PLAN OF OPERATIONS

# SUNNYSIDE EXPLORATION DRILLING PROJECT SANTA CRUZ COUNTY, ARIZONA

**Prepared for:**

**U.S.D.A. Forest Service**
**Coronado National Forest**
300 West Congress Street
Tucson, Arizona 85701

**Prepared by:**

ARIZONA STANDARD
P.O. Box 1155
Patagonia, Arizona 85624

Project Number: 2810-030503
Date: Revised 02/03/2021

Plan of Operations

# Sunnyside Exploration Drilling Project

Santa Cruz County, Arizona

**Project Number: 2810-03050**

**Prepared for:**

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300 West Congress Street
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**Prepared by:**

Arizona Standard, LLC
P.O. Box 1155
Patagonia, Arizona 85624

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# 1.0 INTRODUCTION

The Sunnyside Exploration Drilling Project (Project or proposed Project) is proposed by Arizona Standard, LLC (Arizona Standard), an Arizona Corporation. Arizona Standard is a subsidiary of Barksdale Capital Corporation, a publicly traded company with headquarters in Vancouver, Canada.

Arizona Standard is submitting this Plan of Operations (PoO) for proposed mineral exploration activities designed to evaluate the location, concentration, quality, and type of mineralization in the area, and to help establish the feasibility of possible future mining operations. The Project proposes exploration work only, including drilling. No mining, milling, or permanent facilities are being proposed.

The proposed Project is located within the Sierra Vista Ranger District of the Coronado National Forest (CNF) where surface use is administered by the U.S. Forest Service (USFS). The Project, which includes all proposed drilling areas and temporary low-standard access roads on CNF lands, is located approximately 4 miles south of the town of Patagonia, in Santa Cruz County, Arizona within Sections 4, 5, 6, 32, and 33; Township 23 and 24 South; Range 16 East **(Exhibit 1)**.

The Project is a mineral exploration drilling program that will be completed over the course of a 7-year period. The following outlines the steps of the proposed Project:

- System road surface maintained where necessary.
- Improve up to 6.8 miles of existing system roads and 3.7 miles of existing non-system (administratively decommissioned) roads. Construction up to 0.6 mile of a new temporary low standard non-system access road.
- Brushing, limb, and tree removal where necessary along access roads and drill sites to allow access of drill rigs, water trucks, and other support equipment.
- Construct up to 30 drill pads and associated sumps, install sediment controls, transport equipment and supplies to the drill pads, and set up equipment. During the exploration drilling campaign, no more than 2 drill pads at a time will be active.
- Exploration drilling will be undertaken on a 24/7 (two 12-hour shifts) rotational work schedule with intermittent breaks.
- For each drill hole, drill cuttings and core will be logged and sampled.
- Complete/abandon the drill holes as described herein.
- Reclaim concurrently each drill pad and related temporary low-standard access roads after exploration program is completed and results evaluated.
- Remove all equipment from the Project Area.

The specifics of each of these activities are discussed in **Section 3** of this Plan.

## 1.1 Name of Project

Sunnyside Exploration Drilling Project

U.S. Forest Service, Coronado National Forest, Sierra Vista Ranger District
Santa Cruz County, Arizona

## 1.2 Type of Operation

The proposed Project involves exploration drilling for mineral resources on unpatented claims held by Arizona Standard on the CNF. The proposed Project will require the construction of up to 30 drill pads, upgrades to existing system and non-system access roads, and limited construction of a new temporary low-standard access road to provide access to the drilling locations.

## 1.3 Status of Operation

The proposed Project is a new operation.

## 1.4 Proposed Start-up Date of Operation

The Project is expected to commence December 8, 2021, to coincide with the anticipated CNF approval of the Final Environmental Assessment (EA), including the signing of the Decision Document, and funding of the required reclamation bond(s).

## 1.5 Expected Total Duration of Operation

The proposed drilling program will continue for a period of up to approximately 7 years. Since concurrent reclamation will be conducted where safe and practical to do so, a final reclamation period of one year is anticipated beginning in the spring following Year 7 of drilling operations. Reclamation monitoring will continue for approximately 6 years following the completion of final reclamation operations. A generalized schedule for the proposed Project is shown in **Table 1** below.

## 1.6 Expected Date of Completion of All Required Reclamation

Reclamation of all project-related disturbances is expected to be completed during Year 8 (the year following cessation of drilling operations). Monitoring and maintenance is anticipated to be conducted for at least 6 years after final reclamation **(see Table 1)**.

# 2.0 PRINCIPALS

## 2.1 Operator

The operator of the Project is Arizona Standard. The primary point of contact is:

Mr. Rick Trotman, President
P.O. Box 1155
Patagonia, Arizona 85624
Phone: (520) 394-5374

**Table 1: Generalized Schedule for the Proposed Sunnyside Exploration Drilling Project**

| Phase/Activity [1] | Timeline [2] | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Year 1 2022 | Year 2 2023 | Year 3 2024 | Year 4 2025 | Year 5 2026 | Year 6 2027 | Year 7 2028 | Year 8 2029 | Year 9 2030 | Year 10 2031 | Year 11 2032 | Year 12 2033 | Year 13 2034 | Year 14 2035 |
| **Pre-Construction Phase** | | | | | | | | | | | | | | |
| Stake Road ROWs and Laydown Yard Areas | | | | | | | | | | | | | | |
| Stake Topsoil Storage and Turnout Areas | | | | | | | | | | | | | | |
| Mobilize Construction Equipment | | | | | | | | | | | | | | |
| **Construction Phase** | | | | | | | | | | | | | | |
| Site Clearing of Laydown Yards and Turnouts | | | | | | | | | | | | | | |
| Widen and Improve Existing Roads | | | | | | | | | | | | | | |
| Construct New Temporary Bypass Road | | | | | | | | | | | | | | |
| Mobilize Drilling Equipment | | | | | | | | | | | | | | |
| **Operations Phase** | | | | | | | | | | | | | | |
| New Drill Pad Construction | | | | | | | | | | | | | | |
| Drilling | | | | | | | | | | | | | | |
| Road Watering and Maintenance | | | | | | | | | | | | | | |
| **Closure and Reclamation Phase** | | | | | | | | | | | | | | |
| Decommissioning | | | | | | | | | | | | | | |
| Drill Pad Reclamation | | | | | | | | | | | | | | |
| Reclamation of Decommissioned Roads | | | | | | | | | | | | | | |
| Active Site Management | | | | | | | | | | | | | | |
| **Reclamation Maintenance & Monitoring Phase** | | | | | | | | | | | | | | |
| Maintenance Activities | | | | | | | | | | | | | | |
| Monitoring and Reporting Activities | | | | | | | | | | | | | | |

[1] Project implementation would begin after the signing of the final Decision Document (anticipated to be December 8, 2021).
[2] Each segment of the chart represents one calendar year from January 1 - December 31.

## 2.2 Authorized Field Representative

Western Resource Consulting, LLC (WRC) is responsible for the preparation of this Plan and is the Authorized Field Representative for Arizona Standard during the Plan review and approval process. The primary point of contact for WRC is:

Mr. Brad Norling, President
7900 East Union Avenue, Suite 1100
Denver, Colorado 80237
Phone: (303) 357-3236

## 2.3 Claim Information

The Project is located on a contiguous block of land comprising 43 Federal unpatented lode mineral claims, which cover an area of approximately 1,654 acres (2.6 sq. mi.) in size (Project Area) **(Exhibit 2).** The surface rights are managed by the Forest Service. Detailed claim information on the exploration program proposed under this PoO is provided in **Table 2** below.

**Table 2: Claim Areas and Legal Description for Project Facilities within the Project Area**

| AMC# | Name | Section | Township | Range |
|---|---|---|---|---|
| 368735 | HUM 1 | 5 | 23S | 16E |
| 413395 | HUM 3 | 5 | 23S | 16E |
| 368738 | HUM 4 | 5 | 23S | 16E |
| 368739 | HUM 5 | 5 | 23S | 16E |
| 368740 | HUM 6 | 5 | 23S | 16E |
| 368741 | HUM 7 | 4, 5, & 32 | 23S & 22S | 16E |
| 368742 | HUM 8 | 4, 5, & 32 | 23S & 22S | 16E |
| 368743 | HUM 9 | 32 | 22S | 16E |
| 368744 | HUM 10 | 32 | 22S | 16E |
| 370864 | HUM 11 | 32 | 22S | 16E |
| 410048 | HUM 12 | 32 | 22S | 16E |
| 370867 | HUM 21 | 32 | 22S | 16E |
| 410049 | HUM 22 | 32 | 22S | 16E |
| 370868 | HUM 26 | 32 | 22S | 16E |
| 370869 | HUM 27 | 32 | 22S | 16E |
| 410050 | HUM 28 | 32 | 22S | 16E |
| 371457 | VEN 94/BUCKET 3 | 6 | 23S | 16E |
| 370188 | VEN 92/BUCKET 1 | 6 | 23S | 16E |
| 370195 | VEN 128/BUCKET 2 | 5 & 6 | 23S | 16E |
| 370197 | VEN 135 | 5 & 6 | 23S | 16E |
| 370856 | VEN 134 | 5 | 23S | 16E |
| 371460 | VEN 133 | 5 & 6 | 23S | 16E |
| 370196 | VEN 131 | 5 & 6 | 23S | 16E |
| 371459 | VEN 131A/BUCKET 8 | 5 & 6 | 23S | 16E |
| 371458 | VEN 98 | 6 | 23S | 16E |
| 370807 | VEN 52 | 6 | 23S | 16E |
| 370185 | VEN 89 | 6 | 23S | 16E |
| 370838 | VEN 93 | 6 | 23S | 16E |
| 376881 | VEN 95 | 6 | 23S | 16E |
| 370189 | VEN 96 | 6 | 23S | 16E |
| 371456 | VEN 96A/BUCKET 7 | 6 | 23S | 16E |
| 370840 | VEN 97 | 6 | 23S | 16E |
| 370190 | VEN 100 | 6 | 23S | 16E |
| 370842 | VEN 101 | 6 | 23S | 16E |
| 370843 | VEN 102 | 6 | 23S | 16E |
| 370844 | VEN 103 | 6 | 23S | 16E |
| 370845 | VEN 104 | 6 | 23S | 16E |
| 367730 | Bucket 4 | 5 & 6 | 23S | 16E |
| 383320 | SHELL 73 | 4 | 23S | 16E |
| 383321 | SHELL 74 | 4 | 23S | 16E |
| 416189 | SHELL311 | 4 & 5 | 23S | 16E |
| 414953 | SHELL 251 | 4, 5, 32, & 33 | 23S & 22S | 16E |
| 414955 | SHELL 253 | 32 & 33 | 22S | 16E |

## 2.4 Lessees, Assigns, and Agent(s)

None.

# 3.0 DESCRIPTION OF THE OPERATION

The proposed Project includes drilling and access for mineral exploration. The following sections provide detailed descriptions of the Project access, access road construction, drill areas, and proposed Project design features.

## 3.1 Access

### 3.1.1 Access Route to the Project

Primary access to the proposed Project will be from Arizona State Route (SR) 82 in the Town of Patagonia onto Taylor Avenue and then easterly onto McKeown Avenue, which becomes Harshaw Road after approximately 0.10 mile. Harshaw Road continues for approximately 8 miles to the intersection with Forest Road (FR) 5519, which connects to a 0.6-mile-long new temporary low-standard bypass road which connects to Flux Canyon Road/FR 812. Harshaw Road continues to the southwest for another mile to the intersection with FR 4701, which provides the primary access to the southern portion of the Project Area. Additional access to the proposed Project will be from Arizona SR 82 and then southeasterly along Flux Canyon Road/FR 812 for approximately 4 miles **(Exhibit 3)**

### 3.1.2 Access to Exploration Drill Areas

Initial routes of travel to proposed Drill Areas A and B will be accessed from Flux Canyon Road. Access to Drill Area A would proceed for approximately 3.5 miles along Flux Canyon Road/FR 812 to the intersection of FR 215 **(Exhibit 3)**. The route would then proceed south along FR 215 for approximately 1.4 miles **(Exhibit 4)**. Access to Drill Area B would proceed for approximately 5.9 miles along Flux Canyon Road/FR 812 where it terminates at a locked gate at the South 32 patented claims boundary. The primary access to drill sites within Drill Area B would occur along FR 4685 and an administratively decommissioned spur road (FR 4685A), which connect to Flux Canyon Road/FR 812 in the northeast portion of the Project Area **(Exhibit 4)**. The entire segment of FR 215 and portions of Flux Canyon Road/FR 812, FR 4685, and administratively decommissioned FR 4685A would require additional improvements including minor widening, grading and blading to remove loose rocks and protruding boulders, and placement of road rock to armor soft areas or to fix areas with protruding rocks or large pothole and ruts that cannot be practically fixed with cut/fill from the existing road. Roads along this route are normally suitable for only high clearance vehicle use and are generally impassable during periods of wet weather.

For purposes of analysis in this PoO, all improved roads along these segments would be upgraded from an average width of 12 feet to a maximum width of 14 feet to provide a safe travel-way surface and safely accommodate drill rigs and support vehicles. However, road improvements along these segments will not change the existing road grade. It is expected that FR 215 and portions of Flux

Canyon Road/FR 812 within the Project boundary will remain open for motorized public use; however, access may be limited during periods of specific drilling activity, due to the limitations on safety and traffic congestion around the drilling site. Specific information on road construction activities and disturbance estimates for the proposed drilling program is provided in **Section 3.4** below.

Initial routes of travel to proposed Drill Area C will be accessed from Harshaw Road and from existing FR 4701 **(Exhibit 4)**. Nearly the entire segments of FR 4701, administratively decommissioned FR 4700, administratively decommissioned FR 4898, and administratively decommissioned FR 5551 would require additional improvements including minor widening, grading and blading to remove loose rocks and protruding boulders, and placement of road rock to armor soft areas or to fix areas with protruding rocks or large potholes that cannot be practically fixed with cut/fill from the existing road. Roads along this route are normally suitable for only high clearance vehicle use and are impassable during periods of wet weather.

Proposed access roads within Drill Area C would be widened from an average width of 12 feet to a maximum width of 14 feet to provide a safe travel-way surface and safely accommodate drill rigs and support vehicles. It is expected that all roads associated with Drill Area C will remain open for motorized public use; however, access may be limited during periods of specific drilling activity, due to the limitations on safety and traffic congestion around the drilling site. Specific information on road improvement activities and disturbance estimates for the proposed drilling program is provided in **Section 3.4** below.

## 3.2 Improved and Newly Constructed Roads

A network of system and non-system (administratively decommissioned) roads already exists within the Project Area. These roads would be used as is or improved where acceptable for access to the proposed drill sites. New temporary roads will be constructed only where necessary, given that the proposed access is designed to minimize disturbances and maximize transportation efficiency. Although the length of all access roads under the Proposed Action is an aggregate of 24.4 miles, approximately 11 miles or 45 percent of this total would require improved or newly constructed roads **(see Exhibits 3 and 4).**

In order to safely conduct operations, approximately 6.8 miles of existing system roads and approximately 3.7 miles of non-system roads will be improved within their existing or historical road prism[1]. This includes multiple segments along Flux Canyon Road/FR 812 (totaling approximately 2.7 miles in length) **(Exhibits 5a and 5b)**; a 0.5-mile segment of administratively decommissioned FR 4685A; 1.4-mile segment of FR 215, of which approximately 0.3 miles is administratively decommissioned; 1.3-mile segment of FR 4685; 1.0-mile segment of administratively decommissioned FR 5519; 0.5-mile segment of administratively decommissioned

[1] The road prism is the area between the top of the cut slope and the bottom of the fill slope. The road prism encompasses the machine-made disturbance footprint of the entire road disturbance area in plan-view (when viewed from overhead).

FR 4700; 0.6-mile segment of administratively decommissioned FR 4898; 0.4-mile segment of administratively decommissioned FR 5551; and 2.0-mile segment of FR 4701, of which approximately 0.3 miles is administratively decommissioned **(see Exhibit 4)**. Typical cross-sections of improved roads are shown in **Exhibits 6a and 6b and 7a and 7b.**

For purposes of analysis in this PoO, roads within Drill Areas A, B, and C will need to be widened from an average width of 12 feet to a maximum width of 14 feet to provide a safe travel-way surface and safely accommodate drill rigs and support vehicles. As such, the total estimated area of additional surface disturbance from improvement of existing system and non-system roads would be approximately 2.6 acres. All improved roads that have been administratively decommissioned will be physically decommissioned by Arizona Standard prior to completion of the Project. **Table 3** summarizes the amount of disturbance by area, road name, and facility type.

To provide additional access options to Drill Areas A and B, a 0.6-mile-long new temporary low-standard bypass road would be constructed to connect Flux Canyon Road/FR 812 with administratively decommissioned FR 5519 **(Table 3) (see Exhibit 4)**. The road will be constructed to a maximum width of 14 feet to provide a safe travel-way surface and safely accommodate drill rigs and support vehicles. The total estimated area of disturbance from the construction of the new bypass road would be approximately 1.7 acres. A typical cross-section of a new bypass road is shown in **Exhibit 8a and 8b**.

For public safety reasons, the newly constructed temporary bypass road would be gated and locked to restrict public access. Entry points for the proposed bypass road would be at the intersection of the bypass road with FR 812 and FR 5519. The CNF will be provided a key to all locked gates.

## 3.3 Turnouts

In order to maximize transportation efficiency and safety, a total of 9 traffic turnouts would be constructed at various locations along the proposed road network. This includes four turnouts along FR 812 **(see Exhibits 5a and 5b)**, One turnout along FR 215, three turnouts along FR 4701 (including two along an administratively decommissioned portion of FR 4701), and one turnout along decommissioned FR 5519. A minimum of two spotters with 2-way radios would be stationed at various turnouts during the proposed drilling program.

The total estimated area of disturbance from the construction of the turnouts would be approximately 0.36 acres **(Table 3)**. All newly constructed turnouts will be reclaimed by Arizona Standard prior to completion of the Project.

## 3.4 Road Construction

The design of all improved and newly constructed roads would include site-specific modifications identified for drainage issues and would be reviewed and approved by the CNF Roads Manager prior to construction. Construction would be monitored by a qualified professional engineer or qualified inspector, as deemed appropriate by the CNF.

**Table 3: Estimated Disturbance by Area from Construction of Project Facilities Under the Proposed Drilling Program**

| Facility Type | No. | Length (feet) | Disturbance Area per Facility (acres) | Total Disturbance Area (acres) | Notes |
|---|---|---|---|---|---|
| **Drill Area A** | | | | | |
| Drill Pad Sites | ~2 | N/A | 0.15 | 0.30 | Assumes an average size of 40 feet x 100 feet for each drill site, which includes cut and fill areas. |
| Laydown Yards | 0 | N/A | N/A | 0 | None proposed for Drill Area A. |
| Upgraded Non-System Road | 1 | 1,056 | 0.05 | 0.05 | Assumes 1,056 feet of decommissioned FR 215 would be improved from 12 feet to a width of 14 feet. |
| Water Lines | 1 | 3,832 | N/A | 0 | A single line used to connect the single water tank with a primary distribution tank located at Drill Area B. |
| Water Tanks | 1 | N/A | N/A | 0 | Connected to a primary distribution tank at Drill Area B. |
| **Total for Drill Area A** | **--** | **--** | **--** | **0.35** | |
| **Drill Area B** | | | | | |
| Drill Pad Sites | ~14 | N/A | 0.15 | 2.10 | Assumes an average size of 40 feet x 100 feet for each drill site, which includes cut and fill areas. |
| Laydown Yards | 1 | N/A | 0.76 | 0.76 | A single, large laydown yard is proposed for water supply and equipment storage. |
| Upgraded System Road | 2 | 8,237 | Varies | 0.38 | Assumes 8,237 feet of FR 812 and FR 4685 would be improved from 12 feet to a width of 14 feet. |
| Upgraded Non-System Road | 1 | 2,852 | 0.13 | 0.13 | Assumes 2,852 feet of decommissioned FR 4685A would be improved from 12 feet to a width of 14 feet. |
| New Temporary Bypass Road Construction (FR 812 to Claim Boundary) | 1 | 2,059 | 1.08 | 1.08 | Assumes 2,059 feet of new temporary bypass road would be constructed to a maximum width of 14 feet. Assumes an average width of 23 feet of disturbance including cut and fill area (see New Temporary Bypass |

| Facility Type | No. | Length (feet) | Disturbance Area per Facility (acres) | Total Disturbance Area (acres) | Notes |
|---|---|---|---|---|---|
| | | | | | Road below for remainder of road outside claim boundary). |
| Turnouts | 1 | N/A | 0.04 | 0.04 | One turnout is proposed along FR 4685 for increased traffic efficiency and safety. |
| Water Lines | 8 | 22,457 | N/A | 0 | Includes 8 individual segments connected to 5 central reserve storage tanks located at the laydown yard. |
| Water Tanks | 8 | N/A | N/A | 0 | Includes up to five central reserve storage tanks, each with a 3,500 gal capacity (total 17,500 gal) and three additional water storage tanks along FR 4685, one of which would be used to pump water to Drill Area A, and another which would be used as an alternative water tank location. |
| **Total for Drill Area B** | -- | -- | -- | **4.49** | |
| **Drill Area C** | | | | | |
| Drill Pad Sites | ~14 | N/A | 0.15 | 2.10 | Assumes an average 40 feet x 100 feet for each drill site, which includes cut and fill areas. |
| Laydown Yards | 1 | N/A | 0.22 | 0.22 | One smaller laydown yard is proposed for water supply and equipment storage. |
| Upgraded System Road | 1 | 7,075 | 0.32 | 0.32 | Assumes 7,075 feet of FR 4701 would be improved from 12 feet to a width of 14 feet. |
| Upgraded Non-system Road | 4 | 9,874 | Varies | 0.45 | Assumes 9,874 feet of decommissioned FR 4700, FR 4898, FR 5551, and the decommissioned segment of FR 4701 would be improved from 12 feet to a width of 14 feet. |
| Turnouts | 3 | N/A | Varies | 0.14 | Three turnouts are proposed for various segments along FR 4701 for increased traffic efficiency and safety. |

| Facility Type | No. | Length (feet) | Disturbance Area per Facility (acres) | Total Disturbance Area (acres) | Notes |
|---|---|---|---|---|---|
| Water Lines | 2 | 18,136 | N/A | 0 | Includes two individual segments connected to five central reserve storage tanks located at the laydown yard. |
| Water Tanks | 8 | N/A | N/A | 0 | Includes up to 5 central reserve storage tanks, each with a 3,500 gal capacity (total 17,500 gal) and one additional water storage tank along FR 4701. |
| **Total for Drill Area C** | -- | -- | -- | **3.23** | |
| **Flux Canyon Road (FR 812) from SR 82 to Claim Boundary** | | | | | |
| Upgraded System Road | 1 | 12,778 | 0.59 | 0.59 | Includes multiple segments along FR 812, totaling approximately 12,778 feet, which would be improved from 12 feet to a width of 14 feet. |
| Turnouts | 4 | N/A | Varies | 0.11 | Four turnouts are proposed for various segments along FR 812 for increased traffic efficiency and safety. |
| **Total for FR 812** | -- | -- | -- | **0.70** | |
| **FR 215 from FR 812 to Claim Boundary** | | | | | |
| Upgraded System Road | 1 | 5,597 | 0.26 | 0.26 | Assumes 5,597 feet of FR 215 would be improved from 12 feet to a width of 14 feet. |
| Upgraded Non-system Road | 1 | 581 | 0.03 | 0.03 | Assumes 581 feet of the decommissioned segment of FR 215 would be improved from 12 feet to a width of 14 feet. |
| Turnouts | 1 | N/A | 0.03 | 0.03 | One turnout is proposed along FR 215 for increased traffic efficiency and safety. |
| **Total for FR 215** | -- | -- | -- | **0.32** | |
| **FR 4701 from Harshaw Road to Claim Boundary** | | | | | |

| Facility Type | No. | Length (feet) | Disturbance Area per Facility (acres) | Total Disturbance Area (acres) | Notes |
|---|---|---|---|---|---|
| Upgraded System Road | 1 | 2,270 | 0.10 | 0.10 | Assumes 2,270 feet of FR 4701 would be improved from 12 feet to a width of 14 feet. |
| **Total for FR 4701** | -- | -- | -- | **0.10** | |
| **New Temporary Bypass Road from Harshaw Road to Claim Boundary** | | | | | |
| Upgraded Non-system Road | 1 | 5,174 | 0.24 | 0.24 | Assumes 5,174 feet of decommissioned FR 5519 would be improved from 12 feet to a width of 14 feet. |
| Newly Constructed Temporary Bypass Road (FR 5519 to Claim Boundary) | 1 | 1,109 | 0.59 | 0.59 | Assumes 1,109 feet of new temporary bypass road would be constructed to a maximum width of 14 feet. Assumes an average width of 23 feet of disturbance including cut and fill area (see Drill Area B above for the remainder of this road within the claim boundary). |
| Turnouts | 1 | N/A | 0.04 | 0.04 | One turnout is proposed along FR 5519 for increased traffic efficiency and safety. |
| **Total for Bypass Road** | -- | -- | -- | **0.87** | |
| **Total for Project Area** | -- | -- | -- | **10.06** | |

Safety, sight distance, grade, topography, anticipated traffic flow, and scenery resource management concerns were considered in determining the maximum road width for specific road segments. Running surfaces along all improved and newly constructed temporary access roads would be all-weather type, single lane, with a width of up to 14 feet. Timing of road construction for each of the road segments would depend on the drilling schedule, topographic constraints, weather conditions, and seasonal constraints.

Proposed improvements to existing roads would involve the use of primarily a motor grader and dozer. Construction of the new temporary bypass road would involve the use of heavy equipment, which would include, but not necessarily be limited to, a dozer, motor grader, excavator, and several dump trucks. New road construction would typically begin with stripping and stockpiling topsoil. The top 4 to 6 inches of topsoil material suitable for plant growth would be removed from the road prism and windrowed along the edge of the road and stored for later redistribution. Following vegetation and topsoil removal, the road would be constructed using standard cut-and-fill techniques to minimize the volume of earthwork necessary. This would be followed by construction of reinforced rolling dips and grade dips where feasible to provide a smooth travel-way surface, and installation of straw wattles (containing certified weed-free straw) and erosion control matting on cut and fill slopes, where needed.

Construction of the proposed new temporary bypass road is expected to take approximately 2 to 3 weeks to complete. The new temporary bypass road would be reclaimed by Arizona Standard prior to completion of the Project.

Trees proposed to be removed along improved and newly constructed temporary access roads that are equal to or greater than 5-inch diameter-at-breast-height (dbh) or 5-inch diameter root collar (drc) would be purchased from the CNF through a timber sales contract. All trees less than 5-inch dbh or drc that are proposed to be removed would be cut and stockpiled along with other woody debris and slash along segments of FR 215, FR 4685, FR 4701, FR 5519, and along the newly constructed temporary bypass road **(Exhibits 9 -9g)**. All non-merchantable timber would later be shredded or scattered back across the road prism during final reclamation of all newly constructed roads. For purposes of this PoO it is estimated that up to 180 trees equal to or greater than 5-inch dbh or dcr will be removed as a result of implementation of the proposed Project. In all cases, trees requiring removal and areas where trees and other woody debris would be stockpiled would be marked for approval by the CNF before action is taken.

All improved and newly constructed temporary roads would be constructed with appropriate, adequate drainage and erosion control features (e.g., cut and fill slope and drainage ditch stabilization, and relief and drainage culverts). Where needed, road base or gravel would be placed on improved and newly constructed roads to provide a stable travel-way surface. Aggregate for road surfacing would be obtained from existing, permitted sources outside of CNF lands. Aggregate would be of sufficient size, type, and amount to allow all weather access and to help minimize fugitive dust.

Revegetation of road edges, drainage ditches, and cut-and-fill slopes would help stabilize exposed soil and reduce sediment loss, growth of noxious weeds, and maintenance costs while minimizing impacts to scenic quality, water quality, and wildlife forage and cover. To ensure successful growth of seeded plants, topsoil would be stripped and stockpiled during construction of new roads and upgrades to decommissioned roads and later re-spread on cut slopes, fill slopes, and borrow ditches during final reclamation prior to seeding. Topsoil would be stockpiled in designated areas along segments of FR 215, FR 4685, FR 4701, administratively decommissioned FR 4700, administratively decommissioned FR 4698, and administratively decommissioned FR 5519, and in areas of the newly constructed bypass road **(Exhibits 9 -9g).**

Improved and newly constructed roads would be designed to allow drainage runoff in a manner that would minimize erosion. Drainage control would be ensured over the entire road prism through the use of drainage dips, natural rolling topography, ditch turnouts, or culverts. Culverts, drainage crossings, and other controls would be designed for a storm frequency of 10-years or greater, with an allowable head of one foot at the pipe inlet. Culverts would not be less than 18 inches in diameter and will be sized according to hydraulic requirements. To the extent practicable, streams would be crossed at right angles and on as gentle slope as possible. Crossings would be installed in a manner that would maintain stable channel conditions and favorable erosion control. Sedimentation devices would be used along roads and drill locations as directed by the CNF responsible official. Devices may include, but are not limited to silt fences, excelsior bales, straw wattles (containing certified weed-free straw), etc.

Access roads may be closed for short periods of time to accommodate oversized/overweight vehicles, or to accommodate traffic volumes safely. A Supervisor's Order will be required for road closures greater than one hour in duration. Traffic control will be provided by Arizona Standard during all phases of the operation. No permanent or long-term road closures are proposed for any of the existing roads within the Project Area.

## 3.5 Drilling Areas

Arizona Standard is seeking approval for up to 30 individual drill pads as part of the proposed drilling program. As previously mentioned, three primary drill areas (Drill Areas A, B, and C) have been identified in the field and are shown in **Exhibit 4**. For purposes of analysis in this PoO, it can be assumed that the number of drill sites within each drill area is proportional to the length of road within these areas. As such, it is estimated that approximately 2, 14, and 14 drill sites will be located within Drill Areas A, B, and C, respectively. However, it should be noted that the location of individual drill sites has not yet been determined on the ground and Arizona Standard reserves the right to change the location and number of drill sites as information from drilling become available in real time. Based on efficiencies in mobilization of personnel and equipment and other considerations, it is anticipated that drilling will proceed sequentially from one drill area to another rather than drilling in multiple drill areas concurrently.

The drill rig and all other large equipment will be brought in on a lowboy tractor trailer using the proposed access route as far as they can reasonably go on these roads. From there, the drill rigs

will self-propel to the individual drill sites. Trucks or trailers carrying the remaining support equipment will also be brought into the site along the proposed access routes. All vehicle traffic, including the drillers' daily travel, will use these routes, as well.

Traffic control near each of the drill sites will include a visitor introduction sign warning of heavy equipment posted at both ends of the drill site, at increments of 250 and 2,000 feet from the site in both directions. All road signs will be placed and in compliance with the Manual on Uniform Traffic Control Devices (MUTCD), and Forest Service "Sign and Poster Guidelines, EM 7100-15".

In addition, a safety fence will be built to separate the drill site from the traffic lane where public access is preserved within the existing road right-of-way. If needed, such as in the event of the movement of a large piece of equipment near the drill site, a spotter will direct traffic for safety. All equipment, when not in use, would be parked at one of the two proposed laydown yards (see section below) **(Exhibit 4).**

## 3.6 Laydown Yards

Two laydown yards would be constructed for the secure storage of supplies and equipment used for the proposed exploration program in two of the three drilling areas. One of the laydown yards would be located in Drill Area B within the SW ¼ Section 32, T22S, R16E, near the junction of FR 812 and FR 4685 (**see Exhibit 4 and Exhibit 9c)**. This laydown yard would be constructed to dimensions of roughly 270 feet long by 130 feet wide and approximately 0.76 acres in size. A second smaller laydown yard would be located in Drill Area C within the SE ¼ Section 6, T23S, R16E near the junction of FR 4701 and administratively decommissioned FR 5551 **(see Exhibit 4 and Exhibit 9f)**. This laydown yard would be constructed to dimensions of roughly 200 feet long x 80 feet wide and approximately 0.22 acres in size.

In addition to providing a secure area for the storage of equipment and drilling supplies, each laydown yard would also contain up to five central reserve storage tanks, each with a 3,500-gallon capacity (total 17,500 gallons). The tanks would be connected with a 2-inch diameter rubber suction house. Two Deutz/Hatz - 2 Cylinder, 15 horsepower (HP) (or similar manufacturer specification) station water pumps would be connected to the storage tanks and would transport water through a 1-inch inside diameter (ID) Armor Belt Piranha (or similar manufacturer specification) hose uphill to nearby drill sites and secondary water tanks located at higher elevation sites. Water from these secondary tanks will then supply water via gravity to the individual drill sites via the system of water distribution hoses. One station water pump will be needed to supply water to each of the active drill sites. Specific information on water pump and hose specifications and installation is provided in **Section 3.12** below.

## 3.7 Secondary Water Storage Areas

Up to five additional secondary water storage tanks (each with a 3,500-gallon capacity) would be distributed at various locations along the proposed access roads. These storage tanks would

receive water from the primary tanks at the laydown yards and would supply water via gravity to the individual drill sites via the system of water distribution hoses. The location of these secondary water storage areas and water lines are shown in **Exhibit 4**.

## 3.8 General Discussion of Exploratory Drilling Methods

The two primary drilling methods used for mineral exploration on the proposed drilling program include reverse circulation (RC) drilling and diamond core drilling. These two methods are briefly summarized below.

### 3.8.1 Reverse Circulation (RC) Drilling

RC drilling employs a downhole compressed air powered pneumatic reciprocating piston known as a downhole hammer, which drives a drill bit (typically more than 4.5 inches in diameter) with round protruding tungsten-carbide buttons that can cut hard rock. The drill bit is mounted at the end of a hollow, dual wall drill pipe, through which compressed air is pumped down the hole in the outer chamber of the dual wall drill piper to power the drill bit. Rock cuttings are then returned to the surface via the inner chamber of the dual wall drill pipe, propelled upward by air pressure **(Exhibit 10).**

At the initiation of a new hole, a surface casing may be installed to prevent unconsolidated material from collapsing into the hole. Surface casings are typically greater than 6 inches in diameter, and 20 feet in length, but may extend to approximately 100 feet deep, depending on the depth and stability of the surface soil and rock formations. The casing would consist of a string of steel pipes into the drill hole from the bottom of the hole to the surface as the hole deepens. Casing would be set in the hole one joint at a time and would be flush threaded or full circumferential welds, to connect each joint. Surface casings for temporary boreholes are generally not cement grouted into place. Where competent bedrock is exposed at surface, surface-casings may not be required for borehole stabilization.

Air compressors and boosters used in RC drilling are generally mounted on auxiliary vehicles and are connected to the drill rig by high-pressure hoses via a multi-valve manifold. Air compressors will be appropriately sized based on the target depth of the drill hole and multiple compressors may be used in tandem. The air compressors will likely provide 800 to 1,300 cubic feet per minute of air at pressures of approximately 300 to 350 pounds per square inch.

The RC drilling process generally produces dry rock cuttings, as the compressed air that drives the drill bit is also pumped ahead of the advancing drill bit, thus drying the rock. When the cuttings reach the surface, they are directed through a hose into a cyclone that acts as both a dust and sample collector. The rock cuttings are then sampled using a sample splitter and all the sampled and unsampled cuttings are appropriately bagged and transported offsite for geochemical analysis. Although RC drilling is air-powered, water, or drilling mud may also be injected when collaring a new hole, to reduce dust, and to assist in lifting cuttings to the surface. Additionally,

any groundwater produced in the boring is removed by the compressed air stream along with the rock fragments and brought to the surface.

### 3.8.2 Diamond Core Drilling

Unlike RC drilling, which uses a hammer bit to produces rock cuttings, diamond core drilling uses a hollow drill bit that produces a solid core of rock from within. The diameter of the borehole from core drilling is generally smaller than RC methods (typically less than 4 inches in diameter). By withdrawing a small diameter core of rock from the drilling process, geologists can analyze the core and conduct petrologic, structural, and geochemical investigations. The rock cores are appropriately boxed, crated, and transported offsite for additional analysis.

The diamond drill bit comprises a short steel shank with a cutting head using natural or man-made diamonds as the cutting medium **(Exhibit 11)**. In softer sedimentary formations other cutting elements may be used, such as tungsten-carbide and polycrystalline diamond compacts. The drill bit is mounted onto a core barrel which is attached to the drill stem, which is turned by a rotary drill. Water is injected into the drill stem and is used to reduce the heat produced as the drill bit cuts the rock formations and remove the fine rock cuttings from the borehole.

As the drill bit advances, a cylindrical core of rock progressively fills a double-tube core barrel immediately above the drill bit. Core samples are periodically recovered by lowering a cable with an overshot down the drill string, attaching it to the top of the inner tube (inner barrel) of the core barrel, and winching it to the surface **(Exhibit 11).** The inner barrel is fitted with a core lifter mechanism to prevent core from dropping out during recovery. While the core sections are being removed from the inner tube and placed in core trays, a replacement inner tube is lowered into the hole so that drilling can recommence. This is referred to as the wireline system.

Under this system, penetration is much slower than other drilling methods because of the hardness of the rocks usually encountered and the time involved in retrieving core at depth. Diamond drilling can produce upwards of 100 feet of core per shift depending on rock conditions and penetration rates. If ground conditions deteriorate or advancement rates fall precipitously with drilling depth, the driller may reduce the size of the drill bit and continue drilling a smaller diameter hole.

## 3.9 Drilling Methods and Procedures Under the Proposed Drilling Program

Arizona Standard intends to operate up to two drill rigs at any time. The drills would be operated up to 24 hours per day (two 12-hour rotational shifts), up to 7 days a week, and would require approximately 36 people per day, while drilling from two rigs, inclusive of both day and night shifts.

Under the proposed drilling program, two drilling methods would be utilized, namely RC and diamond core drilling, which may be used in isolation or in tandem. Multiple drilling scenarios

are envisioned, and the methods and procedures used during the proposed drilling program will be largely based on rock conditions, hydrologic conditions, and duration of drilling. The following sections outline the proposed drilling scenarios.

### 3.9.1 Scenario 1 – Diamond Core Drilling as a Stand-Alone

Under this scenario, diamond core drilling, as described in Section 3.8.2, would be employed as a standalone technique. An approximate 3.75-inch diameter vertical core hole would be drilled from a diamond drill core rig and a continuous sample of cored rock collected from the base of the surface casing (typically less than 100 feet deep) to the targeted mineralized zone.

Coring drill holes will have depths of up to approximately 6,500 feet from the surface. Typically, a diamond drill can complete from 65 to 250-feet per day of drilling depending on rock conditions and depth. Up to approximately two months can be spent drilling each hole, depending on depth, and approximately six more days will be required to plug each drill hole and mobilize into and out of each drill site. The drilling time will be dependent on drilling conditions and drill penetration rates.

Upon completion of the drilling, the hole would be filled with "Wyoming grade" bentonite mud (with a permeability of no more than $1x10^{-9}$ cm/s) which would serve as a permanent seal, the surface steel casing removed, and a surface cement plug (up to 20 feet in depth) installed as a permanent drill hole cap. These borehole abandonment procedures would conform to Arizona Department of Water Quality (ADEQ) (R 12-15-811, 816 and 817) regulations, and ASTM Designation: D5299/D5299M – 18 *Standard Guide for Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities (as revised).*

### 3.9.2 Scenario 2 – Diamond Core Drilling as a Stand-Alone with Additional Splay Holes

Under this scenario, diamond core drilling, as described in Section 3.8.2, would be employed as a standalone technique. This would involve using diamond core drilling from the surface to the mineralized zone and, if warranted, one or multiple additional splay ("daughter") holes would be directionally drilled from the original ("mother") hole.

To create a daughter hole from the original mother hole, the drill rods would be withdrawn a certain distance and the lower portion of the hole filled with bentonite mud and a cement plug (up to 20 feet in depth) would be installed as a permanent intra-hole cap. The daughter hole would then be directionally steered to a new trajectory using a down-hole steering tool, such as a 'Devicor.' These types of tools utilize mechanical steering techniques and do not require extra pumps or equipment. If more than one daughter hole is completed from a mother hole, each daughter hole would be initiated from sequentially shallower depths such that each of the prior daughter holes are appropriately filled with Wyoming grade bentonite mud and have a cement cap installed.

Under this scenario, the mother hole would likely be open for periods in excess of several months. To minimize the potential for vertical migration of groundwater flow between rock formations within the bore hole, the mother hole would be filled with Wyoming grade bentonite mud. Upon re-entry of the borehole, the bentonite would be removed using a double-tube core barrel to the surface of the drill site.

Upon completion of the drilling, the mother hole and any open daughter holes would be filled with Wyoming grade bentonite mud (with a permeability of no more than $1x10^{-9}$ cm/s) as a permanent seal, the surface casing removed, and a surface cement plug (up to 20 feet in depth) installed as a permanent drill hole cap. These borehole abandonment procedures would conform to ADEQ (R 12-15-811, 816 and 817) regulations, and ASTM Designation: D5299/D5299M – 17 *Standard Guide for Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities (as revised).*

### 3.9.3 Scenario 3 – Reverse-Circulation (RC) Drilling as a Stand-Alone

Under this scenario, RC drilling, as described in Section 3.8.1, would be employed as a standalone technique. This would involve using RC drilling to a depth of up to 2,500 feet from the surface.

Upon completion of the drilling, the hole would be filled with Wyoming grade bentonite mud as a permanent seal, the surface casing removed, and a surface cement plug (up to 20 feet in depth) installed as a permanent drill hole cap. These borehole abandonment procedures would conform to ADEQ (R 12-15-811, 816 and 817) regulations, and ASTM Designation: D5299/D5299M – 18 *Standard Guide for Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities (as revised)*.

### 3.9.4 Scenario 4 – Reverse-Circulation (RC) Drilling with Diamond Core Drilling

Under this scenario, RC drilling, as described in Section 3.8.1, would be employed to a depth of up to 2,500 feet, at which point, a diamond core drill rig would finish the hole to its targeted completion depth. Drilling would utilize a conventional 6.25-inch diameter drill bit and will conform to ADEQ (R 12-15-811, 816 and 817) regulations **(Exhibit 12).** A surface casing will be set, where necessary, to depths of up to 100 feet to stabilize and prevent surface degradation of the drill hole.

The drill hole will be advanced to the targeted depth of the reverse-circulation portion of the hole and once completed, a 5.25- to 4.85-inch diameter low-carbon steel casing would be installed to the bottom of the hole **(Exhibit 12).** Placement of casing would entail the insertion of a series of approximately 20-foot lengths of steel pipe into the drill hole from the bottom of the hole to the surface as the hole deepens. Casing would be set in the hole one pipe length at a time and would be joined with water-tight flush threaded joints, to connect each casing segment. The casing would be sized such that a minimum of 1-inch of annular space was provided between the outer wall of the casing and the rock surface of the borehole. The casing would be partially held in

place by pumping a slurry of a bentonite clay-water mixture into the casing head, down through the casing string to the bottom, and then up through the 1-inch annular space between the casing and the borehole **(Exhibit 12)**. As with the other scenarios, the drilling mud would be composed of a Wyoming grade bentonite mud with a permeability of no more than $1x10^{-9}$ cm/s.

The pumping of the Wyoming grade bentonite mud around the casing pipe would restore the original isolation of formations by posing a barrier to the vertical migration of groundwater flow between rock formations within the bore hole. It would also protect the bore hole by preventing formation pressures from loosening weak rock sections from damaging the casing and also retard corrosion by minimizing contact between the casing and corrosive formation fluids that may be present.

Following this initial stage, the RC drill will exit the hole and a diamond drilling rig will re-enter the cased pre-collar using a 3.75-inch, or smaller, diameter diamond drill bit. The diamond drilling would commence from the bottom of the pre-collar and extend to the targeted hole depth **(Exhibit 12)**.

Upon completion of the drilling, the hole would be filled with Wyoming grade bentonite mud as a permanent seal, the surface and pre-collar casings removed, and a surface cement plug (up to 20 feet in depth) installed as a permanent drill hole cap. These borehole abandonment procedures would conform to ADEQ (R 12-15-811, 816 and 817) regulations, and ASTM Designation: D5299/D5299M – 18 *Standard Guide for Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities (as revised).*

### 3.9.5 Scenario 5 – Reverse-Circulation (RC) Drilling with Multiple Diamond Drill Splays

Should the initial drilling under Scenario 4 warrant additional diamond drill daughter holes, the drilling procedures would need to be modified, as the mother hole would likely be open for periods in excess of three months. Under this scenario, drilling of the reverse-circulation pre-collar would occur per Scenario 4, but the size and material of the pre-collar casing would be augmented. To prevent degradation of the casing material, a Fiberglass Reinforced Pipe (FRP) or stainless steel (either type 304 or type 316) casing would be utilized, which would prevent or retard corrosion under variable conditions for an extended period of time. The pre-collar casing would be sized such that a minimum of 1-inch of annular space is provided between the outer wall of the casing and the rock surface. This annular space would be filled with Wyoming grade bentonite mud with a permeability of no more than 1x10-9 cm/s. The pumping of the bentonite mud around the casing pipe would restore the original isolation of formations by posing a barrier to the vertical migration of groundwater flow between rock formations within the bore hole.

If warranted, additional daughter holes would be drilled from the diamond core (the smaller diameter) portion of the mother hole (i.e., not within the RC pre-collar). To create a daughter hole from the original diamond core mother hole, the drill rods would be withdrawn a certain distance and the lower portion of the hole filled with a Wyoming grade bentonite mud and a

cement plug (up to 20 feet in depth) would be installed as a permanent intra-hole cap. The daughter hole would then be directionally steered to a new trajectory using a down-hole steering tool, such as a 'Devicor.' If more than one daughter hole is completed from the mother hole, each daughter hole would be initiated from sequentially shallower depths such that each of the prior daughter holes are appropriately filled with bentonite mud and have a cement cap installed.

As with the other scenarios, upon completion of the drilling, the hole would be filled with Wyoming grade bentonite mud as a permanent seal, the surface and pre-collar casing removed, and a surface cement plug (up to 20 feet in depth) installed as a permanent drill hole cap. These borehole abandonment procedures would conform to ADEQ (R 12-15-811, 816 and 817) regulations, and ASTM Designation: D5299/D5299M – 18 *Standard Guide for Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities (as revised).*

## 3.10 Geophysical IP and DHEM Surveys

As part of an ongoing exploration program, down-hole geophysical Induced Potential (IP) and Down Hole Electromagnetic (DHEM) surveys will be undertaken in an effort to target response from deeply buried zones of mineralization. With this method, the IP survey sends a weak electrical charge from a node source placed on the ground. This electrical signal is simultaneously measured by a receiving node that reflects natural electrical response of the rock. The IP method is non-invasive, requiring only the use of a monitored portable generator located at safe distance from the survey grid. Specifically, the down drill hole IP survey method employs extending a single source node down a completed drill hole and a series of receiving nodes down separate adjacent drill holes to focus the collection of the IP signal nearer the mineralized horizon source.

