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GREY EAGLE MINE SITE ASSESSMENT
HAPPY CAMP, CALIFORNIA

START#: 099605-006

TDD: T099603-0001

PAN: 0029-GESA-XX



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Submitted to:

Matt Mitguard
START Project Officer
Planning and Assessment Section (H-8-1)
U.S. Environmental Protection Agency
Region IX

Prepared by:
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5/31/96

Superfund Technical Assessment and Response Team
Ecology and Environment Inc.

TABLE OF CONTENTS

1.0 BACKGROUND	Page 1
2.0 FIELD ACTIVITIES	Page 2
Soil Sample Collection	Page 2
Water Sample Collection	Page 3
XRF Analysis	Page 4
3.0 CONFIRMATORY ANALYTICAL RESULTS FOR SOILS	Page 4
Soil Samples	Page 4
4.0 CONCLUSIONS	Page 4

Table 1a	Lab and XRF Data for Metals
Table 1b	Results from Laboratory Analysis of Soil and Sediment Samples
Table 2a	Results from Laboratory Analysis of Indian Creek Water Samples
Table 2b	Results from Laboratory Bioassay of Indian Creek Water Samples
Table 3	On-Site Results for Stream Sampling Events
Table 4	Analysis of Correlation Between Laboratory ICP and On-Site XRF Screening
Figure 1	Site Location Map
Figure 2	Water Sample Location Map
Figure 3	Soil and Sediment Location Map
Photo 1	Mill Pond ("MP" sampling area)
Photo 2	Edge of the Mill Pond ("LC" sampling area)
Photo 3	Leachate Stream ("LS" sampling area)
Photo 4	Sampling of the Leachate Stream
Photo 5	Collecting Soil Samples from Skip Davis' Property ("SD" sampling area)
Photo 6	Collecting Water Samples from Indian Creek

1.0 BACKGROUND

The Grey Eagle Mine Site mill/tailings pond is located five miles north of Happy Camp, Siskiyou County, California, latitude 41° 51' 27", longitude 123° 23' 54" (see Figures 1 and 2). The site is situated along Indian Creek 5 1/2 miles upstream from the Klamath River. The Grey Eagle Mine, itself, located 2 miles further up Luther Gulch Creek (see Figure 2), yielded approximately 465,000 tons of copper ore before its closure in 1945. The ore was transported to the mill/tailings pond location and extracted for copper. Between 1945 and 1965, the mill/tailings pond site was reused as a saw mill and for veneer manufacturing. No other production activity is known to have occurred at the mill/tailings pond site since 1965. Presently, the 5-10 acre site is privately owned by the Siskon Gold Corporation of Grass Valley, California. The site has an acidic leachate drainage adjacent to the mill/tailings pond and is flowing into Indian Creek. This leachate stream may have originated from past activities and has created an orange/reddish stain, increased the turbidity and may potentially endanger the wildlife and fishery in Indian Creek.

The Grey Eagle Mine may also contribute cyanide contamination into Indian Creek via Luther Gulch Creek, which flows into Indian Creek approximately 400 yards upstream from the mill/tailings pond site. Although the mill/tailings pond site has not been in use since 1965, the Grey Eagle Mine was reopened by Noranda and mined for gold and silver during 1981 and 1986. Tailings waste from the carbon-in-pulp cyanide leaching process used to extract the ore began to seep cyanide into Luther Gulch. Noranda constructed a dam at the headwaters of Luther Gulch, pumped the residual seepage back into the impoundment and capped the area to reduce the cyanide infiltration. In addition, a treatment plant was constructed at the toe of the dam to treat the cyanide contaminated water. The treatment system has effectively reduced the cyanide contamination levels. The drainage is currently monitored by the North Coast Regional Water Quality Control Board (NCRWQCB).

Members of the Karuk Indian Tribe living adjacent to and downstream from the mill/tailings pond site have brought their concerns to the U.S. Environmental Protection Agency (EPA) Indian Program Coordinator, Celia Bloomfield in 1995. After learning more about the site, Ms. Bloomfield requested assistance from the Emergency Response Section (ERS), Hazardous Waste Management Division. The EPA ERS On-Scene Coordinator (OSC) Kay Lawrence activated the Superfund Technical Assessment and Response Team (START) to perform a preliminary site assessment by collecting and screening surface and subsurface soil samples for metals with an x-ray fluorescence field instrument (XRF). Ten percent of the total soil samples were submitted to a contracted laboratory for confirmatory analysis and analyzed for California Code of Regulations Title 26 (CCFR Title 26) metals, iron, cyanide, pH, sulfides and sulfates. In addition, water samples from Indian Creek were collected to determine the environmental impact the mill/tailings pond and the Grey Eagle Mine might have on Indian Creek. The water samples were analyzed by a contracted laboratory for static 96-hour bioassay toxicity test, CCFR Title 26 metals, iron, cyanide, turbidity, alkalinity and sulfates.

Prior to this assessment, the START prepared a Quality Assurance Sampling Plan (QASP). The QASP proposed the collection of surface and subsurface soil samples from approximately two feet below ground surface (bgs). In addition, water samples from five locations along Indian Creek were predetermined. The QASP further detailed the sampling objectives, screening methodologies and standard procedures for the preliminary assessment.

