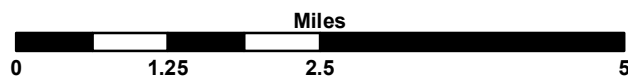


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1:100,000

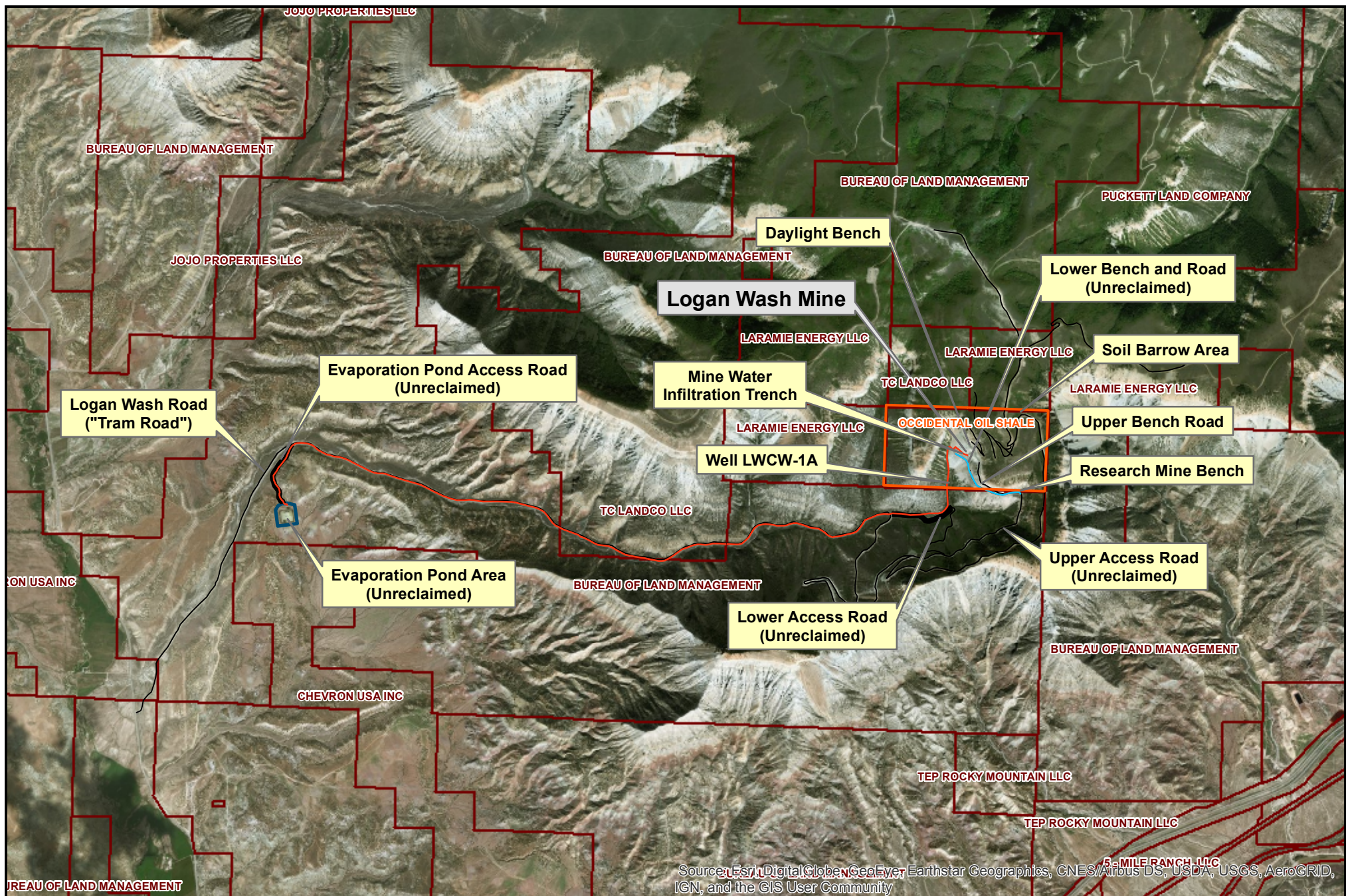
Base Map Source: USGS and NGS 2007(C) and Esri Arc GIS Online Maps

Figure 1. Logan Wash Mine Location Map

N1/2, S 25, T 7S, R 97W, 6 P.M.
Garfield County, Colorado

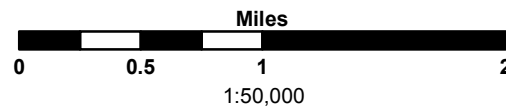


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Applications in Earth Science



