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Aquatic Resource Delineation Report

US 63 Bridge Replacement Project (CN4101410)

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Executive Summary

The New Mexico Department of Transportation (NMDOT) District 4 is proposing a bridge replacement project on NM 63 between MPs 21.6 and 22.7 within San Miguel County, New Mexico, Control Number (CN) 4101410). The US 63 Bridge Replacement project (Project) area is located approximately 24 miles north of the town of Pecos within the Sante Fe National Forest in San Miguel County, New Mexico. Ecosphere Environmental Services, Inc. (Ecosphere) prepared this report on behalf of the NMDOT to document the characteristics and boundaries of aquatic resources in the project survey area.

The existing bridge is 56-feet long and 25-feet wide and spans the Rio Mora that is a tributary to the Pecos River. The driving surface on the bridge is 24-feet wide with no shoulders (2 12-foot driving lanes). The bridge was originally built in 1940 and reconstructed in 1964. The bridge pier had cracks, spalling and exposed rebar repaired in 2012 by encasing the pier in concrete. Scour is still being observed at the bridge pier and is the primary need and purpose of the proposed bridge replacement project.

Wetlands and other waters of the US (WUS) in the survey area were delineated on August 3, 2023 by an Ecosphere wetland specialists using guidance provided in the *Corps of Engineers Wetlands Delineation Manual* (US Army Corps of Engineers [USACE] 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Western Mountains, Valleys, and Coast Region* (USACE 2010). Wetland boundaries were defined based on the presence of hydrophytic vegetation, hydric soils, and hydrologic indicators that under normal conditions would indicate wetland conditions. Any perennial, intermittent, or ephemeral WUS present in the survey area were delineated using *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (USACE 2014).

Delineation of any wetlands and other Waters of the US (WUS) within the project area will be conducted using the U.S. Army Corps of Engineers (USACE) *Wetland Delineation Manual* (1987 Manual) (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (WMVC Supplement) (USACE 2010). Based on pre-field review we anticipate the delineation of approximately 3 acres including the bridge removal and new construction area, drainage courses where there are currently culverts in place, and appropriate upstream and downstream buffers.

Based upon the site investigation conducted by Ecosphere, wetlands and other WUS are present in the survey area. Approximately 0.02 acre of palustrine emergent (PEM) and 0.29 acres of palustrine scrub-shrub (PSS) wetlands were delineated in the survey area. In addition, 35 linear feet of perennial channel WUS along the Mora River were delineated in the survey area.

Based on the proposed project design, temporary impacts to PSS wetlands will total 0.04 acre (1,826 square feet); there are no temporary impacts to PEM wetlands. Permanent impacts to PSS wetlands will total 0.0407 acre (2,005 square feet) and permanent impacts to PEM wetlands will total 0.004 acre (182 square feet). Permanent impacts to all wetlands total 0.0447 acres (2,187 square feet) and are shown below and depicted on Map A-5 in Appendix A.

Summary of Impacts

National Wetland Inventory Classification[1]	Impact	Acres	Square Feet
PSS	Temporary	0.0400	1,826.00
PEM	Temporary	0	0
Total Temporary Wetland Impacts		**0.0400**	**1,826.00**
PSS	Permanent	0.0407	2,004.61
PEM	Permanent	0.0040	182.39
Total Permanent Wetland Impacts		**0.0447**	**2,187.00**

[1] PEM=palustrine emergent; PSS=palustrine scrub shrub (Cowardin et al. 1979).

This report assesses the potential for wetlands in the survey area at the time of the field work and does not address conditions at a given time in the future. This report does not constitute a Jurisdictional Determination of WUS, since such determinations must be verified by the USACE and are subject to review by the US Environmental Protection Agency.

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Abbreviations and Acronyms

APT	Antecedent Precipitation Tool
CN	Control Number
Ecosphere	Ecosphere Environmental Services, Inc.
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	geographic information system
GPS	global positioning system
MP	milepost
NHD	National Hydrologic Dataset
NI	no indicator
NL	not listed
NMDOT	New Mexico Department of Transportation
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	obligate wetland
OHWM	ordinary high water mark
PEM	palustrine emergent
project	US 63 Roadway Project, CN 4101410
PSS	palustrine scrub-shrub
SPI	Standardized Precipitation Index
UPL	upland
US 63	US Highway 63
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
WBD	Watershed Boundary Dataset
WUS	waters of the US

1. Introduction

Ecosphere Environmental Services, Inc. (Ecosphere) was contracted in June 2023 by the New Mexico Department of Transportation (NMDOT) to determine the presence of wetlands and other waters of the US (WUS) in the US 63 Bridge Replacement Project, Control Number (CN) 4101410 (project). The project is in San Miguel County in the state of New Mexico (Appendix A, Map A-1).

The purpose of this report is to identify and describe aquatic resources in the survey area and locate and quantify impacts associated with the proposed project. This report facilitates efforts to

- avoid or minimize impacts to aquatic resources during the design process,
- document aquatic resource boundary determinations and impacts for review by regulatory authorities, and
- provide background information for wetland/hydrologic constraints within the project corridor.

The following sections of this report outline the proposed project actions; methodology used during the delineations; and existing conditions, type, acres, and linear feet of wetlands and WUS identified. Maps defining the aquatic resources identified in the project area are provided in Appendix A; additional informational maps, such as soil surveys, are provided in Appendix B. Wetland delineation determination data forms prepared during the surveys are provided in Appendix C and photographs of the project area are included in Appendix D. A table of dominant plants observed is included in Appendix E.

1.1 Project Description

NMDOT in partnership with FHWA is proposing to replace bridge #3926 with a new bridge on a new alignment that is located approximately 10 – 15 feet east of the existing bridge. The new bridge would be 65-feet long and fully span the Rio Mora with no center pier. The new bridge and roadway alignment would be built while leaving the existing bridge in place so that traffic flow is maintained through the Pecos Canyon. Construction activities will likely start in the late fall/winter of 2024/2025 and continue into spring and summer 2025.

The paved temporary detour could be constructed first or later in construction to allow room to build the new roadway approaches on the new alignment. Geotextile material would be placed on top of the natural ground (probably including wetlands) followed by the placement of clean fill and asphalt. New bridge construction would continue along with construction of the new roadway alignment and approaches. Once this is complete, traffic will be diverted to the new bridge and roadway alignment. The temporary detour would be removed along with the geotextile material and fill.

The existing bridge and old roadway would be removed along with the center pier of the existing bridge. Removal of the center pier will occur down to 2-feet below the current streambed. When the center pier is removed, surface flows will be separated from the work area using non-erodible materials such as concrete wall barrier, sand bags, steal sheet piles or other equivalent materials. Removal of the center pier could be done using an excavator, backhoe or bobcat. All disturbed ground will be revegetated per NMDOT Standard Specifications.

1.2 Site Location and Directions

The aquatic resources survey area is located on the Cowles, Colorado, 7.5-minute US Geological Survey (USGS) quadrangle in Section 22, Township 18 N, and Range 12 E (Appendix A, Map A-1). The aquatic resources survey area is located at the existing Mora River bridge location along NM 63 between milepost (MP) 21.6 and MP22.7. The locations of the beginning and end termini of the project alignment are provided below.

The project is located at an elevation of 7,804 ft above sea level along the US Highway 63 corridor at Mora Campground and the confluence of the Mora River and the Pecos River and includes approximately 3 acres including the bridge removal site, new construction alignment, existing and historic drainage courses, and appropriate upstream and downstream buffers.

Location: (Decimal Degrees) (NAD 83)

Beginning of Project	End of Project
Latitude: 35.7771057°N	Latitude: 35.7752934°N
Longitude: 105.6602002°W	Longitude: 105.6597742°W

1.3 Contact Information

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New Mexico Department of Transportation

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2. Methodology

2.1 Pre-Field Desktop Evaluations

Prior to the initiation of field work, Ecosphere completed a preliminary geographic information system (GIS) desktop evaluation of the project area using the following best available information.

