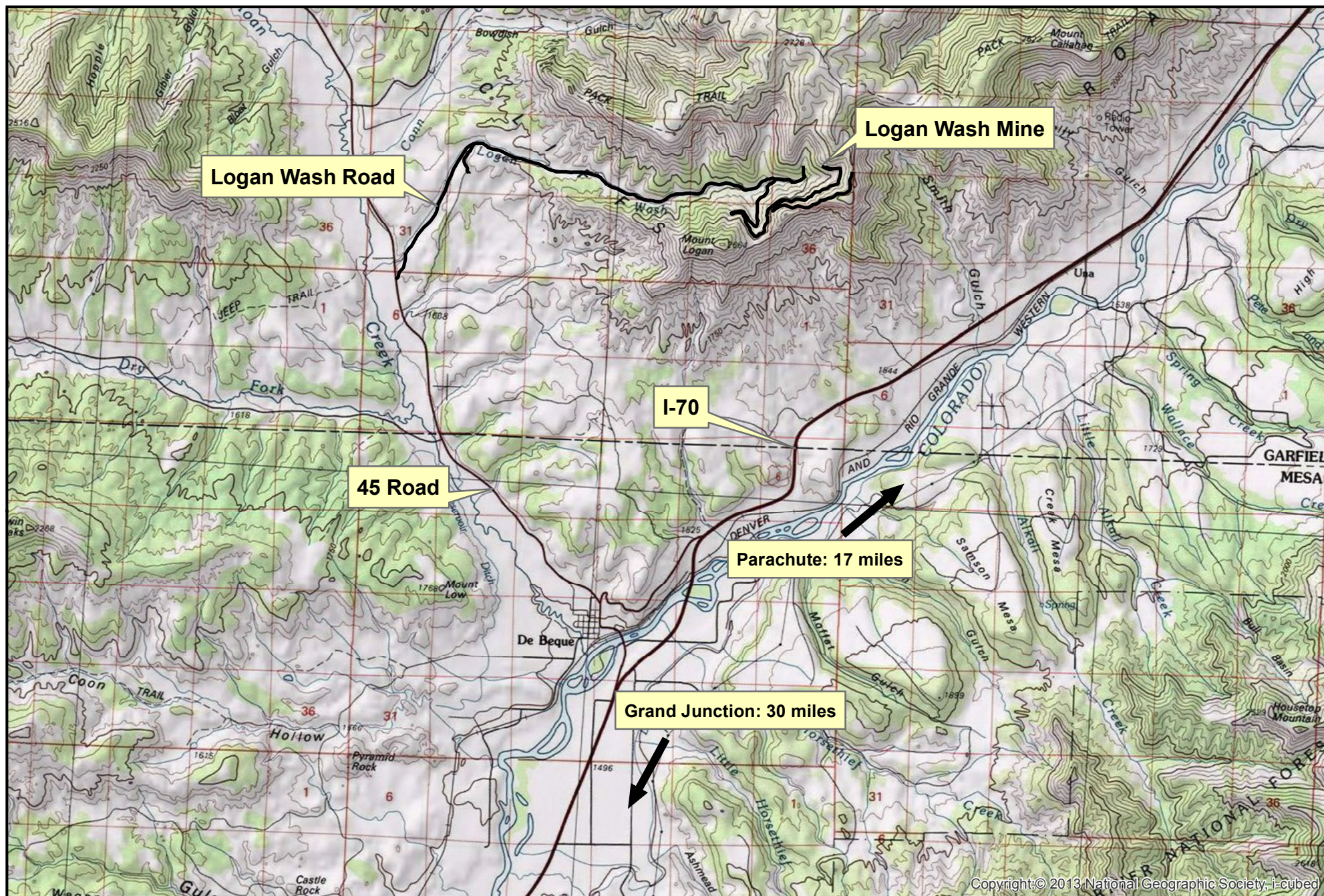
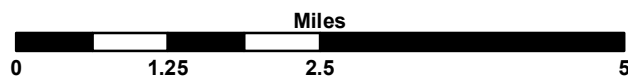


FIGURES



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1:100,000

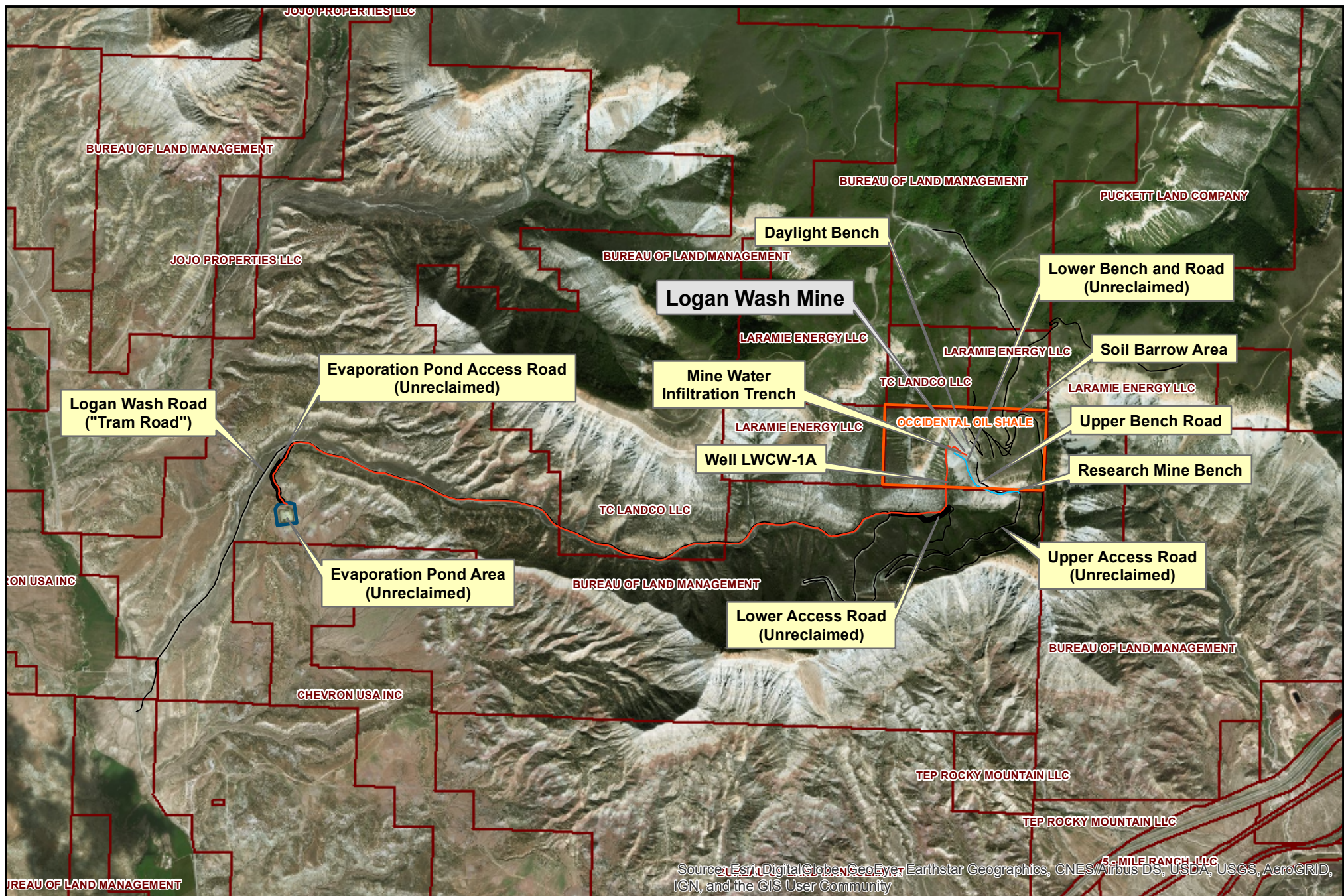
Base Map Source: USGS and NGS 2007(C) and Esri Arc GIS Online Maps

