

Union Mine, Nevada 2026 AML Symposium Update

August 2026



Union Mine Site

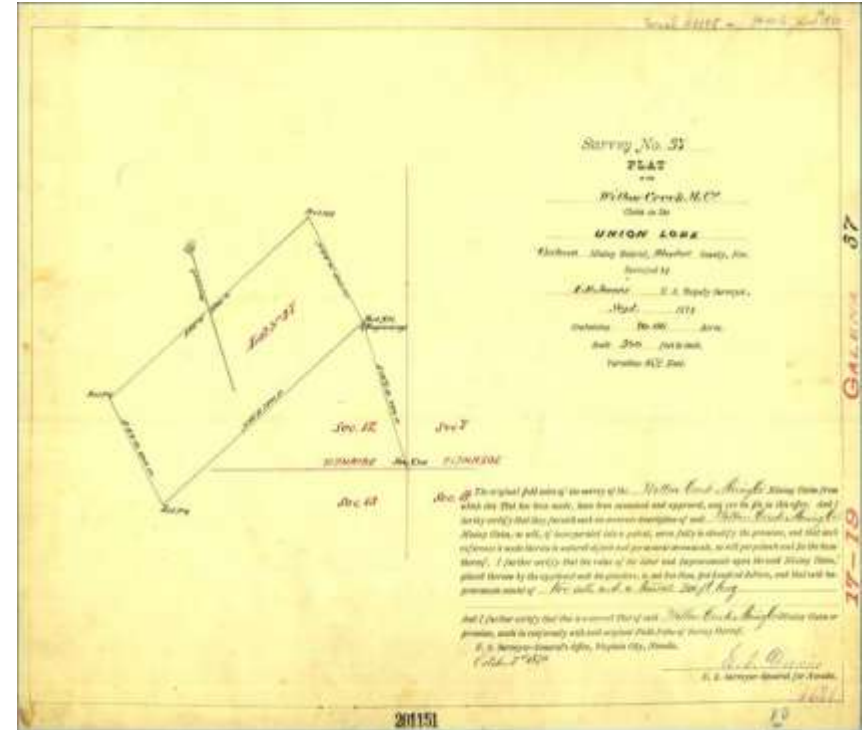
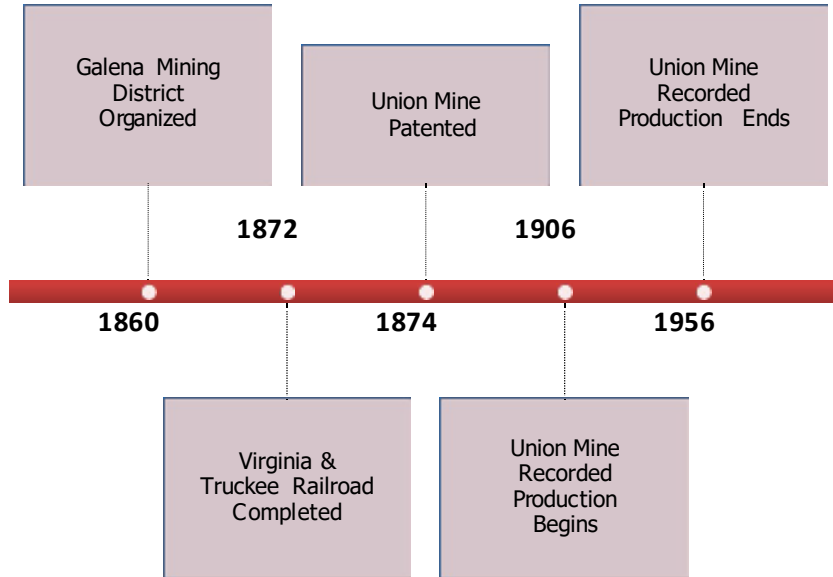
- Historic lead, zinc, silver mine
- ~12 miles south of Reno
- Owned by the State Board of Regents
- Used by locals as trailhead
- Adjacent to residential neighborhood
- Active local consortium of partners





