14	0.00	

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
	53	43	33	23	20	18	56	42	28	29.96	29.83	29.69	10	10	10	26	7	32	0.00	
	44	38	32	34	30	22	100	73	45	29.79	29.70	29.62	10	7	0	26	8	32	0.26	Fog , Rain , Snow
	42	34	26	31	26	21	100	73	45	29.82	29.77	29.68	10	7	1	18	8	27	0.14	Snow
	31	24	17	25	15	9	100	80	59	30.30	29.98	29.77	10	6	0	37	20	45	0.01	Fog , Snow
	29	20	11	16	11	6	84	72	60	30.42	30.34	30.29	10	10	10	12	4	13	0.00	
	29	19	8	17	12	6	88	73	58	30.29	30.09	29.90	10	10	10	10	4	13	0.00	
	34	24	13	24	17	9	92	77	62	29.99	29.92	29.84	10	10	10	33	6	40	0.00	

Albuquerque, NM

Albuquerque International Sunport

1:37 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - October, 2018

October

1

2018

View

Monday, October 1, 2018

Daily | Weekly | Monthly | Custom

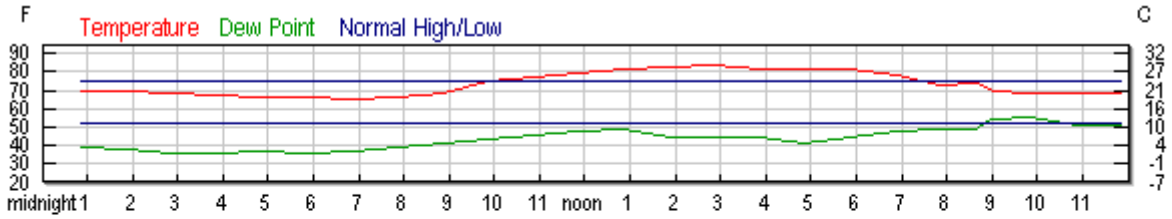
	Actual	Average	Record
Temperature			
Mean Temperature	**73** °F	-	
Max Temperature	**85** °F	-	- ()
Min Temperature	**61** °F	-	- ()
Cooling Degree Days	8		
Month to date cooling degree days	8		
Year to date cooling degree days	1717		
Growing Degree Days	24 (Base 50)		
Moisture			
Dew Point	**44** °F		

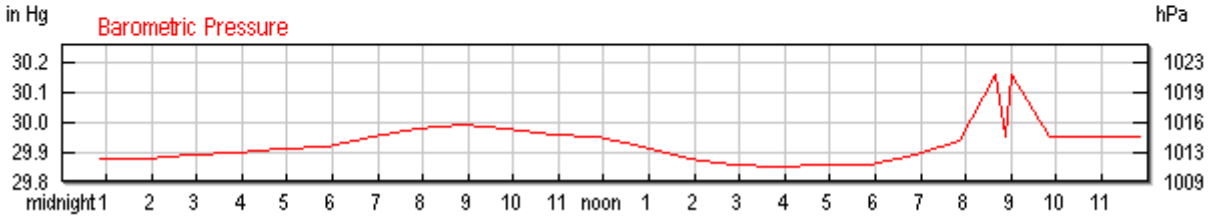
	Actual	Average	Record
Average Humidity	39		
Maximum Humidity	55		
Minimum Humidity	23		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.03		
Year to date precipitation	6.27		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.93** in		
Wind			
Wind Speed	**9** mph (SSW)		
Max Wind Speed	**20** mph		
Max Gust Speed	**26** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

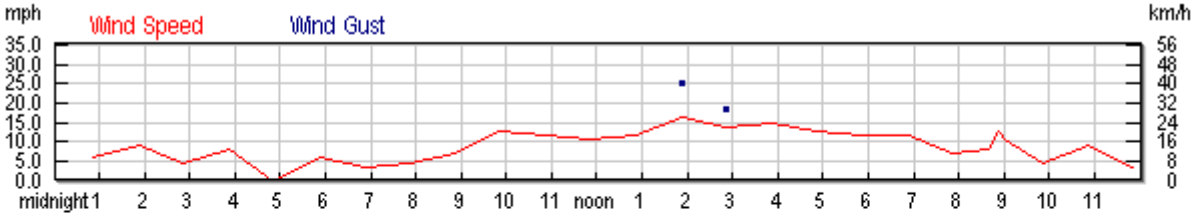
T = Trace of Precipitation, MM = Missing Value

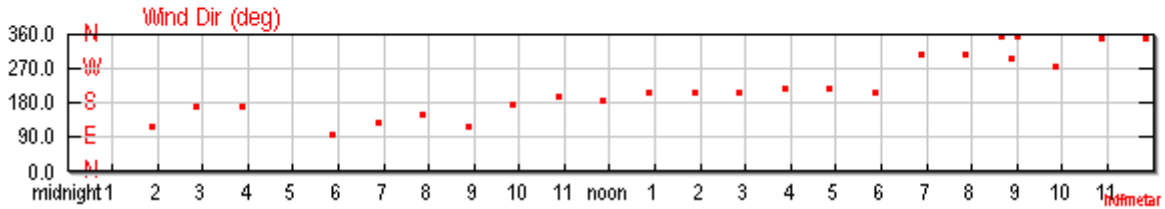
Source: NWS Daily Summary

Daily Weather History Graph









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KABQ

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Astronomy

Oct. 01, 2018	**Rise**	**Set**
Actual Time	7:01 AM MDT	6:50 PM MDT

Oct. 01, 2018	Rise	Set
Civil Twilight	6:36 AM MDT	7:15 PM MDT
Nautical Twilight	6:06 AM MDT	7:44 PM MDT
Astronomical Twilight	5:37 AM MDT	8:14 PM MDT
Moon	11:50 PM MDT (10/1)	1:28 PM MDT (10/1)
Length of Visible Light	12h 39m	
Length of Day	11h 48m	

Waning Gibbous, 58% of the Moon is Illuminated

Oct 1	Oct 2	Oct 8	Oct 16	Oct 24
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**70.0** °F	**39.0** °F	32%	**29.88** in	**10.0** mi	South	**5.8** mph	-	N/A		Overcast
1:52 AM	**69.1** °F	**37.9** °F	32%	**29.88** in	**10.0** mi	ESE	**9.2** mph	-	N/A		Overcast
2:52 AM	**68.0** °F	**36.0** °F	31%	**29.89** in	**10.0** mi	South	**4.6** mph	-	N/A		Mostly Cloudy
3:52 AM	**66.9** °F	**36.0** °F	32%	**29.90** in	**10.0** mi	South	**8.1** mph	-	N/A		Mostly Cloudy
4:52 AM	**66.0** °F	**37.0** °F	34%	**29.91** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
5:52 AM	**66.0** °F	**36.0** °F	33%	**29.92** in	**10.0** mi	East	**5.8** mph	-	N/A		Overcast
6:52 AM	**64.9** °F	**37.0** °F	36%	**29.95** in	**10.0** mi	SE	**3.5** mph	-	N/A		Mostly Cloudy
7:52 AM	**66.0** °F	**39.0** °F	37%	**29.98** in	**10.0** mi	SSE	**4.6** mph	-	N/A		Mostly Cloudy
8:52 AM	**68.0** °F	**41.0** °F	37%	**29.99** in	**10.0** mi	ESE	**6.9** mph	-	N/A		Mostly Cloudy

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**75.0** °F	**43.0** °F	32%	**29.98** in	**10.0** mi	South	**12.7** mph	-	N/A		Mostly Cloudy
10:52 AM	**77.0** °F	**46.0** °F	33%	**29.96** in	**10.0** mi	SSW	**11.5** mph	-	N/A		Scattered Clouds
11:52 AM	**79.0** °F	**48.0** °F	34%	**29.95** in	**10.0** mi	South	**10.4** mph	-	N/A		Mostly Cloudy
12:52 PM	**81.0** °F	**48.9** °F	33%	**29.92** in	**10.0** mi	SSW	**11.5** mph	**19.6** mph	N/A		Mostly Cloudy
1:52 PM	**82.9** °F	**44.1** °F	25%	**29.88** in	**10.0** mi	SSW	**16.1** mph	**25.3** mph	N/A		Scattered Clouds
2:52 PM	**84.0** °F	**44.1** °F	25%	**29.86** in	**10.0** mi	SSW	**13.8** mph	**18.4** mph	N/A		Mostly Cloudy
3:52 PM	**82.0** °F	**44.1** °F	26%	**29.85** in	**10.0** mi	SW	**15.0** mph	-	N/A		Mostly Cloudy
4:52 PM	**82.0** °F	**41.0** °F	23%	**29.86** in	**10.0** mi	SW	**12.7** mph	-	N/A		Mostly Cloudy
5:52 PM	**81.0** °F	**44.1** °F	27%	**29.86** in	**10.0** mi	SSW	**11.5** mph	-	N/A		Mostly Cloudy
6:52 PM	**78.1** °F	**48.0** °F	35%	**29.89** in	**10.0** mi	NW	**11.5** mph	-	N/A		Mostly Cloudy
7:52 PM	**73.0** °F	**48.9** °F	42%	**29.94** in	**10.0** mi	NW	**6.9** mph	-	**0.00** in		Mostly Cloudy
8:39 PM	**73.9** °F	**48.9** °F	41%	**30.16** in	**10.0** mi	North	**8.1** mph	-	**0.00** in	Thunderstorm	Thunderstorm
8:52 PM	**72.0** °F	**53.1** °F	51%	**29.95** in	**10.0** mi	WNW	**12.7** mph	-	**0.00** in	Rain , Thunderstorm	Light Thunderstorms and Rain
9:01 PM	**70.0** °F	**54.0** °F	57%	**30.16** in	**10.0** mi	North	**10.4** mph	-	**0.00** in	Rain	Light Rain
9:52 PM	**68.0** °F	**55.0** °F	63%	**29.95** in	**10.0** mi	West	**4.6** mph	-	**0.00** in		Mostly Cloudy
10:52 PM	**68.0** °F	**51.1** °F	55%	**29.95** in	**10.0** mi	North	**9.2** mph	-	N/A		Mostly Cloudy
11:52 PM	**68.0** °F	**51.1** °F	55%	**29.95** in	**10.0** mi	North	**3.5** mph	-	**0.00** in		Mostly Cloudy

Albuquerque, NM

Albuquerque International Sunport

1:39 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - October, 2018

October

2

2018

View
Tuesday, October 2, 2018

Daily | Weekly | Monthly | Custom

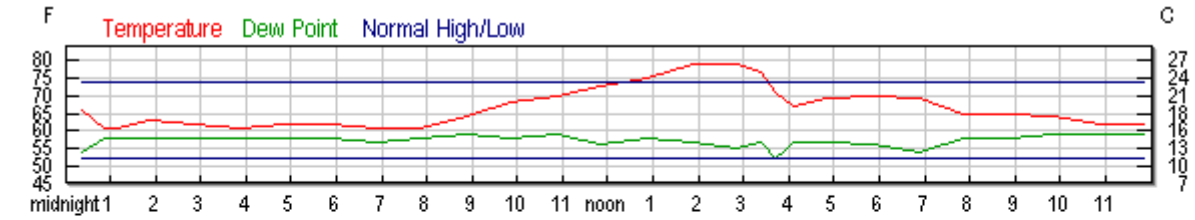
	Actual	Average	Record
Temperature			
Mean Temperature	**70** °F	-	
Max Temperature	**80** °F	-	- ()
Min Temperature	**60** °F	-	- ()
Cooling Degree Days	5		
Month to date cooling degree days	13		
Year to date cooling degree days	1722		
Growing Degree Days	20 (Base 50)		
Moisture			
Dew Point	**57** °F		

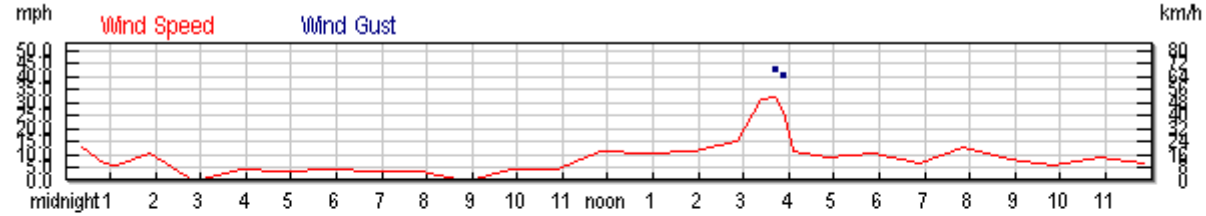
	Actual	Average	Record
Average Humidity	68		
Maximum Humidity	90		
Minimum Humidity	45		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.05		
Year to date precipitation	6.29		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.96** in		
Wind			
Wind Speed	**8** mph (NW)		
Max Wind Speed	**35** mph		
Max Gust Speed	**42** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

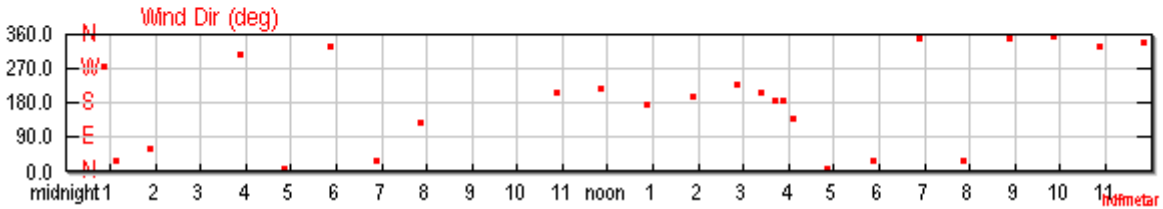
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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Astronomy

Oct. 02, 2018	**Rise**	**Set**
Actual Time	7:02 AM MDT	6:48 PM MDT

Oct. 02, 2018	Rise	Set
Civil Twilight	6:36 AM MDT	7:14 PM MDT
Nautical Twilight	6:07 AM MDT	7:43 PM MDT
Astronomical Twilight	5:37 AM MDT	8:12 PM MDT
Moon	No Moon Rise	2:28 PM MDT (10/2)
Length of Visible Light	12h 37m	
Length of Day	11h 46m	

Last Quarter, 46% of the Moon is Illuminated

Oct 2	Oct 8	Oct 16	Oct 24	Oct 31
Last Quarter	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:22 AM	**66.0** °F	**54.0** °F	65%	**30.21** in	**10.0** mi	WSW	**12.7** mph	-	N/A	Thunderstorm	Overcast
12:52 AM	**61.0** °F	**57.9** °F	90%	**29.99** in	**6.0** mi	West	**6.9** mph	-	**0.02** in	Rain , Thunderstorm	Rain
1:07 AM	**61.0** °F	**57.9** °F	90%	**30.20** in	**10.0** mi	NNE	**5.8** mph	-	**0.01** in	Rain	Light Rain
1:52 AM	**63.0** °F	**57.9** °F	84%	**29.95** in	**10.0** mi	ENE	**10.4** mph	-	**0.01** in		Overcast
2:52 AM	**62.1** °F	**57.9** °F	86%	**29.94** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
3:52 AM	**61.0** °F	**57.9** °F	90%	**29.94** in	**10.0** mi	NW	**4.6** mph	-	N/A		Scattered Clouds
4:52 AM	**62.1** °F	**57.9** °F	86%	**29.95** in	**10.0** mi	North	**3.5** mph	-	N/A		Mostly Cloudy
5:52 AM	**62.1** °F	**57.9** °F	86%	**29.95** in	**10.0** mi	NNW	**4.6** mph	-	N/A		Scattered Clouds
6:52 AM	**61.0** °F	**57.0** °F	87%	**29.98** in	**10.0** mi	NNE	**3.5** mph	-	N/A		Overcast

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
7:52 AM	**61.0** °F	**57.9** °F	90%	**29.99** in	**10.0** mi	SE	**3.5** mph	-	N/A		Mostly Cloudy
8:52 AM	**64.0** °F	**59.0** °F	84%	**30.00** in	**10.0** mi	Calm	Calm	-	N/A		Scattered Clouds
9:52 AM	**68.0** °F	**57.9** °F	70%	**30.01** in	**10.0** mi	Variable	**4.6** mph	-	N/A		Mostly Cloudy
10:52 AM	**70.0** °F	**59.0** °F	68%	**30.00** in	**10.0** mi	SSW	**4.6** mph	-	N/A		Mostly Cloudy
11:52 AM	**73.0** °F	**55.9** °F	55%	**29.96** in	**10.0** mi	SW	**11.5** mph	-	N/A		Mostly Cloudy
12:52 PM	**75.0** °F	**57.9** °F	55%	**29.94** in	**10.0** mi	South	**10.4** mph	-	N/A		Mostly Cloudy
1:52 PM	**79.0** °F	**57.0** °F	47%	**29.88** in	**10.0** mi	SSW	**11.5** mph	**19.6** mph	N/A		Mostly Cloudy
2:52 PM	**79.0** °F	**55.0** °F	44%	**29.85** in	**10.0** mi	SW	**15.0** mph	-	N/A		Overcast
3:24 PM	**77.0** °F	**57.0** °F	50%	**30.09** in	**10.0** mi	SSW	**31.1** mph	**38.0** mph	N/A	Thunderstorm	Overcast
3:41 PM	**71.1** °F	**52.0** °F	51%	**30.10** in	**10.0** mi	South	**32.2** mph	**42.6** mph	**0.00** in	Rain , Thunderstorm	Light Thunderstorms and Rain
3:52 PM	**69.1** °F	**54.0** °F	58%	**29.91** in	**10.0** mi	South	**26.5** mph	**40.3** mph	**0.00** in	Rain , Thunderstorm	Light Rain
4:07 PM	**66.9** °F	**57.0** °F	70%	**30.09** in	**7.0** mi	SE	**11.5** mph	-	**0.01** in	Rain	Light Rain
4:52 PM	**69.1** °F	**57.0** °F	65%	**29.90** in	**10.0** mi	North	**9.2** mph	-	**0.01** in		Mostly Cloudy
5:52 PM	**70.0** °F	**55.9** °F	61%	**29.89** in	**10.0** mi	NNE	**10.4** mph	-	N/A		Mostly Cloudy
6:52 PM	**69.1** °F	**54.0** °F	58%	**29.91** in	**10.0** mi	North	**6.9** mph	-	N/A		Mostly Cloudy
7:52 PM	**64.9** °F	**57.9** °F	78%	**29.93** in	**10.0** mi	NNE	**12.7** mph	-	**0.01** in		Mostly Cloudy
8:52 PM	**64.9** °F	**57.9** °F	78%	**29.91** in	**10.0** mi	North	**8.1** mph	-	N/A		Mostly Cloudy
9:52 PM	**64.0** °F	**59.0** °F	84%	**29.91** in	**10.0** mi	North	**5.8** mph	-	N/A		Mostly Cloudy
10:52 PM	**62.1** °F	**59.0** °F	90%	**29.91** in	**10.0** mi	NNW	**9.2** mph	-	N/A		Mostly Cloudy
11:52 PM	**62.1** °F	**59.0** °F	90%	**29.90** in	**10.0** mi	NNW	**6.9** mph	-	N/A		Mostly Cloudy

Albuquerque, NM

Albuquerque International Sunport

1:39 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - October, 2018

October

3

2018

View
Wednesday, October 3, 2018

Daily | Weekly | Monthly | Custom

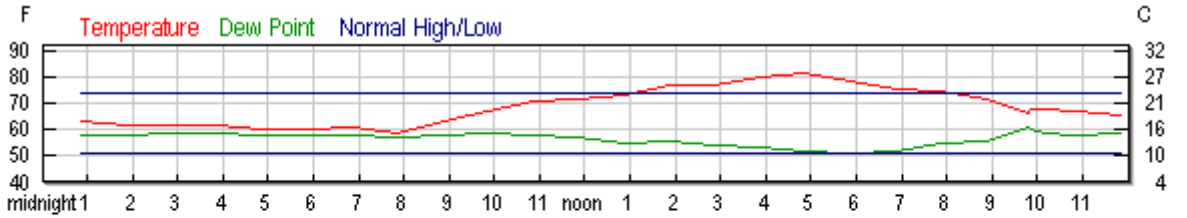
	Actual	Average	Record
Temperature			
Mean Temperature	**71** °F	-	
Max Temperature	**82** °F	-	- ()
Min Temperature	**59** °F	-	- ()
Cooling Degree Days	6		
Month to date cooling degree days	19		
Year to date cooling degree days	1728		
Growing Degree Days	20 (Base 50)		
Moisture			
Dew Point	**57** °F		

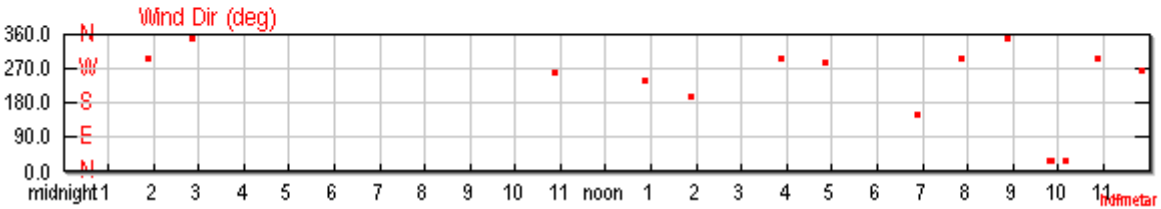
	Actual	Average	Record
Average Humidity	64		
Maximum Humidity	93		
Minimum Humidity	34		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.07		
Year to date precipitation	6.31		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.89** in		
Wind			
Wind Speed	**4** mph (NW)		
Max Wind Speed	**17** mph		
Max Gust Speed	**21** mph		
Visibility	**10** miles		
Events	Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph





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Airport or City:

KABQ

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Astronomy

Oct. 03, 2018	Rise	Set
Actual Time	7:02 AM MDT	6:47 PM MDT

Oct. 03, 2018	Rise	Set
Civil Twilight	6:37 AM MDT	7:12 PM MDT
Nautical Twilight	6:08 AM MDT	7:41 PM MDT
Astronomical Twilight	5:38 AM MDT	8:11 PM MDT
Moon	12:50 AM MDT (10/3)	3:23 PM MDT (10/3)
Length of Visible Light	12h 35m	
Length of Day	11h 44m	

Waning Crescent, 35% of the Moon is Illuminated

Oct 3	Oct 8	Oct 16	Oct 24	Oct 31
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**63.0** °F	-	**57.9** °F	84%	**29.89** in	**10.0** mi	North	**4.6** mph	-	N/A		Mostly Cloudy
1:52 AM	**62.1** °F	-	**57.9** °F	86%	**29.88** in	**10.0** mi	WNW	**4.6** mph	-	N/A		Scattered Clouds
2:52 AM	**62.1** °F	-	**59.0** °F	90%	**29.88** in	**10.0** mi	North	**4.6** mph	-	N/A		Mostly Cloudy
3:52 AM	**62.1** °F	-	**59.0** °F	90%	**29.90** in	**10.0** mi	Calm	Calm	-	N/A		Scattered Clouds
4:52 AM	**60.1** °F	-	**57.9** °F	93%	**29.90** in	**10.0** mi	Calm	Calm	-	N/A		Scattered Clouds
5:52 AM	**60.1** °F	-	**57.9** °F	93%	**29.91** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
6:52 AM	**61.0** °F	-	**57.9** °F	90%	**29.92** in	**10.0** mi	Calm	Calm	-	N/A		Scattered Clouds

Time (MDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
7:52 AM	**59.0** °F	-	**57.0** °F	93%	**29.96** in	**10.0** mi	Calm	Calm	-	N/A		Partly Cloudy
8:52 AM	**63.0** °F	-	**57.9** °F	84%	**29.95** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
9:52 AM	**66.9** °F	-	**59.0** °F	76%	**29.96** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
10:52 AM	**71.1** °F	-	**57.9** °F	63%	**29.95** in	**10.0** mi	West	**4.6** mph	-	N/A		Scattered Clouds
11:52 AM	**72.0** °F	-	**57.0** °F	59%	**29.93** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Scattered Clouds
12:52 PM	**73.0** °F	-	**55.0** °F	53%	**29.91** in	**10.0** mi	WSW	**5.8** mph	-	N/A		Mostly Cloudy
1:52 PM	**77.0** °F	-	**55.9** °F	48%	**29.86** in	**10.0** mi	SSW	**6.9** mph	-	N/A		Mostly Cloudy
2:52 PM	**77.0** °F	-	**54.0** °F	45%	**29.83** in	**10.0** mi	Calm	Calm	-	N/A		Scattered Clouds
3:52 PM	**80.1** °F	**79.9** °F	**53.1** °F	39%	**29.81** in	**10.0** mi	WNW	**6.9** mph	-	N/A		Scattered Clouds
4:52 PM	**82.0** °F	-	**52.0** °F	35%	**29.81** in	**10.0** mi	WNW	**9.2** mph	-	N/A		Scattered Clouds
5:52 PM	**79.0** °F	-	**51.1** °F	38%	**29.81** in	**10.0** mi	Calm	Calm	-	N/A		Scattered Clouds
6:52 PM	**75.9** °F	-	**52.0** °F	43%	**29.82** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Partly Cloudy
7:52 PM	**75.0** °F	-	**55.0** °F	50%	**29.86** in	**10.0** mi	WNW	**10.4** mph	-	N/A		Scattered Clouds
8:52 PM	**72.0** °F	-	**55.9** °F	57%	**29.87** in	**10.0** mi	North	**10.4** mph	-	N/A		Scattered Clouds
9:49 PM	**66.2** °F	-	**60.8** °F	83%	**30.08** in	**10.0** mi	NNE	**11.5** mph	-	**0.02** in	Thunderstorm	Mostly Cloudy
9:52 PM	**68.0** °F	-	**60.1** °F	76%	**29.87** in	**10.0** mi	NNE	**10.4** mph	-	**0.02** in	Thunderstorm	Mostly Cloudy
10:09 PM	**68.0** °F	-	**59.0** °F	73%	**30.08** in	**10.0** mi	NNE	**8.1** mph	-	N/A		Mostly Cloudy
10:52 PM	**66.9** °F	-	**57.9** °F	73%	**29.87** in	**10.0** mi	WNW	**5.8** mph	-	N/A		Scattered Clouds
11:52 PM	**66.0** °F	-	**59.0** °F	78%	**29.87** in	**10.0** mi	West	**4.6** mph	-	N/A		Partly Cloudy

Albuquerque, NM

Albuquerque International Sunport

1:41 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - October, 2018

October

7

2018

View

Sunday, October 7, 2018

Daily | Weekly | Monthly | Custom

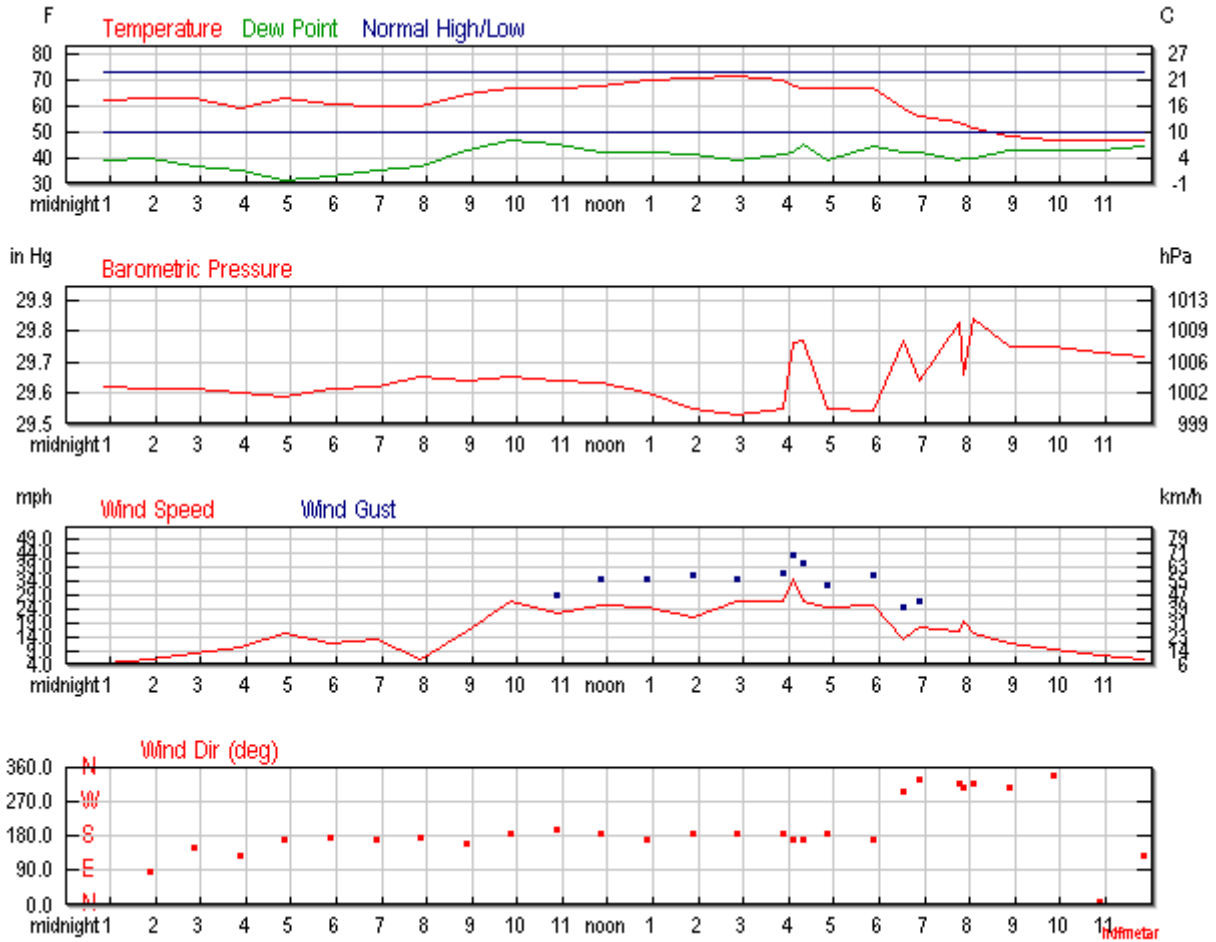
	Actual	Average	Record
Temperature			
Mean Temperature	**59** °F	-	
Max Temperature	**72** °F	-	- ()
Min Temperature	**46** °F	-	- ()
Degree Days			
Heating Degree Days	6		
Month to date heating degree days	8		
Growing Degree Days	9 (Base 50)		
Moisture			
Dew Point	**41** °F		

	Actual	Average	Record
Average Humidity	58		
Maximum Humidity	86		
Minimum Humidity	30		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.22		
Year to date precipitation	6.46		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.65** in		
Wind			
Wind Speed	**16** mph (South)		
Max Wind Speed	**36** mph		
Max Gust Speed	**45** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Oct. 07, 2018	**Rise**	**Set**
Actual Time	7:05 AM MDT	6:41 PM MDT

Oct. 07, 2018	Rise	Set
Civil Twilight	6:40 AM MDT	7:07 PM MDT
Nautical Twilight	6:11 AM MDT	7:36 PM MDT
Astronomical Twilight	5:41 AM MDT	8:05 PM MDT
Moon	5:18 AM MDT (10/7)	6:15 PM MDT (10/7)
Length of Visible Light	12h 26m	
Length of Day	11h 35m	

Waning Crescent, 3% of the Moon is Illuminated

Oct 7	Oct 8	Oct 16	Oct 24	Oct 31
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**62.1** °F	**39.0** °F	43%	**29.62** in	**10.0** mi	ESE	**4.6** mph	-	N/A		Overcast
1:52 AM	**63.0** °F	**39.9** °F	43%	**29.61** in	**10.0** mi	East	**5.8** mph	-	N/A		Overcast
2:52 AM	**63.0** °F	**37.0** °F	38%	**29.61** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Overcast
3:52 AM	**59.0** °F	**35.1** °F	41%	**29.60** in	**10.0** mi	SE	**10.4** mph	-	N/A		Overcast
4:52 AM	**63.0** °F	**30.9** °F	30%	**29.59** in	**10.0** mi	South	**15.0** mph	-	N/A		Overcast
5:52 AM	**61.0** °F	**33.1** °F	35%	**29.61** in	**10.0** mi	South	**11.5** mph	-	N/A		Mostly Cloudy
6:52 AM	**60.1** °F	**35.1** °F	39%	**29.62** in	**10.0** mi	South	**12.7** mph	-	N/A		Mostly Cloudy
7:52 AM	**60.1** °F	**37.0** °F	42%	**29.65** in	**10.0** mi	South	**5.8** mph	-	N/A		Mostly Cloudy
8:52 AM	**64.9** °F	**43.0** °F	45%	**29.64** in	**10.0** mi	SSE	**16.1** mph	-	N/A		Mostly Cloudy

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**66.9** °F	**46.9** °F	49%	**29.65** in	**10.0** mi	South	**26.5** mph	**36.8** mph	N/A		Mostly Cloudy
10:52 AM	**66.9** °F	**45.0** °F	45%	**29.64** in	**10.0** mi	SSW	**21.9** mph	**28.8** mph	N/A		Mostly Cloudy
11:52 AM	**68.0** °F	**42.1** °F	39%	**29.63** in	**10.0** mi	South	**25.3** mph	**34.5** mph	N/A		Mostly Cloudy
12:52 PM	**70.0** °F	**42.1** °F	36%	**29.60** in	**10.0** mi	South	**24.2** mph	**34.5** mph	N/A		Mostly Cloudy
1:52 PM	**71.1** °F	**41.0** °F	34%	**29.55** in	**10.0** mi	South	**20.7** mph	**35.7** mph	N/A		Mostly Cloudy
2:52 PM	**72.0** °F	**39.0** °F	30%	**29.53** in	**10.0** mi	South	**26.5** mph	**34.5** mph	N/A		Mostly Cloudy
3:52 PM	**70.0** °F	**41.0** °F	35%	**29.55** in	**10.0** mi	South	**26.5** mph	**36.8** mph	N/A		Mostly Cloudy
4:06 PM	**68.0** °F	**42.1** °F	39%	**29.76** in	**10.0** mi	South	**34.5** mph	**42.6** mph	N/A	Thunderstorm	Mostly Cloudy
4:20 PM	**66.9** °F	**45.0** °F	45%	**29.77** in	**10.0** mi	South	**26.5** mph	**40.3** mph	N/A		Mostly Cloudy
4:52 PM	**66.9** °F	**39.0** °F	36%	**29.55** in	**10.0** mi	South	**24.2** mph	**32.2** mph	N/A		Mostly Cloudy
5:52 PM	**66.9** °F	**44.1** °F	44%	**29.54** in	**10.0** mi	South	**25.3** mph	**35.7** mph	N/A		Mostly Cloudy
6:32 PM	**59.0** °F	**42.1** °F	53%	**29.77** in	**10.0** mi	WNW	**12.7** mph	**24.2** mph	N/A		Mostly Cloudy
6:52 PM	**55.9** °F	**42.1** °F	60%	**29.64** in	**10.0** mi	NNW	**17.3** mph	**26.5** mph	N/A		Mostly Cloudy
7:46 PM	**53.6** °F	**39.2** °F	58%	**29.83** in	**10.0** mi	NW	**16.1** mph	-	N/A	Thunderstorm	Mostly Cloudy
7:52 PM	**53.1** °F	**39.9** °F	61%	**29.66** in	**10.0** mi	NW	**19.6** mph	-	N/A	Thunderstorm	Mostly Cloudy
8:04 PM	**51.1** °F	**39.9** °F	66%	**29.84** in	**10.0** mi	NW	**15.0** mph	-	**0.00** in	Rain	Light Rain
8:52 PM	**48.0** °F	**43.0** °F	83%	**29.75** in	**10.0** mi	NW	**11.5** mph	-	**0.03** in	Rain	Light Rain
9:52 PM	**46.9** °F	**43.0** °F	86%	**29.75** in	**10.0** mi	NNW	**9.2** mph	-	**0.08** in	Rain	Light Rain
10:52 PM	**46.9** °F	**43.0** °F	86%	**29.73** in	**10.0** mi	North	**6.9** mph	-	**0.01** in	Rain	Light Rain
11:52 PM	**46.9** °F	**44.1** °F	90%	**29.72** in	**10.0** mi	SE	**5.8** mph	-	**0.03** in		Scattered Clouds

Albuquerque, NM

Albuquerque International Sunport

1:44 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - October, 2018

October

8

2018

View

Monday, October 8, 2018

Daily | Weekly | Monthly | Custom

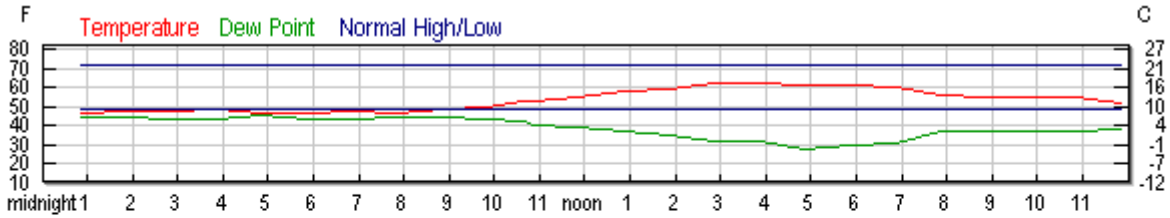
	Actual	Average	Record
Temperature			
Mean Temperature	**54** °F	-	
Max Temperature	**62** °F	-	- ()
Min Temperature	**46** °F	-	- ()
Degree Days			
Heating Degree Days	11		
Month to date heating degree days	19		
Growing Degree Days	4 (Base 50)		
Moisture			
Dew Point	**39** °F		

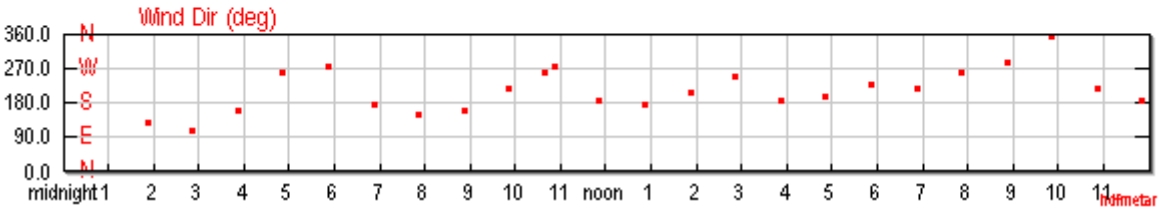
	Actual	Average	Record
Average Humidity	61		
Maximum Humidity	93		
Minimum Humidity	29		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.24		
Year to date precipitation	6.48		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.74** in		
Wind			
Wind Speed	**8** mph (SSW)		
Max Wind Speed	**17** mph		
Max Gust Speed	**20** mph		
Visibility	**10** miles		
Events	Rain		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph





Search for Another Location

Airport or City:

KABQ

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Astronomy

Oct. 08, 2018	**Rise**	**Set**
Actual Time	7:06 AM MDT	6:40 PM MDT

Oct. 08, 2018	Rise	Set
Civil Twilight	6:41 AM MDT	7:05 PM MDT
Nautical Twilight	6:12 AM MDT	7:35 PM MDT
Astronomical Twilight	5:42 AM MDT	8:04 PM MDT
Moon	6:25 AM MDT (10/8)	6:51 PM MDT (10/8)
Length of Visible Light	12h 24m	
Length of Day	11h 33m	

Waning Crescent, 0% of the Moon is Illuminated

Oct 8	Oct 8	Oct 16	Oct 24	Oct 31
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**46.9** °F	**44.1** °F	90%	**29.71** in	**10.0** mi	ESE	**6.9** mph	-	**0.00** in		Overcast
1:52 AM	**48.0** °F	**44.1** °F	86%	**29.70** in	**10.0** mi	SE	**9.2** mph	-	**0.00** in	Rain	Light Rain
2:52 AM	**48.0** °F	**43.0** °F	83%	**29.68** in	**10.0** mi	ESE	**6.9** mph	-	**0.02** in		Overcast
3:52 AM	**48.9** °F	**43.0** °F	80%	**29.69** in	**10.0** mi	SSE	**4.6** mph	-	N/A		Overcast
4:52 AM	**46.9** °F	**45.0** °F	93%	**29.69** in	**10.0** mi	West	**6.9** mph	-	N/A		Mostly Cloudy
5:52 AM	**46.9** °F	**43.0** °F	86%	**29.70** in	**10.0** mi	West	**4.6** mph	-	N/A		Mostly Cloudy
6:52 AM	**48.0** °F	**43.0** °F	83%	**29.76** in	**10.0** mi	South	**3.5** mph	-	**0.00** in		Mostly Cloudy
7:52 AM	**46.9** °F	**44.1** °F	90%	**29.78** in	**10.0** mi	SSE	**6.9** mph	-	N/A		Mostly Cloudy
8:52 AM	**48.9** °F	**44.1** °F	83%	**29.80** in	**10.0** mi	SSE	**11.5** mph	-	N/A		Partly Cloudy

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**50.0** °F	**43.0** °F	77%	**29.82** in	**10.0** mi	SW	**9.2** mph	-	N/A		Mostly Cloudy
10:39 AM	**53.1** °F	**42.1** °F	66%	**29.91** in	**10.0** mi	West	**6.9** mph	-	N/A		Mostly Cloudy
10:52 AM	**53.1** °F	**39.9** °F	61%	**29.81** in	**10.0** mi	West	**6.9** mph	-	N/A		Scattered Clouds
11:52 AM	**55.0** °F	**39.0** °F	55%	**29.79** in	**10.0** mi	South	**5.8** mph	-	N/A		Scattered Clouds
12:52 PM	**57.9** °F	**37.0** °F	46%	**29.77** in	**10.0** mi	South	**10.4** mph	-	N/A		Mostly Cloudy
1:52 PM	**59.0** °F	**35.1** °F	41%	**29.73** in	**10.0** mi	SSW	**9.2** mph	-	N/A		Mostly Cloudy
2:52 PM	**62.1** °F	**32.0** °F	32%	**29.71** in	**10.0** mi	WSW	**8.1** mph	-	N/A		Mostly Cloudy
3:52 PM	**62.1** °F	**32.0** °F	32%	**29.70** in	**10.0** mi	South	**11.5** mph	-	N/A		Mostly Cloudy
4:52 PM	**61.0** °F	**28.0** °F	29%	**29.70** in	**10.0** mi	SSW	**8.1** mph	-	N/A		Mostly Cloudy
5:52 PM	**61.0** °F	**30.0** °F	31%	**29.70** in	**10.0** mi	SW	**8.1** mph	-	N/A		Mostly Cloudy
6:52 PM	**60.1** °F	**30.9** °F	33%	**29.70** in	**10.0** mi	SW	**8.1** mph	-	N/A		Mostly Cloudy
7:52 PM	**55.9** °F	**37.0** °F	49%	**29.73** in	**10.0** mi	West	**9.2** mph	-	N/A		Mostly Cloudy
8:52 PM	**55.0** °F	**37.0** °F	51%	**29.74** in	**10.0** mi	WNW	**8.1** mph	-	N/A		Mostly Cloudy
9:52 PM	**55.0** °F	**37.0** °F	51%	**29.74** in	**10.0** mi	North	**5.8** mph	-	N/A		Mostly Cloudy
10:52 PM	**55.0** °F	**37.0** °F	51%	**29.76** in	**10.0** mi	SW	**6.9** mph	-	N/A		Mostly Cloudy
11:52 PM	**52.0** °F	**37.9** °F	59%	**29.76** in	**10.0** mi	South	**12.7** mph	-	N/A		Mostly Cloudy

Albuquerque, NM

Albuquerque International Sunport

1:44 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - October, 2018

October

9

2018

View
Tuesday, October 9, 2018

Daily | Weekly | Monthly | Custom

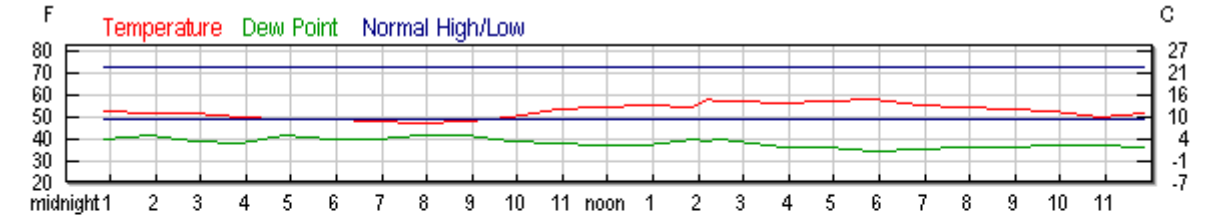
	Actual	Average	Record
Temperature			
Mean Temperature	**53** °F	-	
Max Temperature	**59** °F	-	- ()
Min Temperature	**47** °F	-	- ()
Degree Days			
Heating Degree Days	12		
Month to date heating degree days	31		
Growing Degree Days	2 (Base 50)		
Moisture			
Dew Point	**38** °F		

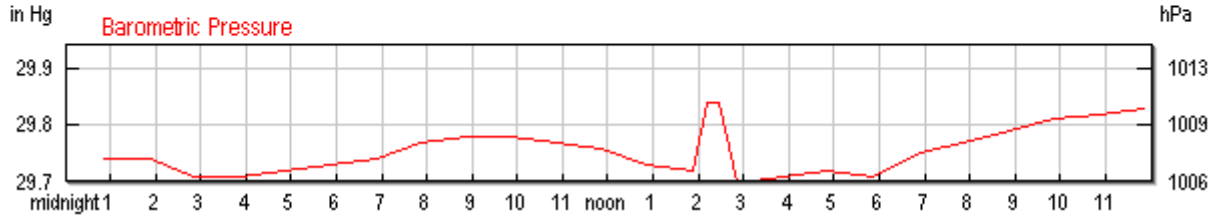
	Actual	Average	Record
Average Humidity	61		
Maximum Humidity	82		
Minimum Humidity	40		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.26		
Year to date precipitation	6.50		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.76** in		
Wind			
Wind Speed	**7** mph (West)		
Max Wind Speed	**18** mph		
Max Gust Speed	**23** mph		
Visibility	**10** miles		
Events	Rain , Thunderstorm		

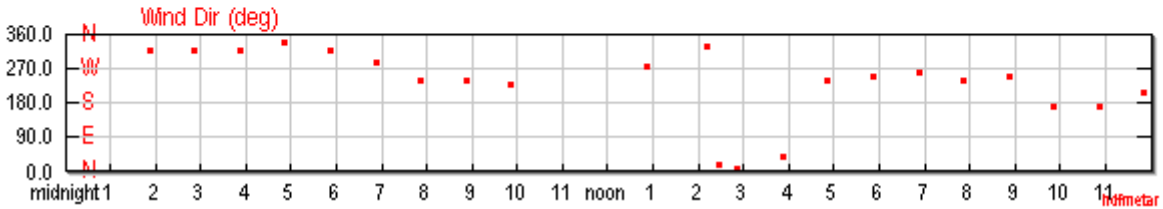
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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Airport or City:

KABQ

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Astronomy

Oct. 09, 2018	**Rise**	**Set**
Actual Time	7:07 AM MDT	6:39 PM MDT

Oct. 09, 2018	Rise	Set
Civil Twilight	6:42 AM MDT	7:04 PM MDT
Nautical Twilight	6:12 AM MDT	7:33 PM MDT
Astronomical Twilight	5:43 AM MDT	8:03 PM MDT
Moon	7:31 AM MDT (10/9)	7:26 PM MDT (10/9)
Length of Visible Light	12h 22m	
Length of Day	11h 31m	

New Moon, 0% of the Moon is Illuminated

Oct 9	Oct 16	Oct 24	Oct 31	Nov 7
New Moon	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**52.0** °F	**39.9** °F	63%	**29.74** in	**10.0** mi	SSW	**4.6** mph	-	**0.00** in	Rain	Light Rain
1:52 AM	**51.1** °F	**41.0** °F	68%	**29.74** in	**10.0** mi	NW	**3.5** mph	-	**0.00** in	Rain	Light Rain
2:52 AM	**51.1** °F	**39.0** °F	63%	**29.71** in	**10.0** mi	NW	**6.9** mph	-	**0.00** in		Overcast
3:52 AM	**50.0** °F	**37.9** °F	63%	**29.71** in	**9.0** mi	NW	**5.8** mph	-	**0.00** in	Rain	Light Rain
4:52 AM	**48.9** °F	**41.0** °F	74%	**29.72** in	**8.0** mi	NNW	**6.9** mph	-	**0.01** in	Rain	Light Rain
5:52 AM	**48.9** °F	**39.9** °F	71%	**29.73** in	**10.0** mi	NW	**6.9** mph	-	**0.00** in	Rain	Light Rain
6:52 AM	**48.0** °F	**39.9** °F	74%	**29.74** in	**10.0** mi	WNW	**5.8** mph	-	**0.00** in		Mostly Cloudy
7:52 AM	**46.9** °F	**41.0** °F	80%	**29.77** in	**10.0** mi	WSW	**6.9** mph	-	N/A		Mostly Cloudy
8:52 AM	**48.0** °F	**41.0** °F	77%	**29.78** in	**10.0** mi	WSW	**8.1** mph	-	N/A		Mostly Cloudy

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**50.0** °F	**39.0** °F	66%	**29.78** in	**10.0** mi	SW	**6.9** mph	-	N/A		Mostly Cloudy
10:52 AM	**53.1** °F	**37.9** °F	57%	**29.77** in	**10.0** mi	Variable	**3.5** mph	-	N/A		Mostly Cloudy
11:52 AM	**54.0** °F	**37.0** °F	53%	**29.76** in	**10.0** mi	Variable	**4.6** mph	-	N/A		Mostly Cloudy
12:52 PM	**55.0** °F	**37.0** °F	51%	**29.73** in	**10.0** mi	West	**5.8** mph	-	N/A		Mostly Cloudy
1:52 PM	**54.0** °F	**39.9** °F	59%	**29.72** in	**10.0** mi	Calm	Calm	-	**0.01** in	Rain	Light Rain
2:11 PM	**57.9** °F	**39.0** °F	49%	**29.84** in	**10.0** mi	NNW	**5.8** mph	-	**0.00** in	Thunderstorm	Mostly Cloudy
2:28 PM	**57.0** °F	**39.9** °F	53%	**29.84** in	**10.0** mi	NNE	**18.4** mph	-	**0.00** in		Mostly Cloudy
2:52 PM	**57.0** °F	**39.0** °F	51%	**29.70** in	**10.0** mi	North	**13.8** mph	-	**0.00** in		Mostly Cloudy
3:52 PM	**55.9** °F	**36.0** °F	47%	**29.71** in	**10.0** mi	NE	**5.8** mph	-	N/A		Mostly Cloudy
4:52 PM	**57.0** °F	**36.0** °F	45%	**29.72** in	**10.0** mi	WSW	**4.6** mph	-	**0.00** in		Mostly Cloudy
5:52 PM	**57.9** °F	**34.0** °F	41%	**29.71** in	**10.0** mi	WSW	**12.7** mph	-	N/A		Scattered Clouds
6:52 PM	**55.0** °F	**35.1** °F	47%	**29.75** in	**10.0** mi	West	**11.5** mph	-	N/A		Scattered Clouds
7:52 PM	**54.0** °F	**36.0** °F	51%	**29.77** in	**10.0** mi	WSW	**8.1** mph	-	N/A		Mostly Cloudy
8:52 PM	**53.1** °F	**36.0** °F	52%	**29.79** in	**10.0** mi	WSW	**5.8** mph	-	N/A		Scattered Clouds
9:52 PM	**52.0** °F	**37.0** °F	57%	**29.81** in	**10.0** mi	South	**3.5** mph	-	N/A		Mostly Cloudy
10:52 PM	**50.0** °F	**37.0** °F	61%	**29.82** in	**10.0** mi	South	**9.2** mph	-	N/A		Mostly Cloudy
11:52 PM	**51.1** °F	**36.0** °F	56%	**29.83** in	**10.0** mi	SSW	**12.7** mph	-	N/A		Scattered Clouds

Albuquerque, NM

Albuquerque International Sunport

1:45 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - October, 2018

October

14

2018

View

Sunday, October 14, 2018

Daily | Weekly | Monthly | Custom

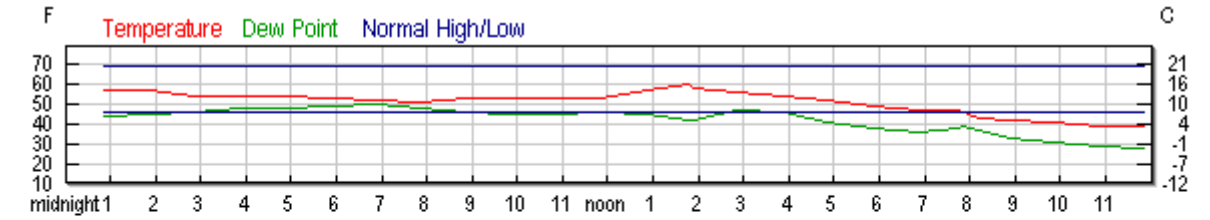
	Actual	Average	Record
Temperature			
Mean Temperature	**50** °F	-	
Max Temperature	**61** °F	-	- ()
Min Temperature	**39** °F	-	- ()
Degree Days			
Heating Degree Days	15		
Month to date heating degree days	74		
Moisture			
Dew Point	**43** °F		
Average Humidity	71		

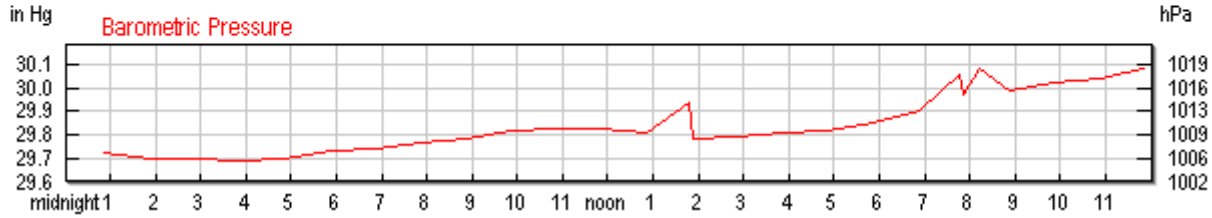
	Actual	Average	Record
Maximum Humidity	89		
Minimum Humidity	53		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.28		
Year to date precipitation	6.52		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.0		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.85** in		
Wind			
Wind Speed	**16** mph (SE)		
Max Wind Speed	**32** mph		
Max Gust Speed	**38** mph		
Visibility	**10** miles		
Events	Rain		

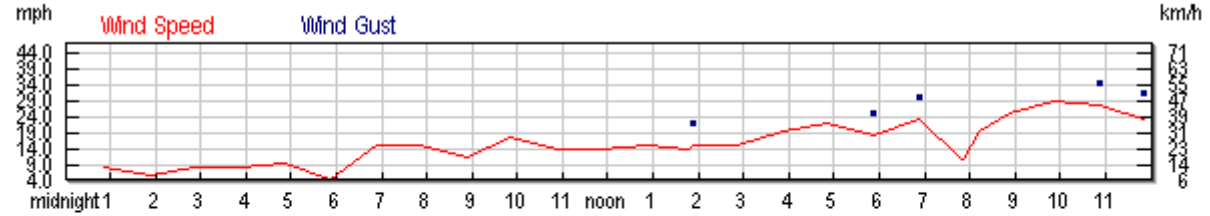
T = Trace of Precipitation, MM = Missing Value

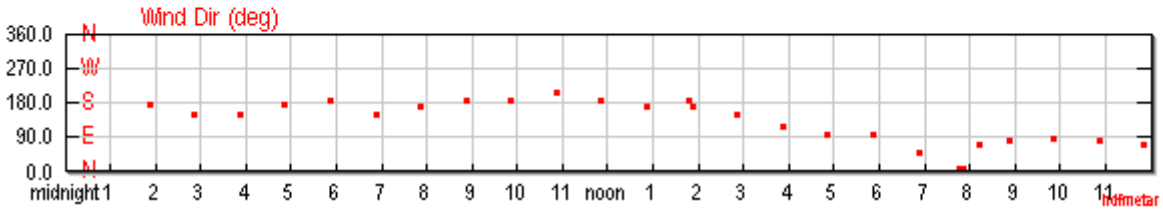
Source: NWS Daily Summary

Daily Weather History Graph









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Astronomy

Oct. 14, 2018	**Rise**	**Set**
Actual Time	7:11 AM MDT	6:32 PM MDT

Oct. 14, 2018	Rise	Set
Civil Twilight	6:46 AM MDT	6:58 PM MDT
Nautical Twilight	6:16 AM MDT	7:27 PM MDT
Astronomical Twilight	5:47 AM MDT	7:56 PM MDT
Moon	12:34 PM MDT (10/14)	10:49 PM MDT (10/14)
Length of Visible Light	12h 11m	
Length of Day	11h 20m	

Waxing Crescent, 31% of the Moon is Illuminated

Oct 14	Oct 16	Oct 24	Oct 31	Nov 7
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**57.9** °F	-	**45.0** °F	62%	**29.72** in	**10.0** mi	SSW	**8.1** mph	-	N/A		Mostly Cloudy
1:52 AM	**57.9** °F	-	**46.0** °F	65%	**29.70** in	**10.0** mi	South	**5.8** mph	-	N/A		Mostly Cloudy
2:52 AM	**55.0** °F	-	**46.9** °F	74%	**29.70** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Overcast
3:52 AM	**55.0** °F	-	**48.9** °F	80%	**29.69** in	**10.0** mi	SSE	**8.1** mph	-	**0.00** in	Rain	Light Rain
4:52 AM	**55.0** °F	-	**48.9** °F	80%	**29.70** in	**10.0** mi	South	**9.2** mph	-	**0.00** in		Overcast
5:52 AM	**54.0** °F	-	**50.0** °F	86%	**29.73** in	**10.0** mi	South	**4.6** mph	-	**0.00** in	Rain	Light Rain
6:52 AM	**53.1** °F	-	**51.1** °F	93%	**29.74** in	**10.0** mi	SSE	**15.0** mph	-	**0.01** in		Overcast
7:52 AM	**52.0** °F	-	**48.9** °F	89%	**29.77** in	**10.0** mi	South	**15.0** mph	-	**0.00** in		Overcast
8:52 AM	**54.0** °F	-	**46.9** °F	77%	**29.78** in	**10.0** mi	South	**11.5** mph	-	**0.00** in		Mostly Cloudy

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**54.0** °F	-	**46.0** °F	75%	**29.82** in	**10.0** mi	South	**17.3** mph	-	**0.00** in	Rain	Light Rain
10:52 AM	**54.0** °F	-	**46.0** °F	75%	**29.83** in	**10.0** mi	SSW	**13.8** mph	-	**0.00** in	Rain	Light Rain
11:52 AM	**54.0** °F	-	**46.9** °F	77%	**29.83** in	**10.0** mi	South	**13.8** mph	-	**0.00** in	Rain	Light Rain
12:52 PM	**57.9** °F	-	**46.0** °F	65%	**29.81** in	**10.0** mi	South	**15.0** mph	-	**0.00** in		Mostly Cloudy
1:48 PM	**60.8** °F	-	**42.8** °F	52%	**29.94** in	**10.0** mi	South	**13.8** mph	**21.9** mph	N/A		Mostly Cloudy
1:52 PM	**59.0** °F	-	**43.0** °F	55%	**29.78** in	**10.0** mi	South	**15.0** mph	**21.9** mph	N/A		Mostly Cloudy
2:52 PM	**57.0** °F	-	**48.0** °F	72%	**29.79** in	**10.0** mi	SSE	**15.0** mph	-	**0.00** in	Rain	Light Rain
3:52 PM	**55.0** °F	-	**46.9** °F	74%	**29.81** in	**10.0** mi	ESE	**19.6** mph	-	**0.01** in		Mostly Cloudy
4:52 PM	**53.1** °F	-	**42.1** °F	66%	**29.82** in	**10.0** mi	East	**21.9** mph	**28.8** mph	**0.00** in		Mostly Cloudy
5:52 PM	**50.0** °F	-	**39.0** °F	66%	**29.85** in	**10.0** mi	East	**18.4** mph	**25.3** mph	N/A		Mostly Cloudy
6:52 PM	**48.0** °F	-	**37.0** °F	66%	**29.90** in	**10.0** mi	NE	**23.0** mph	**29.9** mph	N/A		Mostly Cloudy
7:45 PM	**48.0** °F	-	**39.0** °F	71%	**30.06** in	**10.0** mi	North	**11.5** mph	-	**0.00** in	Rain	Light Rain
7:52 PM	**46.9** °F	-	**39.9** °F	77%	**29.97** in	**10.0** mi	North	**10.4** mph	-	**0.00** in	Rain	Light Rain
8:12 PM	**44.1** °F	**35.9** °F	**37.9** °F	79%	**30.08** in	**10.0** mi	ENE	**19.6** mph	**27.6** mph	**0.00** in	Rain	Light Rain
8:52 PM	**43.0** °F	**33.3** °F	**34.0** °F	71%	**29.99** in	**10.0** mi	East	**25.3** mph	-	**0.00** in		Mostly Cloudy
9:52 PM	**42.1** °F	**31.5** °F	**32.0** °F	67%	**30.02** in	**10.0** mi	East	**28.8** mph	**36.8** mph	N/A		Overcast
10:52 PM	**39.9** °F	**28.8** °F	**30.0** °F	68%	**30.04** in	**10.0** mi	East	**27.6** mph	**34.5** mph	N/A		Mostly Cloudy
11:52 PM	**39.9** °F	**29.7** °F	**28.9** °F	65%	**30.08** in	**10.0** mi	ENE	**23.0** mph	**31.1** mph	N/A		Overcast

Albuquerque, NM

Albuquerque International Sunport

1:46 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - October, 2018

October

23

2018

View
Tuesday, October 23, 2018

Daily | Weekly | Monthly | Custom

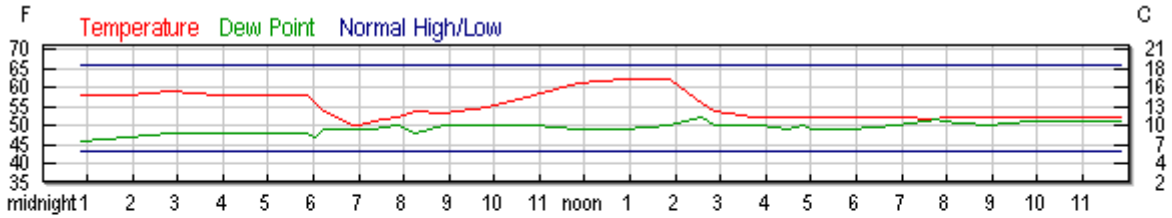
	Actual	Average	Record
Temperature			
Mean Temperature	**57** °F	-	
Max Temperature	**63** °F	-	- ()
Min Temperature	**50** °F	-	- ()
Degree Days			
Heating Degree Days	8		
Month to date heating degree days	184		
Growing Degree Days	6 (Base 50)		
Moisture			
Dew Point	**49** °F		

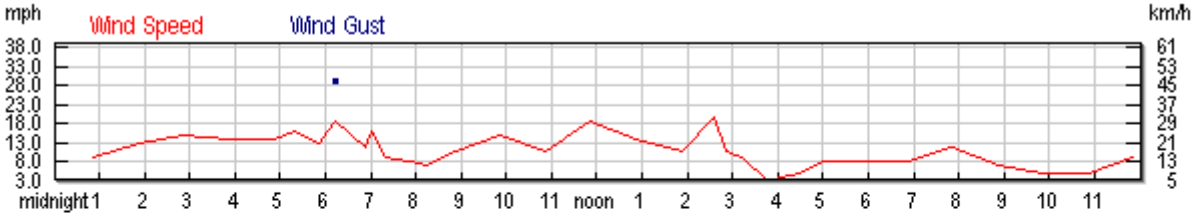
	Actual	Average	Record
Average Humidity	80		
Maximum Humidity	100		
Minimum Humidity	60		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	1.13		
Year to date precipitation	7.37		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.09** in		
Wind			
Wind Speed	**10** mph (NE)		
Max Wind Speed	**23** mph		
Max Gust Speed	**29** mph		
Visibility	**8** miles		
Events	Fog , Rain , Thunderstorm		

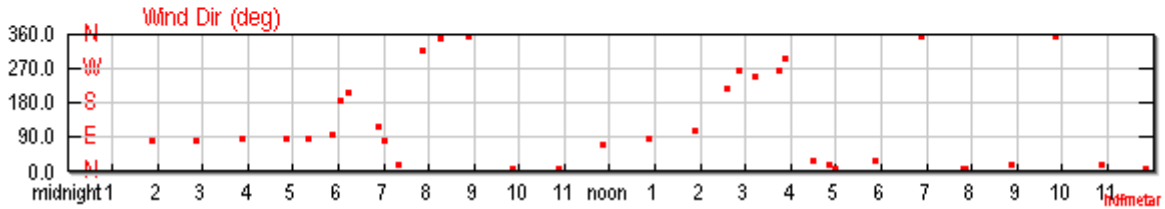
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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Astronomy

Oct. 23, 2018	**Rise**	**Set**
Actual Time	7:19 AM MDT	6:21 PM MDT

Oct. 23, 2018	Rise	Set
Civil Twilight	6:53 AM MDT	6:47 PM MDT
Nautical Twilight	6:23 AM MDT	7:16 PM MDT
Astronomical Twilight	5:54 AM MDT	7:46 PM MDT
Moon	6:15 PM MDT (10/23)	6:07 AM MDT (10/23)
Length of Visible Light	11h 53m	
Length of Day	11h 02m	

Waxing Gibbous, 99% of the Moon is Illuminated

Oct 23	Oct 24	Oct 31	Nov 7	Nov 15
Waxing Gibbous	Full	Last Quarter	New	First Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**57.9** °F	**46.0** °F	65%	**30.02** in	**10.0** mi	ESE	**9.2** mph	-	N/A		Mostly Cloudy
1:52 AM	**57.9** °F	**46.9** °F	67%	**30.02** in	**10.0** mi	East	**12.7** mph	-	N/A		Overcast
2:52 AM	**59.0** °F	**48.0** °F	67%	**30.01** in	**10.0** mi	East	**15.0** mph	-	N/A		Scattered Clouds
3:52 AM	**57.9** °F	**48.0** °F	70%	**30.01** in	**10.0** mi	East	**13.8** mph	-	N/A		Mostly Cloudy
4:52 AM	**57.9** °F	**48.0** °F	70%	**30.01** in	**10.0** mi	East	**13.8** mph	-	N/A		Mostly Cloudy
5:20 AM	**57.9** °F	**48.0** °F	70%	**30.18** in	**10.0** mi	East	**16.1** mph	-	N/A	Thunderstorm	Overcast
5:52 AM	**57.9** °F	**48.0** °F	70%	**30.02** in	**10.0** mi	East	**12.7** mph	-	N/A	Thunderstorm	Overcast
6:03 AM	**55.9** °F	**46.9** °F	72%	**30.22** in	**10.0** mi	South	**16.1** mph	**23.0** mph	N/A	Thunderstorm	Overcast
6:14 AM	**54.0** °F	**48.9** °F	83%	**30.22** in	**9.0** mi	SSW	**18.4** mph	**28.8** mph	**0.01** in	Rain , Thunderstorm	Light Thunderstorms and Rain

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
6:52 AM	**50.0** °F	**48.9** °F	96%	**30.11** in	**4.0** mi	ESE	**11.5** mph	-	**0.10** in	Rain , Thunderstorm	Heavy Thunderstorms and Rain
7:01 AM	**50.0** °F	**48.9** °F	96%	**30.22** in	**4.0** mi	East	**16.1** mph	-	**0.05** in	Rain , Thunderstorm	Heavy Rain
7:20 AM	**51.1** °F	**48.9** °F	92%	**30.21** in	**10.0** mi	NNE	**9.2** mph	-	**0.08** in	Rain	Light Rain
7:52 AM	**52.0** °F	**50.0** °F	93%	**30.07** in	**10.0** mi	NW	**8.1** mph	-	**0.08** in		Mostly Cloudy
8:16 AM	**54.0** °F	**48.0** °F	80%	**30.21** in	**10.0** mi	North	**6.9** mph	-	N/A		Mostly Cloudy
8:52 AM	**53.1** °F	**50.0** °F	89%	**30.11** in	**10.0** mi	North	**10.4** mph	-	N/A		Mostly Cloudy
9:52 AM	**55.0** °F	**50.0** °F	83%	**30.09** in	**10.0** mi	North	**15.0** mph	-	N/A		Overcast
10:52 AM	**57.9** °F	**50.0** °F	75%	**30.09** in	**10.0** mi	North	**10.4** mph	-	N/A		Overcast
11:52 AM	**61.0** °F	**48.9** °F	64%	**30.06** in	**10.0** mi	ENE	**18.4** mph	-	N/A		Overcast
12:52 PM	**62.1** °F	**48.9** °F	62%	**30.03** in	**10.0** mi	East	**13.8** mph	-	N/A		Overcast
1:52 PM	**62.1** °F	**50.0** °F	65%	**30.00** in	**10.0** mi	ESE	**10.4** mph	-	**0.00** in	Rain	Light Rain
2:36 PM	**55.9** °F	**52.0** °F	87%	**30.17** in	**4.0** mi	SW	**19.6** mph	-	**0.00** in	Rain	Light Rain
2:52 PM	**54.0** °F	**50.0** °F	86%	**30.04** in	**6.0** mi	West	**10.4** mph	-	**0.08** in	Rain , Thunderstorm	Light Rain
3:13 PM	**53.1** °F	**50.0** °F	89%	**30.19** in	**2.5** mi	WSW	**9.2** mph	-	**0.06** in	Rain	Light Rain
3:44 PM	**52.0** °F	**50.0** °F	93%	**30.20** in	**3.0** mi	West	**3.5** mph	-	**0.16** in	Rain	Light Rain
3:52 PM	**52.0** °F	**50.0** °F	93%	**30.08** in	**3.0** mi	WNW	**3.5** mph	-	**0.17** in	Rain	Light Rain
4:31 PM	**52.0** °F	**48.9** °F	89%	**30.20** in	**7.0** mi	NNE	**4.6** mph	-	**0.07** in	Rain	Light Rain
4:52 PM	**52.0** °F	**50.0** °F	93%	**30.06** in	**6.0** mi	NNE	**6.9** mph	-	**0.10** in	Rain	Light Rain
4:59 PM	**52.0** °F	**48.9** °F	89%	**30.19** in	**9.0** mi	North	**8.1** mph	-	**0.01** in	Rain	Light Rain
5:52 PM	**52.0** °F	**48.9** °F	89%	**30.06** in	**8.0** mi	NNE	**8.1** mph	-	**0.03** in	Fog , Rain	Light Rain
6:52 PM	**52.0** °F	**50.0** °F	93%	**30.07** in	**10.0** mi	North	**8.1** mph	-	**0.05** in	Rain	Light Rain