Figure 1. Logan Wash Mine Location Map

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

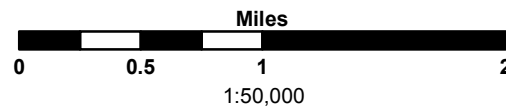


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Applications in Earth Science



Legend

- Retort Water Pipeline
- Research Mine Water Pipeline

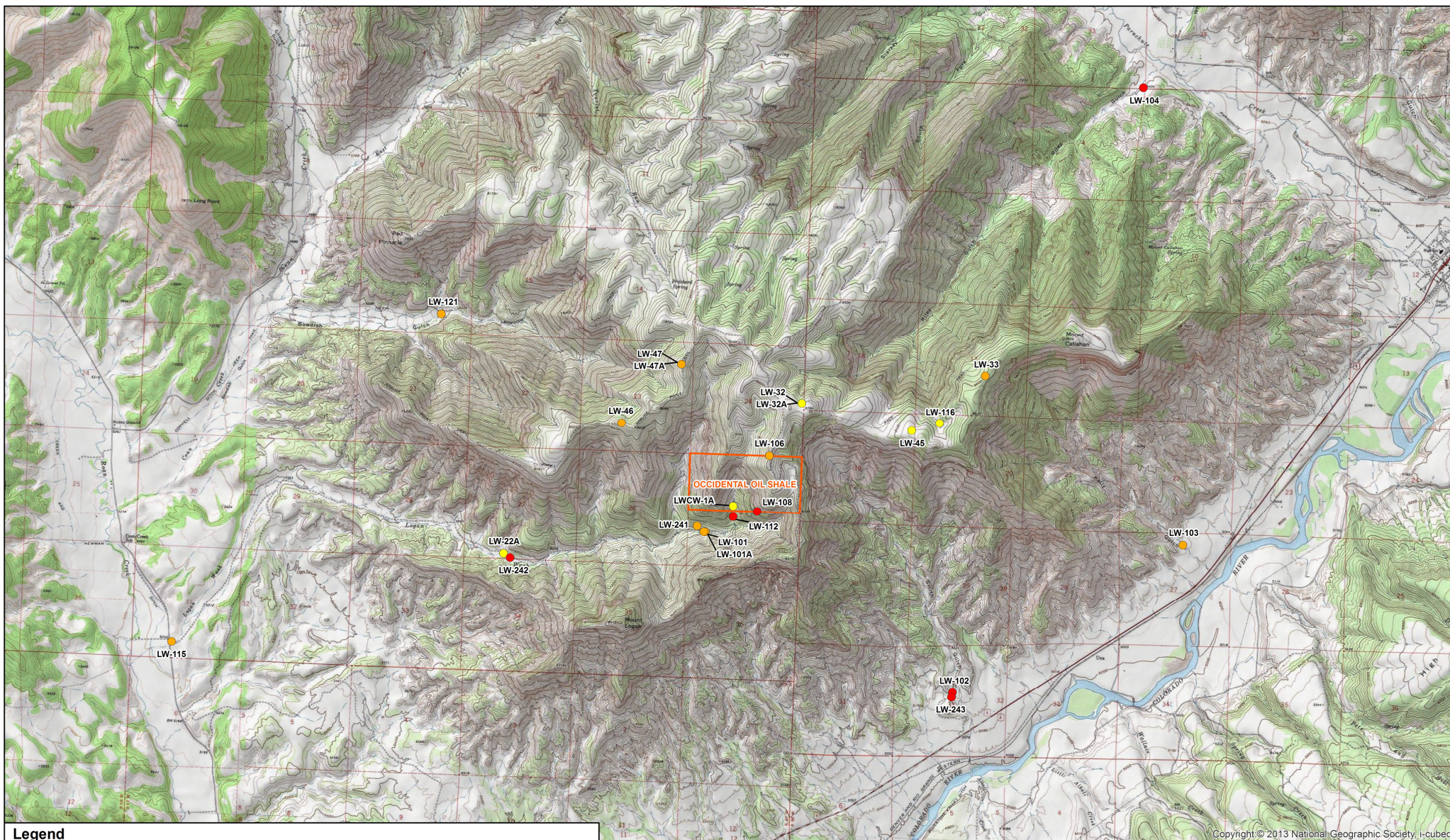


**Figure 2. Logan Wash Mine Facilities
(Unreclaimed areas noted)**