DHEM is a geophysical survey design that uses a drill hole probe to find conductors that were missed during drilling. The energy source consists of an ungrounded loop of wire laid out on the surface normally in a square shape (often 100 meter or 200 meters per side) close to the drill hole. Electrical current is supplied in the wire via transmitter powered by a generator. An electromagnetic probe is then placed down the drill hole to measure the magnetic field induced by the surface electromagnetic loop. Readings are taken at regular intervals down the hole during the off time of the transmitter. All the readings are taken at the drill site. There are no metal stakes or holes dug for the survey.

Upon completion of the down drill hole IP and/or DHEM surveys, all drill holes will be capped with a temporary surface cap until analysis have been completed for each hole. Upon completion of analysis, a determination will be made as to whether to re-enter a particular drill hole in order to complete auxiliary drill holes. This will involve using the original hole as a guide for a secondary, down-hole splay/spur drill hole. After final completion of secondary drilling and/or down-hole geophysical surveys, final permanent hole abandonment procedure will be completed and a final permanent cap will be installed for each drill hole. These borehole abandonment procedures would conform to ADEQ (R 12-15-811, 816 and 817) regulations, and ASTM Designation: D5299/D5299M – 18 *Standard Guide for Decommissioning of Groundwater Wells,*

*Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities (as revised).*

## 3.11 Proposed Design Features

Drill sites will be situated within or near the road prism of existing, improved, and newly constructed access roads to the greatest extent practicable in order to minimize the amount of disturbance. A local contractor would be used to construct each drill site using a small "Kubota" style brushing excavator. At each drill site, minor clearing and tree removal may be necessary to accommodate proper orientation of the drill rig and provide for safe operation and access. Trees proposed to be removed from drill pads and along access roads that are equal to or greater than 5-inch diameter-at-breast-height (dbh) or 5-inch diameter root collar (drc) would be purchased from the CNF through a timber sales contract. All trees greater than 5-inch dbh or drc that are proposed to be removed would be logged and "decked" adjacent to the drill site and trees less than 5-inch dbh or drc along with other woody debris and slash would be stockpiled adjacent to the drill site and later be shredded or scattered back across the site during final reclamation. For purposes of this PoO, it is estimated that up to 180 trees equal to or greater than 5-inch dbh or dcr will be removed as a result of implementation of the proposed Project. In all cases, trees requiring removal would be marked for approval by the CNF before action is taken.

Dimensions, orientation, and equipment layouts for each drill site may vary depending on the terrain and other surface requirements. A typical drill site will be constructed parallel to the road and measure approximately 100 feet long by 40 feet wide, including the area within the road prism **(Exhibit 13)**. However, in some cases, it may be necessary to construct the drill site perpendicular to the road **(Exhibit 14)** or on sloping ground. For drill sites located on sloping ground, the drill pad would be constructed using standard cut-and-fill techniques to create a level pad for the drill rig, and graded surface for the support equipment. Fill slopes, where necessary, would be compacted and maintained to maximize slope stability and minimize erosion. Where cut and fill slopes are required, they would be constructed at no steeper than 3:1 ratio. The exact location and amount of material that will be used for cut and fill is based on site-specific evaluation of slope steepness, height of cuts, and soil characteristics and will be determined during the engineering and construction phase of each drill pad.

Each drill site will include one or more borehole locations, a drill rig, a pipe/drill rod trailer, pad access and parking areas for support vehicles, up to three sumps, core press, mud mixer, two water storage tanks, drilling mud bags and additives, spill supplies, personal supplies and gear, spare parts, tools, lighting system, and a portable toilet. No external power sources will be required, as light plants with internal power sources will be used on the drill sites.

During the drilling process, drilling fluids would be introduced to keep the holes open, lubricate the drill bit, and circulate rock drill cuttings to the surface via the drilled hole. These fluids would consist primarily of water with bentonite clay and organic polymer drilling additives used to increase the density and efficiency of drill cutting removal. Returned drilling fluids would be contained within the immediate vicinity of the drill hole. A temporary containment sump

averaging approximately 10 feet wide by 15 feet long by 4 feet deep would be installed at each drill site to collect drill cuttings and fluids. The sump would be located within the proposed drill pad next to the drill hole and lined with an impermeable liner to capture the drill mud and cuttings. A hydro-vac will be used to remove materials from the sump, as needed. Sump placement will be based on depth to bedrock and proximity to nearby drainages and may require relocation to a more suitable area. Drilling returns collecting in the sumps would consist of a mixture of drill muds and rock cuttings that are generally fine in grain size. Between 200 and 1,500 gallons of clay mud and drill cuttings are anticipated to remain at the completion of drilling at each pad site. This material would be allowed to evaporate and dry to facilitate removal and off- site disposal outside of the CNF.

After the mud and cuttings and liners have been removed, the temporary sumps would be reclaimed by backfilling with locally stockpiled or borrow material. In the event a sump cannot be constructed as a result of shallow bedrock, Arizona Standard may elect to use portable tanks to contain and manage the drill cuttings along with fluid recirculation instead of in-ground sumps. If portable tanks are used, the drill cuttings will be removed with a hydro-vac and transported off-site for disposal.

Drill fluid management and mud mixing may be facilitated using a closed loop "Solid Recovery Unit" (SRU) system designed to reduce traditional environmental impacts caused by drill sump construction and operation. The SRU system improves efficiency and reduces the environmental impact of drilling operations by circulating fluids directly from the drill collar through the SRU's cuttings removal processes. Drill cuttings are removed via centrifuge and cleaned drilling fluids are then returned to the borehole. The unit is mobile and incorporates a mixing chamber and weir system, which enables drilling fluids to be managed by the drill crew. The SRU units will be used if and when available; however, it is expected that the majority of sites will be drilled using a conventual containment sump constructed to collect drill cuttings and fluids.

Cores or rock chip samples from the RC drilling removed from the sites will be taken to one of the laydown yards and from there transported by vehicle outside of the CNF for final logging, sampling, and storage. The drill sites will be maintained in a neat, orderly fashion with fuel and oils stored in a dedicated containment area to prevent accidental release. During reclamation, all materials, supplies, and associated items transported to the drill sites for use will be removed. Arizona Standard will provide the CNF a complete list and safety data sheets for all drilling fluids, fuels, lubricants, and other potentially hazardous materials to be used on the drill sites.

## 3.12 Water Requirements for Drilling

Water needed for use in drilling the exploration drill holes will be obtained from one or more regulated public water sources located outside of the CNF and transported in water trucks by licensed haulers to primary water storage tanks located at each of the laydown yards. Confirmed water sources include, but are not limited to, the City of Nogales (Kino Springs), Santa Cruz County (Nogales International Airport), and the City of Sonoita. The use of regulated public

water sources would ensure that it meets both federal and state water quality standards prior to being used.

Water will be stored in up to five central reserve storage tanks, at each laydown area, each with a 3,500-gallon capacity (total 17,500 gallons). The tanks would be connected with a 2-inch diameter rubber suction house. Two Deutz/Hatz - 2 Cylinder 15 HP (or similar) station water pumps would be connected to the storage tanks and would transport water through a 1-inch ID Armor Belt Piranha (or similar manufacturer specification) hose uphill to nearby drill sites and secondary water tanks located at higher elevation sites. Water from these secondary tanks will then supply water via gravity to the individual drill sites via the system of water distribution hoses **(see Exhibit 4)**. Water will be stored on each drill pad in up to five 3,500-gallon tanks **(see Exhibits 13 and 14)**. Water consumption for drilling at each site is estimated at 12,500 gallons/day. Actual water consumption may be less depending on actual need, days of drilling required, and actual duration of drilling each day. An estimated 1,500 to 2,000 gallons of additional water would be used daily on the access roads for dust control.

Water distribution hoses will be installed along the shoulder of the road from spooled reels with lengths ranging from 250 to 1,000 feet. The hoses are constructed with a synthetic liner reinforcement and protected and encapsulated in an extruded through the weave nitrile/pvc tube. The hoses are abrasion resistant, as well as heat and cold resistant with a 3,000 pound-per-square inch (PSI) operating pressure and 7,500 PSI rated burst pressure.

Couplings and high-pressure valves (also rated at 3,000 PSI operating pressure and 7,500 PSI burst pressure) will be installed along the hoses to shut off water flow from individual segments for repairs, if necessary. The expected pump rate is for these hoses is 10-20 gallons per minute and not to exceed 800 PSI. A meter will also be installed at each pump, each water storage tank, and at water storage tanks at the drill site. Pressure readings at each meter will be evaluated and logged on a regular basis to ensure there are no potential leaks in the system and that the water pumps are operating as expected. Since the water distribution hoses will be located along the shoulder of the road, they will also be easily monitored by personnel in the area, which would serve as a secondary source of leak detection. Issues such as freezing are not expected to be a problem; however, in the unlikely event that temperatures are well below normal, it may be necessary to install heaters along the water distribution hoses at 50 to 500-foot intervals, as appropriate.

While **Table 3** shows an aggregate of over 44,425 feet of water lines associated with all three drill areas, it should be noted that only a fraction of this total is likely to be deployed at any given time. Water distribution hoses would be installed and removed in a sequential manner along with the drilling process, moving from one area to another. Per purposes of analysis in this PoO, it is assumed that no more than 13,200 feet (2.5 miles) of water distribution hoses would be deployed at any given time.

Each pump would be equipped with a 2.5-gallon fuel tank with a 10-12 hour run time. Pumps would be mounted on skids and located inside a secondary containment area within a lined berm

to prevent any spillage. Spillage containment and clean up kits or materials will be provided for each water pump set-up to handle at least 10 gallons of fuel which is four times the capacity of the fuel tank and twice the estimated fuel that would be stored at that location. In addition, each vehicle will carry a spill kit and each drill site would be equipped with a large industrial spill kit capable of handling twice the total amount of fuel located at each drill site. In addition, repair parts for pumps and hoses would be available and stored at the laydown yards.

## 3.13 Workforce Requirements

Under the proposed drilling program, drilling would occur 24 hours per day (two 12-hour rotational shifts), 7 days a week, and would require up to 41 people per day, while drilling from two rigs, inclusive of both day and night shifts. A workforce breakdown of personnel required during the proposed drilling program is shown in **Table 4.**

**Table 4: Estimated Workforce Requirements for the Proposed Drilling Program**

| Company/ Affiliation | Labor Category | No. Personnel per Shift | Day/Night Shift | No. Personnel per 24-Hour Day |
|---|---|---|---|---|
| Arizona Standard | Geologist | 1 | Day (on call evenings) | 1 |
| | Drill Supervisor | 1 | Day (on call evenings) | 1 |
| | Helper | 1 | Day | 1 |
| Drilling Contractor | Drill Lead (Drill 1) | 1 | Day & Night | 2 |
| | Drill Lead (Drill 2) | 1 | Day & Night | 2 |
| | Helpers (Drill 1) | 2 | Day & Night | 4 |
| | Helpers (Drill 2) | 2 | Day & Night | 4 |
| | Drill Supervisor | 1 | Day (on call evenings) | 1 |
| | Mechanic | 1 | On Call 24/7 | 1 |
| | Safety Supervisor | 1 | Periodic Inspections | 1 |
| | Service Crew | 2 | Day & Night | 4 |
| | Laborers | 4 | Day | 4 |
| Construction Contractor | Dozer Operator | 1 | Day | 1 |
| | Excavator Operator | 1 | Day | 1 |
| | Water Truck Driver | 3 | Day | 3 |
| | Hydro-Vac Driver | 1 | Day | 1 |
| | Grader Operator | 1 | Day | 1 |
| | Tractor-Trailer (Flatbed) Driver | 1 | Day (periodic during mobilization & demobilization) | 1 |
| | Spotter | 1 | Day | 1 |

| | | | | |
|---|---|---|---|---|
| | Security Guard | 1 | Day & Night | 2 |
| | Porta-potty Hydro-Vac Driver | 1 | Day (periodic) | 1 |
| Reclamation Contractor | Reclamation Foreman | 1 | Day (as required during drill pad & road reclamation) | 1 |
| | Laborers | 2 | Day (as required during drill pad & road reclamation) | 2 |
| **TOTAL** | -- | **32*** | -- | **41*** |

*Number includes up to 7 part-time workers as needed.

## 3.14 Vehicles and Equipment

Arizona Standard intends to operate up to two drill rigs at any time. The drills would be operated up to 24 hours per day (two 12-hour rotational shifts), up to 7 days a week. Drilling personnel will access the site in four-wheel drive pickup trucks, or similar passenger vehicles. The equipment to be stationed for use at the drill pads is shown in a typical site layout in **Exhibits 13 and 14**. A list of vehicles and equipment to be used over the course of the proposed drilling program is provided in **Table 5** along with the size/capacity, use-frequency, and period of use for the specific equipment types.

**Table 5: Types and Number of Equipment/Vehicles for the Proposed Drilling Program**

| Vehicles/ Equipment | Size/ Capacity | Max No. Units | Frequency of Use | Period of Use |
|---|---|---|---|---|
| **Earthwork Equipment** | | | | |
| Excavator | Up to 50,000 lbs | 1 | Daily - 8 hours per day during road and pad construction | Road and pad construction and reclamation |
| Bulldozer (D-6) | Up to 55,000 lbs | 1 | Daily - 10 hours per day during road and pad construction | Road and pad construction and reclamation |
| Loader | Up to 30,000 lbs | 1 | Daily - 10 hours per day during road and pad construction | Road and pad construction and reclamation. |
| Road grader | Up to 45,000 lbs | 1 | Daily - 10 hours per day during road and pad construction and as needed for periodic maintenance of roads | Entire drilling program |
| Dump truck | Up to 40,000 lbs | 2 | Daily - 10 hours per day during road and pad construction | Road and pad construction and reclamation |

| Vehicles/ Equipment | Size/ Capacity | Max No. Units | Frequency of Use | Period of Use |
|---|---|---|---|---|
| Tractor w/disking attachments | N/A | 1 | As needed for soil ripping, decompaction, and seedbed preparation | Reclamation |
| **Commercial Truck - Multi Axle** | | | | |
| Water truck | Up to 4,000 gal | 3 | As needed - daily use | Entire drilling program |
| Service/fuel truck | 3/4 ton | 1 | Daily use | Entire drilling program |
| Hydro-vac | N/A | 1 | As needed during drilling - approximately one trip per week or less | Entire drilling program |
| Rod truck | N/A | 2 | One per active drill rig | Entire drilling program |
| Tractor/trailer truck | Up to 50,000 lbs | 4 | As needed for delivery and pickup of large earthwork equipment | Road and pad construction and reclamation |
| **Personal Vehicles** | | | | |
| 4-WD pickups | 1/2 - 1 ton | 6 | Daily use | Entire drilling program |
| **Drilling Rigs** | | | | |
| Drill rigs (Diamond core and/or RC) | Track or tire mounted (480 hp) | 2 | 24 / 7 | Entire drilling program |
| **Other Equipment** | | | | |
| Chainsaws | 3.5 hp | 2 | As needed. | Construction activities. |
| Light plant | 16 hp | 2 | One per operating drill - used at night | Entire drilling program |
| Water pumps | 15 hp | 4 | As needed during drilling | Entire drilling program |
| Water storage tanks | 3,500 gal | 15 | 24/7 | Entire drilling program |
| Diesel generator | 95 hp | 2 | As needed during drilling | Entire drilling program |

| Vehicles/ Equipment | Size/ Capacity | Max No. Units | Frequency of Use | Period of Use |
|---|---|---|---|---|
| Air compressor | 122 hp | 2 | 24/7 during drilling with RC drill | Entire drilling program |
| Hydroseeder | 24 hp | 1 | As needed for seed application | Reclamation |
| Straw blower | 20 hp | 1 | As needed for mulch application | Reclamation |

## 3.15 Structures

No permanent structures will be built. A temporary portable sanitary toilet facility will be placed at each laydown yard and at active drill sites and will be serviced weekly by a contractor who would transport the waste to an approved off-site facility for disposal. A temporary trailer for storage of materials, tools and parts will be located within the laydown area near the junction of FR 812 and FR 4685. All vehicles and equipment will be stored onsite during non-operational periods within the two laydown areas. All temporary structures and equipment will be removed upon completion of work.

# 4.0 ENVIRONMENTAL PROTECTION MEASURES

## 4.1 Air Quality

The Project is not located in an air quality "non-attainment area". The nearest EPA designated non-attainment area is located in Nogales and extends to within approximately 6 miles to the west of the Project Area. The Nogales area is classified as a non-attainment area for $PM_{10}$ (particulate matter 10 microns or less in diameter) and $PM_{2.5}$ (particulate matter 2.5 microns or less in diameter), which are criteria pollutants above the National Ambient Air Quality Standards (NAAQS) of the Clean Air Act (CAA).

Air quality regulations implemented by ADEQ include provisions applicable to construction projects which are considered "temporary sources." A temporary source is defined in the Arizona Administrative Code (AAC), Title 18, Chapter 2, Article 1, Section 101, as a source that is portable and does not qualify as an affected source under the acid deposition rules of the federal CAA. It should be noted that items of equipment (specifically generators and equipment engines) used during construction and drilling activities are generally not subject to State air permitting requirements.

An evaluation of maximum air emission rates and calculation of the Project's Potential to Emit (PTE) for all emission sources was conducted for the proposed Project. Based on the results of

the evaluation, it was determined that none of the emission units exceeded permitting thresholds for criteria pollutants under the CAA. Therefore, the Project would not require an air pollution control permit. Submittals were prepared to ADEQ to receive a source registration for the Project.

Minimal impacts to air quality are expected due to light travel along the existing and newly constructed dirt roads and slow travel speeds. The following environmental protection measures will be implemented to avoid impacts to air quality:

- Timber slash generated as a result of the Project will be minimal. As such, rather than burning, timber slash will be lopped and scattered across disturbed sites after they are reclaimed to prevent erosion, facilitate reclamation, and provide microsites for re-vegetation.

- Drilling-related vehicle traffic will be limited to the required access roads relevant to active drilling locations and related activities.

- Dust suppression activities on the roads using a water truck will be administered as conditions dictate. Should the use of water trucks alone prove inadequate to control dust emissions due to high winds or other circumstances, dust-generating activities will cease until weather conditions improve.

- The speed limit will be 15 mph on all Forest Service roads, improved roads, newly constructed temporary access roads, and as signed on other roads, such as county roads.

- All engines used in the operations will be equipped with the pollution-control equipment provided by the manufacturer (i.e., catalytic converters, mufflers, and/or spark arrestors). To the extent possible, Arizona Standard will attempt to secure Tier III and Tier IV engines for all equipment.

## 4.2 Water Resources

### 4.2.1 Surface Water

The Project Area is located within two 12-digit hydrologic units (HUs); the Middle Sonoita Creek (HU 150503010206) and Harshaw Creek (HU 150503010203) subwatersheds of the larger Sonoita Creek Basin**.** The drainage area of Middle Sonoita Creek and Harshaw Creek subwatersheds is about 62 square miles ($mi^2$) and 33 $mi^2$, respectively.

Major Streams near the Project Area include Flux Canyon, Alum Gulch, Humboldt Canyon, and Harshaw Creek. The primary tributary to the portion of Alum Gulch near the Project Area is Humboldt Canyon, the mouth of which is between the January Adit and the World's Fair Mine. As is typical in an arid climate, these streams are generally intermittent or ephemeral. Field

observations confirm that these streams and their associated tributaries are ephemeral and that groundwater (from springs and mine adits) is the sole source of flow during baseflow conditions for these streams. No flow gaging stations exist on any of these streams.

A hydrologic investigation of a three-mile portion of Harshaw Creek upstream from the Hermosa Mine, found that measured and modeled discharges on the reach varied from 0.75 to 75 cubic feet per second (cfs), and that all of the tributaries to upper Harshaw Creek are ephemeral. A segment of Alum Gulch and all of Harshaw Creek are listed under Category 4a (Impaired Waters with EPA-approved Total Maximum Daily Load) as being impaired (ADEQ 2016). The upper portion of Alum Gulch is impaired for cadmium, copper, zinc, and acidity, while Harshaw Creek is impaired for copper and acidity (ADEQ 2016). A third unnamed ephemeral drainage within The Project Area and west of Alum Gulch, is also listed as impaired for zinc and copper (ADEQ 2016).

As previously described, water needed for use in drilling will be obtained from one or more regulated public water sources located outside of the CNF and transported in water trucks by licensed haulers to primary water storage tanks located at each of the two laydown yards. Obtaining water from a regulated public source would generally ensure that it meets both federal and state water quality standards prior to being used.

Based on a review of soils maps for the Project Area, most soils have a profile of very cobbly loam to very cobbly fine sandy loam and a natural drainage class of well drained with a high runoff class. Given these factors, along with nominal surface disturbance and implementation of stormwater best management practices (BMPs), excessive erosion and surface water runoff is not anticipated.

The proposed Project will be operated in accordance with the requirements of an AZPDES Industrial Stormwater Mining Multi-Sector General Permit (MSGP). Arizona Standard will implement the Stormwater Pollution Prevention Plan (SWPPP) which has been prepared for the Project to minimize and manage stormwater within the Project Area **(Appendix D)**. The SWPPP describes the BMPs to be implemented by Arizona Standard, including sediment/erosion control, good housekeeping, maintenance, inspections, and any required monitoring. SWPPP requirements will be incorporated into all phases of the Project and a copy of the SWPPP will be maintained at the Project site during operations.

In addition, baseline water quality samples will be taken at nearby ephemeral or intermittent water sources prior to any disturbance activities; during drilling, and after the completion of drilling activities to document any changes in baseline water quality conditions in the Project Area. Ephemeral or intermittent water sources and water sources near drill sites will also be visually monitored for sedimentation, drilling fluids, changes in flow rates, and/or the presence of any visible petroleum induced water sheen. **Exhibits 9–9g** show the location of proposed drill areas in relation to existing drainage features.

If sedimentation, drilling fluids, or a petroleum sheen is observed, drilling operations will be immediately suspended until corrective actions can be implemented to prevent the release of solids or fluids. Arizona Standard will then coordinate with the Forest Service to determine the appropriate remedial measures based on site-specific conditions and impacts. In the event of a petroleum sheen, Arizona Standard will immediately place absorbent booms and/or pads to absorb petroleum fluids and minimize downstream impacts. In addition, all equipment will have absorbent pads placed underneath during both operational and non-operational periods to prevent any inadvertent leaking onto the ground surface or nearby surface water resources.

### 4.2.2 Ground Water

The annual water consumption of the Project is estimated to be 16.2 acre-feet/year (ac-ft/yr) and would be derived from one or more regulated public water sources located outside of the CNF. Confirmed water sources include, but are not limited to, the City of Nogales (Kino Springs), Santa Cruz County (Nogales International Airport), and the City of Sonoita. Water obtained from either Kino Springs or Nogales International Airport would be pulled from the Santa Cruz basin, while water obtained from the City of Sonoita would be pulled from the Cienega Creek basin. The estimated total cultural water demand for the Santa Cruz and Cienega Creek basins is 23,800 ac-feet/yr (as of 2001, ADWR 2008a) and 1,300 ac-feet/yr (as of 2005, ADWR 2008b), respectively. The additional incremental increase in water demand of 16.2 ac-ft/yr due to the proposed drilling program represents a 0.07 and 1.2 percent increase in temporary water use within the respective basins of Santa Cruz and Cienega Creek.

While available water for drilling potentially poses a risk to groundwater quality and any subsequently connected surface waters, the drilling supply water will be obtained from one or more regulated public water sources located outside of the CNF and undergo periodic water quality testing to ensure the water source meets all ADEQ aquifer water quality standards and identify any potential contaminants that may be introduced into the system. The use of regulated public water sources would ensure that it meets both federal and ADEQ water quality standards prior to being used.

The proposed Project consists of a mineral exploration drilling program that poses a relatively minimal risk, but nonetheless a potential risk to impact groundwater quality and quantity through potential water exchange between aquifers. Deep boreholes drilled through the groundwater system could create a preferred pathway for groundwater in deeper formations to migrate upward and intermingle with the shallow parts of the system. A potential issue would be a risk of water exchange between aquifers as a result of the proposed drilling program.

Under RC drilling procedures, the casing would be partially held in place by pumping a slurry of Wyoming grade bentonite mud (with a permeability of no more than $1x10^{-9}$ cm/s) into the casing head, down through the casing string to the bottom, and then up through the 1-inch annular space between the casing and the borehole. This procedure would effectively restore the original isolation of formations by posing a barrier to the vertical migration of groundwater flow between rock formations within the bore hole. It would also protect the bore hole by preventing formation

pressures from loosening weak rock sections from damaging the casing and also retard corrosion by minimizing contact between the casing and corrosive formation fluids that may be present.

While it is possible that a small volume of groundwater could move from one aquifer to another or one lithologic unit to another while a boring hole is drilled and open, the period of time will be limited from a few weeks to perhaps several months. To minimize the potential for vertical migration of groundwater flow between rock formations within the bore hole using diamond core drilling procedures, the bore hole would be filled with Wyoming grade bentonite mud (with a permeability of no more than $1x10^{-9}$ cm/s) during periods of inactivity. Upon re-entry of the borehole, the bentonite would be removed using a double-tube core barrel to the surface of the drill site. This would ensure that the boreholes would be effectively sealed to prevent short-term exchange of water between aquifers, or between the surface and the aquifers below.

Although artesian aquifers may be present in the project area, the current understanding of the local hydrogeology indicates that is unlikely these artesian aquifers are under high pressure. Bentonite clay powder and Portland cement would be kept nearby so that the borehole can be quickly abandoned if an artesian aquifer is intercepted. Additionally, the erosion control BMPs (silt fence and certified weed-free straw waddles) would serve to filter run off associated with artesian water.

Upon the conclusion of drilling, the boreholes would be effectively sealed to prevent long-term exchange of water between aquifers, or between the surface and the aquifers below. The mother hole and any open daughter holes would be filled with Wyoming grade bentonite mud (with a permeability of no more than $1x10^{-9}$ cm/s) as a permanent seal, the surface casing removed, and a surface cement plug (up to 20 feet in depth) installed as a permanent drill hole cap. These borehole abandonment procedures would conform to ADEQ (R 12-15-811, 816 and 817) regulations, and ASTM Designation: D5299/D5299M – 17 *Standard Guide for Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities (as revised).*

### 4.2.3 Floodplains

Due to the lack of existing FEMA floodplain data for the Project Area, a 100-year floodplain mapping study was conducted by WRC in 2019 to document the location and extent of floodplains with the Project Area (WCR 2019). The drainages studied were selected with priority given to canyons and other lower elevation areas where exploration activities are proposed to take place on CNF-managed lands.

As a result of the modeling effort, some 4.7 miles of floodplains covering approximately 23 acres were mapped within the Project Area in 2019 **(see Exhibits 9-9g)**. According to the results of the modeled 100-year floodplain, up to 3.4 acres, or 25 percent of the proposed road network within the Project Area, would be located with the mapped 100-year floodplain. The results of the study will be used to assist Arizona Standard and the Forest Service in their efforts to avoid all drilling

activities within the mapped 100-year floodplain. A copy of the 2019 100-Year Floodplain Study is on file and available for review at the Forest Service office in Tucson, Arizona.

### 4.2.4 Wetlands and Other Waters of the U.S (WOUS)

A survey to identify potential waters of the United States (WOUS) within 229 acres of land in the Project Area was conducted in 2019, by Archaeological Consulting Services, Ltd. (ACS). The results of the survey were incorporated into a Preliminary Jurisdictional Delineation (PJD) Report, which was submitted to the U.S. Army Corps of Engineers (USACE) for review and preliminary determination of wetlands and other WOUS within the Project Area.

Within the survey area, some 62 ephemeral drainages, including Harshaw Creek were proposed as WOUS, covering a total area of approximately 4.8 acres. Fifteen washes were not recommended as jurisdictional WOUS as they lack sufficient characteristics of WOUS. In addition, three patchily distributed wetlands totaling 1.1 acres in size were mapped within the survey area. Wetlands and other potential WOUS are shown in **Exhibits 9 – 9g**. A copy of the 2019 PJD Report is on file and available for review at the Forest Service office in Tucson, Arizona.
A total of 71 individual road/jurisdictional feature crossings are proposed under the proposed drilling program. In many cases, the existing road alignment crosses the same feature multiple times and is located coincident with the stream channel. The Project would impact a total of 48 jurisdictional features including 9 wetlands and 37 ephemeral washes. In compliance with Section 404 of the Clean Water Act (CWA), Arizona Standard would apply for an Individual Section 404 permit with the U.S. Army Corps of Engineers (USACE). No drill pads, laydown yards, turnouts, or other project facilities would be located within wetlands or other WOUS; thus, none would be affected.

### 4.2.5 Environmental Protection Measures

Environmental protection measures that will be implemented to avoid or minimize impacts to surface and groundwater water resources, floodplains, and wetlands and other WOUS include:

- Temporary sediment barriers such as silt fences, straw wattles (containing certified weed-free straw), water bars, culverts, and other erosion-control features, would be installed as necessary during drilling operations and/or as part of reclamation activities.

- Water diversion structures/erosion control may be utilized on roads to prevent runoff and reduce erosion.

- Although interim shutdown periods are not expected for this Plan (see Section V-L), regular inspections of the site's erosion control system will be performed by the operator at least monthly during inactive periods. During shutdown periods, the

containment sump at each drill site will not exceed 50 percent capacity, in order to accommodate any potential heavy precipitation events.

- Exposure of disturbed areas to rainfall will be minimized by building drill pads only prior to scheduled drilling activity. Regrading and reseeding will be scheduled to commence following completion of drilling to stabilize the site. Concurrent reclamation will reduce the amount of material exposed at any given time and will reduce the possibility of sedimentation or siltation to nearby waterways.

- All temporarily disturbed areas will be stabilized, decompacted, and reseeded to prevent erosion and to promote vegetation growth.

- Slash stockpiled from original construction will be scattered in the area after seeding. Slash will be spread especially thickly over areas on which erosion is most likely to occur, such as steep slopes.

- Spillage containment and clean up kits or materials would be provided for each water pump set-up to handle at least 10 gallons of fuel, which is four times the capacity of the fuel tank and twice the estimated fuel that would be stored at that location.

- Each vehicle would carry a spill kit and each drill site would be equipped with a large industrial spill kit capable of handling twice the total amount of fuel located at each drill site.

- No drill pads would be constructed within the mapped mean 100-year floodplain in the Project Area. To reach drilling targets beneath the mean 100-year floodplain, Arizona Standard would employ directional drilling from drill pads adjacent to (but outside) the floodplain.

- Impacts to wetlands and other WOUS would be avoided to the greatest extent practicable. Where impacts cannot be reasonably avoided, Arizona Standard would obtain Section 404 Individual Permit from the USACE that authorize activities under the CWA.

Seasonal closures due to weather are not expected. However, should short-term cessation of operations due to weather or other circumstances, implementation of the BMPs outlined above will ensure site stability and minimize erosion during short-term temporary closure periods. In the event of a seasonal closure or temporary cessation of operations for a period longer than 60 days, Arizona Standard would complete interim reclamation/stabilization activities to prevent erosion/sediment transport and site stability. This includes the removal of the drill and support equipment, the sumps will be aggressively dewatered by decanting remaining clear water, and/or installing berms/trenching around sumps to prevent storm water accumulation. All hazardous materials and fuels will be removed to one of Arizona Standard's permanent facilities off CNF

lands and all storm water control devices would be reevaluated to ensure adequacy. Monitoring and inspections will continue on a regular basis during temporary short-term cessation of operations until the Project resumes.

Land application of excess wastewater is not anticipated for the Project. However, if excess water is encountered during drilling operations, a series of additional plastic lined containment sumps, as needed, will be constructed near the drill site to allow for excess water flow capture and decanting of all solids and fines prior to allowing any excess, decanted water flow onto the forest floor.

## 4.3 Solid Wastes

Arizona Standard will minimize the amount of solid waste generated during project activities. Good housekeeping practices, such as removal of waste and unused materials, maintenance of all equipment and vehicles, and immediate cleanup of any spills, will be required of all personnel working on the Project.

Additional solid waste from packaging, food products and other materials will be stored in an animal-proof trash bin located at each drilling site and staging areas and hauled to the Sonoita-Elgin Landfill in Sonoita, Arizona, or other nearby landfill(s) outside of the CNF at least every other day.

A portable toilet will be located at each active drill site and one will be placed at each of the laydown areas. Each will be serviced weekly by a licensed contractor. Up to four portable toilets will be used during drilling activities.

Drilling mud and associated cuttings will be removed via hydro-vac upon final completion of drilling activities at each pad and the liner will be removed. All materials will be transported to an approved off-site disposal facility outside of the CNF in accordance with federal, state, and local regulations.

## 4.4 Scenic Values

The proposed drill sites and access roads are not located in the viewshed of any nearby (i.e., within 2 miles) CNF trailheads, campsites, natural areas, or wilderness areas. Drilling equipment on each of the drill pads and the roads connecting those pads may be visible from a short segment of road adjacent to drilling activities, but these activities will be temporary and of short duration.

Visual impacts from proposed exploration activities will be reduced by minimizing disturbance for development of the temporary low standard access road and drill sites, requirements for good housekeeping practices, and implementation of timely reclamation.

Specific activities to minimize the visual impacts of the Project include the following:

- Individual drill pads will be concurrently reclaimed once final drilling activities at each site are completed. No more than three surface drill holes will be active with temporary surface caps at any given time.

- The newly constructed temporary access road will be concurrently reclaimed once drilling activities at all drill pads located along the roads are completed and/or once the road is no longer needed for additional drilling access to the Project Area.

- At the end of drilling, each site should be evaluated from sensitive viewing locations by the Sierra Vista District Ranger and recreation staff, or a landscape architect. If the project results in rock faces that are lighter-colored than natural outcrops in the area, and if these areas are visible from sensitive viewing locations (such as recreation sites), the rock should be treated with a weathering agent such as Permeon, Natina, or approved equivalent.

- Newly constructed temporary access roads will be designed and constructed to minimize clearings, cuts, and fills. Access roads will be reclaimed by restoring natural topography, scarifying disturbed soils, and seeding with a seed mix that includes grasses, forbs, and woody species common to the immediate area.

- Drill pad facilities will be designed to fit into existing clearings wherever possible. Vegetation removal will be minimized (especially large shrubs and trees) to the greatest extent practicable.

- Elevated lighting located at the drill rigs will be shielded and directed towards the ground to reduce visibility impacts.

- There will be no line of site clearing at any location. Protect trees and vegetation that remains, especially vegetation that is visible from NFS roads.

## 4.5 Fish and Wildlife, Including Threatened and Endangered Species

Impacts to federally Threatened or Endangered species, CNF Sensitive Species, and wildlife in general, will be minimized to the greatest extent practicable by establishing buffer zones and seasonal restrictions near active nests of federally listed bird species, by using the road prism of an existing roads for drilling, and avoiding aquatic and riparian habitats wherever possible.

Biological studies and species surveys for threatened, endangered, and Forest Sensitive Species and/or habitat in the Project Area were conducted in 2018, 2019, and 2020. In addition, a Biological Assessment (BA) and Biological Evaluation (BE) is being prepared for the Project which addresses impacts to federally listed species and Forest Service Sensitive species, respectively. Copies of the BA and BE and other reports that summarize the results of recent

species survey efforts are on file and available for review at the Forest Service office in Tucson, Arizona.

### 4.5.1 Species Evaluations

The Project Area was evaluated for the presence of federally listed species and their habitat and the potential for the proposed Project to affect such species. Based on information from the U.S. Fish & Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) website, eight federally listed species have the potential to occur within the Project Area. These include the jaguar (*Panther onca*), ocelot (*Leopardus pardalis*), Mexican spotted owl (*Strix occidentalis lucida*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), Northern Mexican garternsnake (*Thamnophis eques megalops*), Chiricahua leopard frog (*Rana chiricahuensis*), Sonoran Tiger Salamander (*Ambystoma tigrinum stebbinsi*), and Gila topminnow (*Poeciliopsis occidentalis*). These species, their status, and general habitat requirements are listed in **Table 6** below.

Based on the range, general habitat requirements, potential for occurrence, and/or survey results, the Chiricahua leopard frog, northern Mexican gartersnake, Sonoran tiger salamander, and Gila topminnow are unlikely to occur within or near the Project Area. Consequently, there will be *no effect* on these species or their habitat as a result of the Proposed Action, and these species are eliminated from further discussion in this PoO.

#### Jaguar

The Jaguar was listed as endangered in 1997, and in 2014, the USFWS designated more than 764, 207 acres of southern Arizona and New Mexico as critical habitat for the jaguar (USFWS 2014a). The designation includes mountain ranges in Pima, Santa Cruz, and Cochise counties.

Jaguars occur in a variety of vegetation communities (Seymour 1989). At middle latitudes, they show a high affinity for lowland wet communities, including swampy savannas or tropical rain forests (Seymour 1989). However, jaguars have been documented in arid areas, including thornscrub, desertscrub, lowland desert, mesquite grassland, Madrean oak woodland, and pine-oak woodland communities of northwestern Mexico and southwestern U.S. (Boydston and López González 2005, McCain and Childs 2008). The more open, dry habitat of the southwestern U.S. has been characterized as marginal in terms of water, cover, and prey densities (Rabinowitz 1999).

Jaguars historically occurred in California, Arizona, New Mexico, Texas, and possibly Louisiana (USFWS 1997). While jaguars have been documented as far north as the Grand Canyon, Arizona, occurrences in the U.S. since 1963 have been limited to south-central Arizona and extreme southwestern New Mexico. Within Arizona, jaguars have documented in the Baboquivari Mountains of southern Arizona (Childs 1998, Brown and López González 2001) and in south-central Arizona, near the Mexico border (USFWS 2014a). Jaguars in the U.S. are thought to be part of a population, or populations, that occur largely in Mexico.

**Table 6: Federally Listed Species with the Potential to Occur within the Project Area**

| **Common Name** ***Scientific Name*** | **Status** | **Range and General Habitat Requirements** | **Potential for Occurrence** |
|---|---|---|---|
| **Mammals** | | | |
| Jaguar (*Panthera onca*) | FE | Occurs in a variety of vegetation communities including lowland wet communities, including thornscrub, desertscrub, lowland desert, mesquite grassland, Madrean oak woodland, and pine-oak woodland communities of northwestern Mexico and southwestern U.S. The more open, dry habitat has been characterized as marginal in terms of providing suitable water, cover, and prey densities.<br><br>Within Arizona, jaguars have documented in the Baboquivari Mountains of southern Arizona and in south-central Arizona, near the Mexico border. In the U.S. they are thought to be part of a population, or populations, that occur largely in Mexico. The entire Project Area is located within designated critical habitat for the species. | **Low to Moderate:** No known records occur within or near the Project Area. Project Area is within the species range. Suitable habitat for this species exists within the Project Area. |
| Ocelot (*Leopardus pardalis*) | FE | Occurs in a wide range of habitats throughout its range including thornscrub and semi-arid vegetation coastal grasslands and coastal tropical forests, tropical dry forests, tropical rain forests, oaks and grasslands piedmont/montane scrub, cloud forest, pine-oak forests, and fir forests. In Arizona and Sonora, ocelots in are generally associated with tropical or subtropical habitat, namely subtropical thornscrub, tropical deciduous forest, and tropical thornscrub.<br><br>In Arizona, five individual ocelots have been detected between 2009 and 2015. In addition to these sightings, ocelots have been documented in Sonora, Mexico. | **Low to Moderate:** No known records occur within or near the Project Area. Project Area is within the species range. Suitable habitat for this species exists within the Project Area. |
| **Birds** | | | |

| **Common Name** ***Scientific Name*** | **Status** | **Range and General Habitat Requirements** | **Potential for Occurrence** |
|---|---|---|---|
| Mexican Spotted Owl (*Strix occidentalis lucida*) | FT | Occurs in varied habitat, consisting of mature montane forest and woodland, shady wooded canyons, and steep canyons. In forested habitat, uneven-aged stands with a high canopy closure, high tree density, and a sloped terrain appear to be key habitat components. They can also be found in mixed conifer and pine-oak vegetation types. The species generally nests in older forests of mixed conifer or ponderosa pine/Gambel oak.<br><br>Populations in Arizona are patchily distributed and occur where appropriate habitat is present throughout all but the arid southwestern portion of the state. The entire Project Area is located within designated critical habitat (Unit BR-W-14) for the species. | **Present:** A number of MSO detections and active roost sites have been documented within the Project Area. Project Area is within several PACs and suitable nesting and feeding habitat for this species exists within the Project Area. |
| Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*) | FT | On the breeding grounds, YBCUs occur in large blocks of riparian woodland (at least >50 acres but often >200 acres) along low-gradient surface waters at elevations below 7,000 feet. Typically, occur in cottonwood-willow-tamarisk vegetation associations that often possess a mesquite component. Some habitats utilized by breeding YBCUs in southeastern Arizona differ substantially from those utilized in other areas. Such habitats occur in higher elevation drainages within Madrean Evergreen Woodlands in the Sky Island mountain ranges. Vegetation found in these habitats consists of oaks (*Quercus* spp.), junipers (*Juniperus* spp.), and mesquite interspersed with individuals or thin stringers of mesic species.<br><br>Within Arizona, they have been documented along 25 drainages, with the majority occurring along the San Pedro, Agua Fria, and Verde rivers and Sonoita and Cienega creeks. | **Present:** A number of YBCU detections have been documented within the Project Area. Suitable nesting and feeding habitat for this species exists within the Project Area. |
| **Reptiles & Amphibians** | | | |

| **Common Name** ***Scientific Name*** | **Status** | **Range and General Habitat Requirements** | **Potential for Occurrence** |
|---|---|---|---|
| Northern Mexican Gartersnake (*Thamnophis eques megalops*) | FT | Occurs at elevations from 130 to 8,497 feet and is considered a riparian obligate (generally found in riparian areas when not engaged in dispersal, gestation, or hibernation behaviors) and occurs chiefly in the following general habitat types: (1) Small, often isolated wetlands (e.g., cienegas); (2) large river riparian woodlands and forests; and (3) streamside gallery forests (as defined by well-developed broadleaf deciduous riparian forests).<br><br>Five known populations occur in Arizona and include: (1) The Page Springs and Bubbling Ponds State Fish Hatcheries along Oak Creek, (2) lower Tonto Creek, (3) the upper Santa Cruz River in the San Rafael Valley, (4) the Bill Williams River, and (5) the upper and middle Verde River. | **Low:** No known records occur within or near the Project Area and no suitable riparian and terrestrial habitat for this species is present within the Project Area. |
| Chiricahua Leopard Frog (*Rana chiricahuensis*) | FE | Occurs in montane and river valley cienegas, springs, pools, cattle tanks, lakes, reservoirs, streams, and rivers. The species also requires permanent or semi-permanent pools for breeding.<br><br>Chiricahua leopard frogs were observed at 87 sites in Arizona from 1994 to 2001, including 21 northern localities and 66 southern localities. In Arizona, the species is known to presently occur in seven of eight major drainages of historical occurrence (Salt, Verde, Gila, San Pedro, Santa Cruz, Yaqui/Bavispe, and Magdalena river drainages). | **Low:** No known records occur within or near the Project Area. Suitable aquatic habitat for this species in the form of cienegas, springs, pools, cattle tanks, streams, and rivers is generally lacking within the Project Area. |
| Sonoran Tiger Salamander (*Ambystoma tigrinum stebbinsi*) | FE | Requires standing water for breeding from January through June. Cattle ponds or tanks are the primary habitat for Sonora tiger salamanders. Aquatic breeding habitats are used by all life stages; however, upland habitats are also used by terrestrial adults when not at the breeding ponds.<br><br>The subspecies has been found in 53 ponds in the San Rafael Valley in Santa Cruz and Cochise counties in southeastern Arizona and in the most northern parts of Sonora, Mexico. | **Low:** No known records occur within or near the Project Area. Suitable aquatic habitat for this species in the form of cienegas, springs, pools, and cattle tanks is generally lacking within the Project Area. |
| **Fish** | | | |

| **Common Name** ***Scientific Name*** | **Status** | **Range and General Habitat Requirements** | **Potential for Occurrence** |
|---|---|---|---|
| Gila Topminnow (*Poeciliopsis occidentalis*) | FE | Habitat requirements for the species are broad. They prefer shallow, warm springs or slow-moving waters, but can tolerate a wide range of temperature and current regimes. Both lentic habitats and lotic habitats with moderate current are easily tolerated.<br><br>Eleven of the naturally occurring locations currently supporting Gila topminnows are in the Santa Cruz River system: Redrock Canyon, Cottonwood Spring, Monkey Spring, upper Sonoita Creek, Fresno Canyon, Coal Mine Canyon, lower Sonoita Creek, Santa Cruz River north of Nogales, Cienega Creek, Sharp Spring, and the upper Santa Cruz River. | **Low:** No known records occur within or near the Project Area. No suitable aquatic habitat for this species exists within the Project Area. |

No surveys for the jaguar were conducted for this project. The entire Project Area is located within designated critical habitat for the species. There are no current or historical records of Jaguars occurring within the Project Area. The lack of any documented occurrences of jaguars suggests that the Patagonia Mountains do not support resident populations of these species. Therefore, it is unlikely that jaguars would occur in the Project vicinity and any individuals that were to be present would likely be transient individuals from Mexico. The proposed Project will require consultation with USFWS due to the presence of jaguar critical habitat.

### Ocelot

The ocelot was listed as endangered in 1982 due to a variety of factors including commercial exploitation; illegal hunting; and habitat conversion, fragmentation, and loss. In the 1982 final rule (47 FR 31670), the USFWS made a determination that the designation of critical habitat was not prudent because such a designation would not be in the best interests of conservation of the species (USFWS 2016b). As such, no critical habitat has been designated for the species.

The ocelot uses a wide range of habitats throughout its range. Ocelots have been observed in thornscrub and semi-arid vegetation (Shindle and Tewes 1998, López González et al. 2003), coastal grasslands and coastal tropical forests (Caso 2013), tropical dry forests (Fernandez *et a*l.

2002, López González et al. 2003), tropical rain forests (Cuarón 2000, Ávila-Nájera et al. 2015), oaks and grasslands (Avila-Villegas and Lamberton-Moreno 2012, Culver et al. 2016), piedmont/montane scrub, cloud forest (Cuarón 2000), pine-oak forests (Iglesias et al. 2009), and fir forests (Bárcenas and Medellín 2010). In Arizona and Sonora, little is known about ocelot habitat use. Lopez Gonzalez et al. (2003) found 27 of the 36 records (75%) of ocelots in Sonora were associated with tropical or subtropical habitat, namely subtropical thornscrub, tropical deciduous forest, and tropical thornscrub. Only males (11.1% of the total records) were recorded in temperate oak and pine-oak woodland.

