NEW MEXICO ENVIRONMENT DEPARTMENT

Surface Water Quality Bureau
2025-2026 Canadian River and Dry Cimarron River Watersheds
FIELD SAMPLING PLAN

3/31/2025

APPROVAL PAGE

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Surface Water Quality Bureau

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

Land Acknowledgment Statement

The Surface Water Quality Bureau acknowledges that this survey is on the traditional lands of the indigenous peoples who have stewarded this land throughout the generations.

ACRONYMS

AU	Assessment Unit
blw	below
bnd	boundary
ck	creek
confl	confluence
CWA	Clean Water Act
DM	Dissolved Metals
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
d/s	downstream
EIA	U.S. Energy Information Administration
EPA	U.S. Environmental Protection Agency
FSP	Field Sampling Plan
hdwt	headwaters
Hg	Mercury
immed	immediately
IR	State of New Mexico Clean Water Act §303(d)/305(b) Integrated Report
JPA	Joint Powers Agreement
LTD	Long Term Deployment (Sondes, Thermographs, DO Loggers)
MASS	Monitoring, Assessment, and Standards Section
MPG	Miles per gallon
MRG	Middle Rio Grande
MRGESACP	Middle Rio Grande Endangered Species Act Collaboration Program
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
NPS	Non-point Source
PCBs	Polychlorinated biphenyls
PSRS	Point Source Regulation Section
PM	Program Manager
prt	part
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAD	Radionuclide
RGSM	Rio Grande silvery minnow
rsvr	reservoir
SBD	Stream Bottom Deposits
SC	Specific Conductance
SLD	Scientific Laboratory Division
SOP	Standard Operating Procedures
SQUID	Surface water QUality Information Database
STORET WQX	STOrage and RETieval Water Quality eXchange
SSTEMP	Stream Segment Temperature
SVOC	Semi-Volatile Organic Carbon

SWQB	Surface Water Quality Bureau
TDS	Total Dissolved Solids
TKN	Total Kjeldahl Nitrogen
TM	Total Metals
TMDL	Total Maximum Daily Load
TRC	Total Recoverable Chlorine
trib	Tributary
TSS	Total Suspended Solids
u/s	upstream
µm	micrometers
VOC	Volatile Organic Carbon
WPS	Watershed Protection Section
WQ	Water Quality
WQCC	Water Quality Control Commission
WQS	Water Quality Standard
WTU	Work Time Unit
WWTP	Wastewater Treatment Plant

1.0 INTRODUCTION

The purpose of this Field Sampling Plan (Plan or FSP) is to provide a detailed description of the two-year Water Quality Survey to be conducted in the Canadian River and Dry Cimarron River Watersheds from the Colorado border to the Texas and Oklahoma state lines, respectively, during 2025-2026 by the New Mexico Environment Department (NMED) Surface Water Quality Bureau (SWQB). It has been prepared in accordance with the most current version of SWQB *Standard Operating Procedure 2.1 for Field Sampling Plan Development and Execution*. 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, which will be published after completion of the field sampling and verification and validation of data.

This is a companion document to the SWQB *Quality Assurance Project Plan for Water Quality Management Programs* (NMED/SWQB 2024) (QAPP). Data will be collected according to the QAPP and the appropriate SWQB Standard Operating Procedures (SOPs) for water quality data collection. Current versions of the SWQB QAPP and SOPs are available on the SWQB website (https://www.env.nm.gov/surface-water-quality/qaqc/).

The survey includes the Dry Cimarron River and tributaries from its headwaters near Johnson Mesa to the Oklahoma state line; the Cimarron River and tributaries originating above Eagle Nest Lake and in the Valle Vidal unit of the Carson National Forest; Raton Creek and tributaries extending to Sugarite Canyon State Park and Johnson Mesa; the Vermejo River and tributaries originating on the Vermejo Park Ranch; Ocate Creek and the Mora River and tributaries originating in the Carson and Santa Fe National Forests; Conchas River; Ute Creek; the mainstem of the Canadian River all other major tributaries of interest. See Figure 1 for the general area of the planned survey.

Historic and current land uses in the watersheds include agriculture (range, pasture, and croplands), mining, 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), U. S. Fish and Wildlife Service (USFWS), 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 Arkansas River basin and encompasses approximately 15,655 square miles (40,546 square kilometers) in New Mexico. The watershed is located in Omernick Level III Ecoregion 21 (Southern Rockies) in the headwaters and Level III Ecoregion 26 (Southwest Tablelands) in the lowlands.

The 2000, 2002, 2006, and 2015-2016 SWQB water quality surveys[1] of this area resulted in documentation of impaired (i.e. not attaining their specific designated uses) waters as noted in Table 2. 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. Based on a variety of factors, selected monitoring locations will be sampled for water quality constituents 4-5 times over the next two years, that also includes the deployment of monitoring devices to gather long-term data sets and conduct physical habitat surveys where appropriate and warranted as resources allow. The type of monitoring planned at each site is summarized in Tables 6 and 7.

[1] Survey summaries are available at https://www.env.nm.gov/surface-water-quality/water-quality-monitoring/.

SWQB conducts intensive watershed-based water quality surveys on a structured, rotating basis to identify Water Quality Standard (WQS) impairments, prioritize protection and restoration projects, guide National Pollutant Discharge Elimination System (NPDES) permitting, Total Maximum Daily Load (TMDL) development, and inform potential WQS revisions to meet goals and objectives of the Clean Water Act (CWA). The SWQB's mission is to preserve, protect, and improve New Mexico's surface water quality for present and future generations. The Bureau intends to collect appropriate, reliable, defensible, high quality surface water data to meet our mission. This is completed by adhering to quality assurance and quality control protocols to ensure that defensible, reliable data are available to make informed policy decisions.

Data are publicly available to interested parties through the EPA Water Quality Portal (https://www.waterqualitydata.us/) after completion of data verification and validation.

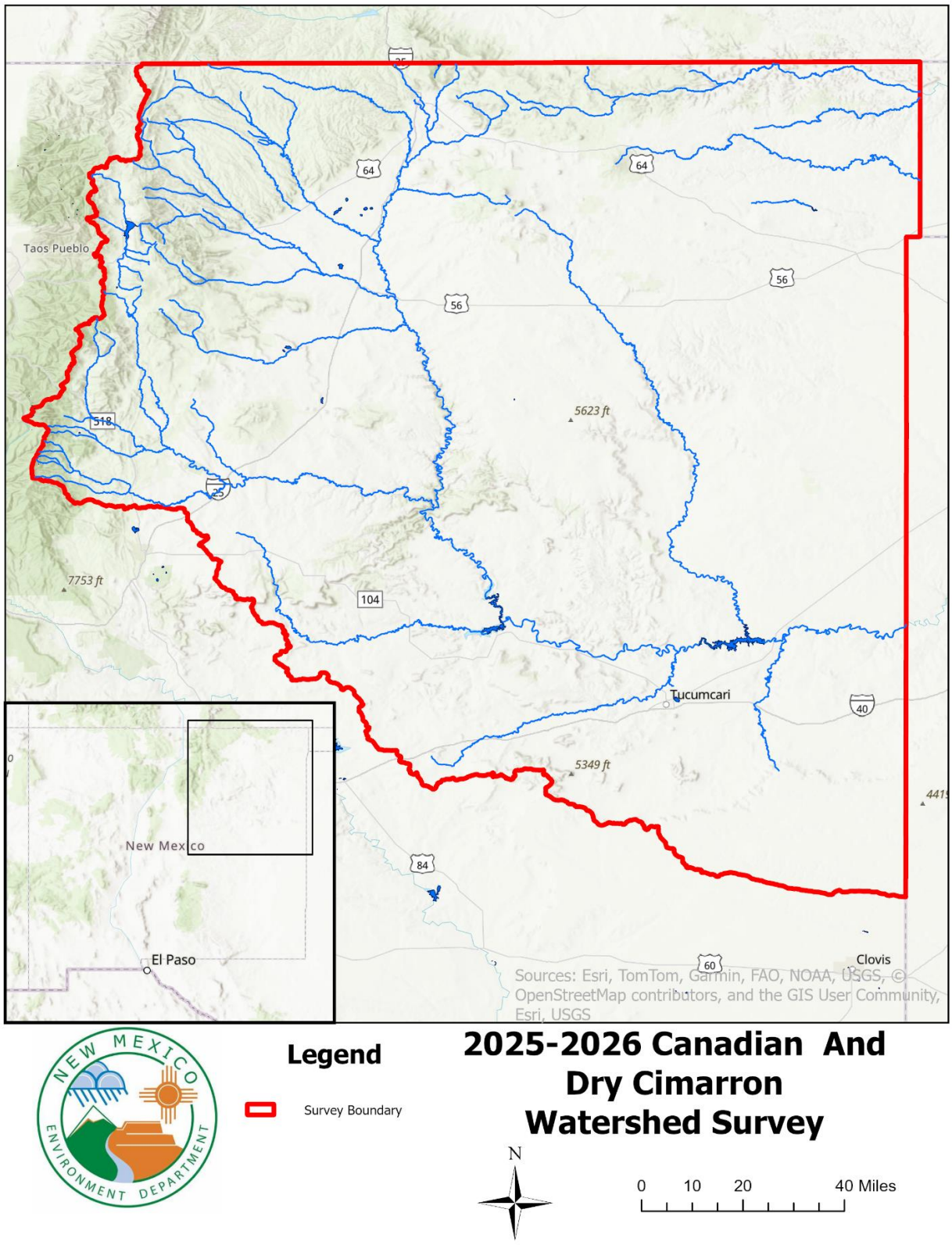

Figure 1. General Map of Canadian and Dry Cimarron Watershed Survey Area

2.0 PROJECT PERSONNEL

2.1 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 Manager.