2.0 FIELD ACTIVITIES

On April 17, 1996, START members Guevarra, Mahony, Whitaker, OSC Lawrence and EPA representative John Jeros, coordinated with Dave Evans (NCRWQB), Polly Haesig (Department of Agriculture Forest Service), Bill Trip and Bob Rhode (Karuk Tribe Representatives) and David Lawler (Siskon Gold Corporation) for a tour of the site. Dave Evans lead a preliminary site reconnaissance and a tour of the Noranda Grey Eagle mine treatment facility. After the field reconnaissance, the soil sampling effort was divided into four main areas; the mill/tailings pond, the outer edge, the leachate stream and the multi-colored edge of the mill/tailings pond (see Figure 3). Soil sampling efforts were focused in these four areas of the mill/tailings pond site.

On the following day, START members Guevarra, Whitaker, OSC Lawrence and EPA representative Jeros collected water and sediment samples along Indian Creek in five predetermined locations (see Figure 2). Conductivity, pH and temperature were measured at the sample locations during collection.

On April 19, 1996 START members Guevarra and Whitaker collected soil samples from Skip Davis' property adjacent to the site and additional sediment samples found in a nearby irrigation ditch which flows past the mill/tailings pond and through Skip Davis' property (see Figure 3).

Soil Sample Collection

A total of 43 soil and sediment samples were collected (see Figures 2 and 3 for locations). Four of the 43 samples were subsurface samples collected one foot below ground surface (bgs). The four subsurface samples were biased towards possible contaminated areas. Soil samples were labeled according to the four areas:

- Samples on the outer edge of the site were labeled "OE."
- Samples collected in the mill/tailings pond were labeled "MP."
- Samples collected along the side of the mill/tailings pond near the leachate stream were labeled "LC."
- Sediment samples collected in the leachate stream were labeled "LS".

As sampling continued additional samples were collected to better characterize the site. The additional samples were labeled accordingly:

- Colored or stained soils were labeled with "TLS" followed by a color code, ie. "YO" meaning yellow orange, and "G" for grey.
- Samples from a trench which flowed off the mill/tailings pond and into the leachate stream were labeled with a "T", followed by a "G" for grey and "OB" for orange brown.
- Two sediment samples were collected along the leachate stream from artesian springs which released groundwater into the stream. These spring samples were labeled SP-1 and SP-2.
- Samples collected on Skip Davis' property were labeled with an "SD" prefix.
- A background sample was collected across Indian Creek road and labeled "BKG-1".

The label methodology deviated from the QASP to better identify sample locations in the field. As detailed in the QASP, the START collected soil samples using dedicated trowels and ziplock bags. Subsurface samples were collected with dedicated augers, but only down to a foot bgs due to soil refusal. Due to rain and snow during sampling, the samples were dried overnight at 120 C° before XRF analysis. Table 1a summarizes the XRF and lab results for the collected samples.

Nine soil samples, including a duplicate sample, a background sample and one sample collected from Skip Davis' property were sent to Lockheed Environmental Laboratory in Las Vegas, Nevada for confirmatory analysis. The remaining six samples were based on high and low XRF results for arsenic. The "TLS-G" sample was chosen to determine if the soil color correlated with higher metal concentrations. Inductively Coupled Plasma Spectroscopy for metals, EPA Method 6010, was conducted on all samples. In addition, the soils were analyzed for pH, sulphate, sulfide and cyanide (see Table 1b).

Water Sample Collection

Five samples were collected along Indian Creek (see Figure 2). The samples were labeled "IC" and sent to Lockheed Environmental Laboratory for analysis on static 96-hour bioassay, metals, sulfates, alkalinity, pH, turbidity and cyanide. The sample IC-3 was duplicated and relabeled IC-6. Table 2a and 2b summarizes the lab results for the aqueous samples. In addition, conductivity, pH and temperature of the water was measured during sampling. Table 3 summarizes the on-site results. All five samples revealed similar results except the leachate stream sample IC-3. The sample IC-3 had a low pH, high turbidity and elevated sulphate concentration. Compared to the other four samples, on-site analysis had higher conductivity and temperature readings with lower pH for IC-3. Iron, copper, cobalt, zinc and nickel were magnitudes higher in concentrations for IC-3 with arsenic being one ug/l greater than the other samples. The 96-hour bioassay revealed a 100% fish kill after 24 hours for IC-3 even after the sample was adjusted to pH 7. The other samples had no effects on

the rainbow trout fingerlings. Cyanide was not detected in any of the samples.

XRF Analysis

The field XRF analysis indicate elevated levels of iron, arsenic, zinc and copper in the "MP", "LC", "OE", "SP" and colored soils. No elevated levels of arsenic was found in sediment samples taken from the leachate stream (IC-LS-1, LS-RC, LS-LC) or Indian Creek (IC-1 sed, IC-4 sed, IC-5 sed). Due to the presence of extremely high levels of iron, spectral interference can be expected with other analytes and lead to inaccurate results for arsenic and lead. As the samples were oven dried, any mercury which may have been present was vaporized. Therefore, all XRF generated mercury data can not be used as viable data. See section 3.0 (Confirmatory Analytical Results for Soil) for data correlation between the contracted laboratory and the XRF.

3.0 CONFIRMATORY ANALYTICAL RESULTS FOR SOILS

Soil Samples

A comparison between the laboratory analytical results and the field analytical results are listed in Table 1a.

The XRF and lab data were correlated using linear regression and calculating the r-value (see Table 4). The chrome and cadmium data sets which had an r- value less than 0.60 are not considered to be correlated. Therefore, XRF data for chrome and cadmium can not be used as viable data. Nickel, selenium, molybdenum, lead, antimony and silver did not have quantifiable data sets to calculate the r-value. However, the laboratory soil results reveal soil concentrations which are below the XRF detection limits. Therefore, data for nickel, selenium, molybdenum, lead, antimony and silver is qualified as estimated (j). XRF data for iron, cobalt, copper, zinc, arsenic and barium are correlated since they have r-values greater than 0.60. However, the r-value does not reveal if the data is biased high or biased low. Bias was calculated by assuming the laboratory data as the true value, then calculating the average percent difference between the two sets of data points. Table 4 states the r-values and the biases for each analyte.