Legend

- Retort Water Pipeline
- Research Mine Water Pipeline

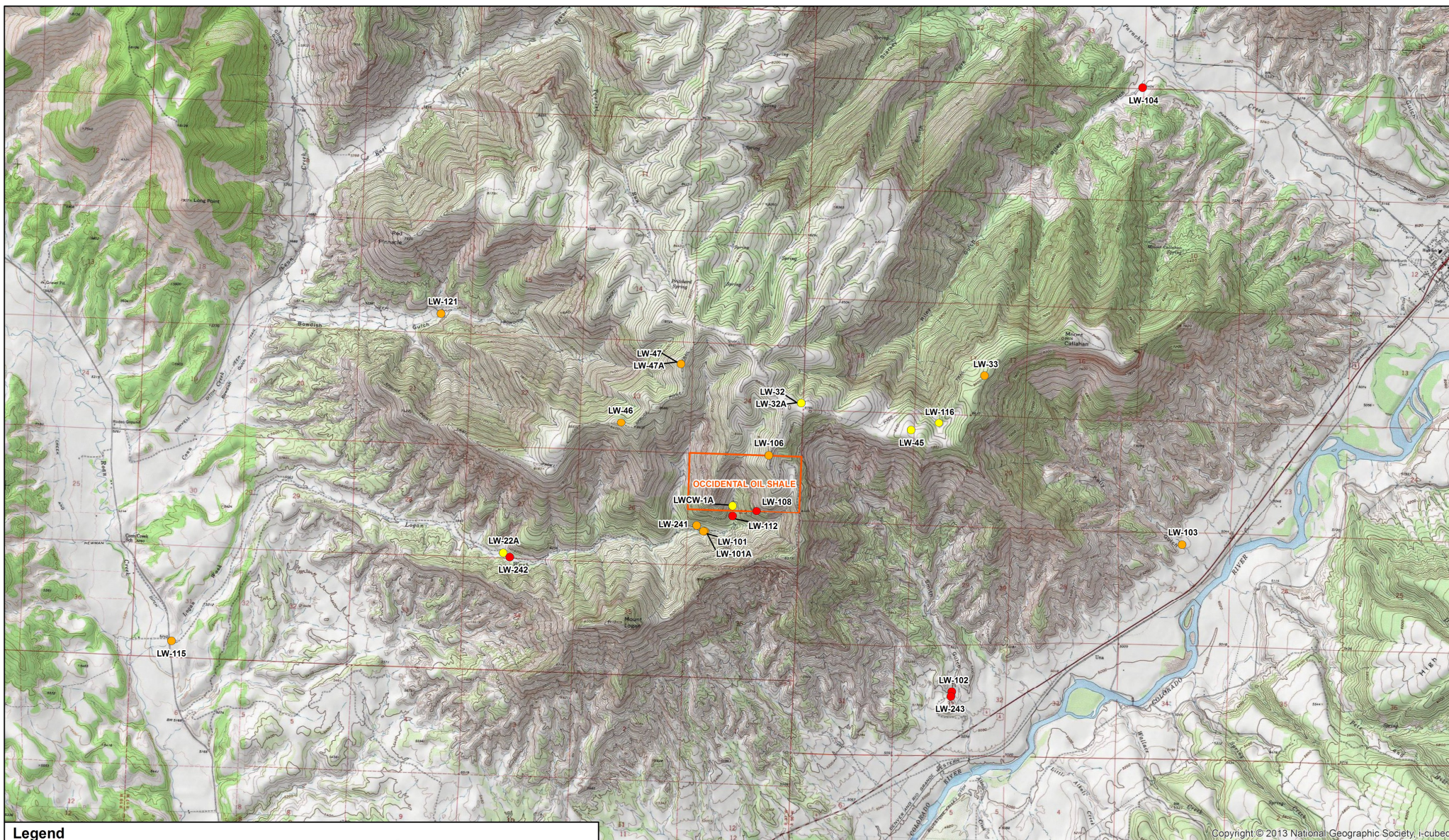


**Figure 2. Logan Wash Mine Facilities
(Unreclaimed areas noted)**

Garfield County, Colorado



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Applications in Earth Science



Legend

- Well - Not abandoned
- Well - Abandoned
- Well - Could not be located; Potentially abandoned

Note: a single well was found where LW-32 and LW-32A are shown. This wells designation is unknown.

0 0.5 1 2 Miles
1:50,000



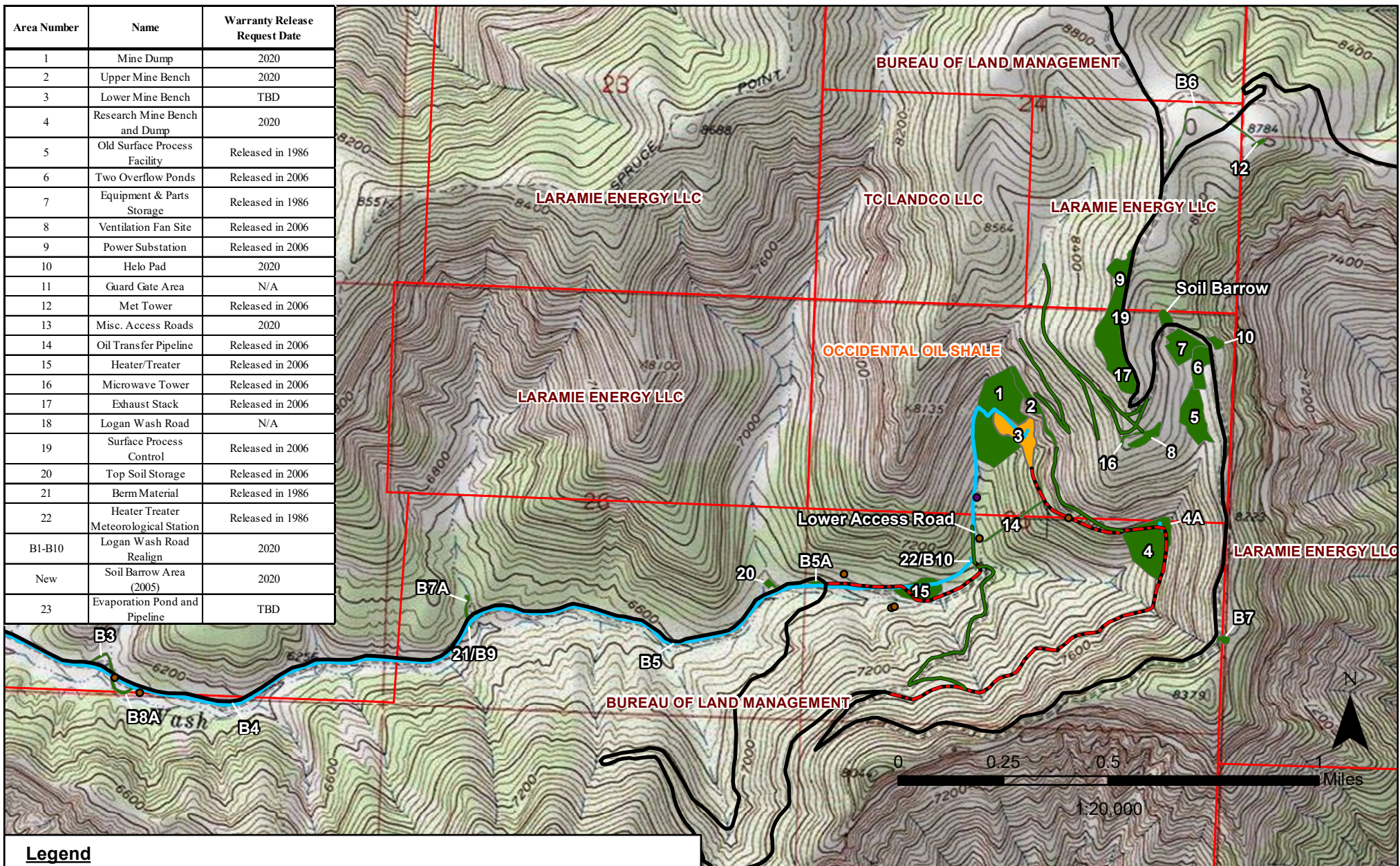
Figure 3. Logan Wash Mine Wells

Garfield County, Colorado



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Area Number	Name	Warranty Release Request Date
1	Mine Dump	2020
2	Upper Mine Bench	2020
3	Lower Mine Bench	TBD
4	Research Mine Bench and Dump	2020
5	Old Surface Process Facility	Released in 1986
6	Two Overflow Ponds	Released in 2006
7	Equipment & Parts Storage	Released in 1986
8	Ventilation Fan Site	Released in 2006
9	Power Substation	Released in 2006
10	Helo Pad	2020
11	Guard Gate Area	N/A
12	Met Tower	Released in 2006
13	Misc. Access Roads	2020
14	Oil Transfer Pipeline	Released in 2006
15	Heater/Treater	Released in 2006
16	Microwave Tower	Released in 2006
17	Exhaust Stack	Released in 2006
18	Logan Wash Road	N/A
19	Surface Process Control	Released in 2006
20	Top Soil Storage	Released in 2006
21	Berm Material	Released in 1986
22	Heater Treater Meteorological Station	Released in 1986
B1-B10	Logan Wash Road Realign	2020
New	Soil Barrow Area (2005)	2020
23	Evaporation Pond and Pipeline	TBD



