# Engineering Evaluation/Cost Analysis

## Industrial Buildings Removal Action
## Halaco Superfund Site
## Oxnard, California

December 18, 2009

U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California, 94105

# Executive Summary

This Engineering Evaluation/Cost Analysis (EE/CA) report addresses the hazards posed by two dilapidated process buildings on the Halaco Engineering Co. Superfund Site in Oxnard, California. Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), an EE/CA supports a non-time-critical removal action. The EE/CA identifies the removal action objectives; assembles removal action alternatives; and analyzes the effectiveness, implementability, and cost of cleanup alternatives that satisfy the removal action objectives.

In September 2007, the U.S. Environmental Protection Agency (EPA) added the former Halaco Engineering Co. facility and adjacent contaminated areas (the Site) to the Superfund National Priorities List (NPL). Halaco operated a secondary metal smelter at the Site from 1965 to 2004, recovering aluminum and magnesium for reuse. The Site includes an 11-acre parcel containing the former smelter and an adjacent 26-acre area where wastes were deposited and managed. Two of the former process buildings, the Smelter and Bag House buildings, are the focus of this EE/CA. A full characterization of the Site will be completed as part of the Remedial Investigation/Feasibility Study (RI/FS), which is in progress at the Site.

Portions of the Smelter and Bag House buildings are likely to fail, detach or collapse. The collapse of either building could create an uncontrolled release of hazardous materials, dust, and debris. It is difficult to quantify the magnitude of the risk, but the contaminants of concern include asbestos, lead, copper, beryllium, chromium, aluminium, barium, cadmium, magnesium, manganese, nickel, zinc, and radiologically active thorium and decay products. Potentially exposed receptors include workers or trespassers on-site who might inhale the airborne contaminated dust. Falling beams or roof panels could cause injury or death to anyone in or near the buildings. Despite EPA's efforts to improve Site security, there is evidence of continued trespassing onto the Site. A release could also expose nearby ecological receptors to Site contaminants. Several endangered or threatened species have been documented in habitats adjacent to the Site.

Accordingly, the objectives of this removal are to prevent an uncontrolled release of Site contaminants into surrounding areas, exposing people and ecological receptors; and to prevent physical harm to people on-site, including workers conducting the remedial investigation or trespassers. The removal action should facilitate future removal and remedial activities at the Site.

Two Alternatives have been identified and analyzed for the process buildings at the Site:

- **Alternative 1**: No Action Alternative
  Under CERCLA, EPA is required to consider the no action alternative. No removal action would occur under this alternative, and the hazards associated with the process buildings would be addressed later as part of the remedial plan for the Site.

- **Alternative 2**: Demolition of Process Buildings
  Alternative 2 would demolish both the Smelter and Bag House buildings. Scrap metal would be separated and sold as scrap, concrete debris would be crushed and used as fill in cleaned and cleared on-site pits, and any residual hazardous or non-hazardous waste would be disposed of appropriately off-site.

A retrofit of the buildings was also considered, but was screened out as infeasible due to the age and extent of structural damage to the buildings. EPA's preferred alternative is Alternative 2, the demolition of both process buildings. Alternative 1, the no action alternative, would not adequately achieve the removal objectives. Therefore, Alternative 2, which uses proven and commonly used construction practices to achieve the removal goals, is the preferred alternative. The anticipated start date for the removal action is January 2010. We estimate the removal action will take approximately two months and $1.3 million to complete.

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# 1. Site Characterization

## 1.1 Site Description and Background

In September 2007, the U.S. Environmental Protection Agency (EPA) added the former Halaco Engineering Company facility and adjacent contaminated areas (the Site) to the Superfund National Priorities List (NPL). The Site is located at 6200 Perkins Road in Oxnard, California, in eastern Ventura County (Figure 1). Halaco operated a secondary metal smelter at the Site from 1965 to 2004, recovering aluminum and magnesium for reuse. Halaco also reports that it recovered zinc until the 1970s. The Site includes an 11-acre parcel containing the former smelter, and an adjacent 26-acre area where wastes were deposited and managed. Two of the former process buildings, the Smelter and Bag House buildings (Figure 2), are the subject of this EE/CA. A full characterization of the Site is underway as part of the Remedial Investigation/Feasibility Study (RI/FS) for the Site.

