

4.2 SP-1 Gold King #1-15 Claims

4.2.1 Site Description

The Gold King #1-15 claims are unpatented placer claims which lie along the East and West forks of upper Glen Creek and along Glen Creek downstream of their confluence. Each of the 15 claims has an area of approximately 20 acres, resulting in a total area of approximately 300 acres for the entire claim block. At least 80 percent of the valley bottom on the claim block appeared to be disturbed by placer mining activities. Dirt roads, tracks, an airstrip, miscellaneous mining equipment and scrap materials, and numerous prospect pits were noted during the Level I and Level II surveys. A collapsed cabin (MMK-063) was noted on claim #12 on the East Fork of Glen Creek. The relatively recent Wieler camp was located near the confluence of the East and West Forks of Glen Creek on claims #5 and 6. The camp area consisted of nine structures including a concentrating shack, a generator shack, a boxcar workshop, and several other buildings.

4.2.2 Summary of the Level II Results

An inventory summary of the items found on the claim block during the Level I and Level II surveys is included on Table 7. In general, the hazardous materials were confined to the Wieler camp and surrounding area, except for a pile of concentrated sands which contained mercury located near the cabin on claim #12. Table 8 summarizes the volume estimates for the hydrocarbon contaminated soil identified at the Wieler camp area. The principal findings of the Level I and Level II hazardous substance surveys included the following.

- Less than 1,400 gallons of fuels, oils, solvents, coolants, and other identified and unidentified fluids were contained in pails, 55-gallon drums, storage tanks, and other miscellaneous containers on the claim block. The great majority of these containers were located at or near the Wieler camp area.
- Buried drums and contaminated soil may exist under a filled bench at the Wieler camp. Due to the potential for contaminated soil in this area, the actual volume of hydrocarbon contaminated soil on the claim block may be much greater than that shown on Tables 7 and 8.

Table 7: SP-1 Gold King #. Claims - Inventory Summary

Items	Fuels/Others ⁽¹⁾											Batteries		Stained Soils ⁽²⁾ (yd ³)	
	Diesel	Gasolines	Oil	Waste Oil	Blazo	Antifreeze	Compressed Gas	Propane	Other	Unlabeled	Asbestos	Undamaged	Damaged	Hydrocarbons	Metals
Containers ⁽³⁾ < 1 gal.			2 (E) 2 (P) 1 (F) 1 (U)						2 (P) 4 (F) 1 (U)						
1 gal.		2 (E)				6 (E) 3 (P) 2 (F) 1 (U)			1 (E) 2 (U)	1 (E) 1 (U)					
5 gal.		11 (E) 7 (P) 1 (F) 1 (U)	12 (E) 17 (P) 3 (F)		1 (E)			1	7 (P) 2 (F)	59 (E) 24 (P) 8 (F) 5 (U)					
55 gal. (drum)									3 (P)	72 (E) 35 (P) 10 (F) 1 (U)					
Misc.									1 (E) 1 (U)						
Tanks	2	2					11	4	3	2					
Batteries											27	9			
Stained Soil														222	16 ⁽⁴⁾

Notes:

- U - Unknown
- E - Empty
- P - Partial
- F - Full

- (1) Includes one 5-gallon container and one cut in half 55-gallon drum partially full of concentrated placer material.
- (2) Rough order-of-magnitude estimate.
- (3) Less than 1,400 gallons of identified and unidentified fluids were estimated to be present on the claim block.
- (4) Includes placer concentrate only, not potentially contaminated soil.

Table 8: SP-1 Gold King #1-15 Claims - Estimated Volume of Hydrocarbon Contaminated Soil

Location	Assumed Vertical Extent of Contamination (ft)	Assumed Area of Contamination (ft x ft)	Estimated Volume of Contaminated Soil (yd ³)
Wieler Camp Area			
Under the light tower	2	4 x 5	1.5
Near the Kitchen:			
Materials storage area	2	3 x 8	1.8
Equipment repair area	1	8 x 12	3.6
Small drum stockpile	1	3 x 5	0.6
Under two drums	1	5 x 6	1.1
Under one drum	2	5 x 6	2.2
Buried drum area on a bench above camp	5 ⁽¹⁾	6 x 8	8.9
Near the A-frame cabin	2	4 x 6	1.8
Beneath the generator shack	5	15 x 20	55.6
Burn pit:			
Beneath pit	2	10 x 15	11.1
Edge of pit	2	6 x 20	8.9
Boxcar workshop:			
Drum storage area	2	5 x 5	1.9
Diesel welder	2	4 x 5	1.2
Drum stockpile	1	10 x 10 ⁽²⁾	3.7
De-icing drum area	3	6 x 10	6.7
Estimated volume of contaminated soil in sampled areas			111
Estimated volume of contaminated soils in unsampled areas⁽³⁾			111
Total estimated volume of contaminated soil on the SP-1 claim block			222