Legend



Parcel boundaries

Permit Reclamation Areas



In use; not under reclamation



Reclaimed and released

Retort Water Pipeline



Monitoring Well

Roads

Not to be reclaimed

Reclaimed

In use; not under reclamation

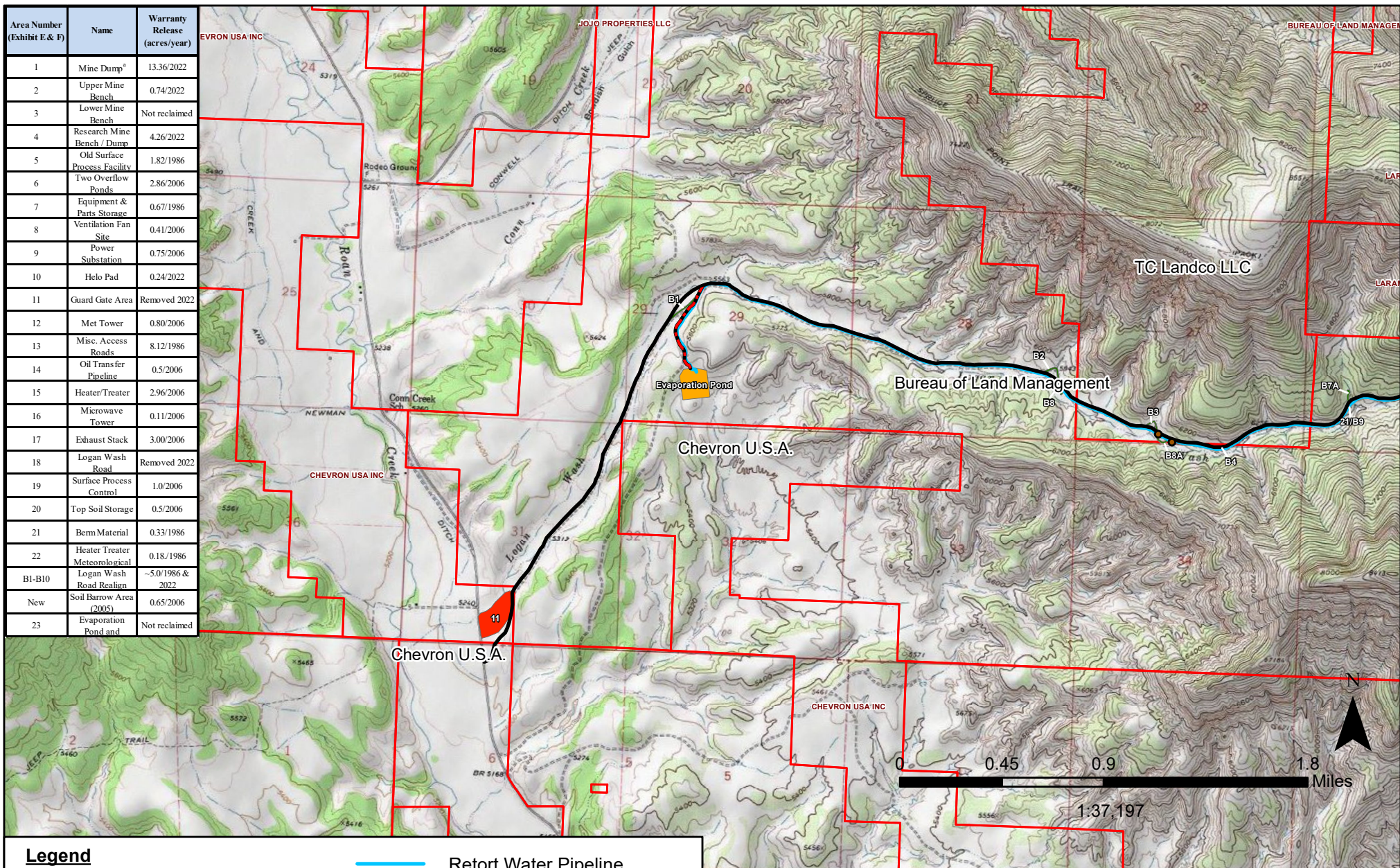
Figure 4A. Logan Wash Mine Reclamation Status East Area

Garfield County, Colorado



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Area Number (Exhibit E & F)	Name	Warranty Release (acres/year)
1	Mine Dump*	13.36/2022
2	Upper Mine Bench	0.74/2022
3	Lower Mine Bench	Not reclaimed
4	Research Mine Bench / Dump	4.26/2022
5	Old Surface Process Facility	1.82/1986
6	Two Overflow Ponds	2.86/2006
7	Equipment & Parts Storage	0.67/1986
8	Ventilation Fan Site	0.41/2006
9	Power Substation	0.75/2006
10	Helo Pad	0.24/2022
11	Guard Gate Area	Removed 2022
12	Met Tower	0.80/2006
13	Misc. Access Roads	8.12/1986
14	Oil Transfer Pipeline	0.5/2006
15	Heater/Treater	2.96/2006
16	Microwave Tower	0.11/2006
17	Exhaust Stack	3.00/2006
18	Logan Wash Road	Removed 2022
19	Surface Process Control	1.0/2006
20	Top Soil Storage	0.5/2006
21	Berm Material	0.33/1986
22	Heater Treater Meteorological	0.18/1986
B1-B10	Logan Wash Road Realignment	~5.0/1986 & 2022
New	Soil Barrow Area (2005)	0.65/2006
23	Evaporation Pond and	Not reclaimed



Legend



Parcel boundaries

Permit Reclamation Areas



In use; not under reclamation



Reclaimed and released



Removed from Reclamation Plan



Retort Water Pipeline



Monitoring Well

Roads



Not to be reclaimed



Reclaimed



In use; not under reclamation

Figure 4B. Logan Wash Mine Reclamation Status West Area

Garfield County, Colorado



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Figure 5. Logan Wash Mine LW-001 and LW-Retort Discharge