### Halaco Operations

During its 40 years of operation, Halaco acquired scrap metal from more than 400 suppliers in a variety of forms and in varying levels of purity. Halaco processed dross, sludge, castings, sheets, pellets, granules, cans, car parts, and other scrap. Halaco reports that it processed one type of scrap, a low-level radioactive magnesium-thorium alloy, until about 1977. Other metals found in aluminum and magnesium alloys include copper, silver, zinc, lead, chromium, titanium, tin, manganese, and nickel.

The scrap materials were received at the Perkins Road facility or at the railroad spur about one-half mile to the north, melted in Halaco's natural-gas-fired rotary furnaces, and then cast into various shapes and sizes. Sodium chloride, potassium chloride, and magnesium chloride salts, known as fluxes, were added to improve the recovery of aluminum and magnesium. The molten material in the furnace would stratify, and the recoverable metal was directly cast into large metal blocks or, at times, mixed with beryllium, manganese, and possibly other alloying agents to produce alloys meeting specifications. Some scrap materials were washed on-site to remove dirt and other impurities before they were placed in the furnace.

The residual material ("dross") from the furnaces was placed in large, rotating horizontal drums ("washers") located next to the Oxnard Industrial Drain (OID) and sprayed with water to break up the dross, dissolve the salts, and separate recoverable metals. Water was reportedly drawn from the OID and Halaco's settling ponds. A slurry of water, salt, metal particles, and other solids was discharged from the washers into a shaker where larger solids were recovered and then sold, disposed, or returned to the smelter area for use as feedstock. The remaining slurry was pumped to on-site settling ponds until about September 2002.

Halaco reports that all operations ceased in September 2004. In support of its operations, Halaco stored and used large quantities of diesel fuel and oil in its vehicles and equipment, and used petroleum-based solvents for cleaning. Halaco also operated

equipment to reduce air pollutants in exhaust gases generated during smelting. Halaco initially operated venturi-type scrubbers, which were replaced by baghouse filters in about 1988. Lime and ammonia were used to raise the pH, neutralize acidic gases, and remove particulate matter.

## Structures

The Smelter building is a pre-engineered metal building (PEMB) approximately 37,200 square feet in size. The main frames run North-South, and the bay spacing is approximately 25 ft. on-center with X-bracing tie rods between the bays. A seven-foot-tall concrete masonry unit (CMU) wainscot wall exists around ¾ of the perimeter of the building, with horizontal metal girts above the wall supporting the exterior vertically spanning metal panel and plywood sheathing. The roof girts and tie rod X-bracing span between the steel frames. An attached concrete shear wall building wraps around the west side of the PEMB building to the north side. The roof of this concrete building consists of pre-cast concrete double – T beams. There are several openings in the floor slab for pits that vary in depth and area. Some of the pits are covered with steel plates.

The Bag House building is approximately 8,400 square feet in size, and is a combination of a PEMB and full height, load bearing CMU walls. The CMU walls cover ¾ of the building and have several different size openings. There are steel columns on the north side of the building with horizontal girts that support a metal panel. The roof girts and tie rod X-bracing span between the steel frames. There are several openings in the floor slab for pits that vary in depth and area. More detailed structural information is available in the October 2007 *Structural Assessment Report*, which is included in the Administrative Record for this removal action.

## Geology and Hydrology

Groundwater is present beneath the Site in three primary aquifer systems: the upper Semiperched Aquifer, the Upper Aquifer System (UAS), and the Lower Aquifer System (LAS). The Semiperched Aquifer extends to a depth of 50 to 100 feet below ground surface (bgs), generally has poor water quality, and is not used as a water supply. The Semiperched Aquifer is underlain by an extensive clay deposit that separates it from the underlying UAS and LAS. The UAS and LAS yield significant amounts of water and contain good quality water across the Oxnard Plain, except in coastal areas (including the Site) where overpumping has historically reduced groundwater levels below sea level and allowed seawater intrusion. The water supply wells closest to the Site are two inactive City of Port Hueneme wells approximately one-half mile to the northwest and an agricultural well used for irrigation approximately one-half mile to the east. Water quality testing of the agricultural well in March 2007 did not show any evidence of contamination from the Site.