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
7:50 PM	**51.8** °F	**51.8** °F	100%	**30.17** in	**10.0** mi	North	**11.5** mph	-	**0.01** in	Rain	Light Rain
7:52 PM	**52.0** °F	**51.1** °F	97%	**30.06** in	**10.0** mi	North	**11.5** mph	-	**0.01** in	Rain	Light Rain
8:52 PM	**52.0** °F	**50.0** °F	93%	**30.04** in	**9.0** mi	NNE	**6.9** mph	-	**0.04** in	Rain	Light Rain
9:52 PM	**52.0** °F	**51.1** °F	97%	**30.04** in	**7.0** mi	North	**4.6** mph	-	**0.05** in	Rain	Rain
10:52 PM	**52.0** °F	**51.1** °F	97%	**30.03** in	**8.0** mi	NNE	**4.6** mph	-	**0.08** in	Rain	Light Rain
11:52 PM	**52.0** °F	**51.1** °F	97%	**29.98** in	**10.0** mi	North	**9.2** mph	-	**0.05** in	Rain	Light Rain

Albuquerque, NM

Albuquerque International Sunport

1:46 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - October, 2018

October

24

2018

View

Wednesday, October 24, 2018

Daily | Weekly | Monthly | Custom

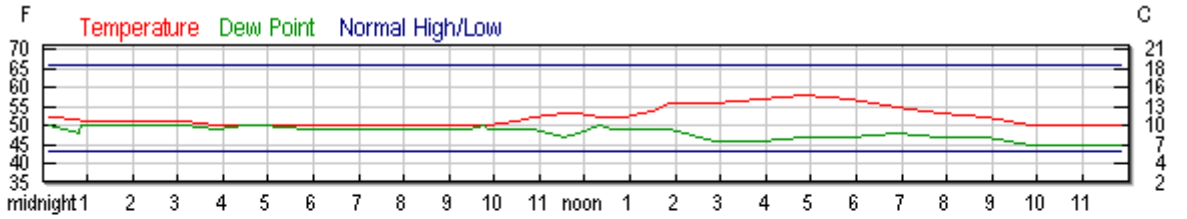
	Actual	Average	Record
Temperature			
Mean Temperature	**54** °F	-	
Max Temperature	**60** °F	-	- ()
Min Temperature	**48** °F	-	- ()
Degree Days			
Heating Degree Days	11		
Month to date heating degree days	195		
Growing Degree Days	5 (Base 50)		
Moisture			
Dew Point	**48** °F		

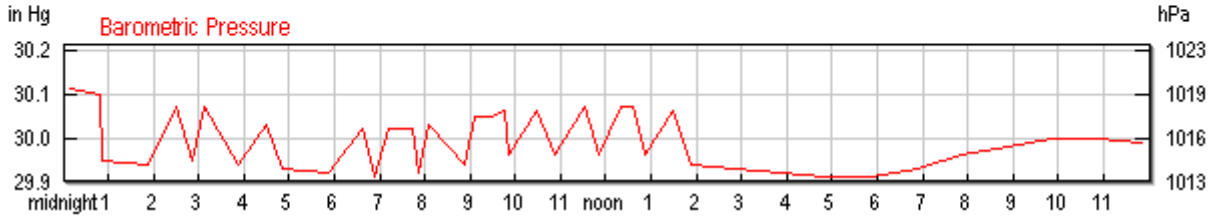
	Actual	Average	Record
Average Humidity	84		
Maximum Humidity	100		
Minimum Humidity	67		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	1.64		
Year to date precipitation	7.88		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.99** in		
Wind			
Wind Speed	**8** mph (NNW)		
Max Wind Speed	**17** mph		
Max Gust Speed	**23** mph		
Visibility	**7** miles		
Events	Rain		

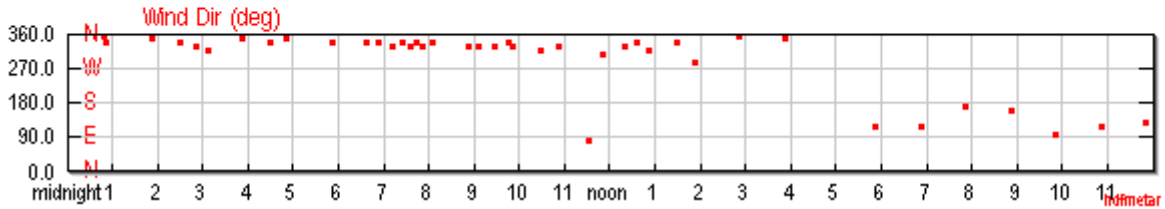
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Oct. 24, 2018	Rise	Set
Actual Time	7:20 AM MDT	6:20 PM MDT

Oct. 24, 2018	Rise	Set
Civil Twilight	6:54 AM MDT	6:46 PM MDT
Nautical Twilight	6:24 AM MDT	7:15 PM MDT
Astronomical Twilight	5:55 AM MDT	7:45 PM MDT
Moon	6:49 PM MDT (10/24)	7:08 AM MDT (10/24)
Length of Visible Light	11h 51m	
Length of Day	11h 00m	

Full, 100% of the Moon is Illuminated

Oct 24	Oct 31	Nov 7	Nov 15	Nov 22
Full	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:08 AM	**52.0** °F	**50.0** °F	93%	**30.11** in	**10.0** mi	NNE	**9.2** mph	-	**0.00** in	Rain	Light Rain
12:48 AM	**51.8** °F	**48.2** °F	88%	**30.10** in	**10.0** mi	North	**8.1** mph	-	N/A	Rain	Light Rain
12:52 AM	**51.1** °F	**50.0** °F	96%	**29.95** in	**10.0** mi	NNW	**6.9** mph	-	**0.01** in	Rain	Light Rain
1:52 AM	**51.1** °F	**50.0** °F	96%	**29.94** in	**6.0** mi	North	**6.9** mph	-	**0.05** in	Rain	Light Rain
2:31 AM	**51.1** °F	**50.0** °F	96%	**30.07** in	**8.0** mi	NNW	**8.1** mph	-	**0.01** in	Rain	Light Rain
2:52 AM	**51.1** °F	**50.0** °F	96%	**29.95** in	**8.0** mi	NNW	**9.2** mph	-	**0.02** in	Rain	Light Rain
3:08 AM	**51.1** °F	**50.0** °F	96%	**30.07** in	**8.0** mi	NW	**10.4** mph	-	**0.00** in	Rain	Light Rain
3:52 AM	**50.0** °F	**48.9** °F	96%	**29.94** in	**6.0** mi	North	**13.8** mph	**23.0** mph	**0.03** in	Rain	Rain
4:31 AM	**50.0** °F	**50.0** °F	100%	**30.03** in	**4.0** mi	NNW	**10.4** mph	**21.9** mph	**0.03** in	Rain	Light Rain

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
4:52 AM	**50.0** °F	**50.0** °F	100%	**29.93** in	**4.0** mi	North	**16.1** mph	-	**0.04** in	Rain	Light Rain
5:52 AM	**50.0** °F	**48.9** °F	96%	**29.92** in	**4.0** mi	NNW	**10.4** mph	-	**0.03** in	Rain	Light Rain
6:38 AM	**50.0** °F	**48.9** °F	96%	**30.02** in	**5.0** mi	NNW	**11.5** mph	-	**0.03** in	Rain	Light Rain
6:52 AM	**50.0** °F	**48.9** °F	96%	**29.91** in	**5.0** mi	NNW	**11.5** mph	-	**0.03** in	Rain	Light Rain
7:12 AM	**50.0** °F	**48.9** °F	96%	**30.02** in	**6.0** mi	NNW	**13.8** mph	-	**0.01** in	Rain	Light Rain
7:26 AM	**50.0** °F	**48.9** °F	96%	**30.02** in	**4.0** mi	NNW	**12.7** mph	-	**0.04** in	Rain	Heavy Rain
7:35 AM	**50.0** °F	**48.9** °F	96%	**30.02** in	**2.5** mi	NNW	**13.8** mph	-	**0.07** in	Rain	Rain
7:44 AM	**50.0** °F	**48.9** °F	96%	**30.02** in	**2.0** mi	NNW	**8.1** mph	-	**0.10** in	Rain	Rain
7:52 AM	**50.0** °F	**48.9** °F	96%	**29.92** in	**2.0** mi	NNW	**12.7** mph	-	**0.12** in	Rain	Rain
8:05 AM	**50.0** °F	**48.9** °F	96%	**30.03** in	**2.5** mi	NNW	**11.5** mph	-	**0.04** in	Rain	Light Rain
8:52 AM	**50.0** °F	**48.9** °F	96%	**29.94** in	**3.0** mi	NNW	**9.2** mph	-	**0.10** in	Rain	Light Rain
9:05 AM	**50.0** °F	**48.9** °F	96%	**30.05** in	**3.0** mi	NNW	**10.4** mph	-	**0.01** in	Rain	Light Rain
9:26 AM	**50.0** °F	**48.9** °F	96%	**30.05** in	**3.0** mi	NNW	**6.9** mph	-	**0.02** in	Rain	Light Rain
9:47 AM	**50.0** °F	**50.0** °F	100%	**30.06** in	**3.0** mi	NNW	**9.2** mph	-	**0.04** in	Rain	Light Rain
9:52 AM	**50.0** °F	**48.9** °F	96%	**29.96** in	**3.0** mi	NNW	**6.9** mph	-	**0.05** in	Rain	Light Rain
10:28 AM	**51.1** °F	**48.9** °F	92%	**30.06** in	**5.0** mi	NW	**6.9** mph	-	**0.01** in	Rain	Light Rain
10:52 AM	**52.0** °F	**48.9** °F	89%	**29.96** in	**5.0** mi	NNW	**8.1** mph	-	**0.02** in	Rain	Light Rain
11:32 AM	**53.1** °F	**46.9** °F	80%	**30.07** in	**5.0** mi	East	**4.6** mph	-	**0.01** in	Rain	Light Rain
11:52 AM	**53.1** °F	**48.0** °F	83%	**29.96** in	**6.0** mi	NW	**10.4** mph	-	**0.02** in	Rain	Light Rain
12:20 PM	**52.0** °F	**50.0** °F	93%	**30.07** in	**10.0** mi	NNW	**9.2** mph	-	**0.00** in	Rain	Light Rain
12:35 PM	**52.0** °F	**48.9** °F	89%	**30.07** in	**10.0** mi	NNW	**10.4** mph	-	**0.00** in		Overcast
12:52 PM	**52.0** °F	**48.9** °F	89%	**29.96** in	**10.0** mi	NW	**11.5** mph	-	**0.00** in		Overcast
1:29 PM	**54.0** °F	**48.9** °F	83%	**30.06** in	**10.0** mi	NNW	**6.9** mph	-	N/A		Mostly Cloudy

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
1:52 PM	**55.9** °F	**48.9** °F	77%	**29.94** in	**10.0** mi	WNW	**6.9** mph	-	N/A		Mostly Cloudy
2:52 PM	**55.9** °F	**46.0** °F	69%	**29.93** in	**10.0** mi	North	**8.1** mph	-	N/A		Mostly Cloudy
3:52 PM	**57.0** °F	**46.0** °F	67%	**29.92** in	**10.0** mi	North	**6.9** mph	-	N/A		Mostly Cloudy
4:52 PM	**57.9** °F	**46.9** °F	67%	**29.91** in	**10.0** mi	Calm	Calm	-	N/A		Scattered Clouds
5:52 PM	**57.0** °F	**46.9** °F	69%	**29.91** in	**10.0** mi	ESE	**4.6** mph	-	N/A		Scattered Clouds
6:52 PM	**55.0** °F	**48.0** °F	77%	**29.93** in	**10.0** mi	ESE	**4.6** mph	-	N/A		Scattered Clouds
7:52 PM	**53.1** °F	**46.9** °F	80%	**29.96** in	**10.0** mi	South	**5.8** mph	-	N/A		Partly Cloudy
8:52 PM	**52.0** °F	**46.9** °F	83%	**29.98** in	**10.0** mi	SSE	**4.6** mph	-	N/A		Partly Cloudy
9:52 PM	**50.0** °F	**45.0** °F	83%	**30.00** in	**10.0** mi	East	**4.6** mph	-	N/A		Partly Cloudy
10:52 PM	**50.0** °F	**45.0** °F	83%	**30.00** in	**10.0** mi	ESE	**4.6** mph	-	N/A		Partly Cloudy
11:52 PM	**50.0** °F	**45.0** °F	83%	**29.99** in	**10.0** mi	SE	**3.5** mph	-	N/A		Scattered Clouds

Albuquerque, NM

Albuquerque International Sunport

1:46 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - October, 2018

October

30

2018

View

Tuesday, October 30, 2018

Daily | Weekly | Monthly | Custom

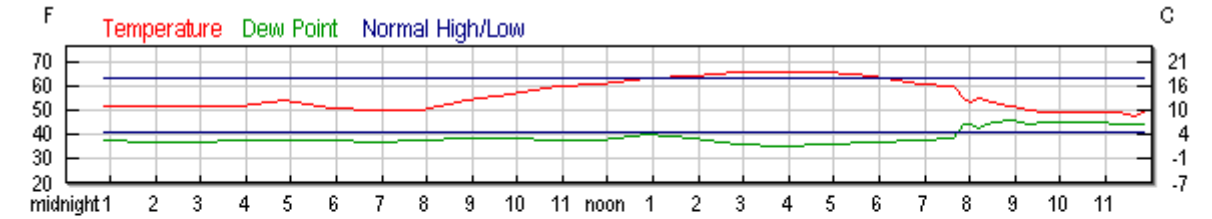
	Actual	Average	Record
Temperature			
Mean Temperature	**57** °F	-	
Max Temperature	**67** °F	-	- ()
Min Temperature	**47** °F	-	- ()
Degree Days			
Heating Degree Days	8		
Month to date heating degree days	243		
Growing Degree Days	7 (Base 50)		
Moisture			
Dew Point	**40** °F		

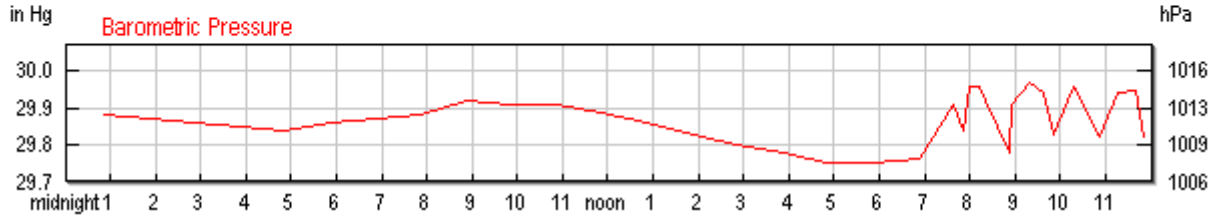
	Actual	Average	Record
Average Humidity	59		
Maximum Humidity	86		
Minimum Humidity	32		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	1.88		
Year to date precipitation	8.12		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.86** in		
Wind			
Wind Speed	**10** mph (SSE)		
Max Wind Speed	**37** mph		
Max Gust Speed	**46** mph		
Visibility	**9** miles		
Events	Rain , Thunderstorm		

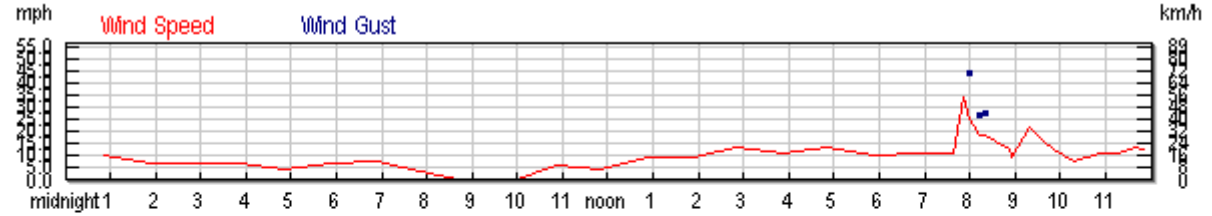
T = Trace of Precipitation, MM = Missing Value

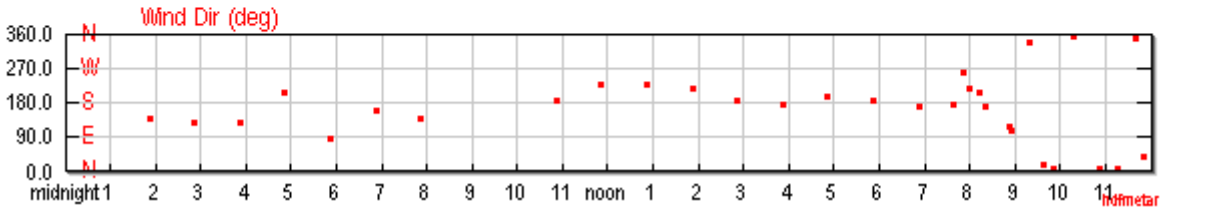
Source: NWS Daily Summary

Daily Weather History Graph









Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Oct. 30, 2018	**Rise**	**Set**
Actual Time	7:25 AM MDT	6:13 PM MDT

Oct. 30, 2018	Rise	Set
Civil Twilight	6:59 AM MDT	6:40 PM MDT
Nautical Twilight	6:29 AM MDT	7:09 PM MDT
Astronomical Twilight	6:00 AM MDT	7:39 PM MDT
Moon	11:46 PM MDT (10/30)	1:20 PM MDT (10/30)
Length of Visible Light	11h 40m	
Length of Day	10h 48m	

Waning Gibbous, 61% of the Moon is Illuminated

Oct 30	Oct 31	Nov 7	Nov 15	Nov 22
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**52.0** °F	**37.9** °F	59%	**29.88** in	**10.0** mi	SE	**10.4** mph	-	N/A		Scattered Clouds
1:52 AM	**52.0** °F	**37.0** °F	57%	**29.87** in	**10.0** mi	SE	**6.9** mph	-	N/A		Mostly Cloudy
2:52 AM	**52.0** °F	**37.0** °F	57%	**29.86** in	**10.0** mi	SE	**6.9** mph	-	N/A		Mostly Cloudy
3:52 AM	**52.0** °F	**37.9** °F	59%	**29.85** in	**10.0** mi	SE	**6.9** mph	-	N/A		Mostly Cloudy
4:52 AM	**54.0** °F	**37.9** °F	55%	**29.84** in	**10.0** mi	SSW	**4.6** mph	-	N/A		Scattered Clouds
5:52 AM	**51.1** °F	**37.9** °F	61%	**29.86** in	**10.0** mi	East	**6.9** mph	-	N/A		Partly Cloudy
6:52 AM	**50.0** °F	**37.0** °F	61%	**29.87** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Scattered Clouds
7:52 AM	**50.0** °F	**37.9** °F	63%	**29.88** in	**10.0** mi	SE	**3.5** mph	-	N/A		Mostly Cloudy
8:52 AM	**54.0** °F	**39.0** °F	57%	**29.92** in	**10.0** mi	Calm	Calm	-	N/A		Overcast

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**57.0** °F	**39.0** °F	51%	**29.91** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
10:52 AM	**60.1** °F	**37.9** °F	44%	**29.91** in	**10.0** mi	South	**5.8** mph	-	N/A		Overcast
11:52 AM	**61.0** °F	**37.9** °F	42%	**29.89** in	**10.0** mi	SW	**4.6** mph	-	N/A		Overcast
12:52 PM	**63.0** °F	**39.9** °F	43%	**29.86** in	**10.0** mi	SW	**9.2** mph	-	N/A		Overcast
1:52 PM	**64.0** °F	**39.0** °F	40%	**29.83** in	**10.0** mi	SW	**9.2** mph	**19.6** mph	N/A		Mostly Cloudy
2:52 PM	**66.0** °F	**36.0** °F	33%	**29.80** in	**10.0** mi	South	**13.8** mph	-	N/A		Mostly Cloudy
3:52 PM	**66.0** °F	**35.1** °F	32%	**29.78** in	**10.0** mi	South	**11.5** mph	-	N/A		Overcast
4:52 PM	**66.0** °F	**36.0** °F	33%	**29.75** in	**10.0** mi	SSW	**13.8** mph	-	N/A		Mostly Cloudy
5:52 PM	**64.0** °F	**37.0** °F	37%	**29.75** in	**10.0** mi	South	**10.4** mph	-	N/A		Mostly Cloudy
6:52 PM	**61.0** °F	**37.9** °F	42%	**29.76** in	**10.0** mi	South	**11.5** mph	-	N/A		Mostly Cloudy
7:37 PM	**60.1** °F	**39.0** °F	46%	**29.91** in	**10.0** mi	South	**11.5** mph	-	N/A	Thunderstorm	Thunderstorm
7:52 PM	**55.0** °F	**44.1** °F	67%	**29.84** in	**3.0** mi	West	**34.5** mph	**46.0** mph	**0.01** in	Rain , Thunderstorm	Heavy Thunderstorms and Rain
7:59 PM	**53.1** °F	**44.1** °F	71%	**29.96** in	**3.0** mi	SW	**25.3** mph	**43.7** mph	**0.07** in	Rain , Thunderstorm	Thunderstorms and Rain
8:12 PM	**55.0** °F	**43.0** °F	64%	**29.96** in	**9.0** mi	SSW	**18.4** mph	**26.5** mph	**0.08** in	Rain , Thunderstorm	Light Thunderstorms and Rain
8:22 PM	**54.0** °F	**44.1** °F	69%	**29.92** in	**7.0** mi	South	**18.4** mph	**27.6** mph	**0.10** in	Rain	Rain
8:52 PM	**52.0** °F	**46.0** °F	80%	**29.78** in	**10.0** mi	ESE	**12.7** mph	-	**0.10** in		Mostly Cloudy
8:56 PM	**52.0** °F	**46.0** °F	80%	**29.91** in	**10.0** mi	ESE	**9.2** mph	-	N/A	Thunderstorm	Thunderstorm
9:20 PM	**50.0** °F	**44.1** °F	80%	**29.97** in	**4.0** mi	NNW	**21.9** mph	**29.9** mph	**0.06** in	Rain , Thunderstorm	Heavy Thunderstorms and Rain
9:39 PM	**48.9** °F	**45.0** °F	86%	**29.94** in	**10.0** mi	NNE	**16.1** mph	-	**0.09** in	Rain	Light Rain
9:52 PM	**48.9** °F	**45.0** °F	86%	**29.83** in	**10.0** mi	North	**12.7** mph	-	**0.09** in	Thunderstorm	Thunderstorm
10:18 PM	**48.9** °F	**45.0** °F	86%	**29.96** in	**10.0** mi	North	**8.1** mph	-	**0.02** in	Rain	Light Rain

Time (MDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
10:52 PM	**48.9** °F	**45.0** °F	86%	**29.82** in	**10.0** mi	North	**11.5** mph	-	**0.02** in		Mostly Cloudy
11:16 PM	**48.9** °F	**44.1** °F	83%	**29.94** in	**10.0** mi	North	**11.5** mph	-	**0.00** in	Thunderstorm	Thunderstorm
11:40 PM	**48.0** °F	**44.1** °F	86%	**29.95** in	**10.0** mi	North	**13.8** mph	-	**0.00** in		Mostly Cloudy
11:52 PM	**48.9** °F	**44.1** °F	83%	**29.82** in	**9.0** mi	NE	**12.7** mph	-	**0.01** in	Rain	Rain

Albuquerque, NM

Albuquerque International Sunport

1:47 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - October, 2018

October

31

2018

View

Wednesday, October 31, 2018

Daily | Weekly | Monthly | Custom

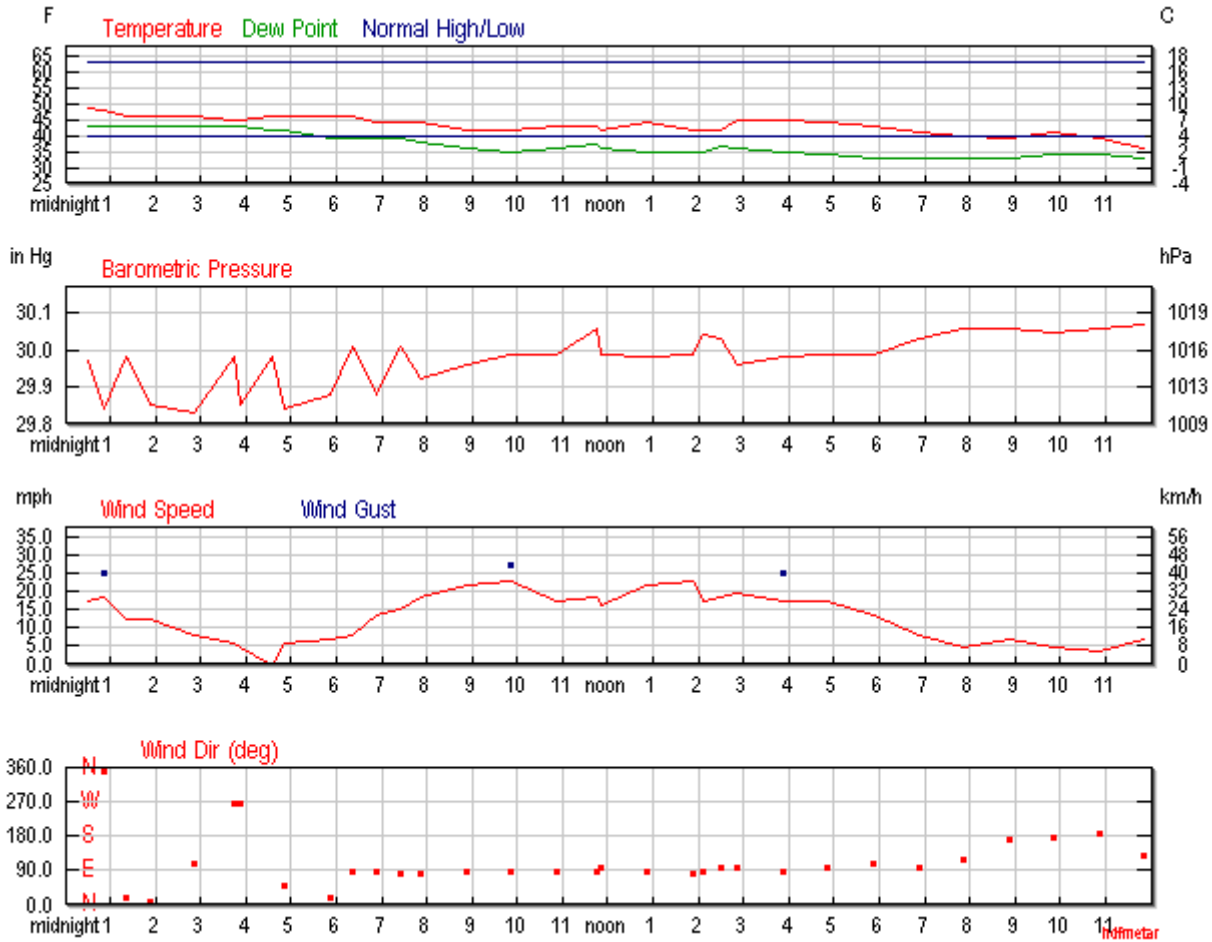
	Actual	Average	Record
Temperature			
Mean Temperature	**42** °F	-	
Max Temperature	**47** °F	-	- ()
Min Temperature	**36** °F	-	- ()
Degree Days			
Heating Degree Days	23		
Month to date heating degree days	266		
Moisture			
Dew Point	**37** °F		
Average Humidity	79		

	Actual	Average	Record
Maximum Humidity	92		
Minimum Humidity	65		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	1.99		
Year to date precipitation	8.23		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.97** in		
Wind			
Wind Speed	**13** mph (East)		
Max Wind Speed	**25** mph		
Max Gust Speed	**29** mph		
Visibility	**10** miles		
Events	Rain		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Airport or City:

KABQ

Submit

Astronomy

Oct. 31, 2018	**Rise**	**Set**
Actual Time	7:26 AM MDT	6:12 PM MDT

Oct. 31, 2018	Rise	Set
Civil Twilight	7:00 AM MDT	6:39 PM MDT
Nautical Twilight	6:30 AM MDT	7:08 PM MDT
Astronomical Twilight	6:01 AM MDT	7:38 PM MDT
Moon	No Moon Rise	2:10 PM MDT (10/31)
Length of Visible Light	11h 38m	
Length of Day	10h 46m	

Waning Gibbous, 49% of the Moon is Illuminated

Oct 31	Nov 7	Nov 15	Nov 22	Nov 29
Waning Gibbous	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:30 AM	**48.9** °F	-	**43.0** °F	80%	**29.97** in	**10.0** mi	North	**17.3** mph	**21.9** mph	**0.01** in		Mostly Cloudy
12:52 AM	**48.0** °F	-	**43.0** °F	83%	**29.84** in	**10.0** mi	North	**18.4** mph	**25.3** mph	**0.01** in	Rain	Light Rain
1:21 AM	**46.0** °F	**40.2** °F	**43.0** °F	89%	**29.98** in	**10.0** mi	NNE	**12.7** mph	-	**0.00** in	Rain	Light Rain
1:52 AM	**46.0** °F	**40.2** °F	**43.0** °F	89%	**29.85** in	**5.0** mi	North	**12.7** mph	-	**0.03** in	Rain	Light Rain
2:52 AM	**46.0** °F	**41.9** °F	**43.0** °F	89%	**29.83** in	**10.0** mi	ESE	**8.1** mph	-	**0.00** in		Mostly Cloudy
3:44 AM	**45.0** °F	**41.8** °F	**43.0** °F	93%	**29.98** in	**10.0** mi	West	**5.8** mph	-	N/A		Overcast
3:52 AM	**45.0** °F	**42.6** °F	**43.0** °F	93%	**29.85** in	**10.0** mi	West	**4.6** mph	-	N/A		Overcast
4:35 AM	**46.0** °F	-	**42.1** °F	86%	**29.98** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
4:52 AM	**46.0** °F	**43.1** °F	**42.1** °F	86%	**29.84** in	**10.0** mi	NE	**5.8** mph	-	N/A		Overcast

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
5:52 AM	**46.0** °F	**42.5** °F	**39.0** °F	76%	**29.88** in	**10.0** mi	NNE	**6.9** mph	-	N/A		Overcast
6:20 AM	**46.0** °F	**41.9** °F	**39.0** °F	76%	**30.01** in	**10.0** mi	East	**8.1** mph	-	N/A		Overcast
6:52 AM	**44.1** °F	**37.4** °F	**39.0** °F	82%	**29.88** in	**6.0** mi	East	**13.8** mph	-	**0.02** in	Rain	Light Rain
7:26 AM	**44.1** °F	**37.1** °F	**39.0** °F	82%	**30.01** in	**10.0** mi	East	**15.0** mph	-	**0.00** in		Mostly Cloudy
7:52 AM	**44.1** °F	**36.2** °F	**37.9** °F	79%	**29.92** in	**10.0** mi	East	**18.4** mph	-	**0.00** in		Overcast
8:52 AM	**42.1** °F	**32.8** °F	**36.0** °F	79%	**29.96** in	**10.0** mi	East	**21.9** mph	**27.6** mph	N/A		Overcast
9:52 AM	**42.1** °F	**32.6** °F	**35.1** °F	76%	**29.99** in	**10.0** mi	East	**23.0** mph	**27.6** mph	**0.04** in	Rain	Light Rain
10:52 AM	**43.0** °F	**35.1** °F	**36.0** °F	76%	**29.99** in	**10.0** mi	East	**17.3** mph	-	**0.00** in	Rain	Light Rain
11:46 AM	**42.8** °F	**34.5** °F	**37.4** °F	81%	**30.06** in	**10.0** mi	East	**18.4** mph	-	**0.00** in	Rain	Light Rain
11:52 AM	**42.1** °F	**34.2** °F	**36.0** °F	79%	**29.99** in	**10.0** mi	East	**16.1** mph	-	**0.00** in	Rain	Light Rain
12:52 PM	**44.1** °F	**35.4** °F	**35.1** °F	71%	**29.98** in	**10.0** mi	East	**21.9** mph	-	**0.00** in		Mostly Cloudy
1:52 PM	**42.1** °F	**32.6** °F	**35.1** °F	76%	**29.99** in	**10.0** mi	East	**23.0** mph	-	N/A		Mostly Cloudy
2:07 PM	**42.1** °F	**33.9** °F	**35.1** °F	76%	**30.04** in	**9.0** mi	East	**17.3** mph	**26.5** mph	**0.00** in	Rain	Light Rain
2:29 PM	**42.1** °F	**33.6** °F	**37.0** °F	82%	**30.03** in	**10.0** mi	East	**18.4** mph	-	**0.02** in		Mostly Cloudy
2:52 PM	**45.0** °F	**37.1** °F	**36.0** °F	71%	**29.96** in	**10.0** mi	East	**19.6** mph	**24.2** mph	**0.02** in		Scattered Clouds
3:52 PM	**45.0** °F	**37.6** °F	**35.1** °F	68%	**29.98** in	**10.0** mi	East	**17.3** mph	**25.3** mph	N/A		Mostly Cloudy
4:52 PM	**44.1** °F	**36.5** °F	**34.0** °F	68%	**29.99** in	**10.0** mi	East	**17.3** mph	-	N/A		Mostly Cloudy
5:52 PM	**43.0** °F	**36.0** °F	**33.1** °F	68%	**29.99** in	**10.0** mi	ESE	**13.8** mph	-	N/A		Scattered Clouds
6:52 PM	**41.0** °F	**35.8** °F	**33.1** °F	73%	**30.03** in	**10.0** mi	East	**8.1** mph	-	N/A		Partly Cloudy
7:52 PM	**39.9** °F	**36.7** °F	**33.1** °F	77%	**30.06** in	**10.0** mi	ESE	**4.6** mph	-	N/A		Partly Cloudy
8:52 PM	**39.0** °F	**34.0** °F	**33.1** °F	79%	**30.06** in	**10.0** mi	South	**6.9** mph	-	N/A		Partly Cloudy
9:52 PM	**41.0** °F	**38.0** °F	**34.0** °F	76%	**30.05** in	**10.0** mi	South	**4.6** mph	-	N/A		Overcast
10:52 PM	**39.0** °F	**36.8** °F	**34.0** °F	82%	**30.06** in	**10.0** mi	South	**3.5** mph	-	N/A		Scattered Clouds

Time (MDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
11:52 PM	**36.0** °F	**30.3** °F	**33.1** °F	89%	**30.07** in	**10.0** mi	SE	**6.9** mph	-	N/A		Partly Cloudy

Albuquerque, NM

Albuquerque International Sunport

1:50 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - November, 2018

November

11

2018

View
Sunday, November 11, 2018

Daily | Weekly | Monthly | Custom

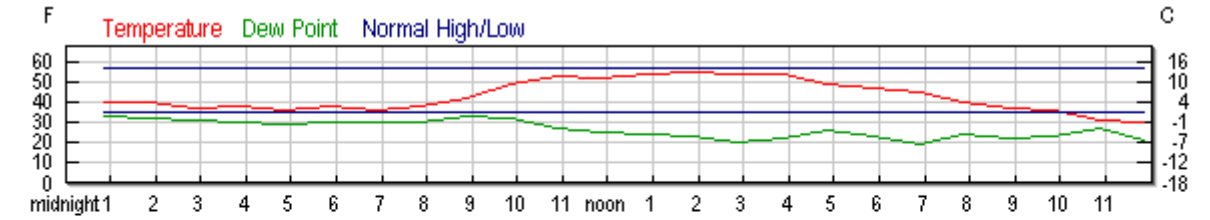
	Actual	Average	Record
Temperature			
Mean Temperature	**44** °F	-	
Max Temperature	**57** °F	-	- ()
Min Temperature	**31** °F	-	- ()
Degree Days			
Heating Degree Days	21		
Month to date heating degree days	185		
Moisture			
Dew Point	**28** °F		
Average Humidity	56		

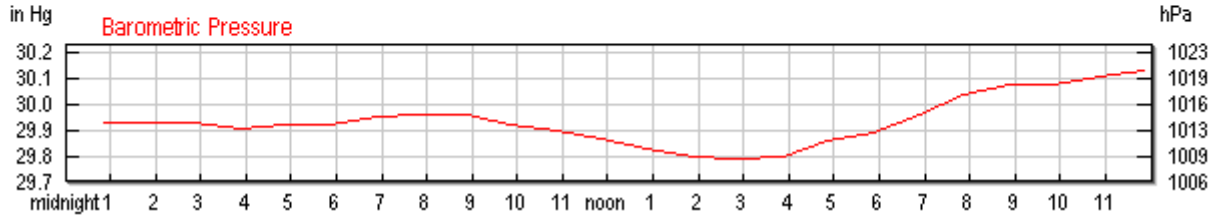
	Actual	Average	Record
Maximum Humidity	85		
Minimum Humidity	26		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	T		
Year to date precipitation	8.23		
Snow			
Snow	**T** in	-	- ()
Month to date snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.94** in		
Wind			
Wind Speed	**10** mph (SSE)		
Max Wind Speed	**28** mph		
Max Gust Speed	**34** mph		
Visibility	**10** miles		
Events	Snow		

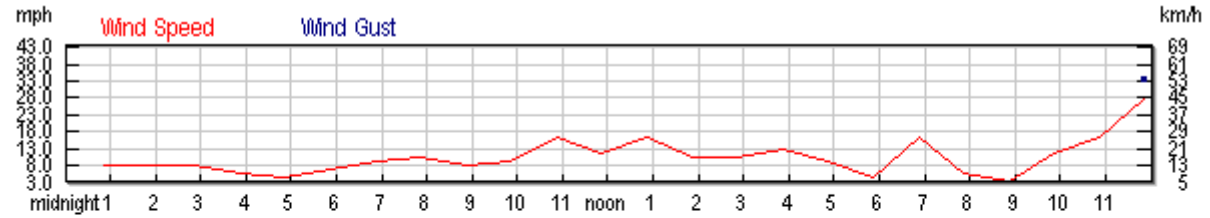
T = Trace of Precipitation, MM = Missing Value

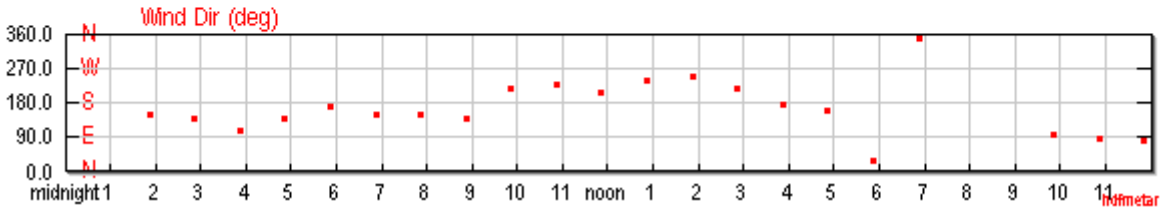
Source: NWS Daily Summary

Daily Weather History Graph









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Astronomy

Nov. 11, 2018	**Rise**	**Set**
Actual Time	6:37 AM MST	5:03 PM MST

Nov. 11, 2018	Rise	Set
Civil Twilight	6:10 AM MST	5:30 PM MST
Nautical Twilight	5:40 AM MST	6:00 PM MST
Astronomical Twilight	5:10 AM MST	6:30 PM MST
Moon	10:16 AM MST (11/11)	8:28 PM MST (11/11)
Length of Visible Light	11h 19m	
Length of Day	10h 26m	

Waxing Crescent, 17% of the Moon is Illuminated

Nov 11	Nov 15	Nov 22	Nov 29	Dec 7
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**41.0** °F	**35.8** °F	**34.0** °F	76%	**29.93** in	**10.0** mi	SE	**8.1** mph	-	N/A		Scattered Clouds
1:52 AM	**41.0** °F	**35.8** °F	**33.1** °F	73%	**29.93** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Partly Cloudy
2:52 AM	**37.9** °F	**32.1** °F	**32.0** °F	79%	**29.93** in	**10.0** mi	SE	**8.1** mph	-	N/A		Clear
3:52 AM	**39.0** °F	**34.8** °F	**30.9** °F	73%	**29.91** in	**10.0** mi	ESE	**5.8** mph	-	N/A		Partly Cloudy
4:52 AM	**37.0** °F	**33.3** °F	**30.0** °F	76%	**29.92** in	**10.0** mi	SE	**4.6** mph	-	N/A		Partly Cloudy
5:52 AM	**39.0** °F	**34.0** °F	**30.9** °F	73%	**29.92** in	**10.0** mi	South	**6.9** mph	-	N/A		Partly Cloudy
6:52 AM	**37.0** °F	**30.4** °F	**30.9** °F	79%	**29.95** in	**10.0** mi	SSE	**9.2** mph	-	N/A		Partly Cloudy
7:52 AM	**39.0** °F	**32.3** °F	**30.9** °F	73%	**29.96** in	**10.0** mi	SSE	**10.4** mph	-	N/A		Scattered Clouds
8:52 AM	**43.0** °F	**38.2** °F	**34.0** °F	71%	**29.96** in	**10.0** mi	SE	**8.1** mph	-	N/A		Scattered Clouds

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**50.0** °F	-	**33.1** °F	52%	**29.92** in	**10.0** mi	SW	**9.2** mph	-	N/A		Scattered Clouds
10:52 AM	**54.0** °F	-	**28.0** °F	37%	**29.90** in	**10.0** mi	SW	**16.1** mph	-	N/A		Mostly Cloudy
11:52 AM	**53.1** °F	-	**26.1** °F	35%	**29.87** in	**10.0** mi	SSW	**11.5** mph	-	N/A		Mostly Cloudy
12:52 PM	**55.0** °F	-	**25.0** °F	31%	**29.83** in	**10.0** mi	WSW	**16.1** mph	-	N/A		Mostly Cloudy
1:52 PM	**55.9** °F	-	**24.1** °F	29%	**29.80** in	**10.0** mi	WSW	**10.4** mph	-	N/A		Mostly Cloudy
2:52 PM	**55.0** °F	-	**21.0** °F	27%	**29.79** in	**10.0** mi	SW	**10.4** mph	-	N/A		Mostly Cloudy
3:52 PM	**55.0** °F	-	**23.0** °F	29%	**29.80** in	**10.0** mi	South	**12.7** mph	**17.3** mph	N/A		Mostly Cloudy
4:52 PM	**50.0** °F	-	**27.0** °F	41%	**29.86** in	**10.0** mi	SSE	**9.2** mph	-	N/A		Mostly Cloudy
5:52 PM	**48.0** °F	-	**24.1** °F	39%	**29.89** in	**10.0** mi	NNE	**4.6** mph	-	N/A		Mostly Cloudy
6:52 PM	**46.0** °F	**39.3** °F	**19.9** °F	35%	**29.96** in	**10.0** mi	North	**16.1** mph	-	N/A		Mostly Cloudy
7:52 PM	**41.0** °F	**37.1** °F	**25.0** °F	53%	**30.04** in	**10.0** mi	Variable	**5.8** mph	-	N/A		Mostly Cloudy
8:52 PM	**37.9** °F	**35.5** °F	**23.0** °F	55%	**30.08** in	**10.0** mi	Variable	**3.5** mph	**17.3** mph	N/A		Mostly Cloudy
9:52 PM	**37.0** °F	**29.3** °F	**24.1** °F	59%	**30.08** in	**10.0** mi	East	**11.5** mph	-	N/A		Overcast
10:52 PM	**32.0** °F	**21.2** °F	**28.0** °F	85%	**30.11** in	**7.0** mi	East	**16.1** mph	**25.3** mph	**0.00** in	Snow	Light Snow
11:52 PM	**30.9** °F	**16.7** °F	**21.9** °F	69%	**30.13** in	**10.0** mi	East	**27.6** mph	**33.4** mph	**0.00** in		Mostly Cloudy

Albuquerque, NM

Albuquerque International Sunport

1:50 PM MST on November 16, 2018 (GMT -0700)

Weather History for KABQ - November, 2018

November

12

2018

View

Monday, November 12, 2018

Daily | Weekly | Monthly | Custom

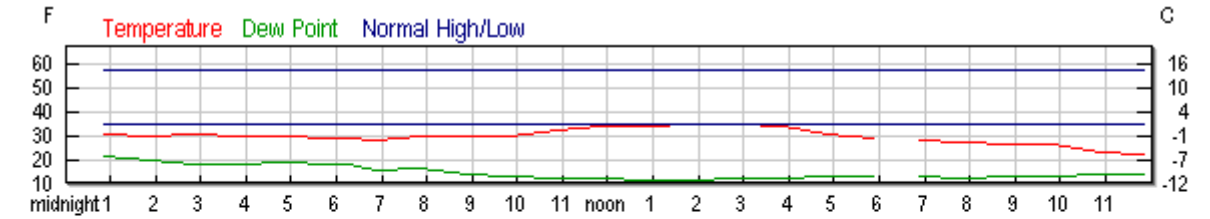
	Actual	Average	Record
Temperature			
Mean Temperature	**29** °F	-	
Max Temperature	**36** °F	-	- ()
Min Temperature	**22** °F	-	- ()
Degree Days			
Heating Degree Days	36		
Month to date heating degree days	221		
Moisture			
Dew Point	**15** °F		
Average Humidity	52		

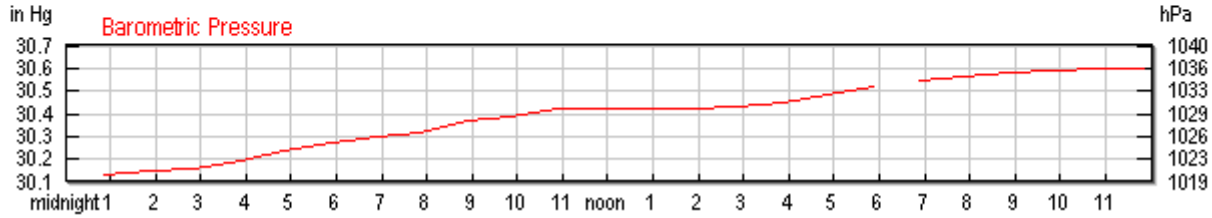
	Actual	Average	Record
Maximum Humidity	69		
Minimum Humidity	35		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	T		
Year to date precipitation	8.23		
Snow			
Snow	**T** in	-	- ()
Month to date snowfall	T		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.40** in		
Wind			
Wind Speed	**18** mph (ESE)		
Max Wind Speed	**40** mph		
Max Gust Speed	**50** mph		
Visibility	**10** miles		
Events	Snow		

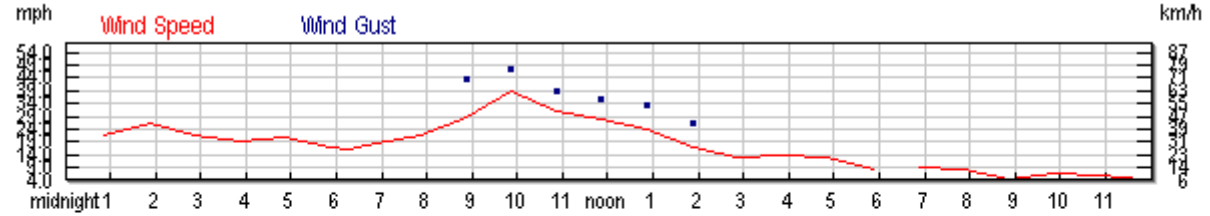
T = Trace of Precipitation, MM = Missing Value

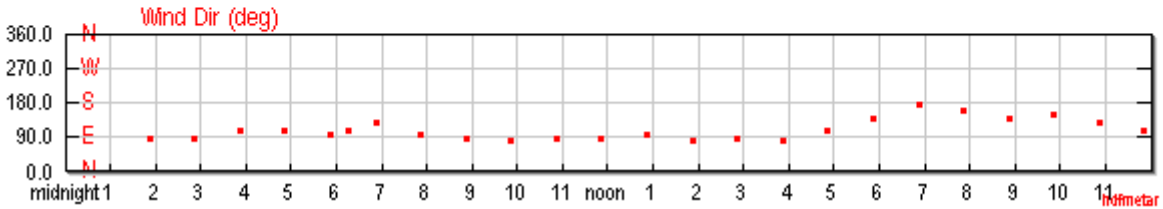
Source: NWS Daily Summary

Daily Weather History Graph









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Airport or City:

KABQ

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Astronomy

Nov. 12, 2018	**Rise**	**Set**
Actual Time	6:38 AM MST	5:02 PM MST

Nov. 12, 2018	Rise	Set
Civil Twilight	6:11 AM MST	5:29 PM MST
Nautical Twilight	5:40 AM MST	5:59 PM MST
Astronomical Twilight	5:10 AM MST	6:29 PM MST
Moon	11:05 AM MST (11/12)	9:19 PM MST (11/12)
Length of Visible Light	11h 18m	
Length of Day	10h 24m	

Waxing Crescent, 25% of the Moon is Illuminated

Nov 12	Nov 15	Nov 22	Nov 29	Dec 7
Waxing Crescent	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**30.9** °F	**18.1** °F	**21.0** °F	67%	**30.13** in	**10.0** mi	East	**21.9** mph	-	N/A		Mostly Cloudy
1:52 AM	**30.0** °F	**15.7** °F	**19.9** °F	66%	**30.15** in	**10.0** mi	East	**26.5** mph	**33.4** mph	N/A		Mostly Cloudy
2:52 AM	**30.9** °F	**18.1** °F	**18.0** °F	59%	**30.16** in	**10.0** mi	East	**21.9** mph	-	N/A		Mostly Cloudy
3:52 AM	**30.0** °F	**17.5** °F	**18.0** °F	61%	**30.19** in	**10.0** mi	ESE	**19.6** mph	-	N/A		Overcast
4:52 AM	**30.0** °F	**17.2** °F	**19.0** °F	64%	**30.24** in	**10.0** mi	ESE	**20.7** mph	-	**0.00** in	Snow	Light Snow
5:52 AM	**28.9** °F	**16.9** °F	**18.0** °F	64%	**30.27** in	**9.0** mi	East	**17.3** mph	-	**0.00** in	Snow	Light Snow
6:17 AM	**28.9** °F	**17.3** °F	**18.0** °F	64%	**30.28** in	**9.0** mi	ESE	**16.1** mph	-	**0.00** in		Mostly Cloudy
6:52 AM	**28.4** °F	**15.8** °F	**15.8** °F	59%	**30.30** in	**10.0** mi	SE	**18.4** mph	-	N/A		Mostly Cloudy
7:52 AM	**30.0** °F	**16.9** °F	**16.0** °F	56%	**30.32** in	**10.0** mi	East	**21.9** mph	**33.4** mph	N/A		Mostly Cloudy

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
8:52 AM	**30.0** °F	**15.2** °F	**14.0** °F	51%	**30.37** in	**10.0** mi	East	**28.8** mph	**43.7** mph	N/A		Mostly Cloudy
9:52 AM	**30.0** °F	**13.2** °F	**12.9** °F	49%	**30.39** in	**10.0** mi	East	**39.1** mph	**47.2** mph	N/A		Mostly Cloudy
10:52 AM	**32.0** °F	**17.4** °F	**12.0** °F	44%	**30.42** in	**10.0** mi	East	**31.1** mph	**39.1** mph	N/A		Mostly Cloudy
11:52 AM	**34.0** °F	**20.8** °F	**12.0** °F	40%	**30.42** in	**10.0** mi	East	**27.6** mph	**35.7** mph	N/A		Mostly Cloudy
12:52 PM	**34.0** °F	**21.5** °F	**10.9** °F	38%	**30.42** in	**10.0** mi	East	**24.2** mph	**33.4** mph	N/A		Mostly Cloudy
1:52 PM	**35.1** °F	**24.8** °F	**10.9** °F	37%	**30.42** in	**10.0** mi	East	**17.3** mph	**26.5** mph	N/A		Mostly Cloudy
2:52 PM	**35.1** °F	**26.4** °F	**12.0** °F	39%	**30.43** in	**10.0** mi	East	**12.7** mph	-	N/A		Mostly Cloudy
3:52 PM	**34.0** °F	**24.6** °F	**12.0** °F	40%	**30.45** in	**10.0** mi	East	**13.8** mph	-	N/A		Scattered Clouds
4:52 PM	**30.9** °F	**21.2** °F	**12.9** °F	47%	**30.48** in	**10.0** mi	ESE	**12.7** mph	-	N/A		Scattered Clouds
5:52 PM	**28.9** °F	**21.1** °F	**12.9** °F	51%	**30.52** in	**10.0** mi	SE	**8.1** mph	-	N/A		Mostly Cloudy
6:16 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown
6:52 PM	**28.0** °F	**19.3** °F	**12.9** °F	53%	**30.55** in	**10.0** mi	South	**9.2** mph	-	N/A		Mostly Cloudy
7:52 PM	**27.0** °F	**18.7** °F	**12.0** °F	53%	**30.56** in	**10.0** mi	SSE	**8.1** mph	-	N/A		Scattered Clouds
8:52 PM	**26.1** °F	**20.5** °F	**12.9** °F	58%	**30.58** in	**10.0** mi	SE	**4.6** mph	-	N/A		Scattered Clouds
9:52 PM	**26.1** °F	**18.4** °F	**12.9** °F	58%	**30.59** in	**10.0** mi	SSE	**6.9** mph	-	N/A		Scattered Clouds
10:52 PM	**23.0** °F	**15.8** °F	**14.0** °F	68%	**30.60** in	**10.0** mi	SE	**5.8** mph	-	N/A		Partly Cloudy
11:52 PM	**21.9** °F	**15.7** °F	**14.0** °F	72%	**30.60** in	**10.0** mi	ESE	**4.6** mph	-	N/A		Partly Cloudy

Albuquerque, NM

Albuquerque International Sunport

12:18 PM MST on December 03, 2018 (GMT -0700)

Weather History for KABQ - December, 2018

December

2

2018

View
Sunday, December 2, 2018

Daily | Weekly | Monthly | Custom

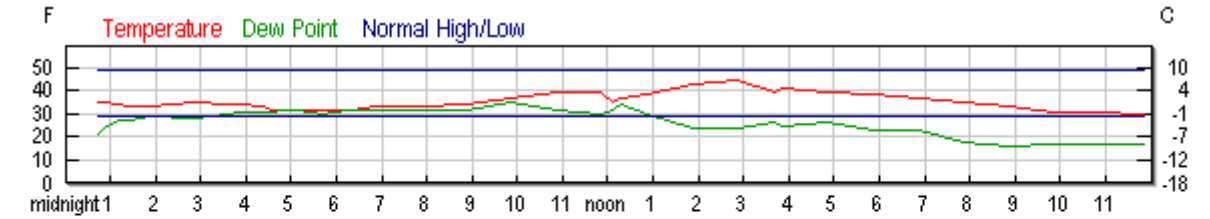
	Actual	Average	Record
Temperature			
Mean Temperature	**37** °F	-	
Max Temperature	**45** °F	-	- ()
Min Temperature	**28** °F	-	- ()
Degree Days			
Heating Degree Days	28		
Month to date heating degree days	51		
Moisture			
Dew Point	**27** °F		
Average Humidity	73		

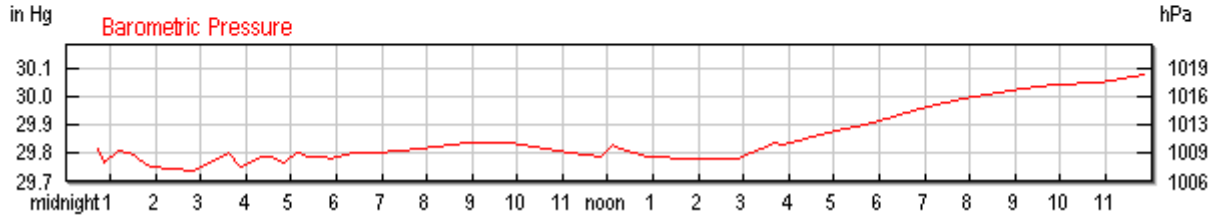
	Actual	Average	Record
Maximum Humidity	100		
Minimum Humidity	45		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.07		
Year to date precipitation	8.30		
Snow			
Snow	**0.30** in	-	- ()
Month to date snowfall	0.3		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.84** in		
Wind			
Wind Speed	**8** mph (SW)		
Max Wind Speed	**26** mph		
Max Gust Speed	**33** mph		
Visibility	**8** miles		
Events	Rain , Snow		

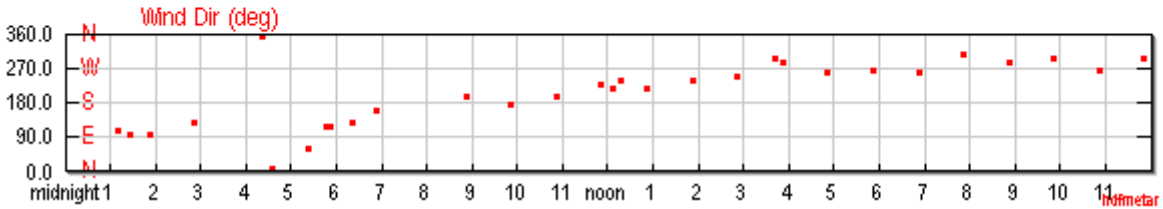
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







Search for Another Location

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KABQ

Submit

Astronomy

Dec. 02, 2018	Rise	Set
Actual Time	6:57 AM MST	4:54 PM MST

Dec. 02, 2018	Rise	Set
Civil Twilight	6:29 AM MST	5:22 PM MST
Nautical Twilight	5:57 AM MST	5:53 PM MST
Astronomical Twilight	5:27 AM MST	6:24 PM MST
Moon	2:06 AM MST (12/2)	2:24 PM MST (12/2)
Length of Visible Light	10h 53m	
Length of Day	9h 57m	

Waning Crescent, 21% of the Moon is Illuminated

Dec 2	Dec 7	Dec 15	Dec 22	Dec 29
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:43 AM	**35.1** °F	-	**21.0** °F	57%	**29.82** in	**9.0** mi	Calm	Calm	-	**0.00** in	Snow	Light Snow
12:52 AM	**35.1** °F	-	**24.1** °F	64%	**29.77** in	**3.0** mi	Calm	Calm	-	**0.00** in	Snow	Light Snow
1:11 AM	**34.0** °F	**27.2** °F	**27.0** °F	75%	**29.81** in	**2.5** mi	ESE	**8.1** mph	-	**0.00** in	Snow	Light Snow
1:26 AM	**33.1** °F	**26.1** °F	**27.0** °F	78%	**29.80** in	**8.0** mi	East	**8.1** mph	-	**0.01** in	Snow	Light Snow
1:52 AM	**33.1** °F	**25.5** °F	**28.9** °F	85%	**29.75** in	**10.0** mi	East	**9.2** mph	-	**0.01** in		Overcast
2:52 AM	**35.1** °F	**29.3** °F	**28.0** °F	76%	**29.74** in	**10.0** mi	SE	**6.9** mph	-	N/A		Overcast
3:36 AM	**34.0** °F	-	**30.0** °F	85%	**29.80** in	**2.5** mi	Calm	Calm	-	**0.00** in	Snow	Light Snow
3:52 AM	**34.0** °F	-	**30.9** °F	89%	**29.75** in	**3.0** mi	Calm	Calm	-	**0.01** in	Snow	Light Snow
4:21 AM	**33.1** °F	**27.7** °F	**30.9** °F	92%	**29.79** in	**1.8** mi	North	**5.8** mph	-	**0.00** in	Snow	Light Snow

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
4:36 AM	32.0 °F	27.5 °F	30.9 °F	96%	29.79 in	1.0 mi	North	4.6 mph	-	0.01 in	Snow	Light Snow
4:52 AM	32.0 °F	-	32.0 °F	100%	29.77 in	1.2 mi	Calm	Calm	-	0.03 in	Snow	Light Snow
5:07 AM	32.0 °F	-	32.0 °F	100%	29.80 in	1.8 mi	Calm	Calm	-	0.01 in	Snow	Light Snow
5:12 AM	32.0 °F	-	32.0 °F	100%	29.80 in	3.0 mi	Calm	Calm	-	0.01 in	Snow	Light Snow
5:22 AM	32.0 °F	28.7 °F	30.9 °F	96%	29.79 in	5.0 mi	ENE	3.5 mph	-	0.01 in	Snow	Light Snow
5:48 AM	32.0 °F	24.8 °F	30.2 °F	93%	29.79 in	8.0 mi	ESE	8.1 mph	-	0.01 in	Snow	Light Snow
5:52 AM	32.0 °F	24.8 °F	30.9 °F	96%	29.78 in	9.0 mi	ESE	8.1 mph	-	0.01 in		Overcast
6:22 AM	32.0 °F	25.6 °F	32.0 °F	100%	29.80 in	10.0 mi	SE	6.9 mph	-	0.00 in		Overcast
6:52 AM	33.1 °F	27.7 °F	32.0 °F	96%	29.80 in	10.0 mi	SSE	5.8 mph	-	0.00 in		Overcast
7:52 AM	33.1 °F	-	32.0 °F	96%	29.82 in	10.0 mi	Calm	Calm	-	0.00 in		Overcast
8:52 AM	34.0 °F	31.0 °F	32.0 °F	92%	29.84 in	10.0 mi	SSW	3.5 mph	-	N/A		Mostly Cloudy
9:52 AM	37.0 °F	28.9 °F	35.1 °F	93%	29.84 in	10.0 mi	South	12.7 mph	-	N/A		Overcast
10:52 AM	39.9 °F	31.8 °F	32.0 °F	73%	29.81 in	10.0 mi	SSW	15.0 mph	24.2 mph	N/A		Mostly Cloudy
11:52 AM	39.9 °F	33.9 °F	30.0 °F	68%	29.79 in	10.0 mi	SW	9.2 mph	-	0.00 in	Rain	Light Rain
12:07 PM	35.1 °F	26.4 °F	32.0 °F	89%	29.83 in	5.0 mi	SW	12.7 mph	24.2 mph	0.00 in	Rain	Light Rain
12:16 PM	37.0 °F	28.1 °F	34.0 °F	89%	29.82 in	10.0 mi	WSW	15.0 mph	-	0.01 in	Rain	Light Rain
12:52 PM	39.0 °F	31.4 °F	30.0 °F	70%	29.79 in	10.0 mi	SW	12.7 mph	-	0.01 in		Mostly Cloudy
1:52 PM	43.0 °F	34.8 °F	24.1 °F	47%	29.78 in	10.0 mi	WSW	18.4 mph	27.6 mph	N/A		Mostly Cloudy
2:52 PM	45.0 °F	36.6 °F	24.1 °F	44%	29.78 in	10.0 mi	WSW	21.9 mph	27.6 mph	N/A		Mostly Cloudy
3:41 PM	39.9 °F	31.4 °F	26.1 °F	58%	29.84 in	10.0 mi	WNW	16.1 mph	-	0.00 in		Mostly Cloudy
3:52 PM	41.0 °F	32.8 °F	25.0 °F	53%	29.83 in	10.0 mi	WNW	16.1 mph	23.0 mph	0.00 in		Mostly Cloudy
4:52 PM	39.9 °F	33.9 °F	26.1 °F	58%	29.87 in	10.0 mi	West	9.2 mph	-	N/A		Mostly Cloudy
5:52 PM	39.0 °F	32.8 °F	23.0 °F	53%	29.91 in	10.0 mi	West	9.2 mph	-	N/A		Mostly Cloudy

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
6:52 PM	**37.0** °F	**31.0** °F	**23.0** °F	57%	**29.96** in	**10.0** mi	West	**8.1** mph	-	N/A		Mostly Cloudy
7:52 PM	**35.1** °F	**30.1** °F	**18.0** °F	50%	**29.99** in	**10.0** mi	NW	**5.8** mph	-	N/A		Scattered Clouds
8:52 PM	**33.1** °F	**26.1** °F	**16.0** °F	50%	**30.02** in	**10.0** mi	WNW	**8.1** mph	-	N/A		Partly Cloudy
9:52 PM	**30.9** °F	**27.5** °F	**17.1** °F	57%	**30.04** in	**10.0** mi	WNW	**3.5** mph	-	N/A		Partly Cloudy
10:52 PM	**30.9** °F	**27.5** °F	**17.1** °F	57%	**30.05** in	**10.0** mi	West	**3.5** mph	-	N/A		Clear
11:52 PM	**30.0** °F	**25.2** °F	**17.1** °F	59%	**30.08** in	**10.0** mi	WNW	**4.6** mph	-	N/A		Partly Cloudy

Albuquerque, NM

Albuquerque International Sunport

11:13 AM MST on December 07, 2018 (GMT -0700)

Weather History for KABQ - December, 2018

December

6

2018

View

Thursday, December 6, 2018

Daily | Weekly | Monthly | Custom

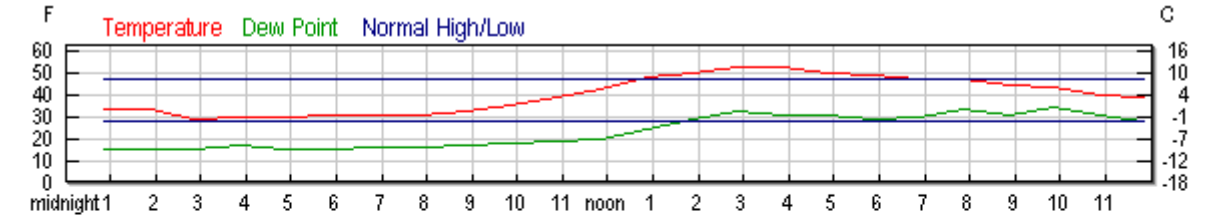
	Actual	Average	Record
Temperature			
Mean Temperature	**42** °F	-	
Max Temperature	**54** °F	-	- ()
Min Temperature	**29** °F	-	- ()
Degree Days			
Heating Degree Days	23		
Month to date heating degree days	176		
Moisture			
Dew Point	**23** °F		
Average Humidity	55		

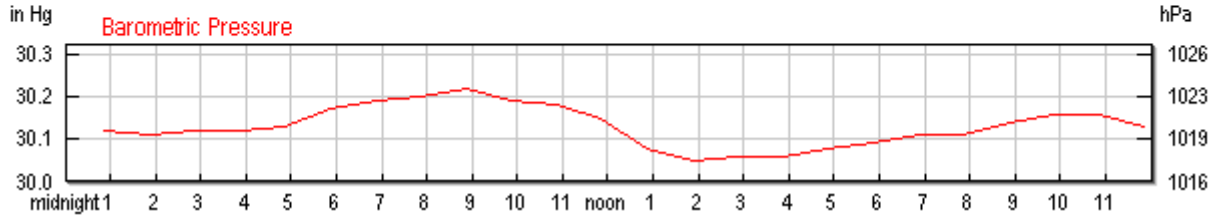
	Actual	Average	Record
Maximum Humidity	70		
Minimum Humidity	39		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.07		
Year to date precipitation	8.30		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.3		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.13** in		
Wind			
Wind Speed	**5** mph (NNE)		
Max Wind Speed	**14** mph		
Max Gust Speed	**17** mph		
Visibility	**10** miles		
Events	Rain		

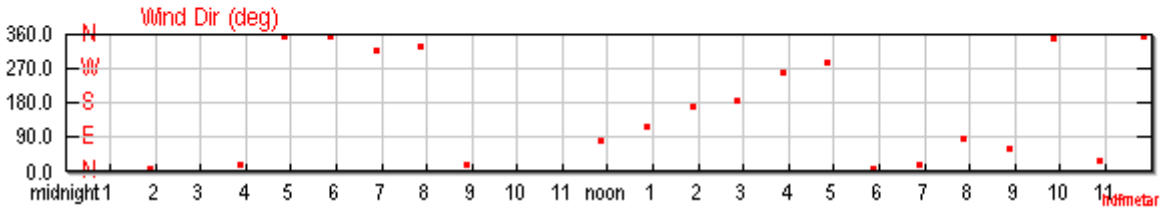
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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KABQ

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Astronomy

Dec. 06, 2018	**Rise**	**Set**
Actual Time	7:00 AM MST	4:54 PM MST

Dec. 06, 2018	Rise	Set
Civil Twilight	6:32 AM MST	5:22 PM MST
Nautical Twilight	6:01 AM MST	5:53 PM MST
Astronomical Twilight	5:30 AM MST	6:24 PM MST
Moon	6:13 AM MST (12/6)	4:49 PM MST (12/6)
Length of Visible Light	10h 49m	
Length of Day	9h 53m	

Waning Crescent, 0% of the Moon is Illuminated

Dec 6	Dec 7	Dec 15	Dec 22	Dec 29
Waning Crescent	New	First Quarter	Full	Last Quarter

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**33.1** °F	**27.7** °F	**15.1** °F	48%	**30.12** in	**10.0** mi	North	**5.8** mph	-	N/A		Mostly Cloudy
1:52 AM	**33.1** °F	**27.7** °F	**15.1** °F	48%	**30.11** in	**10.0** mi	North	**5.8** mph	-	N/A		Overcast
2:52 AM	**28.9** °F	-	**15.1** °F	56%	**30.12** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
3:52 AM	**30.0** °F	**26.5** °F	**17.1** °F	59%	**30.12** in	**10.0** mi	NNE	**3.5** mph	-	N/A		Mostly Cloudy
4:52 AM	**30.0** °F	**21.7** °F	**15.1** °F	54%	**30.13** in	**10.0** mi	North	**9.2** mph	-	N/A		Overcast
5:52 AM	**30.9** °F	**23.5** °F	**15.1** °F	52%	**30.17** in	**10.0** mi	North	**8.1** mph	-	N/A		Mostly Cloudy
6:52 AM	**30.9** °F	**26.2** °F	**16.0** °F	54%	**30.19** in	**10.0** mi	NW	**4.6** mph	-	N/A		Overcast
7:52 AM	**30.9** °F	**27.5** °F	**16.0** °F	54%	**30.20** in	**10.0** mi	NNW	**3.5** mph	-	N/A		Mostly Cloudy
8:52 AM	**32.0** °F	**28.7** °F	**17.1** °F	54%	**30.22** in	**10.0** mi	NNE	**3.5** mph	-	N/A		Mostly Cloudy