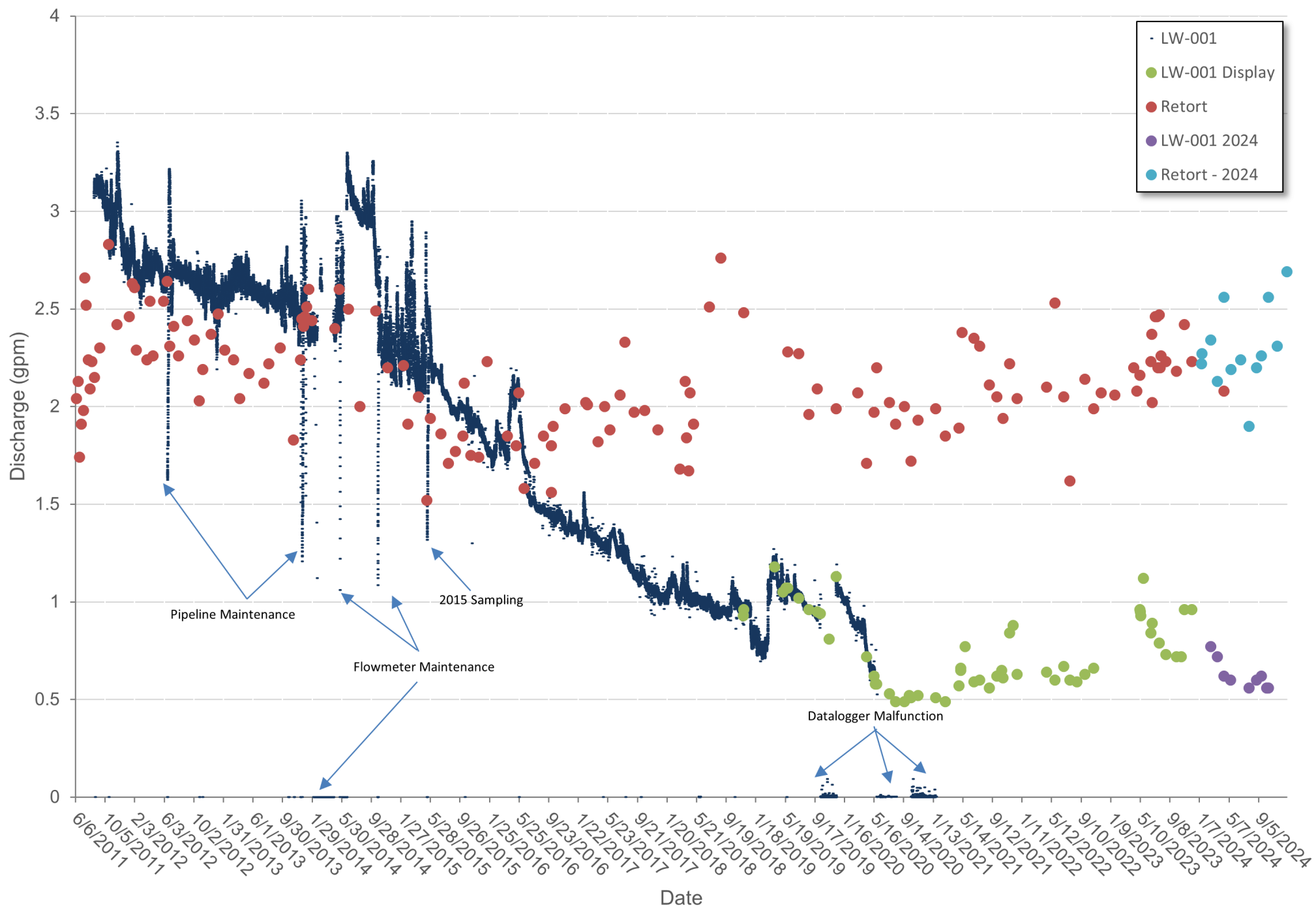
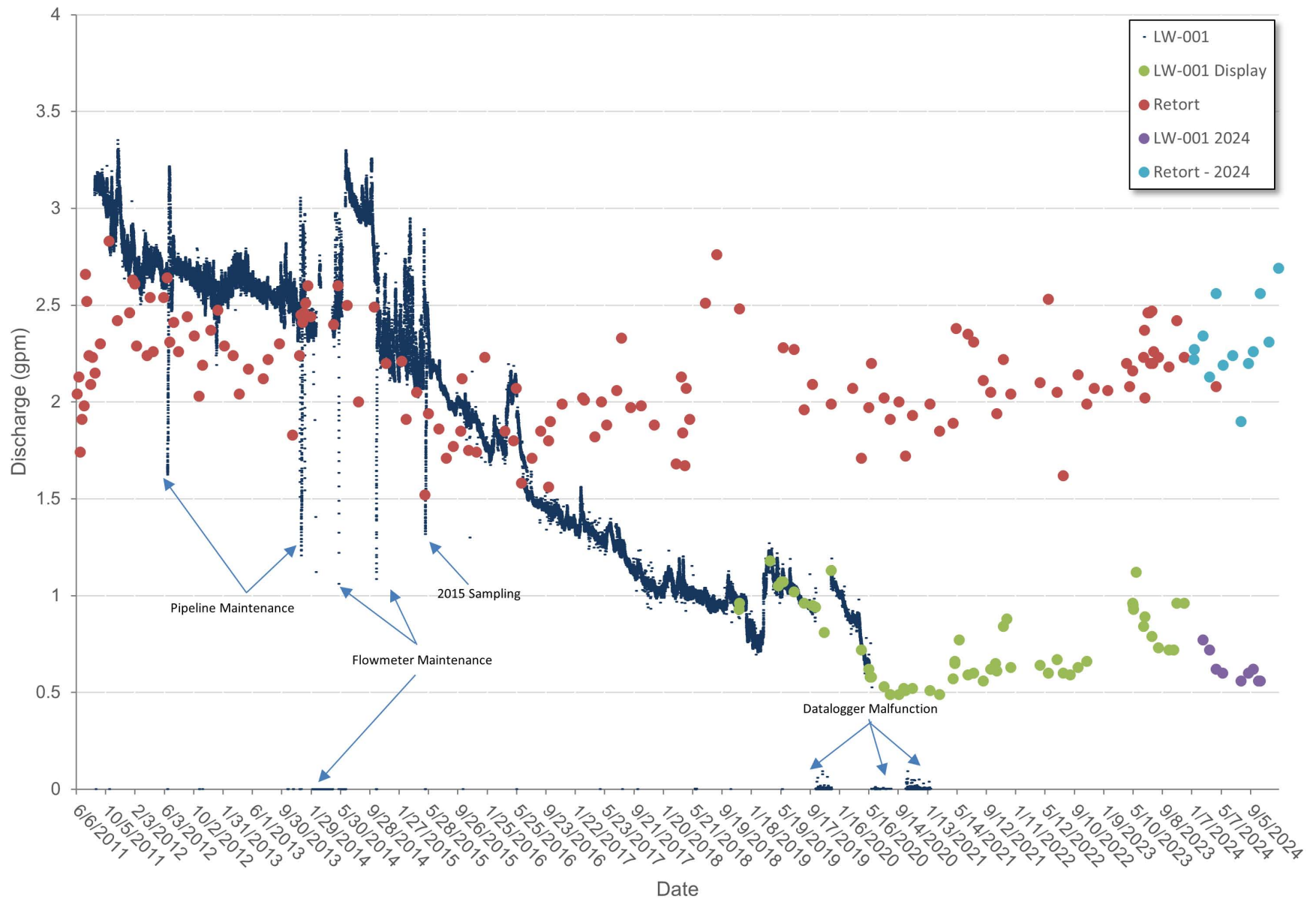
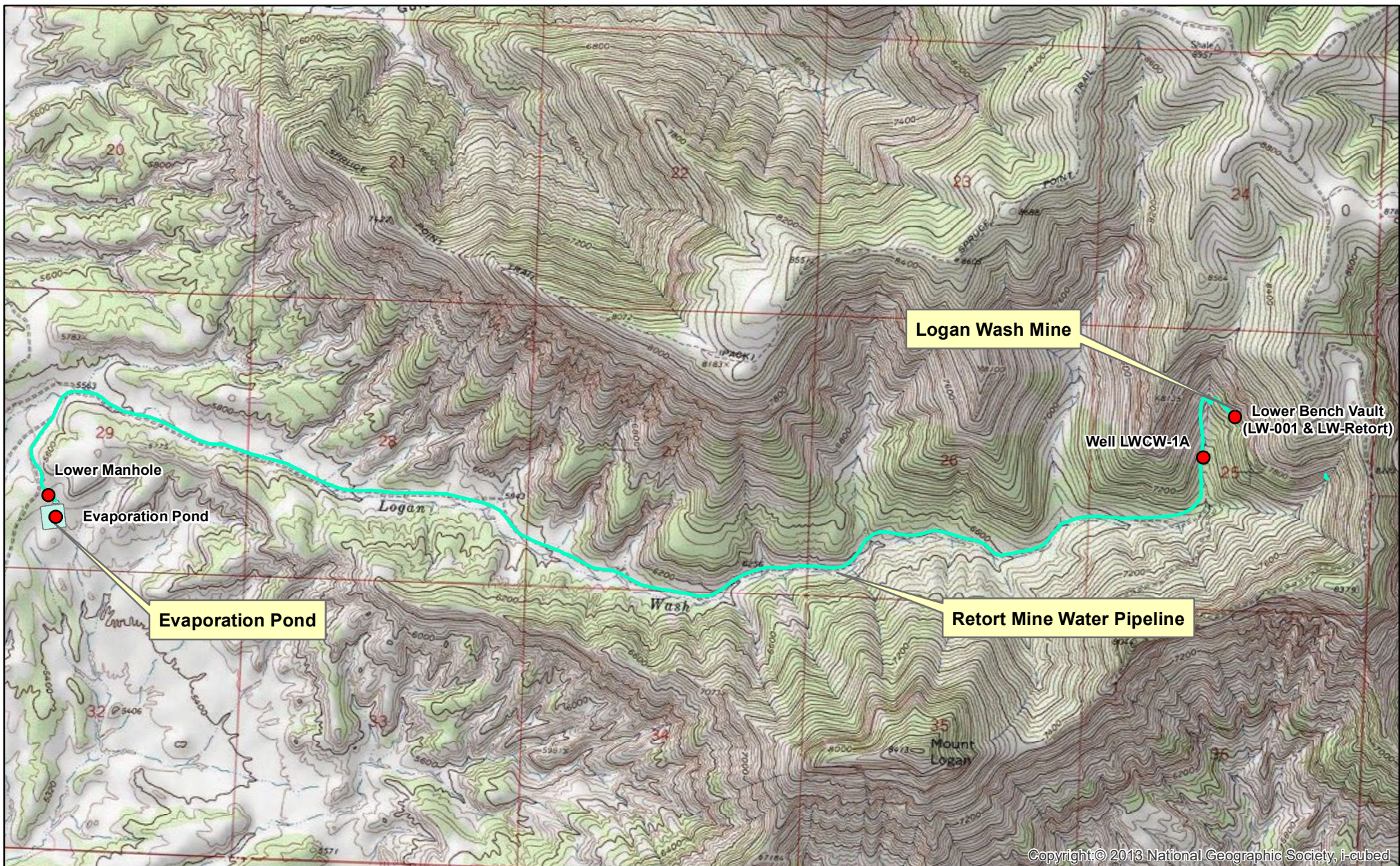