- Notes: (1) The horizontal and vertical extent of the contamination may be greater since drums are suspected to be buried in this area.
- (2) For purposes of volume estimation, the assumed contaminated area near the drum stockpile has been expanded to an area greater than the observed visually stained area (3 feet by 3 feet) due to the detection of hydrocarbons in the downgradient sample. The actual volume of contaminated soil in the drum stockpile area may be much greater than indicated because of the limited number of samples obtained.
- (3) Includes the volume of soil estimated to be present in areas which were observed to be visually stained but were not sampled. These areas were generally smaller and/or more lightly stained than the sampled areas. This volume also allows for a limited amount of contaminated soil which may be present in the bench area at the camp where potentially contaminated soils and buried drums may be located.

- Miscellaneous propane and other compressed gas cylinders and tanks and lead-acid batteries were found on the claim block, primarily at the Wieler camp.
- Antimony, lead, mercury, and/or silver were detected in placer concentrate material at the Wieler camp in concentrations above the project area background values for soil. A total of approximately 16 yd³ of placer concentrate material was observed on the claim block.
- Mercury was detected in soil at the Wieler camp and at the cabin (MMK-063) on claim #12 in concentrations above the project area background ranges for soil.
- An estimated 222 yd³ of soil contained concentrations of petroleum hydrocarbons which exceeded the ADEC Level A cleanup standards and may require remediation.
- Several semi-volatile organic compounds were present in the soil in and near a trash-burn pit at the Wieler camp.

4.2.3 Additional Work

Additional work which may be required to more fully evaluate several potentially contaminated areas on the claim block prior to remediation and cleanup includes the following.

- Collect samples for lead analysis from soil beneath a large battery stockpile at the Wieler camp after the stockpile has been removed.
- Collect additional soil samples to evaluate the horizontal and vertical extent of elevated mercury concentrations in the soil at the Wieler camp and at the cabin (MMK-063) on claim #12.
- Conduct a risk assessment which may include collecting additional soil samples from areas within the claim block to (1) more fully evaluate the naturally occurring concentrations of antimony, lead, and/or silver, and (2) to perform Toxicity Characteristic Leaching Procedure (TCLP) analyses to evaluate the potential for the leaching of these elements and mercury into the surface or

groundwater. From the results of the risk assessment, appropriate cleanup levels and remedial actions can be established.

- Collect additional samples at the trash-burn pit at the Wieler camp to establish the cleanup levels for the semi-volatile organic compounds detected during the Level II survey and to establish the appropriate waste classification of the soil.
- Locate, excavate, and remove potentially buried drums and contaminated soil in the filled bench at the Wieler camp.

4.2.4 Remediation Cost Estimate

Table 9 provides a rough order-of-magnitude (ROM) cost estimate for the assessment and remediation of the hazardous substances found on the SP-1 Gold King claims. The following assumptions were used in estimating the cost for remediation of the claims. These site specific assumptions supplement the General Assumptions found in Section 4.1.

- The remediation crew will mobilize from Fairbanks to Kantishna in two motorhomes and two flatbed trucks hauling equipment, supplies, overpacks/drums, and a small backhoe/front-end loader to complete the initial remediation work.
- The site is inaccessible by road. A chartered helicopter will be utilized for transportation within the project area. The backhoe will walk between Kantishna and the site. Helicopter fuel will be hauled in 55 gallon drums to the Kantishna Airstrip by a private trucking company.
- One of the crew members will be able to operate the backhoe/loader.
- The contents of all cylinders and tanks of compressed gases will consist of propane and will be burned onsite.
- Of the estimated 1,400 gallons of containerized liquids observed on the property during the Level II survey, the following volumes, waste streams, and locations for disposal are assumed.