Site History

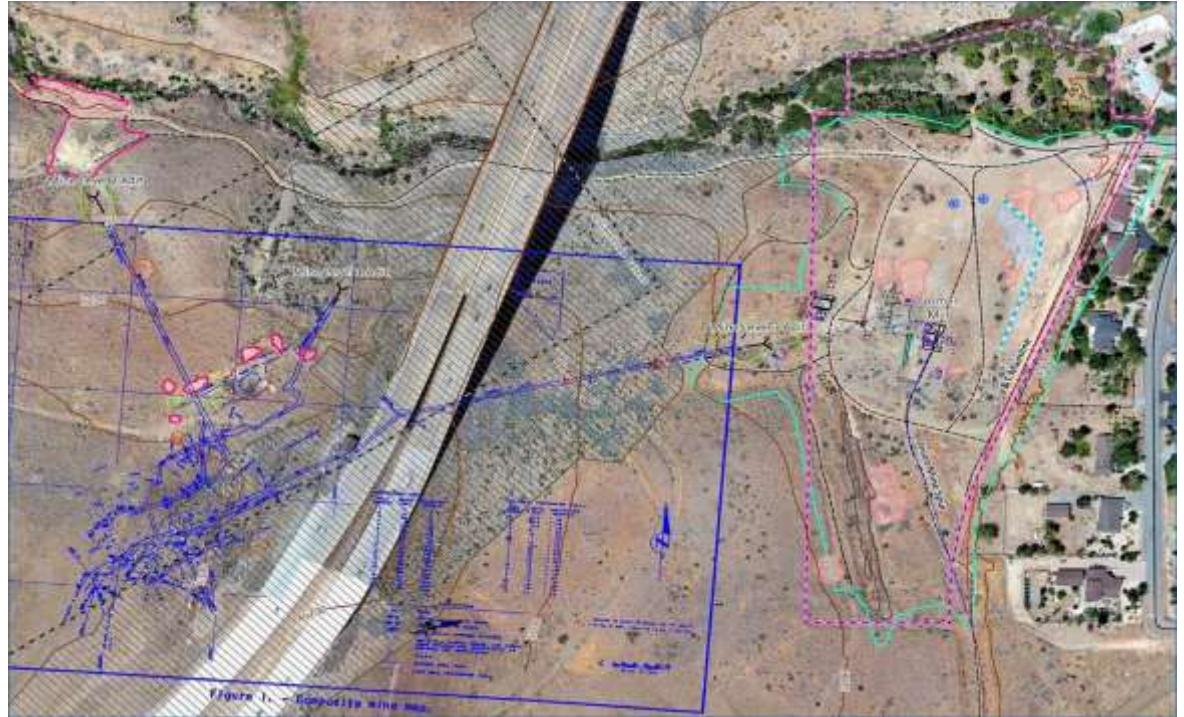
Operation of the Union Mine



Union Mine

Development and Operation

- Willow Creek Mining Co.
- Nevada Commonwealth Mining and Milling Co.
- Washoe Consolidated Mining and Milling Company
- Union Lead Mining and Smelting Company

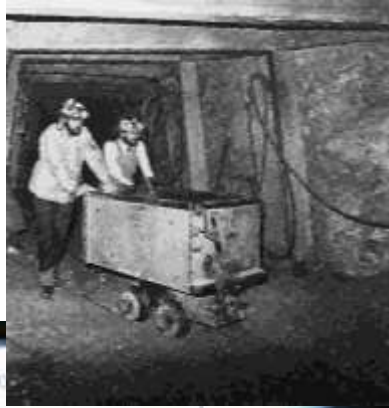




Teaching Laboratory – Mackay School of Mines – University of Nevada

Use as a Teaching Facility

Mackay School of Mines - UNR



Intercollegiate Mining Competition - Mackay School of Mines



Drilling, Mucking and Beer Chugging

Competition down at UNR's Commonwealth Mine



Photo Credit: NDEP

Preliminary Investigation

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Summary of Sampling Program

- 9 Broadbent test pits

EXPLANATION	
■	SRK Samples
■	Broadbent Samples



Union Mine and Mill PA/SI

- Site Identified in 2022
- Desk Research and Site Reconnaissance in 2023
 - Drone Flights/Photos
 - XRF/Limited Soil and Water Sampling



Photo Credit: NDEP

Investigation Results

- Visual and photo records showed waste rock, ore and process waste (tailings) exposed on the surface
- Soil XRF and Analytical Results showed high lead and arsenic concentrations
- Three water samples showed no high metal concentrations



NDEP PA/SI Report Figure 4

Preliminary Assessment Conclusions

- Site identified as high priority for follow-on investigation based on:
 - High metals concentrations in soils
 - Proximity to residential area
 - Proximity to surface water



NDEP (Google Earth)