## Surrounding Land Use

The predominant land uses near the Site are classified as “Industry Coastal Dependent” and “Miscellaneous Open Space/Resource Protection.” Immediately to the north and east of the Site is a wetland area owned by The Nature Conservancy. To the south of the Site are a wetland area, a lagoon, and the Pacific Ocean. To the north and west are the City’s

wastewater treatment plant and an industrial paper recycling plant. The Site is bisected by the OID, a surface water channel that drains upstream agricultural, commercial, and residential areas of the Oxnard Plain.

### Sensitive Ecosystems

Habitat near the Site includes coastal salt marsh, coastal freshwater/brackish wetland, and the southern foredune. The wetlands are part of the larger Ormond Beach wetland area, which was once a vast region of tidal marshlands extending from Port Hueneme in the northwest to Point Mugu in the southeast. The wetlands are home to several endangered or threatened species, including the Beldinger's savannah sparrow, the Southern sea otter, the Western snowy plover, the tidewater goby, the light-footed clapper rail, and the salt marsh bird's-beak. An extensive beach-dune complex runs along the southern boundary of the Site. The wetlands adjacent to the Site are a remnant of the once-extensive salt marsh and brackish water lagoon and dune system. These lagoons were located inland from a narrow strip of low sand dunes and fed by surface water runoff from upland areas. Periodically, the sand dunes were breached by high stream flows or winter storm waves, allowing seawater to enter the lagoons.

## 1.2 Previous Removal Actions

While the Site was being evaluated for placement on the NPL, two removal actions were completed to address immediate Site risks. The first removal action, completed by the property owners between August 2006 and February 2007, included the removal of drums and other hazardous substances from the Site, and the installation of fencing, silt curtain, and straw wattles around the waste pile. A second, EPA-funded removal action was completed in 2007 to stabilize and secure the Site and limit off-site migration of contaminated wastes. It included re-grading the waste pile to reduce the steepness of the slopes, placing matting on the slopes to reduce erosion, stabilizing the banks along the lower portion of the OID, removing an estimated 9,000 cubic yards of waste from the smelter area, removing an estimated 7,600 cubic yards of material from a wetland area adjacent to the Halaco property, and installing an estimated 6,000 feet of fencing around the perimeter of the waste management area.

## 1.3 Source, Nature and Extent of Contamination

### Source

During its 40 years of operation, Halaco generated large quantities of both solid and liquid waste. Most of the waste was process waste generated during the smelting process. Other waste was generated by the air pollution control equipment, and from used oil and spent solvent. Halaco's waste disposal practices were cited for violations by federal, state and local authorities for many years. The facility received various orders and notices of violation from EPA, the Los Angeles Regional Water Quality Control Board, the California Department of Health Services Radiological Health Branch, the California Department of Toxic Substances Control and the City of Oxnard Fire Department.

## Deposition and Location of Wastes

From 1965 to about 1970, Halaco discharged much or all of its process waste to a settling pond adjacent to the OID and used waste solids as fill in the smelter area. After the Los Angeles Regional Water Quality Control Board (RWQCB) issued Waste Discharge Requirements in September 1970 (RWQCB, 1970), Halaco began pumping its wastewater across the OID into unlined earthen settling ponds in an area later named the Waste Management Unit (WMU). Beginning in or before 1980, Halaco began moving waste solids from the WMU to the area immediately to the north known as the Waste Disposal Area (WDA). Discharge to the WMU ended in late 2002, when Halaco began using a filter press and began discharging wastewater to the City sewer in accordance with an industrial waste discharge permit. Discharges to the sewer ceased in or before June 2003, after the City expressed concern about ammonia in its collection system and exceeded performance goals for metals discharged from Oxnard's wastewater treatment plant. Halaco reports that it recycled wastewater on-site after discharge to the sewer stopped. Records indicate that an estimated 6,700 tons (or more) of filter cake or other waste were shipped off-site for disposal. Filter cake left on-site when Halaco ceased operations was later moved to the WMU. Used oil and spent solvent were reportedly disposed on-site before 2000. Oil and/or solvent wastes were reportedly used as "fuel" in the rotary furnaces, observed dripping on the ground during use in the process building, and mixed with air pollution control equipment waste and put in Halaco's washers. Slurry from the washers was discharged to the on-site settling ponds, as described above.