- US Geological Survey (USGS) 7.5-minute topographic quadrangles for local and regional environmental settings relevant to surface waters, wetlands, and contours in the project area
- National Hydrography Dataset (NHD) for mapped "bluelines"—perennial, intermittent, and ephemeral drainages—and other water features in the project area (USGS 2016)
- National Wetlands Inventory (NWI) maps generated by the US Fish and Wildlife Service (USFWS) for the project area (USFWS 2020)
- US Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey information for the project area (USDA/NRCS 2017)
- Floodplain data from the Federal Emergency Management Agency (FEMA) Mapping Information Platform (https://msc.fema.gov/portal) (FEMA 2019)
- ESRI ArcGIS Online World Imagery (ESRI World Imagery 2019)
- A historical Standardized Precipitation Index (SPI) report was generated from the National Oceanic and Atmospheric Administration (NOAA) Regional Climate Center for the project area to obtain a precipitation baseline 1 month (30 days) preceding the field investigation efforts (https://hprcc.unl.edu/products/maps/acis/subrgn/NM/Jul23PDataNM.png).
- The Antecedent Precipitation Tool (APT) report (USACE 2019) was also generated for field investigation dates of August 3, 2023. Using daily rainfall data from five regional weather stations, the APT calculates 30-day rolling totals for each of the three 30-day periods preceding the observation date.

2.2 Field Evaluations

A pedestrian survey/delineation was conducted by an experienced Ecosphere wetland scientist within the proposed project boundaries to identify any wetlands or other WUS that may occur in the study area. The boundaries of WUS and wetlands were mapped in the field by Ecosphere. All wetland and other WUS ordinary high water mark (OHWM) lines were mapped using a Trimble GeoXT® global positioning system (GPS) unit with sub-meter accuracy and documented on maps provided in Appendixes A and B. Photographs were taken where each wetland and OHWM was identified and are included in Appendix D. Data were recorded within a Field Collector GIS data dictionary developed by Ecosphere that includes all data required for submittal to the USACE.

All digital data for the site, including aquatic resource boundary mapping and data point locations, have been included with this report as ESRI shapefiles. Each GIS data file includes a metadata file containing the geographic coordinates, projection, and datum.

2.2.1 Wetlands

Wetlands in the project area were delineated using guidance provided in the Corps of Engineers Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010).

Under the delineation procedures identified in these manuals, an area must exhibit characteristic wetland hydrology, hydric soils, and hydrophytic vegetation to be considered a wetland. The USACE requires that under

normal circumstances, all three of these conditions must be met for an area to be defined as a wetland (USACE 1987). Wetlands are generally defined by the USACE as

> "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (USACE 1987).

Any area that appeared to display these characteristics was documented using the USACE's Wetland Determination Data Form for Western Mountains, Valleys, and Coast Region. Wetland determination data forms from the survey area are provided in Appendix C.

2.2.1.1 Hydrophytic Vegetation

The USACE's 1987 wetland delineation manual defines hydrophytic vegetation as "the community of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to exert a controlling influence on the plant species present." Using the USACE's techniques for identifying hydrophytic vegetation, as defined in Part III, paragraph 35 of the 1987 wetland delineation manual, Ecosphere evaluated vegetation on the project site for hydrophytic indicators. Hydrophytic vegetation determinations for this project were primarily based on determining species dominance in a sample area as indicated via visual observation, application of the Dominance Test and/or Prevalence Index worksheet on each sample area determination data form, and identification of the dominant species' wetland indicator status, as defined by the USACE's *National Hydric Plant List* (Lichvar et al. 2016).

Dominant species were defined as those species in each stratum that, when ranked in decreasing order of abundance, exceed 50 percent of the total dominance measure for that stratum, plus any additional plant species comprising 20 percent or more of the total dominance measure for the stratum. Wetland indicator status ratings include obligate (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), upland (UPL), no indicator (NI), and not listed (NL). Scientific nomenclature of all plant species identified in this report follows that of the NRCS PLANTS Database (NRCS 2021c).

Sampling point locations were selected to capture the primary vegetation communities of the wetland and adjacent upland areas. Points were located within approximately 15 feet of each other to highlight the transition from wetland to upland. At each sample plot's observation point, dominant trees, shrubs, herbaceous species, and woody vines (if present) were identified and recorded on the wetland determination form.

2.2.1.2 Hydric Soils

The National Technical Committee for Hydric Soils defines a hydric soil as "a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation" (USACE 1987, p. 20).

Most hydric soils exhibit characteristic morphologies that result from repeated periods of saturation or inundation for more than a few days. Saturation or inundation combined with microbial activity in the soil causes the depletion of oxygen. These processes are evident in the field and can include high organic contents,

gley formations, development of redoximorphic features, and other hydric soil indicators. The presence of hydric soils at each sample point was determined using the definition, criteria, and indicators identified in the 1987 wetland delineation manual (with revisions related to the 1991 and 1992 guidance memorandums from the USACE) and regional supplement (USACE 2010).

Soil pits were dug in each community type location (Appendix A, Map A-4 and A-5) to a sufficient depth to determine hydric characteristics of wetland soils and hydrology. Parameters evaluated included soil color, texture, saturation, and other indicators of inundation. Soil samples were then examined for soil texture and hydric soil indicators. Soil colors were evaluated using a Munsell® soil color chart (Gretag/Macbeth 2000).

2.2.1.3 Wetland Hydrology

Hydrophytic vegetation and hydric soil indicators typically represent a site's medium- to long-term history. According to the USACE wetlands delineation manual, "the term 'wetland hydrology' encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season" (USACE 1987, p. 33). Hydrology indicators are the most inconsistent of wetland indicators, especially in the arid west where extended dry seasons are common and precipitation throughout the year has extreme temporal and spatial variability.

Assessment of the hydrologic criterion was based on primary and secondary indicators, as described in Section III, Paragraph 49 of the wetland delineation manual (USACE 1987) and regional supplement (USACE 2010). Primary indicators include observation of surface water or saturation, as well as evidence of recent inundation (e.g., oxidized rhizospheres along living roots) or current or recent soil saturation (e.g., hydrogen sulfide odor, oxidized rhizospheres). Secondary indicators also include indicators of recent inundation or saturation (e.g., drainage patterns, saturation visible on aerial imagery). Wetland areas identified in the study area were located both adjacent to NWI mapped intermittent channels and in low slope depression areas.

2.2.2 Ordinary High Water Mark

In areas that supported a slope or gradient in topography and where hydrology followed a defined channel, field determination was made on whether intermittent WUS present in the survey area supported a defined OHWM. The USACE generally defines OHWM as follows:

> "The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (USACE 2005).

General characteristics for determining an OHWM in the survey area were identified using guidance provided in USACE regulatory guidance letter No. 05-05, *Ordinary High Water Mark Identification* (USACE 2005). OHWMs for any ephemeral or intermittent WUS were delineated using *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (USACE 2014). Delineation of intermittent active channels in the study area, and thus the OHWM, was based

on identification of three primary physical or biological indicators—topographic break in slope, change in sediment characteristics, and change in vegetation characteristics.

3. Existing Conditions

The survey of the project area was completed on August 3, 2023, by Ecosphere botanist/wetland scientist Julia Hanson. Weather during the field investigation was predominantly sunny with temperatures ranging from the mid-60s to mid-70s degrees Fahrenheit. The site was clear of snow cover and vegetation reflected normal growing season conditions typical for the month of August. The site was consistently receiving seasonal monsoonal afternoon precipitation during the week leading up to the field investigation. The 3-acre survey area (Appendix A, Map A-2) was evaluated for the presence of wetlands and other WUS. The results of both pre-field data review and field review for the subject property are included in the following sections.

3.1 Current Land Uses, Modifications, and Topography

The project area is in San Miguel County, New Mexico, in the Pecos River valley of the Sante Fe National Forest. The local topography in the project area is dominated by the riparian corridor of the Mora River that flows to the southwest at approximately 7,900 feet above sea level. The steep hillsides rise above the project area both to the east and west to a maximum elevation of approximately 9,000 feet (Appendix B, Map A-3).

The study area has undergone anthropogenic disturbances associated with construction and maintenance of the US 63 roadway thoroughfare, including culvert placement in drainages, the gravel right-of-way, and pullouts that have disturbed the historical land use. The forested study area is located adjacent to the Mora Campground facilities with access provided by the NM 63 bridge.

