United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Royal Gorge Field Office
3028 East Main Street
Cañon City, Colorado 81212

In Reply Refer To:
3600 (LLCOF02000, RPO
COC-080899

Mr. Richard Vidmar
City of Aurora Water Department
15151 E Alameda Parkway, # 3600
Aurora, CO 80012

Dear Mr. Vidmar,

On February 27, 2023, this office received a proposal request from the City of Aurora to conduct a third phase of site investigation in Park County, involving test pits/trenches and boreholes. Additional information about the proposal was received on April 6, 2023 and April 26, 2023. Phase 3 is focused on obtaining data needed to enable engineering to configure project components for various permitting requirements and for feasibility design of the Wild Horse Reservoir.

The BLM Royal Gorge Field Office has completed a review of the proposed site investigation (Enclosure 1) and authorizes you to sample and test the mineral materials under the provisions of 43 CFR Section 3601.30. This authorization does not give you a preference right to a sales contract or free use permit. The authorization will terminate on December 31, 2024. You may conduct operations as outlined in the proposal completed on April 26, 2023, subject to the following stipulations (similar to those required for operations conducted in Phase I and II):

1. The Royal Gorge Field Office will be notified at least 48 hours prior to the City of Aurora beginning testing and sampling efforts.
2. A BLM paleontological specialist conducted a pre-work survey in October 2019 (prior to Phase I fieldwork) and promptly received permission from Aurora to be present during implementation of the exploration work at that time. As this work is being conducted on split-estate, BLM may provide some onsite monitoring as time allows, but it is not a requirement.
3. A comprehensive archaeological monitoring plan will be in place during the work to ensure that the exploration activities will not disturb the sites.
4. It is recommended that no habitat disturbance (removal of vegetation such as timber, brush, or grass) be conducted during the periods of May 15 -July 15, the breeding and brood rearing season for most Colorado migratory birds. The provision will not apply to completion activities in disturbed areas that were initiated prior to May 15 and continue into the 60-day period. An exception to this timing limitation would be a consideration if nesting surveys conducted no more than one week prior to vegetation-disturbing activities indicate no nesting within 30 meters (100 feet) of the area to be disturbed. Surveys would need to be conducted

by a qualified breeding bird surveyor between sunrise and 10:00 a.m. under favorable conditions.

5. Since the project involves oil or fuel usage, transfer, or storage, an adequate spill kit and shovels are required to be on site during project implementation.
6. The project proponent will be responsible for adhering to all applicable local, state and federal regulations in the event of a spill, which includes following the proper notification procedures in BLM's Spill Contingency Plan.
7. If cement mixtures are used as part of the project, all washout water needs to be contained and properly disposed of at a permitted offsite disposal facility.
8. The project proponent will be responsible for adhering to the State of Colorado regulations that govern stormwater management for these types of activities.
9. The responsible party should identify and protect evidence of the Public Land Survey System (PLSS) and related Federal property boundaries prior to commencement of any ground-disturbing activity. Evidence of the PLSS include, but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the responsible party should immediately report the incident, in writing, to the authorized officer. BLM Cadastral Survey will determine how the marker is to be restored. In rehabilitating or replacing the evidence, the responsible party will reimburse the BLM for costs or, if instructed to sue the services of a Certified Federal Surveyor, procurement shall be per qualification-based selection. All surveying activities will conform to the Manual of Surveying Instructions and appropriate State laws and regulations. Cadastral Survey will review local surveys before being finalized or filed in the appropriate State or county office. The responsible party will pay for all survey, investigation, penalties and administrative costs.
10. A report of the results of any testing from the site investigation, including a map showing the location of the test pits/trenches, boreholes and their access routes, will be submitted within 30-days of completion of the sampling/testing program to the Royal Gorge Field Office.

Please remember that Aurora Water is responsible for reclamation of all disturbances resulting from the current, as well as all previous, Letters of Authorization. If you have any questions, please contact Ray Ogle at (719) 269-8522.

Sincerely,

KEITH BERGER Digitally signed by KEITH BERGER
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Keith E. Berger
Field Manager
Royal Gorge Field Office

Enclosure:
1 – NEPA Document: DOI-BLM-CO-F020-2023-0026 CX

cc: Elliott Russell, CDRMS (via email)

CATEGORICAL EXCLUSION DETERMINATION

NEPA Number

DOI-BLM-CO-F020-2023-0026-CX

CASEFILE/PROJECT NUMBER:

COC-080899

PROJECT NAME:

Exploration & Testing of Mineral Materials, Wild Horse Reservoir, Phase 3

LEGAL DESCRIPTION:

Sixth Principal Meridian, Park County, Colorado

T. 12S., R75W., Sections 21-24, and 28-34

T. 13S., R75W., Sections 3-6, 8 and 17

T. 12S., R74W., Sections 27-30

APPLICANT:

City of Aurora

DESCRIPTION OF PROPOSED ACTION:

In February 2023, BLM received a request for a Letter of Authorization from the City of Aurora to conduct pre-application testing and exploration activities at the location of the proposed Wild Horse Reservoir in Park County. This proposal is the 3rd phase of pre-application activities for the planned Wild Horse Reservoir. Phase 1 of these activities was conducted in 2020 (DOI-BLM-CO-F020-2018-0077 CX). Phase 2 of these activities was conducted in 2021 and 2022 (DOI-BLM-CO-F020-2021-0060 CX).

The proposed activities would allow the City of Aurora to obtain geotechnical and geological data to provide the data needed to enable the engineering team to configure project components for the purpose of Federal, State, and local permitting and feasibility design. The full scope of the proposed field program for the project is included in Appendix 1, although only a portion of the work would be conducted on federal split-estate interests and is subject to 43 CFR 3600. This

CX addresses the exploration and testing proposal, which is proposed for locations involving split-estate interests.

Phase 3 would consist of up to 25 test pits, 5 test trenches, 98 boreholes, 20 observation wells, and 3 seismic surveys proposed on both Federal mineral estate and private surface/private mineral estate. 7 drill holes would be on BLM surface. Maps and additional information for proposed testing and exploration activities that are subject to 43 CFR 3600 are detailed in Appendix 1.

Land Use Plan Conformance Review

The proposed action has been determined to be clearly consistent with the terms, conditions, and/or specific decisions of the applicable land use plan. It has been determined that the Proposed Action is subject to and in conformance (43 CFR 1610.5) with the following land use plan:

Name of Plan: Royal Gorge Resource Area Resource Management Plan

Date Approved: May 1996

Decision Number: 4-33

Decision Language: "Areas will be open to mineral entry and available for mineral materials development: - administered under existing regulations; - limited by closure if necessary; - special mitigation will be developed to protect values on a case-by-case basis."

CATEGORICAL EXCLUSION REVIEW:

This proposed action is listed as a categorical exclusion in DOI Departmental Manual Part 516 Chapter 11.9 (F.9): "Digging of exploratory trenches for mineral materials, except in riparian areas." A sufficient review was conducted to determine if any of the following 12 extraordinary circumstances, stated in the 43 CFR 46.215 regulations, are applicable to the action being considered:

EXCLUSION CRITERIA	YES	NO
a. Have significant impacts on public health or safety.		x
b. Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (EO 11990); floodplains (EO 11988); national monuments; migratory birds; and other ecologically significant or critical areas.		x
c. Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources [NEPA section		x

	102(2)(E)].		
	d. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks.		x
	e. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects.		x
	f. Have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects.		x
	g. Have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by the bureau.		x
	h. Have significant impacts on species listed, or proposed to be listed, on the List of Endangered or Threatened Species or have significant impacts on designated Critical Habitat for these species.		x
	i. Violate a Federal law, or a State, local, or tribal law or requirement imposed for the protection of the environment.		x
	j. Have a disproportionately high and adverse effect on low income or minority populations (EO 12898).		x
	k. Limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (EO 13007).		x
	l. Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and EO 13112).		x

Table 1 Exclusion Criteria Screening Table

Interdisciplinary Team Review

NAME	TITLE	AREA OF RESPONSIBILITY	INITIALS/DATE
Dave McNitt	Wildlife Biologist	Terrestrial Wildlife, T&E, Migratory Birds	DCM, 04/27/2023
Jeff Williams, Chris Cloninger, Sarah McClernan	Range Management Spec.	Range, Vegetation, Farmland	CC, 4/27/2023
Aaron Richter	Fisheries Biologist	Invasives, Weeds, Aquatic Wildlife, Riparian/Wetlands	AR, 4/21/2023
Sophia Brooks-Randall	Geologist	Fluid Minerals, Solid & Non-Energy Leasable Minerals, Paleontology, Solid or Hazardous Wastes, AML	SBR, 5/15/2023
John Smeins	Hydrologist	Hydrology, Water Quality/Rights, Soils, Air Quality, GHGs, Noise, Economics, Environmental Justice	JS, 5/2/2023
Rebecca Bruno	Cadastral Surveyor	Cadastral Survey	N/A
Linda Skinner	Outdoor Recreation Planner	Recreation, Wilderness, LWCs, Visual, ACEC, W&S Rivers	LDS, 4/10/2023
Jeremiah Moore	Forester	Forestry	JLM, 5/4/2023
Alia Wallace	Archaeologist	Cultural, Native American	ARW, 05/25/23
Veronica Vogan, Greg Valladares	Realty Specialist	Realty	GDV, 04/10/2023

Glenda Torres	Natural Resource Specialist - Fuels	Fire/fuels	GAT, 05/02/2023

Table 2 Interdisciplinary Team Review Table

REMARKS:

Cultural Resources: During a previous cultural resources inventory, twenty-five historic properties (sites determined to be eligible for the NRHP) have been identified in the area of potential effects (see reports CR-RG-19-046 P; CR-RG-23-046 P).

The present undertaking will not impact these historic properties due to the avoidance and monitoring plan. No Geotechnical activities are allowed within the boundaries of a cultural resource, and a comprehensive archaeological monitoring plan is in place to ensure that the exploration activities will not disturb the sites. Therefore, the proposed undertaking will have no adverse effect on any historic properties.

Native American Religious Concerns: BLM is consulting with the Apache Tribe of Oklahoma, Cheyenne and Arapaho Tribes of Oklahoma, Cheyenne River Sioux Tribe, Comanche Tribe of Oklahoma, Crow Creek Sioux, Eastern Shoshone, Jicarilla Apache Nation, Kiowa Tribe of Oklahoma, Northern Arapaho Tribe, Northern Cheyenne Tribe, the Northern Ute Tribe, Oglala Sioux Tribe, Rosebud Sioux Tribe, Southern Ute Tribe, Standing Rock Lakota Tribe, and the Ute Mountain Ute Tribe.

Responses from the tribes have indicated that the project can proceed with the following stipulations:

- The proponent will increase compliance checks of the project area, visiting weekly to every 10- days.
- If any cultural resources are found during ground disturbing activities, work will stop immediately, and the BLM archaeologist will be contacted. Tribes will also be notified. Work will not be able to recommence in that area until the BLM archaeologist gives the go ahead.

In addition, as the tribal consultation is ongoing, if any additional comments or concerns are received, the BLM archaeologist will communicate these with the proponent immediately to discuss the implication on the Geotech work.

Threatened and Endangered Species: There are no records of, or habitat for, any threatened or endangered species within or near the project area. The Proposed Action will not result in impacts to T & E species.

There are records of, and habitat for, mountain plovers within and adjacent to the project area. Mountain plovers are a BLM sensitive species. Significant impacts to mountain plovers will be avoided via the migratory bird mitigation measures of avoiding habitat disturbance from May 15 – July 15 unless appropriate nesting surveys are conducted. If mountain plover nests are detected, the project lead and applicant will coordinate with the wildlife biologist to avoid disturbance via spatial and timing limitations.

Migratory Birds: Pursuant to BLM Instruction Memorandum 2008-050, to reduce impacts to Birds of Conservation Concern (BCC), no habitat disturbance (removal of vegetation such as timber, brush, or grass) is allowed during the periods of May 15 - July 15, the breeding and brood rearing season for most Colorado migratory birds. The provision will not apply to completion activities in disturbed areas that were initiated prior to May 15 and continue into the 60-day period.

An exception to this timing limitation will be granted if nesting surveys conducted no more than one week prior to vegetation-disturbing activities indicate no nesting within 30 meters (100 feet) of the area to be disturbed. Surveys shall be conducted by a qualified breeding bird surveyor between sunrise and 10:00 a.m. under favorable conditions.

Geological Resources: Minerals in this area are open to exploration and development, in accordance with applicable laws and regulations, as well as the governing BLM Resource Management Plan. Coordination between surface uses may be required, as applicable.

Wastes, Hazardous or Solid: Since this project involves oil or fuel usage, transfer or storage, an adequate spill kit and shovels are required to be onsite during project implementation. The project proponent will be responsible for adhering to all applicable local, State and Federal regulations in the event of a spill, which includes following the proper notification procedures in BLM's Spill Contingency Plan.

If concrete is proposed as part of the project, all concrete washout water needs to be contained and properly disposed of at a permitted offsite disposal facility.

Compliance Plan (optional)

N/A

Preparer & Reviewers

Project Lead Name	John Smeins
P&EC Name & Review Date	John Smeins, 5/25/2023
Supervisor Name & Review Date	Ray Ogle, 5/26/2023

Table 3 Summary Table for Preparer and Reviewers

Determination

After evaluating the proposed action, I have determined the above-referenced CX is appropriate in this situation and none of the 12 extraordinary circumstances, stated in the 43 CFR 46.215 regulations, apply. Therefore, the proposed action is categorically excluded from further environmental analysis.

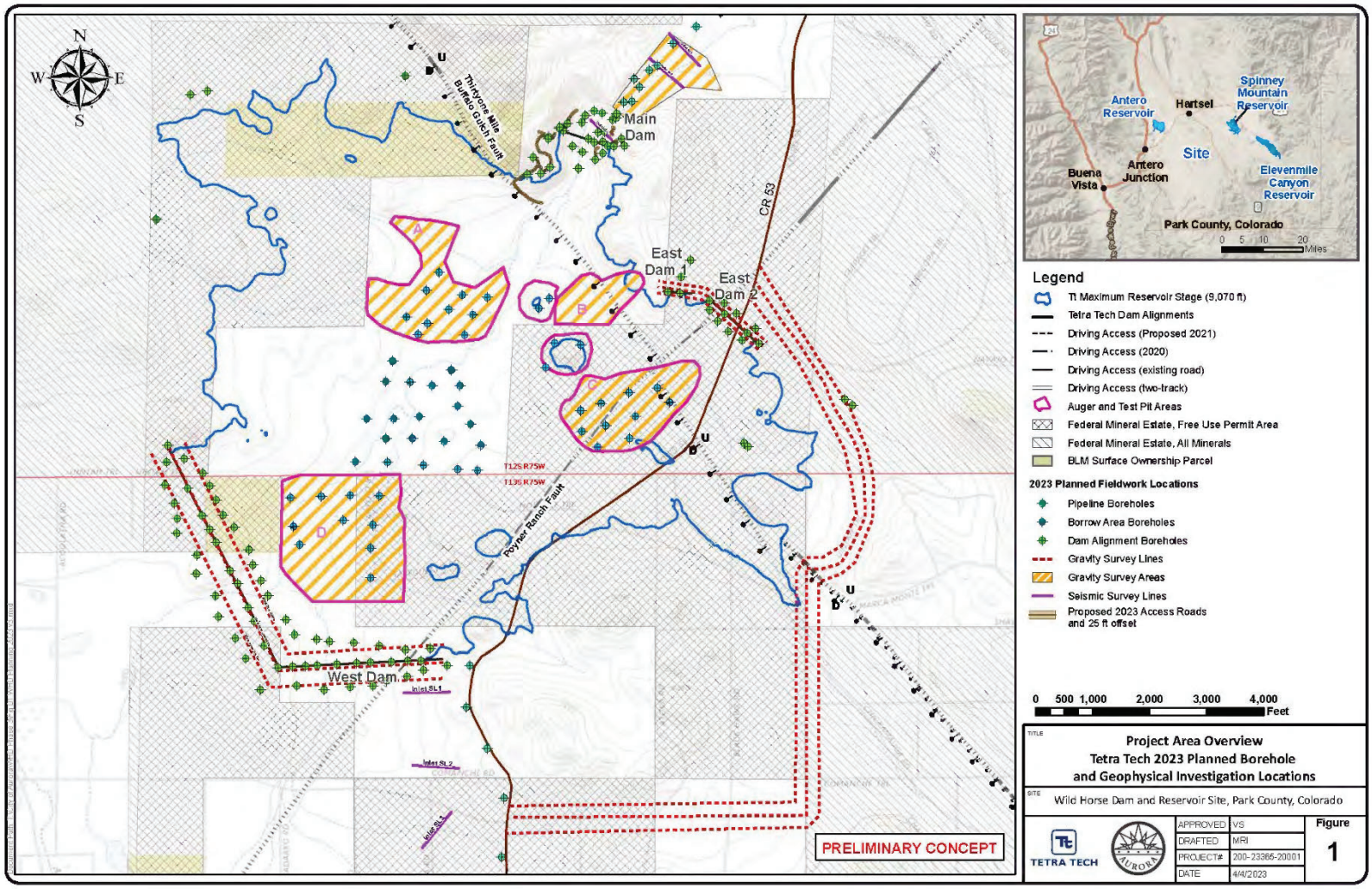
KEITH BERGER

Digitally signed by KEITH BERGER
Date: 2023.05.26 14:47:42 -06'00'

Keith E. Berger, Field Manager

Appendix 1

Maps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Poyner Ranch Fault
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Inlet SL2
Inlet SL3
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Spinney Mountain Reservoir
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Elevenmile Canyon Reservoir
Park County, Colorado
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TI Maximum Reservoir Stage (9,070 ft)
Tetra Tech Dam Alignments
Driving Access (Proposed 2021)
Driving Access (2020)
Driving Access (existing road)
Driving Access (two-track)
Auger and Test Pit Areas
Federal Mineral Estate, Free Use Permit Area
Federal Mineral Estate, All Minerals
BLM Surface Ownership Parcel
2023 Planned Fieldwork Locations
Pipeline Boreholes
Borrow Area Boreholes
Dam Alignment Boreholes
Gravity Survey Lines
Gravity Survey Areas
Seismic Survey Lines
Proposed 2023 Access Roads and 25 ft offset
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Tetra Tech 2023 Planned Borehole and Geophysical Investigation Locations
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Wild Horse Dam and Reservoir Site, Park County, Colorado
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DRAFTED MRI
PROJECT# 200-23365-20001
DATE 4/4/2023
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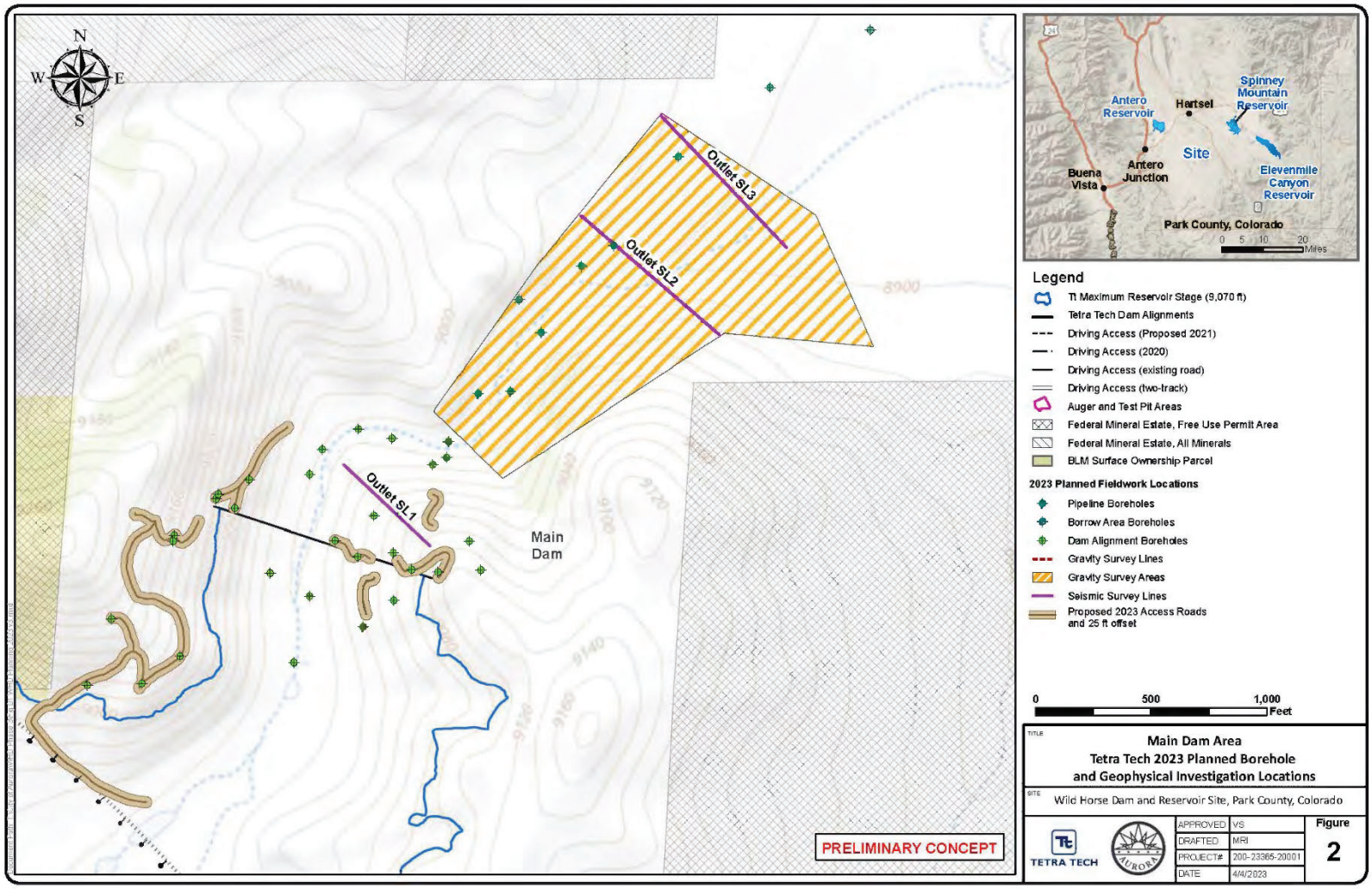
Map 1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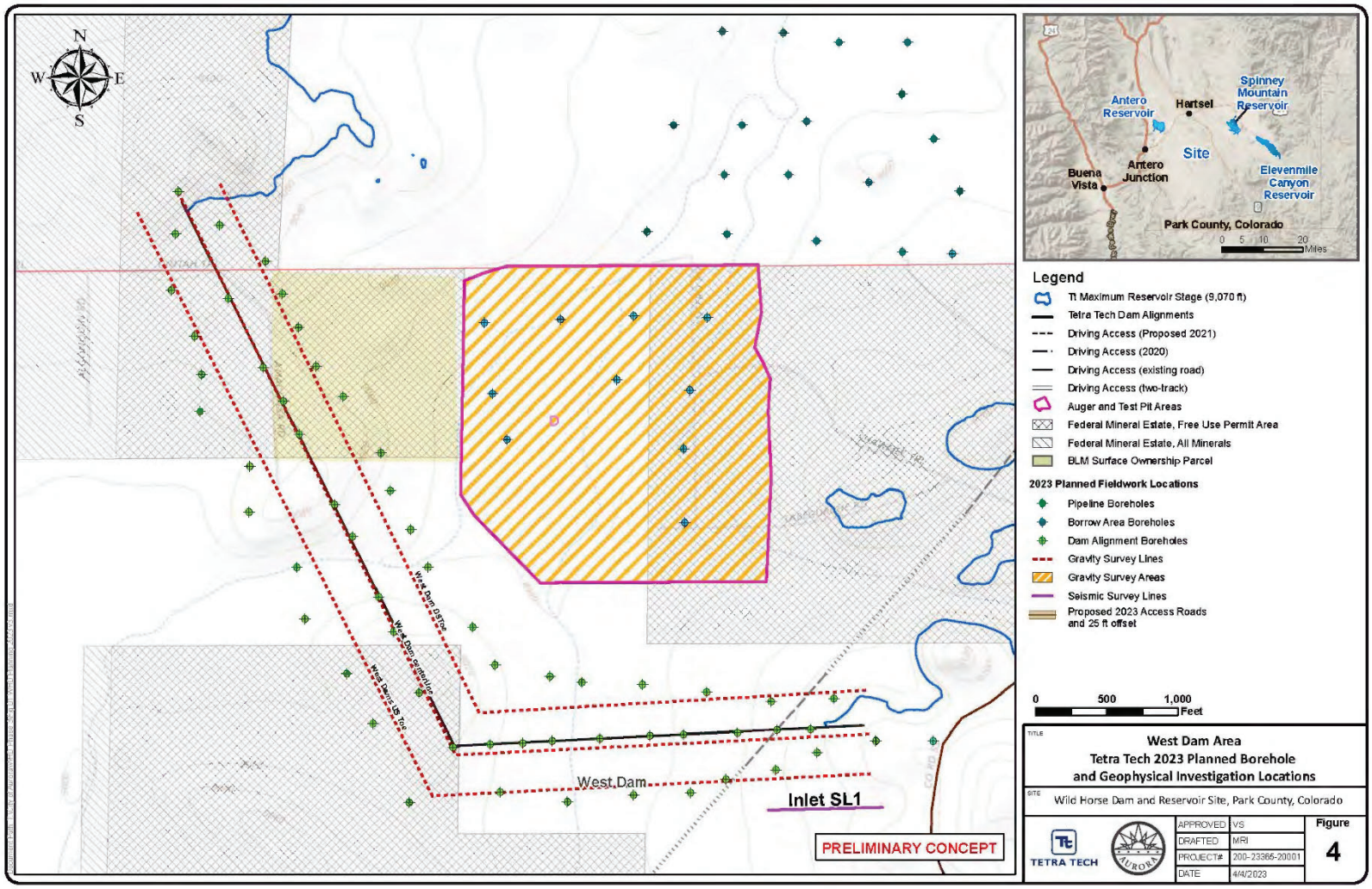
Map 2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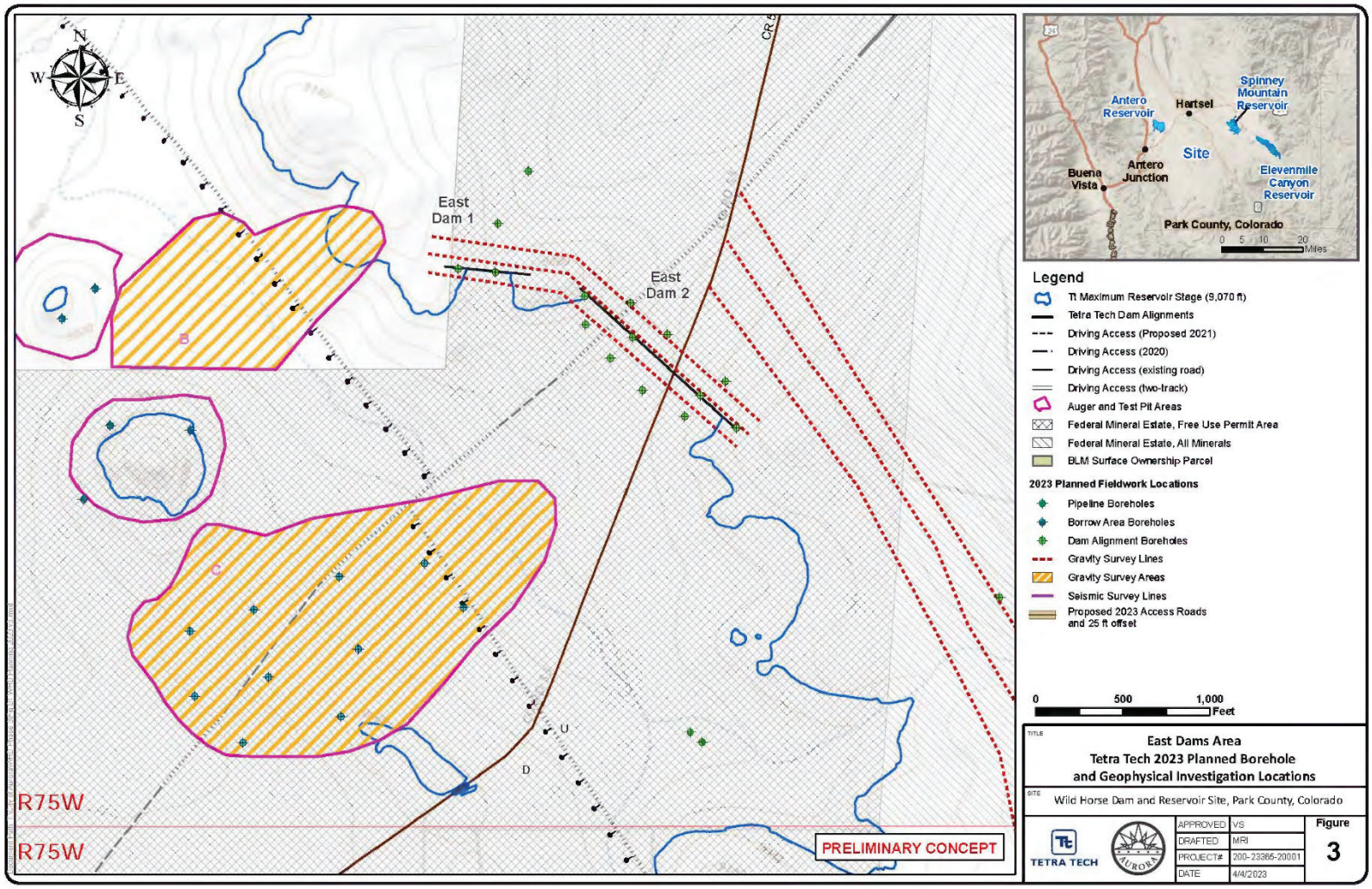
Map 3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PROJECT# 200-23365-20001
DATE 4/4/2023
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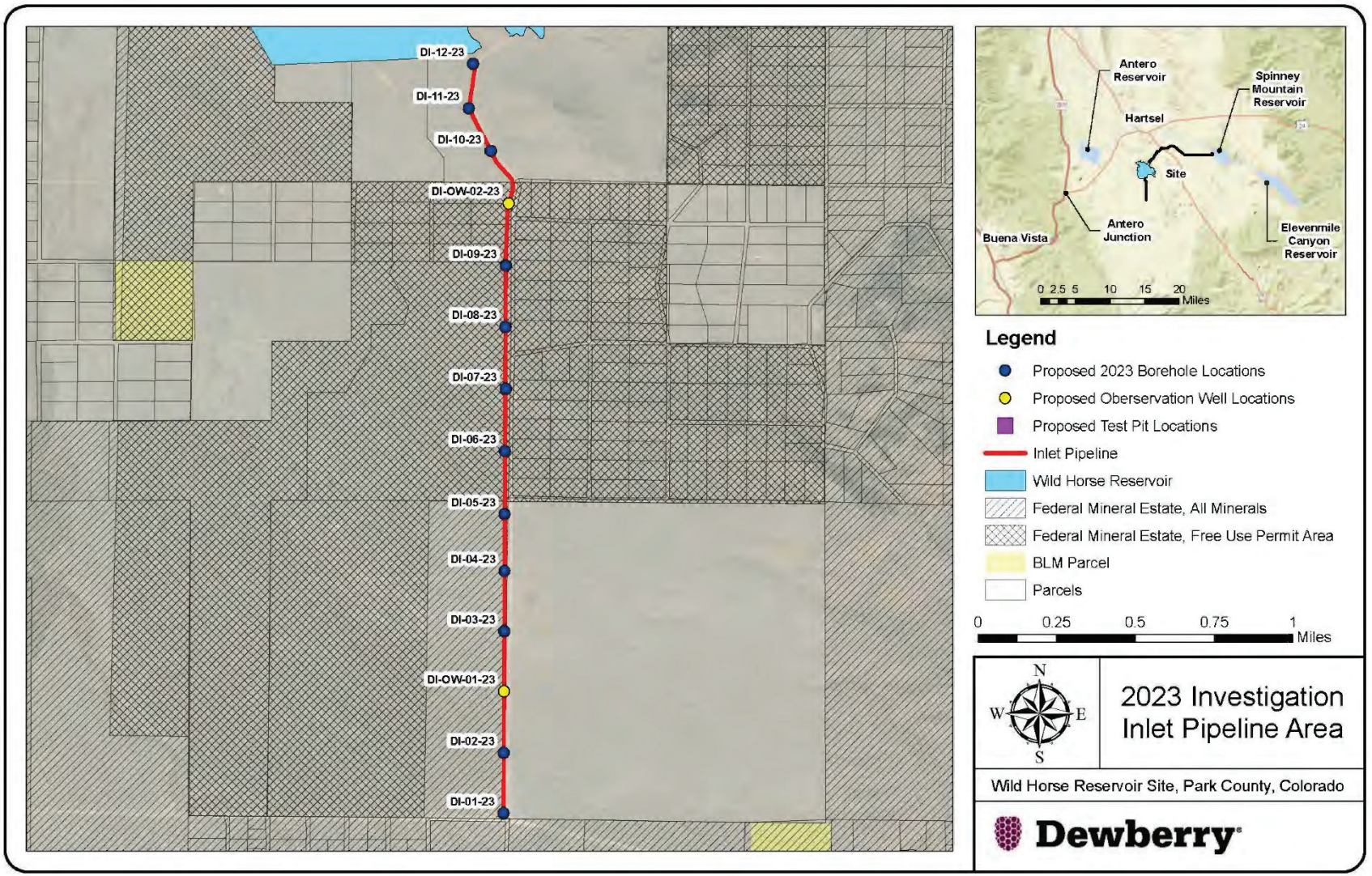
Map 4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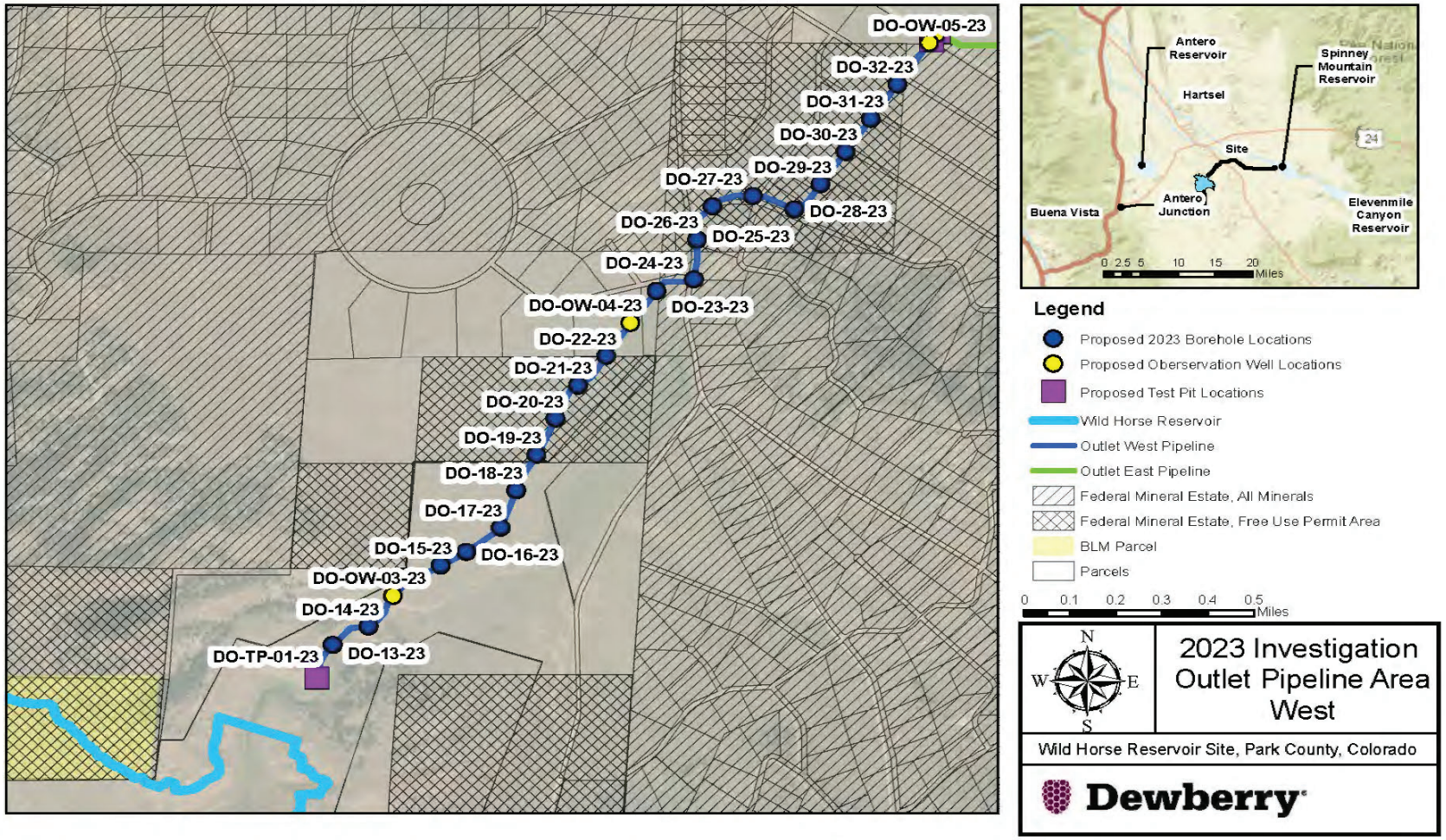
Map 5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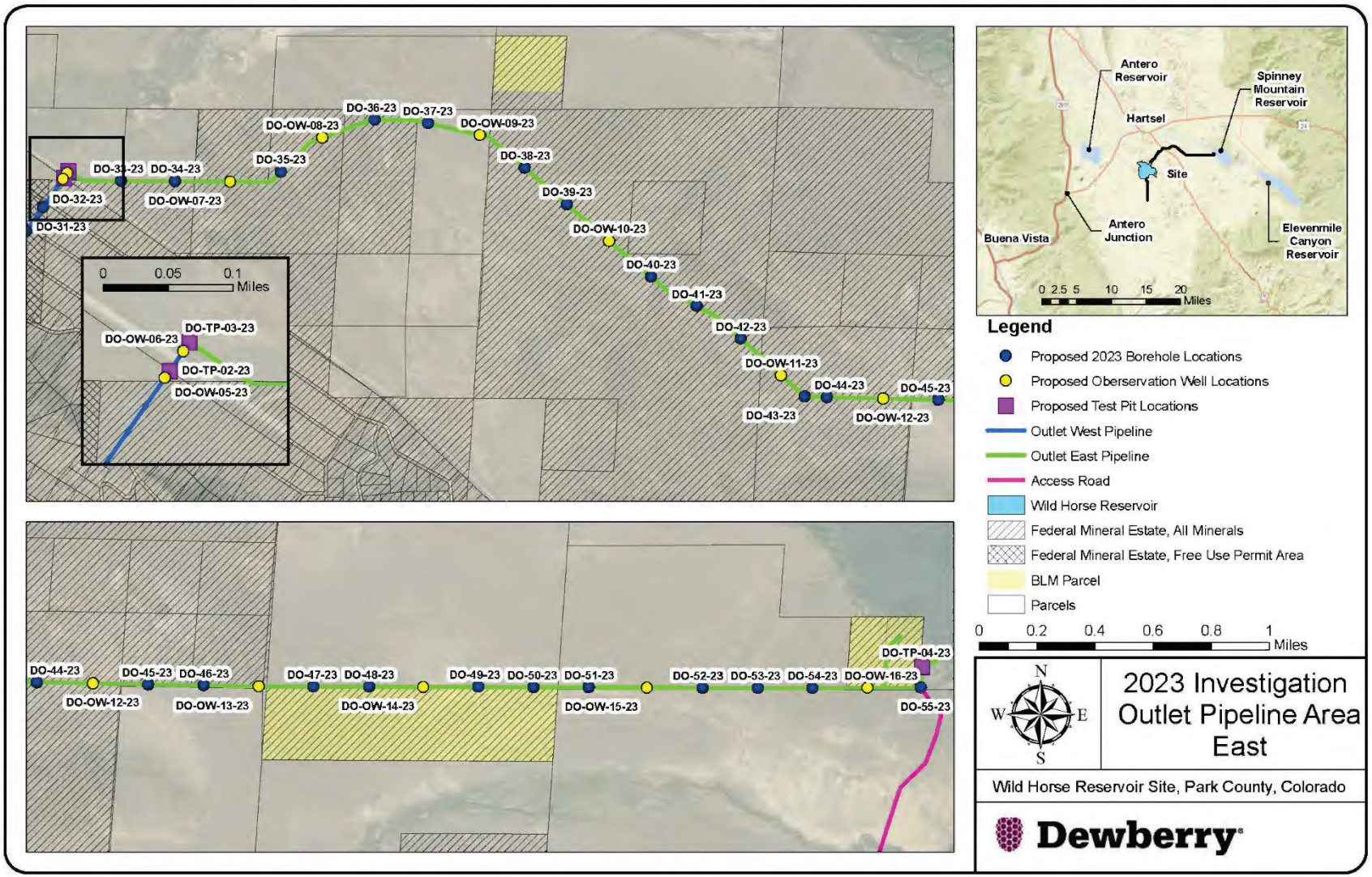
Dewberry