Currently, the ocelot ranges from extreme southern Texas and southern Arizona through the coastal lowlands of Mexico to Central America, Ecuador and northern Argentina. In Arizona, five individual ocelots have been detected between 2009 and 2015 (Avila-Villegas and Lamberton-Moreno 2013, Culver et al. 2016). Prior to these five recently known individuals the last documentable ocelot in Arizona was a male that had been killed by a vehicle near the town of Oracle in 1967 (López González et al. 2003). In addition to the recent Arizona sightings, ocelots have been documented in Sonora, Mexico (López González et al. 2003).

No surveys for the ocelot were conducted for this Project. There are no current or historical records of ocelots occurring within the Project Area. The lack of any documented occurrences of ocelots suggests that the Patagonia Mountains do not support resident populations of these species. Therefore, it is unlikely that ocelot would occur in the Project vicinity and any individuals that were to be present would likely be transient individuals from Mexico. There is no designated critical habitat for this species, thus non would be affected.

### Mexican Spotted Owl

The Mexican spotted owl was federally listed as threatened throughout its range in 1993 due primarily to alteration and fragmentation of their habitat and the threat of catastrophic forest fire events. Critical habitat was first designated on June 6, 1995 but revoked on March 25, 1998 after several Federal courts ruled that FWS had not correctly followed the National Environmental Policy Act (NEPA) process (USFWS 2004). Critical habitat was again designated in 2003, but again nullified through litigation. The most recent critical habitat designation for the species was published in 2004 and remains in effect (USFWS 2004).

Typically, Mexican spotted owls occupy a variety of habitats for breeding and foraging. They breed in dense old growth mixed-conifer forests along steep slopes and ravines. Within this habitat, the trees are dense, forming a closed canopy, a high basal area, and contain numerous downed logs and snags (USFWS 2012). The large trees provide suitable nest cavities, whereas the numerous smaller trees in combination with large trees provide roosting and foraging habitat (AGFD 2005).

In Arizona, Mexican spotted owls do not build their own nests. They use cavities or abandoned platform nests about 80 feet up in coniferous trees, and also will utilize ledges on cliffs or potholes and mistletoe clusters in areas where these features are present (AGFD 2005). Spotted owls are typically active at night (nocturnal) but will forage during the daylight hours when they are raising young.

Populations in Arizona are patchily distributed and occur where appropriate habitat is present throughout all but the arid southwestern portion of the state. Designated critical habitat for the Mexican spotted owl includes 3,983,042 acres statewide, most of which occur on Forest Service lands (USFWS 2012). Critical habitat is designated in Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, and Yavapai counties (USFWS 2012). The entire Project Area is located within designated critical habitat (Unit BR-W-14) for the species.

The Mexican spotted owl is known to nest within the Project Area and surrounding region. One Mexican spotted owl Protected Activity Center (PAC 03-012, also known as the Humboldt Canyon PAC) occurs within the Project Area **(Exhibit 15)**. The Humboldt Canyon PAC extends from the junction of FR 812 and FR 4685 southwest to the headwaters of Humboldt Canyon. The entire Project limits along FR 4685 occur within the PAC boundary; the Project limits along FR 812 and the non-system road are located within 0.2 mile of the PAC boundary. The CNF has designated a nesting core area for this PAC, which is located southwest of the Project Area. Periodic surveys of the PAC that have been conducted since the late 1980s have consistently documented Mexican spotted owls at this location. Past surveys of the Humboldt Canyon PAC documented a breeding pair of owls in June and July of 2013 and a breeding pair of owls that produced one fledgling in 2016. Therefore, it is likely that Mexican spotted owls will continue to occupy this PAC into the foreseeable future.

Since the nesting status of Mexican spotted owls may change from year to year, and nest locations must be current for mitigation planning and impact avoidance, Arizona Standard contracted with ACS to conduct protocol-level surveys for the Mexican spotted owl during the active breeding season in 2018 and 2019. Results from the 2018 survey effort for the Mexican spotted owl indicate that one individual was present within the survey area and suggest that all detections recorded during the 2018 survey originated from the resident individual of the Humboldt Canyon Roost, which is within the boundary of PAC 03-012 **(Exhibit 15)**. Based on the latest survey results for the Mexican spotted owl conducted in 2019, the Humboldt Canyon PAC contained two active roost sites. Each roost contained a non-nesting, non-breeding pair **(Exhibit 15)**.

### Western Yellow-Billed Cuckoo

The western distinct population segment (DPS) of the yellow-billed cuckoo was federally listed as threatened throughout its range in 2014 due primarily to habitat loss associated with manmade features that alter watercourse hydrology so that the natural processes that sustained riparian habitat is greatly diminished. This species is a neotropical migratory species that breeds in the U.S. and Canada and winters in South America (USFWS 2014b). Currently, the range of the yellow-billed cuckoo is limited to disjunct fragments of riparian habitats from northern Utah, western Colorado, southwestern Wyoming, and southeastern Idaho southward into northwestern Mexico and westward into southern Nevada and California.

The USFWS published a proposed rule to designate critical habitat for the species in 2014 (USFWS 2014b). In February 2020, the USFWS published a proposed rule to revise the proposed critical habitat to include some of the atypical (i.e., non-riparian) habitats that were more recently documented as being used by the species in the Southwest (USFWS 2020a). Under the February 2020 proposed rule, the USFWS has designated some 493,665 acres of critical habitat for the western DPS of the yellow-billed cuckoo in 72 separate units in Arizona, California, Colorado, Idaho, New Mexico, Texas, and Utah (USFWS 2020a).

On the breeding grounds, yellow-billed cuckoos occur in large blocks of riparian woodland (at least >50 acres but often >200 acres) along low-gradient surface waters at elevations below 7,000 feet (USFWS 2014b). Typically, yellow-billed cuckoos occur in cottonwood-willow-tamarisk vegetation associations that often possess a mesquite component (USFWS 2014b). Some habitats utilized by breeding yellow-billed cuckoos in southeastern Arizona differ substantially from those utilized in other areas. Such habitats occur in higher elevation drainages within Madrean Evergreen Woodlands in the Sky Island mountain ranges. Vegetation found in these habitats consists of oaks (Quercus spp.), junipers (Juniperus spp.), and mesquite interspersed with individuals or thin stringers of mesic species (MacFarland and Horst 2015).

Within Arizona, the yellow-billed cuckoo is found along rivers in southern and central Arizona, as well as extreme northeast portions of the state (AGFD 2011). Statewide surveys have been conducted in Arizona at historical YBCU locations during 1998 and 1999. During these surveys,

cuckoos were documented along 25 drainages, with the majority occurring along the San Pedro, Agua Fria, and Verde rivers and Sonoita and Cienega creeks (Corman and Magill 2000).

Yellow-billed cuckoos were previously detected on surveys conducted in 2012 along portions of nearby Harshaw Creek, Hermosa Canyon, Goldbaum Canyon, Coral Canyon, and Willow Spring Canyon, suggesting that they are likely to occur within the Project Area. Therefore, Arizona Standard contracted with ACS to conduct protocol-level surveys for the yellow-billed cuckoo during the active breeding season in 2018 and 2019.

The results of the 2018 survey effort indicated three distinct yellow-billed cuckoo detections **(Exhibit 16)**. The first detection occurred at a site along Flux Canyon, while the other two other detections occurred during the third and fourth surveys at sites along Harshaw Creek. Because one of the call detections from an early visit occurred in proximity to one of the detections from a later visit, it is possible that a breeding territory may have been established at this location, although no direct evidence of breeding was observed during the 2018 survey season. Based on the preliminary survey results for the yellow-billed cuckoo conducted in 2019, one possible breeding location was present along the access road to Flux Canyon, FR 215, and one probable breeding territory was present in upper Humboldt Canyon **(Exhibit 16)**. Additionally, single detections were made in Flux Canyon proper and from an unnamed road west of Alum Gulch.

No designated or proposed critical habitat occurs on within the Project Area. The nearest proposed critical habitat occurs approximately 2.8 miles to the northwest of the Project Area.

### 4.5.2 Environmental Protection Measures

The proposed Project will be conducted in a manner that minimizes disturbance to habitat and wildlife species to the extent practicable while allowing for safe access and completion of drilling operations in accordance with the Project purpose. Environmental protection measures that will be implemented to avoid or minimize potential adverse impacts to federally Threatened, Endangered, and CNF Sensitive Species include the following:

- All trees 12 inches dbh or greater would be avoided to the extent possible.

- To minimize direct and indirect impacts to nesting Mexican spotted owls, no drilling activities, road construction, maintenance, or improvements would occur within the core area of a Mexican spotted owl PAC from March 1 through August 31 unless it has been determined that the PAC is unoccupied or the owls are not nesting that year, as inferred from results of surveys conducted according to protocol. (**Exhibit 15**).

- To minimize potential impacts from noise and lighting, measures would be taken to ensure that all night lighting is pointed downwards and all internal combustion engines are fitted with a properly operating muffler, and all equipment would undergo regular maintenance.

- A brief Worker Environmental Awareness Program (WEAP) will be implemented for construction and drilling crews prior to the commencement of Project activities. Training materials and briefings will include but not be limited to, discussion of the federal Endangered Species Act (ESA), the consequences of noncompliance with the ESA, identification and values of wildlife and natural plant communities, hazardous substance spill prevention and containment measures, and review of all required and recommended mitigation measures.

- Trash and food items would be disposed of promptly in predator-proof containers with resealable lids. Trash containers would be emptied at least every day other day.

- Continue to monitor Mexican spotted owl occupancy and reproductive output within the Project Area, or an area determined by the CNF and USFWS, for the duration of the project and for one breeding season after Project completion.

## 4.6 Cultural Resources

The Project is not expected to adversely impact any cultural resources that would be considered eligible for inclusion in the National Register of Historic Places (NRHP). Cultural resource evaluations were previously conducted by Archeological Consulting Services, Limited (ACS) within portions of the then proposed Project Area in 2012 and within a larger portion of the newly defined Project Area in May 2019. The results of these evaluations identified one site and one isolated occurrence in 2012, and four previously recorded sites, six newly recorded sites, two historical in-use structures, and 74 isolated occurrences in the 2019 survey.

Based on the results of the former and most recent surveys and background research conducted in 2019, one historic property (AR03-05-03-550) would be potentially affected by exploration activities. As ACS recommends avoidance of this site, Arizona Standard will implement the necessary avoidance measures to protect historical or archeological sites based on concurrence of the survey recommendations by the CNF Archeologist. Based on these surveys, all historic properties within the Area of Potential Effect (APE) would be avoided and thus no adverse effects to historic properties are expected from proposed Project activities.

In the event that previously unreported cultural resources are encountered during ground-disturbing activities, all work must cease immediately within 100 feet until a qualified archaeologist has documented the discovery and evaluated its eligibility for the NRHP, in consultation with the CNF, Arizona State Museum (ASM), Arizona State Historic Preservation Office (SHPO), and Tribes, as appropriate. Work must not resume in this area without approval of the CNF.

If human remains are encountered during ground-disturbing activities, all work must immediately cease within 100 feet of the discovery. The ASM, CNF, SHPO, and appropriate Tribes must be notified of the discovery within 24 hours (following ASM and/or CNF protocol).

All discoveries would be treated in accordance with Native American Graves Protection and Repatriation Act ([NAGPRA] Public Law 101-601; 25 United States Code [U.S.C.] 3001-3013) or Arizona burial laws (A.R.S. § 41-844 and A.R.S. § 41-865), as appropriate, and work would not resume in this area without proper authorization.

## 4.7 Hazardous Substances

The drill rigs and support vehicles use several petroleum products, including diesel fuel or gasoline, motor oil, hydraulic oil, and deck engine oil. Many of the sealants used for downhole equipment and tooling will be bentonite clay-based products, and the liquid oils or lubricants such as fish oil are considered "environmentally friendly." Thus, while some of the materials may contain components that, under special circumstances, may be hazardous to human health, no materials—other than petroleum products—pose a significant threat to the natural environment.

Drill fluid additives will be used to thicken and condition the drilling water. Some of these products (such as bentonite gel) are in powder form and come in plastic-lined paper bags weighing approximately 50 pounds. Other drill fluid additives, including EZ Mud Plus and Quik Gel Gold, as well as similar products, are commonly used in the drilling industry and are essential to the core drilling process.
Gasoline, diesel fuels, oils, and greases are necessary to successfully operate the drill, pumps, generator, and associated equipment. To prevent spills and releases, these substances and other potentially hazardous materials necessary for operations shall be stored within a plastic lined secondary containment structure with a minimum 110 percent of the capacity of the total volume of all liquids stored. Covers or tarps will be utilized to prevent accumulation of rain or snow within the secondary containments to limit management of additional waters. All fueling of equipment will be completed over absorbent materials or within secondary containment areas.

Potential hazardous substances to be used during this Project include the following:

- #2 Diesel
- Regular unleaded gasoline
- Gasoline and diesel engine oil
- Antifreeze
- Hydraulic fluid
- Joint grease
- Lithium grease
- Drilling mud
- Quick Gel
- Mudlube
- Baroid products
- Cement

- Bentonite

A limited amount of fuel will be contained in the fuel tanks of the equipment used on site. In addition, no more than a total of 10 gallons of fuel will be stored in gear boxes of equipment on site. The total estimated volume of fuel contained in the tanks and gear boxes of the equipment on site is outlined below and will be less than 432 gallons.

- Excavator – 40 gallons
- Bulldozer – 50 gallons
- Water Trucks – 90 gallons
- Water Pump – 5 gallons
- Water Pump 2 – 5 gallons
- Chainsaw (2) – 1 gallon
- Pickup Trucks – 130 gallons
- Drill Truck – 90 gallons
- Motor Oil (1 can) – 5 gallons
- Supplemental Fuel Cans (2) – 5 gallons each

All fuel will be brought to the site in proper petroleum storage containers, via pickup truck or via a medium-duty fuel truck. Fuel will be brought to the site on an as-needed basis. Fueling will not occur in or immediately adjacent to water sources and spill pads will be placed on the ground under any fueling operations. Empty fuel containers will be disposed of properly by an authorized agent to a certified disposal area outside of the CNF.

Fire extinguishers will be kept in pickup trucks, on drill rigs, in the spill kit beside the water pump, and near the drilling area. These fire extinguishers will be inspected regularly, as recommended by the manufacturer and applicable laws.

The following summarizes the volume and frequency of hazardous materials and substances transported:

- Diesel and gasoline transported in OSHA/MSHA approved containers
- Quantity up to 200 gallons of each hauled daily
- Engine oil, hydraulic fluid and other lubricants up to five – 5- gallon containers for each product
- Lubricants located on service vehicles; hauled as needed
- Antifreeze within radiators and hauled in 2.5-gallon containers as needed
- Grease tubes located on service vehicles; hauled as needed
- Drilling muds, gels, bentonite, and cement; up to 1 pallet each
- Drilling materials transported on service vehicles and drill rigs: hauled as needed

Arizona Standard has developed a Spill Prevention, Control, and Countermeasures (SPCC) Plan in order to address spill prevention, containment, notification, and cleanup measures. A

summary of these procedures is provided below. More detailed information pertaining to the implementation of these procedures is provided in **Appendix B – Spill Prevention, Control, and Countermeasures (SPCC) Plan**.

To prevent incidental releases, equipment tanks and gear boxes will be inspected daily prior to operations and daily upon completion of operations. If a piece of equipment is found to be leaking or seeping fuel or lubricants, the equipment will be immediately taken out of service and corrective measures instituted to prevent a release. All vehicles will be equipped with a spill prevention control and counter-measure kit consisting of absorbent pads and a shovel. All fuel will be transported to and from the site using proper fuel containment. Whenever moving fuel from one container to another or fueling a piece of equipment, spill pads will be placed on the ground under the operation. In addition, spill pads will be placed under the drill equipment to catch any leaks during operations. Spill pads or leak proof metal or plastic trays with at least 110 percent capacity will also be placed under fuel cans if these cans are not stored inside leak proof containers.

During interim shutdown periods or periods of inactivity lasting less than 30-days, all equipment stored onsite will be parked with slippage prevention tire chalks, away from steep slopes and all fuel tanks and gear boxes containing chemicals will be underlain with absorbent pads. Plastic sheets and/or absorbent pads may be used under equipment to contain any spillage of lubricants or fuels.

Any spill of a hazardous material listed above will be immediately reported to the ADEQ at (602) 390-7894 and/or National Response Center at (800) 424-8802. Straw waddles (containing certified weed-free straw) and kitty litter would be used to contain and absorb fluid spills. Contaminated soils would be placed in large drums and delivered to an agent authorized to haul such materials in compliance with federal, state, and local regulations.

## 4.8 Reclamation

### 4.8.1 Completion and Closure

Drilling and drill hole abandonment will be conducted in accordance with AAC R12-15 and ARS Title 45, Chapter 2, Article 10, as administered by the Arizona Department of Water Resources (ADWR). Drill holes will be plugged/abandoned in accordance with the ADWR well abandonment handbook and AAC regulations 12-15-816 and 817 using Wyoming grade bentonite mud (with a permeability of no more than 1x10-9 cm/s) as a permanent seal, then followed with a 20-foot surface cap of neat cement at least 2 feet below the reclaimed surface (ADWR Well Abandonment Handbook). The specific mixing and emplacement procedures will be conducted according to manufacturer's specifications, and this information, as well as geologist and/or engineer logging and verification of slurry QA/QC volume calculations, will be documented and provided to the CNF and ADWR as requested. A minimum 48-hour notification will be given to the CNF prior to commencing final core-hole abandonment procedures.

Following the completion of drilling activities at drill sites, all materials, including equipment, water lines, water tanks, lubricants and other products, cores, plastic sheeting, and solid wastes (trash, etc.) will be removed from the site and disposed of at an off-site disposal facility. Drilling mud and associated water will be removed via hydro-vac at the completion of drilling activities at each pad. The liner will also be removed. The sumps will then be backfilled with the previously excavated material.

In accordance with 36 CFR (Code of Federal Regulations) §228 and the policies of Forest Service Manual (FSM) 2840, Arizona Standard has prepared a Reclamation and Revegetation Plan which outlines the initial engineering design, construction procedures, and general environmental mitigation measures for the proposed Project on CNF-managed lands. This Plan is presented in **Appendix E** and describes the overall procedures, techniques, and resources that would be employed for reclamation of those areas utilized or disturbed by exploration activities.

As discussed in **Appendix E**, Arizona Standard will stabilize and reseed temporarily disturbed areas to prevent erosion and to promote vegetation growth. Arizona Standard will conduct concurrent reclamation by reclaiming drill sites and temporary low-standard access roads as associated activities are completed. Each drill pad will be regraded and re-contoured to match approximately the surrounding topography and seeded in accordance with CNF guidelines using approved seed mixes of certified native weed-free species.
All newly constructed low-standard access roads will be regraded and re-contoured to match approximately the surrounding topography and seeded with a CNF approved seed mix. The timing of reseeding will be dependent on the season and anticipated rainfall. No seed application will be done during extremely rainy, windy, or dry periods or over frozen ground. The CNF will be consulted for seeding guidelines.

Soil on areas to be seeded will be left in a roughened, de-compacted condition favorable to the retention and germination of the seed. Slash stockpiled from original construction will be scattered in the area after seeding. Slash will be spread especially thickly over areas on which erosion is most likely to occur, such as steep slopes. Other stormwater BMPs, such as water bars, culverts, and erosion-control features, will be repaired or removed, as necessary. If requested by the CNF, the temporary low-standard access road will be blocked with an earthen berm or boulders at each access point following the completion of reclamation.

Noxious weeds will be monitored by Arizona Standard and treated in compliance with CNF recommendations. If any noxious weeds are found on site at any time, proper actions will be taken to remove the plants and prevent the spread of their seeds. Arizona Standard will work with the CNF to establish treatment methods to reduce or eliminate the spread of noxious weeds within the drilling areas.

### 4.8.2 Reclamation Monitoring

As discussed in the Restoration and Revegetation Plan in **Appendix E**, Arizona Standard will conduct multi-annual field inspections of drill sites and other areas disturbed under this Plan to monitor for reclamation effectiveness and noxious weed infestations for a period of not less than six (6) years. Each of the field inspections will be documented with photographs or written descriptions and provided to the CNF Biologist or Range Management Specialist.

Arizona Standard will monitor the site preparation and installation as necessary to ensure that procedures are implemented properly and thoroughly by the Reclamation Contractor. Qualitative maintenance and quantitative performance monitoring will be conducted by the Restoration Contractor to determine the effectiveness of reclamation, revegetation, and maintenance activities on the site and prescribe any additional maintenance activities that may be required. Monitoring will be conducted three times per year during: (1) spring (February to April), (2) summer (July – September) growing season, and (3) the dormant season (October - January). Performance monitoring will be completed by the Restoration Contractor to document the reclamation and revegetation site progress relative to the established performance criteria (e.g., target conditions), and prescribe any remedial measures that may be required to ensure that each restoration site meets the performance criteria within the six-year maintenance, monitoring, and reporting period.

In the event that any of the above reclamation efforts do not meet with the established criteria as stated below, Arizona Standard will collaborate with CNF representatives and make modifications to the Plan, incorporating such changes and additional procedures necessary to achieve the stated standard.

### 4.8.3 Reclamation Bond Release

Release of the reclamation bond for these activities will be requested when:

Success will be based on the establishment of seeded species and the exclusion of non-native species. The restoration of the mitigation areas will be considered successful and release of the reclamation bond for these activities will be requested when all of the following standards are achieved and sustained over a consecutive two-year period:

- Canopy cover by native species at all revegetation sites shall attain a minimum of 15 percent cover during the 180-day seed establishment period. See table below for required canopy covers of native and non-native species for years two, three, and four to six. Native plant cover must exceed or be within 10% of the specified standards.

| Native/Non-native Percent Cover End of Year 2 | Native/Non-native Percent Cover End of Year 3 | Native /Non-native Percent Cover End of Years 4 to 6 |
|---|---|---|
| 30/<5 | 70/<1 | 70/0 |

- Non-native plants undocumented on the particular disturbance site prior to construction that may appear after construction, shall have a 0 percent cover after two years.
- Regardless of the number of years post-construction, in order for success criteria to be considered complete, restoration sites must meet the final percent canopy covers for native and non-native species listed in the table above for two consecutive growing seasons without any weeding maintenance activities.

- Prior to the agreement that performance standards are met, all restoration sites will be given a qualitative and quantitative assessment in accordance with the requirements listed above.

The vegetation community established on the reclaimed areas must be capable of persisting without continued intervention. Persistence of reclaimed vegetation will be determined through monitoring of reclamation areas as identified in the Reclamation and Revegetation Plan. If monitoring identifies reclaimed areas that may not meet reclamation success criteria, (e.g., seed germination or vegetation cover is lower than expected), the CNF and Arizona Standard will discuss the use of adaptive management procedures to address these issues. The minimum anticipated timeframe for achieving the success criteria is three years after initial seeding.

Reclamation methods are based on best available science to rehabilitate or restore arid lands affected by comparable physical disturbance and are designed to achieve performance criteria consistent with the project area reference conditions. Localized areas with low potential to sustain vegetative cover due to physical or chemical properties of parent material, historic mining activities, or other activities unrelated to the proposed action or proper implementation of reclamation design specifications will be documented and performance criteria may be adapted to meet localized objectives with approval from CNF.

# 5.0 FOREST SERVICE EVALUATION OF PLAN OF OPERATIONS

## 5.1 Required Changes/Modifications/Special Mitigation for this Plan

If the equipment or vehicles are dirty, e.g., have attached soil, seeds, or vegetative matter, they will need to be cleaned before entering CNF lands. These inspections should be recorded and provided to the Forest Service. Also, equipment should also be inspected before moving from areas of infestation to areas free of infestation within the Project work area. After work is completed, the Forest Service specialists will survey the Project Area again, and if any invasive species are found, the operator will be responsible for re-treatment.

## 5.2 Bond

Reclamation of all disturbances connected with this plan of operations is covered by Reclamation Performance Bond No. XXX, dated (mm/dd/yy), signed by (Principal) and (Surety), for the penal sum of $XXX. This Reclamation Performance Bond is a guarantee of

faithful performance with the terms and conditions listed below, and with the reclamation requirements agreed upon in the Plan. This Reclamation Performance Bond also extends to and includes any unauthorized activities conducted in connection with this operation.

The bond amount for this Reclamation Performance Bond was based on a bond calculation worksheet. The bond amount may be adjusted during the term of this proposed PoO in response to changes in the operations or to changes in the economy. Both the Reclamation Performance Bond and the bond calculation worksheet are attached to and made part of this PoO (Attachment D).

Acceptable bond securities (subject to change) include:

1. Negotiable Treasury bills and notes which are unconditionally guaranteed as to both principal and interest in an amount equal at their par value to the penal sum of the bond; or

2. Certified or cashier's check, bank draft, Post Office money order, cash, assigned certificate of deposit, assigned savings account, blanket bond, or an irrevocable letter of credit equal to the penal sum of the bond.

## 6.0 TERMS AND CONDITIONS

1. If a bond is required, it must be furnished before approval of the PoO.

2. Information provided with this Plan marked confidential will be treated in accordance with the agency's laws, rules, and regulations.

3. Approval of this PoO does not constitute certification of ownership to any person named herein and/or recognition of the validity of any mining claim named herein.

4. Approval of this PoO does not relieve then Project proponent responsibility to comply with other applicable state or federal laws, rules, or regulations.

5. If previously undiscovered cultural resources (historic or prehistoric objects, artifacts, or sites) are exposed as a result of operations, those operations will not proceed until notification is received from the Authorized Officer that provisions for mitigating unforeseen impacts as required by 36 CFR 228.4(e) and 36 CFR 800 have been complied with.

6. This PoO has been approved for a period of 7 years or until (mm/dd/yy). A new or revised PoO must be submitted in accordance with 36 CFR part 228, subpart A, if operations are to be continued after that time period.

## 7.0 OPERATING PLAN ACCEPTANCE

I/We have reviewed and agreed to comply with all conditions in this PoO including the required changes, modifications, special mitigation, and reclamation requirements.

I/We understand that the bond will not be released until the Responsible Official in charge gives written approval.

| | |
|---|---|
| Operator (or Authorized Representative) | (Date) *(mm/dd/yy)* |

## 8.0 OPERATING PLAN APPROVAL

| | |
|---|---|
| (Name) | (Title) |
| (Responsible Official) | (Date) *(mm/dd/yy)* |

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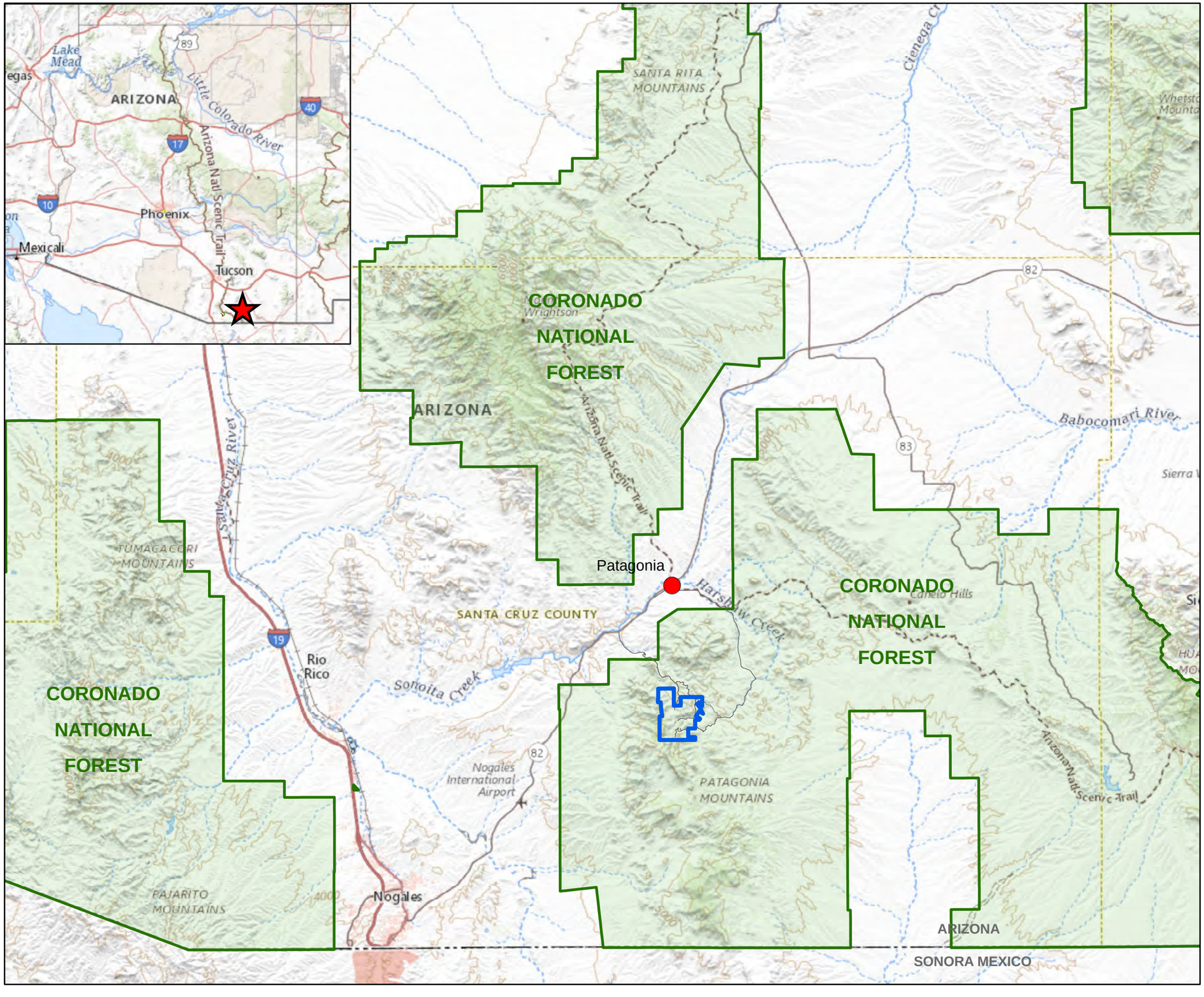
# Exhibits




## LEGEND

- Project Area
- Coronado National Forest

N
W E
S

2 1 0 2 4 6 8 Miles

2 1 0 2 4 6 8 10 Kilometers

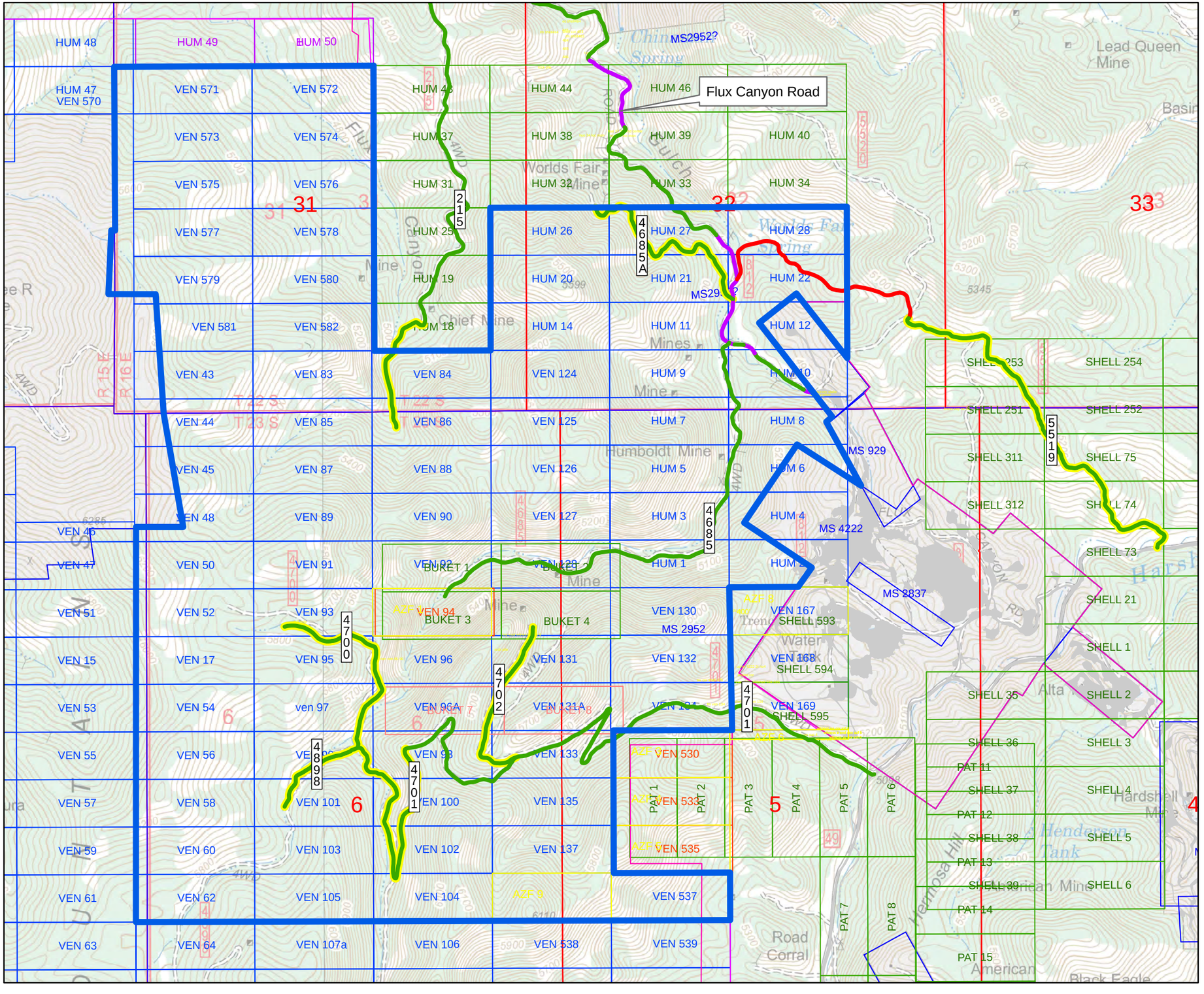
SCALE 1:250,000

# Sunnyside Exploration Drilling Project

## Exhibit 1

Project Location Map

| 02/10/2020 | Sheet 1 of 1 |
|---|---|




## LEGEND

- Project Area
- Existing Road (No Upgrades)
- Newly Constructed Road
- Upgraded Road
- CNF Decomissioned Road

N
W E
S

750 375 0 750 1,500 2,250 Feet

200 100 0 200 400 600 Meters

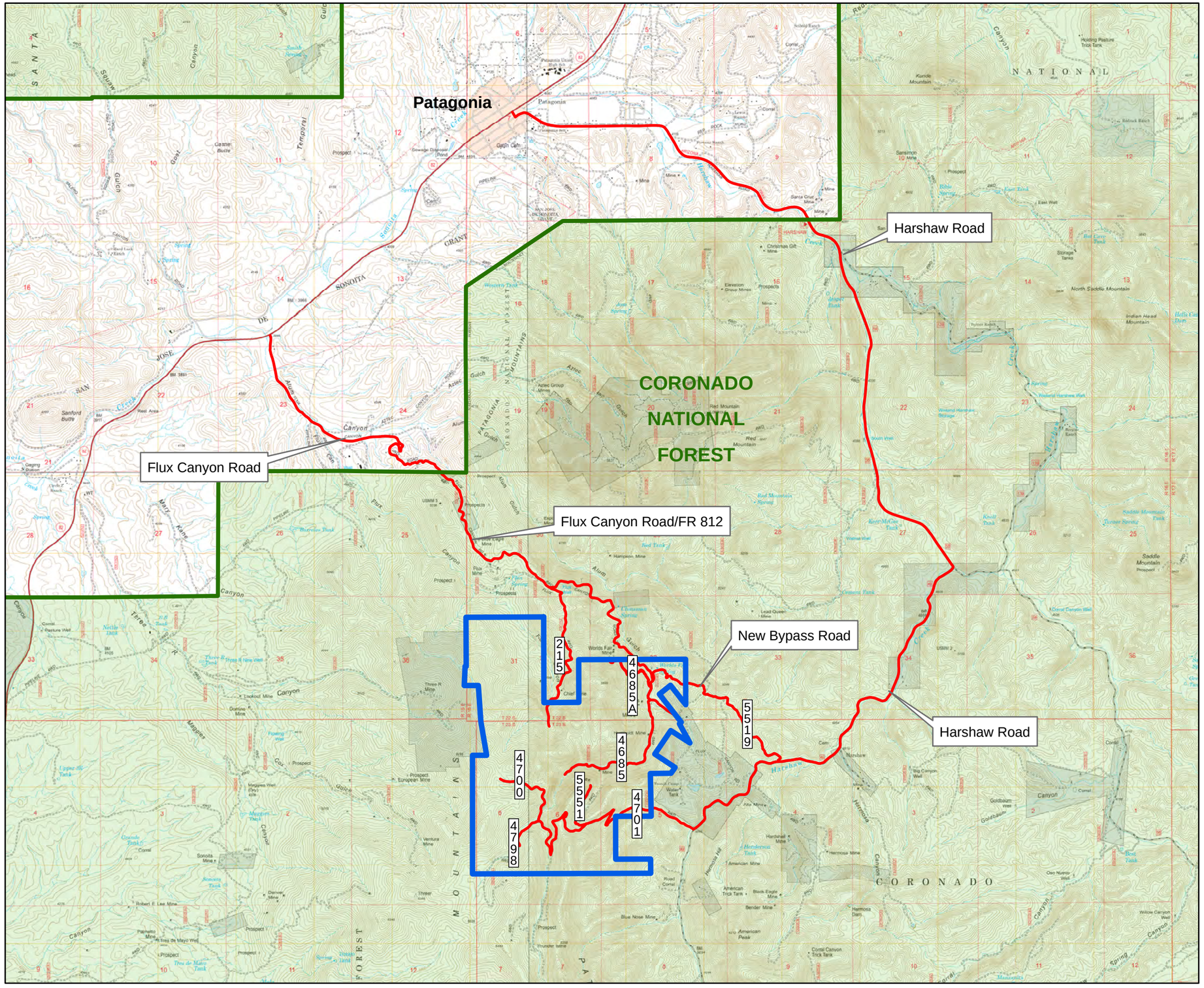
SCALE 1:15,000

# Sunnyside Exploration Drilling Project

## Exhibit 2

Mining Claims Boundary Map

| 06/10/2020 | Sheet 1 of 1 |
|---|---|




## LEGEND

- Project Area
- Primary Access Route
- Coronado National Forest

N
W E
S

1 0.5 0 1 Miles

1 0.5 0 1 2 Kilometers

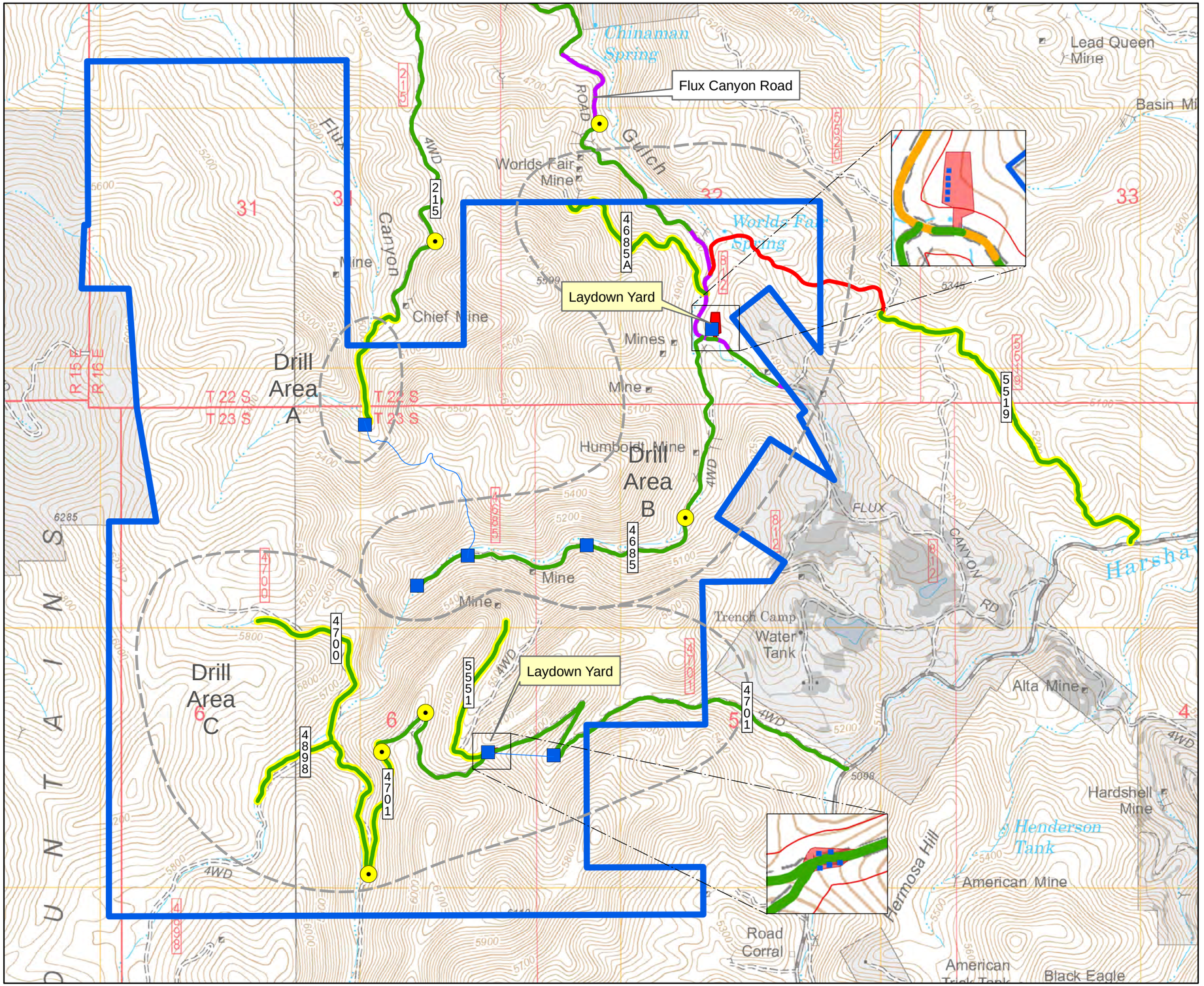
SCALE 1:50,000

# Sunnyside Exploration Drilling Project

## Exhibit 3

Regional Access Road Map

| 06/10/2020 | Sheet 1 of 1 |
|---|---|




## LEGEND

- Project Area
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Proposed Turnout Location
- Water Tank (May Include Multiple)
- Water Line
- Laydown Yard

N
W E
S

750 375 0 750 1,500 2,250 Feet

200 100 0 200 400 600 Meters

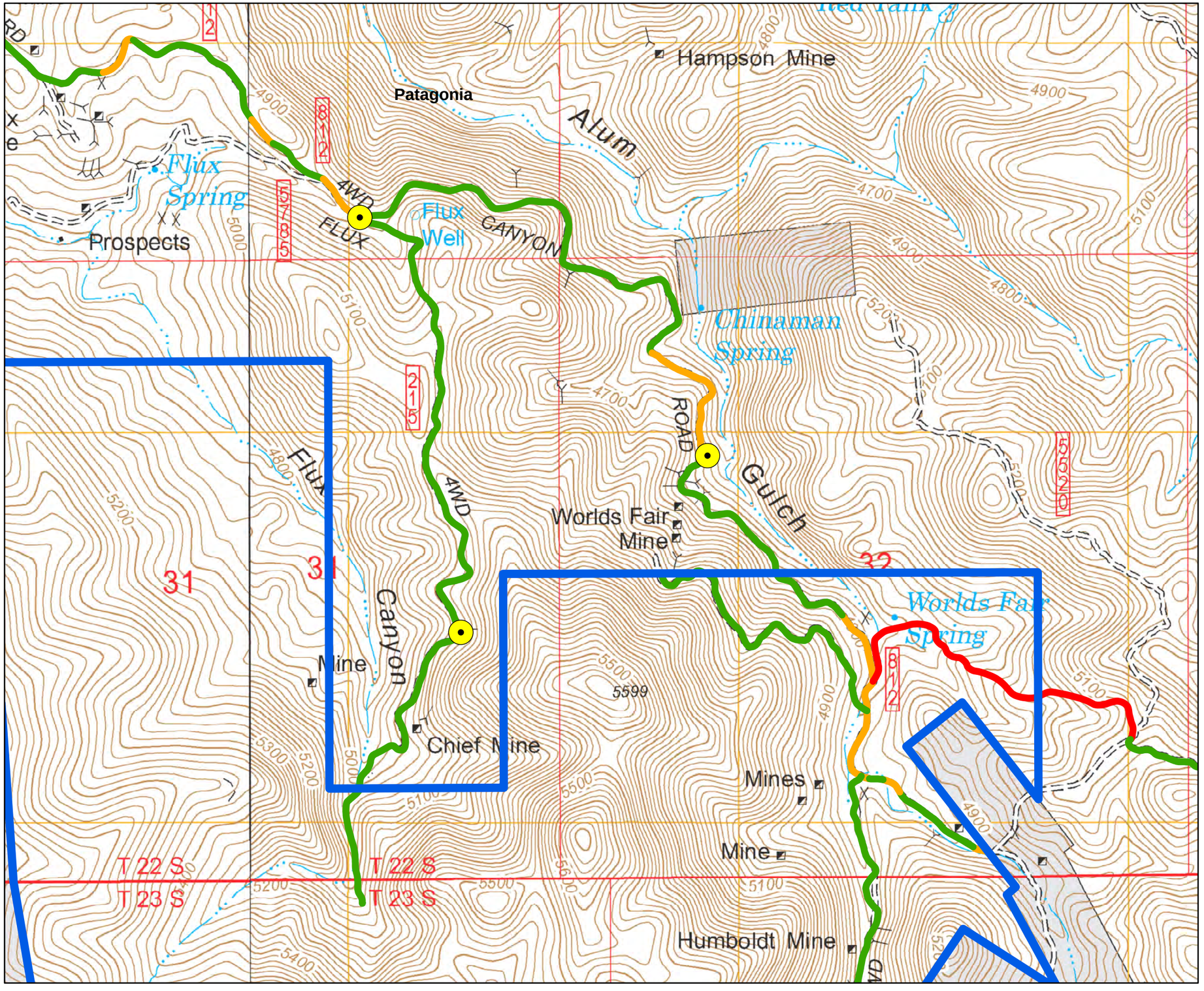
SCALE 1:15,000

# Sunnyside Exploratory Drilling Project

## Exhibit 4

Local Access Roads and Drill Areas

| 12/10/2020 | Sheet 1 of 1 |
|---|---|




## LEGEND

- Project Area
- Existing Road
- Improved Road
- New Temporary Bypass Road
- Proposed Turnout Location