Good Sam Initial Investigation

Excavation material Identification methods

Use visual identification of
materials

Use MWMP data to
determine excavation depth



MWMP results



Profile I	0.2	0.01	0.004		0.005		1	0.015	0.1		500			0.01	5	6.5-8.5
ANALYTE	Aluminum (MWMt)	Arsenic (MWMt)	Beryllium (MWMt)	Bicarbonate as CaCO3	Cadmium (MWMt)	Calcium (MWMt)	Copper (MWMt)	Lead (MWMt)	Manganese (MWMt)	Potassium (MWMt)	Sulfate (MWMt)	Total Alkalinity	Total Nitrogen, calc (MWMt)	Uranium (MWMt)	Zinc (MWMt)	pH
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Units

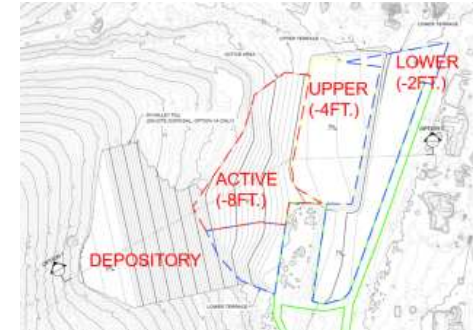
LABID	CLIENTID	COLLECTDATE																
L99424-01	T2-S-08	1/26/2026	0.812	0.0489	0.000493	<2.0	0.14	38.2	0.35	0.0107	0.65	4.54	142	<2.0	0.2	0.00039	5.82	4.2
L99424-02	T3-S-07	1/26/2026	55.9	0.0783	0.00844	<2.0	2.03	347	4.47	0.00775	7.47	15.7	1670	<2.0	1.2	0.0157	141	3.7
L99424-03	T4-S-11	1/26/2026	<0.08	0.0164	<0.0001	<2.0	0.472	153	<0.02	0.00676	1.62	8.39	689	<2.0	1.1	<0.0001	73.8	5.6
L99424-04	SRK 2	1/26/2026	0.198	0.0579	0.000377	<2.0	1.02	35.7	0.314	1.96	4.44	5.43	239	<2.0	1.1	0.00012	75.8	4.5
L99424-05	SRK 3	1/26/2026	<0.08	0.516	<0.0001	29.8	0.000372	12.3	<0.02	0.00072	<0.02	2.36	7.04	29.8	1.7	0.00015	0.061	7
L99424-06	SRK 4	1/26/2026	<0.08	0.0802	<0.0001	73.4	0.000071	28.8	<0.02	0.00014	<0.02	4.73	3.73	73.4	3.9	0.0007	<0.02	7.9
L99424-07	SRK 5	1/26/2026	0.121	0.0988	0.000216	<2.0	0.123	13.2	0.11	0.00237	0.415	3.78	60.8	<2.0	2.5	<0.0001	8.47	4.8
L99424-08	SRK 8	1/26/2026	<0.08	0.0809	<0.0001	5.7	0.000363	2.09	<0.02	0.00335	<0.02	1.18	<0.9	5.7	1.1	<0.0001	0.023	6.4
L99424-09	SRK 9 (T3-01)	1/26/2026	1.1	0.209	0.000609	<2.0	0.105	17.3	0.181	0.00405	0.544	4.68	92.4	<2.0	0.4	0.00014	3.74	4
L99424-10	SRK 10 (T4-01)	1/26/2026	<0.08	0.0825	<0.0002	2.2	2.16	572	<0.02	0.00649	4.5	22.2	1930	2.2	2.5	<0.0002	49	5.8
S2509335-001	T2-S-01	9/17/25	6.06	0.123	<0.000293	<1.0	0.365		0.47	0.031	1.89		368	<1.0	<0.1	<2.34e-05	9.36	3.6

Identified Depth of Potential Source



Methods to reclaim:

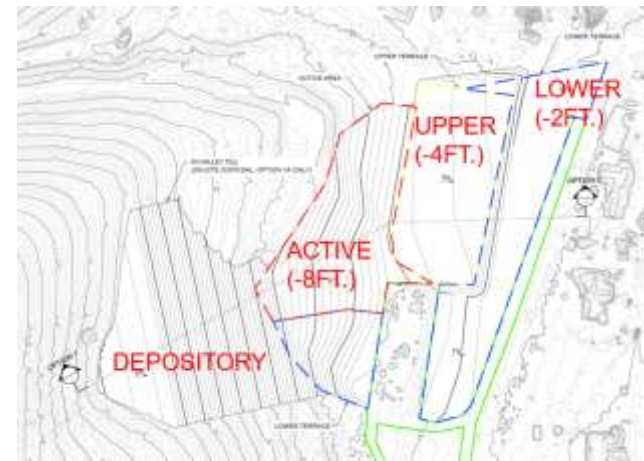
- Excavate identified material per sampling/ testing program
 - Relocate onsite & cover
 - Haul offsite
- Cover in place
 - Soil cover w/ growth media
 - Synthetic cover



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Options Evaluated

Option 1a	Excavate all and put in adit area Cover adit area with 2ft growth media Cover upper with 2 ft Type 2 Cover active and lower with 2ft growth media
Option 1b	Excavate all and take off-site Cover upper with 2ft Type 2 Cover other areas with 2ft growth media
Option 2a	Move lower to upper - cover upper with liner, geotextile, 2 ft of Type 2 Move active to adit, cover adit with 2 ft of growth media Cover lower and active with 2ft growth media
Option 2b	Move lower to upper - cover upper with liner, geotextile, 2 ft of Type 2 Move active to adit, cover adit with liner, geotextile, 2 ft of growth media Cover lower and active with 2ft growth media



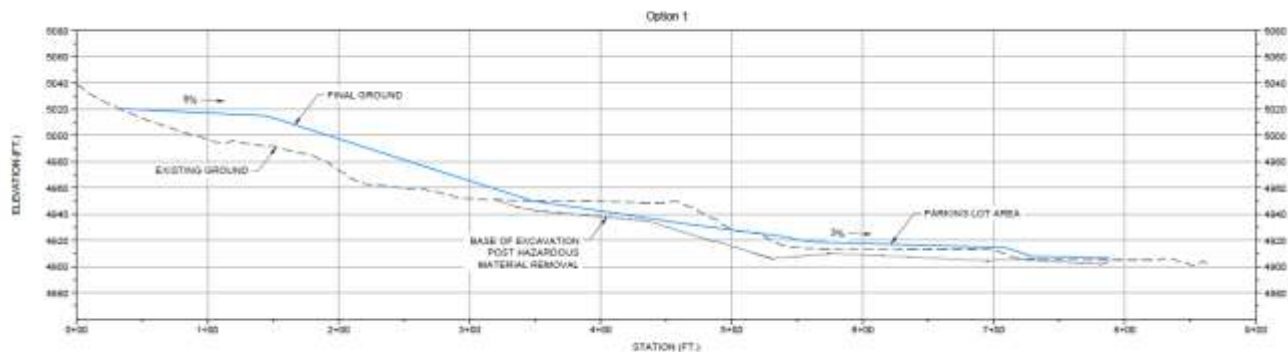
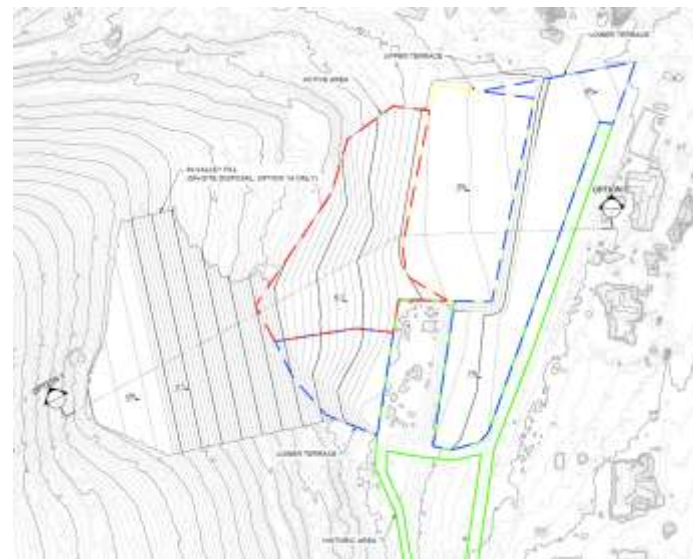
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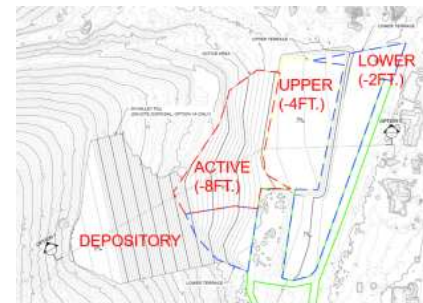
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Option 1A:

Option 1a	Excavate all and put in adit area
	Cover adit area with 2ft growth media
	Cover upper with 2 ft Type 2
	Cover active and lower with 2ft growth media



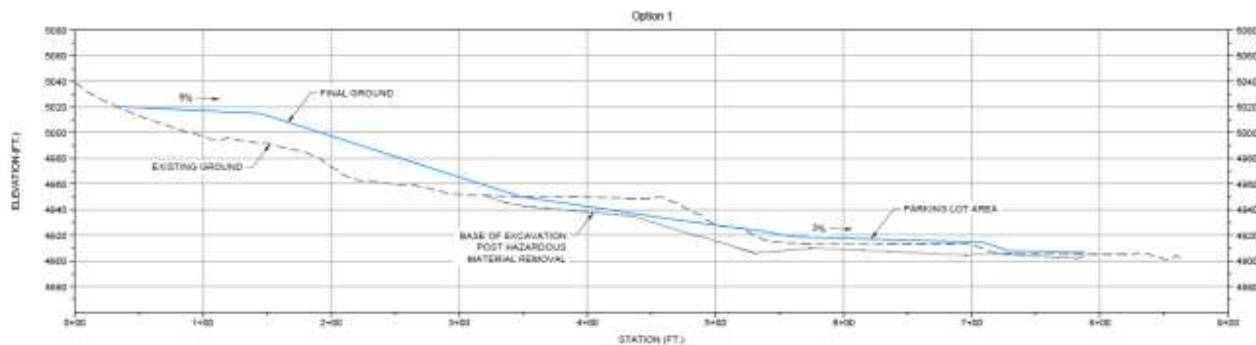
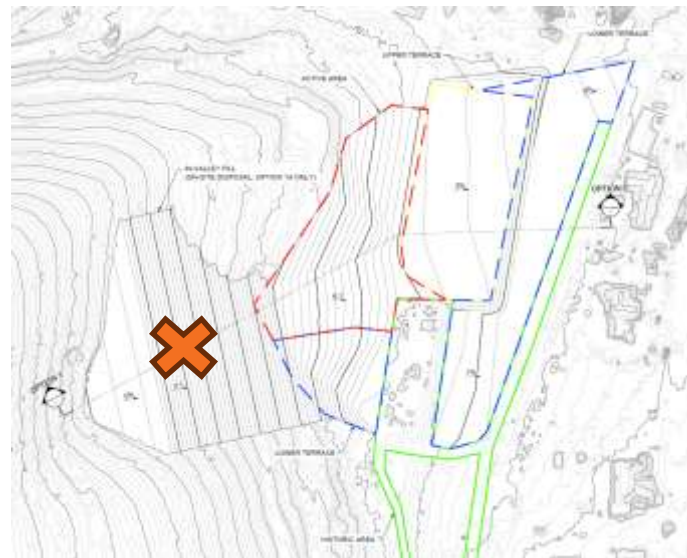
CONCEPTUAL REGRADE OPTION 1 PROFILE
HORIZONTAL SCALE 1" = 60'



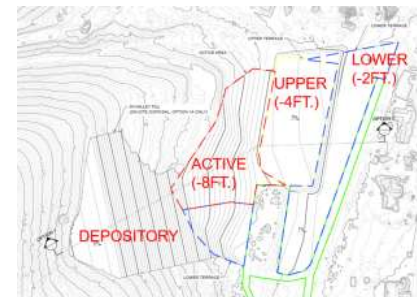
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Option 1B:

Option 1b Excavate all and take off-site
Cover upper with 2ft Type 2
Cover other areas with 2ft growth media