Figure 5. Logan Wash Mine LW-001 and LW-Retort Discharge





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● Sampled Locations

0 0.25 0.5 1 Miles
1:30,000



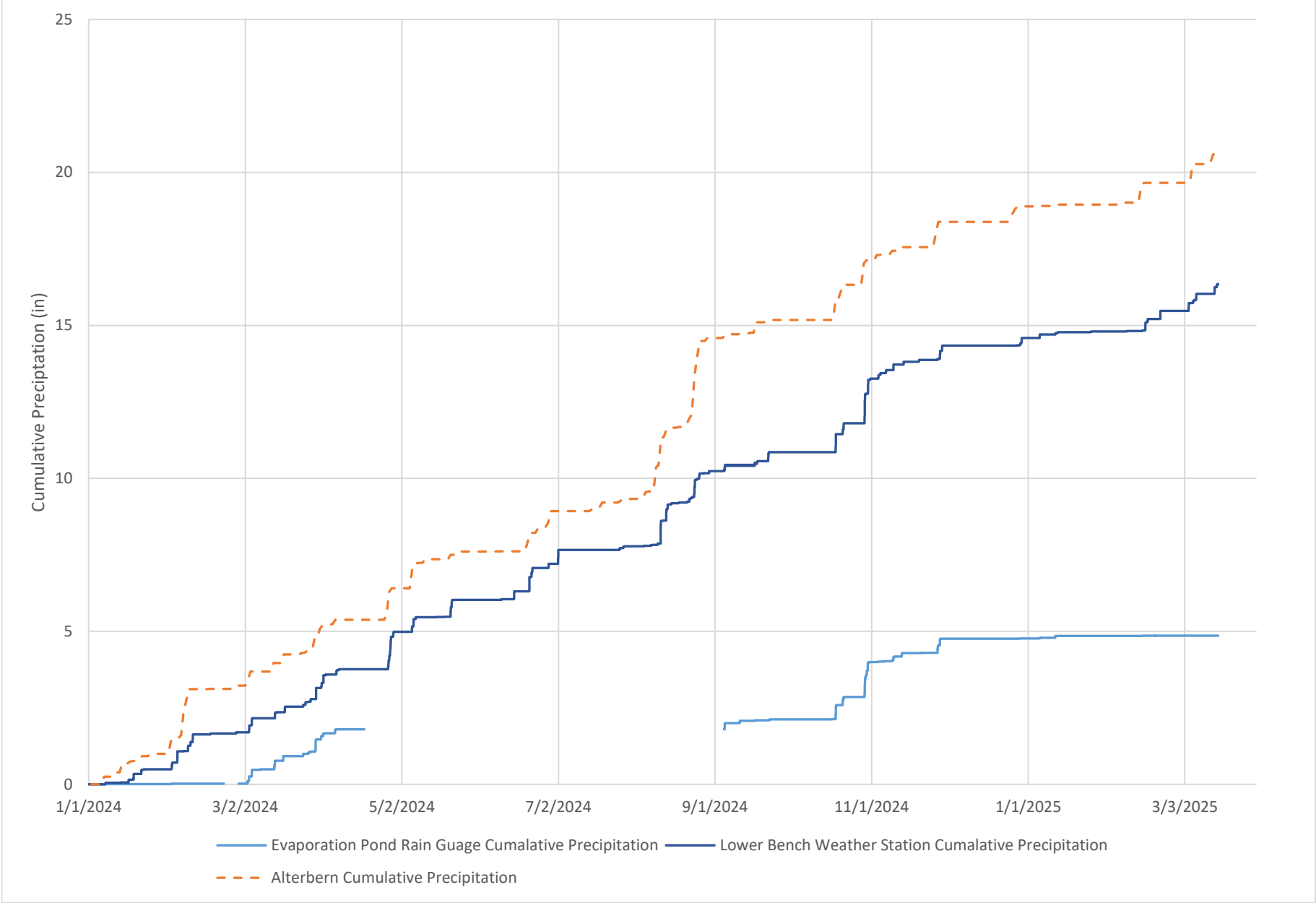
**Figure 6. Logan Wash Mine
Biannual Mine-Water Sampling Locations**

Garfield County, Colorado



Western Water & Land, Inc.

Figure 7. Logan Wash Mine 2024 Precipitation



UTILITY NOTIFICATION CENTER
OF COLORADO
CALL 811
THREE WORKING DAYS BEFORE YOU DIG, GRADE OR
EXCAVATE FOR THE MARKING OF UNDERGROUND UTILITIES.