4.0 CONCLUSIONS

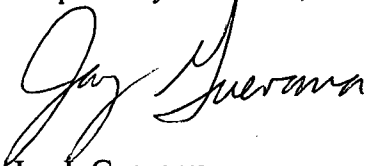
The START collected surface and subsurface samples throughout the mill/tailings pond area. Field analytical XRF data identified high concentrations of arsenic, iron, copper and zinc in the mill/tailings pond ("MP" samples) and on the edges of the mill/tailings pond ("LC" samples). Arsenic was present at the outer edges of the mill pond ("OE" samples). The grey colored soils contained high levels of copper and iron, while the yellow-orange and orange-brown colored soils were moderately contaminated with arsenic.

Leachate stream sediment samples ("LS" samples), had iron concentrations 2 to 5 times greater than sediment samples found in Indian Creek and samples collected in the mill/tailings pond. Leachate stream arsenic concentration was found to be below 100 mg/kg with all other analytes at or below the XRF detection limits. Keep in mind that high levels of iron may interfere with arsenic's spectrum. However, the two artesian spring samples (SP-1 and SP-2) had arsenic concentrations around 450 mg/kg which may suggest that arsenic is being released into the leachate stream. An aqueous sample collected from the leachate stream (sample IC-3) had a low pH, high sulphate content and high turbidity. Sample IC-3 had iron, nickel and zinc at greater concentrations than the maximum contaminant levels for "Primary Standards" or "Secondary Standards" in drinking water stated in Title 22 Article 4 section 64431 (a) and 64449 (a). The 96-hour bioassay study determined that the leachate stream is not capable of sustaining trout fingerlings and possibly most aquatic wildlife. A lethal concentration study was not performed.

Indian Creek samples, IC-1, IC-2, IC-4 and IC-5 were consistently identical except for IC-4 which had slightly higher iron and zinc concentrations. IC-4 was just downstream from the confluence of the leachate stream and Indian Creek. In addition, the conductivity of the water at IC-4 was slightly higher and the pH was slightly lower. This suggests that the leachate stream has a slight impact on Indian Creek, but any effect is diluted before IC-5. Local representatives stated that the creek was flowing at an average rate and could substantially increase during periods of rain. Likewise, during the summer period, Indian Creek will decrease in flow and could be impacted by the leachate stream. The leachate stream was assumed to follow the same fluctuation pattern as Indian Creek.

This completes all START activities under this Technical Direction Document. If you have any further questions regarding this report, please do not hesitate to contact the San Francisco office.

Respectfully submitted,



Jay J. Guevarra
Superfund Technical Assistance and Response Team Member

cc: Kay Lawrence, OSC
File

Table 1a
Soil and Sediment Metal Concentrations (mg/kg)
Determined by On-Site XRF and Laboratory ICP Analysis
PAN: 0029GESAXX TDD: 09-9603-0001

Note: Values in paranthesis indicate XRF detection limit.

SAMPLE	Cr (<550)		Fe (<2,500)		Co (<500)		Ni (<150)		Cu (<100)		Zn (<110)		As (<60)	
	XRF	ICP	XRF	ICP	XRF	ICP	XRF	ICP	XRF	ICP	XRF	ICP	XRF	ICP
BCKGRD	1,480	170	91,000	36,100	590	37.7	860	295	nd	56.7	150	55.2	nd	1
IC-1 SED	1,150		43,610		nd		880		nd		nd		nd	
IC-4 SED	2,070		58,360		560		780		nd		129		nd	
IC-5 SED	950		43,580		nd		740		nd		nd		nd	
IC-LS-1	1,400	356	173,000	56,900	530	28.3	480	396	nd	80.1	167	88	nd	2.7
LC-1	nd	36.5	132,400	109,000	nd	266	nd	23.3	1,010	1,460	nd	62.8	512	390
LC-2	nd		138,900		1,010		nd		nd		nd		950	
LC-3	nd		111,600		nd		nd		nd		nd		967	
LC-4	nd		123,700		1,360		nd		nd		nd		819	
LC-5	nd		109,200		750		nd		nd		124		879	
LC-6	nd		114,500		nd		370		111		116		nd	
LC-7	nd	56.7	132,400	174,000	nd	404	nd	36.1	1,010	1,390	nd	90.8	512	699
LS-C SED	1,140	122	499,300	416,000	nd	8.5	nd	36.7	nd	133	nd	87.5	101	21.1
LS-LC SED	nd		510,300		890		nd		nd		109		nd	
LS-RC SED	3,390		114,500		nd		370		nd		216		nd	
MP-1	nd		180,200		nd		nd		nd		156		751	
MP-2	nd		164,500		1,110		nd		205		118		719	
MP-3	nd		173,000		1,230		nd		384		191		1,196	
MP-3-1	nd		141,400		1,600		nd		1,650		337		511	
MP-4	nd		149,500		940		nd		118		124		538	
MP-5	nd		155,800		nd		nd		224		319		491	
MP-5-1	nd		133,300		670		nd		476		195		503	
MP-6	nd		107,600		770		nd		139		174		283	
MP-6-1	nd	156	160,300	232,000	1,510	877	nd	53.6	2,320	3,640	936	1250	819	1,150
MP-IRR SED	nd		55,730		nd		222		3,850		1,412		nd	
OE-1	257	207	116,300	108,000	644	12.4	nd	101	88	146	152	100	447	302
OE-2	nd		133,800		670		nd		nd		166		373	
OE-3	nd		129,800		530		nd		nd		123		483	
OE-4	nd		180,100		730		nd		nd		107		990	
OE-5	nd		97,800		nd		nd		nd		130		290	
OE-5-1	nd		78,100		597		201		416		320		137	
OE-6	nd		131,600		1,300		nd		nd		193		369	
OE-7	1,020		44,200		nd		517		nd		198		nd	
SD-1	nd		47,420		nd		nd		3,920		1,840		nd	
SD-2	nd		36,440		nd		nd		435		379		nd	
SD-HOUSE	nd	44.8	47,850	23,900	nd	79.1	nd	74.7	3,420	2,540	1,428	999	nd	3.3
SDN	nd		58,580		nd		nd		nd		nd		751	
SD-STRM SED	nd		32,580		nd		nd		1,805		756		nd	
SP-1 SED	930		93,800		860		nd		345		159		459	
SP-2 SED	nd		648,400		5,200		nd		nd		211		444	
TG	nd		130,300		530		nd		1,430		271		571	
TLS-G-NW	nd	2.3	134,600	149,000	1,130	378	nd	26.1	1,520	2,560	161	27.5	392	371
TLS-YO-NW	nd		96,000		890		nd		nd		150		649	
T-OB	580		85,200		910		nd		nd		187		249	