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**35.1** °F	-	**18.0** °F	50%	**30.19** in	**10.0** mi	Calm	Calm	-	N/A		Mostly Cloudy
10:52 AM	**39.0** °F	-	**19.0** °F	45%	**30.18** in	**10.0** mi	Calm	Calm	-	N/A		Overcast
11:52 AM	**42.1** °F	**40.2** °F	**19.9** °F	41%	**30.15** in	**10.0** mi	East	**3.5** mph	-	N/A		Overcast
12:52 PM	**48.0** °F	-	**24.1** °F	39%	**30.08** in	**10.0** mi	ESE	**5.8** mph	-	N/A		Mostly Cloudy
1:52 PM	**50.0** °F	-	**28.9** °F	44%	**30.05** in	**10.0** mi	South	**4.6** mph	-	N/A		Mostly Cloudy
2:52 PM	**52.0** °F	-	**32.0** °F	47%	**30.06** in	**10.0** mi	South	**5.8** mph	-	N/A		Mostly Cloudy
3:52 PM	**52.0** °F	-	**30.9** °F	45%	**30.06** in	**10.0** mi	West	**5.8** mph	-	N/A		Mostly Cloudy
4:52 PM	**50.0** °F	-	**30.9** °F	48%	**30.08** in	**10.0** mi	WNW	**6.9** mph	-	N/A		Mostly Cloudy
5:52 PM	**48.9** °F	-	**28.9** °F	46%	**30.09** in	**10.0** mi	North	**4.6** mph	-	**0.00** in		Mostly Cloudy
6:52 PM	**46.9** °F	-	**30.0** °F	52%	**30.11** in	**10.0** mi	NNE	**10.4** mph	-	**0.00** in	Rain	Light Rain
7:52 PM	**46.9** °F	-	**33.1** °F	59%	**30.11** in	**10.0** mi	East	**9.2** mph	-	**0.00** in		Overcast
8:52 PM	**44.1** °F	**40.8** °F	**30.9** °F	60%	**30.14** in	**10.0** mi	ENE	**5.8** mph	-	N/A		Mostly Cloudy
9:52 PM	**43.0** °F	**38.2** °F	**34.0** °F	71%	**30.16** in	**10.0** mi	North	**8.1** mph	-	N/A		Overcast
10:52 PM	**39.9** °F	**35.1** °F	**30.9** °F	70%	**30.16** in	**10.0** mi	NNE	**6.9** mph	-	N/A		Overcast
11:52 PM	**39.0** °F	**32.8** °F	**28.0** °F	65%	**30.13** in	**10.0** mi	North	**9.2** mph	-	N/A		Overcast

Albuquerque, NM

Albuquerque International Sunport

11:06 AM MST on December 10, 2018 (GMT -0700)

Weather History for KABQ - December, 2018

December

7

2018

View

Friday, December 7, 2018

Daily | Weekly | Monthly | Custom

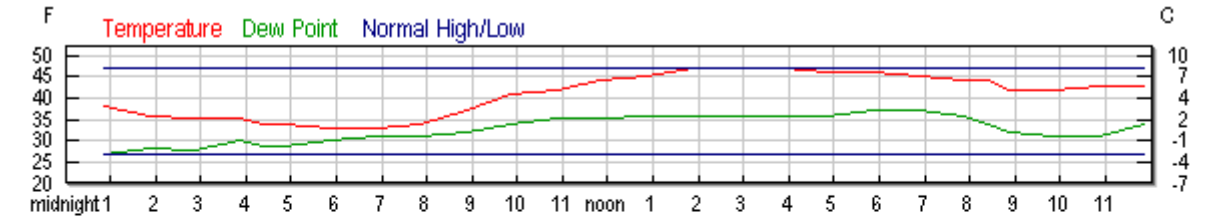
	Actual	Average	Record
Temperature			
Mean Temperature	**40** °F	-	
Max Temperature	**48** °F	-	- ()
Min Temperature	**32** °F	-	- ()
Degree Days			
Heating Degree Days	25		
Month to date heating degree days	201		
Moisture			
Dew Point	**33** °F		
Average Humidity	76		

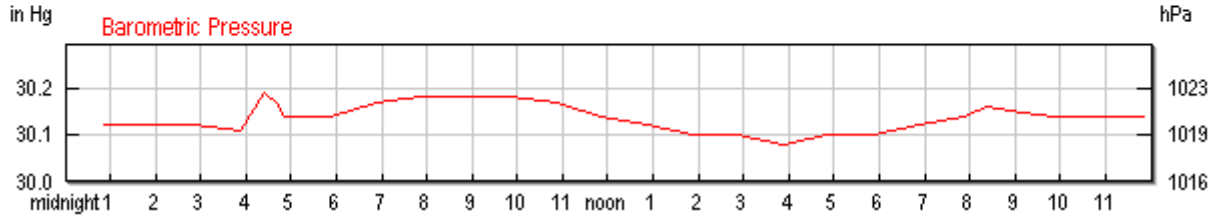
	Actual	Average	Record
Maximum Humidity	89		
Minimum Humidity	62		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.08		
Year to date precipitation	8.31		
Snow			
Snow	**0.00** in	-	- ()
Month to date snowfall	0.3		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**30.14** in		
Wind			
Wind Speed	**8** mph (North)		
Max Wind Speed	**21** mph		
Max Gust Speed	**24** mph		
Visibility	**10** miles		
Events	Rain		

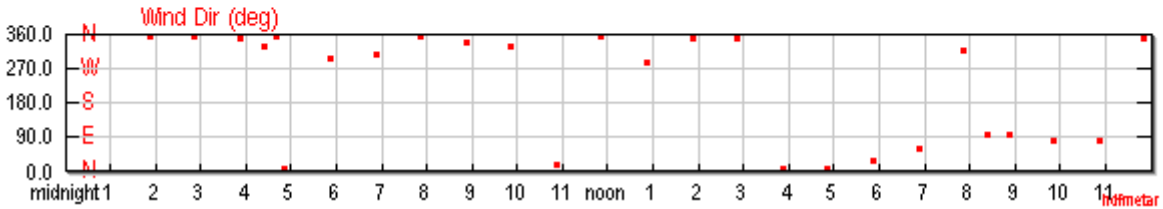
T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph







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KABQ

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Astronomy

Dec. 07, 2018	Rise	Set
Actual Time	7:01 AM MST	4:54 PM MST

Dec. 07, 2018	Rise	Set
Civil Twilight	6:33 AM MST	5:22 PM MST
Nautical Twilight	6:01 AM MST	5:54 PM MST
Astronomical Twilight	5:31 AM MST	6:24 PM MST
Moon	7:12 AM MST (12/7)	5:33 PM MST (12/7)
Length of Visible Light	10h 49m	
Length of Day	9h 53m	

New Moon, 0% of the Moon is Illuminated

Dec 7	Dec 15	Dec 22	Dec 29	Jan 5
New Moon	First Quarter	Full	Last Quarter	New

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**37.9** °F	**31.5** °F	**27.0** °F	65%	**30.12** in	**10.0** mi	NNW	**9.2** mph	-	N/A		Overcast
1:52 AM	**35.6** °F	**28.6** °F	**28.4** °F	75%	**30.12** in	**8.0** mi	North	**9.2** mph	-	N/A	Rain	Light Rain
2:52 AM	**35.1** °F	**26.9** °F	**28.0** °F	76%	**30.12** in	**8.0** mi	North	**11.5** mph	-	**0.01** in	Rain	Light Rain
3:52 AM	**35.1** °F	**27.9** °F	**30.0** °F	82%	**30.11** in	**9.0** mi	North	**9.2** mph	-	**0.00** in		Overcast
4:25 AM	**34.0** °F	**24.2** °F	**28.9** °F	82%	**30.19** in	**9.0** mi	NNW	**15.0** mph	-	**0.00** in	Rain	Light Rain
4:41 AM	**34.0** °F	**24.2** °F	**28.9** °F	82%	**30.17** in	**9.0** mi	North	**15.0** mph	-	**0.00** in	Rain	Light Rain
4:52 AM	**34.0** °F	**24.2** °F	**28.9** °F	82%	**30.14** in	**10.0** mi	North	**15.0** mph	-	**0.00** in		Scattered Clouds
5:52 AM	**33.1** °F	**28.7** °F	**30.0** °F	89%	**30.14** in	**10.0** mi	WNW	**4.6** mph	-	N/A		Scattered Clouds
6:52 AM	**33.1** °F	**27.7** °F	**30.9** °F	92%	**30.17** in	**10.0** mi	NW	**5.8** mph	-	N/A		Overcast

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
7:52 AM	**34.0** °F	**28.8** °F	**30.9** °F	89%	**30.18** in	**10.0** mi	North	**5.8** mph	-	N/A		Mostly Cloudy
8:52 AM	**37.0** °F	**30.4** °F	**32.0** °F	82%	**30.18** in	**10.0** mi	NNW	**9.2** mph	-	N/A		Mostly Cloudy
9:52 AM	**41.0** °F	**37.1** °F	**34.0** °F	76%	**30.18** in	**10.0** mi	NNW	**5.8** mph	-	N/A		Mostly Cloudy
10:52 AM	**42.1** °F	**37.7** °F	**35.1** °F	76%	**30.17** in	**10.0** mi	NNE	**6.9** mph	-	N/A		Mostly Cloudy
11:52 AM	**44.1** °F	**40.8** °F	**35.1** °F	71%	**30.14** in	**10.0** mi	North	**5.8** mph	-	N/A		Mostly Cloudy
12:52 PM	**45.0** °F	**43.5** °F	**36.0** °F	71%	**30.12** in	**10.0** mi	WNW	**3.5** mph	-	N/A		Overcast
1:52 PM	**46.9** °F	-	**36.0** °F	66%	**30.10** in	**10.0** mi	North	**4.6** mph	-	N/A		Overcast
2:52 PM	**46.9** °F	-	**36.0** °F	66%	**30.10** in	**10.0** mi	North	**5.8** mph	-	N/A		Overcast
3:52 PM	**46.9** °F	-	**36.0** °F	66%	**30.08** in	**10.0** mi	North	**8.1** mph	-	N/A		Overcast
4:52 PM	**46.0** °F	**43.1** °F	**36.0** °F	68%	**30.10** in	**10.0** mi	North	**5.8** mph	-	N/A		Overcast
5:52 PM	**46.0** °F	**42.5** °F	**37.0** °F	71%	**30.10** in	**10.0** mi	NNE	**6.9** mph	-	N/A		Overcast
6:52 PM	**45.0** °F	**42.6** °F	**37.0** °F	74%	**30.12** in	**10.0** mi	ENE	**4.6** mph	-	N/A		Overcast
7:52 PM	**44.1** °F	**41.5** °F	**36.0** °F	73%	**30.14** in	**10.0** mi	NW	**4.6** mph	-	N/A		Mostly Cloudy
8:23 PM	**44.1** °F	**37.1** °F	**34.0** °F	68%	**30.16** in	**10.0** mi	East	**15.0** mph	-	N/A		Mostly Cloudy
8:52 PM	**42.1** °F	**36.1** °F	**32.0** °F	67%	**30.15** in	**10.0** mi	East	**10.4** mph	-	N/A		Mostly Cloudy
9:52 PM	**42.1** °F	**33.3** °F	**30.9** °F	65%	**30.14** in	**10.0** mi	East	**19.6** mph	-	N/A		Overcast
10:52 PM	**43.0** °F	**37.7** °F	**30.9** °F	62%	**30.14** in	**10.0** mi	East	**9.2** mph	-	N/A		Overcast
11:52 PM	**43.0** °F	**40.3** °F	**34.0** °F	71%	**30.14** in	**10.0** mi	North	**4.6** mph	-	N/A		Overcast

Albuquerque, NM

Albuquerque International Sunport

12:38 PM MST on January 07, 2019 (GMT -0700)

Weather History for KABQ - December, 2018

December

26

2018

View

Wednesday, December 26, 2018

Daily | Weekly | Monthly | Custom

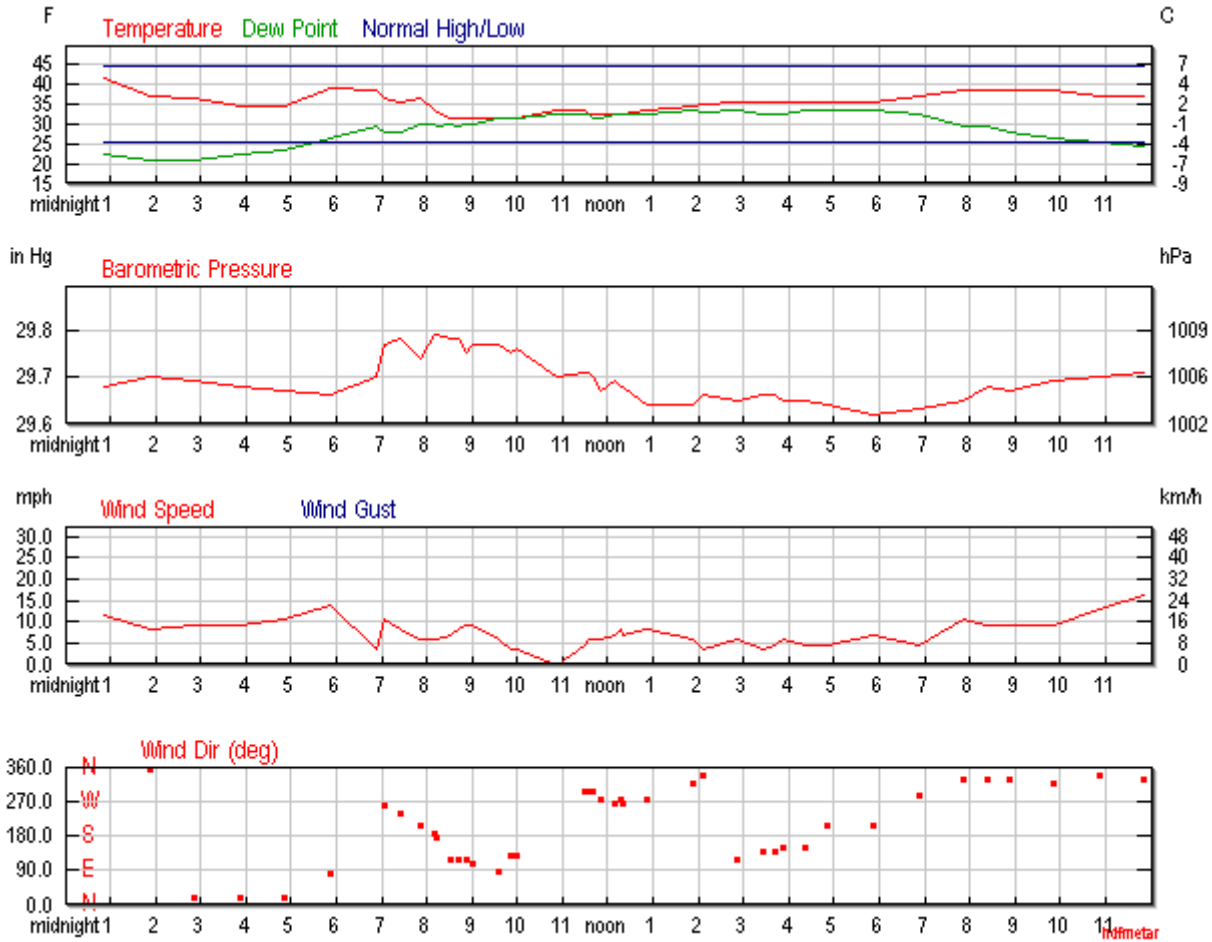
	Actual	Average	Record
Temperature			
Mean Temperature	**38** °F	-	
Max Temperature	**44** °F	-	- ()
Min Temperature	**32** °F	-	- ()
Degree Days			
Heating Degree Days	27		
Month to date heating degree days	662		
Moisture			
Dew Point	**30** °F		
Average Humidity	73		

	Actual	Average	Record
Maximum Humidity	100		
Minimum Humidity	45		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.34		
Year to date precipitation	8.57		
Snow			
Snow	**0.50** in	-	- ()
Month to date snowfall	0.8		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.70** in		
Wind			
Wind Speed	**8** mph (WNW)		
Max Wind Speed	**26** mph		
Max Gust Speed	**32** mph		
Visibility	**7** miles		
Events	Fog , Rain , Snow		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

Daily Weather History Graph



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Airport or City:

KABQ

Submit

Astronomy

Dec. 26, 2018	Rise	Set
Actual Time	7:12 AM MST	5:01 PM MST

Dec. 26, 2018	Rise	Set
Civil Twilight	6:44 AM MST	5:29 PM MST
Nautical Twilight	6:13 AM MST	6:01 PM MST
Astronomical Twilight	5:42 AM MST	6:32 PM MST
Moon	9:47 PM MST (12/26)	10:37 AM MST (12/26)
Length of Visible Light	10h 44m	
Length of Day	9h 48m	

Waning Gibbous, 78% of the Moon is Illuminated

Dec 26	Dec 29	Jan 5	Jan 13	Jan 20
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**42.1** °F	**35.7** °F	**23.0** °F	47%	**29.68** in	**10.0** mi	East	**11.5** mph	-	N/A		Partly Cloudy
1:52 AM	**37.9** °F	**32.1** °F	**21.9** °F	53%	**29.70** in	**10.0** mi	North	**8.1** mph	-	N/A		Partly Cloudy
2:52 AM	**37.0** °F	**30.4** °F	**21.9** °F	54%	**29.69** in	**10.0** mi	NNE	**9.2** mph	-	N/A		Partly Cloudy
3:52 AM	**35.1** °F	**27.9** °F	**23.0** °F	61%	**29.68** in	**10.0** mi	NNE	**9.2** mph	-	N/A		Scattered Clouds
4:52 AM	**35.1** °F	**27.4** °F	**24.1** °F	64%	**29.67** in	**10.0** mi	NNE	**10.4** mph	-	N/A		Partly Cloudy
5:52 AM	**39.9** °F	**32.1** °F	**27.0** °F	60%	**29.66** in	**10.0** mi	East	**13.8** mph	-	N/A		Mostly Cloudy
6:52 AM	**39.0** °F	**36.8** °F	**30.0** °F	70%	**29.70** in	**10.0** mi	Variable	**3.5** mph	-	**0.00** in	Rain	Light Rain
7:04 AM	**37.0** °F	**29.8** °F	**28.9** °F	73%	**29.77** in	**10.0** mi	West	**10.4** mph	-	**0.00** in	Rain	Light Rain
7:25 AM	**36.0** °F	**29.6** °F	**28.9** °F	76%	**29.78** in	**9.0** mi	WSW	**8.1** mph	-	**0.00** in		Overcast

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
7:52 AM	**37.0** °F	**32.4** °F	**30.9** °F	79%	**29.74** in	**6.0** mi	SSW	**5.8** mph	-	**0.01** in	Rain	Light Rain
8:10 AM	**34.0** °F	**28.8** °F	**30.9** °F	89%	**29.79** in	**2.0** mi	South	**5.8** mph	-	**0.01** in	Snow	Light Snow
8:12 AM	**33.8** °F	**28.6** °F	**30.2** °F	87%	**29.79** in	**1.0** mi	South	**5.8** mph	-	N/A		Overcast
8:32 AM	**32.0** °F	**25.6** °F	**30.9** °F	96%	**29.78** in	**1.0** mi	ESE	**6.9** mph	-	**0.04** in	Snow	Light Snow
8:42 AM	**32.0** °F	**24.8** °F	**30.2** °F	93%	**29.78** in	**0.8** mi	ESE	**8.1** mph	-	N/A	Snow	Light Snow
8:52 AM	**32.0** °F	**24.2** °F	**30.9** °F	96%	**29.75** in	**0.8** mi	ESE	**9.2** mph	-	**0.05** in	Snow	Light Snow
9:01 AM	**32.0** °F	**24.2** °F	**30.9** °F	96%	**29.77** in	**1.0** mi	ESE	**9.2** mph	-	**0.01** in	Snow	Light Snow
9:36 AM	**32.0** °F	**26.4** °F	**32.0** °F	100%	**29.77** in	**1.0** mi	East	**5.8** mph	-	**0.04** in	Snow	Light Snow
9:52 AM	**32.0** °F	**28.7** °F	**32.0** °F	100%	**29.75** in	**2.0** mi	SE	**3.5** mph	-	**0.07** in	Snow	Light Snow
9:59 AM	**32.0** °F	**28.7** °F	**32.0** °F	100%	**29.76** in	**3.0** mi	SE	**3.5** mph	-	**0.00** in		Overcast
10:52 AM	**34.0** °F	-	**33.1** °F	96%	**29.70** in	**5.0** mi	Calm	Calm	-	**0.05** in	Rain	Light Rain
11:29 AM	**34.0** °F	**29.8** °F	**33.1** °F	96%	**29.71** in	**4.0** mi	WNW	**4.6** mph	-	**0.01** in	Rain	Light Rain
11:34 AM	**33.1** °F	**27.7** °F	**33.1** °F	100%	**29.71** in	**2.0** mi	WNW	**5.8** mph	-	**0.01** in	Snow	Light Snow
11:39 AM	**33.1** °F	**27.7** °F	**32.0** °F	96%	**29.70** in	**0.2** mi	WNW	**5.8** mph	-	**0.01** in	Fog , Snow	Light Snow
11:52 AM	**33.1** °F	**27.7** °F	**32.0** °F	96%	**29.67** in	**0.2** mi	West	**5.8** mph	-	**0.02** in	Fog , Snow	Light Snow
12:08 PM	**33.1** °F	**26.9** °F	**33.1** °F	100%	**29.69** in	**0.8** mi	West	**6.9** mph	-	**0.00** in	Snow	Light Snow
12:16 PM	**33.1** °F	**26.1** °F	**33.1** °F	100%	**29.68** in	**1.5** mi	West	**8.1** mph	-	**0.00** in	Snow	Light Snow
12:20 PM	**33.1** °F	**26.9** °F	**33.1** °F	100%	**29.68** in	**3.0** mi	West	**6.9** mph	-	**0.00** in	Snow	Light Snow
12:52 PM	**34.0** °F	**27.2** °F	**33.1** °F	96%	**29.64** in	**7.0** mi	West	**8.1** mph	-	**0.00** in	Rain	Light Rain
1:52 PM	**35.1** °F	**30.1** °F	**34.0** °F	96%	**29.64** in	**10.0** mi	NW	**5.8** mph	-	**0.01** in		Overcast
2:06 PM	**35.6** °F	**32.8** °F	**33.8** °F	93%	**29.66** in	**10.0** mi	NNW	**3.5** mph	-	N/A		Overcast
2:52 PM	**36.0** °F	**31.1** °F	**34.0** °F	93%	**29.65** in	**10.0** mi	ESE	**5.8** mph	-	N/A		Overcast
3:26 PM	**36.0** °F	**33.3** °F	**33.1** °F	89%	**29.66** in	**10.0** mi	SE	**3.5** mph	-	**0.00** in	Rain	Light Rain

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
3:42 PM	**36.0** °F	**32.1** °F	**33.1** °F	89%	**29.66** in	**10.0** mi	SE	**4.6** mph	-	**0.00** in	Rain	Light Rain
3:52 PM	**36.0** °F	**31.1** °F	**33.1** °F	89%	**29.65** in	**10.0** mi	SSE	**5.8** mph	-	**0.00** in	Rain	Light Rain
4:22 PM	**36.0** °F	**32.1** °F	**34.0** °F	93%	**29.65** in	**10.0** mi	SSE	**4.6** mph	-	**0.00** in		Overcast
4:52 PM	**36.0** °F	**32.1** °F	**34.0** °F	93%	**29.64** in	**10.0** mi	SSW	**4.6** mph	-	**0.00** in	Rain	Light Rain
5:52 PM	**36.0** °F	**30.3** °F	**34.0** °F	93%	**29.62** in	**6.0** mi	SSW	**6.9** mph	-	**0.05** in	Rain	Light Rain
6:52 PM	**37.9** °F	**34.4** °F	**33.1** °F	83%	**29.63** in	**10.0** mi	WNW	**4.6** mph	-	**0.00** in		Overcast
7:52 PM	**39.0** °F	**32.3** °F	**30.0** °F	70%	**29.65** in	**10.0** mi	NNW	**10.4** mph	**21.9** mph	N/A		Overcast
8:24 PM	**39.0** °F	**32.8** °F	**30.0** °F	70%	**29.68** in	**10.0** mi	NNW	**9.2** mph	-	N/A		Overcast
8:52 PM	**39.0** °F	**32.8** °F	**28.9** °F	67%	**29.67** in	**10.0** mi	NNW	**9.2** mph	**18.4** mph	N/A		Overcast
9:52 PM	**39.0** °F	**32.8** °F	**27.0** °F	62%	**29.69** in	**10.0** mi	NW	**9.2** mph	-	N/A		Overcast
10:52 PM	**37.9** °F	**30.0** °F	**26.1** °F	62%	**29.70** in	**10.0** mi	NNW	**12.7** mph	-	N/A		Overcast
11:52 PM	**37.9** °F	**28.9** °F	**25.0** °F	60%	**29.71** in	**10.0** mi	NNW	**16.1** mph	**19.6** mph	N/A		Overcast

Albuquerque, NM

Albuquerque International Sunport

12:43 PM MST on January 07, 2019 (GMT -0700)

Weather History for KABQ - December, 2018

December

27

2018

View

Thursday, December 27, 2018

Daily | Weekly | Monthly | Custom

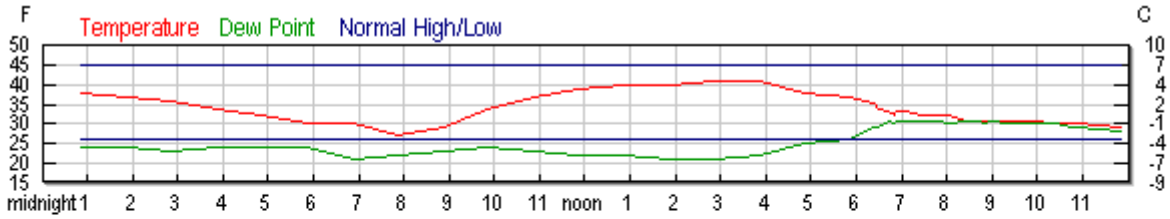
	Actual	Average	Record
Temperature			
Mean Temperature	**34** °F	-	
Max Temperature	**42** °F	-	- ()
Min Temperature	**26** °F	-	- ()
Degree Days			
Heating Degree Days	31		
Month to date heating degree days	693		
Moisture			
Dew Point	**26** °F		
Average Humidity	73		

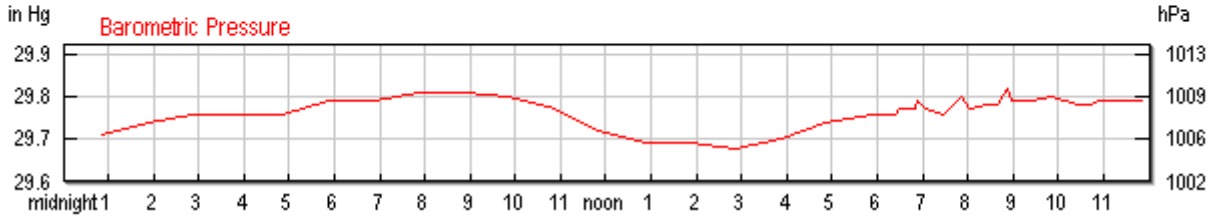
	Actual	Average	Record
Maximum Humidity	100		
Minimum Humidity	45		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.48		
Year to date precipitation	8.71		
Snow			
Snow	**2.00** in	-	- ()
Month to date snowfall	2.8		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.77** in		
Wind			
Wind Speed	**8** mph (SW)		
Max Wind Speed	**18** mph		
Max Gust Speed	**27** mph		
Visibility	**7** miles		
Events	Snow		

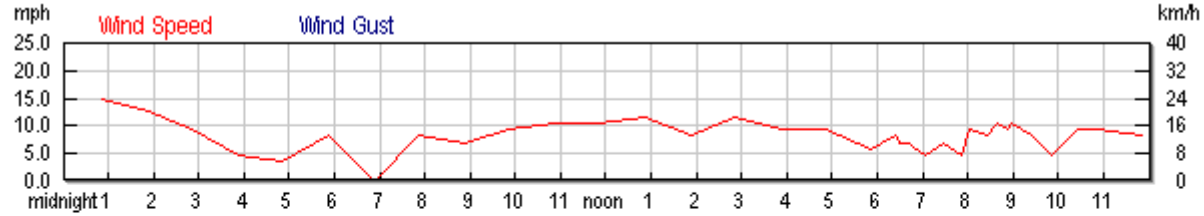
T = Trace of Precipitation, MM = Missing Value

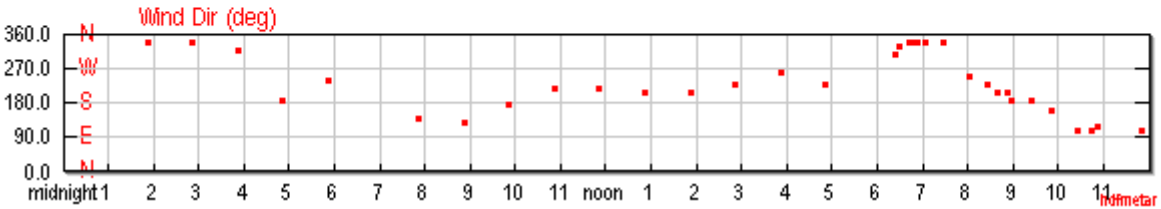
Source: NWS Daily Summary

Daily Weather History Graph









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Astronomy

Dec. 27, 2018	**Rise**	**Set**
Actual Time	7:13 AM MST	5:02 PM MST

Dec. 27, 2018	Rise	Set
Civil Twilight	6:45 AM MST	5:30 PM MST
Nautical Twilight	6:13 AM MST	6:01 PM MST
Astronomical Twilight	5:42 AM MST	6:32 PM MST
Moon	10:54 PM MST (12/27)	11:17 AM MST (12/27)
Length of Visible Light	10h 45m	
Length of Day	9h 48m	

Waning Gibbous, 68% of the Moon is Illuminated

Dec 27	Dec 29	Jan 5	Jan 13	Jan 20
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**37.9** °F	**29.2** °F	**24.1** °F	57%	**29.71** in	**10.0** mi	NNW	**15.0** mph	-	N/A		Overcast
1:52 AM	**37.0** °F	**28.9** °F	**24.1** °F	59%	**29.74** in	**10.0** mi	NNW	**12.7** mph	-	N/A		Overcast
2:52 AM	**36.0** °F	**29.0** °F	**23.0** °F	59%	**29.76** in	**10.0** mi	NNW	**9.2** mph	-	N/A		Scattered Clouds
3:52 AM	**34.0** °F	**29.8** °F	**24.1** °F	67%	**29.76** in	**10.0** mi	NW	**4.6** mph	-	N/A		Scattered Clouds
4:52 AM	**32.0** °F	**28.7** °F	**24.1** °F	73%	**29.76** in	**10.0** mi	South	**3.5** mph	-	N/A		Scattered Clouds
5:52 AM	**30.0** °F	**22.4** °F	**24.1** °F	79%	**29.79** in	**10.0** mi	WSW	**8.1** mph	-	N/A		Scattered Clouds
6:52 AM	**30.0** °F	-	**21.0** °F	69%	**29.79** in	**10.0** mi	Calm	Calm	-	N/A		Partly Cloudy
7:52 AM	**27.0** °F	**18.7** °F	**21.9** °F	81%	**29.81** in	**10.0** mi	SE	**8.1** mph	-	N/A		Scattered Clouds
8:52 AM	**28.9** °F	**21.9** °F	**23.0** °F	78%	**29.81** in	**10.0** mi	SE	**6.9** mph	-	N/A		Partly Cloudy

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 AM	**34.0** °F	**26.6** °F	**24.1** °F	67%	**29.80** in	**10.0** mi	South	**9.2** mph	-	N/A		Partly Cloudy
10:52 AM	**37.0** °F	**29.8** °F	**23.0** °F	57%	**29.77** in	**10.0** mi	SW	**10.4** mph	-	N/A		Partly Cloudy
11:52 AM	**39.0** °F	**32.3** °F	**21.9** °F	50%	**29.72** in	**10.0** mi	SW	**10.4** mph	-	N/A		Mostly Cloudy
12:52 PM	**39.9** °F	**32.9** °F	**21.9** °F	49%	**29.69** in	**10.0** mi	SSW	**11.5** mph	-	N/A		Mostly Cloudy
1:52 PM	**39.9** °F	**34.5** °F	**21.0** °F	47%	**29.69** in	**10.0** mi	SSW	**8.1** mph	-	N/A		Mostly Cloudy
2:52 PM	**41.0** °F	**34.3** °F	**21.0** °F	45%	**29.68** in	**10.0** mi	SW	**11.5** mph	-	N/A		Mostly Cloudy
3:52 PM	**41.0** °F	**35.2** °F	**21.9** °F	47%	**29.70** in	**10.0** mi	West	**9.2** mph	-	N/A		Overcast
4:52 PM	**37.9** °F	**31.5** °F	**25.0** °F	60%	**29.74** in	**10.0** mi	SW	**9.2** mph	-	N/A		Overcast
5:52 PM	**37.0** °F	**32.4** °F	**26.1** °F	65%	**29.76** in	**10.0** mi	Variable	**5.8** mph	-	N/A		Overcast
6:23 PM	**35.1** °F	**28.6** °F	**28.9** °F	78%	**29.76** in	**5.0** mi	NW	**8.1** mph	-	**0.00** in	Snow	Light Snow
6:30 PM	**34.0** °F	**28.0** °F	**28.9** °F	82%	**29.77** in	**2.0** mi	NNW	**6.9** mph	-	**0.00** in	Snow	Light Snow
6:42 PM	**33.1** °F	**26.9** °F	**30.9** °F	92%	**29.77** in	**1.5** mi	NNW	**6.9** mph	-	**0.01** in	Snow	Light Snow
6:50 PM	**32.0** °F	**26.4** °F	**30.2** °F	93%	**29.77** in	**2.0** mi	NNW	**5.8** mph	-	**0.01** in	Snow	Light Snow
6:52 PM	**33.1** °F	**27.7** °F	**30.9** °F	92%	**29.79** in	**2.5** mi	NNW	**5.8** mph	-	**0.02** in	Snow	Light Snow
7:04 PM	**33.1** °F	**28.7** °F	**30.9** °F	92%	**29.77** in	**2.0** mi	NNW	**4.6** mph	-	**0.00** in	Snow	Light Snow
7:27 PM	**32.0** °F	**25.6** °F	**30.9** °F	96%	**29.76** in	**1.8** mi	NNW	**6.9** mph	-	**0.01** in	Snow	Light Snow
7:52 PM	**32.0** °F	**27.5** °F	**30.9** °F	96%	**29.80** in	**1.0** mi	Variable	**4.6** mph	-	**0.04** in	Snow	Light Snow
8:02 PM	**32.0** °F	**24.2** °F	**30.0** °F	92%	**29.77** in	**0.8** mi	WSW	**9.2** mph	-	**0.02** in	Snow	Light Snow
8:25 PM	**30.9** °F	**23.5** °F	**30.9** °F	100%	**29.78** in	**1.0** mi	SW	**8.1** mph	-	**0.04** in	Snow	Light Snow
8:39 PM	**30.9** °F	**22.2** °F	**30.9** °F	100%	**29.78** in	**3.0** mi	SSW	**10.4** mph	-	**0.05** in	Snow	Light Snow
8:52 PM	**30.9** °F	**22.8** °F	**30.0** °F	96%	**29.82** in	**2.5** mi	SSW	**9.2** mph	-	**0.05** in	Snow	Light Snow
8:59 PM	**30.9** °F	**22.2** °F	**30.9** °F	100%	**29.79** in	**5.0** mi	South	**10.4** mph	-	**0.00** in	Snow	Light Snow
9:24 PM	**30.9** °F	**23.5** °F	**30.0** °F	96%	**29.79** in	**1.2** mi	South	**8.1** mph	-	**0.01** in	Snow	Light Snow

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
9:52 PM	**30.9** °F	**26.2** °F	**30.0** °F	96%	**29.80** in	**2.5** mi	SSE	**4.6** mph	-	**0.02** in	Snow	Light Snow
10:27 PM	**30.0** °F	**21.7** °F	**30.0** °F	100%	**29.78** in	**4.0** mi	ESE	**9.2** mph	-	**0.01** in	Snow	Light Snow
10:43 PM	**30.0** °F	**21.7** °F	**28.9** °F	96%	**29.78** in	**8.0** mi	ESE	**9.2** mph	-	**0.01** in		Mostly Cloudy
10:52 PM	**30.0** °F	**21.7** °F	**28.9** °F	96%	**29.79** in	**8.0** mi	ESE	**9.2** mph	-	**0.01** in		Mostly Cloudy
11:52 PM	**28.9** °F	**21.1** °F	**28.0** °F	96%	**29.79** in	**10.0** mi	ESE	**8.1** mph	-	N/A		Overcast

Albuquerque, NM

Albuquerque International Sunport

12:44 PM MST on January 07, 2019 (GMT -0700)

Weather History for KABQ - December, 2018

December

28

2018

View

Friday, December 28, 2018

Daily | Weekly | Monthly | Custom

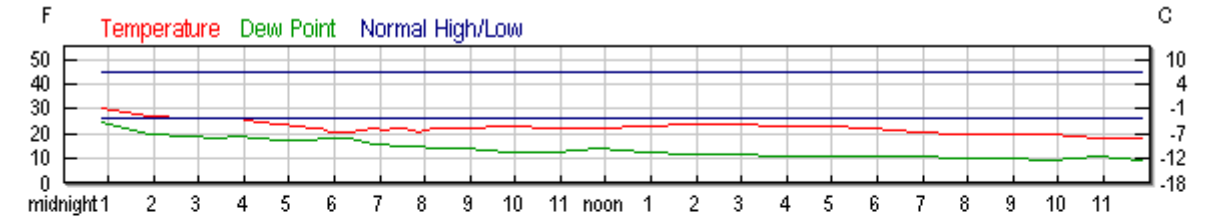
	Actual	Average	Record
Temperature			
Mean Temperature	**24** °F	-	
Max Temperature	**31** °F	-	- ()
Min Temperature	**17** °F	-	- ()
Degree Days			
Heating Degree Days	41		
Month to date heating degree days	734		
Moisture			
Dew Point	**15** °F		
Average Humidity	80		

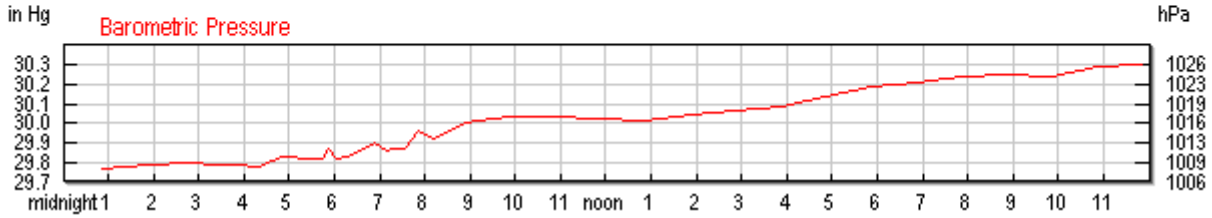
	Actual	Average	Record
Maximum Humidity	100		
Minimum Humidity	59		
Precipitation			
Precipitation	-	-	- ()
Month to date precipitation	0.49		
Year to date precipitation	8.72		
Snow			
Snow	**0.50** in	-	- ()
Month to date snowfall	3.3		
Snow Depth	**0.00** in		
Sea Level Pressure			
Sea Level Pressure	**29.98** in		
Wind			
Wind Speed	**20** mph (East)		
Max Wind Speed	**37** mph		
Max Gust Speed	**45** mph		
Visibility	**6** miles		
Events	Fog , Snow		

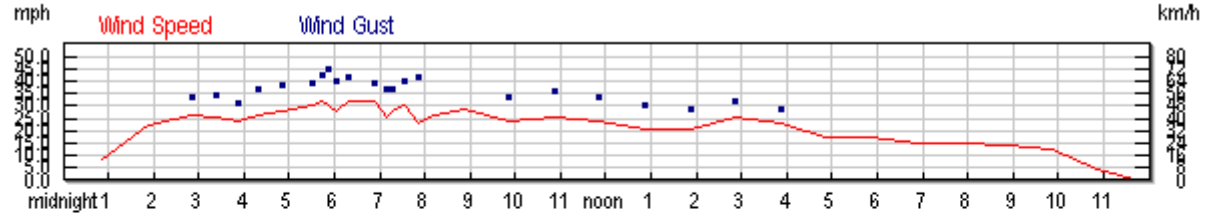
T = Trace of Precipitation, MM = Missing Value

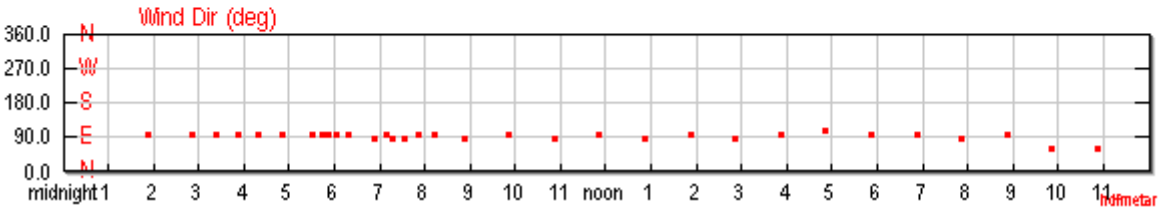
Source: NWS Daily Summary

Daily Weather History Graph









Search for Another Location

Airport or City:

KABQ

Submit

Astronomy

Dec. 28, 2018	**Rise**	**Set**
Actual Time	7:13 AM MST	5:02 PM MST

Dec. 28, 2018	Rise	Set
Civil Twilight	6:45 AM MST	5:30 PM MST
Nautical Twilight	6:13 AM MST	6:02 PM MST
Astronomical Twilight	5:42 AM MST	6:33 PM MST
Moon	11:59 PM MST (12/28)	11:53 AM MST (12/28)
Length of Visible Light	10h 45m	
Length of Day	9h 49m	

Waning Gibbous, 57% of the Moon is Illuminated

Dec 28	Dec 29	Jan 5	Jan 13	Jan 20
Waning Gibbous	Last Quarter	New	First Quarter	Full

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:52 AM	**30.0** °F	**22.4** °F	**25.0** °F	82%	**29.77** in	**9.0** mi	East	**8.1** mph	-	N/A		Overcast
1:52 AM	**27.0** °F	**12.8** °F	**19.9** °F	75%	**29.79** in	**7.0** mi	East	**21.9** mph	**32.2** mph	**0.00** in	Snow	Blowing Snow
2:52 AM	**26.1** °F	**10.4** °F	**19.0** °F	75%	**29.80** in	**6.0** mi	East	**26.5** mph	**33.4** mph	N/A	Snow	Blowing Snow
3:22 AM	**26.1** °F	**10.7** °F	**18.0** °F	71%	**29.79** in	**8.0** mi	East	**25.3** mph	**34.5** mph	N/A	Snow	Blowing Snow
3:52 AM	**26.1** °F	**11.0** °F	**19.0** °F	75%	**29.79** in	**8.0** mi	East	**24.2** mph	**31.1** mph	N/A	Snow	Blowing Snow
4:20 AM	**25.0** °F	**8.9** °F	**18.0** °F	75%	**29.78** in	**6.0** mi	East	**26.5** mph	**36.8** mph	N/A	Snow	Blowing Snow
4:52 AM	**24.1** °F	**7.4** °F	**17.1** °F	75%	**29.83** in	**6.0** mi	East	**27.6** mph	**38.0** mph	**0.00** in	Snow	Light Snow
5:31 AM	**21.9** °F	**3.9** °F	**17.1** °F	82%	**29.82** in	**1.2** mi	East	**29.9** mph	**39.1** mph	**0.00** in	Snow	Light Snow
5:44 AM	**21.9** °F	**3.4** °F	**18.0** °F	85%	**29.82** in	**0.5** mi	East	**32.2** mph	**42.6** mph	**0.00** in	Fog , Snow	Light Snow

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
5:52 AM	**21.0** °F	**2.7** °F	**18.0** °F	88%	**29.87** in	**0.5** mi	East	**29.9** mph	**44.9** mph	**0.00** in	Fog , Snow	Light Snow
6:02 AM	**21.0** °F	**3.3** °F	**18.0** °F	88%	**29.82** in	**0.2** mi	East	**27.6** mph	**40.3** mph	**0.00** in	Fog , Snow	Heavy Snow
6:19 AM	**21.0** °F	**2.2** °F	**18.0** °F	88%	**29.83** in	**0.5** mi	East	**32.2** mph	**41.4** mph	**0.01** in	Fog , Snow	Snow
6:52 AM	**21.9** °F	**3.4** °F	**16.0** °F	78%	**29.90** in	**0.5** mi	East	**32.2** mph	**39.1** mph	**0.01** in	Fog , Snow	Snow
7:09 AM	**21.2** °F	**4.2** °F	**15.8** °F	80%	**29.86** in	**3.0** mi	East	**25.3** mph	**36.8** mph	N/A	Snow	Blowing Snow
7:17 AM	**21.9** °F	**4.5** °F	**15.1** °F	75%	**29.87** in	**5.0** mi	East	**27.6** mph	**36.8** mph	**0.00** in	Snow	Light Snow
7:34 AM	**21.9** °F	**3.9** °F	**15.1** °F	75%	**29.87** in	**0.5** mi	East	**29.9** mph	**40.3** mph	**0.00** in	Fog , Snow	Light Snow
7:52 AM	**21.0** °F	**4.6** °F	**15.1** °F	78%	**29.96** in	**1.0** mi	East	**23.0** mph	**41.4** mph	**0.00** in	Snow	Light Snow
8:14 AM	**21.9** °F	**4.8** °F	**14.0** °F	72%	**29.92** in	**3.0** mi	East	**26.5** mph	-	**0.00** in	Snow	Light Snow
8:52 AM	**21.9** °F	**4.2** °F	**14.0** °F	72%	**30.00** in	**8.0** mi	East	**28.8** mph	**38.0** mph	**0.00** in	Snow	Blowing Snow
9:52 AM	**23.0** °F	**6.9** °F	**12.9** °F	65%	**30.03** in	**10.0** mi	East	**24.2** mph	**33.4** mph	**0.00** in		Overcast
10:52 AM	**21.9** °F	**5.1** °F	**12.9** °F	68%	**30.03** in	**9.0** mi	East	**25.3** mph	**35.7** mph	N/A		Overcast
11:52 AM	**21.9** °F	**5.5** °F	**14.0** °F	72%	**30.02** in	**6.0** mi	East	**24.2** mph	**33.4** mph	**0.00** in	Snow	Light Snow
12:52 PM	**23.0** °F	**8.0** °F	**12.9** °F	65%	**30.01** in	**9.0** mi	East	**20.7** mph	**29.9** mph	**0.00** in		Overcast
1:52 PM	**24.1** °F	**9.4** °F	**12.0** °F	60%	**30.04** in	**10.0** mi	East	**20.7** mph	**28.8** mph	N/A		Overcast
2:52 PM	**24.1** °F	**8.0** °F	**12.0** °F	60%	**30.07** in	**10.0** mi	East	**25.3** mph	**32.2** mph	N/A		Mostly Cloudy
3:52 PM	**23.0** °F	**7.2** °F	**10.9** °F	60%	**30.09** in	**10.0** mi	East	**23.0** mph	**28.8** mph	N/A		Mostly Cloudy
4:52 PM	**23.0** °F	**9.2** °F	**10.9** °F	60%	**30.14** in	**10.0** mi	ESE	**17.3** mph	-	N/A		Mostly Cloudy
5:52 PM	**21.9** °F	**7.8** °F	**10.9** °F	63%	**30.19** in	**10.0** mi	East	**17.3** mph	-	N/A		Overcast
6:52 PM	**21.0** °F	**7.6** °F	**10.9** °F	65%	**30.21** in	**10.0** mi	East	**15.0** mph	-	N/A		Mostly Cloudy
7:52 PM	**19.9** °F	**6.2** °F	**10.0** °F	65%	**30.24** in	**10.0** mi	East	**15.0** mph	-	N/A		Mostly Cloudy
8:52 PM	**19.9** °F	**6.7** °F	**10.0** °F	65%	**30.25** in	**10.0** mi	East	**13.8** mph	-	N/A		Partly Cloudy
9:52 PM	**19.9** °F	**7.3** °F	**9.0** °F	62%	**30.24** in	**10.0** mi	ENE	**12.7** mph	-	N/A		Partly Cloudy

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
10:52 PM	**18.0** °F	**11.1** °F	**10.9** °F	74%	**30.29** in	**10.0** mi	ENE	**4.6** mph	-	N/A		Scattered Clouds
11:52 PM	**18.0** °F	-	**9.0** °F	68%	**30.30** in	**10.0** mi	Calm	Calm	-	N/A		Scattered Clouds

Attachment 12

Education and Outreach Outcomes Report

Mid Rio Grande Stormwater Quality Team

www.keeptheriograndе.org

Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) • City of Albuquerque
Bernalillo County • Town of Bernalillo • Village of Corrales • Ciudad Soil and Water Conservation District
Eastern Sandoval County Arroyo Flood Control Authority (ESCAFCA) • Village of Los Ranchos de Albuquerque
NM Department of Transportation (NMDOT) • City of Rio Rancho • Sandoval County
Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA)

Outcomes Report

for

Fiscal Year 2018-2019

(July 1, 2018 - June 30, 2019)

presented by

Phyllis Baker and Cristofer Romero

CWA STRATEGIC COMMUNICATIONS

CWA STRATEGIC COMMUNICATIONS

During the period from July 1, 2018 through June 30, 2019, the Mid Rio Grande Stormwater Quality Team (MRGSQT) continued its educational outreach by:

- Partnering with the Bosque Ecosystem Monitoring Program (BEMP) and RiverXchange.
- Continuing to post relevant information to its website and Facebook page;
- Participating in high-profile community events, including the State Fair Parade, the Corrales Harvest Festival, the Rio Rancho Children's Water Festival and New Mexico's Animal Humane Society's Doggie Dash and Dawdle;
- Updating the team's interactive kiosk with robust analytics software to track participant interaction and installing it at Albuquerque's Rudolfo Anaya North Valley Library;
- Participating in a variety of community events throughout the year;
- Updating their matrix designed to address MS4-related topics and planning future programs and activities designed to correspond with permit-mandated topics, including proper hazardous waste disposal, appropriate pet waste disposal, stormwater pollution reduction and awareness of hazardous on-the-job chemicals, and
- Continuing to update and improve the team's website **keeptheriogrand.com.**

Team partners and supporters disseminated information on stormwater quality and pollution prevention through municipal water quality reports to stakeholders. Specialty advertising giveaways relating to stormwater quality awareness were ordered/reordered for use at public events. MRGSQT's annual budget for all these activities, excluding Type 9 items, donated hours by team members and funding for Arroyo Classroom, RiverXchange and B.E.M.P., is $50,000. The contractor, CWA Strategic Communications (CWA), donated $1,965.15 in services during the 12-month period. Following is a review of the activities in which the Team has participated.

WEBSITE (www.keeptheriogrand.org)

The team contracted with CWA to redesign the website; the new site was launched in October 2018. Content and links were updated and new material added. The site is now more user-friendly and offers Team members an easy way to upload, store and share materials.

FACEBOOK PAGE

In conjunction with the SQT website, a Facebook page continues to post information at: (https://www.facebook.com/Keeptheriogrand). The page has 151 "Likes" (a 7% increase from the previous year) and the team occasionally boosts posts during events to obtain more visibility.

Estimated number of individuals reached by this activity: 151

Permit Reference(s): General SWP, Construction, Pet Waste

Audience(s): Children, Adults

EVENTS

Between July 1, 2018, and June 30, 2019, MRGSQT members and their partner agencies reported participating in a total of 77 community outreach/educational events reaching adults and children. ***Details can be found in Exhibit 1 at the end of this report.***

Estimated number of individuals reached by these community outreach/education events (with duplications): 32,901

Permit Reference(s): General SWP, Construction, Pet Waste, Construction, Household Hazardous Waste, Illicit Discharge and Animal Sources

Audience(s): Children, Adults

GENERAL MATERIALS DISTRIBUTION

As appropriate, team members distribute materials at events. Following are inventories of materials on hand:

STORMWATER QUALITY TEAM Inventory			
Item	**Starting Qty as of 7/1/2018**	**Distributed**	**Ending Qty as of 6/30/2019**
"Keep the Rio Grand" Bumper Stickers	750	500	250
"Reduce Stormwater Pollution at Home" Brochure	100	16	84
Dog-Shaped Poop Bag Dispensers	2,586	836	1,750
"Don't Contaminate the River" Oval Stickers	5,260	1,510	3,750
Poop Emoji Squeezies	3,840	2,376	1,464
Morphing Fish Bags	3,417	917	2,500
Silicone Pet Food Can Lids	1,767	456	1,311
New Pet Rack Cards	4,900	506	4,394
FOG Rack Cards	4,900	488	4,412
No Poop Fairy Rack Cards	4,900	473	4,427
Professionals Harmful Chemicals Rack Card	4,900	180	4,720
Reduce Stormwater Pollution at Home Rack Card	4,900	542	4,358
Large Stormwater display - 8 ft			1
Tabletop Stormwater display - 6 ft			1
SQT 6' x 3' banner			3
TOTAL DISTRIBUTION		**8,800**	

Total estimated number of people reached by these activities: 8,800

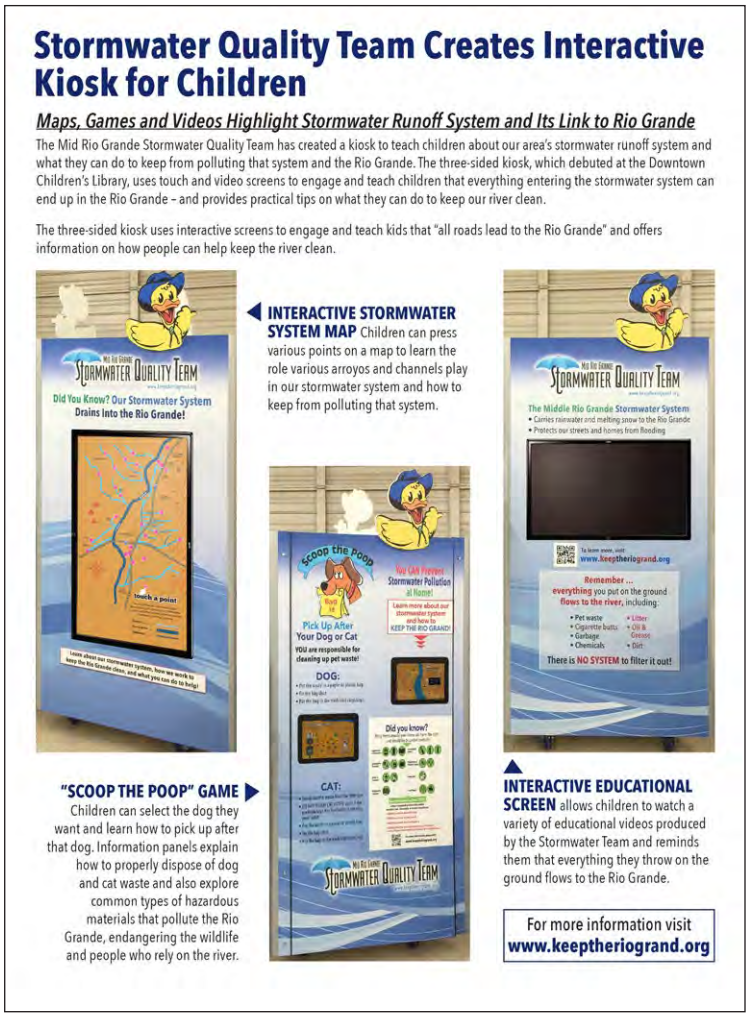
Permit Reference(s): General SWP, Pet Waste, Household Hazardous Waste

Audience(s): Children, Adults

EDUCATIONAL ACTIVITIES

Educational Kiosk at Albuquerque's Rudolfo Anaya North Valley Public Library.

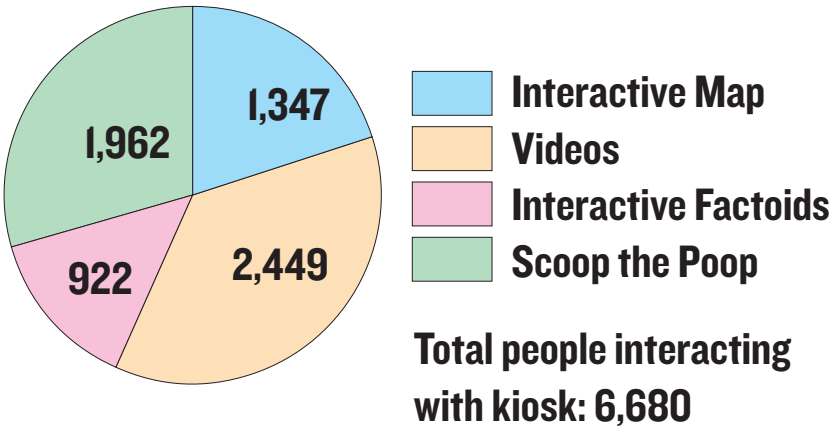
The team's interactive kiosk completed its successful run at Rio Rancho's Loma Colorado Public Library. The kiosk was updated with analytics software to enable the Team to better understand how it was used and which elements were used most frequently – and when. In November 2018 the kiosk was installed in Albuquerque's Rudolfo Anaya North Valley Library, where it continues to educate citizens (primarily children) about stormwater issues. The kiosk features:



- An interactive stormwater system map where children can press various points to learn the roles arroyos and channels play in the stormwater system and how to keep from polluting that system. The system stretches from Bernalillo on the north through Rio Rancho and into Albuquerque.
- A "Scoop the Poop" game that lets children choose one of three dogs and learn how to properly pick up after that dog. This is important because pet waste is a major source of *E coli* contamination in the Rio Grande.
- An educational panel on common types of trash, debris and chemicals that pollute the Rio Grande including appliances and electronics; automotive products such as oil, batteries and gasoline; glass and cement; household cleaners, yard waste; and prescription and over-the-counter medicines.
- A touch screen that includes facts about each arroyo and the Rio Grande.
- A touchscreen that lets viewers choose from different videos to watch:
  - Rio the Duck
  - Keep the Rio Grande
  - Scoop the Poop!
  - 100 Billion Gallons
  - Arroyo Safety
  - Respect Your Arroyos

The software platform on the kiosk was upgraded to allow the games to be posted on websites and played online.

Educational Kiosk Statistics



Total people interacting with kiosk: 6,680

48,256 people visited the library during that time and were give the opportunity to read the messages on the kiosk walls. *(The kiosk was undergoing upgrades between July 1 and October 30.)*

6,680 (mostly) children interacted with the kiosk from November 1, 2018 through June 30, 2019.

Total estimated number of people reached by these educational activities: 48,256

Permit Reference(s): General SWP, Pet Waste, Animal Sources, Household Hazardous Waste,

Audience(s): Children, Adults

2018

	November				December			
	Map	Videos	Factoids	Scoop The Poop	Map	Videos	Factoids	Scoop The Poop
People	173	306	120	218	122	223	84	162
Touches	1,720	306	366	533	1587	223	252	409
Number of Video Views								
Rio The Duck	75				60			
Keep the Rio Grande	47				27			
Scoop the Poop!	81				48			
100 Billion Gallons	33				31			
Arroyo Safety	43				36			
Respect Your Arroyos	25				21			

2019

	January				February				March			
	Map	Videos	Factoids	Scoop The Poop	Map	Videos	Factoids	Scoop The Poop	Map	Videos	Factoids	Scoop The Poop
People	167	283	126	235	178	376	130	263	198	327	136	280
Touches	1,743	283	321	598	1928	376	391	675	2331	327	360	730
Number of Video Views												
Rio The Duck	60				100				87			
Keep the Rio Grande	52				60				37			
Scoop the Poop!	80				111				100			
100 Billion Gallons	43				61				43			
Arroyo Safety	28				21				30			

	April				May				June			
	Map	Videos	Factoids	Scoop The Poop	Map	Videos	Factoids	Scoop The Poop	Map	Videos	Factoids	Scoop The Poop
People	132	181	75	211	158	270	100	259	219	483	151	334
Touches	1,536	181	120	378	1,862	270	221	567	3,436	483	356	822
Number of Video Views												
Rio The Duck	36				74				119			
Keep the Rio Grande	16				27				80			
Scoop the Poop!	53				66				148			
100 Billion Gallons	31				37				71			
Arroyo Safety	25				35				33			

STUDENTS AND TEACHERS REACHED THROUGH PARTNER EDUCATIONAL PROGRAMS – ARROYO CLASSROOM, RIVERXCHANGE AND BOSQUE ECOSYSTEM MONITORING PROGRAM (BEMP)

Arroyo Classroom

The Arroyo Classroom program utilizes natural arroyos as outdoor classrooms and brings local animals into the classroom to motivate third-graders to respect the arroyos as important wildlife habitat. In the 2018-2019 school year, the program served 34 classes within the Rio Rancho Public School System, reaching approximately 34 teachers and 790 students.

For more information, see Exhibit 2, Arroyo Classroom's 2018-2019 report to the Mid Rio Grande Stormwater Quality Team.

RiverXchange

RiverXchange is an innovative, long-term outreach program that integrates water resource topics with computer technology, student writing and a hands-on curriculum to meet specific, measurable outcomes.

Since 2007, the program has enabled upper elementary classes from New Mexico to become "high tech pen pals" with classes outside the state to share what they learn about the geography, culture and ecology of their local river and watershed. Including these partner classes, the program has served over 18,000 students. Each student spends about 25 hours engaged with the program over the course of the school year. The curriculum incorporates hands-on activities and multiple classroom presentations by local water resources experts. During the 2018-2019 season, 36 fifth-grade classes, 20 of which were Title I schools, participated in New Mexico. RiverXchange conducted 22 classes (558 students) in Bernalillo County and 14 classes (396 students) in Sandoval County.

For more information, see Exhibit 3, RiverXchange's 2018-2019 report to the Mid Rio Grande Stormwater Quality Team.

B.E.M.P.

The main objective of the *Stormwater Science* outreach education program of the Bosque Ecosystem Monitoring Program (B.E.M.P.) is to teach students that the health of the Rio Grande is directly related to the health of the surrounding watershed. The *Stormwater Science* program includes a 1.5-hour classroom activity, and a 4-to 5-hour study trip to the Rio Grande. During the 2018-2019 school-year 2017 students and 547 teachers participated in *Stormwater Science* activities in their classrooms, in the field or both. The classroom program was delivered to 599 students in 33 classrooms at 13 different schools in Rio Rancho, Albuquerque and Belen.

For more information, see Exhibit 4, BEMP's 2018-2019 report to the Mid Rio Grande Stormwater Quality Team.

Total estimated number of people reached by these educational activities: 9,604

Permit Reference(s): General SWP, Pet Waste, Animal Sources, Household Hazardous Waste, Illicit Discharges

Audience(s): Children, Adults

PUBLIC EDUCATION CAMPAIGNS ON PROPER DISPOSAL OF FATS, OILS & GREASE

In November and December 2018, the City of Rio Rancho ran a public education campaign on how to dispose of cooking grease properly. The campaign was timed to coincide with the holiday cooking season (Thanksgiving through Christmas). The FOG campaign included:

Digital Outdoor Boards – Alternating the red and green images, two boards ran for two weeks (11/12-11/25) and four boards ran one week (11/19-11/25). In December, all six boards ran the week before Christmas (12/17-12/23). A total estimated audience of 184,321 adults (18 years of age and older) with duplication was reached.

Movie Theaters – One 30-second spot played in Rio Rancho's 14-plex Premiere Theater for two weeks in November (11/16-11/22) and two weeks in December (12/15-12/28), reaching approximately 28,000 people with possible `duplication.

In addition, the City of Rio Rancho published an article in its Fall-Winter 2018 newsletter. *"Fats, Oils and Grease Can Harm Water Pipes"* offered information about the damage fats, oils and grease can do to sewer mains. The newsletter was mailed to 37,000 water utility customers.

Total estimated audience reached (with duplication): 249,321

Permit Reference(s): General SWP, Pet Waste, Animal Sources, Household Hazardous Waste, Illicit Discharges

Audience(s): Children, Adults

Fats, Oils and Grease Can Harm Water Pipes

PIPES CLOGGED WITH DISCARDED FAT can cause raw sewage to back up into your home or overflow into parks, yards and streets. They cause:

- Increased calls for a plumber.
- Unpleasant and expensive cleanups at your expense.
- Potential contact with disease-causing organisms.
- Increased cost for local sewer departments, causing higher sewer bills for all customers.

Avoid clogged pipes – never pour grease down a sink or into a toilet.

- Scrape grease and food scraps into a disposable container, or place in a trash can (after cooling).
- Don't put food scraps in the garbage disposal – this shreds solids into smaller pieces but doesn't prevent grease from going down the drain.
- Use a strainer in the sink to catch food scraps and other solids.

NEVER POUR
Fats, Oils or Grease
Down the Drain.
It Can Clog Sewer Pipes.

ALWAYS PUT
Cooled Fats, Oils or
Grease in the Trash.
Keep Sewer Pipes Clog-Free.

505.896-8715 · rrnm.gov

Get Your **FREE**
"Cease the Grease" Spatula*
Stop by the Utilities Department Environmental Programs
(City Hall Room 250)
**While supplies last*

Rio Rancho Utilities :: Fall-Winter 2018 :: 3

ARROYO SAFETY CAMPAIGN

Mid Rio Grande Stormwater Quality Team member SSCAFCA continued its Arroyo Safety Campaign by producing a one-minute video in collaboration with the Rio Rancho High School Tree Stewards group geared toward high school students. Conceptualized by the students, the spot uses humor to share arroyo safety messages as well as emphasize the importance of keeping trash and debris out of arroyos.

The video was posted on the Stormwater Quality Team's website **www.keeptheriograndе.org,** YouTube, Instagram, Facebook and, of course, SSCAFCA's website. Analytics indicate that the spot garnered 5,152 views on social media, earned 46 Facebook followers and 593 "likes." The spot also ran for two weeks in Rio Rancho's 14-plex Premiere Theater, where it reached 14,000 people. To see the spot visit: **https://www.sscafca.org/know-your-arroyos/**

In addition, the *Rio Rancho Observer* ran an article about the spot, reaching 23,500 people.

NEWS RROBSERVER.COM | SUNDAY, JUNE 16, 2019 5

SSCAFCA report creates humorous flash-flood safety video

SSCAFCA REPORT

With monsoon season approaching, flood-control officials and local students have collaborated to teach people how to stay safe from flash floods in arroyos.

The Southern Sandoval County Arroyo Flood Control Authority recently completed a short arroyo safety video with the help of the Rio Rancho High School Tree Stewards student group and their teachers, Daniel Trujillo and Laura Saulsberry.

To reach their peers with a message that would attract their attention, the group decided to use humor.

"We wanted something that would stand out among all the other visuals we are constantly bombarded with on our phones and mobile devices," said Eric Sommaia, president of the tree stewards.

The video shows how the dry, sandy arroyos in the southern part of Sandoval County can flood quickly from distant storms in the west, even when the sun is shining overhead. The flash flood, carrying dangerous debris, is portrayed by about a dozen students dressed in blue suits, each carrying a piece of trash SSCAFCA recovered after a storm.

"We really had a great time making the spot, and it was extremely educational," Sommaia said. "Most of us had no idea how powerful a flash flood could be until we saw some footage. It was intense."

SSCAFCA Executive Engineer Chuck Thomas explained, "We received funding from FEMA (Federal Emergency Management Agency) to produce an arroyo safety program because it's important to educate the community about how and when to avoid the dangers of flash flooding in our arroyos.

"We encourage everyone to get out and enjoy nature," he continued. "Our sandy arroyos are perfect for walks, hikes or taking the dogs out. But there are definitely rules to follow and weather to watch out for, especially during the monsoon season, to remain safe."

Floods are the most common natural disaster in the United States, and flash floods can occur with no warning. Knowing what signs to look for and how to react can save lives and help avoid serious injuries.

- Watch the weather report and stay out of arroyos if rain is predicted.
- Keep off the fragile walls and banks of arroyos. They are unstable and can collapse.
- Keep an eye on the western sky — that channel water from the west all the way to the Rio Grande. This means a storm in the west can cause flash floods in arroyos miles away, where it's not raining.
- Never walk, swim or drive through flood waters. Move to higher ground.
- Just a few inches of moving water can knock people down, and moving water can sweep away vehicles.
- Dispose of trash appropriately and keep debris, including yard waste, plastic bottles, large appliances and dog waste, out of arroyos and off the mess.

The video can be seen on:

- SSCAFCA's website: sscafca.org/know-your-arroyos and
- YouTube at youtube.com/watch?v=wytAIb_MdfA&t=3s

Established in 1990, SSCAFCA is an independent corporate political body entrusted with flood and stormwater management and education. It builds and maintains structures providing flood control, erosion control, watershed and stormwater management in southern Sandoval County.

For more information, visit sscafca.org or call 892-RAIN (7246).

Courtesy photo

Rio Rancho High School Tree Stewards gather in this still shot from the short video they made about arroyo safety with the Southern Sandoval County Arroyo Flood Control Authority. The students in blue suits portrayed water carrying debris in a flash flood, and the other four students played bicyclists in the arroyo.

Total estimated audience reached (with duplication): 43,291

Permit Reference(s): General SWP, Pet Waste, Animal Sources, Household Hazardous Waste

Audience(s): All ages, especially high school students

SSCAFCA also created and ran alternating ads in the *Rio Rancho Observer* during monsoon season.

Total estimated audience reached (with duplication): 94,000

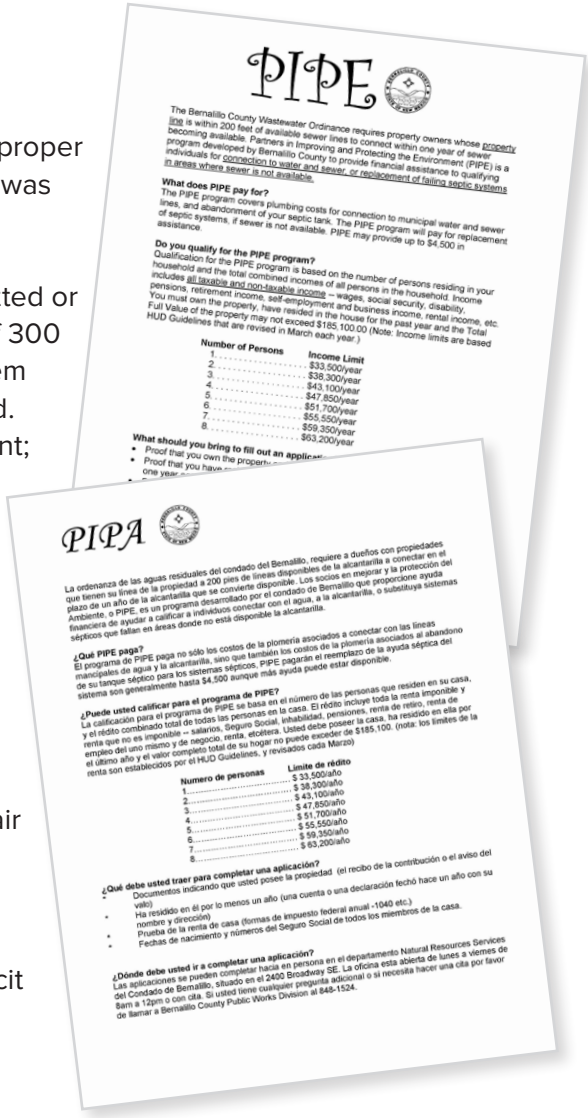
Permit Reference(s): General SWP

Audience(s): All ages

SEPTIC SYSTEM EDUCATION, OUTREACH AND ENFORCEMENT PROGRAM

Bernalillo County administers the septic system permitting program in the unincorporated portions of Bernalillo County under the Bernalillo County Wastewater Ordinance, ensuring the proper disposal of septic waste and proper operation and maintenance of septic systems. The wastewater ordinance was passed in 2015.