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



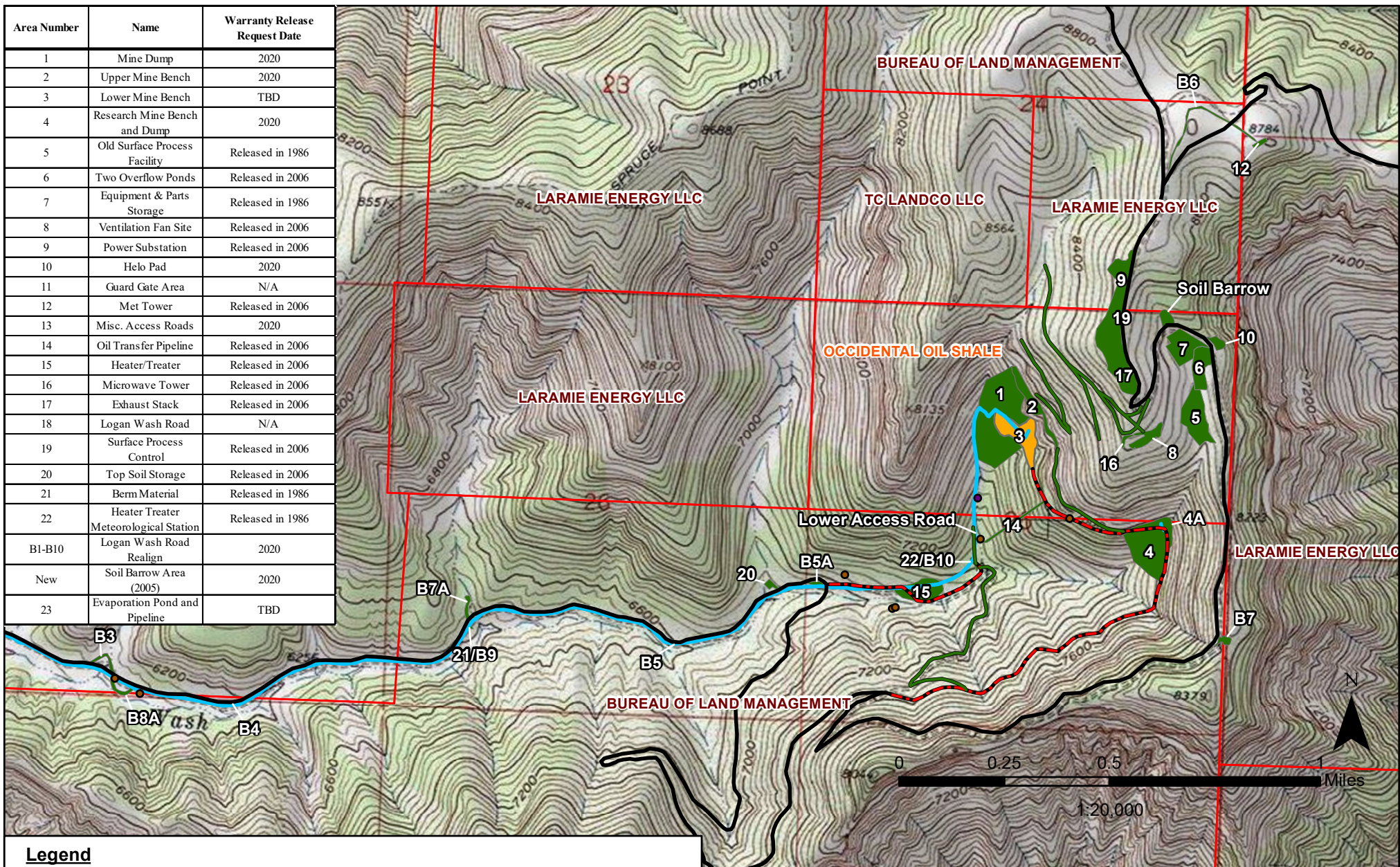
Figure 3. Logan Wash Mine Wells

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

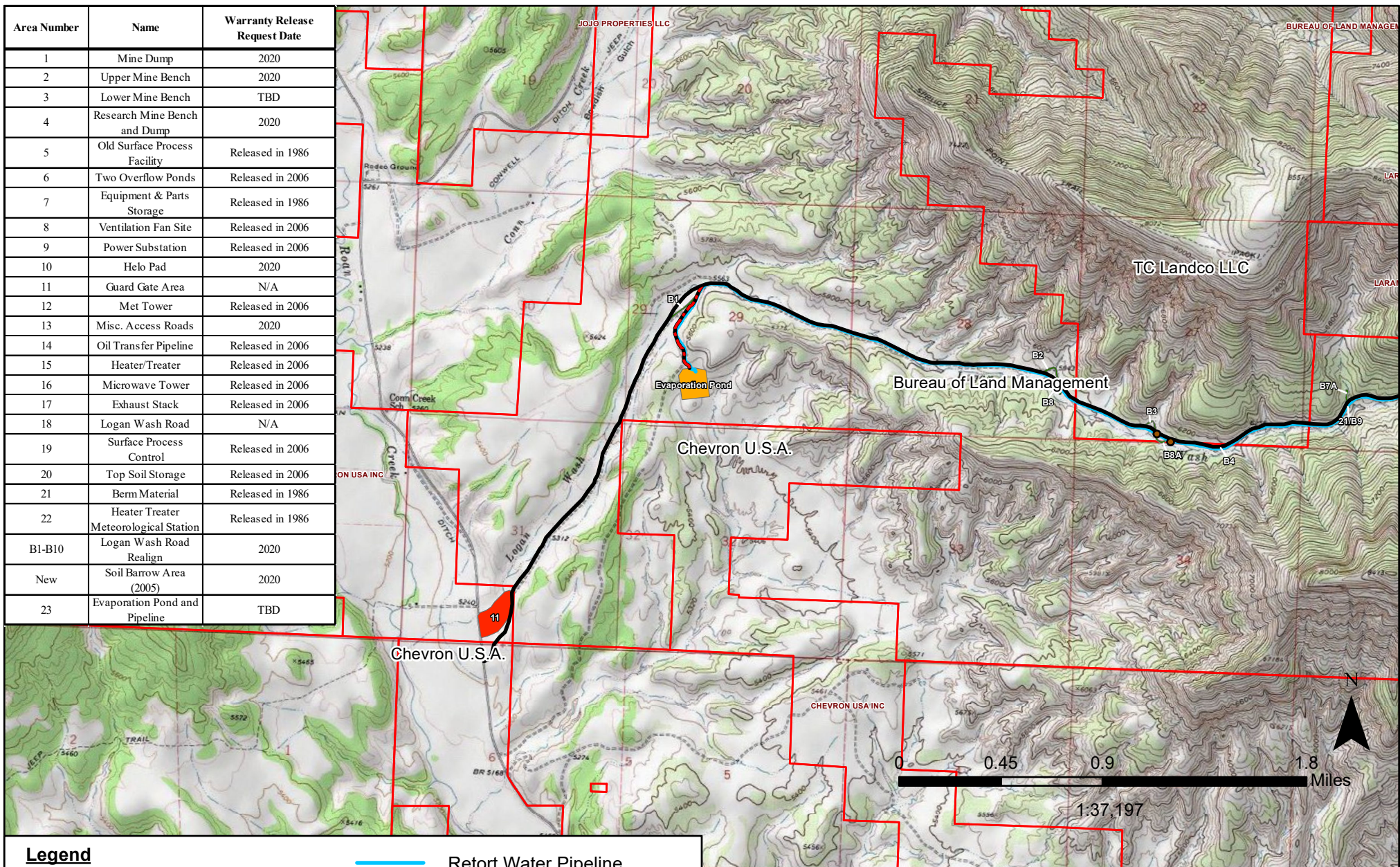
- - - In use; not under reclamation

Figure 4A. Logan Wash Mine Reclamation Status East Area

Garfield County, Colorado