Map 6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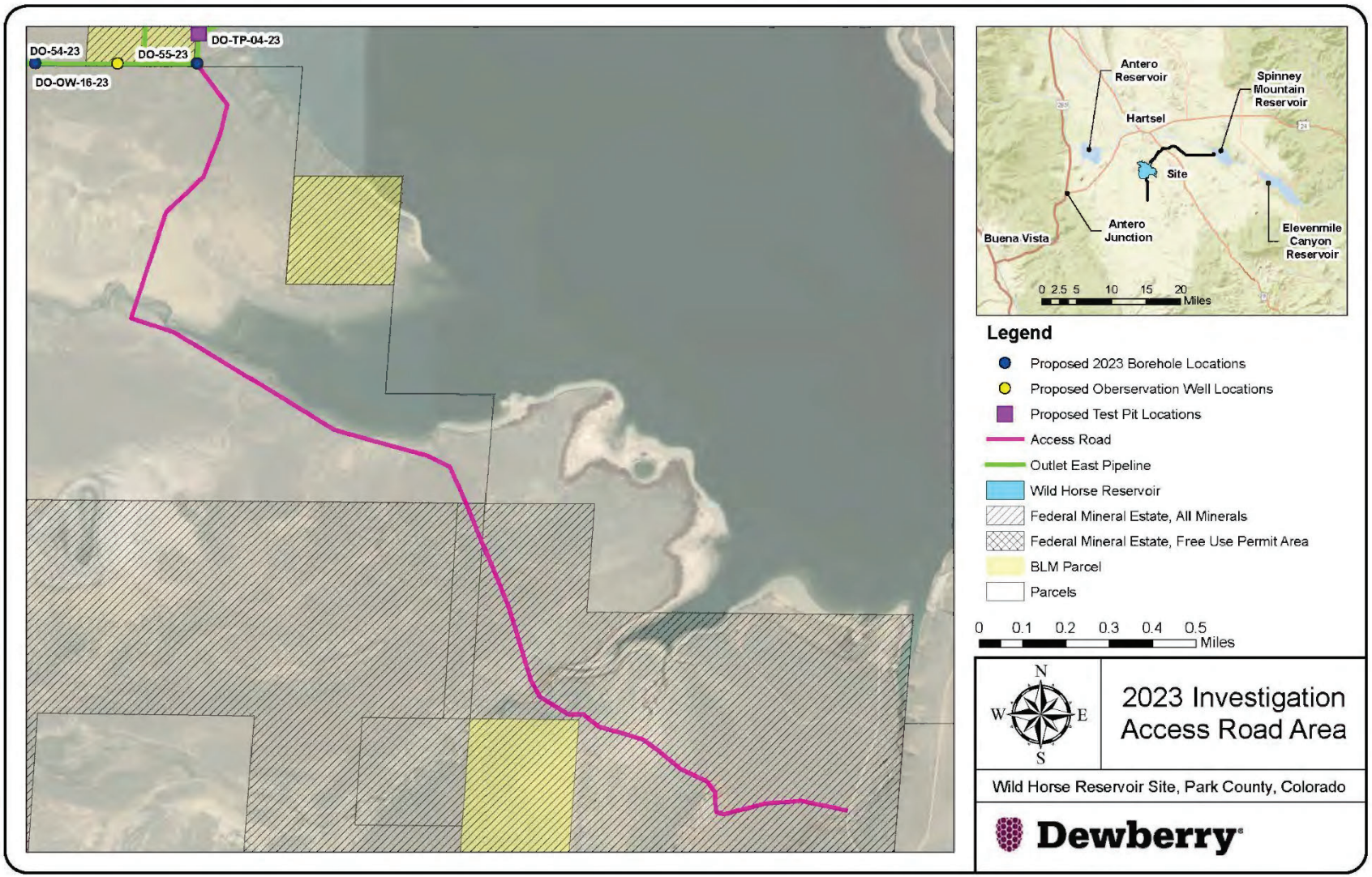
Map 7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2023 Investigation Access Road Area
Wild Horse Reservoir Site, Park County, Colorado
Dewberry

Map 8

Wild Horse Reservoir Project – Additional Information Regarding Geotechnical Exploration Program

Aurora Water

City of Aurora

Water Resources
15151 E. Alameda Parkway, Ste. 3600
Aurora, Colorado 80012
303.739.7370

Worth Discovering • auroragov.org

February 21, 2023
Sent via email and U.S. mail

Bureau of Land Management
Attn. Sophia Randall
Royal Gorge Field Office
3028 East Main Street
Cañon City, CO 81212

SUBJECT: Wild Horse Reservoir Project – Additional Information Regarding Geotechnical Exploration Program

Dear Ms. Randall,

Thank you for your time and attention to this project. Tetra Tech and Dewberry have been retained by the City of Aurora (Aurora) to provide engineering services to support the planning and design to construct a new dam, reservoir and pipelines in Park County, CO. This project is known as the Wild Horse Reservoir (Project). The Project site is located south of Hartsel, CO in Townships 12 South and 13 South, Range 75 West of the 6th Principal Meridian.

Aurora applied for a free-use permit in July of 2018. Aurora was working under categorical exclusion number DOI-BLM-CO-F020-2018-0077 CX (Project number: COC-079195). As part of the categorical exclusion, the site was assessed for cultural and environmental resources. On December 31, 2019, Aurora received a Letter of Authorization (LOA) for the geological and geotechnical investigations for the Wild Horse Project on privately owned property overlayed by Federal Mineral Estates. Our Consultant, Tetra Tech, did some of the field work outlined in the LOA during the late summer/ fall of 2020. This was the first of several investigations necessary to determine all of the necessary information for the feasibility of the Dam being considered for the project. Upon completion of the initial investigations Aurora forwarded to the BLM a report of the findings of this investigation.

Aurora applied for a another free-use permit in June of 2021. Aurora was working under categorical exclusion number DOI-BLM-CO-F020-2021-0060 CX (Project number: COC-080565). On September 1, 2021, Aurora received another Letter of Authorization (LOA) for the geological and geotechnical investigations for the Wild Horse Project on privately owned property overlayed by Federal Mineral Estates. Tetra Tech did the field work outlined in the LOA during the late summer/ fall of 2021 and 2022. Upon completion of the field investigation, Aurora forwarded to the BLM a report of the findings of the field investigations to date.

The purpose for requesting this Letter of Authorization is to obtain geotechnical and geological information that is needed to enable the engineering team to configure Project components for the purpose of Federal, State, and local permitting and design. The full scope of the proposed field program for the project has been included in this request: 98 boreholes, up to 20 observation wells, and 3 seismic surveys are proposed on Federal Mineral Estate land. The remainder of the proposed work will occur on private surface and private mineral estate.

The proposed field investigation locations are shown on **Figures 1** through **Figure 8** below. The site selection process to determine the exploration locations will be adapted as field data is collected and in accordance

with avoidance requirements for cultural and natural resources. Cultural and natural resources avoidance techniques will be utilized regardless of ownership of surface property and mineral estate.

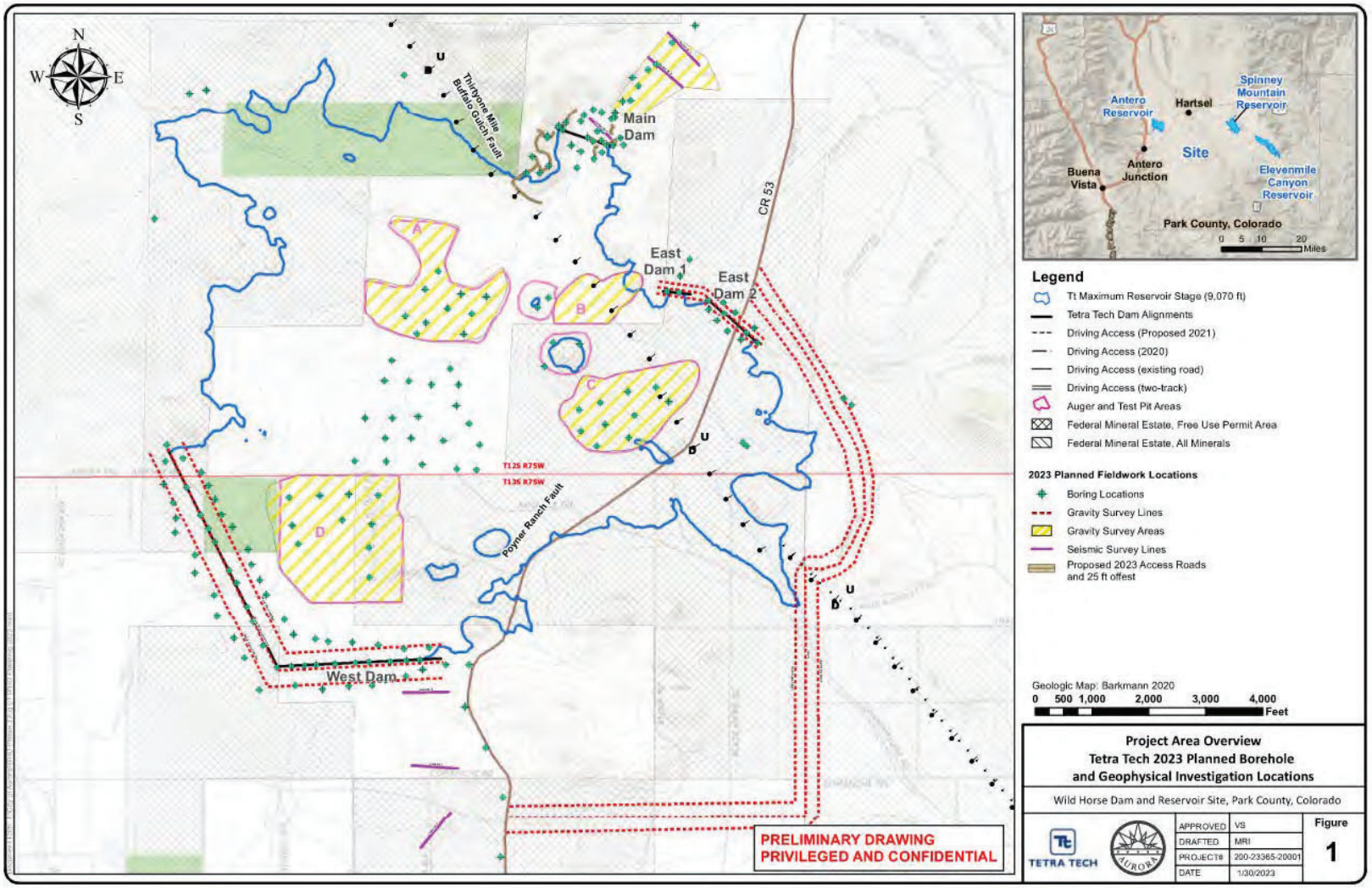

Figure 1: Overview of Tetra Tech's proposed dam and reservoir field investigation program