The County began a campaign in 2012 to get unpermitted systems permitted or properly abandoned, with an established goal of contacting a minimum of 300 unpermitted system or aging system owners per year. To date, 1,773 system owners have been contacted, resulting in 813 responses and 727 resolved. Resolution means either no system was present or the property was vacant; resulted in permit or connection to sewer or repair/replacement to get into compliance; or intended/listed for clerk filing or future legal action (in process and determination). In FY19, the County targeted the East Mountain Area, including the Upper Tijeras Arroyo watershed, and closed 233 septic systems.


PIPE

The Bernalillo County Wastewater Ordinance requires property owners whose property line is within 200 feet of available sewer lines to connect within one year of sewer becoming available. Partners in Improving and Protecting the Environment (PIPE) is a program developed by Bernalillo County to provide financial assistance to qualifying individuals for connection to water and sewer, or replacement of failing septic systems in areas where sewer is not available.

What does PIPE pay for?
The PIPE program covers plumbing costs for connection to municipal water and sewer lines, and abandonment of your septic tank. The PIPE program will pay for replacement of septic systems, if sewer is not available. PIPE may provide up to $4,500 in assistance.

Do you qualify for the PIPE program?
Qualification for the PIPE program is based on the number of persons residing in your household and the total combined incomes of all persons in the household. Income includes all taxable and non-taxable income – wages, social security, disability, pensions, retirement income, self-employment and business income, rental income, etc. You must own the property, have resided in the house for the past year and the Total Full Value of the property may not exceed $185,100.00 (Note: Income limits are based HUD Guidelines that are revised in March each year.)

Number of Persons	Income Limit
1	$33,500/year
2	$38,300/year
3	$43,100/year
4	$47,850/year
5	$51,700/year
6	$55,550/year
7	$59,350/year
8	$63,200/year

What should you bring to fill out an applic
- Proof that you own the proper
- Proof that you have
one year.

PIPA

La ordenanza de las aguas residuales del condado del Bernalillo, requiere a dueños con propiedades que tienen su línea de la propiedad a 200 pies de líneas disponibles de la alcantarilla a conectar en el plazo de un año de la alcantarilla que se convierte disponible. Los socios en mejorar y la protección del Ambiente, o PIPE, es un programa desarrollado por el condado de Bernalillo que proporcione ayuda financiera de ayudar a calificar a individuos conectar con el agua, a la alcantarilla, o subtituya sistemas sépticos que faltan en áreas donde no está disponible la alcantarilla.

¿Qué PIPE paga?
El programa de PIPE paga no sólo los costos de la plomería asociados a conectar con las líneas municipales de agua y la alcantarilla, sino que también los costos de la plomería asociados al abandono de su tanque séptico para los sistemas sépticos. PIPE pagarán el reemplazo de la ayuda séptica del sistema son generalmente hasta $4,500 aunque más ayuda puede estar disponible.

¿Puede usted calificar para el programa de PIPE?
La calificación para el programa de PIPE se basa en el número de las personas que residen en su casa, y el rédito combinado total de todas las personas en la casa. El rédito incluye toda la renta imponible y renta que no es imponible – salarios, Seguro Social, inhabilidad, pensiones, renta de retiro, renta de empleo del uno mismo y de negocio, renta, etcétera. Usted debe poseer la casa, ha residido en ella por el último año y el valor completo total de su hogar no puede exceder de $185,100. (nota: los límites de la renta son establecidos por el HUD Guidelines, y revisados cada Marzo)

Numero de personas	Límite de rédito
1	$ 33,500/año
2	$ 38,300/año
3	$ 43,100/año
4	$ 47,850/año
5	$ 51,700/año
6	$ 55,550/año
7	$ 59,350/año
8	$ 63,200/año

¿Qué debe usted traer para completar una aplicación?
- Documentos indicando que usted posee la propiedad (el recibo de la contribución o el aviso del valo)
- Ha residido en él por lo menos un año (una cuenta o una declaración fechó hace un año con su nombre y dirección)
- Prueba de la renta de casa (formas de impuesto federal anual -1040 etc.)
- Fechas de nacimiento y números del Seguro Social de todos los miembros de la casa.

¿Dónde debe usted ir a completar una aplicación?
Las aplicaciones se pueden completar hacia en persona en el departamento Natural Resources Services del Condado de Bernalillo, situado en el 2400 Broadway SE. La oficina esta abierta de lunes a viernes de 8am a 12pm o con cita. Si usted tiene cualquier pregunta adicional o si necesita hacer una cita por favor de llamar a Bernalillo County Public Works Division al 848-1524.

Beginning in 1993, the PIPE Program has provided assistance to income-qualified residents by providing contractors to connect residences to water and sewer services. Beginning in 1998, the TANK Program provides assistance to income qualified residents with the replacement and/or repair of failing septic systems in areas of the County without sewer availability.

Total estimated audience reached: 1,500

Permit Reference(s): SSS, General SWP, Household Hazardous Waste, Illicit Discharges

Audience(s): Adults

NEW MEXICO STATE FAIR PARADE FLOAT

AMAFCA created a float for the State Fair Parade, which takes place every September in Albuquerque. With signs saying “Keep the Rio Grand” and “There is No Poop Fairy,” the team borrowed a concept developed by Greenville County Soil and Water Conservation District in South Carolina. A staff member dressed up as the “Poop Fairy” and tossed Poop Emoji Squeezies to the crowd.

Total estimated audience reached (with duplication): 50,000

Permit Reference(s): General AW, SWP

Audience(s): All ages

CHILDREN’S WATER FESTIVAL

The 2018 Children’s Water Festival was held October 22-23 at the Santa Ana Star Center in Rio Rancho. An estimated 1,500 fourth-grade students attended from 64 classrooms and one small group of home-schoolers.

The Festival serves to educate fourth-grade school children about water and its relationship to humans, animals and other natural resources in a fun and interactive atmosphere. Its vision is to introduce students and teachers to new ideas, options, and solutions so they will conserve and protect water for the future; lay the foundation for further learning; and reach as many students and teachers as possible.

Total estimated audience reached: 1,500

Permit Reference(s): General SWP

Audience(s): fourth-graders

For more information, see Exhibit 6, Children’s Water Festival Report, 2018-2019

HOUSEHOLD HAZARDOUS WASTE COLLECTION

Total estimated participants: 12,753

Permit Reference(s): HHW

Audience(s): Adults

Diverted from Landfill by City of Albuquerque (includes recycled and destroyed) - Weight in pounds	
FISCAL YEAR 2018-2019	
July	39,373
August	42,054
September	39,728
October	29,818
November	37,332
December	14,723
2018	
January	24,021
February	34,877
March	23,120
April	34,670
May	39,664
June	44,389
TOTAL	**403,769 lbs.**

Diverted from River by AMAFCA	
FISCAL YEAR 2018-2019	
Trash Removed	1,858 cubic yards
Vegetation Removed	150 cubic yards
Sediment Removed	53,948 cubic yards
Homeless Debris Removed	50 cubic yards
Dog Waste Removed	6,142 pounds

DONATIONS/SPONSORSHIPS

Stormwater Team members donated $139,000 to organizations for additional educational and training programs:

MEMBER	AMOUNT DONATED	RECIPIENT	PURPOSE
City of Albuquerque	$43,000	The Nature Conservancy	For Education and Outreach
AMAFCA	$2,000	Land and Water Summit	For Public Involvement and Participation
AMAFCA	$5,000	2018 EPA Region 6 Stormwater Conference	For Public Involvement and Participation
Bernalillo County	$5,000	Land and Water Summit	For Public Involvement and Participation
Bernalillo County	$5,000	2018 EPA Region 6 Stormwater Conference	For Public Involvement and Participation
Bernalillo County	$75,000	BEMP	For Education and Outreach
City of Rio Rancho	$10,000	Children's Water Festival	For Education and Outreach
City of Rio Rancho	$2,000	Land and Water Summit	For Public Involvement and Participation
Mid Rio Grande Stormwater Quality Team	$5,000	Land and Water Summit	For Public Involvement and Participation
SSCAFCA	$2,000	Land and Water Summit	For Public Involvement and Participation
SSCAFCA	$1,000	Children's Water Festival	For Education and Outreach

ESTIMATED TOTAL NUMBER OF PEOPLE REACHED THROUGH ALL ADVERTISING, EDUCATIONAL AND PUBLIC OUTREACH ACTIVITIES DURING 2018-2019:

Obviously, some people were reached by more than one activity, but in gross numbers an estimated **579,553** people were reached with a stormwater quality/stormwater pollution prevention message during the 2018-2019 fiscal year.

Exhibit 1
Event Participation 2018-2019

NAME OF PROGRAM/EVENT	EVENT DATE	TYPE OF AUDIENCE	MS4 CATEGORY	TOTAL REACHED	NOTES
2018					
Rocky Mountain Youth Corp w/Rio Rancho for AMAFCA cleanup at North Diversion Channel	7/7/18	Youth, Adults	SWP	25	Rolling River presentation
National Association of Flood & Stormwater Management Agencies (NAFSMA) Annual Meeting in Santa Fe, NM	7/11/18	Adults	SWP	250	AMAFCA, SSCAFCA, and BernCo delivered presentations.
"There is No Poop Fairy" float in State Fair Parade	7/13/18	All Ages	AS, PW, SWP	50,000	Provided education information about Scoop the Poop, There is no Poop Fairy, why it is important to pick up after your pet as well as proper household hazardous waste disposal.
Environmental Fair at Isleta Youth Center	7/14/18	All Ages		400	
EPA Region 6 Stormwater Conference "Stormwater Permitting"	8/19-23/2018	Adults	SWP	350	AMAFCA delivered 5 presentations at the EPA R6 conference, and hosted field trips at two water quality facility and a design charrette at another water quality facility. Bernalillo County delivered 3 presentations including watershed-based plan implementation, outreach and education, and GI/LID impediments. AMAFCA and Bernalillo County also co-chaired planning of conference.
Welcome Day for UNM Students	8/21/18	College Students	SWP	106	Rolling River presentation
Cancer Services of NM Retreat at Marriott Pyramid	9/9/18	Adults	SWP	25	Rolling River presentation
RMYC/BCMN Rolling River training at Valle de Oro National Wildlife Refuge	9/15/18	Adults	SWP	10	Rolling River presentation
Enviroscape demo for NMED DOE Oversight at Los Alamos	9/18/18	Adults	SWP	10	Enviroscape presentation
East Mountain Celebration at Los Vecinos Community Center	9/23/18	Adults	SWP	500-600	Natural Resources Services table in Bernalillo County tent. Provided information to educate County residents on stormwater quality, water conservation methods and incentive programs, and groundwater monitoring program
Corrales Harvest Festival	9/29-30, 2018	All Ages	AS, PW, SWP	10,000	Booth handing out information, SWAG and collecting surveys to determine public knowledge regarding stormwater issues
Environmental Science class presentation at Nex+Gen Academy	10/2/18	Students	SWP	60	Enviroscape presentation
USFS Mexico Interdependence Day at NHCC	10/6/18	Adults	SWP	25	Rolling River presentation
CNM Environmental Science class ES presentation at Sanchez Farm	10/8/18	Students	SWP	25	Enviroscape presentation
RiverXchange watershed presentation at Bandelier Elementary	10/17-18, 2018	Children	SWP	100	RiverXchange presentation to four 4th grade classes
Rio Rancho Children's Water Festival	10/22/18	Elementary Students and Teachers	SWP	1,500	Students attended from 64 classrooms and one small group of home-schoolers; Bernalillo Elementary School, St. Thomas Aquinas, and all of the elementary schools in Rio Rancho Public Schools. The students attend three 30-minute presentations in a half-day format. Up to 17 classes from three to four schools were on-site at one time. Schools attended a morning or afternoon program.

AS: Animal Sources
CON: Construction
HHW: Household Hazardous Waste
ID: Illicit Discharges
PW: Pet Waste
SSS: Septic & Sanitary Sewer Systems
SWP: General Stormwater Pollution Prevention

NAME OF PROGRAM/EVENT	EVENT DATE	TYPE OF AUDIENCE	MS4 CATEGORY	TOTAL REACHED	NOTES
Children's Water Festival	10/21/18	Children	SWP	125	Rolling River presentation
Children's Water Festival	10/22/18	Children	SWP	125	Rolling River presentation
EPA R6 Manager's Meeting in Dallas, TX	10/25/18	Adults	SWP	50	AMAFCA and BernCo presented at the EPA R6 Manager's Meeting in Dallas, TX;
Animal Humane's Doggie Dash and Dawdle	11/4/18	All Ages	AS, PW, SWP	4,000	Animal Humane's signature event and largest fundraiser
John Baker	12/3/18	All Ages	SWP	31	Planted 27 poles
Colinas del Norte	12/7/18	All Ages	SWP	43	Planted 24 poles
CdN*	12/11/18	All Ages	SWP	53	Planted 45 shrubs
GOK	12/14/18	All Ages	SWP	49	Planted 42 poles
2019					
"GSI/LID in Transportation" at 56th Annual UNM Paving & Transportation Conference	1/7/19	Adults	SWP	645	Presentation in cooperation with Tess Houle, MRWM. GI/LID in transporation/streets, disconnected impervious areas, stormwater quality and quantity, stormwater regulations.
Earth Guardians	1/19/19	Students	SWP	15	Planted 70 poles
Troop 444	1/26/19	Students	SWP	9	Planted 48 poles
Jewish Congregation	1/27/19	All Ages	SWP	56	Planted 42 poles
Bosque school	1/30/19	All Ages	SWP	19	Planted 14 poles
KRQE TV interview on "GSI/LID improvements, stormwater qualiy"	1/30/19	Adults	SWP	4,500	KRQE 7am Morning Show | 2nd Street Corridor Projects Open House
Second Street SW Corridor Improvments Ribbon-Cutting Ceremony	1/30/19	Adults	SWP	75	Public ceremony that discussed the improvements along 2nd Street, including GI/LID improvements, with local community
Bosque School	1/31/19	All Ages	SWP	17	Planted 12 poles
Bosque School PM Session	1/31/19	All Ages	SWP	22	Planted 22 poles
Bosque School	2/1/19	All Ages	SWP	17	Planted 12 poles
Peace Corps	2/2/19	All Ages	SWP	35	Planted 70 poles
Bosque School	2/6/19	All Ages	SWP	19	Planted 9 poles
7 Bar	2/7/19	All Ages	SWP	59	Planted 17 poles
Sunport Commerce Center Public Meeting at Mountain View Community Center	2/7/19	Adults	SWP	50	The proposed design overlay will establish additional criteria in order to achieve quality development of this plan area beyond what is currently required under its existing industrial zone designation. The design overlay process includes but is not restricted to architecture, landscaping, fencing and walls. The public meeting will provide an overview of the design overlay process and the draft document. Included stormwater quality improvements.
Cub Scout Pack	2/9/19	All Ages	SWP	20	Planted 27 poles
Holy Ghost	2/13/19	All Ages	SWP	54	Planted 68 poles
Monte Vista (reschedule)	2/15/19	All Ages	SWP	22	Planted 38 poles
UNM Water Resources Class	2/15/19	College Students	SWP	20	AMAFCA gave presentation.
2019 BEMP Crawford Symposium	2/15/19	All Ages	SWP	500	AMAFCA mentored a student group that presented on water quality data.
Enterprise company	2/23/19	Adults	SWP	6	Planted 36 poles
Landscape for Life Training at Hubble House	2/23/19	Adults	SWP	55	Residential stormwater management- rain gardens, rainwater catchment, residential stormwater quality

AS: Animal Sources
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PW: Pet Waste
SSS: Septic & Sanitary Sewer Systems
SWP: General Stormwater Pollution Prevention

NAME OF PROGRAM/EVENT	EVENT DATE	TYPE OF AUDIENCE	MS4 CATEGORY	TOTAL REACHED	NOTES
New Mexico Land and Water Summit	2/27-3/1/2019	Adults	SWP	137	Provided sponsorship of $5000 - Attendees included professionals, hydrology, landscape architecture, landscaping, engineering. AMAFCA hosted a field trip at a water quality facility and was a member of the planning committee for the 2019 Land and Water Summi
Whittier	3/22/19	All Ages	SWP	9	Planted 10 shrubs
Inez Elementary	3/28/19	All Ages	SWP	77	Planted 68 shrubs
Holy Ghost	4/3/19	All Ages	SWP	39	Planted 55 poles
Cancer Services of NM Retreat at Marriott Pyramid	4/14/19	Adults	SWP	30	Rolling River presentation
Earth Day Event	4/20/19	All Ages	SWP	300	
Annunciation Catholic School Earth Day	4/26/19	Students	SWP	25	Rolling River presentation
Bosque School Earth Day	4/26/19	Students	SWP	60	Enviroscape presentation
Earth Day Celebration, Forest Service	4/26/19	Adults	SWP	200	Spoke with Forest Service employees about water conservation programs in Bernalillo County, donated rain barrel for free drawing.
South Valley Pride Day at Westside Community Center	4/28/19	All ages	SWP	2,000	Provided education about land use impacts to stormwater and the river, human activities and their impacts, things kids can do to reduce SW pollution.
Singing Arrow Public Meeting re: Watershed protection	5/16/19	Adults	SWP	12	Meeting with local community to discuss signage project. Community feedback about signage for watershed protection/stormwater quality'
Abrazos Environmental Justice Community Day at Valle de Oro	5/18/19	Adults	SWP	250	Provided education about land use impacts to stormwater and the river, human activities and their impacts, things kids can do to reduce SW pollution.
Abrazos Justice Day	5/18/19	Adults	SWP		Honoring the rights to a healthy environment in which we live, work, play and go to school.
Paws and Claws Family Festival, Bernco County Animal Care and Resource Center Opening event	5/18/19	All ages	AS, PW, SWP	500	Provided education information about Scoop the Poop, There is No Poop Fairy, why it is important to pick up after your pet as well as proper household hazardous waste disposal.
Business outreach	5/19/19	Adults	SWP	530	Brochures developed with stormwater quality information specific to various sectors of business including automotive, parking lots, contractors' yards, landscaping, mobile carpet cleaners, fueling stations, printers.
Copper Spring Cleanup	Spring 2019	Adults	HHW, SWP	58	Collected 35 lbs. of dog poop, 4 bags of trash, 2 bags mixed recycling, 1 5-gal. bucket of glass, 0.5 bags of aluminum, 450 feet of eroded trails closed and planted with cactus, maintenance on 1/2 mile of trail, about 220 feet of trail rerouted
Indian School Spring Cleanup	Spring 2019	Adults	HHW, SWP	46	Collected 90 lbs. dog poop, 2.5 bags of trash, 1 bag mixed recycling, 2 5-gal. buckets of glass, 0.5 bags of aluminum, 1 pallet, 2 sections of wire mesh fencing, maintenance on 3 trails sections, cactus planted to close off several unofficial trails.
Menaul Spring Cleanup	Spring 2019	Adults	HHW, SWP	27	Collected 33 lbs. dog poop, 1 bag of trash, 1 bag mixed recycling, 1 5-gal. buckets of glass, 2 pieces of rebar, 11 golf balls, 420 feet of trail rerouted, 840 feet of trail maintained, cactus planted to close off one trail section

AS: Animal Sources
CON: Construction
HHW: Household Hazardous Waste
ID: Illicit Discharges
PW: Pet Waste
SSS: Septic & Sanitary Sewer Systems
SWP: General Stormwater Pollution Prevention

NAME OF PROGRAM/EVENT	EVENT DATE	TYPE OF AUDIENCE	MS4 CATEGORY	TOTAL REACHED	NOTES
Piedra Lisa Spring Cleanup	Spring 2019	Adults	HHW, SWP	53	Collected 35 lbs. dog poop, 1 bag of trash, 1 bag mixed recycling, 2.5 gal. of glass, 0.5 bags of aluminum, 1000 feet of trail maintained, cactus planted on 5 sections of social trails, several sections of rock steps built
River Cleanup	Spring 2019	Adults	HHW, SWP	60	Collected 9 bags mixed recycling, 3 5-gal. buckets of glass and 1.5 bags of aluminum. Also filled the dump trailer plus 4 pickup trucks with: 3 shopping carts, 1 bath tub filled with medical supplies, 23 tires, 3 mattresses and a jumble of rusty car parts.
Rt. 66 Spring Cleanup	Spring 2019	Adults	HHW, SWP	40	C+A35:F78sh, 1 tire, several pieces of sheet metal, 8 eroded roads closed
TOTAL REACHED				**73,130**	

AS: Animal Sources
CON: Construction
HHW: Household Hazardous Waste
ID: Illicit Discharges
PW: Pet Waste
SSS: Septic & Sanitary Sewer Systems
SWP: General Stormwater Pollution Prevention

Exhibit 2
Arroyo Classroom 2018-2019

Arroyo Classroom

2018 - 2019 final report

submitted by
Melissa McLamb, CSWCD
June 2019

The Arroyo Classroom program utilizes our natural arroyos as outdoor classrooms and brings local animals into the classroom to motivate 3rd graders to respect the arroyos as important wildlife habitat. Orilla Consulting, LLC developed the program in 2012 and initially implemented the program for 7 classes at Maggie Cordova Elementary in Rio Rancho. In 2013, the program grew to serve 20 classes. On July 1st, 2015, Orilla Consulting, LLC transferred the program to Ciudad Soil and Water Conservation District as part of the larger education and outreach efforts we are involved in throughout Bernalillo and Sandoval Counties. In the 2018-2019 school year, we served 34 classes within Rio Rancho Public Schools, reaching approximately 34 teachers and 790 students.

Participating Schools

SCHOOL	Number of classes	Number of Students
Enchanted Hills Elem.	5	140
Martin Luther King Elem. *	6	158
Sandia Vista Elem.	4	84
Maggie Cordova Elem. *	7	162
Cielo Azul Elem. *	6	124
Puesta del Sol Elem. *	6	120
TOTALS	**34**	**790**

* Title 1 school

Deliverables to date:
All complete

- Watershed Presentations: 34:34
- Arroyo Walk: 34:34
- Bat Presentations: 34:34
- Owl Presentations: 34:34

Task 1: Recruit and select classes.
Complete by September 2018. **Status: completed.**

All classes are returning classes and the program has a waiting list.

Task 2: Review and revise evaluation and curriculum.
Complete by May 2019. **Status: completed.**

The pre and post survey was revised by classroom teachers and AC staff to better suit 3rd graders. We received positive feedback from teachers on new and updated presentations offered to their classrooms this year.

Task 3: Coordinate classroom guest speakers.
Begin September 2018. On-going through May 2019. **Status: completed.**

Guest speakers have been confirmed with up to date Professional Services Agreements. All presentations have been conducted.

Task 4: Collect and analyze teacher feedback.
Complete by May 2019. **Status: completed.**

Staff has developed a feedback form for teachers to issue out to teachers in April.

Task 5: Reporting to sponsors. **Status: completed.**

Midyear report by January 31, 2019. - *submitted Jan 2019*
Final report by June 14, 2019.

Project Summary

The program consists of a four-part series of lessons, based on grade-level science standards and addressing areas of interest to SSCAFCA, such as bats, burrowing owls, ATV use, pet waste, and arroyo safety. Educators Melissa McLamb and Erin Blaz delivered two of the lessons – an introductory lesson about watersheds, and a walking field trip to nearby arroyo habitat. Justin Stevenson of RD Wildlife Management, LLC delivered a lesson using live microbats. Tavo Cruz of Envirological Services, Inc. delivered presentations with a live Burrowing Owl.

The watershed lesson expounds on the water cycle, already integral in 3rd grade curriculum. This year, we developed a hands on lesson where students were able to build a model of a watershed. This lesson introduces the concept of a watershed to students, demonstrates how surface water becomes polluted through a variety of waste, and discusses the importance of keeping our arroyos clean.

The arroyo walk is a highlight for students and teachers, as the majority of participating classes only receive one other field trip during the school year, and students always come away learning something new and interesting about the uniqueness of arroyo habitat. This lesson is about the unique adaptations of arroyo animals and plants, incorporates a walk out to a nearby arroyo (when available) and extensive discussion about arroyo safety *(see lesson plan in Appendix A.)* Melissa first talked to students about the difference between concrete-lined channels and sandy-bottomed arroyos, and emphasized that it is never safe to go into concrete-lined channels, while sandy-bottomed arroyos can be visited when there are no clouds in the sky. Students searched for evidence of animals living in the arroyo banks, learned about how lizards, and other cold-blooded animals, are adapted to the desert environment by moving about to regulate their temperature, and looked for certain adaptations of desert plants to minimize water loss in the desert.

In the lesson about bats, Justin discussed common myths about bats while pointing out how these myths can pose issues for bat populations as he addressed each one. He taught students about species common in their area, including what habitat they prefer, what they eat, the challenges they face, and what to do if one sees an injured bat. He talked about how important bats are in keeping insect populations under control, shared ways to encourage and protect bats and emphasized that kids should not be frightened of them, but also should never touch a bat if they find one. Students were able to view two different species of live microbats.

In the owl presentation, Octavio talked with students about what time of year burrowing owls are in our arroyos, what habitat they need, and what we can do to support and protect them. Tavo emphasized the impact of riding ATVs up the sides of arroyos and encouraged ways to care for burrowing owl habitat. He taught students that burrowing owls are protected by federal law, and that 3rd graders could be ambassadors and protectors for the owls. Each student was able to observe the burrowing owl up close, one at a time. We worked in coordination with Wildlife Rescue to bring in the live burrowing owl for each presentation.

Evaluation

All 34 participating classes, participated in previous years and each teacher expressed interest in returning next year. Teacher feedback from this year also showed that teachers find that each presentation helped increase students understanding of local ecology while educating them about what they can do to protect wildlife habitats and/or water quality. Some teachers have requested extension activities to help them expand on content presented to their class. We plan to integrate additional lesson plans that teachers can easily use next year. We are also working on correlating our presentations to the newly adopted science standards, NM STEM Ready! This correlation will be complete by the start of next school year.

We were unable to confirm with Cielo Azul Elementary to plan for another Arroyo Clean Up event. We hope to work with the City of Rio Rancho next year by promoting their Campus Clean Up Contest and encouraging our participating classes and schools to organize such events.

Highlights from teacher feedback:

“Every year this program adds so much to our classroom and student engagement. The excitement of the owls and bat is amazing for our kiddos. The Arroyo walk is also exciting. I thought the changes to the watershed presentation was a great improvement to capture 3rd graders attention.” - Evans, Sandia Vista Elementary

“They were able to identify how they fit into the habitat surrounding them and how they can help preserve different aspects of it. They were able to apply different ideas taught (water conservation, animal identification, ect.)” - Eisenberg, Martin Luther King, Elementary

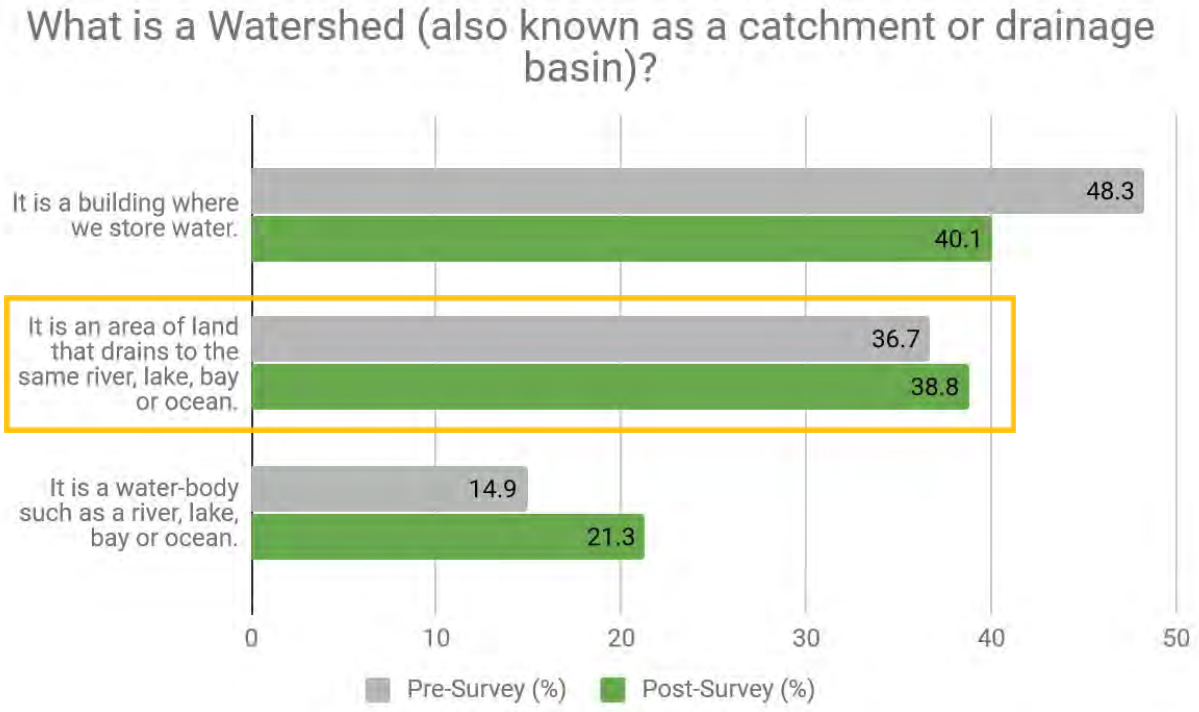
“My kids always love the animals and what they learn about them. I love that the kids get a better understanding of arroyos and how the water shed works.”- Florez, Maggie Cordova Elementary

Survey

We developed the survey this year in collaboration with select 3rd grade teachers to make it as relevant and age-appropriate for students. This is the first year we have had a single pre and post survey to distribute to students.

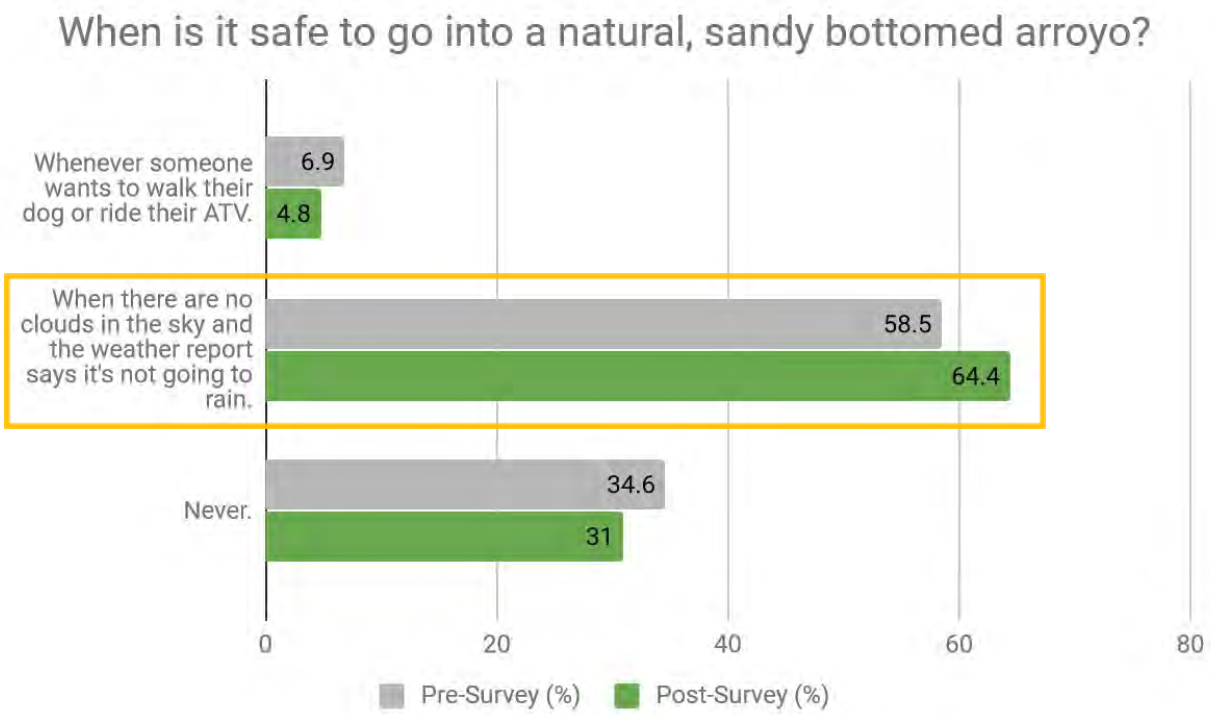
Survey Metrics:

Item 1



This age group of students are often very literal and may find the concept of a "watershed" confusing. We will find ways of making this more age appropriate for 3rd graders. It may require an adjustment to our incorrect answer options. We plan to implement extension activities next year as well, which will offer teachers the opportunity to review and expand on presentation content with students afterwards.

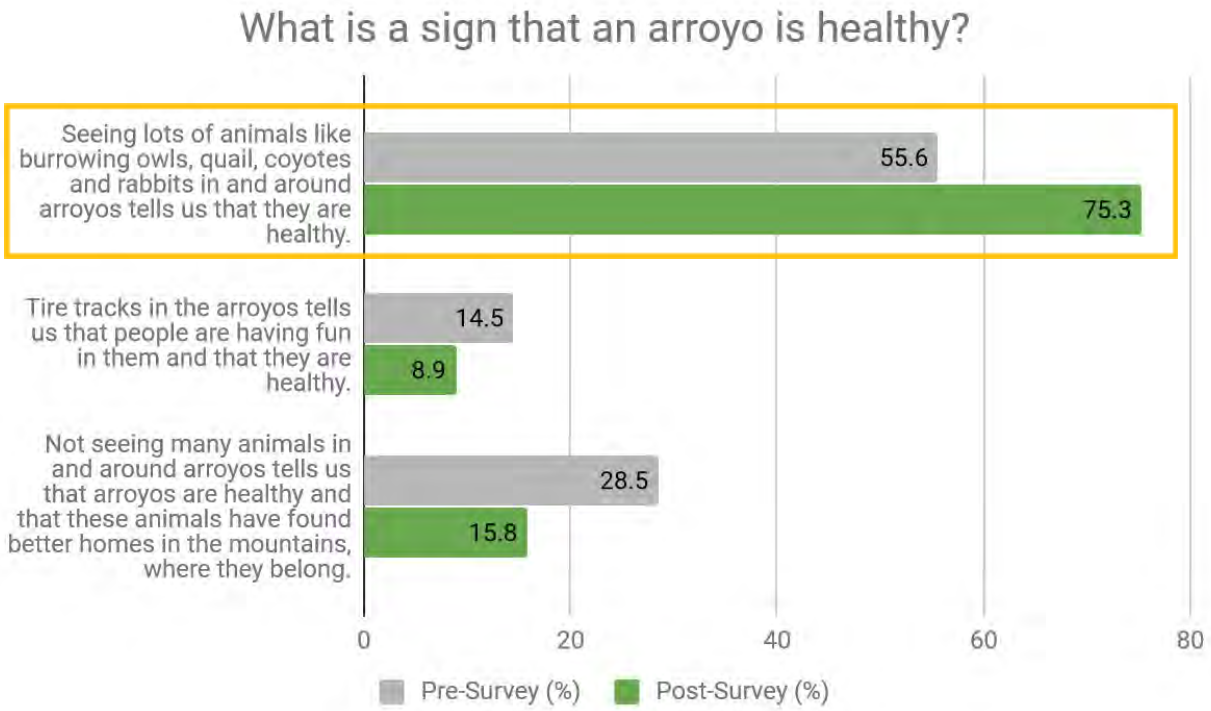
Item 2



When

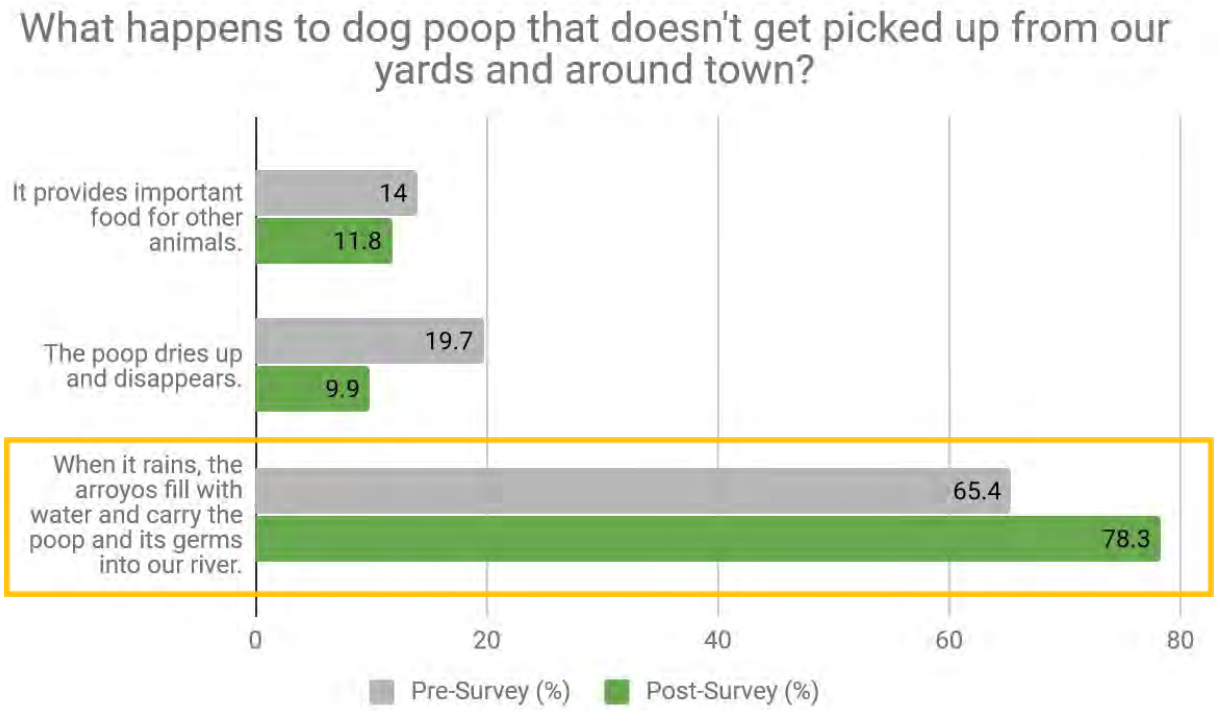
The majority of students seem to understand when it is safe from the beginning of the program, perhaps in contrast to the other answer options. It is interesting to see that 30% of students still consider it is "never" safe to into a natural arroyo. This could be an idea that students are receiving from parents or guardians understanding of arroyo safety.

Item 3



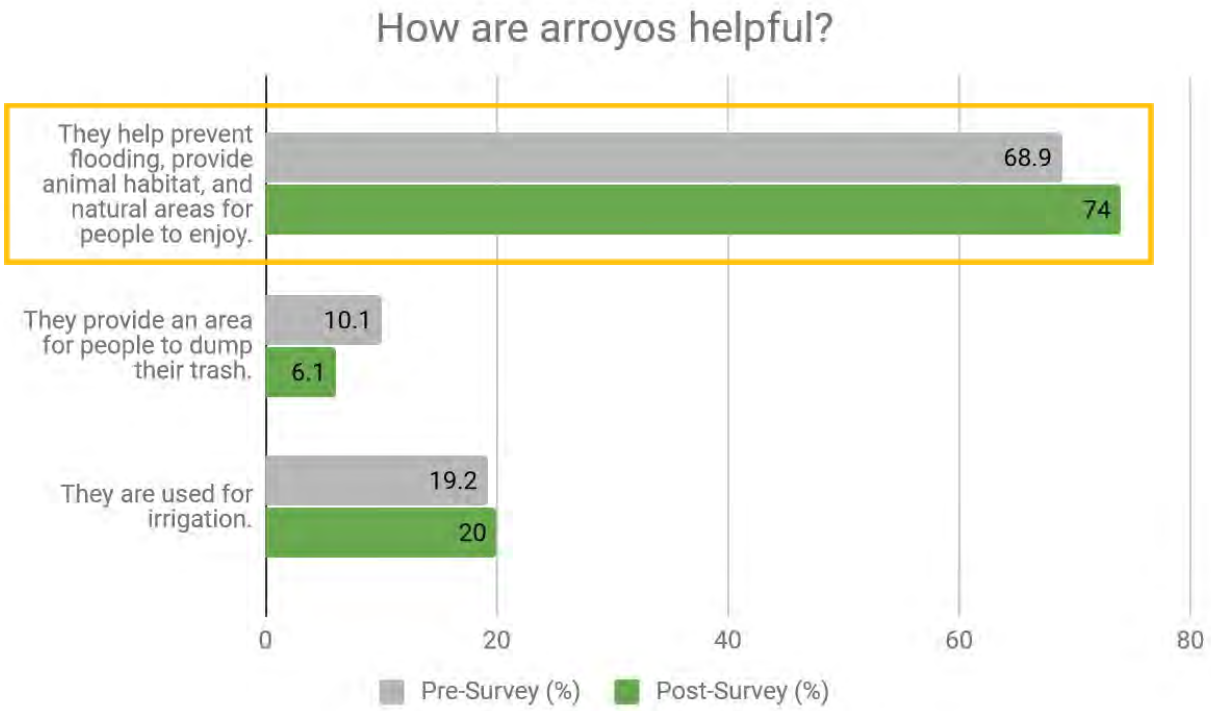
We see a 20% increase in student knowledge of species diversity being an indicator of arroyo health.

Item 4



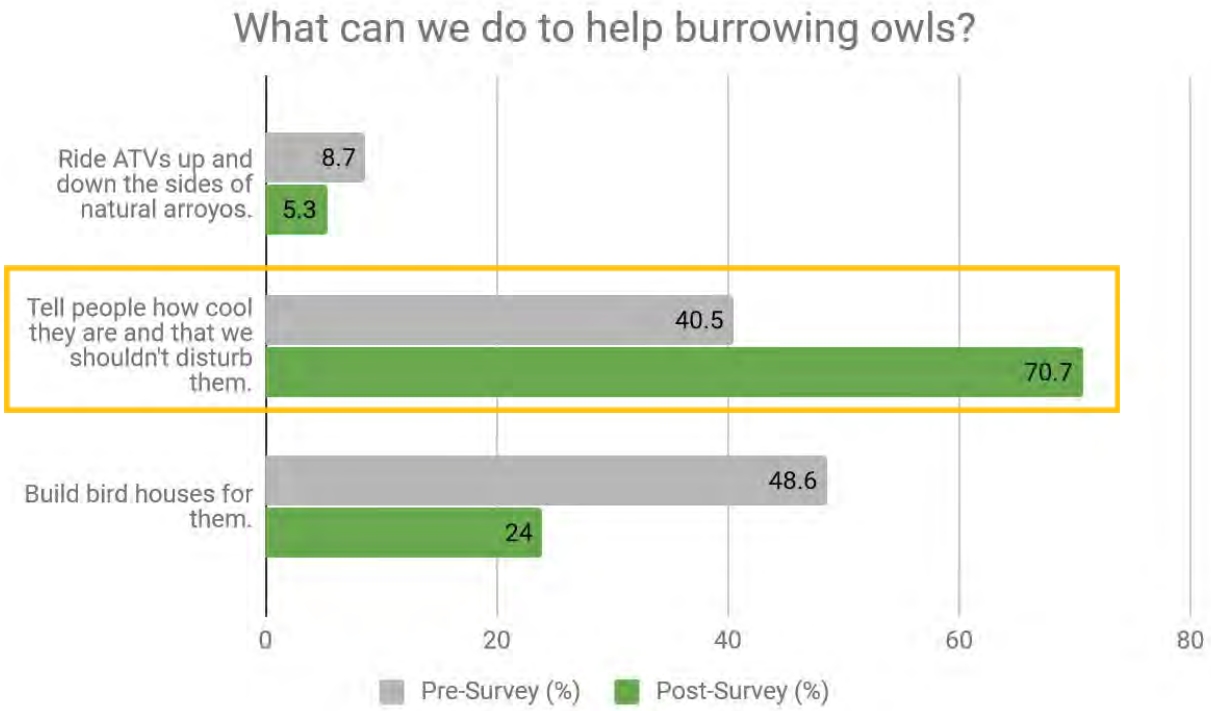
We see a decrease in the incorrect answers from the pre to post survey as well as a 13% increase in students understanding of how dog poop can impact the water quality of the river.

Item 5



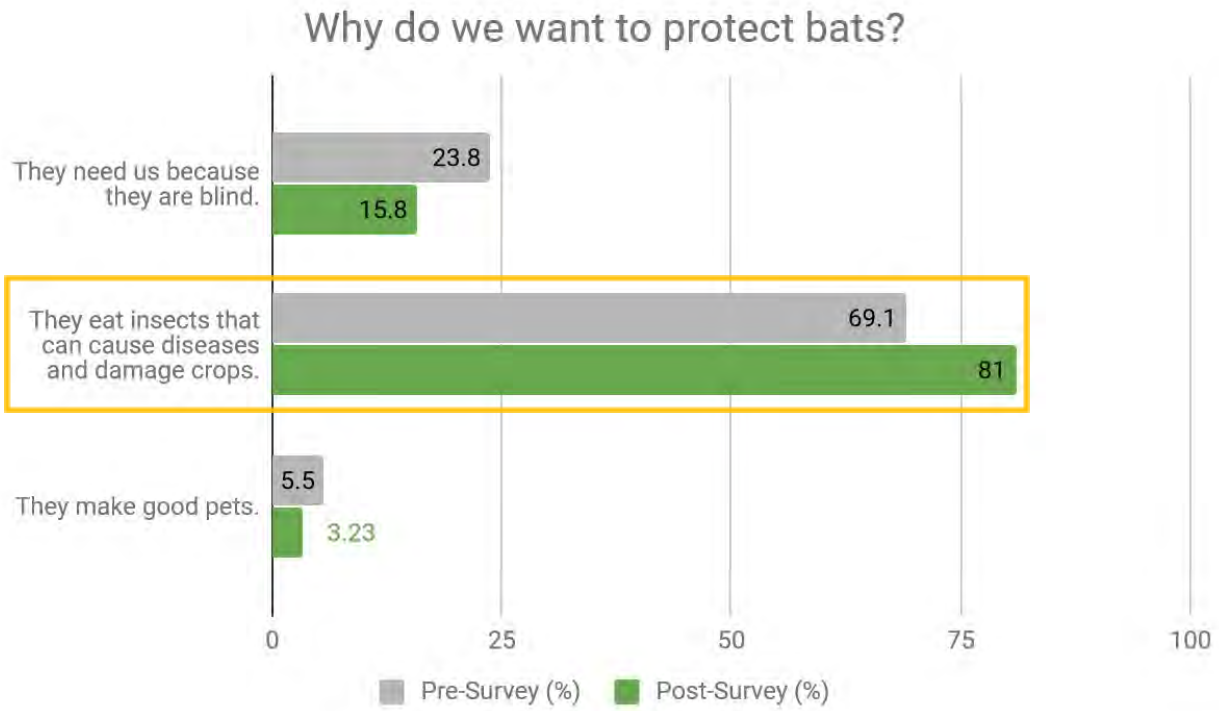
Students either already knew this or is was an easy assumption based on the answers. We will make one of the answers seem more probable next year and replace “They are used for irrigation” with “They help farmers water their crops”.

Item 6



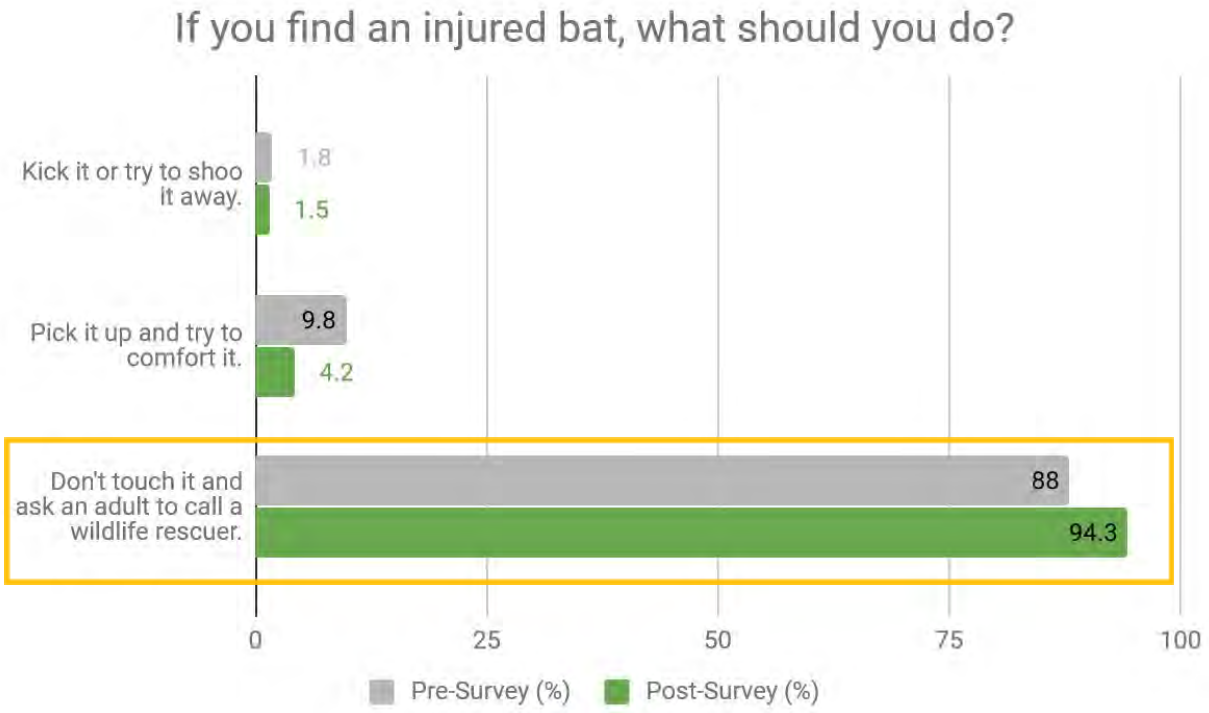
This shows how the live animal presentations introduce students to the importance of not disturbing wildlife and that burrowing owls wouldn't utilize bird houses.

Item 7



It seems that most students either already know this or they can figure it out based on the answer choices. Next year we will make the other choices more probable.

Item 8



Survey Summary

Overall, the survey findings are positive. This was a pilot year with using a single pre and post survey and we will continue to refine our questions with feedback from teachers. It is important that students understand the concept of a watershed. Next year we intend to support our classes with pre and post activities that will help teachers review and explore concepts from the presentations, which will strengthen learning outcomes for students.

Appendix A contains lesson plans; Appendix B contains supplemental materials; Appendix C contains photos.

Appendix A
Lesson Plans

Activity Guide for 3rd Grade – Animal and Plant Adaptations

1. What are we trying to teach the students in this activity?
Arroyos are cool places where animals live, animals and plants are adapted to live in the desert.

2. How can we tie this activity to our teaching goals:

Our Goals	Where we can relate our goals to this activity
Animals live in arroyos	Look for evidence of animals.
We should visit arroyos carefully	Talk about when it is safe.
Picking up dog poop keeps germs out of our river	We'll probably see poop, talk about how it can make animals sick.

Supplies:
- Thermometers
- Clipboards
- Poster of leaf adaptations
- Wax paper
- Paper towels
- Tape

3. How can we tie this activity to standards?
- Measure energy (temperature change)
- Posing a question, using numerical data, various methods to display results
- Animals and plants have adaptations that improve chances of survival
- Classifying animals and plants
- Living things cause changes to their environment, some detrimental, some beneficial

5. How should this activity be organized?

I. Pre-activity (10 minutes)
- Do you ever visit/play in arroyos? What do you do?
- What are arroyos for? Managing stormwater to keep our town from flooding when we get a heavy rain. **Show first flush video.**
- Talk about arroyo safety – don't go into arroyos when you see clouds in the sky.
- Because our arroyos are natural, with sandy sides and bottom, they are safer.
- In Albuquerque, the arroyos have concrete sides and water travels so fast, it is really dangerous to ever go in arroyos. Some arroyos come from the canyon where it might be raining but you can't see.
- Our arroyos are home to all kinds of animals and plants, so they are a wonderful place to enjoy nature. What kinds of animals do you think might live in the arroyo?
- Walk out to arroyo

II. Lizard activity (15 min)
- 5min Look for evidence of animals. What kind of evidence? Scat, tracks, holes.

- What kind of animals live in holes (besides snakes)?
- What do you think makes it difficult to live out here? Heat, sunburn, not much water, cold at night. Animals and plants have special **adaptations** (special things about their bodies) that make it easier for them to live in this habitat.
- How do they get water? From plants, from condensation under rocks.
- How could they avoid heat? Stay in burrows or shade during the day, active at night.
- Some animals love the heat, though! Lizards are cold-blooded, which doesn't mean they are actually cold. It means their body temperature is determined by the environment. They need to absorb heat from their surroundings to function.
- Each student take a thermometer. This is a lizard, and it needs to maintain its body temperature at a certain level: fence lizard 35C (95F), whiptail 38.6C (101F). How can it keep from getting too hot? How can it keep from getting too cold? Lizards regulate their body temperature through behavior.
- Plants do kind of the same thing – hold one palm out flat, one sideways. Which feels hotter? Prickly pear cactus pads grow sideways instead of flat to keep themselves cool!

IV. Plant activity (15 min)

- What do plants need in order to survive? Water, sunlight, air, soil
- What makes it difficult for plants in the desert? It's so hot and there's so little rain.
- How do plants get water? **Show evapotranspiration diagram.** It's kind of like when we're hot, we sweat. But if we lose too much water from sweating we get dehydrated.
- How do they keep cool? Remember prickly pear? **Show pictures of hedgehog and prickly pear cacti.** Desert plants can **s**hade themselves! Hedgehog cactus has lots of spines that shade the surface and also blocks the wind.
- The leaves of many desert plants are **adapted** so that they don't lose too much water.
- Show leaf adaptations poster (fuzzy, small, curled, waxy, green stems but no leaves)

If weather is ok:

- Out in arroyo, we'll do an investigation.
- How many of the plants we see will have these adaptations? Hypothesize.
- To be fair, we can't just pick the plants we like. Standing in one spot, collect the first 6 *different* leaves you see.
- Draw each one, and describe what adaptation it has.
- How many of your 6 leaves have one of the adaptations listed?
- Why don't all have it? Some plants avoid the heat by just growing and producing seed really fast before the weather gets hot, and then they just die off and leave their seeds to grow next year!
- Search for seeds.

If windy, inside activity:

- Let's investigate one way they keep water. **Dab water on board, cover one spot with paper towel, one spot with wax paper.** Which do you think will evaporate faster?
- **Show prickly pear picture.** Make model of prickly pear pad: paper towels with wax paper taped around the outside. **Show cut prickly pear pad.**
- Maybe do an experiment: soak wax-covered and non wax-covered leaves in water and time how long they take to dry.

V. Conclusion (10 min)

- Arroyos are for flood control, and we shouldn't play in them when clouds are in the sky.
- But they are cool places where animals and plants live, and we can visit when it's clear weather.
- Animals and plants are adapted to live in the desert climate.
- What we do in arroyos affects the plants, and animals' habitats. Should we ride ATVs up the sides? That's something humans do to change our environment for the worse.
- Picking up dog poop is important because it can make animals sick. Where does the water go when it flows down the arroyo? The Rio Grande! Keeping dog poop out of the river is one way humans can change our environment for the better.
- Walk back to classroom

Leaf Adaptations

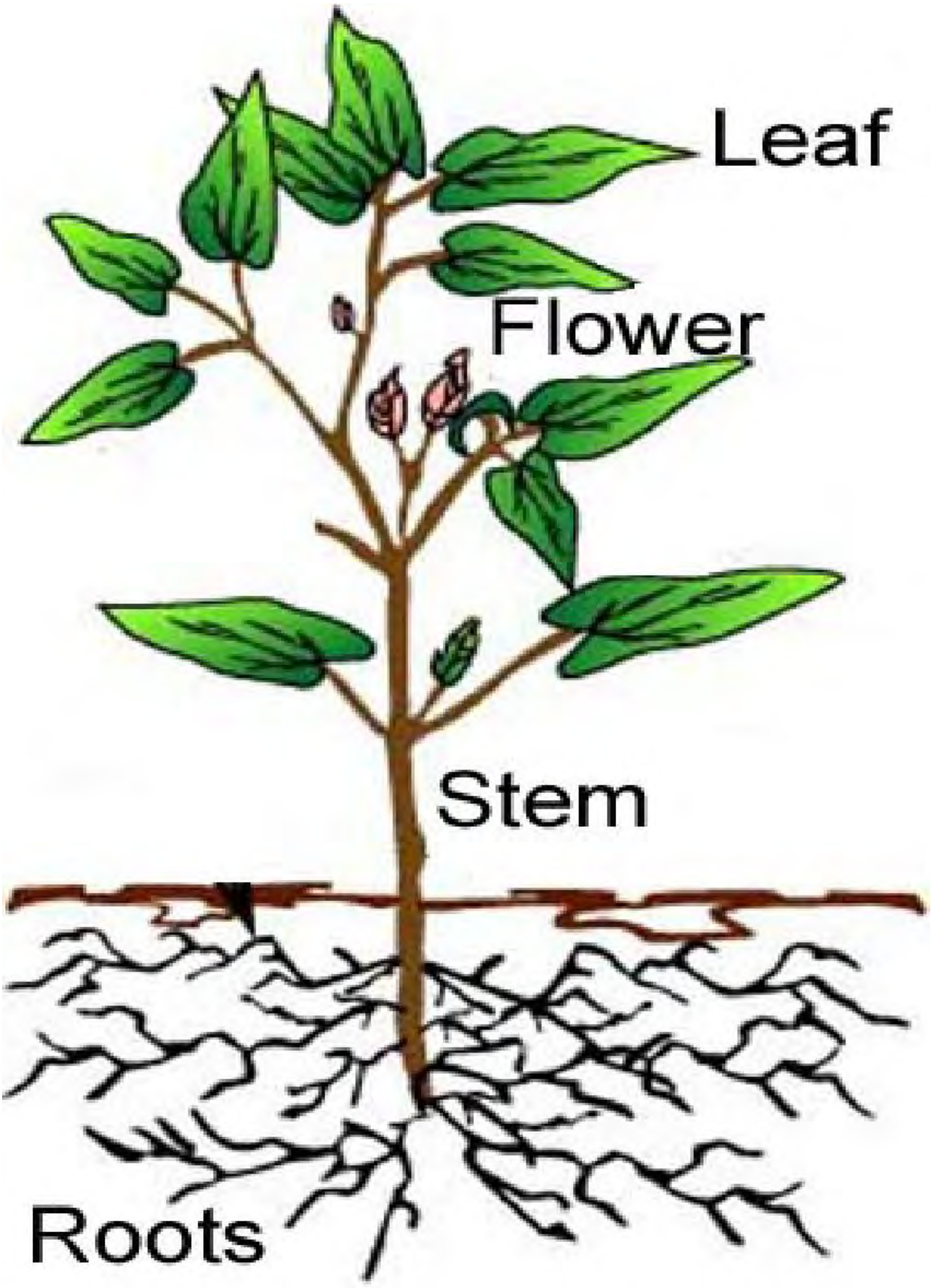
1. **Fuzzy leaves or lots of spines**

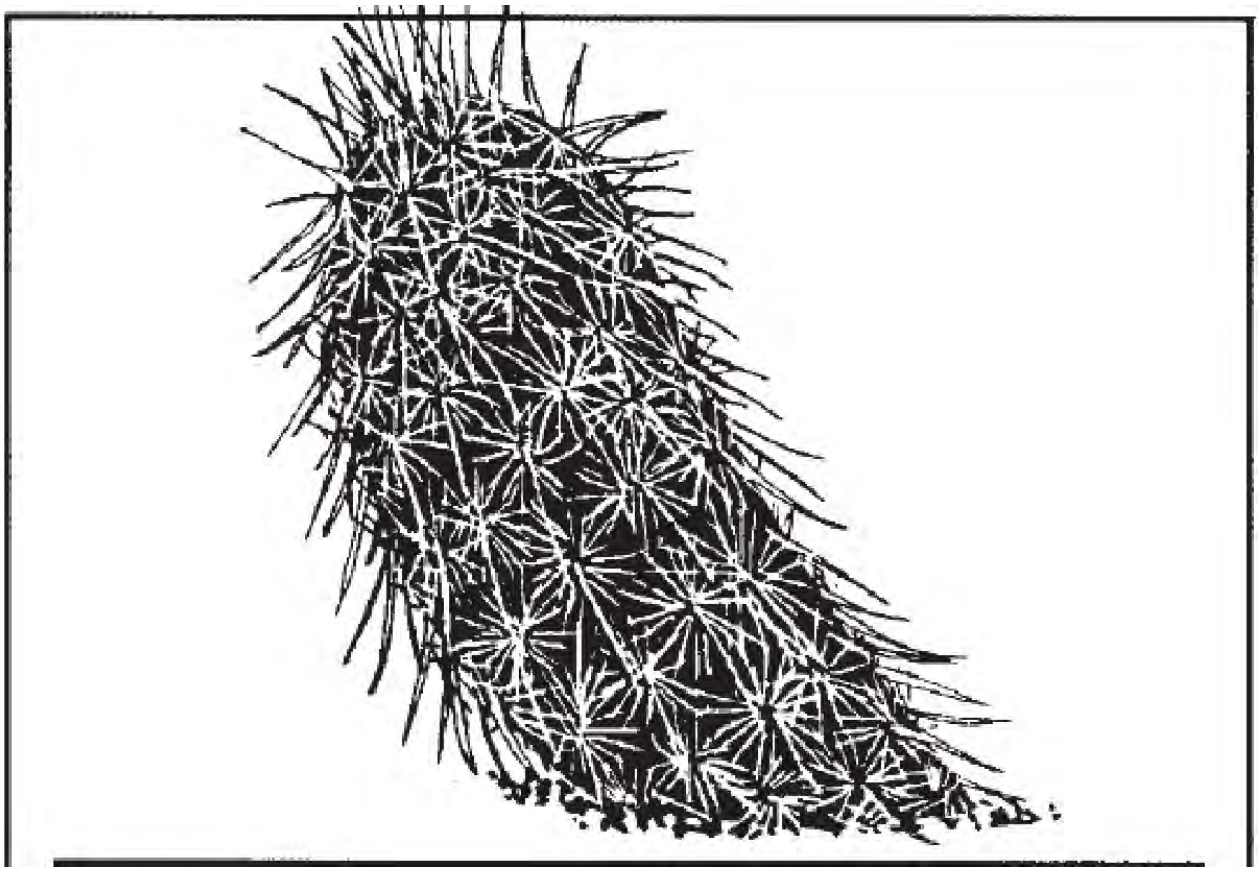
2. **Small leaves**

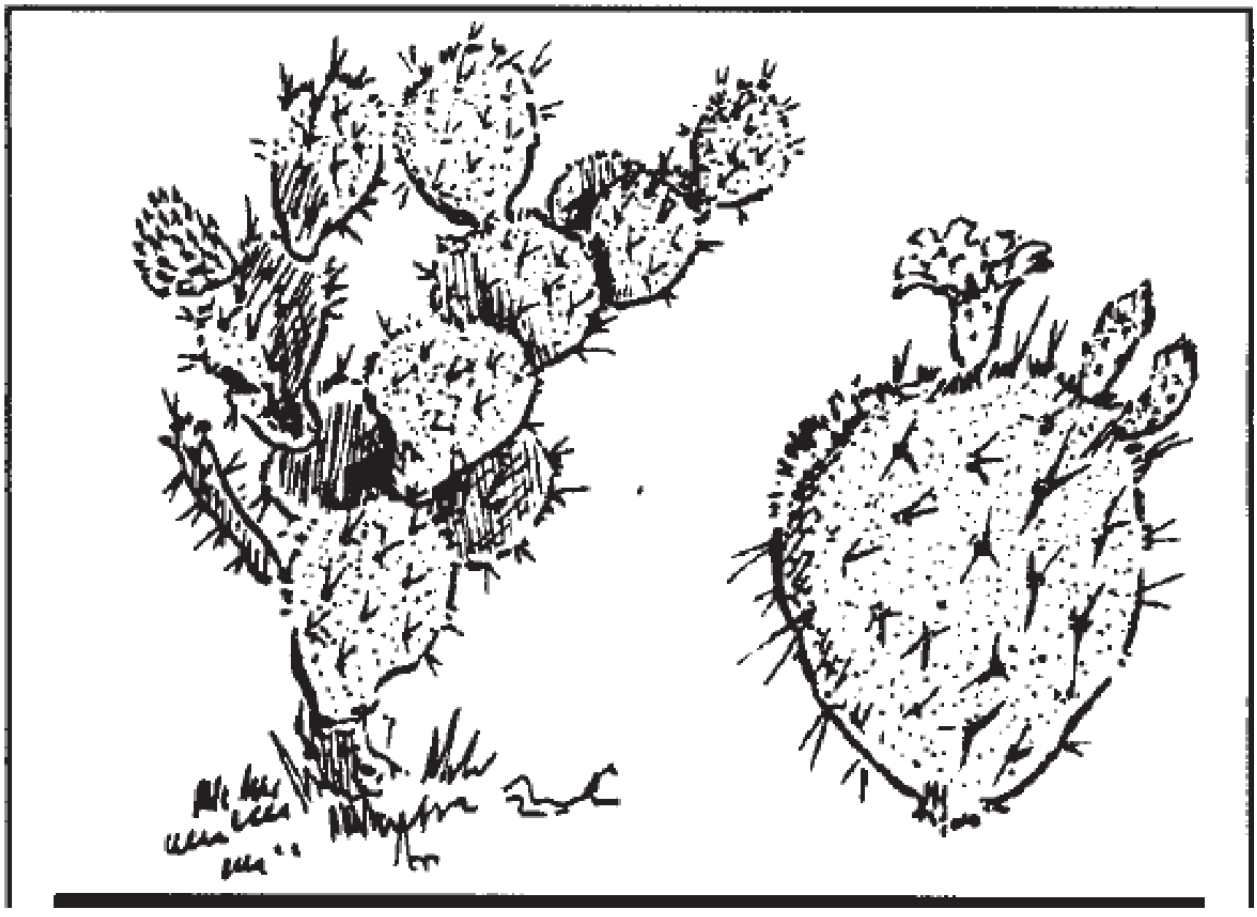
3. **Curled leaves**

4. **Waxy leaves**

5. **Green stems but no leaves!**


Leaf
Flower
Stem
Roots





Build a Watershed Activity Guide for Arroyo Classroom

1. What are we trying to teach the students in this activity?
What is a watershed? How does the water cycle work? What are different forms of pollution and how does it impact our river? Arroyos lead to the river and carries different types of pollution with it.

NM State Science Standards:

3rd Grade
Water cycles through the atmosphere, plants, soil, and bodies of water in various forms.
Describe pollution and identify different types (can be naturally occurring or human made materials). Pollutants can get into our water and harm living things.
Some animals can survive better in certain environments, some will not survive at all.
Describe how roots take up water and soil nutrients, and leaves make food from sunlight.

2. How can we tie this activity to our teaching goals:

Our Goals	**Where we can relate our goals to this activity**
How does the water cycle work?	Describe the processes of the water cycle: evaporation, condensation, precipitation, collection, run-off and infiltration.
What is a watershed?	A watershed is all the land that drains into a river or other body of water, from mountain forests to riparian zone.
What makes water dirty?	Pollution comes from all over the watershed, and erosion is one form of pollution.
Why are arroyos important?	Arroyos provide important drainage in a storm event and provide unique and critical habitat for wildlife and plants.
How does vegetation help our river?	Forests, wetlands and healthy arroyos help keep the river clean and prevent flash floods. Plants in these areas slow the runoff of water into the river, reducing erosion and flooding. They can also remove nasty chemicals from the water by taking them up through their roots.

3. What is effective in this activity? Being in small groups, students enjoy creating the model and discussing what they are observing.

4. What makes this activity difficult to teach? Students get excited and want to play with materials while you are talking.

Activity Materials

- Blank paper, markers, aluminum pans to capture water
- markers (ex: black for oil, brown for dog poop, red for trash)

- a watershed map (ex: SSCAFCA watershed map, It's All Connected in a Watershed poster)
- NM relief map

Preparation

- Post watershed map
- Draw sketch of the water cycle
- Have materials laid out and desks arranged (papers, trays, sets of markers)
- Optional: write out key for marker colors (keep hidden until time to show students)

I. Intro – 5 minutes

1. Introduce yourself and the Arroyo Classroom program: Respect and Know your Arroyos
2. Cover guidelines/expectations in order to be able to have a good time and learn together
3. Introduce what we will be learning: What is a watershed? Where does it go when it rains? We are going to find out how water moves across land, and through our arroyos, when it rains or snows. And learn about how it carries things with it as it flows.

II. Warm Up – 10-15 minutes

1. How many of you used water before you came to school today? How did you use it?
2. How else do people use water on a daily basis?
3. Where do you think all this water comes from? (Discuss the aquifer and it's connection to precipitation). Point out groundwater shown on the "It's All Connected in a Watershed" poster.
4. Pull out the NM relief map. Discuss the purpose of a map. Walk through so each student can view. Introduce the concept of a "key". Have them help you find ABQ on the map and the Rio Grande. Point out the area of Rio Rancho. Explore the map together.