Residents and recreationists frequently haul horse trailers and travel trailers across the existing bridge, originally built in 1940 and reconstructed in 1964. This is the only roadway that provides access to the Pecos Canyon. The driving surface on the bridge consists of two 12-foot-wide driving lanes with no shoulders. The bridge pier had cracks, spalling, and exposed rebar, which was addressed in 2012 by encasing the pier in concrete. Scour is still evident at the bridge pier and is the purpose of the bridge replacement.

3.2 Climate

Baseline climate conditions in the study area over the 30 days leading up to the field investigation were assessed in a historical SPI report generated from the NOAA Regional Climate Center for the project area including the month of July 2023. The report reflected a score of 0.5-1 in the study area, indicating slightly higher than normal precipitation at the time of the field investigation (Figure 3-1).

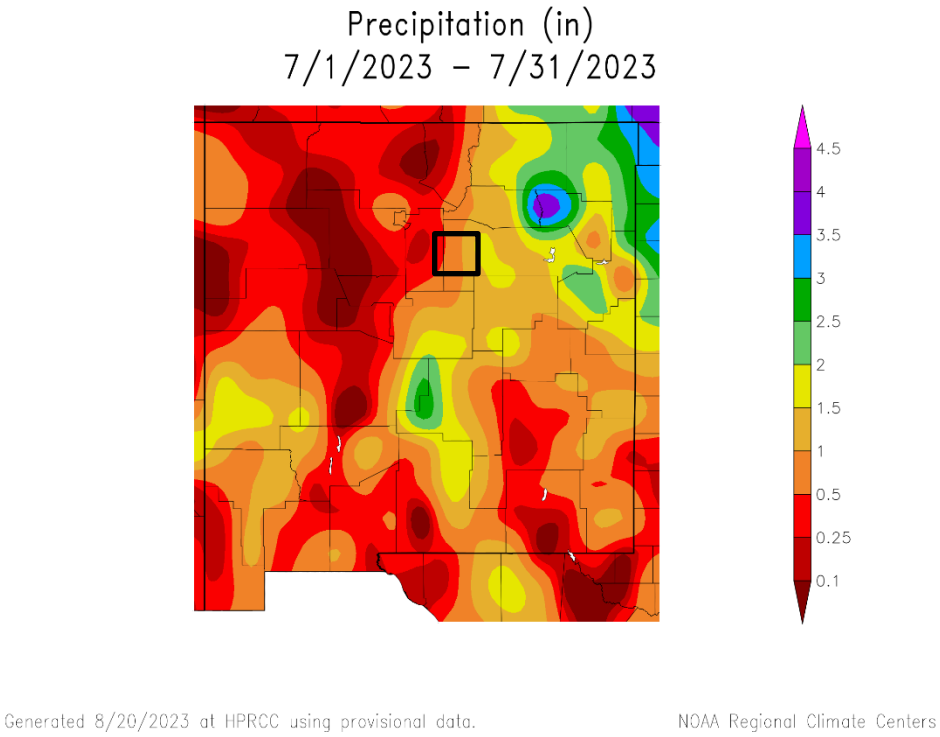
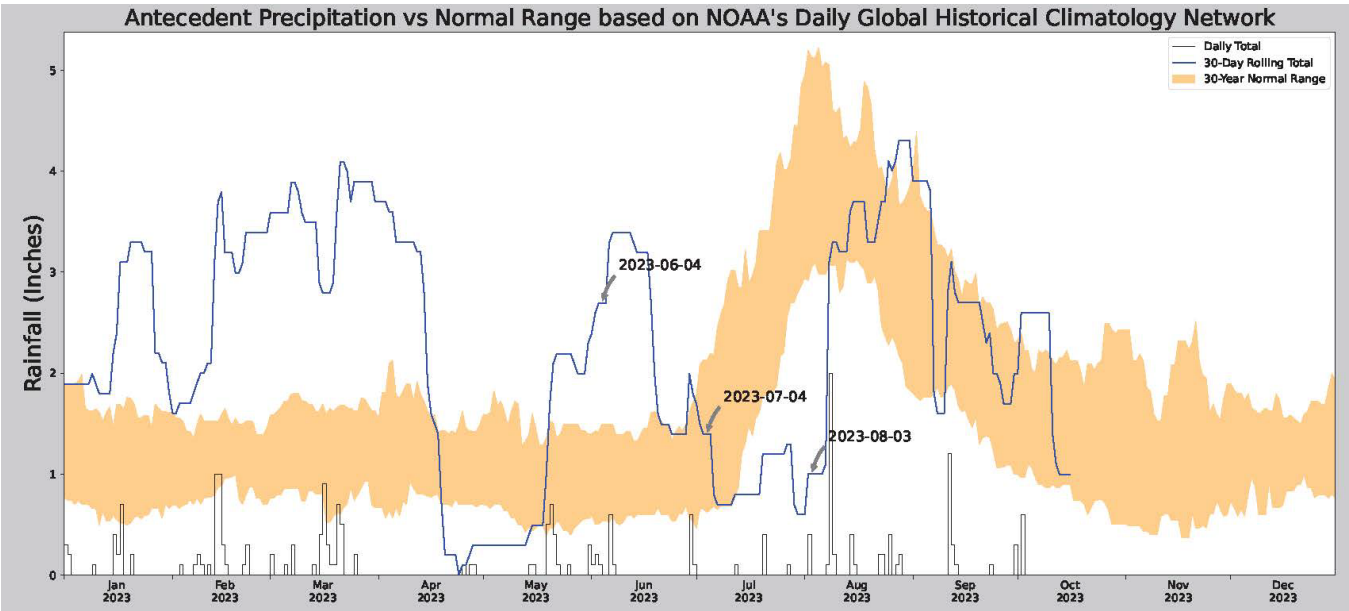


Figure 3-1. SPI Report Generated for the study area July 2023

The APT report was also generated for the field investigation date of August 3, 2023. Using daily rainfall data from five regional weather stations, the APT calculates 30-day rolling totals for each of the three 30-day periods preceding the observation date. A weighted condition value is assigned for each period by determining whether the 30-day total falls within, above, or below the 30th to 70th percentiles of precipitation totals from the same date range over the preceding 30 years. The weighted condition values are then summed across the three 30-day periods to calculate a final precipitation normalcy index score. An index score of 9 or lower indicates antecedent precipitation conditions are drier than normal, a score of 10 to 14 indicates conditions are normal, and a score of 15 or higher indicates conditions are wetter than normal. The APT score for the field investigation dates in the project area is reported as 10, indicating normal conditions in the intermittent channels and wetlands on site during the field assessment (Figure 3-2).



Coordinates	35.7771057, -105.6602002
Observation Date	2023-08-03
Elevation (ft)	7907.383
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-08-03	3.05	5.127953	1.0	Dry	1	3	3
2023-07-04	0.620472	2.126772	1.393701	Normal	2	2	4
2023-06-04	0.537008	1.492126	2.692913	Wet	3	1	3
Result							Normal Conditions - 10

US Army Corps of Engineers
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
Elk Cabin	35.7, -105.81	8209.974	9.948	302.591	7.487	9490	90
SANTA FE 3.6 ENE	35.7047, -105.8992	7604.987	5.015	604.987	5.291	1	0
SANTA FE 2.9 ENE	35.696, -105.9077	7482.94	5.489	727.034	6.461	3	0
SANTA FE 2.7 ENE	35.6946, -105.9094	7413.058	5.59	796.916	6.97	2	0
GLORIETA	35.5817, -105.7728	7520.013	8.436	689.961	9.617	1800	0
GASCON	35.8917, -105.4481	8250.0	24.224	40.026	11.87	57	0

Figure 3-2. Antecedent Precipitation Tool (APT) Report for August 03, 2023

3.3 Hydrology

The study area is in the Pecos River Valley in the Rio Mora watershed (hydrologic unit code 12 [HUC-12] 130600010202), which encompasses 34,419 acres surrounding the study area (WBD 2023). The Rio Mora is a perennial channel and first order tributary to the Pecos River, a perennial waterway that flows southeast through the Sante Fe National Forest to Lake Sumner, near Fort Sumner, New Mexico (NHD 2021). The Rio Mora headwaters are located to the north in the Pecos River Wilderness area in the Sante Fe Mountains and flow southwest to the Pecos River. The smaller watersheds in the higher elevation drainages of the northeast of the study area shed snowmelt and stormwater into ephemeral drainages that flow to the main perennial channel of the Rio Mora (NHD 2021) (Appendix A, Map A-1).