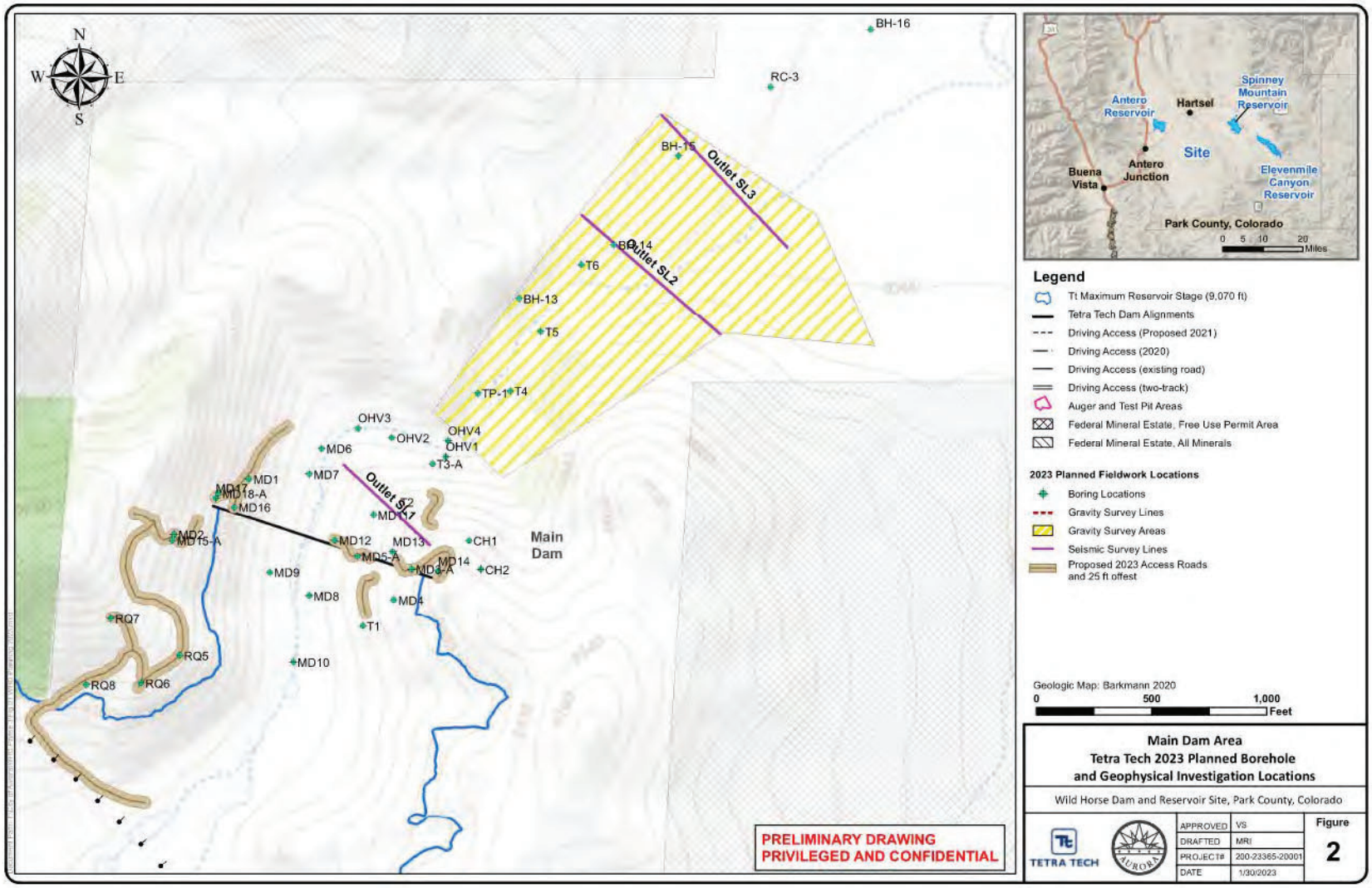

Figure 2: Proposed field investigation plan view of Main Dam area

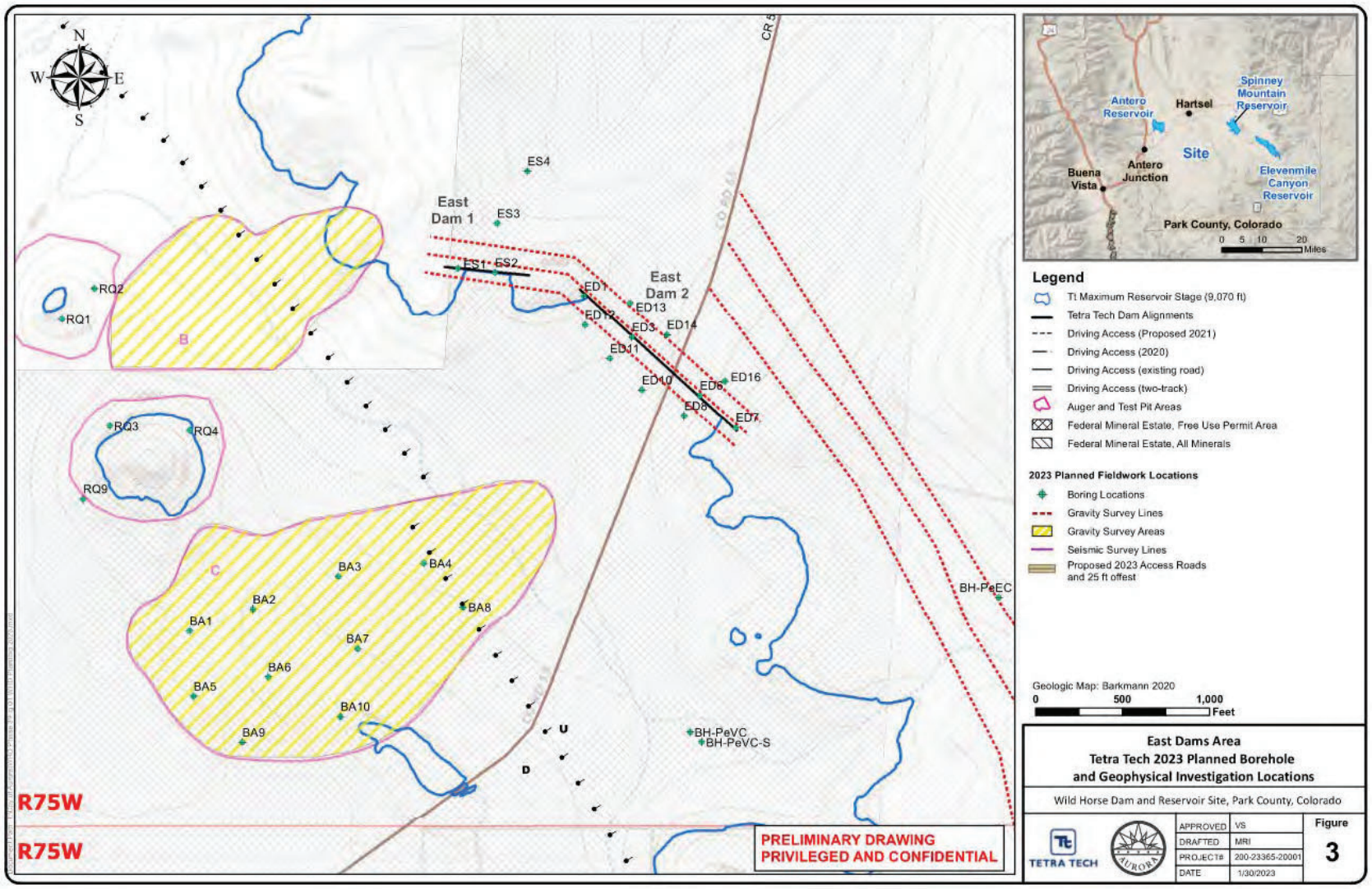

Figure 3: Proposed field investigation plan view of East Dam areas

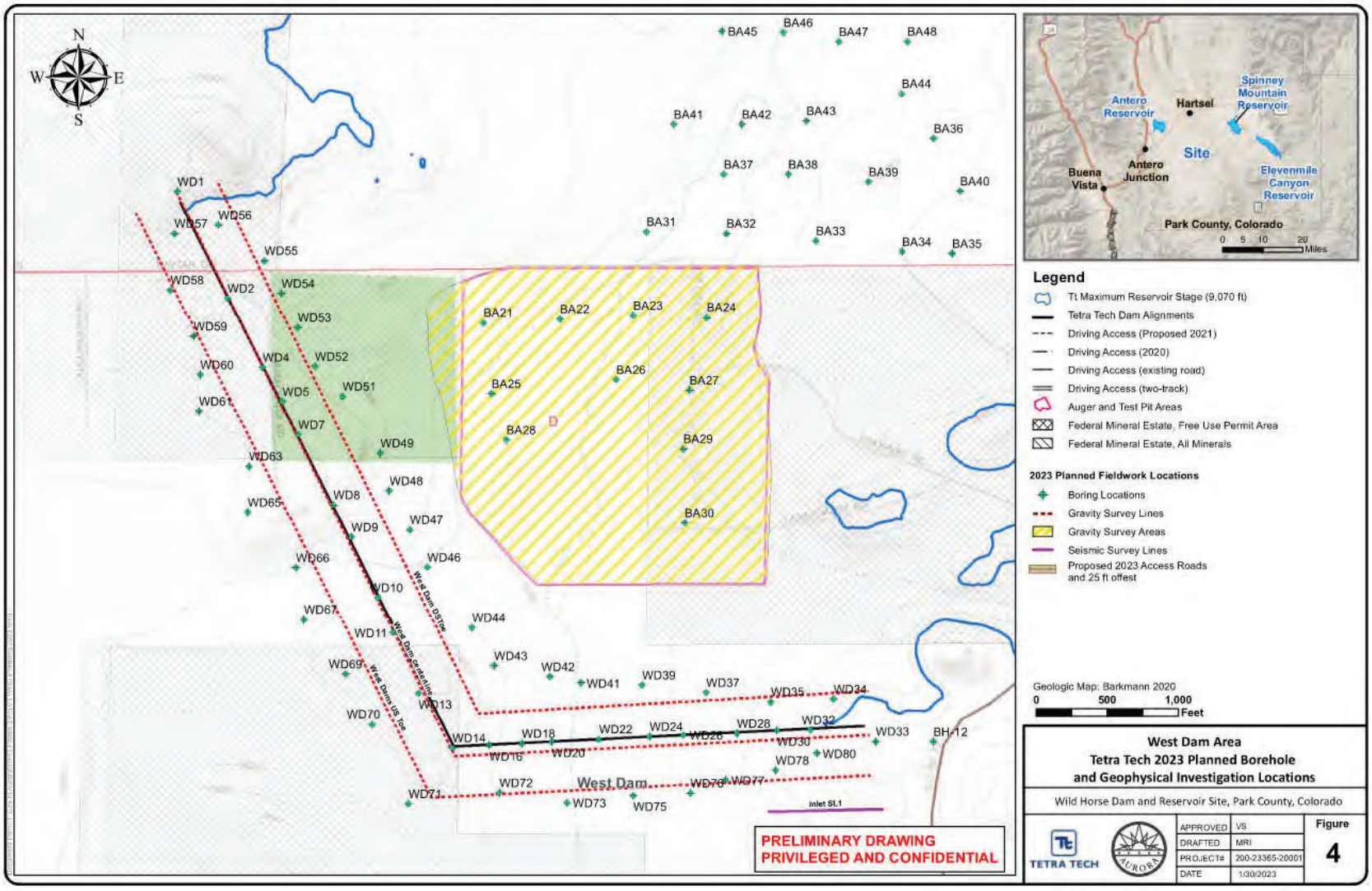

Figure 4: Proposed field investigation plan view of West Dam area

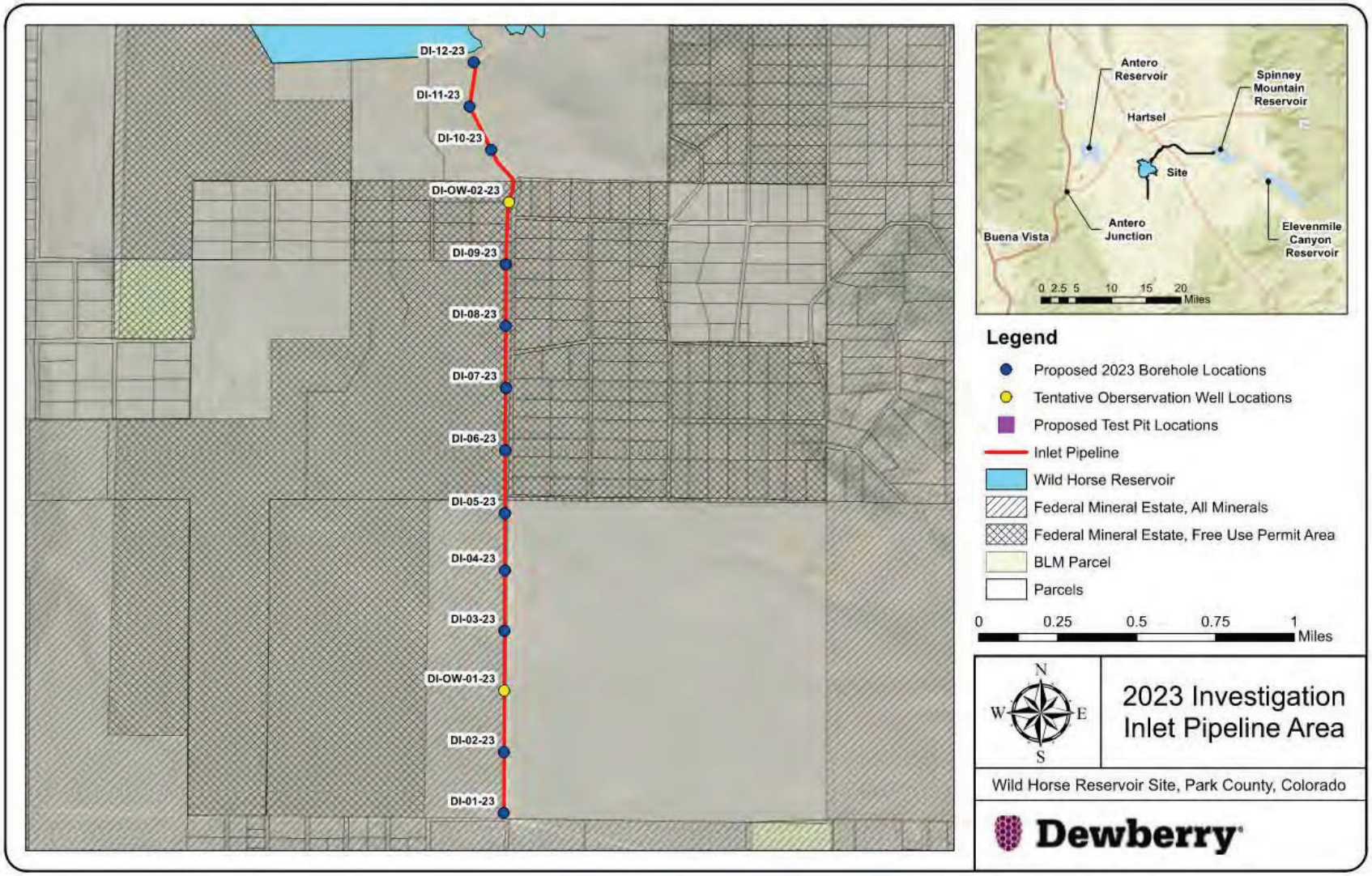

Figure 5: Proposed field investigation plan view of Inlet Pipeline area

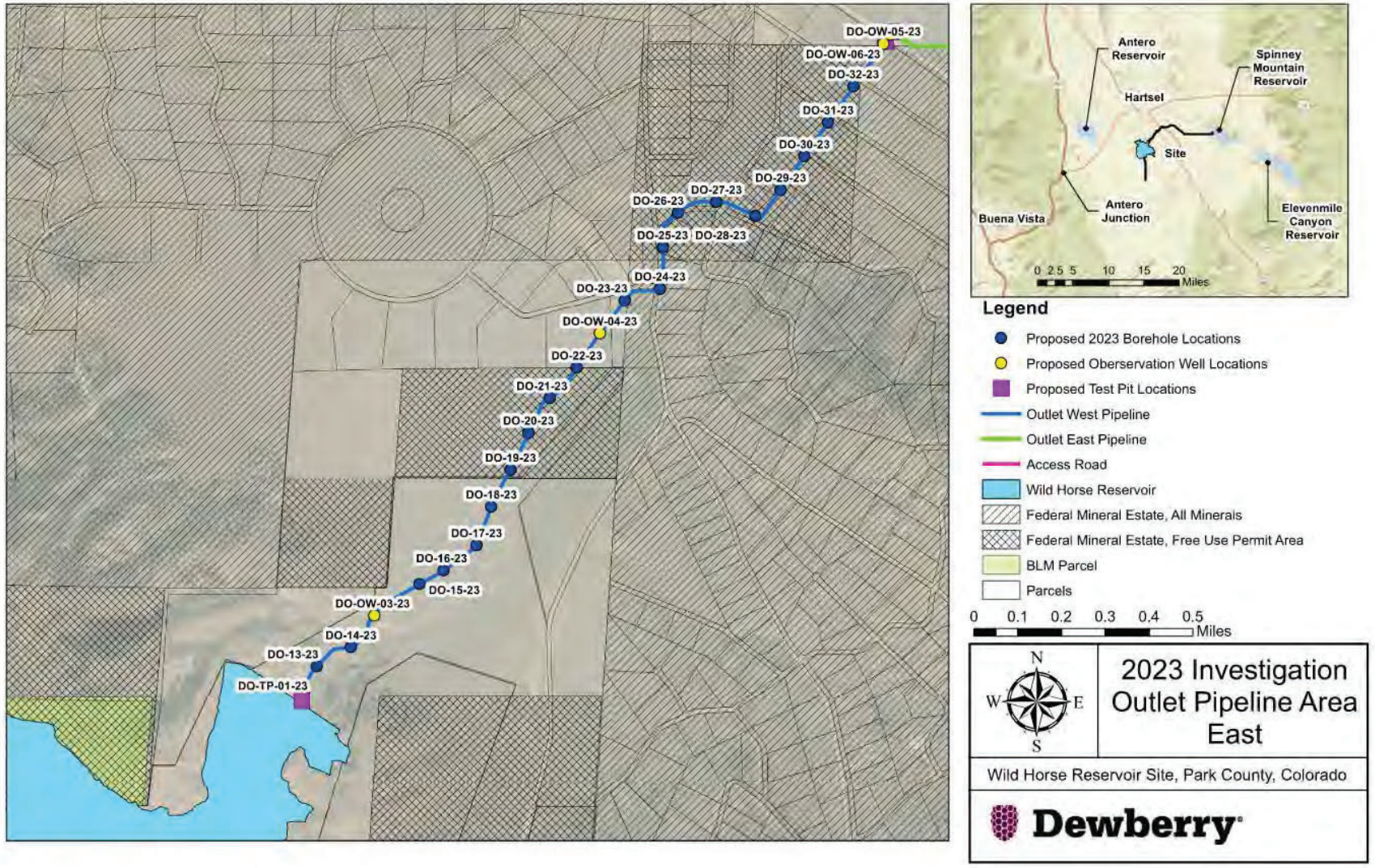

Figure 6: Proposed field investigation plan view of Outlet Pipeline east area

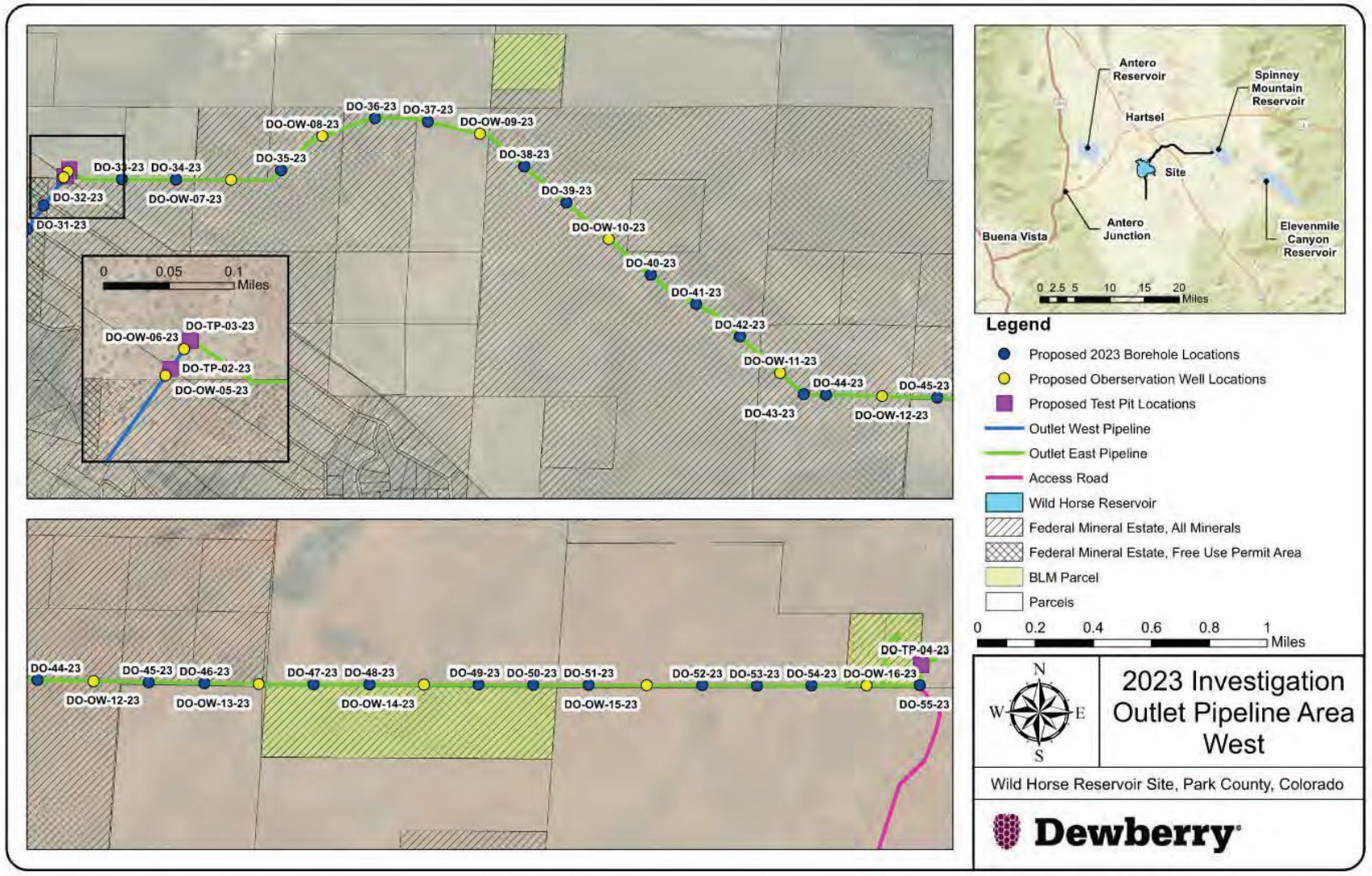

Figure 7: Proposed field investigation plan view of Outlet Pipeline west area

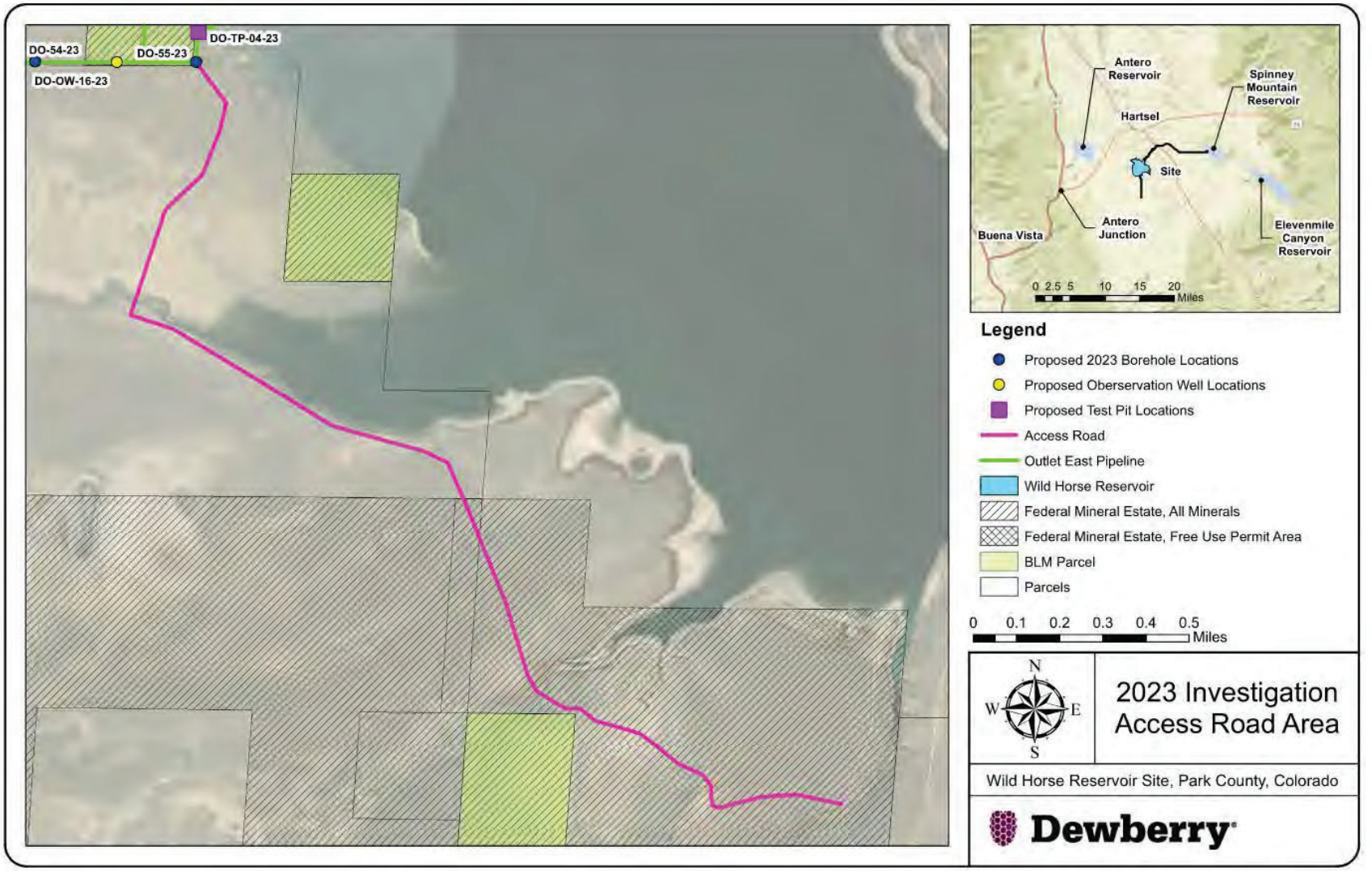

Figure 8: Proposed road access development for Pipeline investigation

All proposed locations were screened by ERO Resources to avoid all cultural resources, regardless of significance and land status, as detailed below. The protocols described below will be completed for the field investigation regardless of property ownership or mineral rights.

1. CULTURAL AND NATURAL RESOURCES AVOIDANCE PROGRAM

In order to seek approval to proceed, Aurora proposes to implement a rigorous program to ensure that the site investigation avoids cultural resources and sensitive or regulated natural resources, including the sensitive mountain plover and an active golden eagle nest. ERO coordinated with BLM resource specialists in developing this avoidance program for the first LOA submitted in 2020 and was revised again for the 2021 LOA. The program includes four steps.

1) Initial Planning to Avoid Impacts:
   a) ERO has completed cultural resource assessments for most of the reservoir footprint (referred to as the 9075 elevation) and most of the proposed site investigation areas. To date, ERO has evaluated cultural resources on private surface (1,580 acres), split estate (2,540 acres), BLM surface (240 acres), and Park County (3 acres) lands for a total of 4,363 acres. Cultural resource reports have been previously submitted to the BLM Royal Gorge Field Office (RGFO) for the Federal surface lands (240 acres) and the 2021 geotechnical work that occurred on Federal mineral estates.
   b) The 2023 LOA seeks approval for the entire Project, including both the inlet and outlet pipeline alignments and two proposed realignments of County Road 53 (CR53). ERO previously completed the cultural resource survey for the outlet pipeline, from the dam outlet to Highway 9, and about 90 percent of the outlet pipeline from Highway 9 to Spinney Reservoir. The proposed inlet pipeline from the Otero Pipeline to the 9,075-elevation reservoir footprint, and which parallels CR53, has not yet been surveyed for cultural resources. If proposed geotechnical activity is proposed where no previous cultural resources survey has occurred, ERO will submit a fieldwork authorization request to the BLM to conduct survey and prepare a report to seek approval for the proposed geotechnical activity prior to any work.
   c) ERO has completed four natural resource assessments (NRAs), including the reservoir footprint and outlet pipeline alignments, and has coordinated with the BLM RGFO regarding sensitive species, including the mountain plover and an active golden eagle nest. Mountain plover habitat occurs over much of the Project area except the craggy uplands above the location of the Main Dam. A golden eagle nest was identified in 2020 by ERO biologists. Since discovery, ERO has coordinated with the BLM, Colorado Parks and Wildlife (CPW), and the U.S. Fish and Wildlife Service to develop and implement a monitoring plan for the golden eagle. Monitoring has now occurred 2021-2022 and ERO will continue biweekly surveys beginning February 1, 2023, and will continue through the 2023 nesting season. Yearly monitoring memos are provided to the BLM.
   d) Geotechnical investigations proposed within the ½ mile avoidance buffer of the golden eagle nest will not begin until after about August 15, 2023, or when the eaglet(s) are observed to have fledged the nest. Mountain plover habitat quality surveys will be conducted by ERO throughout the 2023 field season to begin compiling data for eventual submittal to the BLM and CPW so that a habitat quality determination can be provided to the Project proponent and to allow work within unsuitable areas. Beginning May 2023, mountain plover nesting surveys will begin to identify active nests within areas proposed for geotechnical activity. Identified nests would be marked for avoidance. As plover habitat surveys continue, results would be periodically provided to CPW and the BLM for consultation; geotechnical activity

would be allowed in areas found to be unsuitable plover nesting habitat. Identified plover nests would require an avoidance buffer of up to ¼ mile and would be refined (and perhaps reduced) in coordination with CPW.

2) Pre-Investigation Site Access Surveys:
   a) Geotechnical investigation sites and general areas will be accessed from existing county roads and existing two-tracks previously developed within the Project area. Access to individual boring, test pit, and test trench locations will be over rangeland and will be guided by an access plan provided by ERO to avoid cultural resources. The proposed field program will require access roads to be graded in the canyon by the Main Dam site to access several of the proposed boreholes. These access roads have been designed to avoid cultural resources.
   b) Stakes will be placed in the field by ERO to mark the approved access routes and equipment will traverse within the marked corridors. Shapefiles of the access routes will also be provided to help ensure avoidance. When access routes thread a particularly sensitive area for cultural resources and/or when access terminates within a cultural resource buffer (100 ft), ERO will monitor the access to ensure avoidance.
3) Pre-Investigation Surveys of Exploration Locations:
   a) The surface area that will be disturbed by the exploration work will be identified in the field by Tetra Tech. Before initial exploration begins, ERO will visually confirm that the access plan has been staked, that there are no cultural sites within intended locations, and ensure the cultural resource buffers identified in the cultural resources monitoring plan are maintained.
   b) Should geotechnical investigations be required within the 100 ft cultural resource buffer, ERO will monitor all activities within the buffer to ensure avoidance.
   c) As geotechnical investigations advance, Tetra Tech will provide ERO a "two-week out" notice with their intended locations for additional geotechnical investigations. ERO will again review cultural resource location data to confirm that there are no cultural sites and ensure the setbacks identified above are maintained.
4) Work Stoppage and Documentation:
   a) If a potential cultural resource is encountered during monitoring, the work will immediately cease, ERO will document and evaluate the finding on standard forms and notify the BLM, the excavation will be backfilled, and the exploration location will be relocated.

The full Monitoring Plan is provided as **Attachment A**.

2. DAM & RESERVOIR - REQUIRED DATA COLLECTION

The field exploration program needs to achieve the following objectives to provide the data needed to gather additional engineering data for design and to configure the Project components to advance permitting efforts:

1) Refine the understanding of site geology and dam foundation conditions by further investigating subsurface conditions throughout the dam footprints. Subsurface information is needed to improve the reliability of the geologic model developed based on previous investigations and evaluate key geologic and subsurface features that could impact Project design or component configuration.
2) Obtain additional subsurface data to refine seepage loss estimates.

3) Identify the extent and properties of the various materials within the Project footprint that could be used for construction materials for the dams and ancillary facilities. This is needed to support development of the dam designs and configurations.

The majority of proposed work will be on privately-owned surface properties or established roads and two-tracks. However, 45 of the 116 boreholes, 20 observations wells, and 3 of the 16 seismic lines are currently located in Federal Mineral Estate areas. It is critical for this work to be completed in summer/fall to support development of the design concepts and avoid adverse delays to the overall Project schedule.

The methods and procedures for the exploration program are described in the following sections. The borehole names and identifiers are subject to change prior or during the proposed field work.

2.1 Geologic Mapping

Field work will include geologic fracture mapping near and around the Main Dam area to the East Dam 1 & 2 area. The field work will include personnel walking around the area and taking hand measurements of exposed fractures. Measurements will include evaluating rock type, degree of fracture slope, and fracture direction. The data collected will be used in the site groundwater model to model dam and reservoir seepage.

2.2 Non-Intrusive Geophysical Surveys

Tetra Tech proposes completing gravity and seismic surveys to gain additional data regarding the subsurface structures and engineering properties using non-intrusive methods. This data screens a larger area of the site more efficiently and with less disturbance than drilling boreholes over the same area. No soil or rock samples will be obtained using these ground-surface-based geophysical survey methods.

2.2.1 Gravity Surveys

Gravity surveys will be used to non-intrusively collect data regarding large-scale subsurface structure and depth to competent rock that will support choosing final locations for the seismic survey and boreholes. The gravity surveys are conducted using a small (approximately 12 inches by 8.5 inches, 17.5 pounds) gravimeter which is placed on the ground and leveled on three 2-inch legs (see **Figure 9**). The gravimeter is left in place for one to five minutes to collect repeated measurements at each gravity station location. Gravity surveys will take place in the general proposed work areas of the field exploration program shown in **Figure 1**. Exact locations of the gravity readings cannot be provided as hundreds of readings are taken while walking across the site.

Figure 9: Photo showing gravimeter.
The gravimeter is approximately 12 inches by 8.5 inches.

2.2.2 Seismic Surveys

Seismic surveys will be used to non-intrusively map subsurface structures, constraining geotechnical properties between boreholes, and delineate the lateral extents and depth of low-quality foundation materials. Off-road seismic surveys are designed for on foot placement and removal of cable-less seismic recording equipment and use of a low-ground pressure skid steer seismic source for large surveys (**Figure 10**) and a low-noise dead blow hammer and strike plate (**Figure 11**) for smaller seismic surveys. Three (3) of the proposed 16 seismic surveys will be completed on Federal mineral estate, as shown in **Table 2**.

Table 2: Summary of proposed seismic lines.

Seismic Line ID	On Federal mineral estates?
TT-SL-06	No
TT-SL-18	No
TT-SL-19	No
TT-SL-20	No
TT-SL-21	Yes
TT-SL-28	No
TT-SL-IN1-23	No
TT-SL-IN2-23	No
TT-SL-IN3-23	Yes
TT-SL-OT1-23	No
TT-SL-OT2-23	No
TT-SL-OT3-23	No
TT-SL-Q1-23	No
TT-SL-Q2-23	No
TT-SL-R1-23	No
TT-SL-R2-23	Yes
TT-SL-06	No
TT-SL-18	No
TT-SL-19	No
TT-SL-20	No

The seismic surveys will use seismic equipment placed on the ground surface with seismic cables only used along already disturbed existing roads with the hand-portable seismic nodes (**Figure 6**) deployed on foot along off-road seismic profiles. A low-ground pressure (4-6 psi) rubber-track skid steer equipped with a 200-lb accelerated weight drop (AWD) seismic source (**Figure 5**) may be used for the larger seismic surveys along Country Road 53, West Dam, and East Dam 2 shown in **Figure 1**). The AWD seismic source is required for these profiles to obtain adequate seismic signal at source-receiver separation distances of 1,000 feet given the persistent wind characteristics of the site. **Figure 1** shows the AWD seismic lines with cables along roads in orange, the AWD seismic lines using seismic nodes in yellow, and the dead-blow hammer (DBH) (**Figure 6**) seismic lines using seismic nodes in green; the low-noise, foot-access dead-blow hammer seismic surveys are used at the Inlet and Outlet of the reservoir. Seismic cables along roads will be deployed by unrolling and placing the cables on the ground. Six-channel seismic nodes with geophones are connected to the cable to provide real-time monitoring of seismic signals to ensure adequate seismic data quality to complete seismic analyses. When seismic surveys are completed, the cables are rolled up over the crews' shoulders (not dragged) to remove them from the ground.

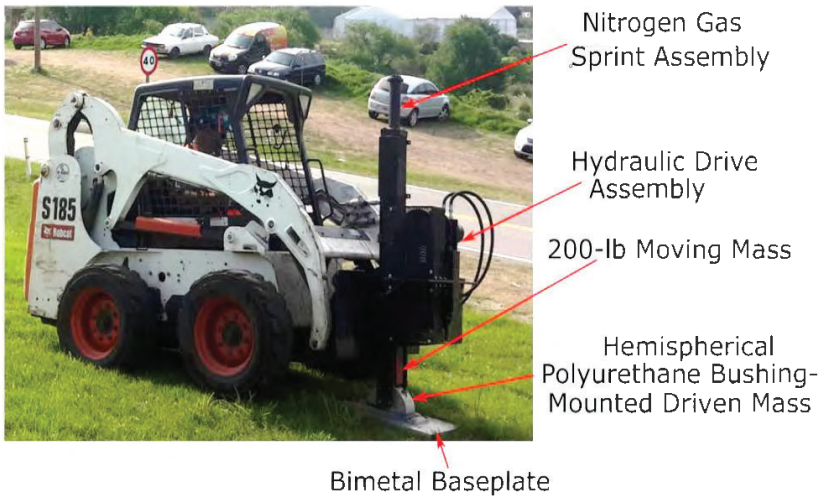

Figure 10: Photo depicting the accelerated weight drop (AWD) seismic source mounted on the skid steer

The off-road seismic surveys will be accomplished using state-of-the-art cable-less seismic recording nodes that are directly placed on the ground (see **Figure 6**). The team will drive on already established and disturbed roads as close to the seismic profiles as feasible and then walk to the seismic profile station positions to deploy and activate the nodes. No motor vehicles except the low-ground pressure skid steer will be driven off of existing, already disturbed roads.

Figure 11: Photo depicting planned equipment to complete seismic surveys without using a seismic streamer (cable)

2.3 Boreholes

Borings will be used to achieve the previously defined objectives of the field exploration program. The specific purposes of the borings are to investigate and collect samples from deeper depths that cannot be explored using test pits, allow for in-situ hydraulic conductivity testing and downhole geophysical investigation of dam foundation materials, and provide data for calibration of surface geophysical results. 45 of the 116 proposed boreholes are on Federal Mineral Estate, as shown in **Table 3.**

Table 3: Summary of proposed boreholes.