Ask: (Really engage with students and listen to their ideas)

- Has anyone heard of the term "watershed" before? You can highlight that it is a compound word. Have students share what they think of when they hear this word usually, "a shed full of water." It's kind of like that! Except the shed (or container) is an area of land. *Everyone lives, plays and works on land that draws to a body of water, like a river, lake, bay or ocean.*
- Point out the Rio Grande Watershed through the middle of the NM relief map.
- Where are there mountains and hills? Where do you see rivers and lakes?
- What would happen if we sprayed water on the mountain peaks, what will happen to it? *It will flow downhill.*
- Where does the water come from in nature? *Rain or snow*

III. Activity – 25 minutes

Where does the water go? Let's find out by making our own model/map, similar to the relief map.
Part A: 10 min
While students are still sitting, demonstrate activity → crumpling paper to drawing on the ridges. Identify the ridges. Ridge as high point of range of hills or mountains. Point out that it is where the

paper has a peak pointing up not down. Maybe identify the difference between a peak and a valley using the paper.

1. With your imagination, imagine that this piece of paper is a piece of land.
2. Crumple up the piece of paper and then smooth it back out most of the way. Leave it a bit crumpled, showing small ridges (high points) and valleys (low points).
3. Find the ridgelines (tops of the fold lines). Use the blue marker to color along the ridgelines on your "land".

Model this for students briefly. Be sure everyone understands the activity. Ask students to crumple their paper and draw their ridgelines. Once they are complete - Hands on their hand so we know they are ready for the next step.

Pair students (groups of 2 or 3), with teachers help. Assign roles 1-2, or 1-3.

Give Roles***: We're all observers, everyone will have a turn.

Have groups gather around their tray. Drawers can begin drawing their ridgelines. Announce that students have 30 more seconds when it seems that each group has enough ridgelines.

Next, demonstrate a "rain event". Model for students the distance we want them to aim from as they spray (i.e. the length of your elbow to hand, vertically placed on the tray). And 4 sprays. (idea: Students can be drill sergeants about the three sprays, acknowledge that sometimes the spray bottles act funny but that we are trusting our classmates to count for themselves to do only four full sprays...).

Ask:

- What do you think will happen to your land when it "rains"?
- What will happen to the blue ridge lines? / Where will the "rainwater" travel?

1. Altogether, sprayers squirt your model a few times to create a "rainstorm" over your land.
2. Observe what happens.
3. As your rainfall accumulates, watch the pathways where the excess "rainfall" travels.

With teachers, walk around to ask each pair to explain what the water is doing and show you rivers and streams in their model.

Have teachers help pick up all the spray bottles, and ask everyone to place their hands on their head and have a small group discussion about their observations.

Part B: 15 min

Have pairs switch roles, “disposers” can throw out previous model. Tell students they will keep the same number assigned earlier and tell them what role they will be playing. You could write these on a whiteboard.

What’s In the Water?
Experiment with how “pollutants” might travel through their watersheds.

With a new piece of “land”, imagine this represents the City of Rio Rancho or the Rio Grande Watershed. Show one of the Watershed posters and point out all the human activity that happens in a watershed (driving cars, making things (manufacturing), farming, walking our dogs, etc.)

Ask:

- What might be on this land that we wouldn’t want in our water?
- What is pollution?
    - Have you ever seen it? What does it look like?

As students share, note the types of pollution on a poster or white board and create a key for groups to use. (Roads/Cars - black, Trash - Green, Dog poop-brown (and/or orange if you have more groups than markers)) Depending on the group, you could also identify Factories - Red

Before crumpling, have drawers (with their support drawers) mark their papers with the brown, red and black marker to represent farms, factories, houses, streets, dog poop and trash.
Announce that students have 30 more seconds when it seems that each group has drawn enough. Then ask all students to put their hands on their head.

Then have crumplers -crumple paper and then partially smooth it out.

Altogether, have sprayers spray the piece of paper.

Ask:

- What happened to the pollution when it rained?
- Describe what happened at the highest and lowest point in your watershed.
- How quickly did it spread? Are there any places on the land where it didn’t go?

WRAP UP: -5-10min
What do you think this means for our watershed - the Middle Rio Grande?
The water we drink comes from our watershed. Animals and plants also depend on this water. That’s why it’s important that we try not to pollute either the water or the land. Anything that pollutes the land will eventually wind up in the water.

What might be ways we could reduce pollution in our watershed?

*By picking up trash and picking up dog poop if we have dogs. (*I like to emphasize to this age group that **being responsible is powerful** and they can make a difference by caring and picking up their own trash. I also tell them that last year a whole grade level of 3rd graders at Cielo Azul Elementary helped pick up 1.8 tons of trash!)

Thank the class for their attention and participation. Tell them we look forward to seeing them again and expect that they show the wildlife biologists the same respect they have shown us.

*****Groups of 3: Each person gets to spray 3x. Model this for them.**
For groups of 3, you'll need two blue markers for Part A.

May be helpful to tell students each turn has a Lead Role and a Supporting role (Supporting role noted in parentheses).

Part A Roles:
1 - Drawers (+ spray)
2 - Crumplers (+ drawing / spray)
3 - 1st Spray (+ disposers) -- Spray 3, 2, 1

Part B Roles:
1 - 1st Spray (+ disposers)
2 - Drawers (+ spray) --Spray 2, 1, 3
3 - Crumpler (+ draw)

Groups of 2:

Part A Roles:
1 - Crumpler / Drawer
2 - Sprayer / Disposer

Part B Roles:
1 - Sprayer / Disposer
2 - Crumpler / Drawer

Appendix B
Supplemental Materials

-SSCAFCA Activity Book and Educational Videos:

KNOW YOUR ARROYOS
ENJOY • RESPECT • PROTECT

-SSCAFCA handouts:

Did you know?

SSCAFCA protects our community from flooding and erosion caused by big rain storms, and works to keep stormwater clean. Stormwater flows down arroyos into the Rio Grande.

Bugs like to live in stagnant water that collects in ponds and low places in the arroyos. Insects like mosquitoes can carry diseases that make us sick.

Brought to you by:

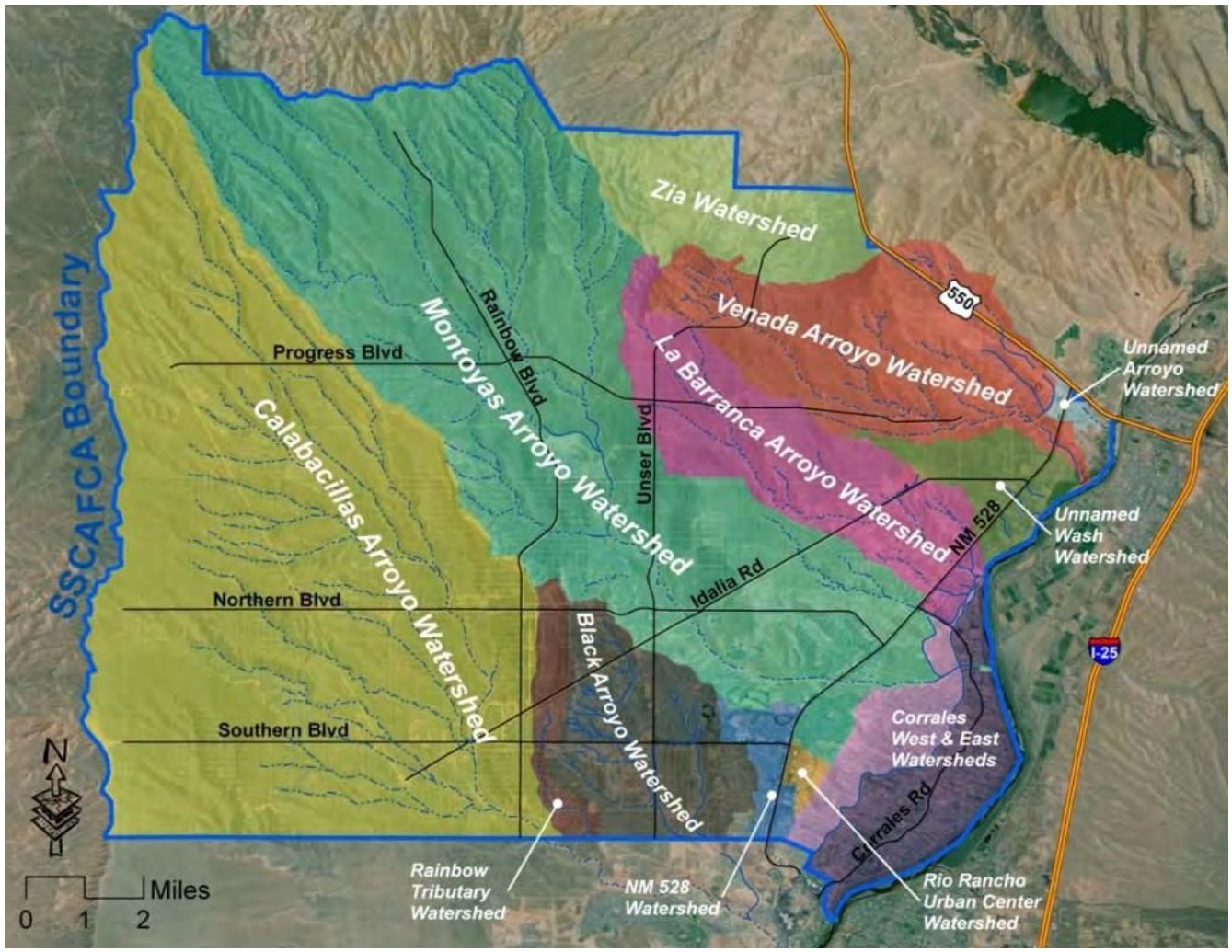
SSCAFCA

Almost all U.S. bats feed exclusively on bugs, and 1 bat can eat between 600 and 1,000 mosquitoes and other insect pests in just one hour. One bat can eat its own weight in insects in a single night!

SSCAFCA provides bat houses to encourage bats to make their homes near our arroyos, and especially near detention ponds where stormwater runoff is captured and allowed to slowly drain.

The more we help bats, the more pests they eat, so we don't have to spray pesticide that could wash down to the Rio Grande and pollute it.

SSCAFCA watershed map:



Appendix C
Program Photos

LEFT - Melissa McLamb discussing desert animal and plant adaptations by Maggie Cordova Arroyo.

RIGHT - Students observing and discussing the watershed model.

LEFT - Students having fun during the arroyo walk on school property. Students gather in between activities to discuss findings such as looking for evidence of wildlife (scat, tracks, burrows, etc.).

Exhibit 3
RiverXchange 2018-2019

Making Meaningful Connections by Integrating Water Resources Topics with Language Arts & Science

2019 Report

Presented by
Ciudad Soil & Water Conservation District

June 2019

CONTENTS

SUMMARY

This year, funding enabled 36 NM classes (954 students and 39 teachers) to participate. The majority of participating classes were from Title I schools. Each NM class was partnered with another NM class and when possible another class outside the state for a total of over 1,338 participants. All program costs and coordination are provided free of charge to NM teachers. Training, technical support, and curriculum materials are provided free of charge to partner teachers. The program required $51,881.62 in cash and generated total match valued at $90,344.90 in the form of in-kind contributions including workshop space, classroom resources, presenters' time in the classroom, field trip docents, donated trees and shrubs, as well as teachers' and students' time.

With the support of two contract hires this year, we were able to focus more on strengthening our program in ways we haven't been able to in the previous three years with unanticipated personnel changes. Our primary accomplishments include: strengthening partnerships with teachers and volunteers who support us with in-class presentations, developing an effective place based lesson on acequias and agriculture, and offering consistent blog support and encouragement in order to increase the efficacy of the technology component. Also, we refined our extension activities this year and are on target to have all RiverXchange presentations correlated with the recently adopted New Mexico science standards, NM STEM Ready! by the end of the summer. Teachers commended us throughout the year on the value of the presentations and curriculum in their class experience.

Strengthening Partnerships

Understanding how RiverXchange meets the needs of participating teachers, students, in-kind donors, as well as how RiverXchange fits into the larger efforts of watershed education in our community, is critical for keeping RiverXchange relevant and impactful. This year, we met with a wide variety of educators and stakeholders in our field. We met with organizations including: Albuquerque Water Utility Authority (ABCWUA), Sandia Labs, Bosque Ecosystem Monitoring Project (BEMP), RiverSource, Sandia Mountain Natural History Center (SMNHC) and Center for Social Sustainable Systems (CESOSS). These meetings, as well as shadowing a few presentations offered by others, gave us and our collaborators an opportunity to establish or reconfirm program expectations, help us evaluate our educational offerings and find ways we can better support common learning objectives in watershed education. Strong partnerships are critical in informing us as we work to strengthen the program, remain relevant, and navigate unexpected changes.

For example, one long term collaborating agency, Bernalillo County Extension, was unable to participate with us this year. In the past, they have offered the agriculture related presentation to all APS schools. Consequently, our staff designed and delivered a similar presentation that engaged students in a regional history of agriculture and irrigation techniques that highlighted acequia culture and the effects of human settlement on the Rio Grande. In our search for resources in the community, we discovered CESSOS, a possible future in-kind partner, who could offer a presentation more culturally relevant and significant for students.

Blog Support

We noticed an increase in blog postings, including postings of class projects this year. We held a contest for excellent and creative blogging with specific criteria and saw more class engagement due to this. Though a few teachers continue to report they face challenges with access to computer labs, many of our classrooms this year are already using technology such as Google Classroom or many have individual tablets for students. With technology being integrated into more classrooms worldwide, the blogging component of RiverXchange continues to be a unique, important offering of our program. The blog offers a protected, educational platform for teachers to guide and review student work, as well as an opportunity for the class to learn about digital citizenship. Using the blog, allows classes to experience the importance of meaningful communication to a broad, digital audience, while practicing creative collaboration and self-responsibility in the submission of work.

Teacher Workshop

Noticing a need for professional development for our teachers with the newly adopted science standards, we took the opportunity to educate teachers about NM STEM Ready! at our teacher workshop and show how the RiverXchange program and curriculum can help their students meet these in their classroom experience. With support from the Environmental Education Association of New Mexico (EEANM) and Seleana Connealy of NM EPSCoR (Established Program to Stimulate Competitive Research), we offered an introduction to the standards, offered practical tools to plan and demonstrate lesson correlation, using RiverXchange activities, and shared resources for learning more throughout the school year.

Teacher Feedback

Every year, we receive invaluable feedback from our teachers. Feedback this year continues to be positive. All participating teachers want to return and a few have asked to add other teachers from their fifth grade team. We are finding that the majority of our teachers choose our program to teach more about water resource issues and to incorporate more science into the classroom. This shows a major shift since the program's conception, at that time teachers were more drawn to the program as a way to incorporate more language arts curriculum. While the program still focuses on reflective and creative writing, we are also responding to current needs by emphasizing how RiverXchange can help teachers include more experiential learning and science in their classroom. Nearly 50% of teachers are also attracted to the program because the blog enables them to connect with other teachers and students in a thematic learning environment. Here are a few highlighted responses from our teachers on the greatest learning outcomes for their class:

> "I was able to add experiential learning in science into my classroom lessons and truly engage the students." - Anonymous
>
> "Students were able to fully understand where our water comes from, what a watershed is, how humans have impacted the environment and ecosystems. And maybe, more importantly, what we can do to help." - John Turrietta, MLK Elementary
>
> "Awareness of their role in conserving and protecting water resources."- Dwayne Norris, Bandalier Elementary
>
> "Working as a team and real life connection to science topics through our local watershed." - Tris Carty, Seven Bar Elementary

"What a wonderful way to have students directly involved in their own watershed while learning hydrosphere concepts. The teamwork and concrete lessons were a great enhancement to our classroom." - Anonymous

"This group in particular, has learned so much from the experience. Many of them have never been to the bosque, or reflected upon the components and how/why they might have come to be there." -Anonymous

"The presentations were engaging and interactive. The demonstrations helped the students to understand more of our environment. I really enjoyed the speakers. The pole planting field trip was amazing! The kids felt very accomplished!"- Randi Sevigny, Seven Bar Elementary

Presentations

Program presentations were completed as follows:

Agriculture: 36/36
Stormwater: 36/36
Wastewater: 36/36
Drinking Water: 36/36
Planting Field Trips: 34/36
Landfill Field Trips: 5

PROGRAM DESCRIPTION

Mission

The mission of RiverXchange is to deepen students' and teachers' understanding and appreciation for their local river ecosystem, motivate participants to protect local water resources by conserving water and keeping their source water clean, and to provide a high quality, high impact outreach opportunity for funders and in-kind contributors.

The Big Water Questions

The optional curriculum frames program outcomes as "guiding questions," known as *Big Water Questions*. A long term goal of RiverXchange is that students understand these questions and can formulate logical, fact-based answers by the time they finish elementary school. We believe that students who can synthesize water facts to understand larger water issues will have the proper critical thinking skills and foundation for further discussion in middle and high school so that they will become informed citizens and voters on water issues.

Understanding a Watershed

- Is every place in the world part of a watershed?
- Where does your community's stormwater go?
- How can surface water become polluted?
- How does the water cycle relate to weather?
- How are groundwater and surface water connected?
- How can groundwater become polluted?
- What actions can all of us take to keep water clean?

Water in Our Society

- In what ways does our society use water?
- Where does your community's drinking water come from?
- Does everyone have the right to use as much water as they want?
- Where does your community's wastewater go?
- What actions can all of us take to conserve water?

River Ecosystem

- How does water affect living things in an ecosystem?
- What role do forests play in a watershed?
- What role do wetlands play in a watershed?
- What are some of the ways scientists can determine the health of a river, lake, bay or ocean?
- What actions can all of us take to improve the health of our ecosystem?

Background

As producers of children's water festivals and other grade K12 water resources outreach in NM since 2007, we observed early on that NM elementary teachers rarely incorporated water concepts in the classroom beyond what is required by the state (e.g., water cycle), and that most elementary teachers considered "water" strictly as a science topic. While teachers personally acknowledged the importance of conserving water and keeping source water clean, we continued to find that upper elementary students had little or no understanding of major water resources topics unless the teacher specifically integrates a wide range of water topics into the curriculum. For this reason, as well as our successful festival work with upper elementary students, this age level was selected as the focus for the RiverXchange program.

We created RiverXchange to provide a free program that is fun, interesting, and easy to integrate into the normal curriculum. Our hope was to motivate participants to explore water resources topics in depth. The program is carried out over eight months so that students spend more time developing a sense of pride and personal connection to their own river ecosystem, as well as a personal connection to a distant river ecosystem and the students who live near it.

RiverXchange began in 2007 as a pilot project of Experiential EE, LLC (under a services agreement with the New Mexico Water Conservation Alliance) and the National Great Rivers Research and Education Center, featuring partnerships between two fourth grade classes in Albuquerque, NM, and two fifth grade classes in Godfrey, IL. A curriculum was developed, a field trip to the river was coordinated, and partner classes "met" three times during the year via video tele-conferencing to present what they had learned. The upper elementary level was chosen because of our successful festival work with this age group.

After the pilot project, we transitioned to a web-based technology called a wiki. This enabled us to overcome limitations such as the high cost, availability, and time zone logistical issues associated with video teleconferencing – and easily involve more classes. The curriculum was updated to incorporate the writing component and we introduced classroom guest speakers to reduce teacher workload and bring up-to-date technical information into the classroom.

In 2012, ownership of RiverXchange transferred to Amy White of Orilla Consulting, LLC, who managed the program through July 2015. In August 2015, RiverXchange became part of the Ciudad Soil & Water Conservation District. Since 2007, we have served over 18,000 students!

This year, the program featured the following components:

- Optional standards-based curriculum including hands on science and social studies lessons, as well as writing assignments
- Coordination of class partnerships
- KidBlog online posting and communication
- Teacher training on curriculum implementation and use of KidBlog
- Ongoing technical and motivational support
- Online class postings
- End of year teacher survey
- Pre and post student surveys (NM only)
- Payment for teacher workshop substitute teachers (NM only)

- Coordination of at least four guest speakers into the classroom (NM only)
- Coordination of a field trip to the local river or important watershed feature (NM only)
- Field trip bus transportation payment (NM only)
- Field trip leadership and activity planning (NM only)

Program Management and Financial Support

The program timeframe was July 1, 2018 through June 14, 2019. All components including fundraising, design, planning, implementation, and analysis were carried out by employees and contractors of Ciudad Soil & Water Conservation District, including:

Melissa McLamb
Jessica Garduño
Erin Blaz
Jenny Lloyd-Strovas

Sponsors

- Southern Sandoval County Arroyo and Flood Control Authority (SSCAFCA)
- Middle Rio Grande Stormwater Quality Team (MRGSQT)

Sponsors provided a total of $51,881.62 in cash.
MRGSQT - $31.768.40 | SSCAFCA - $20,113.22

Program expenses included:

- Substitute teachers for NM teacher workshops
- Teacher workshop space rental and meals
- Field trip bus transportation for NM classes
- Field trip portable toilet rentals for NM classes
- Technology services
- Office and educational supplies
- Coordination services (planning, implementing and assessing all program components)

New Mexico In-Kind Partners

- Albuquerque Water Utility Authority
- Bernalillo County - Public Works Division
- CDM Smith, Inc.
- City of Albuquerque – Open Space Division
- City of Rio Rancho – Environmental Programs Office
- City of Rio Rancho — Parks, Recreation and Community Services Department
- Daniel B. Stephens and Associates
- New Mexico Acequia Association
- Sandia Labs
- Sandoval County Cooperative Extension
- Southern Sandoval County Arroyo and Flood Control Authority

- UNM Maxwell Museum of Anthropology

In-Kind contributions totaled $90,345. For NM classes, in-kind contributions included classroom guest speakers, field trip docents, planting materials, workshop space and computer lab use, and teachers' and students' time attending the presentations and field trips. For partner classes, in-kind contributions were not calculated this year. Sponsors and in-kind partners were recognized on our website and in presentations.

Participant Selection

All 36 participating NM classes were fifth grade classes, distributed as follows:

Bernalillo County	**Sandoval County**
Bandelier Elementary (4)	Colinas del Norte Elementary (5)*
Cochiti Elementary (3) *	Martin Luther King, Jr. Elementary (7)*
Duranes Elementary (1) *	Sandia Vista Elementary (1)
Georgia O'Keeffe Elementary (2)	Santo Domingo Elementary (1)
John Baker Elementary (1)	
Monte Vista Elementary (3)	
Seven Bar Elementary (5)	
Zia Elementary (4) *	
22 classes, 558 students	**14 classes, 396 students**
* Title 1 school	**TOTAL - 36 classes, 954 students**

Curriculum

A component of RiverXchange is the hands-on optional curriculum, which is offered to all participating teachers. It was developed to help students reach for deeper meaning through hands-on learning and reinforce what they have learned through the process of writing to their pen pals. Over the years, we have developed a curated list of activities from the curriculum, along with reflection prompts

specific to each presentation. Organizers strive to incorporate emerging water resources issues into the curriculum, increase networking opportunities for teachers, reduce teacher workload, and align the curriculum with public school curriculum priorities.

Each class learns about its own local water resources issues through hands-on activities, classroom guest speakers, and a field trip. Students write about what they are learning via a private educational website that can be viewed by their partner classes. The computer technology and writing components provide a unique opportunity to reinforce what was learned, increase student motivation to learn, and collect valuable metrics about student performance.

Through RiverXchange, students take pride in sharing their knowledge of the local ecosystem and learning from their peers about another river ecosystem. Comparing the two geographical areas gives students a broader understanding of the importance of a river ecosystem to human and other life. Students gain the unique opportunity to share personal experiences and ask questions about a distant place. Teachers feel this kind of personal connection is a big deal for kids – many of whom have never traveled beyond their city limits.

All activities are correlated to NM state standards and benchmarks for Social Studies. All activities (because they require that students communicate information on the KidBlog) address Common Core Language Arts standards for writing. Some activities also address Common Core Mathematics and Science standards. For a summary of the RiverXchange Curriculum, see Appendix 1. For a summary of the extension activities, see Appendix 2.

Guest Speakers

We coordinated at least three guest presentations to visit each NM classroom. In all cases, guest speakers were water resources professionals from local agencies. Topics included:

- watershed/nonpoint source pollution
- drinking water
- wastewater
- water and agriculture (Our staff had to provide the majority of these presentations as we were unable to find an in-kind partner to do so, after we received notice that our previous provider, Bernalillo County Extension, would be unable to in the foreseeable future. We expended more coordination hours than usual due to this. We anticipate having an in-kind partner to offer this come next school year.)

Field Trips

The program requires that all classes attend at least one field trip to their local river or important watershed feature, which should incorporate a service learning component if possible. We coordinated all NM field trips. Throughout the winter and spring, students planted 518 native trees and 128 shrubs and helped restore critical riparian habitat along the Rio Grande in Albuquerque. In-kind funding from Rio Rancho Public Schools (RRPS) and Waste Management allowed us to offer an additional field trip to our RRPS classes which included a visit to the Sandoval County Landfill and Willow Creek Bosque.

<u>Field Trip Locations</u>

Alamo Farm
Candelaria Farms Open Space Preserve
Sandoval County Landfill / Willow Creek Bosque

EVALUATION

Blog Evaluation

Engagement

Of our total number of classes, Kidblog was used by 77% of RiverXchange teachers this year. Blog posts ranged from 1 to 41 per class over the year. We helped teachers who reached out with any need for technical support. As we did not hear of any issues from most of the teachers who did not blog, we can not be sure why they did not participate in this area. It is likely however, since many of these teachers have blogged in the past, that unpredictable circumstances made it challenging to integrate KidBlog into the classroom. One class did not blog because they did not have sufficient internet access (Santo Domingo ES). In general, we are satisfied that the majority of teachers utilize KidBlog in the specific method we train them on for RiverXchange. In addition, classes continued to use reflection groups for posting and this seemed to work smoothly for teachers.

We ran a contest this year for creative and excellent blogging. We used a rubric to score posts for each class to determine the winner. The results from this rubric demonstrated that about half of classes posts met a satisfactory level of blogging. 32% of classes demonstrated above satisfactory posting and 13% of classes were exceptional. Four winners were chosen, two 1st place and two 2nd place winners, who won gift certificates to Acorn Naturalists and a River of Change model from the Bosque Education Guide (1st place only). In observing the quality of postings from the majority of classes, we determined the use of the KidBlog platform is an effective means to meet our education and outreach objectives.

Student Voices

The blog is not only a platform for student voices to be heard, it also provides a rare opportunity to informally assess student learning from RiverXchange. Even with a range of quantity and quality of postings, across the board, students voices resounded messages of water conservation and protection. While they might not always have a perfect grasp on the technicalities of water distribution and use in our community, we can see they are building knowledge about their watershed and water as a local resource.

This year we continued to encourage group collaboration by setting up reflection groups at the start of the year with the hope that blog posts are a product of that collaboration. We also have tried to encourage teachers to get creative with posts - to do videos, pictures, or even voice recordings. We still see a majority of written-only posts, though some teachers integrated powerpoint projects, drawings and videos to posts. This is encouraging as the blog has the potential to truly catalyze project-based, hands-on, experiential learning by being a multimedia platform.

Blog Images

No Trash

By Gallegos Watery cycles on Oct 31, 2018

Keep our Environment Clean

Hello fellow water users. We have an issue with our trash. The plastic bag is one of the worst threats to our environment. It can destroy our watershed and we can lose all of the water and die. Trash can pollute the sea and can kill the animals. For example a plastic bag can look like a jellyfish and it can trick the turtle into eating it, and then the turtle will suffocate.

If we don't litter than our lakes and seas will not be so DIRTY! Some other ways to save our drinking water is to pick up dog poop, don't take long showers, turn off the water when you're done with it, fix leaky faucets, don't use pesticides, and only use a little fertilizer.

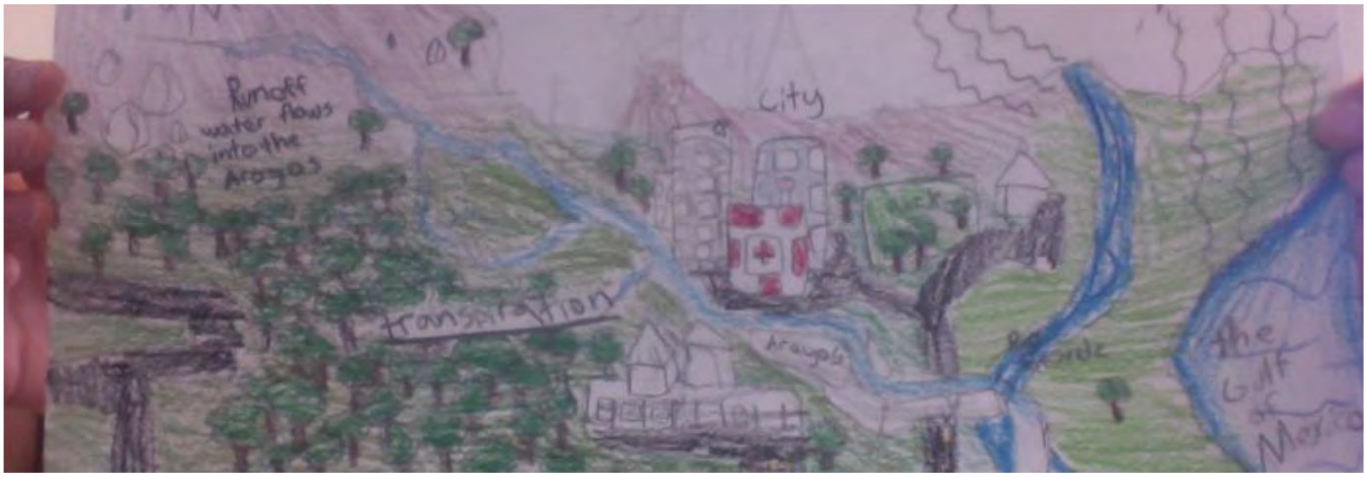
Fifty years ago people in Albuquerque believed that there was a lake under us. But no, we have a small portion of it and must use it carefully. If we don't take care of it we will not have enough of it to drink, water plants, and bathe.

Some facts are:

- The earth is made up of 70% salt water (not usable).
- There are people all over the world who litter in our water.
- The Pacific garbage patch is twice the size of Texas.
- Everyday the Rio Grande goes straight through New Mexico to the Gulf of Mexico.

Thanks for helping us save the environment!

"Learning about the Water Cycle" (image and quote below by Whitlock McGonagal)



"We made diagrams of our local water cycle, the Sandias to the Gulf Of Mexico as our main body of water."

Kidblog Quotes

"On the 13th of December we went to the Rio Grande bosque. When we went on our field trip we felt like this field trip was about friendship. We had fun with people we did not usually hang out with. We made some stronger friendships. It felt really good. We planted three trees and named them Skittles, RIP Mickey Mouse and Paw. We had to use shovels, an auger, and trees. The trees were cottonwoods. We did this so we can help our bosque. We also saved a live mouse. We were happy because our teacher got to help and she was in our group. Unfortunately, we also found a dead mouse and our chaperone got to take a picture. A lot of the tree starters varied from deep to like not even deep at all! Cottonwood trees are special because they can grow from a branch cut from another tree. They can live up to about 80 years old! Beavers like to eat young cottonwoods so the Open Space people use a metal fence around the trunk. This field trip was the best! It meant a lot to give back. We would love to come back!" (Gonzalez Contagious Intelligence)

"I will never forget that if you have a leaky faucet and do not know about it or just don't want to pay money to fix it, in a year over 86,000 gallons of water will be wasted." (Gomez Water Rush)

"A permeable surface means that water can soak into the top, such as grass or dirt. A impermeable surface means that water cannot soak into the top, such as a road or sidewalk. The problem with impermeable surfaces is that there is a lot more runoff from rain or water flowing down the streets." (Gomez River)

"When we learned about storm water we were surprised that just one storm can wash away all of our pollution into our watershed." (Rodriquez Africa)

"Wastewater comes from toilets, sinks, baths, showers, and drains. In Rio Rancho, this wastewater goes to a wastewater recycling plant where it is cleaned and put back into the aquifer. In order to be cleaned, people help the reclaimed water go through the plant." (Turrietta Galilei)

"When we went on the field trip we learned that the Rio Grande used to overflow. When it stoped, other plants took over like salt weed and tumble weeds. So when we planted the trees it helped. Our favorite part was planting them and feeling the accomplishment. Our whole group planted 10 TREES! We also learned that when a cottonwood tree branch falls in the mud it will sprout roots." (Yu Wonderwoman)

"The dust bowl impacted the people because it destroyed peoples farm and crops it was a time of depression and drought." (Shafer Storm)

Kidblog Partners

Due to staff transitioning at the start of the school year and other outside factors, we closed out the year with only two partner teachers who were actually set up on KidBlog and posting. One partner teacher was returning from the previous year and was able to post frequently without support. Two new partners were successfully trained over the phone in February, one of which did end up posting in late April. Detailed instructions for KidBlog were sent to all partner teachers who registered, however since none of them followed through it seems that over- the-phone training is the most effective way to ensure initial partner

success on the blog. We also plan to record a video training for partner teachers for next year to better assist them with integrated the blog in their classrooms.

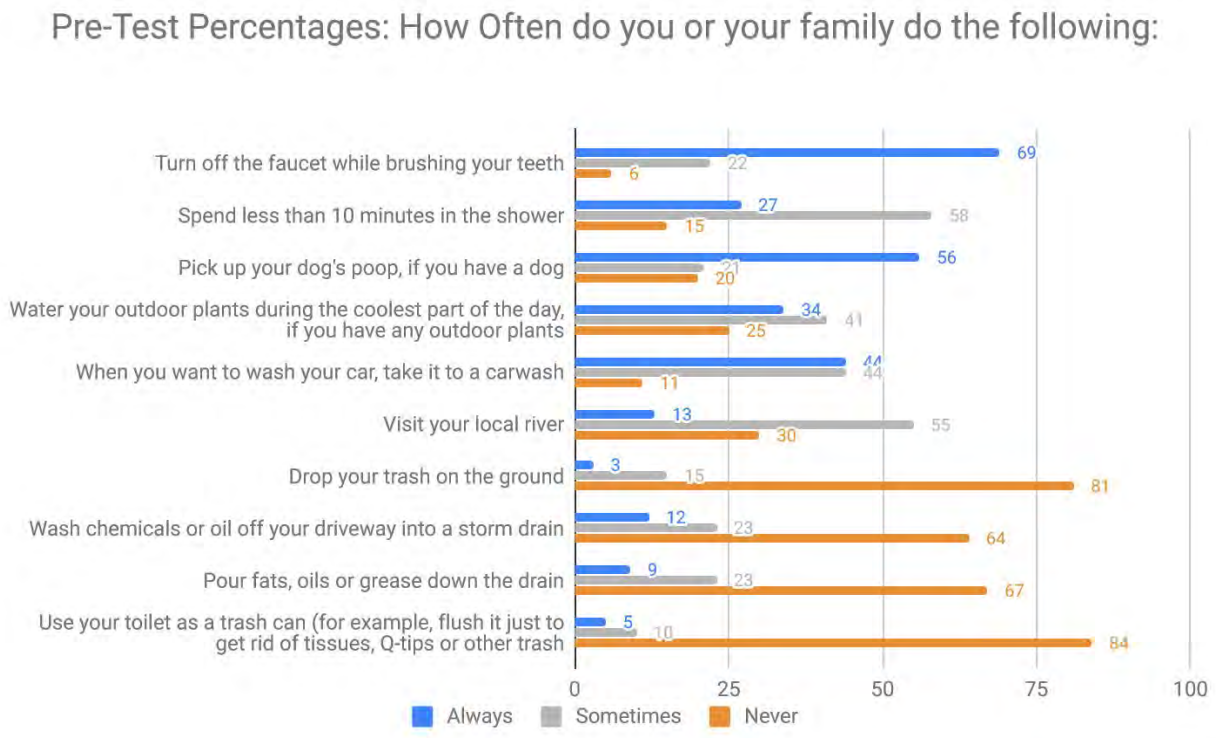
Student Surveys

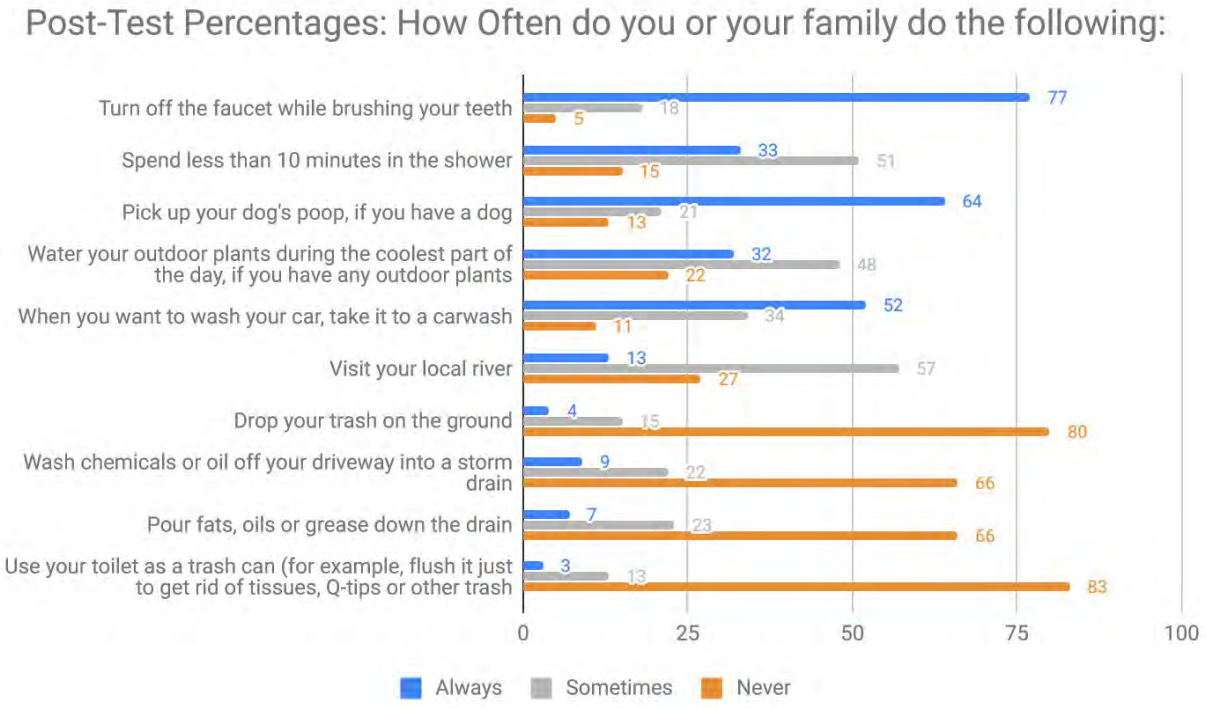
A key component of RiverXchange is it's measurable goals relating to student performance. We collected quantitative data on student performance by way of a pre and post survey and qualitative data by reading what students submitted on KidBlog. We also surveyed students about their actions before and after participating in RiverXchange.

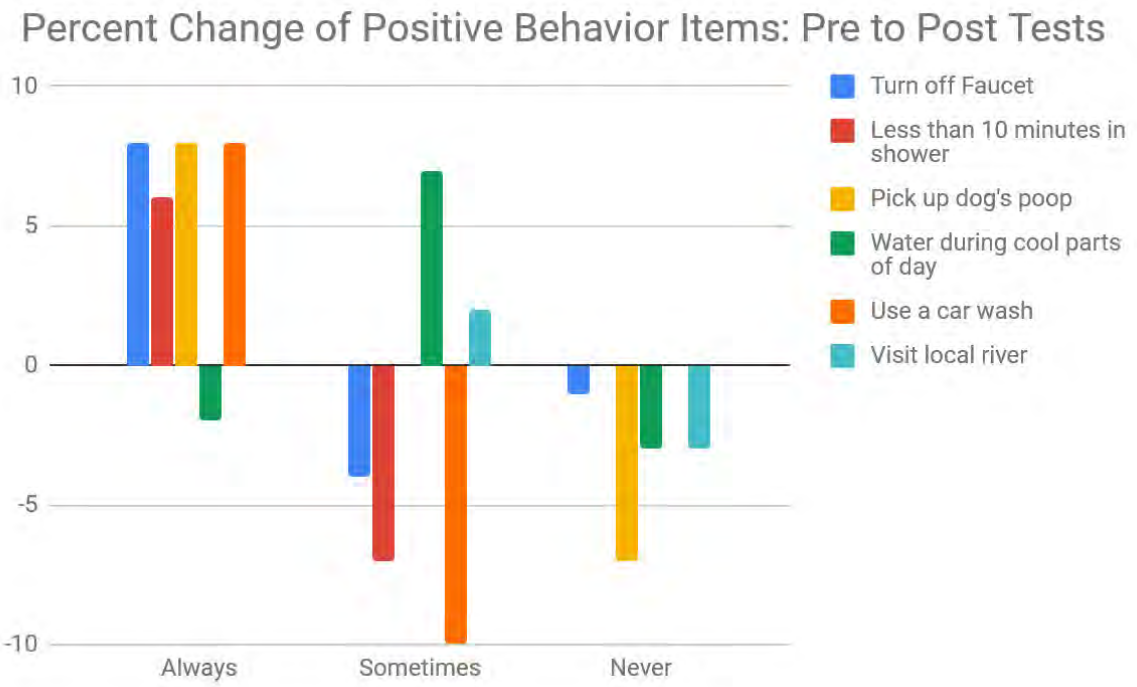
Pre/Post Behavior Survey

In order to quantify the learning outcomes achieved through RiverXchange, we ask our teachers to have their students fill out a survey prior to, and upon completion of the program. Below, you will find a series of graphs used to illustrate the change in responses between the pre and post surveys. This year, 721 students completed the pre-survey, while 718 completed the post-survey. In order to account for this small discrepancy in participation, the number of each given answer has been calculated as a percent of the total number of responses received for each given survey. We continue to refine the survey and our programming year after year based on teacher feedback and metrics gathered from these surveys. We are also evaluating our metrics over the past six years to see how and if the results have been changing year to year. We have included a graph showing the changes for the behavior survey, at the end of Item 1. We expect to have more questions assessed by August 2019.

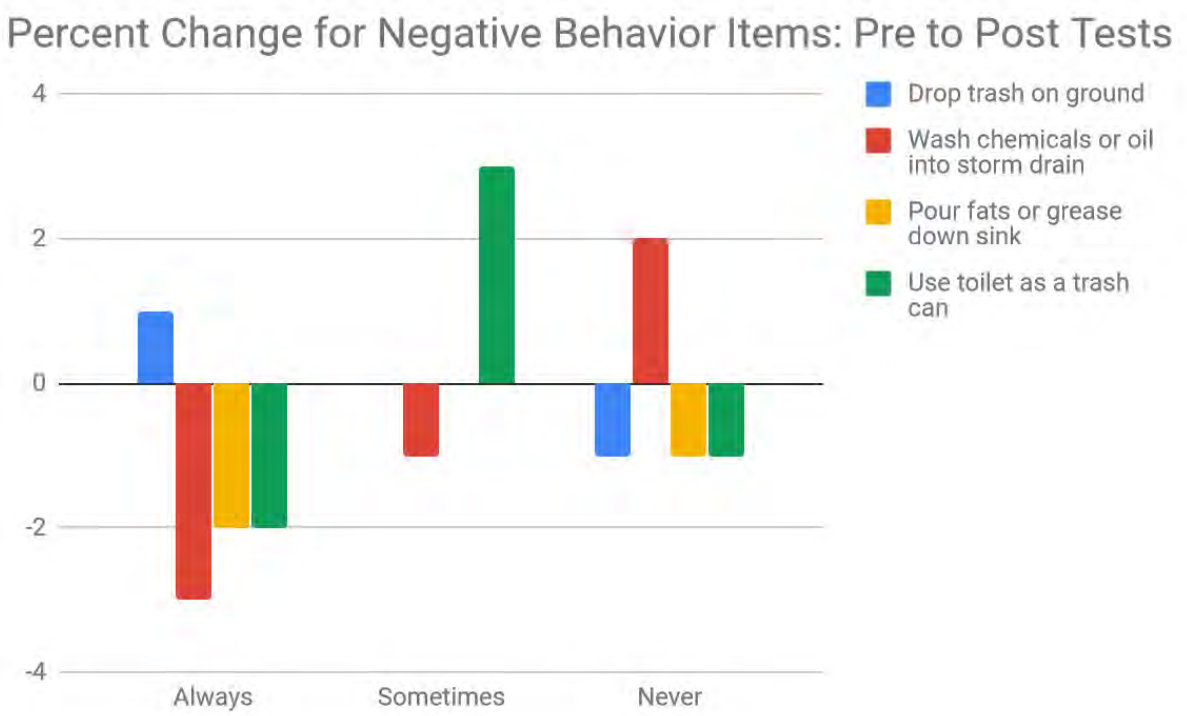
Item 1





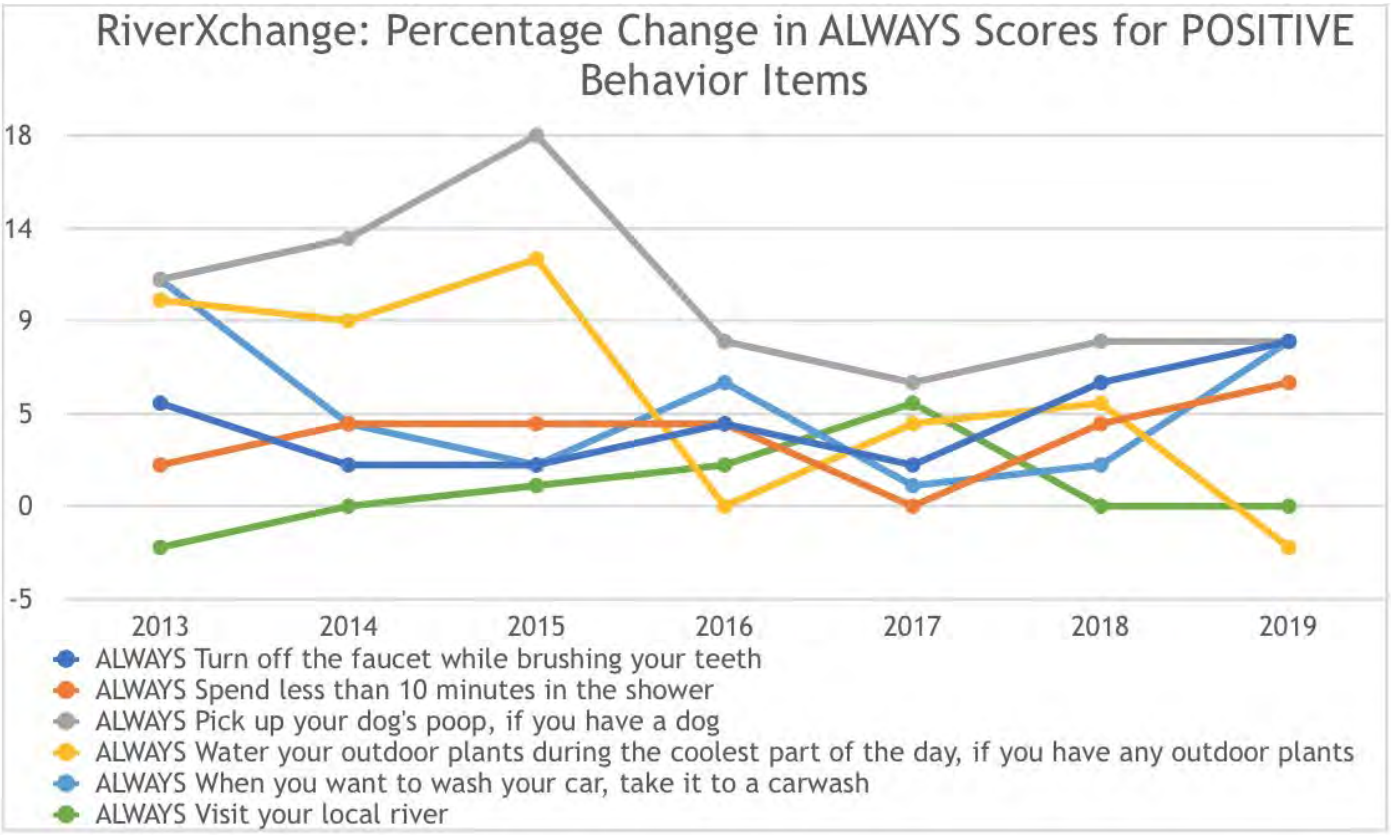


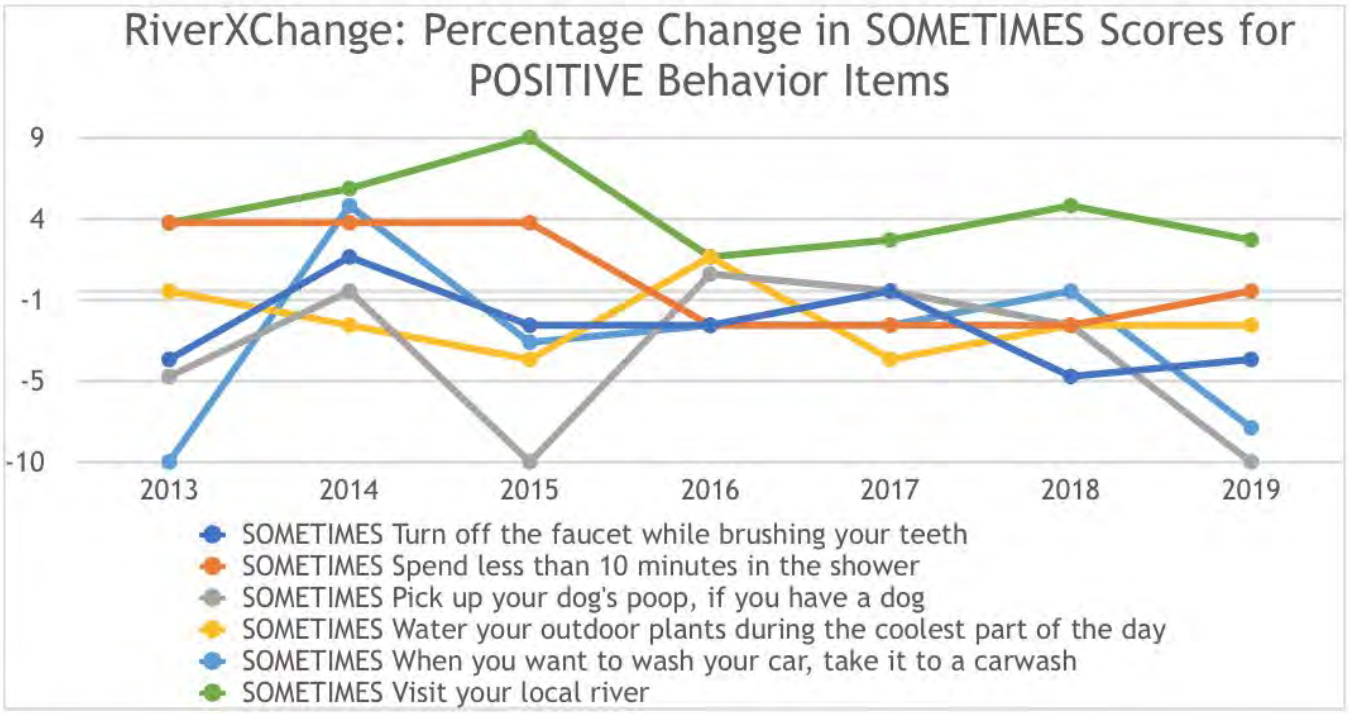
This graph illustrates an increase in positive behaviors after having received the RiverXchange presentations for the following behaviors: turning off the faucet when they brush their teeth, picking up their dog's poop, using a carwash service and spending less than 10 minutes in the shower. For many items we see an increase in positive behavior while also seeing a decrease in negative behaviors. For example, the question "How often do you pick up your dog's poop?", there is an increase in the response "Always or Very Often" while there is a decrease in the response "Never or Not Very Often." While these metrics are positive, we aim to have more significant positive findings in behavior metrics in future years.



This graph illustrates a decrease in negative behaviors after having received the RiverXchange presentations for all of the above listed behaviors except "Drop trash on the ground." It is likely that our students are unsure how to answer for the behaviors listed that may not feel applicable to them, for example, "How often do you wash chemicals or oil off your driveway into a gutter or storm drain?" For behaviors that are more specific to adults, it is more important to us that we capture students' understanding of the actions that are harmful to the watershed. As we revise our survey for next year, we will aim to make this behavior assessment more age appropriate for 5th grade students.

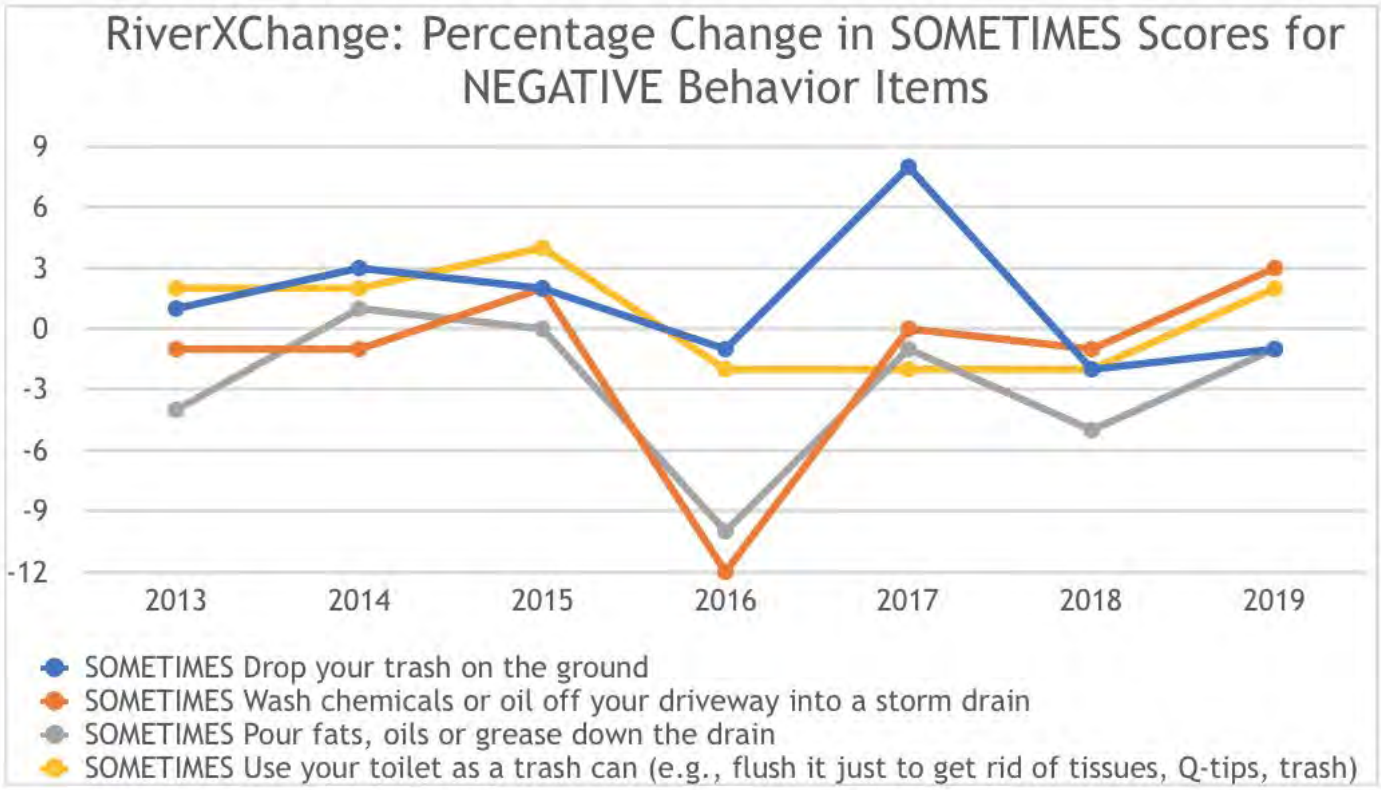
The following graphs show the percentage change between pre and post surveys on the behavior survey items since 2013. The graphs distinguish data for negative and positive behaviors. These graphs will be critical in our ongoing evaluation of the program.

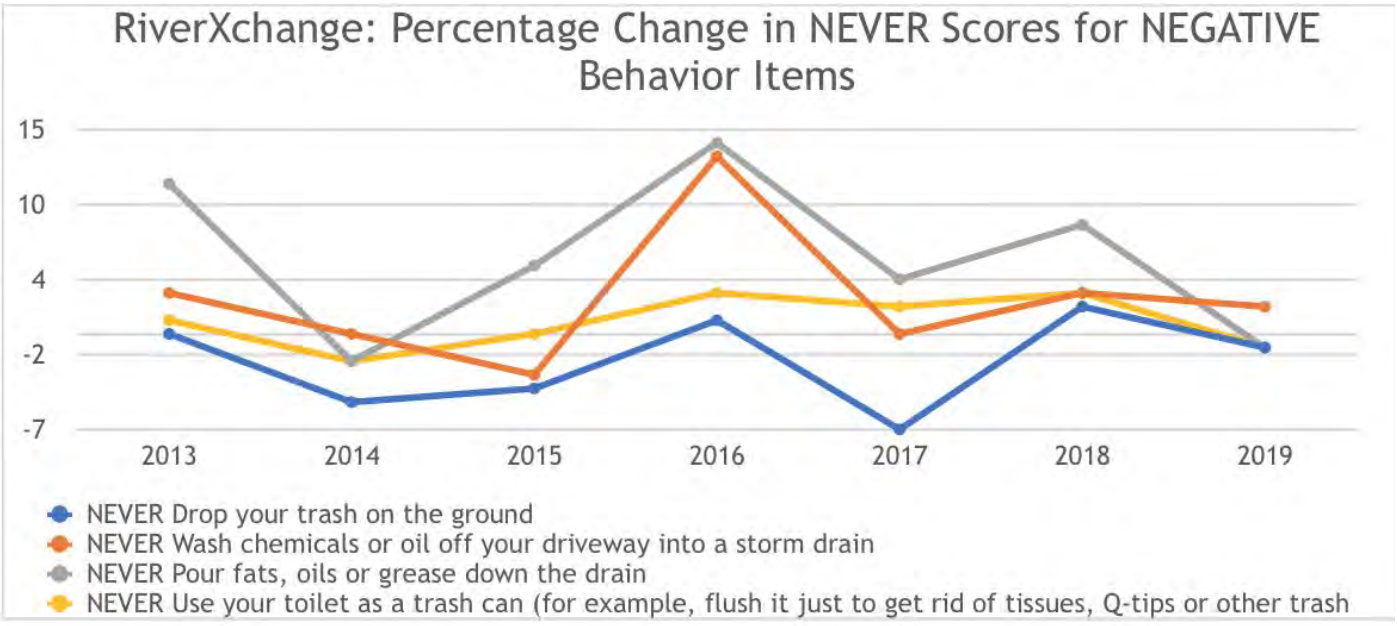




We see an overall trend of positive change in many of the listed behaviors since 2013. The most notable and consistent change showing in students learning the importance of picking up their dog's poop. Inconsistencies can be due to a variety of reasons, including changes in presenters and personnel operating the program, and students may gauge their behavior differently at the end of the year, with what they've learned throughout the program. Seeing how we compare year to year in our metrics, allows us to identify

where we need to improve the learning outcomes for students. In 2015, we had an additional presentation for our participating classes which emphasized all positive behaviors. These graphs also emphasize for us the importance of training our presenters at the start of the program and emphasizing our teaching objectives with them throughout the school year.

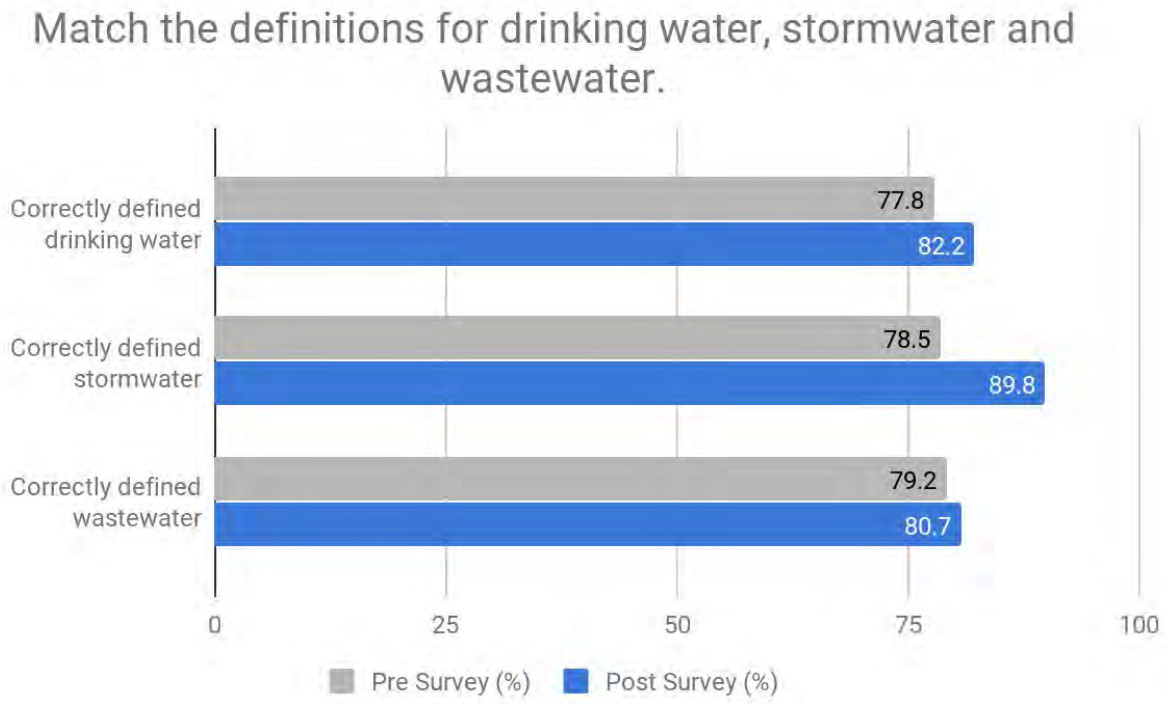




The change in negative behaviors is not consistent over the years, though we do see the majority of items showing a positive change year to year.

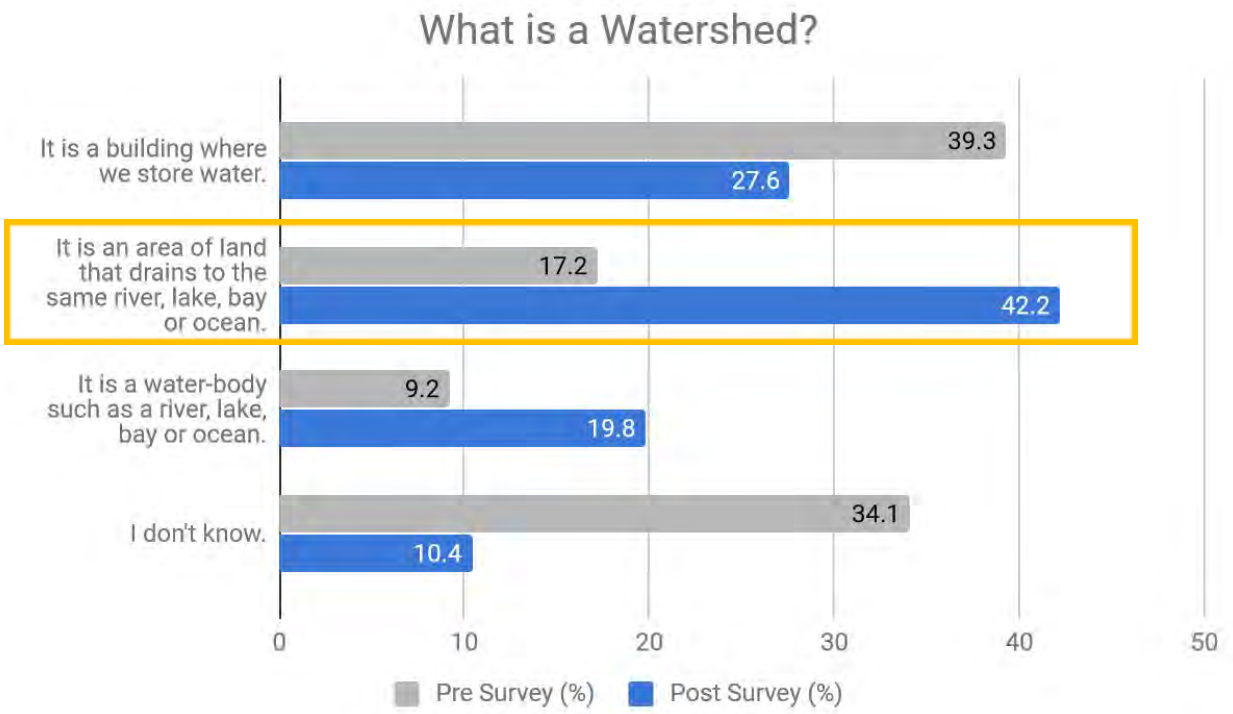
Correct answers, where applicable have been noted with a yellow outline. Stars have been used to indicate where we are seeing large differences with positive outcomes.

Item 2



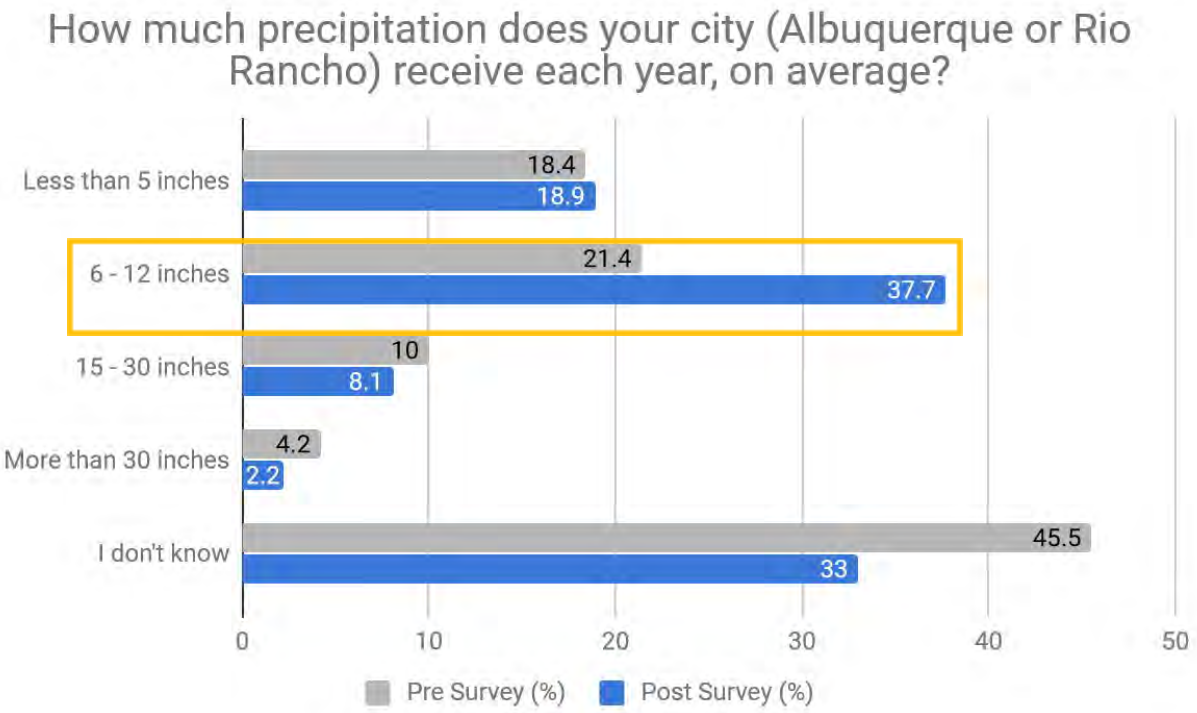
This graph does not demonstrate a significant change from pre to post. One possibility is that students are making educated guesses on the pre-survey and then are confident in their answer on the post-survey.

Item 3



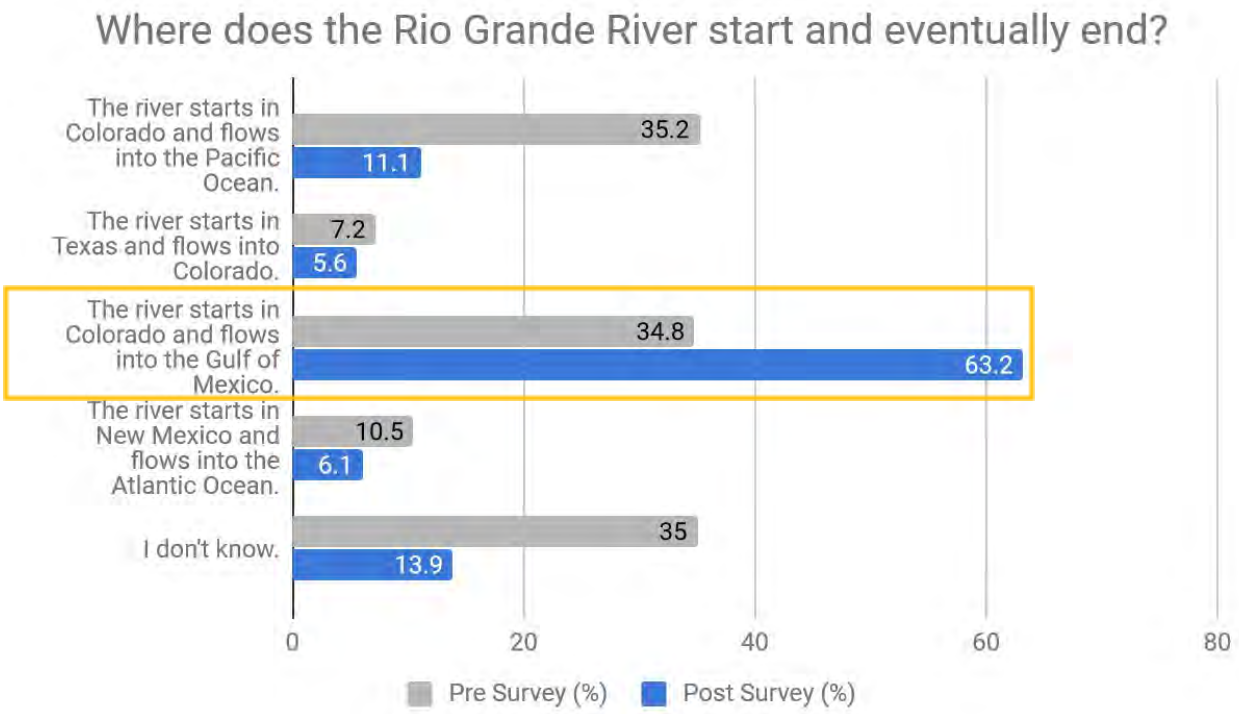
This graph demonstrates a 25% increase in correctly defining a watershed from the pre to post survey. Next year we intend to remove the option to answer “I don’t know” in all survey questions as we have determined that we could better assess student knowledge without it. Students may choose “I don’t know” in cases where they aren’t confident of the answer though could guess the correct answer with a challenge to consider the question more thoroughly.

