NEW MEXICO ENVIRONMENT DEPARTMENT

Surface Water Quality Bureau

DRAFT - SAN JUAN RIVER

2017-2018

FIELD SAMPLING PLAN

1/27/2017

Prepared by

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APPROVAL PAGE

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ACRONYMS

AU	Assessment Unit
BLM	Bureau of Land Management
CWA	Clean Water Act
IR	State of New Mexico Clean Water Act §303(d)/305(b) Integrated Report
MASS	Monitoring, Assessment, and Standards Section
MPG	Miles per gallon
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
NPS	Non-point Source
PCB	Polychlorinated biphenyl
PSRS	Point Source Regulation Section
QAPP	Quality Assurance Project Plan
SLD	Scientific Laboratory Division
SOP	Standard Operating Procedure
SWQB	Surface Water Quality Bureau
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
WPS	Watershed Protection Section
WQ	Water Quality
WQCC	Water Quality Control Commission
WQS	Water Quality Standards
WTU	Work Time Unit
WWTP	Wastewater Treatment Plant

INTRODUCTION

The purpose of this Field Sampling Plan (Plan) is to provide a detailed description of the two-year Water Quality Survey to be conducted in the San Juan River from Navajo Tribal boundary to the Colorado border during 2017-2018 by the New Mexico Environment Department (NMED) Surface Water Quality Bureau (SWQB). It has been prepared in accordance with SWQB *Standard Operating Procedure 2.1: Field Sampling Plan Development and Execution* (NMED/SWQB 2015). The Plan describes project objectives and decision criteria, and it includes the sampling schedule with locations, constituents, and frequencies for physical, chemical, and biological data collection. It may be amended as the need arises. Amendments will be documented and justified in the subsequent survey report.

This is a companion document to the SWQB *Quality Assurance Project Plan for Water Quality Management Programs* (NMED/SWQB 2016a) (QAPP). Data will be collected according to the QAPP and the appropriate SWQB Standard Operating Procedures (SOPs) for water quality data collection. Both the QAPP and SOPs are posted on the SWQB website at https://www.env.nm.gov/swqb/MAS/.

The project area includes the San Juan River from Navajo Tribal boundary to the Colorado border (Figure 1). Some of the major tributaries included in this study are the Animas River, La Plata River, and the Navajo River. Lake sampling will be conducted at Navajo Reservoir and Lake Farmington.

Historic and current land uses in the watersheds include agriculture (range, pasture, and croplands), mining, oil and gas, forest, grassland, residential, shrubland, water, and wetlands. Land ownership in the watershed includes the Bureau of Land Management (BLM), U.S. Forest Service, Bureau of Reclamation (USFS BOR), National Park Service, New Mexico State Parks, New Mexico Department of Game and Fish, and state, tribal, and private parcels. The study area is part of the Colorado River basin and encompasses approximately 5,400 square miles (13,985 square kilometers) in New Mexico. The watershed is located in Omernik (1987) Level III Ecoregion 21 (Southern Rockies) in the headwaters and Level III Ecoregion 26 (Arizona/New Mexico Plateau) in the lowlands.

The 2000 and 2010 SWQB water quality surveys of this area identified waters that are attaining New Mexico Water Quality Standards (WQS) and waters that are impaired (i.e. not attaining their specific designated uses). Rivers are divided into assessment units (AUs) based on differing geological and hydrological properties, and each AU is assessed individually using data from one or more monitoring sites located within the AU. Selected monitoring locations will be sampled for water quality constituents from 6-10 times over two years. The total number of samples for each location is determined through a priority ranking of Integrated Report (IR) classification, presence of point source discharge, and TMDL status, among other considerations. The framework for monitoring prioritization is discussed in the SWQB 10-Year Monitoring and Assessment Strategy (available at https://www.env.nm.gov/swqb/MAS/). The type of monitoring planned at each site is summarized in Tables 6 and 7.

1.0 PROJECT PERSONNEL

1.1 Personnel Roles and Responsibilities

Table 1 details the responsibilities for this project. Each team member is responsible for implementing the assigned responsibilities. If individuals are unable to fulfill their duties, it is the individual's responsibility to find assistance and/or a replacement, in coordination with appropriate supervisors. Questions or comments on this Field Sampling Plan should be directed to the MASS project coordinators.

Table 1. Personnel Roles and Responsibilities

Team Member	Position/Role	Responsibilities
Kris Barrios Monitoring Team Coordinator kristopher.barrios@state.nm.us (505) 827-2621 Charles Dentino Field Team Supervisor charles.dentino1@state.nm.us (505) 827-0101	MASS Project Coordinators	• Coordinate survey planning efforts (integrate the documentation of various team members' information into the field sampling plan and planning spreadsheet); • Prepare final survey report integrating information from all team members.
Adam Ullom Monitoring Team Scientist adam.ullom@state.nm.us (505) 827-2928 Justin Sweitzer Monitoring Team Scientist justin.sweitzer@state.nm.us (505) 827-0187 Seva Joseph Monitoring Team Scientist seva.joseph@state.nm.us (505) 827-0753 Gary Schiffmiller Monitoring Team Scientist gary.schiffmiller@state.nm.us (505) 827-2470	MASS Field Team	• Coordinate and participate in the collection of chemical, biological, and habitat data including sonde and thermograph data collection efforts; • Manage data for study (forms, data entry, data verification and analysis);
Bryan Dail bryan.dail@state.nm.us (505) 476-3799	Standards Liaison	• Provide information and data needs pertaining to water quality standards development and refinement located within the study area.

Sarah Holcomb sarah.holcomb@state.nm.us (505) 827-2798	Point Source Regulation Section (PSRS) Liaison	• Provide information and data needs pertaining to point source discharges located within the study area; • Assist with development of final survey report, as needed.
Alan Klatt alan.klatt@state.nm.us (505) 827-0388	Watershed Protection Section (WPS) Liaison	• Provide information and data needs pertaining to nonpoint sources of pollution and BMPs located within the study area. Assist with development of final survey report, as needed.
Wayne Urbonas wayne.urbonas@state.nm.us (505) 827-2820	TMDL Liaison	• Provide information and data needs pertaining to TMDL development to be conducted in the study area; • Assist with development of final survey report, as needed; and • Develop TMDLs as needed.

1.2 Organization

For the responsibilities defined in this project, the Project Coordinators, Standards Liaison and Total Maximum Daily Load (TMDL) Liaison report to the MASS Program Manager. The Point Source Regulation Section (PSRS) Liaison reports to the PSRS Program Manager. The Watershed Protection Section (WPS) Liaison reports to the WPS Program Manager. Program Managers report to the SWQB Chief.

2.0 PROJECT DESCRIPTION

2.1 Background

Section 303(d) of the Federal Water Pollution Control Act, known as the Clean Water Act (CWA), requires that each state submit to the U.S. Environmental Protection Agency (EPA) a list of water quality limited segments that require load allocations, waste load allocations, and TMDLs. The current §303(d) Program in New Mexico consists of three major steps: monitoring of surface waters; assessing monitoring data against the WQS; and developing TMDLs for those waters not meeting water quality standards (i.e. impaired).

CWA §305(b) requires that each state also submit a biennial report to the U.S. Congress through the EPA. The two requirements are combined into *The State of New Mexico §303(d)/§305(b) Integrated List and Report* (NMED/SWQB 2016b) (IR). It also serves as a source of basic information on water quality and water pollution control programs in New Mexico.

In accordance with the above stated statutory requirements, the IR report contains the following information:

- An assessment of surface water quality;
- An analysis of the extent to which the CWA §101(a) goal of surface water quality to provide for protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water is being achieved;
- An overview of progress in water pollution control and recommendations for further action; and
- A description of the nature of nonpoint source pollution and of programs for nonpoint source control.