Borehole ID	On Federal mineral estates?
BH-PeEC	Yes
BH-PeEC-S	Yes
BH-PeVC	Yes
BH-PeVC-S	Yes
CH1	No
CH2	No
ED01	Yes
ED03	Yes
ED06	Yes
ED07	Yes
ED08	Yes
ED10	Yes
ED11	Yes
ED12	Yes
ED13	Yes
ED14	Yes
ED16	Yes
ES1	Yes
ES2	Yes
ES3	Yes
ES4	Yes
MD01	No

Borehole ID	On Federal mineral estates?
MD02	No
MD03-A	No
MD04	No
MD05-A	No
MD06	No
MD07	No
MD08	No
MD09	No
MD10	No
MD11	No
MD12	No
MD13	No
MD14	No
MD15-A	No
MD16	No
MD17	No
MD18-A	No
OHV1	No
OHV2	No
OHV3	No
OHV4	No
RQ1	No
RQ2	No
RQ3	Yes
RQ4	Yes
RQ5	No
RQ6	No
RQ7	No
RQ8	No
RQ9	Yes
T1	No
T2	Yes
T3-A	No
T4	No
T5	No
T6	No
WD01	Yes
WD02	Yes
WD04	Yes
WD05	Yes
WD07	Yes
WD08	No
WD09	No
WD10	No
WD11	No
WD13	Yes
WD14	Yes
WD16	No
WD18	No
WD20	No

Borehole ID	On Federal mineral estates?
WD22	No
WD24	No
WD26	No
WD28	No
WD30	No
WD32	No
WD33	No
WD34	No
WD35	No
WD37	No
WD39	No
WD41	No
WD42	No
WD43	No
WD44	No
WD46	No
WD47	No
WD48	No
WD49	Yes
WD51	Yes
WD52	Yes
WD53	Yes
WD54	Yes
WD55	Yes
WD56	Yes
WD57	Yes
WD58	Yes
WD59	Yes
WD60	Yes
WD61	Yes
WD63	No
WD65	No
WD66	No
WD67	No
WD69	Yes
WD70	Yes
WD71	Yes
WD72	No
WD73	No
WD75	No
WD76	No
WD77	No
WD78	No
WD80	No

Soil and bedrock samples will be collected from borings for further evaluation and laboratory testing. The soil that is brought to the surface by the augers would be spread out around the boring location. Rock would be cored continuously and removed.

The borings are anticipated to extend to total depths between 100 and 300 feet below the ground surface; however, select borings may need to extend deeper to investigate subsurface conditions identified by surface geophysical investigations. Three drill rigs would be mobilized to the site to complete the work. The borings would be advanced using either augers, air rotary, or rock coring techniques. Borings will create an approximately 3- to 8-inch-diameter hole in the ground. Drilling will involve circulation of water or pressurized air through the boring to remove cuttings. Circulating water and cuttings are collected in a mud tank (approximately 200-gallon steel or plastic tank) at the ground surface. The cuttings settle out of the water in the tank and the drill rig recirculates the water from the mud tank.

In-situ water pressure testing (packer testing) would be performed within the bedrock portion of the borings. This involves inflating a rubber seal near the bottom of the boring to isolate the bottom section of the boring. Water is then injected into the isolated section of the boring under pressure and the rate of injection is used to calculate the hydraulic conductivity of the bedrock.

Downhole geophysical testing, including televiewing or sonic logging, would be performed in select borings. Televiewing involves deploying a camera down the borehole to view the borehole walls in order to observe the conditions and orientations of fractures. Sonic logging would involve measuring the velocity characteristics of subsurface materials to assist with calibration of seismic data collected from surface geophysical investigations.

Upon completion, drill cuttings that accumulate at the ground surface or in the mud tank would be disposed of at each boring location by spreading them out on the adjacent ground surface. The borehole would be filled from the bottom to the ground surface with cement-bentonite grout. Vibrating wire piezometers may be installed in select boreholes with the cement-bentonite grout and used to monitor the groundwater levels.

Colorado Division of Reclamation, Mining, and Safety (DRMS) permits are not currently needed for this work.

The proposed field program will require access roads to be graded in the canyon by the Main Dam site to access several of the proposed boreholes, **Figure 1**. Erosion control measures, such as silt fence, may be installed around the access roads. Working platforms may need to be constructed if borings will be located in areas of steep topography. Working platforms would be about 20 by 40 feet. Grading for working platforms and access roads would be performed using a bulldozer, excavator, or similar construction equipment. No material will be removed from the site or sampled during these grading operations. Excavated materials would be used for fill or stockpiled as appropriate to accommodate the platforms.

2.4 Observation Wells

Observation wells are planned around the reservoir footprint to monitor the long-term groundwater flow paths and distribution. This information will aid in seepage loss estimations and groundwater modeling. Observation wells will be drilled using air rotary or augers. Wells will be installed with either two-inch diameter or four-inch diameter PVC standpipes with locking lids. The wells will be drilled to maximum depths of approximately 200 feet below ground surface. Up to 20 observation wells will be drilled during the field investigation program. Tetra Tech will permit observation wells (including abandonment) with the State of Colorado in accordance with Colorado State Engineer Office Rules and Regulations.

Figure 1 shows the proposed locations of eight (8) of the 20 wells. The remaining well locations will be installed in the boreholes listed above. The proposed observation wells are on Federal mineral estate, as shown in **Table 4**.

Table 4: Summary of proposed observation wells.

Well ID	On Federal mineral estates?
BH-PeEC	Yes
BH-PeEC-S	Yes
BH-PeVC	Yes
BH-PeVC-S	Yes
BH-OW-18	Yes
BH-OW-18-S	Yes
OW-19	Yes
OW-N	Yes
ED-BHs Converted to OW, up to 10	Yes

2.5 Auger Boreholes

Auger boreholes will be used to explore potential borrow areas for future dam construction within the reservoir footprint. A total of 50 auger boreholes are proposed. The auger holes will be drilled near Potential Borrow Areas A, C, and D shown on **Figure 1**. However, the exact locations of auger boreholes cannot be determined until the start of auger borehole drilling. Auger borehole data will determine the number and locations of auger boreholes in each of the Potential Borrow Areas. For instance, if auger boreholes are not exhibiting the desired soils, the area may be abandoned, and the remaining holes distributed between the other Potential Borrow Areas for Future Construction. The Potential Borrow Areas will be staked prior to beginning work to ensure that auger boreholes stay within the areas shown, and outside of constraints identified by the LOA and ERO.

Soil samples will be collected from borings for further evaluation and laboratory testing. The boreholes would be advanced using augers on a drill rig. Borings will create an approximately 3- to 8-inch-diameter hole in the ground. Drilling will not involve circulation of water or pressurized air through the boring. Soil will be sampled intermittently, and we expect that between 1 and 3 cubic feet of soil would be removed from the site per borehole extending to total depths of 10 to 25 feet. The remaining soil that is brought to the surface by the augers would be used to backfill the boreholes. Boreholes not backfilled by soil will be backfilled using bentonite from the bottom of the hole to the surface.

2.6 Test Pits/Trenches

Test pits/trenches will be used to achieve the previously defined objectives of the field exploration program. The specific purposes of test pits are to expose and sample subsurface materials at a larger scale than what can be accomplished by drilling borings. Test pits/trenches will be used to observe geologic structure that will affect performance of the dam and reservoir, including orientation of bedrock bedding, and degree of bedrock fracturing. Test pits/trenches will also be used to evaluate the types and quantities of various materials that could be used for construction materials during dam construction.

1. The test trenches may be located at the West Dam, East Dam 2, and Main Dam foundation sites**.** The exact locations of these test pits will be determined by borehole data.
2. Test pits may be located in within the Potential Borrow Areas A, C, and D. The exact locations of test pits in these areas will be determined based on data from the auger holes. The Potential Borrow Areas will be staked prior to beginning work to ensure that auger boreholes stay within the areas shown, and outside of constraints identified by the LOA and ERO.

Select soil and bedrock samples will be collected from test pits/trenches for further evaluation and laboratory testing.

Test pits/trenches will be excavated using a track-mounted excavator. Test pits are anticipated to be up to about 5 to 20 feet deep, about 5 feet wide, and about 10 to 20 feet long

Test pits/trenches may be left open for several days before being backfilled. Pits/trenches left open overnight will be sloped at one end at a minimum 2 Horizontal to 1 Vertical (2H:1V) slope to allow for egress if someone or an animal were to fall into the pit/trench; orange fencing will be placed around the perimeter of the excavation until the pit/trench is backfilled. Upon completion, the test pits/trenches will be backfilled with the excavated materials and the ground surface will be graded to match the surrounding grade.

3. PIPELINE - REQUIRED DATA COLLECTION

The field exploration program needs to achieve the following objectives to provide the data needed to gather additional engineering data for design and to configure the Project pipeline components to advance permitting efforts:

1) Subsurface information is needed to identify the geologic landscape along the inlet and outlet pipeline alignments to better design the precise location of each pipeline. The information gathered help to evaluated key geologic features that could impact Project feasibility, component configuration and cost.
2) Refine the pipeline alignments based on above ground features and identify a suitable location for access to the facilities at Spinney Mountain Reservoir.

Some of the proposed work will be on privately-owned surface properties or established roads and two-tracks. Some of the exploration will take place on BLM land near the Spinney Mountain Reservoir. Approximately 39 of 55 boreholes, and 11 of 16 observation wells will be located on Federal Mineral Estate land. It is critical for this work to be completed to support development of the design concepts and avoid adverse delays to the overall Project schedule.

The methods and procedures for the exploration program are described in the following sections.

3.1 Site Visits

Field work will include approximately five (5) site visits by Dewberry for review of the proposed pipeline alignments. The purpose of these trips would be to identify surface features that may impact design or construction (such as topography, drainages, culverts, utility crossings, roadway crossings, property boundaries, facility siting etc.).

3.2 Boreholes

Borings will be used to achieve the previously defined objectives of the field exploration program. The specific purposes of the borings are to investigate subsurface conditions to aid in the design of the pipelines. **Table 5** below identifies the geotechnical boreholes along the pipeline and if they are on Federal Mineral Estate.

Table 5: Summary of proposed boreholes.

Borehole ID	On Federal mineral estates?
DI-01-23	Yes
DI-02-23	Yes
DI-03-23	Yes
DI-04-23	Yes
DI-05-23	Yes
DI-06-23	Yes
DI-07-23	Yes
DI-08-23	Yes
DI-09-23	Yes
DI-10-23	Yes
DI-11-23	No
DI-12-23	Yes
DO-13-23	No
DO-14-23	No
DO-15-23	No
DO-16-23	No
DO-17-23	No
DO-18-23	No
DO-19-23	Yes
DO-20-23	Yes
DO-21-23	Yes
DO-22-23	Yes
DO-23-23	No
DO-24-23	Yes
DO-25-23	Yes
DO-26-23	Yes
DO-27-23	Yes
DO-28-23	Yes
DO-29-23	Yes
DO-30-23	Yes
DO-31-23	Yes
DO-32-23	Yes
DO-33-23	Yes
DO-34-23	Yes
DO-35-23	Yes
DO-36-23	Yes
DO-37-23	Yes
DO-38-23	Yes
DO-39-23	Yes
DO-40-23	Yes
DO-41-23	Yes
DO-42-23	Yes
DO-43-23	Yes
DO-44-23	Yes
DO-45-23	Yes
DO-46-23	Yes
DO-47-23	No

Borehole ID	On Federal mineral estates?
DO-48-23	No
DO-49-23	No
DO-50-23	No
DO-51-23	No
DO-52-23	No
DO-53-23	No
DO-54-23	No
DO-55-23	No

Soil and bedrock samples will be collected from borings for further evaluation and laboratory testing. Soil will be sampled intermittently, and the remaining soil that is brought to the surface by the augers would be spread out around the boring location.

The borings are anticipated to extend to total depths between 25 to 50 feet below the ground surface. One drill rig would be mobilized to the site to complete the work. The borings would be advanced using either augers, air rotary, or rock coring techniques. Borings will create an approximately 3- to 8-inch-diameter hole in the ground. Drilling will involve circulation of water or pressurized air through the boring to remove cuttings. Circulating water and cuttings are collected in a mud tank (approximately 200-gallon steel or plastic tank) at the ground surface. The cuttings settle out of the water in the tank and the drill rig recirculates the water from the mud tank.

Colorado Division of Reclamation, Mining, and Safety (DRMS) permits are not currently needed for this work.

The proposed 2023 field program will use erosion control measures, such as silt fence, as needed.

3.3 Observation Wells

Observation wells are planned along the pipelines alignments to monitor the long-term groundwater flow paths and distribution. This information will determine if additional design considerations are required to decrease the flow of groundwater along the pipelines and to aid in construction planning. Observation wells will be drilled using air rotary or augers. Wells will be installed with either two-inch diameter or four-inch diameter PVC standpipes with locking lids. The wells will be drilled to maximum depths of approximately 25 feet below ground surface. A 16 observation wells will be drilled during the field investigation program. Dewberry will permit observation wells (including abandonment) with the State of Colorado in accordance with Colorado State Engineer Office Rules and Regulations.

Figure 5-8 shows the proposed locations of 6 of the 10 wells. The remaining well locations will be determined based on data obtained from boreholes. Currently, 11 of the 16 observation wells are antipacted to be located on Federal Mineral Estate Land, as shown in **Table 6**.

Table 6: Summary of proposed observation wells.

Well ID	On Federal mineral estates?
DI-OW-01-23	Yes
DO-OW-03-23	No
DO-OW-04-23	No
DO-OW-07-23	Yes

Well ID	On Federal mineral estates?
DO-OW-08-23	Yes
DO-OW-09-23	Yes
DO-OW-10-23	Yes
DO-OW-11-23	Yes
DO-OW-12-23	Yes
DO-OW-13-23	Yes
DO-OW-14-23	Yes
DO-OW-15-23	No
DO-OW-16-23	Yes
DI-OW-06-23	No
DI-OW-02-23	Yes
DO-OW-05-23	No

3.4 Test Pits/Trenches

The specific purposes of test pits are to expose and sample subsurface materials at a larger scale than what can be accomplished by drilling borings. Test pits/trenches will be used to observe the lithology that will affect the installation and design of the pipelines. Test pits/trenches will also be used to evaluate the types and quantities of various materials that could be used for construction materials during dam construction. A total of 4 test pits are proposed for the pipelines and would be located at the outlet of Wild Horse Reservoir (1), at the State Highway 9 crossing (2), and at the inlet to Spinney Mountain Reservoir. The test pit numbers and whether they are on Federal Mineral Estates can be seen in **Table 7** below.

Table 7: Summary of proposed observation wells.

Well ID	On Federal mineral estates?
DO-TP-01-23	No
DO-TP-02-23	No
DO-TP-03-23	No
DO-TP-04-23	No

Select soil and bedrock samples will be collected from test pits/trenches for further evaluation and laboratory testing.

Test pits/trenches will be excavated using a track-mounted excavator. Test pits are anticipated to be up to about 15 feet deep, about 5 feet wide, and about 20 feet long. Spoils piles will be temporarily placed to one side of the pit/trench during excavation.

Test pits/trenches may be left open for several days before being backfilled. Pits/trenches left open overnight will be sloped at one end at a minimum 2 Horizontal to 1 Vertical (2H:1V) slope to allow for egress if someone or an animal were to fall into the pit/trench; orange fencing will be placed around the perimeter of the excavation until the pit/trench is backfilled. Upon completion, the test pits/trenches will be backfilled with the excavated materials.

3.5 Mapping and Field Survey

Survey along the proposed inlet and outlet pipeline alignments will be completed during the 2023 field work. This work will include survey and mapping along both the inlet and outlet pipelines to advance the project base mapping to further design. This work will include locating utilities parallel to and crossing the alignment within 150 feet of the proposed alignments. Survey work will be completed by 2-3 surveyors who will traverse the alignments by foot.

4. PROPOSED SCHEDULE

The proposed schedule for completing the field investigation is below. The field investigation will not begin before May 2023; an excat start date will be decided after ERO coimpletes the survey of the Mountain Plover nesting habitat. If no unsuitable nesting habitats are found, the geotechnical field investigation will not begin until after the mountain plover nesting season ends on July 15, 2023. Geotechnical investigations proposed within the ½ mile avoidance buffer of the golden eagle nest will not begin until after about August 15, 2023, or when the eaglet(s) are observed to have fledged the nest.

Area/Work	Proposed Number of Items	Tentative Start Date	Tentative End Date
Pipeline Investigation	75	5/1/23	5/26/23
West Dam & Inlet Boreholes	58	7/17/23	11/17/23
East Dams Boreholes	15	8/14/23	11/17/23
Main Dam & Outlet Boreholes	28	8/14/23	11/17/23
Rock Quarry Boreholes	9	8/14/23	11/17/23
Observation Wells	20	7/17/23	11/17/23
Auger Holes, Test Pits, Test Trenches*	50+	7/17/23	9/15/23
Seismic Survey Profiles	16	7/17/23	10/6/23
Gravity Survey Areas	13	7/17/23	10/6/23

**May be completed at any point during the field investigation*

5. SUMMARY

The majority of proposed work will be on privately-owned surface properties or established roads and two-tracks. For the dam and reservoir investigation, 45 boreholes, 20 observations wells, and 3 of the 16 seismic lines are currently located in Federal Mineral Estate areas. For the pipeline investigation, part of the exploration will take place on BLM land near the Spinney Mountain Reservoir. Approximately 39 boreholes and 9 observation wells will be located on Federal Mineral Estate land. Based on our understanding of the requirements, it is our opinion that this work would be covered under BLM's categorical exclusions for NEPA compliance.

Please do not hesitate to contact me if you have any questions or require further information.

Sincerely,

Richard A. Vidmar, P.E.
Water Resources Manager
Water Resources Division
Aurora Water
15151 E. Alameda Pkwy., #3600
P 303-739-7326
F 303-739-7604

Attachments:
Attachment A – Monitoring Plan
Attachment B- Eagle & Mountain Plover Work Plan

AURORA WATER

City of Aurora

Water Resources
15151 E. Alameda Parkway, Suite 3600
Aurora, Colorado 80012
303.739.7370

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April 6, 2022

Bureau of Land Management
Attn: Mr. Keith E. Berger, Field Manager
Royal Gorge Field Office
3028 East Main Street
Cañon City, CO 81212

RE: 3600 LLCOF02000 | COC-080899 | Surface Management | Responses to Additional Information Needed

Dear Mr. Berger:

The City of Aurora (Aurora) is in receipt of the request for additional information needed, dated March 28, 2023, in regard to our request to conduct a third phase of site investigation in Park County, involving test pits/trenches, monitoring wells, and boreholes for the Wild Horse Reservoir (Project). Responses to the BLM Royal Gorge Field Office's request are included below:

1. Explain the purpose/goals of this phase of site investigation:

The purpose the of the site investigation is to achieve the several objectives to gather additional engineering data for consideration and design of Project components to advance permitting efforts:

- Refine the understanding of site geology and dam foundation conditions by further investigating subsurface conditions throughout the proposed dam, reservoir and pipeline footprints. Subsurface information is needed to improve the reliability of the geology that is based on previous investigations and evaluate key geologic and subsurface features that could impact Project design or component configuration.
- Obtain additional subsurface data to refine seepage loss estimates.
- Identify the extent and properties of the various materials within the Project footprint that could be used for construction materials for the dams and ancillary facilities. This is needed to support feasibility of the dam/pipeline designs and configurations.

2. Provide the attachments mentioned in the application received on February 27, 2023:

a. Attachment A – Monitoring Plan
b. Attachment B – Eagle & Mountain Plover Work Plan

The attachments listed above are included with this response letter.

3. Define the term "Federal Mineral Estate, Free Use Permit Area" as seen in the legends of Figures 1-8:

The Federal Mineral Estate, Free Use Permit Area shown depicts the areas that were included in the July 12, 2018 letter from Aurora Water requesting a Free Use Permit to utilize federally-owned minerals. This request was made as directed during a meeting held on May 11, 2018 with your staff. Our understanding at that time was that the Notice to Use Mineral Materials would be placed into BLM records and inform actions on any future request pertaining to the federal mineral estate in the project area. We've included these areas in the figures for completeness. A copy of the July 12th letter is attached as Attachment C.

4. Submit a field investigations report for 2021-2022 to the Royal Gorge Field Office as required in the terms of the COC-080565 Letter of Authorization:

The 2021-2022 field work authorization, named "Exploration and Testing of Mineral Materials for Wild Horse Reservoir, Additional Acreage" requires a monitoring report. BLM will receive this report under separate cover by ERO. It is anticipated that this monitoring report will be submitted no later than April 10, 2023.

5. Submit a wildlife monitoring memo for the 2022 season to the Royal Gorge Field Office, as mentioned in Section 1.1(c) of the proposal received by the BLM on February 27, 2023:

The document entitled "Wild Horse Reservoir 2022 Data Summary of Golden Eagle Nest Monitoring, Park County, Colorado" dated January 19, 2023 is attached. It is noted as Attachment D in this submittal response.

6. Explain the difference between test pits and test trenches:

Test pits and test trenches serve similar purposes of uncovering and enabling the investigation of subsurface conditions as the site. The size of the excavation depends on the area required for efficient excavation (what equipment is being used) and sample collection.

- Test pits are often more square or circular and generally about 5 to 15 feet deep. Personnel do not enter the excavation for inspection.
- Test trenches are usually at least 7-ft wide and may be extended to any length, as required to reveal subsurface conditions along a specific line. The slopes may be benched or shored to allow for personnel to safely enter the excavation for inspection. The trenches are often used to check for faults.

7. Specify the location of any proposed test trenches:

At this time, exact locations for test trenches have not been identified. The test trenches may be excavated along a limited portion of the dam centerlines at the West Dam or East Dams after an evaluation of borehole and test pit information if it is determined that additional subsurface information is needed.

8. State the proposed number of test pits and trenches:

The exact number of test pits and test trenches will depend on the results of the borehole data.

- No more than 25 test pits would be excavated.
- No more than five test trenches would be excavated.

9. State the proposed number of auger boreholes on Federal Mineral Estate:

In total, there are 50 auger boreholes proposed; 14 of them would occur on Federal Mineral Estate Land.

10. State the amount of mineral material that would be removed (in cubic yards or tons) and the number of acres that would be disturbed on Federal Mineral Estate during this project:

- Approximately 8 cubic yards or less of material would be removed from Federal Mineral Estate land.
- Less than 2 acres of Federal Mineral Estate land would be disturbed.

11. Elaborate on the erosion control measures mentioned on pg. 22 and the circumstances under which the control measures would be implemented:

The erosion control measures would be used for the planned access roads for the Main Dam left and right abutment boreholes. The newly developed roads will use either silt fence, straw bales, straw wattle/blankets to control runoff and protect the exposed soil surface in areas where potential scour may occur. Erosion control measures will be used on steeper slopes in soil or loose rock.

We have also updated the attached figures to remove the privileged and confidential watermarks. In addition, our GIS staff is preparing updated shapefiles for the project to share with your staff.

The City wishes to thank the BLM Royal Gorge Field Office for its timely review of this request. Please do not hesitate to reach out with any additional questions you may have.

Sincerely,

Richard Vidmar

Richard A. Vidmar, P.E.
Water Resources Manager
Aurora Water

Attachments:
Attachment A – Monitoring Plan
Attachment B – Eagle & Mountain Plover Work Plan
Attachment C – Notice of Desired Use of Federally-Owned Mineral Materials Letter
Attachment D - 2022 Data Summary of Golden Eagle Nest Monitoring

ec:

John Smeins, Project Manager, BLM Royal Gorge Field Office
Sophia Brooks-Randall, BLM Royal Gorge Field Office
Raymond Ogle, BLM Royal Gorge Field Office

ERO

Consultants in Natural Resources and the Environment

Monitoring Plan

Exploration and Testing of Mineral Materials

for Wild Horse Reservoir

Park County, Colorado

2023 Letter of Authorization

Prepared for:
Bureau of Land Management
Royal Gorge Field Office
3028 East Main Street
Canon City, Colorado 81212

February 2023

ERO Resources Corporation (ERO), on behalf Aurora Water, is submitting a cultural resource monitoring plan for geotechnical investigations associated with feasibility studies for the proposed construction of Wild Horse Reservoir (Project) for the 2023 field season. Additional geotechnical and geological data is needed to develop 30 percent design for the Project. Site investigations will take place across the Project area, including split estate lands, private surfacer and minerals, and potentially BLM surface. Because an approved undertaking is anticipated for the entire Project, all geotechnical activities regardless of surface or mineral ownership will require a special use permit and are therefore subject to compliance under Section 106 of the National Historic Preservation Act and its implementing regulations under 36 Code of Federal Regulations (CFR) 800.

Nearly the entire Project area has been subject to complete cultural resource inventory. A cultural resources survey report for federal minerals was submitted to the Royal Gorge Field Office and received approval for 2020 and 2021 geotechnical activity. For those areas where proposed geotechnical activity

has not received cultural resources survey, ERO will submit a fieldwork authorization to RGFO to undertake survey and submit a compliance report.

Geotechnical investigations will consist of drilling boreholes and observation wells and undertaking non-invasive gravity and seismic surveys to investigate the underlying geology of the project area and to assess the viability of potential borrow areas within the reservoir footprint. Specifics regarding the geotechnical methods are provided in the technical program prepared by Tetra Tech and submitted by Aurora Water under a letter of authorization.

Each proposed borehole will have a 10-foot radius impact area and would be drilled using a low ground-pressure buggy or truck mounted drilling rig. Gravity surveys are conducted using a small gravimeter which is placed on the ground and left in place to collect repeated measurements at each gravity station location and moved from location to location by foot. Two types of seismic surveys are proposed: accelerated weight drop (AWD) mounted on a skidsteer and dead-blow hammer (DBH) executed by a technician and moved from location to location by foot. Seismic cables are used in conjunction with AWD type surveys. Cables will only be used along existing roads.

Tetra Tech has identified four areas (labeled A-D on the accompanying figures) to test for their feasibility to be used as borrow areas for construction of the dams. Areas A, C, and D will cumulatively have a maximum of 50 auger holes and 20 test pits. The exact location of the auger holes and test pits are uncertain pending seismic survey and are adjusted as the geotechnical findings advance.

Because the exact location of auger and bore holes within Areas A, C, and D are uncertain pending initial investigations, ERO will coordinate on a weekly basis with Tetra Tech and will be provided a “two week out” work plan that ERO will review to confirm that the proposed locations are not in conflict with known cultural resources. ERO will share these work plans with the BLM archaeologist. ERO will then implement the following measures to ensure avoidance of all identified cultural resources, regardless of preliminary significance evaluations.

- ERO will review all proposed Geotechnical activity locations to:
    - Ensure they are within areas that have been surveyed for cultural resources
    - Ensure they are not located within a cultural resource boundary
    - Determine if they fall within 100 ft of a resource boundary

Monitoring is required when:

- Activities are within 100 ft of a resource boundary
- Seismic lines are located within a cultural resource boundary or buffer
- The monitors will ensure that seismic lines are not laid on the surface of or carried over sites, pursuant to tribal concerns.
- Non-cable seismic survey that will take place within known indigenous architectural sites.
- Access needs to thread a high density area of cultural resources and/or when access terminates within a cultural resource buffer
- Prior to off-road access to stake routes

- During the field season, when an archaeological monitor will periodically travel to the Project area to determine if the operator is in compliance with avoidance. The monitors will visit at least monthly while the work is underway, and will submit a short email report to the BLM archaeologist regarding the status of the work and whether the proponent is in compliance with the monitoring requirements.

ERO will review all proposed access routes and implement the following methodology:

- With the exception of existing roads, access routes will not cross through resource boundaries.
- Access routes within 100 ft of a resource boundary will be limited to existing roads or two tracks when possible.
- If off-road access is necessary within 100 ft of a resource boundary an access route will be identified and monitored by ERO to ensure resource avoidance.
- ERO will provide Tetra Tech and its subcontractors linear shapefiles of required access routes to avoid cultural resources.

Noncompliance:

- If the monitor discovers ground disturbance that has not been reviewed, they will collect geospatial data at the location of the disturbance and will thoroughly photograph the location. Work at the unauthorized location will be halted immediately, and the monitor will contact BLM.
- BLM will investigate the breach, including working with the proponent and the operator to determine how and why it happened, and whether the work has caused damage that constitutes a violation under the Archaeological Resources Protection Act (ARPA). If an ARPA violation has occurred, BLM will commence procedures pursuant to ARPA, which might include halting the project in its entirety.

Certification of Monitoring Plan

Sean Larmore

Principal Investigator

Attachments

ERO Resources Corporation
Work Plan for Golden Eagle Monitoring and Mountain Plover Surveys
Wild Horse Reservoir Pre-NEPA Environmental Support
Park County, Colorado

February 16, 2023

Background

On behalf of the city of Aurora (Client), ERO Resources Corporation (ERO) has prepared this Scope of Work (SOW) to provide golden eagle (*Aquila chrysaetos*) monitoring and mountain plover (*Charadrius montanus*) surveys as part of due diligence investigations for a proposed reservoir in Park County, Colorado (project area). The mountain plover, a Colorado species of special concern and Bureau of Land Management (BLM) sensitive species, is known to nest in the project area. A new golden eagle nest was discovered in 2020 near the proposed reservoir main dam during the early stages of due diligence investigations. Past golden eagle surveys occurred in 2021 and 2022.

Bald and Golden Eagle Protection Act (BGEPA)

Bald and golden eagles are protected under the BGEPA. The BGEPA provides protection by prohibiting activities that "disturb" a bald or golden eagle. Originally passed in 1940, the BGEPA prohibits the take, possession, sale, purchase, barter, offer to sell, purchase, or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 United States Code 668(a); 50 Code of Federal Regulations 22). "Take" is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" a bald or golden eagle. The term "disturb" under the BGEPA was defined via a final rule published in the Federal Register on June 5, 2007 (72 Fed. Reg. 31132). "Disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." Additionally, bald and golden eagles are protected by the Migratory Bird Treaty Act, which prohibits direct take or possession of an eagle, or its active nest.

Mountain Plover

The mountain plover is a Colorado species of concern and a Bureau of Land Management sensitive species. In 2002, the U.S. Fish and Wildlife Service (Service) proposed listing the mountain plover as a threatened species under the Endangered Species Act (ESA), as well as a special rule exempting specific

farming practices from ESA prohibitions. In 2003, the Service concluded that the threats to the mountain plover were not as significant as previously believed and withdrew the listing proposal. As part of a settlement agreement, on June 29, 2010, the Service reinstated their 2002 proposal to list the mountain plover as a threatened species under the ESA, without the agricultural exemption of farming practices. In 2011, the Service withdrew the proposed listing of the mountain plover after determining that the species is not endangered or threatened throughout all or a significant portion of its range. Currently, the mountain plover is not listed under the ESA. Colorado lists the mountain plover as a species of special concern.