Item 4



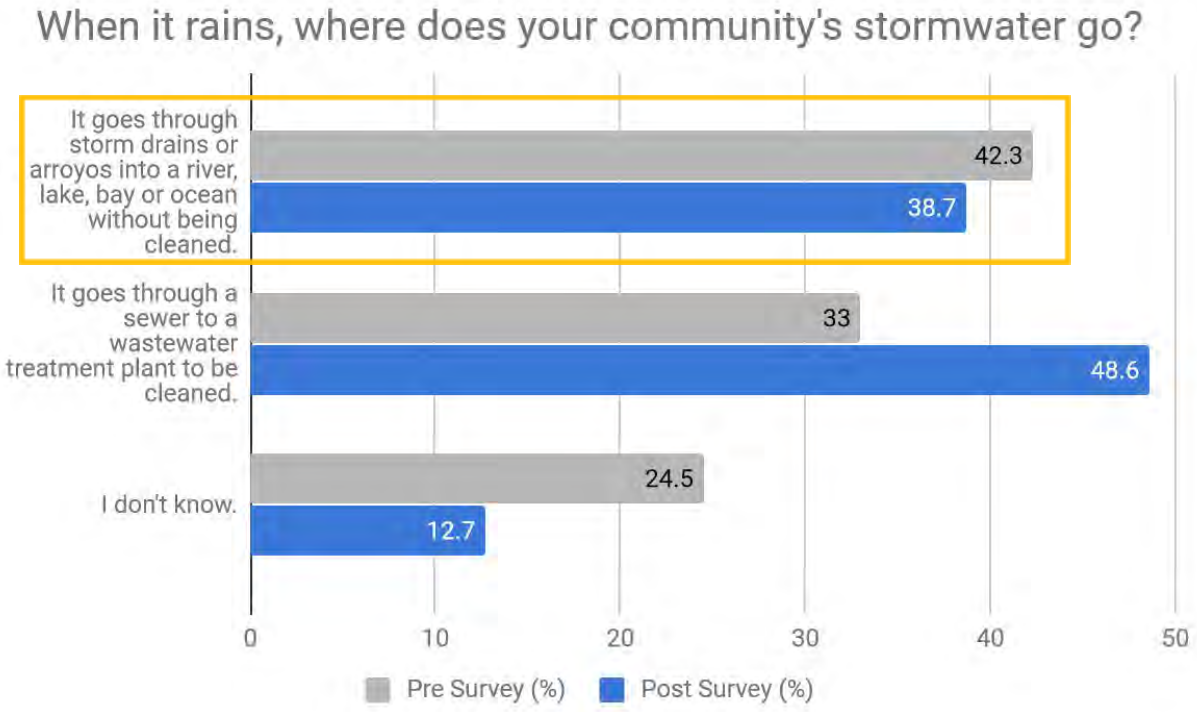
While we see a 16% increase in the correct answer here, we would like to see this metric improve next year. We adjusted the increments of the choices this year as well and added “less than 5 inches”. It’s likely that students who chose “less than 5 inches” thought the lesser precipitation reflected their home desert environment. We will plan to emphasize annual precipitation in the program next year. Also, we see again students opting for the “I don’t know” choice rather than perhaps choosing their best guess.

Item 5



Nearly 30% more students could answer this correctly at the end of the program.

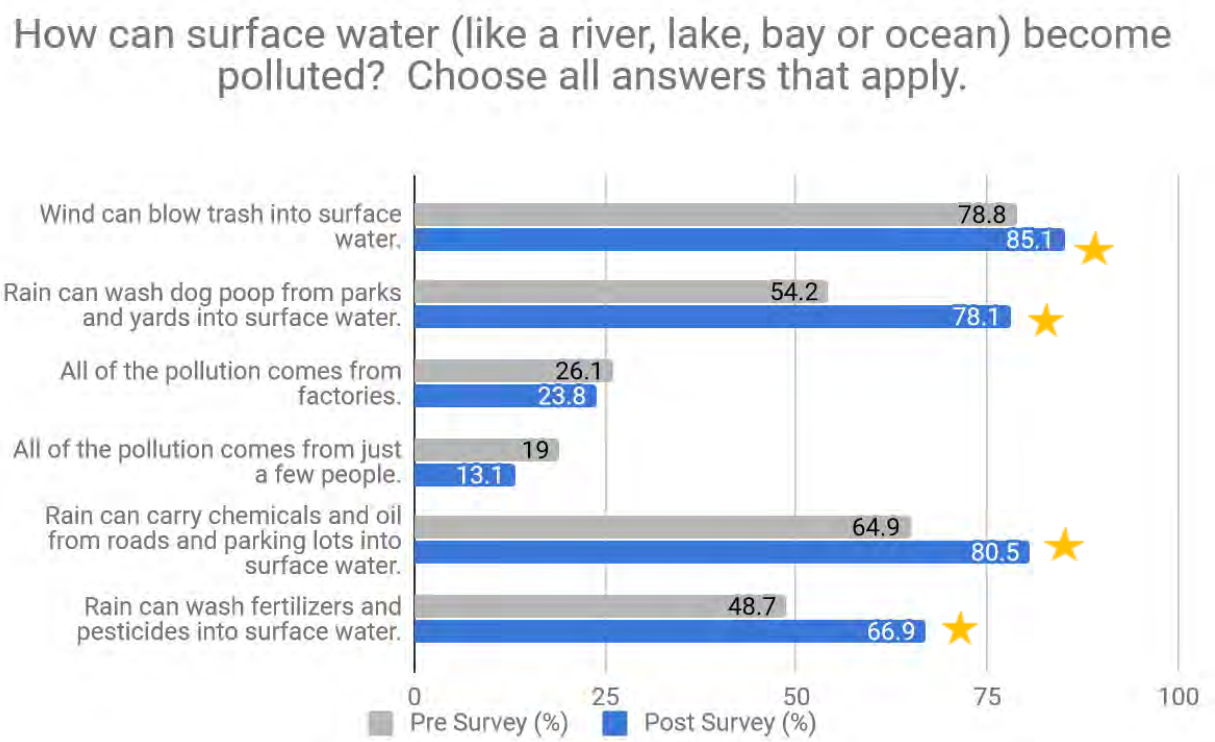
Item 6



This graph demonstrates a small decrease in correctly defining the stormwater pathway. We are not exactly sure where the misunderstanding is stemming from, but it may be rooted in misinformation about a sewer

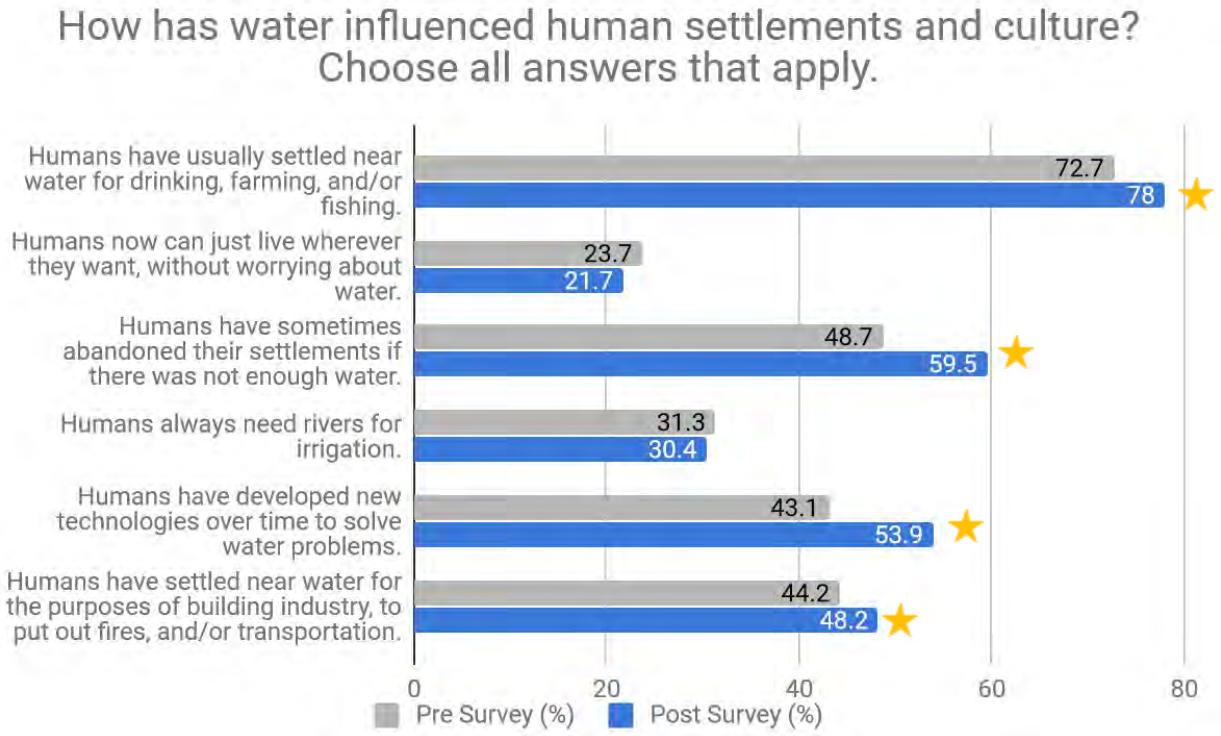
drain versus a stormwater drain. Next year we will ensure that teachers and presenters are clear about the difference between these drains and educate students on the distinctions. These results also support the need for a presenter workshop where we communicate with presenters the overall goal of RiverXchange in order to reinforce the collective goals and desired outcomes of our funders and in-kind sponsors.

Item 7



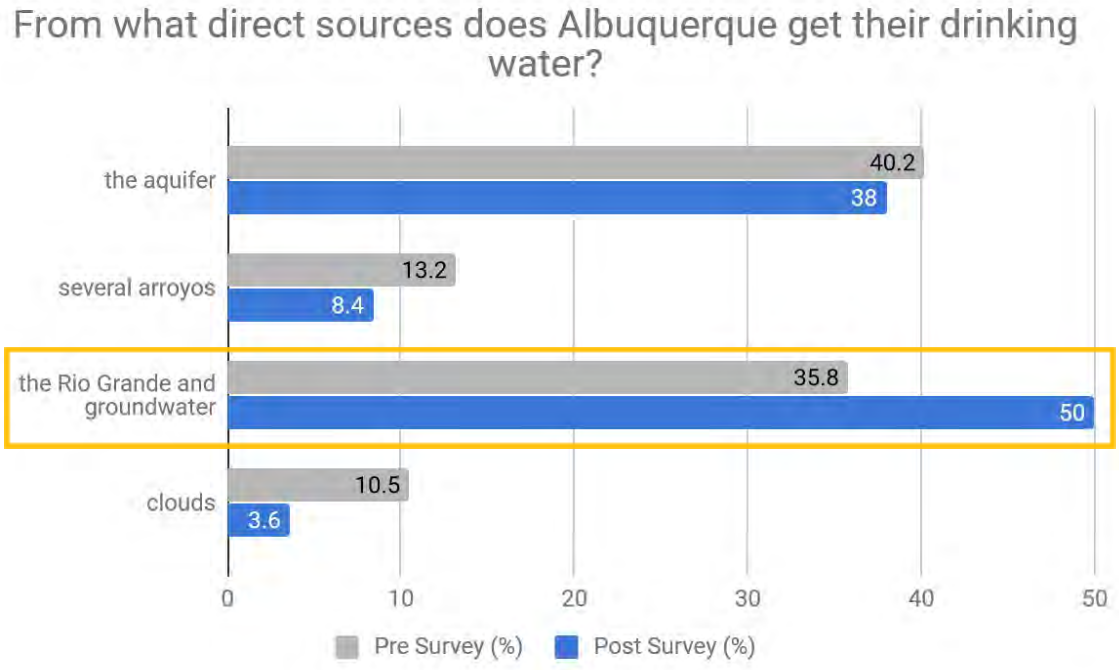
We see a significant increase (15-23%) in the understanding that stormwater can carry chemicals, fertilizers and dog poop into the river.

Item 8

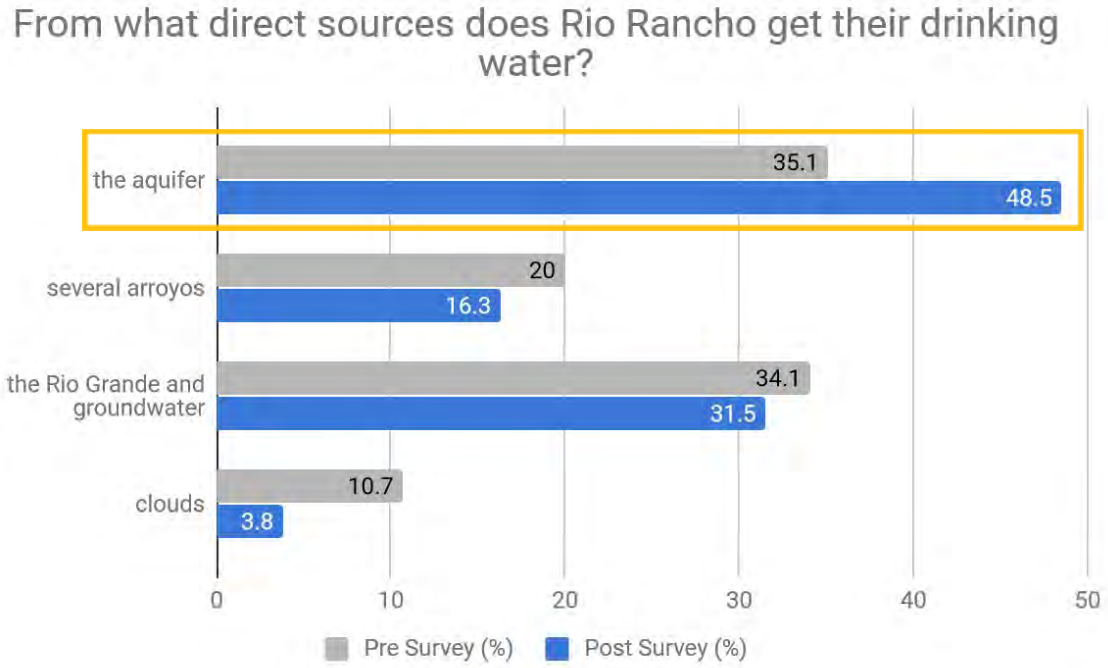


While students show a basic understanding of how water has influenced human settlements and culture at the time of the pre-survey, the post-survey shows an increase in overall understanding after students have been through the RiverXchange program.

Item 9

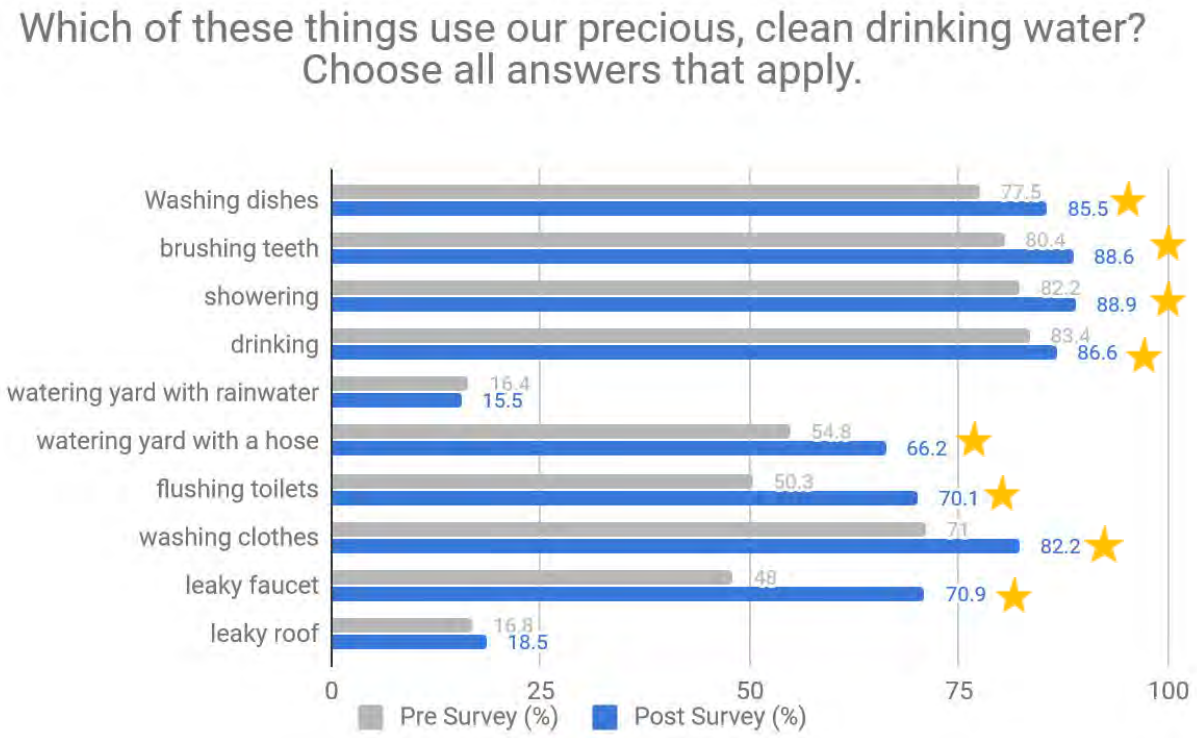


Item 10

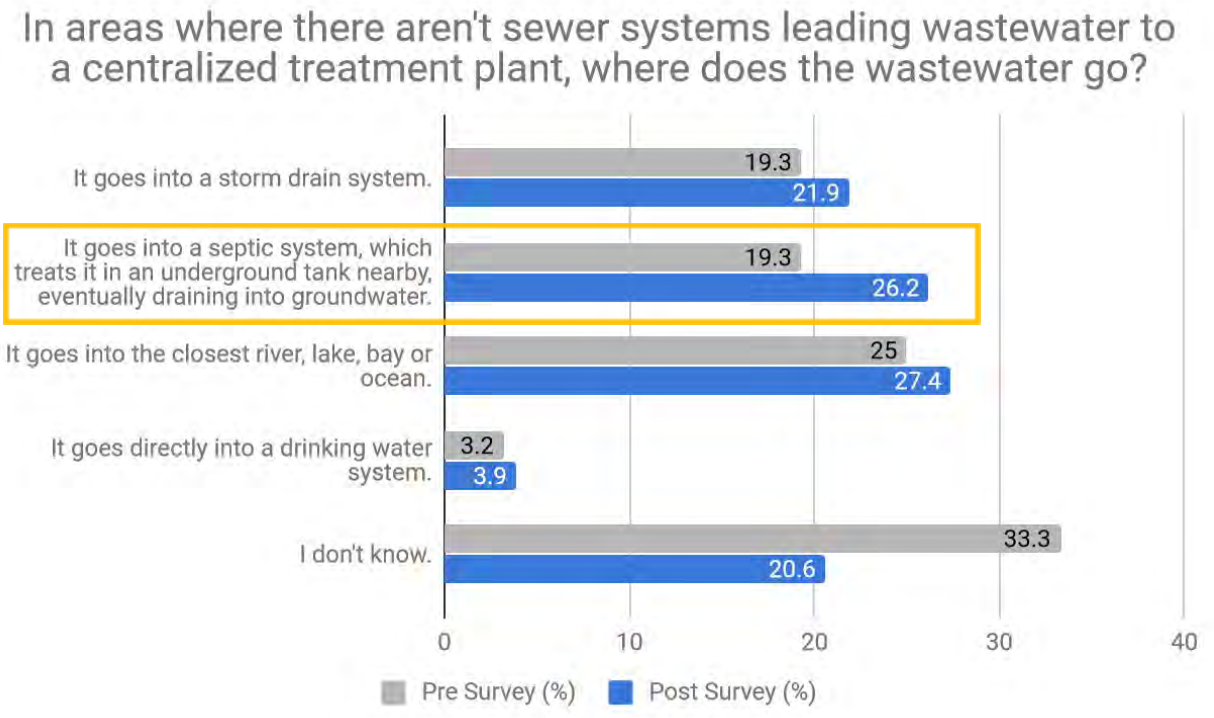


In previous years, all students, whether from APS or RRPS, could select the "river" or "groundwater/aquifer (wells)" as the correct answer to this question. To be more accurate this year, we offered students a similar question for both cities (Albuquerque and Rio Rancho). We also included an option reflecting that Albuquerque receives its drinking water from a combination of the river (surface water) and the aquifer. We also think it's important for students to understand where each city gets their drinking water. And we do see a significant increase in the correct answer for both questions. Next year, we will use the same terminology to signify the aquifer, instead of using "groundwater" and "aquifer."

Item 11



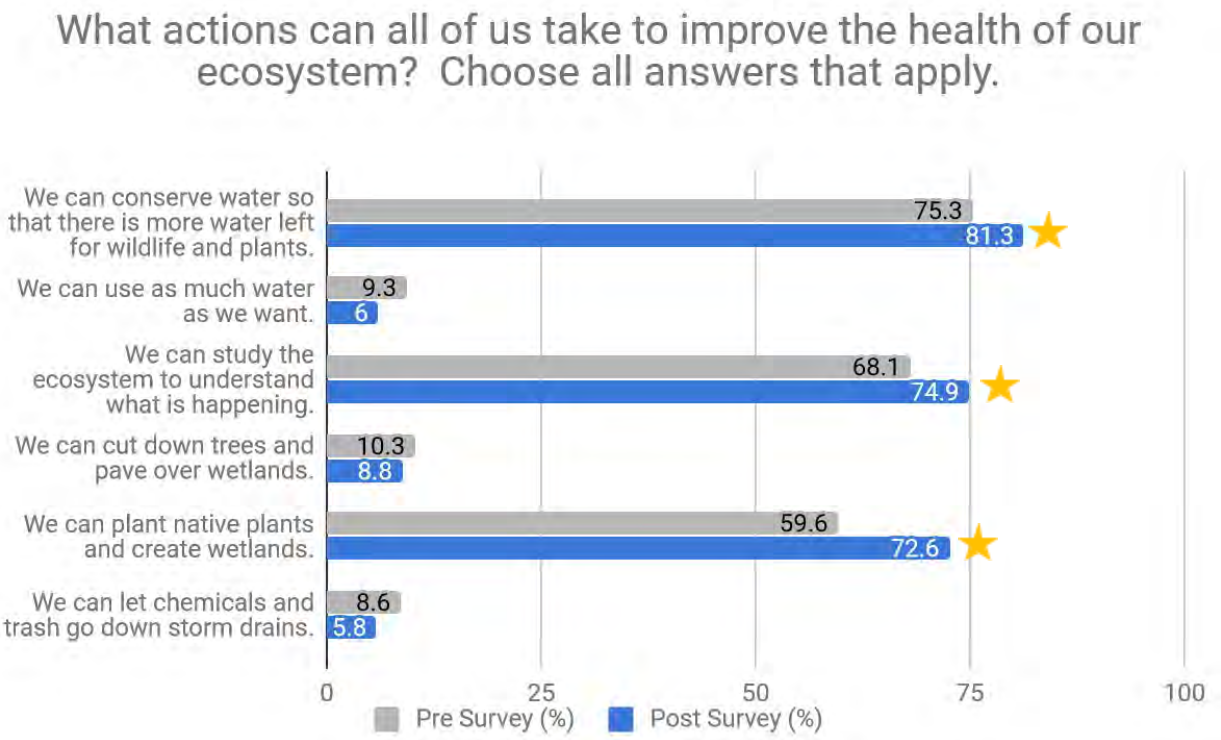
Item 12



It appears that this question is either confusing to read or the students aren't understanding the information from the program. It is likely that our APS students do not get exposed to septic systems as is covered in the

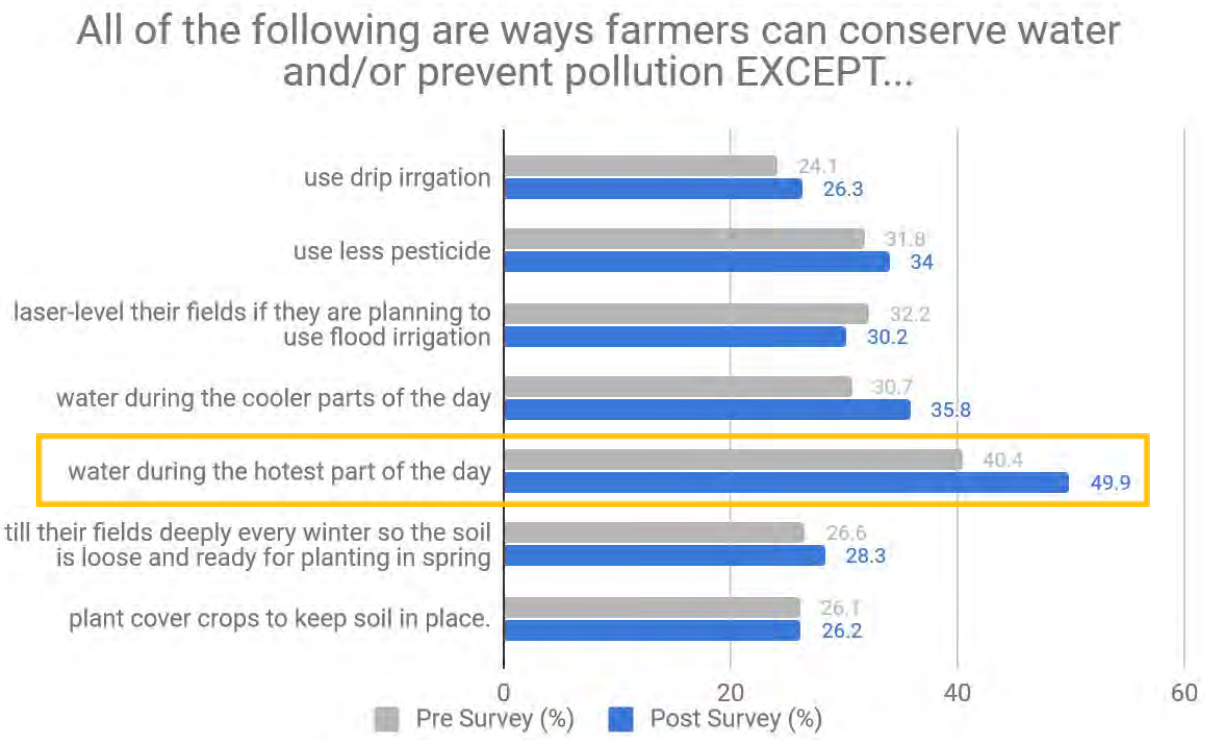
wastewater presentation for our RRPS students. While there is an increase in the correct answer in the post survey, the results also show a misunderstanding of wastewater through a similar percentage of students choosing several incorrect answers. We intend to address this more in the curriculum next year.

Item 13



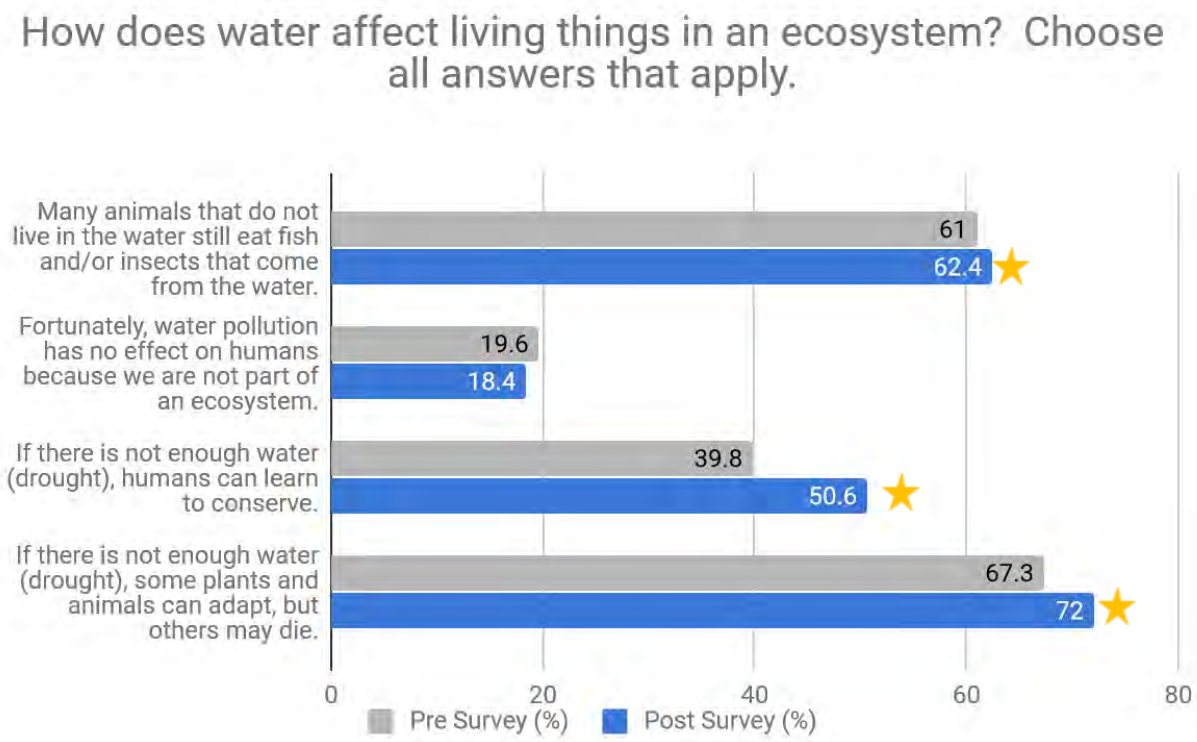
We see a 13% increase in the understanding that planting native plants can improve the health of our ecosystem. This may show learning of the significance of permeability in a landscape and how it can contribute to water conservation and support the health of the local environment.

Item 14



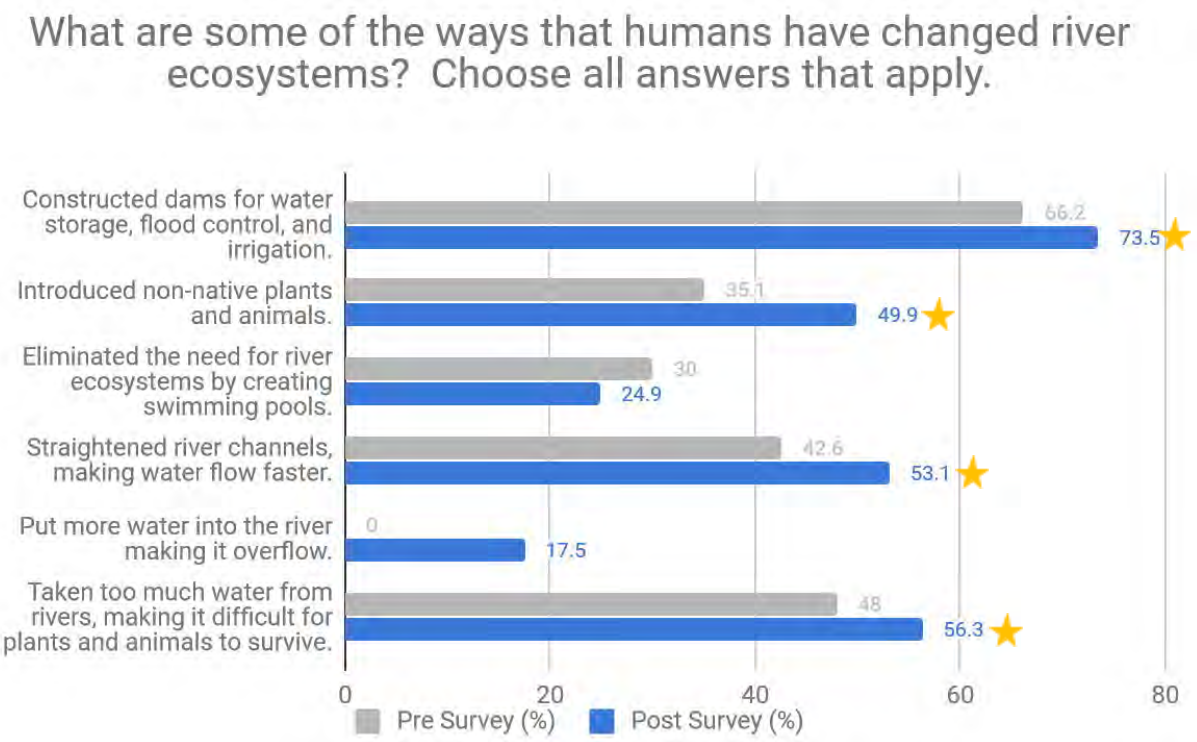
Our new presentation this year focused on acequia culture and history and water conservation did not address all of these items. With similar prompts, "All of the following EXCEPT…" we are noticing students may be choosing ALL the actions that apply rather than the one action that DOES NOT apply. Next year we will switch the question to picking all of the actions that apply to see if that yields better results.

Item 15



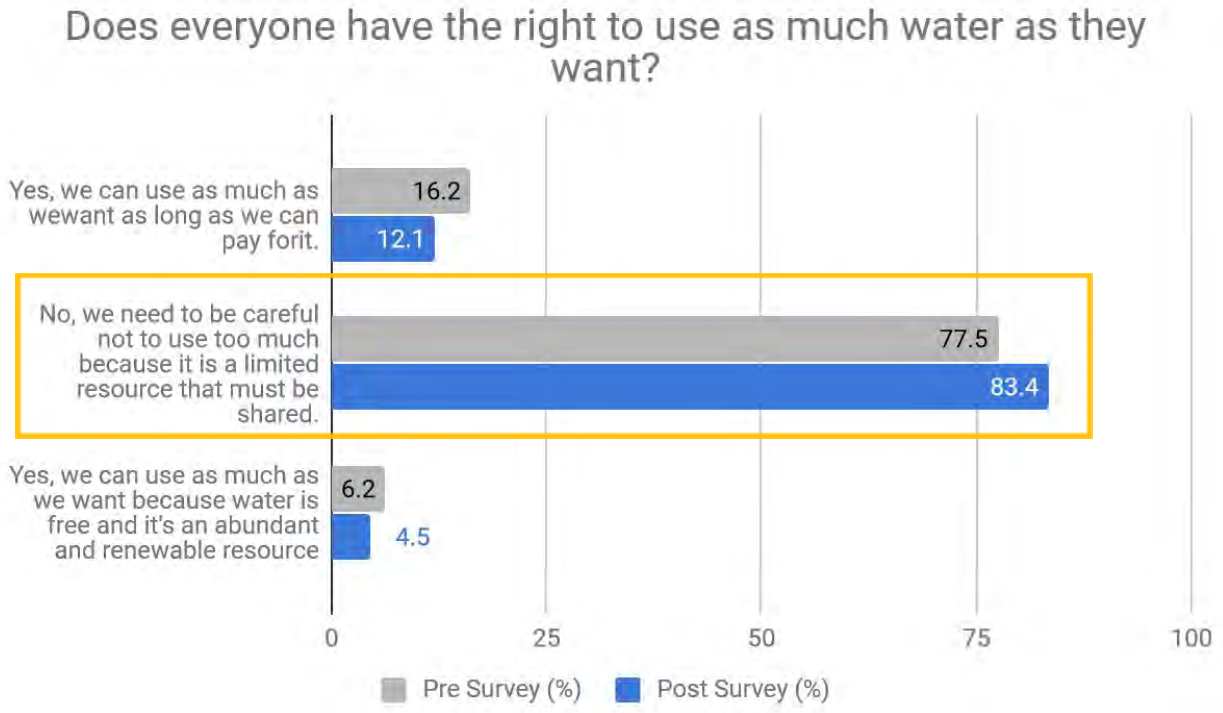
It appears that the answers to this prompt are intuitive for the majority of students from the beginning of the year. Though we do notice a greater increase in the understanding that humans can change their behavior and learn to conserve water.

Item 16



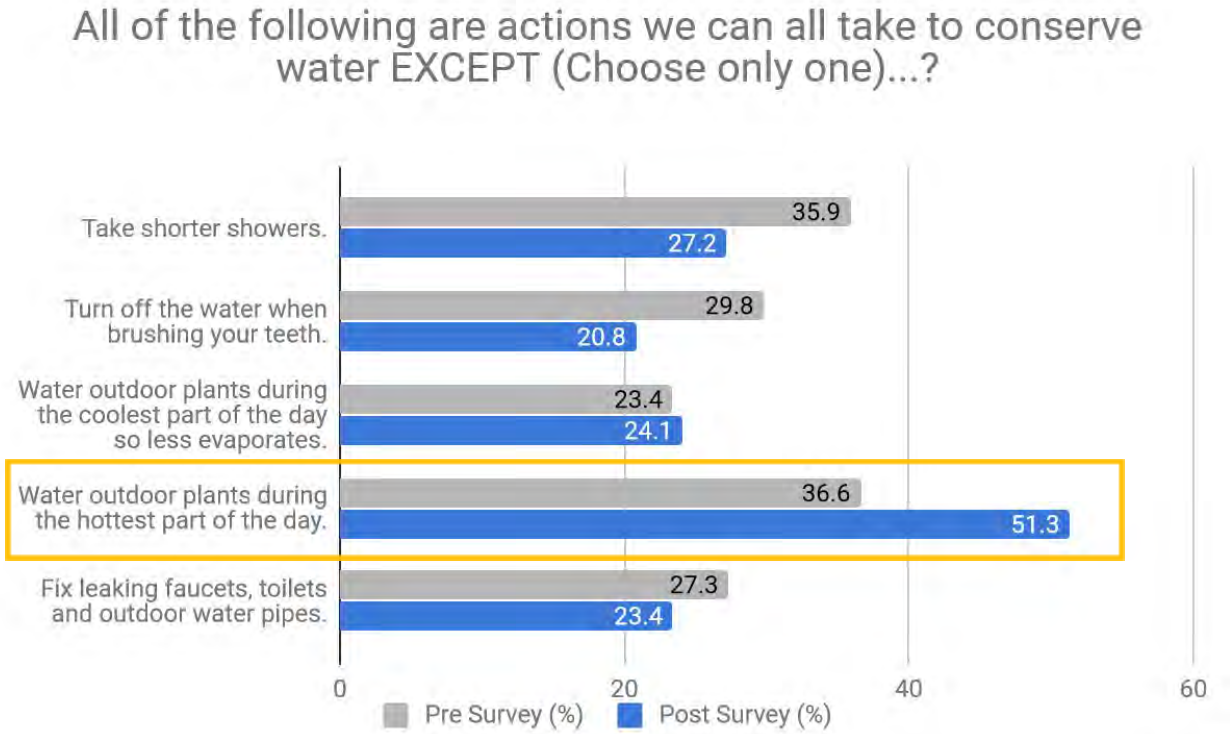
Through learning local water issues, including the history of the Middle Rio Grande, and planting native trees in the Bosque, students gained a significant understanding of the main ways humans have changed river ecosystems.

Item 17



While this answer is obvious to the majority of students, it shows a strong interest in and care for water conservation from future stewards of our watershed.

Item 18



The results in this graph are likely due to students misreading the question and picking ALL the actions we can take to conserve water instead of only choosing one action that DOES NOT conserve water. Next year we will switch the question to picking all of the actions that conserve water to see if that yields better results.

Appendix 1 includes the extension activities from the RiverXchange curriculum, Appendix 2 includes photos.

Appendix 1
Extension Questions and Activities

Understanding Our Watershed:

River Geography

- **Suggested Reading:**
  - **Books:**
    - *Follow the Water from Brook to Ocean* by Arthur Dorros
    - *Paddle-to-the-Sea* by Holling C. Holling
    - *One Well: The Story of Water on Earth (CitizenKid)* Strauss, Rochelle
  - **Articles:**
    - *Albuquerque Journal:* "As Bad as it Gets: Drought Returns to New Mexico."
    - *Albuquerque Journal:* "Drought Affecting 99% of New Mexico."

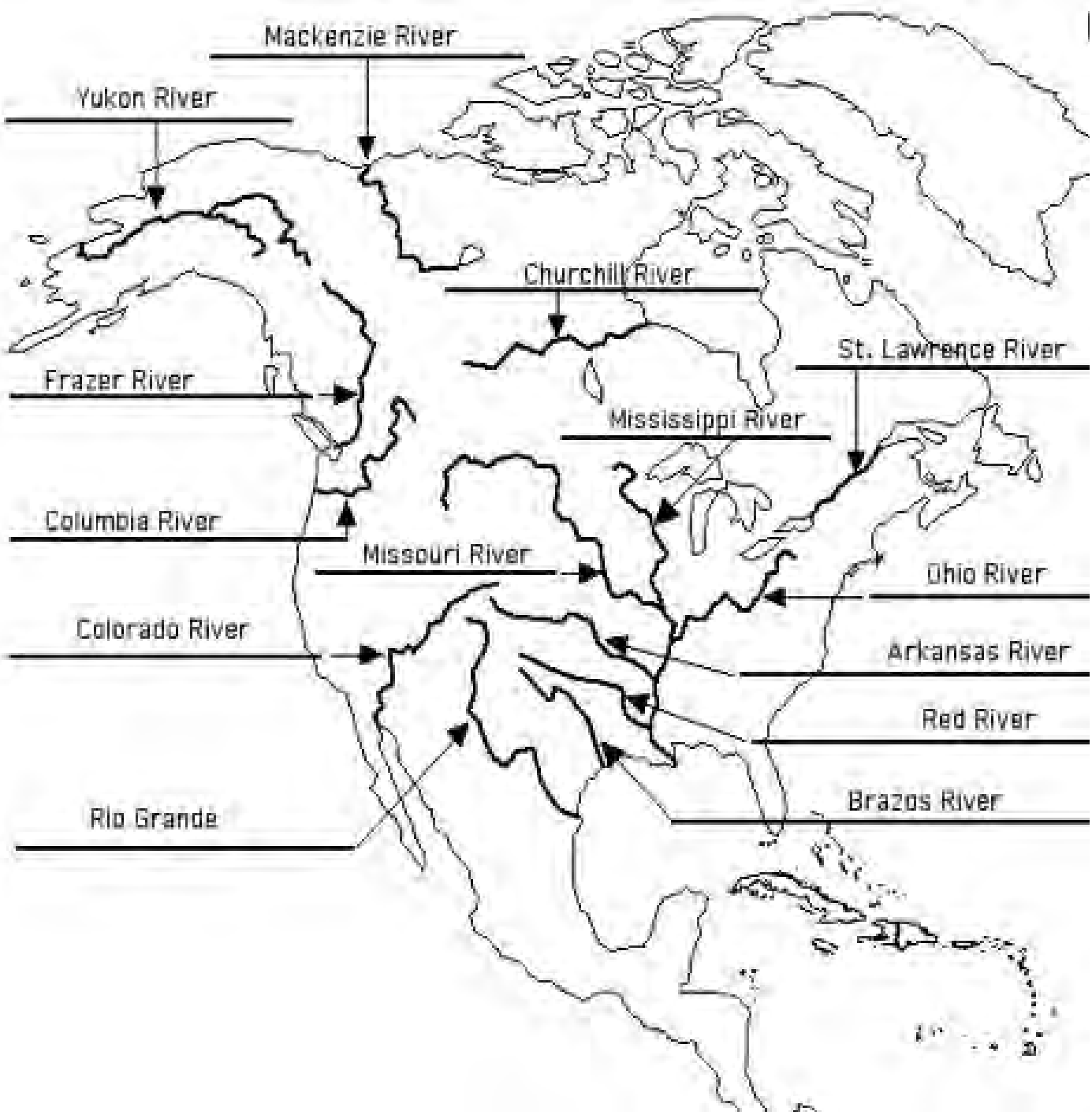
- **Watch:**
  - Watch Save Water - Save Our Rio!, a 17 minute video created by local summer camp students, sponsored by Albuquerque Water Utility Authority. Follow up with *When is the Drought Out?* http://www.abcwua.org/education/pdfs/Drought_GraphingOption.pdf

- **Write a letter to your partners or create a project, explaining:**
  - what a watershed is
  - the name of your river - this is also the name of your watershed!
  - the journey of your river from its headwaters to the ocean

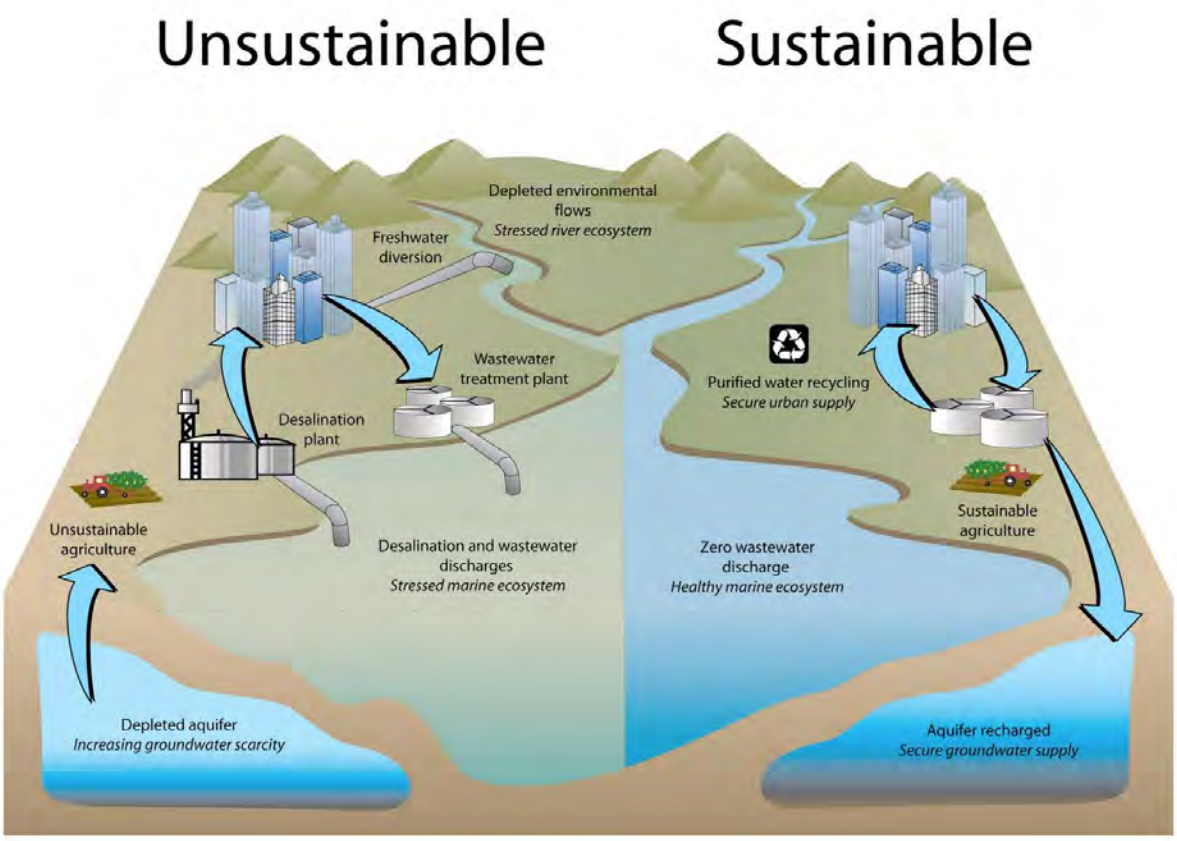
- what the river is like in your area - big/small, clear/muddy, fast/slow?
- how much precipitation your area receives each year, and what season gets the most precipitation

- **Want to explore further?** Refer to Project 1 in the RiverXchange Curriculum "Understanding a Watershed".
  - You can access the curriculum on your Kidblog homepage or by following this link: https://riverxchange.com/teachers2/curriculumpage/

North American River Map



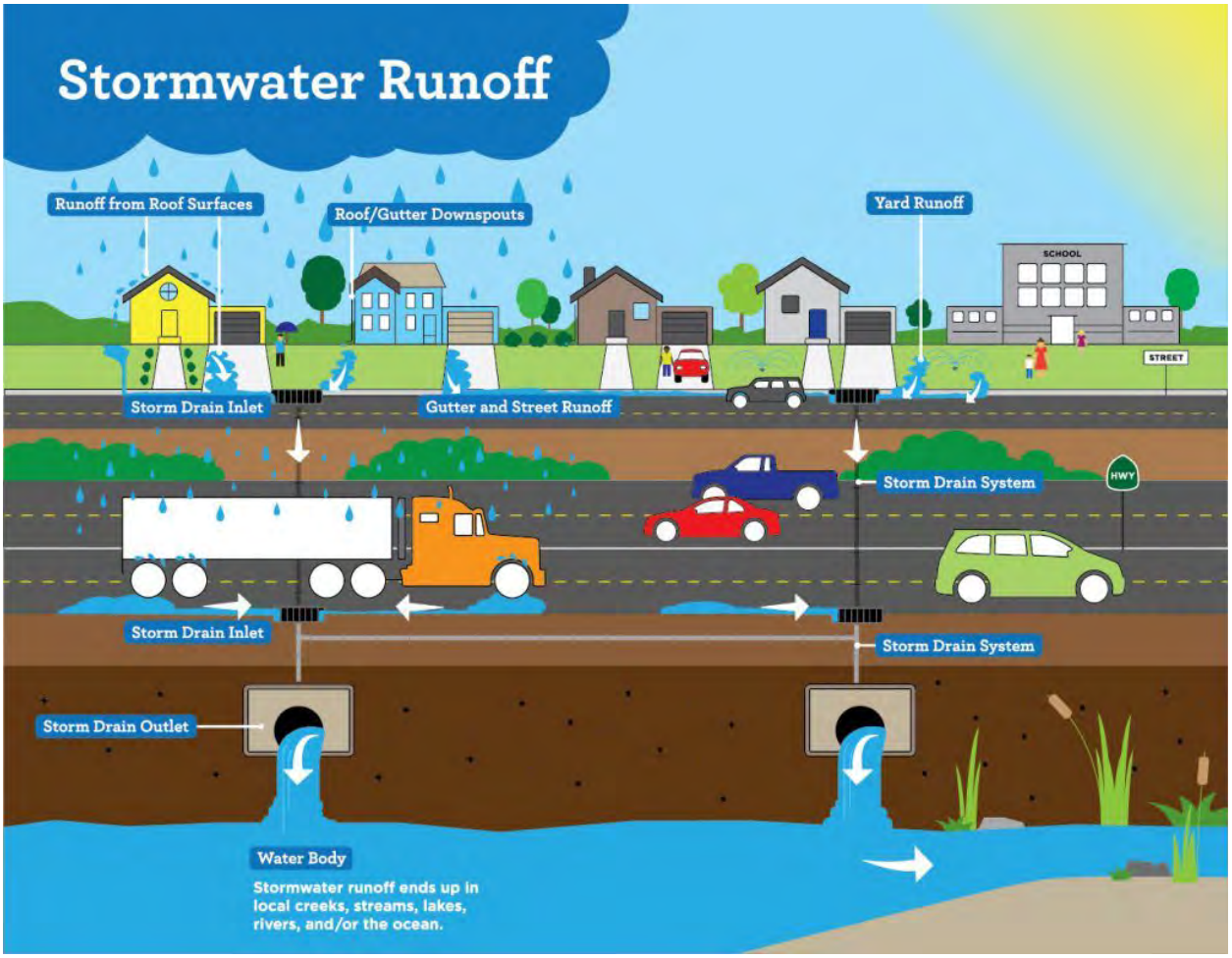
The urban water cycle



Clean Ocean Foundation 2009 - www.cleanocean.org

Understanding a Watershed:

Watershed Model / Infiltration and Runoff



Graphic credit: City of Columbia, MO

Enhance your student's blog posting and extend their learning beyond the Stormwater presentation with the following activities:

- **Suggested Reading:**
  - **Articles:**
    - *CNN* article. 2013. "Garbage Man of the River" http://www.cnn.com/2013/04/18/us/cnnheroes-pregracke-rivers-garbage
    - *Science News for Kids* article. 2012. "Suffocating Waters" https://www.sciencenewsforstudents.org/article/suffocating-waters
- **Watch:**
  - *The Human Solution to Water Pollution* video (to right of screen): http://sscafca.org/teacher-resources/
  - *The Majestic Plastic Bag* video (mockumentary): https://vimeo.com/14221747
    - For a 60 minute class activity, include this lesson to explore the Great Pacific Garbage Patch and what students can do to respond.

- Explore The Ocean Cleanup project and how an 18 year old started with a simple idea which is now making a difference in the effort to clean up the world's oceans.

❖ **Explore your watershed**

➢ Follow the link below to zoom in and explore your watershed and the watershed that family and friends live in, perhaps even your RiverXchange partners who live outside of New Mexico! Interactive Topographic Watershed Map of Earth

❖ **Lesson plan**

➢ *Don't Trash Our Rio Activity Guide* - A math based extension where students learn how much trash is pulled from Albuquerque's storm drain system yearly, and calculate how many trash bags or classrooms it would fill. (Follow links for additional handouts)

- **Reflection Questions**
  - Discuss how the gutters in our streets lead to **storm drains**, which often lead directly to the nearest body of water. Discuss the difference between **stormwater** and **wastewater** (from household drains and toilets).
  - What is stormwater and where does your community's stormwater go?
  - What did you learn about stormwater that was surprising to you?
  - How do things that happen in your yard or your neighbor's yard impact the watershed?
  - What have you noticed about stormwater in your own neighborhood?
  - What are some things you can do to clean up stormwater?
  - How can surface water become polluted?
  - What's happens when rain falls on a pervious surface compared to an impervious surface? Give examples of impervious surfaces.
  - How are groundwater and surface water connected?
  - What are ways you can minimize stormwater pollution?

❖ **Want to explore further?** Refer to Project 2 in the RiverXchange Curriculum "The Watershed".

➢ You can access the curriculum on your Kidblog homepage or by following the link below: https://riverxchange.files.wordpress.com/2018/09/riverxchange-curriculum-20181.pdf

Water in Our Society:

Drinking Water

Enhance your student's blog posting and extend their learning beyond the Drinking Water presentation with the following activities:

- **Suggested Reading:**
  - **Book:** *A Long Walk to Water*, by Linda Sue Park (2010: Clarion Books)
  - **Articles:**
    - **Albuquerque drinking water info**
      - from ABQ Water Utility Authority http://www.abcwua.org/education/pdfs/WaterUse_Text.pdf
      - About the San Juan Chama Project, ABQ Journal 2008: https://riverxchange.files.wordpress.com/2015/08/san-juan-chama-project.pdf
    - **Santa Fe drinking water info**
      - Buckman Diversion, ABQ Journal 2010: https://riverxchange.files.wordpress.com/2015/08/buckman-diversion.pdf
    - **Santa Fe drinking water info**
      - Buckman Diversion, ABQ Journal 2010: https://riverxchange.files.wordpress.com/2015/08/buckman-diversion.pdf

- **Lesson Plan: The Water Project**
  https://thewaterproject.org/resources/WaterLogs_5to8.pdf
  - Five simple activities and lessons to assist students in exploring how water scarcity may impact their lives and how they can contribute by conserving water.
  - Suggested activity: Students log their personal use and observation of other forms of water use over two days, then discuss their findings and explore what would happen if water scarcity were an issue. Another lesson also includes a TRUE/FALSE game to learn about water and how it impacts the human body and communities.

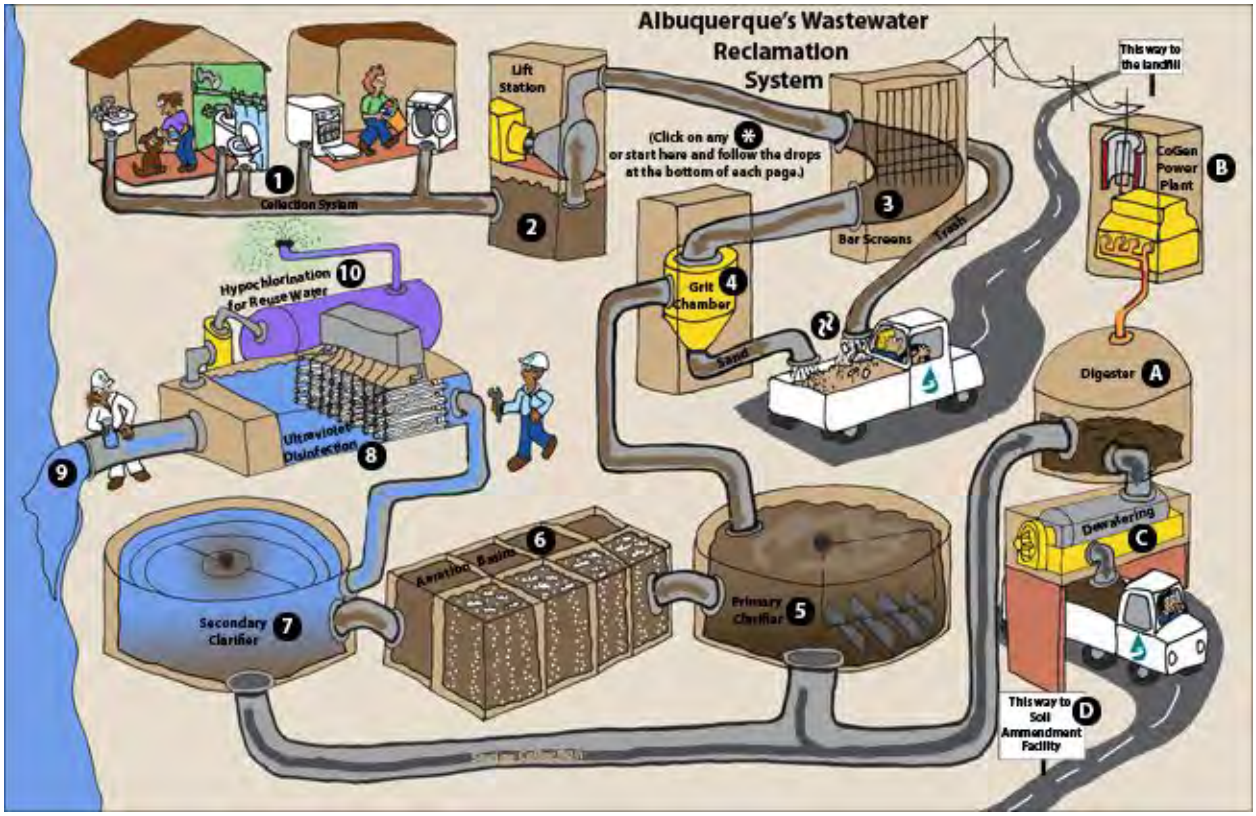
- **Lesson Plan: Cleaning Water**
  http://seplessons.ucsf.edu/node/1754
  - Create a filter in class to clean contaminated water and investigate your findings with the lesson linked below. This activity can be done over the course of a few days in class, or you can demonstrate how a filter works with your class in a shorter lesson.

- **Reflection Questions**
  - Where does your drinking water come from and what communities rely on it?
  - Drinking water is used for much more than bathing, flushing toilets and drinking. What are other ways you and your community use drinking water?
  - Did you learn anything surprising about how we use drinking water, if so what?
  - What percentage of the Earth is covered in water? Out of that amount, how much is accessible fresh water? How much is available as drinking water and why is it important to conserve it?
  - One third of the world's population does not have access to clean drinking water. How would your life be different if you had to walk miles to bring back water to your family?

- **Want to explore further?** Refer to Project 6 in the RiverXchange Curriculum "Drinking Water".
  - You can access the curriculum on your Kidblog homepage or by following this link: https://riverxchange.files.wordpress.com/2018/09/riverxchange-curriculum-20181.pdf

Water in Our Society:

Wastewater / Groundwater



Enhance your student's blog posting and extend their learning beyond the Wastewater presentation with the following activities:

- **Suggested Reading:**
  - *KOAT* news. 2015. "Aging Pipes Mean Higher Water Bills" http://www.koat.com/news/aging-pipes-could-mean-water-bill-hike/34284754
  - Combined sewer overflows article, by Anne Jefferson, a geology professor from Kent State. http://all-geo.org/highlyallochthonous/2013/03/combined-sewer-overflows-solving-a-19th-century-problem-in-the-21st-century/

- **Activities:**
  - Follow this link to the ABQ Water Utility Authority's website to navigate virtually through Albuquerque's wastewater system: http://www.abcwua.org/Education/SWRP_home.html
    - Want to add a project-based learning component to this exercise? Use these questions and activities to go along with your tour: http://www.abcwua.org/education/educators_WSDcur2_quest.html

- ➢ Show students the *Septic System* poster (the poster can be shown on a smartboard and explain the difference between a **sewer system** and a **septic system** – they both treat wastewater essentially the same way, but a septic tank is right by the house and uses a drainfield in rural areas.

- ➢ Create a Public Service Announcement with your class inspired about what you've learned. Take a video and post it on the blog to share with your partner class!

❖ **Watch:**

- ➢ Watch one of these videos in class to review the process of wastewater and what students can do to take care of wastewater: https://www.youtube.com/watch?v=Ldz29NqwK78 (An animation narrated by a young student)
- ➢ https://www.youtube.com/watch?v=tuYB8nMFxQA (A video of the water treatment process created by New Jersey American Water)
- ➢ Learn about recharging the aquifer in the City of Rio Rancho https://rrnm.gov/4024/Rio-Rancho-Pure

- **Reflection & Discussion:**
  - ○ What is wastewater and how does it impact your community?
  - ○ What is the difference between wastewater, stormwater and drinking water?
  - ○ How can you use what you've learned to make a difference at home and at school?
  - ○ What is the process of treating wastewater in your community? (For RRPS students, generally you are on a septic system). What is the difference between a sewer and septic system?
  - ○ What surprised you about the process of treating wastewater from the presentation?
  - ○ Why is it important to do what we can to keep certain things out of our wastewater, whether it goes to septic system or a wastewater treatment plant?

❖ **Want to explore further?** Refer to Project 8 in the RiverXchange Curriculum "Wastewater".

- ➢ You can access the curriculum on your Kidblog homepage or by following this link: https://riverxchange.files.wordpress.com/2018/09/riverxchange-curriculum-20181.pdf

Water in Our Society:

Commercial Uses of Our Waterways: Agriculture

Photo credit: Erich Schlegel

Enhance your student's blog posting and extend their learning beyond the Agriculture presentation with the following activities:

- **Suggested Reading:**
  - **Book:** *Out of the Dust* by Karen Hesse (1997: Scholastic Press)
    Written from the poetic perspective of 14 year old Billie Jo as she narrates her family's struggle in Oklahoma during the years of the Depression and the Dust Bowl.
  - **Articles:**
    - *ABQ Journal* article, 2013. "Deal Allows Farmers to Sell Irrigation Water" http://www.abqjournal.com/221194/news/deal-allows-farmers-to-sell-irrigation-water.htm
    - *National Geographic* article, 2014. "Parched: A New Dust Bowl Forms in the Heartland" http://news.nationalgeographic.com/news/2014/05/140516-dust-bowl-drought-oklahoma-panhandle-food/

- **Explore more about the Dust Bowl:** Check out the link below for an informative, interactive website developed by PBS. http://www.pbs.org/kenburns/dustbowl/educators/overview/

- **Lesson Plan: Soil is Not Trivial**
  - Using facts about the Dust Bowl, students write questions and play a trivia activity focused around the establishment of a national soil conservation program and the importance of soil. Students then explore and/or develop a plan to address a local soil conservation issue.
  - http://www.ncagr.gov/SWC/educational/documents/FLP_soil_is_not_trivial.pdf

- **Write a short story**
  - Write a short story from the perspective of someone who is living during, and affected by the Dust Bowl. Explore the PBS website link, or the suggested reading.

- **Lesson plan: Growing Plants**
  - Students will use the story of *The Empty Pot* to explore literature and science, practicing story mapping and learning about the needs of plants and the importance of soil and water. Like the characters in the story, students will plant and observe the growth of seeds. https://www.agclassroom.org/teacher/matrix/lessonplan.cfm?lpid=484&author_state=0&grade=3&search_term_lp=growing%20plants

- **Reflection Questions**
  - What was the Dust Bowl and how did it impact people?
  - What do you think are the major agricultural lessons for us from the Dust Bowl?
  - How may we be able to prevent a dust bowl from occurring again?
  - What is important for farmers to consider when planning how to irrigate their farm and why?
  - How does agriculture relate to water and to our daily lives?
  - What did you discover in your planting activity about the different types of irrigation?

- **Want to explore further?** Refer to Project 5 in the RiverXchange Curriculum “Commercial Uses of Our Waterways”.
  - You can access the curriculum on your Kidblog homepage or by following this link: https://riverxchange.files.wordpress.com/2018/09/riverxchange-curriculum-20181.pdf

Water in Our Society:
Commercial Uses of Our Waterways: Acequias

Enhance your student's blog posting and extend their learning beyond the Agriculture presentation with the following activities:

- **Suggested Reading:**
  - **Articles:**
    - *ABQ Journal* article, 2013. "Deal Allows Farmers to Sell Irrigation Water" http://www.abqjournal.com/221194/news/deal-allows-farmers-to-sell-irrigation-water.htm
    - *National Geographic* article, 2014. "Parched: A New Dust Bowl Forms in the Heartland" http://news.nationalgeographic.com/news/2014/05/140516-dust-bowl-drought-oklahoma-panhandle-food/

- **Watch:**
  - *Nuestras Acequias* (20 minutes) and/or *South Valley Acequias* (4 minutes). Discuss the **acequia** system which was put in place by the Pueblo people and early Spanish settlers, how is it organized amongst the community and maintained? What is its cultural and ecological significance?

- Explore the acequia tradition further with *El Agua Es Vida* lessons.

❖ **Lesson Plan: Prior Appropriation**

➢ Using the *Prior Appropriation* activity guide, act out the two different methods of assigning water rights to all the water users. Discuss the difference between the Riparian Rights and Prior Appropriation doctrines. Research the history of water rights in your community and compare the differences in water rights issues with your partners' area. Prior Appropriation is used in the western states, which receive far less precipitation.

❖ **Discuss**

➢ How people have developed technological solutions to solve water problems. For example, many ancient settlements in the West were abandoned because of lack of water, but irrigation technology has made it easier to survive. Dams have made it easier to control the flow of rivers, reservoirs store water, and fish ladders are built so that dams don't prevent their migration. High-efficiency toilets and other appliances help conserve water.

- **Reflection Questions**
  - What did you learn about acequias that you didn't know before this presentation?
  - How are acequias important to life and culture in New Mexico?
  - What would happen to the land if people didn't maintain acequias?
  - What is important for farmers to consider when planning how to irrigate their farm and why?
  - How does agriculture relate to water and to our daily lives?

❖ **Want to explore further?** Refer to Project 5 in the RiverXchange Curriculum "Commercial Uses of Our Waterways".

➢ You can access the curriculum on your Kidblog homepage or by following this link: https://riverxchange.files.wordpress.com/2018/09/riverxchange-curriculum-20181.pdf

River Ecosystems:

Pole Planting Field Trip

Enhance your student's blog posting and extend their learning beyond the Field Trip with the following activities:

- **Suggested Reading:**
  - **For teacher:** Read or review the 1st part of Chapter 4 of the Bosque Education Guide: A River of Change and discuss with your class the history of the Rio Grande River, the changes made to it's flow and channel, and the impact on the Bosque ecosystem.
- **Make a food web**
  - Make a food web for our local ecosystem, identifying producers, consumers and decomposers, native species and invasive species, as well as local endangered species. Discuss how wildlife are "water users" too. Like humans, wildlife needs clean water to live, so as a community we must consider their needs when making choices about water. Use Bosque plant and animal cards to do *The Web* activity, discussing how all living things depend on each other.
- **Learn about the STRAW Project**
  - An ongoing watershed restoration project first inspired by 4th graders in 1992, based in Marin Co. California! Add it to your school's library and show the documentary in class.

http://www.pointblue.org/our-science-and-services/conservation-science/conservation-training/straw-program or read about the project in this article and discuss how youth can make an impact: http://www.marinij.com/article/NO/20150325/NEWS/150329872

- **Reflection & Discussion:**
  - What did you learn about the history of the Rio Grande River and the floodplain we planted in? How does this history impact the future of cottonwoods in the area?
  - Identify some common invasive species. Where did they come from and how are they impacting the Bosque?
  - What is the process of planting cottonwoods and willows and why do we do it in the wintertime?
  - After this field trip, how may you see and understand the Bosque differently?
  - What did you most enjoy while being down in the Bosque?
  - How can you apply what you learned or enjoyed on your field trip in your everyday life?

❖ **Want to explore further?** Refer to Project 9 in the RiverXchange Curriculum "Field Trip".

➢ You can access the curriculum on your Kidblog homepage or by following the link below: https://riverxchange.files.wordpress.com/2018/09/riverxchange-curriculum-20181.pdf

Appendix 2
Photos

Field trips

Students from Colinas del Norte at the Sandoval County Landfill. (Left) Receiving a presentation on the green waste composting operation with Robert Sanchez. (Below) At the top of the landfill, getting a tour of how the landfill works and question and answer with Chris Perea.

Below is a selection of images from our planting field trips at Alamo Farm and Candelaria Open Space Preserve.

Exhibit 4
BEMP 2018-2019

Bosque Ecosystem Monitoring Program (BEMP)
Report to the Storm Team of the
2018-2019 Stormwater Science Education Program

The main objective of the *Stormwater Science* outreach education program is to teach students how the health of the Rio Grande is directly related to the health of the surrounding watershed and what their responsibility and opportunities are to help keep the "Rio Grand." BEMP educators have developed a Stormwater Science program that includes a 90-minute classroom activity, a four-to-five-hour study trip to the Rio Grande, and optional curriculum extensions incorporating hands-on data analysis, graphing, and system modeling. **During the 2018-2019 school-year 2,017 students participated in Stormwater Science** activities in their classrooms, in the field, both, or in outreach events. The classroom program was delivered to **599 students** in **33 classrooms** at **13 different schools** in **Rio Rancho, Albuquerque, and Belen.** In addition to the Stormwater Science outreach, BEMP actively involves students in water quality monitoring through the *E. coli* monitoring contract with the Mid Rio Grande Stormwater Quality Team. **29 students from La Academia de Esperanza (LADE)** and **5 University of New Mexico (UNM) undergraduates** were directly involved in water quality monitoring of the Rio Grande in support of this contract. Students are taught the proper protocols for collecting field parameters and *E. coli* data, but, consistent with our quality assurance plan, are only allowed to collect field parameter data. Students then graph and analyze the data and are supported in presenting their findings at BEMP-supported conferences, professional conferences, and to policy makers. In 2018, the student-collected data (field parameters) and *E. coli* data were presented by a UNM undergraduate in August at the EPA Region 6 conference. BEMP also spent much of 2018-19 updating and enhancing its Stormwater Science education and outreach components.