N
W E
S

0 500 1,000 2,000 Feet

0 150 300 600 Meters

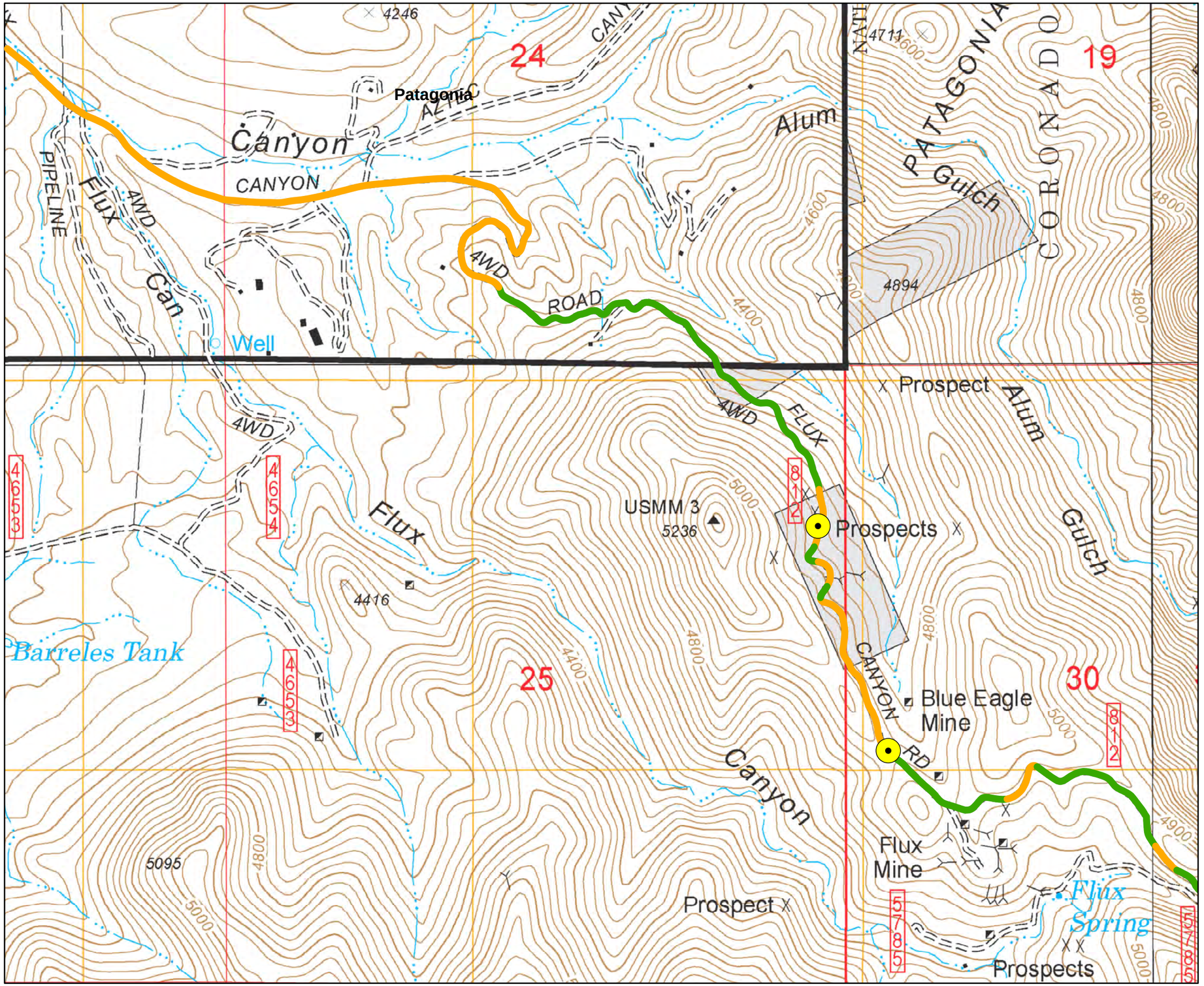
SCALE1:10,000

# Sunnyside Exploration Drilling Project

## Exhibit 5b

Proposed Road Improvements
Along Flux Canyon Road

| 02/10/2020 | Sheet 2 of 2 |
|---|---|




## LEGEND

- National Forest Boundary
- Existing Road
- Improved Road
- Proposed Turnout Location

N
W E
S

0 500 1,000 2,000 Feet

0 150 300 600 Meters

SCALE1:10,000

# Sunnyside Exploration Drilling Project

## Exhibit 5a

Proposed Road Improvements
Along Flux Canyon Road

| 02/10/2020 | Sheet 1 of 2 |
|---|---|

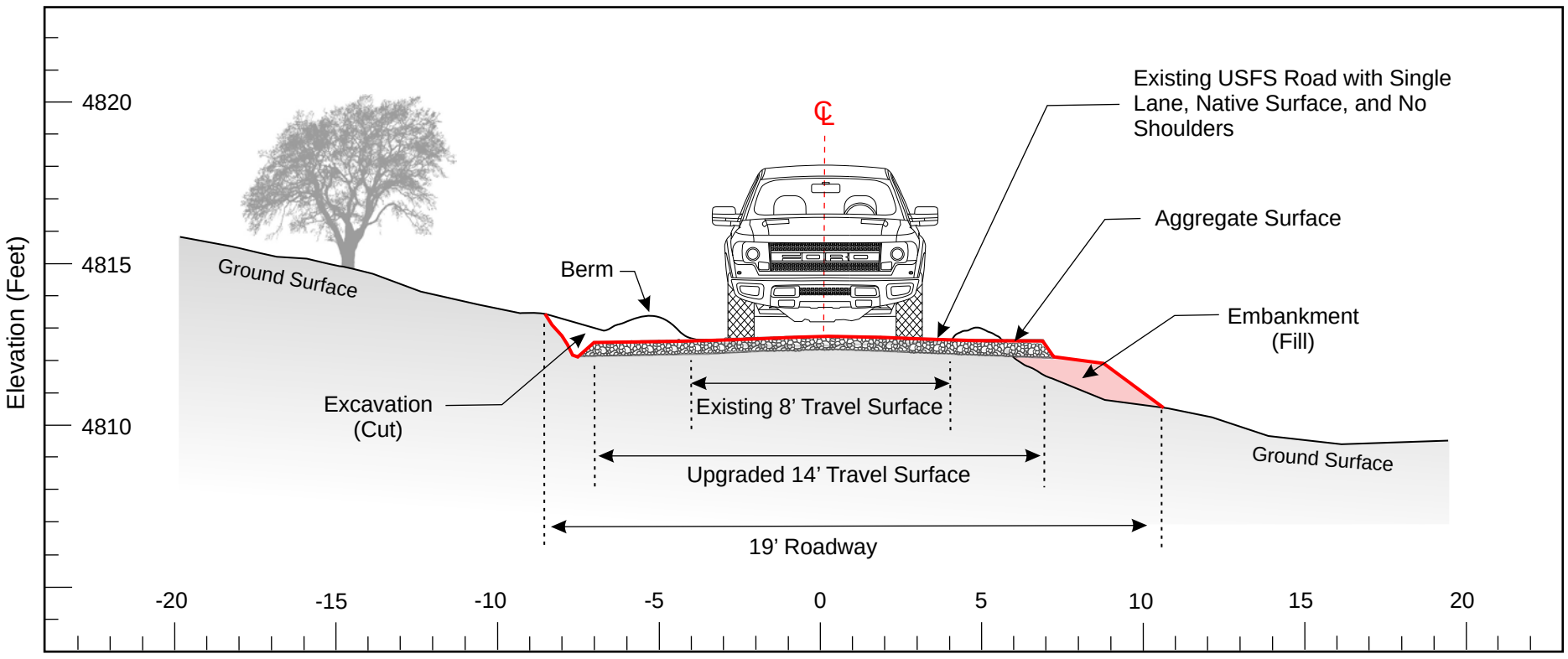



**Exhibit 6a: Cross-Section of Typical Upgraded Narrow-Width Road**

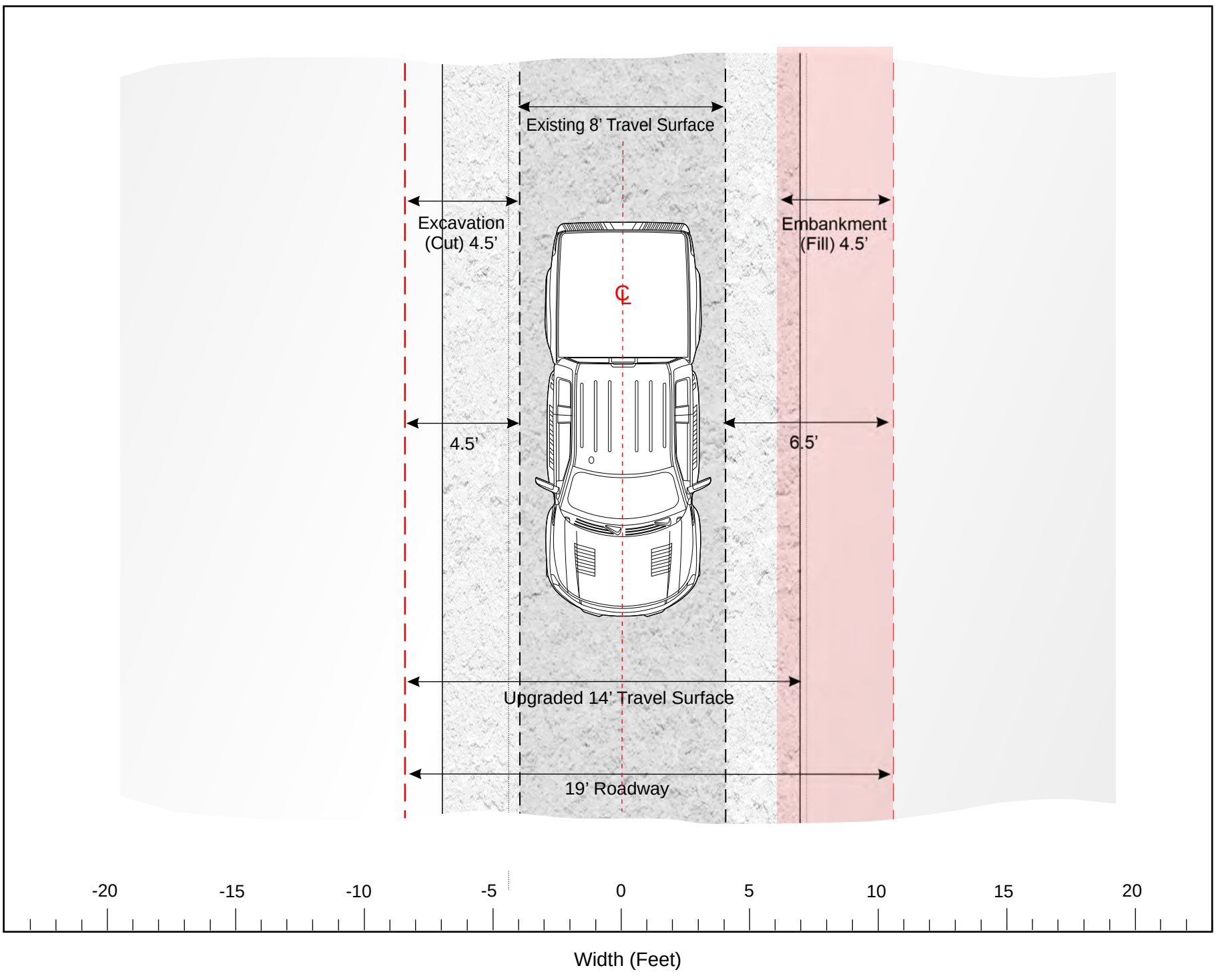



**Exhibit 6b: Plan View of Typical Upgraded Narrow-Width Road**

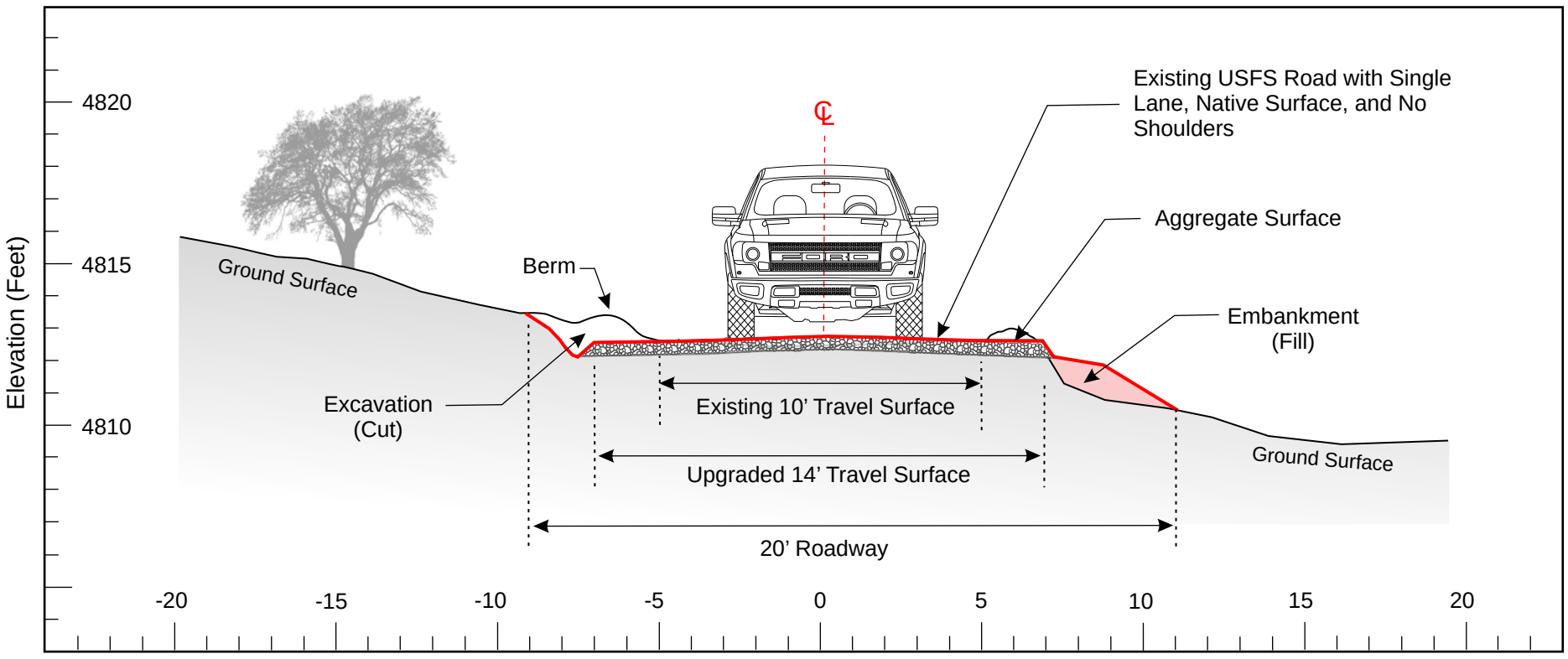



**Exhibit 7a: Cross-Section of Typical Upgraded Medium-Width Road**

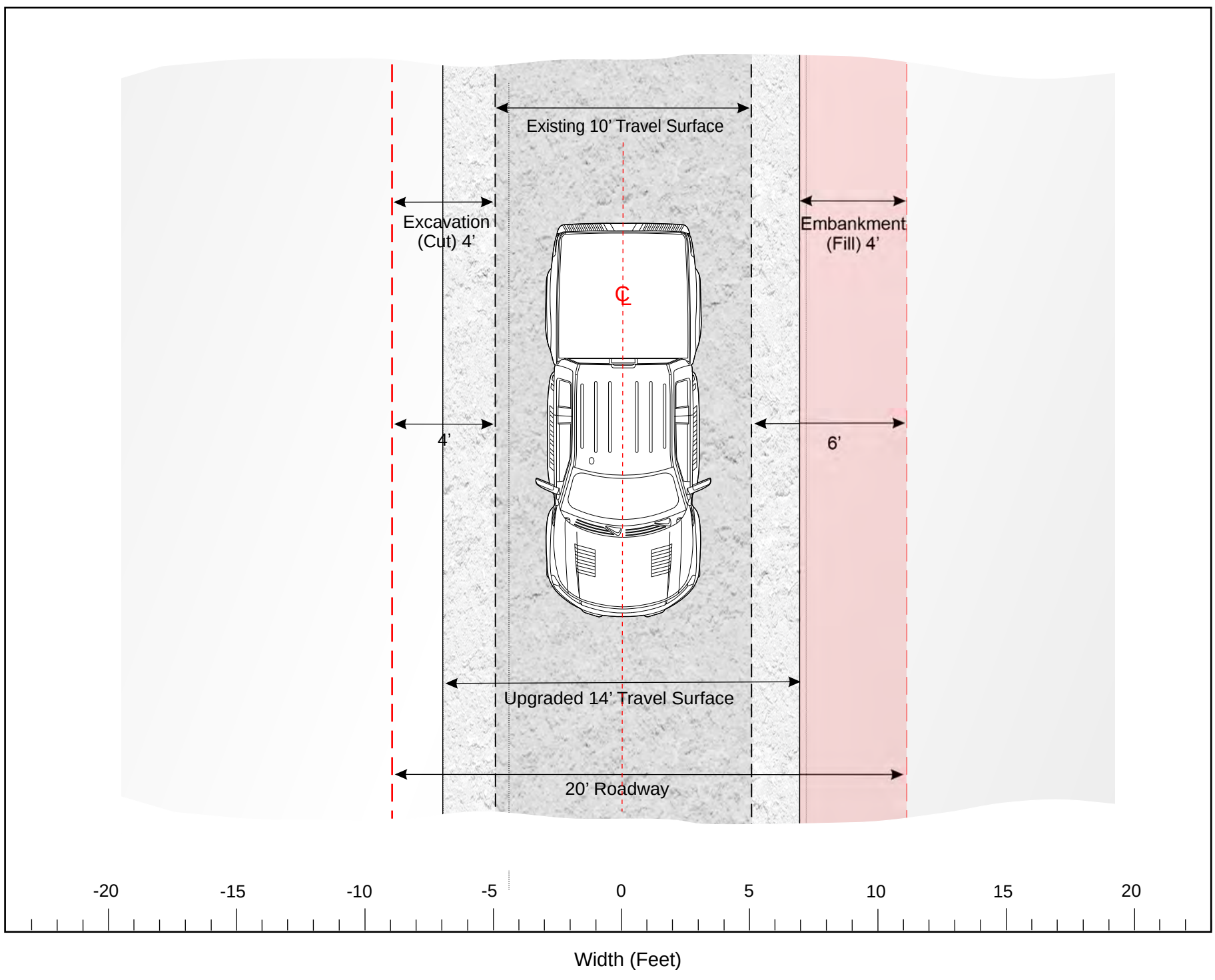



**Exhibit 7b: Plan View of Typical Upgraded Medium-Width Road**

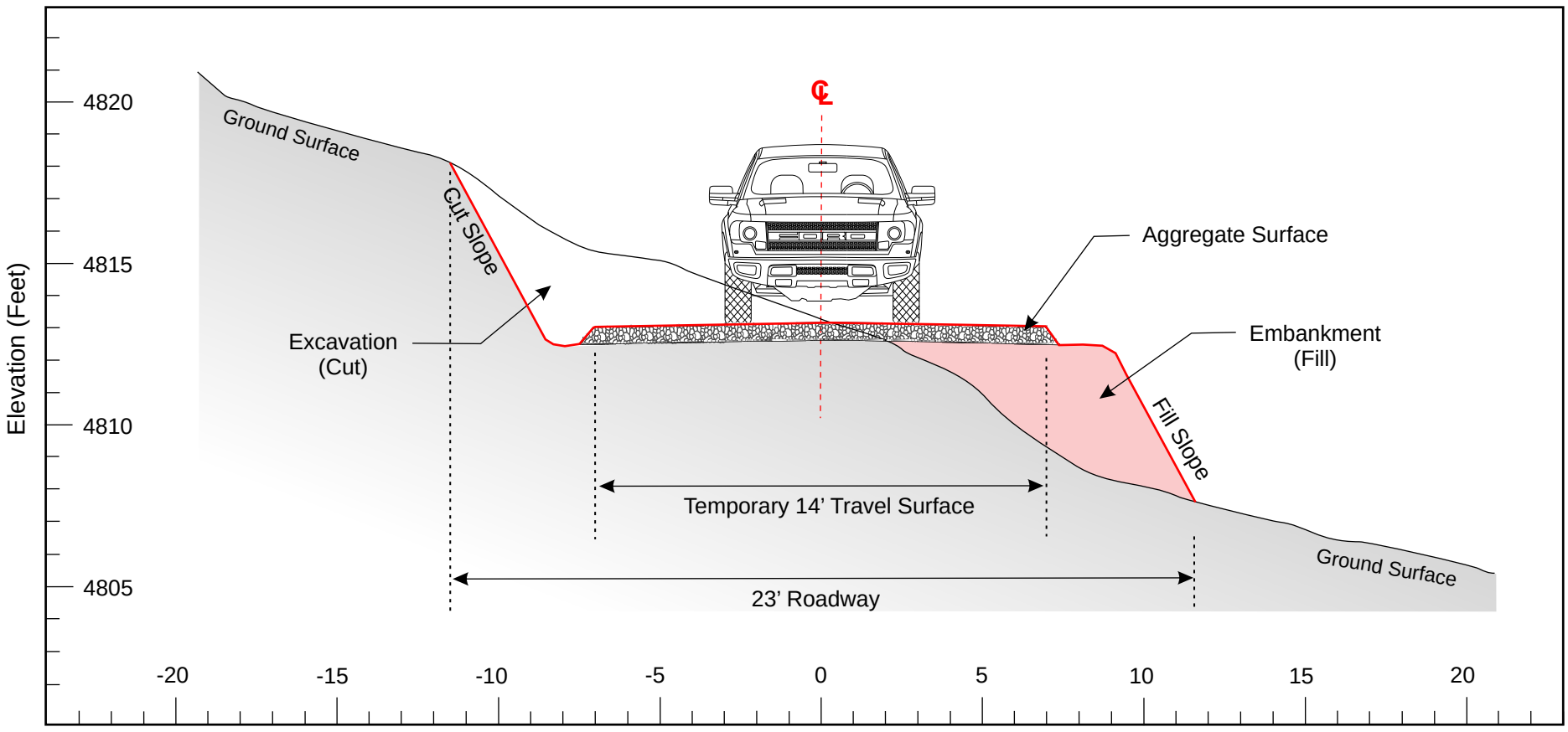



**Exhibit 8a: Cross-Section of Typical New Temporary Bypass Road**

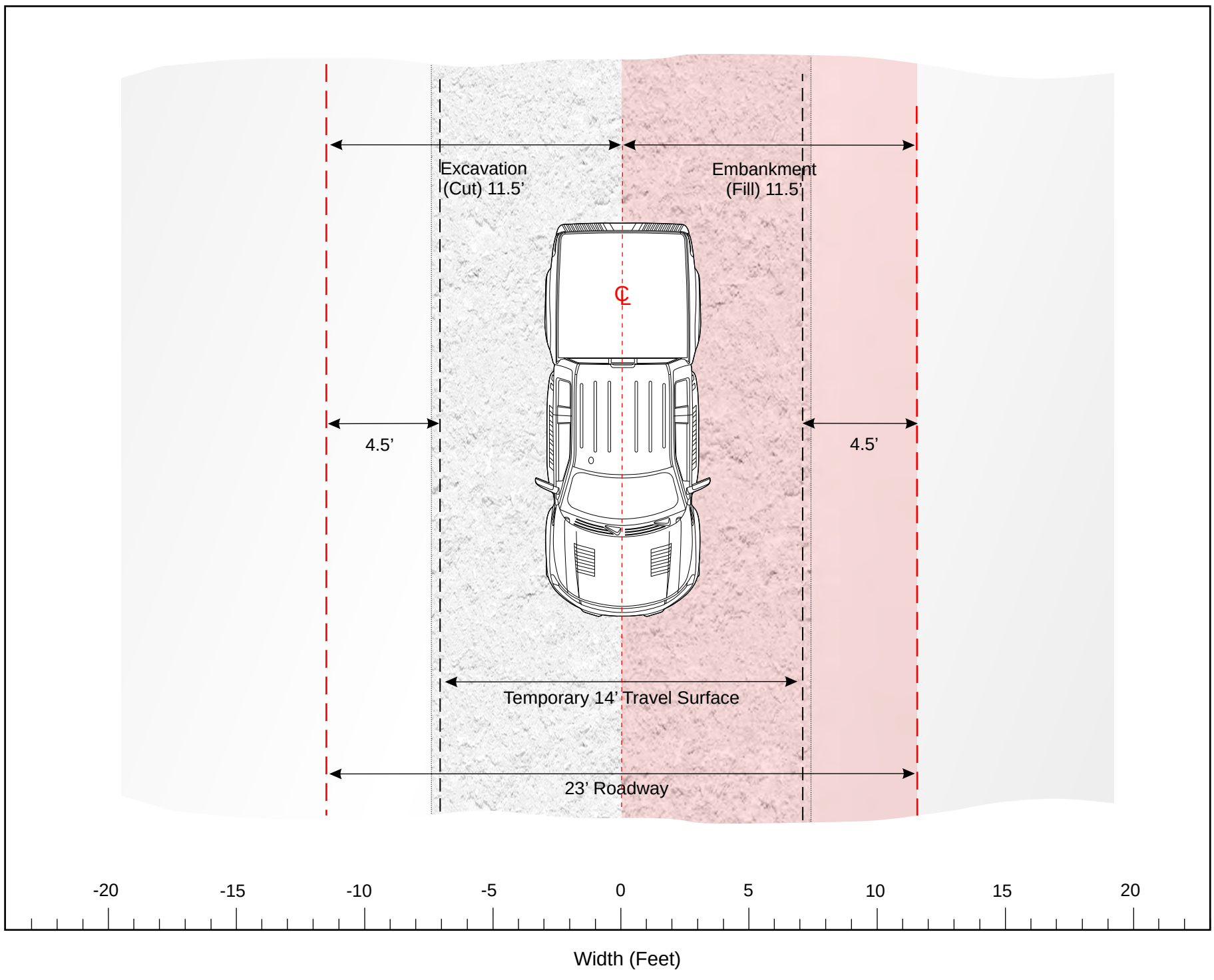
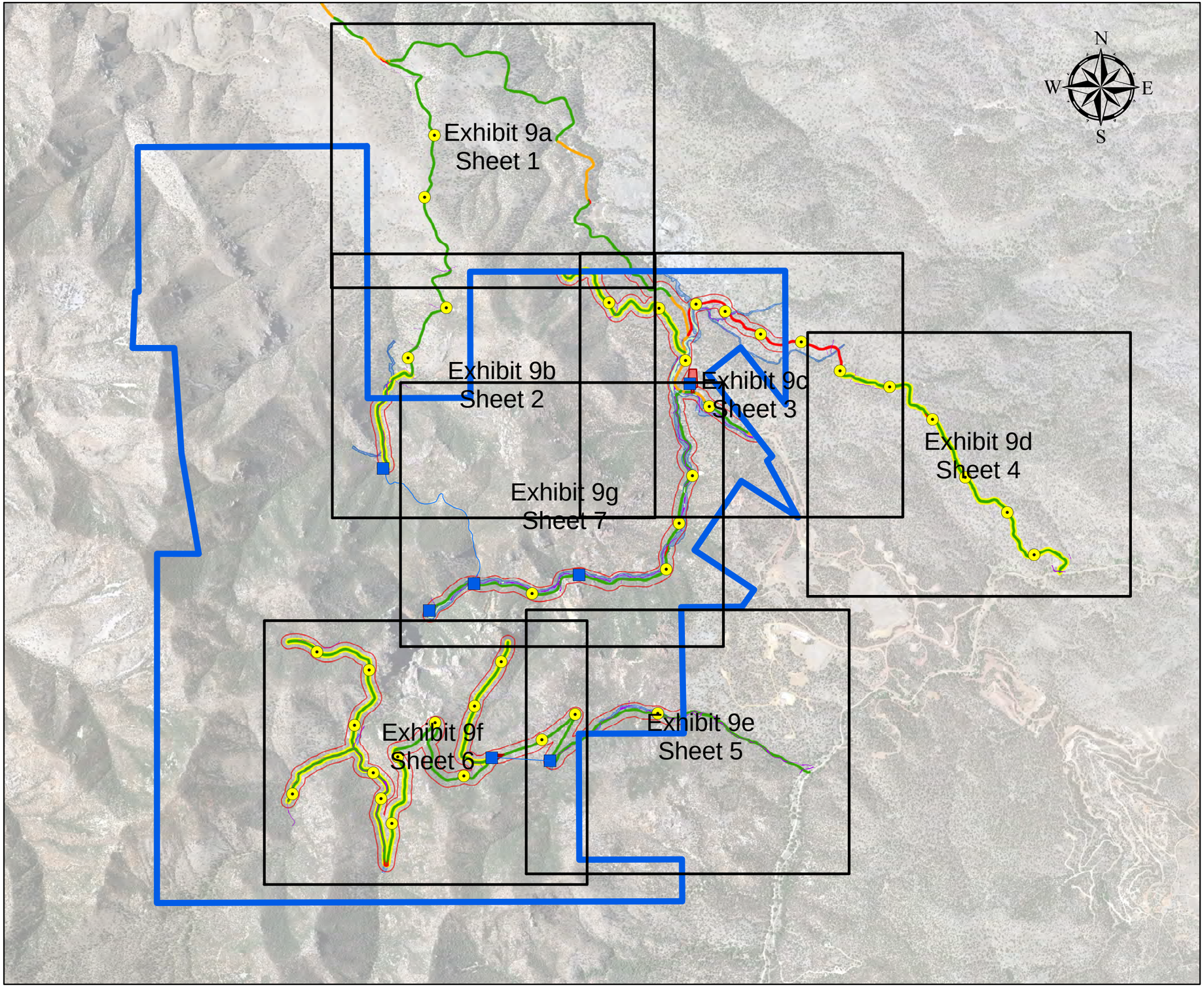



**Exhibit 8b: Plan View of Typical New Temporary Bypass Road**




## LEGEND

- Project Area
- Drill Areas
- Existing Road (Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Waterline
- Water Tank (May Include Multiple)
- Laydown Yard
- Turnout
- Mapped 100-Year Floodplain
- Ephemeral Wash
- Mapped Wetlands
- Potential Topsoil & Slash Stockpile Area

1,000 500 0 1,000 2,000 Feet

200100 0 200 400 600 Meters

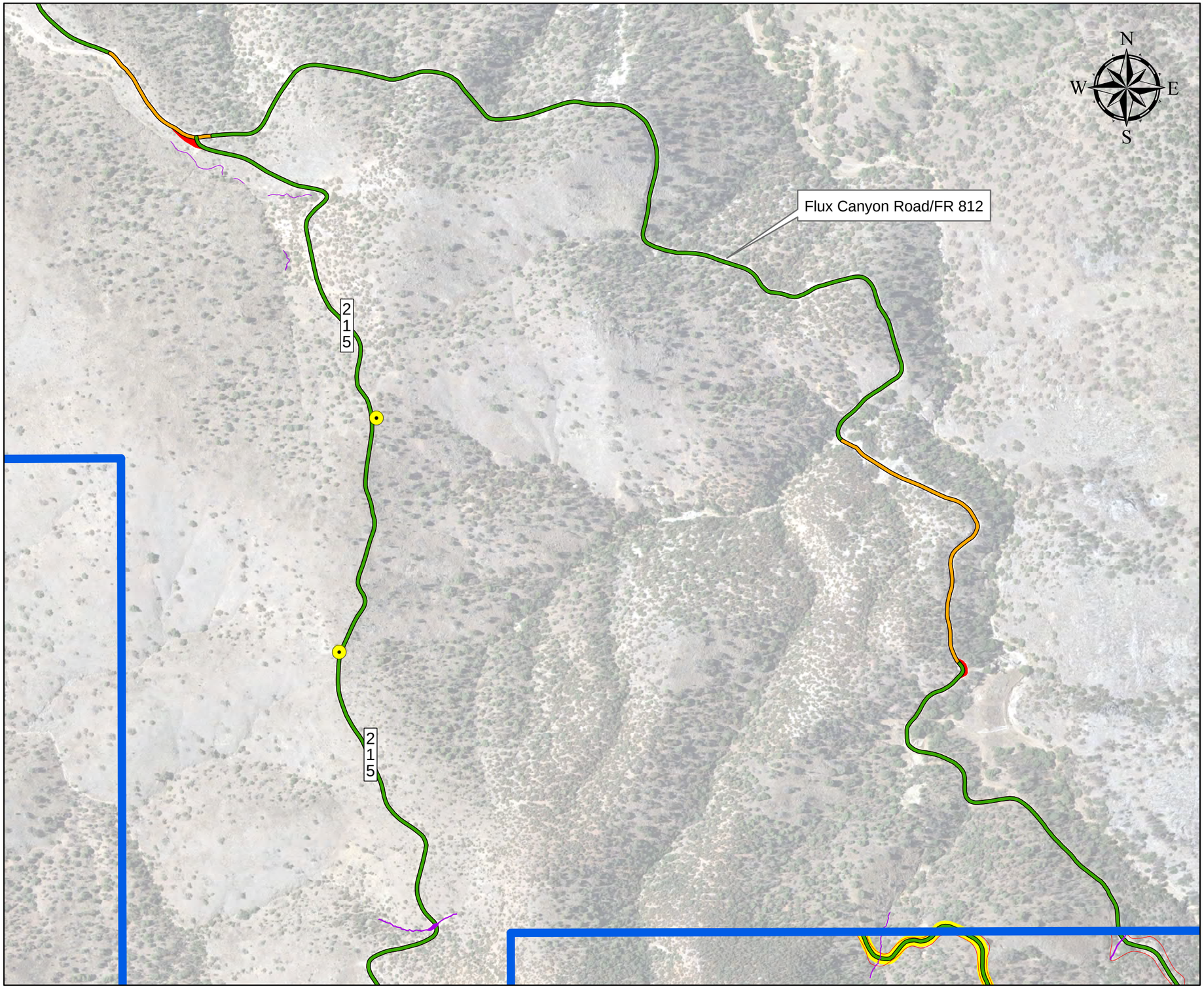
SCALE 1:17,000

# Sunnyside Exploration Drilling Project

## Exhibit 9

Overview Map of Project Facilities Shown in Relation to Drainages and Other Water Resource Features

| 06/10/2020 | Sheet 1 of 1 |
|---|---|




## LEGEND

- Project Area
- Areas of Potential Disturbance
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Waterline
- Water Tank (May Include Multiple)
- Laydown Yard
- Turnout Area
- Mapped 100-Year Floodplain
- Ephemeral Wash
- Mapped Wetlands
- Potential Topsoil & Slash Stockpile Area

450 225 0 450 Feet

110 55 0 110 Meters

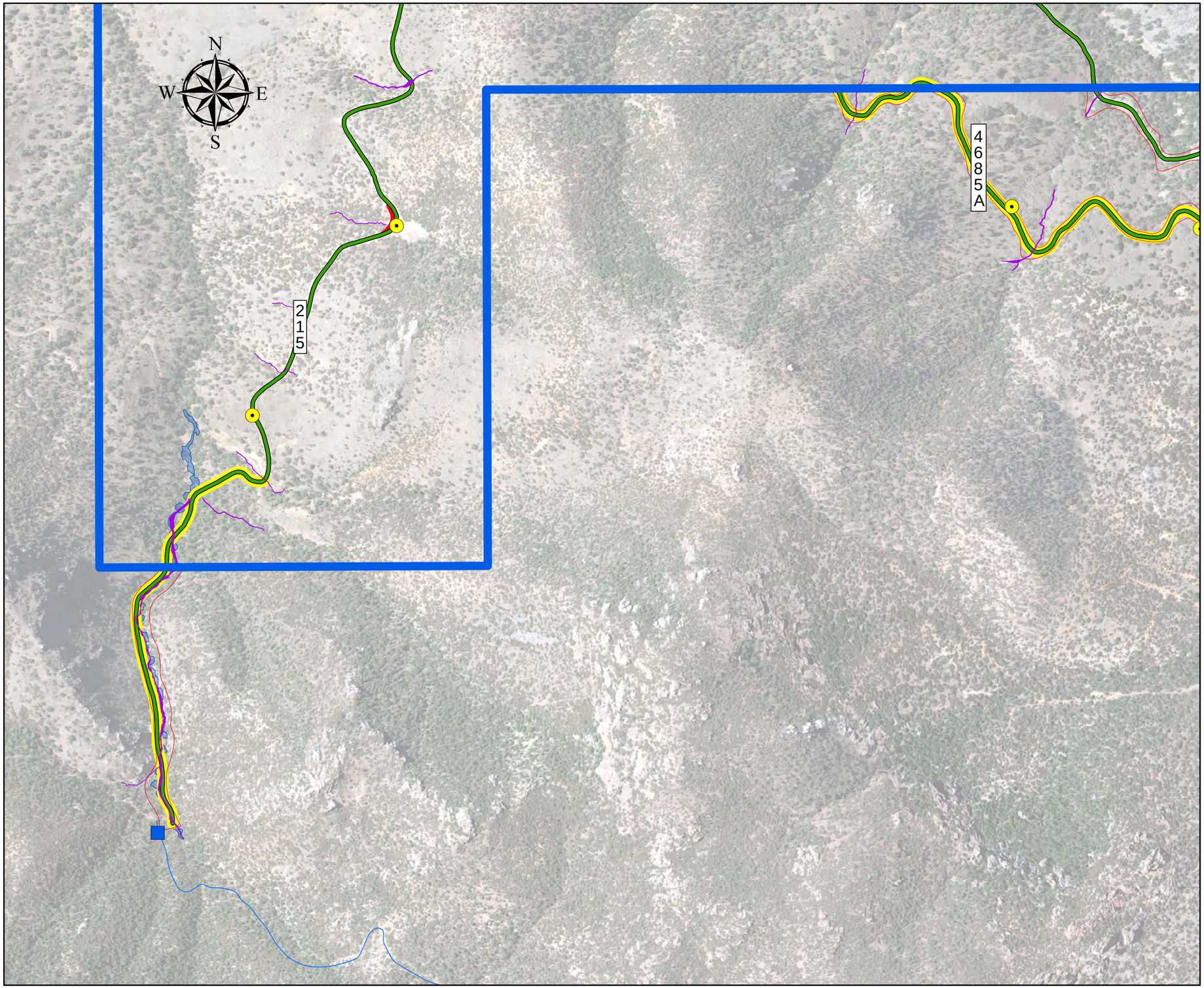
SCALE 1:4,500

# Sunnyside Exploration Drilling Project

## Exhibit 9a

Project Facilities Shown in Relation to Drainages and Other Water Resource Features

| 06/10/2020 | Sheet 1 of 7 |
|---|---|




## LEGEND

- Project Area
- Areas of Potential Disturbance
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Waterline
- Water Tank (May Include Multiple)
- Laydown Yard
- Turnout Area
- Mapped 100-Year Floodplain
- Ephemeral Wash
- Mapped Wetlands
- Potential Topsoil & Slash Stockpile Area

450 225 0 450 Feet

110 55 0 110 Meters

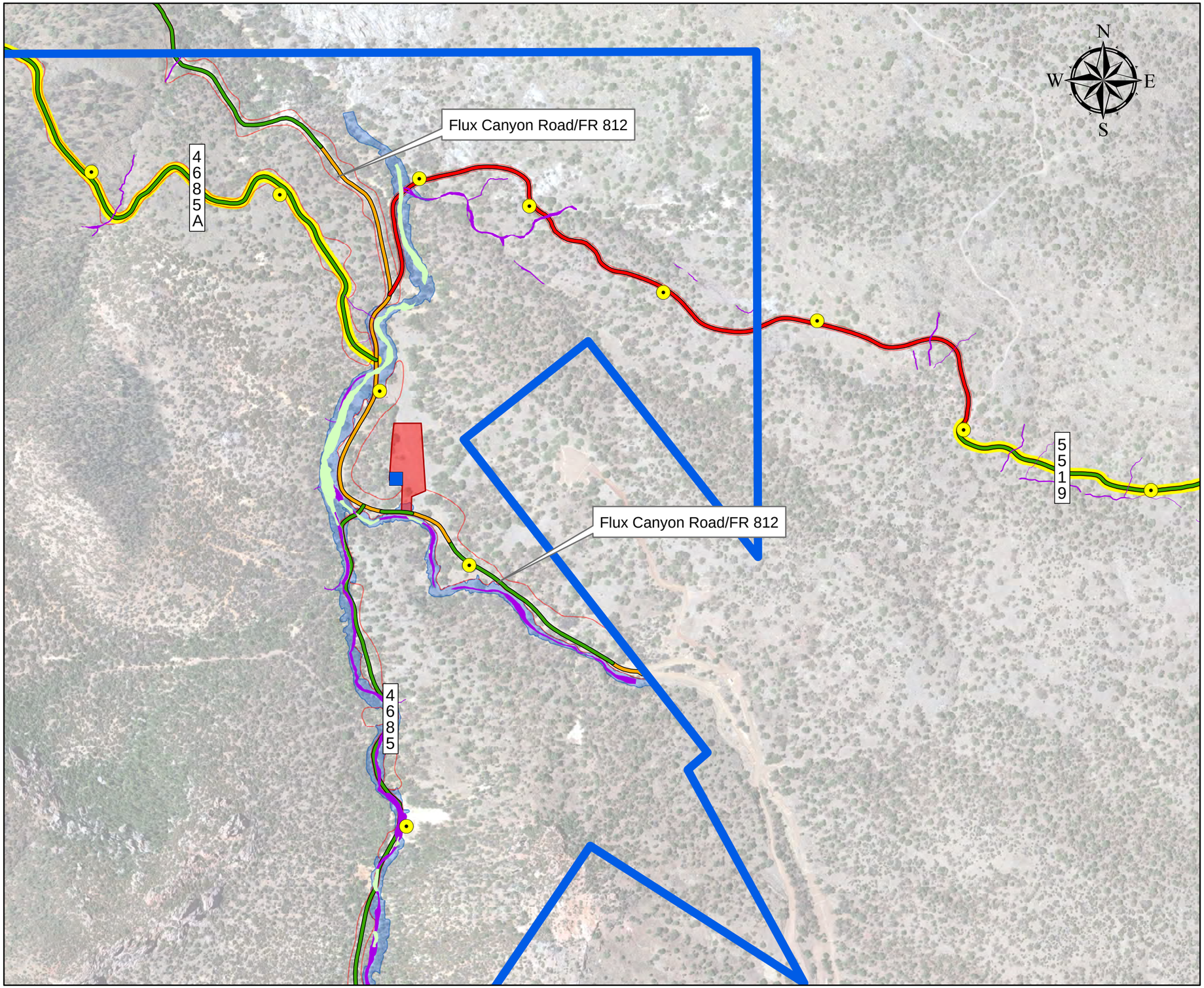
SCALE 1:4,500

# Sunnyside Exploration Drilling Project

## Exhibit 9b

Project Facilities Shown in Relation to Drainages and Other Water Resource Features

| 06/10/2020 | Sheet 2 of 7 |
|---|---|




## LEGEND

- Project Area
- Areas of Potential Disturbance
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Waterline
- Water Tank (May Include Multiple)
- Laydown Yard
- Turnout Area
- Mapped 100-Year Floodplain
- Ephemeral Wash
- Mapped Wetlands
- Potential Topsoil & Slash Stockpile Area

450 225 0 450 Feet

110 55 0 110 Meters

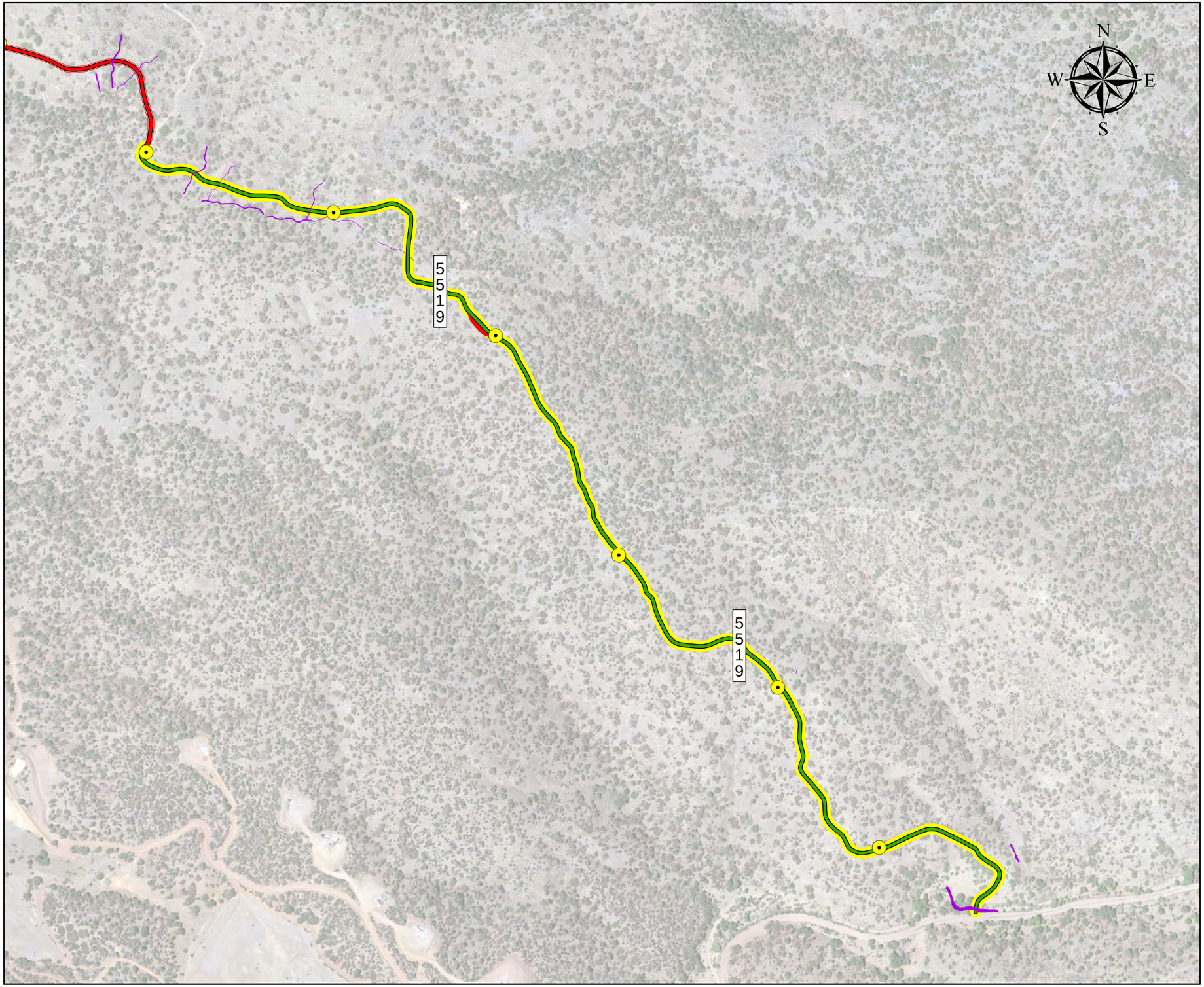
SCALE 1:4,500

# Sunnyside Exploration Drilling Project

## Exhibit 9c

Project Facilities Shown in Relation to Drainages and Other Water Resource Features

| 06/10/2020 | Sheet 3 of 7 |
|---|---|




## LEGEND

- Project Area
- Area of Potential Disturbance
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Waterline
- Water Tank (May Include Multiple)
- Laydown Yard
- Turnout Area
- Mapped 100-Year Floodplain
- Ephemeral Wash
- Mapped Wetlands
- Potential Topsoil & Slash Stockpile Area

