Administrative Record
6.3

JUNE 4, 1992

BEFORE THE STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

IN THE MATTER OF EXEMPTION for ASARCO Incorporated from Chapter 70.105 RCW and the Rules and Regulations of the Department of Ecology (WAC Chapter 173-303)	)	No. PETITION FOR EXEMPTION OF DEMOLITION DEBRIS

ASARCO Incorporated ("Asarco") files this petition to exempt demolition debris at the Asarco Tacoma smelter from designation as dangerous waste under WAC 173-303. Asarco will demonstrate below that demolition debris which designates as dangerous waste only because it has levels of arsenic over the dangerous waste regulatory threshold of 100 ppm does not automatically pose a threat to human health or the environment, meets the other regulatory requirements for exemption from the dangerous waste regulations as set forth in WAC 173-303-072, and is more properly regulated pursuant to CERCLA. Because the Tacoma smelter has been closed since 1986, and a demolition consent decree has been signed between Asarco and the Environmental Protection Agency, this petition applies only to debris resulting from the demolition of the smelter structures, as outlined in the interim remedial action consent decree and statement of work.

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I. INTRODUCTION

The petitioner is a New Jersey corporation with the following mailing addresses:

ASARCO Incorporated 180 Maiden Lane New York, NY 10038	Thomas L. Aldrich Site Manager ASARCO Incorporated P.O. Box 1677 Tacoma, WA 98401-1677

Pursuant to the terms of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9601 et seq., Asarco has been designated a potentially responsible party for the cleanup of the Tacoma smelter site. CERCLA is designed to accomplish "effective and expeditious cleanups" protective of human health and the environment. A cleanup of the smelter site is being required because of the release or threatened release of hazardous substances, primarily heavy metals, into the environment.

Ecology has taken the position that certain of the demolition debris from the interim remedial action is also potentially subject to designation as dangerous waste pursuant to RCW 70.105, the Hazardous Waste Management Act ("HWMA"). The dangerous waste regulations, WAC 173-303, implement the HWMA and are intended to designate those "solid wastes" that pose a "substantial present or potential hazard to human health, wildlife or the environment," RCW 70.105.010(5), and to provide for and monitor the management and disposal of such wastes.

Ecology believes the demolition debris containing arsenic is potentially classified as carcinogenic dangerous waste under WAC 173-303-103 since arsenic is an IARC-listed carcinogen and is

present in some of the debris at a level greater than .01 percent (100 ppm). Ecology takes the position that certain of the demolition debris can be designated dangerous waste pursuant to WAC 173-303-103 based on the mere presence of arsenic at the regulated level, whether or not the arsenic is released into the environment, and without regard to the rate or quantity of release. Moreover, the demolition debris can be classified as dangerous under the regulations without considering the risk to human health and the environment attendant on the specific arsenic level in the debris.

It is critical to clarify that EPA's authority under CERCLA to require a cleanup at the smelter does not depend on the status of the demolition debris as dangerous or non-dangerous waste under HWMA. CERCLA cleanup authority is premised on a defined "release" of a hazardous substance into the environment, not on whether the source of the released hazardous substance or the substance itself is a "dangerous waste" under HWMA, RCW 70.105, an entirely separate statute. The dangerous waste regulations serve an entirely different purpose. Where there is an ongoing industrial waste stream, the regulations are applied to determine how the disposal of those wastes is to be handled. They are not intended to regulate the cleanup of historic hazardous waste sites, but, rather, to govern the ongoing generation of wastes due to current activities. Granting this petition, therefore, will not undermine EPA's (or Ecology's) ability to require a cleanup at sites where a release of heavy metals threatening human health or the

environment has occurred, irrespective of the source of the metals.

Since CERCLA incorporates "ARARs" into its cleanup standards, the designation of certain materials as "dangerous wastes" unneccessarily complicates the CERCLA cleanup evaluation process by requiring those materials to be disposed of as "dangerous wastes" without regard to whether or not they can be disposed of safely under CERCLA in alternative ways. Notwithstanding its CERCLA authority to require any necessary cleanup at the smelter, EPA has indicated that, in its opinion, demolition debris contaminated with arsenic above the level of 100 ppm is dangerous waste that must be handled in accordance with the dangerous waste regulations. In other words, it is EPA's determination that the dangerous waste regulations are ARARs and must be applied.

This is unnecessary and counterproductive. Clearly, the dangerous waste regulations were intended to provide an initial screening to determine where ongoing waste streams were disposed of, not to determine cleanup levels. The regulations were drafted in an overinclusive manner with provision for exemption or exclusion of wastes that meet the regulatory classification but which do not present a substantial threat to human health or the environment. See WAC 173-303-072. CERCLA has its own provision for setting cleanup levels based on a risk analysis, and the waste-screening standards of HWMA are not appropriate for that exercise.

For example, the dangerous waste regulations require any waste that contains one or more IARC carcinogens be designated as

dangerous if the monthly or batch quantity exceeds 220 pounds and the concentration of the carcinogen in the waste exceeds .01 percent (100 ppm) of the total waste quantity. WAC 173-303-103. This method of designation fails to take into account the potency of the substance, the chemical form of the carcinogen, the mobility of the substance in the environment, the bioavailability to living organisms of the substance, the extent that humans or wildlife are exposed to the substance, or other factors affecting the capacity of the substance to harm the public health or environment.

If demolition debris remains classified by Ecology as dangerous waste where the arsenic content is greater than 100 ppm, the effect on the cleanup will be completely inconsistent with public policy. The disposal requirements will be governed by an irrelevant regulatory classification, not by any actual threat to human health or the environment. This conflicts with the policy of CERCLA and ties the hands of both the EPA and Ecology. Further, such an approach is unfair to Asarco.

Ecology should utilize its exemption procedure with respect to the demolition debris that will pose no significant threat to the public health or environment. Before limiting the ways that demolition debris can be handled solely due to arsenic content, Ecology should evaluate actual environmental and human health risks. Disposal of any demolition debris should be based on site-specific requirements actually necessary to protect human health and the environment.

II. PROPOSED ACTION

Asarco will demonstrate that demolition debris containing arsenic in amounts over 100 ppm does not automatically pose a threat to public health or the environment, and therefore, that there is no basis for automatically designating the debris as dangerous waste pursuant to WAC 173-303. Asarco will further demonstrate that alternative methods exist for handling the demolition debris that are protective of human health and the environment. The demolition debris should be exempted from regulation as dangerous wastes and be subject only to the requirements of CERCLA as set forth in the existing consent decree for demoliton of the Tacoma smelter.

III. RELIEF SOUGHT

On December 31, 1990, the United States Environmental Protection Agency (EPA) signed a record of decision (ROD) for an interim remedial action at the Asarco Tacoma smelter site. The interim remedial action consists of three primary elements: (1) demolition of buildings and structures, including the stack; (2) disposal of demolition debris; and, (3) implementation of surface water run-on controls. EPA and Asarco signed a consent decree to implement the interim remedial action ROD on August 28, 1991. A statement of work (SOW) which outlines requirements for implementation of the ROD is attached to the consent decree. One task set out in the SOW is the preparation of a demolition and disposal plan for the interim action. A copy of the consent decree, ROD and SOW is attached as Exhibit 1.

The demolition and disposal plan, prepared by Asarco's consultants, was submitted to the EPA May 12, 1992. A copy of that plan is attached as Exhibit 2. The plan divides the site into ten areas and sets out the structures to be demolished in each area. See Section 4.0, Exhibit 2. Materials generated during the disposal process will consist primarily of wood, steel, brick, and concrete. Additional materials may include ceramics, plastics, electrical wiring, etc.

During the demolition process, structural materials will be sampled to determine their potential final disposition. To assist in classifying these materials, a sampling and analysis plan (SAP) has been prepared to detail procedures for the collection of different types of samples, to determine whether they are representative of the group, and to establish criteria for additional sampling. The SAP is an appendix to the demolition and disposal plan. Based on a comparison of sampling results with practicable objective criteria, the on-site remedial manager will decide whether additional decontamination procedures are necessary, or if the materials are acceptable for off-site shipment. See Figure 1, Exhibit 2 at 62.

The demolition and disposal plan addresses the following disposal options for demolition materials:

- Incineration (wood only);
- Transportation to a solid waste landfill (all materials);
- Placement in a RCRA-equivalent on-site containment facility (OCF) (all materials);

- Transportation to an off-site RCRA facility (all materials);
- Temporary storage in fine-ore bins on-site (most materials);
- Recycling (steel, lead, stainless steel, some wood).

Although the potential of each of the above options is being fully explored by Asarco, not all are practicable or feasible given the quantity of materials and the realities of the demolition process. The two options considered most feasible are incineration of the wood debris and temporary storage in the fine-ore bins pending completion of the final ROD for the site. Another option being investigated, however, involves landfilling the remaining non-recyclable materials in an off-site minimum functional standards landfill. However, in order to fully utilize incineration and off-site landfilling, Ecology would have to exempt the demolition debris from the dangerous waste regulations. If the exemption is granted, only the demolition debris that tests as hazardous waste through the TCLP test will require special handling at disposal. The exemption will not pose a hazard to human health or the environment because each of the disposal options Asarco will utilize if the exemption is granted are already subject to regulation.

Incineration will be carried pursuant to the terms of a permit issued by the Puget Sound Air Pollution Control Agency (PSAPCA). A copy of the permit is attached as Exhibit 3. The incineration process will include ongoing performance evaluation

and monitoring of emissions. An exemption from the dangerous waste regulations will permit Asarco to incinerate all wood demolition debris except for any that tests as hazardous waste in the pre-screening process.

The remaining demolition debris that is neither incinerated nor recycled could be landfilled. If the demolition debris is exempted from regulation as dangerous waste, only debris that tests as hazardous waste would be excluded from an approved facility that meets the state's minimum functional standards. By exempting the debris from the dangerous waste regulations, many more disposal options become available.

The minimum functional regulatory standards for facilities that handle, store, or dispose of solid wastes were adopted by Ecology in 1985. These regulations, set forth in WAC 173-304, impose standards regarding disposal of solid waste that provide significant additional protection of the environment compared to the conditions that prevailed in 1984 when Ecology promulgated WAC 173-303-103 regarding carcinogenic dangerous wastes.

Because of the adoption of the minimum functional standards, waste that might have presented a significant danger to human health or the environment if disposed of at an unregulated solid waste landfill will no longer present any such significant risk if handled consistent with provisions of the minimum functional standards. Demolition debris from the Asarco smelter site can be disposed of safely at solid waste landfills that meet the minimum functional standards.

Ecology has not amended the dangerous waste regulations to recognize the improved protection now required at solid waste facilities that significantly reduce environmental hazard. In particular, low risk materials, like demolition debris containing low levels of arsenic and other contaminants, can no longer conceivably present any significant threat to the environment if properly disposed of at a solid waste landfill meeting the state's minimum functional standards. Ecology can grant Asarco's request for an exemption from the dangerous waste regulations for these materials knowing that the danger to human health and the environment presented by disposing of these materials in a minimum functional standards facility is negligible.

IV. EXPEDITED RESPONSE

In enacting the Administrative Procedure Act, the Washington State Legislature has recognized that, with respect to some agency actions, time may be a factor. For example, when a declaratory judgment is requested of Ecology, pursuant to RCW 34.05.240, the agency has 30 days to enter an order, set the matter for a hearing to be held within 90 days, or set a time within 90 days by which it will enter a declaratory judgment. If a party petitions Ecology for the adoption, amendment, or repeal of a rule, the agency must deny the petition or initiate rulemaking proceedings within 60 days. RCW 34.05.330. Finally, Ecology has the authority to adopt, amend, or repeal a rule on an emergency basis if necessary for protection of public health, safety, or the general welfare. RCW 34.05.350.

The legislature has clearly indicated it believes an agency is capable of acting with due speed where necessary. A petition for exemption from a regulation is not dissimilar from a petition to amend or repeal a rule. Ecology should be capable of addressing the exemption petition expeditiously, particularly where background research has been completed and is available.

V. CONCLUSION

Before Asarco can proceed to the actual cleanup of the smelter site, the demolition process must be completed. Although Asarco has investigated several disposal options for the demolition debris, the two of the most practicable, feasible alternatives, incineration and landfilling in a minimum functional standards facility, would require exemption of the demolition material from the dangerous waste regulations to remain viable. By granting an exemption for demolition debris from the dangerous waste regulations, Ecology will afford Asarco an opportunity to fully utilize these two options. Granting the exemption will not be a threat to human health or the environment because each of the two options is subject to other regulatory requirements. The incineration will be carried out pursuant to the terms of the PSAPCA permit. Any off-site disposal would be in a state regulated minimum functional standards facility.

Asarco urges Ecology to grant this exemption for its demolition debris.

DATED this 4th day of June, 1992.

Respectfully submitted,

ASARCO Incorporated

By _____
Thomas L. Aldrich
Site Manager

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1.	Interim Remedial Action
A.	Record of Decision, Decision Summary, and Responsiveness Summary, December 1990
B.	Commencement Bay Nearshore/Tideflats Superfund Site; Asarco Smelter Interim Remedial Action Consent Decree, filed May 19, 1992 in United States of America vs. Asarco Incorporated, U.S. District Court for the Western District of Washington, Civil No. C91-5528-B.
C.	Asarco Smelter Site Interim Remedial Action Statement of Work dated August 26, 1991
2.	Demolition and Disposal Plan for Interim Remedial Action, Asarco Tacoma Plant dated May 12, 1992
3.	Puget Sound Air Pollution Control Agency ("PSAPCA") Permit for Incinerator at Asarco Tacoma smelter

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Record of Decision, Decision Summary, and Responsiveness Summary

for

Interim Response Action
Commencement Bay Nearshore/Tideflats Superfund Site
Operable Unit 07
(Asarco Demolition)
Tacoma, Washington

December 1990

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RECORD OF DECISION
INTERIM ACTION SELECTION (DEMOLITION ACTIVITIES)
ASARCO, INC.
TACOMA, WASHINGTON

Statement of Basis and Purpose

This decision document presents the selected interim remedial action for demolition activities at the ASARCO Incorporated (hereinafter "Asarco" or "Site") Site in Tacoma, Washington developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. 9601), as amended by the Superfund Amendments and Reauthorization Act (SARA), and to the extent practicable, the National Contingency Plan. This action includes demolition of the majority of structures and buildings at the Site, and other measures in preparation for the final remedial action at this Operable Unit 07 of the Commencement Bay Nearshore/Tideflats Superfund Site.