PREPARED BY JEK
REVIEWED BY JEK
DATE 06-26-2018
SCALE NO SCALE
JOB NO. 18020.02

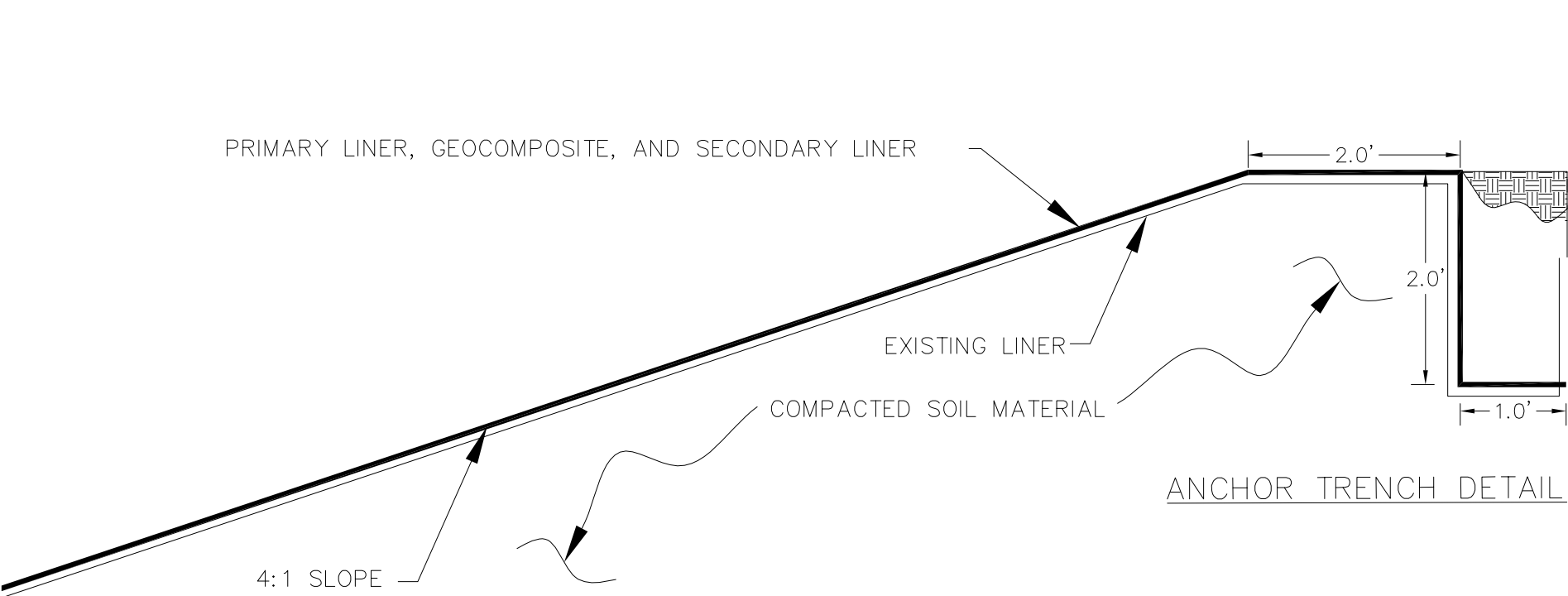
DATE	DESCRIPTION	BY	CHK
09-11-18	CHANGED SECONDARY 80 MIL LINER TO 60 MIL LINER	JEK	JEK

LOGAN WASH MINE
EVAPORATION POND RELINING PROJECT
OCCIDENTAL OIL SHALE, INC.

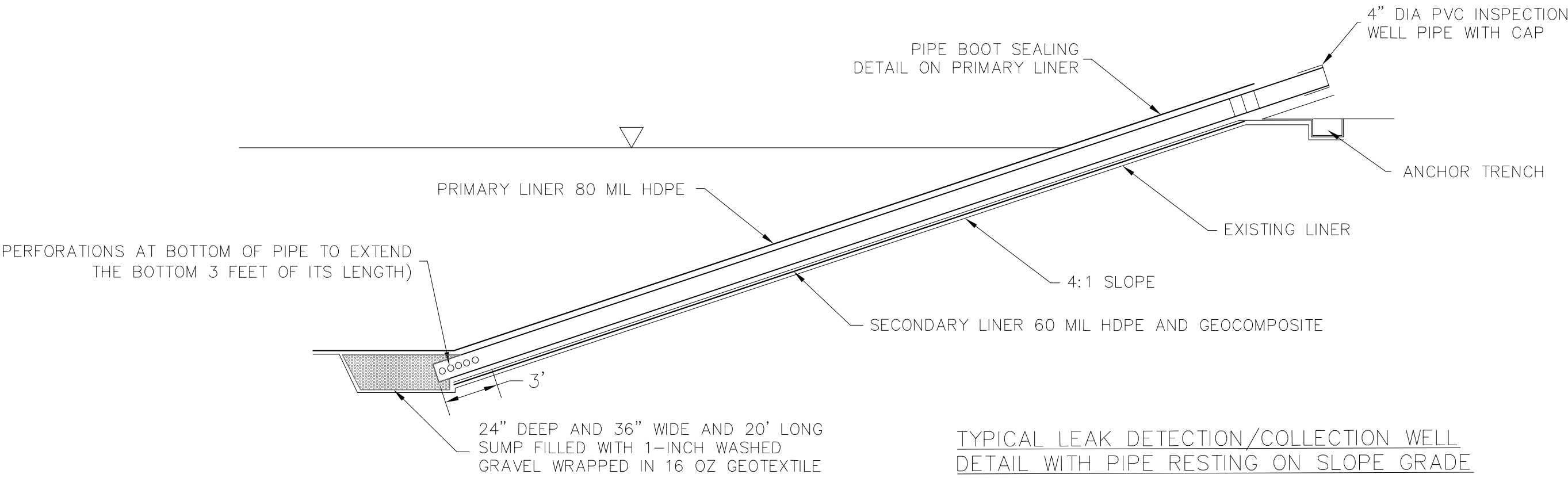
Rhino Engineering
Rhino Engineering, Inc.
PO Box 810
Cedaredge CO 81413
(970) 241-6027
info@rhinoengineers.com
www.rhinoengineers.com