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



Retort Water Pipeline



Monitoring Well

Permit Reclamation Areas

Roads



In use; not under reclamation



Not to be reclaimed



Reclaimed and released



Reclaimed



Removed from Reclamation Plan



In use; not under reclamation

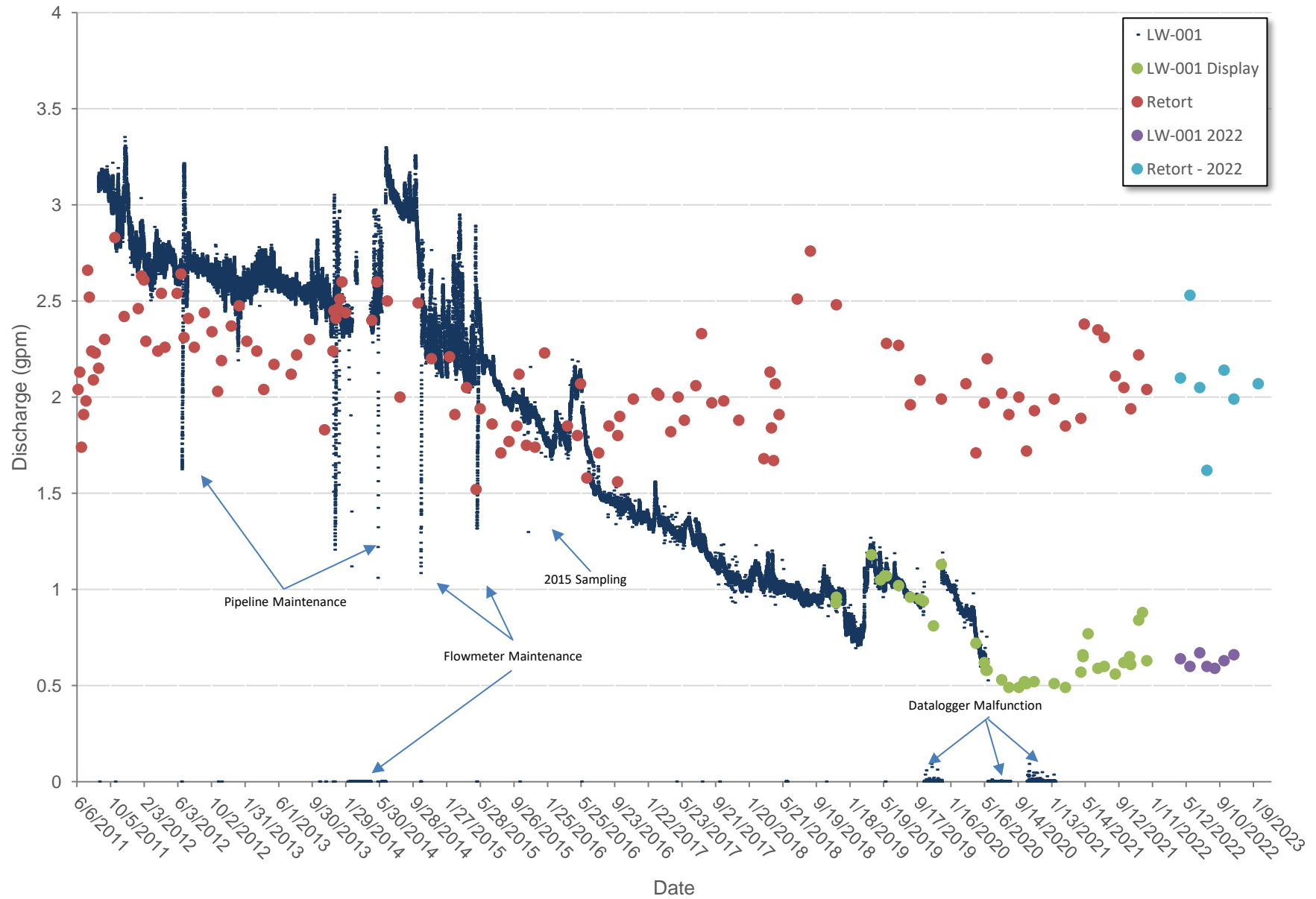
Figure 4B. Logan Wash Mine Reclamation Status West Area

