

NEVADA ABANDONED MINE LANDS REPORT

SEPTEMBER, 1999

STATE OF NEVADA

INTERAGENCY ABANDONED MINE LAND
ENVIRONMENTAL TASK FORCE

(LAMLET)

Prepared in cooperation with:

Bureau of Land Management
United States Forest Service
United States Fish and Wildlife Service
United States Geological Survey
Environmental Protection Agency
Nevada Division of Minerals
Nevada Division of Environmental Protection
Nevada Division of Wildlife
Nevada Bureau of Mines and Geology
Desert Research Institute

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EXECUTIVE SUMMARY

In March of 1999 the Bureau of Land Management - Nevada State Office (BLM) initiated the formation of an Interagency Abandoned Mine Land Environmental Task Force (IAMLET) to begin remediation of abandoned mine land (AML) environmental problems associated with watersheds in Nevada. The task force is comprised of federal and state agencies with a role in abandoned mine lands in the state. Initial funding for the program is from the BLM through the Soil, Water, and Air Management Budget, in accordance with the Clean Water Action Plan. Technical expertise and project management assistance will be provided by the cooperating agencies. The purpose of this report is to prioritize an initial list of AML environmental sites in the state, describe the progress of the task force, and make financial recommendations to fund additional AML remediation activities.

The willingness to participate in the task force from the federal and state agencies has been exceptional. Task force members have contributed time and technical advice. A series of twice monthly meetings have taken place utilizing the "risk-based" approach outlined in the "Interagency Risk-Based Watershed Approach to Mitigating Pollution From Abandoned Mines On Federal Lands", issued as a BLM/USFS draft action planning document in January, 1996. Each agency was asked to "nominate" sites for consideration based on their existing knowledge of AML sites with potential environmental problems for Nevada watersheds.

Accomplishments of the task force to date include:

- Execution of a Memorandum of Understanding (MOU) describing the goals and objectives of the task force (to be signed by representatives from all the cooperating agencies);
- Initiation of cleanup of two AML sites (Stewart and Atronics millsites) in priority watersheds;
- Establishment of site selection criteria for potential AML reclamation projects;
- Compilation of an initial list of 33 AML sites based on proximity and potential impacts to watersheds and assignment of a priority rank to each site.
- Initiation of data compilation, including location and land status maps, existing site characterizations, and photographs for the 33 sites.

The task force has recommended 33 sites for budget consideration in the near future. The task force intends to seek additional nominations from other stakeholders and solicit additional funding from other sources.

The six sites recommended for funding in FY 2000 are in watersheds in need of restoration as described in the Nevada Unified Watershed Assessment and Restoration Priorities (NUWARP) under the Clean Water Action Plan. The six sites are listed below in priority order and are considered reasonably "do-able" without lengthy assessment studies, although several will probably require a multi-year approach. The top two priority sites are in Category One watersheds in NUWARP. The total budget recommendation for FY 2000 is \$2,415,000 as detailed below:

AML environmental sites recommended for reclamation activities in FY 2000.

AML Site	HUC Number	Hydrologic Unit Name	NUWARP Category	Hydrographic Basin Name	FY 2000 Funding Recommendation	Estimated Total Remediation Cost
Veta Grande Mine	16050201	Upper Carson	1	Carson Valley	\$500,000	\$500,000
Rip Van Winkle Mine	16040101	Upper Humboldt	1	Maggie Creek	\$500,000	\$500,000
Johnston Mill	15010013	Meadow Valley Wash	2	Meadow Valley Wash	\$250,000	\$500,000
Tybo Tailings	16060012	Hot Creek – Railroad Valleys	2	Hot Creek	\$300,000	\$5,000,000
Norse Windfall Mill	16060005	Diamond – Monitor Valleys	2	Diamond Valley	\$100,000	\$2,000,000
Caselton Tailings	15010013	Meadow Valley Wash	2	Panaca Valley	\$100,000	\$11,000,000
					\$1,750,000	
		Potential Responsible Party (PRP) Searches			\$165,000	
		Contract Administration			\$500,000	
					\$2,415,000	\$19,500,000

INTRODUCTION

On March 8, 1999 the Bureau of Land Management Nevada State Director issued Instruction Memorandum No. NV-99-024 dated February 25, 1999 outlining abandoned mine land planning for FY 2000 (see Appendix 1). This memorandum indicated the BLM has an opportunity to begin remediation of abandoned mine land environmental problems associated with watersheds. The program is intended to supplement the current program regarding remediation of abandoned mine safety hazards. The State of Nevada has listed watersheds for restoration priority (See Appendix 17).

Additional financial resources to remediate AML environmental sites in Nevada watersheds could be available under the following conditions:

- Priorities for remediation are set in a Federal and State cooperative process.
- Cooperative agencies use a “risk-based” approach as outlined in the Draft Action Planning Document dated January 1996 (see Appendix 2).
- Clean-up of priority sites is reasonably “do-able” without lengthy assessment studies.
- Sites can be remediated in the near future.
- Sites were identified on the basis of mitigation of water quality problems in priority watersheds.

On March 9, 1999 a meeting was called inviting ten Federal and State agencies to send representatives to discuss the formation of a task force to plan the Nevada collaborative process. The Nevada Division of Minerals was asked by the BLM State Director to be the lead agency in the planning effort (see Appendix 3). Representatives from the following organizations attended the initial meeting: Bureau of Land Management, U.S. Forest Service, U.S. Fish and Wildlife Service, Nevada Division of Minerals, Nevada Division of Environmental Protection, Nevada Division of Wildlife, Nevada Bureau of Mines and Geology. Additional agencies have joined the task force in the interim, and at the time of this report, the Environmental Protection Agency, the U.S. Geological Survey, and the Desert Research Institute have also participated.

The current participating agencies and their acronyms, which are used throughout the report, are listed below:

Bureau of Land Management	BLM
United States Forest Service	USFS
United States Fish and Wildlife Service	USFWS
United States Geological Survey	USGS
Environmental Protection Agency	EPA
Nevada Division of Minerals	NDOM
Nevada Division of Environmental Protection	NDEP
Nevada Division of Wildlife	NDOW
Nevada Bureau of Mines and Geology	NBMG
Desert Research Institute	DRI

The task force has met approximately twice monthly in order to develop a Memorandum of Understanding (MOU), site selection criteria, and the recommendations contained in this report.

TASK FORCE ACCOMPLISHMENTS

Formulation of MOU

The lead priority of the BLM instruction memorandum is that the AML environmental program move forward in a Federal and State cooperative process. In order to facilitate that process, a Memorandum of Understanding has been developed by the task force outlining the goals and objectives of the program (see Appendix 4). The MOU delineates the roles and responsibilities of the participating agencies, and outlines the procedure for watershed remediation activities and contracts.

Site Selection Criteria

Nevada has anywhere from 200,000 to 500,000 AML “features” (depending on the source and criteria) as a result of its extensive and intensive mining history. Of these, perhaps 1 to 3% may have the potential to impact ground or surface waters. The task force recognized that a complete inventory of that many sites prior to a beginning a selection process of potential AML reclamation sites was impossible. Instead, the task force chose to rely on the institutional knowledge of the participating agency personnel to “nominate” various sites for consideration.

The task force also recognized that a set of criteria was needed to assist in the prioritization of any potential sites. A brainstorming session was initiated that resulted in the following site selection criteria: It is understood that prior to any site being selected for reclamation/mitigation that a potential responsible party (PRP) search will be done. If no viable PRP is located, then the selection process can proceed.

- I It is understood that the following holds true:
1. Any site selected must lie within the state of Nevada.
 2. If the site is on private land, it will not be considered at this time.
 3. If the site has mixed ownership, particularly between Federal and State agencies, it can be considered.
 4. If the site is being mitigated/reclaimed by another agency or falls under another authority (i.e. Superfund), it will not be considered at this time.
 5. If the site is an industrial hazmat site, it will not be considered at this time.
 6. The sites should be in the list of Category 1 watersheds in need of restoration under the Clean Water Action Plan, Nevada Unified Watershed Assessment and Restoration Priorities (Appendix 17).

The first two conditions are critical and must be met for a site to be considered for remediation.

- II With the above conditions met, the site selection criteria will be in the order listed below:
7. Surface or ground water has present contamination from the AML site.
 8. Surface or ground water has potential contamination from the AML site. Also to be considered is the potential for a wind, rain or flood event to further spread the contamination.
 9. Do-able: Reclamation is do-able within a one to three year time span.
 10. Cost: The cost of reclamation must fit in the available budget. Lower cost sites can probably be cleaned up quicker than higher cost sites.

11. Public health and safety issues: Is public health and safety an issue? What is the proximity to human habitation? Are water wells in danger of contamination? Are threatened and endangered species either affected or potentially affected? Is this a sensitive environment?
12. Toxicity: What is the zone of contamination? What type of contamination? It is understood that if a site has a hazmat component, it may require the formal hazmat procedure, and the site may be considered a hazmat issue and not an AML issue.
13. Geologic setting and background: Is the geologic background and setting such that there was a contamination problem prior to any human activity at the site? If pre-existing conditions exist, these would not be an AML site/issue.
14. Available information on the site: The more site characterization information that is available on any nominated site, the less study will have to be done. This is both a time saving and cost saving feature.
15. On Forest Service lands only, the site must impact a priority watershed (303-D lands).

The following criteria are not prioritized, so are not listed in any specific order. These criteria will all be considered for any potential reclamation site.

- ◆ The "ugly" factor or public perception: This would be a factor if two sites are nominated and have equal weight in all other aspects. The public perception of how bad this site looks could weigh into the consideration.
- ◆ Proximity to an intermittent stream: This is a factor because of the possibility of intermittent water in a stream carrying contaminants away from the site causing downstream contamination to perennial waters. The amount of time that water is present in an intermittent stream during the average runoff year would be a weighting factor.
- ◆ NEPA requirements: What will be the NEPA requirements and considerations for any potential site? How should this be weighted in the consideration for selecting a site?
- ◆ Better to leave alone: Some sites may be of such a nature that an attempt to clean them up, or mitigate the contamination, would create more problems than it would solve. A possible example would be the mercury contamination in the Carson River. It might do more harm than good to attempt to mitigate this problem.
- ◆ Remining or reprocessing "wastes" on site: Would it be possible to remine or reprocess the mine dumps, etc. on site? Is there a possibility of recycling of surface debris i.e. old cars, metal wastes, etc.?
- ◆ Short and long term effectiveness of reclamation/mitigation: Would the proposed reclamation program have short term or long term benefits?

Site Selection Results

To date, the nomination process has resulted in the identification of 33 AML sites which may impact ground or surface waters (see Table 1). The sites are listed in the table alphabetically by

name. Also given is the county where the site is located, the township, range, and section, and the nominating agency. A priority ranking, using the selection criteria outlined above, designates each site as high, moderate, or low (H, M, L) based on potential impacts to watersheds. Additional categories include those not considered (NC) at present time, and other (O) sites currently unranked, which are used as appropriate. The sites have been plotted on a hydrographic basin map that delineates the watershed potentially affected by the AML site (see Appendix 5).

