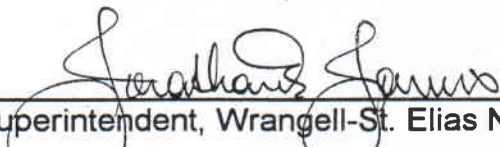


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**Kennecott National Historic Landmark  
Mitigation of Hazardous Material Issues  
Work Plan**

June 8, 1999

Wrangell-St. Elias National Park and Preserve  
Submitted to  
Alaska Department of Environmental Conservation  
Contaminated Sites Remediation Program

Approved:  Date 6-8-99  
Superintendent, Wrangell-St. Elias National Park and Preserve

Concurrence \_\_\_\_\_ Date \_\_\_\_\_  
Alaska Department of Environmental Conservation

## I. Introduction:

On June 16, 1998, the National Park Service (NPS) acquired the Kennecott National Historic Landmark including 2839 acres, the structures on those lots. The Kennecott Corporation donated the subsurface and the deed was recorded on May 4, 1999. Because the Kennecott mine site has known hazardous materials, the NPS entered into a "Prospective Purchaser Agreement" (PPA) with the State of Alaska for the mitigation of the remaining hazards. This agreement requires the NPS to mitigate the remaining hazards over the next five years under the oversight of the Alaska Department of Environmental Conservation (AKDEC). The issues are fuel-stained soils, transformers, disposal of lubricants and greases, asbestos at Jumbo and Erie, solid waste, and lead paint. **The largest issue is the repainting of the buildings to prevent lead paint from entering the soil and to minimize contact with the public.** The work on this will begin in the summer of 1999. This Work Plan outlines the actions to be taken by the NPS to mitigate the remaining known Hazards identified in the "Statement of Work and Schedule, Actions to be Taken by the National Park Service at the Kennecott NHL, December 11, 1997". All action timeframes are dependent upon favorable field conditions, weather, funding and staff availability.

## II. Hazardous Materials and Issues:

- (1) **TAILINGS:** The copper ore recovery process implemented at Kennecott generated a large volume of tailings that were discarded on site. Based on the studies and analyses conducted at the Site, the tailings do not pose an unacceptable risk to human health or the environment. This finding is consistent with Alaska Department of Environmental Conservation's (ADEC) belief that the Kennecott tailings are not a human health or environmental concern. No further environmental assessment or mitigation is required.
- (2) **FUEL RELEASES:** Evidence of fuel spills and releases were observed at several locations throughout the site. Recommended management options for these include: determining the depth of Bunker C oil contamination; plugging fuel transport piping; investigation of in-situ vitrification/solidification of remaining fuel at Jumbo Mine. The Bunker C has no volatiles and poses no RCRA toxicity characteristics. As primarily a physical hazard, it poses a hazard to wildlife, though due to viscosity, it is not very mobile in the environment. On-site vitrification will be the recommended option. ; and capping exposed contaminated areas to minimize exposure.
- (3) **TRANSFORMERS:** Electrical transformers filled with oil were encountered at the Bonanza Mine. The fluids in the transformers have been tested and contain no PCB's. (Kennicott- A Hazardous Waste Audit, Kay and Miller, 1990). The oil is easily disposed of at Alaska Pollution Control, the transformers themselves are not hazardous. Due to the historic nature of the transformers they will be left on site but affixed with a permanent brass engraved label indicating they have been

drained of oil and the oil was PCB free.

- (4) LUBRICANT OILS AND GREASES: Containers of lubricant oils and greases were observed throughout outer mine areas. The recommended management option is that these containers be removed for recycling and/or disposal.
- (5) **LEAD-BASED PAINT:** Approximately 144,000 square feet of building surfaces at the mill town are covered with lead-based paint. The recommended management option is that the potential exposure to lead-based paint be mitigated as part of the stabilization/maintenance of the Site, through a combination of removal and disposal of the lead-based paint, encapsulation of the lead-based paint or repainting with non-lead paint, **capping impacted surrounding soils.** These activities will occur on a phased, five-year schedule, with a priority based on high lead, accessibility, public safety, and historic stabilization requirements.
- (6) ASBESTOS: During 1993 and 1994 the Kennecott Corporation hired INTERA Inc. to mitigate the asbestos hazards in the mill town. INTERA Inc. subcontracted the work to Technic Services Inc., and EMCON Alaska provided local assistance and air monitoring services during the removal process (INTERA 1995). ACM was removed from all buildings and accessible utilidors in the mill town, with the following exceptions (INTERA 1995):
  - 1) Utilidors with more than two feet of soil cover were not abated.
  - 2) The boilers in the powerhouse and leaching plant were not dismantled for ACM removal. Instead, after abatement of exterior ACM, boilers were sealed by injecting with a solid foam and welding a steel plate across fuel injection port.
  - 3) Due to inaccessibility, they were unable to clean below the boilers in the leaching plant. Consequently, two feet of tails were deposited on the floor to bury it beneath the tanks.