3.4 Vegetation

Vegetation in the project area includes species characteristic of montane/subalpine coniferous forests and the riparian corridor of the Mora River. The forested habitat of the study area is dominated by ponderosa pine (*Pinus ponderosa*), Engelmann's spruce (*Picea engelmannii*), blue spruce (*Picea pungens*), and Gambel oak (*Quercus gambelii*). The riparian corridor community associated with the Mora River is dominated by mature overstory canopy of narrow leaf cottonwood (*Populus angustifolia*) and eastern cottonwood (*Populus deltoides*).

Hydrophytic shrubs such as golden currant (*Ribes aureum*), Woods' rose (*Rosa woodsii*), pacific willow (*Salix lucida* ssp. *lasiandra*), and diamondleaf willow (*Salix planifolia*) dominate the shrub strata. Dominant hydrophytic forbs and graminoids identified in the wetland areas include meadow horsetail (*Equisetum pratense*), marsh willowherb (*Epilobium palustre*), feathery false lily of the valley (*Maianthemum racemosum*), water mint (*Mentha aquatica*), black bent (*Agrostis gigantea*), and spreading bent (*A. stolonifera*). Plant species found in wetland areas and their wetland indicator status are included on the list of observed plant species (Appendix E).

Upland species in the study area include fowl bluegrass (*Poa palustris*), Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*), and western wheatgrass (*Pascopyrum smithii*). Graminoid species in the roadside habitat do not represent historical composition of the surrounding native plant community and include red clover (*Trifolium pratense*), common yarrow *(Achillea millefolium*), Norwegian cinquefoil *(Potentilla norvegica*), and common sunflower *(Helianthus annuus*).

3.5 Geology and Soils

From Raton and Taos south to Santa Fe, the Sangre de Cristo Mountains represent the southern Rocky Mountain Province. These mountains were formed by the folding and faulting of the North American continent about 80 to 55 million years ago. Specifically, the geologic unit underlying the study area is metamorphic, undifferentiated Paleoproterozoic mafic metavolcanic rocks with subordinate felsic metavolcanic rocks. Lithologic constituents include metamorphic, metasedimentary, and metaclastic. Numerous metasedimentary rocks are present, mostly metasandstone, metaconglomerate, and various schists. The geologic map is included in Appendix B, Map B-2.

According to the NRCS Web Soil Survey, two soil map units occur in the survey area and include the Morenda-Fiesta-Dula complex, 0 to 35 percent slopes, flooded unit and Etown, moderately deep-Derecho families-Rock outcrop association, 15 to 120 percent slopes unit (Table 3-1). Soils descriptions are included in the soil survey report from the Santa Fe National Forest Area, New Mexico, Parts of Los Alamos, Mora, Rio Arriba, Sandoval, San Miguel and Santa Fe Counties Soil Survey (NRCS 2021a). NRCS soil unit maps for the study area are provided in Table 3-1 and are depicted on the soil map in Appendix B (Map B-3).

Based on the field investigation of delineated aquatic resource areas, the soils were not significantly disturbed or problematic and displayed normal circumstances in wetland areas and soil data points. Soils primarily conform to the depleted matrix (F3) hydric soil indicator, in the persistently saturated soils of the depressional wetlands. Soils were assessed at two soil dataset transects (T1 and T2) conducted in the survey area and are depicted on Map A-2 and Map A-3 in Appendix A. The set of T1 data points was taken within the Area 1 and 2 PSS wetland and reflected hydric conditions that displayed a depleted soil matrix. The data set for T2 soil data points was taken within the PEM/ wetlands labeled Area 3 and displayed depleted dark surface (F7) through the soil profile from 6” to 12” below surface (Appendix C).

Table 3-1. Soil Types in the Project Area, San Miguel County, New Mexico Soil Report

Soil Unit Symbol	Soil Type[1]	Description	Hydric Soil? [2]
MLC	Morenda-Fiesta-Dula complex, 0 to 35 percent slopes, flooded	The Morenda flooded component is on valley floors. The parent material consists of slope alluvium derived from granite and gneiss. This soil does not meet hydric criteria. The Fiesta component consists of slope alluvium derived from granite and gneiss. This component is in the *Pinus ponderosa-Juniperus scopulorum/Quercus gambelii* ecological site. Non-irrigated land capability classification is 4c. This soil does not meet hydric criteria. The Dula flooded component parent material consists of alluvium derived from igneous, metamorphic and sedimentary rock. This component is in the Mountain Meadow ecological site. This soil meets hydric criteria.	Yes
228	Etown, moderately deep-Derecho families-Rock outcrop association, 15 to 120 percent slopes	The Etown family, moderately deep component parent material consists of colluvium derived from sandstone and shale and/or limestone and/or residuum weathered from sandstone and shale and/or limestone. This soil does not meet hydric criteria. The Derecho family component is on mountain slopes, mountains. The parent material consists of colluvium derived from sandstone and shale and/or limestone and/or residuum weathered from sandstone and shale and/or limestone. This soil does not meet hydric criteria.	No

[1, 2] Natural Resources Conservation Service 2023.

4. Aquatic Resources

Wetland delineation determination data forms were completed for all aquatic resources in the survey area; copies of the completed forms are provided in Appendix C. Table 4-1 provides a summary of the aquatic resources delineated in the survey area.

Table 4-1. Aquatic Resources Delineated in the Survey Area

Name	National Wetland Inventory Classification[1]	Latitude	Longitude	Length (Linear Feet)	Area (Acres)
Area 1	PSS	35.776333 N	105.659592 W	NA	0.140
Area 2	PSS	35.776464 N	105.659670 W	NA	0.058
Area 3	PEM	35.779755 N	105.659518 W	NA	0.019
Area 4	PSS	35.775500 N	105.659857 W	NA	0.088
Mora River	R3SB	35.776597 N	105.659646 W	35	NA

[1] PEM=palustrine emergent; PSS=palustrine scrub shrub; R3SB=perennial streambed (Cowardin et al. 1979).

4.1 PEM/PSS Wetlands

PSS riparian fringing wetlands Area 1 and 2 are hydrologically sourced by the perennial flows of the Mora River drainage. The Mora River supports a rocky bed channel with low sloping banks that support hydrophytic vegetation, rocky soils with redoxomorphic hydric soil indicators and saturation. The wetlands are linear and typically 8 feet wide within the study area. (Appendix A, Map A-3 and A-4; Appendix D, Photographs D-5, D-6 and D-7).

PEM wetland Area 3 is a topographic depressional area that impounds hydrology sources from the adjacent hillside of the study area. Located in an historic topographic depression that naturally supports wetlands, this area was surface saturated, supported hydric vegetation and bare ground where saturation was prevalent during periods of inundation. (Appendix A, Map A-3 and A-4, Appendix D, Photographs D-4).

PSS wetland Area 4 is also supported by the groundwater hydrology and adjacent proximity to the Mora River. PSS wetland Area 4 is a depressional wetland complex that supports surface saturation during the growing season and ordinary flow levels of the Mora River. The hydrology within PSS Wetland Area 4 may be associated with the low-lying topography of an historical oxbow channel of the Mora River. Hydrophytic shrubs, forbs and graminoids are supported by hydric soils. PSS wetland Area 4 continues south beyond the project area as depicted on Appendix A, Map A-3 and A-4. Photograph D-8 represents the vegetation and low-lying topography observed during the field investigation.

4.2 Perennial Channels (R3SB WUS)

Mora River is a perennial channel mapped within the project area and labeled as R3SB. The cobble stream bed channel flows through the NM 63 project corridor and supported a typical ordinary high water level during the field investigation in August 2023 (Appendix A, Map A-3 and A-4). The perennial channel maintained a defined bed and bank, with an OHWM that was approximately 12-feet wide, with 6- to 8-foot vegetated banks dominated by hydrophytic OBL and FAC forbs, grasses, and shrub species (Photographs D-5 and D-6).

5. Discussion

Ecosphere delineated the aquatic resources along the NM 63 corridor study area. Based upon the site investigation conducted by Ecosphere, wetlands and other WUS are present in the survey area. Approximately 0.02 acre of palustrine emergent (PEM) and 0.29 acres of palustrine scrub-shrub (PSS) wetlands were delineated in the survey area. In addition, 35 linear feet of perennial channel WUS along the Mora River were delineated in the survey area.