The mountain plover is a bird of the dry tablelands and Colorado Plateau, nesting primarily in shortgrass prairie used historically by prairie dogs, bison, and pronghorn. This species breeds in shortgrass prairie from northern Montana, Wyoming, and Colorado to central New Mexico. The wintering range extends from central California to southern Arizona into northern Mexico. The habitat requirements of this bird generally consist of open flat tablelands and short intensively grazed grasslands. Plovers avoid vegetation greater than 6 inches high and hillsides or steep slopes.

Known mountain plover nesting sites in Colorado are in eastern and southeastern Colorado and South Park. Mountain plovers typically nest in Colorado between April 1 and July 10 but often do not arrive to South Park until mid-May. Incubation averages 29 days and then the chicks stay with the adults and fledge 33 to 34 days later. Mountain plovers may be vulnerable to human and vehicular disturbance during courtship, egg laying, and early chick development.

Task 1. Project Coordination

ERO will coordinate with the Client and Bureau of Land Management on the proposed due diligence schedule, eagle and plover activity observed, and recommendations. ERO will also coordinate with Colorado Parks and Wildlife (CPW) and the Service, as needed, to discuss potential challenges with the project and how to best avoid, minimize, and mitigate for impacts on any active golden eagle or mountain plover nests.

Task 2. Golden Eagle Monitoring

ERO will provide golden eagle nest monitoring at the proposed Wild Horse Reservoir site between January 2023 and September 2023. ERO biologists will visit the site and record eagle activity following the schedule below.

Months	Survey Purpose and Eagle Activity (Duration)	Survey Frequency and Minimum Duration
Courtship/Nest Building		
Late January–March 2023	Search for eagles starting to nest. Look for evidence of nest building.	1 survey/every other week, 2 to 3 hours
Egg Laying/Incubation (45 days)		
March–May 2023	Observe eagles sitting and incubating eggs on the nest.	1 survey/every other week, 2 to 3 hours
Brooding/Caring for Young (70 days)		
May–August 2023	Observe eagles raising the eaglet(s) in the nest. Take note of eaglets' development.	1 survey/week, 2 to 3 hours
Fledging		
August 2023	Observe eaglet(s) fledging from the nest.	1 survey/week, 2 to 3 hours
Post-Fledging (Dependent on Nest/Adults; up to 56 days)		
August–September 2023	Monitor eagle activity near the nest. Take note of juvenile eagles' use of nesting territory.	1-2 surveys, 2 to 3 hours

Products

- ERO will prepare a data summary report with results from the golden eagle monitoring effort at the end of the 2023 nesting season.

Task 3. Mountain Plover Habitat Assessment

ERO biologists will complete mountain plover habitat assessments across the project area while visiting for golden eagle monitoring. These surveys will inform upcoming nest searching and monitoring efforts and help us get an early indicator of mountain plover potential in the project area. Habitat assessments for plovers will be completed throughout potential habitat in the project area. The field visits for this assessment will occur between February and June 2023. The purpose of the habitat assessment is to compile data on habitat suitability and to request a determination from the BLM.

Mountain plover habitat assessment surveys require ERO biologists to observe and evaluate habitat characteristics to determine potential for nesting plovers across the project area prior to the 2023 nesting season. The entire project area, including a ¼ mile buffer around the project area, will be systematically visited throughout the winter and spring to categorize areas as suitable, or unsuitable, for nesting plovers. ERO biologists, traveling by vehicle and foot, will evaluate the topography, vegetation communities, and other habitat characteristics as they relate to mountain plover's breeding biology.

Products

- Email updates will be provided to the BLM and CPW periodically throughout the survey season to request determinations of habitat suitability.

- ERO will prepare a habitat assessment report with results including maps of plover habitat in the project area at the end of the 2023 monitoring season.

Task 4. Mountain Plover Nest Surveys

ERO will provide mountain plover nest searching at the proposed Wild Horse Reservoir site between May 2023 and July 2023. ERO biologists will visit the site and record plover activity following the schedule below. ERO will coordinate with Aurora Water and Tetra Tech to focus the plover surveys to areas where geotechnical work will occur. Identified nests will be located using GPS and avoided during geotechnical activity. The purpose of the nesting surveys is to identify nests, avoid as necessary, and ultimately to facilitate geotechnical activity within plover habitat.

Two ERO biologists will visit the project area three to four times to look for evidence of mountain plovers and their nests throughout suitable habitat (as identified in Task 3) within ¼ mile of proposed project activities. ERO biologists will drive in vehicles and survey transect lines spaced ¼ mile apart throughout suitable habitat. The U.S. Fish and Wildlife Service recommends a ¼ mile buffer to minimize disturbance to plover nests from pedestrian foot traffic and continual equipment operations. Surveys may require use of an ATV depending on terrain accessibility. To increase the probability of detecting mountain plovers, the U.S. Fish and Wildlife Service recommend driving, and not walking, nest survey transects since plovers will avoid pedestrians at a greater distance than vehicles.

Timing	Survey Purpose and Plover Activity (Duration)	Effort
Arrival/Courtship/Nest Building (variable)		
May 2023	Search for plovers starting to nest.	1 survey, 2 biologists
Egg Laying/Incubation (~29 days)		
May-June 2023	Search for active nests.	1 survey, 2 biologists
Brooding/Caring for Young (~33 days)		
June 2023	Search for active nests and young.	1 survey, 2 biologists
Fledging/Later Nesting (variable)		
July 2023	Search for late active nests and young.	1 survey (if needed)

Products

- ERO will prepare a data summary report with results from the mountain plover monitoring effort including locations of nests in the project area at the end of the 2023 monitoring season.

ERO Resources Corporation

Denver 1842 North Clarkson Street, Denver, CO 80218
Durango 835 East Second Avenue, Suite 400, Durango, CO 81301
Hotchkiss 161 South 2nd Street, PO Box 932, Hotchkiss, CO 81419
Idaho 7154 West State Street, Suite 398, Boise, ID 83714

January 19, 2023

John Clark, Principal Engineer
City of Aurora
15151 East Alameda Parkway
Aurora, CO 80012

RE: Wild Horse Reservoir Pre-NEPA Environmental Support, 2022 Data Summary of Golden Eagle Nest Monitoring, Park County, Colorado

ERO Resources Corporation (ERO) prepared this Data Summary memo to provide the City of Aurora the results of golden eagle nest monitoring for the 2022 nesting season at the proposed Wild Horse Reservoir site south of the intersection of State Highway 9 and County Road 53 in Park County, Colorado (project area; Figure 1).

Project Area Location

The project area is in Sections 28-34, Township 12 South, Range 75 West; Sections 3-6, Township 13 South, Range 75 West of the 6th Principal Meridian in Park County, Colorado (Figure 1). The UTM coordinates of the approximate center of the project area are NAD 83 430463mE, 4311900mN, Zone 13 North. The longitude/latitude of the approximate center of the project area is 105.802509°W/38.953293°N. The elevation of the project area ranges from approximately 8,650 to 9,200 feet above sea level.

Project Area Description

The project area generally consists of undeveloped rangeland that is grazed by livestock. The topography of the project area consists of rolling hills with shallow slopes, open plains, shallow valleys, and large open floodplains near the south and middle forks of the South Platte River. Shortgrass prairie is the dominant vegetation community, and the dominant grasses throughout most of the project area include blue grama (*Bouteloua gracilis*), ring muhly (*Muhlenbergia torreyi*), mountain muhly (*Muhlenbergia montana*), plains bluegrass (*Poa arida*), Arizona fescue (*Festuca arizonica*), and junegrass (*Koeleria macrantha*). Small shrubs such as fringed sage (*Artemisia frigida*), rubber rabbitbrush (*Ericameria nauseosa*), Parry's rabbitbrush (*Ericameria parryi*), and broom snakeweed (*Gutierrezia sarothrae*) are common throughout the project area.

Summary

ERO biologists observed two adult eagles nesting at Nest 2 during the 2022 nesting season (Figure 2). The eagle nest was successful with one juvenile eagle fledging from the nest. No signs of disturbance to the eagles were observed during the 2022 nesting season.

Methods

ERO biologists completed 20 site visits from January 6 through August 10, 2022. ERO spent 49 hours monitoring the site for eagle activity during the 2022 nesting season using binoculars and spotting scopes to view the eagles from locations where the eagles would not be disturbed (Figure 2). ERO biologists recorded data on the eagles' presence and behavior and documented nesting activity with photos when possible (see attached datasheets).

Results

On January 6, 2022, an ERO biologist detected an adult golden eagle perched in Nest 1 (Figure 2). ERO first observed an adult eagle in Nest 2 on March 14. On March 31, both adult golden eagles were seen incubating eggs during the survey. ERO biologists were uncertain if more than one egg was laid in 2022. ERO had the first confirmed eaglet sighting on May 19. ERO is also uncertain if more than one eaglet hatched in 2022. If another eaglet was present in the nest, it was not detected and did not survive for long after hatching. The first sighting of the fledged eaglet was on the final survey for the 2022 nesting season on August 10. During the final survey, an ERO biologist took pictures of the nest and fledged eaglet. Datasheets from the 2022 nesting season including photos are attached.

Nesting Milestones	First Observation Date
Adult eagle(s) observed near nest site(s)	January 6, 2022
Adult eagle(s) seen perched in Nest 2	March 14, 2022
Adult(s) incubating egg(s)	March 31, 2022
Egg(s) hatched; eaglet(s) in nest	May 19, 2022
Juvenile eagle in flight; eaglet has fledged	August 10, 2022

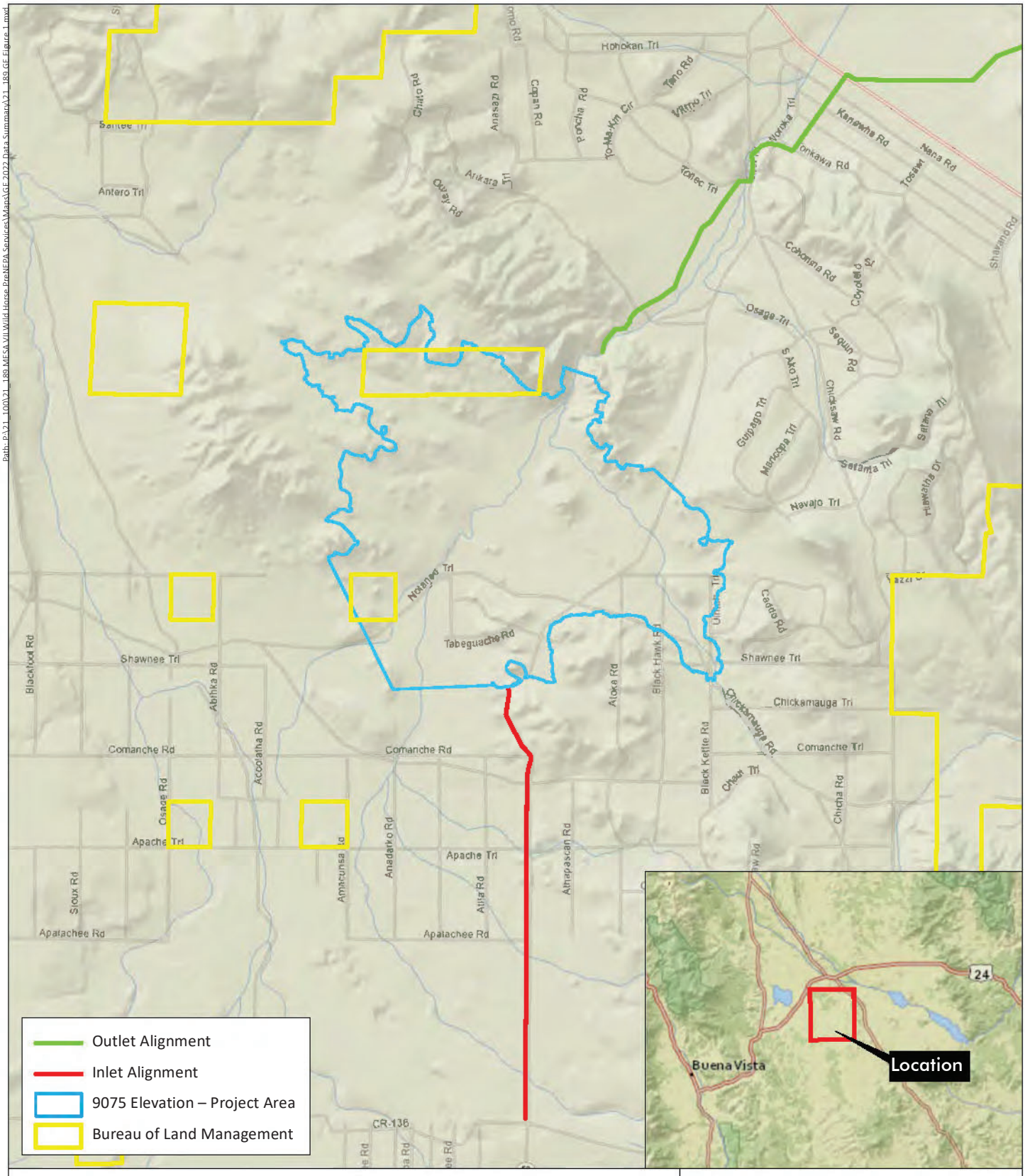
Conclusion

Monitoring for golden eagles will continue at the site during the 2023 nesting season. The results of the 2023 nest monitoring surveys will be shared with the City of Aurora following the 2023 nesting season.

SIGNED: 

Jeff Birek, Wildlife Biologist

Attachments: Figures 1 and 2; Datasheets



Wild Horse Reservoir Pre-NEPA Environmental Support

Sections 28-34, T12S, R75W; Sections 3-6, T13S, R75W; 6th PM

UTM NAD 83: Zone 13N; 430463mE, 4311900mN

Latitude, Longitude: 38.953293°N, 105.802509°W

USGS Antero Reservoir NE, CO Quadrangle

Park County, Colorado

0 2,000 4,000 Feet

N

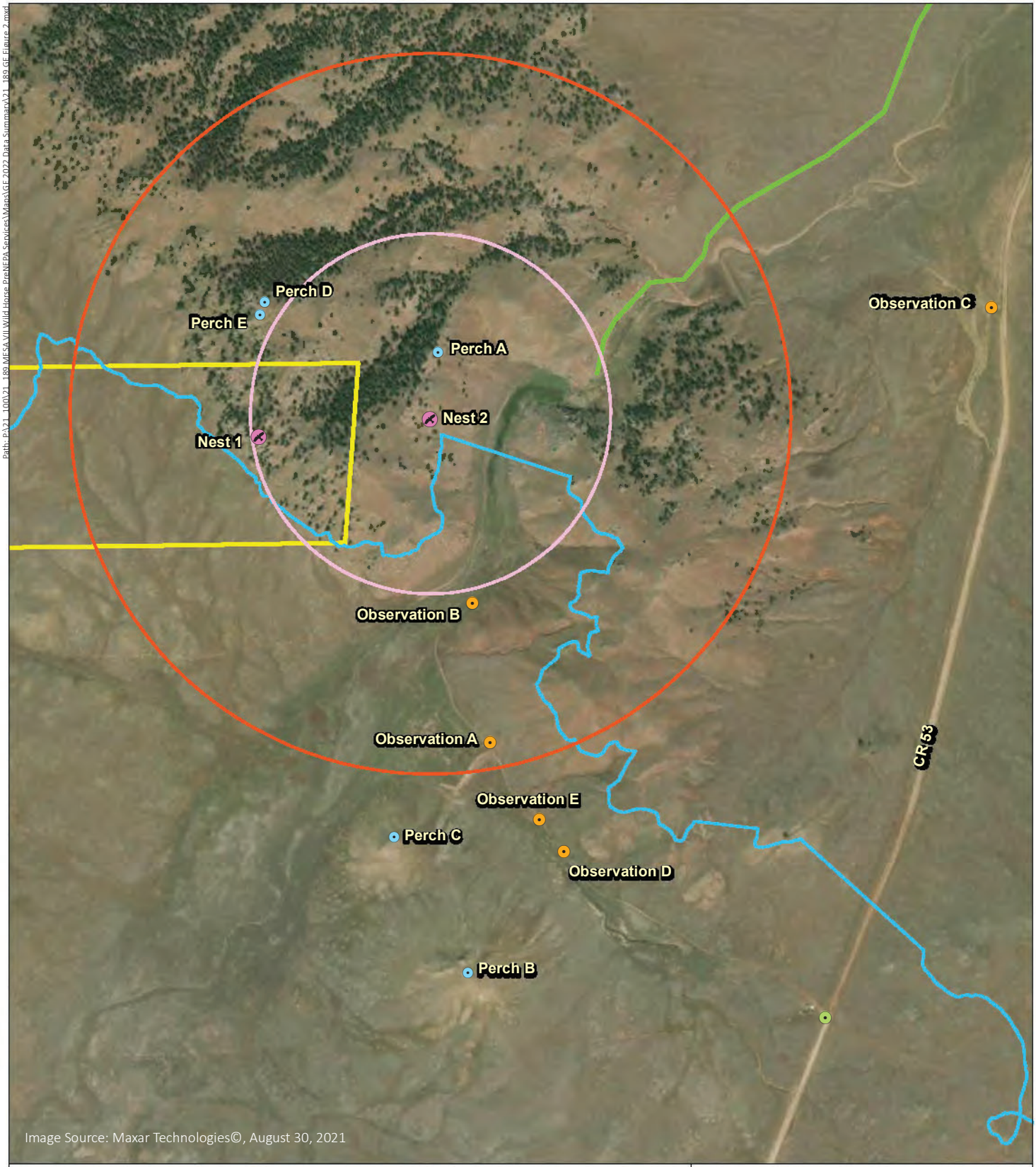
Figure 1
Vicinity Map

Prepared for: The City of Aurora, Water Division

File: 21_189 GE Figure 1.mxd (GS)

April 6, 2023

ERO Resources Corp.



Wild Horse Reservoir Pre-NEPA Environmental Support

- Nest
- Observation Point
- Perch
- Gate
- Golden Eagle 1/4-Mile Buffer
- Golden Eagle 1/2-Mile Buffer
- Bureau of Land Management
- 9075 Elevation
- Outlet Alignment

N

0 500 1,000 Feet

Figure 2
Golden Eagle Monitoring

Prepared for: The City of Aurora, Water Division
File: 21_189 GE Figure 2.mxd (GS)
April 6, 2023

ERO Resources Corp.

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	1/6/2022	13:45	15:45	JWS	A	PC

Noise	Start		End		Temp (F)	32	32

Number of adult GOEA detected	1
Number of nestlings detected	0
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

Partly cloudy day with very high winds sustained at 20mph with 40mph gusts. Photo is blurry due to tripod shake from wind. Access road was snowed in and I walked in over the access road and used a blind for visual cover. A common raven was first seen at 14:00 perched on the outcrop east of the observation point and was actively flying and calling throughout the survey. An adult golden eagle flew to the nest outcrop from the south at 14:28 and flew to the north side of the outcrop out of sight. The eagle did not show any sign of carrying prey or nest materials. At 14:41, the golden eagle reappeared soaring above the nest outcrop and circled until it was out of sight at high altitude at 14:43. No signs of fresh vegetation on either nest. Horned larks and a rough-legged hawk were observed during the walk to the observation point.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

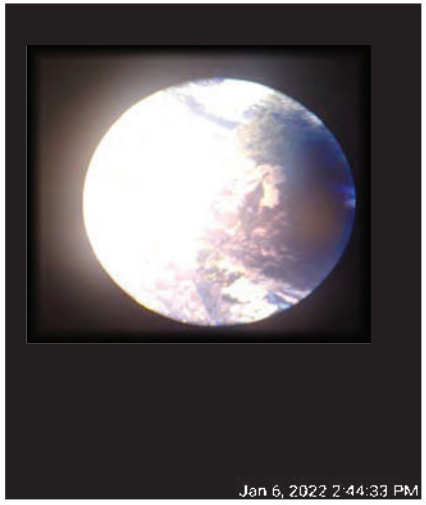
Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)



Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
13:45		NV	NV				N/A		Survey start. No eagles visible	20	N
14:00		NV	NV				CORA		Common raven (CORA) calling and flying over outcrop east of Obs. A		
14:15		NV	NV				N/A		Wind reading	22	NW
14:28		Fly	NV				N/A		Adult golden eagle (A1) flies to nest outcrop from south and flies over nest outcrop to the north and out of sight		
		NV	NV				N/A				
14:41		Fly	NV				N/A		A1 soaring above main outcrop, circling higher		
14:43		NV	NV				N/A		A1 circles out of sight to the north		
14:45		NV	NV				N/A		Wind reading	21	NW
14:48		NV	NV				CORA		CORA flying above outcrop east of Obs. A		
15:15		NV	NV				N/A		Wind reading	22	NW
15:45		NV	NV				N/A		Survey end	20	NW

[1.] Perch type = 1. On nest; 2. In nest tree (outside of nest); 3. < 50 m. outside of nest tree; 4. >51-200 m from nest; 5. 201-1000 m. from nest: 6. >1k from nest. mark locations on attached map

[3.] Mark disturbance on attached map (Figure 2).

Disturbance Type includes: construction, aircraft, pedestrians, other

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	1/19/2022	12:05	16:00	AEW	A	PC

Noise	Start		End		Temp (F)	27	34

Number of adult GOEA detected	1
Number of nestlings detected	0
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

1 adult golden eagle was observed this day. We do not have any other data for this visit.

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	1/31/2022	10:00	14:00	JWS	A and C	PC

Noise	Start	N/A	End	N/A	Temp (F)	30	30

Number of adult GOEA detected	1
Number of nestlings detected	0
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

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5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

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One adult golden eagle was observed during the survey. The eagle was visible soaring over the main outcrop throughout the survey and flew out of sight to the north. The eagle flew by the alternate nest location three times. At 11:40, the eagle demonstrated display flights, diving and then returning to its starting point 5 times. At 12:15, the observer moved to observation point C to determine if the eagle was perching at a different snag along the ridge. No new vegetation or signs of useeen at either of the existing nests.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
10:00		NV					N/A	0	Survey start at Point A, no eagles visible	10	S
10:23		Fly					N/A	0	A1 flies from north side of outcrop south out of sight		
10:30		Fly					N/A	0	Wind reading	8	SW
10:37		Fly					N/A	0	A1 flies to outcrop, past alternate nest, then soaring over outcrop		
10:40		Fly					N/A	0	A1 flies by main nest and out of sight into gully		
10:46		Fly					N/A	0	A1 circling near alternate nest, then north out of sight		
11:00		Fly					N/A	0	Wind reading, A1 not visible	10	S
11:21		NV					Coyote	0	Pair of coyotes howling at base of outcrop		
11:25		Fly					Coyote	0	A1 soaring over outcrop		
11:30		NV					N/A	0	Wind reading, A1 not visible	10	S
11:31		NV					CORA	0	CORA flying SW of observation point A		
11:37		Fly					N/A	0	A1 flies by alternate nest		
11:40		TE					N/A	0	A1 diving in territorial flight 5x, then holding steady in place		
11:43		NV					N/A	0	A1 not visible		
12:00		NV					N/A	0	Wind reading, A1 not visible	8	S
12:15		NV					N/A	0	Observer moves to Point C		
12:50		NV					CORA	0	CORA flying over main outcrop		
13:00		NV					N/A	0	Wind reading, A1 not visible	8	SW
13:15		Fly					N/A	0	A1 soaring over outcrop		
13:30		NV					N/A	0	Survey end	8	W

[1.] Perch type = 1. On nest; 2. In nest tree (outside of nest); 3. < 50 m. outside of nest tree; 4. >51-200 m from nest; 5. 201-1000 m. from nest: 6. >1k from nest. mark locations on attached map

[3.] Mark disturbance on attached map (Figure 2).

Disturbance Type includes: construction, aircraft, pedestrians, other

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	2/18/2022	11:27	13:52	HNG	Gate and A	PC

Noise	Start	N/A	End	N/A	Temp (F)	28	34

Number of adult GOEA detected	0
Number of nestlings detected	0
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

No golden eagles were observed during the survey. A single rough-legged hawk and a raven were observed in the area, far off to the southwest of Nest 1 and briefly at/near Perch B. No new vegetation or signs of use were seen at Nest 2, but Nest 1 seemed significantly improved.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
11:27		NV	NV				N/A	0	Survey start at gate; no eagles visible	1	NW
11:30		NV	NV				N/A	0	single unknown raptor perched far off on hillside southwest of Nest 1		
11:41		NV	NV				N/A	0	unknown raptor left ground perch to fly southeast		
11:45		NV	NV				N/A	0	Single rough-legged hawk at Perch B (assumed to be one observed above)		
"		NV	NV				N/A	0	raven perched adjacent to rough-legged hawk		
11:46		NV	NV				N/A	0	rough-legged hawk and raven gone		
11:48		NV	NV				N/A	0	hawk far off to southwest perched on outcrop further south of hillside perch		
11:50		NV	NV				N/A	0	raven briefly perches near hawk		
"		NV	NV				N/A	0	raven gone		
11:54		NV	NV				N/A	0	Leave gate observation location to walk in to Observation A	2	NW
12:07		NV	NV				N/A	0	during walk in, rough-legged hawk leaves perch far southeast of Nest 1		
12:23		NV	NV				N/A	0	Arrive at Observation A		
12:45		NV	NV				N/A	0	rough-legged hawk flying low in meandering circles far southwest of Nest 1	1	NW
12:51		NV	NV				N/A	0	rough-legged hawk no longer visible		
13:00		NV	NV				N/A	0	rough-legged hawk briefly hovers high above to the southeast of Perch B		
13:03		NV	NV				N/A	0	wind significatly picks up	15	E
13:30		NV	NV				N/A	0	begin walk back to gate/car while observing	18	E
13:52		NV	NV				N/A	0	Back at vehicle/gate; survey end.		

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	3/1/2022	9:50	12:50	AJW	Gate, A, and C	CL

Noise	Start	N/A	End	N/A	Temp (F)	38	46

Number of adult GOEA detected	0
Number of nestlings detected	0
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

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Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

No golden eagles were observed throughout the survey. A raven was observed perched on a structure near the gate (SW of the nest). No new vegetation or signs of use were seen at Nest 1; however, Nest 2 seemed improved and a small tree branch with foliage was observed atop the nest.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
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Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
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6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Nest 1

Nest 2

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
9:50		NV	NV				N/A	0	Survey start at Obs. Pt. C; no eagles visible	3	NE
10:05		NV	NV				N/A	0	drive to gate to walk into Obs. Pt. A		
10:08		NV	NV				N/A	0	Unknown raptor (possibly eagle) perched atop snag N of Nest 1		
10:10		NV	NV				N/A	0	Set up spotting scope at gate; Unknown raptor no longer visible atop snag		
10:15		NV	NV				N/A	0	Walk into Obs. Pt. A		
10:30		NV	NV				N/A	0	Arrive at Ob.s Pt. A; no eagles observed		
10:40		NV	NV				N/A	0	Nest 2 appears to have a branch with foliage and more sticks		
11:00		NV	NV				N/A	0	No ealges observed		
11:34		NV	NV				N/A	0	Raven flying SW of Obs. Pt. A		
12:00		NV	NV				N/A	0	No ealges observed		
12:35		NV	NV				N/A	0	Head back to gate		
12:50		NV	NV				N/A	0	Back at vehicle/gate; end of survey.	6	NW

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	3/14/2022	10:00	13:00	AJW	Gate and A	CL

Noise	Start	N/A	End	N/A	Temp (F)	26	33

Number of adult GOEA detected	2
Number of nestlings detected	0
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

Two golden eagles (A1 and A2) were observed approximately 50 minutes into the beginning of the survey. New vegetation but no signs of use were seen at Nest 1 and no new vegetation was observed at Nest 2; however, both A1 and A2 were observed perched on Nest 2 approximately 50 minutes into the survey.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

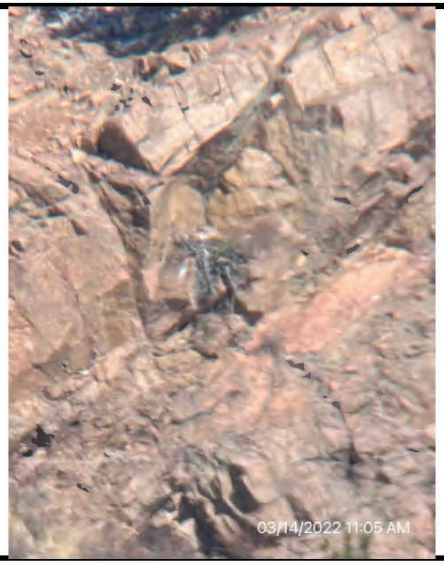
Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Nest 1



Nest 2

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
10:00		NV	NV				N/A	0	Start survey at entrance gate; no eagles visible	7	NW
10:10		NV	NV				N/A	0	Arrive at Obs. Pt. A; no eagles observed		
10:52		Fly	NV				N/A	0	A1 observed soaring northeast of Nest 2		
10:53		Fly	P1				N/A	0	A1 soaring northeast of nest; A2 perched on Nest 2		
10:54		Fly	P1				N/A	0	A1 flies into a group of trees west of the Nest 2 and appears to land on the ground		
10:54		NV	P1				N/A	0	A1 no longer visible in trees west of Nest 2		
10:56		Fly	NV				N/A	0	A1 flies east and lands on Nest 2		
10:56		P1	Fly				N/A	0	A2 flies off Nest 2		
10:57		Fly	Fly				N/A	0	A1 flies off Nest 2; A1 and A2 both soaring northeast of Nest 2		
10:59		Fly	NV				N/A	0	A2 no longer visible northeast of Nest 2; A1 soaring		
11:01		Fly	Fly				N/A	0	A1 and A2 both visible soaring northeast of Nest 2		
11:04		Fly	NV				N/A	0	A2 no longer visible northeast of Nest 2; A1 soaring		
11:09		NV	NV				N/A	0	A1 no longer visible soaring above Nest 2		
12:45		NV	NV				N/A	0	Head back to gate		
13:00		NV	NV				N/A	0	Arrive at gate; no eagles observed; end of survey	3	NW

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	3/31/2022	12:45	15:47	HNG	Gate, D, and E	PC

Noise	Start	N/A	End	N/A	Temp (F)	46	48

Number of adult GOEA detected	2
Number of nestlings detected	0
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

Two adult golden eagles were observed during the survey, incubating eggs at Nest 2. An incubation exhange occurred at 2:05 pm and at 3:33 pm the adult eagle that was incubating breifly left the nest to catch prey and returned to eat it in the nest.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Nest 1