The BEMP Stormwater Science program targets middle and high school students using two main formats: an indoor classroom lesson and an outdoor field experience or *Stormwater Study Trip*. This year, a new high school classroom lesson was designed and implemented to teach more complex and nuanced stormwater science concepts, including analyzing data to see how different water quality parameters are affected by storm events. High school curriculum extensions were also created for groups who either request multiple classroom visits or have enough class time for a longer, more intensive lesson.

1. Classroom curriculum*: Preparation and delivery of Stormwater Science activities in the classroom for middle and high school students* **(599 students)**

The principal objective for the middle school classroom curriculum is to demonstrate how some of our daily, individual actions impact the health of the Rio Grande. To reach that goal, students construct a model of the Rio Grande Watershed (pages 5 and 18). The watershed model has five different communities along the river: a cattle ranch, upstream and downstream eco-friendly towns, an urban city, and agricultural fields. Students add different 'runoff cards' to the river downstream of the communities where the runoff constituents originate. Some of the runoff is naturally occurring (e.g. turbidity) while some is human-caused (e.g. pesticides or oil). The model runs through two different scenarios: (1) *before-the-storm* and (2) *after-the-storm*. While working through different variations of the model, students record the number of runoff cards introduced into the river before and after a storm event (handout table; page 6). This helps them to conceptualize/quantify and further discuss the impacts of these changes to overall river health. Exploring these two scenarios demonstrates the harmful effects that stormwater contamination can have on aquatic organisms and downstream communities.

The high school classroom lesson builds upon these core concepts. After discussing the aforementioned watershed model, students learn about some key water quality parameters: temperature, conductivity, dissolved oxygen, turbidity, and dissolved organic matter. Students divide into groups assigned one parameter each. They must then predict how their parameter might be affected by a storm event along with providing justification for their prediction. Students are given graphed data of their parameter before and after actual storm events and must analyze the graphs to determine if the data supports their previous supposition. When classes have more time available, this activity is supplemented by two different curriculum extensions. The first curriculum extension uses the same key water quality parameters introduced in the regular classroom activity but the students analyze provided data and create their own graphs. We provide (1) a blank graphing sheet with the axis labeled and with the river flow data (used as a reference to talk about the time gap between the increase in cfs and parameter peaking; see page 13) and (2) a table with measurements for each parameter (see page 14). This activity helps students learn how to analyze and graph data and then interpret the results, using skills aligned with Next Generation Science Standards (NGSS). The second curriculum extension is a soil porosity and permeability experiment that deepens students' understanding of how different surfaces (natural vs. anthropogenic, permeable vs. impermeable) impact the overall water budget and water quality (page 15 and 16).

The Stormwater Science classroom program encourages students to be reflective about their daily behaviors and to think about ways they can help keep their watershed clean. Students are asked to brainstorm about how they can help improve watershed health before educators lead a discussion on watershed stewardship that aligns with MRGSQT educational messaging. In order to reach students that identify Spanish as their first language and better serve New Mexico's diverse communities, the handouts for these activities are now available to students in both English and Spanish (pages 7 and 8).

In 2018-19, the Stormwater Science curriculum was used in BEMP's pilot after-school program, BASS (BEMP After School Science). BASS engaged K-12 students from five Title 1 schools

through STEAM-based, hands-on learning, as well as self-directed, place-based exploration and data collection. As part of the curriculum, BEMP included two Stormwater Science sessions: a live macroinvertebrate lab (page 19), and leaf pack macroinvertebrate collection. BEMP used these opportunities to introduce stormwater science concepts to a new cohort of middle school students from communities underserved and underrepresented in the sciences.

Please note that classroom curriculum numbers no longer include tabling and other outreach events.

2. Stormwater Study Trip: *Delivery and coordination of place-based Stormwater Science experiences* **(113 students)**

The centerpiece of BEMP's stormwater outreach is the Stormwater Study Trip. This activity builds upon classroom activities and facilitates hands-on student experiences including performing water quality testing at the Rio Grande. The Stormwater Study Trip is a four to five-hour trip to the river during which students investigate how stormwater moves through the city and sweeps pollutants and debris into the river. Students also collect and interpret water quality data. The middle school version of the program begins with an explanation of the arroyo system in Albuquerque (map on page 9) followed by an arroyo pollution survey where students examine and categorize the amount of visible pollutants (e.g. plastics, paper, dog poop, animal scat, etc.) in Albuquerque's San Antonio arroyo which drains into the bosque. In the arroyo, students test water quality using a LaMotte water quality monitoring kit (pages 10, 11, and 18). When the students hike to the Rio Grande, they do additional water quality testing and collect leaf packs from two locations. Students then share their results with each other, compare Rio Grande and arroyo water quality data, and discuss what their results could mean in terms of the river's health. This section of the curriculum allows students to have a more hands-on learning experience involving different type of data collection and scientific tools. The high school Stormwater Study Trip uses the same format with an emphasis on the water quality indices (percent EPT and biotic index) through analyzing collected macroinvertebrates. The goal for high school students is to connect and understand the two collected data sets and develop a deeper sense of how the system functions on a broader scale.

During the 2018-2019 scholar year, BEMP added leaf packs placed along the Rio Grande and in a backwater pond as a method to collect macroinvertebrate data. Students collect four leaf packs, one week after they are placed in these two locations. Leaf packs are brought back to the classroom where hand-held lenses and dissecting scopes are used to identify macroinvertebrates. A handout is then used to calculate EPT (pages 9 and 12). This new methodology provides valuable biological information about water quality that can be compared to student-performed chemical water quality tests. Macroinvertebrate collection is also used as a tool to introduce concepts like using percent EPT as a water quality index. Student-generated datasets are compared, sparking a discussion about the short and long-term effects of a storm event.

As an alternative to the field-based Stormwater Study Trip, BEMP offers a curriculum extension that brings hands-on macroinvertebrate and water chemistry exercises to the classroom (page 17). A thorough revamp of the water chemistry lab offered in previous years, this extension uses BEMP's macroinvertebrate tank to bring live aquatic organisms to the classroom. After

magnifying lenses and dissecting scopes are used in conjunction with field guides to identify macroinvertebrates, students explore how these organisms can be used as bioindicators of water quality. Students then chemically determine the water quality of a local sample and hypothesize whether or not the organisms they observed came from the sampled system.

3. Elementary school outreach: *Continued delivery and coordination of Stormwater Science experiences for elementary school students* **(277 students)**

Although the BEMP Stormwater Science program primarily targets middle and high school students, BEMP also reaches hundreds of elementary school students through outreach events. BEMP participated in the 2018 Children's Water Festival at the Santa Ana Star Center (277 students and 23 teachers) where BEMP educators used macroinvertebrates to teach fourth grade students about their watershed, how humans impact the health of this system, how aquatic organisms are affected by pollution, and what everyone can do to improve the health of the Middle Rio Grande.

4. Monthly Monitoring: *Continued development and delivery of Stormwater Science outreach during Monthly Monitoring*

BEMP's Monthly Monitoring data collection is often able to include a discussion with students about the bosque's health and how it is intrinsically tied to Rio Grande hydrology and water quality. The impacts of storm events can be related to different type of pollutants students find and identify in the bosque and BEMP educators then engage students in a conversation about what they can do to help minimize these impacts. For example, students from Cien Aguas International School collect litter during and/or after data collection nearly every time they are at a BEMP site. Monthly Monitoring is often a space where educational concepts are introduced based upon what students encounter in the bosque or what they are currently studying in class. Because of this, Stormwater Science is only taught intermittently during Monthly Monitoring and has not yet been granularly tracked.

5. Summer programming: *Preparation and delivery of Stormwater Science presentations during summer programming* **(20 students)**

During June and July each year, BEMP partners with Horizons Albuquerque, a tuition-free academic enrichment program that intends to fill the summer learning gap that students from low-income families often encounter. This year, 20 middle school students learned about different methods scientists use to collect environmental data through hands-on, place-based experiences. Students collected water samples, analyzed water chemistry, and discovered how their results provide insight into the overall health of their local ecosystems.

6. Stormwater Science curriculum development: *Continued development of Stormwater Science curriculum*

Much of the 2018-19 school year was spent thoroughly updating the Stormwater Science curriculum, making it more hands-on, engaging, and appropriate for a wider range of students. While some Stormwater Science activities are already closely aligned with Next Generation

Science Standard principles, part of the 2019-20 school year will be spent applying specific standards to this program and making changes to the curriculum as needed. While this year's overall outreach numbers are lower than last year's, it is important to note that festivals and outreach events are no longer considered classroom outreach, but are reflected in the outreach total. The intensive Stormwater Science curriculum work completed this year is now ready to be rolled out to a broader audience in 2019-20 and beyond.

7. BEMP educational outreach events: *Funding covers partial costs for classrooms to participate in Otter Day and BEMP Student Congress* **(492 students)**

Hundreds of students took part in Stormwater Science-related activities at two BEMP events this year: two days of BEMP Student Congress (220 students and 31 adults), where BEMP students shared their research and experiences in the bosque, including watershed health observations; and BEMP's two Otter Days festivals(262 students and 45 adults), where first graders, hosted by high school students, are taught how they are individually responsible for keeping the Rio Grande and its watershed free of pollutants for the benefit of both wildlife and humans.

8. Additional BEMP educational outreach and events: *Funding covers partial costs for classrooms to participate in Luquillo-Sevilleta Virtual Symposium and Crawford Symposium* **(535 students)**

BEMP organizes and delivers two annual educational events where stormwater science concepts are presented in various forms: The Luquillo-Sevilleta Virtual Symposium (LSVS) and the BEMP Crawford Symposium. BEMP's Luquillo-Sevilleta Virtual Symposium (16 students and 13 adults) brings together students involved with the Luquillo Long Term Ecological Research Site in Puerto Rico and students from Albuquerque to share their watershed research with each other via Skype in Spanish. The BEMP Crawford Symposium (54 students and 250 adults) is an annual conference honoring BEMP's co-founder Dr. Clifford Crawford which celebrates community science along the Middle Rio Grande and showcases environmental research by both students and professionals (page 19).

As part of our outreach, BEMP also participates in events where we bring a variety of materials and activities directly related to BEMP's curriculum and data collection. Students and community members learn about different important aspects of the bosque ecosystem, including how it is impacted by storm events. These events now allow participants to observe and identify live freshwater macroinvertebrates, and learn how these organisms can be used as Rio Grande bioindicators. This year we participated in two major tabling events: Sandia High School Earth Day Festival (400 students and 30 adults) and Albuquerque Sign and Language Academy (ASLA) Fishing Day at Sandia Lakes (65 students and 45 adults).

APPENDICES

APPENDIX A: CLASSROOM HANDOUTS

English Classroom Handout – Middle School

BEMP
Bosque Ecosystem Monitoring Program
www.bemp.org 2018

Hydrologist: _____ Date: _____

Stormwater Science

What 2 sources can New Mexicans get their drinking water from?

1. _____
2. _____

Where does water go after we use it?

_____

A ***watershed*** is an area of land where all of the water that falls on it, or that is under it, drains to the lowest point.

Draw a line from the word to its definition

Turbidity	♦ A stream or arroyo that brings water to the main channel of the river
Nonpoint source pollution	♦ Types of nutrients found in fertilizers that can lead to excess algae growth
E.coli	♦ A single location where pollution is being leaked into the environment
Point source pollution	♦ A type of *bacteria* found in warm blooded animal's intestines that can make people sick
Nitrates and phosphates	♦ Tiny 'water bugs' whose species are an indication of water quality
Tributary	♦ *Any* type of pollution that comes from *many different* sources
Macro-invertebrates	♦ A measure of water clarity based on the amount of suspended solids

Page 1

Is the river healthier before or after an storm event?

Before: Amount + High / Medium / Low

After: Amount + ↑ / ↓ / = ✓ ✗

	Up-stream Ecofriendly Town		Cattle Ranch		Agricultural Field		Urban city		Down-stream Ecofriendly Town	
	Before	After	Before	After	Before	After	Before	After	Before	After
Oxygen										
Nutrients (Nitrates and phosphates)										
Turbidity										
Macroinvertebrates (healthy – unhealthy)										
Fish biodiversity (green – red – blue – yellow)										
Pesticides, Herbicides and Fungicides										
Trash										
Oil and gasoline										
Chemicals and medicine										
Escherichia coli										

Water quality AFTER an storm event:

Which community has the most polluted water AFTER an storm event? _____

How can YOU help to keep the watershed clean?

1. _____
2. _____
3. _____
4. _____

Page 2

English Classroom Handout – High School

BEMP

Name: _____ Date: _____

Stormwater Science

What is a **watershed**?

1. River composition during a storm event: A hypothetical watershed example

(Natural and anthropogenic inputs)

Which community has the most polluted water AFTER a storm event? _____ *Why?* _____

2. Data Analysis: A real example of a storm event in a city

Parameters analyzed:

- Temperature:
- Conductivity:
- Dissolved Oxygen (DO):
- Turbidity:
- Dissolved Organic Matter (DOM):

Example

Parameter: Conductivity

Prediction: *Water conductivity will drop right after an storm event due to the new input of rain water with no salts.*

Justification:

Your data

Parameter:

Group prediction:

Justification:

- Was your prediction supported based on your data analysis? Explain why or why not.

Page 1

Data Analysis: General discussion

1. In which order did the parameters react to the storm event?
2. In which season did this storm event occur?
3. Do you think these storm event peaks would be higher or lower in a different season? Why?
4. Would you expect the same parameter behavior in a non-urban area? Why?
5. Does the overall water quality after a storm event increase or decrease?

Take-home vocabulary

Match the following words with their descriptions: **Conductivity**; **Turbidity**; **Nonpoint source pollution**; ***Escherichia coli***; **Point source pollution**; **Dissolved Organic Matter**; **Temperature**; **Dissolved Oxygen** and **Tributary**.

- Drinking contaminated water with _____ may cause diarrhea.
- _____ is directly related to the concentrations of ions in the water which an oil spill can decrease.
- Acid water from acid rain is an example of _____.
- Rio Grande water often appears murky because of high _____.
- High water _____ can increase the solubility and thus the toxicity of certain compounds.
- _____ is the mixture of living and dead materials at various stages of decomposition.
- Chemical drainage into a stream from a nearby factory is an example of _____
- A lack of _____ in the river water can cause fish die-off's.
- The Chama river is a _____ of the Rio Grande.

3. How can YOU help improve the health of the river after an storm event?

1. _____
2. _____
3. _____
4. _____

Page 2

Spanish Classroom Handout – Middle School

Hidrólogo/a: _____ Fecha: _____

Ciencia detras una tormenta

Cuales son las dos fuentes de agua de donde los Nuevo Mexicanos sacan el agua para beber?

1. _____
2. _____

A donde va el agua despues de usarla?

_____

Una *cuenca hidrografica* es el territorio drenado por un unico rio, delimitado por montanas.

Conecta las palabras con su definicion

Turbidez	Corriente de agua que desemboca en un río mayor o directamente al mar.
Contaminacion difusa	Tipologia de nutrientes que se encuentran en los fertilizantes y que pueden causar crecimiento algal excesivo.
E.coli	Contaminacion de un solo origen.
Contaminacion focal	Tipologia de bacteria que se encuentra en el aparato digestivo de animales de sangre caliente. Cuando se ingiere, puede causar/traer enfermedad.
Nitratos y fosfatos	Pequenos insectos aquaticos que pueden ser usados como indicadores de la calidad del agua.
Tributario o afluente	Contaminacion de origen diverso.
Macro-invertebrados	Medida del grado de transparencia del agua que depende de la cantidad de particulas en suspension.

Page 1

En que momento el agua del rio es más saludable, antes o después de una tormenta?

Antes: Cantidad + Alta / Media / Baja

Después: Cantidad + ↑ / ↓ / = ✓ ✗

	Comunidad Ecológica rio arriba		Hacienda de ganado		Campo agrícola		Ciudad		Comunidad Ecológica rio abajo	
	Antes	Después	Antes	Después	Antes	Después	Antes	Después	Antes	Después
Oxígeno										
Nutrientes (Nitratos y fosfatos)										
Turbidez										
Macro invertebrados (saludables – no saludables)										
Biodiversidad peces (verde – rojo – azul – amarillo)										
Pesticidas, Herbicidas y Fungicidas										
Basura										
Aceite y gasolina										
Productos químicos y medicina										
Escherichia coli										

Calidad del agua <u>después</u> de una tormenta:

Cual de las comunidades sufre los mayores niveles de contaminación después de una tormenta? _____

Cómo <u>TU</u> puedes ayudar a mantener la cuenca limpia?

1. _____
2. _____
3. _____
4. _____

Page 2

Spanish Classroom Handout – High School

BEMP

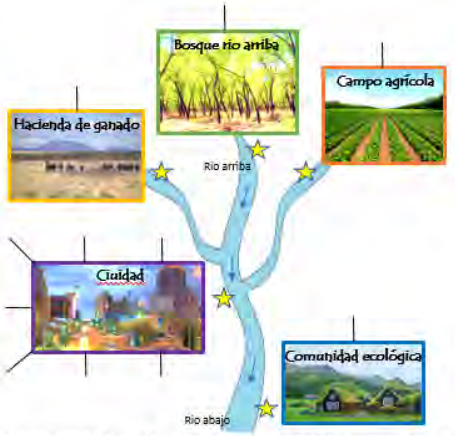
Nombre: _____ Fecha: _____

Ciencia detrás una tormenta

Qué es una **cuenca hidrográfica**?

1. Composición del rio durante una tormenta: Un ejemplo hipotético de una cuenca hidrográfica

(Elementos naturales y antropogénicos)



Cual de las comunidades sufre los mayores niveles de contaminación después de una tormenta? _____ *Por qué?* _____

2. Análisis de datos: Un ejemplo real de una tormenta en la ciudad

Parámetros analizados:

- Temperatura:
- Conductividad:
- Oxigeno Disuelto (OD):
- Turbidez:
- Materia Orgánica Disuelta (MOD):

Ejemplo:

Parámetro: Conductividad

Predicción: *La conductividad del agua disminuirá justo después de la tormenta debido a la incorporación de agua de lluvia (sin sales).*

Justificación:

Tus datos

Parámetro:

Predicción en grupo:

Justificación:

- Aceptas tu predicción según el análisis de datos? Explica por qué o por qué no.

Page 1

Análisis de datos: Discusión general

1. En qué orden respondieron los parámetros analizados durante la tormenta?
2. En qué estación del año ocurrió la tormenta?
3. Crees que el patrón de la grafica (puntos máximos y mínimos) seria el mismo en otra estación del año? Por qué?
4. Crees que los parámetros se comportarán de la misma manera en una área no urbanizada? Por qué?
5. Crees que la calidad del agua en general mejora o empeora después de una tormenta?

Vocabulario para llevarte a casa

Empareja las siguientes palabras con sus definiciones: **Conductividad**, **Turbidez**, **Contaminación focal**, ***Escherichia coli***, **Contaminación difusa**, **Materia Orgánica Disuelta**, **Temperatura**, **Oxigeno Disuelto** y **Tributario**.

- Beber agua contaminada con _____ puede causar diarrea.
- La _____ esta directamente relacionada con las concentraciones de iones en el agua. Un derrame de petróleo puede provocar el incremento de este parámetro.
- El agua acida procedente de la lluvia acida es un ejemplo de _____.
- El agua del Rio Grande es marrón porque la _____ es elevada .
- Un incremento en la _____ del agua del rio puede incrementar la solubilidad y por lo tanto la toxicidad de ciertos compuestos.
- _____ es la mezcla de materiales (vivos y muertos) en diversos estados de descomposición.
- Cuando una fabrica drena productos químicos al rio se le llama _____
- La ausencia de _____ en el agua puede causar la muerte masiva de peces en el rio.
- El rio Chama es un _____ del Rio Grande.

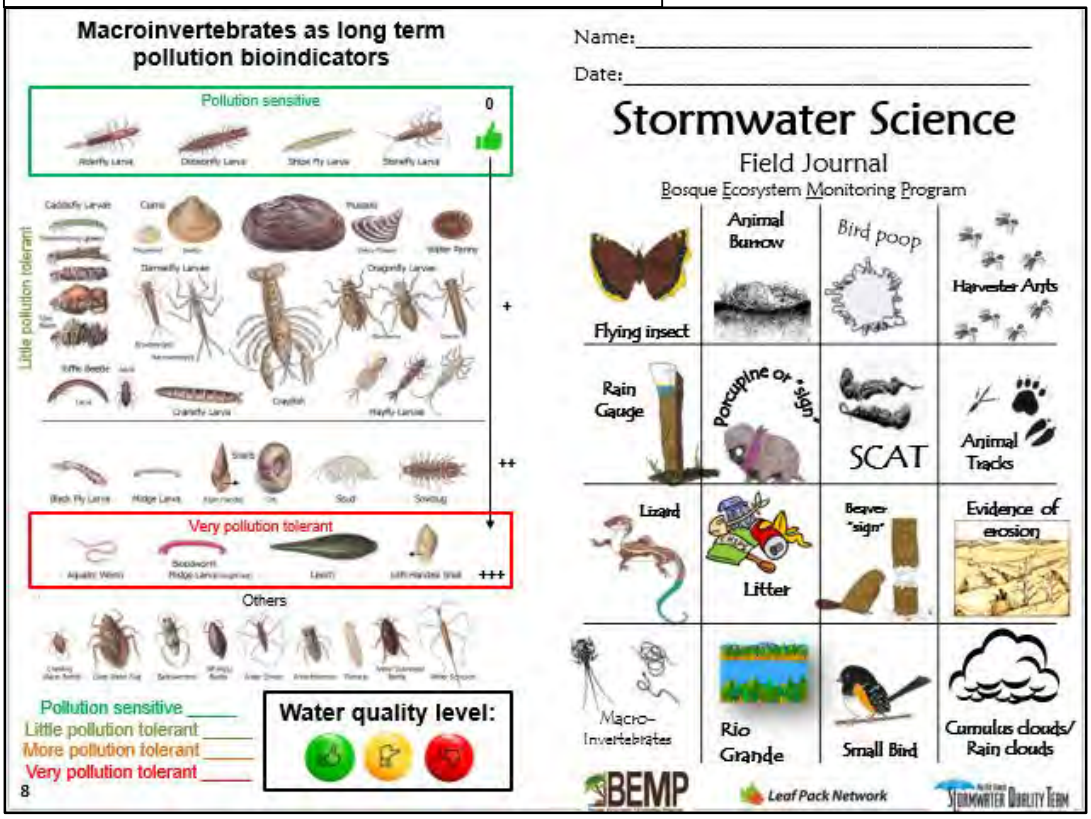
3. Cómo TU puedes ayudar a mantener la cuenca limpia?

1. _____
2. _____
3. _____
4. _____

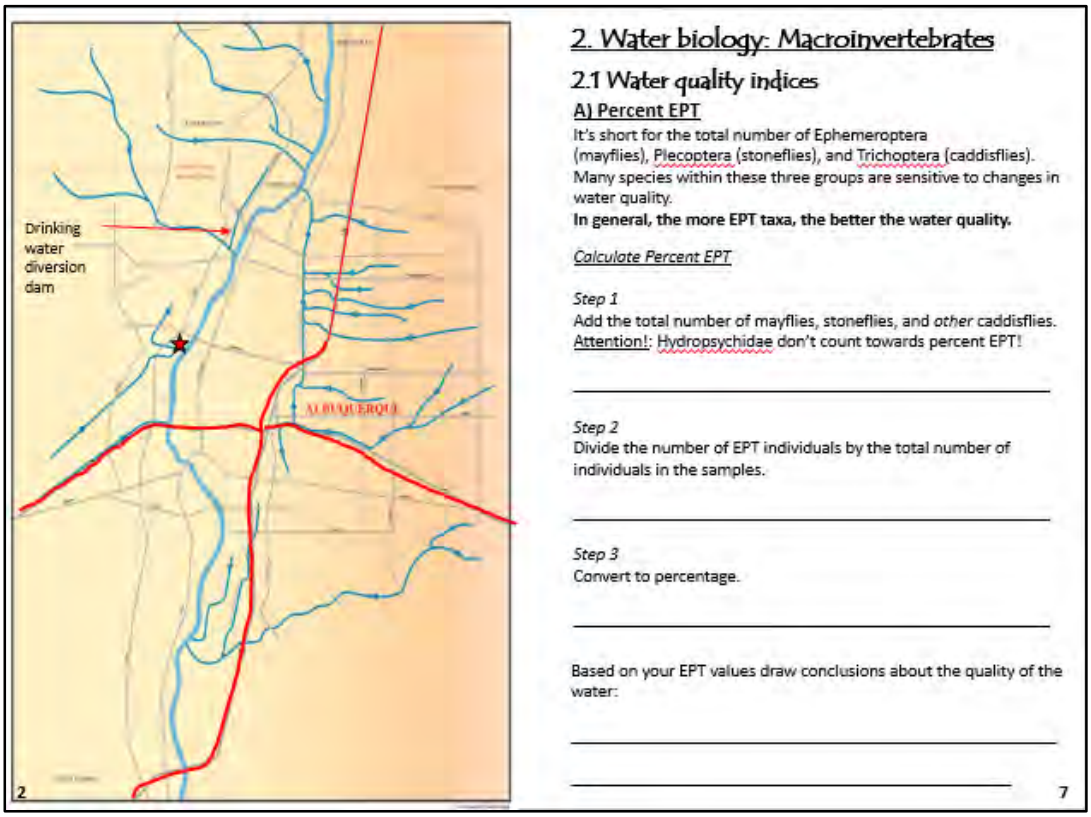
Page 2

APPENDIX B: STUDY TRIP HANDOUTS

Field Journal for study trips – Middle School



Page 1&8



Page 2&7

Field Journal for outdoor study trips (cont.) - MS

Weather Report

1. Time: _____ am or pm
2. Today's Weather: 
3. Cloud Cover: _____ %
4. Wind: Speed: _____ Direction: 

km/h OR mph
5. Humidity: _____ %
6. Temp: It feels like: _____ °F It actually is.... _____ °F

Reflection/Conclusions

1. How do you think the weather can effect the water chemistry results of the river that we got today?

2. If the overall river health is fair or poor, who do you think is responsible? Do you think is a point source pollution or a non-point source pollution scenario?

6

Litter Survey

The San Antonio Arroyo collects runoff from all over the west side of Albuquerque, anything on the streets can end up in the arroyo. Tally the litter you find throughout the day here. Also, think who might be responsible for this. Is it a point source pollution or a non-point source pollution?

Litter type	Arroyo	Bosque
Plastic		
Paper		
Glass		
Metal		
Cigarette butts		
Dog poop		
Animal scat		
Evidence of chemicals		
Other trash		

Reminder:

- Point source pollution - comes from a specific place
- Non-point source pollution - comes from many places and people

3

Page 6&3

How long will it take?

Every piece of trash has a face… where and WHO did it come from? It takes just a moment for an item to be carelessly discarded where it can be washed into a river or blown in by wind, but it can take many, many years for it to completely decompose. Test your knowledge about decomposition times below by drawing a line from the item to its decomposition time.

Banana peel	1–2 million years
Cigarette butt	600 years
Fishing line	450 years
Styrofoam cup	20–1000 years
Milk carton	200–500 years
Plastic bottle	+1 million years
Aluminum can	1.5–10 years
Glass bottle	5 years
Plastic bag	3–4 weeks

Which of these things can be reused or recycled?

_____

_____

_____

4

1. Water Chemistry

	Arroyo	River
Temperature	°F / °C	°F / °C
Turbidity	JTU	JTU
Nitrate	ppm	ppm
Phosphate	ppm	ppm
pH		
Dissolved oxygen	ppm %	ppm %
E. coli	Present / Absent	Present / Absent

Temperature
6-12 °C- good
13-15 °C- fair
>15 °C- poor

Turbidity
Sources: erosion, fire
1-99 JTU- good
4–100 JTU- fair
>100 JTU- poor

Nitrates
Sources: plants, soil, fertilizer
1-4 ppm- good
5- 20 ppm- fair
>20 ppm- poor

Phosphates
Sources: plants, fertilizer, plastic
1 ppm- good
2 ppm- fair
4ppm- poor

pH
1-strong acid- poor
6-weak acid- fair
7-neutral- good
8-weak base-fair
14-strong base-poor

Dissolved Oxygen
1 ppm or 60-100% -good
4 ppm or 40-60%- fair
8 ppm or 0-40%- poor

E. coli
Sources: animal waste
E.coli will always be present in small amounts. Large amounts are harmful to humans and animals

Overall river health: (circle one)

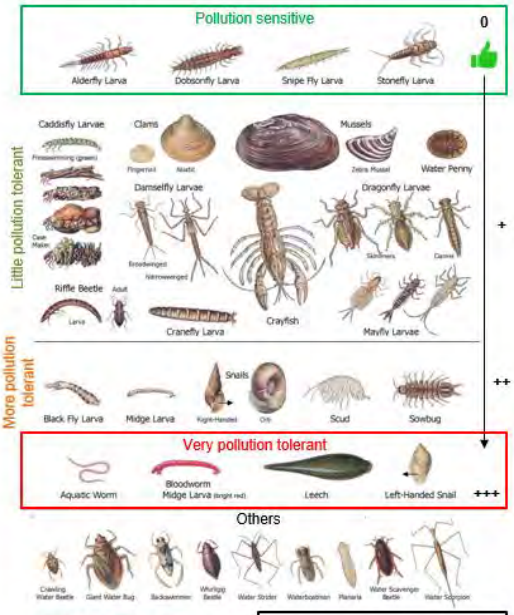
Good Fair Poor

5

Page 4&5

Field Journal for study trips – High School

Macroinvertebrates as long term pollution bioindicators



Pollution sensitive _____
Little pollution tolerant _____
More pollution tolerant _____
Very pollution tolerant _____

Water quality level:

8

Name:_____

Date:_____

Stormwater Science

Field Journal

Bosque Ecosystem Monitoring Program

BEMP Leaf Pack Network Stormwater Quality Team

Page 1&8

1. Water Chemistry

	Arroyo	River
Temperature	°F / °C	°F / °C
Turbidity	JTU	JTU
Nitrate	ppm	ppm
Phosphate	ppm	ppm
pH		
Dissolved oxygen	ppm %	ppm %
E. coli	Present / Absent	Present / Absent

Temperature
8-12 °C- good
13-15 °C- fair
>15 °C- poor

Turbidity
Sources: erosion, fire
1-39 JTU- good
4--100 JTU- fair
>100 JTU- poor

Nitrates
Sources: plants, soil, fertilizer
1-4 ppm- good
5- 20 ppm- fair
>20 ppm- poor

Phosphates
Sources: plants, fertilizer, plastic
1 ppm- good
2 ppm- fair
4ppm- poor

pH
1-strong acid- poor
6-weak acid- fair
7-neutral- good
8-weak base-fair
14-strong base-poor

Dissolved Oxygen
1 ppm or 60-100% -good
4 ppm or 40-60%- fair
8 ppm or 0-40%- poor

E. coli
Sources: animal waste
E.coli will always be present in small amounts. Large amounts are harmful to humans and animals

River health: (circle one)

Good Fair Poor

2

Biotic Index	Water Quality	Degree of Organic Pollution
<3.75	Excellent	Organic pollution unlikely
3.75-5.0	Good	Some organic pollution
5.1-6.5	Fair	Substantial pollution likely
6.6-10.0	Poor	Severe pollution likely

Overall Conclusions

1. Why is important to compare the water chemistry of the river to the macroinvertebrate data?
2. Does these two measurements show the same overall results?
3. Are the water chemistry results for the arroyo different form the river? Why?
4. Are the macroinvertebrate indices different between the pond and the river? Why?

7

Page 2&7

B) Biotic Index

Biotic Index is a comparison of the abundance of taxa and their tolerance to environmental stress. This widely used index can indicate organic and nutrient pollution. Organisms are assigned tolerance values which range from 0 to 10, depending on the organism's sensitivity to changes in water quality and habitat (tolerance values increase as water quality decreases).

In contrast to the percent EPT index, the lower the biotic index, the better the water quality.

Calculate Biotic Index

Step 1
To calculate the Total Tolerance Value (D), multiply each taxa (B) by the Pollution Tolerance Value (C) and record in column D.

Step 2
Add all Total Tolerance Value values (D): _____

Step 3
Add all Average # from all packs (B): _____
This is the *total number of individuals*.

Step 4
Divide all Total Tolerance Value (step 2) by total number of Individuals (step 3).

_____

Step 5
Look up the Biotic Index Value in the table to know the degree of organic pollution:

_____

6

Weather Report

1. Time: _____ am or pm
2. Today's Weather:
3. Cloud Cover: _____ %
4. Wind: Speed: _____ Direction: km/h OR mph
5. Humidity: _____ %
6. Temp: It feels like: _____°F It actually is.... _____°F

Reflection/Conclusions

1. How do you think the weather can effect the water chemistry results of the river that we got today?

2. If the overall river health is fair or poor, who do you think is responsible? Do you think is a point source pollution or a non-point source pollution scenario?

3

Page 6&3

2. Water biology: Macroinvertebrates (Pond or River)

Taxa	A *Total # in your pack*	B *Average # from all packs*	C *Pollution Tolerance Value*	D *Total Tolerance Value*
EPHEMEROPTERA (Mayflies)			3.6	
PLECOPTERA (Stoneflies)			1	
TRICHOPTERA (Caddisflies)				
Hydropsychidae (Common Netspinners)			3	
Other Caddisflies			2.9	
ANISOPTERA (Dragonflies)			6	
ZYGOPTERA (Damselflies)			7	
MEGALOPTERA				
Corydalidae (Hellgrammites)			0	
Sialidae (Alderflies)			4	
COLEOPTERA (Beetles)			4.6	
DIPTERA (True Flies)				
Athericidae (Watersnipe flies)			2	
Chironomidae (Midges)			6	
Simuliidae (Black flies)			6	
Tipulidae (Crane flies)			3	
Other Diptera			6	
AMPHIPODA (Scud)			6	
ISOPODA (Aquatic sowbugs)			8	
DECAPODA (Crayfish)			6	
OLIGOCHAETA (Aquatic Worms)			8	
HIRUDINEA (Leeches)			8	
TURBELLARIA (Planarians)			8	
GASTROPODA (Snails)			7	
SPHAERIIDAE (Fingernail Clams)			8	

4

2.1 Water quality indices

A) Percent EPT

It's short for the total number of Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies). Many species within these three groups are sensitive to changes in water quality.

In general, the more EPT taxa, the better the water quality.

Calculate Percent EPT

Step 1
Add the total number of mayflies, stoneflies, and *other* caddisflies.
Attention!: Hydropsychidae don't count towards percent EPT!

_____

Step 2
Divide the number of EPT individuals by the total number of individuals in the samples.

_____

Step 3
Convert to percentage.

_____

Based on your EPT values draw conclusions about the quality of the water:

_____

_____

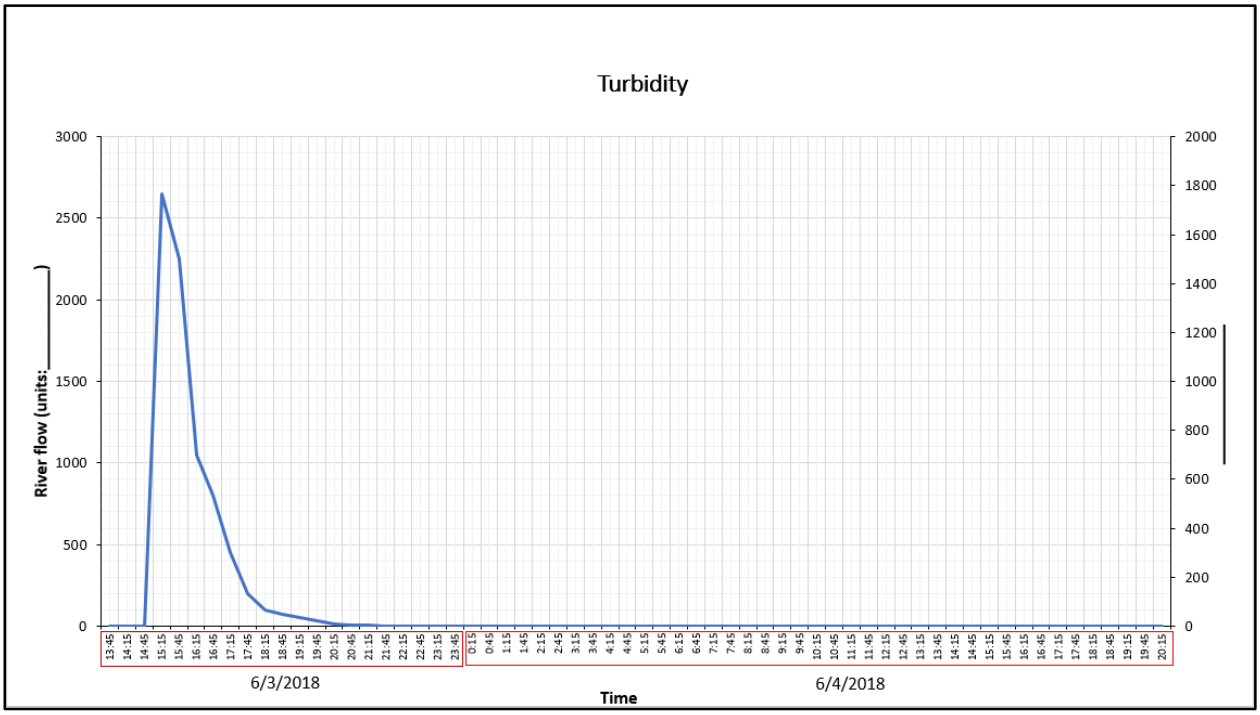
5

Page 4&5

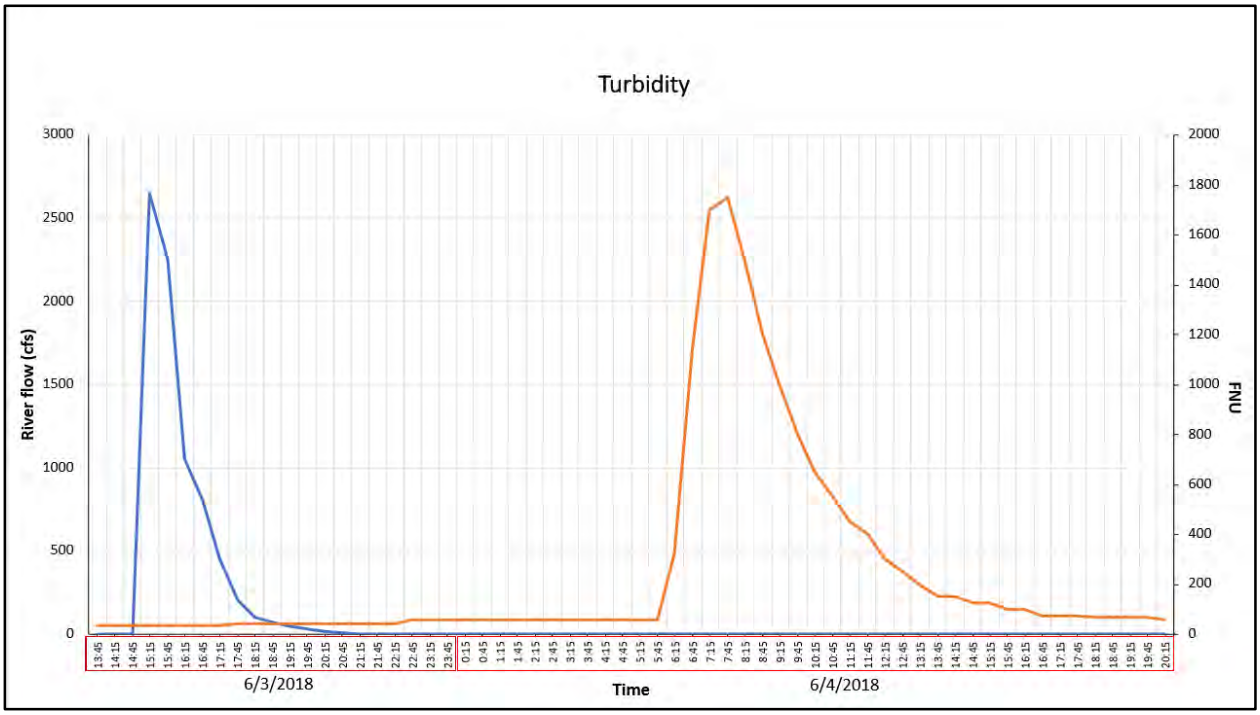
APPENDIX C: CURRICULUM EXTENSIONS

Curriculum extension 1 – HS graphing

Handout



Result expected

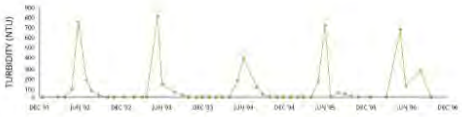


Curriculum Extension 1 – HS graphing (cont.)

Handout Information

What is Turbidity?

- Turbidity is an optical determination of water clarity based on the amount of light scattered by particles in the water column.
- Suspended particles can come from soil erosion, runoff, discharges, stirred bottom sediments or algal blooms.
- Some streams have naturally high levels of suspended solids (parts of the Rio Grande).
- High levels of total suspended solids will increase water temperatures and decrease dissolved oxygen (DO) levels.
- Turbidity can also inhibit photosynthesis by blocking sunlight
- The higher the turbidity levels, the less light that can reach the lower levels of water.
- Weather, water flow or contamination are some of the factors that can affect turbidity levels.



Turbidity will often spike annually due to spring rains and snow melt.

FONDRIEST

Table

Date	Time	Precipitation (mm)	River flow (cfs)	Turbidity (FNU)
6/3/18	13:45	0	0	35
6/3/18	14:15	1.6	1	35
6/3/18	14:45	0.1	1	35
6/3/18	15:15	0	2650	35
6/3/18	15:45	0	2250	35
6/3/18	16:15	0	1050	35
6/3/18	16:45	0	800	35
6/3/18	17:15	0	450	35
6/3/18	17:45	0	200	45
6/3/18	18:15	0	100	45
6/3/18	18:45	0	70	45
6/3/18	19:15	0	50	45
6/3/18	19:45	0	30	45
6/3/18	20:15	0	15	45
6/3/18	20:45	0	7	45
6/3/18	21:15	0	3	45
6/3/18	21:45	0	1	45
6/3/18	22:15	0	1	45
6/3/18	22:45	0	1	60
6/3/18	23:15	0	1	60
6/3/18	23:45	0	1	60
6/4/18	0:15	0	1	60
6/4/18	0:45	0	1	60
6/4/18	1:15	0	1	60
6/4/18	1:45	0	1	60
6/4/18	2:15	0	1	60
6/4/18	2:45	0	1	60
6/4/18	3:15	0	1	60
6/4/18	3:45	0	1	60
6/4/18	4:15	0	1	60
6/4/18	4:45	0	1	60
6/4/18	5:15	0	1	60
6/4/18	5:45	0	1	60
6/4/18	6:15	0	1	325
6/4/18	6:45	0	1	1150
6/4/18	7:15	0	1	1700
6/4/18	7:45	0	1	1750

Curriculum Extension 2 – HS Soil Porosity and Permeability Experiment

Cary Institute of Ecosystem Studies

BEMP

Name _____ Date _____

Stormwater Science: Soil Porosity and Permeability Experiment

Background: Layers of rock, sand or gravel that are good ground water reservoirs are called aquifers, from the Latin words for "water" and "to bring". This water reservoirs are key to transfer nutrients from the soil to growing plants. The properties that make a good aquifer are those that increase the storage of water (porosity) and increase the flow of water (permeability) within that layer. ***Porosity*** is the proportion of empty space in a substrate. ***Permeability*** is a measure of the ease with which liquids and gases can pass through a substrate. Some soil types let water flow in quickly (infiltrate), others may let the water completely through at a fast paste and some others may keep the water from getting in at all. None of these soil types is better than the other. Today you will complete an investigation to determine which soil substrate holds the most water.

Hypothesis:

_____

_____

Materials:

- Funnel
- Substrates: (1) sand, (2) soil, (3) gravel and (4) clay
- Plastic wrap
- Water
- Plastic cups - optional
- Beakers
- Graduated cylinder
- Coffee filter
- Stopwatch
- Dropper

Procedure:

1. Make observations about the substrates you will test. Write down your observations
2. Get a funnel, and place the coffee filter inside the funnel.
3. Measure 200 mL of the first substrate you will test into the funnel.
4. Place the funnel over a beaker. One person should hold the funnel and block the tip with a finger.
5. Measure out 100 mL of water with the graduated cylinder and record the amount in the table (A).
6. Pour the water SLOWLY into the funnel, making sure not to let the water overflow the funnel. Allow the water to soak in all the way. Use the dropper to remove any excess water on top of the gravel. Be sure to put any water removed from the cup back into the graduated cylinder.
7. Record how many ml of water are now in the graduated cylinder, then discard.
8. Complete the table to determine how many ml of water you poured into the cup.
9. SLOWLY remove your finger from the tip of the funnel.
10. Time for 1 minute as the water drips from the funnel into the beaker.
11. Record the final volume of water in the beaker in the table.
12. Empty the sediment in the funnel into the appropriate container.
13. Repeat the above steps for all substrates.
14. Complete the trial again with only the coffee filter. This is your control.
15. Finally, cover the last substrate you tested (clay) with plastic wrap. Do not pull it tight, but lay it on top of the soil sample inside of the funnel. Pour the same amount of water onto the sample, and wait five minutes to see what will happen.
16. Write down all of your results and compare with your classmates.

Substrate	A. Water beginning (ml)	B. Water end (ml)	C. Water used (A-B) **Porosity**	D. Water cylinder	E. Water dripped **Permeability**
Sand					
Soil					
Gravel					
Clay					
Control					

Results:

_____
_____
_____
_____

Discussion:

1. What happens to the porosity when the particle size gets smaller?

2. Through which material did the water move the fastest? The slowest? Why?

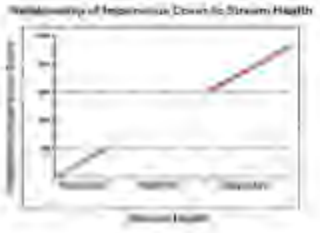
3. Why is the permeability of the substrates different?

4. What happen to the permeability of the plastic wrap?

5. What type of surface does plastic wrap mimic in real life?

6. Which substrate would cause the least flooding for a community? Why?

7. What does this graph tell you about the relationship between permeability and stream health? How does this graph relate to the activity you just completed?



Curriculum Extension 3 – MS & HS

BEMP
Rompe Ecosystem Monitoring Program

Hydrologist: _____ Date: _____

Stormwater Science

What 2 sources can New Mexicans get their drinking water from?

1. _____

2. _____

Where does water go after we use it?

_____

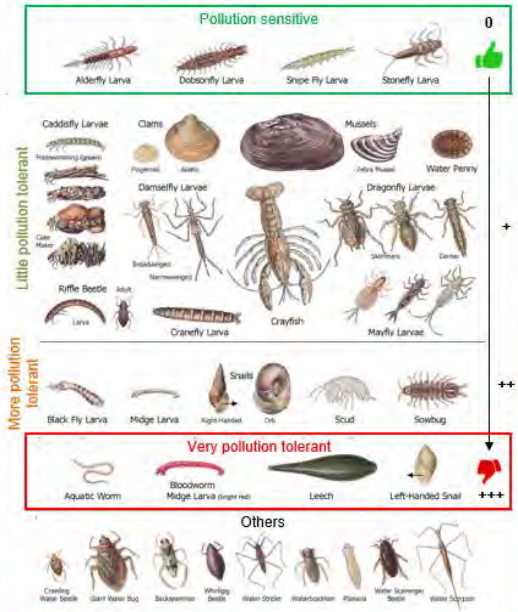
A ***watershed*** is an area of land where all of the water that falls on it, or that is under it, drains to the lowest point.

Draw a line from the word to its definition

Turbidity	♦ A stream or arroyo that brings water to the main channel of the river
Nonpoint source pollution	♦ Types of nutrients found in fertilizers that can lead to excess algae growth
E.coli	♦ A single location where pollution is being leaked into the environment
Point source pollution	♦ A type of *bacteria* found in warm blooded animal's intestines that can make people sick
Nitrates and phosphates	♦ Tiny 'water bugs' whose species are an indication of water quality
Tributary	♦ *Any* type of pollution that comes from *many different* sources
Macro-invertebrates	♦ A measure of water clarity based on the amount of suspended solids

Page 1

1. *Water Biology:* Macroinvertebrates as long term pollution bioindicators



Pollution sensitive _____
Little pollution tolerant _____
More pollution tolerant _____
Very pollution tolerant _____

Water quality level:

2. *Water Chemistry:* Dissolved materials as short term pollution indicators

Water origin:	_____
Turbidity	JTU
Nitrate	ppm
Phosphate	ppm
pH	
Dissolved oxygen	ppm %
E. coli	Present / Absent

Water quality level:

Turbidity
Sources: erosion, fire
1-39 JTU- good
4--100 JTU- fair
>100 JTU- poor

pH
1-strong acid- poor
6-weak acid- fair
7-neutral- good
8-weak base-fair
14-strong base-poor

Nitrates
Sources: plants, soil, fertilizer
1-4 ppm- good
5- 20 ppm- fair
0 ppm- poor

Dissolved Oxygen
1 ppm or 60-100% -good
4 ppm or 40-60%- fair
8 ppm or 0-40%- poor

Phosphates
Sources: plants, fertilizer, plastic
1 ppm- good
2 ppm- fair
4ppm- poor

E. coli
Sources: animal waste
E.coli will always be present in small amounts. Large amounts are harmful to humans and animals

How can YOU help to keep the watershed clean?

1. _____
2. _____
3. _____
4. _____

Page 2

APPENDIX D: PHOTOS

Watershed model at Jefferson Middle School

Study Trip Water Quality analysis at the arroyo system

Study Trip with el Camino Real Academy – Water Quality analysis at the river

Study Trip macroinvertebrate lab observation

Otter Day 2019

BEMP Student Congress 2019

Luquillo-Sevilleta Virtual Symposium (LSVS)

Tabling event at Sandia High School

BASS students at Harrison Middle School observing macroinvertebrates

APPENDIX E: 2018-2019 STORMWATER SCIENCE EDUCATION OUTREACH NUMBERS

Date	School/Event name	City	Students	Adults	Grade	Activity	Presentations	School Level
11/27/18	Harrison MS	Albuquerque	2	1	6, 7, 8	BASS	1	MS
3/5/19	Harrison MS	Albuquerque	5	1	6, 7	BASS	1	MS
4/12/19	Ace Leadership HS	Albuquerque	12	1	11, 12	Classroom	1	HS
1/31/19	Albuquerque Institute for Mathematics and Science	Albuquerque	50	2	7	Classroom	2	MS
1/29/19	El Camino Real Academy	Albuquerque	24	2	6	Classroom	1	MS
12/5/18	Jefferson MS	Albuquerque	116	2	6,7,8	Classroom	6	MS
12/4/18	La Academia De Esperanza	Albuquerque	50	1	9, 10, 11	Classroom	5	HS
2/13/19	School of Dreams Academy	Los Lunas	15	1	11,12	Classroom	1	HS
3/8/19	School of Dreams Academy	Los Lunas	12	1	11,12	Classroom	1	HS
11/8/18	Taft MS	Albuquerque	14	1	6,7,8	Classroom	1	MS
9/25/18	The International School	Albuquerque	40	2	4	Classroom	2	MS
2/12/19	The International School	Albuquerque	14	1	9, 10	Classroom	2	HS
3/25/19	Volcano Vista HS	Albuquerque	168	2	11, 12	Classroom	5	HS
11/28/18	Wilson MS	Albuquerque	36	1	6,7,8	Classroom	2	MS
8/22/18	2018 EPA Region 6 Conference	Albuquerque	1	70	NA	Conference	1	NA
2/15/19	BEMP Crawford symposium	Albuquerque	54	250	all	Event	1	all
4/15/19	BEMP Otter Day	Albuquerque	130	21	K, 1	Event	1	ES
4/25/19	BEMP Otter Day	Albuquerque	142	24	1	Event	1	ES
4/24/19	BEMP Student Congress	Albuquerque	140	20	6, 7, 8	Event	1	MS
4/26/19	BEMP Student Congress	Albuquerque	80	11	6, 7, 8	Event	1	MS
4/25/19	Luquillo-Sevilleta Virutal Symposium	Albuquerque/Puerto Rico	16	13	6, 11	Event	1	MS/HS
10/22/18	Rio Rancho schools/Children's Water Festival	Rio Rancho	130	4	4	Event	6	ES
10/23/18	Rio Rancho schools/Children's Water Festival	Rio Rancho	147	19	4	Event	6	ES
9/14/18	Amy Bielh HS	Albuquerque	21	2	9	Other*	1	HS
7/1/19	Horizons Albuquerque	Albuquerque	20	5	6	Other*	1	MS
2/14/19	El Camino Real Academy	Albuquerque	20	5	6	Study trip	1	MS
11/2/18	Holy Ghost Catholic Church	Albuquerque	20	2	7	Study Trip	1	MS
4/23/19	Holy Ghost Catholic Church	Albuquerque	24	3	6	Study trip	1	MS
11/13/18	Taft MS	Albuquerque	15	1	6, 7	Study trip	1	MS
2/26/19	The International School	Albuquerque	14	1	9,10	Study Trip	1	HS
3/29/19	Volcano Vista HS	Albuquerque	20	2	10	Study trip	1	HS
4/10/19	Albuquerque Sign Language Academy	Albuquerque	65	45	4, 5, 6, 7, 8	Tabling	1	ES/MS
4/17/19	Sandia HS	Albuquerque	400	30	9, 10, 11, 12	Tabling	1	HS
TOTAL			2017	547				

*Other activities included condensed study trips (~2 hours) and classroom lessons (~30 min)

and Bernalillo Counties. This will include age-appropriate, substantive education about point and non-point source pollution that impacts the Rio Grande locally and at large. To closely align this work with BEMP's mission, students will also have the opportunity to work with real water quality data collected along the Rio Grande in Albuquerque to better understand the impacts of storm events on their local watershed. These students will have additional opportunities to learn about stormwater science concepts when participating in BEMP's Monthly Monitoring data collection. Elementary school students will primarily receive Stormwater Science education through community events, festivals, and BEMP Monthly Monitoring.

To best accommodate a variety of school models and incorporate feedback from participating classroom teachers, BEMP will offer two Stormwater Science curriculum components during the 2019-2020 school year: a classroom lesson and a Rio Grande Study Trip. Both experiences include the explicit message that students can and should act to protect the health of the Rio Grande and its watershed.

1. Classroom curriculum*: Preparation and delivery of Stormwater Science activities in the classroom for middle and high school students*

During the classroom lesson, middle school students build a watershed model with runoff cards representing pollutants relating to MS4 permit requirements and educational priorities as detailed in the matrix provided by the Storm Team. The high school classroom lesson builds upon these core concepts and includes new data analysis and data visualization components that align with NGSS principles.

2. Stormwater Study Trip: *Delivery and coordination of place-based Stormwater Science experiences*

The Study Trip is a place-based educational experience which, for middle school students, includes walking through an arroyo, surveying for litter, and testing water quality at the Rio Grande. At the high school level, the Study Trip uses a similar format with an emphasis on water quality indices and other related ecological concepts. In order to build a more holistic understanding of the Rio Grande watershed and provide students the opportunity to work with real data, student-collected water quality data gathered during these Study Trips will be shared internally with other participants. BEMP will continue to build this dataset, share student-collected data with other science organizations (ex. GLOBE – Global Learning and Observations to Benefit the Environment), and make this data available for student research projects.

Whether students only receive classroom activities or also participate in a Study Trip, Stormwater Science outreach will address all four areas of Science, Technology, Engineering and Math (STEM) education through exploring the ecological and chemical effects of water pollution, scientific technology used to test and record water chemistry data, and the engineering and design of storm drains and arroyos. During the 2018-19 school year, BEMP created lesson extensions that can be used as either homework assignments or as classwork. For the 2019-2020 school year, BEMP will to continue to align Stormwater Science activities with Next Generation Science Standards.

To implement this program, BEMP education staff will contact middle and high school teachers in Albuquerque public, charter and private schools with a focus on Title I schools. First priority will be given to public schools and then to charter, private, and home schools in Sandoval and Bernalillo Counties.

3. Elementary school outreach: *Continued delivery and coordination of Stormwater Science experiences for elementary school students*

While the Stormwater Science curriculum is primarily focused upon middle and high school students, BEMP educators will continue to attend to a variety of outreach events such as the Children's Water Festival and BEMP's Otter Days where younger students will learn about stormwater science concepts and actionable ways to help keep the Rio Grande healthy.

4. Monthly Monitoring: *Continued development and delivery of Stormwater Science presentations during Monthly Monitoring*

In addition to the core Stormwater Science curriculum, BEMP will, when possible, continue to educate all of its K-12 student and community partners about stormwater science concepts during Monthly Monitoring data collection. Students will also learn how to care for and conserve the Rio Grande and its watershed in ways that amplify key Storm Team messaging and takeaways.

Schools in Bernalillo and Sandoval Counties that participated in BEMP monthly monitoring during 2018-2019 school year and are anticipated to participate in 2019-2020:

Location	**Name**
Bernalillo	Bernalillo Middle School Santo Domingo Elementary School
Rio Rancho	Rio Rancho Cyber Academy
Albuquerque	Albuquerque Institute of Math and Science Bandelier Elementary School Bosque School Cien Aguas International School Harrison Middle School Highland High School Jefferson Middle School La Academia De Esperanza La Cueva High School Rio Grande Elementary School Rio Rancho Cyber Academy South Valley Academy The International School at Mesa del Sol Wilson Middle School Volcano Vista High School

5. Summer programming*: Preparation and delivery of Stormwater Science presentations during summer programming*

During summer months, BEMP partners with Horizons Albuquerque, a tuition-free academic enrichment program that intends to fill the summer learning gap that students from low-income families often encounter. BEMP plans on offering a program for high school students where they will learn to collect and analyze water quality-related datasets as part of their summer enrichment experience.

6. Stormwater Science curriculum development: *Continued development of Stormwater Science curriculum*

BEMP educators will continue to develop new hands'-on, engaging and age-appropriate curriculum activities for a wider range of students. Educators will continue to develop data-intensive stormwater science activities to better align with Next Generation Science Standards.

7. BEMP educational outreach events: *Funding covers partial costs for classrooms to participate in Otter Day and BEMP Student Congress*

Two of the main Stormwater Science-related field activities that BEMP organizes every year are BEMP Student Congress and Otter Day. The main goal of BEMP Student Congress is to gather middle school students from different areas in Albuquerque and help them share their research and experiences in the

bosque, including watershed health observations. BEMP's Otter Day is an event where first graders, hosted by high school students, are taught how they are individually responsible for keeping the Rio Grande and its watershed free of pollutants for the benefit of both wildlife and humans. We plan to continue offering this type of events for the next school year.

8. Additional BEMP educational outreach and events: *Funding covers partial costs for classrooms to participate in Luquillo-Sevilleta Virtual Symposium and Crawford Symposium*

BEMP also participates in other outreach events throughout the school year where stormwater science concepts are taught to a broad audience. BEMP organizes two of these events every year - the Luquillo-Sevilleta Virtual Symposium (LSVS) and the Crawford Symposium. The LSVS is an online event where students from Albuquerque and Puerto Rico share their watershed research in Spanish via Skype. BEMP's Crawford Symposium is a community science event honoring Dr. Clifford Crawford (BEMP's co-founder) where students and professionals present their Middle Rio Grande environmental research. In both of these events, BEMP teaches students why it is their responsibility to help maintain a clean river and watershed and what steps they can take to help. In the next school year, BEMP educators will continue to participate in Stormwater Science-related research projects that will be presented to the scientific community and the public at large..

All deliverables will be non-proprietary and consist of: education materials, online posting of lesson plans and associated documents, and a report summarizing the program's accomplishments, findings, documented learner outcomes, and participant numbers.

Exhibit 5
Nature Conservancy 2018-2019

The Nature Conservancy
Protecting nature. Preserving life.™

New Mexico
212 East Marcy, Suite 200
Santa Fe, New Mexico 87501

Tel (505) 988-3867 nature.org/new mexico
Fax (505) 988-4095

The Nature Conservancy in New Mexico
Urban Conservation Educational Programs
Final Report to the City of Albuquerque: June 2019

In 2019, The Nature Conservancy engaged communities throughout the Albuquerque area, including several under-resourced neighborhoods, with education/awareness programs focused on stormwater pollution that highlight nature-based solutions. Our education programs reached both adults and youth with hands-on, outdoor learning activities about stormwater impacts on the Rio Grande, how Albuquerque residents can reduce stormwater pollution, and the role of infiltration and the use of trees and other vegetation to clean our air and water. We reached approximately 625 youth and 1,225 adults directly with our water messages and additional community members through earned media from articles featured in the Albuquerque Journal and other tv and radio news outlets.

Youth Education Programs:
Throughout the year we engaged kids and young adults ranging from elementary aged children to age 24. Activities included installing rain barrels, building rain gardens, making native seed bombs, tree planting and participating in other conservation educational events. In partnership with a local elementary school we installed 750 gallons of rainwater storage at Eugene Fields Elementary to support their existing garden space and expand the gardening space to accommodate greater student participation. Additionally, we worked with a girl scout troop to install a rain garden to accompany rain barrels at a local community center. Finally, we engaged a high school class over several lectures, site visits and build day activities to install a large rain garden on campus where flooding in a central plaza was a problem turned into a resource.

For the second year in a row, we participated in the environmental day at Sandia Lakes where 138 special-needs students and their families (30 adults) built seed bombs, learned about how stormwater impacts our waterways and enjoyed catching fish. Students were primarily from Albuquerque Sign Language Academy, and special-education students from various schools throughout Albuquerque Public Schools (APS) system. Participants, both youth and adults, participated in similar hands-on activities and watershed based educational curriculum. Topics included stormwater management, water quality, watershed connections, the importance of forests and mountains as water towers, drinking water sources, impacts of drought, and ecological consequences of river management.

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We have also engaged eight Rocky Mountain Youth Corp members, ages 17-25, in activities to learn about trees and how stormwater could serve as an asset to building a more robust tree canopy in Albuquerque. Crew members assisted with taking an inventory of and assessing the health of trees in city parks and street trees to help us understand where the gaps in tree canopy are, which trees do the best in our urban setting and identifying locations where stormwater could benefit street trees. Additionally, we participated in UNM Geography Day, guest lectured at UNM transportation engineering class, the Cibola Youth Advisory Council, the City of Albuquerque's Bosque crew, a fall Garden Party at Coronado Elementary school, and Build your Refuge Day at Valle de Oro National Wildlife Refuge. These activities help us reach new audiences and engage students of all ages in stormwater management learning events.

Adult Education Programs:
Over the course of the engagement with the City of Albuquerque, we installed more than 4,000 gallons of rainwater storage at various locations including schools, community centers, community gardens and other public spaces. We also provided talks and presentations to community groups such as the Civitan Group, Kiwanis Club, South San Pedro Neighborhood Association, International District Healthy Communities Coalition, and the Los Jardines Community Garden. Additionally, we tabled at larger event such as South Valley Pride day, Environmental Justice Day and sponsored the City Nature Challenge, including hosting an event and reaching our members with partner events.

To reach a more professional audience we also presented at the UNM Paving Conference, the Land and Water Summit, and the EPA region 6 stormwater conference. Collectively participating in these community-based and professional events allowed us to reach more than 1,225 people with the message of water conservation and stormwater management approaches that will benefit the Rio Grande and help people understand what role they play in helping to keep the river clean.

Tijeras Creek is an important tributary of the Rio Grande and with its recent TMDL limits, it is an area of active restoration. The Conservancy has continued to participate in this Watershed Collaborative, which is addressing all parts of the watershed from high in the Sandias to the river. Projects such as the Cedro Restoration Project at the Cedro Creek headwaters and the Rocky Mountain Youth Corp project, funded by the Rio Grande Water Fund, which is restoring 3-4 miles of Cedro Creek, will improve conditions to reduce erosion, improve water infiltration and potentially reduce the flow of contaminants into the City's

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jurisdiction.

Finally, we have engaged with two local experts to develop a plant list of trees and shrubs that are suitable for five elevational transects crossing the city. These selected species account for drought tolerance, water requirements, temperature limits, invasiveness, wildlife habitat and other attributes that make them good selections for our arid City.

Marketing and Communications:
During the time of the Conservancy's contract with the city, we disseminated press releases and media advisories about urban conservation outreach activities. We also produced a "benefits of trees and rainwater harvesting" postcards, an urban program annual report and a conservation handout that highlights our work with the City of Albuquerque. These collateral pieces are utilized at tabling events and distributed to residents during educational activities and identify the City of Albuquerque as a funder of this work.

During the time of our contract with the City, the program received 22 mentions reaching 16.8 million online and another 231,000 via video broadcast. The coverage is valued at $32,000.

We also featured the urban conservation activities via Facebook, our Great Places E-newsletter (reaching 3,000 individuals), and via Nature.Org/Newmexico as highlighted below.

Facebook: July 2018 – June 2019

- 35 posts
- 9,288 people reached
- 9,741 impressions
- 654 people engaged

Great Places E-Newlsetter: July 2018 – June 2019

- 5 GPN stories
- 61 clickthroughs
- Average reach: 2,600 recipients

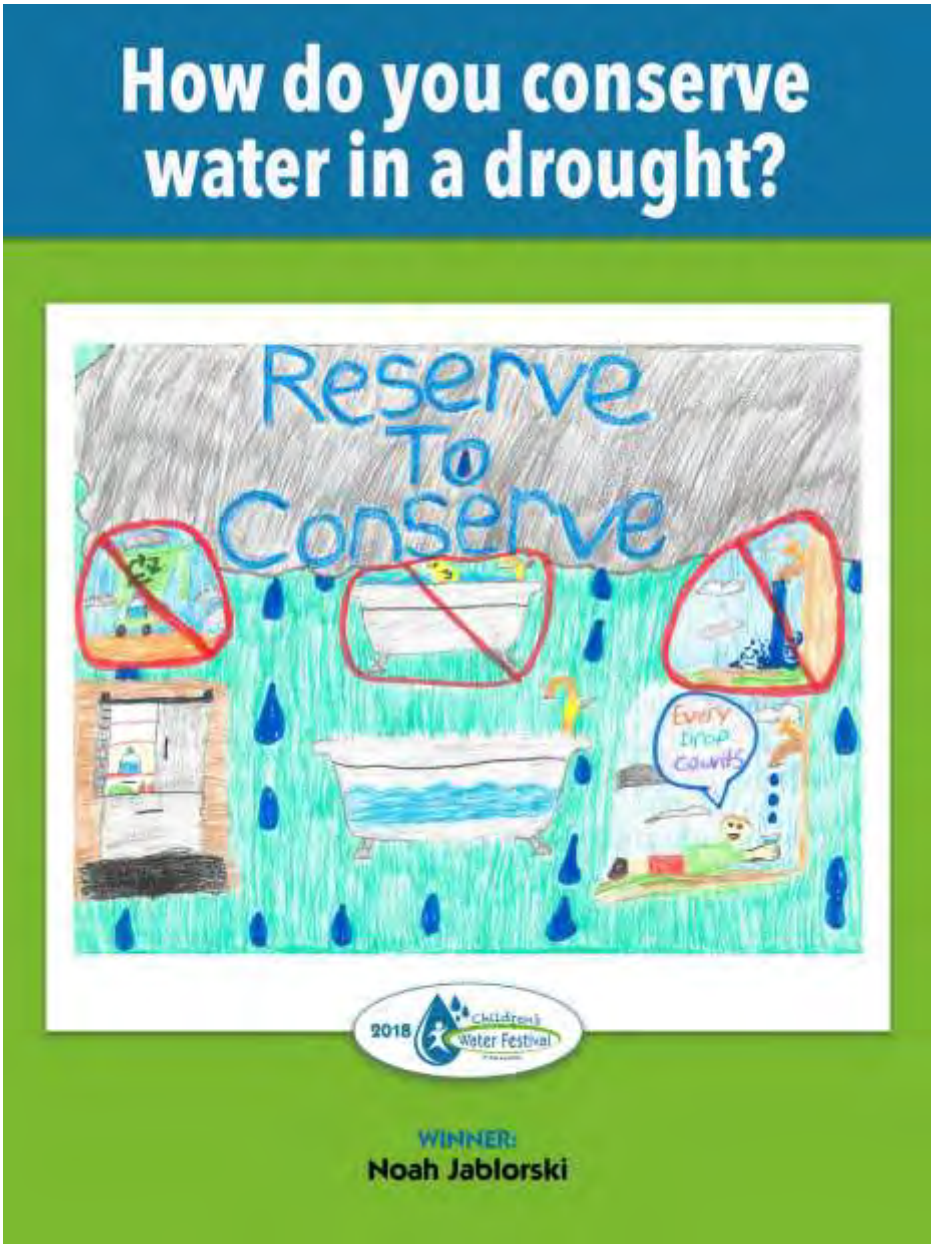
Nature.org July 2019 – June 2019

- Two web pages
    - Page 1
        - https://www.nature.org/en-us/about-us/where-we-work/united-states/new-mexico/stories-in-new-mexico/creative-conservation-in-albuquerque/
        - Views: 948
    - Page 2
        - https://www.nature.org/en-us/about-us/where-we-work/united-states/new-mexico/stories-in-new-mexico/new-mexico-nature-in-the-city/
        - Views: 245

Exhibit 6
Rio Rancho Children's Water Festival 2018-2019

Children's Water Festival

Rio Rancho, 2018



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Executive Summary

The 2018 Children's Water Festival (Festival) was held Monday, October 22nd and Tuesday, October 23rd at the Santa Ana Star Center in Rio Rancho. An estimated 1,500 fourth-grade students attended from 64 classrooms and one small group of home-schoolers; Bernalillo Elementary School, St. Thomas Aquinas, and all of the elementary schools in Rio Rancho Public Schools. The students attend three 30 minute presentations in a half-day format. Up to seventeen classes from three to four schools were on-site at one time. Schools attended a morning or afternoon program.

The seventeen presentations represented twenty-two professional organizations that ranged from federal, state, regional governments, and private industry. The organizations all have water interests and focused on subjects such as the water cycle, water quantity and conservation, water distribution, and water quality and pollution.

Students were evaluated on basic water knowledge before and after the Festival. On average, for all testing returned, **the students showed an increase in knowledge of 9 percentage points on the post testing**.

A teacher from Sandia Vista Elementary wrote, "I thought this was the best year out of the years I've attended with my class. All of our water activities were hands-on and informative."