450 225 0 450 Feet

110 55 0 110 Meters

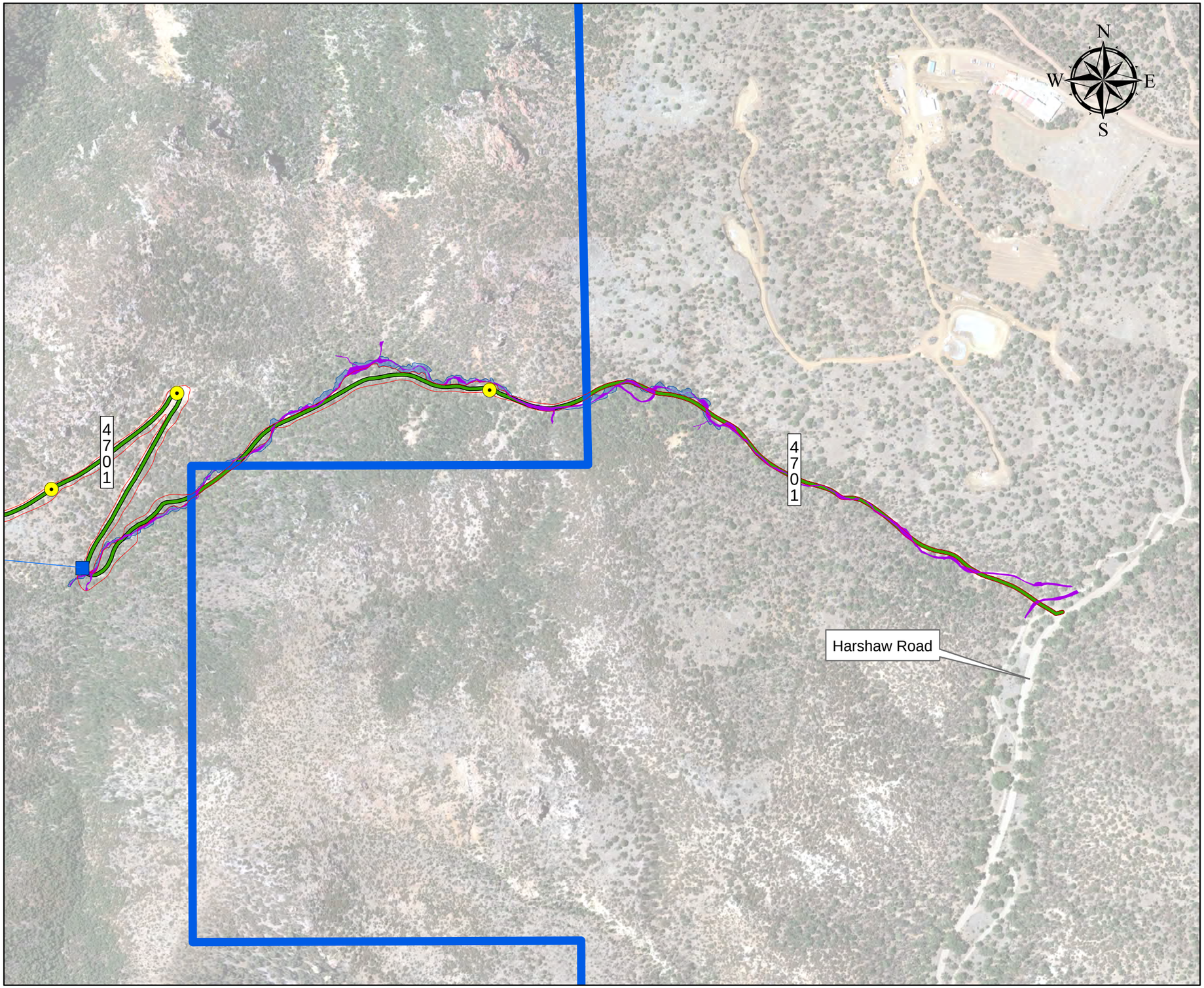
SCALE 1:4,500

# Sunnyside Exploration Drilling Project

## Exhibit 9d

Project Facilities Shown in Relation to Drainages and Other Water Resource Features

| 06/10/2020 | Sheet 4 of 7 |
|---|---|




## LEGEND

- Project Area
- Areas of Potential Disturbance
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Waterline
- Water Tank (May Include Multiple)
- Laydown Yard
- Turnout Area
- Mapped 100-Year Floodplain
- Ephemeral Wash
- Mapped Wetlands
- Potential Topsoil & Slash Stockpile Area

450 225 0 450 Feet

110 55 0 110 Meters

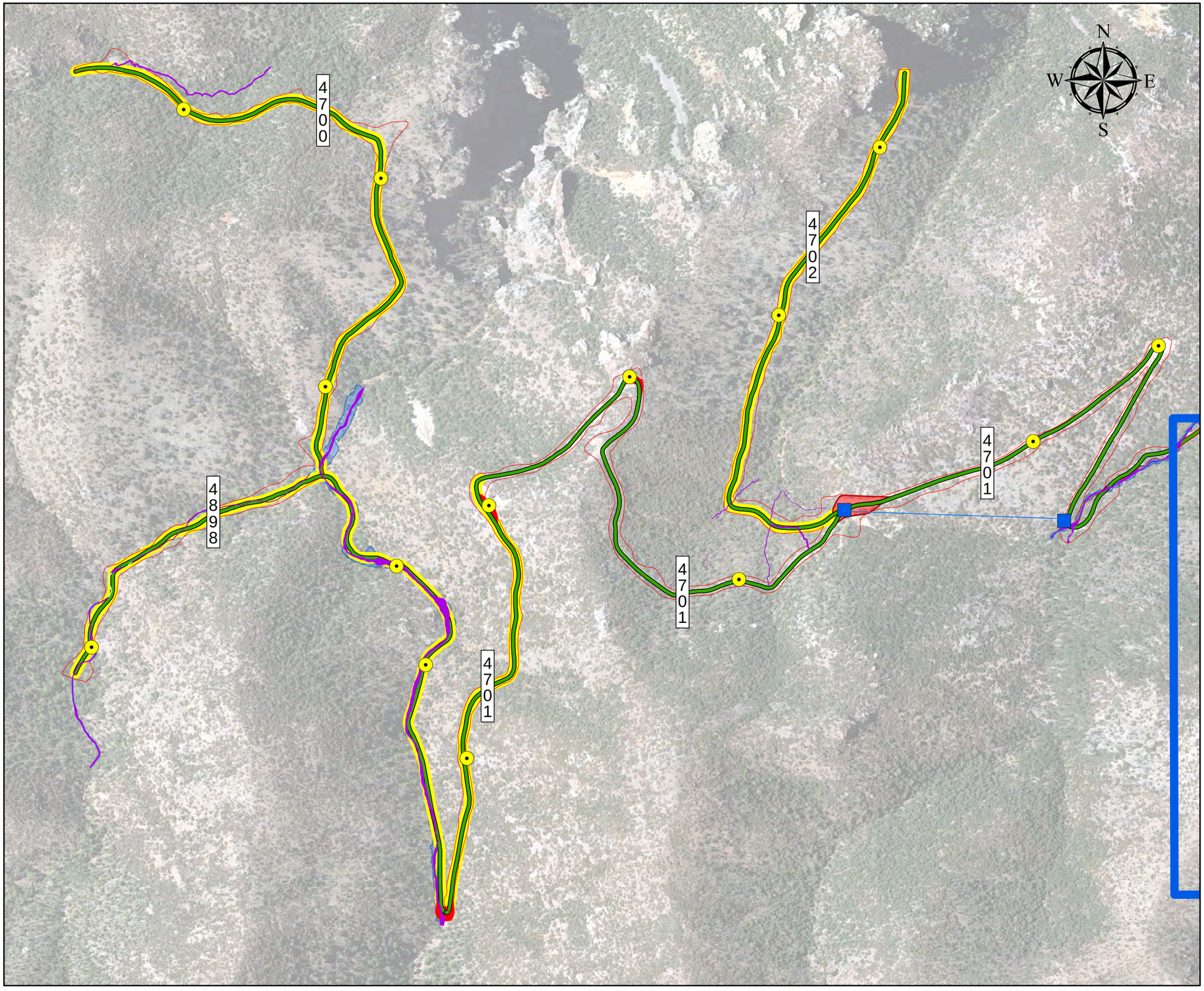
SCALE 1:4,500

# Sunnyside Exploration Drilling Project

## Exhibit 9e

Project Facilities Shown in Relation to Drainages and Other Water Resource Features

| 06/10/2020 | Sheet 5 of 7 |
|---|---|




## LEGEND

- Project Area
- Areas of Potential Disturbance
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Waterline
- Water Tank (May Include Multiple)
- Laydown Yard
- Turnout Area
- Mapped 100-Year Floodplain
- Ephemeral Wash
- Mapped Wetlands
- Potential Topsoil & Slash Stockpile Area

450 225 0 450 Feet

110 55 0 110 Meters

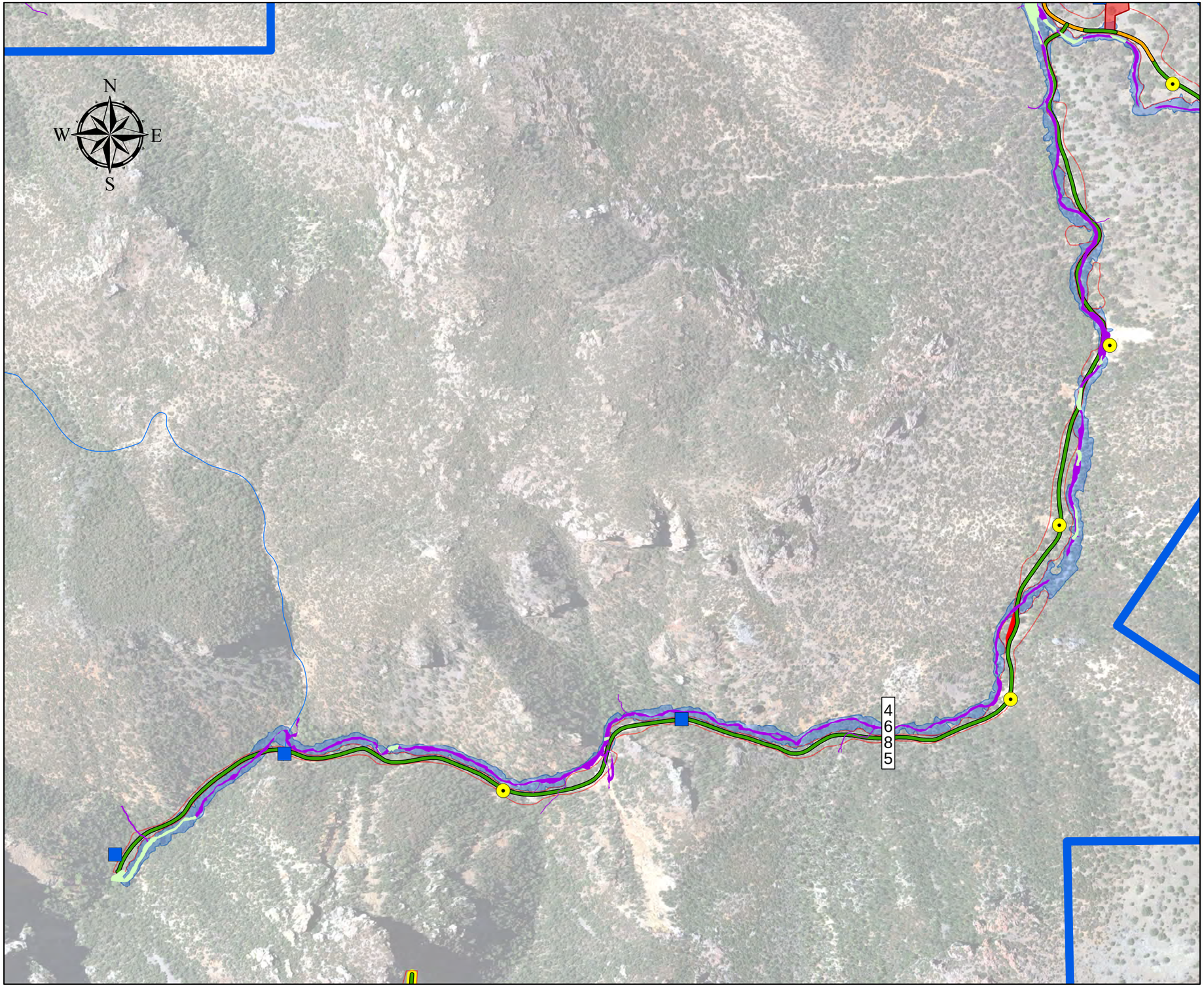
SCALE 1:4,500

# Sunnyside Exploration Drilling Project

## Exhibit 9f

Project Facilities Shown in Relation to Drainages and Other Water Resource Features

| 06/10/2020 | Sheet 6 of 7 |
|---|---|




## LEGEND

- Project Area
- Areas of Potential Disturbance
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Waterline
- Water Tank (May Include Multiple)
- Laydown Yard
- Turnout Area
- Mapped 100-Year Floodplain
- Ephemeral Wash
- Mapped Wetlands
- Potential Topsoil & Slash Stockpile Area

450 225 0 450 Feet

110 55 0 110 Meters

SCALE 1:4,500

# Sunnyside Exploration Drilling Project

## Exhibit 9g

Project Facilities Shown in Relation to Drainages and Other Water Resource Features

| 06/10/2020 | Sheet 7 of 7 |
|---|---|

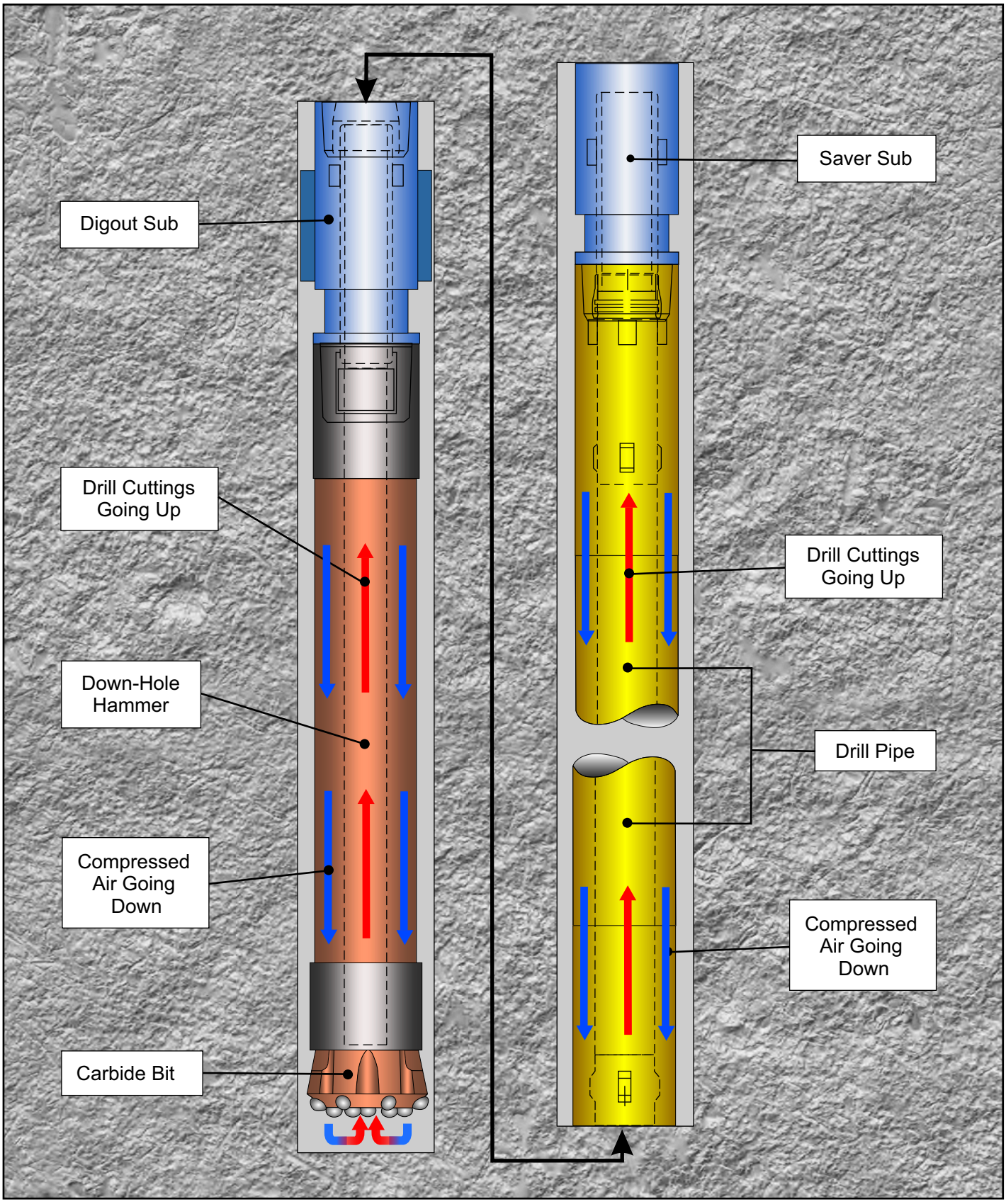



**Exhibit 10: Generalized Schematic of a Reverse Circulation (RC) Drilling System**

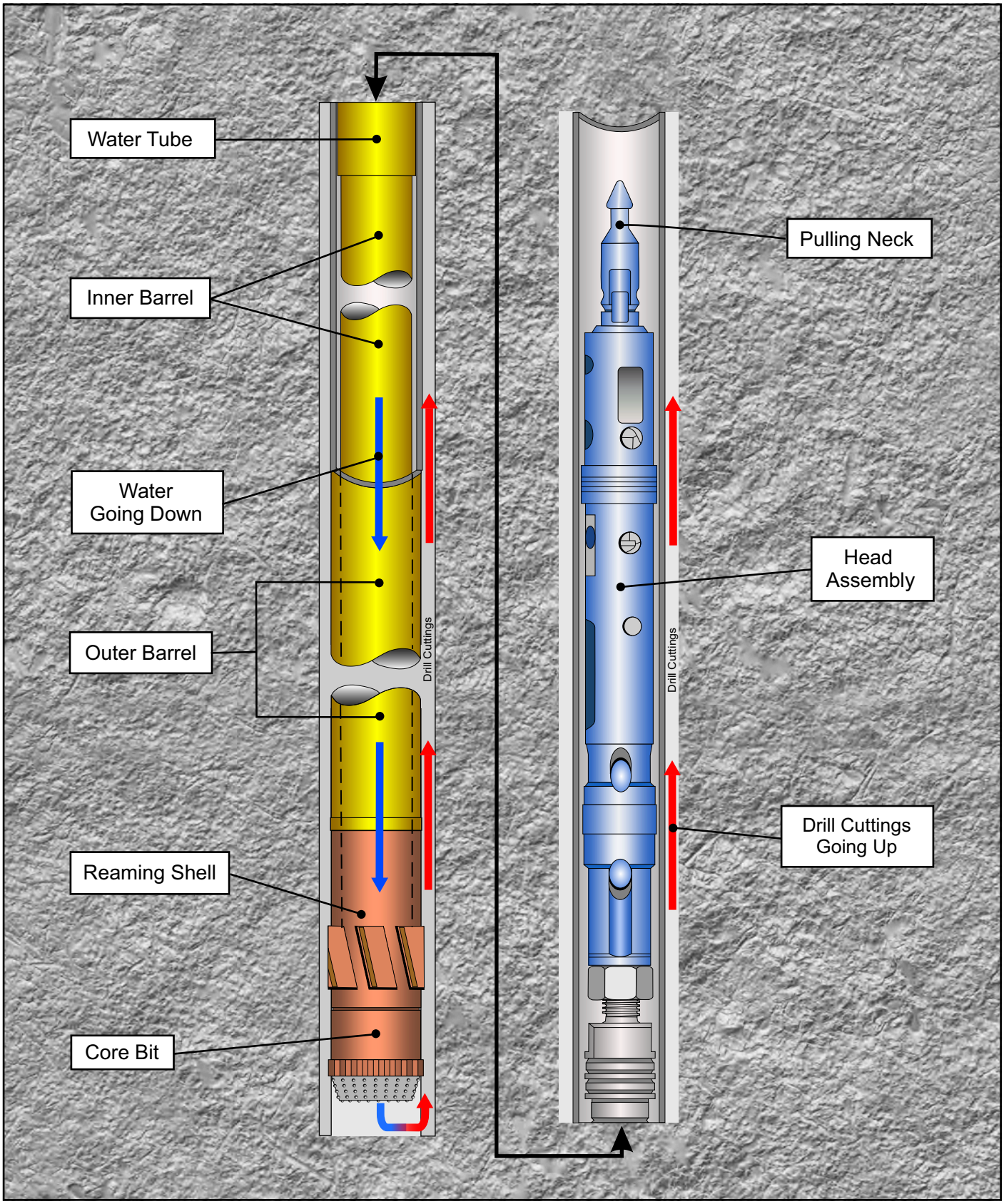



**Exhibit 11: Generalized Schematic of a Diamond Core Wire-Line Drilling System**

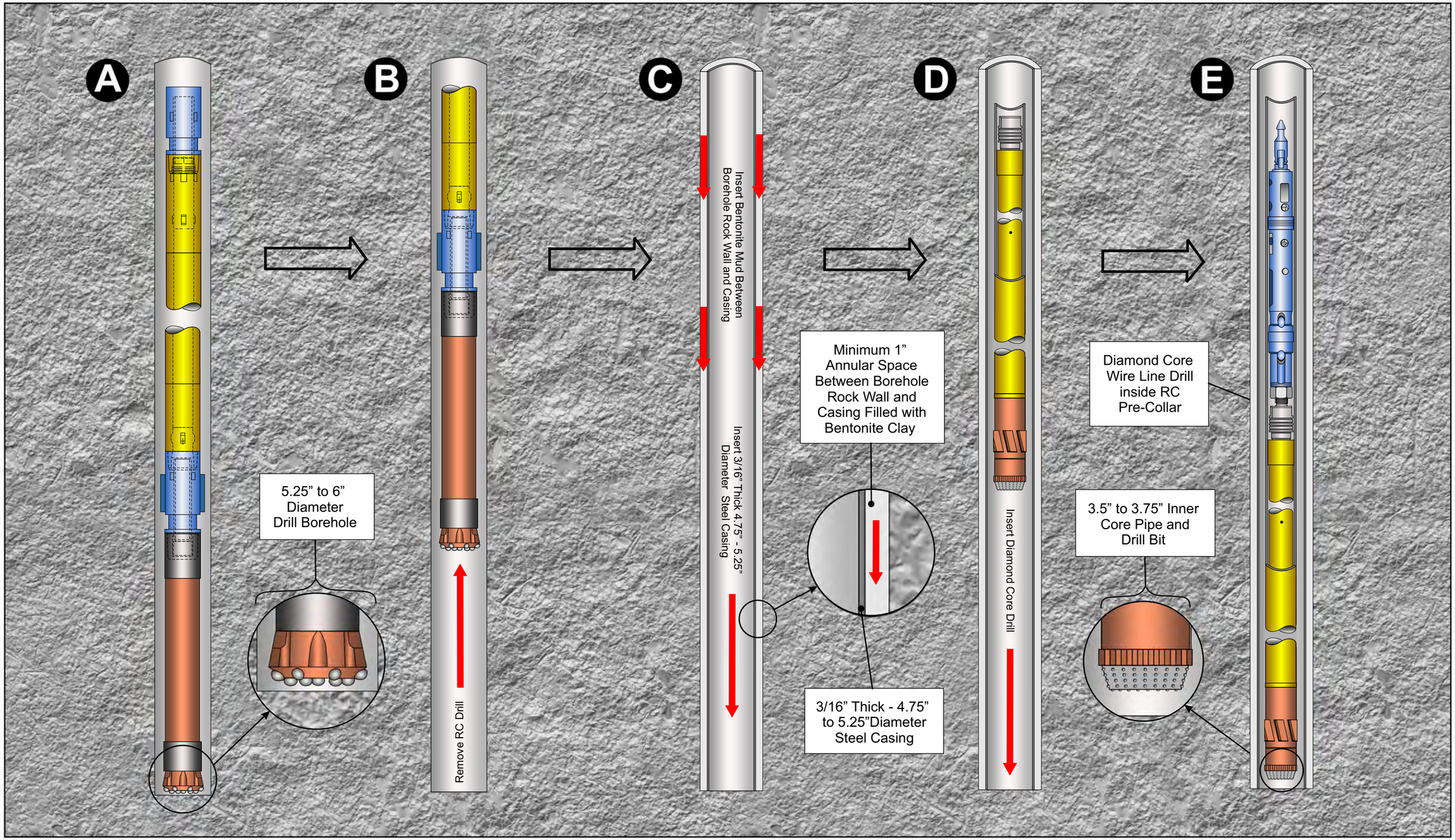
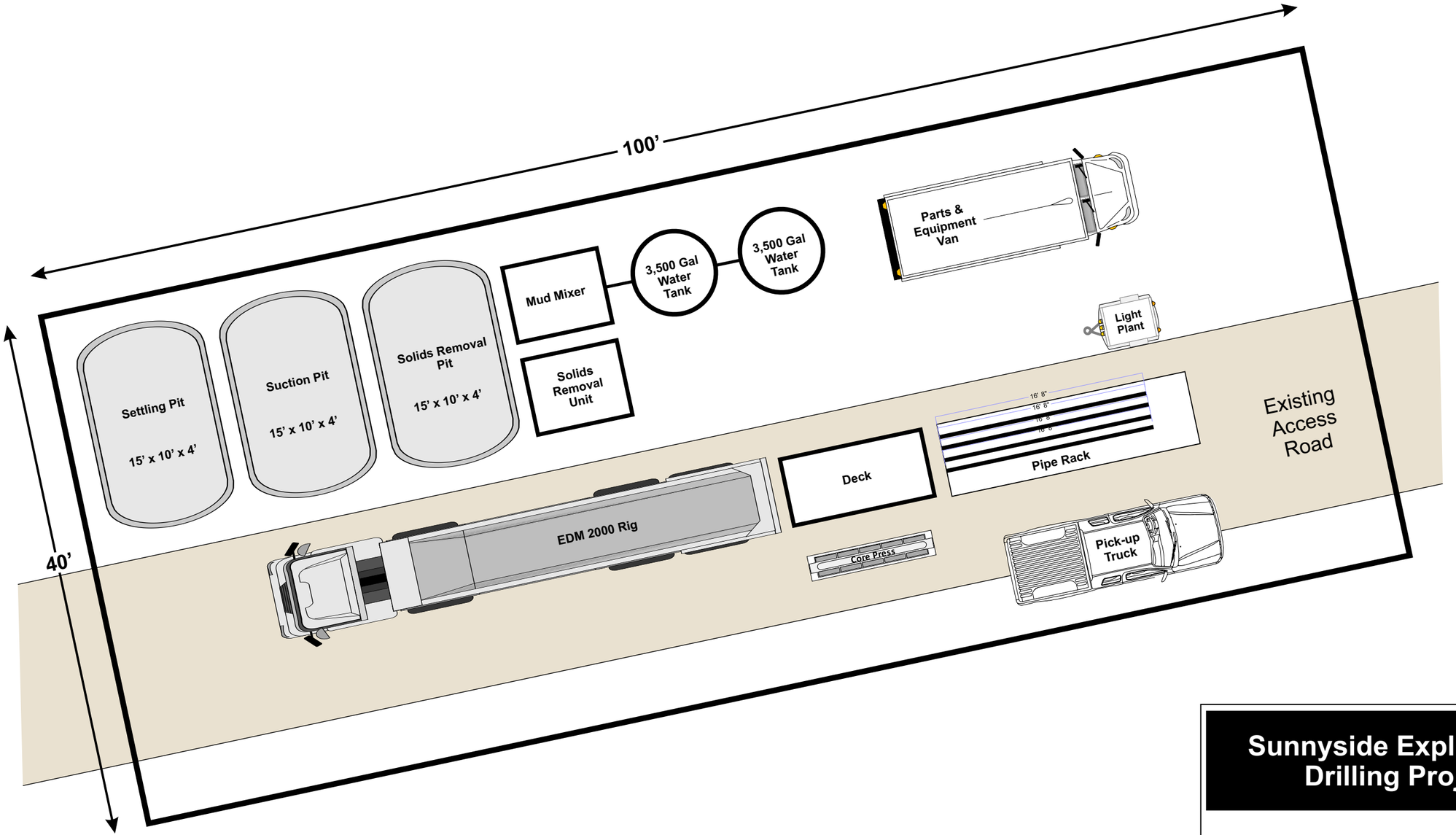



**Exhibit 12: Progression of Steps Shown for Scenario 4, which Includes Reverse Circulation (RC) Drilling, Pre-collar Installation, and Vertical Core Tail Installation and Drilling to the Targeted Mineralized Zone**

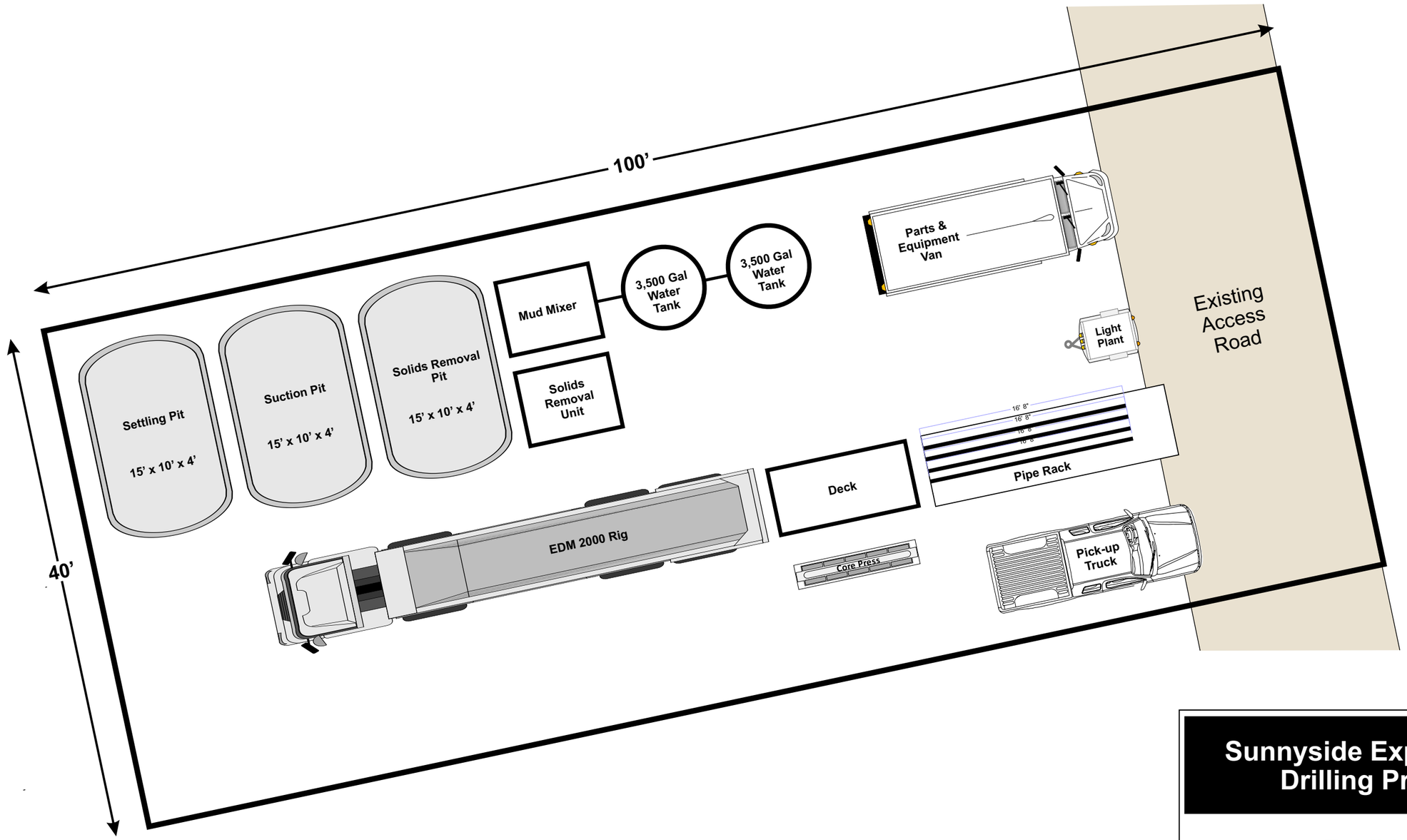



**Sunnyside Exploration Drilling Project**

## Exhibit 13

Diagram of a Typical Drill Pad Layout Parallel to the Existing Access Road

| 02/20/2020 | Sheet 1 of 1 |
|---|---|

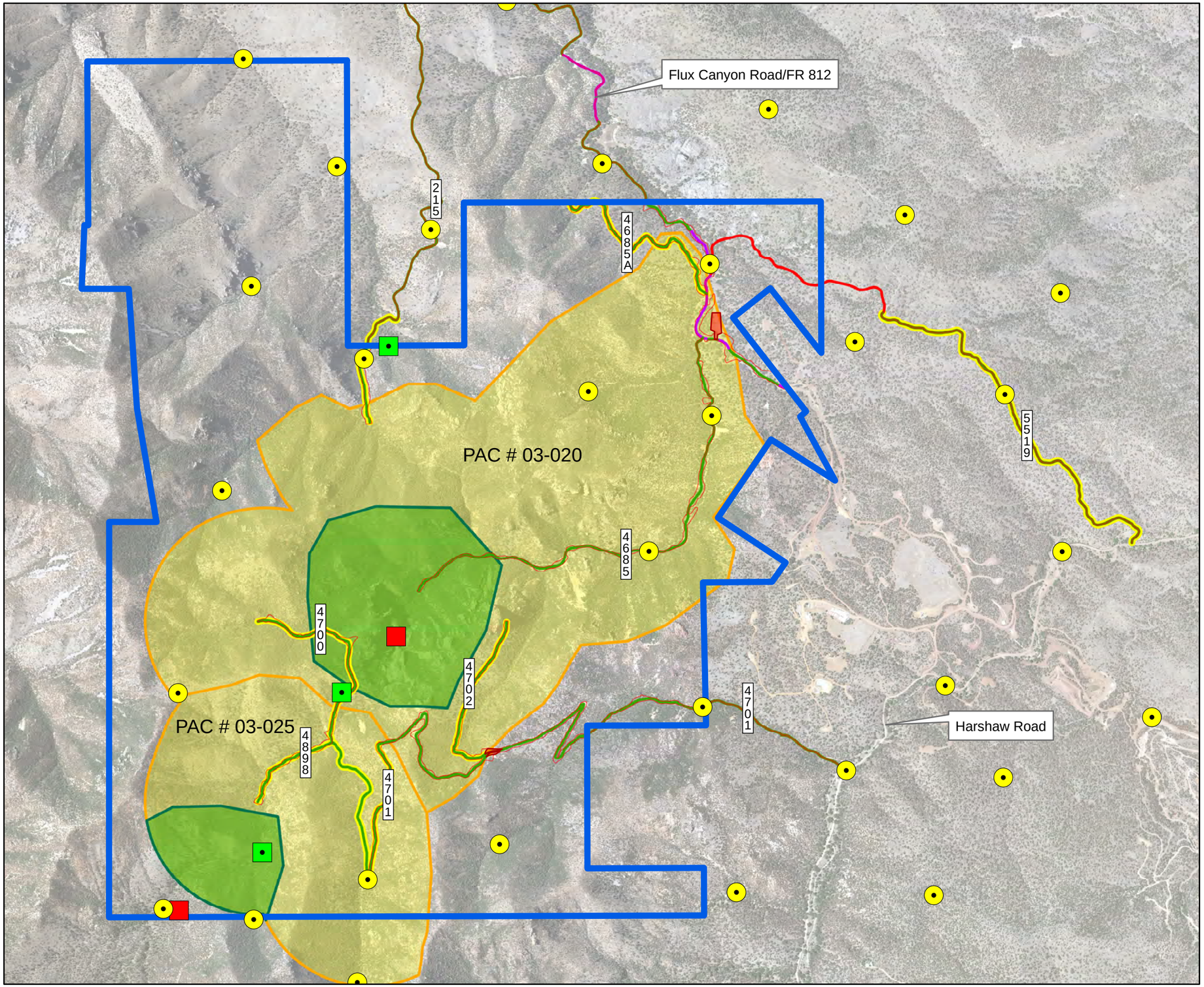



# Sunnyside Exploration Drilling Project

## Exhibit 14

Diagram of a Typical Drill Pad Layout
Perpendicular to the Existing Access Road

| 02/20/2020 | Sheet 1 of 1 |
|---|---|




## LEGEND

- Project Area
- Areas of Potential Disturbance
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Laydown Yard
- MSO Active Roost Site (2019)
- MSO Detection (2019)
- MSO Nighttime Calling Station
- MSO Core Area
- MSO Protected Activity Center (PAC)

N W E S

750 375 0 750 1,500 2,250 Feet

200 100 0 200 400 600 Meters

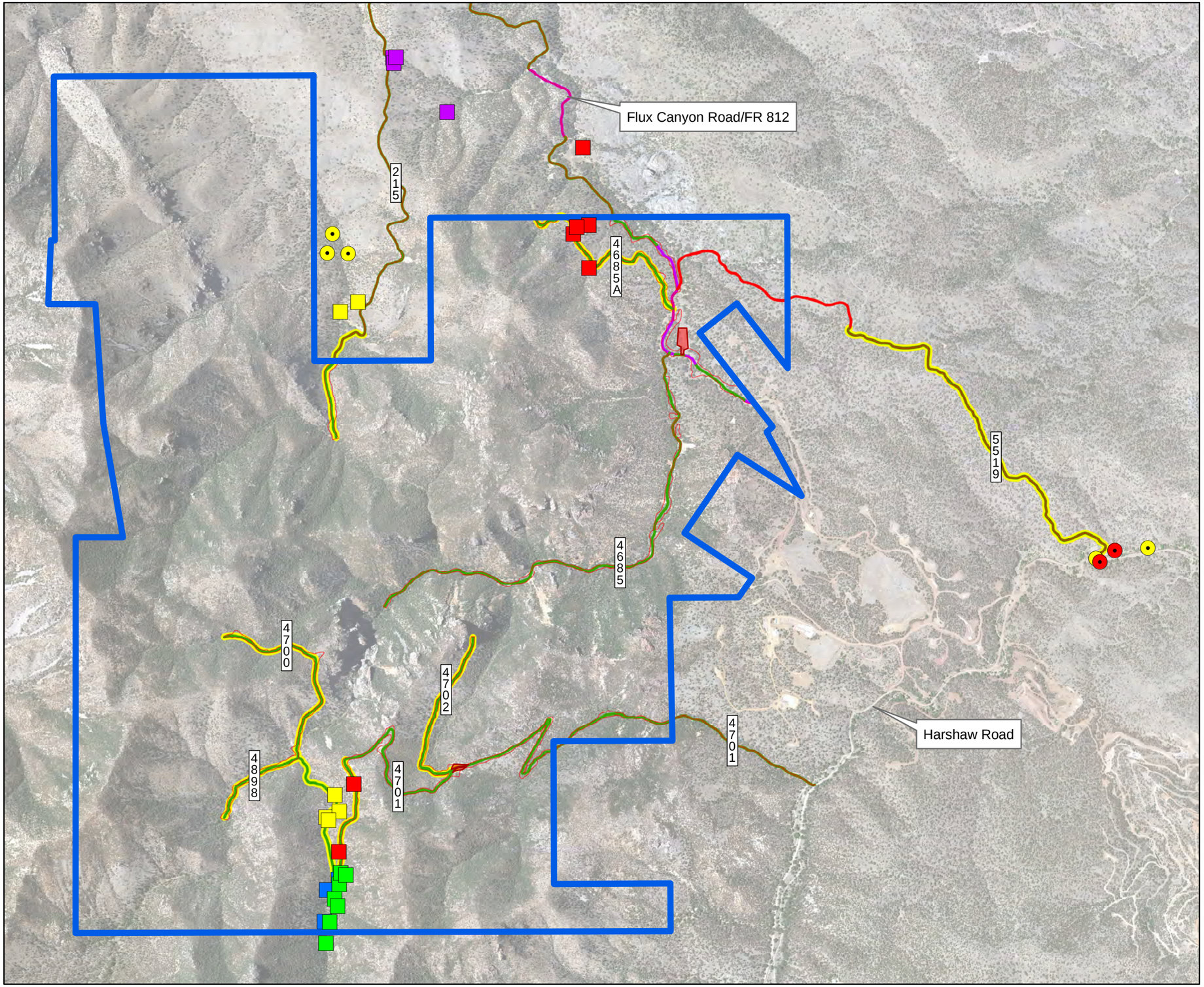
SCALE 1:15,000

# Sunnyside Exploration Drilling Project

## Exhibit 15

2019 Mexican Spotted Owl Survey Results

| 06/15/2020 | Sheet 1 of 1 |
|---|---|




# LEGEND

- Project Area
- Areas of Potential Disturbance
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Laydown Yard
- 2018 YBCU Detections - Individual 1 and 2, Multiple Detections
- 2019 YBCU Detections - Individual 1, 2, 3, 4, and 5, Multiple Detections

N
W E
S

750 375 0 750 1,500 2,250 Feet

200 100 0 200 400 600 Meters

SCALE 1:15,000

# Sunnyside Exploration Drilling Project

## Exhibit 16

2018 and 2019 Yellow-Billed Cuckoo Survey Results

| 06/10/2020 | Sheet 1 of 1 |
|---|---|

# Appendices

# Appendix A – Fire Prevention and Control Plan

# SUNNYSIDE EXPLORATION DRILLING PROJECT, SANTA CRUZ COUNTY, AZ

## FIRE PREVENTION AND CONTROL PLAN

*Prepared for*:

**UNITED STATES DEPARTMENT OF AGRICULTURE FOREST SERVICE**

CNF

300 West Congress
Street Tucson, Arizona
85701

*Prepared by:*

**Arizona Standard LLC**

P.O. Box 1155, Patagonia, Arizona 85624

**January 2021**

## 1.0 PURPOSE

This document has been developed by Arizona Standard to provide the staff and contractors based at the Sunnyside Project site with information and understanding of fire policies and procedures. The objective of this Fire Management Plan (FMP) is to ensure that fire control practices are implemented on site to minimize the risk of fire from site operations and is designed to provide information on how Arizona Standard intends to manage fire risks and how all staff on site will be informed about fire safety measures as part of IC Exploration's overarching environmental management, and health and safety systems.

## 2.0 SCOPE

The FMP applies existing management commitments, as outlined in the PoO for the proposed Sunnyside Project, with regards to fire management and safety for exploration purposes and expands to include all fire management prior to, and during, construction, operation and closure of the proposed Project. The FMP will be subject to ongoing review and change to ensure that it remains relevant and effective throughout the life of the operation.

## 3.0 SITE LOCATION AND DESCRIPTION

The proposed Project is located within the Sierra Vista Ranger District of the Coronado National Forest (CNF) where surface use is administered by the U.S. Forest Service (USFS). The Project, which includes all proposed drilling areas and temporary low-standard access roads on CNF lands, is located approximately 4 miles south of the town of Patagonia, in Santa Cruz County, Arizona within Sections 4, 5, 6, 32, and 33; Township 23 and 24 South; Range 16 East **(Exhibit 1)**.

The Project is a mineral exploration drilling program that will be completed over the course of a 7-year period. The following outlines the steps of the proposed Project:

- System road surface maintained where necessary.
- Improve up to 6.8 miles of existing system roads and 3.7 miles of existing non-system (administratively decommissioned) roads. Construction up to 0.6 mile of a new temporary low standard non-system access road **(Exhibit 2).**
- Brushing, limb, and tree removal where necessary along access roads and drill sites to allow access of drill rigs, water trucks, and other support equipment.
- Construct up to 30 drill pads and associated sumps, install sediment controls, transport equipment and supplies to the drill pads, and set up equipment. During the exploration drilling campaign, no more than 2 drill pads at a time will be active.
- Exploration drilling will be undertaken on a 24/7 (two 12-hour shifts) rotational work schedule with intermittent breaks.
- For each drill hole, drill cuttings and core will be logged and sampled.
- Complete/abandon the drill holes as described herein.
- Reclaim concurrently each drill pad and related temporary low-standard access roads after exploration program is completed and results evaluated.
- Remove all equipment from the Project Area.

## 4.0 RESPONSIBILITIES

Responsibility for ensuring the site environmental requirements are met, including the FMP, will lie with the Drilling Supervisor and Health and Safety Supervisor or their delegates.

The responsibilities will include:

1) Ensuring company-wide compliance with FMP and policy application throughout the Project.
2) Allocation of appropriate funding for fire safety and equipment.
3) Ensuring that training and procurement and maintenance of firefighting equipment is consistent with the requirements of the FMP.

The Health and Safety Supervisor will be responsible for ensuring employees are appropriately trained, employees will then be responsible for carrying out a range of activities to minimize fire safety risk.

## 5.0 COMMUNICATIONS

Arizona Standard and its contractors will have serviceable telephones for the area which can connect each site with the local Forest Service Dispatch Center within five (5) minutes of discovery of a fire in the Project Area. The communications system has been in operation continually for several years and has proven reliable during that time with no changes anticipated during Arizona Standard's drilling activities.

## 6.0 EQUIPMENT OPERATION

Vehicles and other mobile equipment will be fitted with efficient exhaust systems to reduce the potential of ignition from hot exhausts. Vehicles with low level exhaust systems will be restricted from leaving defined access tracks in conditions that pose risk to ignition of combustible plant material and hence fire potential. Any mobile vehicles working in vegetated areas will not be left unattended where there is an environment that provides fire risk. Alternatively, mobile vehicles would be parked in a safe cleared location free of vegetation. In addition, engine bays, catalytic converters, and other exhaust system components will be checked for vegetation to limit to potential for fire hazards.