The activities described in this Plan are focused toward meeting the goals of the most recent, EPA-approved IR (NMED/SWQB 2016c). Impairments for AUs in this survey area (Table 2) were identified during SWQB's most recent surveys of this watershed, conducted in 2000 and 2010, and include data from a variety of other investigations. The "IR Category" column provides the current AU's status in the IR (see Appendix A for definitions). "Water Quality Segment" provides the applicable WQS segment as assigned to each AU and described in Section 20.6.4 New Mexico Administrative Code (NMAC) as governed by the New Mexico Water Quality Control Commission

(WQCC) (NMAC 2013). The purpose of 20.6.4 NMAC is to establish WQS that consist of the designated uses of surface waters of the state, the water quality criteria necessary to protect those uses, and an antidegradation policy. The "TMDL Status" column lists the EPA-approved TMDLs for the Assessment Unit.

Monitoring of surface waters currently across the State has traditionally occurred on an eight-year rotational watershed approach, meaning a given waterbody is generally surveyed intensively, on average, every eight years. Monitoring occurs during the non-winter months (March through November); focuses on physical, chemical, and biological conditions in perennial waters; and includes sampling for most pollutants that have numeric and/or narrative criteria in the WQS. Each assessment unit is represented by a small number of monitoring stations (often only one), each of which receives 6–10 site visits during the survey.

Through public outreach, inter-agency coordination, and a scoring system which takes into account a variety of factors, a three tier monitoring system – primary, secondary, and tertiary – was developed to prioritize AUs. High ranking priority waters (primary AUs) will receive the greatest amount of monitoring, whereas low ranking waters (*i.e.*, tertiary AUs) will receive the least. The two-year monitoring will allow more data to be collected from the highest priority waters to better capture inter-annual variability due to hydrologic conditions during sampling events, and year-2 monitoring may be adjusted dependent on year-1 analytical results

Assessment of surface waters against the WQS occurs after the monitoring data have been verified and validated, using the most recent assessment protocols. These protocols are updated every odd year (e.g. 2017) and are opened for the EPA and the public to review and comment as part of the update process. Waterbodies determined to be impaired are reported as such every even year (e.g. 2018) on the State's IR List and TMDLs or TMDL alternatives are developed for listed AUs.

Table 2. Impairment and TMDL Status of Survey Assessment Units (NMED/SWQB 2016)

Assessment Unit	Water Quality Segment	Impairment	IR Category	TMDL Status
Animas River (Estes Arroyo to So. Ute Indian Tribe bnd)	20.6.4.404	Escherichia coli|Phosphorus (Total)|Temperature, water|Turbidity	5/5B	TMDLs for E. coli and Total Phosphorus
Animas River (San Juan River to Estes Arroyo)	20.6.4.403	Escherichia coli|Nutrient/Eutrophication Biological Indicators|Temperature, water	4A	TMDLs for nutrients, temperature, and E. coli
Gallegos Canyon (San Juan River to Navajo bnd)	20.6.4.99	Selenium	4A	TMDL for selenium
La Plata River (McDermott Arroyo to So. Ute Indian Tribe bnd)	20.6.4.402	Escherichia coli|Nutrient/Eutrophication Biological Indicators	5/5A	TMDLs for DO and E. coli
La Plata River (San Juan River to McDermott Arroyo)	20.6.4.402	Escherichiacoli|Oxygen, Dissolved|Sedimentation/Siltation	5/5C	TMDLs for sedimentation and E. coli
Lake Farmington (Beeline Reservoir)	20.6.4.409	Mercury in Fish Tissue|PCB in Fish Tissue	5/5A	None
Los Pinos River (Navajo Reservoir to CO border)	20.6.4.407		3/3A	None
Navajo Reservoir	20.6.4.406	Mercury in Fish Tissue|Temperature, water	5/5A	None
Navajo River (Jicarilla Apache Nation to CO border)	20.6.4.407	Temperature, water	5/5B	None
San Juan River (Animas River to Cañon Largo)	20.6.4.408	Escherichia coli|Sedimentation/Siltation	4A	TMDLs for sedimentation and E. coli.
San Juan River (Cañon Largo to Navajo Reservoir)	20.6.4.405		2	None
San Juan River (Navajo bnd at Hogback to Animas River)	20.6.4.401	Escherichia coli|Sedimentation/ Siltation|Turbidity	5/5C	TMDL for E. coli
Shumway Arroyo (San Juan River to Ute Mtn Ute bnd)	20.6.4.98		2	None
Stevens Arroyo (Perennial prts San Juan R to headwaters)	20.6.4.99		2	None

2.2 Objectives

Table 3 outlines the project objectives that have been identified to meet the various needs within the SWQB. Data needs have been determined based on impairments from previous studies, identified data gaps, and consultation with SWQB MASS, PSRS, and WPS staff as well as other state agencies, federal agencies, tribes, local watershed groups, and interested parties.

Table 3. Project Objectives

	Purpose for Water Quality Data Collection	Question to be answered	Products/ Outcomes	Decision Criteria
Primary Objective	Assess designated use attainment for the *Integrated Report* and provide information to the public on the condition of surface waters	Are sampled waterbodies meeting WQS criteria?	Integrated Report	WQS as interpreted by the Assessment Protocols
Secondary Objectives	Develop load and waste load allocations for TMDLs	What is the maximum pollutant load a waterbody can receive and meet the requirements of the WQS?	TMDL loading calculations and NPDES permit limits	WQS as interpreted by the Assessment Protocols
	Evaluate restoration and mitigation measures implemented to control NPS pollution	Have watershed restoration activities and mitigation measures improved water quality?	Project Summary Reports, NPS Annual Report, *Integrated Report (De-Listing)*	WQS as interpreted by the Assessment Protocols
	Develop or refine the WQS	Are the existing uses appropriate for the waterbody?	Use Attainability Analyses (UAA); Amendments to WQS	Are data sufficient to support a petition to the WQCC to revise WQS?

2.3 Schedule

As part of the survey planning process, public meetings are held to receive input on any areas of concern within the AUs surveyed and to inform interested parties about the SWQB water quality survey process, our specific sampling plans in the watershed, and the assessment and TMDL processes. An online survey is also circulated to gauge public interest in specific water segments and pollutants in the survey area.

Water chemistry results typically take several months to return from the analytical laboratory, the New Mexico Scientific Laboratory Division (SLD). When these data are received, they are verified and validated according to SWQB SOPs. Once all data have been received, validated, and verified, the data will be assessed according to assessment protocols in time for incorporation

into the 2020-2022 IR List. Once the assessments are complete, the TMDL development process will begin for any identified impairments.

The progress of this project will be documented and tracked from its inception through implementation to ensure all sampling and analytical activities are performed in accordance with all applicable requirements and in a cost effective manner. Table 4 provides the project timeline.

Table 4. Project Schedule

Activity	Winter 2016-2017	Spring 2017	Summer2017	Fall 2017	Winter 2017-2018	Spring 2018	Summer2018	Fall 2018	Winter 2018-2019	Spring 2019	Fall 2019
Survey Planning, Site Reconnaissance, and Public Input Period	==========►										
Data Collection & Submittal of WQ Samples to SLD		==========►				==========►					
Data Verification & Validation Procedures, Assessment of data		==========►									
Publication of Survey Report									==========►		

2.4 Location

The survey includes the San Juan River from the Navajo Tribal boundary to the Colorado border. Some of the major tributaries included in this study are the Animas River, La Plata River, and the Navajo River. Lake sampling will be conducted at Navajo Reservoir and Lake Farmington. Table 5 shows a complete list of stations as presented in Figure 2 – Figure 3.