Table 1a continued
Soil and Sediment Metal Concentrations (mg/kg)
Determined by On-Site XRF and Laboratory ICP Analysis

PAN: 0029GESAXX TDD: 09-9603-0001

Note: Values in paranthesis indicate XRF detection limit.

SAMPLE	Se (<NA)		Mo (<100)		*Hg (<NA)		Pb (<40)		Cd (<120)		Sb (<50)		Ba (<30)		Ag (<80)	
	XRF	Lab	XRF	Lab	XRF	Lab	XRF	Lab	XRF	Lab	XRF	Lab	XRF	Lab	XRF	Lab
BCKGRD	nd	0.67	nd	0.22	n/a	0.12	nd	6.2	126	0.22	nd	0.22	327	77.5	nd	0.22
IC-1 SED	nd		nd		n/a		nd		nd		nd		186		nd	
IC-4 SED	nd		nd		n/a		nd		nd		nd		237		124	
IC-5 SED	nd		nd		n/a		nd		nd		nd		199		nd	
IC-LS-1	nd	0.75	nd	0.36	n/a	0.13	nd	1.9	257	0.25	nd	0.25	259	16.2	nd	0.25
LC-1	nd	32.4	nd	11.5	n/a	5.9	43	48	172	0.28	77	22.2	nd	11.1	nd	3.3
LC-2	nd		nd		n/a		nd		nd		72		nd		nd	
LC-3	nd		nd		n/a		nd		219		68		58		nd	
LC-4	nd		15		n/a		nd		nd		nd		66		nd	
LC-5	nd		nd		n/a		nd		nd		nd		73		nd	
LC-6	nd		9.3		n/a		36		165		78		102		nd	
LC-7	nd	43.4	nd	9.4	n/a	5.1	43	36.8	172	0.28	77	14.8	nd	18.2	nd	2.6
LS-C SED	nd	1.1	nd	0.53	n/a	0.17	nd	0.69	130	0.37	nd	0.37	73	8.2	nd	0.37
LS-LC SED	nd		nd		n/a		nd		220		nd		132		nd	
LS-RC SED	nd		nd		n/a		nd		157		nd		226		nd	
MP-1	nd		nd		n/a		nd		nd		nd		nd		nd	
MP-2	nd		nd		n/a		nd		nd		nd		nd		nd	
MP-3	nd		9.9		n/a		nd		nd		67		nd		nd	
MP-3-1	nd		nd		n/a		nd		nd		nd		nd		nd	
MP-4	nd		nd		n/a		nd		147		nd		41		nd	
MP-5	nd		nd		n/a		nd		nd		nd		96		nd	
MP-5-1	nd		nd		n/a		nd		nd		nd		nd		nd	
MP-6	nd		nd		n/a		nd		nd		82		nd		nd	
MP-6-1	nd	52.8	nd	5.8	n/a	2.5	nd	33.9	nd	1.5	100	6	nd	3.9	nd	1.7
MP-IRR SED	nd		nd		n/a		nd		nd		nd		296		nd	
OE-1	nd	13.5	nd	2.1	n/a	1.5	nd	19.7	nd	0.27	nd	1.7	161	137	nd	0.75
OE-2	nd		nd		n/a		17		92		23		109		22	
OE-3	nd		nd		n/a		nd		nd		20		140		nd	
OE-4	nd		nd		n/a		nd		nd		nd		72		nd	
OE-5	nd		nd		n/a		nd		174		nd		291		nd	
OE-5-1	nd		nd		n/a		nd		nd		nd		305		nd	
OE-6	nd		nd		n/a		nd		nd		nd		127		nd	
OE-7	nd		nd		n/a		nd		nd		nd		129		nd	
SD-1	nd		nd		n/a		nd		nd		nd		382		nd	
SD-2	nd		nd		n/a		nd		nd		nd		281		nd	
SD-HOUSE	nd	0.74	nd	0.25	n/a	0.11	nd	7.7	nd	1.6	nd	0.25	468	97.5	100	0.25
SDN	nd		9.1		n/a		nd		nd		nd		69		nd	
SD-STRM SEI	nd		nd		n/a		nd		nd		nd		395		nd	
SP-1 SED	nd		nd		n/a		nd		nd		nd		177		nd	
SP-2 SED	nd		nd		n/a		nd		nd		nd		nd		nd	
TG	nd		12		n/a		nd		132		97		nd		nd	
TLS-G-NW	nd	38.7	nd	6.6	n/a	5.2	nd	28.8	135	25	nd	21.2	nd	5	nd	2.8
TLS-YO-NW	nd		nd		n/a		nd		147		80		nd		nd	
T-OB	nd		16		n/a		nd		184		nd		nd		nd	