The perennial channel (R3SB) displayed a clear bed and bank channel with OHWM indicators with consistent perennial flows during the field investigation in August 2023. The perennial channel transitions into a wetland complex that supports both fringing and depressional PSS and PEM wetlands delineated within the study area (Areas 1, 2, 3, 4).

NMDOT in partnership with FHWA is proposing to replace bridge #3926 with a new bridge on a new alignment that is located approximately 10 to 15 feet east of the existing bridge. The new bridge would be 65 feet long and fully span the Rio Mora with no center pier. The existing bridge and old roadway would be removed along with the center pier of the existing bridge. Removal of the center pier will occur down to 2 feet below the current streambed.

Based on the proposed project design, temporary impacts to PSS wetlands will total 0.04 acre (1,826 square feet); there are no temporary impacts to PEM wetlands. Permanent impacts to PSS wetlands will total 0.04 acre (2,005 square feet) and permanent impacts to PEM wetlands will total 0.004 acre (182 square feet). Permanent impacts to all wetlands total 0.044 acres (2,187 square feet) and are shown in Table 5-1 and depicted on Map A-5 in Appendix A.

Table 5-1. Summary of Impacts

National Wetland Inventory Classification[1]	Impact	Acres	Square Feet
PSS	Temporary	0.0400	1,826.00
PEM	Temporary	0	0
Total Temporary Wetland Impacts		**0.0400**	**1,826.00**
PSS	Permanent	0.0407	2,004.61
PEM	Permanent	0.0040	182.39
Total Permanent Wetland Impacts		**0.0447**	**2,187.00**

[1] PEM=palustrine emergent; PSS=palustrine scrub shrub (Cowardin et al. 1979).

The boundaries of identified wetlands were mapped using a Trimble GeoXT unit with sub-meter accuracy. Note that field indicators can change with variations in hydrology and other factors. This report assesses the potential for wetlands at the site at the time of the field work and does not address conditions at any time in the future. This report does not constitute a jurisdictional determination of wetlands and other WUS, since such

determinations must be verified by the USACE and are subject to review by the US Environmental Protection Agency.

6. References

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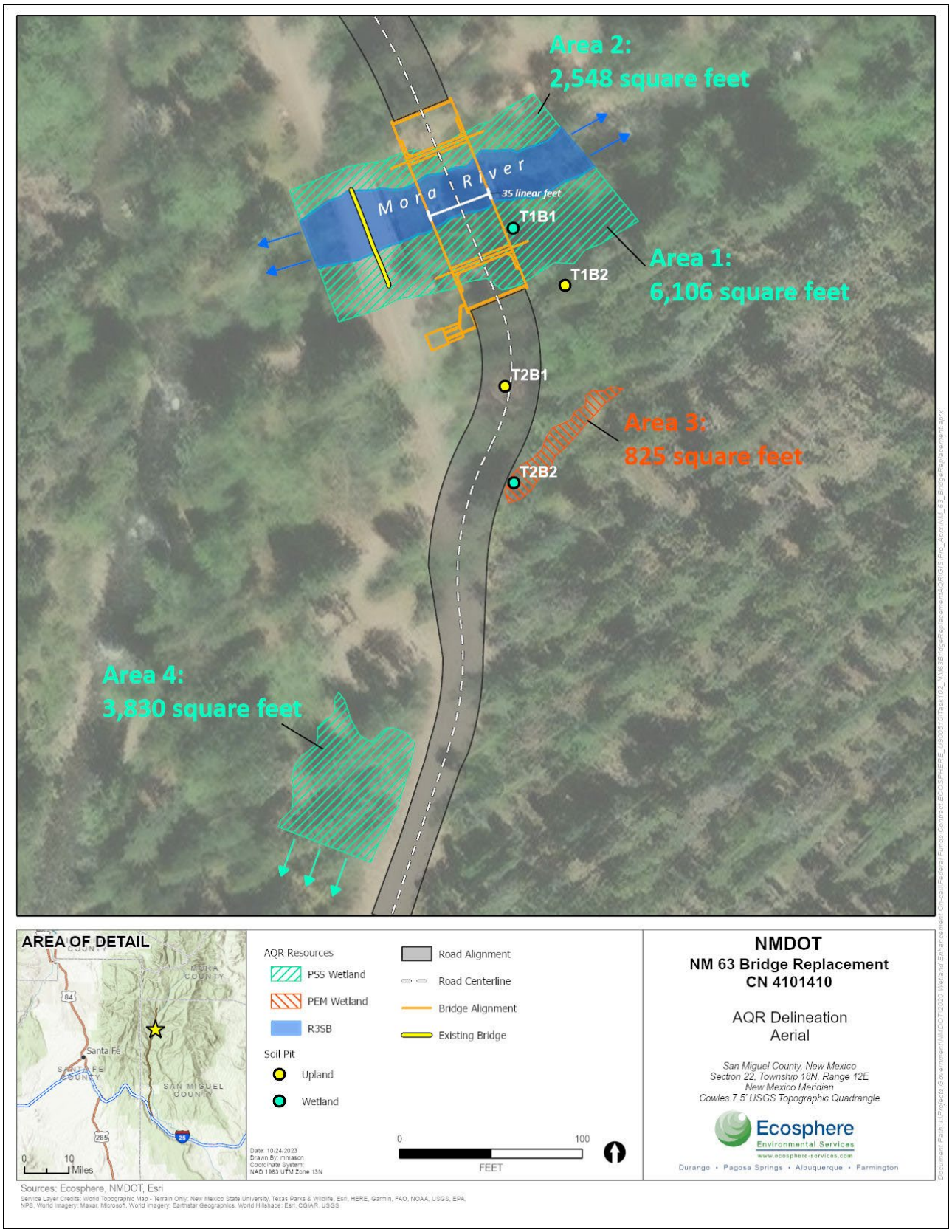
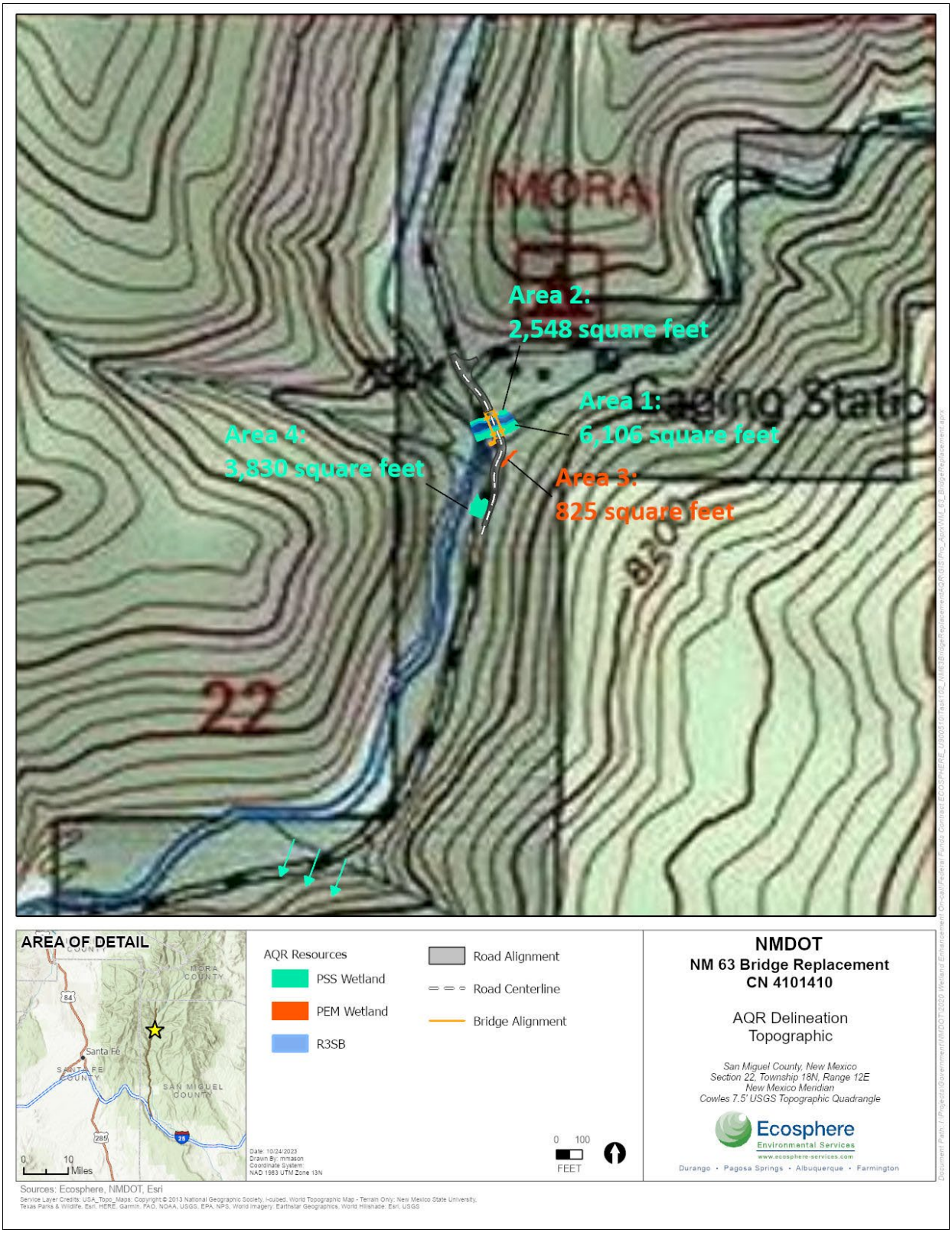
Appendix A – Vicinity and Aquatic Resource Maps