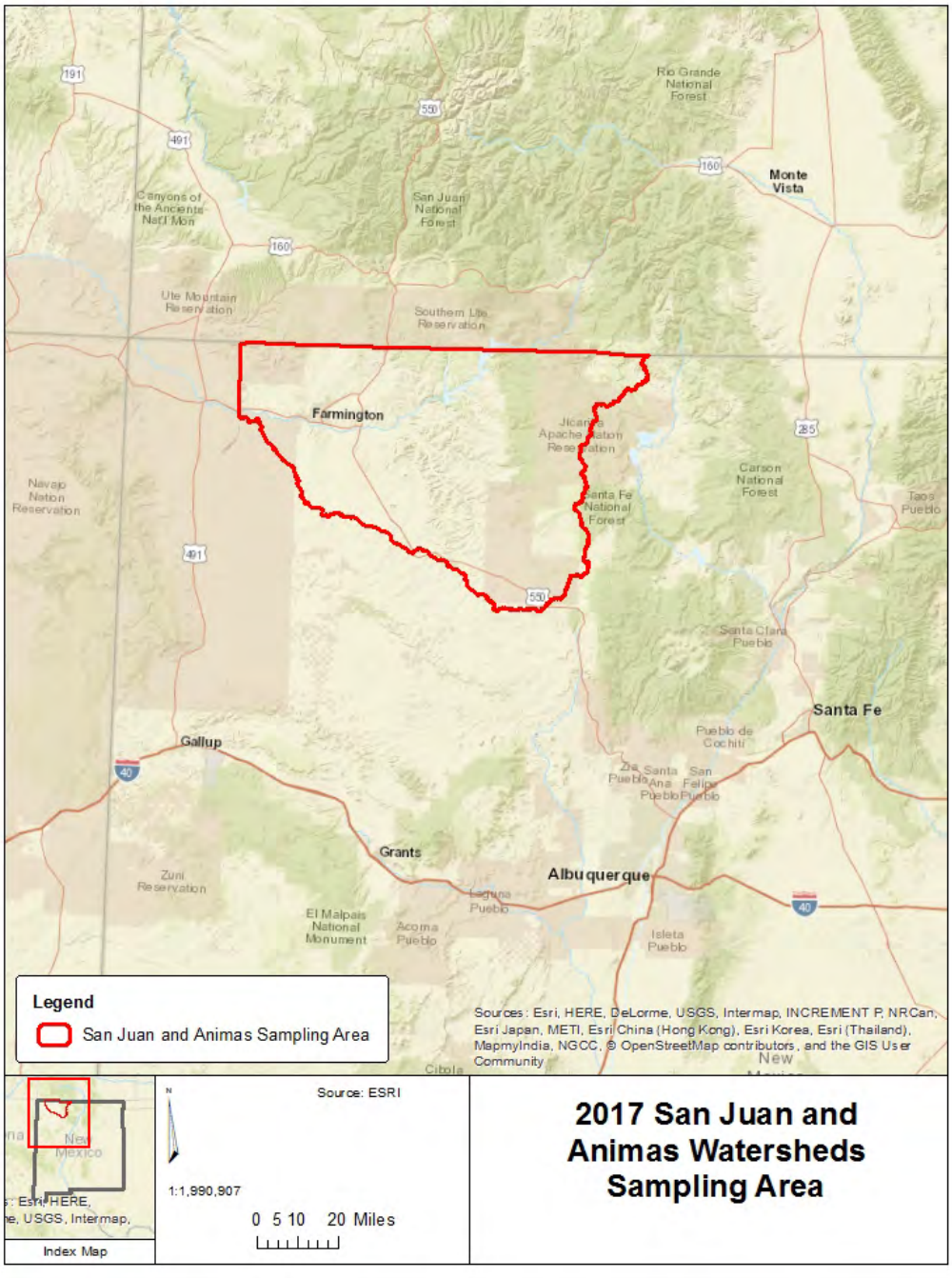

Figure 1. 2017-2018 San Juan survey area shown in red.

Table 5. Water Quality Stations: San Juan Watershed Survey 2017-2018

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments
1	Animas River above Estes Arroyo - 66Animas028.1	66Animas028.1	Animas River (Estes Arroyo to So. Ute Indian Tribe bnd)	Bottom of AU. Impairment. Above WWTP.
2	Animas River at CR 2125 nr state line - 66Animas055.4	66Animas055.4	Animas River (Estes Arroyo to So. Ute Indian Tribe bnd)	Water entering NM.
3	ANIMAS R AT FARMINGTON - 66Animas001.7	66Animas001.7	Animas River (San Juan River to Estes Arroyo)	Bottom of AU. Impairment.
4	Animas River at CR 350 Bridge - 66Animas017.4	66Animas017.4	Animas River (San Juan River to Estes Arroyo)	Below WWTP.
5	Aztec WWTP - NM0020168	NM0020168	Animas River (San Juan River to Estes Arroyo)	WWTP
6	Gallegos Canyon at San Juan River - 64Galleg000.4	64Galleg000.4	Gallegos Canyon (San Juan River to Navajo bnd)	Only station in AU. Impairment
7	LA PLATA RIVER AT LA PLATA, NM - 67LaPlat024.8	67LaPlat024.8	La Plata R (McDermott Arroyo to So. Ute Indian Tribe bnd)	Bottom of AU. Impairment.
8	LA PLATA R NR FARMINGTON - 67LaPlat000.3	67LaPlat000.3	La Plata River (San Juan River to McDermott Arroyo)	Bottom of AU. Impairment.

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments
9	LAKE FARMINGTON DEEP - 66LkFarmiDeep	66LkFarmiDeep	Lake Farmington (Beeline Reservoir)	Lake. Drinking water supply. Recreation lake. Impairment
10	Los Pinos above Navajo Reservoir	64LosPin021.7	Los Pinos River (Navajo Reservoir to CO border)	Lake inlet.
11	NAVAJO RESERVOIR TOWARDS THE DAM - 64NavajoLkDam	64NavajoLkDam	Navajo Reservoir	Recreation lake. Impairment.
12	NAVAJO RESERVOIR AT GOOSENECK - 64NavajoLkGoo	64NavajoLkGoo	Navajo Reservoir	Recreation lake. Impairment.
13	NAVAJO LAKE AT SIMS MESA MARINA - 64NavajoLkSim	64NavajoLkSim	Navajo Reservoir	Recreation lake. Impairment.
14	Navajo River upstream of Jicarilla Bnd - 64Navajo022.1	64Navajo022.1	Navajo River (Jicarilla Apache Nation to CO border)	Impairment. Only station in AU.
15	San Juan River abv Animas - 64SanJua101.6	64SanJua101.6	San Juan River (Animas River to Cañon Largo)	Bottom of AU. Impairment.
16	San Juan River at McGee Park -	64SanJua113.5	San Juan River (Animas River to Cañon Largo)	Below WWTP.

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments
	64SanJua113.5			
17	SAN JUAN RIVER AT BLOOMFIELD BRIDGE - 64SanJua126.2	64SanJua126.2	San Juan River (Animas River to Cañon Largo)	Above WWTP.
18	BLOOMFIELD WWTP OUTFALL - NM0020770	NM0020770	San Juan River (Animas River to Cañon Largo)	WWTP.
19	SAN JUAN RIVER AT BRIDGE NEAR BLANCO - 64SanJua144.8	64SanJua144.8	San Juan River (Cañon Largo to Navajo Reservoir)	Bottom of AU.
20	San Juan Below Navajo Lake	64SanJua171.9	San Juan River (Cañon Largo to Navajo Reservoir)	Lake outlet.
21	SAN JUAN R AT HOGBACK - 67SanJua065.3	67SanJua065.3	San Juan River (Navajo bnd at Hogback to Animas River)	Bottom of AU. Impairment.
22	SAN JUAN RIVER AT BISTI BRIDGE - 67SanJua100.2	67SanJua100.2	San Juan River (Navajo bnd at Hogback to Animas River)	Below WWTP.
23	FARMINGTON WASTEWATER PLANT - NM0020583	NM0020583-M	San Juan River (Navajo bnd at Hogback to Animas River)	WWTP.
24	San Juan above Navajo Reservoir	64SanJua226.2	San Juan River (New Mexico portion above Navajo Reservoir)	Lake inlet.