* Mercury data is n/a because samples were oven dried causing Hg vaporization.

Table 1b**Results from Laboratory Analysis of Soil and Sediment Samples**

PAN: 0029GESAXX

TDD: 09-9603-0001

Sample	pH	Sulphate mg/kg	Sulfide mg/kg	CN mg/kg
BKG-1	6.8	0.82	<14	<0.29
LS-C	2.9	1300	<23	<0.47
MP-6-1	3.5	750	<16	<0.33
OE-1	3.3	310	<16	<0.34
TLS-G	2.9	560	<15	<0.32
LC-1	2.8	1000	<17	<0.35
LC-7	2.9	810	<18	<0.37
IC-LS	4.5	180	<16	<0.32
SD-House	6.7	1.5	<15	<0.31

Table 2a**Results from Laboratory Analysis of Indian Creek Water Samples**

Sample	pH	Turbidity NTU	Sulphate mg/l	Alkalinity mg/l as CaCO ₃	CN mg/l	Sb ug/l	As ug/l	Ba ug/l	Be ug/l	Cd ug/l	Cr ug/l	Co ug/l
IC-1	7.8	0.91	1.1	45	<0.005	1	2	6.4	1	1	6.2	1
IC-2	7.8	1.4	2.8	52	<0.005	1	2	7.3	1	1	7.5	1
IC-3	3.1	560	1400		<0.005	1.4	3.2	13.1	1	1.2	34.1	1640
IC-4	7.3	2.6	8.1	50	<0.005	1.8	2	6.8	1	1	5.5	6.9
IC-5	7.7	1.3	3.1	53	<0.005	1	2	7.4	1	1	7	1.4
IC-6*	3.1	710	1400		<0.005	1	3.6	12.8	1	1.2	33.9	1620

Table 2a continued

Sample	Cu ug/l	Fe ug/l	Pb ug/l	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Tl ug/l	V ug/l	Zn ug/l	Mo ug/l
IC-1	2.0	89.6	1	0.2	8.1	3	1.1	1	2	5.2	1
IC-2	3.8	146	1	0.2	8.5	3	1	1	2	7.5	1
IC-3	828	398,000	1	0.2	648	4	1.7	1	2	7620	1
IC-4	5.1	1,570	1	0.2	12	3	1	1	2	30.6	1
IC-5	2.1	354	1	0.2	9.3	3	1	1	2	11.6	1
IC-6*	818	388,000	1	0.2	637	4.6	1.4	1	2	7610	1

* IC-6 is a duplicate sample of IC-3

Table 2b**Results from Laboratory Bioassay of Indian Creek Water Samples**

Sample	0 hours	24 hours	48 hours	72 hours	96 hours	LC 50	Toxicity Units
Control	20	20	20	20	20		
IC-1	20	20	20	20	20	>100%	<1
IC-2	20	20	20	20	20	>100%	<1
IC-3	20	0	0	0	0	<100%	>1
IC-4	20	20	20	20	20	>100%	<1
IC-5	20	20	20	20	20	>100%	<1

TABLE 3
ON-SITE RESULTS FOR STREAM SAMPLING EVENTS
 PAN: 0029GESAXX TDD: 09-9603-0001

Sample	Location	Conductivity mU/cm	Temperature C°	pH
IC 5	Indian Creek Swimming hole	0.045	7.0	7.10
IC 4	Indian Creek Sample point 4	0.198	6.4	6.28
	Indian Creek Sample point 4	0.077	6.0	7.23
	Indian Creek Sample point 4	0.076	6.0	7.10
	Indian Creek Sample point 4	0.074	6.1	7.20
IC 3	Indian Creek Sample point 3	1.287	9.7	3.56
	Indian Creek Sample point 3	1.261	9.4	3.68
LS	In leachate stream near right channel	1.688	10.3	3.40
MP	Corner of mill pond	1.696	10.1	3.42
	Corner of mill pond	1.561	14.2	3.33
	Water in mill pond	0.040	11.4	5.90

Table 4
Analysis of Correlation Between Laboratory ICP
and On-Site XRF Metal Concentrations
 PAN: 0029GESAXX TDD: 09-9603-0001