Map A-1. Vicinity Map

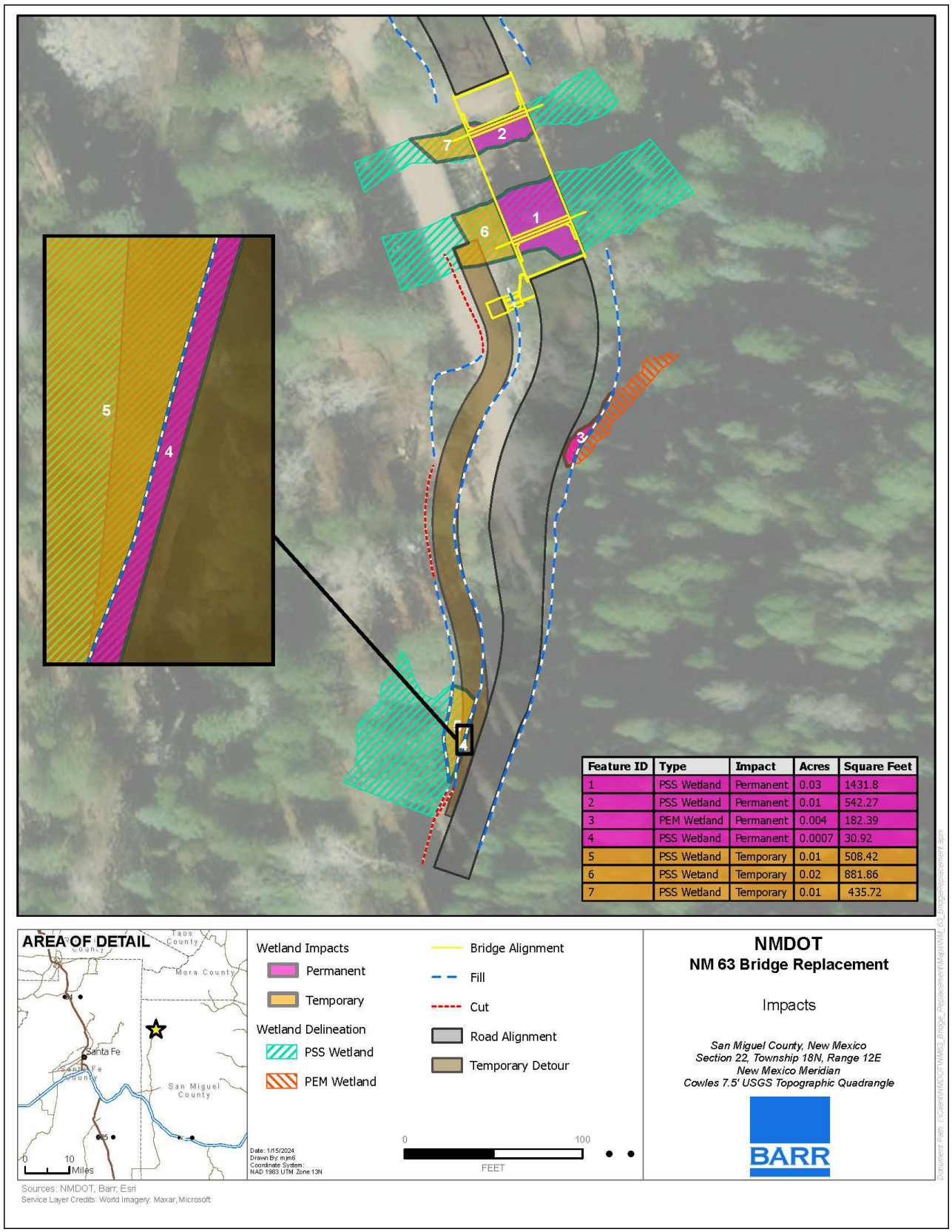
Map A-2. Aquatic Resource Delineation Project Detail Map