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments
25	Shumway at Hwy 64 bridge - 67Shumwa002.4	67Shumwa002.4	Shumway Arroyo (San Juan River to Ute Mtn Ute bnd)	Bottom of AU.
26	Stevens Arroyo below CR 6100 - 67SteveArroyo	67Steven000.7	Stevens Arroyo (Perennial prts San Juan R to headwaters)	Bottom of AU.

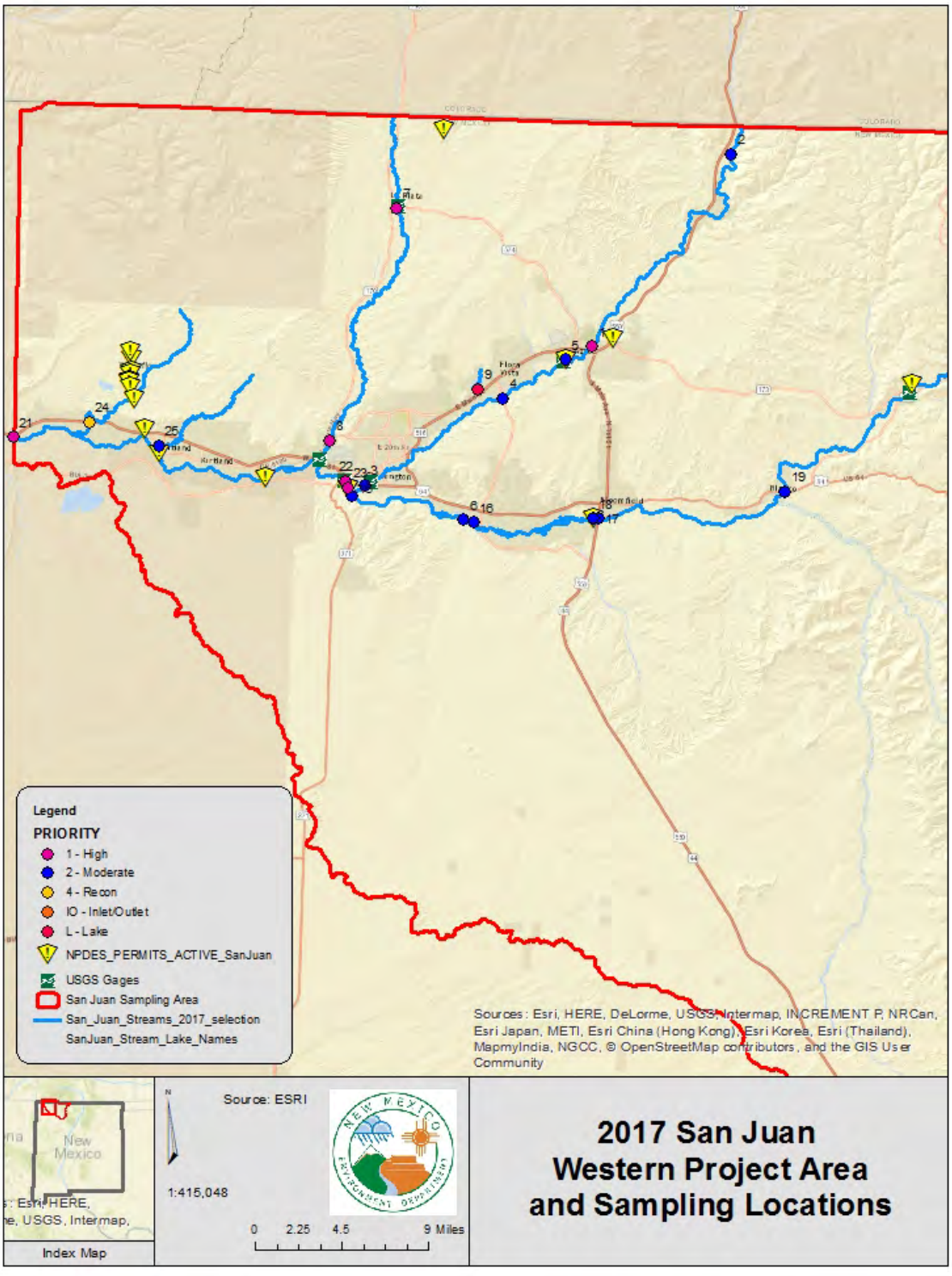

Figure 2. Western project area and sampling locations.

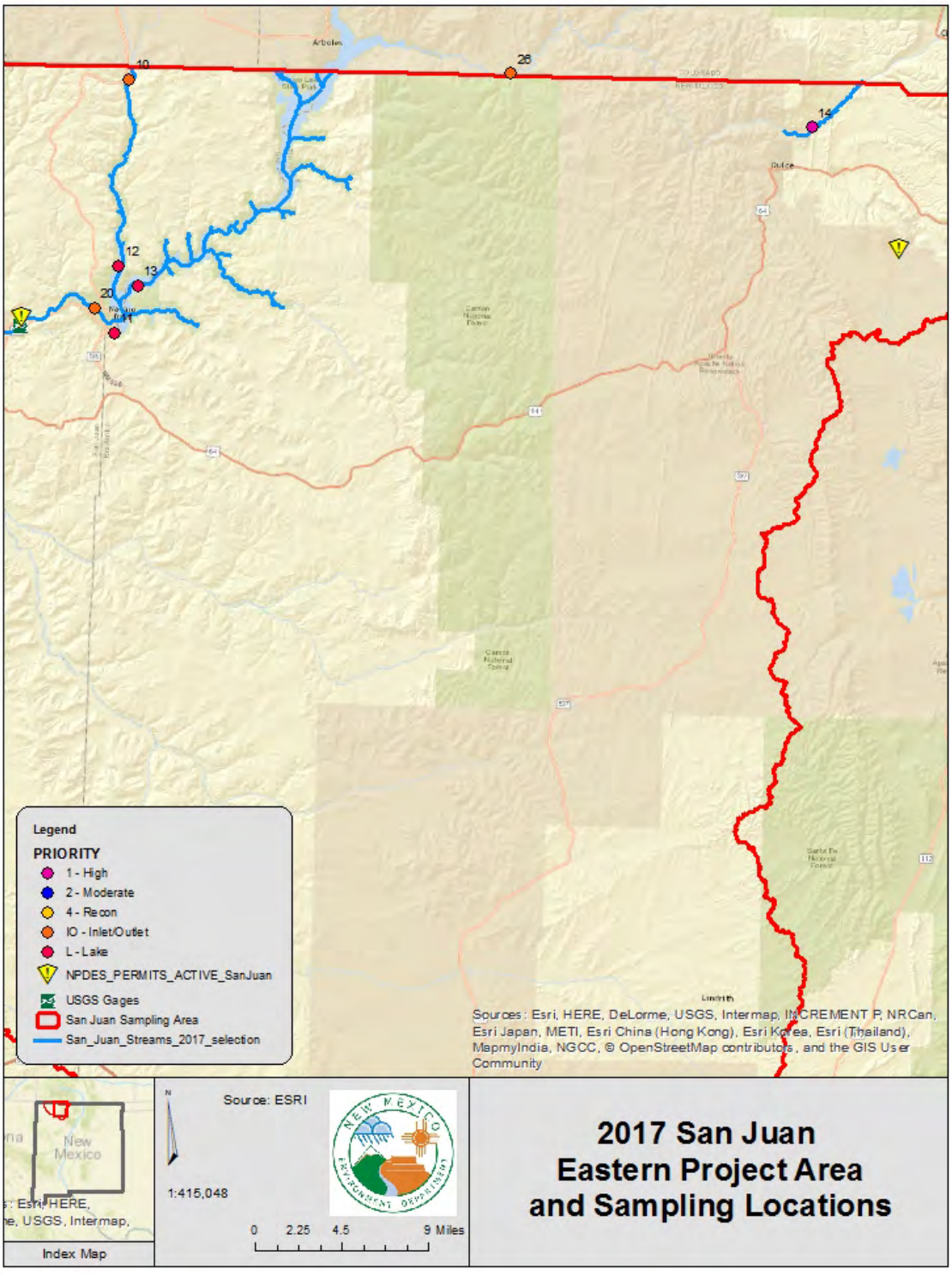

Figure 3. Eastern project area and sampling locations.