## Extent of Contamination

In 2007, EPA estimated that more than 700,000 cubic yards of waste solids remained on-site. The bulk of the solids are in the WMU, which covers about 15 acres and rises up to 40 feet above grade. Estimates of waste process solids in the smelter area exceed 7,000 cubic yards. Waste process solids have also been discovered in the Ormond Beach Wetlands. The extent to which site contaminants spread offsite is currently being investigated as part of the RI/FS.

## Contaminants of Concern

Environmental sample testing results indicate that elevated levels of a variety of metals are present in the waste, and that Site soils, sediments, and groundwater have been contaminated by Halaco's wastes. Constituents found at elevated levels include aluminum, barium, beryllium, cadmium, chromium, copper, lead, magnesium, manganese, nickel, and zinc. Elevated levels of radioactive thorium (and its decay products) are also present in soils, sediments, and groundwater in some areas of the Site. In previous sampling, elevated levels of ammonia and petroleum hydrocarbons have also been detected in waste materials at the Site.

## Process Buildings

The process building area was the location of most of Halaco's operations, including metal smelting in rotary furnaces, storage of scrap materials and wastes, equipment storage and maintenance, and fuel and oil storage in above-ground and underground tanks. Sampling by EPA contractors in March 2007 revealed the presence of asbestos in the furnaces in the Smelter building. A building assessment in October 2009 by EPA

contractors determined the presence of solid residue in four furnaces in Smelter building and two storage tanks in the Bag House building.

## 1.4 Analytical Data

### Building Contamination

A building materials assessment was conducted by EPA and its contractors in March 2007. Five building material samples were analyzed for asbestos, and results indicate the presence of non-friable amosite asbestos in the furnaces of the Smelter building (Figure 3).

Further testing of the buildings was conducted by EPA and its contractors in October 2009 to aid in the planning for potential building demolition. Radiation surface measurements and wipe samples were collected for assessment of radiological contamination, dust wipe samples were analyzed for metals contamination, and solid samples were analyzed for metals, volatile organic compounds (VOCs), total petroleum hydrocarbons as diesel (TPH-d), and alpha and gamma spectroscopy. None of the radiation measurements or samples exceeded the radiological action levels for surface contamination outlined in the U.S. Department of Energy Order 5400.5, Radiation Protection of the Public and Environment. The dust wipe samples indicated the presence of California Title 22 listed metals on both structures including antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc. The complete results from the sampling effort are available in the December 2009 *Halaco Building Assessment Letter Report*, which is included in the Administrative Record for this removal action.

### Structural Integrity

The City of Oxnard Building and Engineering Division conducted an inspection of the Smelter and Bag House buildings in 2007, and determined that they should be designated "dangerous buildings" under Items 3, 4, 5, 7, and 8 of Section 302 of the Abatement of Dangerous Building Code as adopted by the City of Oxnard. The city inspector noted extensive corrosion of the steel framing, delamination of concrete in reinforced concrete walls and roofing, and other weaknesses, and concluded that portions of the buildings are likely to fail, become detached, or collapse.

In October 2007, EPA retained a structural engineer to inspect and evaluate the buildings. EPA's contractor confirmed the findings of the city inspector. The contractor documented steel beams, columns, girts, metal deck, tie rods, bolts, and exposed rebar that are extremely corroded and rusted. The contractor also reported that portions of the walls, floor covers, and roof are shredded or missing, certain structural supports are loose, and parts of the concrete face shells are cracked and unsupported. The report recommended demolition of the buildings as soon as possible to avoid any injury and/or possible loss of life. The full *Structural Assessment Report* is included in the Administrative Record for this removal action.

## 1.5 Streamlined Risk Assessment

The primary risks associated with the two process buildings are direct injury to persons on-site from falling structural members, and/or an airborne release of Site contamination.

Portions of the Smelter and Bag House buildings are likely to fail, detach or dislodge, or collapse. The structural summary report found that "several failures have occurred in the main vertical and lateral load resisting systems" and that "various component and cladding elements are inadequately supported and pose a significant threat to safety". Falling beams or roof panels could cause injury or death to anyone in or near the buildings, including workers carrying out remedial activities or trespassers. Despite EPA's efforts to improve Site security, there is evidence of continued trespassing onto the Site.

The collapse of either building could also create an uncontrolled release of hazardous materials, dust, and debris. It is difficult to quantify the magnitude of the risk, but the contaminants of concern include asbestos, lead, copper, beryllium, chromium, aluminium, barium, cadmium, magnesium, manganese, nickel, zinc, and radiologically active thorium and decay products. Potentially exposed receptors on-site include workers conducting the Remedial Investigation or trespassers, who might inhale the airborne contaminated dust.