This decision is based on the administrative record for this site. A copy of the administrative record index is attached as Appendix VII.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Selected Remedy

The demolition activities described in this Record of Decision (ROD) are an interim remedy for the Asarco site. The interim measures include: demolishing contaminated structures to clear the Site for the completion of the Remedial Investigation and Feasibility Study (RI/FS); preventing the threat of an uncontrolled smelter stack collapse; and partially controlling surface water originating off the Asarco property.

The interim remedy will:

- Demolish and dismantle certain on-site buildings and structures other than the stack, that are identified in Appendix V (found in Decision Summary) using

conventional trade demolition techniques after cleaning the buildings and removing all asbestos-containing materials;

- Demolish the smelter stack by implosion using explosives;

- Suppress dust and particulate emissions during demolition using fogging and misting techniques and to the extent practicable, encapsulate the interior lining of the smelter stack.

- Collect wastewater from the dust suppression measures at each demolition site and route collected wastewater to an on-site wastewater evaporation system;

- Monitor ambient air levels during demolition activities;

- Vacuum, sample and decontaminate buildings that are not demolished or dismantled;

- Remove the ship to shore oil line at the central dock area and ensure any residual oil is not released;

- Dispose of uncontaminated wood and combustible materials which are not dangerous or hazardous waste, by burning them in an incinerator;

- Dispose of steel, concrete, contaminated wood, asbestos, and other demolition debris in one of the following ways:

    * temporary storage of debris in the fine ore bins until selection of the final disposal remedy (all demolition debris that remains on site must be stored in the fine ore bins);

    * off-site disposal of debris that is hazardous, dangerous, or solid waste in an appropriate disposal facility that is operating in compliance with applicable federal and state requirements;

    * salvage for reuse or recycling of decontaminated material.

- Dispose of sludge from the wastewater evaporation process and dust from vacuuming the on-site structures by shipment to a metal recovery facility.

- Temporarily store stack bricks in the fine ore bins building until selection of the final disposal remedy.

- Implement measures to prevent surface water from entering the Site by rerouting the water through diversion ditches and conduits to a permitted outfall

- Implement measures to minimize contact of on-site surface water with newly exposed soils and collect surface water run-off in the wastewater evaporation system.

Declaration

This Interim Action is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate for this remedial action, and is cost-effective. This Interim Action utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable given the limited scope of the action. Because this interim action does not constitute the final remedy for the site, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element will be addressed at the time of the final response action. Subsequent actions are planned to fully address the principal threats posed by this site.

Because this remedy will result in hazardous substances remaining on site above health-based levels, a review will be conducted within five years of commencement of this interim remedial action, unless the final remedy for the Site has been initiated by that time, to ensure that the remedy continues to provide adequate protection of human health and the environment.

Dana A Rasmussen
Regional Administrator
EPA Region 10

12/31/90
Date

DECISION SUMMARY
INTERIM RESPONSE ACTION
COMMENCEMENT BAY/NEARSHORE TIDEFLATS SUPERFUND SITE
ASARCO DEMOLITION
OPERABLE UNIT 07
TACOMA, WASHINGTON

ASARCO, INCORPORATED

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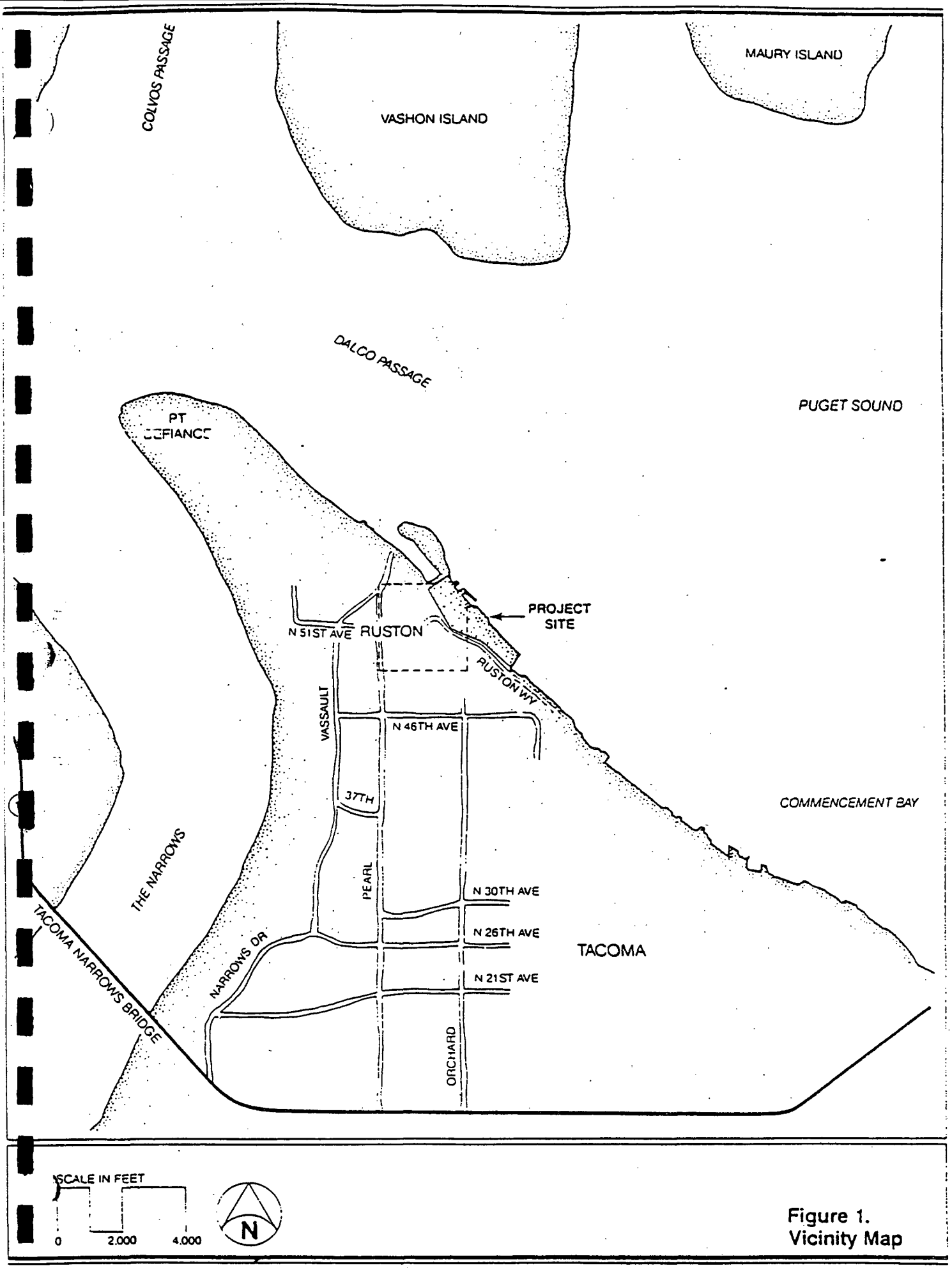
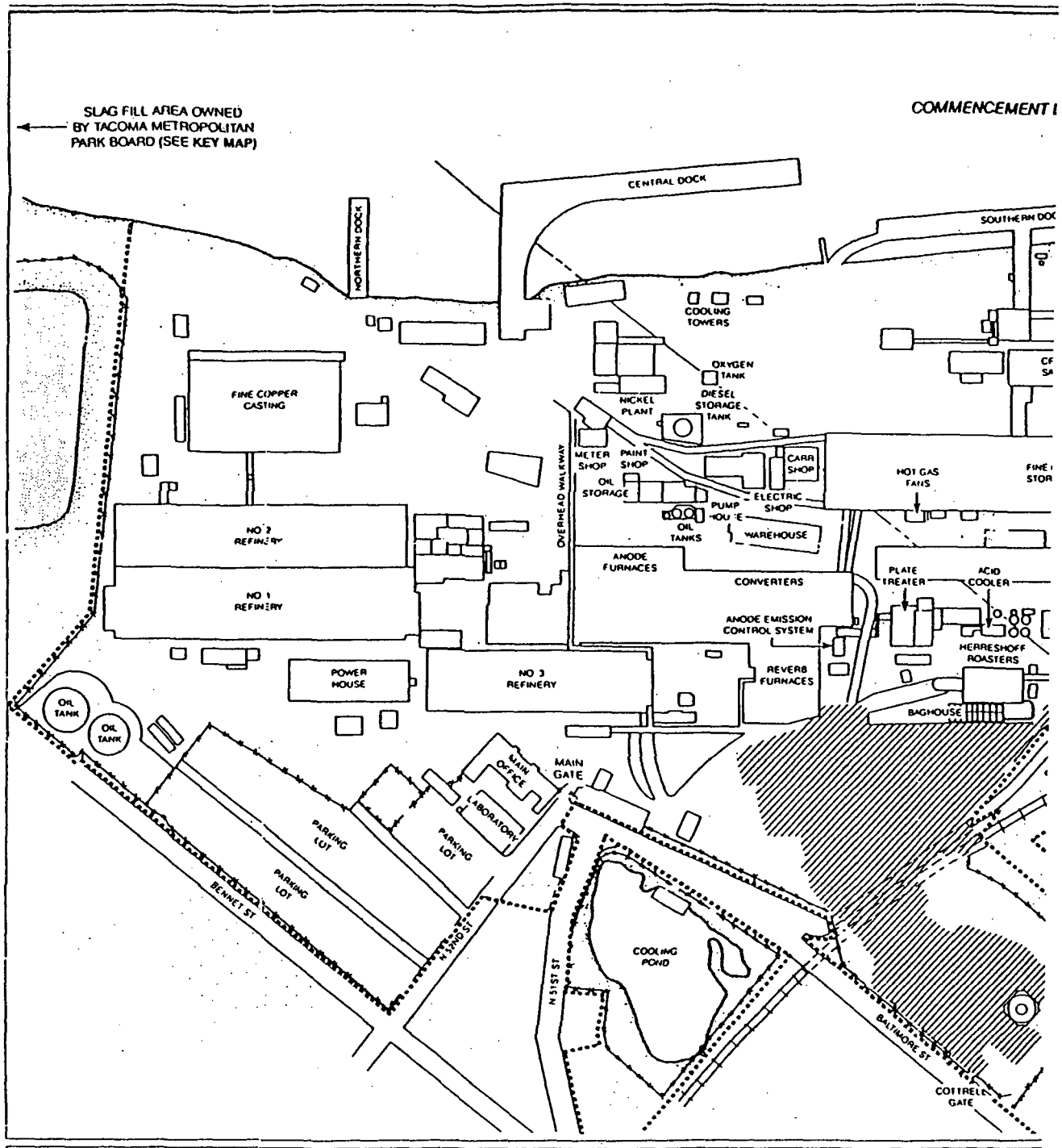
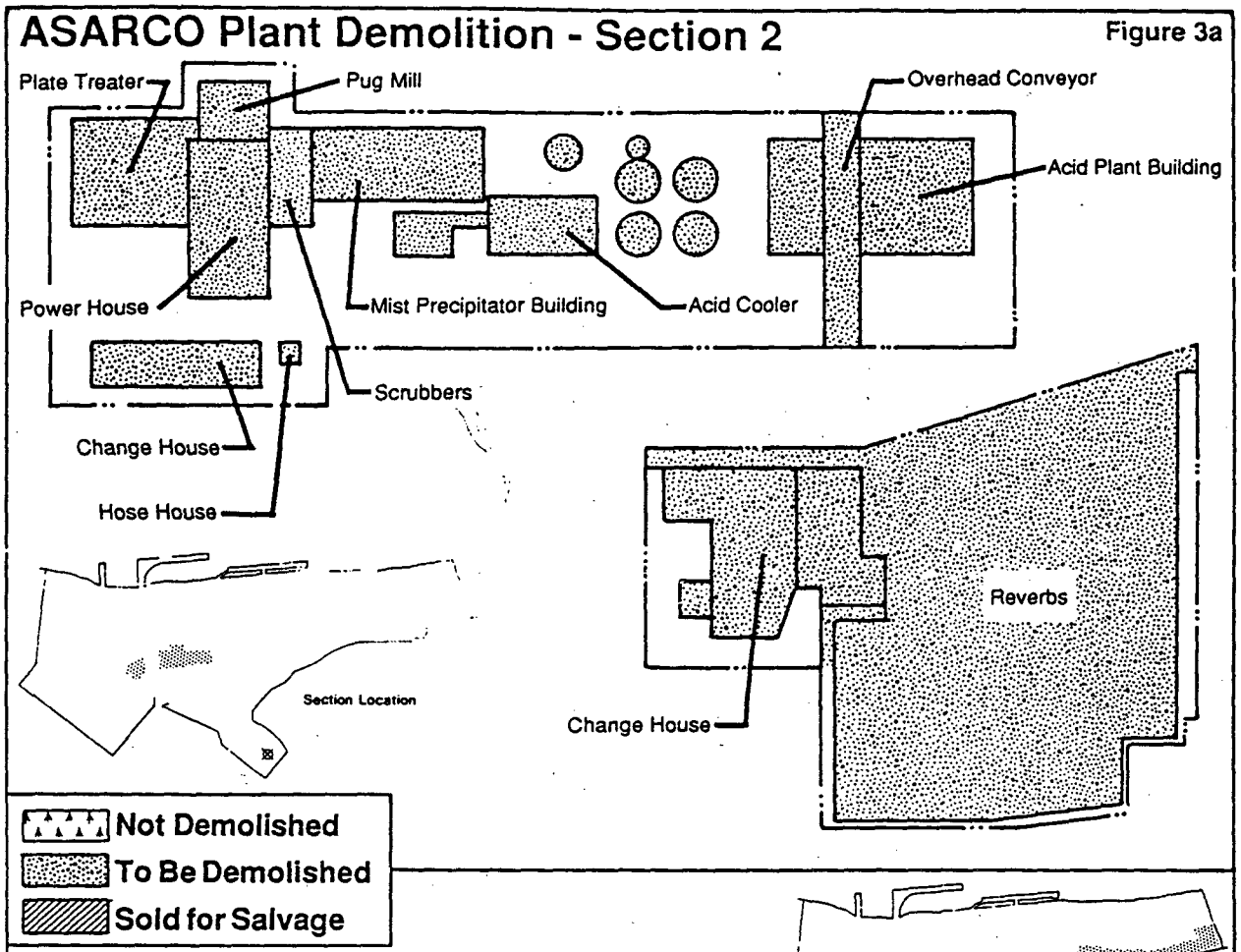
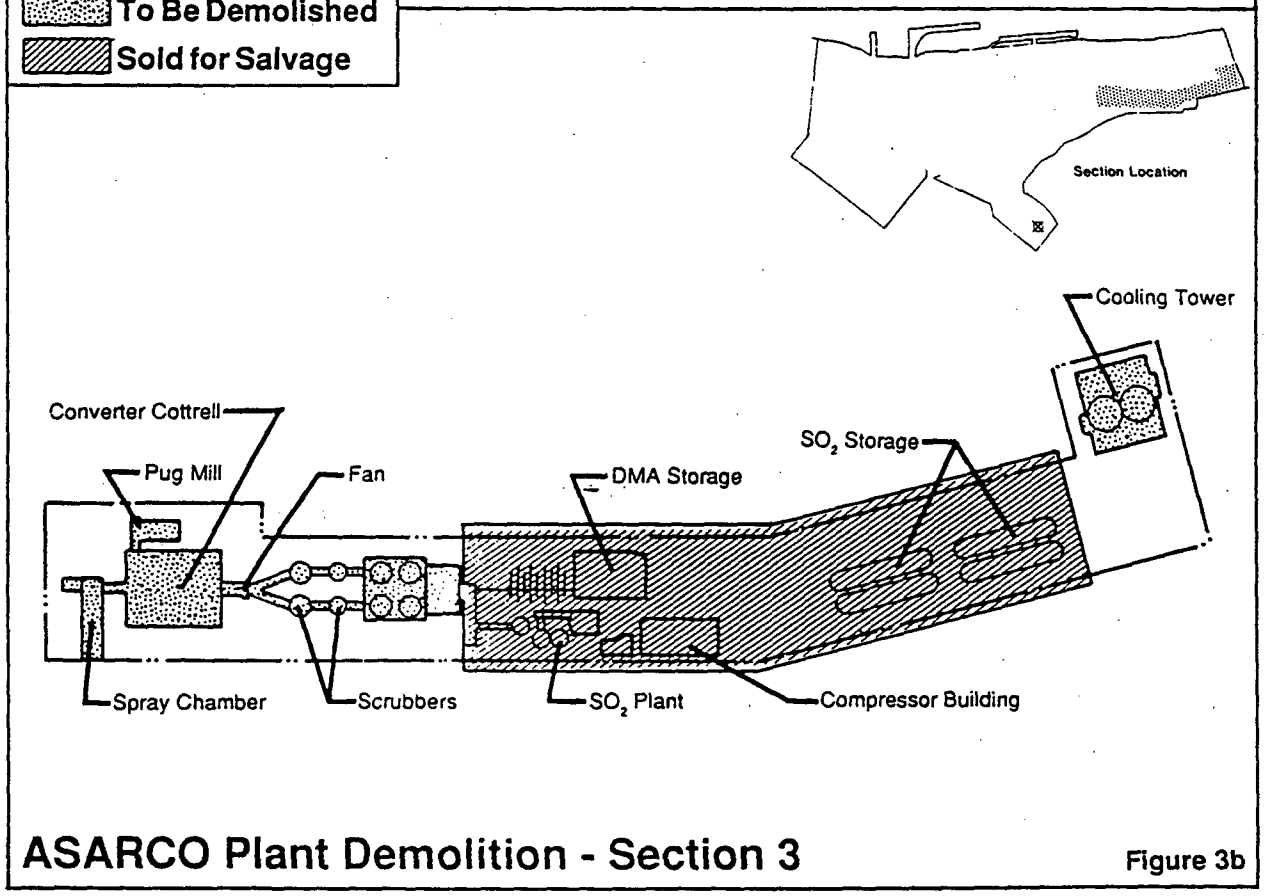
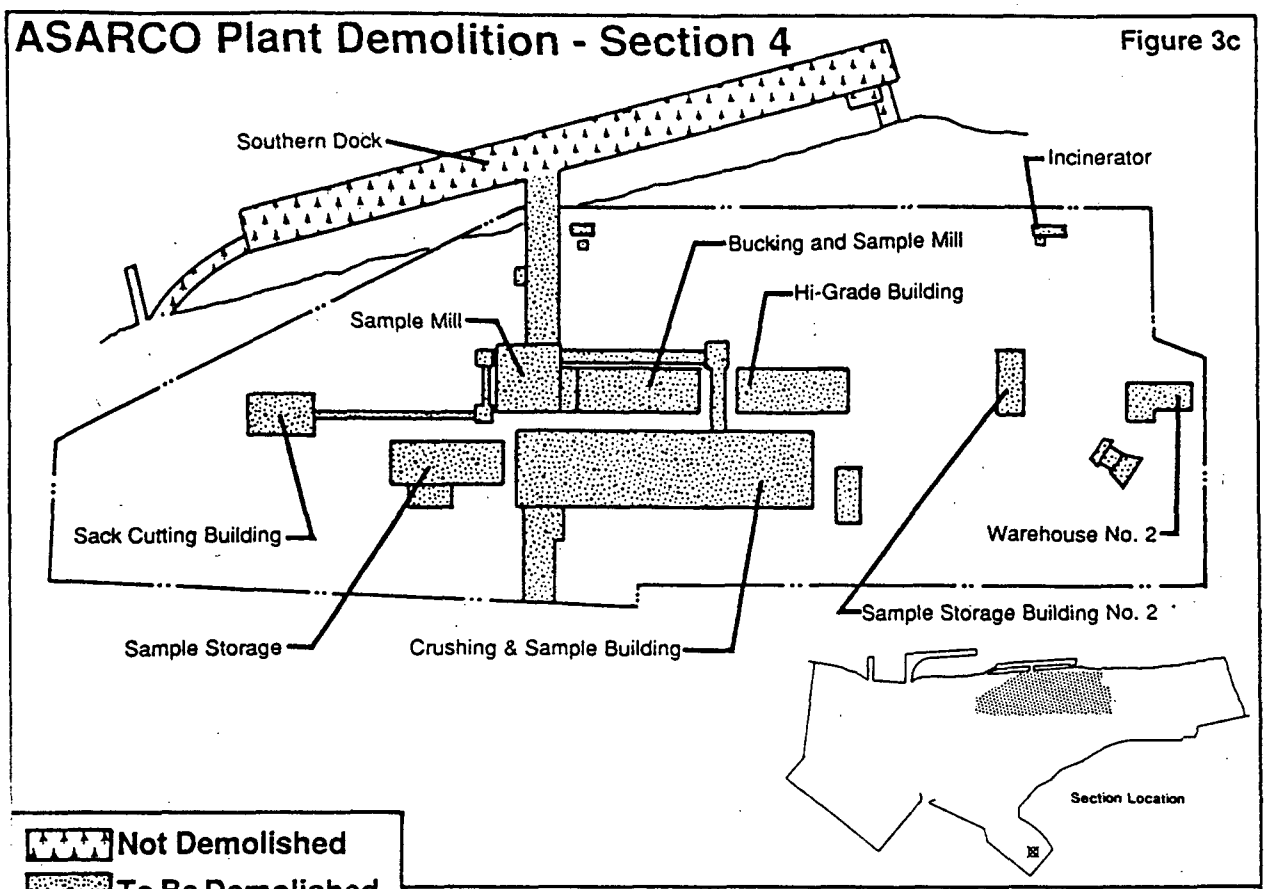