Because land status was an important component of the ranking process, an examination of the BLM claim records was done to determine potential ownership of unpatented mining claims in the immediate vicinity of the nominated sites. The presence or absence of mining claims was utilized to upgrade or downgrade the ranking of a site. For the six priority sites, a preliminary search of county courthouse land plats was completed to determine the presence of patented mining claims or other private property rights. A complete summary of the land status work to date is shown in Appendix 6.

In order to expedite site consideration and ranking a short summary table was developed for the 33 sites showing the site name, location, brief description, reason for consideration, land status, and rank (see Table 2).

Implementation

Responsibilities for implementation of AML site reclamation will be shared between the federal and state agencies, with the BLM and USFS having final responsibility to determine course of action on lands they manage. The BLM and USFS will perform Potentially Responsible Party (PRP) status research and satisfy NEPA requirements prior to any action on AML sites.

The lead federal agency (BLM or USFS) will determine the scope of work to be performed. Remediation may be performed by a third-party contractor, task force agencies (in-house), or any combination thereof. Cleanup objectives will be determined by the lead federal agency in cooperation with the task force. The activities undertaken may not constitute full closure of any project site.

When requested by the lead federal agency, NDOM, NDEP, or both agencies will be responsible for writing contracts, advertising for bids, selecting contractors, and monitoring contract performance, with input and oversight by the lead federal agency and task force partners. The lead federal agency will make final determination as to the adequacy of the remediation and the necessity of performing additional work to meet reclamation objectives.

Responsibility Action Plan

The responsibility action plan is a summary of the implementation strategy described above.

Responsibility Action Plan

Task	Responsible Agency	Activity	Comment
1	Lead Federal Agency and Task Force	Solicit Funding	
2	Lead Federal Agency	PRP Searches	
3	Task Force	Site Characterizations	Extent is determined by Task Force
4	Lead Federal Agency and Task Force	Engineering Evaluation/Cost Analysis	List of possible remediation activities and associated costs
5	Task Force	Determination of activities to undertake	
6	Lead Federal Agency Field Offices	Field Office Review	
7	Lead Federal Agency Field Offices	NEPA Process if required	
8	Lead Federal Agency	Scope of Work Document	From Engineering Evaluation/Cost Analysis
9	Task Force	Contracts for Field Work	
10	Lead Federal Agency and Task Force	Follow up/ Adequacy determination	

FY 1999 Cleanup Projects

Nevada has utilized BLM FY 1999 funds to implement the interagency task force, develop a statewide collaborative plan for FY 2000 and beyond, and to remediate two AML sites in priority watersheds. The two AML sites are the Stewart mill site near Austin (Reese River watershed) and the Atronics mill site northeast of Tonopah (Hot Creek watershed). Site characterizations and work plans have been completed. Contracts are in progress and it is expected that money will be obligated by the end of August 1999. It is anticipated the work will be completed by the end of October 1999.

Stewart mill was chosen because it lies in a drainage on the outskirts of Austin. It has the potential to impact the aquifer that supplies the town's water. A large amount of trash and derelict machinery is present and constitutes an easily accessed attractive nuisance. The project is budgeted at \$50,000.



The Atronics site has experienced significant wildlife mortality since operations ceased. The deaths are due to residual cyanide solutions that remain in the lined ponds. The project is budgeted at \$40,000.



Table 1. Nevada AML Environmental Sites considered by the Task Force as of June 1, 1999

SITE	COUNTY	LOCATION	NOMINATING AGENCY	RANKING
American Beauty	Elko	T31N R58E Sec. 33	EPA	L
Argentum Mill Site	Esmeralda	T3N R36E Sec. 17	BLM-Battle Mountain	L
Atlanta Standard Slag	Lincoln	T7N R68E Sec. 15, 16	BLM-Ely	L
Big Mike	Pershing	T31N R39E Sec. 23	BLM-Winnemucca	M
Black Beauty (Ind. Ptnshp)	Elko	T40N R53E Sec. 26	EPA	L
Boss Mine	Esmeralda	T3N R39E Sec. 31	BLM-Battle Mountain	NC
Boston Mill	Mineral	T7N R34E Sec. 25	BLM-Carson City	M
Buckskin	Douglas	T13N R23E Sec.13, T13N R24E Sec.18	BLM-Carson City	NC
Caselton Tailings	Lincoln	T1N R67E Sec.32, T1S R67E Sec. 4	BLM-Caleinte	H
Castle Peak	Storey	T18N R21E Sec. 20	BLM-Carson City	NC
Eagle One	Clark	T26S R64E Sec. 14	BLM-Las Vegas	M
Golden Ensign	Elko	T45N R53E Sec.1	EPA	L
Johnston Mill Site	Lincoln	T6S R67E Sec. 22	BLM-Caliente	H
Leadville (Gerlach)	Washoe	T37S R23E Sec. 8, 9, 16	BLM-Winnemucca	M
Mt. Hope	Eureka	T22N R51E Sec.12, T22N R51.5E Sec.13	NDEP	L
National Mine	Humboldt	T46N R39E Sec. 27	USFS	NC
Norse-Windfall	Eureka	T18N R53E Sec. 2 SE1/4	BLM-Winnemucca	H
Nylene Site	Mineral	T8N R28E Sec. 20	BLM-Carson City	M
Osage	Clark	T24S R57E Sec. 27 SW1/4	BLM-Las Vegas	NC
Patsy Ann Mine	Elko	T36N R32E Sec. 6	BLM-Elko	L
Powder River Mining Co.	Mineral	T12N R32E Sec.33 E1/2	BLM-Carson City	L
Pyramid District	Washoe	T23N R21E Sec. 15, 16, 22, 23	NBM&G	M
Rio Tinto	Elko	T45N R53E Sec. 11	EPA	NC
Rip Van Winkle	Elko	T37N R53E Sec. 3	BLM-Elko	H
Seneca Gold	Mineral	T8N R28E Sec. 32	BLM-Carson City	M
Silverado Mill Site	White Pine	T18N R55E Sec. 24	BLM-Eagan Planning Unit	L
Tuscarora	Elko	T40N R51E Sec. 34	BLM-Elko	NC
Tybo Tailings	Nye	T6N R50E Sec. 16, 17	BLM-Winnemucca	H
United Mining (Amer. Flat)	Storey	T16N R21E Sec.6, 7	BLM-Carson City	O
Veta Grande	Douglas	T11N R21E Sec. 3, 4, 9, 10, 15	BLM-Carson City	H
Warren Hendrix Site	Mineral	T6N R33E Sec. 36	BLM-Carson City	L
Wedekind	Washoe	T20N R20E Sec. 28, 29	NBM&G	M
West Gate Mill	Churchill	T17N R35E Sec. 32	NDOM	L

Hazard Ranking Key: H – High M – Moderate L - Low NC - Not considered at present time O - Other sites currently unranked

**Table 2. Summary of Nevada AML Environmental Sites considered by the Task Force as of June 1, 1999
(Expanded Version)**

Name	District/Location	Description	Reasons	Land Status	Rank
American Beauty	USFS. T31N R58E Sec 33 Elko County	Adits at 8,000 feet elevation just above Long Creek	Possible acid mine drainage	No active unpatented claims in section	L
Argentum Mill Site	BLM - Battle Mountain T3N R36E Sec 17 Esmeralda County adjacent to Columbus Salt Marsh	See Site Evaluation Report 1994 by C.C. Johnson and Malhotra, Environmental Engineers	Releases from tailings ponds, mill structures, possible human health issues with site caretaker	Argentum mill site claim active, active placer claims in area	L
Atlanta Standard Slag	BLM - Ely T7N R68E Sec 15-16 Lincoln County	Large tailings area, pit lake is apparently benign	Tailings are unlined, possible PRP, Rutherford Day of Bobcat Properties	Numerous active unpatented claims, possible patented claims	L
Big Mike	BLM - Winnemucca T31N R39E Sec 23 Pershing County	Abandoned copper mine with heavy metal contamination leaking from site, acid mine water drainage also present? Material on asphalt pad.	Potential for ground water contamination, present surface water contamination	Big Mike lode claims active in SW 1/4 of section	M
Black Beauty (Indep. Partnership)	USFS T40N R53E Sec 26 Elko County	3 to 4 acres of disturbance	No known hazards	Numerous active <i>patented and</i> unpatented claims in section	L
Boss Mine	BLM - Battle Mountain T3N R39E Sec 31 Nye County 25 miles west of Tonopah	Pit lake with elevated concentrations of heavy metals and other contaminants	Exceeds all of Nevada's water quality criteria and standards, possible PRP, Roy Tibbols of Phoenix	Section covered by active unpatented claim blocks	NC
Boston Mill (New Boston)	BLM - Carson City T7N R34E Sec 25 Mineral County 4 miles north of Mina on the west of highway	BLM Case File N37-87-007P, re stockpiles, heap leach pad, pump building and ponds	PRP deceased, heap leach and Water well with unknown contamination Cost = \$40,000+ (?)	No active unpatented claims in section	M

Buckskin	BLM - Carson City T13N R23E Sec 13 T13N R24E Sec 18 Douglas County.	Lined tailings ponds, no current mining or milling activities	PRP - Pruett Ranches.	Numerous active unpatented claim blocks in sections	NC
Caselton Tailings	BLM - Ely - Caliente T1N R67E Sec. 32 T1S R67E Sec. 4 Lincoln County south of Pioche	See Roy F. Weston site characterization, breached tailings dam with tailings going down drainage; Cathedral State Park down drainage from site	Unknown contamination, possible PRP, probable high cost and lengthy time, may have patented claims	Numerous active mill site and lode claims. Patented claims??	H
Castle Peak	BLM - Carson City T18N R21E Sec 20 Washoe County	Mercury mine with tailings in active drainage channel	Site characterization needed, sediment samples have high mercury, presence of water?	All private land parcels, Delete from consideration.	NC
Eagle One	BLM - Las Vegas T26S R64E Sec 14 Clark County near Nelson area	Millsite with ponds, heavy metal contamination, mercury hazmat cleanup conducted, additional site characterization needed, get EPA involved?	Amount of contamination unknown, upstream from Lake Mead, potential flood event could spread contamination, public hazard	Mill site claim with last assessment year 1998, no patents or private lands in section	M
Golden Ensign	USFS T45N R53E Sec 1 Elko County		No known significant risks	Active lode and placer claims cover most of section.	L
Johnston Mill Site	BLM - Ely - Caliente T6S R67E Sec 22 Lincoln County	See site evaluation report by CCJM Environmental Engineers, heap leach pads for Au and solution ponds	Elevated levels of metals and cyanide in leach pads, possible risk to threatened and endangered species, unknown amount of contamination	Assorted lode and placer claims – last assessment year 1998. Patented claims?	H
Leadville Mine	BLM - Winnemucca T37N R23E Sec 8, 9, 16 Washoe County	Old Lead Mine with adits, waste dumps; water flowing from workings has pH of 6.2	Nearby perennial stream; unknown contamination; PRP Transwestern Mining Co.	Active unpatented lode claim blocks in all sections	M
Mt. Hope	NDEP T22N R51E Sec 12 T22N R51.5E Sec 13 Eureka County	Adits with flowing water	Unknown contamination in springs	Active lode claims in most areas of both sections. Patents??	L
National Mine	BLM - Winnemucca T46N R39E Sec 27 Humboldt County	Acid mine drainage	Acid mine drainage from private land flows onto USFS	Several active unpatented claims in area	NC