Nest 2

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
12:45		NV	NV				N/A	0	Survey start at Gate; no eagles visible	7	N
13:09		NV	NV				N/A	0	Along walk in, stop to view nest 1 once visible, no occupancy.		
"		"	"				N/A	0	wind begins to die down some	2	NE
13:14		P3	P1 (?)				N/A	0	Along walk in, A1 in snag above Nest 2 (Perch A), and		
"		"	"				N/A	0	another adult appears to be in Nest 2, but hard to tell due to heat waves		
13:29		P3	P1/NI				Hawk	0	Unknown buteo flys over project area off to north/northwest		
13:33		NV	P1/NI				N/A	0	A1 now not visible		
13:34		Fly	P1/NI				N/A	0	A1 seen flying in to land in nest		
13:36		P1	P1				N/A	0	A1 and A2 standing in nest		
"		Fly	Fly				N/A	0	A2 moves off a bit, then both eagles flew north/northeast into ravine		
"		NV	NV				N/A	0	neither eagle visible		
"		Fly	NV				N/A	0	A1 (or A2? - Lost sight so could be either) circles back to nest		
"		P1	NV				N/A	0	A1 returns to nest		
13:37		NI	NV				N/A	0	A1 settles back down to incubate		
13:40		NC/NI	NV				N/A	0	A1 moving nest materials and in prone position	9	N
13:49		NI	NV				Crows	0	2 crows fly in form north to west of pond/inpoundment, no change		
13:50		NI	NV				N/A	0	A1 low on nest/prone position, A2 not visible		
14:01		NI	Fly				N/A	0	A2 observed flying near Nest 1, in front of cliff face		
14:02		NI	Px/NV				N/A	0	A2 circled back in front of cliff to south and west		
"		NI	Px/NV				N/A	0	and appeared to land in trees on hillslope between Nest 1 and 2, not visible		
14:05		Fly	P1				N/A	0	A1 left nest as A2 lands in nest - incubation exchange		
14:07		NV	NI				N/A	0	A1 flew northeast in ravine and not visible, A2 settles down on nest		
14:28		NV	NI				N/A	0	no change; A2 in prone position		
14:39		NV	NI				airplane	0	Airplane high overhead, no change.		
14:57		NV	NI				N/A	0	moved to observation location E (yellow post), no change, pretty quiet		
15:00		NV	NI				N/A	0	wind picking up a bit	10	N
15:01		NV	NI				helicopter	0	medic helicopter flew directly overhead from south/southwest to north		
"		NV	NI				N/A	0	no change; A2 in prone position		

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
15:10		NV	NI				crows	0	2 crows in from northeast, no change; A2 in prone position		
15:14		NV	NI				N/A	0	haze/heatwaves clear; A2 seems to be watching me and looking to northeast		
15:25		NV	NI				N/A	0	wind picked up more, colder. Begin walk back to car	15	NW
15:27		Fly	NI				N/A	0	A1 observed flying high southwest of cliff band/Nest 1		
"		Fly	NI				N/A	0	A1 circles back closer to Nest 1, high, trending south and west		
15:30		Fly	NV/P1				N/A	0	A2 briefly gone, returned to nest; A1 still circling		
15:33		NV	FS/NI				N/A	0	A1 no longer visible, A2 feeding self in nest while incubating		
15:34		NV	NI				N/A	0	A2 in prone position		
15:36		NV	NI				N/A	0	no change; continue walking back to car		
15:41		NV	NI				N/A	0	nests no longer visible.		
15:47		NV	NI				N/A	0	return to gate/car. Survey end.	10	NW

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	4/20/2022	10:55	12:55	HNG/JJB	Gate, D, and E	PC

Noise	Start	N/A	End	N/A	Temp (F)	56	58

Number of adult GOEA detected	2
Number of nestlings detected	0
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

Two eagles were observed. One was incubating on the nest for the duration of the observation period. The other eagle began perched on perch rock and eventually flew out of view to the northwest. The eagle on the nest changed position once during observation.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
10:55		NV	NV				N/A	0	Survey start at gate. No eagles visible.	18	SW
11:05		NI	Rock				N/A	0	Along road at obervation D. A1 in nest 2. A2 on rock perch.		
11:15		NI	Rock						Drove up to observation E to confirm incubation. Unable to see A2 from observation E.		
11:25		NI	Rock						Drove back to observation D for view of both birds.		
11:35		NI	Rock						No change.	22	SW
11:40		NI	Rock						4 Horned Larks and 1 Mourning Dove near observation D.		
11:49		NI	Rock						A1 changed position. Still incubating but lower in nest.		
11:52		NI	FLY						A2 flew from perch to the northwest.		
11:53		NI	NV						A2 flew out of view to northwest.		
11:54		NI	FLY						A2 visible briefly flying on north side of cliff band between nest 1 and 2.		
11:55		NI	NV						A2 flew out of view to northwest.		
11:59		NI	NV						No change.	26	SW
12:04		NI	NV						Common Raven flew over observatoin D toward north.		
12:10		NI	NV						90 Green-winged Teal on pond north of observation E. Most flushed.		
12:13		NI	NV						Moved closer to double check nest occupancy.		
12:21		NI	FLY						A2 seen briefly flying no far from nest 1.		
12:21		NI	NV						A2 disappeared NW of nest 1.		
12:25		NI	NV						Common Raven soaring north of nest 1. 8 Horned Larks near observation E.	26	SW
12:33		NI	NV						Red-tailed Hawk flying east of observation E.		
12:47		NI	NV						Moved further to observation D to try and observe A2. 3 Barn Swallows flew near obs D.		
12:55		NI	NV						Survey end.	36	SW

[1.] Perch type = 1. On nest; 2. In nest tree (outside of nest); 3. < 50 m. outside of nest tree; 4. >51-200 m from nest; 5. 201-1000 m. from nest: 6. >1k from nest. mark locations on attached map

[3.] Mark disturbance on attached map (Figure 2).

Disturbance Type includes: construction, aircraft, pedestrians, other

Time	3 min.	Behavior	Disturbance[3]	Notes /comments/Loc [2.]	Wind

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	5/3/2022	12:30	14:30	JJB	Obs. E	PC

Noise	Start	0	End	0	Temp (F)	59	64

Number of adult GOEA detected	2
Number of nestlings detected	1?
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

Observed female perched in nest the entire time. Might have noticed a juvenile bird but was difficult to confirm with scope shaking in the wind. Will try and confirm next week.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Image

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
1230		NB	NV						Survey Start. Incubating or brooding (A1). Checked perch rock, no bird. At Observation E.	16	SE
1240		NB	Fly						A2 seen soaring over nest.		
1250		NB	Fly						A1 still in nest. A2 still soaring, now very high.		
1310		NB	Fly						A2 still soaring very high.	16	SE
1320		NB	NV						A2 disappeared into clouds.		
1322		NB	Fly						A2 seen between clouds soaring.		
1322		NB	NV						A2 disappeared into clouds again.		
1330		NB	NV						A1 still in nest. A2 not visible.	18	SE
1340		NB	NV						No change.		
1344		NB	NV						Moved to observation D. Checked perch rock. No A2. Drove back to Obs E.		
1356		NB	Fly						A2 appeared low east of nest. Flew over nest to west side.		
1356		NB	P4						A2 perched in tree ~60 m west of nest.		
1356		NB	NV						Obscured by branches.		
1406		NB	NV						No change.	20	SE
1407		NB	Fly						A2 flew to join A1 in nest.		
1407		NB	P1						Both adults in nest.		
1411		NB	Fly						A2 left nest.		
1411		NB	NV						A2 flew east out of view.		
1412		P1	NV	P1?					Might have seen older nestling. Body molt complete if so.		
1412		P1	NV	P1?					Was difficult to tell with wind.		
1419		NB	NV	NV					A1 nest brooding or sitting.		
1430		NB	NV	NV					End survey.	23	SE

[1.] Perch type = 1. On nest; 2. In nest tree (outside of nest); 3. < 50 m. outside of nest tree; 4. >51-200 m from nest; 5. 201-1000 m. from nest: 6. >1k from nest. mark locations on attached map

[3.] Mark disturbance on attached map (Figure 2).

Disturbance Type includes: construction, aircraft, pedestrians, other

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	5/12/2022	11:30	13:30	JJB	Observation E	CL

Noise	Start	N/A	End	N/A	Temp (F)	49	51

Number of adult GOEA detected	2
Number of nestlings detected	0
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

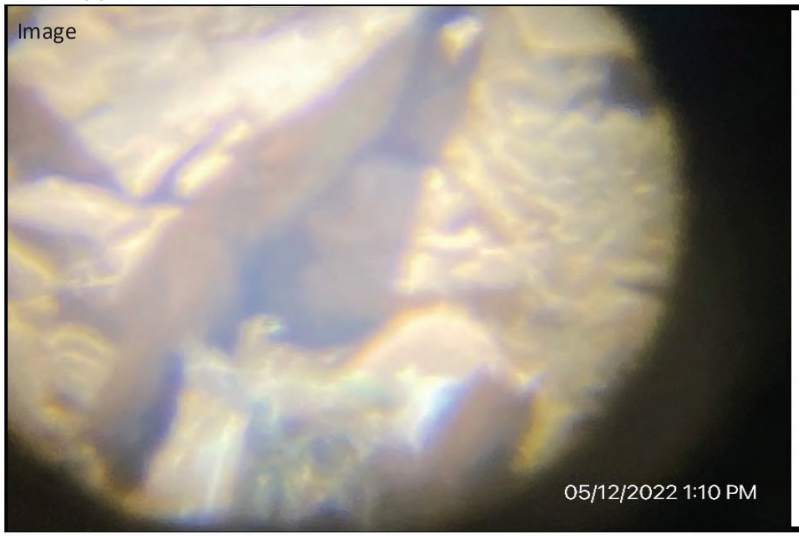
Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)



A1 nest brooding (presumably).

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
1130		P1	Fly				None	0	Soaring over nest with two ravens.	35	E
1135		NB	Fly						A1 appears to be brooding.		
1138		NB	NV						A2 flew out of view to north.		
1140		NB	Fly						Saw A2 gliding briefly to the north.		
1141		NB	NV						A2 flew out of view to north.		
1145		NB	NV						No change. Winds are tough.	38	E
1150		NB	NV						No change.		
1155		NB	NV						No change.	37	E
1200		NB	NV						No change.		
1210		NB	NV						No change.		
1220		NB	NV						No change.		
1230		NB	NV						No change.		
1240		NB	NV						No change.		
1255		NB	NV						No change.		
1300		NB	NV						No change.		
1310		NB	NV						No change.		
1320		NB	NV						No change.		
1330		NB	NV						No change. End survey.	36	E

[1.] Perch type = 1. On nest; 2. In nest tree (outside of nest); 3. < 50 m. outside of nest tree; 4. >51-200 m from nest; 5. 201-1000 m. from nest: 6. >1k from nest. mark locations on attached map

[3.] Mark disturbance on attached map (Figure 2).

Disturbance Type includes: construction, aircraft, pedestrians, other

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	5/19/2022	9:30	11:30	JJB	New point	PC

Noise	Start	N/A	End	N/A	Temp (F)	60	66

Number of adult GOEA detected	2
Number of nestlings detected	1
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

I was able to verify presence of at least one nestling. It is likely between 7 and 21 days old. Will need to verify age later. Saw both adults. A2 flying. A1 perched at the nest.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
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4	13-18	Small branches sway
5	19-24	Smaller trees sway
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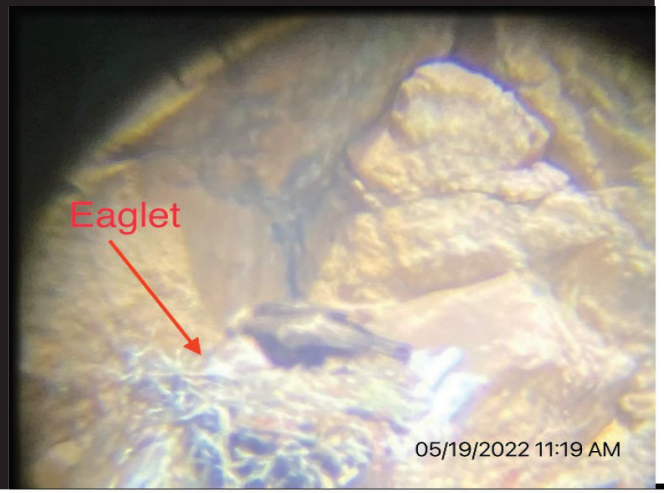
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)



Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
0930		NV	Fly						Saw the presumed male eagle flying as I entered the project area. Near obs E.	12	W
0930		NV	NV						I let the eagle move on before advancing to observation E.		
0933		NB	NV						Saw the presumed female nest brooding.		
0935		NB	NV						No change. Moved to new observation pt. for better view.		
0942		NB	NV						No change. Arrived and setup at new observation point.		
0950		NB	NV						No change.		
1000		NB	NV						No change.	13	W
1010		NB	NV						No change.		
1020		NB	NV						No change.		
1030		NB	NV						No change.	17	W
1040		NB	NV						No change.		
1050		NB	NV						No change.		
1100		NB	NV						No change.	18	W
1110		P1	NV						No change		
1114		P1	NV						A1 stood up and repositioned.		
1115		P1	NV	P1					Saw one chick clearly. Downy, just a couple weeks old.		
1115		FY	NV	P1					A1 feeding Y2 from something that was already in the nest this morning.		
1117		P1	NV	NV					A1 repositioned. Can't see chick.	22	W
1119		FY	NV	P1	?				Could be a second chick. A1 feeding a chick on other side of nest.		
1121		NB	NV	NV					A1 nest brooding.		
1130		NB	NV	NV					No change.		

[1.] Perch type = 1. On nest; 2. In nest tree (outside of nest); 3. < 50 m. outside of nest tree; 4. >51-200 m from nest; 5. 201-1000 m. from nest: 6. >1k from nest. mark locations on attached map

[3.] Mark disturbance on attached map (Figure 2).

Disturbance Type includes: construction, aircraft, pedestrians, other

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	5/27/2022	12:38	14:38	HNG	Obs. Pt. A	PC

Noise	Start	N/A	End	N/A	Temp (F)	77	79

Number of adult GOEA detected	1
Number of nestlings detected	1
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

One adult golden eagles (A1) was observed near the beginning of the observation period within the Nest 2 shading the young. One nestling (Y1) was also observed during the survey within Nest 2; a second nestling could have been present, ubt heatwaves and wind make confirmation difficult. Approximatetly 1 hour into the survey, at 1:45 pm, A1 began feeding Y1 (and possibly Y2?). At 1:52, Y1 was observed briefly stretching wings. Feeding of young continued by A1 until 2:08 when A1 left Nest 2 towards the northwest and was observed soaring high above the area west of Nest 1, going in and out of visibility. A1 did not return to the nest for the remainder of hte observation period, A2 was not observed during the survey, and no new vegetation was observed at Nest 1.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)


A1 in Nest 2 shading young, 12:56 pm


A1 in Nest 2 feeding young, 1:50 pm


Nest 1

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
12:38		NV	NV	NV	NV		N/A	0	Start observations at gate, no eagles visible	15	SW
12:45		NB	NV	NV	NV		N/A	0	Arrive at Observation Location A, one adult (A1) observed in Nest 2		
12:51		NB	NV	NV	NV		N/A	0	Heatwaves and wind made observations difficult, very little movement in nest		
13:06		NB	NV	NV	NV		N/A	0	Turkey vulture pass overhead, towards east/southeast		
13:10		NB	NV	NV	NV		N/A	0	Turkey vulture no longer visible	20	SW
13:36		P1	NV	P1	?		N/A	0	A1 up in nest, walking around; one young (Y1) observed in nest		
13:45		FY	NV	P1	?		N/A	0	A1 begins feeding young	15	W
13:51		FY	NV	P1	?		N/A	0	A1 continues feeding		
13:52		P1	NV	P1	?		N/A	0	Y1 stretches wings		
13:58		FY	NV	P1	?		N/A	0	A1 feeding again		
14:01		FY	NV	P1	?		N/A	0	A1 still feeding		
14:08		Fly	NV	P1	?		N/A	0	A1 left nest to northwest/west		
14:09		NV	NV	P1	?		N/A	0	A1 no longer visible		
14:10		Fly	NV	P1	?		N/A	0	A1 observed hight above cliff north and west of Nest 1		
14:10		NV	NV	P1	?		N/A	0	lost sight of A1 behind hill		
14:15		Fly	NV	P1	?		N/A	0	A1 seen soaring high northwest of Nest 1	18	W
14:20		NV	NV	P1	?		N/A	0	A1 no longer visible		
14:38		NV	NV	P1	?		N/A	0	survey end.	13	SW

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	5/31/2022	10:15	12:45	AJW	Obs. Pt. A	PC

Noise	Start	N/A	End	N/A	Temp (F)	49	69

Number of adult GOEA detected	2
Number of nestlings detected	1
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
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Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

Two golden eagles (A1 and A2) were observed approximately 45 minutes into the beginning of the survey. One nestling (Y1) was observed during the survey. No new vegetation was observed at Nest 1; however, signs of use were seen at Nest 2 and it appeared that A1 brought a new stick to Nest 2 during the survey. Both A1 and A2 were observed perched on or flying into and perching within Nest 2 during the first hour of the survey.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
PC	Partly Cloudy
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Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

A1 perched in Nest 2 with Y1

Nest 2

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
10:15		NV	NV				N/A	0	Start survey at observation point A; no eagles visible	11	SE
10:45		NV	NV				N/A	0	No Change	9	SE
11:00		Fly	NV				N/A	0	A1 observed flying into Nest 2 with what appears like a stick		
11:02		P1	NV				N/A	0	A1 appears to be situating stick in Nest 2		
11:07		P1	NV	P1			N/A	0	Y1 observed perched within Nest 2 with A1		
11:09		Fly	NV	P1			N/A	0	A1 flies south to southwest out of Nest 2 and soars above Nest 2		
11:13		P4	P1	P1			N/A	0	A1 lands in pine tree east of nest on top of the hillside; A2 observed on Nest 2		
11:15		Fly	P1	P1			N/A	0	A1 flies east out of pine tree and is no longer visible	10	SE
11:16		NV	Fly	P1			N/A	0	A2 flies off Nest 2 to southwest and soars above Nest 2		
11:19		NV	NV	P1			N/A	0	A2 lands in pine tree east of Nest 2 and is no longer visible		
11:20		P4	NV	P1			N/A	0	A1 observed perched atop a tree north of A2 on top of the hillside		
11:32		Fly	NV	P1			N/A	0	A1 flies east of the top of the pine tree and is no longer visible		
11:45		NV	NV	P1			N/A	0	A1 and A2 not visible	10	SE
12:15		NV	NV	P1			N/A	0	No Change	12	SE
12:45		NV	NV	P1			N/A	0	A1 and A2 not visible; Y1 in Nest 2; End of Survey	11	SE

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	6/6/2022	11:00	13:00	JJB	Obs E	PC

Noise	Start	N/A	End	N/A	Temp (F)	65	68

Number of adult GOEA detected	2
Number of nestlings detected	1
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
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Was able to see one parent and one nestling.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
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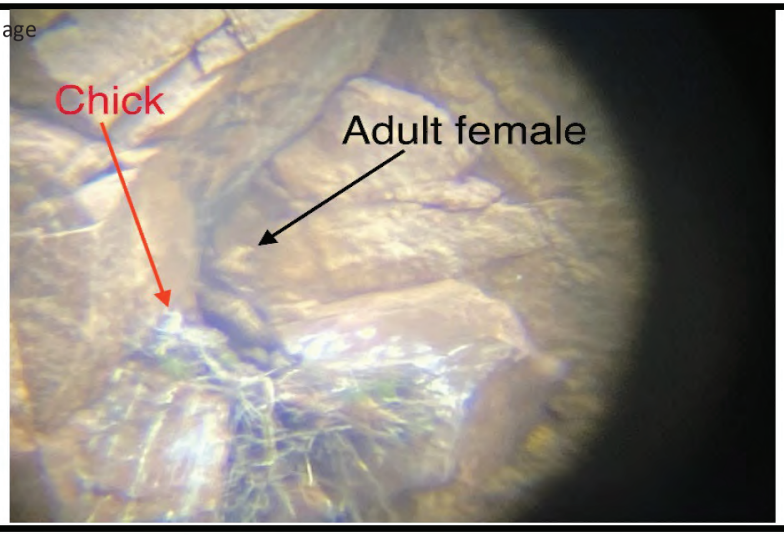
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Image



Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
1100		NV	Fly	NV			None	0	Start survey. At entrance gate. A2 seen soaring over nest.		
1126		P1	NV	P1			None	0	A2 soaring north and disappeared. A1 and Y1 in nest.		
1210		Fly	NV	P1			None	0	A1 flew off nest. Soaring over nest.		
1210		Fly	NV	P1			None	0	Y1 only chick in nest it looks like.		
1215		NV	NV	P1			None	0	A1 out of view to east.		
1225		P1	NV	P1			None	0	A1 and Y1 back in nest. Didn't see approach. No view of A2.		
1300		P1	NV	P1			None	0	No change. End survey.		

[1.] Perch type = 1. On nest; 2. In nest tree (outside of nest); 3. < 50 m. outside of nest tree; 4. >51-200 m from nest; 5. 201-1000 m. from nest: 6. >1k from nest. mark locations on attached map

[3.] Mark disturbance on attached map (Figure 2).

Disturbance Type includes: construction, aircraft, pedestrians, other

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	6/14/2022	11:30	13:30	JJB	Obs E	PC

Noise	Start	N/A	End	N/A	Temp (F)	64	70

Number of adult GOEA detected	1
Number of nestlings detected	1
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

Was able to see one parent and one nestling. Y1 was born on or before 5/19, so it is at least 3 weeks 5 days old. I'd say it is not more than 4 weeks and 3 days old based on plumage. I can see dark remiges (wing flight feathers) beginning to emerge from the sheaths but they have not reached more than 2 inches long it looks like. A1 brought prey in to nest and fed Y1. About the size of a cottontail rabbit I think.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

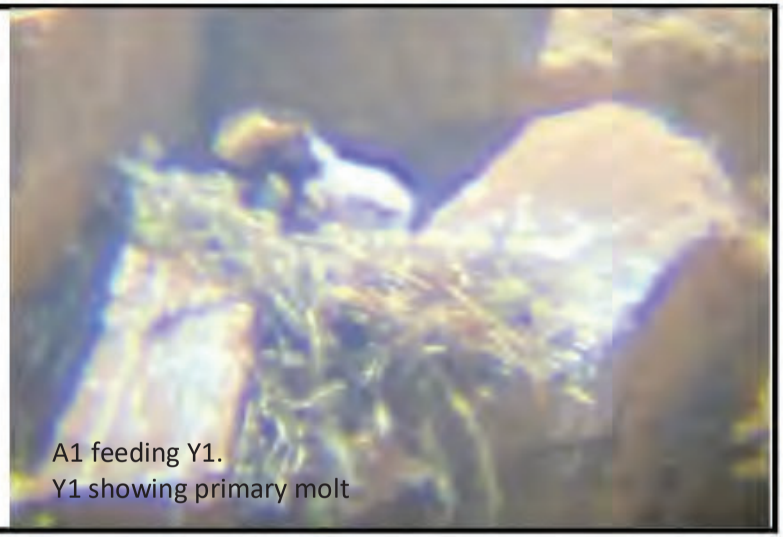
Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Image

Y1 standing as A1 approached



A1 feeding Y1.
Y1 showing primary molt

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
1130		NV	NV	NV					Start survey.	20	SW
1145		NV	NV	P1					Saw nestling briefly.		
1148		Fly	NV	P1					Saw nestling moving in nest. A1 was flying overhead.		
1148		NV	NV	NV					A1 flew east. Nestling out of view.		
1200		NV	NV	NV					No change. No disturbance.	22	SW
1230		NV	NV	NV					No change. No disturbance.	20	SW
1300		Fly	NV	P1					A1 flying toward nest with prey. Y2 bounds across nest to greet A1.	24	SW
1300		P1	NV	P1					A1 and Y1 in nest (photos).		
1302		FY	NV	P1					A1 feeding Y1.		
1326		FY	NV	P1					No change. No disturbance. Still feeding.		
1327		P1	NV	P1					A1 done feeding Y1.		
1330		P1	NV	P1					No change. End survey.	25	SW

[1.] Perch type = 1. On nest; 2. In nest tree (outside of nest); 3. < 50 m. outside of nest tree; 4. >51-200 m from nest; 5. 201-1000 m. from nest: 6. >1k from nest. mark locations on attached map

[3.] Mark disturbance on attached map (Figure 2).

Disturbance Type includes: construction, aircraft, pedestrians, other

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	6/24/2022	8:45	11:00	HNG	Obs A	PC

Noise	Start	N/A	End	N/A	Temp (F)	66	68

Number of adult GOEA detected	1
Number of nestlings detected	1
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

Y1 observed in Nest 2 throughout survey and A1 observed briefly in flight west of Nest 1; no other activity observed.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

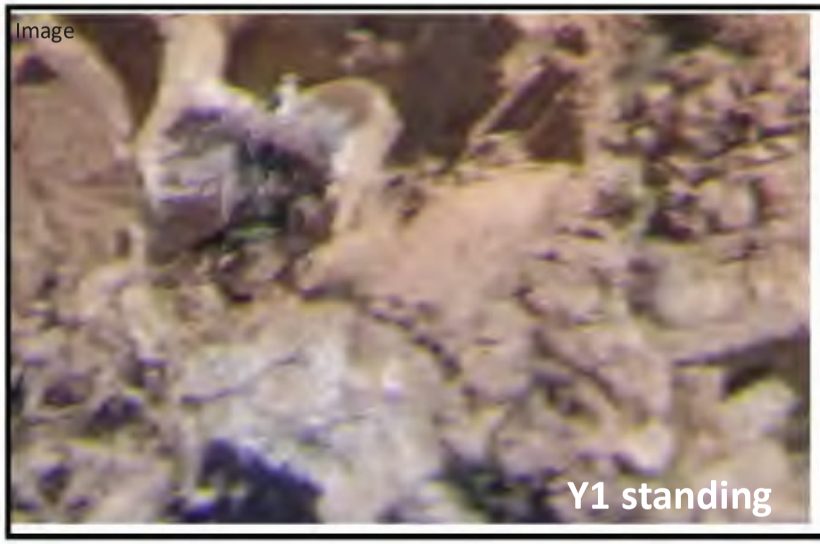
Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Image



Y1 standing

Nest 1 (Alternate)

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
8:45		NV	NV	P1			none	0	Arrive at observation A. Horses S of cliff band. Y1 in Nest 2		
8:57		NV	NV	P1			none	0	Y1 moved around in nest		
9:09		Fly	NV	P1			none	0	A1 circling SW of Nest 1	1	W
9:09		NV	NV	P1			none	0	Y1 up to edge of nest		
9:21		NV	NV	P1			none	0	Y1 looking for food in nest & preening		
9:25		NV	NV	P1			none	0	Y1 back down in nest	2	W
9:27		NV	NV	P1			none	0	Y1 walks to edge of nest & turned around		
9:49		NV	NV	PR			none	0	Y1 settled back into nest, preening		
9:51		NV	NV	PR			none	0	Y1 up preening		
9:52		NV	NV	P1			none	0	Y1 sit/settles back down in nest		
9:54		NV	NV	PR			none	0	Y1 up & preening		
9:57		NV	NV	P1			none	0	Y1 down more & looking around	4	NW
10:08		NV	NV	P1			none	0	Y1 up		
10:08		NV	NV	P1			none	0	Y1 down		
10:15		NV	NV	P1			none	0	wind picking up slightly	7	NW
10:35		NV	NV	PR			none	0	Y1 preening		
10:40		NV	NV	P1			none	0	Y1 lifted wing to cool; heat waves make visibility difficult.		
10:42		NV	NV	P1			none	0	Y1 still holding wing up		
10:43		NV	NV	P1			none	0	Y1 stands up, moved toward left side of nest		
10:45		NV	NV	P1			none	0	Y1 looks down, up, around (looking for food)	4	W
10:46		NV	NV	P1			none	0	Y1 took 2-4 steps in nest		
10:53		NV	NV	P1			none	0	Y1 up walking, flapped wings for a second		
11:00		NV	NV	P1			none	0	no change end of observation		

[1.] Perch type = 1. On nest; 2. In nest tree (outside of nest); 3. < 50 m. outside of nest tree; 4. >51-200 m from nest; 5. 201-1000 m. from nest: 6. >1k from nest. mark locations on attached map

[3.] Mark disturbance on attached map (Figure 2).