Figure 1.
Vicinity Map

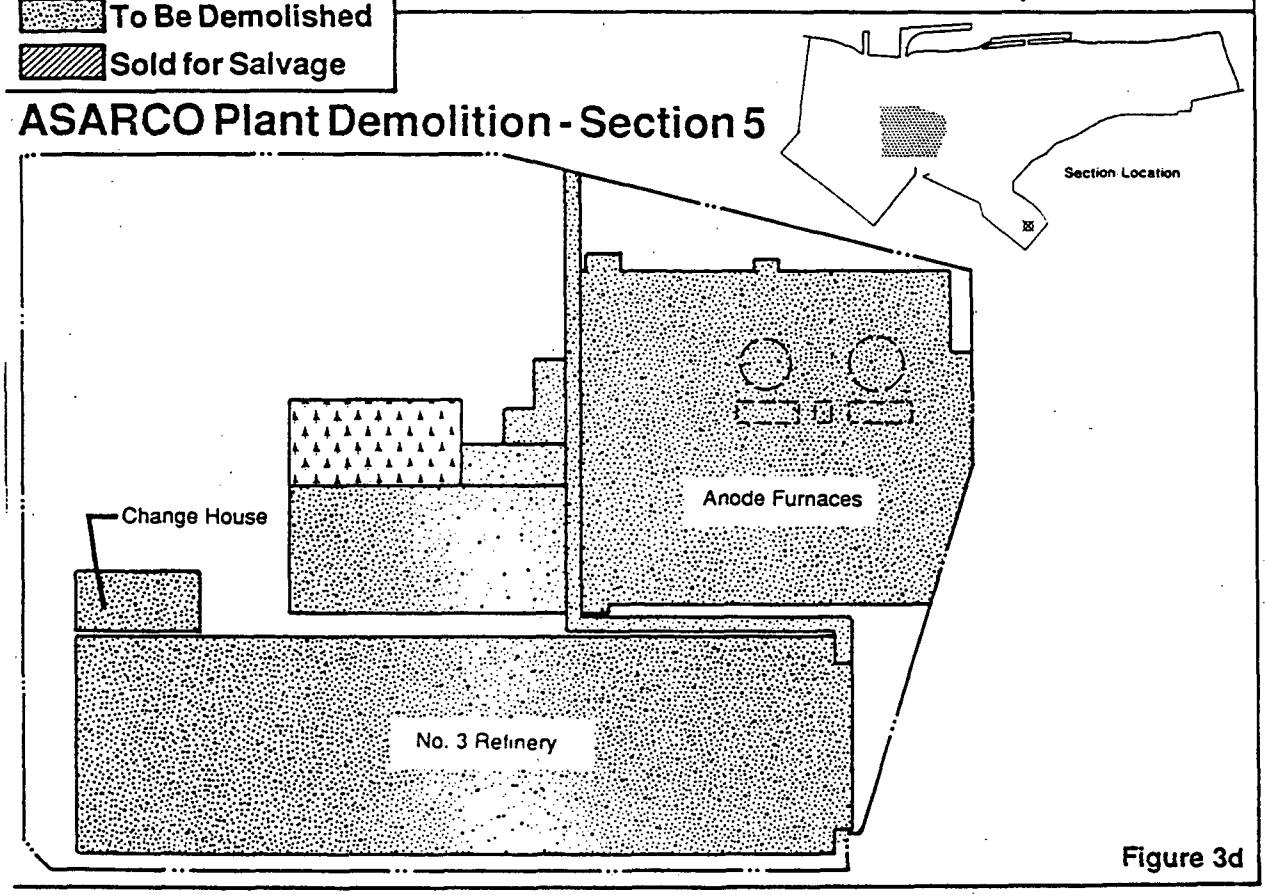

SLAG FILL AREA OWNED BY TACOMA METROPOLITAN PARK BOARD (SEE KEY MAP)
COMMENCEMENT
CENTRAL DOCK
NORTHERN DOCK
SOUTHERN DOC
COOLING TOWERS
OXYGEN TANK
DIESEL STORAGE TANK
NICKEL PLANT
FINE COPPER CASTING
METER SHOP
PAINT SHOP
OIL STORAGE
CARR SHOP
ELECTRIC SHOP
PUMP HOUSE
OIL TANKS
WAREHOUSE
HOT GAS FANS
OVERHEAD WALKWAY
NO 2 REFINERY
NO 1 REFINERY
ANODE FURNACES
CONVERTERS
PLATE TREATER
ACID COOLER
ANODE EMISSION CONTROL SYSTEM
HERRESHOFF ROASTERS
POWER HOUSE
NO 3 REFINERY
REVERB FURNACES
BAGHOUSE
OIL TANK
OIL TANK
MAIN OFFICE
MAIN GATE
LABORATORY
PARKING LOT
PARKING LOT
PARKING LOT
BENNET ST
N 52ND ST
N 51ST ST
COOLING POND
BALTIMORE ST
COTTRELL GATE
SCALE IN FEET
N


ASARCO Plant Demolition - Section 2
Figure 3a
Plate Treater
Pug Mill
Overhead Conveyor
Acid Plant Building
Power House
Mist Precipitator Building
Acid Cooler
Scrubbers
Change House
Hose House
Reverbs
Change House
Section Location
Not Demolished
To Be Demolished
Sold for Salvage


Section Location
Cooling Tower
Converter Cottrell
Pug Mill
Fan
DMA Storage
SO_2 Storage
Spray Chamber
Scrubbers
SO_2 Plant
Compressor Building
ASARCO Plant Demolition - Section 3
Figure 3b