All work was conducted according to Alaska Construction Code 8ACC05.045, and all areas had less than 0.01 fibers/cc before the Site was declared abated, which exceeds OSHA standards for worker safety, and meets EPA standards for clearance in schools. All removed ACM was transported off Site and properly disposed of.

Asbestos containing materials (ACM) were observed at the Jumbo and Erie Mines. The recommended management option is that the ACM at Jumbo Mine be removed. Due to the Erie Mine's inaccessibility, it should be administratively closed to eliminate access.

- (7) **SOLID WASTE:** The historical dumps found at the mill town pose no unacceptable risk to human health or the environment at this time. Based on our findings, the dumps are not leaching hazardous substances into the groundwater. However, to ensure that no risk is posed to groundwater, it is recommended that a groundwater monitoring program for hazardous substances be implemented. (See Appendix B.)

### **III. Work Plan Review, Intent and Updates:**

The intent of this work plan and effort is to reduce the risk to human health and the environment from the remaining hazardous materials at the Kennecott National Historic Landmark in a manner that is consistent with the protection of cultural and historic values. Regulations and clean-up technologies will change over the course of this work plan and it is the intent that the National Park Service and the Alaska Department of Environmental Conservation communicate regularly and openly to achieve the stated objectives. This plan will be updated annually, if necessary.



**Kennecott National Historic Landmark  
Mitigation of Hazardous Material Issues  
1999 Work Plan**

**TAILINGS:** No further environmental assessment or mitigation is required.

**FUEL RELEASES:**

*membrane in G-30 TC layer*

**A. Power Plant soil stain:**

Tasks: Plug and/or decommission the fuel distribution line to prevent any further releases and determine the vertical extent of contamination:

Action: The NPS plans to thread and cap and weld the end of the fuel distribution line. We will also perform a series of test pits and hand auguring to define the depth of the spill on the slope below power plant. Hydrocarbon-impacted soils have a very high resistivity relative to surrounding soils and the use of a resistivity probe will provide information to delineate the extent of spill.

**B. Jumbo Mine:**

Tasks: Characterize the quantity of fuel to be removed

Action: Field visit for Bunker "C" calculations

**C. Bonanza, Glacier, and Erie Mines:**

Tasks: Characterize the fuel stains:

Action: On site visit to the three areas for photo-documentation, mapping and sampling (if necessary) of each fuel stain

**TRANSFORMERS:**

**A. Bonanza Mine Transformers:**

Tasks: Properly test and dispose of transformers, if necessary.

Action: Remove all insulating oil from the transformers. Seal the transformer to avoid collection of water and creation of additional waste (oily water), and leave in place. The removed oil may be recycled or disposed of as used oil. Oil meeting specifications can be burned in EPA-approved, used oil heaters or generators. Off-specification oil must be disposed of as hazardous waste in accordance with RCRA. Label transformers as empty and tested.

**LUBRICANT OILS AND GREASES:**

Tasks: Collect and dispose of all remaining lubricants and greases.

Actions: Collect and containerize all petroleum lubricants throughout the project area: Remove and dispose of cans and containers containing oils and grease. If the removed oil and grease meets oil burning specifications, it may be recycled, disposed

of as used oil, or burned in EPA-approved, used oil heaters or generators. Off-specification oil and grease will be disposed of as hazardous waste in accordance with RCRA.

## **LEAD-BASED PAINT**

Tasks: Mitigate lead paint as a part of the historic fabric stabilization

Actions: Implement Worker Safety and Visitor Protection Program, Emergency Stabilization Work Plan: installation of on-site safety features, barriers, toilets, fences, preparation of safety brochure, training for staff on lead paint hazards, environmental contract for lead based blood screening, priority setting for building rehab. During the repainting process, the appropriate level of signing, restricted access, or closure should be employed to prevent human contact with the paint chips and dust. See Appendix A for "Supplemental Safety Plan-Lead Based Paint Abatement-Kennecott Project"

## **ASBESTOS:**

Tasks: Assess the location and extent of the asbestos containing material at the Jumbo Mine site. Administratively close the Erie site.