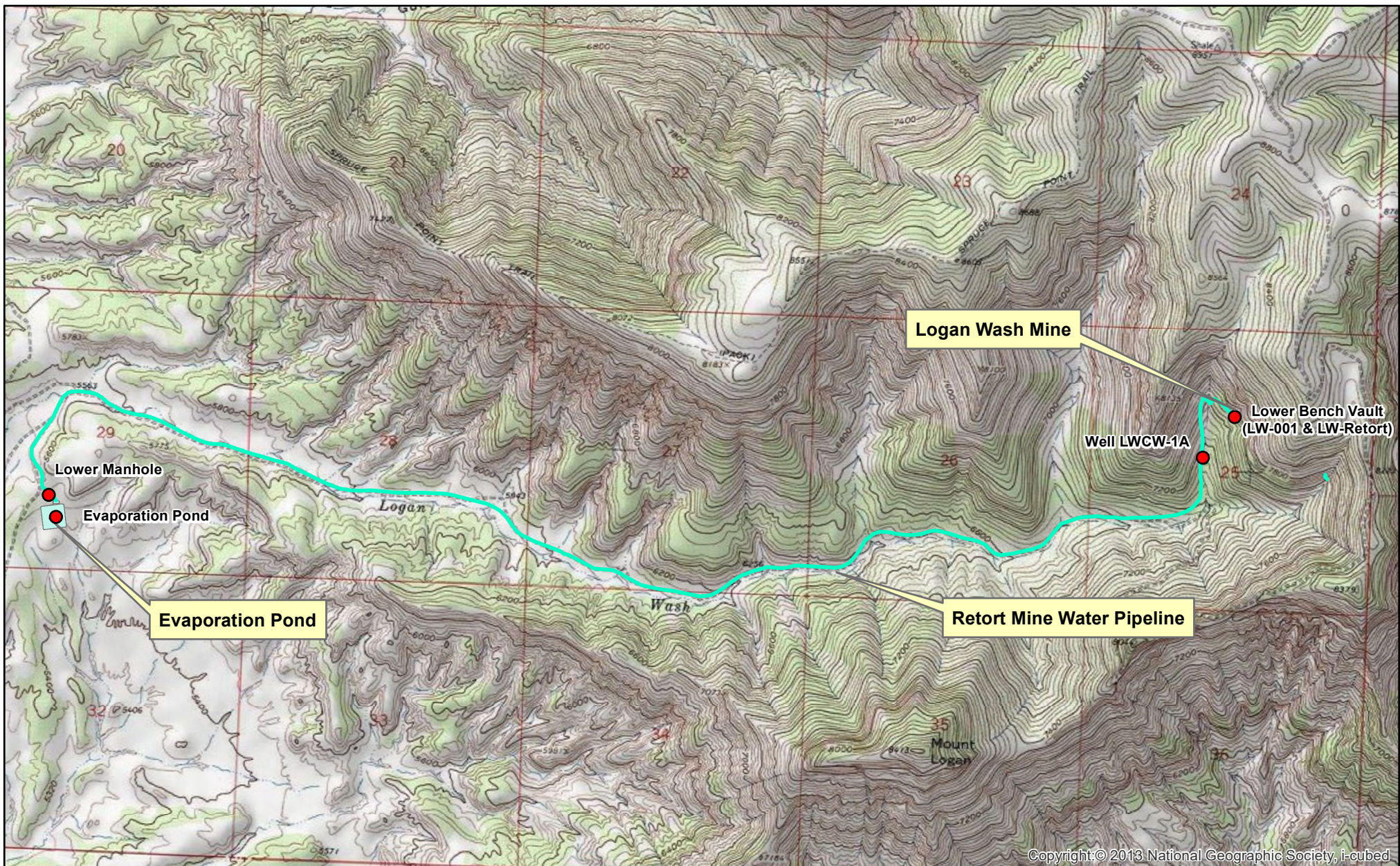
Garfield County, Colorado



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





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● Sampled Locations

0 0.25 0.5 1 Miles
1:30,000



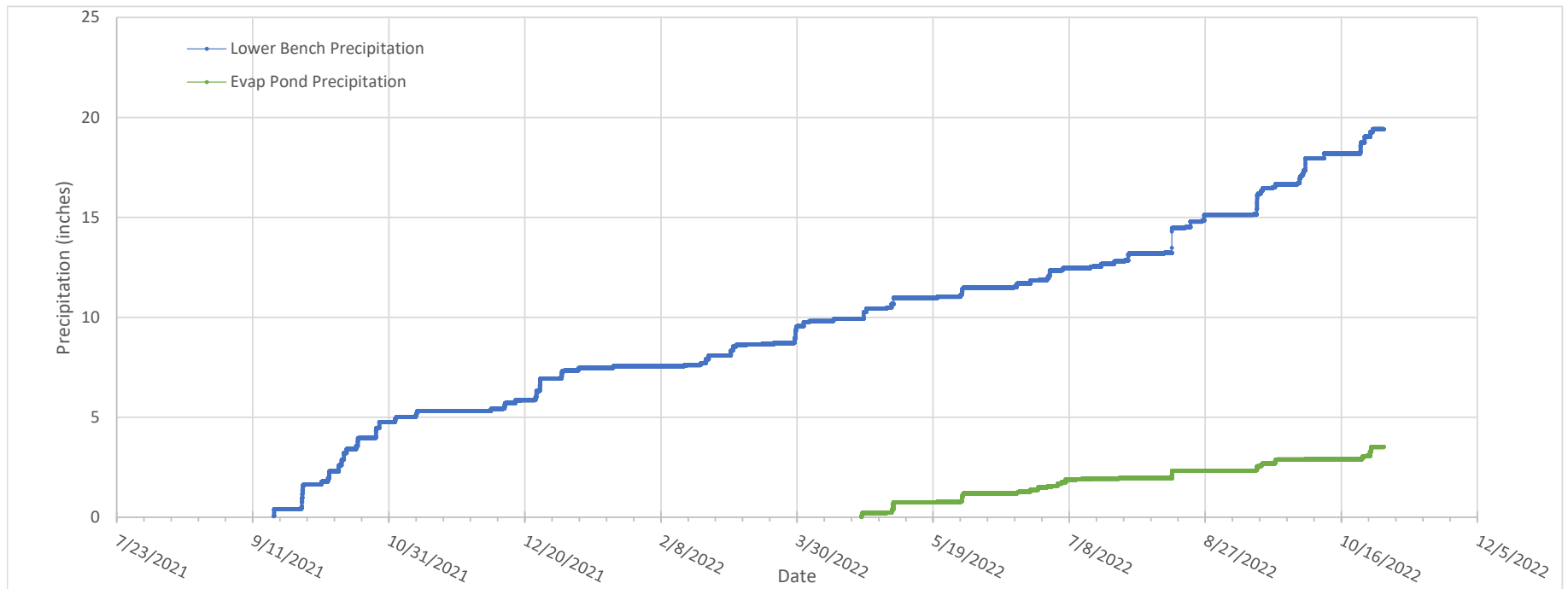
**Figure 6. Logan Wash Mine
Biannual Mine-Water Sampling Locations**