Not Demolished
To Be Demolished
Sold for Salvage



ASARCO Plant Demolition - Section 6

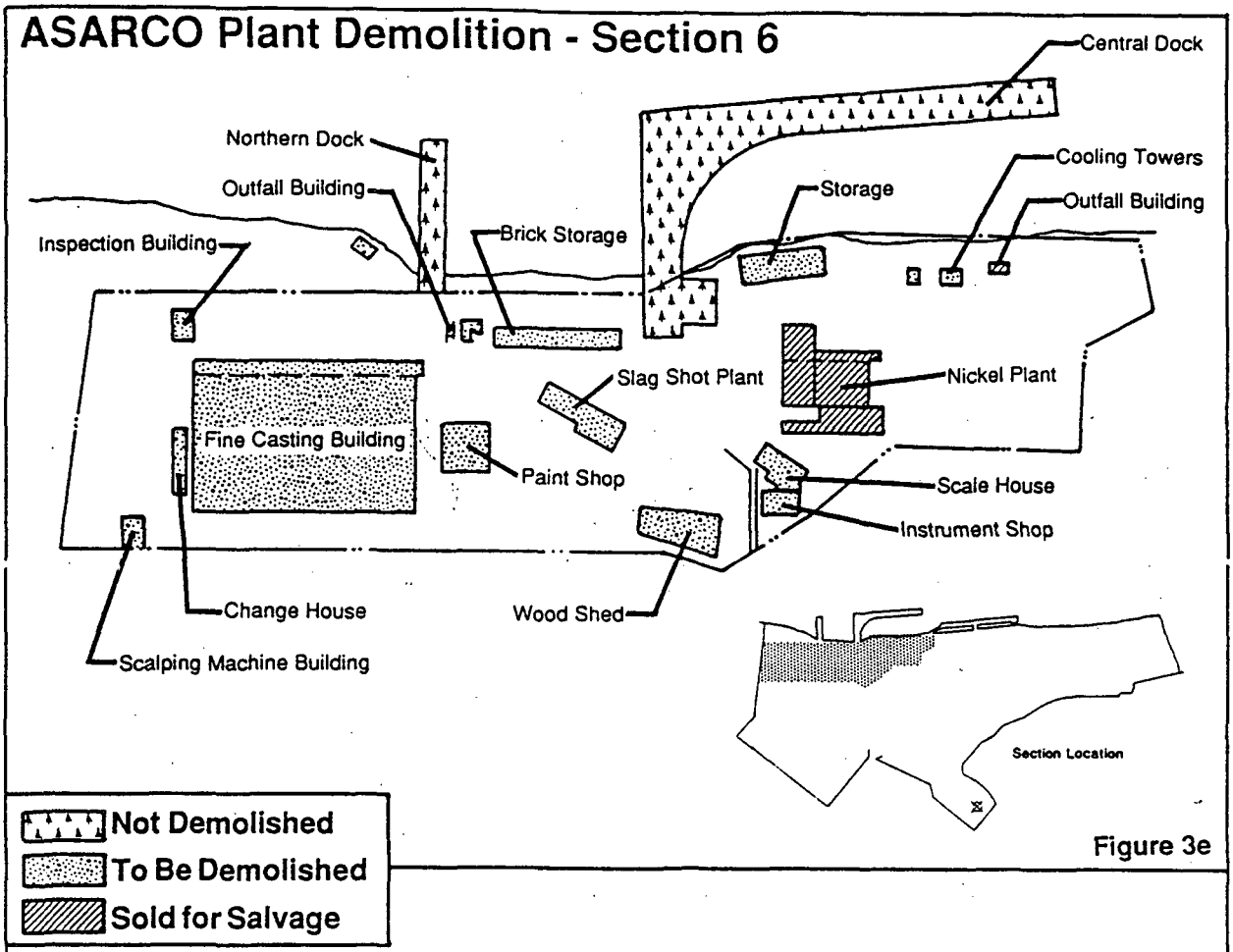
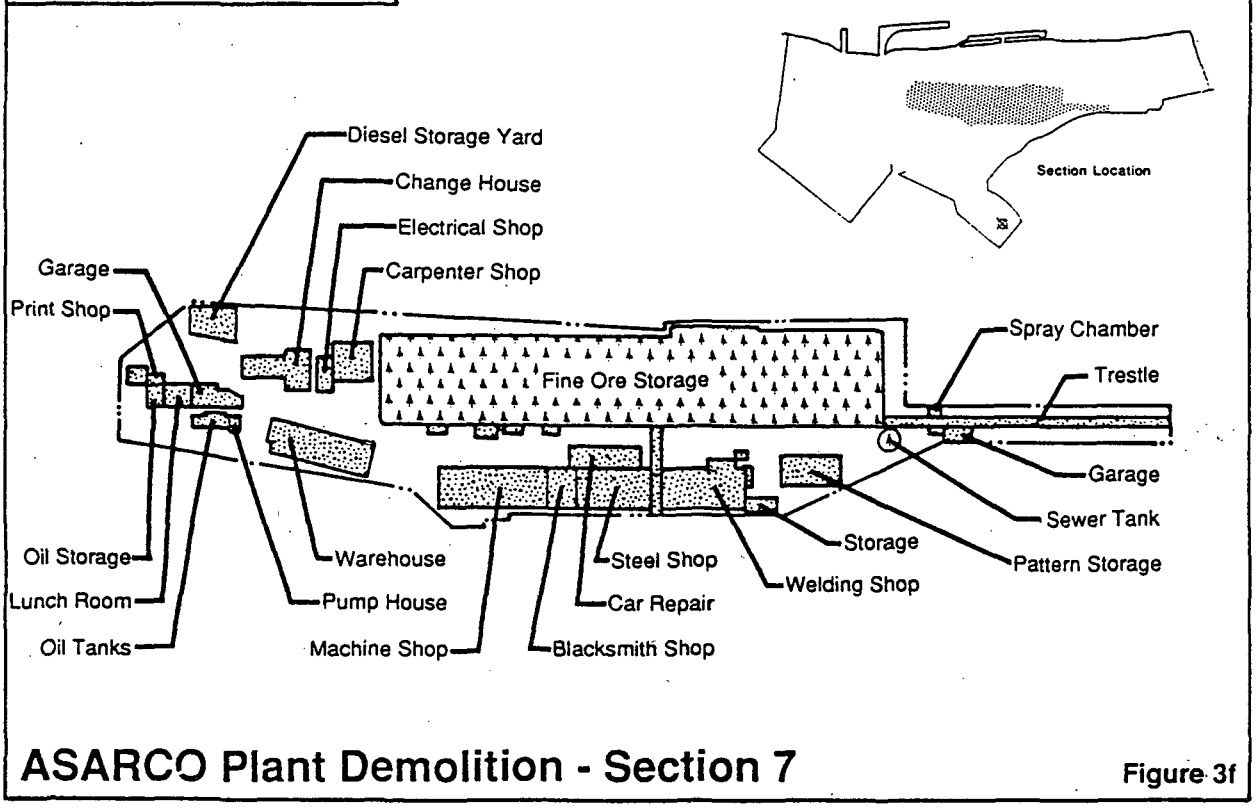