Actions: Access the Jumbo mine site and photograph and determine the volume for a contract removal of the ACM in 2000. Post signs for visitors to stay out of the ACM containing areas in both Jumbo and Erie.

**Kennecott National Historic Landmark  
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2000 Work Plan**

**FUEL RELEASES:**

**A. Power Plant soil stain:**

Tasks: Encapsulate soil stained area with an impermeable cap:

Actions: Actions are predicated on the summer 1999 findings of the vertical extent of the spill. If the contamination is confined to a small area (the same extent as the surface spill) and is not too deep (four to five feet), there should be no long-term seeping of Bunker C from the hillside. The existing oil spill at the bottom of hill should be removed. The spill should be covered with geo-fabric stabilizer and six to eight inches of dirt/tailings to avoid human health risk by dermal contact or ingestion.

If the contamination is deep or to bedrock, product recovery should be installed in the area of the existing spill. The spill should be covered with geo-fabric stabilizer and six to eight inches of dirt/tailings to avoid human health risk by dermal contact or ingestion.

**B. Jumbo Mine Fuel:**

Tasks: Solidify the oil and encapsulate the fuel stained area with impermeable cap:

Actions: Issue contract to solidify Bunker C and ACM (see Asbestos Section). Since soil type under the power house is glacial moraine (sandy gravel GW), the fuel has most likely seeped in. Unless the contamination is resurfacing and ponding in an area downhill, the spill should be scarified and covered with six to eight inches of dirt/tailings to avoid human health risk by dermal contact or ingestion.

**C. Bonanza, Glacier, and Erie Mines:**

Tasks: Encapsulate the fuel stained area with impermeable cap:

Actions: Since soil type under the power house is glacial moraine (sandy gravel GW), the fuel has most likely seeped in. Unless the contamination is resurfacing and ponding in an area downhill, the spill should be scarified and covered with six to eight inches of dirt/tailings to avoid human health risk by dermal contact or ingestion.

**LEAD-BASED PAINT**

Tasks: Mitigate lead paint as a part of the historic fabric stabilization

Actions: Site mobilization, lead based screening, paint scraping/stripping, and paint removal and disposal in accordance with state and federal standards for Hazardous materials. Work will proceed on priority buildings. Capping of soil around buildings will be completed as the paint on the siding is removed or encapsulated. Capping or covering the paint-impacted soils near structures will be incorporated as the last step of the Site stabilization/ lead-paint abatement, placing six inches of clean soil cover from a local source to a distance of three feet outward from the buildings.

**ASBESTOS:**

Tasks: Remove asbestos

Actions: Remove and dispose (at an approved facility) any ACM identified at the Mill Town and Jumbo Mine Sites by contract. Submit an administrative closure plan for the Erie Mine site. The plan will include NPS administrative actions to restrict public access to the site. Inspect area for any current or former ACM disposal sites and develop closure and monitoring standards in conformance with 18 AAC 60

**SOLID WASTE:**

Tasks: Close remaining solid waste sites

Actions: Develop a Draft Closure plan for all former dump sites on NPS lands. Closure plans will consider historic elements and archeology of the sites:.



**Kennecott National Historic Landmark  
Mitigation of Hazardous Material Issues  
2001-2005 Work Plan**

**LEAD-BASED PAINT:**

Tasks: Mitigate lead paint as a part of the historic fabric stabilization

Actions: Site mobilization, lead based screening, paint scraping/stripping, and paint removal and disposal in accordance with state and federal standards for Hazardous materials. Work will proceed on priority buildings. Capping of soil around buildings will be completed as the paint on the siding is removed or encapsulated. Capping or covering the paint-impacted soils near structures will be incorporated as the last step of the Site stabilization/ lead-paint abatement, placing six inches of clean soil cover from a local source to a distance of three feet outward from the buildings.

**SOLID WASTE:**

Tasks: Close remaining solid waste sites

Actions: Develop a Draft Closure plan for all former dump sites on NPS lands. Closure plans should consider historic elements and archeology of the sites: Institute monitoring plans.