A release could further expose nearby ecological receptors to Site contaminants. Several endangered or threatened species have been documented in areas adjacent to the Site, and portions of those areas are designated as critical habitat.

# 2. Identification of Removal Action Objectives

Section 300.415(b)(2) of the National Contingency Plan (NCP) lists a number of factors for EPA to consider in determining whether a removal action is appropriate. One of the factors, provided in Section 300.415(b)(2)(i), is actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants. Accordingly, the primary objectives of this removal are:

- Prevent an uncontrolled release of Site contaminants into surrounding areas to reduce exposure to human and ecological receptors;

- Prevent physical harm to persons on-site, including workers conducting the remedial investigation or trespassers; and

- Remove structures limiting EPA's ability to safely conduct a thorough Remedial Investigation.

## 2.1 Statutory limits on removal actions

Pursuant to Section 104(c)(1) of CERCLA, this non-time-critical removal action is limited to $2 million in cost and 12 months in duration.

### Applicable or Relevant and Appropriate Requirements

This section presents any applicable or relevant and appropriate requirements (ARARs) that may govern removal actions at the Site. For removal actions, ARARs are to be attained "to the extent practicable considering the exigencies of the situation" (40 CFR 300.415(i)). In determining whether compliance with ARARs is practicable, the urgency of the situation and the scope of the removal action to be conducted may be considered. ARARs can be chemical specific, location specific, or action specific requirements.

EPA has identified the following ARARs:

- National Emissions Standards for Hazardous Air Pollutants (NESHAP)- Asbestos, 40 CFR 61, Subpart M
  Any demolition or removal of the asbestos-containing materials in the furnaces in the Smelter building must comply with NESHAP requirements

- Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 et seq.,
  Any debris from the removal that qualifies as federal hazardous waste under RCRA must comply with the relevant requirements for storage, transport, and/or disposal

- California Code of Regulations Title 22, Division 4.5
  Any debris from the removal that qualifies as state hazardous waste must comply with the relevant requirements for storage, transport, and/or disposal

The removal action will also comply with the Migratory Bird Treaty Act of 1918, 16 U.S.C. § 703 *et seq*. Migratory swallows have been documented nesting in rafters of the smelter buildings at the Halaco Site in the past.

## 2.2 Determination of removal scope

The scope of the removal is the Smelter and Bag House buildings on the Smelter parcel of the Halaco Site. The scope includes the decontamination of the sub-floor vaults, demolition of both buildings, and disposal or salvage of any demolition debris generated including concrete debris, metal debris, miscellaneous debris, and residual waste material. The scope of this removal does not include any of the structures on the smelter parcel other than the Smelter and Bag House process buildings.

## 2.3 Determination of removal schedule

The anticipated start date for the removal action is January 2010. We estimate that approximately two months will be required to complete the removal action.

## 2.4 Planned remedial activities

Further remedial activities at the Site are currently being evaluated as part of the RI/FS. As part of the RI/FS, EPA is conducting a large field effort expected to continue through spring 2010. The investigation includes the collection and analysis of soil, soil gas, sediment, water, plant, insect, fish and air samples at the Site. The final remedial plan for the Site has not been determined yet.

# 3. Identification and Analysis of Removal Action Alternatives

## 3.1 Identification of Alternatives

The following alternatives have been identified and analyzed for the smelter buildings at the Halaco Site:

- **Alternative 1**: No Action Alternative
  No removal action would occur under this alternative, and the hazards associated with the process buildings would be addressed later as part of the remedial plan for the Site.

- **Alternative 2**: Demolition of Process Buildings
  Alternative 2 would demolish both the Smelter and Bag House buildings. The sub-floor vaults would be cleared and cleaned, and both buildings would be demolished. Alternative 2 would generate several waste streams, including concrete debris, metal debris, miscellaneous non-hazardous municipal waste, and a limited amount of possibly hazardous waste. The concrete debris would be crushed and used as fill in on-site pits. Metal debris would be salvaged and sold as scrap. Miscellaneous non-hazardous construction waste would be disposed of in an appropriate landfill. Any waste material classified as hazardous under RCRA or California Title 22 would be dealt with in accordance with the relevant requirements. The December 2009 wipe testing and solid sample analysis of the buildings indicated that none of the samples analyzed for metals exceeded the California Total Threshold Limit Concentration for a state hazardous waste. However, further testing would be conducted to determine whether any of the debris would qualify as hazardous waste, particularly the solid residues in the furnaces and storage tanks.