<u>Volumes</u>	<u>Waste Streams</u>	<u>Disposal Location</u>
700 gallons	fuel/water mixture	Fairbanks
500 gallons	on-spec oil and waste oil	Fairbanks
50 gallons	off-spec oil and waste oil	Palmer
50 gallons	other	Fairbanks
100 gallons	other hazardous substances	Seattle, Washington

- The generator shack and generator will be taken down and moved by the property claimant in order to provide access to the underlying stained soils for the remediation crew.
- A total of approximately 220 yd³ of stained soil which was estimated during the Level II survey will be bioremediated on site. All hydrocarbon stained soils will be treated in bioremediation cells. Two bioremediation cells will be constructed in order to avoid transporting hydrocarbon contaminated soils across the West Fork of Glen Creek. One will be located in the vicinity of the A-frame cabin, and the other will be located across the creek near the drum stockpile.
- The area having suspected buried drums will take three days to excavate. No additional waste fluids will be found. Approximately 25 yd³ of hydrocarbon stained soils are assumed to be present in this area. This volume is included in the approximately 220 yd³ of contaminated soil that will be bioremediated onsite. It is assumed that no other buried hazardous materials or contaminated soils will be found on the site. Eight EPA Method 418.1, eight Method 8015M, and four Method 8270 samples will be taken to determine the level of contamination and to verify that all of the contamination is removed from the excavation.
- After the performance of a risk assessment, 8 yd³ of mercury contaminated soil and placer concentrate material located near the cabin (MMK-063) on the Gold King #12 claim will be excavated by hand and placed in forty 55 gallon drums for transportation and disposal in Seattle.
- One TCLP sample will be taken from under the battery stockpile, two from the generator shack, and two from the concentrate shack areas. Based on the results of the risk assessment, it is assumed that no remediation action will be required for the soils and placer concentrate materials which contain elevated levels of inorganic elements near these areas.

- The laboratory analysis results for all critical samples will be obtained in time for the remediation crew to take the appropriate actions during the initial field trip. For example, confirmatory analyses of excavations and TCLP analysis results will be received in a timely manner so that additional excavation or other remediation actions can be completed during the initial field trip. It is therefore assumed that no additional mobilization and demobilization of personnel and equipment will be required except as indicated for the subsequent field work to perform monthly sampling and to remove the bioremediation cells.
- Two hazardous waste technicians will mobilize to Kantishna in one motorhome and one flatbed truck for the removal of the bioremediation cells.
- Sufficient helicopter fuel for subsequent trips will be cached at the site or at the Kantishna Airstrip.

Personnel and schedule:

Number of Working Days	Number of Persons	Total Number of Mandays	Contractor Remediation Crew Activity	
3	4	12	Preparation in Fairbanks for field work	
1	4	4	Mobilization of crew, equipment, and supplies from Fairbanks to Kantishna	
15	4	60	Onsite remediation work	
1	4	4	Demobilization from Kantishna to Fairbanks	
1	2	2	Disposal of wastes in Fairbanks	
3	1	3	Mobe	Monthly rototilling and sampling of bioremediation cells. (Includes 3 trips.)
3	2	6	Onsite	
5	1	3	Demobe	
6	2	12	Removal of bioremediation cells. Includes mob/demob, and onsite.	
15	1	15	Report	
Total		121		

Number of Overnights	Number of Persons	Total Overnights	Contractor Remediation Crew Activity
18	5	90	Remediation work
6	3	18	Removal of bioremediation cells
Total		108	

Helicopter Activity	Number of Roundtrips	Round Trip Flight Time (min)	Helicopter (Hrs)
Fairbanks to Kantishna	2	180	6.0
Remediation work	135	30	67.5
Fairbanks to Site (Monthly sampling)	3	180	9.0
Removal of bioremediation cell (minimum 3 hr/day, 4 days)			12.0
Total			94.5

Personnel, equipment, and supplies for the initial remediation work:

- 1 Environmental supervisor
- 3 Hazardous waste technicians
- 2 Motorhomes
- 2 Flatbed trucks
- 1 Backhoe/loader
- 1 Helicopter and pilot
- 1 Rototiller for adding bacterial agent to contaminated soil
- 1 Pump for transferring liquids to drums
- 2 Materials for bioremediation cell
- 1 Miscellaneous tools and supplies
- 80 55-gallon overpacks/drums
- 15 5-gallon overpacks/pails
- 2 55-gallon drums of remediation microorganisms

- 40 Pounds of nutrients
- 45 55-gallon drums of Jet A helicopter fuel

Personnel, equipment, and supplies for the subsequent work:

Monthly sampling

- 1 Environmental supervisor
- 1 Hazardous waste technician
- 1 Helicopter and pilot
- 1 Rototiller
- 80 Pounds of nutrients