Garfield County, Colorado



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Figure 7. Logan Wash Mine 2022 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

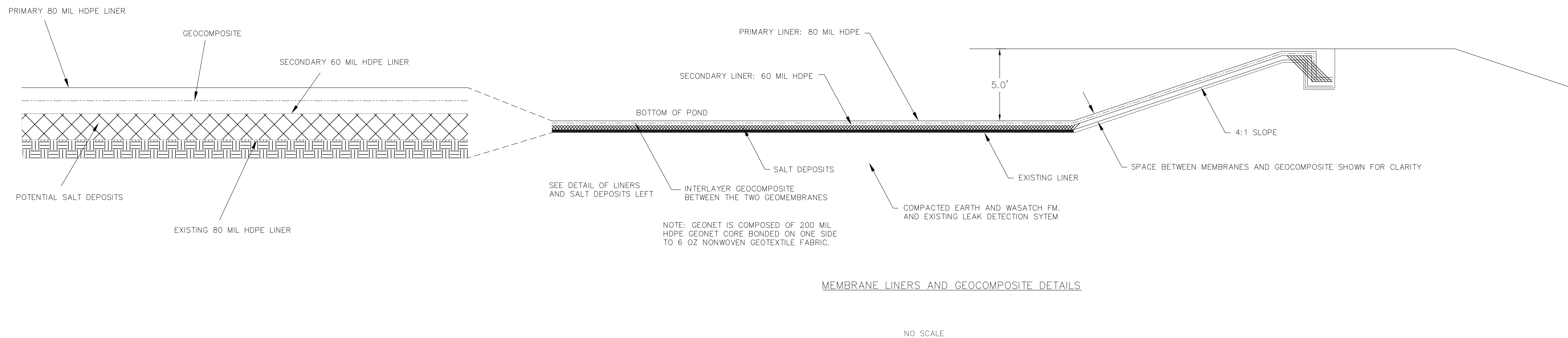
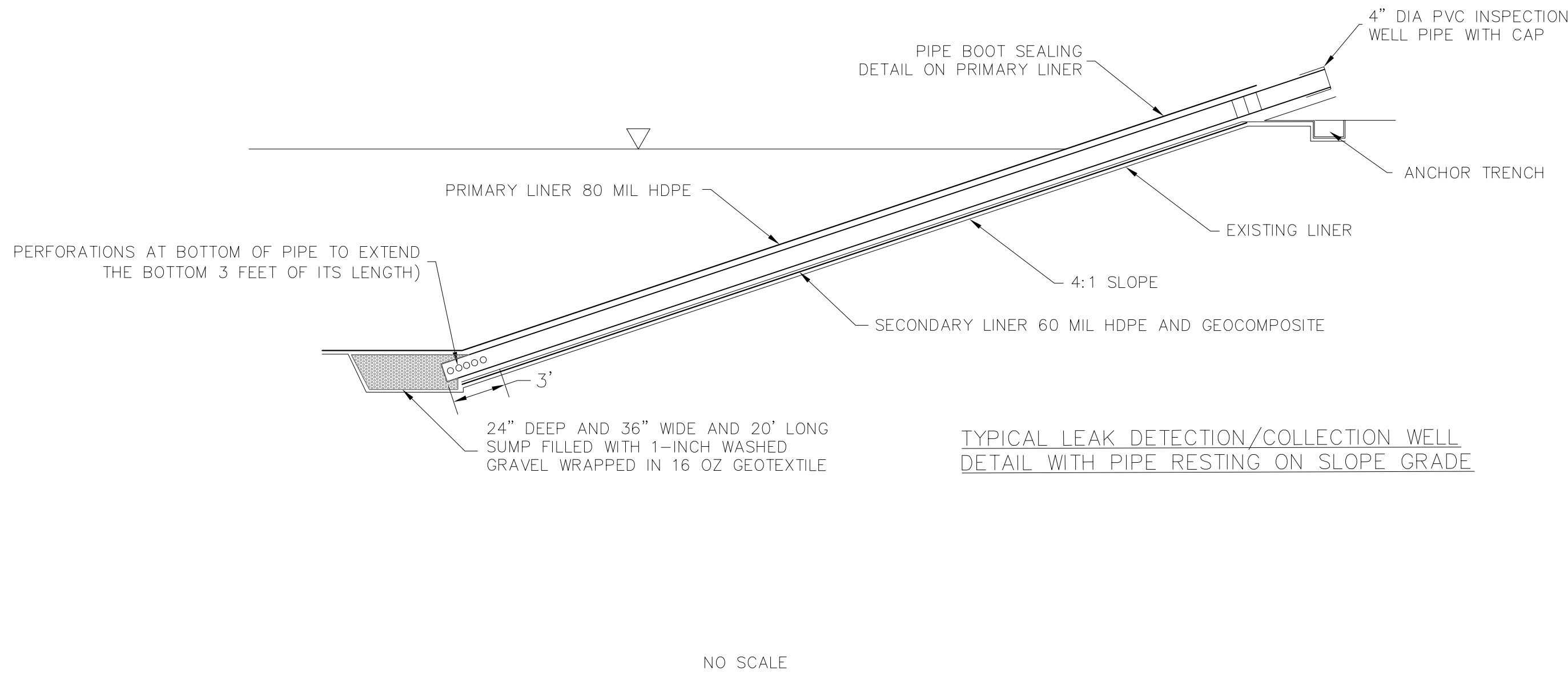
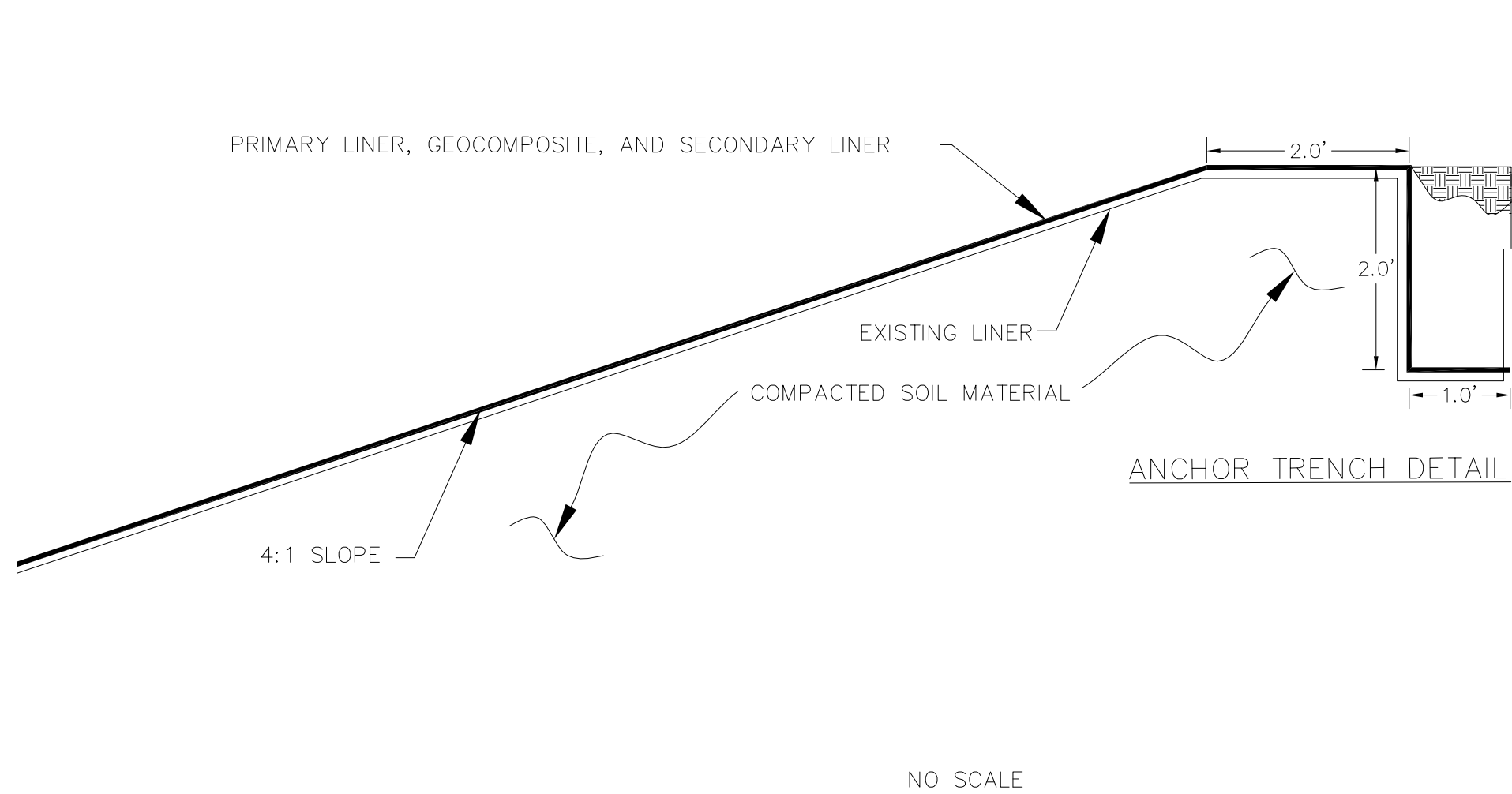
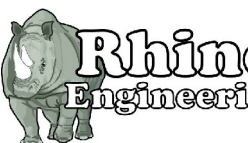