Map A-3. Aquatic Resources Delineation Aerial Map

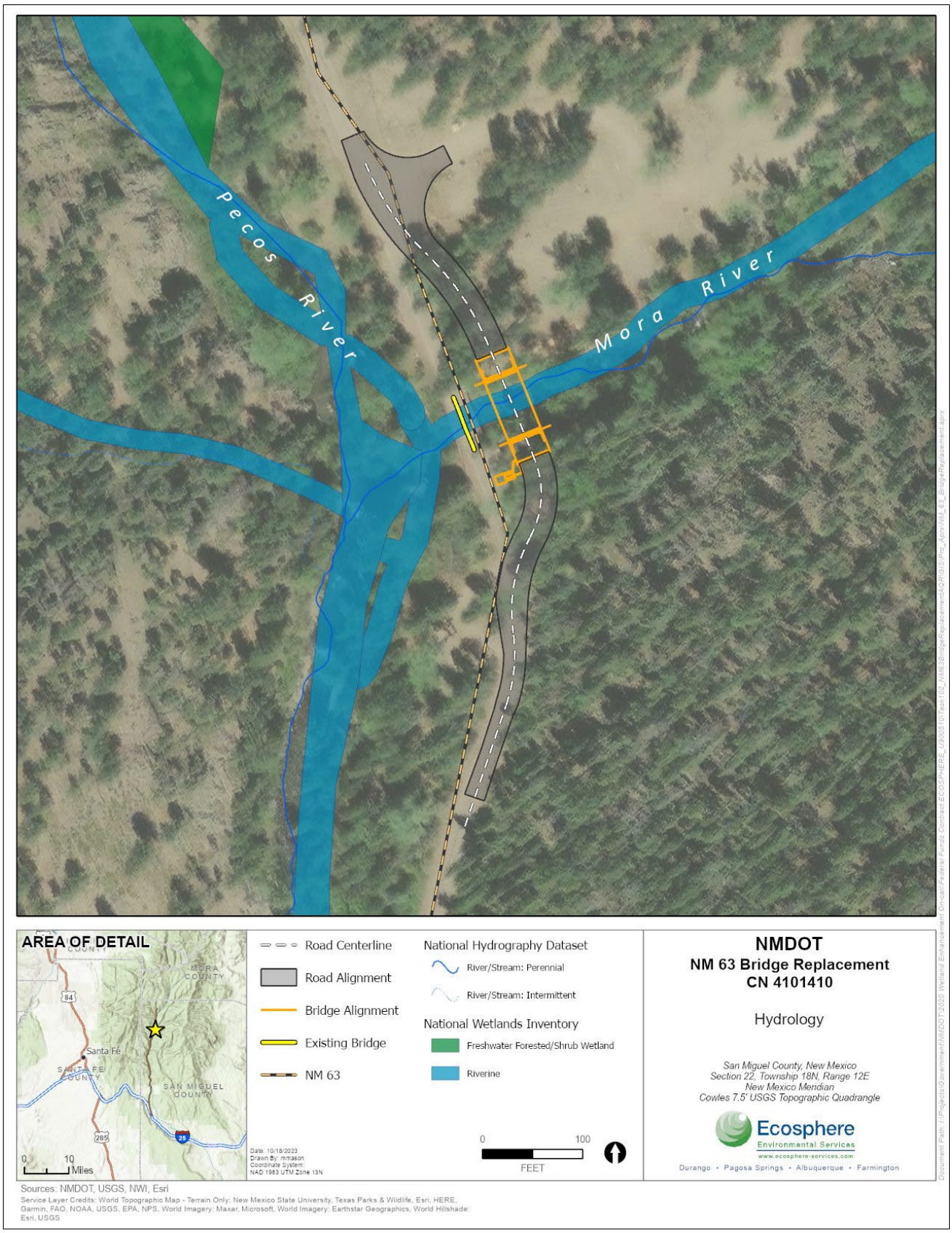


Map A-4. Aquatic Resources Delineation Topographic Map

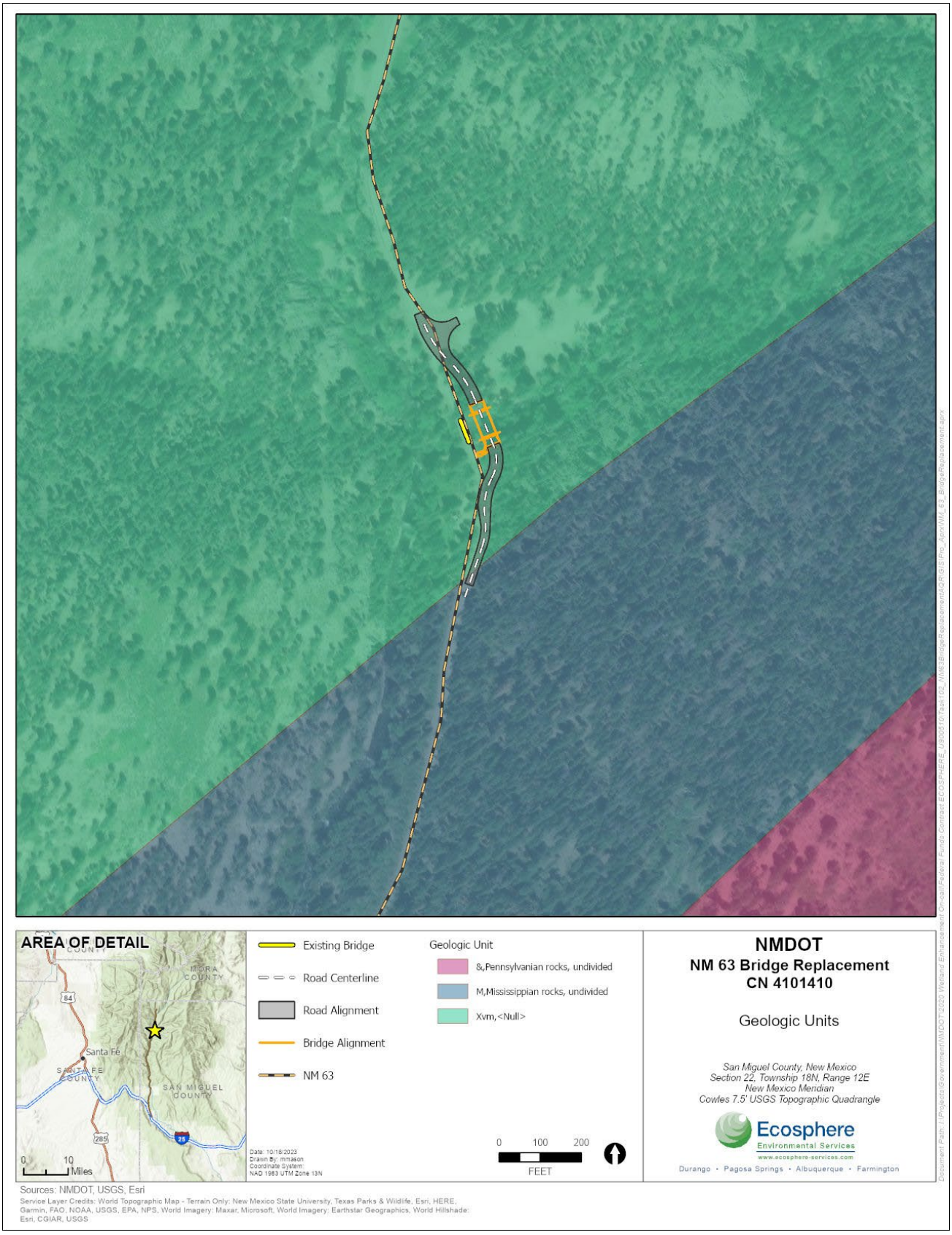


Map A-5. Aquatic Resources Impact Map

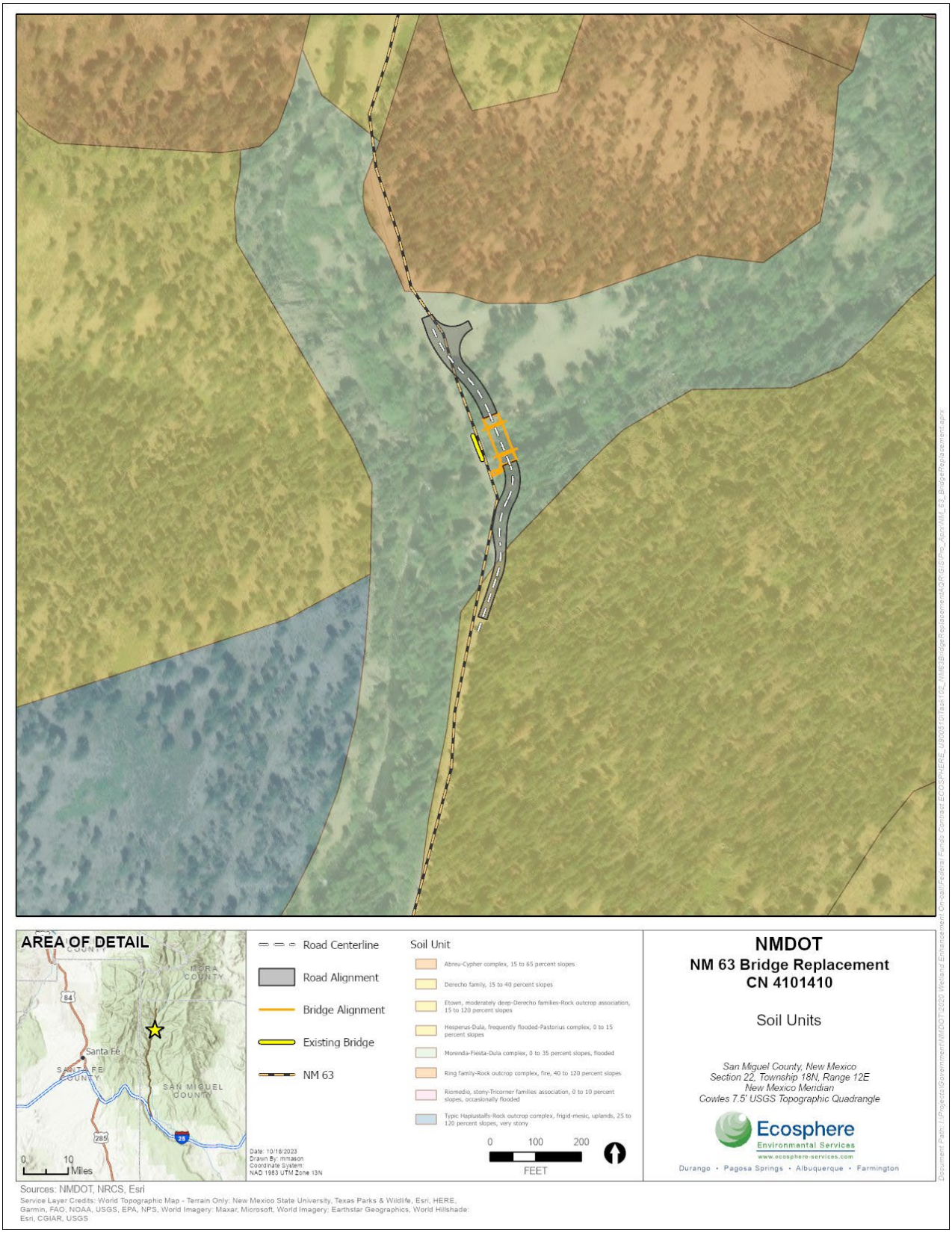
Appendix B – Supporting Maps



Map B-1. Hydrology NWI/NHD Map



Map B-2. Geology Map



Map B-3. Soils Map

Appendix C – Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: NM Hwy 63 Bridge Replacement City/County: Cowles/ San Miguel Sampling Date: August 3, 2023
Applicant/Owner: NM DOT State: NM Sampling Point: T1B1
Investigator(s): Hanson Section, Township, Range: Section 22, Township 18 N, and Range 12 E
Landform (hillslope, terrace, etc.): river bank Local relief (concave, convex, none): Convex Slope (%): _____
Subregion (LRR): LRR D Lat: 35.776333 N Long: 105.659592 W Datum: NAD 83
Soil Map Unit Name: Morenda-Fiesta-Dula complex, 0 to 35 percent slopes, flooded NWI classification: R3SB
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Alnus incana	20	Y	FACW
2. Picea engelmannii	20	Y	FAC
3.			
4.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. Cornus sericea	5	Y	FACW
2. Rosa woodsii	20	Y	FACU
3. Ribes aureum	30	Y	FAC
4.			
5.			
	55	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Equisetum pratense	20	Y	FACW
2. Maianthemum racemosum	5	Y	FAC
3. Thalictrum fendleri	2	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	27	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)
Total Number of Dominant Species Across All Strata: 7 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 85 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
✓ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: T1B1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10 YR 2/2	80	10YR 2/2	20	D	M	sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✓ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): surface

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: NM Hwy 63 Bridge Replacement City/County: Cowles/ San Miguel Sampling Date: August 3, 2023
Applicant/Owner: NM DOT State: NM Sampling Point: T1B2
Investigator(s): Hanson Section, Township, Range: Section 22, Township 18 N, and Range 12 E
Landform (hillslope, terrace, etc.): river bank Local relief (concave, convex, none): Convex Slope (%): _____
Subregion (LRR): LRR D Lat: 35.776333 N Long: 105.659592 W Datum: NAD 83
Soil Map Unit Name: Morenda-Fiesta-Dula complex, 0 to 35 percent slopes, flooded NWI classification: R3SB
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus ponderosa	40	Y	FACU
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Taraxacum officinale	5	Y	FACU
2. Bromus inermis	20	Y	UPL
3. Dactylis glomerata	20	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 50 %

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: T1B2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-6	10 YR 5/1	98	10YR 6/6	2	D	M	Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: rock

Depth (inches): 6-12 inches

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: NM Hwy 63 Bridge Replacement City/County: Cowles/ San Miguel Sampling Date: August 3, 2023
Applicant/Owner: NM DOT State: NM Sampling Point: T2B1
Investigator(s): Hanson Section, Township, Range: Section 22, Township 18 N, and Range 12 E
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): Concave Slope (%): _____
Subregion (LRR): LRR D Lat: 35.775975 N Long: 105.659518 W Datum: NAD 83
Soil Map Unit Name: Morenda-Fiesta-Dula complex, 0 to 35 percent slopes, flooded NWI classification: R3SB
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus angustifolia	35	Y	FACW
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. Rosa woodsii	20	Y	FACU
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Dactylis glomerata	30	Y	FACU
2. Erigeron flagellaris	30	Y	FACU
3. Tragopogon dubius	15	Y	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		
% Bare Ground in Herb Stratum _____			

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: T2B1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10"	10 YR 2/1						sandy loam	
6"	10 nYR 6/8		10 YR 6/8	5	D	M		restrictive layer