Retrofitting the buildings was also considered, but screened out due to technical impracticability. The October 2007 structural evaluation report determined that a retrofit of the existing structures was not feasible due to the age of the structures and the extent of the structural damage observed.

## 3.2 Evaluation Criteria

CERCLA requires that removal alternatives be compared on the basis of three broad categories: effectiveness, implementability and cost. Effectiveness includes the degree to which the alternative is protective of public health and community, protective of workers

during implementation, protective of the environment, and compliant with ARARs. Effectiveness also refers to the ability to achieve removal objectives, including the level of treatment or containment expected, any concerns about residual effects, and the maintenance of control until a long-term solution is implemented.

Implementability includes technical feasibility, such as construction and operational considerations, the performance and useful life, adaptability to environmental conditions, contributions to remedial performance, and implementability in one year. Implementability also includes the availability of equipment, personnel and services, laboratory testing capacity, off-site treatment and disposal capacity, and post-removal Site control. Administrative feasibility also factors into implementability, including any required permits, easements or right-of-ways, impacts on adjoining property, ability to impose institutional controls, and the likelihood of obtaining exemption from statutory limits if needed. Cost refers to capital cost, post removal Site control cost, and present worth cost.

## 3.3 Analysis of Alternatives

### Alternative 1

Under CERCLA, EPA is required to consider the no action alternative. No removal action would occur under this alternative, and the hazards associated with the process buildings would be addressed later as part of the remedial plan for the Site.

- **Effectiveness**
  Alternative 1 would not take any action to address the risks posed by the dilapidated Smelter and Bag House buildings and therefore is ineffective at removing the threat to human health and the environment. Either or both buildings could collapse or pieces of the buildings could detach, posing the risk of physical harm to on-site workers or trespassers. A collapse could also release contaminated dust into the air, spreading asbestos, heavy metals, and radiological contamination to adjacent areas, including sensitive environmental areas. Alternative 1 does not comply with the City of Oxnard's requirement that the buildings be retrofitted or demolished.

- **Implementability**
  There is no physical removal action associated with Alternative 1, so there are no technical implementability concerns.

- **Cost**
  There is no additional cost associated with Alternative 1. Current costs associated with maintaining Site security would continue.

### Alternative 2

Alternative 2 would demolish both the Smelter and Bag House buildings. The sub-floor vaults of both buildings would be cleared and cleaned. Process waste material would be disposed of off-site, metal debris would be separated and salvaged as scrap, and concrete debris would be crushed and used to fill in the sub-floor vaults.

- **Effectiveness**
  Alternative 2 would reduce the threat of injury or death to workers or trespassers on-site. Removing the buildings would also prevent an uncontrolled release of the Site contaminants into adjacent areas, including sensitive ecological areas. This alternative would also allow access to the soils under the buildings for testing. Alternative 2 would be consistent with future remedial goals for the Site and would comply with ARARs.

- **Implementability**
  Alternative 2 would use proven and commonly accepted demolition and disposal practices. Equipment and labor with the required expertise would be available for the removal, and the time required to complete it is less than one year. The City of Oxnard has indicated a preference for demolishing the buildings.

- **Cost**
  The estimated cost for Alternative 2 is approximately $1.3 million, with costs broken down as follows:

| Alternative 2 Cost Summary Table | | |
|---|---|---|
| Labor | $ | 280,459 |
| Equipment | $ | 269,384 |
| Subcontract | $ | 25,000 |
| Analytical | $ | 200,000 |
| Travel | $ | 130,000 |
| Miscellaneous | $ | 75,000 |
| Transportation & Disposal | $ | 15,000 |
| Overhead | $ | 24,180 |
| 25% Contingency | $ | 254,756 |
| **Total** | **$** | **1,273,779** |

This estimate is based on the stated removal scope and duration; the actual cost would be determined by the specific work plan developed for the removal.

# 4. Comparative Analysis of Removal Action Alternatives

This section compares the three alternatives with respect to the evaluation criteria.