3.0 DOCUMENTATION

Project documents include this field sampling plan, probable source sheets, calibration records, field sheets (including sonde and thermograph deployment/retrieval sheets), electronic data logger downloads, data validation and verification records, sample collection data, lab submittal forms, and records of analytical data in hard copy or in electronic form. Documents will be maintained in accordance with the requirements of the SWQB QAPP.

Project documentation will include narrative descriptions of progress throughout the life of the project relating to planning and implementation efforts, including deviations from the original plan and issues that arise along with any associated corrective actions.

Project activities will be documented in SWQB Monitoring Field Sheets. Information from field sheets are entered in the SWQB database or maintained in the Project Coordinator's survey files at the conclusion of the project. Analytical results are electronically transferred into the Bureau's database and eventually moved to US EPA'S Water Quality Exchange database. The project is completed with the finalization of the Survey Report.

Any deviations from SOPs and other field, laboratory, and data analysis practices must be presented to the Project Manager and the Quality Assurance Officer for consideration and approval.

4.0 SAMPLING PLAN

4.1 Chemistry Sampling

Water quality samples will be submitted to the SLD or processed in the SWQB laboratory in accordance with procedures as outlined in the SWQB SOPs.

Table 6 outlines the water quality analytes to be measured and the sampling frequency for each analyte, for each year of the two-year survey. In addition to the analytes listed, field parameters (temperature, specific conductance, salinity, dissolved oxygen concentration, dissolved oxygen saturation, pH, and turbidity) will be measured at each site using a YSI® or Hydrolab® multi-parameter sonde.

Table 6. 2017-2018 Water Chemistry Sampling Frequency.

Map #	Station Name	Station ID	Assessment Unit	PRIORITY[1]	TDS/TSS	Nutrients[2]	Nutrient (low P)[2]	Total Metals	Dissolved Metals[3]	E.Coli	Volatile Organics[4]	Semi-Volatile[4] Organics	Radionuclides[5]
1	Animas River above Estes Arroyo - 66Animas02 8.1	66Animas02 8.1	Animas River (Estes Arroyo to So. Ute Indian Tribe bnd)	1	10	0	10	6	6	10	0	0	0
2	Animas River at CR 2125 nr state line - 66Animas05 5.4	66Animas05 5.4	Animas River (Estes Arroyo to So. Ute Indian Tribe bnd)	2	8	0	8	4	4	8	0	0	0
3	ANIMAS R AT FARMINGTO N - 66Animas00 1.7	66Animas00 1.7	Animas River (San Juan River to Estes Arroyo)	2	8	0	8	4	4	8	2	2	2
4	Animas River at CR 350 Bridge - 66Animas01 7.4	66Animas01 7.4	Animas River (San Juan River to Estes Arroyo)	2	8	0	8	4	4	8	0	0	0
5	Aztec WWTP - NM0020168	NM0020168	Animas River (San Juan River to Estes Arroyo)	2	8	8	0	4	4	8	0	0	0
6	Gallegos Canyon at San Juan River - 64Galleg000. 4	64Galleg000 .4	Gallegos Canyon (San Juan River to Navajo bnd)	2	8	0	8	4	4	8	0	0	0
7	LA PLATA RIVER AT LA PLATA, NM - 67LaPlat024. 8	67LaPlat024 .8	La Plata R (McDermott Arroyo to So. Ute Indian Tribe bnd)	1	10	0	10	6	6	10	0	0	0

Map #	Station Name	Station ID	Assessment Unit	PRIORITY[1]	TDS/TSS	Nutrients[2]	Nutrient (low P)[2]	Total Metals	Dissolved Metals[3]	E.Coli	Volatile Organics[4]	Semi-Volatile[4] Organics	Radionuclides[5]
8	LA PLATA R NR FARMINGTON - 67LaPlat000.3	67LaPlat000.3	La Plata River (San Juan River to McDermott Arroyo)	1	10	0	10	6	6	10	2	2	2
9	LAKE FARMINGTON DEEP - 66LkFarmiDeep	66LkFarmiDeep	Lake Farmington (Beeline Reservoir)	L	6	0	6	4	4	6	2	2	2
10	Los Pinos above Navajo Reservoir	64LosPin021.7	Los Pinos River (Navajo Reservoir to CO border)	IO	6	0	6	4	4	6	0	0	0
11	NAVAJO RESERVOIR TOWARDS THE DAM - 64NavajoLkDam	64NavajoLkDam	Navajo Reservoir	L	6	0	6	4	4	6	2	2	2
12	NAVAJO RESERVOIR AT GOOSENECK - 64NavajoLkGoo	64NavajoLkGoo	Navajo Reservoir	L	6	0	6	0	0	6	0	0	0
13	NAVAJO LAKE AT SIMS MESA MARINA - 64NavajoLkSim	64NavajoLkSim	Navajo Reservoir	L	6	0	6	0	0	6	0	0	0
14	Navajo River upstream of Jicarilla Bnd - 64Navajo022.1	64Navajo022.1	Navajo River (Jicarilla Apache Nation to CO border)	1	10	0	10	6	6	10	0	0	0

Map #	Station Name	Station ID	Assessment Unit	PRIORITY[1]	TDS/TSS	Nutrients[2]	Nutrient (low P)[2]	Total Metals	Dissolved Metals[3]	E.Coli	Volatile Organics[4]	Semi-Volatile[4] Organics	Radionuclides[5]
15	San Juan River abv Animas - 64SanJua101.6	64SanJua101.6	San Juan River (Animas River to Cañon Largo)	2	8	0	8	4	4	8	0	0	0
16	San Juan River at McGee Park - 64SanJua113.5	64SanJua113.5	San Juan River (Animas River to Cañon Largo)	2	8	0	8	4	4	8	0	0	0
17	SAN JUAN RIVER AT BLOOMFIELD BRIDGE - 64SanJua126.2	64SanJua126.2	San Juan River (Animas River to Cañon Largo)	2	8	0	8	4	4	8	0	0	0
18	BLOOMFIELD WWTP OUTFALL - NM0020770	NM0020770	San Juan River (Animas River to Cañon Largo)	2	8	8	0	4	4	8	0	0	0
19	SAN JUAN RIVER AT BRIDGE NEAR BLANCO - 64SanJua144.8	64SanJua144.8	San Juan River (Cañon Largo to Navajo Reservoir)	2	8	0	8	4	4	8	0	0	0
20	San Juan Below Navajo Lake	64SanJua171.9	San Juan River (Cañon Largo to Navajo Reservoir)	I O	6	0	6	4	4	6	0	0	0
21	SAN JUAN R AT HOGBACK -	67SanJua065.3	San Juan River (Navajo bnd at Hogback	1	10	0	10	6	6	10	2	2	2