Disturbance Type includes: construction, aircraft, pedestrians, other

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	6/30/2022	9:35	11:50	AJW	Obs. Pt. A	PC

Noise	Start	N/A	End	N/A	Temp (F)	64	66

Number of adult GOEA detected	1
Number of nestlings detected	1
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

One adult golden eagle (A1) was observed at the beginning of the survey perched on the ground on the hillside directly northeast of observation point A . One nestling (Y1) was observed in Nest 2 throughout the survey. A1 brought prey into Nest 2 and Y1 was observed feeding itself. Dark remiges (wing flight feathers) having emerged from the sheaths were observed on Y1.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

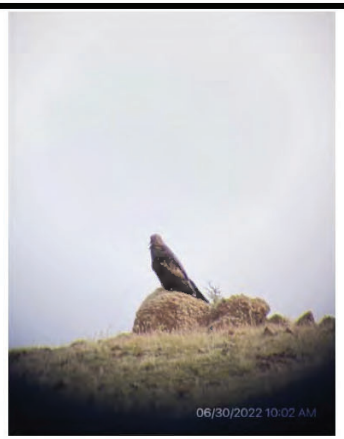
Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

A1 perched in Nest 2 with Y1



A1 perched on ground NE of Obs. Pt. A

Y1 in Nest 2

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
9:35		P5	NV	P1			N/A	0	Begin at obs. pt. A; Y1 in Nest 2 and A1 perched on rock on hillside NE of obs. pt. A	5	SW
10:01		Fly	NV	P1			N/A	0	A1 flies SW and attempts to capture prey directly NW of obs. pt. A		
10:02		Fly	NV	P1			N/A	0	A1 flies N and lands on the ground N of obs. pt. A; A1 does not appear to have prey		
10:03		Fly	NV	P1			N/A	0	A1 flies N to NE and lands on hillside across from Nest 2		
10:05		P4	NV	P1			N/A	0	A1 feeding self and perched on the ground of the hillside SE of Nest 2	7	SW
10:16		Fly	NV	P1			N/A	0	A1 flies N to NW and lands in Nest 2		
10:17		P1	NV	P1			N/A	0	A1 in Nest 2; Y1 in Nest 2		
10:22		Fly	NV	P1			N/A	0	A1 flies E out of Nest 2 and is no longer visible		
10:27		Fly	NV	P1			N/A	0	A1 observed flying SW and loops back and lands on hillside NE of obs. pt. A		
10:30		P5	NV	P1			N/A	0	A1 walking around hillside and no longer visible over the top of hillside		
10:31		NV	NV	P1			N/A	0	A1 not visible; Y1 in Nest 2		
10:32		Fly	NV	P1			N/A	0	A1 flies into Nest 2 and appears to have prey		
10:33		P1	NV	FS			N/A	0	Y1 appears to be feeding self		
10:35		Fly	NV	FS			N/A	0	A1 flies NE out of nest and is no longer visible; Y1 feeding self	8	SW
10:44		P5	NV	P1			N/A	0	A1 observed walking around hillside NE of obs. pt. A; Y1 no longer feeding		
10:50		NV	NV	P1			N/A	0	A1 no longer visible; Y1 in Nest 2		
10:52		P5	NV	P1			N/A	0	A1 perched back on same rock on hillside NE of obs. pt. A		
11:05		P5	NV	P1			N/A	0	No change	7	SW
11:35		P5	NV	P1			N/A	0	No change	8	SW
11:50		P5	NV	P1			N/A	0	A1 perched on hillside NE of obs. pt. A; Y1 in Nest 2; End of Survey		

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	7/22/2022	11:00	13:00	JJB	Obs. Pt. A	PC

Noise	Start	N/A	End	N/A	Temp (F)	79	80

Number of adult GOEA detected	1
Number of nestlings detected	1
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
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2	Raised hackles
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4	Vocalizations
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5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
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Y1 perched in nest throughout survey. A1 brought prey item to the nest at 1211.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Y1 in nest

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
11:00		NV	NV	NV			None	0	Start survey. Arrived to observation A. Can't see Y1.	10	N
11:08		NV	NV	P1			None	0	No disturbance. Y1 in nest moving.		
11:30		NV	NV	P1			None	0	No change. No disturbance.		
12:00		NV	NV	P1			None	0	A couple of ravens have been circling north of the nest off and on.	8	N
12:11		Fly	NV	P1			None	0	No disturbance. A1 flies toward nest from southeast.		
12:11		P1	NV	P1			None	0	A1 brought prey item to nest. Y1 jumped toward A1 while flapping its wings.		
12:13		Fly	NV	FS			None	0	Y1 began to eat prey. A1 flew toward southeast.		
12:14		NV	NV	FS			None	0	Y1 still eating. A1 flew out of view to east.		
12:20		NV	NV	P1			None	0	Y1 taking a break from eating.		
12:21		NV	NV	FS			None	0	Y1 eating a bit more.		
12:23		NV	NV	PR			None	0	Y1 preening.		
12:27		NV	NV	P1			None	0	Y1 perched in nest. Occasionally preening.		
12:30		NV	NV	P1			None	0	No change. No disturbance.	14	N
13:00		NV	NV	p			None	0	End survey. No change. No disturbance.	12	N

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	8/2/2022	9:45	12:15	AJW	Obs. Pt. A	CL/PC

Noise	Start	N/A	End	N/A	Temp (F)	70	74

Number of adult GOEA detected	1
Number of nestlings detected	1
Number of fledglings detected	0

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
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FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
5	Flushing (from nest or perch)
6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

One adult golden eagle (A1) was observed approximately an hour into the survey flying north to northeast past Nest 2. A1 was observed flying for intermittent periods north to northeast of Nest 2 twice throughout the survey. One nestling (Y1) was observed in Nest 2 throughout the entire survey. Y1 appeared to be in the back corner of Nest 2, most likely due to the moderate to high winds occurring during the survey. No disturbance indicators were observed.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
Y3- Third Eaglet

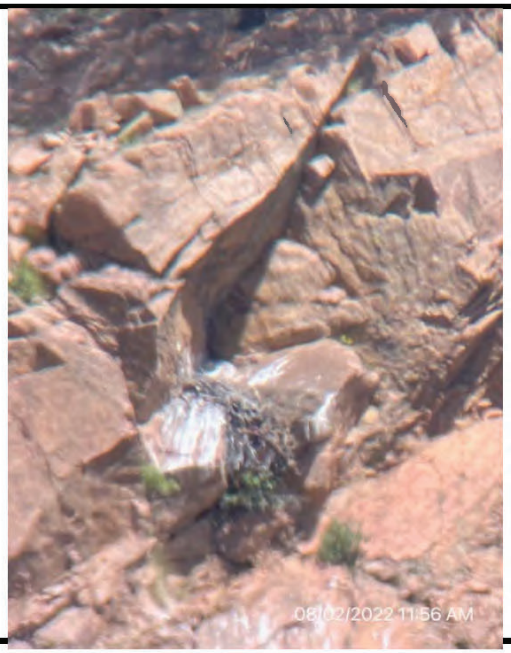
Sky Codes	
CL	Clear
PC	Partly Cloudy
OC	Overcast
DR	Drizzle
RA	Rain
SN	Snow
SL	Sleet/hail
FH	Fog/Haze

Wind Codes	Speed (mph)	Description
0	0	Smoke rises vertically
1	1-3	Wind direction visible in smoke
2	4-7	Wind felt on face, leaves rustle
3	8-12	Leaves and smaller twigs in constant motion
4	13-18	Small branches sway
5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Y1 in Nest 2



Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
9:45		NV	NV	P1			N/A	0	Begin at obs. pt. A; Y1 in Nest 2; No adult eagles observed	9	NW
10:15		NV	NV	P1			N/A	0	No change	10	NW
10:45		NV	NV	P1			N/A	0	No change	10	NW
10:46		Fly	NV	P1			N/A	0	A1 flies N to NE past Nest 2 and continues into gulley		
10:47		NV	NV	P1			N/A	0	A1 no longer visible; Y1 in Nest 2		
11:03		Fly	NV	P1			N/A	0	A1 observed soaring directly north of Obs. Pt. A		
11:07		NV	NV	P1			N/A	0	A1 no longer visible; Y1 in Nest 2		
11:15		NV	NV	P1			N/A	0	No change	12	NW
11:45		NV	NV	P1			N/A	0	No change	14	NW
12:15		NV	NV	P1			N/A	0	A1 and A2 not visible; Y1 in Nest 2	13	NW

Wild Horse Golden Eagle Monitoring Data Sheet

Site Code	Date	Start Time	End Time	Observer	Observation Pt.	Sky Code
21-189 Wild Horse	8/10/2022	12:30	14:30	JJB	Obs. Pt. A	PC

Noise	Start	N/A	End	N/A	Temp (F)	75	82

Number of adult GOEA detected	0
Number of nestlings detected	0
Number of fledglings detected	1

Behaviors [A]
P- Perched [1.] (A)
NI - Nest Incubating (L)
NB - Nest Brooding (1)
NC - Nest Const/Maint. (D)
FS - Feeding Self (C)
FY - Feeding Young (M)
PR - Preening (B)
BR - Branching
FL - Fledging
SL - Sleeping (E)
AI - Aggressive Interact. (F)
Fly - to/from Nest/Perch (7)
TE- Territory Flight (8)
NV - Not Visible (9)
C - Courtship (G)
Cop - Copulate (H)

Disturbance Indicators (DI)	
1	Staring Intently
2	Raised hackles
3	Alert posture (head raised in an alert posture)
4	Vocalizations
	Possible vocalizations include: Drawn-out clear monosyllabic call or whistle and a "falsetto chirp" repeated at intervals or groups; Extremly rapid, high frequency chitter; dog-like bark call "wonk"; plaintive or shrill call "cherop"; shorter and high frequency bark "wip"; drawn-out, low frequency whine like the honk of a goose "honk"; blowing or hissing sound "hiss"; deep rasping "croak"; Mewing cries used during displays "weee-o"; thin, shrill calls "pleek" or "tsewk"; a loud duck-like call "wak'wak'wak".
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6*	Standing over their eggs (Record the amount of time and if any human or other disturbance is observed)
7*	Standing on the side of nest (Record the amount of time and if any human or other disturbance is observed)
8*	Absence from the nest for an extended period
9	Direct flight toward construction, particularly if vocalizing while flying
10	Vocalization during flight in the vicinity of construction

[2.] *Any distress call must be investigated to determine cause and* ***any construction or human activity that may be responsible for the distress call, must be halted or modified immediately.***

*. Applies to incubation /brooding periods - once chicks hatch standing in or on the side of the nest is normal. Absence from nest also common

[A.] The alpha-numeric codes in parenthesis correspond to FRNBES behavior codes

Please record all times of eagle activities and the duration, below.
Record vocalization type (#4 above) and associated activites (in-flight, nest material delivery, incubation transfer, territorial interactions, food delivery, threatening or alarming situation, copulation, coming into an evening roost, perching, or meeting or approaching a mate) below.

I observed Y1 flying over the nest briefly (for ~1 minute). Y1 has fledged.

Plumage
Y - Young
JU - Juvenile
SU- Sub Adult
AD- Adult

Eagle ID Examples
A1 - Adult 1
A2 - Adult 2
Y1 - First Eaglet
Y2 - Second Eaglet
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5	19-24	Smaller trees sway
6	25-31	Large branches in motion
6+	31+	Whole trees in motion

Used as a back-up to anemometer

Photo (s)

Nest photos

Y1 gliding over nest

Time (Continuous)	3 min. obs.	Behavior					Disturbance[3]		Notes /comments/Loc [2.]	Wind	
		A1	A2	Y1	Y2	Y3	Type	DI		Spd.	Dir.
12:30		NV	NV	NV	--	--	None	0	Start survey. Arrived at Observation A.		
13:00		NV	NV	NV	--	--	None	0	After 30 minutes of seeing no eagles, began to approach nest.		
13:15		NV	NV	NV	--	--	None	0	Parked car below nest. Couldn't see eagles. Began hiking up to nest.		
13:30		NV	NV	NV	--	--	None	0	Approaching nest. No eagles		
13:42		NV	NV	NV	--	--	None	0	At nest.		
13:44		NV	NV	Fly	--	--	None	0	I see Y1 approach from south flying over nest.		
13:46		NV	NV	NV	--	--	None	0	Y1 flies over nest and disappears to north beyond ridgeline.		
14:00		NV	NV	NV	--	--	None	0	Returned to car.		
14:05		NV	NV	NV	--	--	None	0	Returned to observation A.		
14:30		NV	NV	NV	--	--	None	0	No change. End of survey.		

AURORA WATER

City of Aurora

Water Administration
15151 E. Alameda Parkway, Suite 3600
Aurora, Colorado 80012
303.739.7370

July 12, 2018

Keith Berger, Field Manager
BLM Royal Gorge Field Office
3028 E. Main Street
Canon City, CO 81212

Re: Notice of Desired Use of Federally-Owned Mineral Materials

Dear Mr. Berger,

Thank you for taking the time to meet with my staff and our contractors regarding the proposed Wild Horse Reservoir Project on May 11. I know the Royal Gorge Field Office is extremely busy working to complete its Resource Management Plan update and that your and your staff's time is limited. At the May 11 meeting, we discussed the federally-owned mineral estate underlying the Project area.

With this letter, Aurora requests a Free Use Permit to extract and utilize federally-owned mineral materials to construct dams, inlet/outlet pipelines, and other ancillary facilities for the Wild Horse Reservoir. Aurora Water is a Department of the City of Aurora, a municipal entity and subdivision of the State and will be using the materials for non-commercial purposes.

As you know, Aurora intends to submit an application for a right-of-way on the three parcels of BLM-managed surface estate in the Project area. In addition, Aurora will need to extract and use materials from the underlying federal mineral estate on these three parcels and other parcels in the vicinity of the Project to construct its facilities. It is our understanding that this "Notice to Use Mineral Materials" request will be acknowledged in the agency's records to inform actions on any future requests pertaining to the federal mineral estate in the Project area.

The location of the federally-owned mineral estates in Aurora's Free Use Permit request are depicted on the map in Exhibit A, and legal descriptions are provided in Exhibit B. We are requesting a total of 4,105 acres be included in the Free Use Permit. Aurora owns approximately 1,215 acres of the surface estate overlying the Free Use Permit request area. The land owned by Aurora is also shown on Exhibit A. Aurora is currently working to acquire another approximately 1,145 acres of the surface estate overlying the Free Use Permit request area. Aurora will not be pursuing ownership of about 1,745 acres of land that is included in the Free Use Permit request area. Aurora Water will work with the individual land owners to obtain access and authorization to use federally-owned minerals on land that Aurora Water does not own.

RJH Consultants, Inc., Aurora Water's Owner's Representative for the Project, estimates the following types and quantities of various mineral resources that may be required for construction of the dams, pipelines, and ancillary facilities associated with the Project.

Mineral Description	Estimated Quantity (Tons)
Topsoil	300,000
Durable Rock for Rockfill, Riprap, and Bedding	4,000,000
Sand and Gravel Aggregate for Filters, Drains, Roadbase, and Pipe Bedding	3,500,000
Fine Grained Materials for Embankment Fill	4,500,000
Coarse Grained Materials for Embankment Fill and Soil-Cement	2,500,000
Earth and Rock Materials for General Fill	3,000,000

It is preferable to obtain these materials from within the area that would be inundated by the reservoir or as close as possible to proposed construction to reduce impacts, traffic on local roads, and Project cost. Based on a general review of the area geology, it is currently our opinion that much of the needed mineral materials could be obtained from the areas identified on Exhibit A. The needed quantities of various mineral materials and the specific locations where they will be obtained will be refined as the design and investigation of the Project and mineral resources are advanced. Our best estimate at this time is that it will take until September 2028 to extract and use the federally-owned mineral materials for the Project.

Please contact Joe Kleiner at 720-859-4302 or Robert Huzjak at 303-225-4611 if you have questions or need additional information to process this request.

Sincerely,

Marshall P. Brown
Director, Aurora Water

cc: Stephanie Carter, RGFO Geologist
Joe Kleiner, Aurora Water Senior Project Manager
Robert Huzjak, RJH Consultants, Inc. Owner's Representative

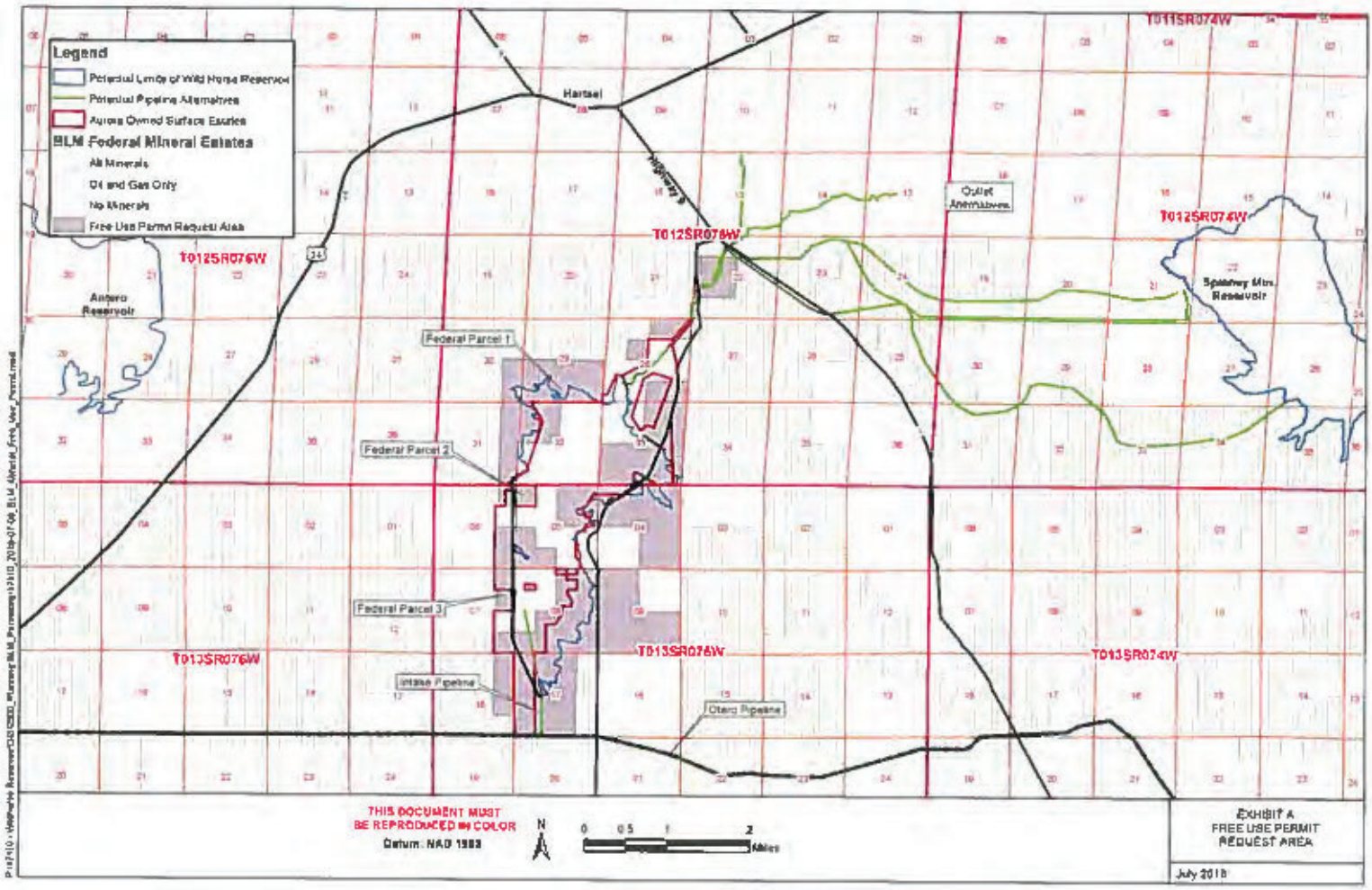

Legend
Potential Lands of Wild Horse Reservoir
Potential Pipeline Alignments
Aurora Owned Surface Estates
BLM Federal Mineral Estates
All Minerals
Oil and Gas Only
No Minerals
Free Use Permit Request Area
T012SR076W
T012SR075W
T011SR074W
T012SR074W
T013SR076W
T013SR075W
T013SR074W
Antero Reservoir
Spinney Mtn. Reservoir
Hartsel
Outlet Alternatives
Federal Parcel 1
Federal Parcel 2
Federal Parcel 3
Intake Pipeline
Otero Pipeline
24
THIS DOCUMENT MUST BE REPRODUCED IN COLOR
Datum: NAD 1983
N
0 0.5 1 2
Miles
EXHIBIT A
FREE USE PERMIT
REQUEST AREA
July 2018

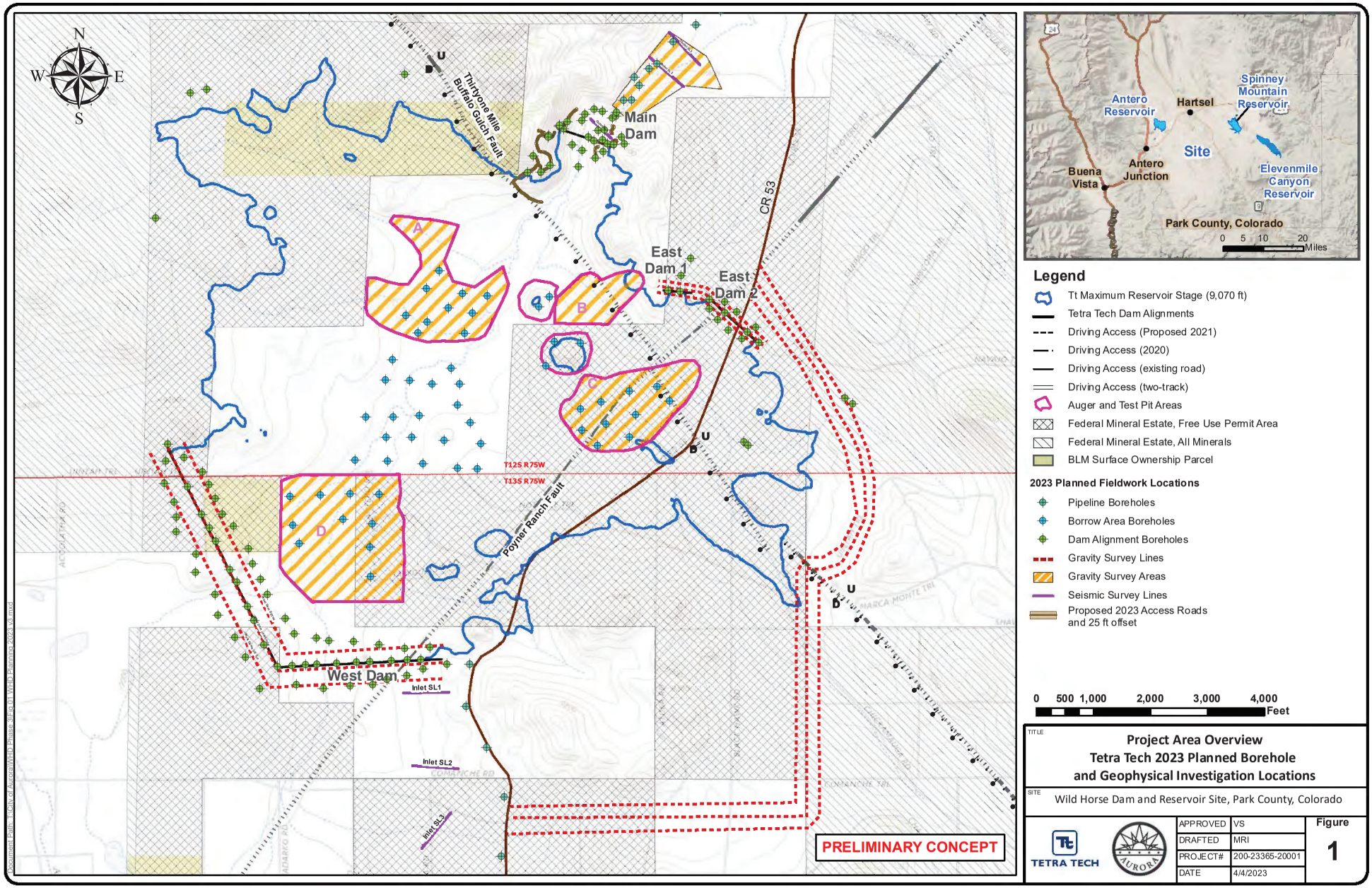
Exhibit B – Legal Description

Township 12 South, Range 75 West,

Section 22:	S ½ NW ¼, N ½ SW ¼;
Section 28:	N ½ NE ¼, SE ¼ NW ¼, S ½ SE ¼;
Section 29:	S ½;
Section 30:	E ½ SE ¼;
Section 31:	E ½ NE ¼, E ½ SE ¼;
Section 32:	NW ¼;
Section 33:	NE ¼, S ½;

Township 13 South, Range 75 West,

Section 4:	N ½, SE ¼;
Section 5:	NE ¼, NW ¼ NW ¼, NW ¼ SW ¼, S ½ SW ¼;
Section 6:	NE ¼ NE ¼, E ½ SE ¼;
Section 7:	E ½ NE ¼, SE ¼ SE ¼;
Section 8:	E ½, E ½ SW ¼, SW ¼ SW ¼;
Section 9:	NW ¼, S ½;
Section 17:	W ½ NE ¼, W ½ SE ¼; W ½,
Section 18:	E ½ NE ¼, NE ¼ SE ¼;



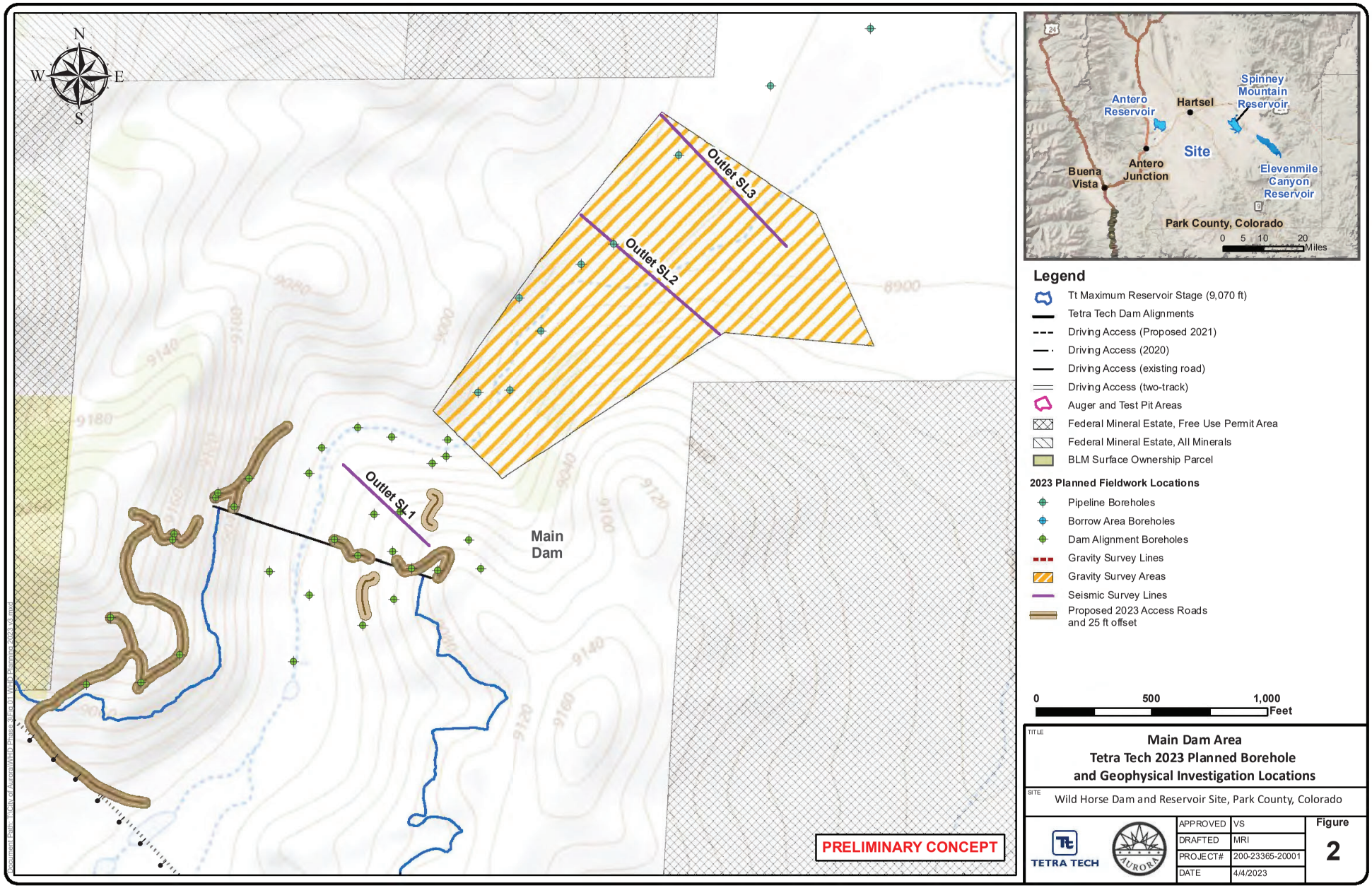
TITLE
Project Area Overview
Tetra Tech 2023 Planned Borehole and Geophysical Investigation Locations

SITE
Wild Horse Dam and Reservoir Site, Park County, Colorado

TETRA TECH

APPROVED	VS
DRAFTED	MRI
PROJECT#	200-23365-20001
DATE	4/4/2023

Figure
1



TITLE

Main Dam Area
Tetra Tech 2023 Planned Borehole and Geophysical Investigation Locations