Table 1. Personnel Roles and Responsibilities

Team Member	Position/Role	Responsibilities
Lynette Guevara Monitoring, Assessment, and Standards Section Program Manager Lynette.Guevara@env.nm.gov 505-629-8811	Program Manager	Program Manager responsibilities noted in this FSP are completed in coordination with the Project Manager. Approve FSP, directs staff to publish the FSP according to program and/or grant requirements. Manage project personnel and resources throughout the project in coordination with Project Manager(s) and Project Team. Provide oversight and coordinate with QAO and Project Manager(s) on data collection activities not conducted in accordance with the FSP, QAPP, or current SOPs. Conduct environmental data collection activities in accordance with the developed FSP, QAPP, and current SWQB SOPs.

Team Member	Position/Role	Responsibilities
Miguel Montoya Monitoring Team Supervisor Miguel.Montoya@env.nm.gov 505-819-9882	Project Manager	Manage project resources throughout the project in coordination with Program Manager and Project Team. Conduct environmental data collection activities in accordance with the developed FSP, QAPP, and current SWQB SOPs. Data collection activities not conducted in accordance with the FSP, QAPP, or current SOPs will be documented and reported to the Program Manager and QAO. Conduct mid-survey meeting with team to discuss any changes to the project plan. Coordinate and conduct post-survey meeting with team to discuss differences between planned and actual sampling and what data gaps, if any, exist. Ensure the progress of project is kept on track by running SQUID reports and discussing on going data collection activities with Project Team. Write, coordinate, and assemble report and/or other grant deliverables required of the project.
Neal Denton Advanced Monitoring Team Scientist Neal.denton@env.nm.gov 505-531-7250 Issac Martinez Monitoring Team Scientist Issac.martinez@env.nm.gov 505-699-7101 Savannah Cutler Monitoring Team Scientist Savannah.cutler@env.nm.gov 505-629-2443 Hannah Burnham Monitoring Team Scientist Hannah.burnham@env.nm.gov	Project Team	Conduct environmental data collection activities in accordance with the developed FSP, QAPP, and current SWQB SOPs. Data collection activities not conducted in accordance with the FSP, QAPP, or current SOPs will be documented and reported to the Project Manager. Maintain project files in dedicated survey folder. Calibration worksheets and field forms utilized for data collection will be maintained according to SOPs. Write assigned sections of reports and/or other grant deliverables required throughout the project.

Team Member	Position/Role	Responsibilities
505-946-8808		
Emily Miller Emly.miller@env.nm.gov 505-660-3534	Quality Assurance Officer (QAO)	Approve and ensure FSP is retained in accordance with 1.21.2 NMAC, Retention and Disposition of Public Records. Documents approved changes of FSP in QA project files. Conduct audits as needed to ensure compliance with FSP, QAPP and SOPs.
Michael Baca Michael.Baca1 @env.nm.gov 505-946-8954	Standards, Planning and Reporting Team (SPRT) Liaison	Provide information and data needs pertaining to water quality standards development and refinement located within the study area.
Heidi Henderson Heidi.Henderson@env.nm.gov 505-819-9986	TMDL and Assessment Team (TAT) Liaison	Provide information and data needs pertaining to TMDL development and assessment to be conducted in the study area.
Susan A. Lucas Kamat Susan.LucasKamat@env.nm.gov 505-946-8924	Point Source Regulation Section (PSRS) Liaison	Provide information and data needs pertaining to point source discharges located within the study area.
Kate Lacey Kathryn.Lacey@env.nm.gov 505-946-8952	Watershed Protection Section (WPS) Liaison	Provide information and data needs pertaining to nonpoint sources of pollution and BMPs located within the study area.
Maryann McGraw Maryann.McGraw@state.nm.us 505-819-9891	Wetlands Program Liaison	Provide information and data needs pertaining to wetlands located within the study area.

2.2 Organization

The Project Manager; Project Team; Standards, Planning and Reporting Team Liaison; and TMDL and Assessment Team Liaison report to the MASS Program Manager for the responsibilities defined in this project. The Wetlands Program Liaison reports to the Watershed Protection Section (WPS) Program Manager. The Point Source Regulation Section (PSRS) Liaison and the WPS Liaison are section Program Managers and report to the SWQB Bureau Chief. An organizational chart of the SWQB is available at https://www.env.nm.gov/surface-water-quality/contact-us-3/.

3.0 PROJECT DESCRIPTION

3.1 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 2024b) (IR). The IR 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 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 FSP are focused toward meeting the goals of the most recent, EPA approved IR (NMED/SWQB 2024b). The impairments for AUs in this survey area listed in **Table 2** were identified during SWQB's most recent survey of this watershed, conducted in 2015-2016, 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). "WQS Reference" provides the applicable Water Quality Standard reference 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). 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 Completed" column lists the EPA-approved TMDLs for the Assessment Unit.

Assessment of surface waters against the WQS occurs after the monitoring data have been verified and validated, using the most recent assessment protocols. Assessment protocols are updated every odd year (e.g., 2025, 2027) and are opened for the EPA and the public to review and comment as part of the update process (NMED/SWQB 2023a). Waterbodies determined to be impaired are reported as such every even year (e.g., 2026, 2028) on the State's IR List. TMDLs or TMDL alternatives are typically developed for listed AUs.

Table 2. Canadian and Dry Cimarron: Impairment and TMDL Status of Survey Assessment Units[1]

Assessment Unit	WQS[2] Segment	Impairments	IR Category	Completed TMDLs
American Creek (Cieneguilla Creek to headwaters)	20.6.4.309	Aluminum, Total Recoverable|E. coli	5-R	Aluminum, Total Recoverable (2022)[3]| E. coli (2022)
Canadian River (Chicorica Creek to CO border)	20.6.4.305	Temperature	5/5B	
Canadian River (Cimarron River to Chicorica Creek)	20.6.4.305	Nutrients	4A	Nutrients (2011)
Canadian River (Mora River to Cimarron River)	20.6.4.305		1	
Canadian River (TX border to Ute Reservoir)	20.6.4.301	Temperature	5/5B	
Carrizozo Creek (OK bnd to headwaters)	20.6.4.702		3/3A	
Chicorica Creek (Canadian River to East Fork Chicorica)	20.6.4.305		1	
Chicorica Creek (East Fork Chicorica to Lake Maloya)	20.6.4.305		1	
Cieneguilla Creek (Eagle Nest Lake to headwaters)	20.6.4.309	E. coli |Nutrients| Sedimentation/Siltation |Temperature| Turbidity	4A	E. coli (2010) | Nutrients (2010) | Sedimentation/Siltation (2004) | Turbidity (2004)
Cimarron River (Canadian River to Ponil Creek)	20.6.4.306	Nutrients|Temperature	5/5B[4]	Nutrients (2010)
Cimarron River (State hwy 21 in Cimarron to Turkey Creek)	20.6.4.309	Temperature|Turbidity	5/5A	Temperature (2010)
Cimarron River (Turkey Creek to Eagle Nest Lake)	20.6.4.309	Nutrients|Temperature |Turbidity	5/5A	Nutrients (2010) | Temperature (2010)
Conchas River (Conchas Reservoir to Salitre Creek)	20.6.4.305	Aluminum, Total Recoverable|E. coli |Nutrients	4A	Aluminum, Total Recoverable (2019)|E. coli (2019)|Nutrients (2019)
Corrumpa Creek (OK border to headwaters)	20.6.4.310		3/3A	
Coyote Creek (Mora River to Amola Ridge)	20.6.4.309	Nutrients|Specific Conductance| Temperature	4A	Nutrients (2019) | Specific Conductance (2007) | Temperature (2007)
Doggett Creek (Raton Creek to headwaters)	20.6.4.318	E. coli|Nutrients	4A	E. coli (2019) | Nutrients (2019)
Dry Cimarron R (Perennial prt Jesus Canyon to Long Canyon)	20.6.4.702		3/3A	
Dry Cimarron R (Perennial prt OK bnd to Sloan Creek)	20.6.4.702	Nutrients|Sulfate| Temperature|Total Dissolved Solids (TDS)	4A	Nutrients (2019) | Sulfate (2009) | Temperature (2019) | Total Dissolved Solids (TDS) (2009)