Figure 3e

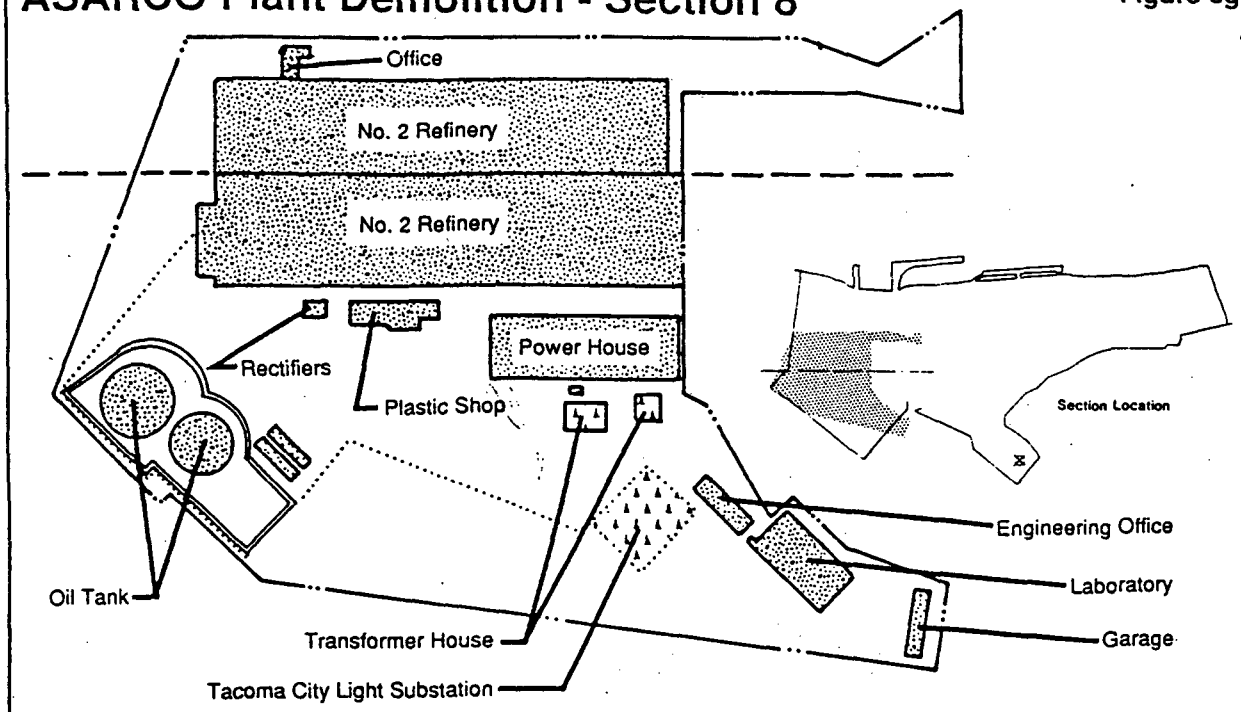


ASARCO Plant Demolition - Section 7

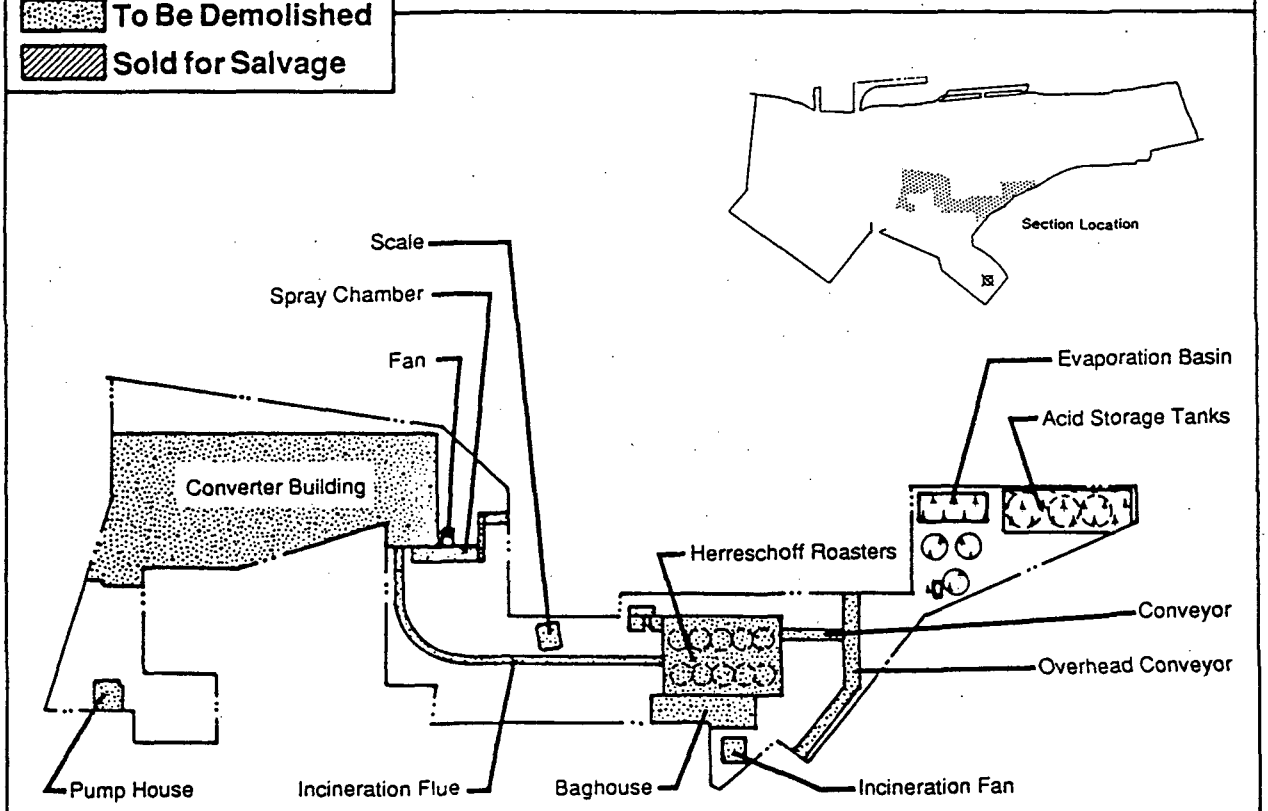
Figure 3f

ASARCO Plant Demolition - Section 8

Figure 3g



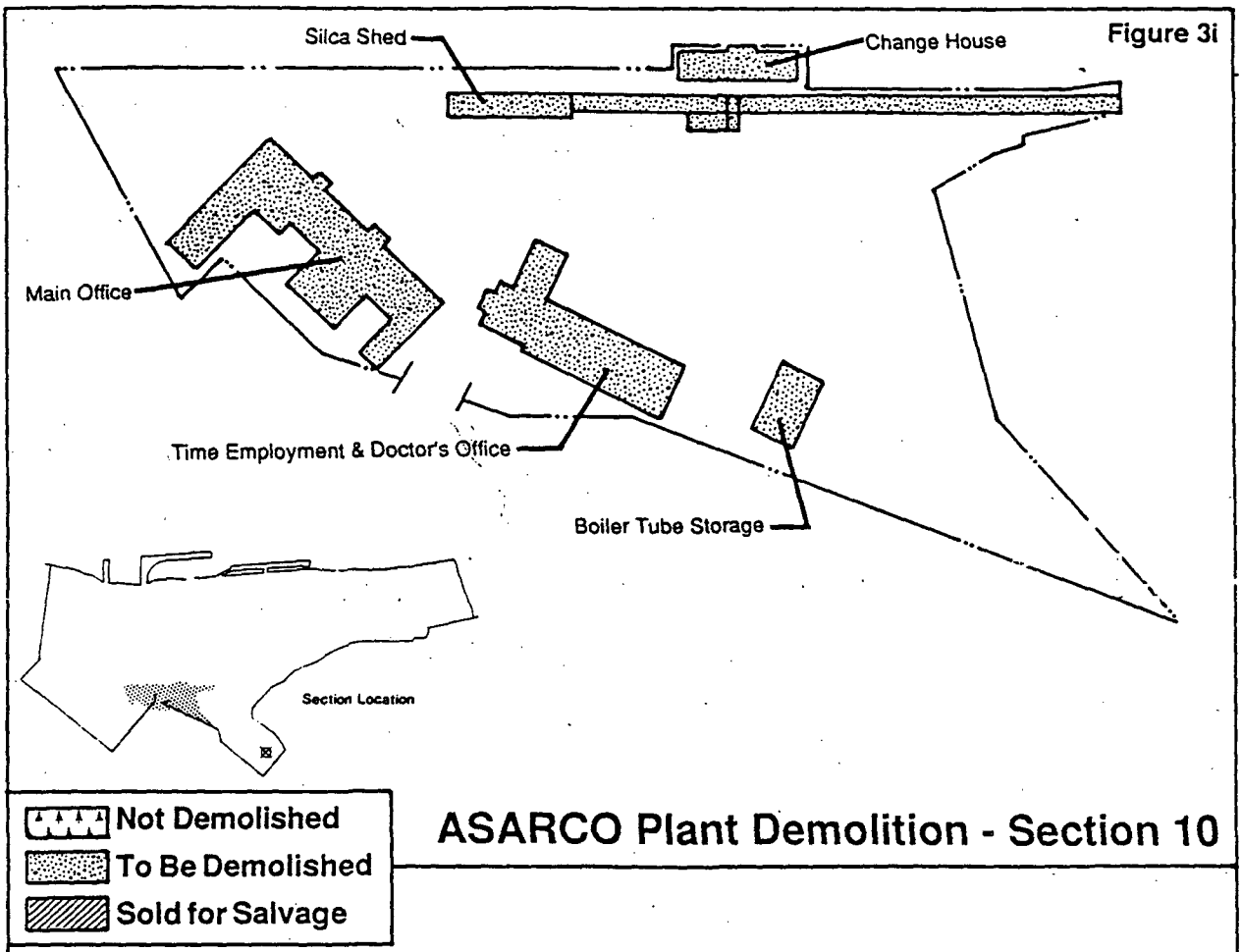
Not Demolished
To Be Demolished
Sold for Salvage



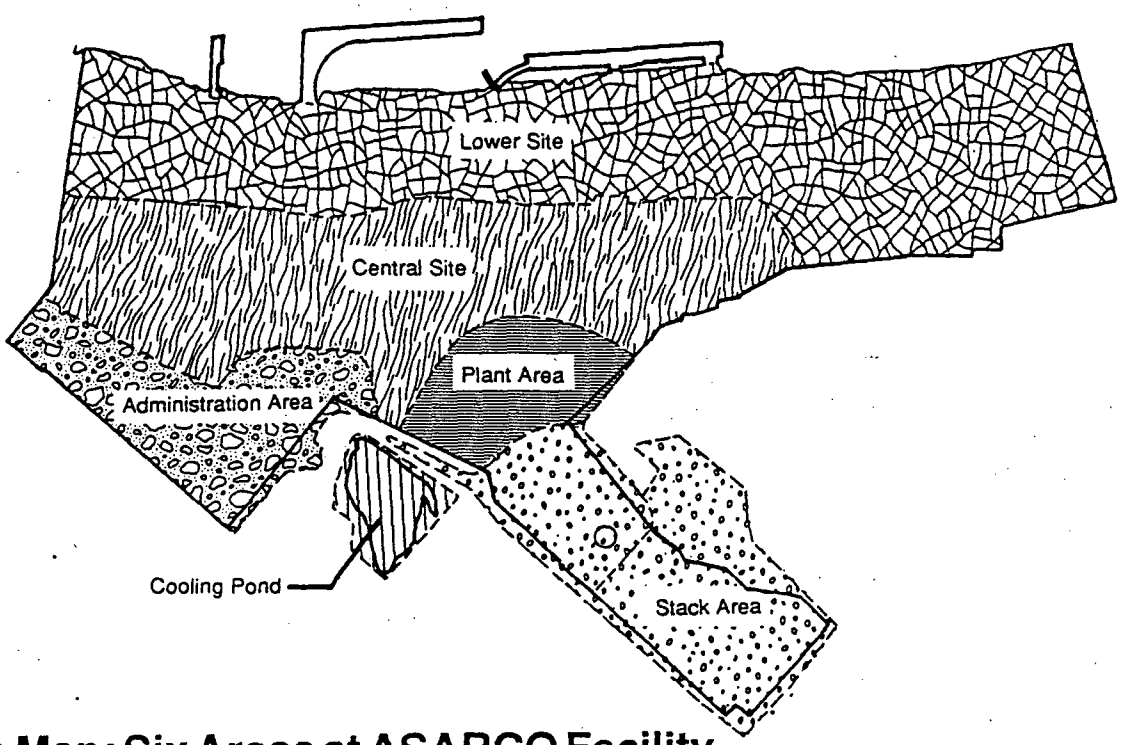
ASARCO Plant Demolition - Section 9

Figure 3h

Figure 3i



ASARCO Plant Demolition - Section 10



Site Map: Six Areas at ASARCO Facility

Figure 3j

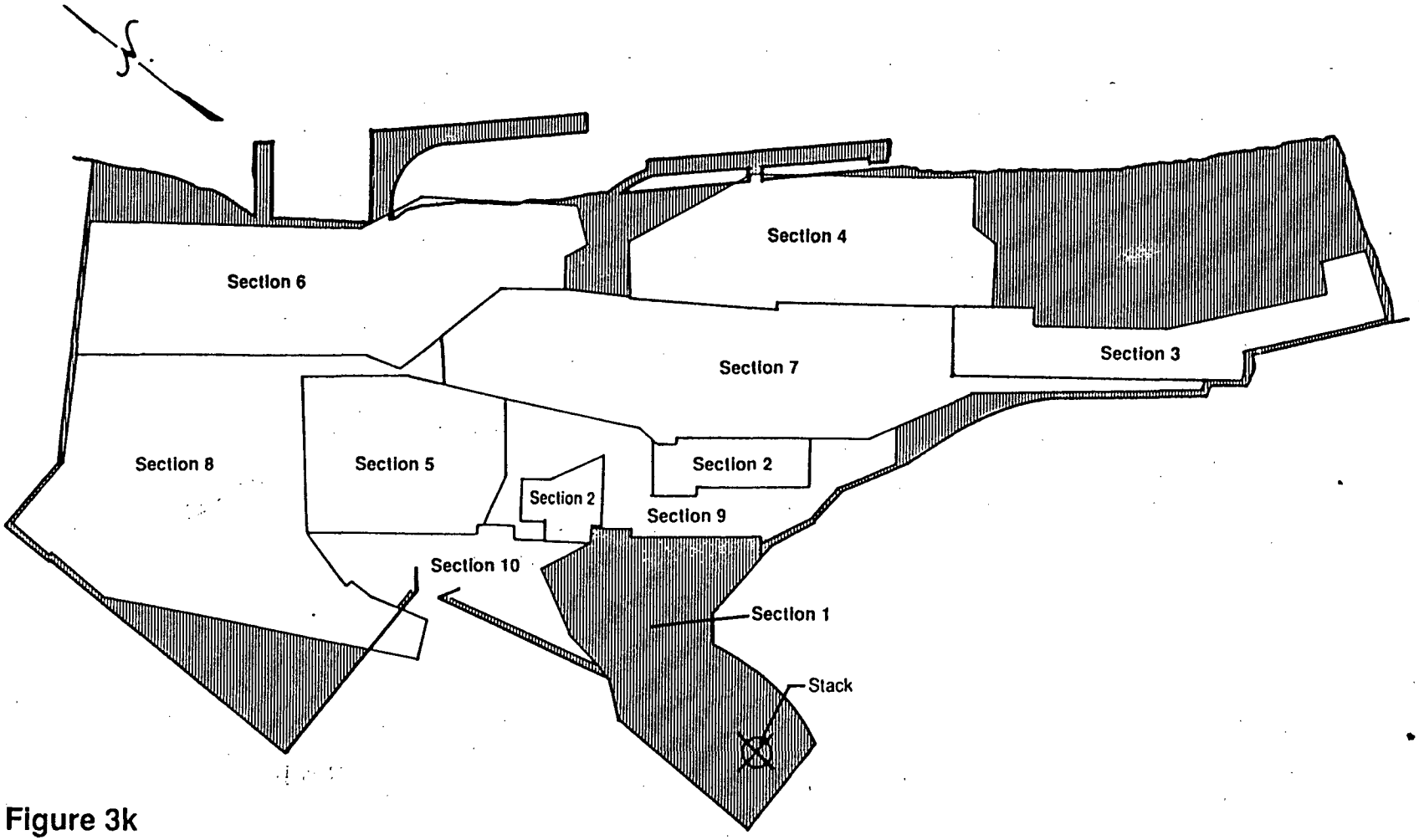


Figure 3k

Ten Demolition Sections of ASARCO Facility

DECISION SUMMARY
INTERIM RESPONSE ACTION
ASARCO DEMOLITION

I. SITE DESCRIPTION AND HISTORY

A. Site Description

The Asarco Tacoma Smelter Site (the Site) is part of the Commencement Bay Nearshore/Tideflats (CB N/T) Superfund Site, which was listed on the interim priority list by EPA in 1981 and included in the first promulgated National Priorities List (NPL) that EPA published in September 1983. The CB N/T Superfund Site is located in Tacoma, Washington at the southern end of the main basin of Puget Sound. The Asarco Tacoma Smelter Site, located in Ruston and Tacoma, Washington, is on approximately 67 acres of property owned by ASARCO Incorporated (Asarco), a New Jersey corporation, also known as the American Smelting and Refining Company. The Site is bordered to the north by the shoreline of Commencement Bay. Surrounding lands are owned by the Town of Ruston and the City of Tacoma (Figure 1). The Site is presently fenced and secured.

Land use adjacent to the Site is primarily suburban residential, with nearby recreational (yacht club) and commercial uses. Single family residences are predominant in the area with the closest located approximately 300 feet to the west of the smelter stack. Schools, playgrounds, and parks are also located within 1 mile of the Site. Ruston, the community west of the Asarco facility, has a population of approximately 640 within 1/3 mile of the Site; the North Tacoma population within a mile of the Asarco Site numbers approximately 3,650. Ruston Way, which is an access route to the Vashon Ferry at nearby Point Defiance, runs across the southern portion of the Asarco property, which includes a tunnel. A rail line operated by Burlington Northern Railroad also runs across the southern portion of the Site.

The Site includes over seventy buildings and a large stack that were constructed since the late 1800's for copper smelting and the refinement of process byproducts. The stack, a brick chimney which was constructed in 1918, is 562 feet high. During the period of copper smelting operations, Asarco generated large quantities of copper reverberatory slag (slag). Historically, molten slag was poured on the ground and at the shoreline edge as fill material, which altered the shape of the original shoreline. Many of the existing structures at the Site were built upon the fill portion of the Asarco property. The Site area also includes a pond that was used during plant operations as a discharge point

for cooling water. Since the early 1970's, the pond, which is at a low elevation, has served as a natural drainage basin on the Site and receives runoff from about 45 acres of adjacent Asarco property.

There are no known wetlands, floodplain zones, or endangered species at this Site.

B. Site History

During the active industrial life of the Asarco Tacoma Smelter, the primary product was refined copper. Byproducts of the copper smelting process that were produced included sulfuric acid, liquid sulfur dioxide, arsenic trioxide, arsenic metal, and copper reverbatory slag. The following is a brief chronological summary of operations at the Asarco Tacoma Smelter.

1890	Began operation as a lead smelter under the ownership of the Tacoma Smelter Company.
1902	Copper production started.
1905	Asarco purchased the smelter.
1917	Plant was rebuilt, stack was constructed, electrostatic precipitators were added.
1930	Blast furnace smelting operations were discontinued and replaced with reverberatories that produced slag as one by-product.
1950	A sulfuric acid plant began producing acid from the converter off-gases.
1960	The sulfuric plant was enlarged.
1974	A liquid sulfur dioxide plant began operation, using a dimethylaniline process.
1977	A baghouse was installed to handle dust from the arsenic kitchen and metallic arsenic plant.
1979	Electrolytic refinery ceased operation.
1985	Copper smelting operations were discontinued.
1986	Arsenic production was discontinued, and facility was taken completely out of production.

As described above, much of the present facility is built over fill material, including slag, which was placed by Asarco as part of the smelter operations. In addition, many of the structures at the Site are either directly or indirectly in contact with process materials, including materials containing inorganic arsenic.

Since January 1987, Asarco has completed initial stabilization measures at the Site. Facilities in the stack area associated with copper smelting and the production of both arsenic trioxide and metallic arsenic were demolished. Since stabilization began, much of the southern part of the Site (where these facilities were located) has been leveled and, to a minor

extent, graded. Figure 2 [Figure 1-3 from Remedial Investigation (RI)2 v. 1] shows the Site as of January 1989.