Map #	Station Name	Station ID	Assessment Unit	PRIORITY[1]	TDS/TSS	Nutrients[2]	Nutrient (low P)[2]	Total Metals	Dissolved Metals[3]	E.Coli	Volatile Organics[4]	Semi-Volatile[4] Organics	Radionuclides[5]
	67SanJua065.3		to Animas River)										
22	SAN JUAN RIVER AT BISTI BRIDGE - 67SanJua100.2	67SanJua100.2	San Juan River (Navajo bnd at Hogback to Animas River)	1	10	0	10	6	6	10	0	0	0
23	FARMINGTON WASTEWATER PLANT - NM0020583	NM0020583-M	San Juan River (Navajo bnd at Hogback to Animas River)	1	10	0	10	6	6	10	0	0	0
24	San Juan above Navajo Reservoir	64SanJua226.2	San Juan River (New Mexico portion above Navajo Reservoir)	IO	6	0	6	4	4	6	0	0	0
25	Shumway at Hwy 64 bridge - 67Shumwa002.4	67Shumwa002.4	Shumway Arroyo (San Juan River to Ute Mtn Ute bnd)	4	0	0	0	0	0	0	0	0	0
26	Stevens Arroyo below CR 6100 - 67SteveArroyo	67Steven000.7	Stevens Arroyo (Perennial prts San Juan R to headwaters)	2	8	0	8	4	4	8	0	0	0
	QC		Blanks Collected per QAPP		23	5	20		12	25	4	0	0
		Totals			223	21	204	106	118	225	14	10	10

[1]Priority rankings: 1 are highest priorities, and 2 the lowest. 4 indicate station recon needs to confirm water. "L" are lake stations; "IO" are lake inlets or outlets.

[2]Suite includes total Kjeldahl nitrogen, nitrate+nitrite, ammonia and total phosphorus. QC blanks are collected with the "Nutrients (low P)" suite.
[3]Suite includes aluminum, antimony, arsenic, barium, boron, cadmium, chromium, cobalt, copper, iron, manganese, molybdenum, nickel, silicon, silver, tin, vanadium and zinc PLUS calcium and magnesium.
[4]See Appendix B for a complete list of analytes.
[5]A radionuclide sample will include gross alpha and gross beta and depending on detections may include Uranium mass and Radium 226 + 228.

4.2 Physical and Biological Sampling

Measuring biological response indicators concurrent to physical habitat and chemistry gives an overall interpretation of the biological integrity of the reach represented, provides more complete information on characteristics of sediment and nutrients currently cycling through the stream, and may provide enough information to investigate or eliminate specific potential sources of water quality stress. SWQB is currently collecting fish, periphyton, macroinvertebrates and physical habitat data at select sites to assess waterbodies for potential impairment from increased temperatures, sediment deposition, nutrient enrichment, and toxic pollutants. Sampling methods are conducted in accordance with the SWQB SOPs. Biological sampling is conducted within a biological index period for appropriate comparability of samples and life history requirements. Sondes and Data Loggers are deployed at select sites in the stream for a minimum of 7 days to record specific conductance, dissolved oxygen, turbidity, and pH fluctuations. Thermographs (data logging thermometers) are deployed from May through September in each AU throughout the survey to measure temperature fluctuations.

Resources, site access, and other issues do not allow for the collection of biological and habitat data at every AU. Stations are selected for biological and habitat monitoring based on 1) current IR status, 2) results from nutrient, sediment, and temperature data, 3) observations of the surrounding land use including upland and riparian habitat conditions, and results of the Site Condition Class Verification & Probable Source Field Sheet. Additional sites determined to be in" reference" or "best available condition" will also be selected for biological and habitat monitoring for inclusion in development and refinement of biological and habitat criteria. **Table 7** summarizes the biological and habitat sampling that is planned for this survey.

The Nutrient Assessment Protocol for Wadeable, Perennial Streams is undergoing significant revision. Sampling of Chlorophyll *a*, periphyton-diatoms, and sonde/DO logger deployments described in **Table 7** are planned in accordance with the current 2015 Assessment Protocols. Revision of the Assessment Protocol will likely lead to changes in the sampling schedule described in **Table 7**.

Table 7. Biological and Habitat Sampling for 2017-2018.

Map #	Station Name	Station ID	Assessment Unit	Priority[1]	Sonde/DO Deployment[2]	Thermograph	Flow	Physical Habitat[5,6]	Chlorophyll a[3]	Phytonplakton	Periphyton-diatoms[4]	Macro-invertrebrates	Fish[7]
1	Animas River above Estes Arroyo - 66Animas028.1	66Animas028.1	Animas River (Estes Arroyo to So. Ute Indian Tribe bnd)	1	2	0	10	0	0	0	0	0	0
2	Animas River at CR 2125 nr state line - 66Animas055.4	66Animas055.4	Animas River (Estes Arroyo to So. Ute Indian Tribe bnd)	1	0	0	8	0	0	0	0	0	0
3	ANIMAS R AT FARMINGTON - 66Animas001.7	66Animas001.7	Animas River (San Juan River to Estes Arroyo)	1	2	0	10	0	0	0	0	0	0
4	Animas River at CR 350 Bridge - 66Animas017.4	66Animas017.4	Animas River (San Juan River to Estes Arroyo)	1	0	0	10	0	0	0	0	0	0
5	Aztec WWTP - NM0020168	NM0020168	Animas River (San Juan River to Estes Arroyo)	1	0	0	10	0	0	0	0	0	0
6	Gallegos Canyon at San Juan River - 64Galleg000.4	64Galleg000.4	Gallegos Canyon (San Juan River to Navajo bnd)	2	0	2	8	1	0	0	0	0	0
7	LA PLATA RIVER AT LA PLATA, NM - 67LaPlat024.8	67LaPlat024.8	La Plata R (McDermott Arroyo to So. Ute Indian Tribe bnd)	1	2	2	10	1	0	0	0	0	0

Map #	Station Name	Station ID	Assessment Unit	Priority[1]	Sonde/DO Deployment[2]	Thermograph	Flow	Physical Habitat[5,6]	Chlorophyll a[3]	Phytonplakton	Periphyton-diatoms[4]	Macro-invertrebrates	Fish[7]
8	LA PLATA R NR FARMINGTON - 67LaPlat000.3	67LaPlat000.3	La Plata River (San Juan River to McDermott Arroyo)	1	2	2	10	1	0	0	0	0	0
9	LAKE FARMINGTON DEEP - 66LkFarmiDeep	66LkFarmiDeep	Lake Farmington (Beeline Reservoir)	L	0	0	6	0	6	6	0	0	1
10	Los Pinos above Navajo Reservoir	64LosPin021.7	Los Pinos River (Navajo Reservoir to CO border)	L	2	2	6	0	0	0	0	0	0
11	NAVAJO RESERVOIR TOWARDS THE DAM - 64NavajoLkDam	64NavajoLkDam	Navajo Reservoir	L	2	2	6	0	6	6	0	0	1
12	NAVAJO RESERVOIR AT GOOSENECK - 64NavajoLkGoo	64NavajoLkGoo	Navajo Reservoir	L	0	0	6	0	6	6	0	0	0
13	NAVAJO LAKE AT SIMS MESA MARINA - 64NavajoLkSim	64NavajoLkSim	Navajo Reservoir	L	0	0	6	0	6	6	0	0	0
14	Navajo River upstream of Jicarilla Bnd - 64Navajo022.1	64Navajo022.1	Navajo River (Jicarilla Apache Nation to CO border)	1	2	2	10	1	0	0	0	0	0
15	San Juan River abv Animas - 64SanJua101.6	64SanJua101.6	San Juan River (Animas River to	1	2	0	10	0	0	0	0	0	0