Remove bioremediation cell

- 2 Hazardous waste technicians
- 1 Motorhome
- 1 Flatbed truck
- 1 Backhoe/loader
- 1 Helicopter and pilot
- 2 55-gallon drums for disposal of visqueen

Table 9
SP-1 Gold King Claims
ROM COST ESTIMATE

ITEM	QUANTITY	UNIT	\$/UNIT	TOTAL	COMMENTS
Remedial Action Plan	1	ea	\$8,000	\$8,000	
Sampling & Analysis Plan	1	ea	\$4,000	\$4,000	
Health & Safety Plan	1	ea	\$2,000	\$2,000	
Risk Assessment Report	1	ea	\$10,000	\$10,000	
LABOR					
Environmental Supervisor	44	day	\$850	\$37,400	
Hazardous Waste Technician	77	day	\$500	\$38,500	
EQUIPMENT					
Two flatbed trucks	22	day	\$600	\$13,200	
Backhoe/loader	24	day	\$500	\$12,000	
Rototiller	1	ea	\$1,000	\$1,000	Includes purchase and fuel
Motorhome	42	day	\$125	\$5,250	
Mileage	1500	mile	\$0.15	\$225	
EXPENSES					
Helicopter	94.5	hr	\$510	\$48,195	
Per diem	108	day	\$50	\$5,400	
55 gallon Jet A fuel drums	45	ea	\$91	\$4,095	
55 gallon overpacks/drums	82	ea	\$100	\$8,200	
5 gallon overpacks/pails	15	ea	\$40	\$600	
Microorganisms	2	drum	\$1,700	\$3,400	PES-31
Nutrients	120	lb	\$3	\$360	
Clor-D-Tect 1000 test	10	packs	\$70	\$700	Pack of 10
HydroClor-Q test	10	packs	\$156	\$1,560	Pack of 12
EPA 418.1 test	120	ea	\$95	\$11,400	
EPA 8015 M test	120	ea	\$200	\$24,000	
EPA 8270 test	6	ea	\$450	\$2,700	
Oil Burning Spec Test	8	ea	\$190	\$1,520	
TCLP/Metals test	20	ea	\$100	\$2,000	
Analysis of unknowns	8	ea	\$500	\$4,000	Field screening and laboratory analysis
Misc. field equip & supplies	1	ea	\$5,000	\$5,000	
Misc. sample shipping	1	ea	\$1,000	\$1,000	
Misc. bio cell materials	2	cell	\$500	\$1,000	
Sampling fast turnaround	1	ea	\$7,000	\$7,000	
Misc. reporting expenses	1	ea	\$5,000	\$5,000	
Motorhome fuel	300	gal	\$1.50	\$450	
TRANSPORTATION					
55 gallon overpacks/drums	43	ea	\$65	\$2,795	Fairbanks to Anchorage
5 gallon overpacks/pails	5	ea	\$40	\$200	Fairbanks to Anchorage
55 gallon overpacks/drums	42	ea	\$280	\$11,760	Anchorage to Seattle
5 gallon overpacks/pails	5	ea	\$120	\$600	Anchorage to Seattle
55 gallon Jet A fuel drums (full)	1	ea	\$850	\$850	Fairbanks to Kantishna Airstrip
55 gallon Jet A fuel drums (empty)	1	ea	\$850	\$850	Kantishna Airstrip to Fairbanks
DISPOSAL					
Treatment of water/fuel mix	700	gal	\$1.45	\$1,015	Fairbanks
Incineration of on-spec oil mix	500	gal	\$0.35	\$175	Fairbanks
Incineration of off-spec oil mix	50	gal	\$1.00	\$50	Anchorage or Palmer
Disposal of 55 gallon overpacks/drums	40	ea	\$450	\$18,000	Mercury contaminated soil in Seattle
Disposal of 55 gallon overpacks/drums	2	ea	\$400	\$800	Hazardous waste liquids in Seattle
Disposal of 5 gallon overpacks/pails	1	ea	\$180	\$180	Hazardous waste solids in Seattle
Disposal of 5 gallon overpacks/pails	4	ea	\$160	\$640	Hazardous waste liquids in Seattle
Drum cleaning	38	ea	\$20	\$760	Fairbanks
SUBTOTAL ROM COST ESTIMATE				\$307,830	
CONTINGENCY				50%	\$153,915
TOTAL ROM COST ESTIMATE				\$461,745	

\$462,000