II. ENFORCEMENT ACTIVITIES

The history of regulatory activities affecting the Asarco Tacoma Smelter began in the late 1960s with the passage of air emission standards by the Puget Sound Air Pollution Control Authority (PSAPCA). EPA requirements, such as National Pollution Discharge Elimination Systems (NPDES) permits which regulate point source water discharges, were applied in 1975.

Although PSAPCA began regulating sulfur dioxide and arsenic emissions in 1968, variances to the standards were granted Asarco until 1975. EPA began enforcement proceedings in the early 1980s to regulate air emissions. Federal and state standards and variances continued to be issues of contention until the smelter closed in 1985.

In September 1986, Asarco signed an Administrative Order on Consent with EPA pursuant to Sec. 106(a) of CERCLA, in which Asarco agreed to conduct a Remedial Investigation and Feasibility Study (RI/FS) and perform immediate site stabilization activities at the Site. Asarco's contractors began the RI/FS in 1987 under EPA oversight. Site stabilization, Phase I, removing the most contaminated buildings around the smelter stack, also began in 1987 and was completed in 1988. Draft RI and FS reports prepared by Asarco have been submitted to EPA and placed in the Administrative Record for this Site. Information and analyses in those draft reports is sufficient to develop the interim remedial action that is selected in this Record of Decision. The field investigation and evaluation of remedial alternatives for a final RI/FS is ongoing and will be used to develop a final Site remedy.

In addition to the smelter property itself, Asarco is a responsible party for three closely related operable units of the CB N/T Superfund Site, known as Ruston/North Tacoma Study Area, Asarco Sediments and Ruston Expedited Response Action (ERA). These units are reviewed below in the section "Scope and Role of Response Action." In March 1989, Asarco and EPA entered into an agreement for Asarco to conduct the ERA in the Ruston/North Tacoma Study Area. The Administrative Order on Consent, issued under Sec. 106(a) of CERCLA, required Asarco to clean up and cap 11 publicly accessible properties in Ruston. Contaminated soils excavated from the 10 of the 11 properties are stored temporarily at the Site in a building known as the "fine ore bins building" until the final remedy is selected for the Site.

III. COMMUNITY RELATIONS

During its years of operation, the Asarco smelter was the largest employer in the town of Ruston (which was named after the smelter's founder). After the smelter's closure in 1986 the community suffered a loss of 550 jobs and a large tax base. Most residents feel that the property should be cleaned up and returned to profitable economic use; they are also concerned about public perceptions of their community as a polluted place where new businesses might not want to locate, and the effect such perceptions may have on local property values. The Ruston Town Council passed an ordinance in 1988 prohibiting any hazardous waste storage or disposal facilities within the town limits.

Throughout EPA's Superfund activities at the Asarco Site, the Agency has been working to keep the community involved and informed. EPA and Ecology, with help from the Tacoma Pierce County Health Department, established several local information repositories. These repositories, listed in Appendix III, contain information about all of the Asarco related projects including demolition. In October 1989 EPA hired a community liaison to distribute information and respond to the community's questions and concerns. The community liaison has a part-time local office in Tacoma near the Asarco facility.

EPA publishes fact sheets on a regular basis in order to keep the community informed of its progress on the Asarco related projects. A list of fact sheets published to date can be found in Appendix IV.

Although the fact sheets are an important means of reporting progress and members of the community find them useful, EPA and the community felt that more involvement, in addition to information, was needed. In October 1989, a community workgroup was formed, primarily to promote involvement in the residential investigation. However, the group is interested in all aspects of the Asarco cleanup and has provided EPA with useful feedback on its activities for the smelter Site. EPA first solicited interest in the group in June 1989 in a fact sheet that was mailed to 5,000 addresses in the Ruston and North Tacoma area. The workgroup now has 17 members who regularly attend the monthly meetings; however the meetings are open to anyone and other members of the public attend the meetings as they are interested.

One workgroup meeting (July 1990) focused specifically on the proposed plan for demolition. The workgroup provided important feedback as to additional pieces of information they wanted to see in the proposed plan. EPA was able to incorporate all of the group's suggestions before releasing the proposed plan for public comment on July 18, 1990. The plan was subject to public comment for 60 days and was also discussed at a public meeting on August

16, 1990. All of the comments received during the period, EPA's responses to them and changes made to the plan based on those comments are described in the Responsiveness Summary found in Appendix I.

IV. SCOPE AND ROLE OF RESPONSE ACTION

Superfund response actions at the CB N/T Superfund Site are currently coordinated under seven separate operable units (OU). The interim remedy addressed by this ROD is OU 07 and involves the demolition of contaminated Site structures to clear the Site for completion of the RI/FS and partially controls off-site surface water at the Site. The seven operable units making up the Site are:

- OU 01 - CB N/T Sediments
- OU 02 - Asarco Tacoma Smelter
- OU 03 - Tacoma Tar Pits
- OU 04 - Asarco Off-Property (Ruston/Tacoma)
- OU 05 - CB N/T Sources
- OU 06 - Asarco Sediments
- OU 07 - Asarco Demolition

The CB N/T operable units have been designated by EPA over the course of several years in response to changing project needs as the agencies develop a better understanding of the overall CB N/T Site. The numbering sequence used to identify each operable unit is simply chronological, and does not reflect priorities.

Scope Of Current Work:

OU 07. Asarco Demolition - The demolition of structures on the Asarco Smelter facility addressed by this Record of Decision is the initial step for this operable unit. This ROD provides for demolition of structures and the smelter stack, temporary storage of demolition debris on Site, incineration of uncontaminated wood debris in a modified incinerator on Site and the partial control of off-site surface waters.

Other Related Activities:

OU 01. Nearshore/Tideflats Sediments - The evaluation and cleanup of 10-12 square miles of shallow water shoreline located in the active commercial seaport of the City of Tacoma are being addressed in this operable unit. The marine boundaries of this operable unit are limited to the shoreline, intertidal areas, bottom sediments, and water of depths less than 60 feet below mean low water. A ROD that selected the remedy for remediation of sediments in eight

problem areas was issued by EPA on September 30, 1989. EPA is the lead agency for implementation of the cleanup for this operable unit. Closely related to this unit is OU 05, CB N/T Sources, which is designed to identify and control sources of contamination in the marine environment. The remedy for OU 05 was also selected in the September 30, 1989 ROD. The Washington Department of Ecology is the lead Agency for the source control operable unit. The Puyallup Tribe is a supporting agency for continuing response actions with a particular focus on natural resource issues and implementation of the federal Puyallup Tribe of Indians Settlement Act of 1989 (P.L. 101-41) and the State of Washington's Puyallup Tribal Claims Settlement (Ch. 4, Laws of 1989 1st Ex. Sess.). Other natural resource trustees are the National Oceanic and Atmospheric Administration (NOAA), Department of Interior, State of Washington and the Muckleshoot Tribe of Indians.

OU 02. Asarco Tacoma Smelter - Contamination at the Asarco Tacoma Smelter facility is being addressed by this operable unit. Initial site stabilization activities removing the most contaminated structures, but not including the stack, in the Stack Area (see Site Characteristics and Figure 2) was completed in 1988. The interim remedial work addressed in OU 07, Asarco Demolition, will be followed by a second ROD which will select the final remedy for the Asarco Tacoma Smelter facility, including the final disposal of demolition debris to be temporarily stored at the Site. EPA is the lead agency for the smelter operable units.

OU 03. Tacoma Tar Pits - This former coal gasification plant is located in Tacoma near the mouth of the Puyallup River. EPA issued a ROD in December 1987 calling for a combination of excavation and treatment of the most highly contaminated soils, capping of the remaining areas of the Site, and continued monitoring of groundwater near the Site. The unit is now in remedial design phase, with remedial action scheduled to begin in 1991 for which EPA is the lead agency.

OU 04. Asarco Off-Property - Federal, state and local environmental and public health agencies have conducted extensive studies to determine the risks associated with arsenic exposure in areas surrounding the Asarco Tacoma Smelter. In March 1989, Asarco signed a Consent Order agreeing to conduct an Expedited Response Action (ERA) to contain contaminated soils in 11 publicly accessible areas. Work began in November 1989 to remove the top layer of contaminated soil and cap each area. Excavated soils are being stored temporarily in the fine ore bins at the Asarco Tacoma Smelter facility. At present, EPA is conducting an RI/FS for the remaining areas of concern and expects to issue

a ROD for the remaining remedial work in this operable unit in 1991. EPA is the lead agency.

OU 05. Nearshore/Tideflats Sources - This operable unit addresses the identification and control of sources of continuing contaminant discharges to Commencement Bay from within the City of Tacoma. Planned remedial measures for this unit are incorporated in the Nearshore/Tideflats ROD that was issued in September 1989. The Washington Department of Ecology (Ecology) is the lead agency for this unit.

OU 06. Asarco Sediments - Originally a part of the Nearshore/Tideflats unit, this area (also known as the Ruston/Pt. Defiance Shoreline problem area) was made a separate operable unit in 1989. At the time EPA issued the ROD for OU 01, the CB N/T Sediments, EPA determined that the sediment problem area associated with the Asarco facility exhibited different characteristics that needed further study before remedial action selection. EPA is the lead agency and is currently preparing a Supplemental FS for the unit.

EPA decided to take the early action to demolish structures at the Site for several reasons. First, evaluations under the RI/FS work at the Site suggest that many of the Site structures are constructed over contaminated materials. Removal of the structures will be necessary in order to fully characterize the nature and extent of contamination and ultimately address the contamination in the final remedy for the Site. This action also will eliminate the threat of an uncontrolled smelter stack collapse. Studies submitted by Asarco indicate evidence of serious deterioration of the stack. Weathering of the cement mortar has caused the stack to become increasingly unstable. Therefore, this interim remedial action will control risks at the Site while the RI/FS is being completed and in advance of EPA's selection of a final remedy for the Site.

For these reasons, EPA has determined that the interim activities selected in this ROD will contribute to the efficient performance of the long-term remedial actions for the Site. As the NCP states, sites should generally be remediated in operable units when early activities are necessary or appropriate to achieve significant risk reduction quickly and to expedite completion of a total Site cleanup. Based on evaluations conducted under the RI/FS, this interim action operable unit is neither inconsistent with nor will it preclude implementation of alternatives being evaluated for the final remedy.

V. SITE CHARACTERISTICS

There are six functional divisions within the smelter complex, each used for specific plant activities during its operation, as illustrated in Figure 3j. They include:

Stack Area
Plant Area
Cooling Pond
Administration Area
Central Site
Lower Site

The following is a brief description of each area on the Site.

The Stack Area now includes the 562 foot brick chimney stack, which has an outside diameter of 50 feet at the base and 27 feet at the top. A number of structures previously in this area (electrostatic precipitators, baghouse, flues, arsenic kitchens, Godfrey roasters, and the metallic arsenic plant) were demolished during the first site stabilization effort in 1987. The ground in this area is a relatively steep slope starting at the stack and grading down into a flat zone in the plant area. The area south of the stack is gently sloped and was not used for plant processes.

The Plant Area includes the converters, reverberatory furnaces, and Hereshoff roasters. This part of the Site is relatively flat.

The Cooling Pond area was originally used as a water source for cooling the anodes coming off the anode furnace. After water was sprayed onto the anodes, the contaminated water was drained into a pit and then pumped back to the cooling pond. Since the early 1970's, the pond was used only as a natural drainage basin on the Site. The pond is in a low elevation topographic area that receives runoff from about 45 acres of property in Ruston and North Tacoma that are adjacent to the Site.

The Administration Area includes the main offices, laboratory, engineering building, and parking lots.

The Central Site is the transition zone between the upper Site (stack and plant areas) and the lower Site. It includes the refinery buildings and fine ore bins building. Much of this part of the Site is paved.

The Lower Site, which is the northern boundary of the Site along the shoreline of Commencement Bay, was primarily a staging and transport area that includes docking facilities,

rail lines, and a limited number of buildings. It is very flat, predominantly paved, and is built over the slag fill that was deposited over the original shoreline.

As a copper smelter and refinery, the principal contaminants of concern at the Site are metals. Specifically, these metals include antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc. Dimethylaniline (DMA) which was used to manufacture liquid sulfur dioxide, has been found in the groundwater at the Site.

Arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc are hazardous substances as defined in Section 101(14) of CERCLA.

Soils and fill material on Site are contaminated with a variety of the metals listed above as well as with some organic chemicals such as polyaromatic hydrocarbons and polychlorinated biphenyls (PAH's and PCB's). The organic contamination is limited to small areas of the Site. The metals contamination varies both horizontally over the Site surface and with depth.

The many buildings and structures on Site vary in condition. Due to the nature of plant operations, accumulations of dust are present in varying degrees on building materials and equipment in many of the buildings, including dust contaminated with arsenic and other metals. Most reusable equipment has been removed. Asbestos-bearing materials have been removed from many of the buildings, under EPA order or PSAPCA permit.

The stack, which is built of bricks, has become seriously deteriorated, especially in areas near the top of the stack. Studies performed by Asarco indicate that chimney bands are broken or deteriorated, the stack bulges from the 540-foot elevation to the top, and the liner has fallen in several places and has blisters. Weathering and sulfation of mortar joints has added to the instability of the structure. Analysis of brick contamination found arsenic, cadmium, copper, lead, and zinc at significant levels. The sample results (letter from Mr. Thorp, attorney for Asarco, to Mr. Rose, EPA Project Manager, May 11, 1989) are as follows:

Arsenic	21000	parts per million (ppm)
Cadmium	385	ppm
Copper	5150	ppm
Lead	28950	ppm
Zinc	1980	ppm

Surface water at the facility presents two potential paths of migration: discharge of contaminated surface water into Commencement Bay, and surface water running through contaminated

soil transporting contaminants to groundwater and off Site. Since much of the soils and exposed surface area of the Site are contaminated, the movement of surface water picks up and transports contaminants. Some surface water flows into the unlined cooling pond where sediments settle out.