Map #	Station Name	Station ID	Assessment Unit	Priority[1]	Sonde/DO Deployment[2]	Thermograph	Flow	Physical Habitat[5,6]	Chlorophyll a[3]	Phytonplakton	Periphyton-diatoms[4]	Macro-invertrebrates	Fish[7]
			Cañon Largo)										
16	San Juan River at McGee Park - 64SanJua113.5	64SanJua113.5	San Juan River (Animas River to Cañon Largo)	1	0	0	10	0	0	0	0	0	0
17	SAN JUAN RIVER AT BLOOMFIELD BRIDGE - 64SanJua126.2	64SanJua126.2	San Juan River (Animas River to Cañon Largo)	2	0	0	8	0	0	0	0	0	0
18	BLOOMFIELD WWTP OUTFALL - NM0020770	NM0020770	San Juan River (Animas River to Cañon Largo)	1	0	0	10	0	0	0	0	0	0
19	SAN JUAN RIVER AT BRIDGE NEAR BLANCO - 64SanJua144.8	64SanJua144.8	San Juan River (Cañon Largo to Navajo Reservoir)	1	0	2	10	0	0	0	0	0	0
20	San Juan Below Navajo Lake	64SanJua171.86	San Juan River (Cañon Largo to Navajo Reservoir)	IO	0	0	6	0	0	0	0	0	0
21	SAN JUAN R AT HOGBACK - 67SanJua065.3	67SanJua065.3	San Juan River (Navajo bnd at Hogback to Animas River)	1	2	0	10	0	0	0	0	0	0

Map #	Station Name	Station ID	Assessment Unit	Priority[1]	Sonde/DO Deployment[2]	Thermograph	Flow	Physical Habitat[5,6]	Chlorophyll a[3]	Phytonplakton	Periphyton-diatoms[4]	Macro-invertrebrates	Fish[7]
22	SAN JUAN RIVER AT BISTI BRIDGE - 67SanJua100.2	67SanJua100.2	San Juan River (Navajo bnd at Hogback to Animas River)	1	0	0	10	0	0	0	0	0	0
23	FARMINGTON WASTEWATER PLANT - NM0020583	NM0020583-M	San Juan River (Navajo bnd at Hogback to Animas River)	1	0	0	10	0	0	0	0	0	0
24	San Juan above Navajo Reservoir	64SanJua226.2	San Juan River (New Mexico portion above Navajo Reservoir)	IO	0	0	6	0	0	0	0	0	0
25	Shumway at Hwy 64 bridge - 67Shumwa002.4	67Shumwa002.4	Shumway Arroyo (San Juan River to Ute Mtn Ute bnd)	4	0	0	0	0	0	0	0	0	0
26	Stevens Arroyo below CR 6100 - 67SteveArroyo	67Steven000.7	Stevens Arroyo (Perennial prts San Juan R to headwaters)	2	0	2	8	1	0	0	0	0	0
	Totals				18	18	214	5	24	24	0	0	2

[1]Priority rankings: 1 are the highest priorities, and 3 the lowest. "L" are lake stations; "IO" are lake inlets or outlets.

[2]Sondes are deployed at sites that indicate elevated turbidity or nutrient enrichment or have been previously listed for turbidity or nutrients.

[3]Chlorophyll-a samples are collected at sites that indicate nutrient enrichment or have been previously listed for nutrients. Additional stations may be added as indicated by the preliminary nutrient assessments.

[4]Periphyton community composition samples are only collected at “non-wadeable” river sites that indicate nutrient enrichment or have been previously listed for nutrients. The exact number of periphyton samples to be collected will be unknown until after 3 to 5 sampling runs.

[5]If sedimentation data (pebble counts) exceed the threshold value for percent sand and fines at a site, more extensive habitat data are collected.

[6]If preliminary analysis of thermograph data indicates potential for impairment then cross-section, flow, canopy cover, and slope data required to use SSTEMP temperature modeling software will be collected.
[7]Fish sampling will be determined by interagency cooperation and the availability of shocking equipment.

5.0 RESOURCE REQUIREMENTS

Sample analysis costs include SLD work-time units (WTUs) for chemical analysis performed at SLD and provided to SWQB through a Joint Powers Agreement between the State agencies; analysis costs for biological samples sent to contract laboratories; and equipment costs for E. *coli* analysis performed by qualified SWQB staff. These expenses are summarized in **Table 8**. Approximated monthly fuel expenses are summarized in **Table 9**. Vehicles will require standard preventative maintenance and unforeseen costs may arise at any time.

Water quality sampling trips will require two staff per month to stay up to two nights out of Santa Fe. Biological survey crew maximum requirements are four staff surveying one to two sites per day. Therefore, twelve biological survey sites may take up to ten days, or over two weeks (**Table 10**).
Staff receives $91 per night per diem for travel costs. Costs not included below may involve general sampling supplies such as water quality sample containers and preservatives, sonde calibration solutions, and periphyton, macroinvertebrate, fish, and habitat sampling/monitoring equipment.

Table 8. Biological and Chemical Cost Summary

Analyate	Total # of Samples	Cost per Sample (WTU or $)	Total Expenditure (WTU or $)
TDS/TSS	223	45	10035
Nutrients	21	100	2100
Nutrients (low P)	204	95	19380
Total Metals	106	85	9010
Dissolved Metals	118	170	20060
E.Coli	225	$5.08	$1,143.00
Volatile Organics	14	150	2100
Semi-Volatile Organics	10	235	2350
Radionuclides	10	520	5200
Chlorophyll a	24	$50	$1,200
Phytoplankton	24	$165	$3,960
Periphyton - Diatoms	0	$425	0
Macroinvertebrates	0	$175	0
Totals		WTU	70,235
		Dollar	$6,303

Table 9. Vehicle Costs

Month	Approximate Miles	Estimated MPG	Estimated Cost of Gasoline per Gallon	Total Fuel Costs
March	650	17	$2.50	$95.59
April	650	17	$2.50	$95.59
May	650	17	$2.50	$95.59
June	650	17	$2.50	$95.59
July	650	17	$2.50	$95.59
August	650	17	$2.50	$95.59
September	650	17	$2.50	$95.59
October	650	17	$2.50	$95.59
TOTAL				**$764.72**

Table 10. Stream/Lake Survey Per Diem Costs

Expense	Water Chemistry Surveys	Biological and Habitat Surveys	Total
Per Diem (number of nights out)	$2,640		$2,640
Salary Days	44		$2,640

*Staff days are estimated for two crews of two going out for chemistry surveys for two days and two crews of two going out for three-day bio/habitat surveys.

Table 11. Total Cost Estimates

WTUs	Contract Labs & Supplies $	Fuel $	Per Diem $	Staff Field Days
70,235	**$6,247**	**$765**	**$2,640**	**44**

Surface Water Quality Bureau

Our mission is to preserve, protect, and improve New Mexico's surface water quality for present and future generations.

6.0 REFERENCES

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APPENDIX A

IR (Integrated Report) Category: Overall water quality standards attainment category for each assessment unit as determined by combining individual designated use support decisions. The unique assessment categories for New Mexico are described as follows:

IR Category 1 Attaining the water quality standards for all designated and existing uses. AUs are listed in this category if there are data and information that meet all requirements of the assessment and listing methodology and support a determination that the water quality criteria are attained.

IR Category 2 Attaining some of the designated or existing uses based on numeric and narrative parameters that were tested, and no reliable monitored data is available to determine if the remaining uses are attained or threatened. AUs are listed in this category if there are data and information that meet requirements of the assessment and listing methodology to support a determination that some, but not all, uses are attained based on numeric and narrative water quality criteria that were tested. Attainment status of the remaining uses is unknown because there is no reliable monitored data with which to make a determination.

IR Category 3 Insufficient or no reliable data and/or information to determine if any designated or existing use is attained. AUs are listed in this category where sufficient data to support an attainment determination for any use are not available, consistent with requirements of the assessment and listing methodology. In order to relay additional information to stakeholders including SWQB staff, Category 3 is further broken down in New Mexico into the following categories:

3A. Limited data (n = 0 to 1) available, no exceedences. AUs are listed in this subcategory when there are no exceedences in the limited data set. These are considered low priority for follow up monitoring.

3B. Limited data (n = 1) available, exceedence. AUs are listed in this subcategory when there is an exceedence in the limited data set. These are considered high priority for follow up monitoring.