Norse-Windfall Millsite	BLM - Battle Mountain T18N R53E Sec 1, 2 Eureka County	See Site Evaluation Report by Brown and Root Environmental, 1996; leach pads fill valley	Creek is draining directly through tailings, municipal wells for Eureka downstream	Numerous active lode claims in both sections	H
Nylene Site	BLM - Carson City T8N R28E Sec 20-22 Mineral County	BLM Case File N37-83-033N Mill site, equipment, drums, vehicles, trash, barrels of "stuff", pit and heap leach pads, with ponds on approx. 3 acres	Ephemeral stream nearby; ponds have year round water content. Unknown contamination. Estimate \$50,000+?	Scattered active lode claims in all sections	M
Osage Mill Site	BLM - Las Vegas T24S R57E Sec 27 SW1/4; Clark County near Sandy Valley	Drums, trash, etc.	Unknown amount of contamination, possible PRP is W.H. Snavely	No active unpatented claims in area	NC
Patsy Ann Mine	BLM - Elko T36N R 51E Sec 6 Elko County	Spring producing acid water	Acid water; mining related??	Active lode claims cover most of section	L
Powder River Mining Co.	BLM - Carson City T12N R32E Sec 33 E1/2 Mineral County	BLM Case File N37-83-005N Abandoned mill site, buildings, trailers, trash, cyanide heap leach used on sulfide ores.	Heap leach, water well, pipelines, drums, trenches; unknown contamination. \$20,000 to clean?	No active claims in section	L
Pyramid Dist.	NBMG T23N R21E Sec 15, 16, 22, 23 Washoe County	Acid mine drainage from 2 adits; NBMG has water sampling data	Poor quality of water in ephemeral stream, tribal lands less than one mile from site	Several patented claims in sections	M
Rio Tinto	USFS T45N R53E Sec 11 Elko County	Multiple tailings impoundments in active creek	Active reclamation program being conducted by USFS, NDEP and industry	Area has patented claims and unpatented claims	NC
Rip Van Winkle Mine	BLM - Elko T37N R53E Sec 3 Elko County Lone Mountain area	Four tailings impoundments which contain acid generating material. Difficult access. Mill building "blew up" during 1994 wild land fire. Cupels and debris scattered over site	Perennial stream, Coon Creek flows through tailings impoundments, then into Maggie Creek. See site BLM report.	Numerous active patented claims in section. Patented claims present at mine site	H
Seneca Gold	BLM - Carson City T8N R28E Sec 32 Mineral County	BLM Case File N37-86-007N Equipment, drums, trailers, trash. Pond with year-round water. Possible occupancy problem	PRP? Year-round pond with water; contamination unknown. Estimate \$10,000+?	Rattlesnake claim group in area. Last assessment year 1997.	M

Silverado Millsite	BLM - Ely, Egan unit T18N R55E Sec 19 White Pine County	Heap leach for Au; CN, caustic soda has been removed from the site; 1994 site investigation	Residents within two miles. Unknown potential to contaminate ground water. Four reported bird kills.	No active unpatented mine claims in vicinity	L
Tuscarora	BLM – Elko T40N R51E Sec 34 (and others) Elko County	Garbage from residences in mine shafts, using mine shafts as garbage disposal	Unknown effect on water wells in nearby town of Tuscarora	Numerous active unpatented lode and placer claims and patented claims	NC
Tybo Tailings	BLM - Battle Mountain Hot Creek Valley T6N R50E Sec 16, 17 Nye County	Failed tailings impoundment; highly acidic release (pH of 1); dead and stressed plants. See site report.	Heavy metal contamination; high potential to affect ground water; potential for high rainfall, flood event to spread contamination; unknown amount of contamination	LJW Inc. and Wolfe placer claims in area last assessment years 1996-1997; A& B placer claims in Sec. 17 active	H
United Mining American Flat	BLM - Carson City T16N R21E Sec 6, 7 Storey County	Abandoned 750 tons per day millsite; Shut down in 1984	Abandoned buildings and equipment	Numerous active lode and mill site claims in area	O
Veta Grande	BLM - Carson City T11N R21E Sec 3, 4, 9, 10, 15 Douglas County	Mine and mill last operated in 1989; blue trees; Washoe tribe issue; 1994 site evaluation; EPA preliminary assessment in 1985; EPA decision?	Cyanide with heavy metals contamination in soil and groundwater; visible from highway	No active unpatented claims. Patented claims tax forfeit held by Douglas Co.; surrounded by BIA and private land	H
Warren Hendrix Site	BLM - Carson City T6N R33E Sec 36 Mineral County	BLM Case File N37-82-014N Cyanide (?) heap leach, 40' X 40'	PRP no money or deceased; Cyanide heap leach pad needs reclaiming; Est. \$8,000?	No active unpatented claims in section	L
Wedekind	BLM - Carson City T20N R20E Sec 28, 29 Washoe County	Sulfide waste rock in urban area	Groundwater issues? NBMG nomination	No active unpatented claims, inhabited private land to south	M
West Gate Mill	BLM - Carson City T17N R35E Sec 32 Churchill County	Mill site with tailings; Intermittent water	Unknown possible groundwater contamination; small; NDOM nomination	No active unpatented claims in section.	L

HIGH PRIORITY SITES

For each of the high priority sites, a section on location and history, watershed considerations, status of site characterization, land status, possible alternatives and projected costs are included, as well as the recommendations of the task force.

Caselton Tailings Site

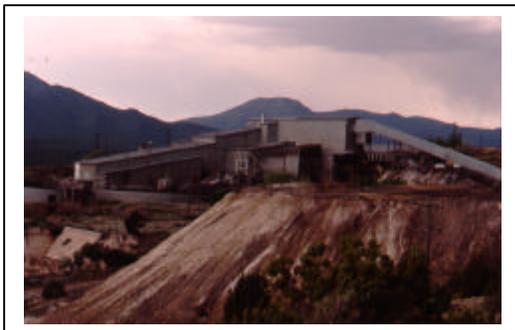
Location and History

The Caselton Tailings Site is located in Lincoln County in T01N, R67 E, Sec 32, E ½ and W ½, and T01S, R67E, Sec 4, NE 1/4, NE 1/4, Pioche 7.5' Quadrangle. The site is approximately 3 miles southwest of Pioche, just south of State Highway 320, and 1 mile southwest of Caselton.



The initial mineral discovery in Pioche occurred in 1863 and mining production began in 1869. The original ore consisted of oxidized silver chlorides occurring in fissures in Cambrian quartzites.

At one time Pioche was one of largest silver districts in the United States. Total mineral production exceeded \$130,000,000. The primary metal values were for gold, silver, lead, zinc and copper. Low-grade argentiferous manganese oxides were also found in the region. Major periods of production were: 1895-1901; 1912-1920; 1934-1953; and 1958-1959. Minimal activity has occurred from 1959 to the present time. Early milling occurred in Pioche, but a shortage of water forced the mills to be relocated to Bullionville (near Panaca) around 1871. In 1924 Combined Metals Reduction Company developed a selective flotation process to treat massive lead-zinc sulfide ores. The ore bodies consisted of massive bedded sulfide minerals



(pyrite, sphalerite, galena and chalcopyrite) replacing limestone host rocks. Combined Metals Reduction Company processed ore at a mill in Bauer, Utah from 1923-1941, until the Caselton Mill was built in 1941. Mountain Mines, Inc. acquired the Caselton Tailings after the bankruptcy of Combined Metals Reduction Company in 1976. Mountain Mines, Inc. claims to have produced precious metals from the tailings with a small chemical processing facility located in the vicinity of the tailings.

Numerous mining companies have had operators or exploration activity at site, including: Meadow Valley Mining Company (1864-1876); Consolidated Mining Company (1880's); White Pine Minerals Company (?); Combined Metals Reduction Company (1924-present); Pioche

Manganese Company (WWII); Comet Coalition Mining Company (1964-1978); St. Patrick Mining Company (1975); Bunker Hill Mining Company (1976-77); Kerr-McGee Chemical Company (1980); Mountain Mines, Inc. (1976-present). Homestake Mining Company, Prince Consolidated Mining Company and Anaconda Company also have been active in the area.

Watershed Considerations

The Caselton Tailings Site is situated in the Panaca Valley hydrographic basin (see Appendix 5). The tailings ponds are located between 5,880 and 5,720 feet above sea level over a distance of 1.1 miles, and cover an area of approximately 100 acres. The tailings ponds are situated in Caselton Wash, which is ephemeral in nature. The Caselton Wash discharges into Meadow Valley Wash approximately 11 miles south of the site.



Meadow Valley Wash flows into the Muddy River approximately 90 miles south of the Caselton Tailings Site, which in turn discharges into the Overton Arm of Lake Mead.

Groundwater depth at the Caselton Tailings site is not known at this time. Several domestic wells are located in the vicinity of Pioche, northeast and upstream of the tailings dams. The nearest downstream wells are agricultural wells, located approximately 10 miles southeast in Panaca.

According to information obtained from the Western Regional Climate Center (WRCC) web-site, annual rainfall at Pioche (elevation 5800") is 13.46", with highest monthly rainfall occurring between January and March (1.58", 1.41" and 1.59" respectively). The highest recorded single day rainfall event was 3.02", occurring in December, 1966. It should be noted that WRCC records for Pioche begin in 1948.

Status of Site Characterization

In 1989, the BLM contracted with Roy F. Weston, Inc. to produce a preliminary site characterization of the Caselton Tailings area (see Appendix 7). This characterization included background research, cursory site map, and some analytical analysis of soil samples on, adjacent and downstream of the tailings impoundments. Weston determined that containment of tailings material had not been effective as many dikes were damaged. Discoloration of soil and dead and stressed vegetation were noted as far as two miles downstream of the site. Some small pools of reddish-brown water were found within the tailings impoundments. A conservative estimate of 1,500,000 cubic yards of potentially acid-generating tailings was calculated to exist at the site.

The Caselton tailings ponds vary in size from 1000' by 600' (upper) to 300' by 100' (lower) and have an estimated maximum thickness of 50'. Elevations range between 5720' and 5880'. Each

pond is separated by dikes. Several drainages originate upstream of the tailings impoundments at the Pioche Mine and Camp and the remnants of an effluent pipeline from the north indicate some contamination originated upstream of the tailings site.