The available geologic and hydrogeologic data from the RI/FS indicate the potential for surface contamination to migrate to the water table. Water balance estimates indicate that precipitation falls on the Site to recharge the groundwater even though much of the precipitation falls on paved areas and is collected before infiltration into the subsurface. In addition, surface water run-on from property near the Site and surface water that collects in the cooling pond has the potential to leach into the groundwater. Available data indicate that groundwater beneath the Asarco facility flows toward Commencement Bay.

Presently, off property surface water run on enters the Site at two locations. The majority of off property run on comes from a 45-acre area west of the Site that drains into a bypass channel around the cooling pond, or into the cooling pond, and then discharges to the Site's middle outfall to Commencement Bay. The second location is at the south end of the Site along Ruston Way. An off-site sub-basin drains down the hillside, onto the Site via at least four culverts passing under Ruston Way, and discharges by one of the Site outfalls to Commencement Bay. Currently there are three NPDES permitted outfalls on Site and two storm water outfalls in the vicinity of the Asarco facility. The northern and southern most outfalls are not located on Asarco's property and are not regulated by NPDES permits. The three NPDES permitted outfalls located on the Site are between these two unregulated outfalls.

The majority of surface water runoff on-site is channeled and directed to the existing storm water drainage system. Runoff is generally collected in catch basins, conveyed to the storm drain system, and finally discharged to Commencement Bay through three on-site outfalls that were permitted under the NPDES Permit System when the facility was active. Asarco was granted NPDES permits in 1975 which were extended by the Department of Ecology in 1980. Monitoring of surface water discharges from these outfalls found, but did not limit, high concentrations of total and dissolved metals, including arsenic and copper, at levels exceeding water quality standards. There are indications that the integrity of the storm drain system is failing. Part of the surface water is also collected and sent to an on-site wastewater evaporation system. As part of the first site stabilization effort in 1987, a surface water runoff collection system was installed at the newly graded area below the stack and from the acid plant area. Collected water is routed to the evaporation system. Water created in dust suppression activities during

demolition will be diverted to this on-site system.

VI. SUMMARY OF SITE RISKS

The following qualitative risk information demonstrates that the actions contemplated by this interim action are necessary to stabilize the Site and prevent further degradation. This interim action will address Site risks and cleanup objectives associated with buildings and structures, including the stack. In addition, this interim action partially addresses the potential risks from uncontrolled surface water runoff by addressing off-property surface water run on. The final ROD will further address on-site runoff. The complete RI/FS that is ongoing will evaluate the potential hazards associated with contaminated soils beneath or surrounding the buildings and stack, fill materials, Site surface water, and groundwater. A baseline risk assessment addressing site-wide conditions is a part of the overall RI/FS; draft reports are part of the Administrative Record. When completed, the RI/FS will support selection of a final remedial action for this operable unit to address the remaining risks.

At the Asarco smelter facility there are several migration and exposure pathways of contaminants which will be partially addressed by this interim remedial action. Because this was a copper smelting facility, the contaminants of concern include arsenic, other metals and byproducts of the copper smelting process that are present at the Site in soils and fill materials, in dust on or within buildings, and in building materials. Many of these contaminants are toxic to humans and aquatic life including:

Arsenic

The adverse health effects from exposure to arsenic have been confirmed in numerous public health and scientific studies. Arsenic can cause a variety of toxic effects in humans with the type and severity of effects depending upon the level of exposure and form of arsenic. Inorganic arsenic is a human poison and large doses can cause death. Human exposure to lower levels of arsenic has resulted in injury to a number of body tissues and organs, including the liver, kidneys, nervous system, skin, and an increased risk of developing lung and skin cancers. This increased risk of lung cancer has been observed in numerous studies of workers who inhaled arsenic in smelters and in a pesticide plant. Increased incidence of skin cancers have been found in people who have consumed drinking water contaminated with arsenic (for example, in Taiwan and Mexico) and in those who used medicines containing arsenic.

Antimony

Antimony exposure has been associated with an increase in lung cancer. Animal studies yielded suggestive evidence that

antimony trioxide causes lung and liver tumors. Female workers exposed to antimony compounds had an increased incidence of gynecological disorders and spontaneous abortion.

Cadmium

Cadmium is relatively mobile in the aquatic environment. Cadmium is a known carcinogen to animals, and potentially to humans, exposed by inhalation. There is evidence linking cadmium with cancer of the prostate in humans.

Studies suggest that cadmium may have adverse effects on reproduction in fish at levels present in lightly to moderately polluted waters.

Chromium

Hexavalent chromium (Cr IV) is rather soluble and is quite mobile in groundwater and surface water. In the presence of reducing agents it is rapidly converted to trivalent chromium (Cr III), which is strongly adsorbed to soil components and consequently is much less mobile. Sources of chromium in air include windblown soil and particulate emissions from industrial processes. Inhalation of Cr VI salts causes irritation and inflammation of the nasal mucosa, and ulceration and perforation of the nasal septum. Hexavalent chromium causes kidney damage in animals and humans. The liver is also sensitive to the toxic effects of Cr IV, but less so than the kidneys or respiratory system.

Cr III appears to be more acutely toxic to fish than Cr VI; the reverse is true in long term chronic exposure studies.

Copper

Because copper compounds and complexes are readily soluble, copper is very mobile in soil and other surface environments, and is adsorbed to organic matter, clays, and other materials. It is toxic to humans at high levels causing irritation following acute exposure and anemia following chronic exposure. Exposure to metallic copper dust can cause a short-term illness that is characterized by chills, fever, aching muscles, dryness of mouth and throat, and headache. Copper is very toxic to aquatic organisms.

Lead

There is suggestive evidence that some lead salts are carcinogenic, inducing kidney tumors in mice and rats. Exposure to lead has been linked to reproductive risk and it can adversely affect the brain and central nervous system. Chronic exposure to low levels of lead can cause subtle learning disabilities in children. Exposure to lead can also cause kidney damage and anemia, and it may have adverse effects on the immune system.

Nickel

In a number of epidemiological studies, occupational exposure to nickel compounds has been associated with excess cancer of the lung and nasal cavity. Several nickel compounds are mutagenic and can cause cell transformation. In humans, nickel and nickel compounds can cause a sensitization dermatitis. The chronic toxicity of nickel to aquatic organisms is high.

Zinc

Ingestion of excessive amounts of zinc may cause fever, vomiting, stomach cramps, and diarrhea. High levels of zinc in the diet have been shown to also retard growth and produce defective mineralization of bone. Zinc may be indirectly important with regard to cancer since its presence seems to be necessary for the growth of tumors.[1]

Exposure Pathways

The existing buildings and structures contain dust and building materials contaminated from exposure to industrial activities at the Site. Air movement can release particulate matter which may be transported off Site by winds. Particulate matter can also settle to the ground and contaminate soils and dusts off Site. People can be exposed by inhaling or ingesting contaminated particulate matter. Contaminated building materials may present risks from direct contact.

The smelter stack presents additional risks. Evaluations of the stack's structural integrity found serious deterioration. The results of a field investigation by Asarco's consultant, which was presented in detail in an engineering report prepared in 1986 by Industrial Chimney, Inc. (Site Stabilization Plan, Phase II, Appendix C) indicates that the stack, particularly the upper section, has deteriorated considerably because of weather and sulfation of the mortar joints. If the stack was to fall without controls there would be a substantial risk of injury or death for the on-site personnel and the closely located residences. In addition, exposure from inhalation of stack contaminants released into the air during an uncontrolled stack collapse could occur for both on-site personnel and people living in the community (approximately 35 homes are within 1000 feet of the stack). The contaminants also could settle in the nearby residential areas, and present risks from direct contact or ingestion, and from inhalation of resuspended soils and dusts.

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[1]Referenced chemicals cited from: U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA). 1985. Chemical, Physical, and Biological Properties of Compounds Present At Hazardous Waste Sites. Office of Waste Programs Enforcement (OWPE), Washington, D.C.

A significant portion of the surface water at the Site flows into the Site from the 45-acre off-property drainage basin to the west of the Asarco property. Much of the surface water runoff enters storm water drainage conduits existing at the Site, which discharge to Commencement Bay via three outfalls. However, the integrity of portions of the drainage system is in doubt. Several observations based on drainage flows suggest that surface waters are entering the groundwater via breaks in the system. Thus, the Site evaluation indicates that contamination in surface water at the Site is being transported to groundwater. Much of this contaminated groundwater beneath the facility flows toward Commencement Bay and may be exceeding EPA's water quality criterion and the state's water quality standards. This may result in risks to aquatic life and to humans who may be eating aquatic life from Commencement Bay.

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the interim response actions selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VII. DESCRIPTION OF ALTERNATIVES

The scope of the interim remedial action at the Asarco Site is limited and few alternatives were evaluated. For one of the actions, the removal of existing buildings and structures other than the stack, EPA considered only conventional trade and protective techniques to dismantle and demolish buildings (see Section A below, "Structure Demolition"). Although the evaluation of approaches for demolishing the stack analyzed several alternatives, only one approach was considered effective and implementable due to the height of the stack and lack of stability (see Section B below, "Alternatives for Stack Demolition"). Several options for disposal of debris were considered, but the decision for permanent disposal of material that cannot be reused, recycled or burned on Site will be made in the final ROD for Operable Unit 02, Asarco Tacoma Smelter. Only one approach to divert surface water from flowing on-site was developed in the draft Feasibility Study. Descriptions of the alternatives follow.

A. Structure Demolition

<u>No Action</u>

The Superfund program requires that the "no-action" alternative be considered at every site in addition to a range of treatment and containment alternatives. "No action" would mean that the structures would not be removed thereby impeding the

sampling and analysis necessary to complete the RI/FS. "No action" and also would result in contaminants remaining on-site which could be resuspended and released off Site.

Conventional Demolition

All buildings indicated in Sections 2-10, see Figures 3a-i, will be demolished or dismantled by conventional and protective methods. In an effort to be consistent, the areas and specific buildings affected are summarized in Appendix V using the numbers and order assigned to them in the Site Stabilization Plan. However, the buildings will not necessarily be demolished or dismantled in the order listed in Appendix V. The order for demolition will be based on access needs for further sampling, and other on-site considerations.

Prior to demolition, buildings and structures will be vacuumed and washed to remove dust, and asbestos-containing materials will be removed. Proper notification procedures, in accordance with the asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP), will be followed. Areas of structures containing dust that are inaccessible for vacuuming will be washed down to curtail dust emissions. During demolition, dust suppression measures using high pressure water fogging and misting devices will be utilized to control the release of dust and particulates. Containment systems to collect water from the dust suppression measures will collect the waste water and route the waste water to the evaporation system. These systems will meet EPA requirements.

This ROD does not call for the demolition of certain structures. Some of these structures, such as those in Section 9, will remain for continued storage and others, such as those in Section 5, will remain to act as retaining walls for terraced portions of the Site. Structures not listed in Appendix V will be vacuumed, emptied and washed down. Footings, pads, and other support structures for some of the dismantled buildings will remain on Site until the final remedy is selected. The following is a list of the buildings, as represented in the site stabilization plan, that will remain on Site after demolition activities are finished.

Section 4: southern dock

Section 6: central dock (copper dock); northern dock

Section 5: northeast portion of anode furnaces building; small portion of the roof adjacent to the anode furnace area; portion of the west wall in No. 3 refinery building

Section 7: fine ore bins building, trestles and conveyor galleries

Section 8: transformer houses; Tacoma City Light Substation

Section 9: acid storage tanks; settling tanks; evaporation basin

B. Alternatives for Stack Demolition

For Section 1 (see figure 3k), the smelter stack, five demolition techniques, and two other alternatives, were evaluated. Three of the techniques involved different types of manual demolition with the use of scaffolding equipment. Also evaluated were mechanical demolition, with a crane and heavy metal ball, explosive demolition, by implosion, cleaning the stack and no action.

No Action

The Superfund program requires that the "no-action" alternative be considered at every site in addition to a range of treatment and containment alternatives. No action for demolition of the stack would not stabilize the deteriorating stack nor alleviate the threat of uncontrolled collapse (see Section IV above, "Summary of Site Risks").

Cleaning The Stack

Washing or encapsulating the inside of the stack could possibly contain dust and prevent air releases. However, this approach would not eliminate all of the risks from an uncontrolled collapse posed by the deteriorating stack. A study, completed by Industrial Chimney, Inc., identified no practical method for washing that would eliminate contamination.

Manual Techniques

Several techniques for manually dismantling the stack were evaluated. All approaches were rejected because they are not technically feasible for a chimney structure that is 562 feet high. Pole scaffolding is prefabricated out of metal tubing and secured to the outside of the stack. Pole scaffoldings for heights over 125 feet must be designed specifically for the project. Currently there are no specifically designed pole scaffoldings that have exceeded 250 feet, and it is expected that this is an upper limit, according to Industrial Chimney, Inc. Outrigger scaffolding is attached directly to the stack using cables wrapped around the stack. To use this method safely approximately 60 feet of the upper stack would need to be reinforced. A second layer of board and cables would then be required at each scaffolding level. Mechanical

Scaffolding is similar to that used by window washers on high-rise buildings. The scaffold is supported by hangers (stirrups) at two points, suspended from overhead supports to permit the raising or lowering. Because the upper portion of the stack is not secure, this technique is not technically feasible.

Mechanical Technique

Mechanical demolition involves the use of a crane and heavy steel ball to batter the stack into pieces. This technique is not feasible for the stack since a typical height limit for this type of demolition is around 100 feet.

Explosive Demolition (Implosion)

Controlled explosive demolition using implosion involves drilling holes in the base of the stack and placing explosives in these holes. This method has been used extensively on stacks in the past. Prior to demolition, the interior of the stack is encapsulated to minimize the release of soot and contaminants on the surface of the lining. A lined and bermed trench will be constructed at the base of the stack to contain the falling bricks and the water generated from the dust suppression activities (described in detail in Section IX.B.2.b, "Description of Remedial Component").