Assessment Unit	WQS[2] Segment	Impairments	IR Category	Completed TMDLs
Dry Cimarron River (Long Canyon to Oak Ck)	20.6.4.702	Nutrients	4A	Nutrients (2019)
Dry Cimarron River (Oak Creek to headwaters)	20.6.4.701	Nutrients|Temperature	5/5B	Nutrients (2019)
Middle Ponil Creek (South Ponil to Greenwood Creek)	20.6.4.309	Temperature|Turbidity	4A	Temperature (2001) | Turbidity (2001)
Mora River (Canadian River to USGS gage east of Shoemaker)	20.6.4.305		1	
Mora River (HWY 434 to Luna Creek)	20.6.4.309	Specific Conductance	4A	Specific Conductance (2007)
Mora River (USGS gage east of Shoemaker to HWY 434)	20.6.4.307	E. coli|Nutrients	4A	E. coli (2019) | Nutrients (2015)
North Ponil Creek (Seally Canyon to headwaters)	20.6.4.309	Aluminum, Total Recoverable|Gross Alpha, Adjusted Radium|Temperature| Turbidity	5/5C	Temperature (2011) | Turbidity (1999)
North Ponil Creek (South Ponil Creek to Seally Canyon)	20.6.4.309	E. coli| Temperature|Turbidity	4A	E. coli (2010) | Temperature (1999) | Turbidity (2004)
Ocate Ck (Perennial prt Sweetwater Ck to Charette Lakes Div)	20.6.4.307	Flow Regime Modification	4C	
Ocate Creek (Ocate Village to Wheaton Creek)	20.6.4.309	Flow Regime Modification	4C	
Ponil Creek (Cimarron River to HWY 64)	20.6.4.306	Dissolved oxygen	5/5C	
Ponil Creek (HWY 64 to confl of North and South Ponil)	20.6.4.309	E. coli |Nutrients|Specific Conductance| Temperature|Turbidity	5/5B	E. coli (2010) | Nutrients (2010) | Temperature (2001) | Turbidity (2001)
Raton Creek (Chicorica Creek to headwaters)	20.6.4.305	Nutrients	4A	Nutrients (2019)
Rayado Creek (Cimarron River to Miami Lake Diversion)	20.6.4.307	E. coli |Nutrients| Sedimentation/Siltation	5/5A	Nutrients (2010) | Sedimentation/Siltation (2001)
Rayado Creek (Miami Lake Diversion to headwaters)	20.6.4.309	Temperature	4A	Temperature (2010)
Revuelto Creek (Canadian River to headwaters)	20.6.4.98	Temperature	5/5B	
Rito Cebolla (Mora River to Rito Morphy)	20.6.4.307	Dissolved oxygen	5/5B	
Sapello River (Mora River to Arroyo Jara)	20.6.4.307	Dissolved oxygen|Sedimentation/ Siltation|Temperature	5/5B	Sedimentation/Siltation (2007)

Assessment Unit	WQS[2] Segment	Impairments	IR Category	Completed TMDLs
Santiago Creek (Rito Cebolla to headwaters)	20.6.4.307	Flow Regime Modification	4C	
South Ponil Creek (Ponil Creek to Middle Ponil Creek)	20.6.4.309	Temperature	4A	Temperature (2010)
Una de Gato Creek (Chicorica Creek to HWY 64)	20.6.4.305	Nutrients	4A	Nutrients (2011)
Ute Creek (Perennial prt Garcia Creek to Palo Blanco Creek)	20.6.4.303		1	
Ute Creek (Ute Reservoir to Bueyeros Creek)	20.6.4.98		3/3A	
VanBremmer Creek (HWY 64 to headwaters)	20.6.4.309	Specific Conductance | Temperature | Turbidity	5/5B	
Vermejo River (Canadian River to Rail Canyon)	20.6.4.305	Flow Regime Modification	4C	
Vermejo River (Rail Canyon to York Canyon)	20.6.4.309	Temperature | Turbidity	5/5B	Temperature (2007)
Vermejo River (York Canyon to Rock Creek)	20.6.4.309	Temperature	4A	Temperature (2007)
Wolf Creek (Mora River to headwaters)	20.6.4.307	Flow Regime Modification	4C	
York Canyon (Vermejo R to Left Fork York Canyon)	20.6.4.309	Dissolved oxygen | Specific Conductance |Temperature | Turbidity	5/5B	Specific Conductance (2007)

NOTES:

[1] Based on the 2024-2026 State of New Mexico Clean Water Act Section 303(d)/Section 305(b) Integrated List and Report. Santa Fe, NM (NMED/SWQB 2022. Available at: https://www.env.nm.gov/surface-water-quality/303d305b/).

[2] WQS = Water Quality Standards

[3] Alternative Based Plan rather than TMDL.

[4] Incorrectly listed as 5/5A in the 2024-2026 IR.

3.2 Objectives

Table 3 outlines the project objectives identified to meet the various SWQB needs. Data needs have been determined based on core parameters needed to complete assessments according to the Comprehensive Assessment and Listing Methodology (CALM), impairments from previous studies, identified data gaps, and consultation with the 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
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?	IR	WQS as interpreted by the Assessment Protocols
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, IR (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?
Obtain data for ambient/baseline water quality upstream of NPDES outfall	What is the water quality above the NPDES outfall?	Survey chemical, physical and biological data	NPDES Permits / Certifications

3.3 Monitoring Strategy

SWQB monitoring of surface waters across the State currently occurs utilizing a rotational watershed sampling approach. Monitoring occurs during the non-winter months from March through November and focuses on physical, chemical, and biological conditions, mostly in perennial waters, including sampling for most pollutants that have numeric and/or narrative criteria in the WQS.

To achieve the goals outlined in Section 3.2, the NMED SWQB utilizes a targeted monitoring design to address data needs identified for assessment, TMDLs, potential standards revisions, and point source monitoring. Monitoring sites are selected based on the data needs for an assessment unit, accessibility, and representation of and within the assessment unit. Each assessment unit is represented by one or more monitoring stations, each of which receives 4–5 site visits during the survey. The goal of the project is to visit and collect at least the minimum number of data points for assessment. Requirements for assessment can be found in the most recent version of the CALM.

3.4 Project Schedule

As part of the survey planning process, the NMED SWQB held a public comment period to solicit input on any areas of concern within the AUs surveyed and to inform interested parties about the SWQB water quality survey process, the specific sampling plans in the watershed, and the assessment and TMDL processes.

For this survey, the NMED SWQB held a virtual public meeting in March 2025 and considered information received from the public input process into the FSP.

The NMED SWQB will document the progress of this project and track it from 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.

Water chemistry results typically take several months to return from the State analytical laboratory, Scientific Laboratory Division (SLD). The NMED SWQB has incorporated the lag time to receive results into the schedule. When sample results are received, they undergo verification and validation according to the most up to date SWQB SOPs. The final step of the project is the publication of a survey report on the SWQB website that summarizes the data collection effort and documents changes to the original and revised FSP. The final survey report will be made available at: https://www.env.nm.gov/surface-waterquality/water-quality-monitoring/.

Following project completion, the data will be assessed for incorporation into the 2028-2030 IR List. Once the assessments are complete, the TMDL development process will begin for any identified impairments.

Table 4. Project Schedule

Activity	Winter 2024-2025	Spring 2025-2026	Summer 2025-2026	Fall 2025-2026	Winter 2025-2026	Spring 2027	Summer 2027
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					==========▶	==========▶	

3.5 Project Location

The survey includes the Dry Cimarron River and tributaries from its headwaters near Johnson Mesa to the Oklahoma state line; and the following Canadian River tributaries: the Cimarron River and tributaries originating above Eagle Nest Lake and in the Valle Vidal unit of the Carson National Forest; Raton Creek and tributaries extending to Sugarite Canyon State Park and Johnson Mesa; the Vermejo River and tributaries originating on the Vermejo Park Ranch; Ocate Creek and the Mora River and tributaries originating in the Carson and Santa Fe National Forests; Conchas River; Ute Creek; and all other major tributaries of interest. **Table 5** shows a complete list of stations illustrated in **Figure 2**. Figures 3-7 show a more precise location of sampling stations.

Table 5. Canadian and Dry Cimarron Watersheds Water Quality Stations

Map #	AU ID	Station ID	Station Name	Station Rationale
1	NM-2306.A_066	05Americ001.3*	American Creek upstream of pond	Determined most representative station in last survey, Al/E.coli impairments
2	NM-2305.A_200	04Canadi352.7	Canadian River above Cimarron River	Bottom of the AU
3	NM-2305.A_201	04Canadi416.5	Canadian River at I-25	Bottom of the AU
4	NM-2305.A_100	06Canadi274.8	Canadian River at NM 120	Lowest in AU
5	NM-2301_00	09Canadi003.9*	Canadian River near TX line	Lowest station in AU/Watershed/State
6	NM-2701_40	02Carriz002.7	Carrizozo Creek near NM406 (DCR 12)	Bottom of the AU
7	NM-2305.A_251	04Chicor029.4	Chicorica Creek at NM 72	Bottom of the AU
8	NM-2305.A_250	04Chicor010.9	Chicorica Creek below Una de Gato Creek	Bottom of the AU, increased chance of maintaining flow if sampled below Una de Gato rather than above.
9	NM-2306.A_065	05Cieneg019.3	Cieneguilla Creek at Angel Fire Road	Above Angel Fire WWTP outfall
10	NM-2305.1.A_10	05Cimarr000.5	Cimarron abv Canadian River	Bottom of the AU
11	NM-2306.A_130	05Cimarr078.1	Cimarron River at Eagle Nest Outlet	Bottom of HUC 12
12	NM-2306.A_040	05Cimarr044.2	Cimarron River at NM 21 in Cimarron	Bottom of the AU
13	NM-2305.A_010	08Concha043.1	Conchas River abv NM 104	Bottom of HUC 10 where break in AU is recommended
14	NM-2701_30	16Corrum051.1	Corrumpa Creek at Hwy 370	Only station in AU
15	NM-2306.A_020	07Coyote004.2	Coyote Creek at USGS Gage at Thal Ranch	Lowest station in AU that did not go dry in 2015-2016 survey