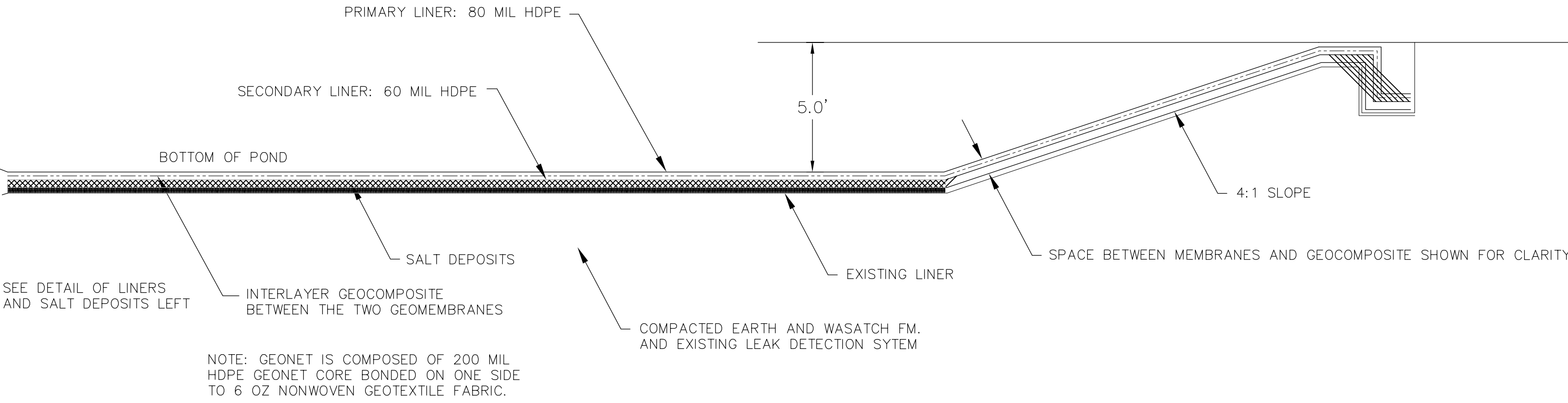
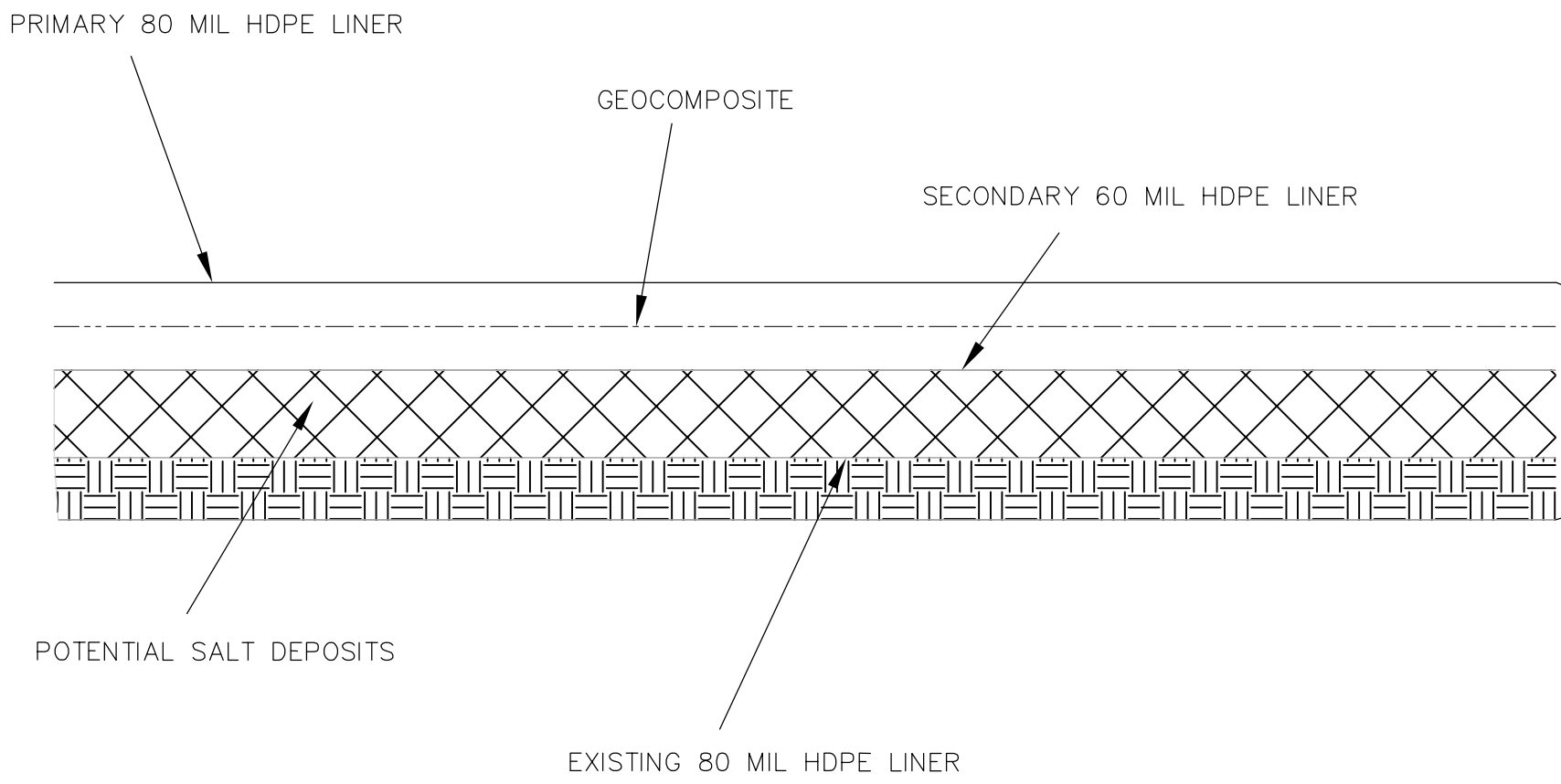
SHEET