## 7.0 FLAMMABLE LIQUIDS

No flammable liquids will be permanently stored on site. All fuel will be brought to the site in proper petroleum storage containers, via pickup truck. Fuel will be brought to the site on a daily basis. All fueling of equipment will be completed within secondary containment areas away from vegetated areas.

## 8.0 FIRE PREVENTION AND CONTROL

Arizona Standard and the Drilling Contractor will implement the following measures for the prevention and control of fires during the course of the Project:

1) Firefighting equipment shall be on site, ready and available at all times.
2) All grass around drill sites would be trimmed/mowed to limit fire hazards.
3) A tanker truck that will be routinely used for dust suppression will also be equipped to fight fires and would be on site for the duration for the Project.

4) All combustion engine equipment will be equipped with spark arrestors installed by the manufacturer.
5) All vehicles will be equipped with a working fire extinguisher and a shovel. Drill rigs will be equipped with a filled water tank during periods of operation.
6) All smoking will be prohibited.
7) Campfires or uncontained fires of any kind will be prohibited.
8) The crew contingency plan will include a fire communications protocol for contacting firefighting personnel, by contacting the CNF Tucson Interagency Fire Center (520) 202-2700 and the Patagonia Volunteer Fire and Rescue (520) 394-2936**.**
9) The Project will comply with fire restrictions and/or red flag warning day guidelines.

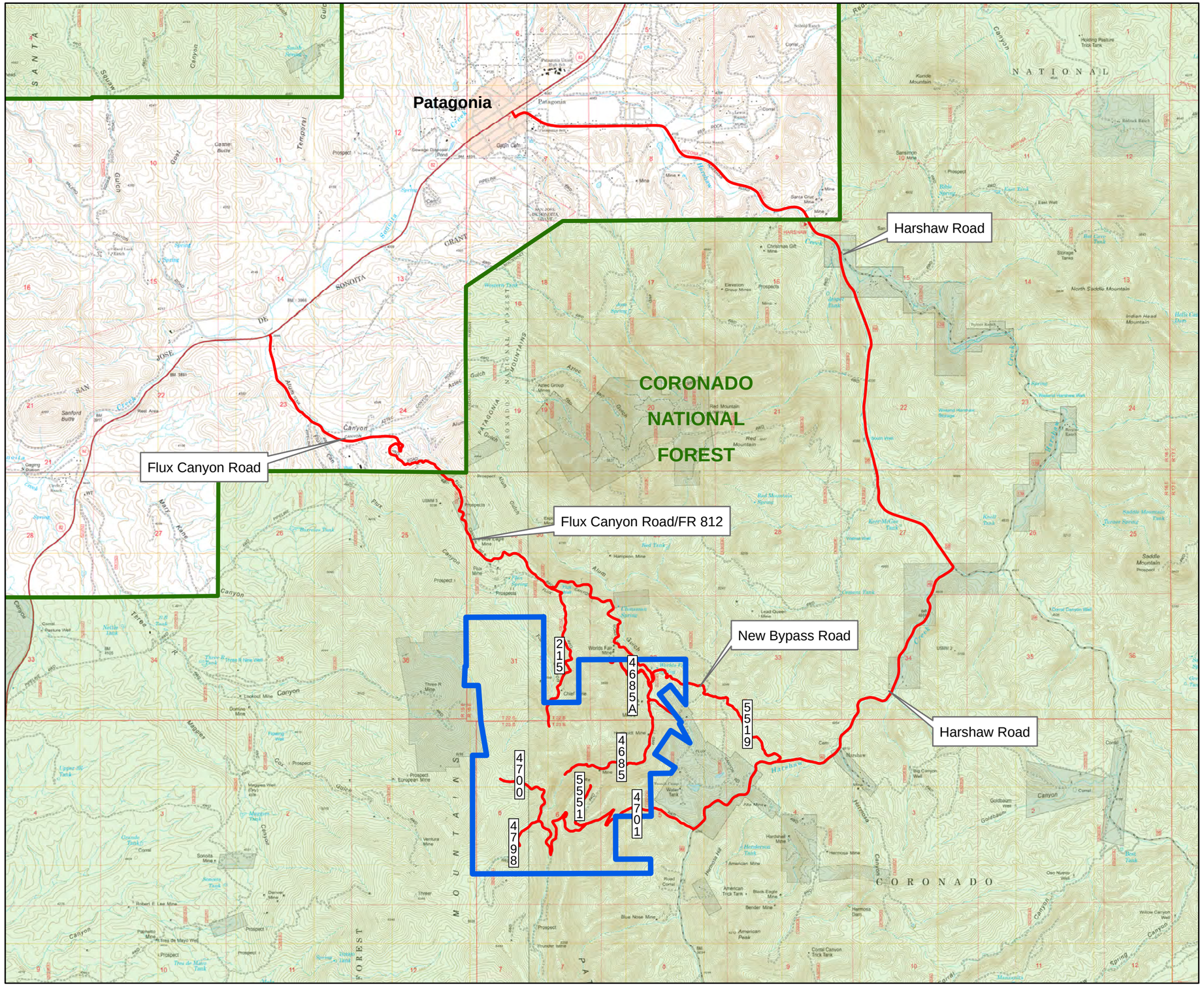
## 9.0 FIREFIGHTING EQUIPMENT

IC Exploration will require its contractors to furnish and have available for emergency use on each piece of equipment used in conjunction with performance of the work as listed below, hand tools and/or equipment as follows:

1) One shovel, one axe (or Pulaski) and a fully charged fire extinguisher U.L. rated at 2-A:10-B:C, or larger, on each truck, personnel vehicle, tractor, grader and other heavy equipment.
2) One shovel and one backpack 5-gallon water-filled tank with pump
3) During the use of chain saws or other gas-powered tools, one shovel and one pressurized chemical fire extinguisher will be provided for each tool, including but not restricted to chain saws, etc. Fire extinguishers shall be rated at 2-A: 10 B:C, or larger.
4) A shovel will be kept within 100 feet from each chain saw.
5) All tools and equipment are represented as being in good workable condition and meet the following principal Forest Service specifications for fire tools:
6) Axes (or Pulaski) shall have 2.5 pound or larger heads and be not less than 28 inches in overall length.
7) Shovels shall be size "O" or larger and be not less than 46 inches in overall length.
8) Multiple water tanks with water will be located on site and will be available to distribute water in the event of an uncontrollable or large fire. In addition, tanker trucks that will be routinely used for dust suppression will also be equipped to fight fires and would be on site for the duration for the Project.

## 10.0 FIRE TRAINING FOR COMPANY PERSONNEL

All company personnel and contractors will be trained in basic firefighting at the commencement and undertake refresher training at regular intervals.




# LEGEND

- Project Area
- Primary Access Route
- Coronado National Forest

N
W E
S

1 0.5 0 1 Miles

1 0.5 0 1 2 Kilometers

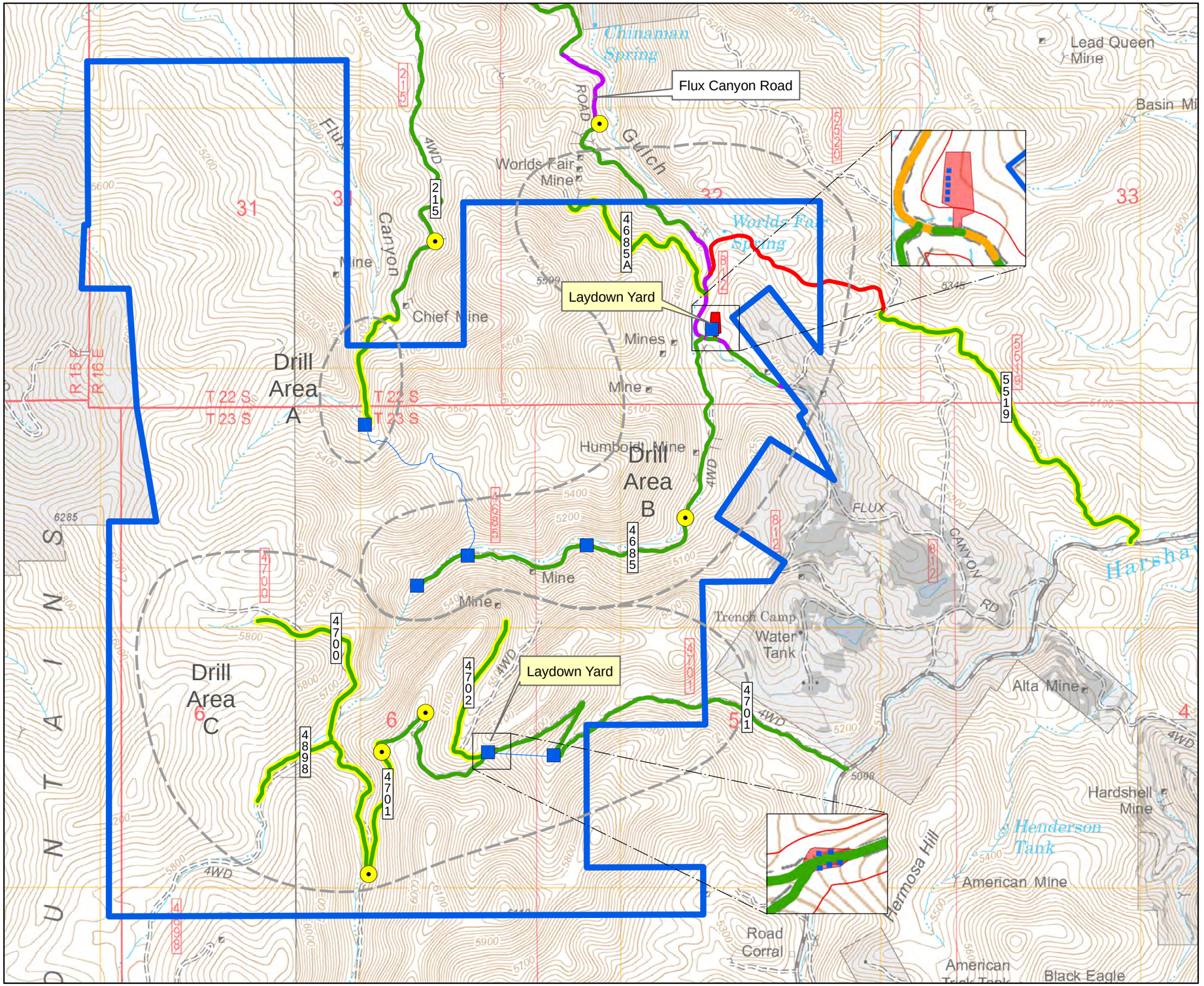
SCALE 1:50,000

# Sunnyside Exploration Drilling Project

## Exhibit 1

Regional Access Road Map

| 06/10/2020 | Sheet 1 of 1 |
|---|---|




# LEGEND

- Project Area
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Proposed Turnout Location
- Water Tank (May Include Multiple)
- Water Line
- Laydown Yard

N
W E
S

750 375 0 750 1,500 2,250 Feet

200 100 0 200 400 600 Meters

SCALE 1:15,000

## Sunnyside Exploration Drilling Project

### Exhibit 2

Local Access Roads and Drill Areas

| 06/10/2020 | Sheet 1 of 1 |
|---|---|

# Appendix B – Spill Prevention, Control, and Countermeasures Plan

# SUNNYSIDE EXPLORATION DRILLING PROJECT, SANTA CRUZ COUNTY, AZ

## SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

*Prepared for*:

**UNITED STATES DEPARTMENT OF AGRICULTURE FOREST SERVICE**

CNF

300 West Congress
Street Tucson, Arizona
85701

*Prepared by:*

**Arizona Standard LLC**

P.O. Box 1155, Patagonia, Arizona 85624

**October 2019**

# 1. 0 SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

## 1.1. PURPOSE AND GOAL

The purpose of these procedures is to prevent or reduce discharge of materials that may be considered pollutants to the environment. These procedures will result in increased safety and awareness of personnel; elimination or reduction of the potential of releases (regardless of size); and assurance that mitigation, storage, reporting, and disposal procedures are adequate for environmental protection and regulatory compliance.

Copies of the Spill Prevention, Control, and Countermeasure (SPCC) Plan and of the Safety Data Sheets (SDSs) are located on site with the drill rig, along with copies of SDSs. Employees and contractors are responsible for becoming familiar with the SPCC and SDSs, consistent with the Occupational Safety Health Administration (OSHA) Hazard Communication Standard.

### 1.1.1. Specific Tasks and Procedures for Spill Prevention and Control

Specific tasks and procedures will be implemented to prevent and control spills of pollutants. Listed below are tasks and procedures to be implemented as part of this plan:

1. Storage areas will be maintained in a clean and well–organized manner. Storage areas will be properly equipped so maintenance and cleanup of leaks or spills of pollutants will occur quickly and as described in section 1.1.6 of this document.
2. Information on proper storage, cleanup procedures, and reporting protocols will be posted at a visible and accessible location at all times.
3. As applicable, storage areas will have 5-gallon safety cans stored inside a portable trailer. Secondary containment berms and drum containment pans will be used for containment and control of unforeseen leaks and spills of pollutants. Any discharged will be quickly contained and cleaned up using sorbent pads and products.
4. Products and materials that are considered potential pollutants will be protected from rain.

### 1.1.2. Equipment Fueling

Fueling equipment will have an authorized shut–off nozzle to contain drips of fuel and to eliminate accidental overflow while fueling. The practice of “topping off” the fuel tank while filling will not be allowed. Hand–operated fuel dispensers are not subject to unintended overfilling. Operators will be trained in proper fueling operations and procedures to make sure that they are alert to the task and will not overfill the fuel tank. On work areas on CNF land, plastic sheets and/or absorbent pads will be used underneath equipment to capture and contain any potential spillage of fuels.

### 1.1.3. Material Storage and Disposal

Good housekeeping practices are designed to minimize amounts of materials stored and the potential release of these products. Listed below are good housekeeping practices to be followed:

1. The amount of product stored on individual drill sites will be limited to that amount required for the job at hand.
2. Excess materials will be stored in a temporary trailer located at the laydown yard near the junction of FR 812 and 4685. This proposed site will be located above the mapped 100-year floodplain in a flat area north of the junction.
3. All materials will be stored in a neat and orderly manner in appropriate containers with approved lids or sealed and enclosed by water resistant covering, as needed.
4. Products will be kept in original containers with the original manufacturer's label.
5. Manufacturer's recommendations for proper storage, use, and disposal of each product will be followed.
6. The authorized field representative or designee will inspect the drill sites daily to ensure proper use and disposal of materials onsite. Inspection logs will be kept onsite and available. Inspection logs will document noticeable problems and outline a time frame for the correction of problems or issues identified.
7. All materials will be stored outside of the mapped 100-year floodplain.

### 1.1.4. Preventative Maintenance

Contractors will have preventative maintenance programs in place to ensure vehicles and equipment are utilized under optimum operating parameters and to ensure hoses and fittings are in good condition and leak–free. The operator, mechanic, tool pusher, or other designee will be responsible to execute the repairs or preventative maintenance tasks. Vehicle and equipment repair and maintenance will be documented through the use of maintenance logs. Vehicles and equipment in need of repair will not be put into service until repairs are fully completed.

### 1.1.5. Source Identification

Potential sources of pollutants include drill rigs, service vehicles, and other equipment. Potential pollutants include any of the substances listed below. These materials are not expected to come into contact with soils or surface waters. Nonetheless, BMPs will be employed to prevent release of pollutants to the environment.

All potential hazardous substances to be used during this Project include the following:

- #2 Diesel
- Regular unleaded gasoline
- Gasoline and diesel engine oil
- Antifreeze
- Hydraulic fluid
- Joint grease
- Lithium grease
- Drilling mud
- Quick Gel

- Mudlube
- Baroid products
- Cement
- Bentonite

### 1.1.6. Spill Contingency Plan

Materials and equipment necessary for spill cleanup will be kept in the parts and equipment van which will be located at each of the active drill sites. Equipment and materials will include, but not be limited to, brooms, dust pans, rags, gloves, goggles, absorbent materials, and plastic/metal trash containers specifically for this purpose. Many of these materials will also be located on operational vehicles to mitigate releases or spills in the field during the program.

Well-maintained equipment will be used to perform the work required during this project. When practicable, equipment maintenance will be performed off-site. In the event of oil, fuel, and lubricating grease leaks, cleanup will be conducted as soon as possible. If the leak is on compacted soil, an oil-absorbing product, such as Absorb®, may be applied. Once the cleanup product has absorbed the leak, the product will be removed and placed into watertight drums or bins, labeled, stored, and disposed of according to federal, state, or local regulations. If the leak occurs on uncompacted soil, affected soil will be removed to the depth required to capture the contaminated soils and/or materials. An authorized hazardous waste removal company located in Tucson, Arizona will be used for disposal of contaminated soils impacted from spills. TransChem Environmental of Tucson [(520) 829-5651], or another authorized company of equal ability will be contacted to remove the waste and haul it to the nearest hazardous waste facility depending on the type of spill.

In the case of a spill, procedures and BMPs will be adjusted to include measures that will mitigate reoccurrence and ensure that cleanup procedures are adequate. A description of the spill, cause, cleanup measures, and disposal method will be documented and reported as appropriate.

### 1.1.7. Spill Response

Spills will be treated as if hazardous. Employees will refer to the SDS and implement the appropriate human health and safety measures and spill cleanup procedures. Regardless of size, spills will be reported to the appropriate supervisor.

The following actions will be taken in the event of a hazardous spill:

1. The authorized field representative or designee will be notified immediately. The authorized field representative or designee will oversee the response and cleanup of hazardous materials releases.
2. If a hazardous material spill is suspected to be dangerous, Emergency Notification procedures provided in ***Sections 1.1.7*** and ***1.1.8*** will be implemented.
3. Proper Personal Protective Equipment (PPE) will be utilized.
4. As practicable the release of the material will be stopped or minimized.
5. Employees will avoid contact with the spilled material including avoidance of gases, fumes, and smoke.
6. A reputable, licensed company will be used to cleanup large spills and dispose of contaminated materials.

7. Contaminated materials will be stored in appropriate and approved containers. Containers will be properly labeled following federal, state, and local requirements.

### 1.1.8. Spill Reporting

For the purpose of establishing appropriate response procedures, this SPCC Plan classifies discharges as either "minor" or "major," depending on the volume and characteristics of the material released.

A "minor" discharge is defined as one that poses no significant harm (or threat) to human health and safety or to the environment. Minor discharges are generally those where:

- The quantity of product discharged is small (less than 20 gallons of oil, hydraulic fluid or fuel);
- Discharged material is easily stopped and controlled at the time of the discharge;
- Discharge is localized near the source;
- Discharged material is not likely to reach water;
- There is little risk to human health or safety; and
- There is little risk of fire or explosion.

The following guidelines apply to a "minor spill":

1. Immediately notify the Site Manager
2. Under the direction of the Site Manager, the discharge will be contained with discharge response materials and equipment. Place discharge debris in properly labeled waste containers.
3. The Site Manager will complete the discharge notification form (attached below) and attach a copy to this SPCC Plan.

If the discharge involves more than 20 gallons of oil, hydraulic oil, or fuel, the Site Manager will call the Arizona Department of Environmental Quality Emergency Response Specialist 520-770-3125.

A "**major**" discharge is defined as one that consists of more than 20 gallons and/or cannot be safely controlled or cleaned up by site personnel, such as when:

- The discharge is large enough to spread beyond the immediate discharge area;
- The discharged material enters water;
- The discharge requires special equipment or training to clean up;
- The discharged material poses a hazard to human health or safety; or
- There is a danger of fire or explosion.

In the event of a **major** discharge, the following guidelines apply:

- All workers must immediately evacuate the discharge site via the designated exit routes and move to the designated staging areas at a safe distance from the discharge.
- If the Site Manager is not present at the facility, the senior on-site person notifies the Site Manager of the discharge and has authority to initiate notification and response.

Certain notifications are dependent on the circumstances and type of discharge.

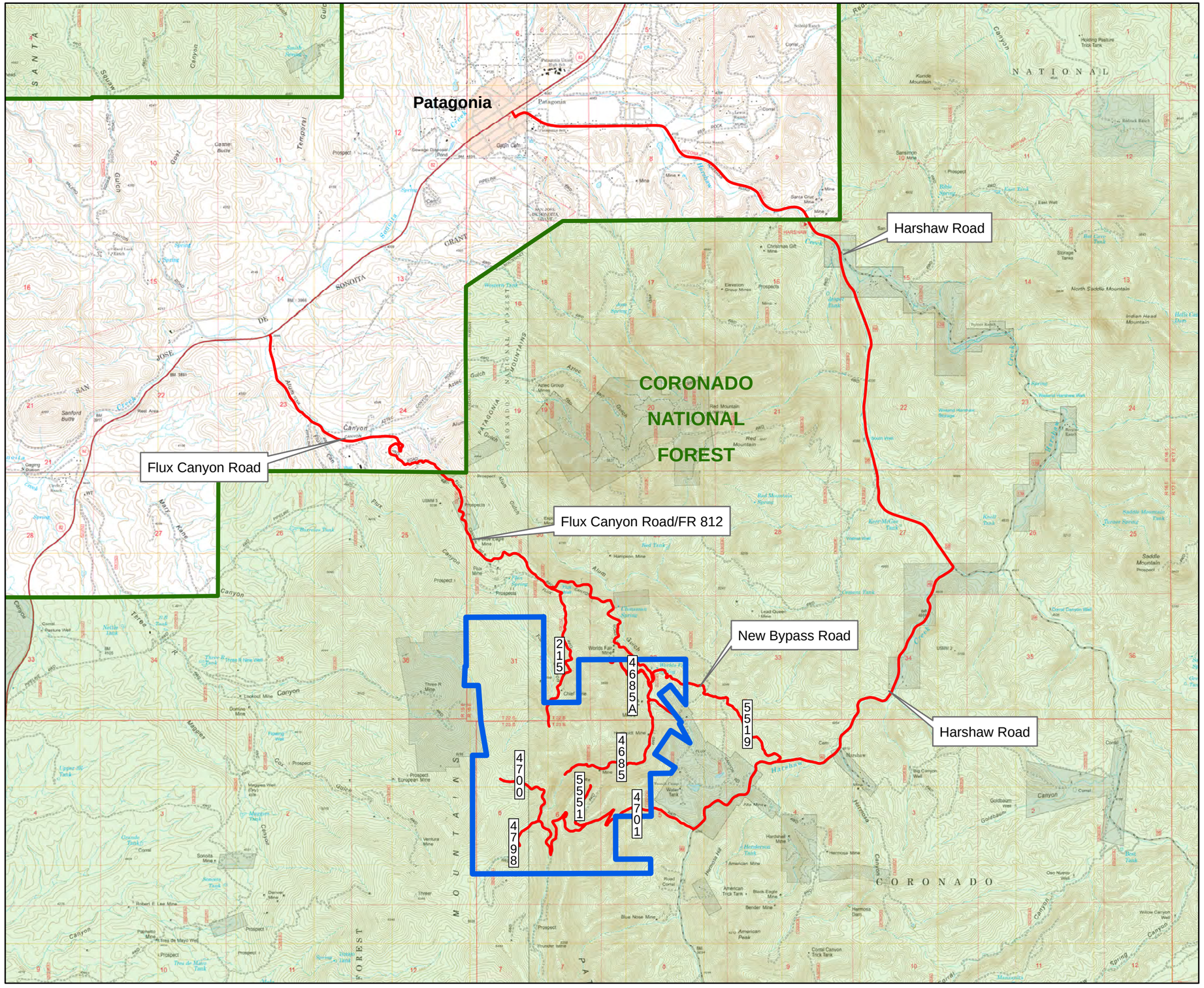
- The Site Manager (or senior on-site person) must call for medical assistance if workers are injured.
- The Site Manager (or senior on-site person) must call the spill response and cleanup contractors listed in the Emergency Contacts listed below.
- The Site Manager (or senior on-site person) must immediately contact the Arizona Department of Environmental Quality (ADEQ) Emergency Response Specialist (520-770-3125) and/or the **National Response Center (800) 424-8802**.

The Site Manager (or senior on-site person) must record the call on the Discharge Notification form and attach a copy to this SPCC Plan.

## EMERGENCY CONTACTS

1. Sierra Vista Ranger District, CNF, (520) 378-0311
2. Arizona Department of Environmental Quality Emergency Response Specialist (520) 770-3125
3. National Response Center (800) 424-8802
4. TransChem Environmental Tucson (520) 829-5651

The Project is located in Sections 4, 5, 6, and 32; TWP 23 S; RNG 16 E and in Sections 32 and 33; TWP 22 S; RNG 16 E. **Figure 1** depicts the general location of the Project along with regional access roads and **Figure 2** depicts the location of the proposed drill areas.




# LEGEND

- Project Area
- Primary Access Route
- Coronado National Forest

N
W E
S

1 0.5 0 1 Miles

1 0.5 0 1 2 Kilometers

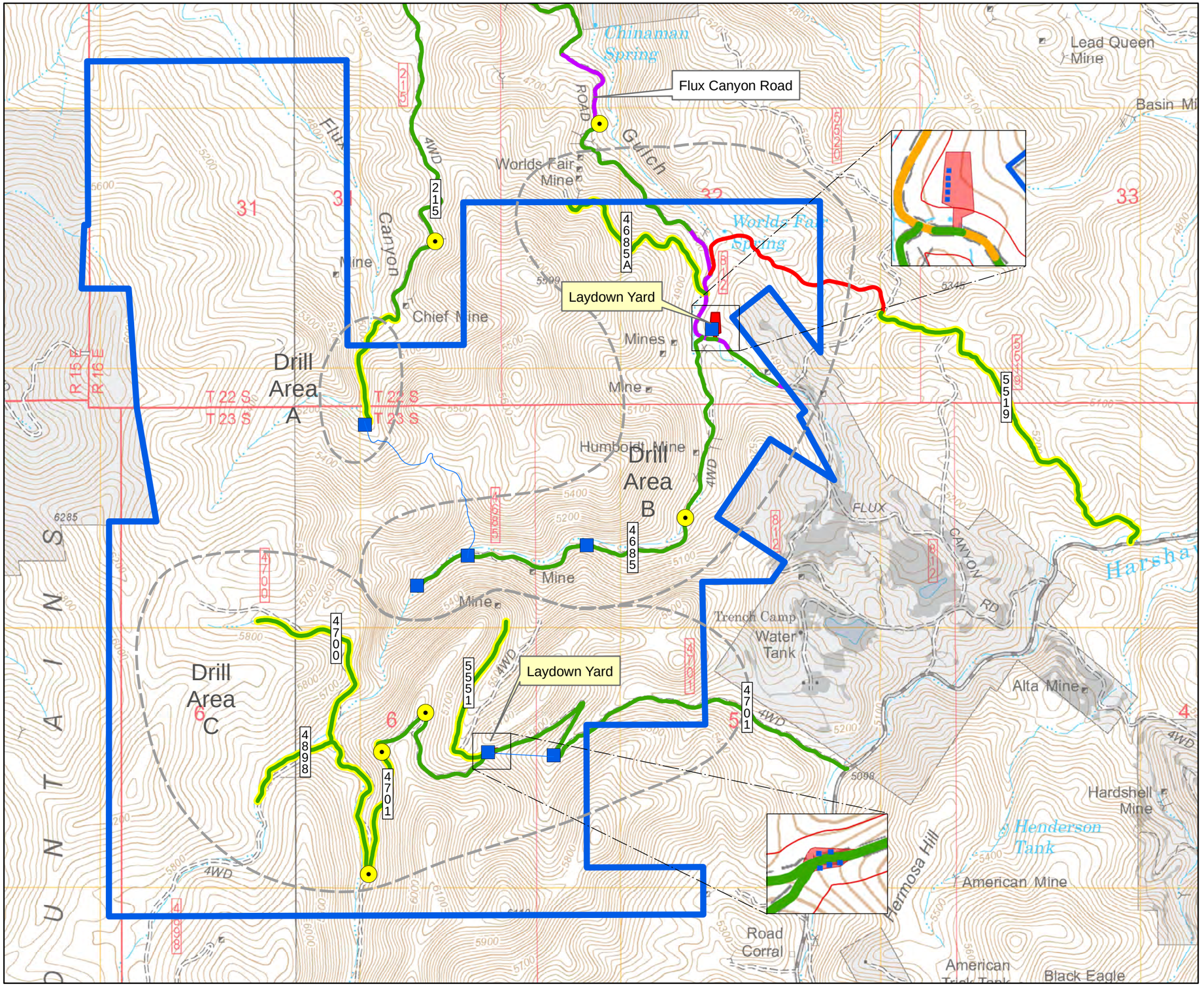
SCALE 1:50,000

# Sunnyside Exploration Drilling Project

## Exhibit 1

Regional Access Road Map

| 06/10/2020 | Sheet 1 of 1 |
|---|---|




## LEGEND

- Project Area
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Proposed Turnout Location
- Water Tank (May Include Multiple)
- Water Line
- Laydown Yard

N W E S

750 375 0 750 1,500 2,250 Feet

200 100 0 200 400 600 Meters

SCALE 1:15,000

# Sunnyside Exploratory Drilling Project

## Exhibit 2

Local Access Roads and Drill Areas

| 12/10/2020 | Sheet 1 of 1 |
|---|---|

# Discharge Notification Form

| *Part A: Discharge Information* | |
|---|---|
| General information when reporting a spill to outside authorities:<br>Name: Arizona Standard LLC<br>Address: P.O. Box 1897<br>Elko, Nevada 89803<br>Telephone: (775) 738-9572<br>Owner/Operator: Arizona Standard LLC<br>P.O. Box 1897<br>Elko, Nevada 89803<br>Primary Contact: Site Manager TBD<br>Work: (xxx) xxx-xxxx<br>Cell (24 hrs): (xxx) xxx-xxxx | |
| Type of Oil: | Discharge Date and Time: |
| Quantity Released: | Discovery Date and Time: |
| Quantity Released to a Waterbody: | Discharge Duration: |
| Location/Source: | |
| Actions taken to stop, remove, and mitigate impacts of the discharge: | |
| Affected media:<br>G air<br>G water<br>G soil | G storm water sewer<br>G dike/berm<br>G other: _____ |
| Notification person: | Telephone contact:<br>Business:<br>24-hr: |
| Nature of discharges, environmental/health effects, and damages:<br><br>Injuries, fatalities or evacuation required? | |

| **Part B: Notification Checklist** | | |
|---|---|---|
| | Date and time | Name of person receiving call |
| **Discharge in any amount** | | |

| | | |
|---|---|---|
| Site Manager: **TBD**<br>(xxx) xxx-xxxx/ (xxx) xxx-xxxx | | |
| **Discharge in amount exceeding 20 gallons and *not affecting a waterbody or groundwater*** | | |
| Local Fire Department<br>Patagonia Fire Dept.<br>(520) 394-2435 or 911 | | |
| Arizona Department of Environmental Quality<br>520-770-3125 | | |
| ***Discharge in any amount and affecting (or threatening to affect) a waterbody*** | | |
| Local Fire Department<br>Patagonia Fire Dept.<br>(520) 394-2435 or 911 | | |
| Arizona Department of Environmental Quality<br>520-770-3125 | | |
| National Response Center<br>(800) 424-8802 | | |
| TransChem Environmental<br>(520) 829-5651 | | |

# Appendix C – Signage Plan

# SUNNYSIDE EXPLORATION DRILLING PROJECT, SANTA CRUZ COUNTY, AZ

## SIGNAGE PLAN

*Prepared for*:

**UNITED STATES DEPARTMENT OF AGRICULTURE FOREST SERVICE**

CNF

300 West Congress
Street Tucson, Arizona
85701

*Prepared by:*

**Arizona Standard LLC**

P.O. Box 1155, Patagonia, Arizona 85624

**October 2019**

# 1.0 SIGN PLAN

## 1.1. PURPOSE AND GOAL

The purpose of the following procedures are to provide temporary fencing, gates and cautionary signs for public safety. These procedures will result in increased safety and awareness of personnel and the public during operations on site. Copies of this plan are located on site with the drill rig.

### 1.1.1. Sign Placement

Specific sign placement will be implemented to provide public safety. The safety signs identified below shall be approved and installed prior to the work being performed. Listed below are specific sign placements to be implemented as part of this plan:

1. Truck traffic warning signs at the entrances to Flux Canyon Road and Harshaw Road at near the junction of FR 4701.
2. Signage on the temporary gate for the bypass road at the junction of FR 5519 and Flux Canyon Road indicating administrative use only.
3. Road closure and turn-around signs before entering FR 4701 at the junction with Harshaw Road.
4. Heavy equipment (drilling equipment) warning signs on Flux Canyon Road.

### 1.1.2. Sign Specifications

Specifications for signs, markers, barricades, and other traffic devices will be in conformance with the latest revisions of the Manual of Uniform Traffic Control Devices (MUTCD) published by the U.S. Department of Transportation.

### 1.1.3. Traffic Control

In order to maximize transportation efficiency and safety, a total of 9 traffic turnouts would be constructed at various locations along the proposed road network. This includes four turnouts along FR 812 **(see Exhibits 5a and 5b in the PoO)**, One turnout along FR 215, three turnouts along FR 4701 (including two along a decommissioned portion of FR 4701), and one turnout along decommissioned FR 5519. A minimum of two spotters with 2-way radios would be stationed at various turnouts during the proposed drilling program. Additionally, when mechanized equipment is moved on or off public roads, a flag-person will be used to direct traffic and prevent accidents.

### 1.1.4. Road Closure Procedures

Access roads may be closed for short periods of time to accommodate oversized/overweight vehicles, or to accommodate traffic volumes safely. A Supervisor's Order will be required for road closures greater than one hour in duration. Traffic control will be provided by Arizona Standard during all phases of the operation. The Forest Service will be notified at least 45 days before drilling progresses on drill sites. The Forest Service will be responsible for ensuring the proper temporary closure order is in place prior to physical closing of roads. The road closure(s) will be properly signed as described above.

# Appendix D – Stormwater Pollution Prevention Plan

# SUNNYSIDE EXPLORATION DRILLING PROJECT, SANTA CRUZ COUNTY, AZ

## STORMWATER POLLUTION PREVENTION PLAN

*Prepared for*:

**UNITED STATES DEPARTMENT OF AGRICULTURE FOREST SERVICE**

CNF

300 West Congress
Street Tucson, Arizona
85701

*Prepared by:*

**Arizona Standard LLC**

P.O. Box 1155, Patagonia, Arizona 85624

**October 2019**

# 1.0 INTRODUCTION

## 1.1 Background

This document has been prepared in accordance with the Arizona Department of Environmental Quality (AZDEQ) Arizona Pollutant Discharge Elimination System (AZPDES) General Permit for Stormwater Discharges Associated with Industrial Activity – Mineral Industry (AZMSG2010-003 [MSGP-2010]), pursuant to Arizona Revised Statutes, Title 49, Chapter 2, Article 3.1, the Arizona Administrative Code (A.C.C.), Title 18, Chapter 9, and the Clean Water Act as amended (33 U.S.C. 1251 et seq.). This document is Arizona Standard's Storm Water Pollution Prevention Plan (SWPPP or Plan) for construction activities and has been developed to address associated ground disturbance with this project.

The SWPPP identifies measures to be implemented by Arizona Standard's contractor during construction and operation of the proposed Project with the goal of minimizing erosion on disturbed areas, minimizing the discharge of sediment and other pollutants in storm water runoff, and maintaining compliance with requirements of the Permit. This SWPPP also identifies a schedule for inspection(s) and maintenance of the proposed measures to ensure they are functioning properly and meet the requirements of the Permit. Additionally, the SWPPP outlines the final stabilization and termination design to minimize storm water impacts after construction and operations are complete.

# 2.0 SITE DESCRIPTION

## 2.1 Project Type and Construction Activities

Arizona Standard's proposed Sunnyside Exploration Drilling Program would evaluate the location, concentration, quality, and type of mineralization, help establish the feasibility of likely future mining operations. Activities involve exploration work only, including drilling. No mining, milling, or permanent facilities are being proposed.

Arizona Standard is seeking approval for up to 30 individual drill pads as part of the Sunnyside Exploration Program. Three primary drill areas (Drill Areas A, B, and C) have been identified in the field and are shown in **Exhibit 1 - Appendix A**. Each drill site will be constructed to dimensions of approximately 100 feet long by 40 feet wide.

Two laydown yards would be constructed for the secure storage of supplies and equipment used for the proposed exploration program in two of the three drilling areas. One of the laydown yards would be located in Drill Area B within the SW ¼ Section 32, T22S, R16E, near the junction of FR 812 and FR 4685 **(Exhibit 1 - Appendix A)**. This laydown yard would be constructed to dimensions of roughly 270 feet long by 130 feet wide and approximately 0.76 acres in size. A second smaller laydown yard would be located in Drill Area C within the SE ¼ Section 6, T23S, R 16E near the junction of FR 4701 and decommissioned FR 5551 **(Exhibit 1 - Appendix A)**. This laydown yard would be constructed to dimensions of roughly 200 feet long x 80 feet wide and approximately 0.22 acres in size.

A network of system and non-system (administratively decommissioned) roads already exists within the Project Area. These roads would be used as is or improved where acceptable for access to the proposed drill sites. New temporary roads will be constructed only where necessary, given that the proposed access is designed to minimize disturbances and maximize transportation efficiency. Although the length of all

access roads under the Proposed Action is an aggregate of 20.7 miles, approximately 7.4 miles or 36 percent of this total would require improved or newly constructed roads **(Exhibit 1 - Appendix A).**

In order to safely conduct operations, approximately 6.8 miles of existing system and non-system roads will be improved from an average width of 12 feet to a maximum width of 14 feet. This includes multiple segments along Flux Canyon Road/FR 812 (totaling approximately 1.8 miles in length), a 0.5-mile segment of decommissioned FR 4685A, 1.4-mile segment of FR 215, 1.3-mile segment of FR 4685, 1.0-mile segment of decommissioned FR 5519, 0.7-mile segment of decommissioned FR 4700, 0.6-mile segment of decommissioned FR 4898, 0.5-mile segment of decommissioned FR 4702, and 2.4-mile segment of FR 4701, of which approximately 0.29 miles is decommissioned (**Exhibit 1 - Appendix A).** Existing roads widths along these segments are variable ranging from approximately 8 to 20 feet wide, with an average road width of 12 feet.

Approximately 0.8 miles of new road construction will be required. These temporary access roads will be reclaimed by Arizona Standard prior to completion of the Project. The total estimated area of disturbance from the construction of new roads would be approximately 1.7 acres (**Exhibit 1 - Appendix A).**

## 2.2 Project Area and Disturbance Estimate

The Project is located in Santa Cruz County, Arizona, on lands managed by the U.S. Forest Service, Coronado National Forest in Sections 4, 5, 6, and 32; TWP 23 S; RNG 16 E and in Sections 32 and 33; TWP 22 S; RNG 16 E.

The Project will result in approximately 10.1 acres of temporary ground disturbance.

## 2.3 Sequence of Activities

The following outlines the steps of the planned activities:

- System road surface maintained where necessary.
- Improve up to 6.8 miles of existing system roads and 3.7 miles of existing non-system (administratively decommissioned). Construction up to 0.6 mile of new temporary low standard non-system access roads.
- Brushing, limb, and tree removal where necessary along access roads and drill sites to allow access of drill rigs, water trucks, and other support equipment.
- Construct up to 30 drill pads and associated sumps, install sediment controls, transport equipment and supplies to the drill pads, and set up equipment. During the exploration drilling campaign, no more than 2 drill pads at a time will be active.
- Exploration drilling will be undertaken on a 24/7 (two 12-hour shifts) rotational work schedule with intermittent breaks.
- For each drill hole, drill cuttings and core will be logged and sampled.
- Complete/abandon the drill holes as described herein.
- Reclaim concurrently each drill pad and related temporary low-standard access roads after exploration program is completed and results evaluated. Revegetation will be completed using Forest Service approved seed mix and by scattering slash from the removal of trees and brush.
- Remove all equipment from the Project Area.

Installation of soil erosion and sedimentation control devices will occur prior to ground disturbance and/or site preparation as determined by a qualified Arizona Standard representative. Erosion control device(s), installation and subsequent monitoring shall be conducted in accordance with the frequency specified in this Plan (See Section 5).

### 2.4 Project Soils

Soil mapping units within the Project area are shown in **Exhibit 2 – Appendix A** and described briefly in the table below.

**Soil Types and Properties of the Project Area**

| Map Unit Symbol | Map Unit Name | Drainage Class | Hydric Rating | Area (Acres) | Percent Area |
|---|---|---|---|---|---|
| FrF | Faraway-rock outcrop complex, 30 to 60 percent slopes | Well Drained | Not Hydric | 1,263 | 76.5 |
| Rn | Rock outcrop-Lithic Haplustolls association | N/A | Not Hydric | 323 | 19.5 |
| LgF | Lampshire-Graham-Rock outcrop association, steep | Well Drained | Not Hydric | 67 | 4.0 |
| **Total** | | | | **1,653** | **100.0** |

### 2.5 Receiving Waters

The receiving waters for possible stormwater discharges from the Sunnyside Exploration Project are Humboldt Canyon, Alum Gulch, and Flux Canyon **Exhibit 3 - Appendix A**. Sediment and erosion control measures will be implemented to minimize impacts to the watershed during construction (see Section 3.2). Runoff from the site generals flows north and northwest into various unnamed drainages which are tributaries to Humboldt Canyon, Alum Gulch, and Flux Canyon.

### 2.6 Site Map

Maps of the project area can be found in Appendix A. These maps depict the following features if present:

- Project location;
- Land ownership;
- Soils; and
- Wetlands, waterbodies and impaired waters.

## 3.0 CONTROLS

### 3.1 Personnel

The SWPPP Coordinator responsible for overseeing SWPPP implementation, inspection, and maintenance of erosion control Best Management Practices (BMPs) during construction and drilling activities associated with the proposed project is:

TBD:

Arizona Standard will implement their corporate Spill Prevention Containment and Countermeasure Plan (SPCC Plan). Project staff shall be oriented to the SPCC Plan. Arizona Standard will train responsible parties as to the fundamentals and principles of erosion control. This training will include a review of standard BMPs. Arizona Standard's SPCC Plan is contained in Appendix B of the Plan of Operations.

A log will be kept tracking employee orientation and training **(Appendix D)**.

## 3.2 Erosion and Sediment Controls

Prior to the commencement of construction activities, Arizona Standard will clearly mark the boundaries of approved work areas, so they are easily identifiable by Project personnel. Project activities shall be confined to the approved work areas. Project activities are not permitted outside these areas. Clearing may be conducted throughout the entire approved work area.

### 3.2.1 Structural Practices

Arizona Standard's contractor shall install temporary sediment barriers during road and pad clearing using silt fence and/or double-staked straw bales (see typical details found in Appendix C). Temporary sediment barriers shall be installed per manufacturer's specifications and maintained within the approved work area at the base of slopes adjacent to wetlands, waterbodies, ditches, drainage channels and other storm water conveyance systems; along the edge of the approved work area where wetlands, waterbodies, ditches, drainage channels, or other storm water conveyance systems are directly adjacent to the approved work area; where necessary to contain spoil and sediment within the approved work area (e.g., on steep side slopes or in saturated areas that straddle the border of the work site); and at other locations as directed by the SWPPP Coordinator, as applicable. If work is being conducted near a wetland, proper sediment and erosion control methods shall be installed and maintained along the edge of the wetland areas.

Sediment barriers such as temporary degradable rolled erosion control products or vegetative buffers will remain functional until permanent vegetation has become successfully re-established (i.e., 70 percent perennial vegetation cover as compared to adjacent undisturbed areas). If non-degradable devices such as silt fences are used, the barriers will be removed and disposed of properly once final stabilization has occurred. Final stabilization for the project area may be achieved by installing temporary erosion control measures with an appropriate seed base to provide erosion control for at least three years and achieve 70 percent vegetative coverage within three years without active maintenance since the project area receives on average less than 20 inches of rainfall annually.

Arizona Standard's contractor will control the tracking of debris onto public roads by installing a combination of crushed stone access pads, matting, and/or culverts at project access points that abut paved public roads. If sediment is tracked onto paved roads, the contractor will remove the debris in a timely manner, typically by the close of business.

Sediment barriers located in active portions of the work area may be removed during the day when work is being conducted but must be replaced each night or at the onset of inclement weather (e.g., rainstorm). Sediment barriers will be inspected daily in areas of active construction and repaired as needed throughout construction to maintain functionality. Sediment barriers shall be cleaned, repaired and/or replaced when

sediment reaches one-third the height of the barrier and within 24 hours of discovery during active construction and within 24 hours thereafter.

### 3.2.2 Stabilization Practices

Upon completion of construction, Arizona Standard's contractor shall make every effort to initiate stabilization measures on disturbed areas within 14 days of final grading activities. Initiation of final or temporary stabilization may exceed 14 days if earth-disturbing activities will be resumed within 21 days. Perennial herbaceous vegetation will be used to permanently stabilize the project site.

Prior to seeding, Arizona Standard's contractor will remove construction debris and grade the area to condition the site for seedbed preparation. The contractor will prepare the seedbed to a depth of 3 to 4 inches using appropriate equipment to provide a firm uniform seedbed. If the area will be hydro seeded, the seedbed shall be scarified to facilitate seed lodging and germination.

Permanent seeding of the area will be completed with a seed mix compatible with the soil and climate of the area and will be seeded within the recommended seeding dates as recommended by the Forest Service AO. Mulch shall be applied before seeding if final cleanup is not completed in an area within 10 days after the area has had final grading, or if construction or restoration activity is interrupted for extended periods as determined by the SWPPP Coordinator. If mulching before seeding, Arizona Standard's contractor will increase mulch applications on slopes within 100 feet of wetlands, waterbodies, ditches, drainage channels, or other storm water conveyance systems to a rate of three tons per acre.

Mulch typically consists of straw (not hay) or a paper-based biodegradable material. Mulch may also consist of erosion control fabrics. Erosion control fabrics usually consist of a geotextile mesh interwoven with large fibers, such as straw or wood strands. Jute thatching or bonded fiber blankets are two types of erosion control fabrics. If field conditions do not allow for timely reseeding or mulching (e.g., frozen ground), reseeding will take place at the earliest practicable date.

Final stabilization is complete when a 70 percent vegetative cover has been achieved throughout the project area as compared to the natural adjacent landscape. Because the project area receives an average of less than 20 inches of annual rainfall, final stabilization may be achieved by installing temporary, degradable erosion control measures along with an appropriate seed base to provide erosion control for at least three years and achieve 70 percent vegetative coverage within three years without active maintenance.

Temporary synthetic, structural, and non-biodegradable erosion and sediment control measures must be removed after restoration is complete and before permit coverage is terminated.

## 3.3 Storm Water Management

Permanent soil erosion and sediment controls will be put in place as soon as practicable and as necessary after final cleanup. Permanent erosion controls are addressed in more detail under Stabilization Practices in Section 3.2.2. Arizona Standard's contractor will restore the Project area to as close to preconstruction contours where possible. A small area will involve the addition of an impervious surface (e.g. structure roof); the Project will not generate a measurable increase in off-site storm water runoff into surface waters or wetlands.