Map #	AU ID	Station ID	Station Name	Station Rationale
16	NM-2305.A_255	04Dogget002.3	Doggett Creek above Raton WWTP	Above Raton WWTP
17	NM-2305.A_255	04Dogget002.2	Doggett Creek below Raton WWTP	Lowest in AU
18	NM-2701_02	02DryCim074.5*	Dry Cimarron River above Long Canyon (DCR 05)	Downstream end of the AU. To fill the long gap between Folsom Falls and Wiggens Road.
19	NM-2701_01	02DryCim113.1	Dry Cimarron River above Oak Creek	Bottom of the AU
20	NM-2701_04	02DryCim047.2	Dry Cimarron River at Jesus Mesa Road (DCR 09)	Lowest in AU (and proposed HUC 10 AU)
21	NM-2701_00	02DryCim011.4	Dry Cimarron River at Spool Ranch Road (DCR 08)	Better site on AU for physical habitat measurements
22	NM-2306.A_121	05MPonil000.1	Middle Ponil Creek above South Ponil Creek	Bottom of AU above S. Ponil.
23	NM-2305.A_020	07MoraRi000.8*	Mora River 0.5 mile abv Canadian River	Lowest in AU
24	NM-2305.3.A_00	07MoraRi147.1	Mora River above Mora WWTP lagoons	Above WWTP outfall
25	NM-2306.A_000	07MoraRi151.1	Mora River at CR 48	Bottom of HUC 12
26	NM-2306.A_000	07MoraR177.3	Mora River at Luna Canyon Rd	In Calf Canyon Fire bnd. Bottom of HUC 12
27	NM-2306.A_000	07MoraR161.1	Mora River at Tramperos Rd	In Calf Canyon Fire bnd. Bottom of HUC 12
28	NM-2305.3.A_00	07MoraRi094.0	Mora River at Watrous	Lowest historic station in AU
29	NM-2305.3.A_00	07MoraRi146.6	Mora River below Mora WWTP lagoons	Below WWTP outfall
30	NM-2305.3.A_00	07MoraRi123.7	MORA RIVER NEAR GOLONDRINAS N. MEX.	Bottom of AU, high priority for follow up data collection prior to temperature TMDL
31	NM-2306.A_162	05NPonil023.2	North Ponil Cr abv Seally Cr	Bottom of the AU
32	NM-2306.A_110	05NPonil000.1	North Ponil Creek above South Ponil	Bottom of the AU
33	NM-2306.A_070	06OcateC063.0	Ocate Creek above village of Ocate	Only station in AU
34	NM-2305.3.A_71	06OcateC025.1	Ocate creek at I-25	Only station in AU
35	NM-2306.A_100	05PonilC000.1	Ponil Creek above Cimarron River	Bottom of the AU
36	NM-2306.A_10	05PonilC014.9*	Ponil Creek at NM 64	Above Cimarron Village WWTP outfall
37	NM-2305.A_253	04RatonC005.1	Raton Creek at McAuliffe Ranch	Lowest in AU
38	NM-2305.3.A_80	05Rayado001.8*	Rayado Creek above Cimarron River	Bottom of the AU

Map #	AU ID	Station ID	Station Name	Station Rationale
39	NM-2306.A_051	05Rayado033.8	Rayado Creek on NM 21	Bottom of AU. Above Miami lake diversion-bio reference site. Casa fire 2006 burned watershed from Philmont to Miami lake.
40	NM-2301_10	11Revuel025.5	Revuelto Creek at I-40	Hudson reservoir & irrigation canals enter into Revuelto. CA 2006 sampled in support of OSE project. Better site on AU to prevent losing equipment to flood theft.
41	NM-2305.3.A_40	07RitoCe017.8	Rio Cebolla at CR A014	Bottom of HUC 12
42	NM-2305.3.A_40	07RitoCe000.3	Rito Cebolla @ NM 161	Lowest in AU
43	NM-2305.3.A_41	07Santia002.3	SANTIAGO CREEK AT STATE HWY 94 NEAR LEDOUX, NM	Classified as perennial but 2016 data show it may not be. Hydrology protocol scheduled here.
44	NM-2305.3.A_20	07Sapell000.1	Sapello R. at Hwy 161 (near Watrous)	Only station in AU
45	NM-2306.A_120	05SPonil000.1	South Ponil abv North Ponil	Bottom of the AU
46	NM-2305.A_254	04UnaGat000.1	Una de Gato Creek above Chicorica Creek	Bottom of the AU. Listed for fecals and SBD on 1998-2000 303(d) list.
47	NM-2303_21	10UteCre164.7	Ute Cr. at SR 56	Lowest in AU
48	NM-2303_23	10UteCre083.8	Ute Creek at NM 420	Bottom of HUC 10
49	NM-2306.A_140	04VanBre009.4	VanBremmer Creek at Hwy 64	Lowest in AU
50	NM-2305.A_220	04Vermej039.5*	Vermejo River above Rail Canyon	Bottom of the AU
51	NM-2305.A_230	04Vermej076.0	Vermejo River above York Canyon	Bottom of the AU
52	NM-2305.A_210	04Vermej002.9	VERMEJO RIVER AT I-25	Lowest in AU
53	NM-2305.3.A_10	07WolfCr000.6	Wolf Cr. abv Mora R.	Lowest in AU
54	NM-2306.A_153	04YorkCa000.1	York Canyon above Vermejo River	Bottom of the AU