Several soil samples within the tailings impoundments indicated lead levels exceeding the RCRA waste standards, however elevated metals levels were not found downstream. It should be noted that the BLM did not accept the results of the analytical work conducted by Roy F. Weston, Inc. No explanation was given.

Land Status

Numerous mining claims (patented and unpatented) are found in the Caselton area. The current ownership status of the Caselton area is complex, being a mixture of patented claims, unpatented mining and millsite claims, and federal land (see Appendix 6). The ownership of the tailings site itself is currently under review.



Possible Alternatives and Projected Costs

The Weston Report recommended mitigation actions to minimize further potential contamination:

- Remove tailings to hazardous waste disposal site or repair dikes and cap the tailings using a synthetic or clay cap and topsoil.
- Divert Caselton Wash around tailings impoundments.
- Contain and treat water flowing over or through tailings.

The recommendations of the report were not acted on by the BLM. A recent summary of the Weston Report by the BLM's Ely Field Office (see Appendix 7) gave estimated costs for remediation as follows:

Provide 645,333 cubic yards of soil to cap impoundments	\$5,000,000
Water containment of tailings and diversion of Caselton Wash	\$1,000,000
Water diversion around millsite and water treatment plant	<u>\$5,000,000</u>
	\$11,000,000

It was noted that this estimate does not include the costs of treating contaminants downstream of the Caselton Tailing impoundments.

Task Force Recommendations

Initiate a site characterization funded in the amount of \$250,000. This site should be considered a long term project with FY 2000 monies used to determine if it is cost effective to proceed on this very complex site.

Johnston Mill Site

Location and History

The Johnston Mill Site is located in southeastern Lincoln County in an unsurveyed portion of T6S, R67E, Section 22, Ella Mountain 7.5' Quadrangle. It covers an area of approximately 4 to 6 acres and is approximately 20 miles south of Caliente. It can be reached by traveling south from Caliente on the Rainbow Canyon Road (also known as the Meadow Valley Wash Road) 24 miles to Elgin. At Elgin turn northeast and travel 6 miles to the entrance to Pennsylvania Canyon. Head ENE in Pennsylvania Canyon for about 1 mile to a fork in the road. Take the right fork heading ESE about 1 mile to Johnston Mill Site.

The Johnston Mill operated between the years of 1985 and 1991 in conjunction with a nearby gold mining operation that ran from 1985 to 1988. The mill produced 2,000 ounces of gold before shutting down. The operation was permitted by the BLM under Plan of Operations Number N57-84-09P. The operation included a cyanide heap leach facility and associated ponds.



Watershed Considerations

The Johnston Mill Site is within the Lower Meadow Valley Wash hydrographic basin as shown on the map in Appendix 5.

The site is located in the Pennsylvania Canyon drainage which is part of the watershed of the Colorado River basin. The generally intermittent flow from Pennsylvania Canyon discharges into Meadow Valley Wash some 7 miles south of the mill site. Contaminants from the mill site have the potential to affect agricultural activities and the habitat of the Desert Tortoise and the Northwest Valley Fly Catcher, both Endangered Species, which are found in Meadow Valley Wash. Surface water runoff can be very high in Pennsylvania Canyon, especially during flash flood events.

A spring, located 150 feet below the mill site, flows intermittently in early spring and throughout the summer. Year round water flow has been noted occasionally at this spring locality. Depth to groundwater is estimated to be 70 feet in the area of the Johnston Mill Site. The heap leach pad and pond are in the infiltration field of the spring and mill site contaminants could affect groundwater quality.

Two unnamed springs, located 0.25 and 0.50 miles downstream from the Johnston Mill Site, are utilized by wildlife. Contaminants from the mill site have the potential to affect spring water quality. The springs flow seasonally.

A water well is located adjacent to the mill site. It is not currently in use but could be converted to a monitoring well or plugged and abandoned.

Status of Site Characterization

The “Final Site Evaluation Report - Johnston Millsite” was prepared and submitted to BLM on October 1, 1997. The report was prepared by CCJM Environmental Engineers and Scientists (see Appendix 8).



Two waste sources were identified in the site evaluation report. Numerous waste source samples were collected and analyzed from the heap leach pad (Source #1), and three surface impoundments (ponds) (Source #2). A brief summary of the report indicates that elevated levels of arsenic, barium, cadmium, chromium, cyanide, and lead were found in the heap leach. The impoundments contained arsenic, barium, cadmium, chromium, cyanide (not found in

Impoundment #3), and lead. The impoundment liners are in good condition but are partly exposed on the surface. Without sufficient cover, the liners could decompose, resulting in possible groundwater contamination. Two surface samples collected in the ephemeral stream in Pennsylvania Canyon approx. 300 yards downstream from Impoundments #1-2 showed elevated levels of chromium, indicating a release had occurred.

Waste source areas are devoid of cover and containment and are therefore subject to off-site transport, either by water or wind. The Johnston Mill Site also contains two buildings, ranging from stable to dilapidated, one of which contains an assortment of drums, barrels, and bags of chemicals and other materials. The site contains, batteries, containers, tires and miscellaneous trash.



Land Status

The Johnston Mill Site has three inactive and one possibly active claim(s) in the vicinity. Two of the three inactive claims were case closed by the BLM in 1986. The third inactive group was case closed in 1993. The one possibly active claim is the CA claim group belonging to Royal Standard Mining, but the latest assessment year is 1998 (see Appendix 6).

Possible Alternatives and Projected Costs

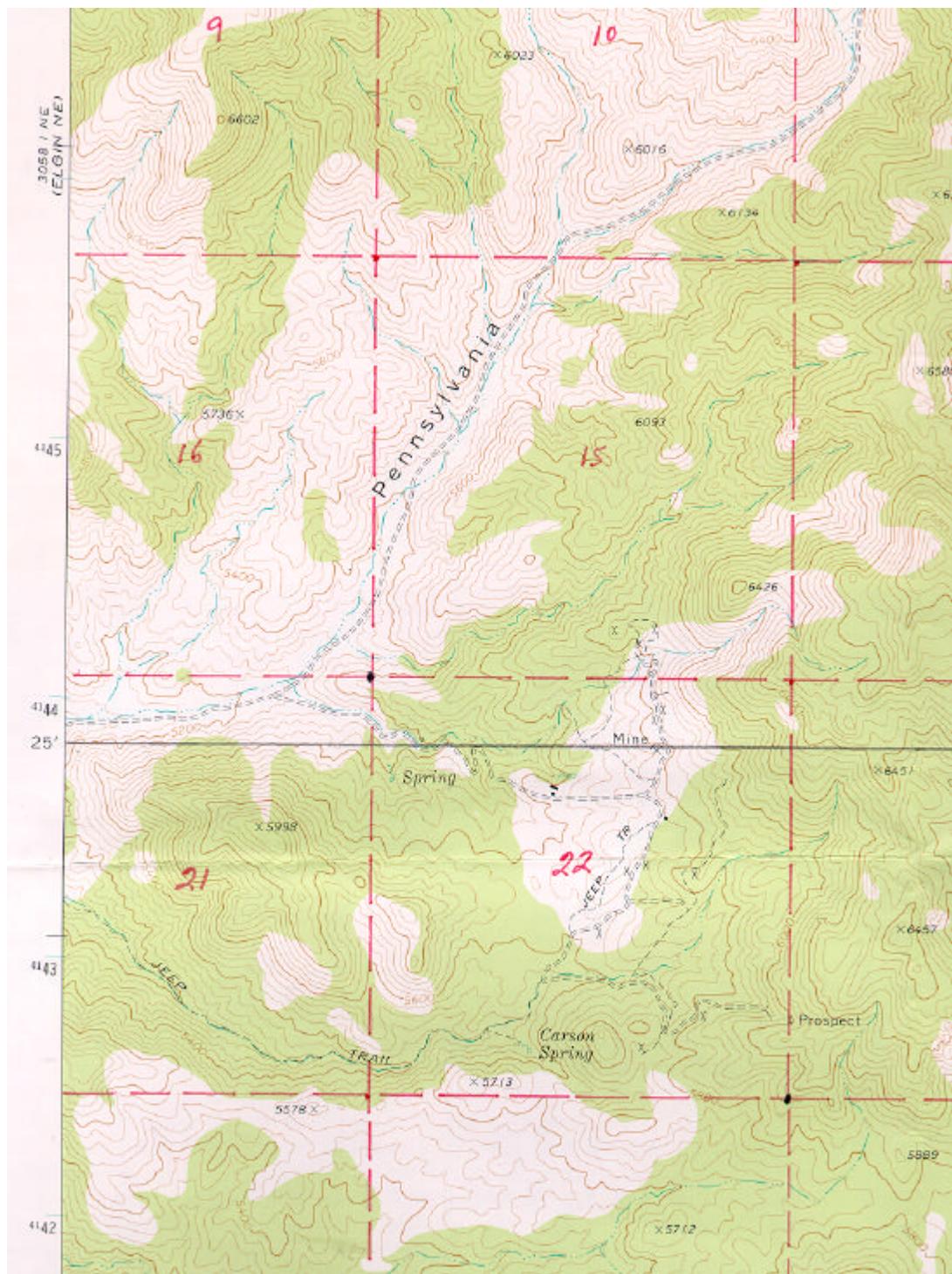
The BLM Ely Field Office has proposed the following actions and costs:

Detoxification (including chemicals, sprinklers, generators, and pipe)	\$250,000
Stabilization (overall area)	
Clean up of facilities	\$100,000
Laboratory Tests	\$10,000
Recontouring	\$100,000
Soil Cap (including revegetation):	<u>\$250,000</u>
Total Cost	\$710,000

Task Force Recommendation

Prepare closure plan and contract for site closure. Assume no heap rinsing or treatment is necessary and that the heap could be closed by recontouring and capping. Solution ponds can be closed by backfilling and contouring. Water well should be plugged and abandoned. This site could be completed in but may require additional funding in FY2001. Recommended actions are as follows:

Site closure plan	\$50,000
Backfilling and recontouring	\$150,000
Plug and abandon water well	<u>\$50,000</u>
Total	\$250,000



Johnston Mill Site
From USGS 7.5 minute topo
"Ella Mountain, Nev."
Legal description: T. 6S. R. 67 E. Sec. 22

Norse-Windfall Mill Site

Location and History

The Norse-Windfall Mill Site is located approximately 5 miles south of Eureka, Nevada, T18N, R53E, section 2, Pinto Summit 7.5' Quadrangle. Access to the site is south 1.2 miles from Eureka on U.S. Highway 50 and then west 2.3 miles on Windfall Canyon Road.