Analyte	Linear Regression Coefficient, R	Comments
Cr	0.17	XRF Cr data is rejected as there is no correlation between the lab and on-site results
Fe	0.89	There is correlation between the lab and the on-site Fe data. The XRF results are not biased in a particular direction
Co	0.98	There is correlation between the lab and the on-site Co data, however the XRF gave results which were biased high by approximately 1721%
Ni		Linear regression was not determined due to there being an insufficient number of samples with a Ni concentration above the LOD of the XRF, therefore XRF data is qualified (j)
Cu	0.63	There is some correlation between the lab and the Cu on-site data, however the XRF gave results which were biased low by approximately 20%
Zn	0.91	There is correlation between the lab and the on-site Zn data, however the XRF gave results which were biased high by approximately 136%
As	0.94	There is correlation between the lab and the on-site As data. The XRF results are not biased in a particular direction
Se		Linear regression was not determined due to there being an insufficient number of samples with a Se concentration above the LOD of the XRF, therefore XRF data is qualified (j)
Mo		Linear regression was not determined due to there being an insufficient number of samples with a Mo concentration above the LOD of the XRF, therefore XRF data is qualified (j)
Hg		On-site Hg data was rejected as the soil/sediment samples were oven dried
Pb		Linear regression was not determined due to there being an insufficient number of samples with a Pb concentration above the LOD of the XRF, therefore XRF data is qualified (j)
Cd	0.30	XRF Cd data is rejected as there is no correlation between lab and on-site results
Sb		Linear regression was not determined due to there being an insufficient number of samples with a Sb concentration above the LOD of the XRF, therefore XRF data is qualified (j)
Ba	0.90	There is correlation between the lab and the on-site Ba data, however the XRF gave results which were biased high by approximately 747%
Ag		Linear regression was not determined due to there being an insufficient number of samples with a Ag concentration above the LOD of the XRF, therefore XRF data is qualified (j)

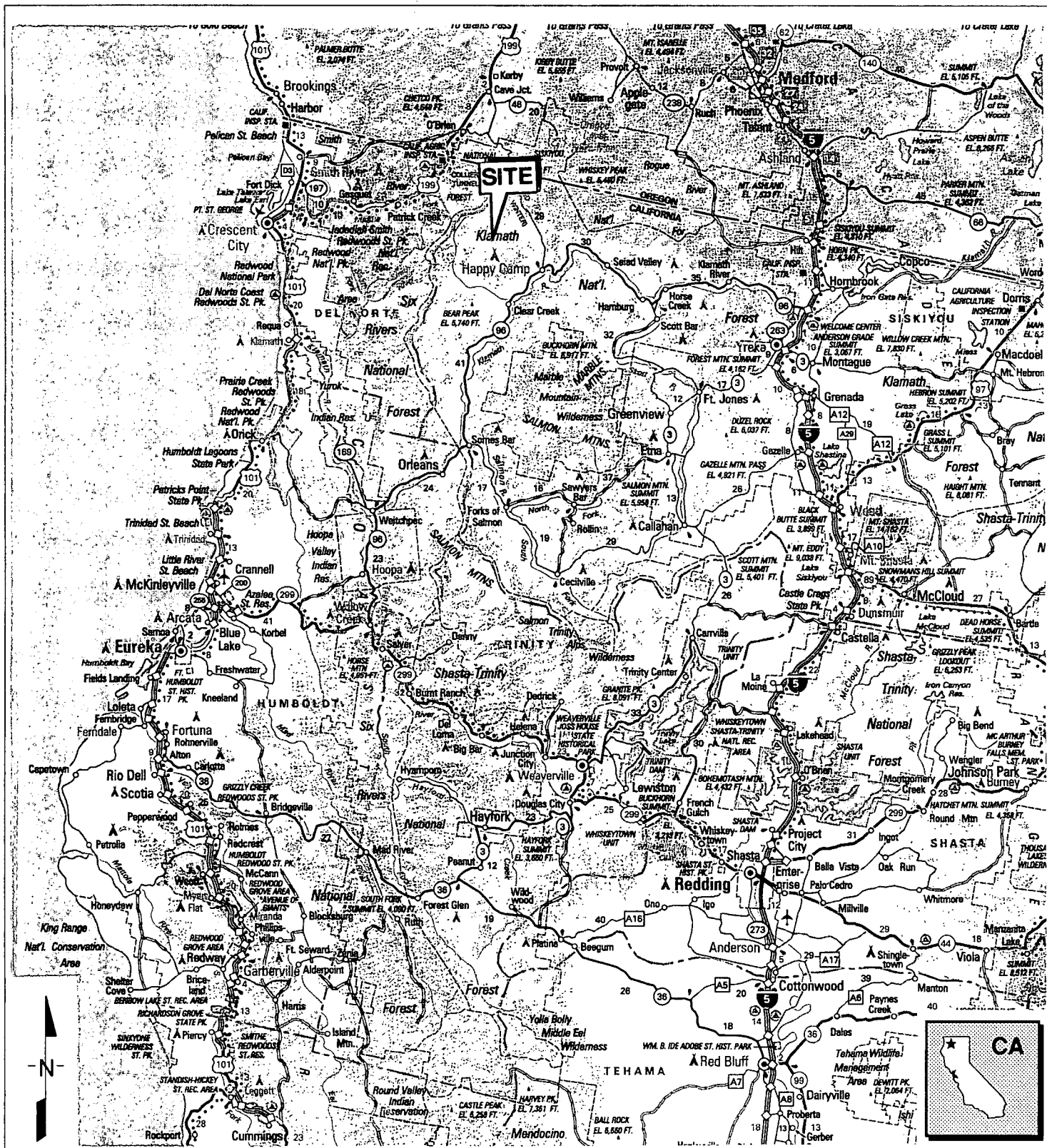


Figure 1

SITE LOCATION MAP
Grey Eagle Mine Site Assessment
 Happy Camp, California
 PAN: 0029GESAXX TDD: 09-9603-0001