In periods of heavy precipitation, sediment-laden storm water runoff will travel through temporary soil erosion and sediment control measures and/or established vegetation, thereby reducing pollutant transport. All runoff will be directed to these areas and via culverts when necessary to bypass site access roads.

### 3.4 Other Controls

Waste Disposal: Non-hazardous construction wastes generated will be containerized and properly disposed of off-site. Storm water contact with wastes will be minimized. Wastes not native to the construction site will be disposed of off-site. No hazardous wastes are anticipated to be generated during this Project. Arizona Standard and its contractor will comply with applicable federal, state and local waste disposal, sanitary sewer or septic system regulations.

Spill Control and Response: To protect against accidental release of lubricant, coolant, or fuel, equipment will have catch pans and absorbing pads. The contractor will have on-site equipment and materials needed to prevent and/or contain an accidental spill. Construction equipment will be inspected each morning before work starts and frequently during the workday to check for leaks and to repair or replace hoses or connections that are in danger of failure. Arizona Standard will follow the procedures in its SPCC Plan (see Appendix D).

Other Practices: Arizona Standard's contractor will apply water as necessary to control excessive dust due to equipment travel. In addition, water distribution hoses used for drilling will be installed along the shoulder of the road from spooled reels with lengths ranging from 250 to 1,000 feet. Couplings and high-pressure valves will be installed along the hoses to shut off water flow from individual segments for repairs, if necessary. A meter will also be installed at various locations to obtain pressure readings which will be evaluated and logged on a regular basis to ensure there are no potential leaks in the system and that the water pumps that supply water to the distribution hoses are operating as expected. Since the water distribution hoses will be located along the shoulder of the road, they will also be easily monitored by personnel in the area, which would serve as a secondary source of leak detection.

### 3.5 Record Keeping

It is recommended that a schedule is maintained of when interim and permanent stabilization practices have been implemented on the site. Examples of these practices may include:

- Dates when major grading activities occur;
- Dates when construction activities temporarily or permanently cease on a portion of the site; and
- Dates when stabilization measures are initiated.

SWPPP records will be maintained at the following locations as detailed below:

- During Active Construction: On-site or in the control of the responsible party or SWPPP Coordinator;
- During Restoration: Contractor's office; and
- After Termination: Contractor's office.

## 4.0 MAINTENANCE

The following inspection and maintenance practices will be used to maintain erosion and sediment controls:

- Silt fences will be inspected for:
  - Depth of sediment;
  - Tears in the fabric;
  - Proper attachment to fence posts; and
  - To see that the fence posts are firmly in the ground.

- Where silt fence is identified with sediment levels reaching one-third the height of the silt fence, the sediment will be removed from the silt fence, and if necessary, the silt fence repaired or replaced.
  - Straw bales will be inspected for proper installation and performance.
  - Temporary and permanent seeding will be inspected for bare spots, washouts, and unhealthy growth.
  - Ineffective or damaged erosion and sediment controls will be repaired on the following schedule:

| Construction Phase | Project Area | Time from Discovery to Conduct Maintenance |
|---|---|---|
| Construction | Active Construction | Within 24 Hours |
| Restoration | 30+ days Post Construction | Within 72 Hours |
| Restoration | Restricted Access | Within 72 Hours |
| Restoration | Highly Sensitive Areas | Within 48 Hours |

Any delay in the replacement or maintenance of nonfunctional BMPs beyond seven (7) days shall be documented in the SWPPP with sufficient detail as to explain the reason for the delay. Inspections will be performed until the site is permanently stabilized. Installation of necessary erosion control measures or repairs to existing erosion control measures must be completed before the next storm event whenever practicable. If implementation before the next storm event is impracticable, the situation must be documented in the SWPPP and alternative BMPs must be implemented as soon as possible.

## 5.0 INSPECTIONS

As required by the Permit, the Project area will be inspected for erosion and sediment control issues with the following frequency:

**During active construction:**

- At least once every 14 calendar days, and
- Within 24 hours of a 0.5 inch or greater rainfall event.

**During restoration:**

- A minimum of once per month.

**Frozen conditions or dangerous elements:**

- Inspections shall be temporarily suspended when ground disturbing activities are suspended due to frozen conditions, or if conditions pose a significant risk to project personnel.

**Limited access:**

- First growing season: Portions of the project area that have limited access and that would suffer damage due to access shall be monitored on a quarterly basis when not frozen.
- Second growing season: Limited access areas shall be inspected monthly in April, May, and June. Quarterly inspections resume in July through frozen conditions or final stabilization.

Visual inspections of all erosion and sediment control measures and other protective measures identified in the SWPPP will be performed for evidence of pollutants entering the drainage system. The inspection will verify that the structural BMPs are in good condition and are minimizing erosion and sediment migration. Construction entrances and exits will be inspected for evidence of sediment being tracked offsite. The inspection will also verify that the procedures used to prevent storm water contamination from the construction activities are effective. Inspections will continue until the site has reached final stabilization and a Notice of Termination has been submitted (Appendix C).

## 5.1 Identification of Potential Storm Water Contaminants

The primary pollutant sources are disturbed soils and subsequent surface water runoff within the construction area(s). Other potential pollutant sources include debris from tree and brush clearing operations and petroleum products (see below) needed for the construction equipment. The following practices will be followed during the course of the Project for spill prevention:

<u>Fuels and Hazardous Materials Handling</u>

- Refueling of equipment or hazardous material transfer will occur in designated areas only;
- No refueling or hazardous material transfer will occur within 100 feet of a wetland, waterbody, spring or water supply well; and
- Where conditions require that construction equipment (i.e., pumps used in trench dewatering) be refueled within 100 feet of wetlands or waterbodies, sufficient oil and fuel containment booms and absorbent materials will be on-hand to allow for rapid containment and recovery of a spill.

In the event of a spill, Arizona Standard will follow procedures outlined in its SPCC Plan (see Appendix B in the Plan of Operations).

## 5.2 Inspection Reports

An inspection report (see Appendix C) will be prepared after each inspection and will be maintained on-site during the entire construction project. Records of each inspection and of maintenance activities will include:

- Date and time of inspection;

- Name, title, and qualifications of person(s) conducting inspections;
- Scope and findings of inspections, including recommendations for corrective actions;
- Location(s) of discharges of sediment or other pollutants from the site;
- Location(s) of BMPs that need to be maintained;
- Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location;
- Location(s) where additional BMPs are needed that did not exist at the time of inspection;
- Corrective actions taken (including dates, times and party completing maintenance activities);
- Documentation of changes made to the SWPPP;
- Identify any incidents of non-compliance;
- Records will be maintained as part of the SWPPP for at least 3 years from the date an area has undergone final stabilization.

Based on the results of the inspection, the plan will be revised and implemented no later than seven (7) calendar days following the inspection. Where an inspection does not identify any incidents of non-compliance, the report will contain a certification that the site is in compliance with the plan and the Permit (see Appendix B). The report will be signed in accordance with the signatory requirements for the permit.

## 6.0 KEEPING PLANS CURRENT

Arizona Standard will amend the plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the waters of the State. The plan will also be amended to improve observed deficiencies associated with treatment of storm water discharges. Changes will be tracked in the SWPPP Modification Log (Appendix F).

## 7.0 FINAL STABILIZATION

Arizona Standard will be responsible for ensuring that final stabilization is accomplished on non-impervious surfaces prior to submitting the construction storm water Notice of Termination form. Coverage will be terminated when:

- Soil disturbing construction activity has been completed;
- Final stabilization is achieved by utilizing one of the following:
  - A uniform perennial vegetative cover with a minimum density of 70 percent of the native background vegetative cover has been established on all non-impervious surfaces and areas not covered by permanent structures, or
  - Equivalent permanent stabilization measures have been employed, or
  - Temporary erosion control measures have been installed with an appropriate seed base to provide erosion control for at least three years and achieve 70 percent vegetative coverage within three years without active maintenance in areas that receive an average annual rainfall of less than 20 inches;
- All non-degradable temporary erosion protection and sediment control BMPs have been removed without compromising the permanent erosion protection and sediment control BMPs;
- All sediment build-up has been removed from conveyances and basins that are to be used as permanent water quality management BMPs. The cleanout of permanent basins used as temporary BMPs during construction shall be sufficient to return the basin to design capacity; and

- Responsibility for long-term maintenance of permanent BMPs must be assigned.

## 8.0 CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

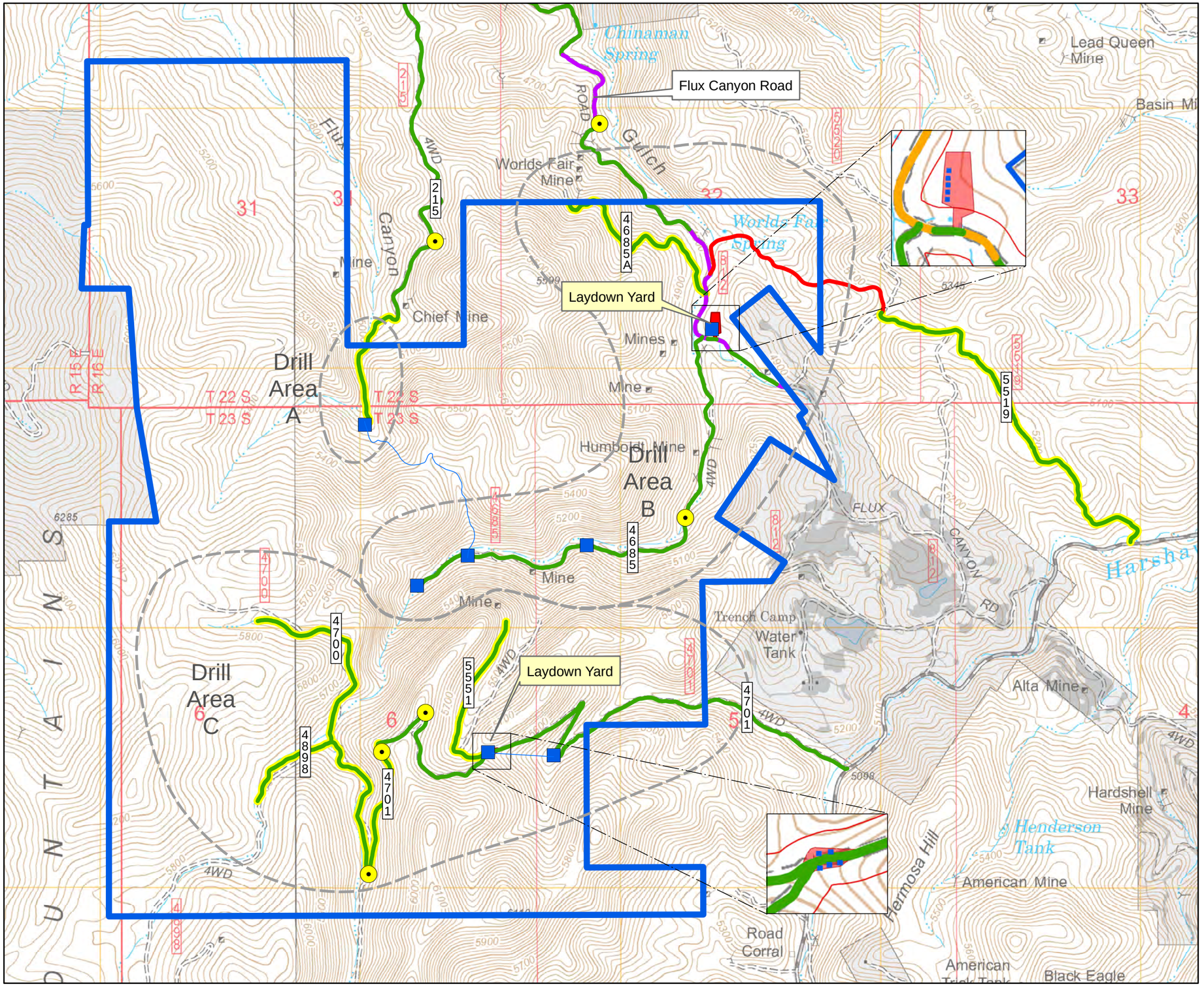
Name:_____ Title:_____

Signature: _____ Date:_____

# APPENDICES

# Appendix A

Exhibits




# LEGEND

- Project Area
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Proposed Turnout Location
- Water Tank (May Include Multiple)
- Water Line
- Laydown Yard

N
W E
S

750 375 0 750 1,500 2,250 Feet

200 100 0 200 400 600 Meters

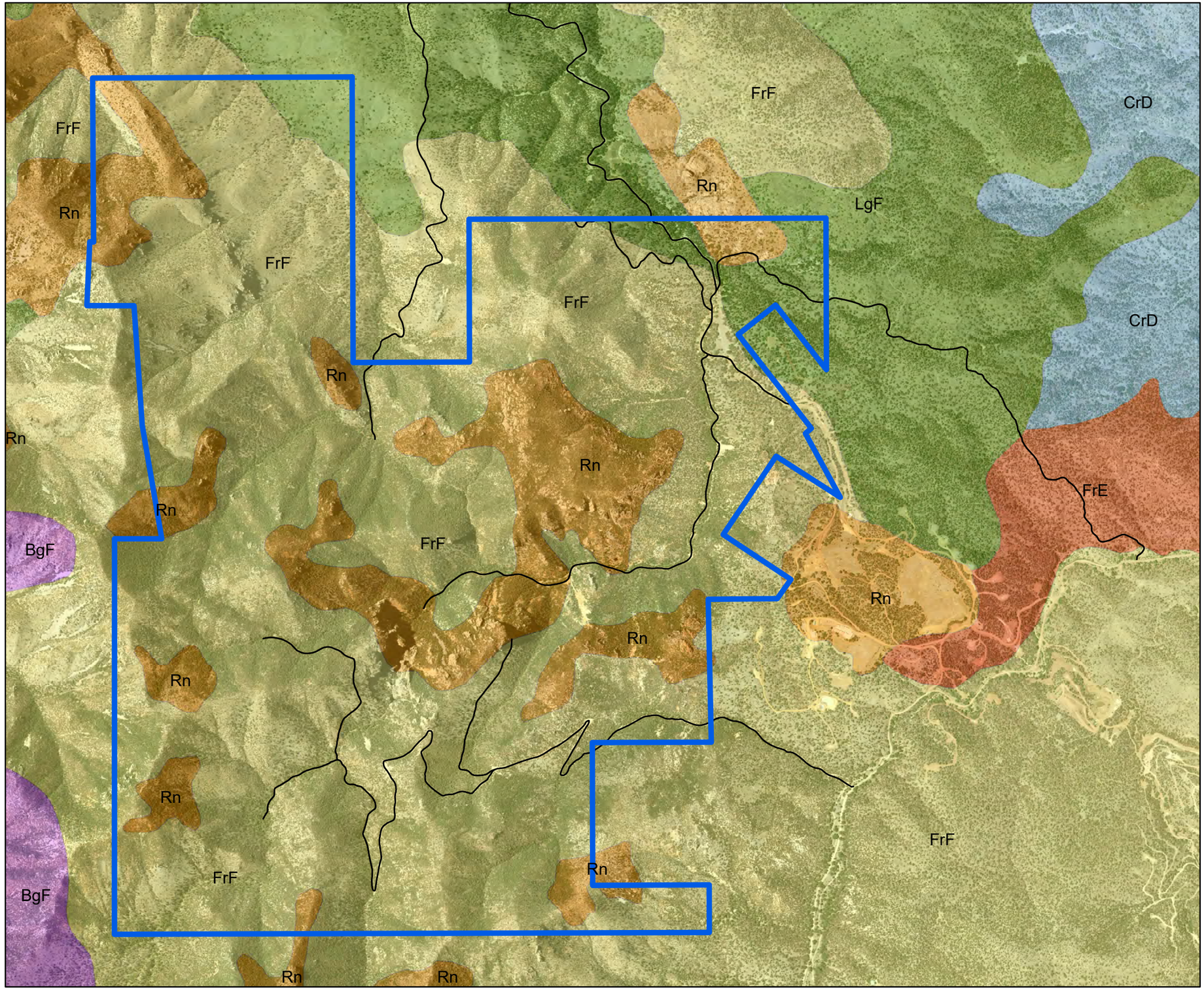
SCALE 1:15,000

## Sunnyside Exploratory Drilling Project

### Exhibit 1

Local Access Roads and Drill Areas

| 12/10/2020 | Sheet 1 of 1 |
|---|---|




# LEGEND

Project Area

Project Area Access Roads

Soil Map Unit Symbol and Name

BgF—Barkerville-Gaddes association, steep

CrD—Chiricahua-Lampshire association, rolling

FrE—Faraway-Rock outcrop complex, 10 to 30 percent slopes

FrF—Faraway-rock outcrop complex, 30 to 60 percent slopes

LgF—Lampshire-Graham-Rock outcrop association, steep

Rn—Rock outcrop-Lithic Haplustolls association

N

W E

S

0 500 1,000 2,000 3,000

Feet

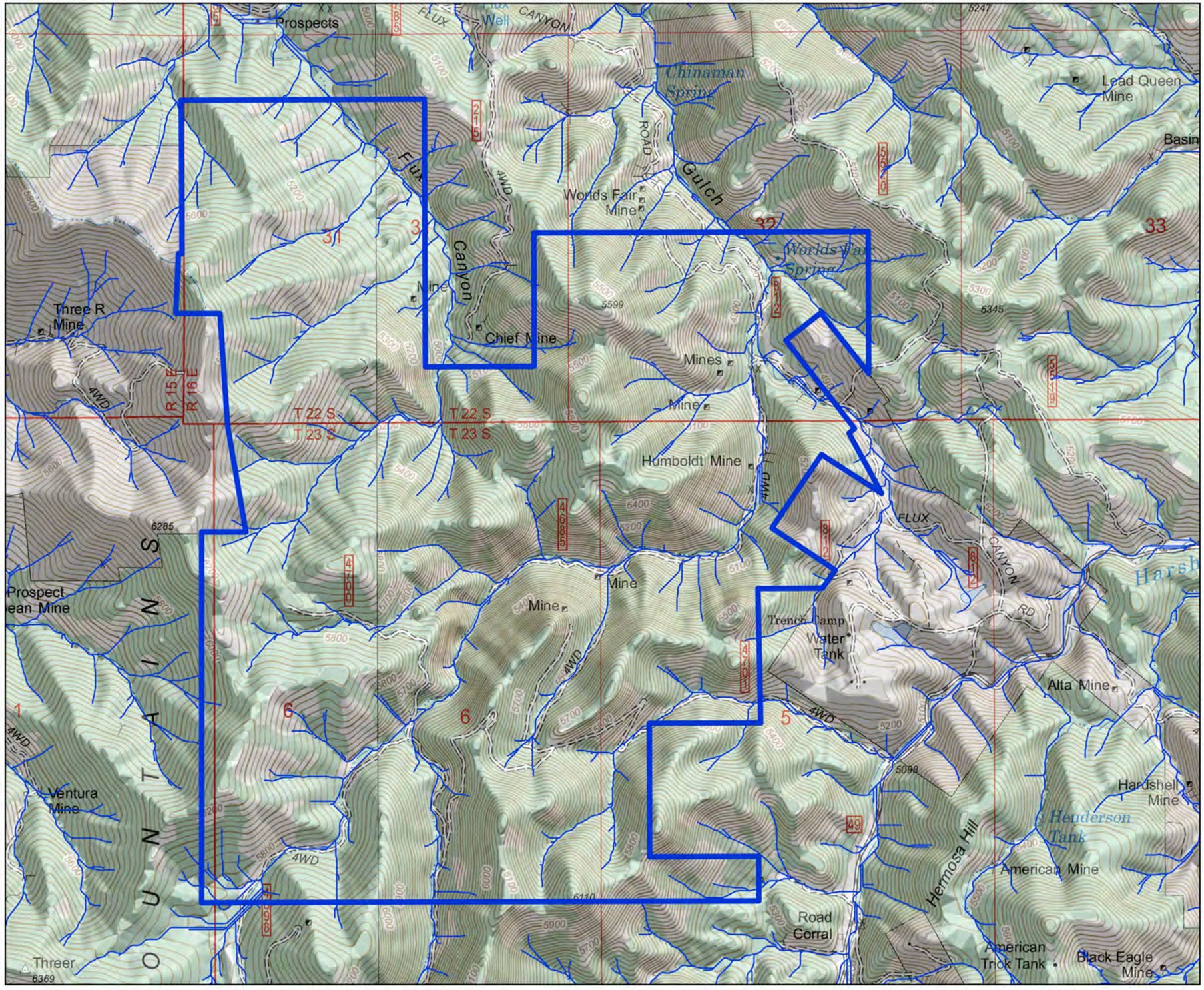
SCALE 1:15,000

**Sunnyside Exploration Drilling Project**

## Exhibit 2

Soils Map

| 07/23/2020 | Sheet 1 of 1 |
|---|---|




## LEGEND

- Claim Area Boundary
- Drainage Network

N
W E
S

1,000 500 0 1,000 2,000 Feet

250 125 0 250 500 750 Meters

SCALE 1:16,000

**Sunnyside Exploration Drilling Project**

**Exhibit 3**

Drainage Network

| 10/26/2018 | Sheet 1 of 1 |
|---|---|

# Appendix B

General Permit for Storm Water Discharges Associated with Construction Activity

# Appendix C

Inspection Report Form

# Appendix D

Employee Training Log

**SWPPP Training Log**

Project Name: Sunnyside Mineral Exploration Project

Location: Santa Cruz County, Arizona

Instructor's Name(s):

Instructor's Title(s):

Course Location: _____ Date: _____

Course Length (hours):

Stormwater Training Topic: *(check as appropriate)*

☐ Erosion Control BMPs ☐ Emergency Procedures

☐ Sediment Control BMPs ☐ Good Housekeeping BMPs

☐ Non-Stormwater BMPs

Specific Training Objective:

Attendee Roster: (attach additional pages as necessary)

| No. | Name of Attendee | Company |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |

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| 13 | | |
| 14 | | |
| 15 | | |

# Appendix E

Additional Owners/Operators

## Additional Owners/Operators

This section is provided to include additional owners and operators that may be designated by the permit holder to perform activities on a project (i.e., subcontractor). The additional owners/operators must adhere to this Storm Water Pollution Prevention Plan.

*Signatory:*

"I certify under penalty of law that I have personally read, understood, and accepted all terms and conditions of this Storm Water Pollution Prevention Plan, and that I shall implement the Plan accordingly. I am also familiar with the NDPDES General Permit for Storm Water Discharges Associated with Construction Activity (NDR10-0000)."

| Printed Name | Signature | Title | Company Name | Date |
|---|---|---|---|---|
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# Appendix F

SWPPP Modification Log

# Appendix F – SWPPP Modification Log

Project Name: Sunnyside Exploration Drilling Project
SWPPP Contact: TBD

| Amendment No. | Description of the Amendment | Date of Amendment | Amendment Prepared by [Name(s) and Title] |
|---|---|---|---|
| | | | |
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# Appendix E – Reclamation and Revegetation Plan

# SUNNYSIDE EXPLORATION DRILLING PROJECT, SANTA CRUZ COUNTY, AZ

## RECLAMATION AND REVEGETATION PLAN

*Prepared for*:

**UNITED STATES DEPARTMENT OF AGRICULTURE FOREST SERVICE**

Coronado National Forest

300 West Congress Street
Tucson, Arizona 85701

*Prepared by:*

**Arizona Standard LLC**

P.O. Box 1155
Patagonia, Arizona 85624

**February 2021**

## TABLE OF CONTENTS

## TABLES



## EXHIBITS



## APPENDICES

# 1.0 INTRODUCTION

Arizona Standard LLC (Arizona Standard) is proposing an exploratory drilling project designed to evaluate the location, concentration, quality, and type of mineralization in the area, and to help establish the feasibility of potential future mining operations. The Sunnyside Exploration Drilling Project (Project) is located approximately 4 miles south of Patagonia, Arizona in Santa Cruz County on public land managed by the U.S. Forest Service (Forest Service) Coronado National Forest (CNF) **(Exhibit 1)**. The Project includes ground-disturbing activities associated with the construction of drill pads, temporary access roads, staging areas, and upgrades to existing roads where necessary for access to the proposed drill sites.

## 1.1 Purpose and Scope

This Restoration and Revegetation Plan (Plan) is an Appendix to the Plan of Operations (PoO) submitted by Arizona Standard, which outlines the initial engineering design, construction procedures, and general environmental mitigation measures for the proposed Project on CNF-managed lands. This Plan describes the overall procedures, techniques, and resources that would be employed for reclamation of those areas utilized or disturbed by exploration activities. Site reclamation activities would be conducted early and concurrent with construction and ongoing drilling operations by reclaiming drill sites and temporary low-standard access roads as associated activities are completed. Arizona Standard will reclaim and revegetate all disturbed areas in a manner compatible with the land use selected and contained herein. Concurrent and final reclamation and revegetation practices will utilize best practicable established and acceptable technologies suitable to the vegetation, climate, and soils within the Project Area and surrounding region.

## 1.2 Statement of Responsibility

Arizona Standard will have the overall responsibility for implementing, directing, and monitoring reclamation measures, revegetation, noxious and invasive weed management, and all other mitigation identified in this Plan. To best accomplish this, Arizona Standard will retain the services of a Revegetation Ecologist/Contractor who specializes in reclamation to implement the protocols identified in this Plan during and following construction. The Revegetation Ecologist/Contractor shall have the following qualifications:

- At least five years of experience in Southern Arizona native habitat revegetation.
- Experience managing revegetation projects over an area comparable in size to this project that met the performance standards and that were released from maintenance and monitoring obligations by the appropriate resource agencies.
- Successful completion of the installation and long-term maintenance of a minimum of three native habitat revegetation projects, each over 2 acres in Southern Arizona.

The Forest Service requires reclamation bonds for all mineral activities that will potentially cause significant surface disturbance and require reclamation. Arizona Standard will provide a reclamation bond to ensure compliance with the terms and conditions of the CNF special-use authorization and other applicable regulatory requirements, including reclamation and administrative costs to the CNF. The amount of the required bond will be determined by the Minerals Administrator during the PoO authorization process based on site-specific and project-specific factors, including measures identified in this Plan.

The CNF will be given a schedule of proposed reclamation implementation activities. The CNF will be consulted for approval of any of the key items of the plan if any major changes are proposed. Small proposed non-time sensitive modifications will also be relayed to CNF for approval, and descriptions of minor changes that occur in the field will be sent to CNF and other concerned parties via field memos prepared following each site visit. Timely responses (i.e., 48 hours or less) to minor questions and approval will be needed for elements of the plan that require CNF input or approval.

### 1.3 Schedule

Initial reclamation tasks, beginning with topsoil salvage, will begin with construction of the temporary access roads upon approval of the Project, presumed to be in December 2021. Reclamation and revegetation in any given portion of the Project Area will commence when exploration activities will no longer affect the area. Reclamation of drill sites will occur concurrently following the completion of drilling activities at each location, while reclamation and revegetation of the temporary access roads and laydown yards, will occur at the completion of the proposed drilling program, estimated to be in 2028, when no further access is needed. The reclamation schedule, including revegetation and monitoring, will be based on the outcome of accumulated data collected during proceeding stages of exploration, the extent of future exploration needs, and the achievement of performance criteria. The progression of key elements of the reclamation schedule is as follows:

**Pre-construction Phase:**

- *Wash Station Setup*. Prior to equipment being brought into the Project Area a wash station utilizing pressurized water must be procured and the staging area identified.

- *Topsoil Salvage*. Determine if topsoil salvage is necessary and if so, locations where it will be removed and stored.

**Construction Phase:**

- *Seed Collection.* A custom native plant palette will be created for the project. All seed shall be collected from the local genetic sources in the USFS Provisional Seed Zone of the project area. A complete discussion of the plant species to be used is located within the Seed Mixture section.

- *Construction Weed Abatement*. During construction activities if non-native plant species begin to bolt or flower in areas disturbed by the project they shall be eradicated. All reproductive parts of the plants shall be cut, bagged, and disposed of off of federal lands.

- *Wash Station Use.* During construction the wash station shall be utilized (if deemed necessary on site) and/or all equipment and tools shall be cleaned of all soil and plant material prior to entering CNF lands to prevent the spread of invasive plants and disease.

**Post-Construction Phase:**

- Site preparation (*e.g*. decompaction, replacement of topsoil, erosion control) will be started immediately following construction completion.

- Seeding shall occur after site preparation activities are completed. The seeding should be conducted between August 1 to November 1 to take advantage of natural rainfall. Dependent

on weather conditions, seeding may be appropriate earlier or later in the season. The CNF will make the final decision if seeding dates outside of those listed above are proposed.

- Maintenance and monitoring will start immediately following completion of revegetation installation and will continue until the performance standards are met. Maintenance activities will be performed weekly to quarterly depending on the amount of weeding and watering required on site per the Maintenance Section. Trend monitoring will be required during the spring of the third growing season after site preparation and seeding and shall continue until the success criteria are met. Arizona Standard may conduct trend monitoring before this time if they so choose.

- If construction is completed outside of the appropriate seeding/planting season, weed control shall be conducted until installation can occur. Secondary soil decompaction prior to seeding will be completed if determined necessary.

- Photos shall be taken at points that were established pre-construction and disturbance boundaries shall be georeferenced and given in a timely manner to the CNF project administrator and designated botanist.

## 2.0 DESCRIPTION OF PROJECT-RELATED DISTURBANCES REQUIRING RECLAMATION

All reclamation sites will require the same revegetation performance criteria. Non-system roads and constructed turn outs will be physically decommissioned to rehabilitate soil permeability and native vegetative cover. The constructed temporary access road, laydown yards, and, where applicable, drill pads, will require recontouring to restore sites to their preconstruction condition. All upland sites, outside of creek or ephemeral wash bottoms, will undergo decompaction, topsoil replacement (as applicable), seedbed preparation, seeding, slash and/or mulch application, and erosion control procedures.

### 2.1 Access Roads

A network of system and non-system (administratively decommissioned) roads already exists within the Project Area. These roads would be used as is or improved where acceptable for access to the proposed drill sites. New temporary roads will be constructed only where necessary, given that the proposed access is designed to minimize disturbances and maximize transportation efficiency. Although the length of all access roads under the Proposed Action is an aggregate of 24.4 miles, approximately 11 miles or 45 percent of this total would require improved or newly constructed roads **(Exhibit 2).**

In order to safely conduct operations, approximately 6.8 miles of existing system roads and approximately 3.7 miles of non-system roads will be improved within their existing or historical road prism[1]. This includes multiple segments along Flux Canyon Road/FR 812 (totaling approximately 2.7 miles in length); a 0.5-mile segment of administratively decommissioned FR 4685A; 1.4-mile segment of FR 215, of which approximately 0.3 miles is administratively decommissioned; 1.3-mile segment of FR 4685; 1.0-mile segment of administratively decommissioned FR 5519; 0.5-mile segment of administratively

[1] The road prism is the area between the top of the cut slope and the bottom of the fill slope. The road prism encompasses the machine-made disturbance footprint of the entire road disturbance area in plan-view (when viewed from overhead).

decommissioned FR 4700; 0.6-mile segment of administratively decommissioned FR 4898; 0.4-mile segment of administratively decommissioned FR 5551; and 2.0-mile segment of FR 4701, of which approximately 0.3 miles is administratively decommissioned **(Exhibit 2)**.

To provide additional access options to Drill Areas A and B (see Section 2.2 below), a 0.6-mile-long new temporary low-standard bypass road would be constructed to connect Flux Canyon Road/FR 812 with decommissioned FR 5519 **(Exhibit 2)**. The road will be constructed to a maximum width of 14 feet to provide a safe travel-way surface and safely accommodate drill rigs and support vehicles. The total estimated area of disturbance from the construction of new bypass road would be approximately 1.7 acres.

## 2.2 Drill Sites

Arizona Standard is proposing the construction of up to 30 individual drill sites as part of the Sunnyside Exploration Program. Three primary drill areas (Drill Areas A, B, and C) have been identified in the field and are shown in **Exhibit 2**. It should be noted, however, that the location of individual drill sites has not yet been determined on the ground and the specific location and number of drill sites may change as information from drilling becomes available in real time. Based on efficiencies in mobilization of personnel and equipment and other considerations, it is anticipated that drilling will proceed sequentially from one drill area to another rather than drilling in multiple drill areas concurrently.

Drill sites will be situated within or directly adjacent to the road prism of existing, upgraded, and newly constructed access roads to the greatest extent practicable in order to minimize the amount of disturbance. A local contractor would be used to construct each drill site using a small "Kubota" style brushing excavator. At each drill site, minor clearing and tree removal may be necessary to accommodate proper orientation of the drill rig and provide for safe operation and access.

Dimensions, orientation, and equipment layouts for each drill site may vary depending on the terrain and other surface requirements. A typical drill pad will be constructed parallel to the road and measure approximately 100 feet long by 40 feet wide, including the area within the road prism **(Exhibit 3)**. However, in some cases, it may be necessary to construct the drill site perpendicular to the road **(Exhibit 4)**. Each drill site will include the borehole locations, a drill rig, a pipe/drill rod trailer, pad access and parking areas for support vehicles, up to three sumps, core press, mud mixer, two water storage tanks, drilling mud bags and additives, spill supplies, personal supplies and gear, spare parts, tools, lighting system, and a portable toilet. The total estimated area of disturbance from the construction of up to 30 drill sites would be approximately 4.5 acres. Drill pads constructed within the prism of non-system roads will be rehabilitated during physical road decommissioning. Drill pads constructed outside of existing or historic road prisms will be restored to their pre-disturbance condition once drilling activities on each of the pads are complete.

## 2.3 Turnouts

In order to maximize transportation efficiency and safety, a total of 9 traffic turnouts would be constructed at various locations along the proposed road network. This includes four turnouts along FR 812, one turnout along FR 215, three turnouts along FR 4701 (including two along a decommissioned portion of FR 4701), and one turnout along decommissioned FR 5519. A minimum of two spotters with 2-way radios would be stationed at various turnouts during the proposed drilling program. The total estimated area of disturbance from the construction of the turnouts would be approximately 0.36 acres.

### 2.4 Laydown Yards

Two laydown yards would be constructed for the secure storage of supplies and equipment used for the proposed exploration program in two of the three drilling areas. One of the laydown yards would be located in Drill Area B within the SW ¼ Section 32, T22S, R16E, near the junction of FR 812 and FR 4685 (**see Exhibit 2)**. This laydown yard would be constructed to dimensions of roughly 270 feet long by 130 feet wide and approximately 0.76 acres in size. A second smaller laydown yard would be located in Drill Area C within the SE ¼ Section 6, T23S, R 16E near the junction of FR 4701 and decommissioned FR 5551 **(see Exhibit 2)**. This laydown yard would be constructed to dimensions of roughly 200 feet long x 80 feet wide and approximately 0.22 acres in size.

## 3.0 EXISTING ENVIRONMENT

### 3.1 Soils

Soils in the Project Area consist of igneous- and volcanic-derived cobbly loams with components of clay or sand that are interspersed with rock outcroppings and underlain by andesite and dacite (Ludington *et al*. 2005; USDA 2010). Three primary soil map units are present within the Project Area: Faraway-rock outcrop complex, 30 to 60 percent slopes; Rock outcrop-Lithic Haplustolls association; and Lampshire-Graham-Rock outcrop association, steep (USDA 2019). These three soil map units are shown in **Exhibit 5** and summarized below.

**Faraway-Rock Outcrop Complex, 30 to 60 Percent Slopes (FrF):** This unit comprises over 76 percent of soils within the Project Area. The parent material consists of mostly alluvium derived from igneous rock. The soil profile of the A Horizon is from 0 to 12 inches and is comprised of very cobbly fine sandy loam. Depth to a root restrictive layer, bedrock, lithic, is from 5 to 20 inches. The natural drainage class is well drained and the runoff class is high. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low.

**Rock Outcrop-Lithic Haplustolls Association (Rn):** This unit comprises over 19 percent of soils within the Project Area. The Lithic Haplustolls component makes up 30 percent of the map unit. Slopes are 15 to 60 percent. This component is generally restricted to mountains and hills. Depth to a root restrictive layer is greater than 60 inches. Available water to a depth of 60 inches (or restricted depth) is very low.

**Lampshire-Graham-Rock Outcrop Association, Steep (LgF):** This unit comprises the remaining 4 percent of soils within the Project Area. The parent material consists of mostly residuum weathered from volcanic and metamorphic rock. The soil profile of the A Horizon is from 0 to 8 inches and is comprised of very cobbly loam. Depth to a root restrictive layer, bedrock, lithic, is 4 to 20 inches. The natural drainage class is well drained and the runoff class is high. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low.

### 3.2 Vegetation

The Project Area is located within the Madrean evergreen woodland biotic community (Brown and Lowe 1980). Pine-oak woodlands occur at relatively higher elevations and on north-facing slopes, while evergreen oak woodlands and scrub grasslands tend to occur at lower elevations and on south-facing slopes. The most common tree and shrub species in the Project Area include Emory oak (*Quercus emoryi*), silverleaf oak (*Quercus hypoleucoides*), blue oak (*Quercus oblongifolia*), Arizona white oak (*Quercus arizonica*), border pinyon (*Pinus discolor*), ponderosa pine (*Pinus ponderosa*), velvet mesquite (*Prosopis velutina*), velvet

pod mimosa (*Mimosa dysocarpa*), fragrant sumac (*Rhus aromatica*), and alligator juniper (*Juniperus deppeana*). Other common tree and shrub species within the Project Area include one-seed juniper (*Juniperus monosperma*), Fremont cottonwood (*Populus fremontii*), Arizona sycamore (*Platanus wrightii*), shrub live oak (*Quercus turbnella*), point-leaf manzanita (*Arctostaphylos pungens*), sotol (*Dasylirion wheeleri*), Palmer's agave (*Agave palmeri*), banana yucca (*Yucca baccata*), catclaw acacia (*Senegalia greggii*), ocotillo (*Fouquieria splendens*), and common sotol (*Dasylirion wheeleri*). Understory species include grasses such as sideoats grama (*Bouteloua curtipendula*) and beargrass (*Xerophyllum tenax*).

# 4.0 SITE RECLAMATION AND REVEGETATION PROCEDURES

## 4.1 Topsoil Stripping and Salvage

Construction of drill pads and temporary access roads would typically begin with stripping and stockpiling topsoil. All areas that are to incur ground disturbance will have all retrievable topsoil suitable for reclamation (2- to 6-inches) salvaged and stored for redistribution during restoration. Topsoil salvage will include the O, A, and B soil horizons. Topsoil would ideally be salvaged in a dry state in the late summer to fall when most plants have finished seeding and seeds in the seedbank are dormant. Topsoil would be windrowed around the perimeter of drill pad sites and laydown yards in a pile no higher than three feet for the duration of the construction activities. Stockpiles would be flagged with avoidance flagging so as to not be disturbed by construction activities or contaminated by construction related material. Topsoil salvaged along laydown yards, newly constructed temporary access roads, and upgraded decommissioned roads would be stockpiled along the perimeter and in designated storage areas along road segments. Topsoil stockpiles would be located minimum of 50 feet away from concentrated flows of stormwater, drainage courses, and outside of riparian areas. Topsoil stockpiles would be protected from stormwater run-on using a temporary perimeter sediment barrier such as fiber rolls, silt fences, etc.

## 4.2 Woody Plant Removal and Storage

At each drill site and along temporary access roads, minor clearing and tree removal may be necessary to accommodate proper orientation of the drill rig and provide for safe operation and access. Trees proposed to be removed at drill sites and along access roads that are equal to or greater than 5-inch diameter-at-breast-height (dbh) or 5-inch diameter root collar (drc) would be purchased from the Forest Service through a timber sales contract. All trees greater than and less than 5-inch dbh or drc that are proposed to be removed at drill sites would be logged and "decked" adjacent to the drill sites and along segments of the temporary access roads and trees less than 5-inch dbh or drc along with other woody debris and slash would be stockpiled adjacent to the drill sites and along segments of the temporary access roads and later be shredded and/or scattered back across these areas during final reclamation.

## 4.3 Completion and Closure Activities

Following the completion of drilling activities at each drill site, all materials, including equipment, water lines, water tanks, lubricants and other products, cores, plastic sheeting, and solid wastes (trash, etc.) would be removed from the site and disposed of at an off-site disposal facility. Drilling mud and associated water will be removed via hydro-vac at the completion of drilling activities at each pad. The liner will also be removed. The sumps will then be backfilled with the previously excavated material.

Upon the conclusion of drilling, the boreholes would be effectively sealed to prevent long-term 18 exchange of water between aquifers, or between the surface and the aquifers below. The 19-mother hole and any open daughter holes would be filled with Wyoming grade bentonite mud 20 (with a permeability of no more than

1x10-9 cm/s) as a permanent seal, the surface casing 21 removed, and a surface cement plug (up to 20 feet in depth) installed as a permanent drill hole 22 cap. These borehole abandonment procedures would conform to ADWQ regulations 23 (AAC R12-15-811, 816, and 817), and ASTM Designation: D5299/D5299M–18 Standard Guide for 24 Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and 25 Other Devices for Environmental Activities (as revised).The specific mixing and emplacement procedures will be conducted according to manufacturer's specifications, and this information, as well as geologist and/or engineer logging and verification of slurry QA/QC volume calculations, will be documented and provided to the CNF and ADWR as requested.
Upon final demobilization, and prior to reclamation, inspection will be conducted for all drill pad sites and laydown yards for spillage of fuels, oils, drilling solids, etc., and those materials and impacted soils removed and properly disposed of off CNF lands.

## 4.4 Recontouring

Arizona Standard will conduct concurrent reclamation by reclaiming drill sites as associated activities are completed. Newly constructed temporary access roads and laydown yards will be restored to preconstruction condition at the completion of the proposed drilling program. All improved non-system roads shall be physically decommissioned by Arizona Standard prior to completion of the Project.

Drill sites, laydown yards, and temporary access roads will be regraded and re-contoured to match approximately the surrounding topography using a CAT 235-C excavator or other similarly sized excavator. Emphasis during recontouring will be to return all disturbed areas to approximate original contour, to stabilize slope, as appropriate, control surface drainage, and to provide a more aesthetic appearance. Ruts and other scars will be filled and all drainages will be returned to their preconstruction condition. All gates associated with temporary low standard access roads will be removed and disposed of. To reduce the risk of sloughing, soils used in the toe of cut slopes of steeper terrain areas will be placed in layers and compacted with heavy equipment.

## 4.5 Decommissioning of Non-System Roads

Approximately 3.6 miles of non-system roads will be improved for site access and drill pad construction. All non-system roads used during construction will be physically decommissioned to meet reclamation performance criteria. Non-system roads will have the following methods applied to achieve performance criteria: decompaction, topsoil replacement (as applicable), seedbed preparation, seeding, slash and/or much application, and erosion control (see Sections 4.6-4.12). Physical barriers will be placed at each end of non-system roads to prevent future motorized access.

Site-specific reclamation specifications will need to address local slope length and steepness, topographic position of slopes, and location of seeps, streams, and unstable areas to be successful. Long slopes of ripped high erosion hazard soils, will require frequent low rolling bars, properly installed and maintained certified weed free straw wattles, erosion netting and other site-specific prescriptions properly specified and applied. Scarification, installation of erosion control structures, and seeding will not be conducted in creek or ephemeral wash bottoms.

## 4.6 Scarification

Prior to topsoil replacement and seeding, all disturbed upland areas will be scarified by ripping or chiseling to loosen compacted areas from heavy equipment traffic. Scarifying the subsoil will also promote water infiltration and improve better soil aeration and root penetration. The surface will be ripped or scarified to

a depth sufficient to achieve 10 to 15 inches of decompaction or to the depth of bedrock as appropriate. Ripping and chisel plowing will also occur when materials are dry to promote the shattering of compacted layers. The purpose of roughening the surface is to trap moisture, reduce wind shear, minimize surface erosion by increasing infiltration, and create micro habitats conducive to seed germination and development. After disturbed areas have been scarified, implements to smooth the rough surface and return it to its original contour (e.g., skid-steer with bucket and link-chain harrow) will be utilized where applicable.

### 4.7 Topsoil Replacement

All topsoil salvaged will be uniformly spread over portions of disturbed areas where the soil was salvaged. If compaction occurs during this operation that might not be relieved during seedbed preparation, all compacted areas will be scarified. Extreme care will be taken to prevent mixing of sub-soil into topsoil layer. Soil replacement will occur with a skid-steer outfitted with a flat bucket, which will be utilized to deposit and finish grade the areas to match the existing, undisturbed grade on each side of the temporary impact area(s). Hand raking of soils will provide the final grade where graded areas meet undisturbed soil surfaces. Topsoil spreading will not occur during wet periods when soils are easily compacted and all travel over re-topsoiled areas will be restricted. The Reclamation Contractor will be responsible for ensuring that all areas that are to be reclaimed are topsoiled appropriately.

### 4.8 Topsoil Amendments

Topsoil that has been placed in stockpiles to a depth of greater than 2 feet from the surface will be amended with the addition of Mycorrhizal Inoculum, which consist of spores, mycelium and mycorrhizal root fragments in a solid carrier suitable for handling in reclamation equipment. The Mycorrhizal Inoculum generally includes three or more species of endomycorrhiza of the genus Glomus. Inoculum will be applied into the topsoil at the time of seeding at an estimated rate of up to 3.6 million propagules per acre (or as specified by the supplier). The Mycorrhizal Inoculum is a considered a good soil amendment in any reclamation program but is especially beneficial in amending topsoil that has been stockpiled at a depth of 2 or more feet for a period of one year or more. These topsoil materials have been largely restricted from oxygen and water due to the way that stockpiles are generally constructed to ensure their stability and prevent them from failing or eroding. Mycorrhizae are fungi that form a symbiotic relationship with the root systems of a majority of plant species and are better at adsorbing water and nutrients and providing these to the root systems. This gives the topsoil that has been deprived of oxygen and water a “boost” to establish root system of reseeded plants, and thereby increases plant community establishment and revegetation success. Wood shred or mulch will be applied to the topsoil as described in section 4.11.

### 4.9 Seedbed Preparation

After the topsoil has been re-spread and prior to seeding, the planting beds would be prepared to maximize success. Seedbed preparation will be conducted immediately prior to seeding to prepare a firm seedbed conducive to proper seed placement and moisture retention. Seedbed preparation will also be performed to break up surface crusts and to eliminate weeds that may have developed between initial reclamation and seeding.

Soils within the planting beds will be treated with a surface tiller or rake (2 to 4 inches) to ameliorate compaction and to provide a seedbed that is firm, yet rough. Extreme care will be taken to prevent mixing of sub-soil into topsoil layer. A rough seedbed is conducive to capturing or lodging seed when broadcasted

or hydroseeded, and it reduces runoff and erosion potential. The rough seedbed will retain soil moisture needed for seeding germination and establishment.