The Windfall Mine was discovered in 1908, and was operated intermittently for about 30 years as an underground operation with a cyanide vat leach facility. Around 1968, Idaho Mining Corp. acquired the property and mined the same ore body via open pit methods. Between 1975 and 1978 the Windfall Pit, and associated cyanide heap-leach piles, waste dumps, mill process building, office and laboratory were constructed. Because the ore body contains anomalous amounts of mercury, a retort was constructed to recover some mercury as a by-product. The last operator of the site was Norse Windfall Mines, Inc. BLM files indicate the site has been abandoned since 1989 and little or no reclamation has occurred. A January 19, 1993 memo from the BLM area manager stated that 67 acres of public land had been disturbed at the site. Additional disturbance exists on adjacent private land. In July 1994, the Nevada Division of Environmental Protection conducted a compliance inspection of the site and noted that unmaintained process components and materials left scattered about the property may have the potential to cause environmental damage by degrading the waters of the state.

Watershed Considerations

The Norse-Windfall Mill Site is located in the Diamond Valley hydrographic basin (see Appendix 5). Perennial springs are prolific in the mountainous region south of Eureka, and flowing springs exist at the mill site. A diversion ditch was constructed along the mill site in an effort to keep runoff from the site, however several breaches have occurred, especially along the heap leach pad. Surface drainage is intermittent because spring water infiltrates through coarse gravels, surfacing occasionally in ponds and stream segments located in the Windfall Canyon Valley. Overland drainage flows through the site and intercepts an unnamed stream that flows north through Windfall Canyon. Approximately 2 miles downstream, the stream enters the subsurface for about 1000 feet and reappears before the confluence with another unnamed stream that flows through Eureka Canyon toward the town of Eureka, approximately 4 miles away.

Within a 4 mile radius of the site, six municipal springs and one domestic well provide drinking water for Eureka. The domestic well is located about 2.8 miles northeast of the site. Water from the nearby springs is blended and pumped into 2 water tanks located just outside of Eureka. This water serves as the main water supply for the entire town, except for Diamond Valley. No threatened or endangered species are known to exist around the springs or streams.

Status of Site Characterization

The BLM authorized C. C. Johnson & Malhotra (CCJM) in association with Brown & Root Environmental (BRE) to conduct a site evaluation of the Norse Windfall Mill Site in 1995 (see

Appendix 9). Several environmental concerns were noted by the Nevada Division of Environmental Protection during a compliance inspection in 1994. In 1995, the BLM conducted a site reconnaissance and documented site conditions and confirmed the 1994 observations. CCJM and BRE conducted a subsequent review, confirming areas of concern, and identified potential sampling locations. In addition, limited receptor information was gathered to determine whether the site poses a threat to human health and the environment.

The Site Evaluation (SE) consisted of 5 separate areas:

- 1) Chemical inventory of the on-site buildings,
- 2) Surface soil/sludge sampling of stained soils,
- 3) Surface water and sediment sampling of drainage pathways across the site,
- 4) Subsurface soil sampling in the heap leach piles, and
- 5) Groundwater sampling from an on-site monitoring well.

Field activities were conducted in October 1995. A walk through inspection of all on-site buildings turned up one 50 kg container of sodium hydroxide, some cans of paint, a 55 gallon drum containing an unknown white powder (with "flux" handwritten on the side), an "empty" cyanide drum with residue, an old cyanide drum with "borax" handwritten on the side, and a 50 kg fiber drum labeled calcium hypochlorite (half full).

Six surface samples and three subsurface samples were collected. Locations, descriptions, and analyses are shown in Appendix Norse. All subsurface samples were analyzed for a suite of target analyte list (TAL) metals, total cyanide, and weak acid dissolvable (WAD) cyanide. Surface water and sediment samples were taken to determine if the drainage along the southeast side of the site has the potential for off-site migration of contaminants. Groundwater sampling was conducted to determine if the underlying aquifer was contaminated and to provide an indication of the potential for contaminant migration.

All six surface soil samples had relatively high concentrations of arsenic with three having levels over three times the background value. Mercury was over three times background in all samples. Cyanide was detected in three of the samples. Two of the samples showed lead concentrations three times background. The subsurface samples showed low levels of cyanide, and wide ranges of arsenic and lead.

A total of six surface water samples were collected from heap leachate, ponds, a tank, and site drainages. Arsenic, mercury, nickel, total cyanide and WAD cyanide were all found to exceed the Nevada Water Quality Standards. Four sediment samples were taken from surface water sites. One sample exceeded three times background for seven metals including arsenic, barium, cadmium, copper, lead, and zinc. That sample was collected from a dry ponded area on the southeast side of the heap pad. This area drains a large portion of the heap, and being in a low area, has also collected miscellaneous debris including some empty drums. The diversion ditch just downslope is breached and high water or runoff that does not evaporate migrates off-site and down the valley to lower catchment basins.

Groundwater samples show only one metal (antimony) exceeds the EPA standards for drinking

water regulations. Cyanide levels were found to be under the threshold for degradation of state waters.

In the site evaluation report, BRE concluded that several areas of concern existed at the site. They stated that the soil exposure pathway is of concern because of documented mercury, arsenic, and lead releases. Other sources of significant contamination, such as the mercury retort, carbon absorption tanks, and drum storage areas are relatively small and do not seem to have a large potential for off site migration. The potential for a release to surface waters does exist in the heap pad area. Erosion has breached containment features and tailings are clearly migrating off-site. Access to the site is unrestricted.

Land Status

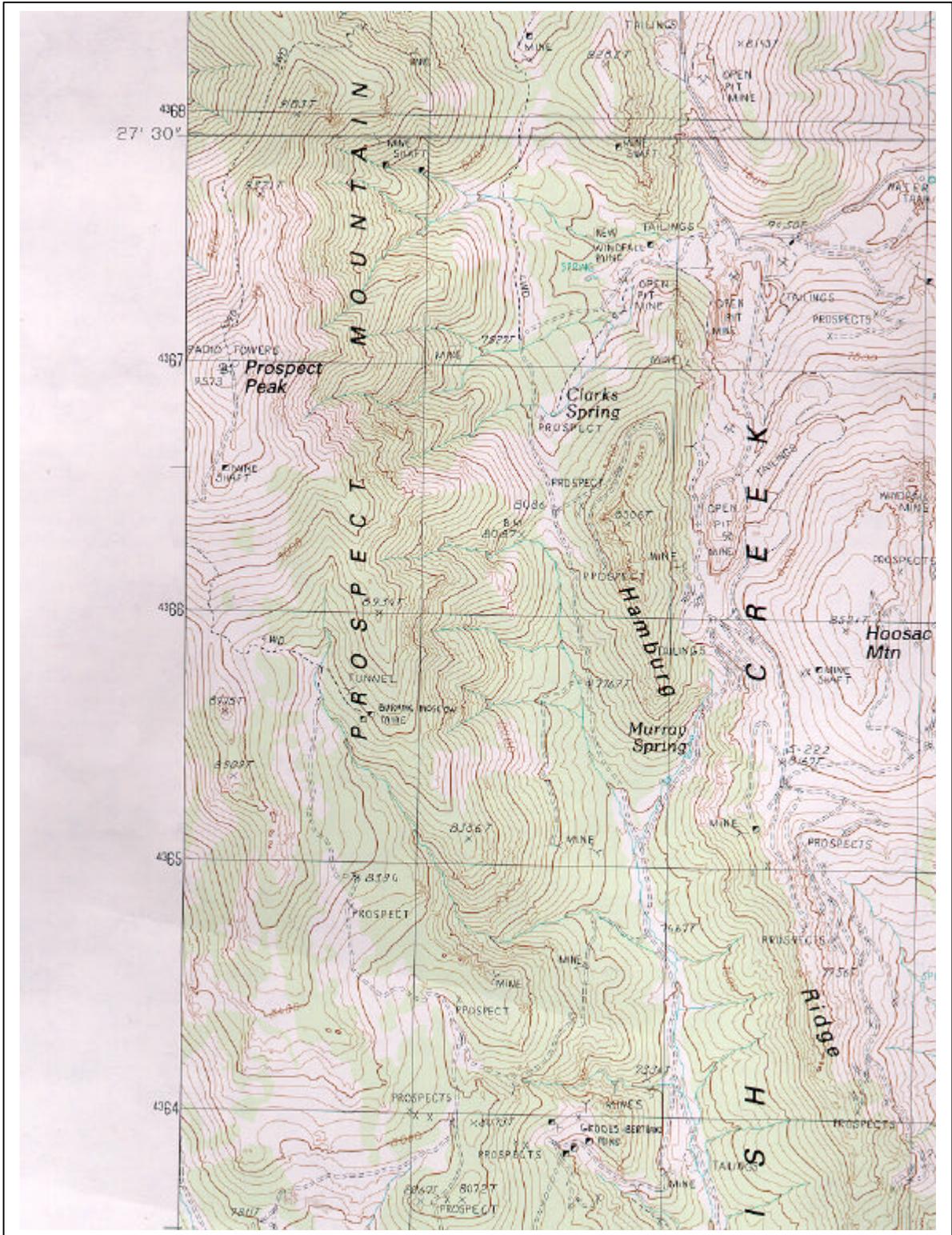
Although numerous lode claims were found to exist in the vicinity of the Norse-Windfall Mill Site, none appear to be located directly on the tailings area (see Appendix 6).

Possible Alternatives and Projected Costs

Although some site characterization has been completed, no engineering or closure plan has been designed. Further chemical evaluation of the mercury, arsenic and lead contamination will be necessary. One major consideration is the runoff from the heap leach pad and the breached tailings impoundments. Potential groundwater effects to the city of Eureka water supply is of major concern.

Task Force Recommendation

Undertake additional site characterization. Prepare engineering evaluation/cost analysis (EE/CA). Total funding for above items would be \$250,000.



Norse Windfall Site
From USGS 7.5 minute topo
"Pinto Summit, Nev."
Legal description: T. 18N R. 53 E Sec. 2

Rip Van Winkle Mine

Location and History

The Rip Van Winkle Mine is located in T37N, R53E, Section 3 and T38N R53E, Section 4, Singletree 7.5' Quadrangle. The mine is located in the Merrimac mining district, Elko County, on the west side of Lone Mountain in the Independence Mountains. The mine is approximately 25 miles northwest of Elko, and can be accessed from a dirt road off of Nevada State Highway 51.

Discovery of copper-lead-silver mineralization in the area occurred in 1866. Mines of the Merrimac district produced over \$1,000,000 of gold, silver, lead, zinc and copper between 1866 and 1948, with the bulk of production coming from the Rip Van Winkle property.

The Rip Van Winkle Mine recorded first production in 1918. It has been the only active producer since 1949 with limited production of lead, zinc and silver

through 1966. In recent years a number of companies have conducted exploration in the district for precious metals, especially in jasperoids in carbonate rocks; as well as for sediment-hosted massive sulfide deposits near the Rip Van Winkle Mine.



Watershed Considerations



The Rip Van Winkle Mine is situated in the Maggie Creek Area hydrographic basin (see Appendix 5). The mine is located at approximately 7000' above sea level. The mine dumps and tailings sit at about 6700' elevation in Coon Creek, an ephemeral stream which feeds into Maggie Creek, 10 miles to the west. Maggie Creek receives discharge from the dewatering efforts at Newmont and Barrick's mining operations. This water flows into the Humboldt River near Elko, approximately 35 miles to the south.