IR Category 4A Impaired for one or more designated uses, but does not require development of a TMDL because TMDL has been completed. AUs are listed in this subcategory once all TMDL(s) have been developed and approved by USEPA that, when implemented, are expected to result in full attainment of the standard. Where more than one pollutant is associated with the impairment of an AU, the AU

remains in Category 5A (see below) until all TMDLs for each pollutant have been completed and approved by USEPA.

IR Category 4B Impaired for one or more designated uses, but does not require development of a TMDL because other pollution control requirements are reasonably expected to result in attainment of the water quality standard in the near future. Consistent with the regulation under 40 CFR 130.7(b)(i),(ii), and (iii), AUs are listed in this subcategory where other pollution control requirements required by local, state, or federal authority are stringent enough to implement any water quality standard (WQS) applicable to such waters.

IR Category 4C Impaired for one or more designated uses, but does not require development of a TMDL because impairment is not caused by a pollutant. AUs are listed in this subcategory if a pollutant does not cause the impairment. For example, USEPA considers flow alteration to be "pollution" vs. a "pollutant."

IR Category 5A Impaired for one or more designated or existing uses and a TMDL is underway or scheduled. AUs are listed in this category if the AU is impaired for one or more designated uses by a pollutant. Where more than one pollutant is associated with the impairment of a single AU, the AU remains in Category 5A until TMDLs for all pollutants have been completed and approved by USEPA.

IR Category 5B Impaired for one or more designated or existing uses and a review of the water quality standard will be conducted. AUs are listed in this category when it is possible that water quality standards are not being met because one or more current designated use is inappropriate. After a review of the water quality standard is conducted, a Use Attainability Analysis (UAA) will be developed and submitted to USEPA for consideration, or the AU will be moved to Category 5A and a TMDL will be scheduled.

IR Category 5C Impaired for one or more designated or existing uses and Additional data will be collected before a TMDL is scheduled. AUs are listed in this category if there is not enough data to determine the pollutant of concern or there is not adequate data to develop a TMDL. For example, AUs with biological impairment will be listed in this category until further research can determine the particular pollutant(s) of concern. When the pollutant(s) are determined, the AU will be moved to Category 5A and a TMDL will be scheduled. If it is determined that the current designated uses are inappropriate, it will be moved to Category 5B and a UAA will be developed. If it is determined that "pollution" is causing the impairment (vs. a "pollutant"), the AU will be moved to Category 4C.

APPENDIX B

Organics (semi-volatiles)	Organics (volatiles)
1,2,4-Trichlorobenzene	1,1,1,2-Tetrachloroethane
1,2-Dichlorobenzene	1,1,1-Trichloroethane
1,2-Dinitrobenzene	1,1,2,2-Tetrachloroethane
1,3-Dichlorobenzene	1,1,2-Trichloroethane
1,3-Dinitrobenzene	1,1-Dichloroethane
1,4-Dichlorobenzene	1,1-Dichloroethene
1,4-Dinitrobenzene	1,1-Dichloropropene
1-Methylnaphthalene	1,2,3-Trichlorobenzene
2,3,4,6-Tetrachlorophenol	1,2,3-Trichloropropane
2,3,5,6-Tetrachlorophenol	1,2,4-Trichlorobenzene
2,4,5-Trichlorophenol	1,2,4-Trimethylbenzene
2,4,6-Trichlorophenol	1,2-Dibromo-3-chloropropane (DBCP)
2,4-Dichlorophenol	1,2-Dibromoethane (EDB)
2,4-Dimethylphenol	1,2-Dichlorobenzene
2,4-Dinitrophenol	1,2-Dichloroethane
2,4-Dinitrotoluene	1,2-Dichloropropane
2,6-Dinitrotoluene	1,3,5-Trimethylbenzene
2-Chloronaphthalene	1,3-Dichlorobenzene
2-Chlorophenol	1,3-Dichloropropane
2-Methylnaphthalene	1,4-Dichlorobenzene
2-Methylphenol	1,4-Dioxane
2-Nitroaniline	2,2-Dichloropropane
2-Nitrophenol	2-Butanone (MEK)
3,3'-Dichlorobenzidine	2-Chloroethyl vinyl ether
3-Methylphenol & 4-Methylphenol	2-Chlorotoluene
3-Nitroaniline	2-Hexanone
4,4'-DDD	4-Chlorotoluene
4,4'-DDE	4-Isopropyltoluene
4,4'-DDT	4-Methyl-2-pentanone
4,6-Dinitro-2-methylphenol	Acetone
4-Bromophenyl Phenyl Ether	Acetonitrile
4-Chloro-3-methylphenol	Acrolein
4-Chloroaniline	Acrylonitrile
4-Chlorophenyl Phenyl Ether	Allyl chloride
4-Nitroaniline	Benzene
4-Nitrophenol	Bromobenzene
Acenaphthene	Bromochloromethane
Acenaphthylene	Bromodichloromethane
Alachlor	Bromoform
Aldrin	Bromomethane
alpha-BHC	Carbon disulfide
Aniline	Carbon tetrachloride

Organics (semi-volatiles)	Organics (volatiles)
Anthracene	Chlorobenzene
Atrazine	Chloroethane
Azobenzene	Chloroform
Benzidine	Chloromethane
Benzo(a)anthracene	Chloroprene
Benzo(a)pyrene	cis-1,2-Dichloroethene
Benzo(b)fluoranthene	cis-1,3-Dichloropropene
Benzo(g,h,i)perylene	cis-1,4-Dichloro-2-butene
Benzo(k)fluoranthene	Dibromochloromethane
Benzyl alcohol	Dibromomethane
beta-BHC	Dichlorodifluoromethane
bis(2-Chloroethoxy)methane	Ethyl methacrylate
bis(2-Chloroethyl)ether	Ethylbenzene
bis(2-Chloroisopropyl)ether	Hexachlorobutadiene
bis(2-Ethylhexyl)adipate	Iodomethane
bis(2-Ethylhexyl)phthalate	Isobutyl alcohol
Butyl Benzyl Phthalate	Isopropylbenzene
Carbazole	m- & p-Xylenes
Chrysene	Methyl methacrylate
cis-Chlordane	Methylacrylonitrile
Cyanazine	Methylene chloride (Dichloromethane)
delta-BHC	Naphthalene
Dibenz(a,h)anthracene	n-Butylbenzene
Dibenzofuran	Nitrobenzene
Dieldrin	o-Xylene
Diethylphthalate	Pentachloroethane
Dimethylphthalate	Propionitrile
Di-n-butyl Phthalate	Propylbenzene
Di-n-octyl phthalate	sec-Butylbenzene
Endosulfan I	Styrene
Endosulfan II	tert-Butyl methyl ether (MTBE)
Endosulfan sulfate	tert-Butylbenzene
Endrin	Tetrachloroethene
Endrin aldehyde	Tetrahydrofuran (THF)
Endrin ketone	Toluene
Fluoranthene	Total trihalomethanes
Fluorene	Total xylenes
gamma-BHC (lindane)	trans-1,2-Dichloroethene
Heptachlor	trans-1,3-Dichloropropene
Heptachlor epoxide	trans-1,4-Dichloro-2-butene
Hexachlorobenzene	Trichloroethene
Hexachlorobutadiene	Trichlorofluoromethane
Hexachlorocyclopentadiene	Vinyl acetate
Hexachloroethane	Vinyl chloride

Organics (semi-volatiles)	Organics (volatiles)
Indeno(1,2,3-cd)pyrene	
Isophorone	
Methoxychlor	
Metolachlor	
Metribuzin	
Naphthalene	
Nitrobenzene	
N-nitrosodimethylamine	
N-nitroso-di-n-propylamine	
N-nitrosodiphenylamine	
Pentachlorophenol	
Phenanthrene	
Phenol	
Prometryne	
Pyrene	
Pyridine	
Simazine	
trans-Chlordane	