NOTES:
*Pending private property access approval

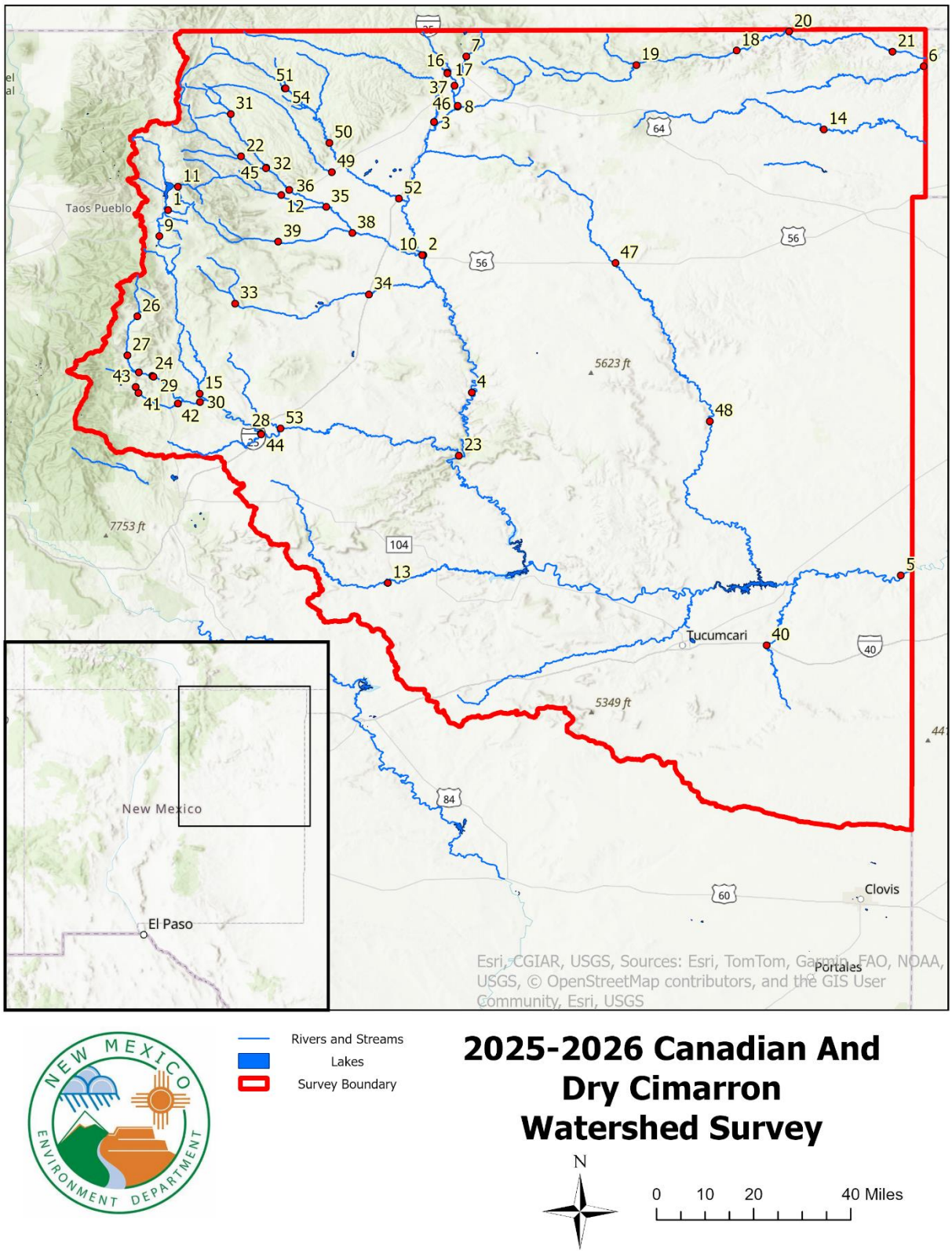

Figure 2. Survey Area Sampling Locations

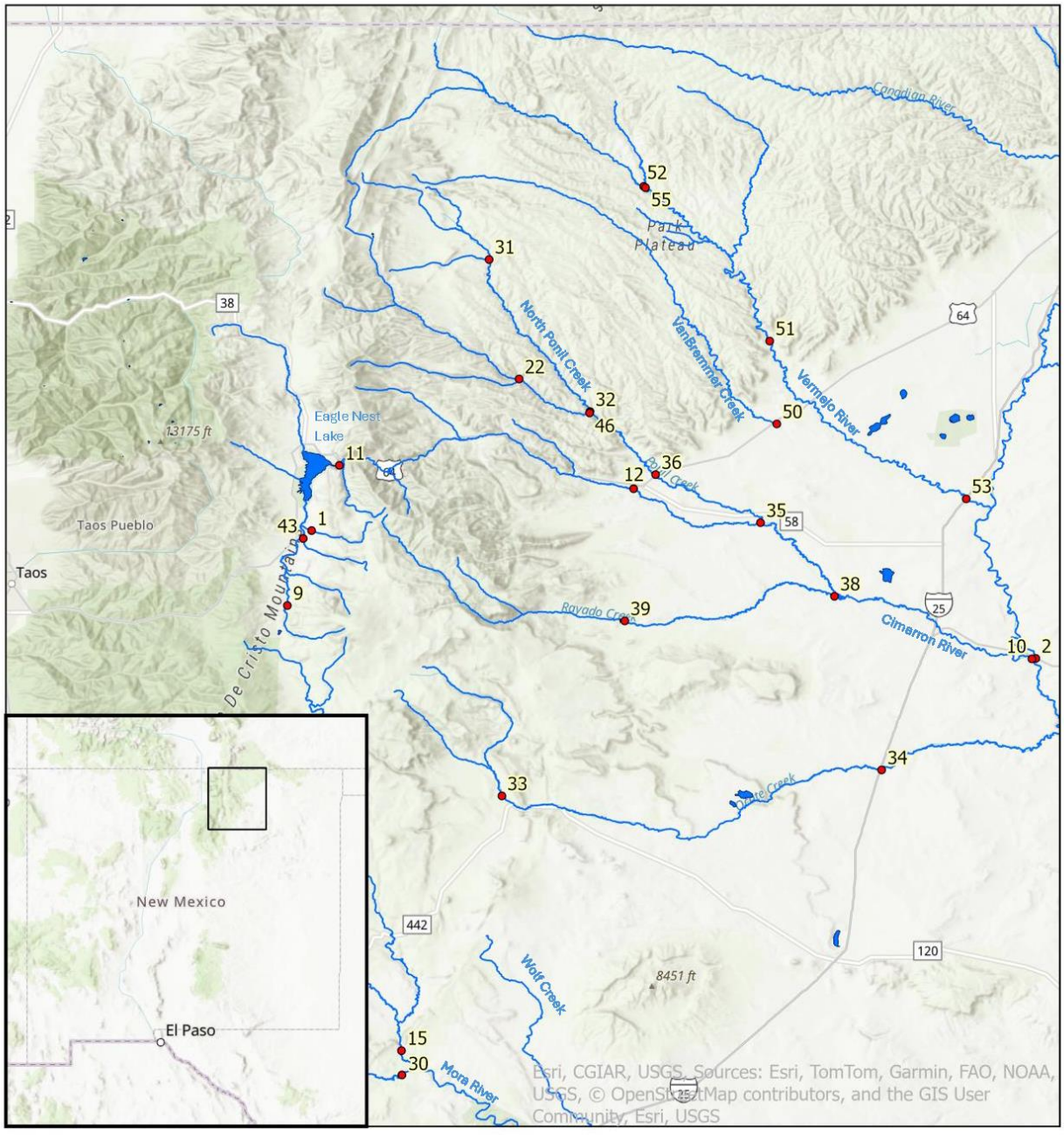

Figure 3. Northwest Sampling Locations

Figure 4. North Sampling Locations

Figure 5. Northeast Sampling Locations

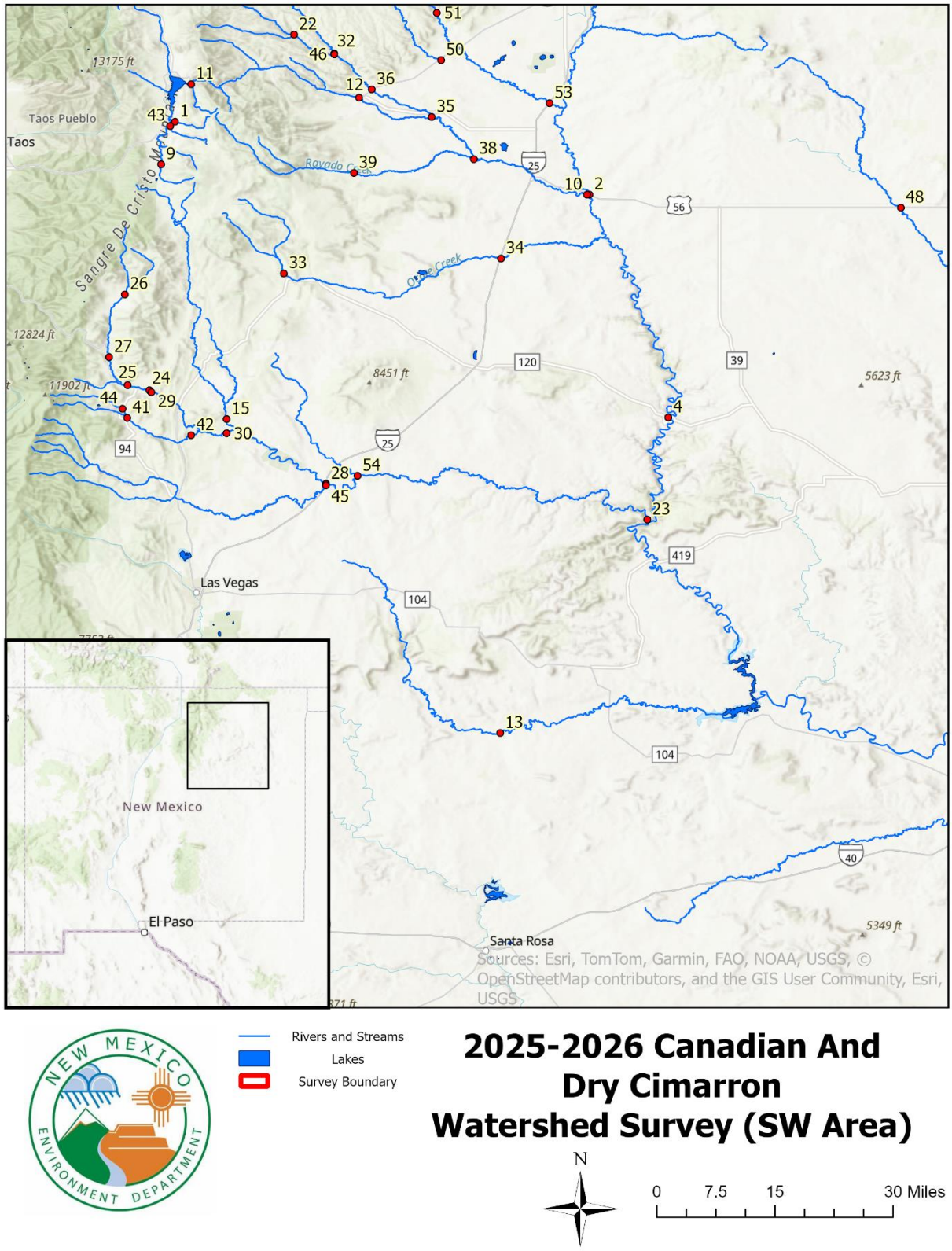

Figure 6. Southwest Sampling Locations

Figure 7. Southeast Sampling Locations

4.0 DOCUMENTATION

Project documents will include this field sampling plan, field sheets (including chemistry, physical habitat, probable source observations and data logger deployment/retrieval sheets), calibration records, 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 for Water Quality Management Programs (NMED/SWQB 2024).

The survey data will be organized within the following project folder in the SWQB database:

- Canadian River / Dry Cimarron River Survey 2025-2026

The NMED SWQB will document project activities on SWQB Monitoring Field Sheets and enter and maintain information from field sheets in the SWQB database in accordance with the SWQB QAPP and SOPs. Analytical results will be electronically transferred into the SWQB database and uploaded to US EPA'S Water Quality Exchange (WQX) database. The project is completed once the Survey Report is finalized.

Narrative descriptions of progress, any plan deviations, issues, or corrective actions throughout the project will be documented and addressed in the mid-survey revised FSP and Final Survey Report. Any deviations from SOPs and other field, laboratory, and data analysis practices will be presented to the MASS Program Manager, Monitoring Team Supervisor and the Quality Assurance Officer for consideration and approval.

Project activities will be documented in SWQB MASS Section Field Sheets. Information from field sheets are entered and organized in the SWQB's network server and data results are uploaded to the *Surface water Quality Information Database* (SQUID). Most results are electronically transferred into the SQUID database and eventually uploaded to the U.S. Environmental Protection Agency's (EPA) ***W**ater **Q**uality E**x**change* (WQX). All data are verified and validated for completeness and accuracy. Project data housed in SQUID are organized in reports and assessed by the SWQB Assessment Coordinator to determine if water quality standards are being attained. A survey report summarizing the Canadian / Dry Cimarron 2025-2026 Water Quality Survey is tentatively planned for completion in April 2027.