The Festival costs an estimated $23,000. The City of Rio Rancho contributed $10,000 to the Festival and additional funding was raised through the New Mexico Water Conservation Alliance 501(c)(3). Festival sponsors include: Jacobs, Waste Management, NM Gas Company, Southern Sandoval County Arroyo Flood Control Authority, RMCI Inc., All Type, Alpha Southwest, and CWA Strategic Communications.

Introduction

The Children's Water Festival (Festival) has occurred in Rio Rancho since 2007. The 2010 Festival was the first event hosted by the City of Rio Rancho's Water Conservation Office. This report is for the 2018 Festival; the ninth event hosted by the Water Conservation Office. As in years past, the Festival was held at the Santa Ana Star Center. There were an estimated 1,500 students attending from 64 classrooms and one small group of home-schoolers; Bernalillo Elementary School, St. Thomas Aquinas, and all of the elementary schools in Rio Rancho Public Schools. The event was held on October 22nd and Tuesday, October 23rd.

Purpose and Intent

The principal focus of the Festival is to educate fourth-grade school children about water and its relationship to humans, animals and other natural resources in a fun and interactive atmosphere. The Festival's vision is to:

- Introduce students and teachers to new ideas, options, and solutions so they will conserve and protect water for the future,
- Lay the foundation for further learning, and
- Reach as many students and teachers as possible.

Public participation is essential to successful water conservation, and educating the public promotes better water conservation planning and implementation. Early education influences the future acceptance of water conservation concepts. This early education experience also has shown that training efforts affected behavioral changes and improved water use practices. Water conservation goals are only as effective as water users' willingness to adopt and implement appropriate water conservation measures. Through special training activities, water users are taught proper water use practices and techniques. Efficient use of water supplies decreases waste and prevents degradation of water quality leading to healthier ecosystems for fish and wildlife, including locally listed endangered species, such as, the Rio Grande Silvery Minnow (*Hybognathus amarus)* and the Southwestern Willow Flycatcher (*Empidonax traillii extimus*).

The Festival was designed specifically to introduce and explain new and unfamiliar water management tools to present and future water users and managers. Research concerning water conservation education indicates the targeted group of the Festival, fourth-grade students, is ideal for achieving long-term goals. Through sharing water conservation and water quality tools at home and with extended family, the estimated 1,600 participants (students, teachers, and chaperones) represent a potential audience of 10,000 to 15,000 people for the Festival program.

A series of activities that cover a wide range of core curriculum areas were presented at the Festival. These activities included language arts, mathematics, science, social studies, visual arts, and health/wellness; all of which are tied to water conservation, water quality, and water quantity in the arid Southwest desert.

The updated Water Resources Management Plan (Plan), adopted by the City of Rio Rancho Governing Body in 2014, details water efficiencies and water conservation measures to be taken by the City to better manage the existing water supplies. Policy E.4 of the Plan sets forth this initiative: "Continue consulting with and improving the partnership with Rio Rancho Public Schools to implement a robust water resources educational curriculum."

Additionally, the City of Rio Rancho Strategic Plan was formally adopted by the City of Rio Rancho Governing Body on March 25, 2009 and updated August 2017. One important element of the Infrastructure Strategies section of the Strategic Plan pertains to water sustainability and conservation to support growth and development of the City.

"My class enjoyed all 3 events. They learned the most from the watershed activity, where the students stood on blue tape that represented the water that flows into the river. They still talk about it." said one Sandia Vista Elementary teacher.

Funds

Festival Cost

The Festival costs are listed in the table below. Please note that the cost for the Santa Ana Star Center is only for the personnel time. Any monies raised from sponsors that exceed the Festival costs will be used for the 2019 Festival. The cost per student for the Festival was $14.96, and includes the Festival T-shirt and transportation.

Cost Description	Amount
Santa Ana Star Center	$2,271.96
Pipe and Drape rental	$2,801.92
Catering for volunteers & presenters	$4,401.72
Buses	$3,560.70
T-shirts with art/logos (1,629 shirts)	$7,866.10
Shadow box (for T-shirt winner)	$23.18
Banner for Display Stand	$96.00
Posters	$216.00
Copy paper (pre & post-tests)	$44.00
White paper for T-shirt artwork	$37.29
Thank you cards	$130.42
Fiscal Sponsor	$1,000.00
Thank you gifts for steering committee	$168.00
Stamps for VIP invitations/thank you cards	$62.32
Total	**$22,679.61**

Sponsorships

Through its fiscal partner, the New Mexico Water Conservation Alliance, a 501(c)3 non-profit organization, the City of Rio Rancho was able to secure several sponsors to fund the Festival. Additionally, the City sponsored $10,000 for the Festival.

A heartfelt thank you goes to these valuable partners for the Festival!

Steering Committee

The Festival was directed by a diverse steering committee. The core group contained members from:

- City of Rio Rancho's Water Conservation Office
- City of Rio Rancho's Keep Rio Rancho Beautiful Office
- Jacobs
- Sandoval County Master Gardeners
- Sandoval County Master Composters
- New Mexico Environment Department – Surface Water Quality Bureau
- Citizen volunteers

Design of Festival

Students attended the Festival for a half day program that included three presentations. This ensures participation by all Rio Rancho fourth graders. There is a transition period in the middle of the day where the morning classes are leaving and the afternoon classes are arriving.

Teachers and students experienced the Festival in three parts: pre-Festival activities, the Festival itself, and post-Festival activities.

Pre-Festival Activities

- Each school provides a lead fourth grade teacher who confirms their commitment to participate, provides the number and names of the teacher/classes and the number of anticipated students for each.
- Elementary schools are provided the information on how to participate in the student T-shirt artwork project; student art work is submitted to the Water Conservation Office and a winner is selected.
- The pre-Festival tests are provided to the schools and the teachers administered the test to the students. The post-Festival tests, printed on colored paper, were dropped off at the same time.
- Teachers received resource kit materials that included the T-shirts and miscellaneous items donated by our sponsors (e.g., pens, rulers.).

Rio Rancho Children's Water Festival Event

Students at the "Rio Grande Bosque Water Cycle" activity.

- The Water Festival ran from 9:40 a.m. through 1:30 p.m.
- Students attending the Festival in the morning boarded buses at 9:15 a.m. at their school. Students attending the afternoon program boarded the buses at 11:30 a.m.
- Each class was met by a guide/timekeeper who escorted them to each of their three assigned presentations.
- Teachers turned in completed pre-Festival student tests and photo releases.
- Presentations lasted 30 minutes and topics included: water quality, water conservation, water cycle, wastewater, ecosystems, and built water infrastructure.
- All students received a Festival T-shirt. Noah Jablorski, Puesta del Sol Elementary, was the winner of the T-shirt student artwork contest. His design was displayed on the front of the T-shirt and Festival sponsor logos were on the back.

Noah Jablorski – T-shirt artwork winner from Ms. Armendariz's Puesta del Sol Elementary class

Post-Festival Activities

- Post-Festival tests were completed by students.
- Tests and teacher evaluation forms were picked up by steering committee members.
- Teachers will receive a copy of this report with specific information on how their students did on the tests.

All aspects of the Festival planning and implementation were created with the *Big Water Questions* in mind. Each activity was categorized into one of three water themes, and each class attended one 30-minute activity in each of those themes. In addition, each presentation addressed at least one of the *Big Water Questions*, as well as the Festival's mission and objectives. The long-term outcome goal is that all elementary school students will be able to provide reasonable answers to these questions by the time they reach middle school.

Big Water Questions

- Why is water so important to life?
- How do all living things depend on each other?
- What is the water cycle?
- What is a watershed?
- Where does my drinking water come from?
- What makes water dirty?
- How much water does my family use?
- Who are the other water users in our society?
- How can *I* protect our water?
- Where does my wastewater go?

Schools Attending the Festival

The following table outlines which schools attended.

Elementary School	**Number of Teachers**	**Number of Students**
Bernalillo Elementary	6	133
Cielo Azul Elementary	5	113
Colinas del Norte Elementary	5	124
Enchanted Hills Elementary	6	158
Ernest Stapleton Elementary	6	144
Maggie Cordova Elementary	6	150
Martin Luther King Elementary	6	147
Puesta del Sol Elementary	6	135
Rio Rancho Elementary	4	103
Sandia Vista Elementary	6	132
St. Thomas Aquinas Elementary	2	40
Vista Grande Elementary	5	132
Home School Group	1	5
Totals	**64**	**1,516**

Festival Presentations

One teacher wrote, “Each of the activities were “hands-on”. They were informative and fun!”

“Let’s Settle This Outside” activity. Students learn about wastewater treatment while becoming a wastewater operator.

Each year the Festival relies on numerous professionals who volunteer their expertise and presentation time. These professionals represent federal, state and regional government entities, local engineering firms, and the school district. They choose presentations that represent their missions or specialties. There were seventeen presentations running simultaneously on both Day 1 and on Day 2. A description of all the presentations, the presenters and their contact information has been provided in Appendix A.

Volunteer Hours

The Festival could not be held without the assistance of a number of volunteers, presenters, and steering committee members. New last year, was a requirement that the volunteers use the City's on-line application process to have a background check conducted. It was hopeful that this year process would be smoother and it was not. The City's human resources staff added an additional requirement where the volunteer applicants had to fill out a form with their social security number and driver's license number. At least one volunteer was worried that her social security number may fall in the wrong hands and she would not complete the process. Several other volunteers expressed concern about this new step.

The table below lists an estimate of the in-kind volunteer hours.

Presenters	382.5 hours
Volunteers	166.5 hours
Steering Committee Meetings	37 hours
Total Hours	**586 hours**

Lessons Learned

Steering Committee Comments from the Festival

There were only a few comments from the steering committee including:

- Bus issues with Rio Rancho Elementary– there was still a problem with one school not being picked up on time even though we verified with the bus coordinator to make sure all schools were on the bus schedule. We did not get a good response from the bus coordinator when asked why the bus did not arrive; we were told both "rain delay" and "the bus was there but the classes did not get on it when they were supposed to". On the teacher evaluation forms, though, the teachers said that bus 481 was not there on time. They missed the entire first rotation.
- Chaperones from Bernalillo Elementary did not have badges showing that they were supposed to chaperone the classes.
- One female parent and boyfriend show up the first day and wanted to be let in. They were not background checked and were denied entry. The teacher said that the parent was not supposed to be there. The parent and boyfriend walked the outside of the Star Center trying each door to get in.
- A comment from the Festival Director to the Star Center security team was overheard by one of the Bernalillo Elementary teachers. When talking about the chaperone badges, the Director told security that "Bernalillo is different" and the teacher took offense.
- A male parent of a Bernalillo student wanted to be let in to visit with the class. He did not know the name of the teacher his child was with so he was denied entry.
- A comment from last year was that it needed to be more hands on – maybe let presenters know that "lecture time" should be no more than 10 minutes and use the last 15 minutes for hands-on. Still need to get better with this. Several of the presenters lectured most of the time.
- Many teachers want more activities, but that is impossible – can't get enough volunteers and presenters to do more than two days.
- From last year, we did put TURN OVER on front of test page so kids answer all of the questions and had more students do both pages.
- One class from M. Cordova (Alderson) had a lot of the students circled in between the numbers on the post-test causing the post-test scores to be significantly lower than the pre-test scores (12% decrease).
- DeCristoforo's class from ML King all received scores of 100% on the post-tests. This gave a 24% increase in the score.
- We barely managed with less volunteers due to the inconvenience of the background check.
- The Festival began at 9:40 this year and some of the classes could not make it in time. Suggestion is to go back to 9:45 for next year. Need to have the students on the bus by 1:30 next year, just like this year.
- Food for the vegetarian presenters and volunteers was very poor. Even though the caterer told us what would be served, the Star Center staff did not have anything the first day and

it was cold the next day. Next year, need to have vegetarian as one of the options especially since the meals were enchiladas one day and lasagna the other.

- There needs to be ice packs, or something quick, when a child either pinches a finger or trips. We had a student trip and bump his knee and we had to scramble to find ice and something to put the ice in.
- Question #3 from the test has "False" then "True" as the selection for the students. It was mentioned that this might be misleading for the students so it will be rewritten for next year to have "True" then "False" as the answers.
- One of the teacher comments from 2017 was that it would be nice to have each school's t-shirts be a different color. We checked on this when we ordered the shirts for this year. Colored shirts would be an additional $1 per shirt. This would put the cost of shirts from $4.95 per shirt to $5.95 per shirt. The t-shirts are the second most expensive cost of the Festival besides the venue and food for presenters and volunteers.

Comments from Teacher Evaluation Forms

Buses

- Comment from St. Thomas Aquinas: "Our office registrar received a call stating that we had not confirmed via RRPS Trip Tracker. We never had to do this in the past. We also do not have access to this system. It was Liz Aldaz who called from RRPS transportation."
- Comments from Rio Rancho Elementary:
  - "Our buses were late picking us up at Rio Rancho Elem so we missed the first rotation."
  - "Bus 481 from Rio Rancho was late causing us to miss 1 activity."
- Comment from Vista Grande: "Well, the only thing was we only got 2 buses for 5 classes and we had to do 3 to a seat."
- No problems. The bus driver was great!
- Buses were fine. We were a bit crammed in.
- "Left fast and arrived fast" Commented a teacher from M. Cordova.

2017 Festival layout.

Santa Ana Star Center

- Wonderful place.
- Facility was clean/spacious.
- Great; was good. All set up, good temp., no noise.
- Thought layout was good and having a volunteer guide kept us right on time.
- While acoustics are poor, the lessons reach the students just fine. I love the venue for this.
- Not decorated fun or with kid-friendly posters.
- It would be nice if chairs were available for the teachers & parents volunteers.
- The "rooms" were too small for tables and my 25 students.
- Well organized & a lot of room for the students @ each station.

Activities

- Each of the activities were "hands-on". They were informative and fun!
- Yes, the activities were fabulous! I believe making the activities shorter in time (± 15 mins.) would allow students to see more.
- Some were hands on but still not very engaging for students.
- Students enjoyed the content. A content guide to be used ahead of time (to introduce vocab/concepts would be great).
- Improved by…Small tables for 27 children to huddle around, my group did a lot of listening in all 3 stations.
- At our first station, it was impossible for 24 kids to gather around a small table & be able to see. I understand there is a specific vocabulary to be uses with the water content & activities but not all students know what they mean. Many of the presenters seemed very annoyed that my class didn't instantly understand a term. The only rotation my class was engaged in was the Jeopardy station. More than half of my class was disengaged during the other two. They were unsure of what to do & shy they were doing the activity, & learned nothing from them. The students might be more engaged & learn <u>something</u> if they were able to choose what station they visited.
- Many were hands on but many of the rotations finished early (up to 15 minutes) and struggled to keep kids engaged.
- Thank you for more hands on activities this year. It is hard for 4th graders to sit and listen to lectures.
- I thought this was the best year out of the years I've attended with my class. All of our water activities: "Leaky Faucet", "water cycle in Action", and "flood Plain" were <u>hands-on</u> and <u>informative</u>.

- The presentation from the Museum of Natural History was the most memorable for my students. Although they did have to figure out a connection from ancient New Mexico to water resources.
- I like that you posted the information students should know before leaving in every booth. My students and I noticed.
- My students enjoyed all 3 events. They learned the most form the watershed activity, where the students stood on blue tape that represented the water that flows into the river. They still talk about it.
- I like how everything is separated. It helps the students focus on the presenter. I also like how the person escorting the group has sign with my name on it. It made it easy to find.
- My students really enjoyed the activities. One activity was having trash and the water & poo squish toys & the kids acted as a river. Great hands-on.

Overall

- Make it interesting and kid friendly. Presenters seemed as if they did not want to be there. Presentations were boring and dull. It was nice to take home goodies, kids love that.
- For a larger class of 26+, more models may help for all to see.
- Great! A lot of volunteers that were well prepared & very knowledgeable.
- More hands on, at least 1 group out of the 3.
- Make sure EVERYONE receives the same info about the process of the festival. We got different info than our guide got.
- Shorten time slots to allow us to see more rotations.
- Provide chairs for the adults to sit in. This has always been done before. Two out of three presentations did not have them available. (Festival staff note: the chairs were there but not placed out where the teachers could access them; need to do better on this next year.)
- I think the key is to have little bit of explanation and mostly hands-on activities. The presenters should be patient and kind to the students.
- Possibly have the first rotation set up differently since buses can't get there as early as expected.
- My students loved it. Things they learned included, ½ of New Mexico was ocean, we have ocean fossils, illegal dump sites, waste and toxins pollute river and aquifer and that there many layers to a landfill.
- It was my first time and we had a great time.
- This is such important information. We should have curriculum for at least 2 weeks prior and the time we are at the event should be longer.
- Test question #2 and #3 are poorly written.
- I just feel like it needs to be more kid friendly, like a fun rally, or water rally before we go in?

- The organization can make sure each teacher gets a mix of different topics through the stations. For example, my class went to two rotations that explained the water cycle (very similar discussions). The organization can also make sure each teacher gets their fair share of hands-on activities. (Festival staff note: we use a activity matrix and do try to make sure that teachers don't go the same activity year after year and have a mix of activities each year.)

Festival Event

The two days of the Festival ran very smooth with two exceptions:

- There was an issue with the buses for Rio Rancho Elementary and the students missed the first rotation. The Festival Director spoke to the Rio Rancho teachers to let them know that activities could be brought to them.
- The comment from the Festival Director to the Star Center security team that was overheard by one of the Bernalillo Elementary teachers. When talking about the chaperone badges, the Director told security that "Bernalillo is different" and the teacher took offense. The Festival Director apologized to one of the Bernalillo teachers who contacted her after the event and tried to explain the context of the comment.

Appendix A

Working Timeline

The following was used to ensure that steps of the Festival preparation were completed in a timely manner.

- July 15 – PO for RR Sponsorship
- July 15 – PO for Buses
- August 1 – update VIP list and mail invitations
- August 14 – RR schools starts
- August 24 – Email teachers about CWF date and artwork delivery
- August 30 – Drop off artwork paperwork, poster, photo release forms
- September 1 – email volunteers
- September 7 – email reminder to teachers including schedule
- September 7 – Start scheduling/meeting with teacher/schools
- September 11 – Pick up artwork, photo release forms
- September 17 – Meeting to select the winner
- September 17 – Artwork to Wayne at Rio Rancho T Shirts
- September 28 – meet with SASC about food, etc.
- October 15 – Pick up T Shirts
- October 15 – email layout to SASC
- October 16 – Meeting to pack bags
- October 16 – Drop off bags this week
- October 22nd and 23rd – Water Festival
- November 1 – Pick up post tests
- December 31 – Festival report completed

Appendix B

Teacher/Class Rotation Schedule

Booth	MON Oct 22 morning		9:40 – 10:10	10:15 – 10:45	10:50 – 11:20
#	**Presentation**	**Category**			
1	Incredible Journey – NMED	Water Cycle	Lambson Cielo Azul	McCann Cielo Azul	Langdon/Romero Puesta del Sol
2	No Dumping – KRRB	Recycling/Water Quality	McCann Cielo Azul	Smith Puesta del Sol	Torres Colinas del Norte
3	Vacant				
4	Let's Settle this Outside – Jacobs	Wastewater	Armendariz Puesta del Sol	Lambson Cielo Azul	Wiberg Colinas del Norte
5	Basic Surface Water Treatment – Carollo	Water Quality	Langdon/Romero Puesta del Sol	Armendariz Puesta del Sol	Herrera Puesta del Sol
6	Water Jeopardy – Bohannan Huston	General Water	Vargas Colinas del Norte	Ulibarri Puesta del Sol	Smith Puesta del Sol
7	Watersheds & Aquifers – UNM	Source Water	Romero Cielo Azul	Torres Colinas del Norte	Armendariz Puesta del Sol
8	Rolling River – Ciudad SWCD	Watersheds	Ulibarri Puesta del Sol	Wiberg Colinas del Norte	McCann Cielo Azul
9	RG Bosque Water Cycle - RGNC	Water Cycle	Torres Colinas del Norte	Romero Cielo Azul	Vargas Colinas del Norte
10	Weather or Not - NOAA	Weather	Infantino Cielo Azul	Farfan Colinas del Norte	Lambson Cielo Azul
11	Watersheds & Stormwater – SNL	Watersheds	Messenger Cielo Azul	Vargas Colinas del Norte	Romero Cielo Azul
12	Leaky Faucet – RRPS	Conservation	Smith Puesta del Sol	Parker/Straley Puesta del Sol	Randall Colinas del Norte
13	NM Past and Present – NM Cultural Services	Historical Perspective	Farfan Colinas del Norte	Randall Colinas del Norte	Messenger Cielo Azul
14	Water Cycle – Ask Academy	Water Cycle	Randall Colinas del Norte	Messenger Cielo Azul	Ulibarri Puesta del Sol
15	BEMPing it Up – BEMP	Ecosystems	Herrera Puesta del Sol	Langdon/Romero Puesta del Sol	Farfan Colinas del Norte
16	Keep the Rio Grande – Stormwater Team	Watersheds	Parker/Straley Puesta del Sol	Herrera Puesta del Sol	Infantino Cielo Azul
17	Virtual Water – OSE	General Water	Wiberg Colinas del Norte	Infantino Cielo Azul	Parker/Straley Puesta del Sol
	16 Presenters		**16 Classes**		

Booth	MON Oct 22 afternoon		11:50 – 12:20	12:25 – 12:55	1:00 – 1:30
#	**Presentation**	**Category**			
1	Incredible Journey – NMED	Water Cycle	DeCristoforo ML King	Pearson ML King	Marsh Enchanted Hills
2	No Dumping – KRRB	Recycling/Water Quality	Mandich Enchanted Hills	Lawton St.Thomas	Wallace ML King
3	Vacant				
4	Let's Settle this Outside – Jacobs	Wastewater	Wallace ML King	Zukowski Enchanted Hills	Salaz ML King
5	Basic Surface Water Treatment – Carollo	Water Quality	Filkins ML King	Salaz ML King	Wiebelhaus Enchanted Hills
6	Water Jeopardy – Bohannan Huston	General Water	Sierz Enchanted Hills	Hunt Enchanted Hills	Dannenberg Enchanted Hills
7	Watersheds & Aquifers – UNM	Source Water	Marsh Enchanted Hills	Wallace ML King	Hunt Enchanted Hills
8	Rolling River – Ciudad SWCD	Watersheds	Zukowski Enchanted Hills		Sierz Enchanted Hills
9	RG Bosque Water Cycle - RGNC	Water Cycle	Dannenberg Enchanted Hills	Sierz Enchanted Hills	Lawton St.Thomas
10	Weather or Not - NOAA	Weather	Summerbell ML King	Dannenberg Enchanted Hills	Pearson ML King
11	Watersheds & Stormwater – SNL	Watersheds	Griego St. Thomas	Wiebelhaus Enchanted Hills	
12	Leaky Faucet – RRPS	Conservation	Salaz ML King	Mandich Enchanted Hills	Filkins ML King
13	NM Past and Present – NM Cultural Services	Historical Perspective	Lawton St.Thomas	Marsh Enchanted Hills	DeCristoforo ML King
14	Water Cycle – Ask Academy	Water Cycle		Griego St. Thomas	Zukowski Enchanted Hills
15	BEMPing it Up – BEMP	Ecosystems	Hunt Enchanted Hills	Filkins ML King	Summerbell ML King
16	Keep the Rio Grande – Stormwater Team	Watersheds	Pearson ML King	DeCristoforo ML King	Mandich Enchanted Hills
17	Virtual Water – OSE	General Water	Wiebelhaus Enchanted Hills	Summerbell ML King	Griego St. Thomas
	16 Presenters		**15 Classes**		

Booth	TUE Oct 23 morning		9:40 – 10:10	10:15 – 10:45	10:50 – 11:20
#	**Presentation**	**Category**			
1	Incredible Journey – NMED	Water Cycle	Sidor M Cordova	Hurlock M Cordova	Malan Bernalillo
2	No Dumping – KRRB	Recycling/Water Quality			
3	DW Model – Santa Fe	Water Quality	Sosa Bernalillo	Gabaldon M Cordova	Martinez Bernalillo
4	Let's Settle this Outside – Jacobs	Wastewater	Galvez-Romero Bernalillo	Alderson M Cordova	Paiz Rio Rancho
5	Basic Surface Water Treatment – Carollo	Water Quality	Hurlock M Cordova	Chavez Bernalillo	Steiner M Cordova
6	Water Jeopardy – Bohannan Huston	General Water	Malan Bernalillo	Sidor M Cordova	Bailey/Mashour Rio Rancho
7	Watersheds & Aquifers – UNM	Source Water	Lujan Bernalillo	Steiner M Cordova	Chavez Bernalillo
8	Rolling River – Ciudad SWCD	Watersheds	Paiz Rio Rancho	Galvez-Romero Bernalillo	Boldt Rio Rancho
9	RG Bosque Water Cycle - RGNC	Water Cycle	Aldaz Rio Rancho	Boldt Rio Rancho	Galvez-Romero Bernalillo
10	Weather or Not - NOAA	Weather	Martinez Bernalillo	Lujan Bernalillo	Sidor M Cordova
11	Watersheds & Stormwater – SNL	Watersheds	Alderson M Cordova	Sosa Bernalillo	Hurlock M Cordova
12	Leaky Faucet – RRPS	Conservation	Chavez Bernalillo	Zirpel M Cordova	Gabaldon M Cordova
13	NM Past and Present – NM Cultural Services	Historical Perspective	Boldt Rio Rancho	Malan Bernalillo	Sosa Bernalillo
14	Water Cycle – Ask Academy	Water Cycle	Bailey/Mashour Rio Rancho	Paiz Rio Rancho	Alderson M Cordova
15	BEMPing it Up – BEMP	Ecosystems	Gabaldon M Cordova	Aldaz Rio Rancho	Zirpel M Cordova
16	Keep the Rio Grande – Stormwater Team	Watersheds	Zirpel M Cordova	Bailey/Mashour Rio Rancho	Aldaz Rio Rancho
17	Virtual Water – OSE	General Water	Steiner M Cordova	Martinez Bernalillo	Lujan Bernalillo
	16 Presenters		**16 Classes**		

Booth	TUE Oct 23 afternoon		11:50 – 12:20	12:25 – 12:55	1:00 – 1:30
#	**Presentation**	**Category**			
1	Incredible Journey – NMED	Water Cycle	Pichette Sandia Vista	Wadsworth Sandia Vista	Reichbach E Stapleton
2	No dumping – KRRB	Recycling/Water Quality	Pasternaki/Hernandez Vista Grande	Bird Vista Grande	Fox - Sandia Vista Salido - Home School
3	DW Model – Santa Fe	Water Quality	Rojas/Sanchez E Stapleton	Gonzales Vista Grande	Lautt E Stapleton
4	Let's Settle this Outside – Jacobs	Wastewater	Zungia E Stapleton	Lowe E Stapleton	Walker Vista Grande
5	Basic Surface Water Treatment – Carollo	Water Quality	Wadsworth Sandia Vista	Pichette Sandia Vista	Marcotte E Stapleton
6	Water Jeopardy – Bohannan Huston	General Water	Grant Vista Grande	Pasternaki/Hernandez Vista Grande	Valdez Sandia Vista
7	Watersheds & Aquifers – UNM	Source Water	Valdez Sandia Vista	Rojas/Sanchez E Stapleton	Glauvitz/Cook Sandia Vista
8	Rolling River – Ciudad SWCD	Watersheds	Rambaldi Sandia Vista	Walker Vista Grande	Wadsworth Sandia Vista
9	RG Bosque Water Cycle - RGNC	Water Cycle	Lowe E Stapleton	Glauvitz/Cook Sandia Vista	Rambaldi Sandia Vista
10	Weather or Not - NOAA	Weather	Lautt E Stapleton	Reichbach E Stapleton	Gonzales Vista Grande
11	Watersheds & Stormwater – SNL	Watersheds	Reichbach E Stapleton	Grant Vista Grande	Pichette Sandia Vista
12	Leaky Faucet – RRPS	Conservation	Glauvitz/Cook Sandia Vista	Valdez Sandia Vista	Rojas/Sanchez E Stapleton
13	NM Past and Present – NM Cultural Services	Historical Perspective	Walker Vista Grande	Lautt E Stapleton	Grant Vista Grande
14	Water Cycle – Ask Academy	Water Cycle	Marcotte E Stapleton	Fox - Sandia Vista Salido - Home School	Zungia E Stapleton
15	BEMPing it Up – BEMP	Ecosystems	Gonzales Vista Grande	Marcotte E Stapleton	Pasternaki/Hernandez Vista Grande
16	Keep the Rio Grande – Stormwater Team	Watersheds	Fox - Sandia Vista Salido - Home School	Zungia E Stapleton	Bird Vista Grande
17	Virtual Water – OSE	General Water	Bird Vista Grande	Rambaldi Sandia Vista	Lowe E Stapleton
	17 Presenters		**17 Classes**		

Appendix C

Festival Presentations

This appendix lists all of the Festival presentations and contacts. For each section, there is the name of the presentation, a brief description of the activity, the correlation of the presentation with the Next Generation Science Standards (NGSS), the contact information of the presenter and if available, where the teacher can locate a similar presentation if they would like to teach it in the classroom.

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Basic Surface Water Treatment
Students learn about processes used to clean water in a contemporary water treatment facility through an interactive process. This activity teaches children about the importance of water quality for drinking water.

Next Generation Science Standards, Grades 3-5:
Practice 2, Practice 3

Carollo Engineers
Rob Buss rbuss@carollo.com

****

BEMPin' It Up
Students learn about the plants, mammals, arthropods, and water table along the Bosque and how it is all supported by water in the Rio Grande.

Next Generation Science Standards, Grades 3-5:
Practice 6, Practice 7

Bosque Ecosystem Monitoring Program, UNM Dept. Biology & Bosque School
Kelly Steinberg (505) 898-6388 x 151 kelly.steiner@bosqueschool.org

Similar activity found on web: Habitats of the World, Discovery Education
http://www.discoveryeducation.com/teachers/free-lesson-plans/habitats-of-the-world.cfm

****

Drinking Water Model
The 3D EnviroScape® Drinking Water/Wastewater model traces the path of the water we use in our communities. Real water is drawn from the aquifer and enters the water treatment plant processes -- clean water is delivered for residential and commercial uses -- wastewater is sent for treatment -- treated water returned to the river.

Next Generation Science Standards, Grades 3-5:
Practice 1, Practice 2

City of Santa Fe – Water Conservation Office
Christine Chavez cychavez@ci.santa-fe.nm.us

****

Incredible Journey
During this activity, students become water molecules and move through the water cycle. They learn about the movement and distribution of water – as well as pollution – on the earth.

Next Generation Science Standards, Grades 3-5:

Practice 6, Practice 7

NM Environment Department, Surface Water Quality Bureau
Heidi Henderson heidi.henderson@state.nm.us

A similar activity found on web: Incredible Journey, Project WET
http://files.dnr.state.mn.us/education_safety/education/project_wet/sample_activity.pdf

****

Keep the Rio Grande
Keep the Rio Grande Activity is an interactive game where the students become an arroyo supplying stormwater to the Rio Grande. The stormwater picks up a variety of items as the flow increases creating a flood or raindrops, trash, pet waste, bacteria, plastics as the students pass the items down to the river. The students learn about stormwater quality and the impact we have on water in our neighborhoods and town. After the rain has stopped, students discuss the water and debris on the ground around them and at the end of the line the river. Then they are tasked with sorting all of the items to bins labeled: trash, compost, recycle and rain.

Next Generation Science Standards, Grades 3-5:
Practice 1, Practice 2

Middle Rio Grande Stormwater Quality Team
Xavier Pettes (505) 891-5045 xpettes@rrnm.gov

****

Leaky Faucet

Students create a water leak and scientifically measure the leak using graduated cylinders over three tests. The students then compute the average milliliters of water leaked over one minute to the amount of gallons of water leaked and wasted over one year.

Next Generation Science Standards, Grades 3-5:
Practice 4, Practice 5

Rio Rancho Public Schools
Lou Cusimano (505) 975-0326
lou.cusimano@rrps.net

A similar activity found on web: Leaky Faucet, Utah Education Network
http://www.uen.org/Lessonplan/preview.cgi?LPid=27247

****

Let's Settle This Outside

Students become wastewater operators and learn how the wastewater treatment plant cleans dirty water. They then create wastewater using everyday materials and clean the wastewater by sorting it into three stations: water, sludge, and trash.

Next Generation Science Standards, Grades 3-5:
Practice 1,

Jacobs
Billy Jaquez (505) 891-5024 billy.jaquez@jacobs.com
Rita Armijo (505) 891-5024

A similar activity found on web: Wastewater: We Treat it Right, City of Boise
http://bee.cityofboise.org/media/216580/43385_Wastewater.pdf

****

New Mexico Past and Present
Students learn where water comes from (the water cycle), where water is today in New Mexico, and what they can do to protect and conserve water. The students then become detectives to discover where water occurred in the past in New Mexico.

Next Generation Science Standards, Grades 3-5:
Practice 3, Practice 6

New Mexico Museum of Natural History and Science
Mike Sanchez (505) 841-2583 michael.sanchez1@state.nm.us

****

No Dumping

The 3D EnviroScape® Landfill Model was utilized to teach students the importance of landfills. The students demonstrated how both landfills and illegal dumpsites affect the environment. Students participated by adding mock hazardous items that can be found in both landfills and illegal dumpsites. This allowed the students to see how hazardous items affected the environment and how landfills can protect the environment from these hazards.

Next Generation Science Standards, Grades 3-5:
Practice 2

City of Rio Rancho, Keep Rio Rancho Beautiful
Zac Keintz (505) 896-8729 zkeintz@rrnm.gov

****

Rio Grande Bosque Water Cycle

In the semi-arid climate of New Mexico, our scarce precipitation limits the quantity of water available for use by plants, animals and humans. Students become water molecules traveling through a water cycle. The presentation emphases, with evidence and cause and effect, why we need to consider all water users when making water-use decisions.

Next Generation Science Standards, Grades 3-5:
Practice 6, Practice 7

Rio Grande Nature Center
Tanja George (505) 344-7240 Tanja.George@state.nm.us

A similar activity found on web: Incredible Journey, Project WET
http://files.dnr.state.mn.us/education_safety/education/project_wet/sample_activity.pdf

****

Rolling River

How does a river work? Students interact with a model watershed and watch the cause and effects of precipitation as it flows down-gradient from urban and rural environments. Students learn about "pervious" and “impervious” surfaces and their relationship with the water cycle, including pollutant transport and increased erosion. Students learn that their personal actions can protect their watershed.

Next Generation Science Standards, Grades 3-5:
Practice 2, Practice 7

Ciudad Soil and Water Conservation District
Steve Glass
ciudadswcd1944@gmail.com

A similar activity found on web: Protecting Our Water Resources, Midwest Research Institute (See Level 2)
http://www.stormwater.ucf.edu/toolkit/vol3/Contents/pdfs/Student%20Activities/student_activities.pdf

****

Virtual Water

The activity teaches students the importance of water and introduces /explains the terms "direct" and "indirect" water use and challenge students to think of how all water use is connected.
Students create a "water web" that illustrates their dependence on water and their interdependence among other water users. Students learn how water users depend upon the goods and services provided by other water users.

Next Generation Science Standards, Grades 3-5:
Practice 1, Practice 2

New Mexico Office of the State Engineer,
Water Conservation Bureau
Julie Valdez
julie.valdez@state.nm.us

****

Water Cycle

The students made bracelets with different colored beads that represented phases of the water cycle. Additionally, the students participated in an interactive matching game, where the students had to match the steps of the water cycle to the correct pictures, as well as guess how much clean water is readily available to us.

Next Generation Science Standards, Grades 3-5:
Practice 1, Practice 2

The ASK Academy
Barbara McCann (505) 366-3437
bmccann@theaskacademy.org

****

Water Jeopardy

Students learn basic concepts and differences about groundwater vs. surface water supply for potable drinking water. The concepts are reinforced by participation in a Jeopardy game where students compete to determine the correct water "question" for a series of given "answers" (like the TV show).

Next Generation Science Standards, Grades 3-5:
Practice 1

Bohannon Huston, Inc.
Nathan Roberts (505) 823-1000
nroberts@bhinc.com

A similar activity found on web: The Water Cycle Jeopardy, Super Teacher Tools (online Flash game for up to 5 teams)
http://www.superteachertools.com/jeopardy/usergames/Jan201205/game1327973751.php

****

Watersheds and Aquifers

Students learn about watersheds by examining and manipulating both types of models. They learn that a watershed is the land area that drains to a water body such as a river or lake. The

students also learn how drinking water comes from aquifers and how pollution can influence water quality.

Next Generation Science Standards, Grades 3-5:
Practice 1, Practice 2

University of New Mexico, Civil Engineering
Blade Allen blallen3196@unm.edu

A similar activity found on web: Protecting Our Water Resources, Midwest Research Institute (See Level 2)
http://www.stormwater.ucf.edu/toolkit/vol3/Contents/pdfs/Student%20Activities/student_activities.pdf

****

Watersheds and Stormwater
Students learn about watersheds by examining and manipulating watershed models. They learn that a watershed is the land area that drains to a water body such as a river or lake. They see for themselves how watersheds can influence water quality.
Next Generation Science Standards, Grades 3-5:
Practice 1, Practice 2

http://www.stormwater.ucf.edu/toolkit/vol3/Contents/pdfs/Student%20Activities/student_activities.pdf

Sandia National Laboratories
John Kay (505) 344-7240
jtkay@sandia.gov

A similar activity found on web: Protecting Our Water Resources, Midwest Research Institute (See Level 2)

****

Weather or Not
Students analyze meteorological and hydrological data to determine if a flash flood might occur, issue warnings, and monitor the flood event.

Next Generation Science Standards, Grades 3-5:
Practice 1, Practice 2, Practice 3,

National Oceanic & Atmospheric Administration, National Weather Service
Kerry Jones (505) 243-0702 kerry.jones@noaa.gov

A similar activity found on web: Create Your Own Water Cycle, The Water Project
http://thewaterproject.org/resources/lesson-plans/create-a-mini-water-cycle.php

Appendix D

Information to Teachers

The following information was included in the teacher packets with the student's pre- and post-tests.

2018 Children's Water Festival

Monday, October 22nd
Tuesday October 23rd

Santa Ana Star Center

3001 Civic Center Circle NE
Rio Rancho, NM 87144

Theme: "***How do You Conserve Water in a Drought?***"

The Children's Water Festival has been arranged so **ALL** fourth-grade students in Rio Rancho and Bernalillo Elementary can attend the event. This is a ***FREE*** event for the students and teachers using monies donated from local businesses who care about water-related education.

The water festival is organized with three activities in the morning and three activities in the afternoon. Each school will attend on one day at either the morning or afternoon session. Each class will attend three activities during their session.

Morning Session	Afternoon Session
9:40-10:10	11:50-12:20
10:15-10:45	12:25-12:55
10:50-11:20	1:00-1:30

Chaperones

It is recommend at least one adult be present for every ten students. Chaperones are responsible for their own transportation to the Star Center. They have not been included in the bus count. Please ask all chaperones and any volunteers from the school to wear their school badges. **We ask that only the approved chaperones attend from your school. Please no "extra" parents/grandparents that show up to watch; they will be turned away!** If you do have any of these "extras", have them contact me prior to the event and I can assign them to be volunteers at the event.

Transportation

Buses are provided and paid by the Children's Water Festival. There will be no place or time for students to eat lunch at the Star Center, so plan on your students' lunch period to be at your school either before or after the water festival.

RRPS TEACHERS ARE RESPONSIBLE FOR FILLING OUT THE TRIP TRACKER.

- **Morning Sessions - Schedule for 9:15 pick up and 11:25 pick up**
- **Afternoon Sessions – Schedule for 11:25 pick up and 1:30 pick up**
- **Bernalillo and St. Thomas will be scheduled by City Staff**

These are the schools that will be attending with dates and arrival times.

Elementary School	Lead Teacher	Email	Number Classes	Day	Time
Puesta del Sol	Sarah Parker	sarah.parker@rrps.net	6	10/22	9:40
Colinas Del Norte	Ashley Randall	ashley.randall@rrps.net	5	10/22	9:40
Cielo Azul	Karin McCann	karin.mccann@rrps.net	5	10/22	9:40
St. Thomas	Pat Lawton	pat.lawton@stasnm.net	2	10/22	11:50
M.L. King	Allison Salaz	allison.salaz@rrps.net	7	10/22	11:50
Enchanted Hills	Christina Mandich	christina.mandich@rrps.net	7	10/22	11:50
M. Cordova	Cheyenne Zirpel	Cheyenne.zirpel@rrps.net	6	10/23	9:40
Rio Rancho	Joy Christopherson	joy.christopherson@rrps.net	4	10/23	9:40
Bernalillo	Samantha Lujan	slujan@bps.k12.nm.us	6	10/23	9:40
Vista Grande	Bethany Grant	bethany.grant@rrps.net	5	10/23	11:50
E. Stapleton	Carey Rojas	carey.rojas@rrps.net	6	10/23	11:50
Sandia Vista	Merry Wadsworth Veronica Valdez (Mont.)	merry.wadsworth@rrps.net veronica.valdez@rrps.net	6	10/23	11:50
Total (as of 9/12/18)			65		

Water Conservation staff would love to meet with all your 4th grade teachers to go over the festival and the logistics. The meeting should take about 15 minutes or so.

Please contact Marian Wrage, Rio Rancho Environmental Programs Manager and Festival Director, if there are any questions and to schedule the meeting with your 4th grade team. Marian's telephone number is (505) 896-8737, her cell is (505) 681-7325, and her email is mwrage@rrnm.gov.

The Rio Rancho Children's Water Festival funding has been provided by:

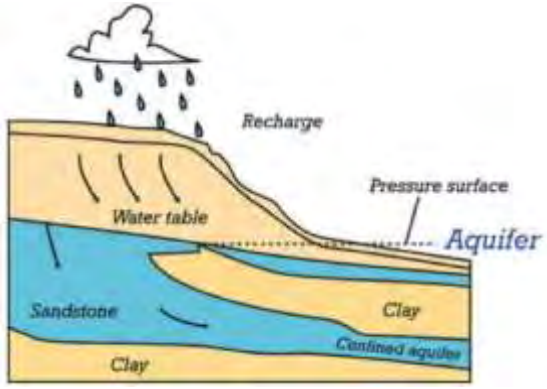
SPONSORS

Pre and Post Test

The Festival steering committee rewrote the student test in 2017; diagrams and pictures were added to help the students visualize the concepts. Note that references to "Rio Rancho" on the tests was changed to "Bernalillo" for the students attending from Bernalillo Elementary.

1. Many substances and objects can make river water dirty. Which of the following items can make the Rio Grande dirty?
   a) Trash
   b) Dog poop
   c) Leaky cars
   d) All the above

2. An **aquifer** is a layer of water-saturated porous rock. It lies below the water table. Most people who live in New Mexico get drinking water from a well drilled into an aquifer. If you live in Rio Rancho, is the water coming from your faucet from an aquifer?
   a) True
   b) False



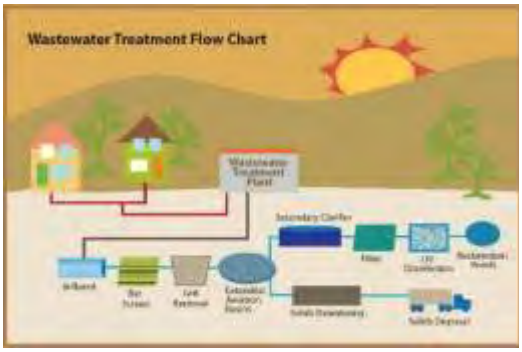
3. A **watershed** is an area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel. Is the following statement true or false: We all live in a watershed?
   a) False
   b) True

4. Everyone in Rio Rancho/Bernalillo uses, on average, about 65 gallons of water per person per day. If you have four people in your home, what is your family's daily average water use?
   a) 260 gallons of water per day
   b) 200 gallons of water per day
   c) 2,600 gallons of water per day

5. Water users in our state include plants, animals, and people. Why is water so important to life?
   a) People need it to survive
   b) Plants need it to survive
   c) The river needs it to support nature
   d) All the above

6. The **water cycle** happens as the earth is warmed by the sun and water circulates between the earth's oceans, atmosphere, and land. Which of the following are terms associated with the water cycle?
   a) Pumping, Treatment, Delivery
   b) Evaporation, Condensation, Precipitation
   c) River, stream, aquifer

7. How can we protect our water?
   a) Litter
   b) Tell your parents when you see a leak
   c) Pour chemicals on the ground



8. **Wastewater** (or sewer water) is the used water from toilets, showers, and clothes washers and it is too dirty to go straight into the river or into the ground. Septic tanks and wastewater treatment plants clean the water before it goes to the river or into the ground.
   a) True
   b) False

Appendix E

Statistical Outcomes from Students' Tests by School, Teacher, and Question

The following table shows the percentage of students that got the question correct on both the pre and post-test. The improvement is shown by the increase/decrease in percentage points. Not every teacher from every school provided pre and post-tests. ***There was a 9 percentage point increase from pre- to post-tests for all the participating students.***

Table 1 shows the increase/decrease by question for the entire testing group.
Table 2 shows the test increase/decrease average by school and teacher.
Table 3 shows pre- and post-test by each teacher (school) for each question.

Table 1 **Test Question**	**Increase from Pre to Post-Test**
1 Makes river dirty	19%
2 DW come from	8%
3 Watershed	29%
4 How much Water	7%
5 H2O important to life	7%
6 Water Cycle	7%
7 Protect water	3%
8 Wastewater	2%

Table 2 **School**	**Average %**	**Average % by School**
Bernalillo		
Galvez-Romero (BES)	5%	
		5%
Cielo Azul		
Romero	21%	
Infantino/Lynch	8%	
Lambson	8%	
McCann	26%	
Messenger	16%	
		16%

Colinas del Norte		
Randall	13%	
Farfan	15%	
Vargas	14%	
Torres	11%	
Wiberg	1%	
		11%
Enchanted Hills		
Zukowski	-2%	
Dannenberg	-4%	
Sierz	7%	
Mandich	15%	
Marsh	5%	
Wiebelhaus	17%	
		6%
Ernest Stapleton		
Lowe	16%	
Lautt	11%	
Reichbach	14%	
Rojas/Sanchez	13%	
Marcotte	8%	
Zuniga	5%	
		11%
Maggie Cordova		
Alderson	-12%	
Gabaldon	4%	
Hurlock	7%	
Sidor	1%	
Steiner	15%	
Zirpel	15%	
		5%
Martin Luther King		
DeChristoforo	24%	
Pearson	16%	
Salaz	3%	
		14%
Puesta del Sol		
Langdon/Romero	13%	
Ulibarri	26%	
Straley/Parker	-2%	
Smith	15%	
		13%

Rio Rancho		
Aldaz	17%	
Boldt	3%	
Bailey/Mashour	8%	
Paiz	2%	
		8%
Sandia Vista		
Pichette	9%	
Fox	13%	
Glauvitz/Cook	17%	
Rambaldi	14%	
Valdez	4%	
Wadsworth	12%	
		11%
St. Thomas Aquinas		
Lawton	3%	
Griego	10%	
		6%
Vista Grande		
Grant	15%	
Paternaki/Hernandez	6%	
Gonzales	13%	
Bird	2%	
Walker	25%	
		12%
Increase/Decrease		9%

Table 3

Teacher (School) Question#	**AS PERCENTAGE**		
Galvez-Romero (BES)	Pre %	Post %	Improvement
1 Makes river dirty	38%	46%	8%
2 DW come from	31%	69%	38%
3 Watershed	62%	85%	23%
4 How much Water	69%	62%	-7%
5 H2O important to life	54%	54%	0%
6 Water Cycle	38%	46%	8%
7 Protect water	54%	46%	-8%
8 Wastewater	85%	62%	-23%
Average %	54%	59%	
	Average increase =		5%

Romero (CA)	Pre %	Post %	Improvement
1 Makes river dirty	42%	91%	49%
2 DW come from	68%	100%	32%
3 Watershed	11%	55%	44%
4 How much Water	58%	64%	6%
5 H2O important to life	53%	73%	20%
6 Water Cycle	32%	45%	13%
7 Protect water	74%	91%	17%
8 Wastewater	74%	64%	-10%
Average %	52%	73%	
	Average increase =		21%

Infantino/Lynch (CA)	Pre %	Post %	Improvement
1 Makes river dirty	84%	88%	4%
2 DW come from	60%	76%	16%
3 Watershed	48%	68%	20%
4 How much Water	56%	80%	24%
5 H2O important to life	80%	84%	4%
6 Water Cycle	64%	80%	16%
7 Protect water	88%	88%	0%
8 Wastewater	80%	60%	-20%
Average %	70%	78%	
	Average increase =		8%

Lambson (CA)	Pre %	Post %	Improvement
1 Makes river dirty	80%	96%	16%
2 DW come from	80%	92%	12%
3 Watershed	20%	25%	5%
4 How much Water	64%	75%	11%
5 H2O important to life	88%	88%	0%
6 Water Cycle	88%	79%	-9%
7 Protect water	100%	92%	-8%
8 Wastewater	60%	95%	35%
Average %	73%	80%	
	Average increase =		8%

McCann (CA)	Pre %	Post %	Improvement
1 Makes river dirty	35%	69%	34%
2 DW come from	47%	88%	41%
3 Watershed	41%	75%	34%
4 How much Water	53%	63%	10%
5 H2O important to life	35%	63%	28%
6 Water Cycle	35%	69%	34%
7 Protect water	59%	88%	29%
8 Wastewater	71%	69%	-2%
Average %	47%	73%	
	Average increase =		26%

Messenger (CA)	Pre %	Post %	Improvement
1 Makes river dirty	33%	61%	28%
2 DW come from	83%	83%	0%
3 Watershed	22%	72%	50%
4 How much Water	50%	67%	17%
5 H2O important to life	44%	78%	34%
6 Water Cycle	44%	61%	17%
7 Protect water	89%	89%	0%
8 Wastewater	83%	61%	-22%
Average %	56%	72%	
	Average increase =		16%

Randall (CDN)	Pre %	Post %	Improvement
1 Makes river dirty	74%	82%	8%
2 DW come from	70%	73%	3%
3 Watershed	30%	64%	34%
4 How much Water	83%	100%	17%
5 H2O important to life	74%	82%	8%
6 Water Cycle	30%	59%	29%
7 Protect water	87%	91%	4%
8 Wastewater	70%	68%	-2%
Average %	65%	77%	
	Average increase =		13%

Farfan (CDN)	Pre %	Post %	Improvement
1 Makes river dirty	38%	96%	58%
2 DW come from	75%	71%	-4%
3 Watershed	50%	50%	0%
4 How much Water	54%	63%	9%
5 H2O important to life	63%	83%	20%
6 Water Cycle	33%	50%	17%
7 Protect water	58%	88%	30%
8 Wastewater	79%	67%	-12%
Average %	56%	71%	
	Average increase =		15%

Vargas (CDN)	Pre %	Post %	Improvement
1 Makes river dirty	67%	95%	28%
2 DW come from	62%	89%	27%
3 Watershed	48%	53%	5%
4 How much Water	76%	100%	24%
5 H2O important to life	90%	100%	10%
6 Water Cycle	52%	74%	22%
7 Protect water	100%	100%	0%
8 Wastewater	86%	79%	-7%
Average %	73%	86%	
	Average increase =		14%

Torres (CDN)	Pre %	Post %	Improvement
1 Makes river dirty	27%	73%	46%
2 DW come from	82%	82%	0%
3 Watershed	64%	82%	18%
4 How much Water	64%	68%	4%
5 H2O important to life	36%	64%	28%
6 Water Cycle	32%	27%	-5%
7 Protect water	86%	86%	0%
8 Wastewater	82%	82%	0%
Average %	59%	71%	
	Average increase =		11%

Wiberg (CDN)	Pre %	Post %	Improvement
1 Makes river dirty	45%	50%	5%
2 DW come from	86%	78%	-8%
3 Watershed	59%	72%	13%
4 How much Water	59%	67%	8%
5 H2O important to life	73%	56%	-17%
6 Water Cycle	55%	56%	1%
7 Protect water	77%	78%	1%
8 Wastewater	68%	70%	2%
Average %	65%	66%	
	Average increase =		1%

Zukowski (EH)	Pre %	Post %	Improvement
1 Makes river dirty	89%	78%	-11%
2 DW come from	89%	94%	5%
3 Watershed	39%	72%	33%
4 How much Water	56%	50%	-6%
5 H2O important to life	78%	67%	-11%
6 Water Cycle	89%	67%	-22%
7 Protect water	89%	83%	-6%
8 Wastewater	72%	72%	0%
Average %	75%	73%	
	Average increase =		-2%

Dannenberg (EH)	Pre %	Post %	Improvement
1 Makes river dirty	83%	86%	3%
2 DW come from	91%	86%	-5%
3 Watershed	57%	52%	-5%
4 How much Water	65%	67%	2%
5 H2O important to life	91%	95%	4%
6 Water Cycle	74%	52%	-22%
7 Protect water	96%	95%	-1%
8 Wastewater	96%	86%	-10%
Average %	82%	77%	
	Average increase =		-4%

Sierz (EH)	Pre %	Post %	Improvement
1 Makes river dirty	85%	88%	3%
2 DW come from	81%	88%	7%
3 Watershed	31%	84%	53%
4 How much Water	92%	88%	-4%
5 H2O important to life	92%	96%	4%
6 Water Cycle	85%	96%	11%
7 Protect water	100%	92%	-8%
8 Wastewater	96%	84%	-12%
Average %	83%	90%	
	Average increase =		7%

Mandich (EH)	Pre %	Post %	Improvement
1 Makes river dirty	61%	78%	17%
2 DW come from	65%	78%	13%
3 Watershed	22%	61%	39%
4 How much Water	61%	65%	4%
5 H2O important to life	78%	87%	9%
6 Water Cycle	61%	83%	22%
7 Protect water	91%	96%	5%
8 Wastewater	74%	87%	13%
Average %	64%	79%	
	Average increase =		15%

Marsh (EH)	Pre %	Post %	Improvement
1 Makes river dirty	50%	67%	17%
2 DW come from	78%	90%	12%
3 Watershed	17%	19%	2%
4 How much Water	61%	57%	-4%
5 H2O important to life	44%	62%	18%
6 Water Cycle	56%	52%	-4%
7 Protect water	56%	67%	11%
8 Wastewater	67%	57%	-10%
Average %	54%	59%	
	Average increase =		5%

Wiebelhaus (EH)	Pre %	Post %	Improvement
1 Makes river dirty	82%	95%	13%
2 DW come from	59%	91%	32%
3 Watershed	18%	91%	73%
4 How much Water	82%	100%	18%
5 H2O important to life	82%	82%	0%
6 Water Cycle	77%	82%	5%
7 Protect water	95%	100%	5%
8 Wastewater	91%	77%	-14%
Average %	73%	90%	
	Average increase =		17%

Lowe (ES)	Pre %	Post %	Improvement
1 Makes river dirty	55%	68%	13%
2 DW come from	80%	84%	4%
3 Watershed	40%	53%	13%
4 How much Water	60%	79%	19%
5 H2O important to life	60%	79%	19%
6 Water Cycle	60%	84%	24%
7 Protect water	90%	89%	-1%
8 Wastewater	55%	89%	34%
Average %	63%	78%	
	Average increase =		16%

Lautt (ES)	Pre %	Post %	Improvement
1 Makes river dirty	59%	89%	30%
2 DW come from	82%	94%	12%
3 Watershed	47%	61%	14%
4 How much Water	76%	67%	-9%
5 H2O important to life	41%	39%	-2%
6 Water Cycle	53%	50%	-3%
7 Protect water	59%	83%	24%
8 Wastewater	47%	67%	20%
Average %	58%	69%	
	Average increase =		11%

Reichbach (ES)	Pre %	Post %	Improvement
1 Makes river dirty	65%	91%	26%
2 DW come from	78%	86%	8%
3 Watershed	30%	82%	52%
4 How much Water	74%	73%	-1%
5 H2O important to life	61%	82%	21%
6 Water Cycle	96%	95%	-1%
7 Protect water	96%	95%	-1%
8 Wastewater	78%	86%	8%
Average %	72%	86%	
	Average increase =		14%

Rojas / Sanchez (ES)	Pre %	Post %	Improvement
1 Makes river dirty	26%	80%	54%
2 DW come from	68%	85%	17%
3 Watershed	53%	70%	17%
4 How much Water	79%	60%	-19%
5 H2O important to life	58%	65%	7%
6 Water Cycle	68%	60%	-8%
7 Protect water	74%	100%	26%
8 Wastewater	68%	75%	7%
Average %	62%	74%	
	Average increase =		13%

Marcotte (ES)	Pre %	Post %	Improvement
1 Makes river dirty	48%	68%	20%
2 DW come from	65%	60%	-5%
3 Watershed	48%	52%	4%
4 How much Water	74%	64%	-10%
5 H2O important to life	61%	72%	11%
6 Water Cycle	48%	84%	36%
7 Protect water	91%	96%	5%
8 Wastewater	61%	64%	3%
Average %	62%	70%	
	Average increase =		8%

Zuniga (ES)	Pre %	Post %	Improvement
1 Makes river dirty	57%	63%	6%
2 DW come from	74%	84%	10%
3 Watershed	30%	68%	38%
4 How much Water	78%	74%	-4%
5 H2O important to life	70%	68%	-2%
6 Water Cycle	61%	74%	13%
7 Protect water	96%	89%	-7%
8 Wastewater	87%	74%	-13%
Average %	69%	74%	
	Average increase =		5%

Alderson (MC)	Pre %	Post %	Improvement
1 Makes river dirty	45%	88%	43%
2 DW come from	85%	25%	-60%
3 Watershed	30%	50%	20%
4 How much Water	50%	13%	-37%
5 H2O important to life	75%	94%	19%
6 Water Cycle	65%	44%	-21%
7 Protect water	95%	56%	-39%
8 Wastewater	65%	44%	-21%
Average %	64%	52%	
	Average increase =		-12%

Gabaldon (MC)	Pre %	Post %	Improvement
1 Makes river dirty	72%	75%	3%
2 DW come from	64%	63%	-1%
3 Watershed	36%	42%	6%
4 How much Water	80%	42%	-38%
5 H2O important to life	52%	71%	19%
6 Water Cycle	20%	17%	-3%
7 Protect water	80%	92%	12%
8 Wastewater	60%	92%	32%
Average %	58%	62%	
	Average increase =		4%

Hurlock (MC)	Pre %	Post %	Improvement
1 Makes river dirty	57%	67%	10%
2 DW come from	67%	71%	4%
3 Watershed	29%	52%	23%
4 How much Water	57%	67%	10%
5 H2O important to life	57%	67%	10%
6 Water Cycle	57%	38%	-19%
7 Protect water	67%	86%	19%
8 Wastewater	57%	57%	0%
Average %	56%	63%	
	Average increase =		7%

Sidor (MC)	Pre %	Post %	Improvement
1 Makes river dirty	52%	65%	13%
2 DW come from	65%	75%	10%
3 Watershed	48%	70%	22%
4 How much Water	74%	55%	-19%
5 H2O important to life	61%	70%	9%
6 Water Cycle	52%	45%	-7%
7 Protect water	100%	80%	-20%
8 Wastewater	74%	75%	1%
Average %	66%	67%	
	Average increase =		1%

Steiner (MC)	Pre %	Post %	Improvement
1 Makes river dirty	58%	56%	-2%
2 DW come from	74%	94%	20%
3 Watershed	42%	72%	30%
4 How much Water	53%	89%	36%
5 H2O important to life	63%	67%	4%
6 Water Cycle	53%	72%	19%
7 Protect water	100%	100%	0%
8 Wastewater	58%	72%	14%
Average %	63%	78%	
	Average increase =		15%

Zirpel (MC)	Pre %	Post %	Improvement
1 Makes river dirty	32%	48%	16%
2 DW come from	63%	71%	8%
3 Watershed	42%	71%	29%
4 How much Water	53%	81%	28%
5 H2O important to life	47%	62%	15%
6 Water Cycle	47%	62%	15%
7 Protect water	79%	81%	2%
8 Wastewater	58%	67%	9%
Average %	53%		
	Average increase =		15%

DeCristoforo (MLK)	Pre %	Post %	Improvement
1 Makes river dirty	100%	100%	0%
2 DW come from	75%	100%	25%
3 Watershed	31%	100%	69%
4 How much Water	31%	100%	69%
5 H2O important to life	94%	100%	6%
6 Water Cycle	100%	100%	0%
7 Protect water	94%	100%	6%
8 Wastewater	81%	100%	19%
Average %	76%	100%	
	Average increase =		24%

Pearson (MLK)	Pre %	Post %	Improvement
1 Makes river dirty	44%	80%	36%
2 DW come from	76%	72%	-4%
3 Watershed	12%	56%	44%
4 How much Water	72%	80%	8%
5 H2O important to life	72%	84%	12%
6 Water Cycle	76%	96%	20%
7 Protect water	96%	96%	0%
8 Wastewater	76%	84%	8%
Average %	66%	81%	
	Average increase =		16%

Salaz (MLK)	Pre %	Post %	Improvement
1 Makes river dirty	83%	88%	5%
2 DW come from	91%	92%	1%
3 Watershed	35%	28%	-7%
4 How much Water	91%	84%	-7%
5 H2O important to life	74%	92%	18%
6 Water Cycle	57%	80%	23%
7 Protect water	91%	88%	-3%
8 Wastewater	78%	72%	-6%
Average %	75%	78%	
	Average increase =		3%

Langdon/Romero (PDS)	Pre %	Post %	Improvement
1 Makes river dirty	35%	76%	41%
2 DW come from	57%	80%	23%
3 Watershed	43%	68%	25%
4 How much Water	48%	48%	0%
5 H2O important to life	74%	68%	-6%
6 Water Cycle	74%	80%	6%
7 Protect water	91%	96%	5%
8 Wastewater	70%	80%	10%
Average %	62%	75%	
	Average increase =		13%

Ulibarri (PDS)	Pre %	Post %	Improvement
1 Makes river dirty	32%	73%	41%
2 DW come from	77%	82%	5%
3 Watershed	23%	64%	41%
4 How much Water	68%	82%	14%
5 H2O important to life	32%	82%	50%
6 Water Cycle	59%	82%	23%
7 Protect water	77%	100%	23%
8 Wastewater	64%	77%	13%
Average %	54%	80%	
	Average increase =		26%

Straley/Parker (PDS)	Pre %	Post %	Improvement
1 Makes river dirty	89%	88%	-1%
2 DW come from	89%	71%	-18%
3 Watershed	16%	35%	19%
4 How much Water	74%	82%	8%
5 H2O important to life	89%	76%	-13%
6 Water Cycle	63%	59%	-4%
7 Protect water	100%	94%	-6%
8 Wastewater	95%	94%	-1%
Average %	77%	75%	
	Average increase =		-2%

Smith (PDS)	Pre %	Post %	Improvement
1 Makes river dirty	60%	84%	24%
2 DW come from	55%	84%	29%
3 Watershed	40%	53%	13%
4 How much Water	45%	42%	-3%
5 H2O important to life	70%	84%	14%
6 Water Cycle	45%	47%	2%
7 Protect water	80%	89%	9%
8 Wastewater	55%	84%	29%
Average %	56%	71%	
	Average increase =		15%

Aldaz (RR)	Pre %	Post %	Improvement
1 Makes river dirty	40%	88%	48%
2 DW come from	64%	80%	16%
3 Watershed	32%	80%	48%
4 How much Water	56%	52%	-4%
5 H2O important to life	60%	80%	20%
6 Water Cycle	52%	32%	-20%
7 Protect water	92%	100%	8%
8 Wastewater	40%	60%	20%
Average %	55%	72%	
	Average increase =		17%

Boldt (RR)	Pre %	Post %	Improvement
1 Makes river dirty	65%	78%	13%
2 DW come from	55%	67%	12%
3 Watershed	20%	61%	41%
4 How much Water	45%	33%	-12%
5 H2O important to life	75%	72%	-3%
6 Water Cycle	45%	50%	5%
7 Protect water	85%	78%	-7%
8 Wastewater	90%	61%	-29%
Average %	60%	63%	
	Average increase =		3%

Bailey/Mashour (RR)	Pre %	Post %	Improvement
1 Makes river dirty	56%	59%	3%
2 DW come from	84%	82%	-2%
3 Watershed	24%	68%	44%
4 How much Water	38%	59%	21%
5 H2O important to life	68%	59%	-9%
6 Water Cycle	40%	59%	19%
7 Protect water	76%	86%	10%
8 Wastewater	84%	64%	-20%
Average %	59%	67%	
	Average increase =		8%

Paiz (RR)	Pre %	Post %	Improvement
1 Makes river dirty	53%	61%	8%
2 DW come from	74%	83%	9%
3 Watershed	16%	26%	10%
4 How much Water	63%	57%	-6%
5 H2O important to life	79%	78%	-1%
6 Water Cycle	68%	57%	-11%
7 Protect water	84%	91%	7%
8 Wastewater	89%	91%	2%
Average %	66%	68%	
	Average increase =		2%

Pichette (SV)	Pre %	Post %	Improvement
1 Makes river dirty	61%	81%	20%
2 DW come from	52%	71%	19%
3 Watershed	57%	57%	0%
4 How much Water	91%	81%	-10%
5 H2O important to life	43%	71%	28%
6 Water Cycle	61%	57%	-4%
7 Protect water	83%	95%	12%
8 Wastewater	78%	81%	3%
Average %	66%	74%	
	Average increase =		9%

Fox (SV)	Pre %	Post %	Improvement
1 Makes river dirty	75%	100%	25%
2 DW come from	90%	84%	-6%
3 Watershed	50%	95%	45%
4 How much Water	65%	95%	30%
5 H2O important to life	95%	95%	0%
6 Water Cycle	95%	95%	0%
7 Protect water	95%	100%	5%
8 Wastewater	85%	89%	4%
Average %	81%	94%	
	Average increase =		13%

Glauvitz/Cook (SV)	Pre %	Post %	Improvement
1 Makes river dirty	68%	89%	21%
2 DW come from	95%	95%	0%
3 Watershed	37%	89%	52%
4 How much Water	47%	95%	48%
5 H2O important to life	84%	89%	5%
6 Water Cycle	68%	79%	11%
7 Protect water	95%	95%	0%
8 Wastewater	84%	84%	0%
Average %	72%	89%	
	Average increase =		17%

Rambaldi (SV)	Pre %	Post %	Improvement
1 Makes river dirty	61%	75%	14%
2 DW come from	78%	75%	-3%
3 Watershed	39%	60%	21%
4 How much Water	48%	55%	7%
5 H2O important to life	70%	75%	5%
6 Water Cycle	39%	60%	21%
7 Protect water	61%	80%	19%
8 Wastewater	70%	100%	30%
Average %	58%	73%	
	Average increase =		14%

Valdez (SV)	Pre %	Post %	Improvement
1 Makes river dirty	90%	100%	10%
2 DW come from	76%	90%	14%
3 Watershed	57%	67%	10%
4 How much Water	81%	76%	-5%
5 H2O important to life	100%	95%	-5%
6 Water Cycle	90%	90%	0%
7 Protect water	100%	100%	0%
8 Wastewater	62%	67%	5%
Average %	82%		
	Average increase =		4%

Wadsworth (SV)	Pre %	Post %	Improvement
1 Makes river dirty	61%	87%	26%
2 DW come from	52%	78%	26%
3 Watershed	43%	65%	22%
4 How much Water	70%	83%	13%
5 H2O important to life	96%	91%	-5%
6 Water Cycle	70%	87%	17%
7 Protect water	87%	96%	9%
8 Wastewater	83%	74%	-9%
Average %	70%	83%	
	Average increase =		12%

Lawton (ST)	Pre %	Post %	Improvement
1 Makes river dirty	75%	100%	25%
2 DW come from	85%	95%	10%
3 Watershed	25%	40%	15%
4 How much Water	65%	70%	5%
5 H2O important to life	90%	85%	-5%
6 Water Cycle	80%	85%	5%
7 Protect water	100%	85%	-15%
8 Wastewater	90%	70%	-20%
Average %	76%	79%	
	Average increase =		3%

Griego (ST)	Pre %	Post %	Improvement
1 Makes river dirty	58%	89%	31%
2 DW come from	63%	78%	15%
3 Watershed	32%	83%	51%
4 How much Water	84%	94%	10%
5 H2O important to life	79%	72%	-7%
6 Water Cycle	95%	100%	5%
7 Protect water	100%	94%	-6%
8 Wastewater	74%	56%	-18%
Average %	73%	83%	
	Average increase =		10%

Grant (VG)	Pre %	Post %	Improvement
1 Makes river dirty	35%	56%	21%
2 DW come from	77%	56%	-21%
3 Watershed	19%	64%	45%
4 How much Water	58%	72%	14%
5 H2O important to life	58%	52%	-6%
6 Water Cycle	19%	56%	37%
7 Protect water	69%	80%	11%
8 Wastewater	46%	68%	22%
Average %	48%	63%	
	Average increase =		15%

Paternaki/Hernandez (VG)	Pre %	Post %	Improvement
1 Makes river dirty	52%	87%	35%
2 DW come from	62%	70%	8%
3 Watershed	33%	61%	28%
4 How much Water	43%	61%	18%
5 H2O important to life	71%	70%	-1%
6 Water Cycle	71%	39%	-32%
7 Protect water	95%	83%	-12%
8 Wastewater	71%	78%	7%
Average %	62%	69%	
	Average increase =		6%

Gonzales (VG)	Pre %	Post %	Improvement
1 Makes river dirty	68%	89%	21%
2 DW come from	73%	78%	5%
3 Watershed	27%	89%	62%
4 How much Water	86%	96%	10%
5 H2O important to life	91%	81%	-10%
6 Water Cycle	55%	56%	1%
7 Protect water	91%	81%	-10%
8 Wastewater	64%	89%	25%
Average %	69%	82%	
	Average increase =		13%

Bird (VG)	Pre %	Post %	Improvement
1 Makes river dirty	60%	44%	-16%
2 DW come from	64%	78%	14%
3 Watershed	24%	56%	32%
4 How much Water	72%	78%	6%
5 H2O important to life	72%	50%	-22%
6 Water Cycle	44%	50%	6%
7 Protect water	80%	72%	-8%
8 Wastewater	60%	67%	7%
Average %	60%	62%	
	Average increase =		2%

Walker (VG)	Pre %	Post %	Improvement
1 Makes river dirty	59%	59%	0%
2 DW come from	74%	81%	7%
3 Watershed	11%	85%	74%
4 How much Water	63%	85%	22%
5 H2O important to life	56%	70%	14%
6 Water Cycle	41%	81%	40%
7 Protect water	78%	96%	18%
8 Wastewater	63%	85%	22%
Average %	56%	80%	
	Average increase =		25%