SITE

Wild Horse Dam and Reservoir Site, Park County, Colorado

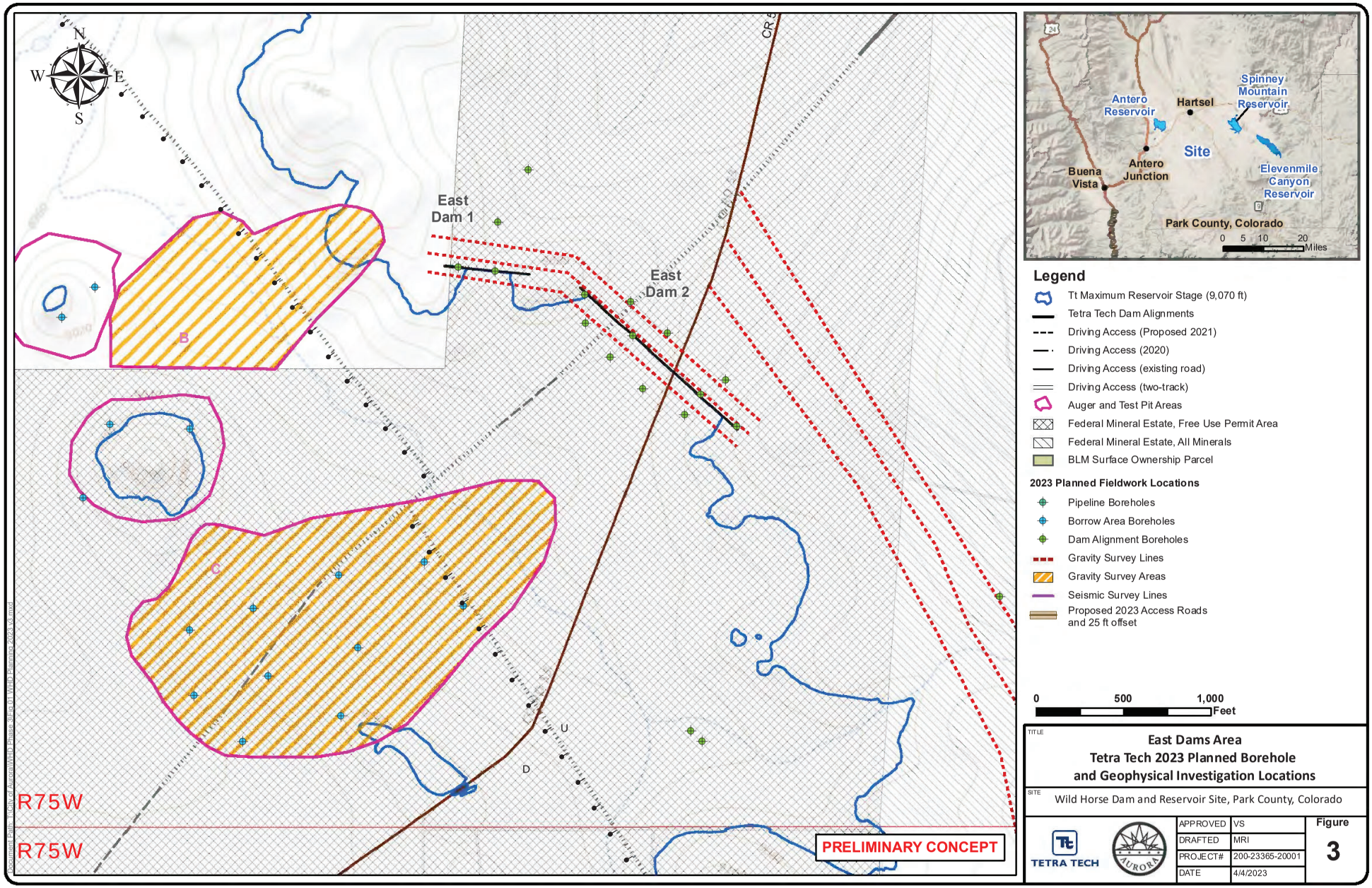
TETRA TECH

AURORA

APPROVED	VS
DRAFTED	MRI
PROJECT#	200-23365-20001
DATE	4/4/2023

Figure

2


N
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East
Dam 1
East
Dam 2
CR 3
B
C
D
U
R75W
R75W
PRELIMINARY CONCEPT
Antero
Reservoir
Hartsel
Spinney
Mountain
Reservoir
Site
Antero
Junction
Buena
Vista
Elevenmile
Canyon
Reservoir
Park County, Colorado
0 5 10 20
Miles
Legend
Tt Maximum Reservoir Stage (9,070 ft)
Tetra Tech Dam Alignments
Driving Access (Proposed 2021)
Driving Access (2020)
Driving Access (existing road)
Driving Access (two-track)
Auger and Test Pit Areas
Federal Mineral Estate, Free Use Permit Area
Federal Mineral Estate, All Minerals
BLM Surface Ownership Parcel
2023 Planned Fieldwork Locations
Pipeline Boreholes
Borrow Area Boreholes
Dam Alignment Boreholes
Gravity Survey Lines
Gravity Survey Areas
Seismic Survey Lines
Proposed 2023 Access Roads
and 25 ft offset
0 500 1,000
Feet
TITLE
East Dams Area
Tetra Tech 2023 Planned Borehole
and Geophysical Investigation Locations
SITE
Wild Horse Dam and Reservoir Site, Park County, Colorado
TETRA TECH
APPROVED VS
DRAFTED MRI
PROJECT# 200-23365-20001
DATE 4/4/2023
Figure
3
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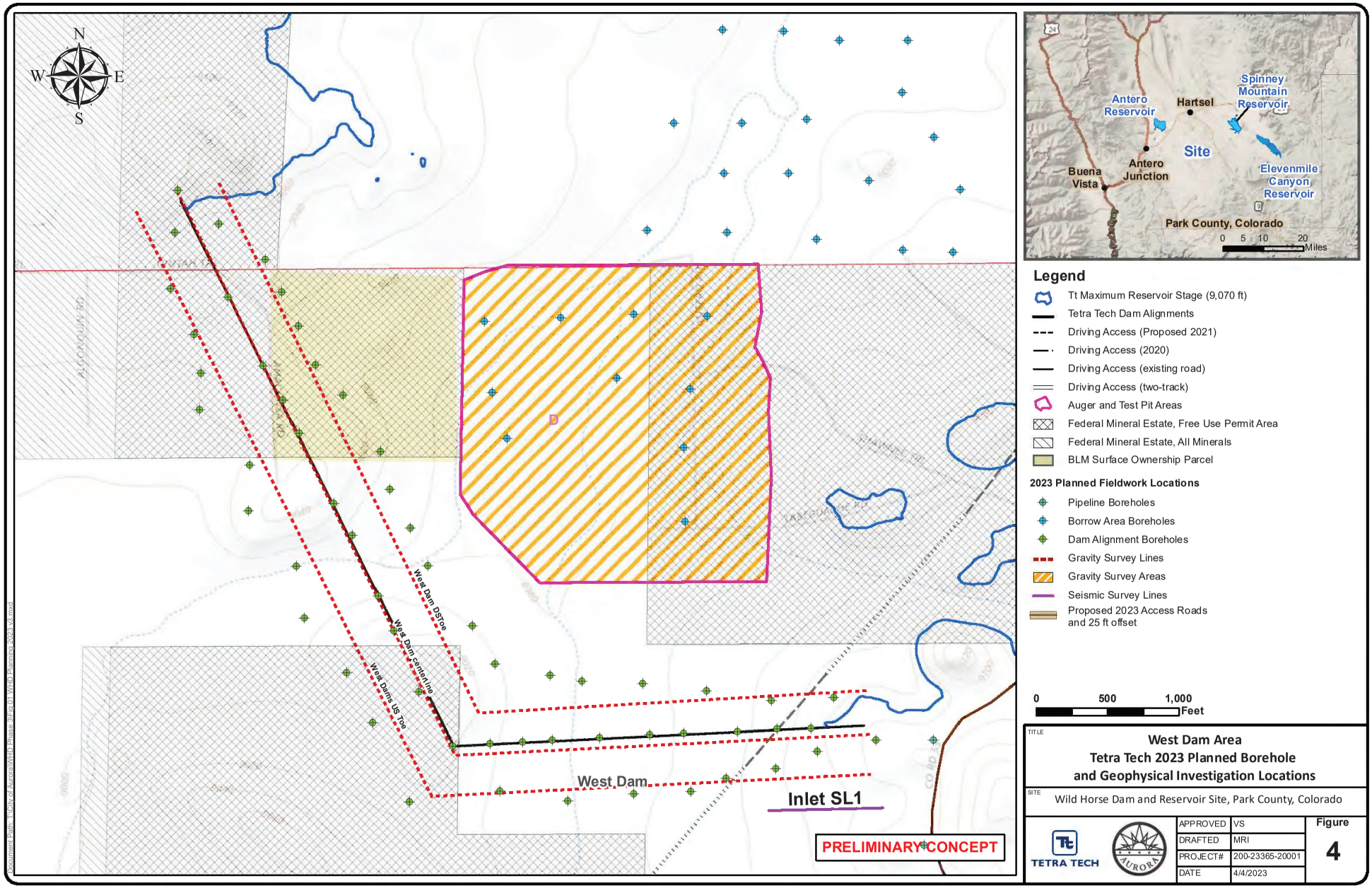
N
W
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West Dam DSToe
West Dam centerline
West Dams US Toe
West Dam
Inlet SL1
PRELIMINARY CONCEPT
Antero Reservoir
Hartsel
Spinney Mountain Reservoir
Site
Antero Junction
Buena Vista
Elevenmile Canyon Reservoir
Park County, Colorado
0 5 10 20 Miles
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Gravity Survey Lines
Gravity Survey Areas
Seismic Survey Lines
Proposed 2023 Access Roads and 25 ft offset
0 500 1,000 Feet
TITLE
West Dam Area
Tetra Tech 2023 Planned Borehole and Geophysical Investigation Locations
SITE
Wild Horse Dam and Reservoir Site, Park County, Colorado
TETRA TECH
APPROVED VS
DRAFTED MRI
PROJECT# 200-23365-20001
DATE 4/4/2023
Figure
4
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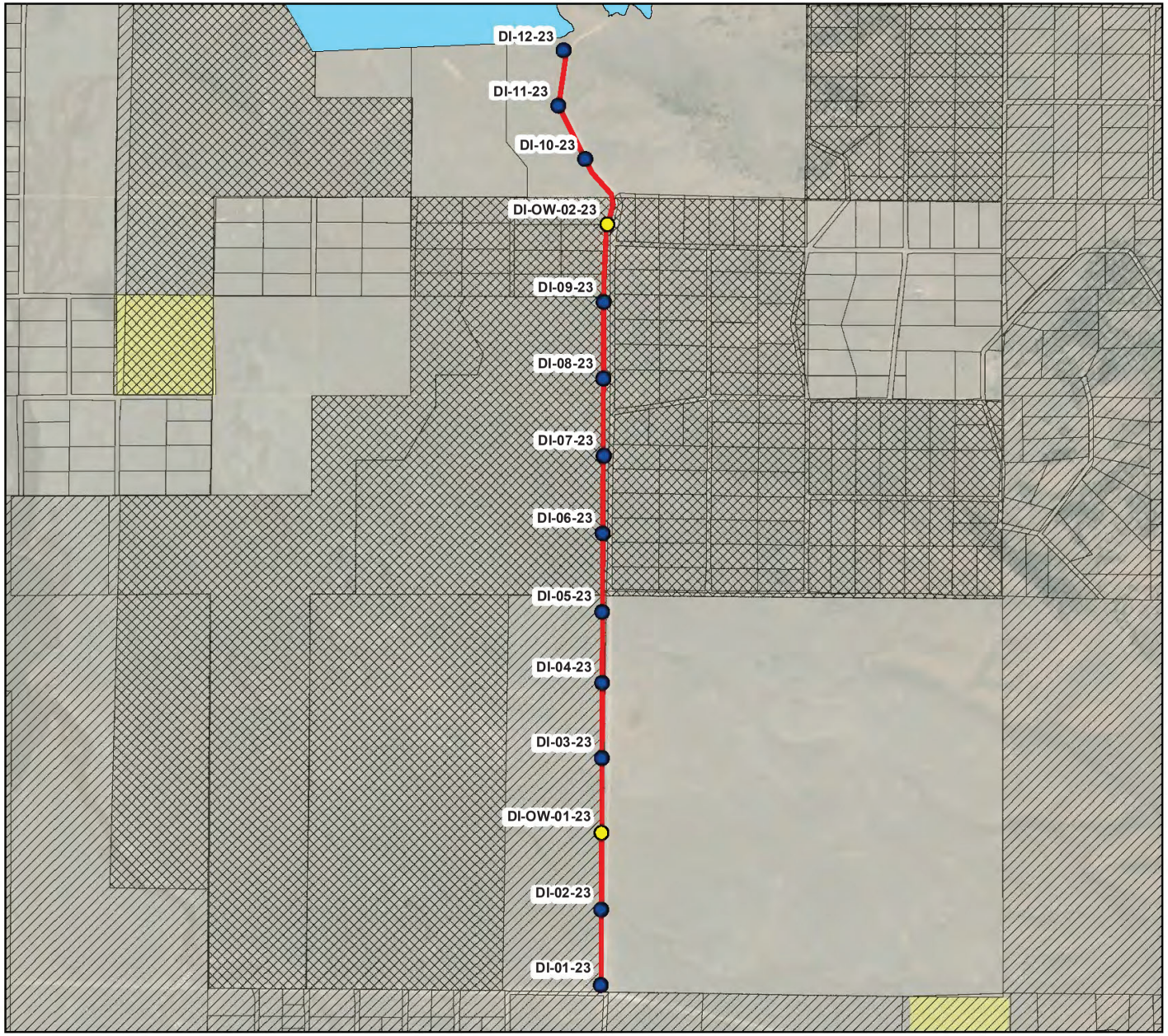
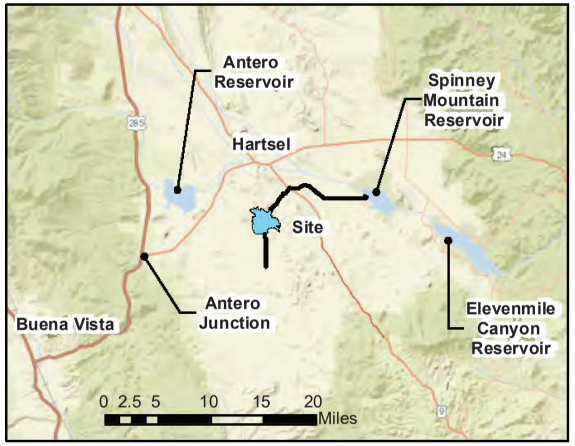




Legend

- Proposed 2023 Borehole Locations
- Proposed Oberservation Well Locations
- Proposed Test Pit Locations
- Inlet Pipeline
- Wild Horse Reservoir
- Federal Mineral Estate, All Minerals
- Federal Mineral Estate, Free Use Permit Area
- BLM Parcel
- Parcels

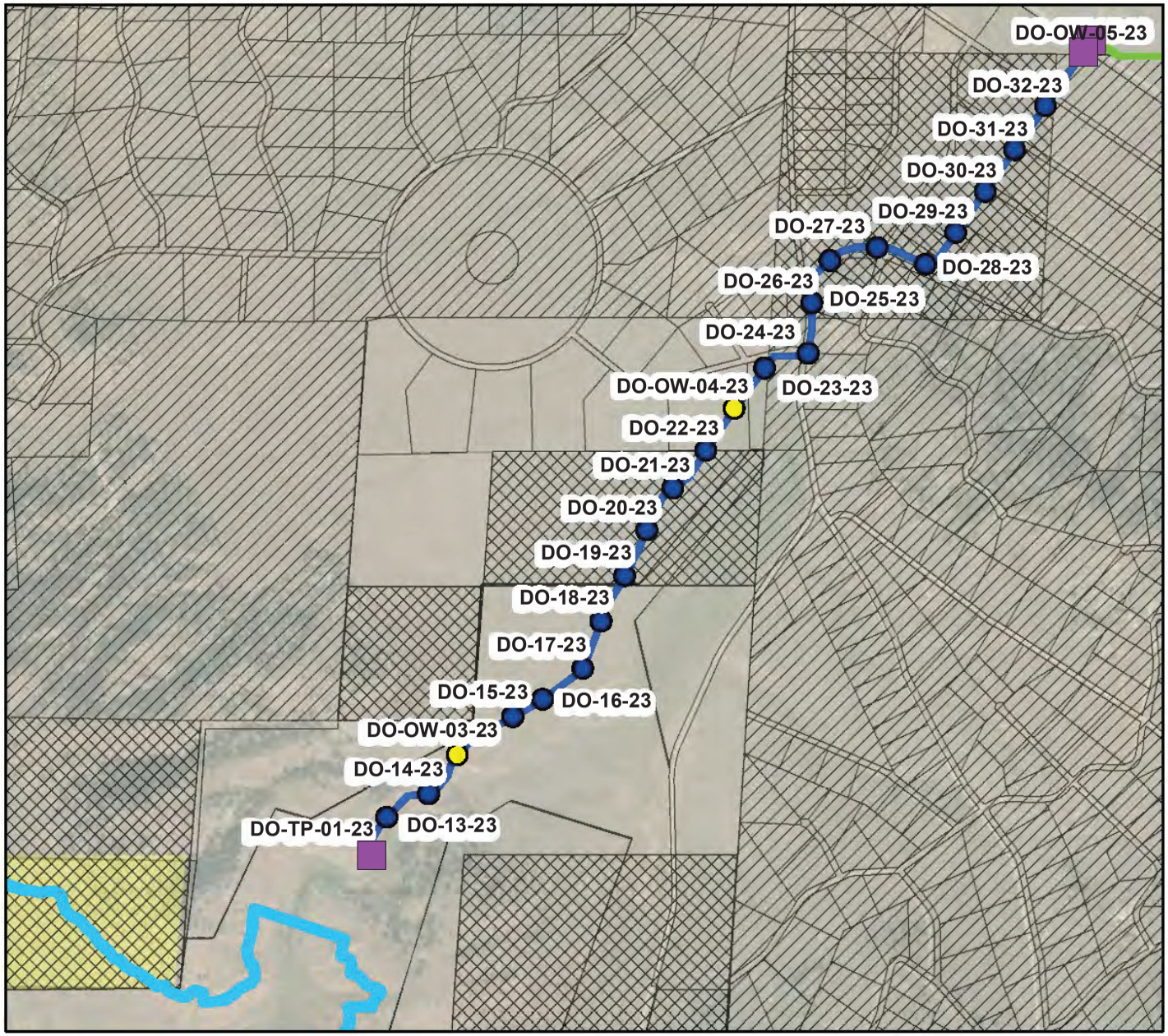
0 0.25 0.5 0.75 1 Miles

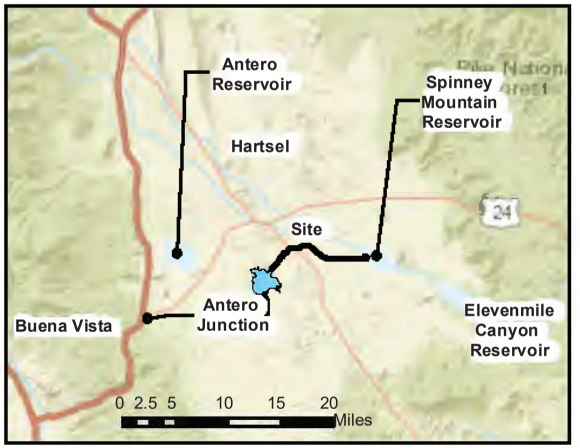
N W E S

2023 Investigation Inlet Pipeline Area

Wild Horse Reservoir Site, Park County, Colorado

Dewberry





Legend

- Proposed 2023 Borehole Locations
- Proposed Oberservation Well Locations
- Proposed Test Pit Locations
- Wild Horse Reservoir
- Outlet West Pipeline
- Outlet East Pipeline
- Federal Mineral Estate, All Minerals
- Federal Mineral Estate, Free Use Permit Area
- BLM Parcel
- Parcels

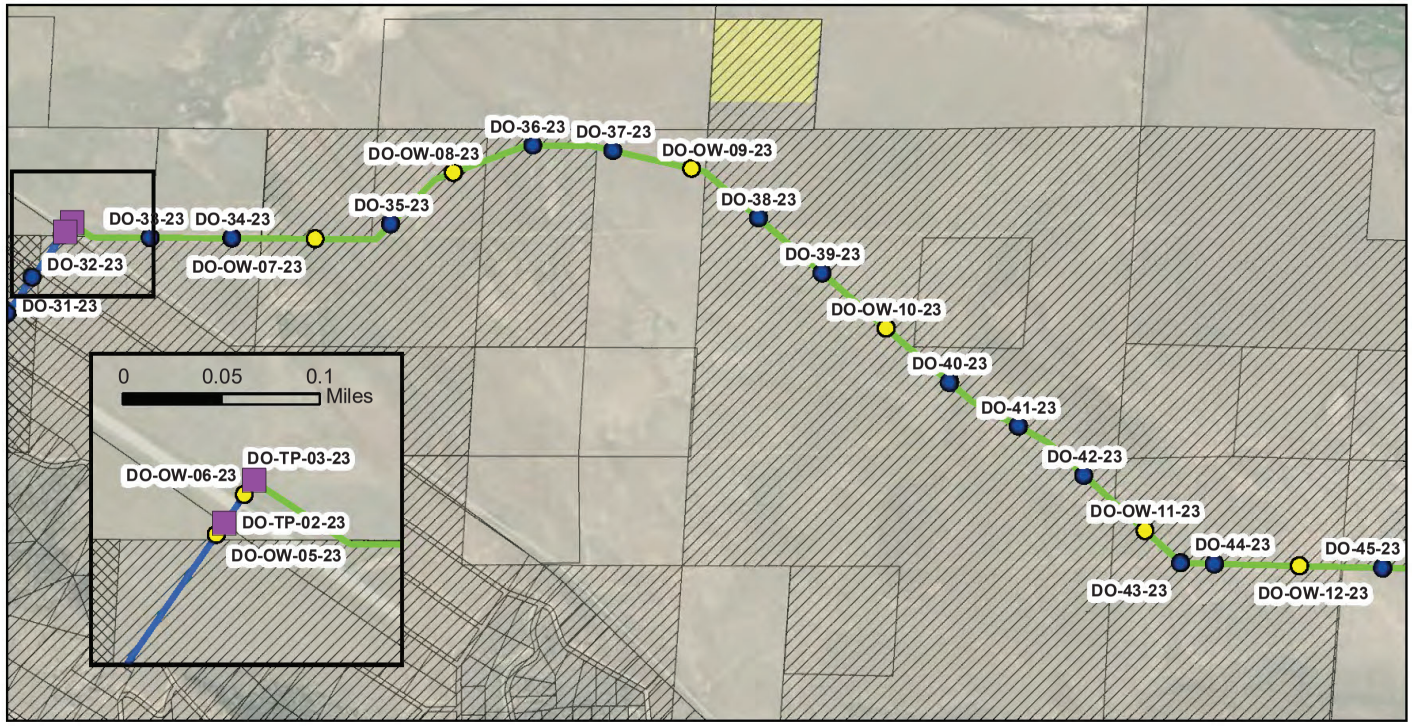
0 0.1 0.2 0.3 0.4 0.5 Miles

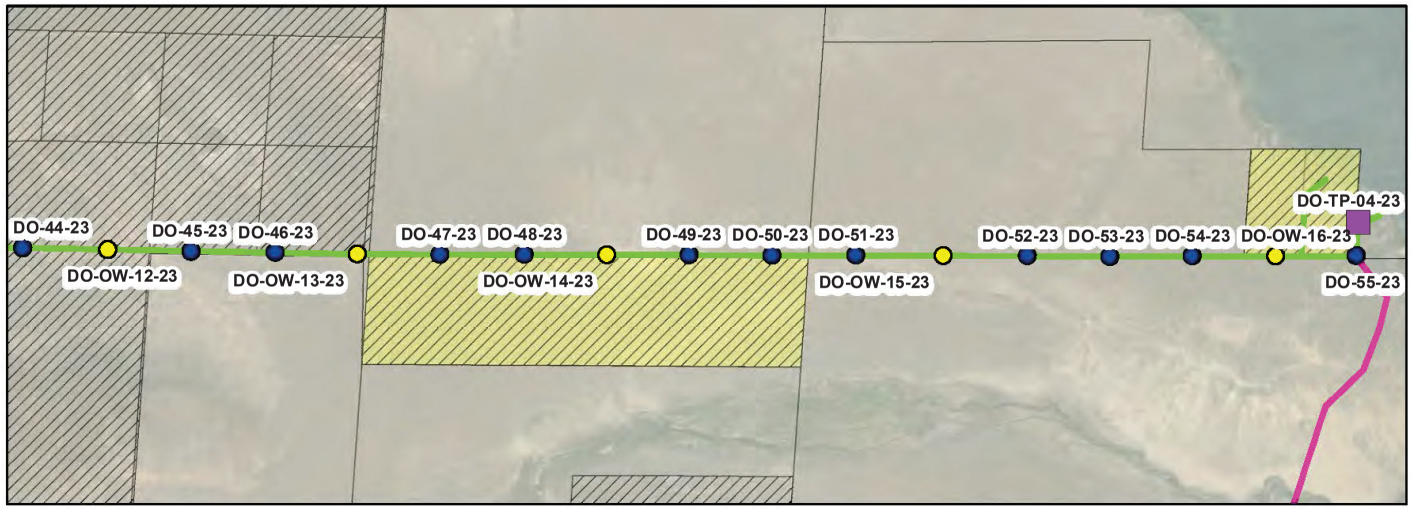
N W E S

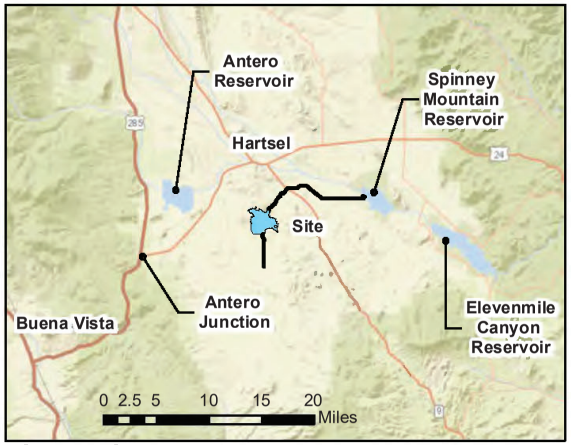
2023 Investigation Outlet Pipeline Area West

Wild Horse Reservoir Site, Park County, Colorado

Dewberry







Legend

- Proposed 2023 Borehole Locations
- Proposed Oberservation Well Locations
- Proposed Test Pit Locations
- Outlet West Pipeline
- Outlet East Pipeline
- Access Road
- Wild Horse Reservoir
- Federal Mineral Estate, All Minerals
- Federal Mineral Estate, Free Use Permit Area
- BLM Parcel
- Parcels

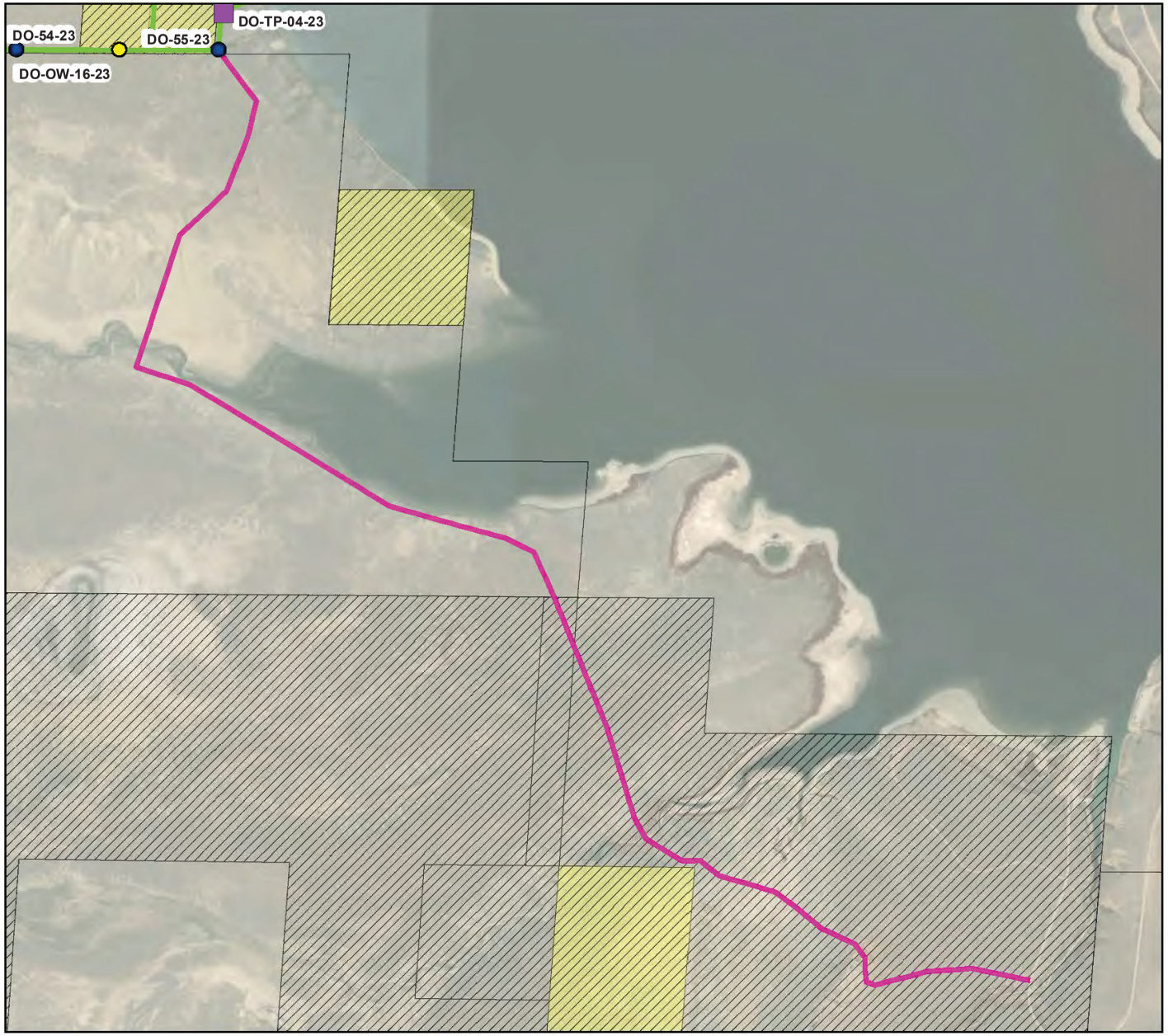
0 0.2 0.4 0.6 0.8 1 Miles

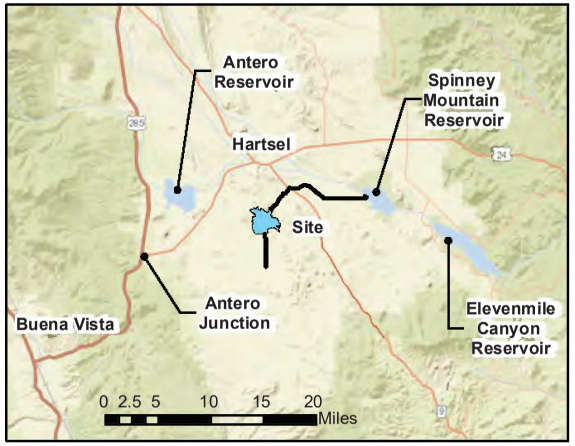
N W E S

2023 Investigation Outlet Pipeline Area East

Wild Horse Reservoir Site, Park County, Colorado

Dewberry





Legend

- Proposed 2023 Borehole Locations
- Proposed Oberservation Well Locations
- Proposed Test Pit Locations
- Access Road
- Outlet East Pipeline
- Wild Horse Reservoir
- Federal Mineral Estate, All Minerals
- Federal Mineral Estate, Free Use Permit Area
- BLM Parcel
- Parcels

0 0.1 0.2 0.3 0.4 0.5 Miles

N W E S

2023 Investigation Access Road Area

Wild Horse Reservoir Site, Park County, Colorado

Dewberry

STATE OF COLORADO

Russell - DNR, Elliott <elliott.russell@state.co.us>

2023 Letter of Authorization for Site Investigation Wild Horse Reservoir

Ogle, Raymond P <rogle@blm.gov> Fri, Jun 2, 2023 at 1:40 PM
To: Richard <rvidmar@auroragov.org>
Cc: "Smeins, John W" <jsmeins@blm.gov>, Lauren <lnance@auroragov.org>, John <jpclark@auroragov.org>, Lyle <gwhitney@auroragov.org>, "elliott.russell@state.co.us" <elliott.russell@state.co.us>

Afternoon Mr. Vidmar,

Attached is your Letter of Authorization for the third phase of site investigation in Park County, Colorado for feasibility of the Wild Horse Reservoir. This letter of Authorization contains stipulations that are very similar to Phase I and Phase II. If you have any questions please let Mr. John Smeins or myself know. Thanks for taking the time to answer our questions on this project. I have sent you a hard copy of the authorization via snail mail, but figured you might want an electronic copy.

Two files should be attached:

1. Letter of Authorization (3 pages)
2. NEPA Document (127 Pages)

Regards!
Ray

Ray Ogle
Assistant Field Manager - Lands and Minerals
Royal Gorge Field Office
3028 East Main Street
Canon City, Colorado 81212
719-269-8522
rogle@blm.gov

2 attachments

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