## Appendix A

### Supplemental Safety Plan- Lead Based Paint Abatement-Kennecott Project

- A. **Scope of Work**—The project involves the inspection, identification and abatement or removal of lead paint from buildings within the Kennecott site by one or a combination of the following methods: (1) replacement (2) encapsulation (3) stripping (4) material reversal (5) scraping by hand (6) electric heat guns or (7) HEPA sanding. Work will be accomplished by a park day labor crew, consisting of a project manager and three - four personnel experienced in historic stabilization and restoration work. Lead dust and debris will be contained within the work area and disposed of in accordance with all local, state and federal regulations. Inspections will be an ongoing process throughout the life of the project to determine that surfaces requiring abatement have been adequately abated. Following the final cleanup, dust samples will be collected and analyzed for content.
- B. **Job Layout**—Since there are over twenty buildings at the site, the primary emphasis of lead paint abatement will be on those buildings, i.e., the power plant, machine shop, mill building and company store, located north of National Creek. All paints and paint products will be stored in a hazardous control environment. Crew members will work off of ladders, scaffolding and roofs while performing carpentry and painting tasks.
- C. **Designated Employee for Project Safety Program**—Ron Dorsey, Project Manager; an alternate will be named at the start of the project.
- D. **Supervisory Responsibility**—Establish time and date to start project. Coordinate work procedures between park staff and WRST headquarters. Discuss accident prevention program and ensure staff follow procedures.
- E. **Employee Responsibility**—Follows supervisor's direction and park policies, procedures and safety regulations. Wear prescribed personal protection equipment (PPE) at all appropriate times.
- F. **Emergency Telephone Numbers**—Park Headquarters 1-907-822-5234  
Alaska State Police (McCarthy) 1-907-822-3263  
Ambulance Chitina) 1-907-822-3203 or 911
- G. **Medical Facilities**—Emergency medical first aid station located at the Jurick building, adjacent to the Kennecott Lodge. No other medical facilities exist at the site.
- H. **Hygiene Facilities**—Showers provided (if feasible) and a clean place for changing clothes; hand washing facilities will be provided along with a separate storage areas for street and work clothing to prevent contamination. Tyvek suits will be available to wear over regular work clothes while lead paint abatement is in progress.
- I. **Medical Surveillance**—Blood samples will (1) be taken before any lead paint abatement activities commence (2) from all employees (voluntarily) for Blood Lead Level determinations and (3) tested at an OSHA approved laboratory. A HEPA air pump will be used daily to monitor free floating lead in the air. Medical surveillance is required when free floating lead in the air reaches 30 ug / cubic meter of air and

PPE is required when the Permissible Exposure Level for lead in the air is 50 ug/cubic meter of air over and 8 hour period. Medical surveillance required for any employee exposed to lead above 30 ug per cubic meter of air (TWA) for more than 30 days each year and whose BLL exceeds 40 ug/dl. When BLL's are 40 ug/dl of blood, biological monitoring is required every two months. When any worker reaches 50 ug/dl, blood lead level, the employee shall be removed from the work environment. Medical surveillance requires that a second and third blood sample be taken at two week intervals with all three samples averaged to determine BLL.