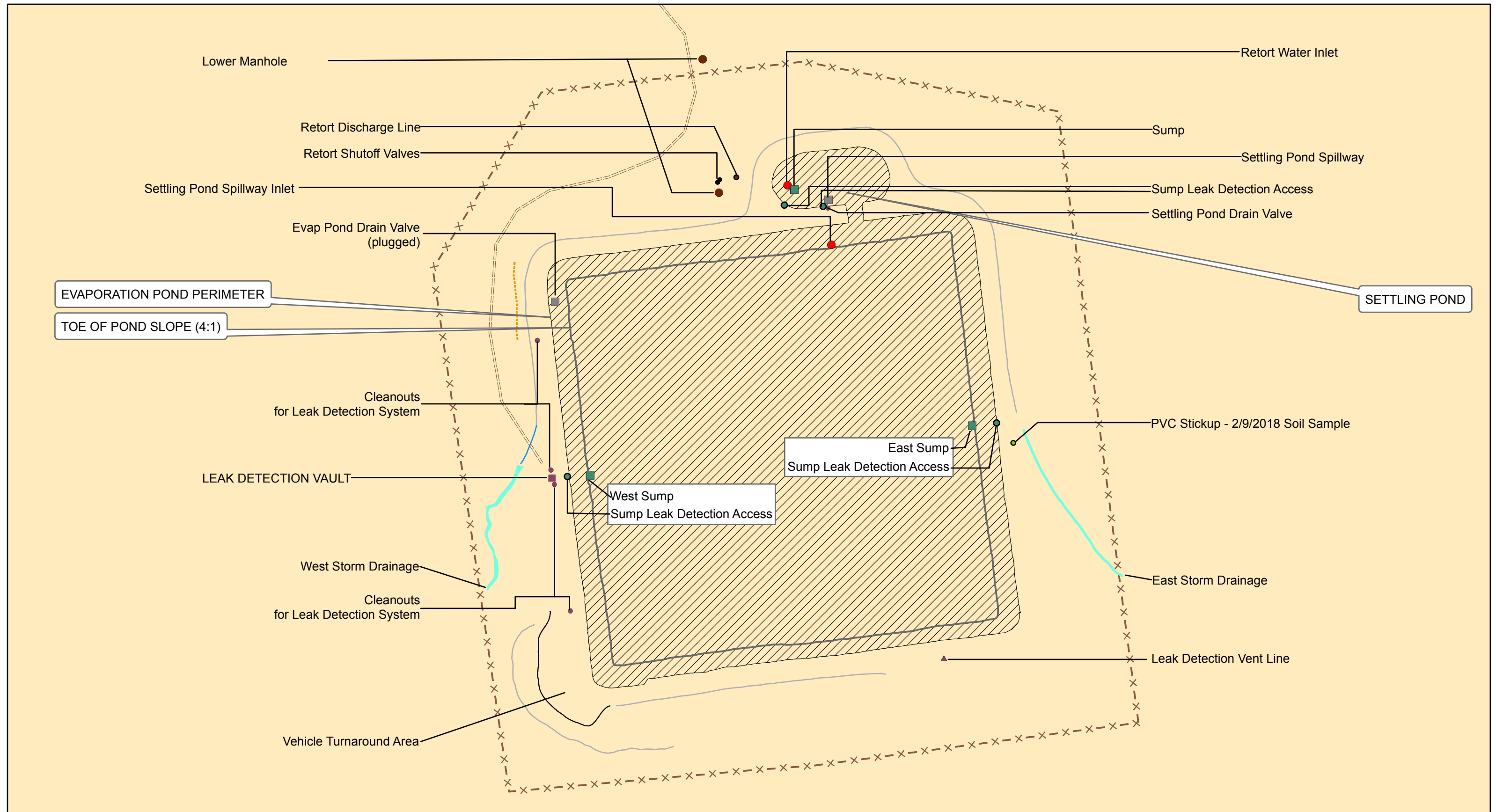
Figure 8. Pond Lining System

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



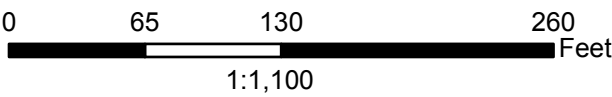
Rhino Engineering, Inc.
PO Box 810
Cedaredge CO 81413
(970) 241-6027
info@rhinoengineers.com
www.rhinoengineers.com





Legend

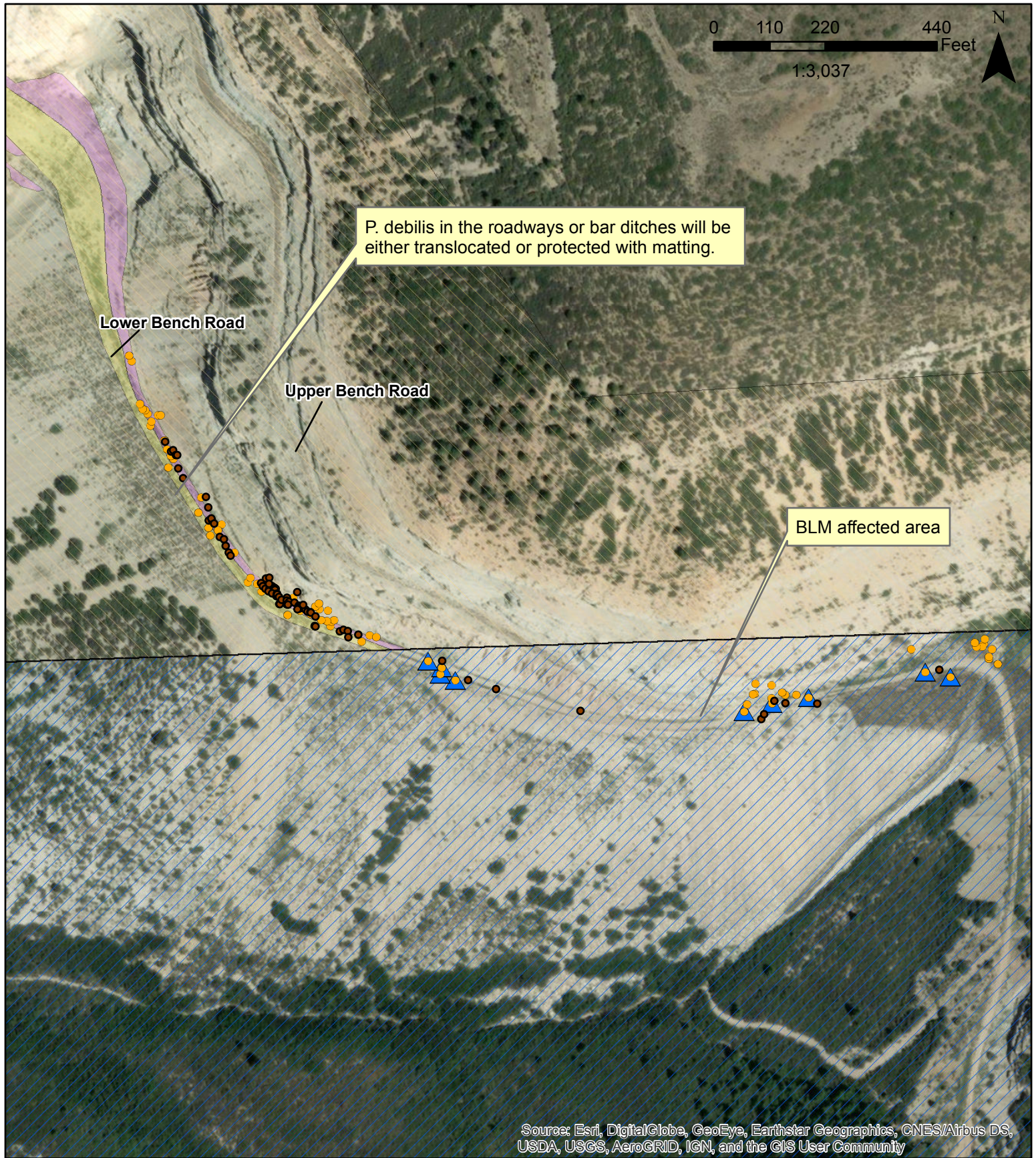
- × — Pond Perimeter Wildlife Fence
- — Safety Fence
- Low Crossing Swale
- Toe of Cut Slope
- == Access Road



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

Garfield County, Colorado





Legend








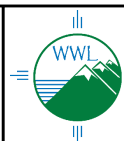
- | | | | |
|--|---|---|--|
|  | Potentially disturbed area |  | 2015 P. debilis (Location +/- 10 feet) |
|  | Potential transplant area |  | 2019 P. debilis survey |
|  | CNAP boundary |  | Protective barricade or matting |
|  | Bureau of Land Management (USBLM) parcels | | |

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

Garfield County, Colorado



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Applications in Earth Science



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



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