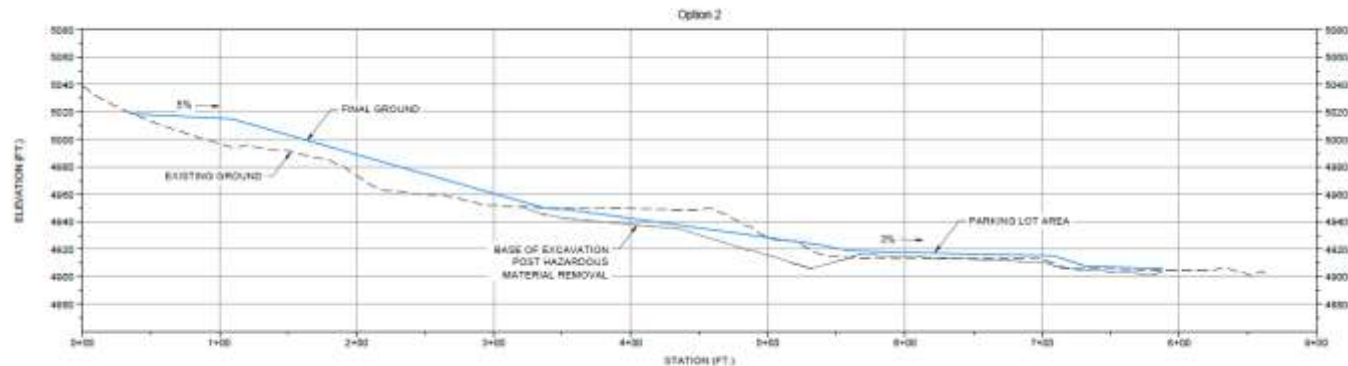
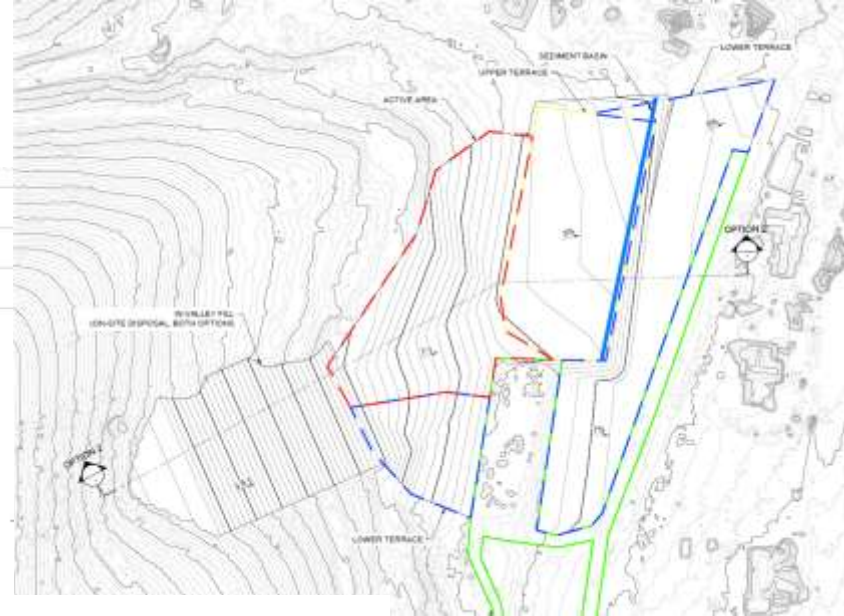
CONCEPTUAL REGRADE OPTION 1 PROFILE
HORIZONTAL SCALE 1" = 60'



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Option 2A:

- Option 2a Move lower to upper - cover upper with liner, geotextile, 2 ft of Type 2
- Move active to adit, cover adit with 2 ft of growth media
- Cover lower and active with 2ft growth media