Status of Site Characterization

No formal site characterization for the Rip Van Winkle Mine has been done. However, a site inspection completed by BLM in 1994 exists (see Appendix 10). The mine consists of shafts and underground workings, a mill, building foundations and several cabins, waste dumps and tailing impoundments.. All are derelict. The tailings impoundments cover approximately 3 acres and containing acid-generating materials. Puddled water observed on the tailings was orange in color, and had a pH of 7.6.

Six small tailings dams were mapped in Coon Creek. Cyanide barrels were identified at the mill and on the uppermost tailings impoundment. The tailings contained both sand and silt/clay particles, and the surface of the tailings exhibited a surface crust in places as well as precipitation of salts. Vegetation on the site was sparse and in the vicinity of the tailings some plants showed signs of stress.

Land Status

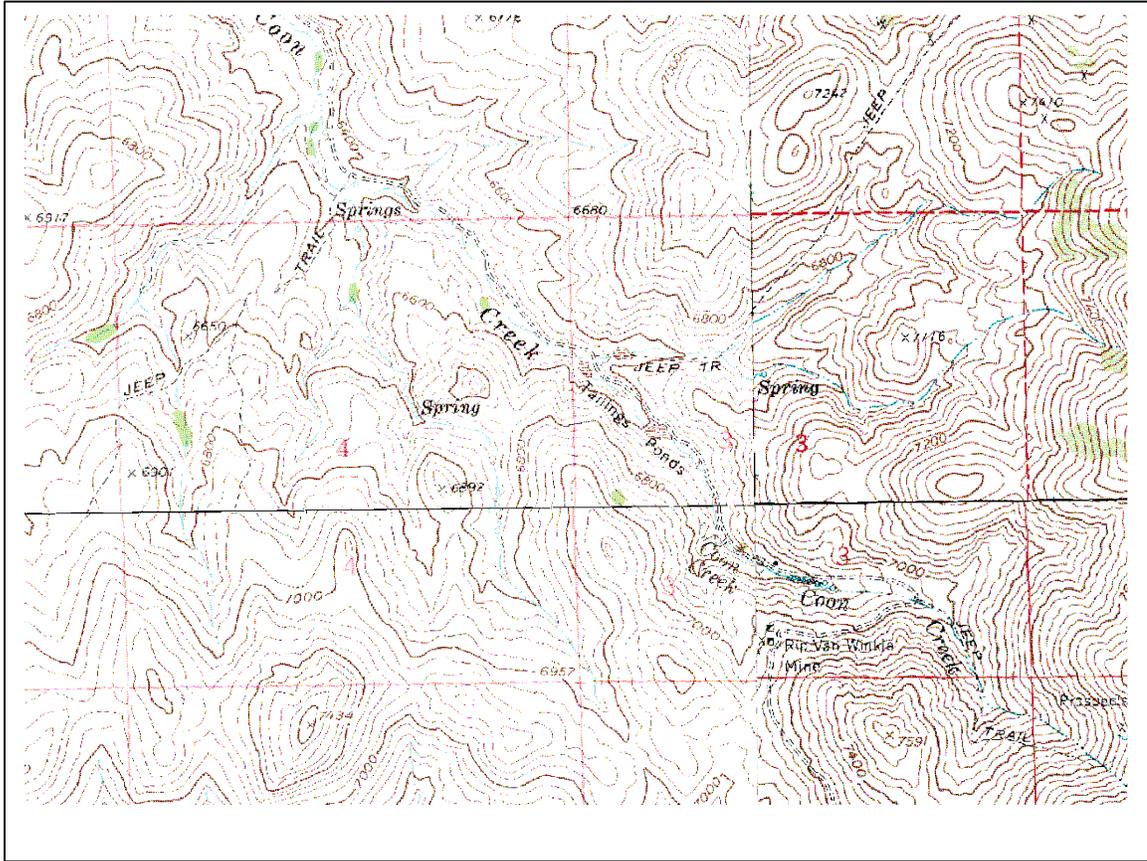
Claim research indicates that there are no current unpatented mining claim holders (see Appendix 6).

Possible Alternatives and Projected Costs

Site characterization	\$100,000
Engineering Evaluation/Cost Analysis	\$100,000
Regrade and cap tailings impoundments	\$200,000
Removal of hazardous material and site cleanup	<u>\$100,000</u>
Total	\$500,000

Task Force Recommendation

Initiate remediation and closure plan outlined above.



Rip Van Winkle Site
From mosaic of four USGS 7.5 minute topos:
Battle Mountain, Double Mountain, Elko, Tuscarora
Legal Description: T 37N R 53 E Sec. 3

Tybo Tailings Site

Location and History

The Tybo Tailings Site is located in the Tybo mining district, T6N, R50E, sections 16 and 17, Blue Jay Springs and Tybo SE 7.5' Quadrangles. It is approximately 58 miles east of Tonopah on U.S. Highway 6 and thence 6.5 miles northwest on the Central Nevada Test Site Base Camp access road.



As is typical with many older mining districts, some discrepancies exist with respect to exact dates of operation and production amounts. The tailings are the result of mining activity which began around 1866. Silver, lead, zinc, copper, mercury, and small amounts of gold were recovered. By 1877, Tybo was the second largest lead producing area in the United States

after Eureka, Nevada. Production continued on an intermittent basis until around 1940. Some very minor production occurred in the 1950's and early 1960's. Two claimants may have been reprocessing some parts of the tailings in recent years. Total recorded production from the district is valued at over \$9 million.

Watershed Considerations

The Tybo Tailings Site is located in the Hot Creek hydrographic basin (see Appendix 5). Tybo Creek flows from Tybo Canyon in the Hot Creek Range and then easterly into the Hot Creek Valley. The tailings impoundment is located just downstream from the mouth of the canyon. The actual impoundment is located in an ephemeral wash and is about 1,000 feet long and up to 600 feet wide (approximately 10-12 acres in total). The dam has been breached, allowing tailings to migrate down the creek for at least 6 miles. The tailings appear to be about 20 feet thick at the dam. The tailings are highly acidic (surface water on the tailings has a pH of 1-3), have a strong sulfur smell, and are stained brown-orange to purple, red and black. Surface water has eroded channels into the tailings. All vegetation along the migration path from the impoundment is stressed or dead for at least 3 miles downstream. West of the impoundment is a dump containing hundreds of rusted drums and debris. The dump also contains at least 6 full cyanide canisters containing weathered white powder.

Three wells exist near the tailings. The Pedro well is located about 2,000 feet southwest of the tailings, the Keystone well about 2.6 miles to the northeast, and the Tybo well about 3.8 miles to the southeast. The nearest domestic well is believed to be located 6.5 miles to the southeast, at the Central Nevada Test Site Base Camp. Wild horses have been observed in the vicinity, which raises concerns about the effect of the tailings on wildlife.



Status of Site Characterization

The BLM has developed a Sampling and Analysis Plan for the Tybo Tailings Site (see Appendix 11). In February 1995, BLM personnel and consultants visited the site and collected 27 samples for total metals analysis via Chemex Labs in Sparks, NV. Arsenic and lead ranged up to 10,000 ppm, zinc up to 7,500 ppm, and copper up to 233 ppm. At that time, the group recommended evaluating groundwater use and the habitat of threatened and endangered species. Additional recommendations included measures to prevent wildlife from drinking surface water, and restricting site access by fencing and gating. In 1998, NDOW expressed concern about the effects on plants and wildlife and groundwater. In February 1999, BLM, NDOW, and NDEP personnel visited the site to discuss plans for site characterization. These plans are in an advanced stage, with actual work scheduled to begin in the summer of 1999. Objectives for this investigation are expected to include an assessment of human and environmental risk at the site, collecting representative samples of the tailings in an effort to accurately determine the horizontal and vertical extent of the contaminants, assessing the extent of downstream migration, sampling and characterizing the mill area, sampling the material in the decaying drums in the dump, and determining the background levels of metals concentrations. If possible, the water from the nearby wells will also be sampled.

Land Status

Research indicates the presence of 4 small groups of placer claims in the area of the tailings. The latest assessment year filing for one group is 1996, and for a second and third group is 1997. Therefore, three of the four claim groups are probably not valid. Two placer claims have had assessment year filing for 1999 and may be valid (see Appendix 6).

Possible Alternatives and Projected Costs

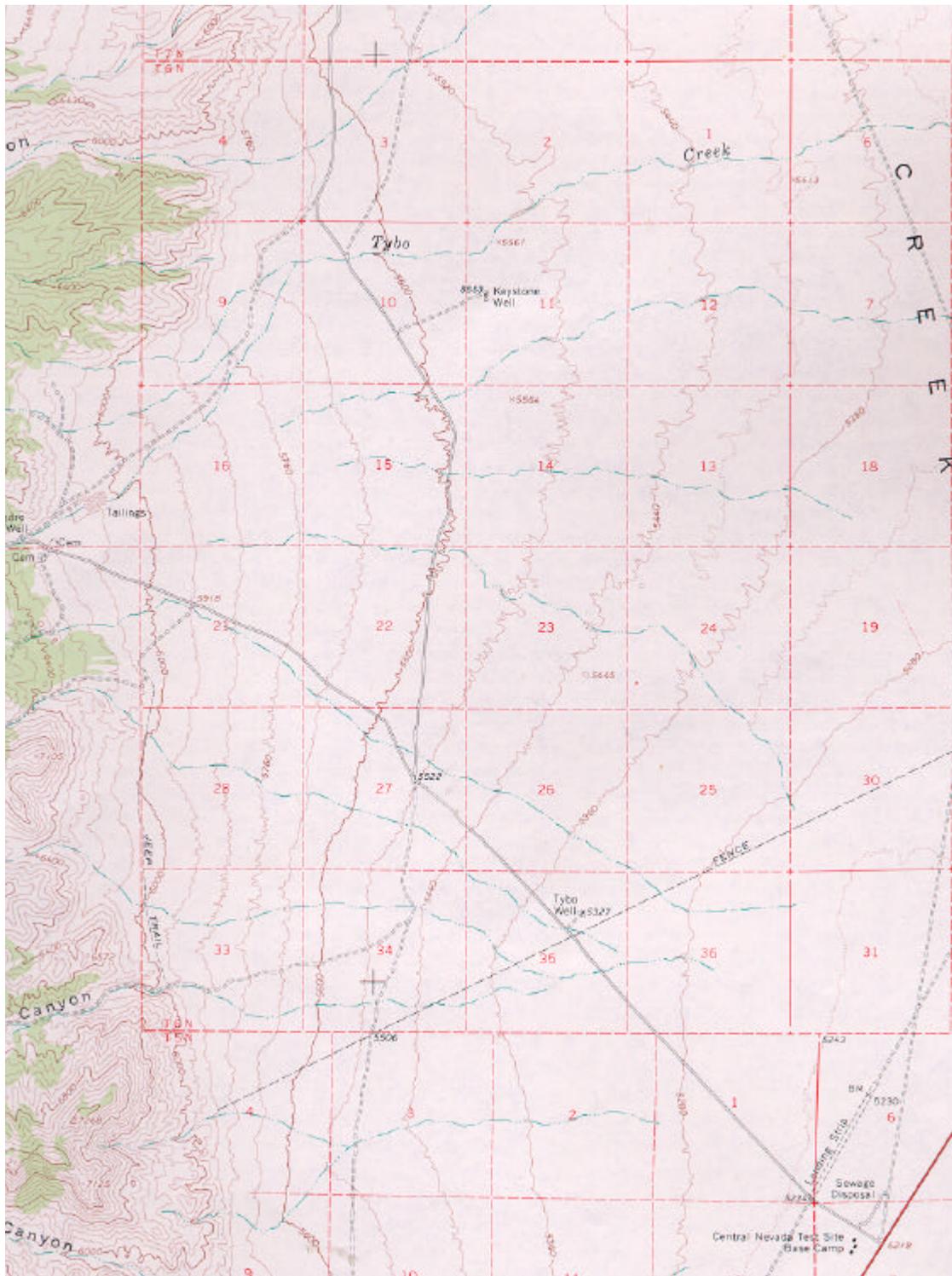
The BLM's Sampling and Analysis Plan proposed four alternatives that are currently under consideration, however no associated costs were projected.