## 4.10 Seeding

### 4.10.1 Seed Mixtures

The selection of appropriate seed mixtures for revegetation is a critical process, which controls the overall success of the revegetation program. Seeds will be obtained from established seed supply companies which produce native seed adapted to the specific environmental conditions of the Project site. Native seed should be collected within the same USFS Provisional Seed Zone as the disturbance location, within 500-1,000 vertical feet of the elevation of the site, and on the same aspect and soil type, in order to utilize seed that is best adapted to each site's microclimate variations. The seed mixture chosen for revegetation will be designed to provide a stable environment that will be capable of supporting pre-project land uses with an emphasis on optimum wildlife habitat development. No commercial seed will be accepted unless the collection source is local to the Project area and must be certified to be free of noxious weeds by an independent lab. Species that are adapted to low nutrient conditions are better suited to compete with aggressive weedy species during the critical plant establishment period. The utilization of adapted species will ultimately result in a plant community composed of species that can survive lower nutrient conditions, yet out-compete aggressive weedy species that require higher nutrient conditions.

If at the time of procurement, inadequate supplies are available from seed supply companies, seed will be collected from local genetic sources in the area. The use of seed mixtures, which are adapted to local conditions, increases the likelihood that seedlings will be successful and maintains the genetic integrity of the local ecosystem. For widespread herbaceous species that are more likely to be genetically homogeneous, seed collection areas may include a broader geographic range. If seed is collected from the CNF, the collection areas will be determined by the CNF District Biologist or Range Management Specialist in collaboration with the individual or entity responsible for seed collection. Collected seed will be labeled with collection location, date, and species, and stored in a cool, dry location until it is used during reclamation of disturbed areas.

The seed mixtures will be based on Pure Live Seed (PLS) seeding rates, not bulk seeding rates. The total amount of seed required (in pounds per acre) will be dependent on the level of ground disturbance and potential for natural regeneration but is estimated to be 15-20 pounds/acre based on PLS. The final seed species mixture chosen will be based on consultation with, and approval from, the CNF District Biologist or Range Management Specialist. Species utilized and their exact PLS poundage may be substituted or altered as agreed upon by the CNF Botanist. The native species present in the vicinity of the proposed restoration area will be used as a reference for the proposed seed palette.

### 4.10.2 Seeding Timing

All reclaimed areas should be seeded between August 1 to November 1 to take advantage of natural rainfall. Dependent on weather conditions, seeding may be appropriate earlier or later in the season. Seeding should occur within one to two weeks of seedbed preparation, weather and soil conditions permitting. The combined seed blend will be broadcast at the conclusion of regrading, placement of topsoil, and seedbed preparation. Seeding is most effective when completed prior to and immediately after the period of peak precipitation. If seeding is determined to be unsuccessful based on monitoring, areas will be re-seeded following summer or fall.

### 4.10.3 Seeding Methods

Hydro-seeding where practicable and feasible is the preferred method for seeding to meet reclamation goals and objectives. Seed will be applied to side-slopes, stockpiles, and areas not needed for construction as soon as practicable after completion of the areas grading or use (see seeding timing section). Seed used in hydroseeding will be applied in a slurry at an approximate rate of 20-25 lbs./ acre. In addition to seed, components of the hydroseed mix will include the appropriate type and amount of mulch and tackifier to be determined by the Restoration Contractor.

Broadcast seeding by hand will be used in areas that are not accessible by hydro-seeding equipment. Before broadcasting, the seed will be mixed with a seed dispersal agent such as rice hulls, bran, or some other acceptable medium that will aid in good seed dispersal and coverage at approximately 20% of the overall volume. After evenly broadcasting the seed at the specified rate, the seed will be lightly raked into the soil surface to ensure good seed contact with the soil (seed should ideally be covered with soil at a depth similar to their width and will not be further than half an inch under the surface).

The specific seeding method used will be based on the type of seed, disturbance level, soil type, and terrain for the area to be reclaimed. Seeding methods will be reviewed and approved by the CNF District Botanist or Range Management Specialist.

## 4.11 Slash and Mulch Application

Immediately after seeding, slash stockpiled from original construction will be scattered on disturbance areas in a natural manner that is consistent with CNF visual resource management objectives. All slash greater than 2 inches in diameter will be cut into lengths not to exceed 4 feet and scattered over the seeded and finished soil surface. All remaining slash less than 2 inches in diameter will be cut with loppers into varying lengths and placed into small piles or distributed evenly over the seeded and finished soil surface. The slash may be combined with rocks, existing woody debris, and/or raked into the soil to prevent blowing or washing away during storm events. Alternatively, to cutting and lopping, slash may be chipped and the chips scattered over the seeded and finished soil surface.

Mulch, in the form of chopped weed-free wood straw or lightweight and biodegradable erosion control blanket, will be applied on all disturbed slopes greater than 25 percent grade areas to aid in stabilizing the area to minimize or prevent erosion, as well as to promote revegetation. The mulch will be uniformly applied at a rate of = to cover at least 75% of the ground surface at a depth less than 0.5”. Mulching will occur during seeding (where hydroseeded) or immediately after seeding where broadcast seeding occurs. All material utilized for mulch will be weed free wood. Mulch will be applied following seeding with a standard straw blower mounted behind a truck or tractor. Where practical, mulch will be crimped into the seedbed using a cultipacker or shallow-set disk harrow to prevent wind-blow and increase microhabitat for seed germination.

## 4.12 BMP Erosion Control Procedures

The Restoration Contractor will monitor the reclaimed and reseeded areas at each monitoring visit for erosion. The Restoration Contractor will be responsible for preventing erosion through the installation and maintenance of best management practices (BMPs) where required. In addition to the establishment of native vegetation, which will minimize erosion, non-vegetative erosion control measures may be used as prescribed by the Restoration Contractor. Such erosion control measures, or BMPs, may include certified "weed-free" wood straw or wood mulch application, jute netting, certified weed free wattles with

biodegradable netting or tubes, biodegradable coir or excelsior blankets, sandbags, soil binders, trenches, or dissipaters. All erosion control materials will be composed of natural, non-synthetic, materials. Any such measures will preclude the introduction of infestations of invasive, non-native plant species and weeds listed on federal and state noxious weed lists into the seed bank of areas where native vegetation either occurs or is to be restored. Drainage and sedimentation control devices will be routinely cleaned, maintained, and repaired prior to and during the rainy season by the Restoration Contractor. All repairs to these systems will be executed immediately to offset any potential future erosion problems.

## 5.0 MAINTENANCE, MONITORING, AND REPORTING REQUIREMENTS

The maintenance, monitoring, and reporting period will begin with implementation of the site reclamation and revegetation work (as specified in **Section 3** above) at each of the Project's temporary impact sites and will continue for a for six years or until performance criteria are met. The Restoration Contractor or other authorized Arizona Standard representative will be responsible for providing monitoring and reporting, in addition to maintenance of site reclamation and revegetation areas as required.

### 5.1 Maintenance Activities and Schedule

Maintenance activities within the site reclamation and revegetation areas consist of control of infestations of invasive, non-native plant species and weeds listed on CNF and State noxious weed lists, installation, or replacement of erosion control BMPs as necessary, and/or application of additional mulch on site reclamation and revegetation areas throughout the six-year maintenance, monitoring, and reporting period as needed.

Weed control measures (i.e., measures intended to control infestations of invasive, non-native plant species and weeds listed on CNF and state noxious weed lists) will be implemented in accordance with prescribed weed management procedures for the Project (as described Section 5.4 below). Additional maintenance items may include occasional repair, replacement, or installation of BMPs, and/or installation of additional slash or mulch. If any of these activities is required, the Restoration Contractor would specify the location and materials required. All maintenance activities would be performed consistent with the schedule shown in **Table 1**.

**Table 1: Anticipated Maintenance Schedule**

| Period | Maintenance Frequency | Maintenance Activities | Remedial Actions |
|---|---|---|---|
| 6-Year Long-Term Maintenance Period | Three times per year in spring (Feb – April), summer (July – September), and winter (November – January) as directed by the Restoration Contractor. One additional visit per year as conditions require. | Control of infestations of invasive, non-native plant species and weeds listed on CNF and State noxious weed lists (Appendix A) in accordance with prescribed weed management procedures for the Project, replacement or installation of BMPs, collection and installation of additional vertical or horizontal mulch (all as required only). | Collection and installation of additional vertical or horizontal mulch in areas with off- road activity, hand seeding/raking of plant seeds in designated areas (all as required only). |

## 5.2 Monitoring and Reporting Activities and Schedule

Arizona Standard will monitor the site preparation and installation as necessary to ensure that procedures are implemented properly and thoroughly by the Reclamation Contractor. Qualitative maintenance and quantitative performance monitoring will be conducted by the Restoration Contractor to determine the effectiveness of reclamation, revegetation, and maintenance activities on the site and prescribe any additional maintenance activities that may be required. Monitoring will be conducted three times per year during the 1) spring (February to April) and 2) summer (July – September) growing season and 3) the dormant season (October - January). Performance monitoring will be completed by the Restoration Contractor to document the reclamation and revegetation site progress relative to the established performance criteria (e.g., target conditions), and prescribe any remedial measures that may be required to ensure that each restoration site meets the performance criteria within the six-year maintenance, monitoring, and reporting period. Both maintenance and performance monitoring will be completed on the site reclamation and revegetation sites consistent with the schedule summarized in **Table 2**.

Following each annual qualitative maintenance inspection, the Restoration Contractor will submit a maintenance monitoring report to Arizona Standard and CNF. A standardized qualitative monitoring report form will be utilized for maintenance monitoring and reporting. The ultimate purpose of the maintenance monitoring reports is to advise Arizona Standard and the CNF of the reclamation and revegetation site conditions and any required maintenance items needing to be completed to ensure conformance with this Plan.

**Table 2: Anticipated Monitoring and Reporting Schedule**

| Period | Monitoring Frequency | Submittals | Reporting Frequency |
|---|---|---|---|
| Pre-Construction | As needed to complete soil salvage in temporary impact areas. | Memo summarizing salvage activities and map showing storage locations. | Once per year. |
| Post-Construction | As needed to complete soil decompaction, recontouring, and vertical mulch installation. | Letter Report with photos summarizing the reclamation-restoration activities as installed. | Once per year. |
| 6-Year Long-Term Maintenance and Performance Monitoring | One visit in spring (February - April), Summer (July – September) and winter (November – January) annually. One additional visit per year as conditions require. | Letter Report with photos summarizing the site conditions and recommending any maintenance or remedial work required. | Once per year for five years. Anticipated annual reports begin in 2022 and end 2035. |

Any reclamation and revegetation site deficiencies will be noted in the monitoring report, with accompanying recommendations for maintenance and/or remedial actions. Maintenance monitoring will be performed three times a year and reported annually during the six-year maintenance, monitoring, and reporting period as specified in **Table 2**. Quantitative performance monitoring will also be conducted by the Restoration Contractor three times per year to assess the effectiveness of the vertical and horizontal mulching efforts, the native plant vigor and development within the site reclamation and revegetation sites,

document any seedling recruitment from natural sources, presence/absence of plant pests or diseases, presence/absence of nonnative or invasive plant species, and project erosion control BMP conditions.

Performance monitoring will be completed by the Restoration Contractor beginning one year after installation of vertical and horizontal mulch and will continue annually throughout the six-year maintenance, monitoring, and reporting period. Performance monitoring will be documented within an annual report, which will be forwarded to Arizona Standard and CNF. Any project deficiencies will be addressed by the Restoration Contractor and be noted in the annual report, with accompanying recommendations for maintenance or remedial actions. Quantitative performance monitoring will be conducted to determine total bare ground cover, total native species cover and composition, total non-native species cover and composition, vertical stratification of native herb, shrub, and tree species on each of the site reclamation and revegetation sites, and overall plant species diversity. Performance monitoring will include quantification of vegetative cover throughout the site reclamation and revegetation areas. All quantitative monitoring will be conducted using permanent vegetation quadrants and the establishment of a series of fixed photo-points, and the resulting data will be compared with performance criteria for the Project as described in Section 5.3 below.

### 5.3 Performance Criteria

Performance evaluations will be based on the restoration areas developing a trend of vegetative cover, diversity, and species dominance that is similar to the naturally occurring habitat in adjacent areas of the Project.

The goal of this plan is the successful reclamation of native habitats impacted during project construction and revegetation of impact areas with native species. Success will be based on the establishment of seeded species and the exclusion of non-native species. The restoration of the mitigation areas shall be considered successful when all of the following standards are achieved and sustained over a consecutive two-year period:

The following Performance Standards apply:

- Canopy cover by native species at all revegetation sites shall attain a minimum of 15 percent cover during the 180-day seed establishment period. See table below for required canopy covers of native and non-native species for years two, three, and four to six. Native plant cover must exceed or be within 10% of the specified standards.

| Native/Non-native Percent Cover End of Year 2 | Native/Non-native Percent Cover End of Year 3 | Native /Non-native Percent Cover End of Years 4 to 6 |
|---|---|---|
| 30 / <5 | 70 / <1 | 70 / 0 |

- Non-native plants undocumented on the particular disturbance site prior to construction that may appear after construction, shall have a 0 percent cover after two years.

- Regardless of the number of years post-construction, in order for success criteria to be considered complete, restoration sites must meet the final percent canopy covers for native and non-native species listed in the table above for two consecutive growing seasons without any weeding maintenance activities.

- Prior to the agreement that performance standards are met, all restoration sites will be given a qualitative and quantitative assessment in accordance with the requirements listed above.

The vegetation community established on the reclaimed areas must be capable of persisting without continued intervention. Persistence of reclaimed vegetation will be determined through monitoring of reclamation areas as identified in Sections 5.1 and 5.2 above. If monitoring identifies reclaimed areas that may not meet reclamation success criteria, (e.g., seed germination or vegetation cover is lower than expected), the CNF and Arizona Standard will discuss the use of adaptive management procedures to address these issues. The minimum anticipated timeframe for achieving the success criteria is three years after initial seeding.

Reclamation methods are based on best available science to rehabilitate or restore arid lands affected by comparable physical disturbance and are designed to achieve performance criteria consistent with the project area reference conditions. Localized areas with low potential to sustain vegetative cover due to physical or chemical properties of parent material, historic mining activities, or other activities unrelated to the proposed action or proper implementation of reclamation design specifications will be documented and performance criteria may be adapted to meet localized objectives with approval from CNF.

### 5.4 Noxious and Invasive Weed Management and Control

"Noxious weed" is a legal term, meaning any plant officially designated by a federal, state, or local agency as injurious to public health, agriculture, recreation, wildlife, or property. The more general term "invasive species" refers to species that are non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive plant species include those that are legally designated as noxious, as well as additional species that may be considered noxious in some areas but not others, and other non-native species that are already widespread.

The Reclamation Contractor will remove all noxious and invasive plants (hereafter referred to as weeds) from the reclamation areas in order to help establish the developing plant community by reducing the competition for natural resources, including water, nutrients, and sunlight. Reclamation sites will be subject to weed control efforts until the performance standards are met. A list of the known nonnative, invasive plant species known to occur within or adjacent to CNF lands is found in **Appendix A**. Surveying and monitoring for weed infestations in disturbance sites will occur when sites are in use and during the six-year post-seeding monitoring period or until the restoration performance standards are met.

The amount of weeding required will be determined by the amount of weed seed in the soil, weather conditions, and the Reclamation Contractor's diligence in removing the weeds, thereby reducing the existing seed bank of weeds present. All weeds will be controlled through manual removal or by herbicide use. The control method used will depend on the weed species, location of weeds, and the time of year that weed operations occur. An annual pre-weed removal meeting will be held in December or early January between a CNF invasive plant management specialist, Arizona Standard, and Reclamation Contractor for at least the first two years following project construction to discuss weed control methods and schedules.

Regardless of the method of control, all weeds on site will be removed prior to the development of seed to prevent the introduction of more weed seed into the soil seed bank. If weeds are not controlled before they reach a flowering or seeding stage, they will have these reproductive parts bagged in 3 mil or greater plastic, sealed to prevent seed dispersal and disposed of legally off site.

Native vegetation will not be damaged by weed control operations. During the first growing season of native grasses, forbs, and shrubs use of chemical herbicides will not be feasible. Until newly reseeded species reach a height of 3-6 inches, they are susceptible to damage from herbicides. Therefore, manual weed control is proposed for the first growing season if re-seeded species are not determined to be mature enough to withstand herbicide spray.

Manual removal is the process of removing the entire portion (roots, stems, flowers, seeds) of a non-native species by hand. Hand removal of non-native species may include the use of small trowels, but not hoes unless approved by an CNF botanist, and care must be taken to ensure that the root systems of native plants, seeding areas, or erosion control materials (e.g., mulch, jute netting) are not damaged in the process. During subsequent years herbicide applications may be utilized when weed densities are determined to pose a threat to revegetation success or spread to surrounding lands.

The following measures will be implemented when using herbicides:

- Herbicide application will be limited to foliar or spot spray.
- Herbicide will be applied according to the label instructions.
- All herbicides used will be applied by a qualified, licensed individual.
- District Forester or Botanist approval of the Herbicide Use Plan will be necessary for the application of any herbicide, unless that authority is delegated to the Forest Supervisor.
- All applicable state and federal laws, including herbicide label requirements will be followed.
- Spraying will be overseen by a Forest Service certified applicator who will insure safe handling, application and disposal of herbicide.
- Persons involved in mixing, loading and applying herbicides will be required to wear appropriate personal protective equipment as required on the label.
- Areas used for mixing herbicides and cleaning equipment shall be located where spillage will not run into surface waters or result in ground water contamination.
- All requirements of the Spill Prevention, Control, and Countermeasures Plan (SPCC) will be followed.
- Herbicide treatment of weeds will be tracked in an herbicide tracking table. The purpose of the table is to track the amount and efficacy of herbicide applied in each treatment area. As such, an entry will be made for each treatment area. For each entry, the date of treatment, amount and type of chemical applied, adjuvants included, target species and estimated number of individuals treated, size of treated area, weather conditions, name and herbicide license, number of applicators, method of application and other vital information will be provided. The herbicide applicator will also include details on the success/failure of previous applications in the area and recommended adaptive management strategies to guide future treatments of the target species or area. Documentation of herbicide use will be the responsibility of the Herbicide Contractor and shall be submitted to the CNF on a monthly basis. Herbicide

contractors shall also keep records of herbicide applications in accordance with herbicide label requirements, local, state, and federal regulations, and permit requirements.

- Spraying will be conducted only when weather conditions are conducive to effective uptake of the herbicide by the targeted species (e.g., sunny, dry, and when plants are actively growing) and when wind conditions are such that herbicide drift is nonexistent. Applications of herbicide will not occur during or if a precipitation event is expected.

- During herbicide application, protection for non-targeted species is required. This is relevant to any native plants outside the restoration areas, as well as native plants within these areas.

- Only aquatically labeled herbicides and surfactants can be used within 30 feet of riparian areas.

## 5.5 Adaptive Management

Adaptive management will be implemented in the event of unforeseen or probable, but unpredictable circumstances. Adaptive management is defined, for the purposes of this Plan, as a flexible, iterative approach to the long-term management of the reclamation and revegetation sites that is directed over time by the results of ongoing monitoring activities and direct observation of environmental stressors that are producing adverse results within the reclamation and revegetation sites. Adaptive management will include the utilization of annual quantitative assessments and rapid qualitative assessment data gathered in the field to assess the health and vigor of all vegetation communities and reclamation and revegetation sites.

Following an event that causes damage to all or part of the reclamation and revegetation sites, these data will be used in part to drive management considerations for repair of the damaged areas. Individual environmental events are discussed below along with an anticipated range of management responses to correct any damage that may occur to the reclamation and revegetation sites.

## 5.6 Anticipated Events and Remedial Measures

### 5.6.1 Flooding

Flooding may periodically reduce overall plant cover within and adjacent to reclamation and revegetation sites near intermittent streams and dry washes, but with application of erosion control materials (BMPs) at all appropriate reclamation and revegetation sites in conformance with the Project SWPPP, seasonal flooding is not anticipated to reduce vegetation cover below a level in conformance with the Plan performance standards. If qualitative and/or quantitative monitoring of these areas indicate that cover is being reduced below acceptable levels, re-contouring of reclamation and revegetation sites within the first two years after initial vertical and horizontal mulch application, installation of addition erosion control materials (BMPs), and/or remedial seed imprinting may be recommended by the Restoration Contractor. These remedial measures would be subject to approval by Arizona Standard and the CNF.

### 5.6.2 Prolonged Drought

Seasonal drought and/or periods of average to below-average precipitation is anticipated to occur within all of the reclamation and revegetation sites annually, and all vegetation communities are composed of drought-tolerant native plant species that are capable of withstanding drastic seasonal fluctuations in available moisture onsite. Performance criteria values for all vegetation communities have been adjusted based on the expected temporal development in each reclamation and revegetation site without

supplemental seeding and irrigation. However, an extended drought could potentially occur during any portion or all of the long-term six-year maintenance, monitoring, and reporting period including below-average seasonal rainfall and prolonged high temperatures that may negatively affect any or all of the reclamation and revegetation sites (e.g., lower plant cover, higher plant mortality, increased potential for pest infestations onsite, etc.). Remedial measures for prolonged drought would be limited to remedial seed imprinting prior to any anticipated precipitation, extension of the five-year maintenance, monitoring, and reporting period, and/or coordination with the CNF to adjust the performance criteria for expected vegetation community development under extended drought conditions. These remedial measures will be recommended as required by the Restoration Contractor and would be subject to approval by Arizona Standard and CNF.

## 6.0 REFERENCES

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United States Department of Agriculture (USDA), Natural Resource Conservation Service. 2010. Soil Survey Official Soil Series Descriptions. Available at http://soils.usda.gov/technical/classification/osd/index.html.

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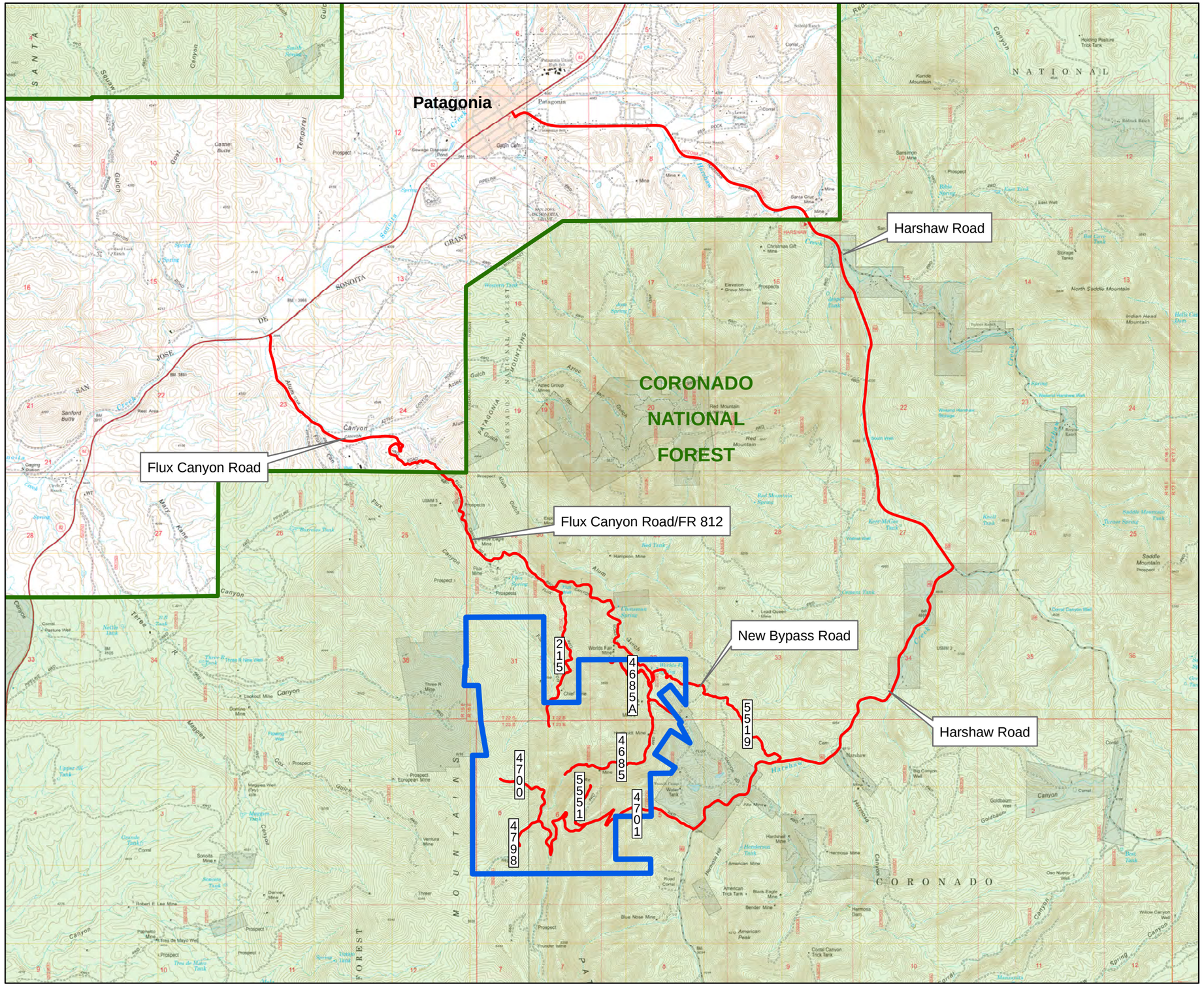
# EXHIBITS




# LEGEND

- Project Area
- Primary Access Route
- Coronado National Forest

N
W E
S

1 0.5 0 1 Miles

1 0.5 0 1 2 Kilometers

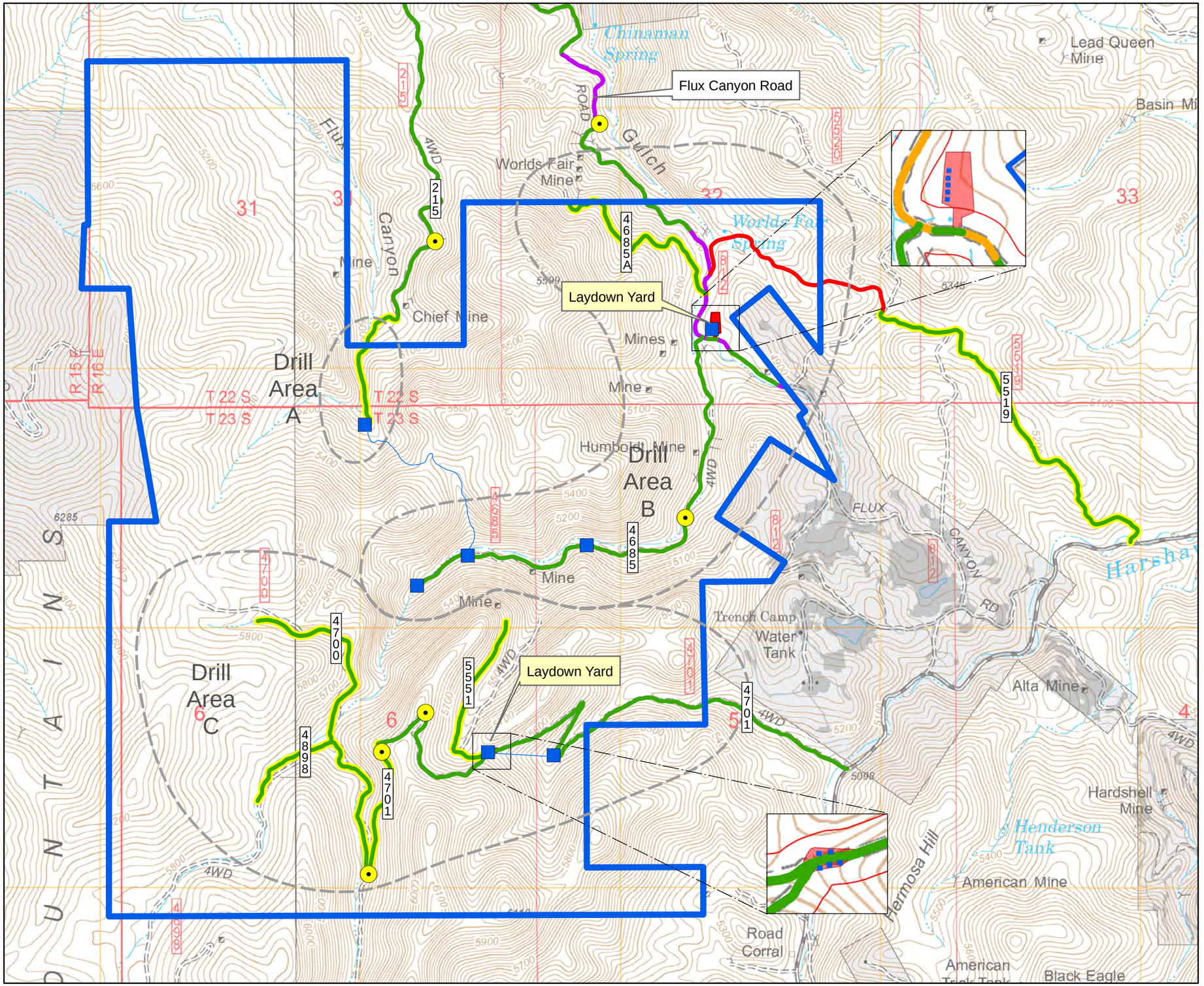
SCALE 1:50,000

# Sunnyside Exploration Drilling Project

## Exhibit 1

Regional Access Road Map

| 06/10/2020 | Sheet 1 of 1 |
|---|---|




## LEGEND

- Project Area
- Existing Road (No Improvements)
- Newly Constructed Bypass Road
- Improved Road
- CNF Decomissioned Road
- Proposed Turnout Location
- Water Tank (May Include Multiple)
- Water Line
- Laydown Yard

N W E S

750 375 0 750 1,500 2,250 Feet

200 100 0 200 400 600 Meters

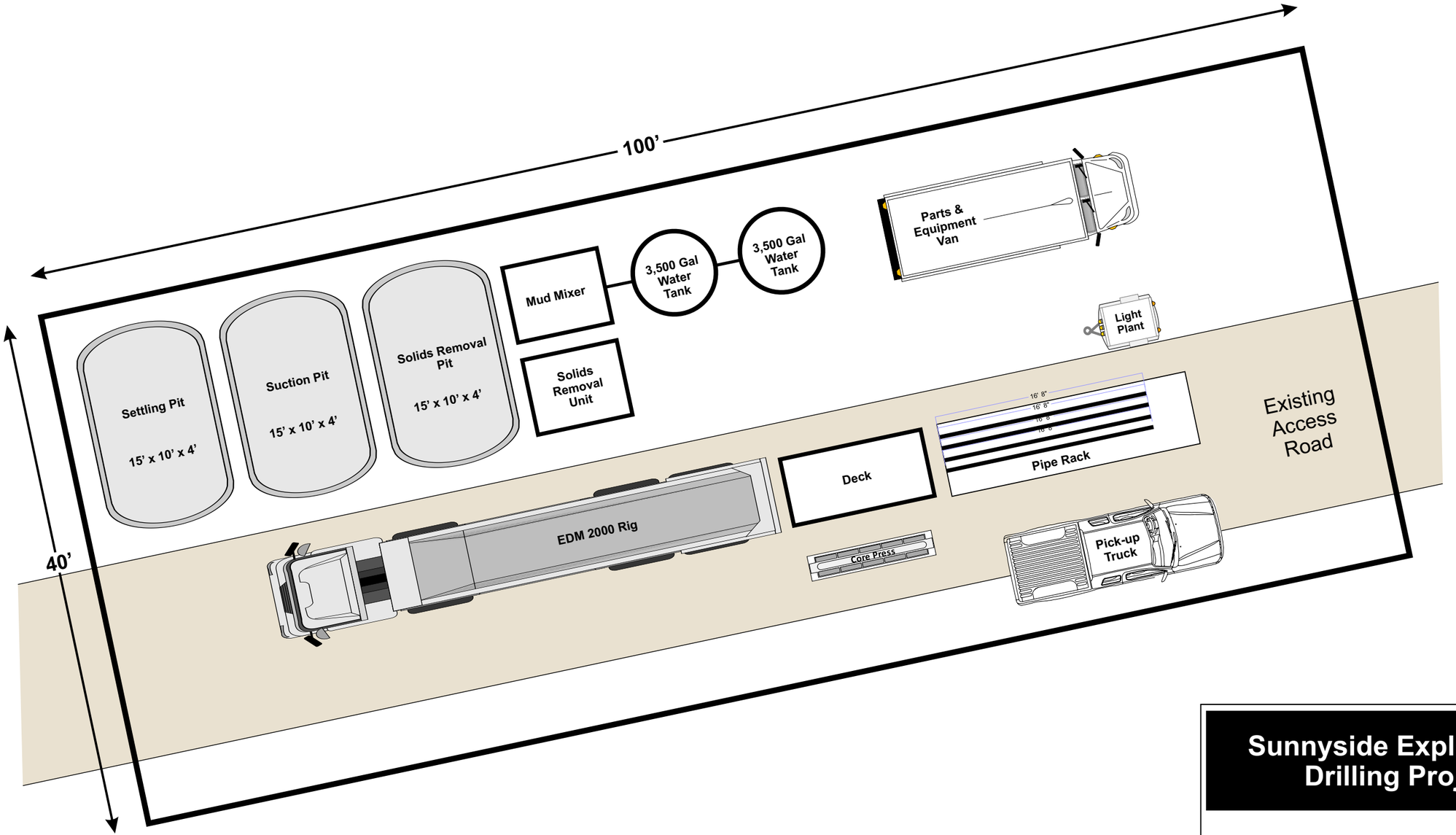
SCALE 1:15,000

# Sunnyside Exploratory Drilling Project

## Exhibit 2

Local Access Roads and Drill Areas

| 12/10/2020 | Sheet 1 of 1 |
|---|---|

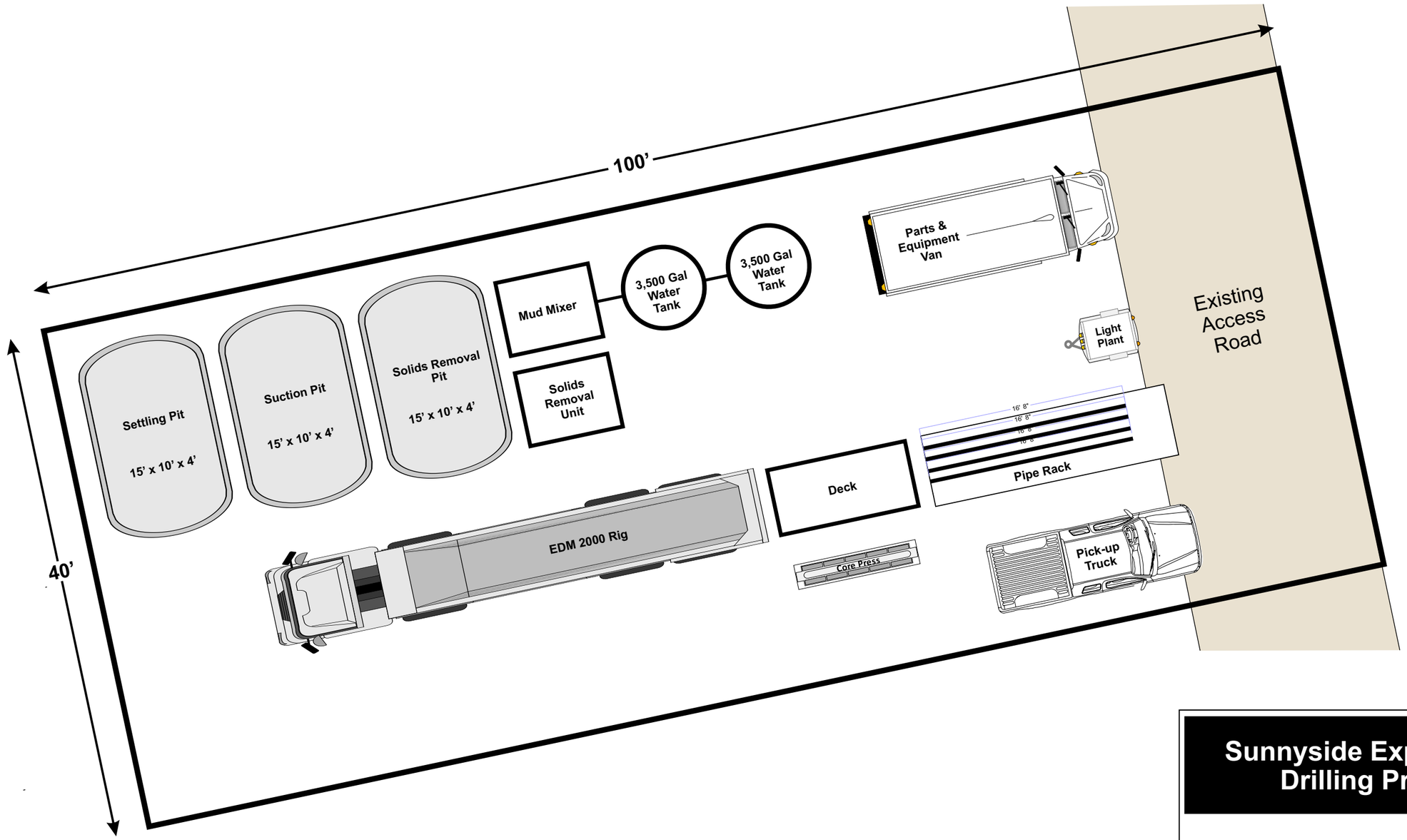



**Sunnyside Exploration Drilling Project**

## Exhibit 3

Diagram of a Typical Drill Pad Layout Parallel to the Existing Access Road

| 02/20/2020 | Sheet 1 of 1 |
|---|---|

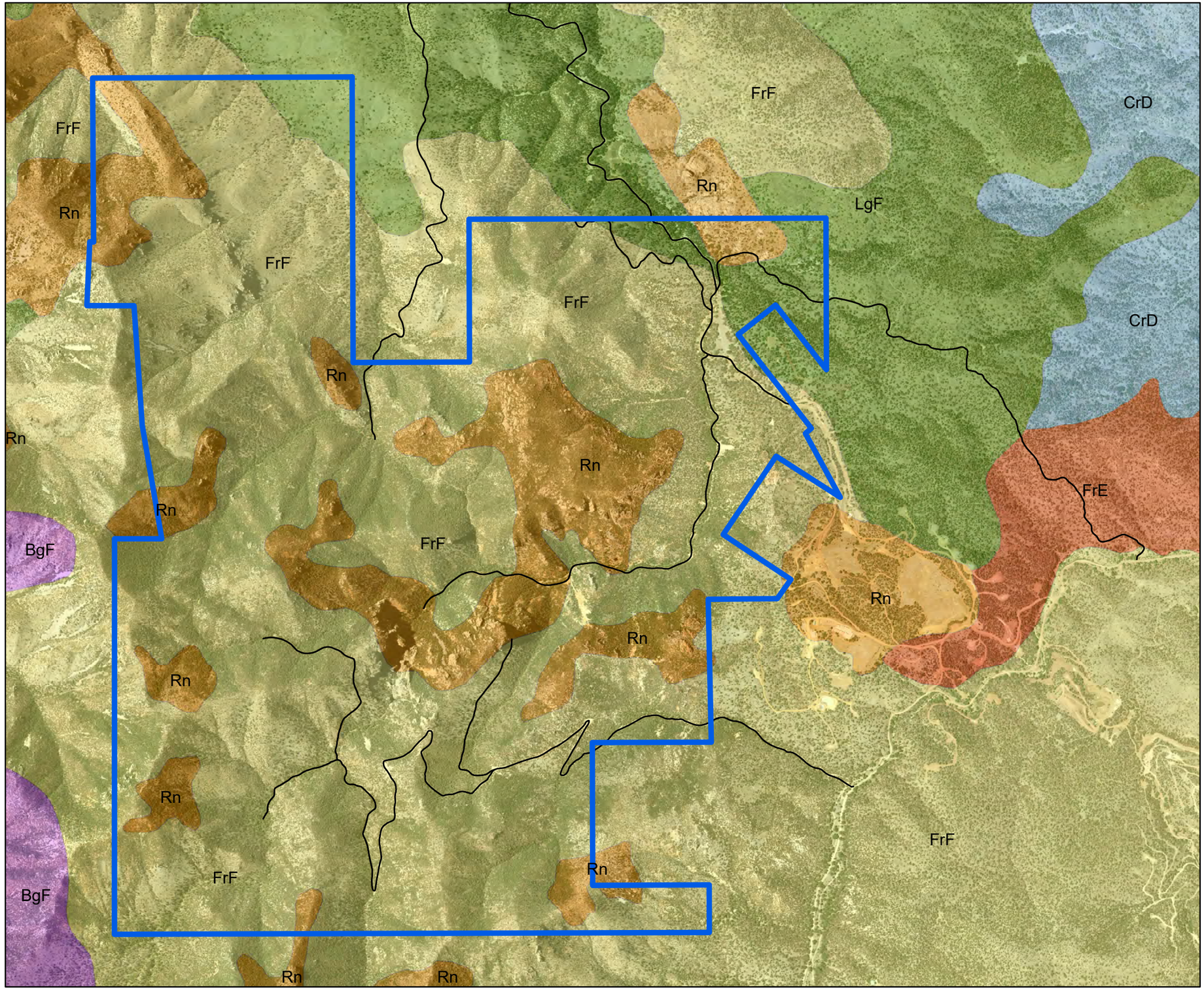



# Sunnyside Exploration Drilling Project

## Exhibit 4

Diagram of a Typical Drill Pad Layout
Perpendicular to the Existing Access Road

| 02/20/2020 | Sheet 1 of 1 |
|---|---|




# LEGEND

Project Area

Project Area Access Roads

Soil Map Unit Symbol and Name

BgF—Barkerville-Gaddes association, steep

CrD—Chiricahua-Lampshire association, rolling

FrE—Faraway-Rock outcrop complex, 10 to 30 percent slopes

FrF—Faraway-rock outcrop complex, 30 to 60 percent slopes

LgF—Lampshire-Graham-Rock outcrop association, steep

Rn—Rock outcrop-Lithic Haplustolls association

N

W E

S

0 500 1,000 2,000 3,000

Feet

SCALE 1:15,000

**Sunnyside Exploration Drilling Project**

## Exhibit 5

Soils Map

| 07/23/2020 | Sheet 1 of 1 |
|---|---|

# APPENDICES

# APPENDIX A

## Coronado National Forest Weed Species List

| Species Code | Scientific Name | Common Name |
|---|---|---|
| ACRE3 | *Acroptilon repens* | Russian knapweed |
| AECY | *Aegilops cylindrica* | jointed goatgrass |
| AIAL | *Ailanthus altissima* | tree of heaven |
| ALMA12 | *Alhagi maurorum* | camelthorn |
| ARDO4 | *Arundo donax* | giant reed grass |
| BASSI | *Bassia spp* | kochia |
| BOIS | *Botrichloa ischaemum* | yellow bluestem |
| BRTO | *Brassica tournefortii* | African mustard |
| BRMAR | *Bromus madritensis ssp rubens* | red brome |
| BRTE | *Bromus tectorum* | cheat grass |
| CACH42 | *Cardaria chalepensis* | lenspod whitetop |
| CADR | *Cardaria draba* | whitetop |
| CAAC | *Carduus acanthoides* | plumeless thistle |
| CANU4 | *Carduus nutans* | musk thistle |
| CAPY2 | *Carduus pycnocephalus* | Italian thistle |
| CEDI3 | *Centaurea diffusa* | diffuse knapweed |
| CEIB | *Centaurea iberica* | Siberian star thistle |
| CESO3 | *Centaurea solstitialis* | yellow star thistle |
| CEME2 | *Centaurea melitensis* | Tocalote /Malta starthistle |
| CIAR4 | *Cirsium arvense* | Canada thistle |
| CIVU | *Cirsium vulgare* | bull thistle |
| COMA2 | *Conium maculatum* | poison hemlock |
| COAR4 | *Convolvulus arvensis* | field bindweed |
| CYDA | *Cynodon dactylon* | Bermuda grass |
| ELAN | *Elaeagnus angustifolia* | Russian olive |
| ELRE4 | *Elymus/Elytrigia repens* | quackgrass |
| ERBA2 | *Eragrostis barrelieri* | Mediterranean lovegrass |
| ERCI | *Eragrostis cilianensis* | stinkgrass |
| ERCU2 | *Eragrostis curvula* | weeping lovegrass |
| ERLE | *Eragrostis lehmanniana* | Lehmann's lovegrass |
| EREC | *Eragrostis echinochloidea* | African lovegrass |
| ERPI2 | *Eragrostis pilosa* | Indian lovegrass |
| ERSU | *Eragrostis superba* | saw tooth lovegrass |
| ERODI | *Erodium sp.* | filaree |
| EUES | *Euphorbia esula* | leafy spurge |
| EUMU | *Euryops multifidus* | hawk's eye |

| Species Code | Scientific Name | Common Name |
|---|---|---|
| EUSUV | *Euryops subcarnosus* | sweet resin bush |
| HAGL | *Halogeton glomeratus* | halogeton |
| HOMU | *Hordeum murinum* | barley |
| LELA2 | *Lepidium latifolium* | perennial pepperweed |
| LIDAD | *Linaria dalmatica ssp. dalmatica* | Dalmatian toadflax |
| LYSA2 | *Lythrum salicaria* | purple loosestrife |
| MAVU | *Marrubium vulgare* | horehound |
| MELU | *Medicago lupulina* | black medic |
| MEPO3 | *Medicago polymorpha* | bur clover |
| MEOF | *Melilotus officinalis/alba* | sweetclover |
| MERE9 | *Melinus repens* | Natal grass |
| ONAC | *Onopordum acanthium* | Scotch thistle |
| PEHA | *Peganum harmala* | African rue |
| PECI | *Pennisetum ciliare* | buffelgrass |
| PESE3 | *Pennisetum setaceum* | fountain grass |
| PEIN4 | *Pentzia incana* | African sheepbush |
| PHAQ | *Phalaris aquatica* | Harding grass |
| POMO5 | *Polygonum monospeliensis* | rabbitfoot grass |
| RHLA11 | *Rhus lancea* | African sumac |
| RUAR9 | *Rubus discolor* | Himalayan blackberry |
| SATR12 | *Salsola tragus* | Russian thistle |
| SISYM | *Sisymbrium* sp. | mustard |
| SOHA | *Sorghum halepense* | Johnsongrass |
| TAMAR2 | *Tamarix spp.* | saltcedar |
| TRTE | *Tribulus terrestris* | puncture vine |
| ULPA | *Ulmus parvifolia* | Chinese elm |
| ULPU | *Ulmus pumila* | Siberian elm |
| VETH | *Verbascum thapsus* | wooly mullein |
| VIMA | *Vinca major* | periwinkle |