5.0 SAMPLING PLAN

5.1 Chemistry Sampling

Sample collection techniques, preservation and acidification requirements, equipment, and quality control activities associated with the sampling of surface water for analytes listed in **Table 6** will be conducted in accordance with current SWQB SOP 8.1 Chemical Sampling – Equipment Cleaning Procedure, SOP 8.2 Chemical Sampling in Lotic Environments, SOP 8.4 PFAS Sample Collection, SOP 9.1 Bacteriological Sampling and SOP 12.1 Lake Sampling.

Water quality samples will be analyzed by the SLD, the SWQB laboratory, or contract laboratory accordance with procedures prescribed in the most current SWQB QAPP and SOPs. Nutrient samples where high phosphorus levels are expected, such as WWTPs, will be analyzed using a method with a higher reporting limit.

Table 6 outlines the water quality analytes to be measured during the two-year survey and their sampling frequency. The number of samples collected at each monitoring station depends on the available time and resources. At a minimum the SWQB will collect a sufficient number of samples for assessment purposes according to the requirements of the most up to date CALM. Currently, the SWQB plans to collect at least 4 samples (5 if resources allow) of core parameters (i.e., metals, nutrients and *E. coli*) at each monitoring location detailed in **Table 6**. The footnotes to **Table 6** contain more detailed information regarding the specific analytical suites utilized.

Chemistry samples and their applicable analytical suites for each station are planned based on the data needs identified for each assessment unit and to address the most common sources of impairment in lakes and streams. Due to limited resources, not all the water quality criteria listed in 20.6.4.900 NMAC will be sampled at all stations. Radionuclides and volatile/semi-volatile organic compounds may be sampled in major tributaries, typically upstream of WWTPs. PCBs generally will not be sampled in the water column since these compounds have not been detected at levels of concern in previous water samples for these areas. Assessment units with current or historic metals impairments may receive higher numbers of metals samples.

In addition to the analytes listed, instantaneous measurements for field parameters such as temperature, specific conductance, salinity, dissolved oxygen concentration, dissolved oxygen saturation, pH, and turbidity will be measured at each site using an In-Situ® multi-parameter sonde in accordance with SWQB SOPs.

SWQB is working with other government agencies, municipalities, Pueblos, watershed groups, and other organizations to collaboratively maximize sampling and monitoring efforts. Data sharing opportunities benefit all groups by providing larger spatial and temporal coverage. Any data collected from outside groups are subjected to the SWQB QAPP, SOPs, and any other applicable QA/QC procedures prior to assessment.

Table 6. Canadian and Dry Cimarron Watersheds: Water Chemistry Sampling Frequency

Map #	Station ID	Assessment Unit	TDS/TSS	TDS/TSS + Chloride, Sulfate	Nutrients (low P)[1]	Total Metals (Hg, Se, Al)	Dissolved Metals[2]	Total Organic Carbon[3]	Dissolved Organic Carbon[4]	*E. coli*	PFAS / PFOA[5]	Volatile Organic Compounds[6]	Semi-volatile Organics[7]	Radionuclides[8]
1	05Americ001.3	American Creek (Cieneguilla Creek to headwaters)	4		4	4	4	4	4	4				
2	04Canadi352.7	Canadian River (Cimarron River to Chicorica	4		4	4	4	4	4	4				

Map #	Station ID	Assessment Unit	TDS/TSS	TDS/TSS + Chloride, Sulfate	Nutrients (low P)[1]	Total Metals (Hg, Se, Al)	Dissolved Metals[2]	Total Organic Carbon[3]	Dissolved Organic Carbon[4]	*E. coli*	PFAS / PFOA[5]	Volatile Organic Compounds[6]	Semi-volatile Organics[7]	Radionuclides[8]
		Creek)												
3	04Canadi416.5	Canadian River (Chicorica Creek to CO border)	4		4	4	4	4	4	4				
4	06Canadi274.8	Canadian River (Mora River to Cimarron River)	4		4	4	4	4	4	4				4
5	09Canadi003.9	Canadian River (TX border to Ute Reservoir)	4		4	4	4	4	4	4				4
6	02Carriz002.7	Carrizozo Creek (OK bnd to headwaters)		4	4	4	4	4	4	4				
7	04Chicor029.4	Chicorica Creek (East Fork Chicorica to Lake Maloya)	4		4	4	4	4	4	4				
8	04Chicor010.9	Chicorica Creek (Canadian River to East Fork Chicorica)	4		4	4	4	4	4	4				
9	05Cieneg019.3	Cieneguilla Creek (Eagle Nest Lake to headwaters)	4		4	4	4	4	4	4				
10	05Cimarr000.5	Cimarron River (Canadian River to Ponil Creek)	4		4	4	4	4	4	4				
11	05Cimarr078.1	Cimarron River (Turkey Creek to Eagle Nest Lake)	4		4	4	4	4	4	4				
12	05Cimarr044.2	Cimarron River (State hwy 21 in Cimarron to	4		4	4	4	4	4	4				

Map #	Station ID	Assessment Unit	TDS/TSS	TDS/TSS + Chloride, Sulfate	Nutrients (low P)[1]	Total Metals (Hg, Se, Al)	Dissolved Metals[2]	Total Organic Carbon[3]	Dissolved Organic Carbon[4]	*E. coli*	PFAS / PFOA[5]	Volatile Organic Compounds[6]	Semi-volatile Organics[7]	Radionuclides[8]
		Turkey Creek)												
13	08Concha043.1	Conchas River (Conchas Reservoir to Salitre Creek)	4		4	4	4	4	4	4				
14	16Corrum051.1	Corrumpa Creek (OK border to headwaters)		4	4	4	4	4	4	4				
15	07Coyote004.2	Coyote Creek (Mora River to Amola Ridge)	4		4	4	4	4	4	4				4
16	04Dogget002.3	Doggett Creek (Raton Creek to headwaters)	4		4	4	4	4	4	4				
17	04Dogget002.2	Doggett Creek (Raton Creek to headwaters)	4		4	4	4	4	4	4				
18	02DryCim074.5	Dry Cimarron River (Long Canyon to Oak Ck)		4	4	4	4	4	4	4				
19	02DryCim113.1	Dry Cimarron River (Oak Creek to headwaters)		4	4	4	4	4	4	4				
20	02DryCim047.2	Dry Cimarron R (Perennial prt Jesus Canyon to Long Canyon)		4	4	4	4	4	4	4				
21	02DryCim011.4	Dry Cimarron R (Perennial prt OK bnd to Sloan Creek)		4	4	4	4	4	4	4				4

Map #	Station ID	Assessment Unit	TDS/TSS	TDS/TSS + Chloride, Sulfate	Nutrients (low P)[1]	Total Metals (Hg, Se, Al)	Dissolved Metals[2]	Total Organic Carbon[3]	Dissolved Organic Carbon[4]	*E. coli*	PFAS / PFOA[5]	Volatile Organic Compounds[6]	Semi-volatile Organics[7]	Radionuclides[8]
22	05MPonil000.1	Middle Ponil Creek (South Ponil to Greenwood Creek)	4		4	4	4	4	4	4				
23	07MoraRi000.8	Mora River (Canadian River to USGS gage east of Shoemaker)	4		4	4	4	4	4	4				4
24	07MoraRi147.1	Mora River (USGS gage east of Shoemaker to HWY 434)	4		4	4	4	4	4	4	2	4		
25	07MoraRi151.1	Mora River (HWY 434 to Luna Creek)	4		4	4	4	4	4	4				4
26	07MoraR177.3	Mora River (HWY 434 to Luna Creek)	4		4	4	4	4	4	4				
27	07MoraR161.1	Mora River (HWY 434 to Luna Creek)	4		4	4	4	4	4	4				
28	07MoraRi094.0	Mora River (USGS gage east of Shoemaker to HWY 434)	4		4	4	4	4	4	4				4
29	07MoraRi146.6	Mora River (USGS gage east of Shoemaker to HWY 434)	4		4	4	4	4	4	4				
30	07MoraRi123.7	Mora River (USGS gage east of Shoemaker to HWY 434)	4		4	4	4	4	4	4				

Map #	Station ID	Assessment Unit	TDS/TSS	TDS/TSS + Chloride, Sulfate	Nutrients (low P)[1]	Total Metals (Hg, Se, Al)	Dissolved Metals[2]	Total Organic Carbon[3]	Dissolved Organic Carbon[4]	*E. coli*	PFAS / PFOA[5]	Volatile Organic Compounds[6]	Semi-volatile Organics[7]	Radionuclides[8]
31	05NPonil023.2	North Ponil Creek (Seally Canyon to headwaters)	4		4	4	4	4	4	4		4	4	4
32	05NPonil000.1	North Ponil Creek (South Ponil Creek to Seally Canyon)	4		4	4	4	4	4	4		4	4	4
33	06OcateC063.0	Ocate Creek (Ocate Village to Wheaton Creek)	4		4	4	4	4	4	4				
34	06OcateC025.1	Ocate Ck (Perennial prt Sweetwater Ck to Charette Lakes Div)	4		4	4	4	4	4	4				
35	05PonilC000.1	Ponil Creek (Cimarron River to HWY 64)	4		4	4	4	4	4	4				
36	05PonilC014.9	Ponil Creek (HWY 64 to confl of North and South Ponil)	4		4	4	4	4	4	4				
37	04RatonC005.1	Raton Creek (Chicorica Creek to headwaters)	4		4	4	4	4	4	4				
38	05Rayado001.8	Rayado Creek (Cimarron River to Miami Lake Diversion)	4		4	4	4	4	4	4				
39	05Rayado033.8	Rayado Creek (Miami Lake Diversion to headwaters)	4		4	4	4	4	4	4				