## 4.1 Comparison of Alternative Effectiveness

Alternative 1 is not protective of public health, workers, or the environment, and does not comply with the City of Oxnard's order that the buildings be either repaired or demolished. Alternative 2 is the most protective of public health, workers, and the environment. Because a retrofit of the buildings is not technically feasible, only demolition of the buildings would prevent any structural failures. Alternative 2 would

reduce the risk of injury to workers or trespassers on-site and the risk of an uncontrolled release of contaminants off-site. Alternative 2 would be compliant with ARAR's, including the asbestos control measures under NESHAP and the hazardous substance transportation and disposal requirements of RCRA. Alternative 2 would achieve the removal objectives and would maintain control until a long-term solution is implemented.

### 4.2 Comparison of Alternative Implementability

There is no action associated with Alternative 1, so technical feasibility concerns are not relevant. Alternative 2, demolition of both buildings, uses proven technology, contributes to the remedial goals for the Site, and can be implemented in under 1 year. There are suitable opportunities to sell the salvaged metal scrap, and appropriate disposal options for the other waste streams including concrete debris, miscellaneous non-hazardous waste, and limited hazardous waste.

### 4.3 Comparison of Alternative Cost

Alternative 1 has no associated cost and is therefore the cheapest. Alternative 2 is estimated to cost $1.3 million.

## 5. Preferred Alternative

EPA's recommended removal action alternative is Alternative 2, Demolition of Process Buildings.

Alternative 2 satisfies the RAO's by preventing an accidental collapse of either building or an uncontrolled release of contaminants off-site. Alternative 2 is expected to satisfy all ARARs, and is supported by the City of Oxnard. The work will be designed to comply with NESHAP requirements for buildings containing asbestos, as well as prohibitions from disturbance to nesting swallows under the Migratory Bird Treaty Act of 1918. Any waste classified as hazardous will be stored, transported, and disposed of in accordance with RCRA requirements. Alternative 2 follows standard practices for removing dilapidated buildings, and the required expertise, equipment, and labor should be readily available. Alternative 2 stays within the statutory requirements for removal actions: the estimated cost for the removal action is $1.3 million, and the estimated time required to complete the action is two months.

Alternative 2 will also enable soil and groundwater sampling to be conducted in previously inaccessible areas (under the process buildings), and will prevent an uncontrolled release of contaminants off-site. The removal action will ensure the health and safety of workers participating in remedial activities by eliminating the risk of injury and/or death from falling building materials. Thus, Alternative 2 is consistent with future remedial plans for the Site and is protective of human health and the environment.

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Wise, Robert. POLREP #9 - Continuation of Work. April 3, 2007.

Wise, Robert. POLREP #10. April 19, 2007.

Wise, Robert. POLREP #11- Radiological Soil Assessment. June 4, 2007.

Wise, Robert. POLREP #12 - Continuation of Smelter Assessment. June 6, 2007.

Wise, Robert. POLREP #13- On-site Vehicle Fire. August 27, 2007.

Wise, Robert. POLREP #14 - Final POLREP. March 23, 2008.

Figure 1
Site Location Map
Halaco Engineering Facility
Oxnard, CA
March 2007

W Hueneme Rd.

Perkins Rd.

Arcturus Ave.

McWane Blvd.