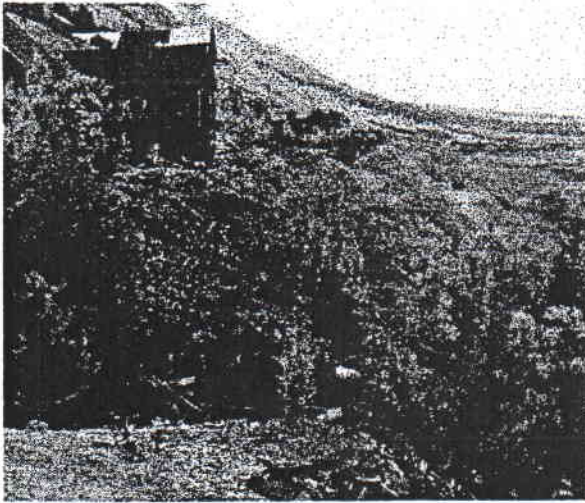
- J. **Sanitation**—No water facilities exist at the site. Bottled water for drinking will be available at the Jurick building. One out-house is located on site.
- K. **Public Protection**—Work areas to be flagged and surrounded by an orange plastic fence with appropriate signing, i.e. Caution-Historic Preservation Work in Progress. Park staff will monitor the work area to keep unauthorized persons from entering the area. Warning signs will be posted in the work area when lead PEL limits have been exceeded.
- L. **Fire Protection**—Dry chemical fire extinguishers (classified ABC) will be placed at locations throughout the site and in accordance with the Fire Marshall's recommendations for proper location. A portable water tank (250 gal. Cap) will be outfitted on a trailer to serve as emergency water supply with firefighting capabilities. To report a fire: Dial 823-2235
- M. **Construction Equipment**—Chainsaws, electric power hand tools ,i.e., skill saw, planers, shapers, etc., shall be operated in accordance with the manufacturer's operating instructions, local and National Building Codes. Where heavy equipment is needed, a park staff member will serve as flagperson to lead the equipment through all public use areas and at equipment loading sites.
- N. **Specialized Equipment**—Scaffolding will be erected in accordance with 29 CFR.454-OSHA Standards. All employees working on and around scaffolding will be trained in the erection, dismantling and securing procedures prior to beginning work. A daily inspection of all scaffolding will be made by a "competent person" before the start of each day's work. All employees will wear PPE while working on lead paint abatement projects, to include face respirators, tyvek suits, air pump, eye protection, etc. HEPA equipment will be used on the job and respective PPE shall be worn during its operation. While operating chainsaws, chaps and respective PPE shall be used.
- O. **Water Safety**—Personal Flotation Devices (PFD) shall be used during the transport of supplies and materials across all waterways, rivers and lakes while in a boat or within 4 feet of open water while ashore.
- P. **Hauling and Traffic Control**—Park employees, while operating a vehicle to haul materials, supplies and or debris to and from the job site, shall yield to all foot traffic on the McCarthy road by bringing their vehicle to a complete stop and waiting until all foot traffic has cleared the rear bumper of the vehicle before proceeding.
- Q. **Hazardous Material**—The Project Manager shall be responsible for the loading, securing and transport of hazardous material to the HAZMAT storage site located at the McCarthy Airfield. All employees shall use PPE while loading and transporting

- hazardous material. The fueling of equipment shall be performed off-site.
- R. **Blasting Caps and Explosives**—Dynamite and blasting caps may be found in and around the work site; employees shall not attempt to remove these items. Instead, the Project Manager or his alternate shall be notified immediately to ensure corrective removal actions.
- S. **Safety Meetings**—Each work day shall begin with a short safety meeting to discuss a particular aspect of the Project's accident prevention program. These discussions shall be conducted by the Project Manager or his alternate. Material Safety Data Sheets/ HazCom Posters will be available at the Project Manager's Office.
- T. **Personal Protective Equipment**—PPE shall include but not be limited to the following: hard hats, respirators, ear plugs, safety glasses and eye protection, chainsaw chaps, steel-toe shoes, gloves and other PPE outlined OSHA regulations-29 CFR 454.
- U. **Electrical Safety**—No overhead electrical lines exist on the job site. Small emergency generators will be used to power electrical hand tools.
- V. **Ladders and Scaffolding**—All employees who work around, on, erect, dismantle or erect scaffolding shall be trained by a competent person before the project begins; all employees will be trained in the proper techniques to set-up and take-down ladders.
- W. **Accident Reporting**—All significant accidents will be reported within two hours of occurrence, i.e., accidents involving injuries that require more than first aid treatment and all vehicle accidents where damage is estimated to exceed \$500.00. The Project Manager will contact WRST Headquarters within in one hour of receiving a report and verbally inform him of the situation. A written report will be prepared and submitted for all accidents meeting the above criteria within 24 hrs. or no later than close of business on the next day. The interim report shall contain the following items:
- a. Name of injured person or operator of motor vehicle.
  - b. Extent of injuries or damage to vehicle
  - c. Condition of individual after initial treatment
  - d. Nature of accident, including location, others involved, time and conditions of accident.
  - e. Probable cause(s) and recommendations for follow up actions.
  - f. Complete CA-1, CA-2 and CA-16 forms in reporting all causes of accidents.
- X. **Training:** All employees will receive a minimum of eight hours in OSHA approved lead paint mitigation safety training by a certified instructor prior to beginning work.





Appendix B:  
Kennecott National Historic Landmark  
Artifact Debris (Historic Dumps) Below the Mill Town



Debris pile behind Power Plant



Debris pile below West Bunk house



Debris Pile below Power Plant



Close-up of metal artifacts within Historic Dump