- Removal of tailings from the flood plain and establishment of run-on controls.
- Diversion of stream around the tailings pond, establishment of run-on controls, and removal of tailings from flood plain downstream of tailings dam.
- Alternative 1 or 2 plus covering tailings pond with local soil material.
- Investigation of reprocessing the tailings for recovery of precious metal values.

Task Force Recommendation

Prepare Engineering Evaluation/Cost Analysis	\$100,000
Cap the main impoundment and create diversion channel	<u>\$200,000</u>
Total	\$300,000

Consider outwash tailings for closure in subsequent year.



Tybo Tailings Site

From USGS 15 minute topo "Tybo, Nev."
 Legal description: T 6N R 50E Sec. 16,17

Veta Grande Mine

Location and History

The Veta Grande Mine is located in T11N, R21E, in portions of sections 3, 4, 9, 10, and 15, Carters Station and Double Spring 7.5' Quadrangles. The mine is located approximately 11 miles southeast of Gardnerville, Nevada, and 0.5 miles east of U.S. Highway 395.

The Veta Grande Mine is located in the Gardnerville (Eagle) mining district. Mining occurred in the area in the late 1800s. The earliest known reference to the name Veta Grande dates to 1917. Production from the district prior to 1940 was reported to be \$29,488. Mining occurred in a very large quartz vein (over 50 feet thick, in places). The vein cuts metavolcanic rocks that are interbedded with metasediments. The vein contains silver in streaks of argentite and stephanite, and minor amounts of gold. Quartz vein material, recovered from mill tailings, has been processed into a powdery silica product of high purity and brightness (Moore, 1969).



Mineral Resource Data System

(MRDS) Record No. M035909 indicates that mine workings consisted of an inclined shaft, two tunnel levels (adits) and a large open pit. The open pit was developed in 1972 with bulk of mining occurring along the massive quartz vein. The gold and silver concentrates and silica sand produced at this time were stockpiled. A mill was planned for construction in 1982 to increase production capacity to 600 tpd. The operation was listed as an active open pit silver and gold mine with mill (gravity, concentration, and flotation) in 1983 by the Nevada State Mine Inspector's Office. The operation employed 14 people at the time. The mine was abandoned between 1987 and 1989. The operation was located on a combination of BLM lands and one patented mining claim, and was permitted by BLM under Plan of Operations Number N37-81-004P. The mine was a very small open pit operation with a cyanide vat leach facility, three solution ponds, and a tailings impoundment.

The site was used for illegal drug manufacturing operations (methamphetamine) in the early 1990s. In early 1993, the BLM contracted out to CCJM Environmental Engineers and Scientists to conduct a HAZCAT (Hazard Categorization) study of hazardous and/or toxic materials related

to the drug lab, mining, and other activities. In late 1993, a hazmat removal project was completed.

Watershed Considerations

The Veta Grande Mine is situated in the Carson Valley hydrographic basin (see Appendix 5). The mine is situated at an elevation of approximately 6,200 feet near the western flank of the Pine Nut Mountains. Washes and stream channels trend west and southwest from the mine site to a major unnamed drainage that parallels U.S. Highway 395. This drainage crosses Bodie Flat and enters the North Fork of the Carson River approximately 1.5 miles north of Horseshoe Bend. Cyanide and/or heavy metal contaminants entering streams during high runoff periods or during severe flash-flood conditions, could affect the stream waters and possibly the Carson River, some 4.5 miles to the northwest. There is good quality water flowing from an adit up-stream of the three solution ponds. The flow of water is fairly significant and, when combined with rainfall or flash flood waters, could result in the overflowing and breaching of one or more of the solution ponds.

Less than 100 yards west of the tailings is a small grove of dead pine trees whose trunks have turned a bluish color. This coloration is suspected to be the result of absorption of cyanide or copper solutions through surface or groundwater flow.



Less than 0.25 miles west of the mine is Carters Spring. It is adjacent to a number of private homes with water wells. Cyanide and heavy metals were identified in soil and groundwater. Springs and water wells have been sampled on a monthly basis for years. Domestic water wells downslope of the mine contained elevated levels of cyanide and heavy metals during the life of the mining operation and for several years after abandonment. However, as rainfall and snow melt waters have percolated through, and rinsed the tailings over the years, the cyanide and heavy metals concentrations have decreased proportionally in the wells. The well water now meets federal and state drinking water standards.

Double Spring is located nearly three miles to the southeast of the Veta Grande mine in Double Spring Flat and less than 500 feet east of U.S. Highway 395. It would be topographically impossible for surface flows to reach Double Spring from the mine. It is uncertain,

however, what groundwater impacts might occur if tailings impoundments were to breach and flood stream channels below.

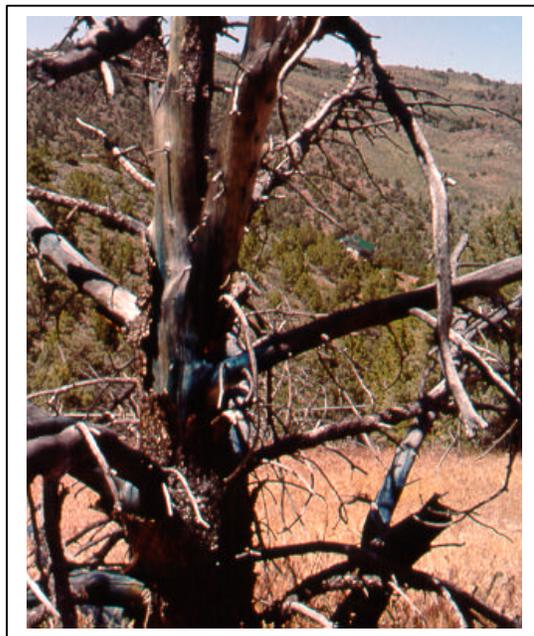
Status of Site Characterization

The EPA conducted a site assessment in 1985 to address environmental impacts and to determine if the site deserved Superfund designation (see Appendix 12). A notice to BLM from EPA Region IX, dated September 15, 1998, indicated that the Veta Grande Mine site does not warrant Federal Superfund action and has been archived. The site could be re-listed by EPA if new information is discovered.

Land Status

Current research indicates there are no active unpatented mining claims in the area (see Appendix 6). There is one patented mining claim, the Danite claim (Mineral Survey #37), in the SE 1/4, NW 1/4 and the NE 1/4, SW 1/4 of Section 10. The patented claim is currently under Douglas County trusteeship.

The area surrounding the site is comprised of a number of private parcels ranging in size from less than 3 to more than 366 acres. There are numerous parcels surrounding the Veta Grande Mine that are Bureau of Indian Affairs lands.



Possible Alternatives and Projected Costs

Site characterization sampling needs to be done on the tailings pond and the solution ponds. An engineering study of potential slope failure of the earthen dam holding the tailings impoundment needs to be undertaken. An assessment of whether the downstream residents are at risk from a dam failure also should be considered.

Regrading and capping of the tailings impoundment to prevent further water infiltration is desirable. Potentially a diversion channel around the impoundment may be necessary.

A toxicology study of the blue trees could assist in evaluation of groundwater impairment. The possibility of buried underground tanks needs to be assessed. Removal of equipment and junk that remains on-site should be accomplished.

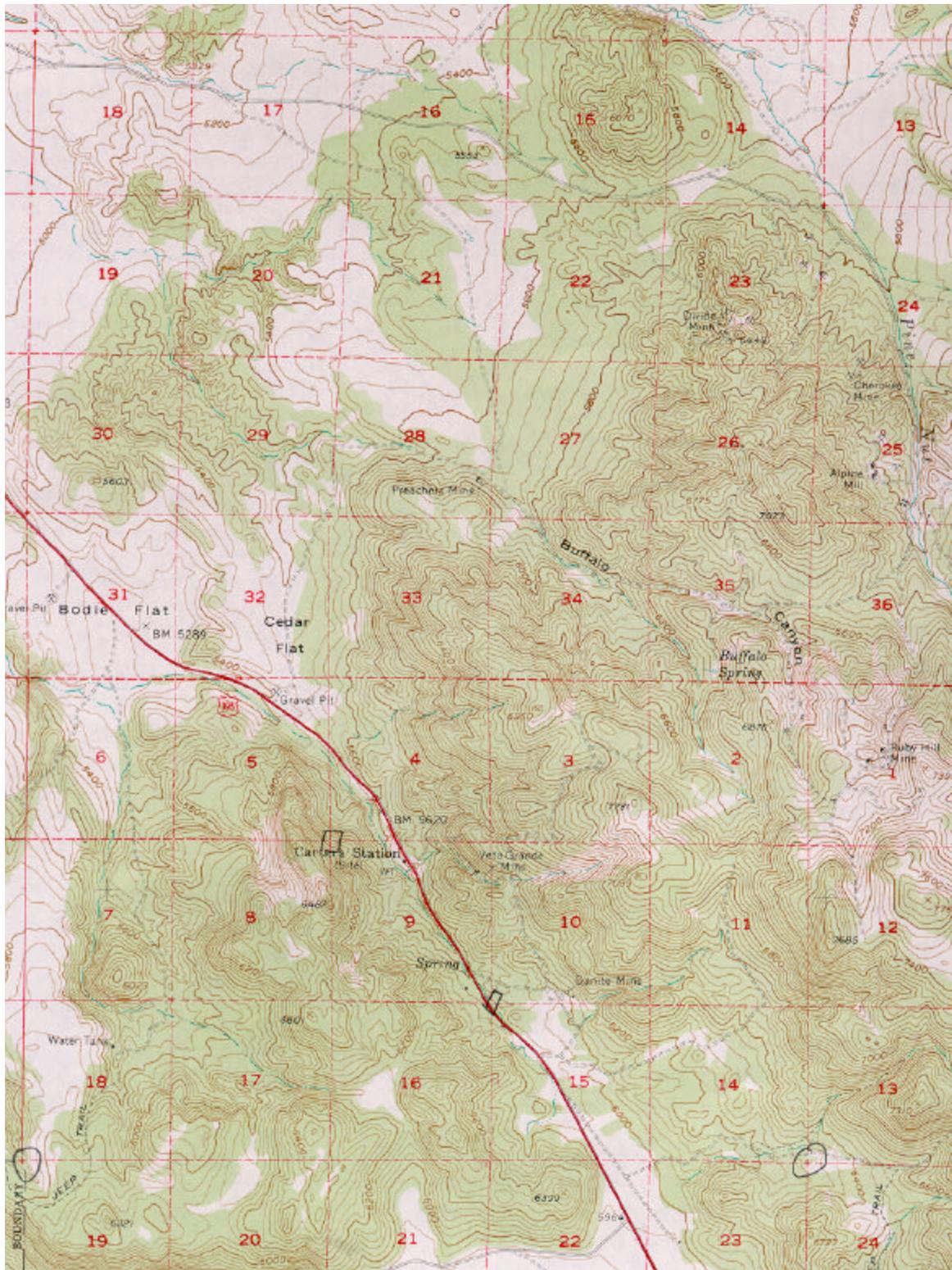
Native American concerns for the Bureau of Indian Affairs land in close proximity to the site need to be addressed. The private wells in the vicinity should continue to be monitored for cyanide and heavy metal concentrations.