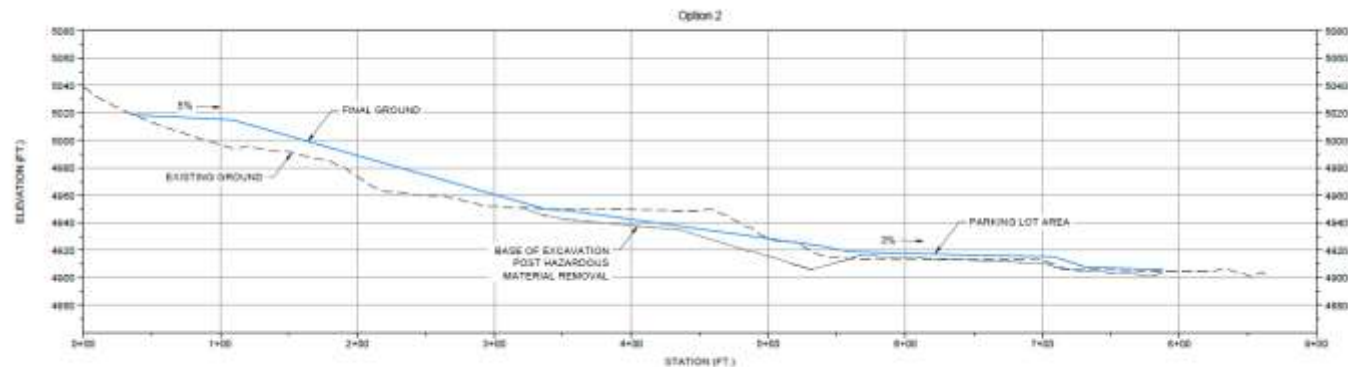
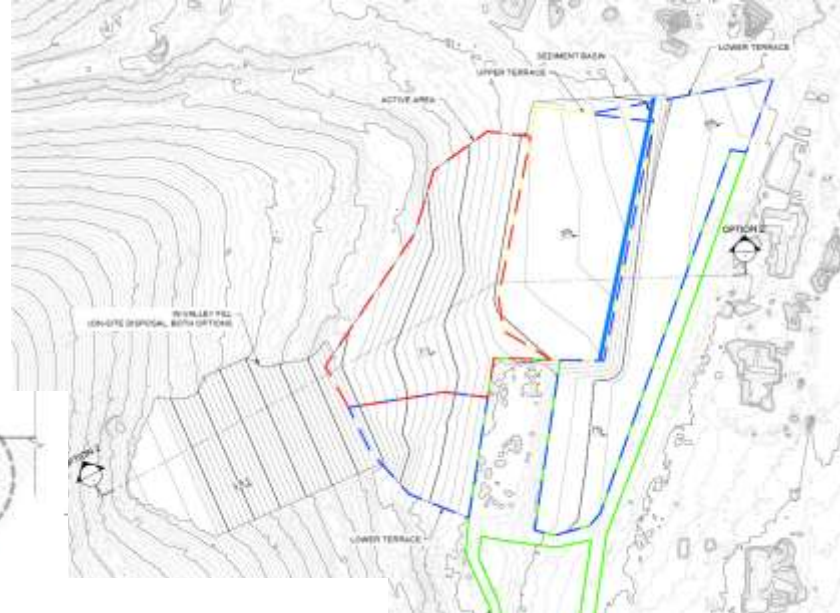


CONCEPTUAL REGRADE OPTION 2 PROFILE
HORIZONTAL SCALE 1" = 60'

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Option 2B:

Option 2b Move lower to upper - cover upper with liner, geotextile, 2 ft of Type 2
 Move active to adit, cover adit with liner, geotextile, 2 ft of growth media
 Cover lower and active with 2ft growth media



CONCEPTUAL REMEDIATION OPTION 2B PROFILE
 HORIZONTAL SCALE 1" = 60'

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GOOD SAMARITAN PROJECT UPDATE

UNION MINE PROJECT

MMSA AML SYMPOSIUM

PROJECT OVERVIEW

- Advancing under the Good Samaritan Remediation of Abandoned Hardrock Mines Act of 2024
- Historic Union Mine along US-395 between Carson City and Reno
- Low-risk cap-and-cover remedy for historic mine waste





PROGRESS TO DATE

- Site selected (Summer 2025)
 - Application largely complete
 - Baseline characterization, remediation, and monitoring plans substantially developed
 - Multiple stakeholder and EPA meetings
-

CURRENT FOCUS

- Primary focus is now eligibility
 - Working with UNR and EPA on remaining questions
 - Finalizing design and cost estimate with SRK
 - Refining Financial Assurance approach
-



ELIGIBILITY CHALLENGE

- Nevada Board of Regents Owns the Property on Behalf of UNR
 - EPA views UNR as a responsible owner/operator with funds for clean up
 - Property acquired for mining engineering education
 - No mining or milling occurred UNR occupation
 - Historic contamination predates UNR occupation
 - UNR did not create or contribute to the mining residue
-



OUR POSITION

- Letter submitted to EPA
 - Current ownership alone should not disqualify a voluntary cleanup
 - Project aligns with the Good Samaritan Act's purpose of encouraging cleanup of legacy mining impacts
-



QUESTIONS FOR EPA

- How does EPA distinguish ownership from responsibility?
 - What additional information would strengthen the application?
 - How should universities and public institutions be evaluated?
 - What other routes exist for projects like this if Good Sam isn't viable?
-

CLOSING

- Technical planning is largely complete.
 - The remaining hurdle is understanding EPA's interpretation of eligibility under this new authority.
 - We look forward to continuing the discussion.
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