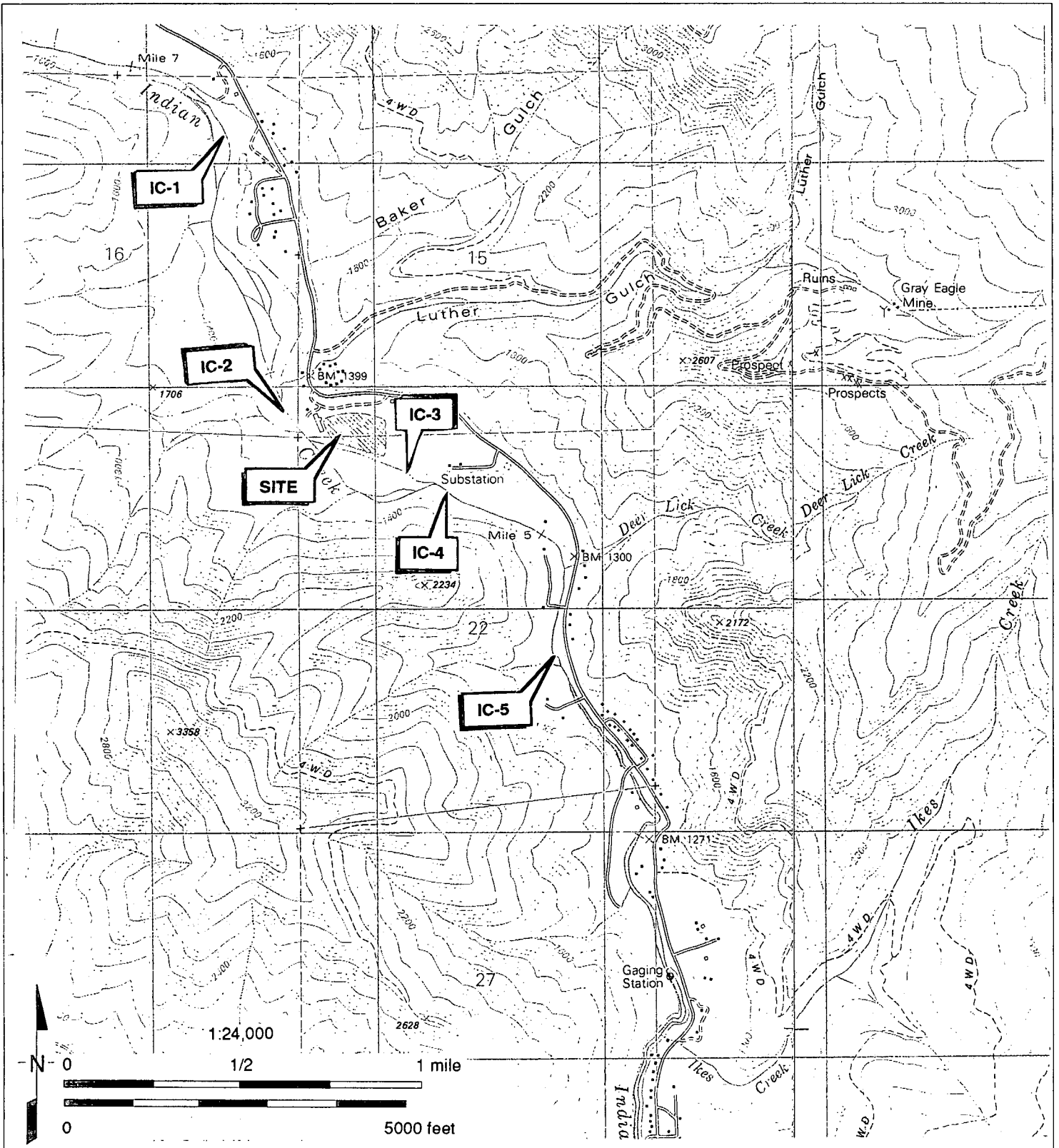


Figure 2
WATER SAMPLE LOCATION MAP
Gray Eagle Mine Site Assessment
Happy Camp, California
PAN: 0029GESAXX TDD: 09-9603-0001