NO SCALE



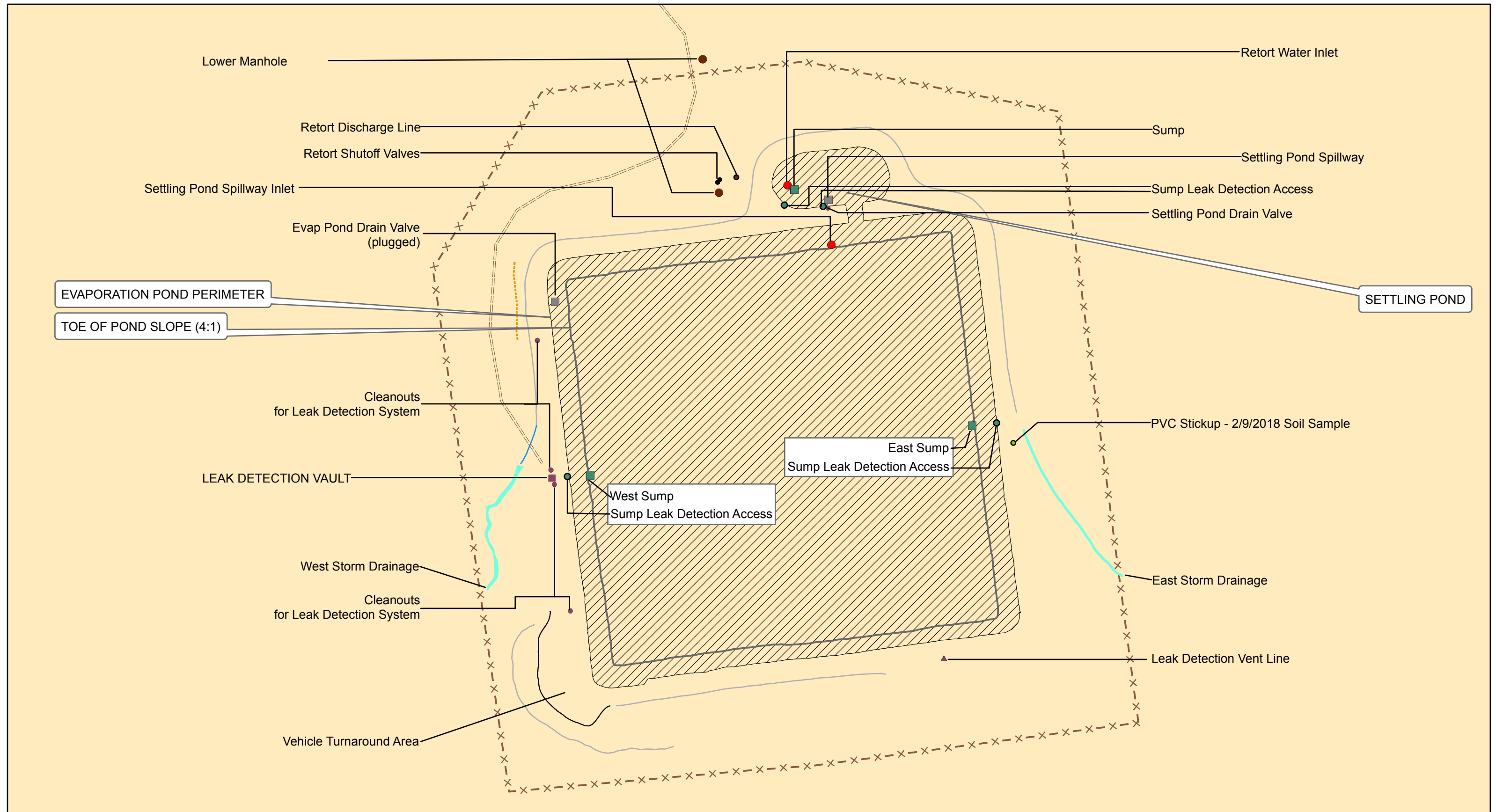
NO SCALE



MEMBRANE LINERS AND GEOCOMPOSITE DETAILS

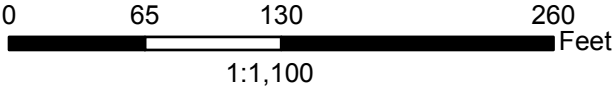
NO SCALE

Figure 8. Pond Lining System



Legend

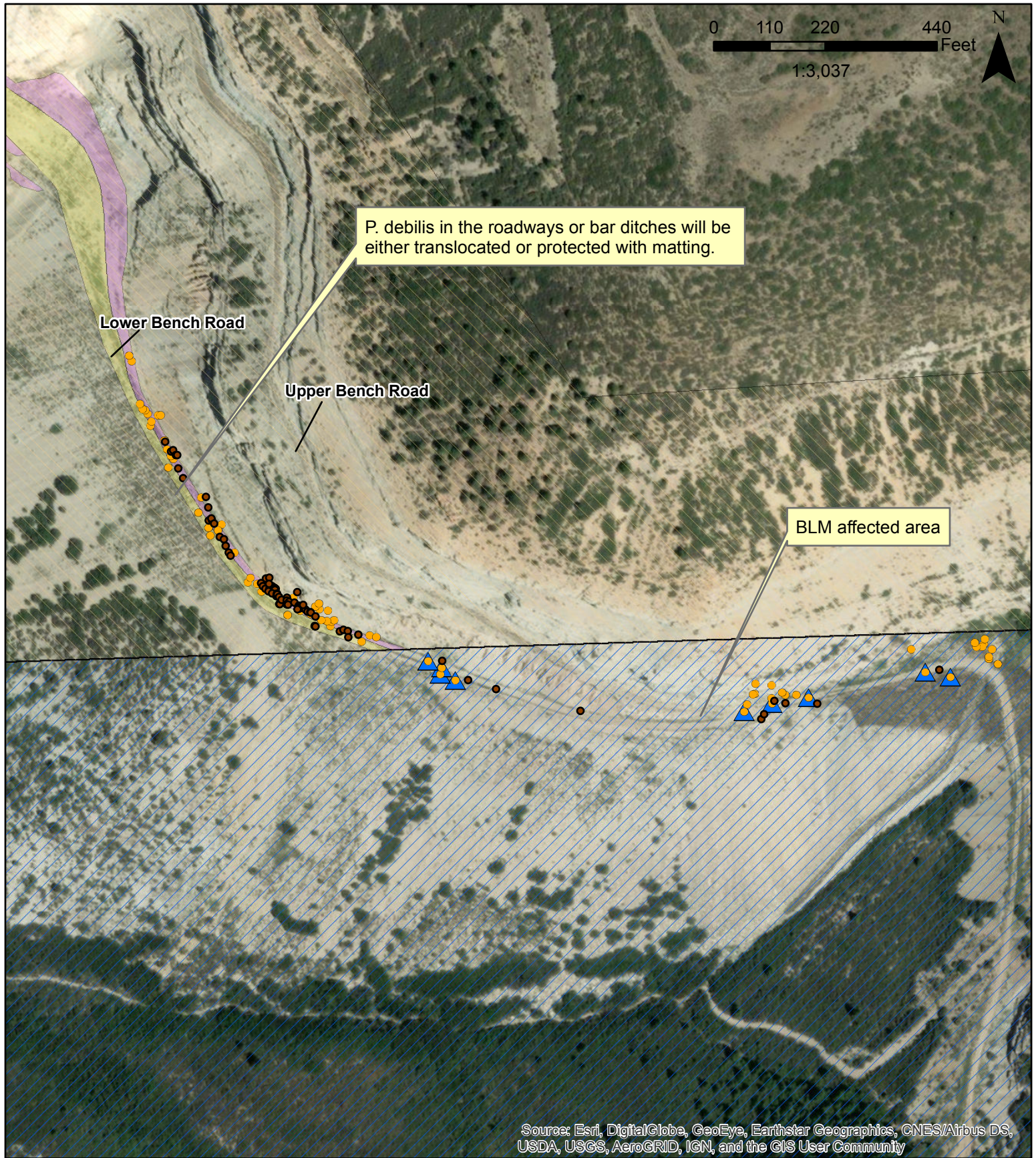
- × — Pond Perimeter Wildlife Fence
- — Safety Fence
- Low Crossing Swale
- Toe of Cut Slope
- == Access Road



**Figure 9. Logan Wash Mine
Evaporation Pond Site Map As-Built 2018 Pond Reline Project**

Garfield County, Colorado





Legend








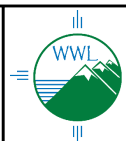
- | | | | |
|--|---|---|--|
|  | Potentially disturbed area |  | 2015 P. debilis (Location +/- 10 feet) |
|  | Potential transplant area |  | 2019 P. debilis survey |
|  | CNAP boundary |  | Protective barricade or matting |
|  | Bureau of Land Management (USBLM) parcels | | |

Figure 10. Locations of P. debilis, Proposed Mitigation measures and Potential Transplant Areas

Garfield County, Colorado



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Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus-DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

● Original location

● Transplanted location

▨ CNAP boundary

▨ Bureau of Land Management (BLM) parcels

0 25 50 100 Feet
1:800



Note: The original location of Plant No. 29 was overlooked during the survey.

Figure 11
Logan Wash Mine *P. debilis* Transplanting
March 25, 2015

N 1/2 S. 25 T. 7S R. 97W 6 P.M.
Garfield County, Colorado



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