Site characterization including tailings	\$50,000
Engineering study of tailings dam	\$50,000
Toxicology and ground water assessment	\$50,000
Regrade and cap tailings	\$250,000
Create diversion channel	\$50,000
Miscellaneous site cleanup	<u>\$50,000</u>
Total	\$500,000

Task Force Recommendation

Confirm the accuracy of the existing PRP search. This site has been particularly troublesome over the years. It is visible from a major highway and is easily accessible by the public. Complete all the prescribed remediation activities in FY2000.





Veta Grande Site
From USGS 15 minute topo "Mt. Siegel, Nev.- Calif"
Legal Description : T 11N R 21 E. Sec. 3.4.9.10.15

MODERATE, LOW, AND UNRANKED SITES

Moderate sites are those evaluated by the task force and found to have environmental problems, but to a lesser degree than the sites ranked high. It is hoped that the moderate and low sites will be able to be cleaned up once the sites ranked high have been addressed, subject to availability of funding.

Moderate Sites

Big Mike:

Big Mike is an abandoned copper mine with an associated heap leach pad. Heavy metal contamination has been noted leaking from the site. The possibility of groundwater contamination also exists.

Boston Mill (New Boston):

The Boston Mill consists of ore stockpiles, a heap leach pad, a pump building, and accessory ponds. Cyanide was reportedly used for less than 6 months in 1984. A water well also exists at the site. This site was originally ranked low, but changed to moderate due to concerns about the integrity of the water well.

Eagle One:

Eagle One is a mill site with ponds upstream from Lake Mead, a source of drinking water for Las Vegas. Mercury and other heavy metal contaminants are known to exist at this site, although the extent is unknown. The main concern is that a flash flood event could spread contaminants into Lake Mead.

Leadville Mine:

The Leadville Mine Site consists of several waste dumps and a one-mile streambed filled with tailings that have the potential to generate acid mine drainage and heavy metal contaminants. The creek that flows through the tailings has eroded a channel down to the original pre-mine gravels. The main concern is that rain events would dissolve metal sulfates, allowing them to flow into the stream.

Nylene Site:

The Nylene Site consists of an abandoned mill site and associated equipment, heap leach pads, and barrels of unknown materials. Nearby ponds contain water year round and an ephemeral stream is nearby. The extent of contamination is unknown.

Pyramid District:

The Pyramid District contains at least 2 adits with documented acid mine drainage. Dumps from other adits, while usually dry, have the potential to generate acid during rain events. The drainage ultimately reaches Pyramid Lake.

Seneca Gold:

The Seneca Gold Site consists of a "town" with assorted buildings, equipment, drums, a fire

assay oven with discarded cupels, and 3 man made ponds. The concern is the degree of uncertainty that exists with respect to possible contamination.

Wedekind:

The Wedekind District contains sulfide waste rock with the potential to generate acid mine drainage. The district is located within the metropolitan Reno area. People are living on private parcels on lands immediately south of the waste rock.

Low Priority Sites

Low priority sites are those judged by the task force to have a lesser degree of risk than the moderate sites. In some cases not enough information is known about the sites to adequately assess their potential risk.

American Beauty:

The American Beauty Site consists of some adits with the potential to generate acid mine drainage. The adits are located at about 8,000 feet just above Long Creek.

Argentum Mill Site:

The Argentum Mill Site contains a mill building and tailings ponds. Releases of contaminants from the tailings ponds have been documented. The contaminants, however are released into the Columbus Salt Marsh, where the naturally occurring water is of a very poor quality.

Atlanta-Standard Slag:

The main concern involves unconfined tailings which cover a relatively large area. Many active unpatented claims exist at the site. Patented claims are also believed to exist but are not confirmed at this time.

Black Beauty:

The Black Beauty Site consists of 3 to 4 acres of disturbance on a mixture of U.S. Forest Service and private lands. It does not appear that either sediment or chemical constituents mobilized from this site pose a significant risk to the environment. This site may be dropped from consideration.

Golden Ensign:

The Golden Ensign Site does not appear to pose a significant risk to the environment, and may eventually be dropped from consideration.

Mt. Hope:

Mt. Hope is a recent nominee and has not received a high degree of evaluation. Some springs are present at the site, but little else is known. The site's low ranking is subject to change.

Patsy Ann Mine:

The Patsy Ann Site has a spring that is producing acid water, however it is not known whether the acid is the result of the mining or is naturally occurring. The low ranking may change.

Powder River Mining:

The Powder River Site consists of an abandoned mill site and associated drums, buildings, trash, trailers, trenches, and a cyanide heap that had been used to leach sulfide ores. A water well is also at the site. The extent of any contamination is unknown.

Silverado Mill Site:

The Silverado Mill Site consists of a heap leach that appears to have had the cyanide and caustics removed. Residents exist within 2 miles, and 4 bird kills have been reported. The potential for contamination is unknown.

Warren Hendrix Site:

The Warren Hendrix Site consists of a relatively small (40 x 40 foot) heap leach pile. It is not known whether cyanide was ever applied. The heap needs to be tested.

West Gate Mill Site:

The West Gate Mill Site consists of an abandoned mill and unlined tailings pile. Rain events have cut erosional channels into portions of the tailings and caused them to migrate slightly towards an ephemeral stream. A few cyanide drums (some partly full) and miscellaneous junk exist. The extent of contamination, if any, is not known.

Unranked Sites

Unranked sites are those that do not meet the ranking criteria established by the task force.

Boss Mine:	Possible PRP
Buckskin:	PRP exists
Castle Peak:	Private land
National Mine:	Private land
Osage Mill:	May not be mine related
Rio Tinto:	Private land
Tuscarora:	Private land and possible PRP. Environmental concern is modern trash and garbage dumped into shafts.

BUDGET RECOMMENDATION

The task force recommends the following budget for the six high priority AML environmental sites in Nevada:

Caselton Tailings Site		
PRP Search	Included below	
Site Characterization	\$100,000	
Subtotal		\$100,000
Johnston Mill Site		
PRP search	Included below	
Site closure plan	\$50,000	
Backfilling and recontouring	\$150,000	
Plug and abandon water well	<u>\$50,000</u>	
Subtotal		\$250,000
Norse-Windfall Mill Site		
PRP search	Included below	
Site characterization	\$50,000	
Engineering Evaluation/Cost Analysis	<u>\$50,000</u>	
Subtotal		\$100,000
Rip Van Winkle Mine		
PRP search	Included below	
Site characterization	\$100,000	
Engineering Evaluation/Cost Analysis	\$100,000	
Regrade and cap tailings impoundments	\$200,000	
Removal of hazardous material and site cleanup	<u>\$100,000</u>	
Subtotal		\$500,000
Tybo Tailings Site		
PRP search	Included below	
Engineering Evaluation/Cost Analysis	\$100,000	
Cap main impoundment, create diversion channel	<u>\$200,000</u>	
Subtotal		\$300,000
Veta Grande Mine		
Site characterization including tailings	\$50,000	
Engineering study of tailings dam	\$50,000	
Toxicology and ground water assessment	\$50,000	
Regrade and cap tailings, create diversion channel	\$300,000	
Miscellaneous site cleanup	<u>\$50,000</u>	
Subtotal		\$500,000

PRP searches for all 33 sites	\$165,000	
Subtotal		\$165,000
Contract Administration and Overhead	\$500,000	
Subtotal		\$500,000
TOTAL BUDGET REQUEST		\$2,415,000

APPENDICES

1. BLM Instruction Memorandum No. NV-99-024 dated February 25, 1999.
2. BLM/USFS Draft Action Planning Document "Interagency Risk-Based Watershed Approach to Mitigating Pollution from Abandoned Mines on Federal Land" dated January, 1996.
3. Letter from BLM State Director dated February 26, 1999, asking NDOM to be lead
4. Memorandum of Understanding outlining goals and objectives of IAMLET.agency in planning effort.
5. Map of Nevada showing AML environmental sites and hydrographic basins.
6. Mining claim status for nominated AML sites.
7. Weston Report for Caselton Tailings dated 1989 with memorandum from BLM Ely Field Office.
8. Final Site Evaluation Report, Johnston Millsite, dated 1997 with memorandum form BLM Ely Field Office.
9. Caselton Tailings Site Trip Report
10. Johnston Mill Site Trip Report
11. Site Evaluation Draft Report, Norse-Windfall Millsite, Battle Mountain District, Eureka County, dated 1996.
12. Bureau of Mines Inventory form for Rip Van Winkle Mine dated June 28, 1994.
13. Sampling and Analysis Plan, Tybo Tailings, Nevada. BLM National Applied Resource Sciences Center dated 1995.
14. EPA Site Assessment for the Veta Grande Mine dated 1998.
15. Non-high priority topographic site maps
16. Nevada Abandoned Mines Data Base Compilation Report, March 1, 1996, NBMG
17. Nevada Unified Watershed Assessment and Restoration Priorities

Due to the volume of material in the appendices, this copy of the report may or may not contain the documents. Any or all of the documents may be obtained from:

Nevada Division of Minerals 400 W. King St. #106 Carson City, NV 89703 775/687-5050	Bureau of Land Management – NSO 920 1340 Financial Blvd. Reno, NV 89502 775/861-6400
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