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: rock

Depth (inches): 10-12

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: NM Hwy 63 Bridge Replacement City/County: Cowles/ San Miguel Sampling Date: August 3, 2023
Applicant/Owner: NM DOT State: NM Sampling Point: T2B2
Investigator(s): Hanson Section, Township, Range: Section 22, Township 18 N, and Range 12 E
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): Concave Slope (%): 4-6
Subregion (LRR): LRR D Lat: 35.775975 N Long: 105.659518 W Datum: NAD 83
Soil Map Unit Name: Morenda-Fiesta-Dula complex, 0 to 35 percent slopes, flooded NWI classification: R3SB
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus angustifolia	30	Y	FACW
2.			
3.			
4.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. Ribes aureum	20	Y	FAC
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Epilobium palustre	20	Y	OBL
2. Equisetum pratense	20	Y	FACW
3. moss	15	Y	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 40

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
✓ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: T2B2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10 YR 2/1	90					loam	
5-10	10 YR 5/2	10			D	M	loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): surface

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix D – Reference Photographs

Photograph D-1. Wetland Soil Data Point T1B1.

Photograph D-2. Upland Soil Data Point T1B2.

Photograph D-3. Upland Soil Data point T2B1.

Photograph D-4. Wetland Soil Data Point T2B2.

Photograph D-5. Mora River looking upstream.

Photograph D-6. Mora River looking downstream.

Photograph D-7. Fringe PSS wetlands adjacent to Mora River channel.

Photograph D-8. PSS Wetland Area 4.

Appendix E– Dominant Plant Species Observed in the Study Area

Appendix Table E-1. List of Dominant Plant Species Observed in the Study Area

Scientific Name	Common Name	WMVC Wetland Indicator Status[1]
Trees		
Alnus incana	speckled alder	FACW
Picea engelmannii	Engelmann's spruce	FAC
Picea pungens	blue spruce	FAC
Pinus ponderosa	ponderosa pine	FACU
Populus angustifolia	narrowleaf cottonwood	FACW
Populus deltoides	eastern cottonwood	FAC
Shrubs		
Berberis fendleri	Colorado barberry	UPL
Cornus sericea	redosier dogwood	FACW
Quercus gambelii	Gambel oak	UPL
Ribes aureum	golden currant	FAC
Rosa woodsii	Woods' rose	FACU
Salix exigua	narrowleaf willow	FACW
Salix lasiandra	Pacific willow	FACW
Salix planifolia	diamondleaf willow	OBL
Graminoids		
Agrostis gigantea	black bent	FAC
Agrostis stolonifera	spreading bent	FAC
Bromus inermis	smooth brome	UPL
Dactylis glomerata	orchardgrass	FACU
Pascopyrum smithii	western wheatgrass	FACU
Phleum pratense	timothy	FAC
Poa palustris	fowl bluegrass	FAC
Poa pratensis	Kentucky bluegrass	FAC
Forbs		
Achillea millefolium	common yarrow	FACU
Conyza canadensis	Canadian horseweed	UPL
Descurainia sophia	herb sophia	UPL
Epilobium ciliatum	fringed willowherb	FACW
Epilobium palustre	marsh willow herb	OBL
Equisetum pratense	meadow horsetail	FACW
Erigeron flagellaris	trailing fleabane	FACU
Erigeron speciosus	aspen fleabane	UPL
Geranium richardsonii	Richardson’s geranium	FAC
Helianthus annuus	common sunflower	FACU

Scientific Name	Common Name	WMVC Wetland Indicator Status[1]
Linaria vulgaris	*butter and eggs*	UPL
Maianthemum racemosum	feathery false lily of the valley	FAC
Mentha aquatica	water mint	FACW
Plantago lanceolata	narrowleaf plantain	FACU
Potentilla norvegica	Norwegian cinquefoil	UPL
Taraxacum officinale	common dandelion	FACU
Thalictrum fendleri	Fendler's meadow-rue	FAC
Tragopogon dubius	yellow salsify	UPL
Trifolium pratense	red clover	FACU

[1] Wetland indicator status for western mountains, valleys, and coast (WMVC) (Lichvar et al. 2018):

OBL = Obligate wetland (hydrophyte); occurs in aquatic resources > 99% of the time

FACW = Facultative wetland (hydrophyte); occurs in aquatic resources 67-99% of the time

FAC = Facultative (hydrophyte); occurs in aquatic resources 34-66% of the time

FACU = Facultative upland (non-hydrophyte); occurs in aquatic resources 1-33% of the time

UPL = Obligate upland (non-hydrophyte); occurs in uplands > 99% of the time

NI = indicator status not known in this region