Industrial Paper Plant

Waste Water Treatment Plant

Halaco Wate Disposal Area

Halaco Waste Management Unit

Area of Concern

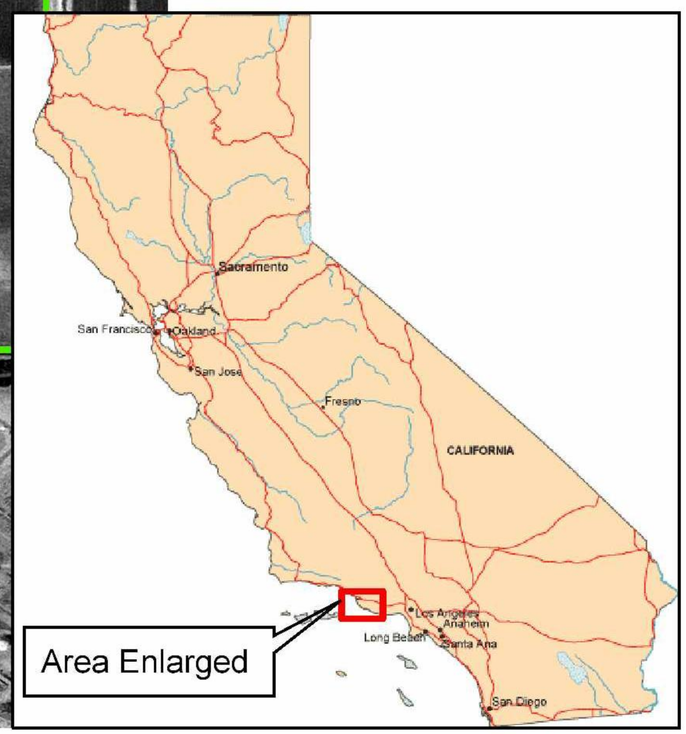
Halaco Smelter Site

Ormond Beach

N
W E
S

Scale in Feet

0 265530 1,060 1,590 2,120




**Legend**

- Oxnard Industrial Drain
- Roads
- Surrounding Industry
- Halaco Area
- Nature Conservancy Land
- Agricultural Area
- Residential Areas

Project # 002693.2053.01RA
TDD# 09-09-09-0002

Source: DigitalGlobe, Image date 2007-07-01


N

0 250 500 Feet

**Figure 2**

# Site Features
# Halaco Building Assessment

**6200 Perkins Road, Oxnard,**
**Ventura County, California**

ecology and environment, inc.
International Specialists in the Environment

FIGURE 3: Data Indicating Presence of Asbestos in Smelter Building

| | | | |
|---|---|---|---|
| REPORT NO: | 112670 | CLIENT: | START 3, TEAM 9<br>3700 INDUSTRY AVE., STE. 102<br>LAKEWOOD, CA 90712 |
| DATE: | Mar 29, 2007 | | |
| DATE RECEIVED: | Mar 23, 2007 | ATTENTION: | MINDY SONG |
| DATE ANALYZED: | Mar 29, 2007 | REFERENCE: | PO#584-0-0<br>PROJECT: HALACO |
| DATE / TIME COLLECTED: | 3/21/07 AT 0853-0857 | | |

SUBJECT: Polarized Light Microscopy Analysis for Asbestos; 2 Samples

METHODOLOGY: "Method for Determination of Asbestos in Bulk Building Materials." EPA 600/R-93/116

ACCREDITED: National Institute of Standards and Technology (NVLAP) #101218

CERTIFIED: California Department of Health Services Environmental Testing Laboratory ELAP 1119, County Sanitation Districts of Los Angeles County, Laboratory Identification No. 10120

QUALITY CONTROL SAMPLE (SRM 1866 GLASS FIBERS AS THE BLANK): NONE DETECTED

| SAMPLE ID NUMBER | SAMPLE LOCATION & DESCRIPTION | VISUAL DESCRIPTION | ASBESTIFORM MINERALS | OTHER FIBROUS MATERIALS | NON-FIBROUS MATERIALS |
|---|---|---|---|---|---|
| BUILDING 1<br>O32107 | NON-FRIABLE | BROWN GRANULAR | NONE DETECTED | CELLULOSE-<br>LESS THAN 1% | GRANULAR MINERALS<br>OPAQUES<br>MICA |
| BUILDING 2<br>O32107 | NON-FRIABLE | GRAY GRANULAR<br>GRAY FIBROUS | AMOSITE 15% | NONE DETECTED | GRANULAR MINERALS<br>OPAQUES |

Optical Microscopist
BMK/vm

B.M. Kolk, Laboratory Director

The EPA method is a semi quantitative procedure. The detection limit is between 1/10 to 1 percent by area and is dependent upon the size of the asbestos fibers, the means of sampling and the matrix of the sampled material.

The test results reported are for the sample or samples delivered to us and may not represent the entire material from which the sample was taken. The EPA recommends three samples or more be taken of a "homogeneous sampling area" before friable material is considered non-asbestos-containing.

This report, from a NIST accredited laboratory through NVLAP, must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.



** Negative floor tile samples may contain significant amounts (>1%) of very thin asbestos fibers which cannot by detected by PLM. Confirmation by X-Ray diffraction or TEM is recommended by EPA (Federal Register Vol. 59, No. 146).



EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 /626-568-4065