Map #	Station ID	Assessment Unit	TDS/TSS	TDS/TSS + Chloride, Sulfate	Nutrients (low P)[1]	Total Metals (Hg, Se, Al)	Dissolved Metals[2]	Total Organic Carbon[3]	Dissolved Organic Carbon[4]	*E. coli*	PFAS / PFOA[5]	Volatile Organic Compounds[6]	Semi-volatile Organics[7]	Radionuclides[8]
40	11Revuel025.5	Revuelto Creek (Canadian River to headwaters)	4		4	4	4	4	4	4		4		4
41	07RitoCe017.8	Rito Cebolla (Mora River to Rito Morphy)	4		4	4	4	4	4	4				
42	07RitoCe000.3	Rito Cebolla (Mora River to Rito Morphy)	4		4	4	4	4	4	4				
44	07Sapell000.1	Sapello River (Mora River to Arroyo Jara)	4		4	4	4	4	4	4		4		4
45	05SPonil000.1	South Ponil Creek (Ponil Creek to Middle Ponil Creek)	4		4	4	4	4	4	4				
46	04UnaGat000.1	Una de Gato Creek (Chicorica Creek to HWY 64)	4		4	4	4	4	4	4				
47	10UteCre164.7	Ute Creek (Perennial prt Garcia Creek to Palo Blanco Creek)	4		4	4	4	4	4	4				
48	10UteCre083.8	Ute Creek (Ute Reservoir to Bueyeros Creek)	4		4	4	4	4	4	4				4
50	04Vermej039.5	Vermejo River (Rail Canyon to York Canyon)	4		4	4	4	4	4	4				
51	04Vermej076.0	Vermejo River (York Canyon to Rock Creek)	4		4	4	4	4	4	4				

Map #	Station ID	Assessment Unit	TDS/TSS	TDS/TSS + Chloride, Sulfate	Nutrients (low P)[1]	Total Metals (Hg, Se, Al)	Dissolved Metals[2]	Total Organic Carbon[3]	Dissolved Organic Carbon[4]	*E. coli*	PFAS / PFOA[5]	Volatile Organic Compounds[6]	Semi-volatile Organics[7]	Radionuclides[8]
52	04Vermej002.9	Vermejo River (Canadian River to Rail Canyon)	4		4	4	4	4	4	4				
53	07WolfCr000.6	Wolf Creek (Mora River to headwaters)	4		4	4	4	4	4	4				
54	04YorkCa000.1	York Canyon (Vermejo R to Left Fork York Canyon)	4		4	4	4	4	4	4				
	Quality Control	Blanks Collected per QAPP					24		24	24	**			
		Totals	184	24	208	208	232	208	232	232	2	20	8	48

NOTES:

[1] Suite includes total Kjeldahl nitrogen, nitrate+nitrite, ammonia and total phosphorus.

[2] 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.

[3] SM analytical method 5310 Total Organic Carbon (TOC)

[4] SM analytical method 5310 Dissolved Organic Carbon (DOC)

[5] PFAS EPA analytical method 537.1: See SWQB SOP 8.4 for a list of PFAS compounds included in analysis.

[6/7] See Appendix B for a complete list of analytes.

[8] A radionuclide sample will include gross alpha and gross beta and depending on detections may include Uranium mass and Radium 226 + 228.

** Blanks provided by Laboratory see SOP 8.2 for Chemical Sampling in Lotic Environments (VOCs) and SOP 8.4 for PFAS.

5.2 Physical Habitat, Biological Sampling, and Datalogger Deployment

Measuring biological response indicators (e.g., fish, macroinvertebrates, and phytoplankton) concurrent to physical habitat measurements and chemistry gives an overall interpretation of the biological integrity of the reach represented. These data also provide further information such as characteristics of sediment and nutrients currently cycling through the stream and potential sources of water quality stress.

For this survey the SWQB will be collecting physical habitat data at select sites to assess waterbodies for potential impairment from increased temperatures, sediment deposition, nutrient enrichment, and toxic

pollutants and conducted in accordance with the SWQB SOPs. Physical habitat data will be collected in accordance with the most current version of SOP 5.0 Physical Habitat Measurements.

Fish data may also be collected within survey areas in coordination with the NMED SWQB Fish Consumption Advisory Program.

Sondes and data loggers will be deployed at select sites in the stream according to the requirements of the CALM to record specific conductance, dissolved oxygen, turbidity, or pH fluctuations. For more information on minimum deployment intervals needed to complete assessment for specific parameters please refer to the most current CALM. Sones, DO loggers and conductivity loggers will be deployed according to SWQB SOP 6.1 Sondes, and SOP 6.2 Dissolved Oxygen and Conductivity Loggers. Thermographs (water temperature data loggers) are generally deployed from May through September in targeted AUs throughout the survey to measure temperature fluctuations. Thermographs will be deployed in accordance with the most current SOP 6.3 Temperature data loggers. The Hydrology Protocol data will be collected as prescribed in the most current NMED SWQB Water Quality Management Plan/ Continuing Planning Process (WQMP/CPP 2020) (https://www.env.nm.gov/surface-water-quality/wqmp-cpp/).

Resources, site access, and other issues do not allow for the deployment of datalogging instruments or collection of biological and habitat data at every AU. Stations are selected for biological and physical 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 observation of probable source(s). Additional sites determined to be in "reference" or "best available condition" will also be selected for biological and physical monitoring for inclusion in development and refinement of biological and habitat criteria if time and resources allow. **Table 7** summarizes the biological and habitat sampling that is planned for this survey. The numbers listed within data type columns of **Table 7** describe and number of data collection events planned for each station during the 2025-2026 survey. The footnotes to **Table 7** contain more detailed information.

Sonde/DO/conductivity logger deployments described in **Table 7** are planned in accordance with the data requirements identified in the most current CALM. Revision of the CALM in 2025 may lead to changes in sampling methods or the sampling schedule.

Any resulting changes to the FSP will be documented in the final survey report.

Table 7. Canadian and Dry Cimarron Watersheds: Biological and Habitat Sampling

Map #	Station ID	Assessment Unit	Sonde Deployment[1]	DO Logger[2]	Conductivity Logger	Thermograph[3]	Physical Habitat[3]	Flow	Hydrology Protocol
1	05Americ001.3	American Creek (Cieneguilla Creek to headwaters)						4	
2	04Canadi352.7	Canadian River (Cimarron River to Chicorica Creek)		1				4	
3	04Canadi416.5	Canadian River (Chicorica Creek to				1	1	4	

Map #	Station ID	Assessment Unit	Sonde Deployment[1]	DO Logger[2]	Conductivity Logger	Thermograph[3]	Physical Habitat[3]	Flow	Hydrology Protocol
		CO border)							
5	09Canadi003.9	Canadian River (TX border to Ute Reservoir)				1			
6	02Carriz002.7	Carrizozo Creek (OK bnd to headwaters)						4	
7	04Chicor029.4	Chicorica Creek (East Fork Chicorica to Lake Maloya)						4	
8	04Chicor010.9	Chicorica Creek (Canadian River to East Fork Chicorica)						4	
9	05Cieneg019.3	Cieneguilla Creek (Eagle Nest Lake to headwaters)	1			1		4	
10	05Cimarr000.5	Cimarron River (Canadian River to Ponil Creek)		1		1		4	
11	05Cimarr078.1	Cimarron River (Turkey Creek to Eagle Nest Lake)	1			1	1	4	
12	05Cimarr044.2	Cimarron River (State hwy 21 in Cimarron to Turkey Creek)	1			1	1		
13	08Concha043.1	Conchas River (Salitre Creek to headwaters)						4	
14	16Corrum051.1	Corrumpa Creek (OK border to headwaters)						4	
15	07Coyote004.2	Coyote Creek (Mora River to Amola Ridge)		1	1	1	1		
16	04Dogget002.3	Doggett Creek (Raton Creek to headwaters)		1					
17	04Dogget002.2	Doggett Creek (Raton Creek to headwaters)						4	
18	02DryCim074.5	Dry Cimarron River (Long Canyon to Oak Ck)		1				4	
19	02DryCim113.1	Dry Cimarron River (Oak Creek to headwaters)						4	
20	02DryCim047.2	Dry Cimarron R (Perennial prt		1		1	1	4	