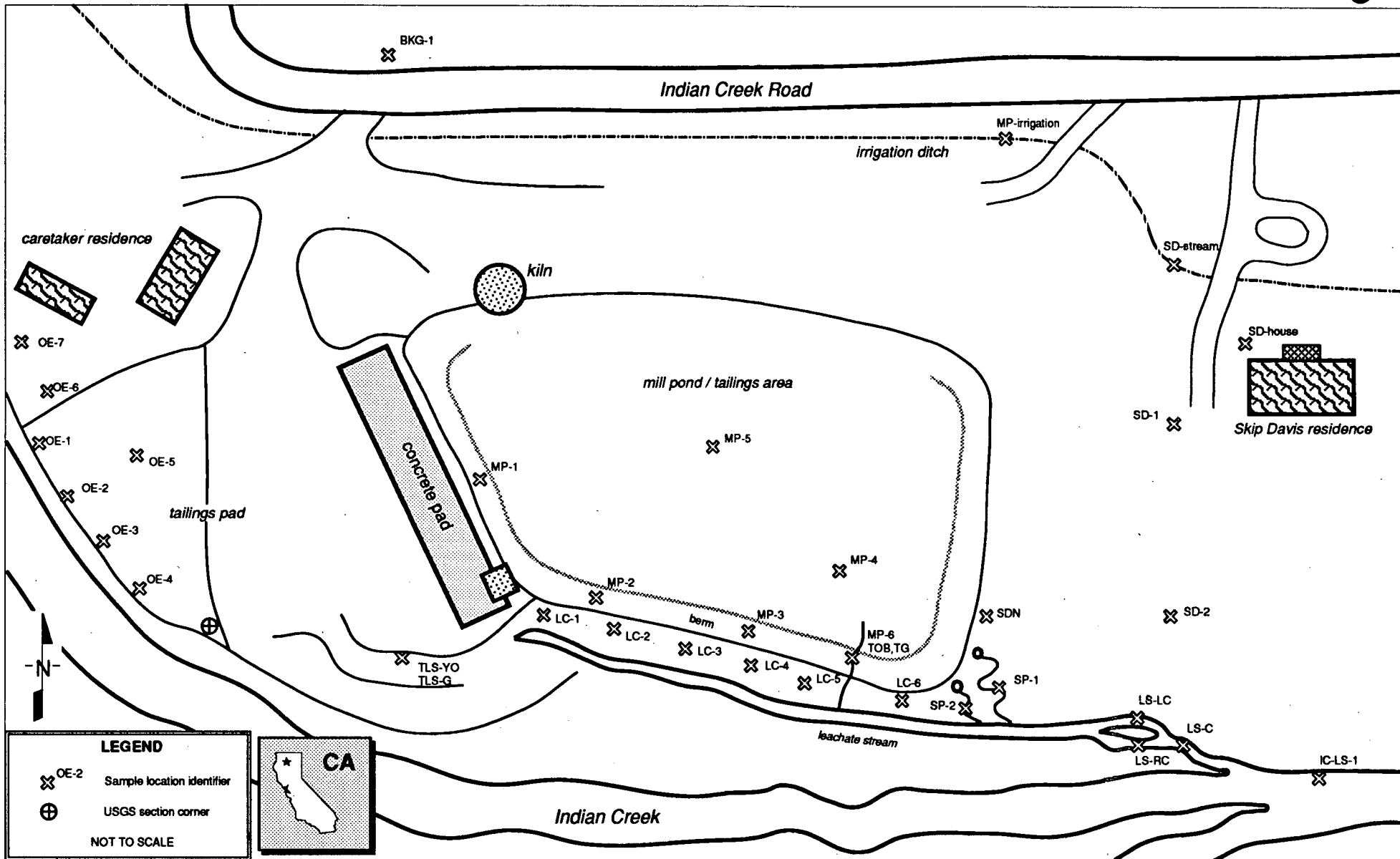


Figure 3
SAMPLE LOCATION MAP
 Grey Eagle Mine Site
 Happy Camp, CA

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Superfund Technical Assessment and Response Team
Grey Eagle Mine Site Assessment, Siskiyou County, California
PAN: 0029GESAXX TDD: 09-9603-0001
Photographer: John Whitaker Date: 17-19 April, 1996
(START Member)



Photo 1: Mill Pond ("MP" sampling area)



Photo 2: Edge of the Mill Pond ("LC" sampling area)

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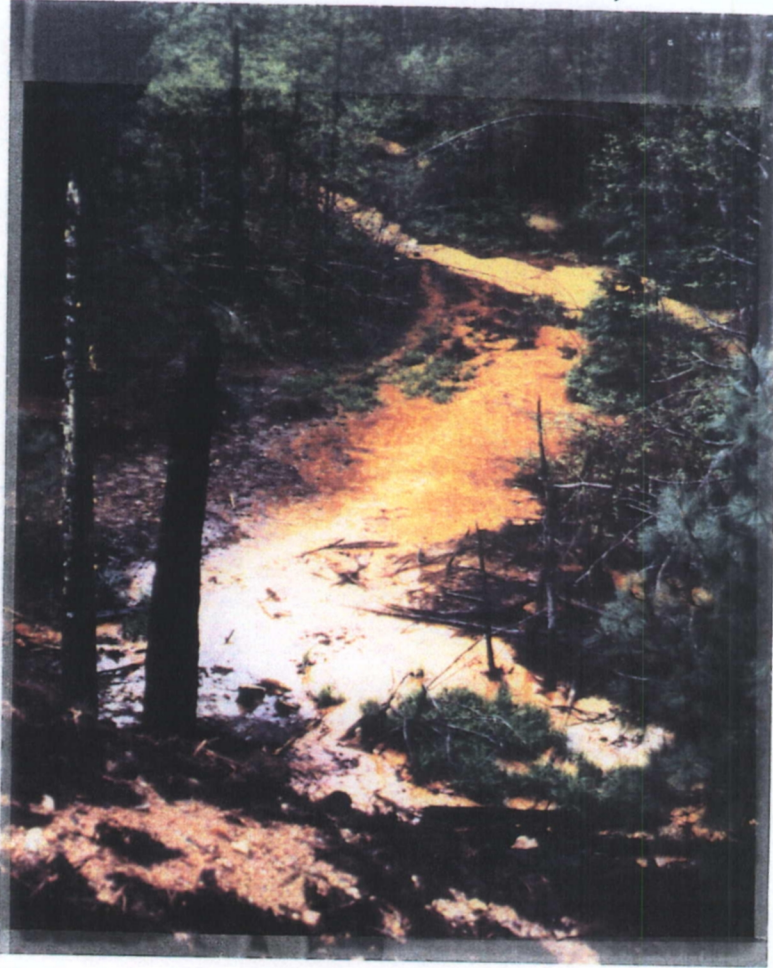


Photo 3: Leachate Stream
("LS" sampling area)

Photo 4: Sampling of
the Leachate
Stream



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Photo 5: Collecting Soil Samples from Skip Davis's Property ("SD" sampling area)



Photo 6: Collecting Water Samples from Indian Creek