Map #	Station ID	Assessment Unit	Sonde Deployment[1]	DO Logger[2]	Conductivity Logger	Thermograph[3]	Physical Habitat[3]	Flow	Hydrology Protocol
		Jesus Canyon to Long Canyon)							
21	02DryCim011.4	Dry Cimarron R (Perennial prt OK bnd to Sloan Creek)		1		1	1	4	
22	05MPonil000.1	Middle Ponil Creek (South Ponil to Greenwood Creek)	1			1	1	4	
23	07MoraRi000.8	Mora River (Canadian River to USGS gage east of Shoemaker)						4	
24	07MoraRi147.1	Mora River (USGS gage east of Shoemaker to HWY 434)						4	
25	07MoraRi151.1	Mora River (HWY 434 to Luna Creek)			1		1	4	
28	07MoraRi094.0	Mora River (USGS gage east of Shoemaker to HWY 434)		1			1		
31	05NPonil023.2	North Ponil Creek (Seally Canyon to headwaters)	1			1	1	4	
32	05NPonil000.1	North Ponil Creek (South Ponil Creek to Seally Canyon)	1			1	1	4	
33	06OcateC063.0	Ocate Creek (Ocate Village to Wheaton Creek)				1	1	4	
34	06OcateC025.1	Ocate Ck (Perennial prt Sweetwater Ck to Charette Lakes Div)						4	1
35	05PonilC000.1	Ponil Creek (Cimarron River to HWY 64)		1				4	
36	05PonilC014.9	Ponil Creek (HWY 64 to confl of North and South Ponil)	1			1	1		1
37	04RatonC005.1	Raton Creek (Chicorica Creek to headwaters)		1			1	4	
38	05Rayado001.8	Rayado Creek (Cimarron River to Miami Lake Diversion)		1			1	4	
39	05Rayado033.8	Rayado Creek (Miami Lake Diversion to headwaters)				1	1		

Map #	Station ID	Assessment Unit	Sonde Deployment[1]	DO Logger[2]	Conductivity Logger	Thermograph[3]	Physical Habitat[3]	Flow	Hydrology Protocol
40	11Revuel025.5	Revuelto Creek (Canadian River to headwaters)				1			
42	07RitoCe000.3	Rito Cebolla (Mora River to Rito Morphy)		1			1	4	
43	07Santia002.3	Santiago Creek (Rito Cebolla to headwaters)							1
44	07Sapell000.1	Sapello River (Mora River to Arroyo Jara)		1		1	1	4	
45	05SPonil000.1	South Ponil Creek (Ponil Creek to Middle Ponil Creek)				1	1	4	
46	04UnaGat000.1	Una de Gato Creek (Chicorica Creek to HWY 64)		1				4	
47	10UteCre164.7	Ute Creek (Perennial prt Garcia Creek to Palo Blanco Creek)						4	
49	04VanBre009.4	VanBremmer Creek (HWY 64 to headwaters)							1
50	04Vermej039.5	Vermejo River (Rail Canyon to York Canyon)	1			1	1		
51	04Vermej076.0	Vermejo River (York Canyon to Rock Creek)				1	1	4	
52	04Vermej002.9	Vermejo River (Canadian River to Rail Canyon)						4	
53	07WolfCr000.6	Wolf Creek (Mora River to headwaters)						4	1
54	04YorkCa000.1	York Canyon (Vermejo R to Left Fork York Canyon)	1			1	1	4	
		Totals	9	14	2	21	22	144	5

NOTES:

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

[2] DO Loggers are deployed at sites that indicate dissolved oxygen supersaturation or depletion.

6.0 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 chemical and biological samples sent to contract laboratories; and equipment costs for E. coli analysis performed by qualified SWQB staff. Sample analysis expenses are summarized in **Table 8**.

Approximate 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. Habitat surveys and hydrology protocol will require two staff surveying one to two sites per day. Staff field days and per diem costs are summarized in **Table 10**. Staff receive $166 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 habitat sampling/monitoring equipment. Total costs for the survey are summarized in **Table 11**.

Table 8. Biological and Chemical Cost Summary for the Canadian and Dry Cimarron Watersheds Survey

Analyte	Total # Samples	Cost per Sample (WTU or $)	Total Expenditure (WTU or $)
TDS/TSS	184	45	8,280
TDS/TSS Chloride, Sulfate	24	105	2,520
Nutrients, low phosphorus	208	95	19,760
Total Metals	208	185	38,480
Dissolved Metals + Ca, Mg	232	140	32,480
Total Organic Carbon (TOC)	232	30	6,960
Dissolved Organic Carbon (DOC)	208	30	6,240
Volatile Organic Compounds	20	150	3,000
Semi-volatile Organics	8	235	1,880
Radionuclides	48	610	29,280
PFAS EPA Method 1633	2	$500	$1,000.00
E. coli (in-house)	232	$8.58	$1,990.56
10 µm Filters (est.)	58	$11.83	$686.14
0.45 µm Filters (est.)	174	$14.79	$2,573.46
Total Samples	2,020	**Total WTUs**	148,880
Total Dollars for Chemistry (excluding E. coli)		**Dollars**	$1,000
Additional Cost (filters)			$3,259.60

Costs are in WTUs, unless otherwise specified by table.

Table 9. Vehicle Costs for the Canadian and Dry Cimarron Watersheds Survey

Month	Approximate Miles	Estimated MPG	EIA Projected Cost of Gasoline per Gallon	Total Fuel Costs
March	1,250	17	$2.92	$215
April	2,500	17	$2.92	$429
May	2,500	17	$2.92	$429
June	2,500	17	$2.92	$429
July	2,500	17	$2.92	$429
August	2,500	17	$2.92	$429
September	2,500	17	$2.92	$429
October	2,500	17	$2.92	$429
TOTAL	**18,750**			**$3,220.59**

Table 10. Field Staff Days and Per Diem Costs for the Canadian and Dry Cimarron Watersheds Survey*

Expense	Water Chemistry Surveys	Biological and Habitat Surveys	Data Logger Deployments	Per diem rate	Total
Per Diem (number of nights out per year)*	32	10	8	$166	$8,300
Field Staff Days (number of days per year)*	80	24	20	-	124

NOTE: *Numbers are for two staff conducting sampling runs (e.g. 16 overnights are expected. 32 water chemistry surveys are shown for per diem to account for the expense of two staff staying overnight.)

Table 11. Total Cost Estimates for the Canadian and Dry Cimarron Watersheds Survey

WTUs	Samples $	Fuel $	Per Diem $	Staff Field Days
148,880	$1,000	$3,220.59	$8,300	124

NOTE: Sample ($) do not include the cost of filters or *E. coli.*

7.0 REPORTING

Following completion of the survey and verification and validation of all data collected during the project (following SWQB SOP 15.0 Verification and Validation), a final survey report will be produced in April 2027 that summarizes the data collected during the survey and describes any deviations from the original or amended Field Sampling Plan. Progress during the survey will be documented in biannual progress reports to EPA for the CWA 106 grant. Other reports and documents that may use information collected during this survey include TMDL reports, proposals for water quality standards revision, and/or NPDES permits.

8.0 REFERENCES

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NMED/SWQB. 2022. SOP 8.1 for Chemical Sampling – Equipment Cleaning Procedure.

NMED/SWQB. 2024. SOP 8.2 for Chemical Sampling in Lotic Environments.

NMED/SWQB. 2023. SOP 8.4 for PFAS Sample Collection.

NMED/SWQB. 2023. SOP 9.1 for Bacteriological Sampling.

NMED/SWQB. 2025. SOP 12.1 for Lake Sampling.

NMED/SWQB. 2023. SOP for Data Verification and Validation.

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 (AU)	Overall water quality standards attainment category for each assessment unit as determined by combining individual designated use support decisions. The unique IR categories for New Mexico are described as follows as follows:
IR Category (Parameter)	Water quality standards attainment category for each listed cause of impairment. The unique IR categories for New Mexico are described as follows 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 3/3A	Insufficient of no reliable monitored data and/or information to determine if any designated or existing use is attained. No data available -- AUs are listed in this subcategory when there are no available data to assess. These are considered high priority for follow up monitoring.
IR Category 3/3B	Insufficient monitored data and/or information to determine if any designated or existing use is attained. Limited data (n = 1 to 3) available, no exceedances -- AUs are listed in this subcategory when there are no exceedances of any applicable criteria in the limited data set. Their priority for follow up monitoring depends on the parameter and concentration (for example, measurements near the criteria would increase the priority for additional sampling).

IR Category 3/3C	Insufficient monitored data and/or information to determine if any designated or existing use is attained. Limited data (n = 1 to 3) available, exceedance(s) -- AUs are listed in this subcategory when there are exceedances of one or more applicable criteria 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 IR Category 5A (see below) until all TMDLs for each pollutant have been completed and approved by EPA.
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, EPA considers flow alteration to be “pollution” vs. a “pollutant.”
IR Category 5/5A	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 IR Category 5A until TMDLs for all pollutants have been completed and approved by EPA.
IR Category 5/5B	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 EPA for consideration, or the AU will be moved to IR Category 5A and a TMDL will be scheduled.
IR Category 5/5C	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 IR Category 5A and a TMDL will be scheduled. If it is determined that the current designated uses are inappropriate, it will be moved to IR 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 IR Category 4C.
IR Category 5-R (previous 5-ALT)	Advanced restoration approach is in progress or under development. EPA created this optional subcategory as an organizing tool to clearly articulate which impaired waterbodies have or will have alternative approaches to attain WQS (EPA 2015). The advanced restoration approach needs to clearly demonstrate how the WQS will be achieved. The description of the advanced restoration approach and the waters to which it applies will be included during public review of the draft Integrated Report, so that the public has an opportunity to view the proposed advance restoration approaches. Additional details on what must be included in the description are found in EPA's listing guidance (EPA 2015).

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)

Organics (semi-volatiles)	Organics (volatiles)
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
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

Organics (semi-volatiles)	Organics (volatiles)
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
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	

Organics (semi-volatiles)	Organics (volatiles)
Simazine	
trans-Chlordane	