C. Disposal of Debris

Various types of debris will be generated during the demolition of structures including wood, steel, brick, fiberglass, asbestos materials, flue dust, and other miscellaneous materials. The following is a brief review of disposal options for the primary types of material to be generated. This interim remedial action relies on one alternative for the temporary storage on Site of all hazardous debris, and several alternatives for the disposal of wastes that are not hazardous or dangerous, pending selection of a permanent disposal remedy in the final ROD for the smelter Site.[2] Federal land disposal restrictions (LDR) will not apply to the on-site storage within the area of contamination of hazardous waste (see 53 FR 51444, December 21, 1988). Off-site disposal for hazardous wastes, solid wastes, fiberglass, and asbestos may be approved as

[2]Hazardous waste is defined in 40 CFR Section 261.3 and dangerous waste is defined in Washington's Dangerous Waste Regulation, WAC 173-303-040 (18).

a permanent disposal measure where appropriate. To the extent LDR applies to the materials shipped off Site for disposal which are not covered by a national capacity variance for debris, the materials must either comply with the applicable treatability standard or must be the subject of a treatability variance. In addition, materials may be approved for reuse or recycling.

1. Disposal options for materials other than stack debris.

a. Temporary storage of debris in the fine ore bins until selection of a permanent disposal remedy. The fine ore bins are in a large building on Site with adequate capacity to store debris materials that can protect materials from precipitation and wind erosion, and prevent the migration of contamination into the environment. If storage in this building will meet the substantive requirements for waste pile storage, this option provides a cost-effective storage solution until the permanent disposal remedy is selected (see footnote 5 below).

b. Disposal at an off-site facility operating in compliance with applicable federal and state requirements. Demolition debris can be shipped off Site for disposal in an appropriate facility, depending on the nature of contamination. All material would undergo a waste analysis prior to shipment off Site. EPA would ensure that any off-site disposal destination is operating in compliance with applicable federal or state laws and EPA's off Site disposal policy before the material is shipped. Hazardous waste must be disposed of at a hazardous waste disposal facility; dangerous waste would be disposed of in an appropriate facility. (See page 17, footnote 1.) The appropriate facility would depend on whether the disposal site is in the State of Washington, and whether the waste is also a hazardous waste. Asbestos-containing materials will be disposed at a facility operating in accordance with National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations and applicable state law. Waste materials that qualify as solid waste only may be shipped off-site for disposal at a solid waste facility. Proper off-site disposal of the debris would be the final response for that debris.

c. Reuse or recycling of the material. A number of materials at the Site will be evaluated to determine if they can be adequately decontaminated, if necessary, and then reused or recycled. Steel, wood and other materials that meet decontamination requirements approved by the EPA during remedial design, can be salvaged for reuse. Steel can be decontaminated by high pressure washing, or by other procedures approved by the EPA. Steel may need to be decontaminated before being recycled by batch melting or resmelting at an off-site facility. Wood that is a dangerous or hazardous waste must be decontaminated before reuse. Wood decontamination procedures, such as removing

the exterior of the wood by planing, will also be subject to approval by the EPA. Lead collected in dust and wastewater sludge could also be recycled by resmelting at an off-site facility.

d. On-site incineration of wood that is not a hazardous waste or a dangerous waste. A former production vessel, called a converter, is available at the Site. The converter can be modified to incinerate wood that is neither a hazardous waste nor a dangerous waste. Wood that is a hazardous or dangerous waste will be temporarily stored in the fine ore bins building until final disposal or treatment is selected as part of the final remedy.

Although under CERCLA § 121(e), permits are not required for activities conducted entirely on-site, PSAPCA has issued a permit to Asarco regulating performance of the converter. EPA can authorize Asarco to conduct a remedial action to fully comply with this permit under the authority of CERCLA § 122 (e)(6). In the event EPA determines, however, that it is necessary to withdraw its authorization, any activity involving the converter must comply with substantive requirements under federal or state laws and regulations.

2. Disposal alternatives for stack debris

Demolition of the smelter stack will generate 12,000 to 15,700 cubic yards of debris, primarily brick with varying levels of contamination. There were several alternatives evaluated for the temporary and permanent disposal of this debris pending selection of the final remedy for the smelter Site.

a. On-site storage in place

A temporary storage facility would be created from the trench and bermed area in which the stack debris is expected to settle following the explosive demolition. Since this debris will contain hazardous waste and dangerous waste, the storage area design would be evaluated for compliance with the federal and state requirements for a waste pile (40 CFR Part 264, Subpart L; WAC 173-303-660). Specifically, the waste pile would have to be protected from water run-on and wind erosion, and a sufficient liner and leachate collection system would be required. Groundwater monitoring wells would be placed up and down gradient of this area. Covered demolition debris would stay in place until a permanent solution for debris disposal is decided upon in the ROD for complete Site remediation.

b. On-site storage in the fine ore bins building

The fine ore bins building is a large building that is presently being used to temporarily store soils excavated from the Ruston Expedited Response Action. After demolition of the smelter stack the contaminated bricks would be moved by truck

within the area of contamination from the stack area to temporary storage in the fine ore bins building. Temporary storage in this building will meet the requirements for a waste pile (see footnote 5 below). The stack debris would stay in the fine ore bins building until a permanent solution for debris disposal is decided upon in the ROD for complete Site remediation.

c. Off-site disposal

Under this alternative, stack debris would be transported to an approved waste facility. Whether the materials were shipped to a hazardous waste or a solid waste facility would depend on analysis of the debris contamination. This alternative provides permanent disposal for the stack bricks after the stack's demolition.

D. Surface Water Controls

a. No Action

The no action alternative for the partial control of surface water from the adjacent area off-property would not prevent contaminant transport. Surface waters must be diverted from flowing on the smelter facility because precipitation contact with newly exposed surfaces must be minimized to prevent further contamination to groundwater aquifers and Commencement Bay.

b. Diversion

The draft Feasibility Study (FS) evaluated in detail only one alternative to divert and control surface waters from the 45-acre drainage area adjacent to the Site (see Alternatives 3A, 4.1A, and 7A).

The surface water run on from areas adjacent to the Asarco facility would be diverted before entering the Site and directed to off-property storm water outfalls (the northern or southern most outfalls discussed in Site Characteristics). Diverting the surface water before the on-site demolition activities will reduce the potential problems of increased contamination from the newly exposed surfaces on Site. Reducing the volume of surface water on Site will also reduce contaminant loading to the groundwater aquifers on Site. In the draft Feasibility Study for this Site, the diversion of run-on surface water was included as a component of each remedial alternative that was analyzed in detail.

c. On-site surface water collection

On-site water that results from precipitation and dust suppression activities, during the stack demolition and cleaning and demolishing the structures, will be controlled to the extent practicable. Surface water coming into contact with the newly exposed soils will be channeled into the sedimentation basins and collected for treatment in the wastewater evaporation system. Other surface water controls to minimize the potential for

contaminant transport and potential soil erosion may include:

- Soil covers/tarps
- Soil sealant/binders
- Surface water diversion ditches
- Soil berms/containment structures
- Grouting key drains to re-route potentially contaminated surface water to the water evaporation system.

VIII. COMPARATIVE ANALYSIS OF ALTERNATIVES

The National Contingency Plan (NCP) requires that each analyzed remedial alternative be evaluated according to specific criteria. The purpose of this evaluation is to promote consistent identification of the relative advantages and disadvantages of each alternative, thereby ensuring compliance with CERCLA requirements and guiding selection of remedies offering the most effective and efficient means of achieving Site cleanup objectives. There are nine evaluation criteria by which feasible remedial alternatives are judged. While all nine criteria are important, they are weighted differently in the decision-making process. Threshold criteria are used to determine whether an alternative meets a required level of performance. Primary balancing criteria are used to evaluate technical, economic, and practical realities, and modifying criteria require consideration of state and community concerns.

The nine criteria are:

<u>Threshold Criteria</u>

1. Overall Protection of Human Health and the Environment
2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) under federal or state environmental laws

<u>Primary Balancing Criteria</u>

3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility, or Volume
5. Short-Term Effectiveness
6. Implementability
7. Cost

<u>Modifying Criteria</u>

8. State Acceptance
9. Community Acceptance

THRESHOLD CRITERIA

The remedial alternatives for this interim action were first evaluated in relation to the threshold criteria: overall protection of human health and the environment and compliance with ARARs. The threshold criteria must be met by the potential alternatives before further consideration as remedies for the Record of Decision.

1. Overall Protection of Human Health and the Environment

This criteria addresses whether or not remedial actions provide adequate protection and describes the mechanisms for controlling risks for the different exposure pathways.

The no action alternative would not be protective of human health and the environment because it would not stabilize the Site, prevent an uncontrolled collapse of the smelter stack, or control surface water run on from the adjacent property. The no-action alternative neither reduces the magnitude of contamination found on Site nor the likelihood of exposure to Site contaminants and thus is not considered protective of human health or the environment.

The demolition of structures and the smelter stack at the Site will be protective of human health and the environment by removing the threat of an uncontrolled stack collapse, by removing contaminated structures and by allowing the final RI/FS to be completed so that final Site cleanup can begin.

The conventional demolition techniques for dismantling buildings and other structures, the only alternative evaluated, will be performed in a manner that is protective by first cleaning the buildings and then using dust suppression measures during the demolition activities. Any water generated during the dust suppression activities will be collected to prevent release into the environment. The effectiveness of dust suppression activities will be evaluated with ambient air monitoring.

The explosive demolition technique for controlled implosion of the stack, which was the only technically feasible and/or safe alternative, will be implemented in a manner that minimizes releases to the environment and threats to worker safety and health. Of the alternative techniques for demolishing the stack, implosion of the smelter stack is the most protective by posing the least risk to on-site workers. The other alternatives, which may not be feasible, involve attaching scaffolding to, and suspending workers from the unsafe chimney structure, thereby exposing them to unacceptable risk. The explosive demolition alternative, using implosion, includes encouraging voluntary evacuation of residents from approximately 35 homes within a

1,000 foot radius of the stack to ensure minimal risk. Dust suppression measures during the explosive demolition would be effective in reducing dust emissions during the action. Air monitoring stations would be in operation at least 24 hours before, during and after the actual demolition of the stack to ensure that dust suppression is effective in minimizing releases of particulates and fugitive dusts.

All of the potential disposal options would be effective in eliminating the risks from contaminated materials that will be generated by the demolition. In-place temporary storage of the stack bricks created from the lined trench and bermed area, in which the stack debris is expected to settle, would be protective of human health and the environment. Since the debris will contain hazardous waste and dangerous waste, the storage area design would be in compliance with the waste pile requirements.

A large secure building that will meet waste pile requirements, known as the fine ore bins, could be used for temporary storage of demolition debris until selection of a permanent disposal remedy. The building will protect the materials from exposure to the environment and reduce the potential for their release. Both of the temporary storage options, in-place storage or the fine ore bins building, would require that the stored materials be moved to a final disposal location in the future, therefore requiring the contaminated materials to be double handled. This procedure is not protective of human health: however a dust suppression protocol and a protective level of worker safety will be required. Permanent disposal in an approved off-site waste facility would provide the most protection to human health and the environment.

Wood that is not a hazardous or dangerous waste or that cannot be salvaged for reuse, will be burned on Site in an incinerator. EPA will authorize under CERCLA §122 (e)(6) operation of the incinerator in compliance with a PSAPCA permit. If authorization under §122 (e)(6) is withdrawn, operation of the incinerator will comply with federal and state ARARs. Waste materials to be disposed of off Site will be analyzed to determine if the waste should be sent to either a hazardous waste or solid waste disposal facility.

2. Compliance with ARARs

Compliance with ARARs required an evaluation of each alternative to determine compliance with action-, chemical-, location-specific ARARs (or justification for a waiver), and whether the remedy adequately considers other criteria, advisories, and guidelines.

As more fully described below, EPA identified several ARARs involved in this interim action. All alternatives are expected to be able to comply with ARARs. Materials and debris generated by the demolition activities will be tested to determine whether the materials are considered federal hazardous wastes or state dangerous wastes. Under state regulation, wastes containing greater than 100 ppm of arsenic are regulated as dangerous wastes. Handling, storage and management of the materials to be stored on Site or shipped off Site for disposal that contain hazardous or dangerous waste will be governed by the appropriate federal or state hazardous waste regulations. Specifically, regulations establishing requirements for waste piles are relevant and appropriate to on-site storage of hazardous waste. Federal and state land disposal restrictions (LDR) will not apply to the on-site storage of hazardous wastes because the hazardous wastes have merely been picked up and consolidated within the area of contamination (53 FR 51444, December 21, 1988). To the extent LDR apply to the materials shipped off Site for disposal that are not covered by a national capacity variance for debris, the materials either must comply with the applicable treatability standard or must be the subject of a treatability variance.

The incineration of wood in the modified converter will only proceed if the wood is not a hazardous or dangerous waste. EPA will authorize under CERCLA §122 (e)(6) operation of the incinerator in compliance with a PSAPCA permit. If authorization under §122 (e)(6) is withdrawn, operation of the incinerator will comply with federal and state ARARs. If the incinerator cannot comply with the legal requirements, the wood will be either temporarily stored on Site or shipped off Site for disposal as a hazardous waste or a solid waste.

Surface water from off property will be diverted away from the Site to existing city storm water outfalls to Commencement Bay. Discharges to surface waters of the state are regulated under the State Waste Discharge Permit Program (WAC 173-216) unless the National Pollutant Discharge Elimination System Permit Program (NPDES) (WAC 173-220) applies. Both programs require technology-based treatment and compliance with water quality standards. For storm water discharges, the state considers Best Management Practices (BMP) to constitute all known, available, and reasonable technology (AKART). Source control BMPs include measures to prevent the storm water from being contaminated in the first place. The remedial alternatives will divert the surface water from running over the Site, thus meeting BMPs and AKART.

ARARs related to disposal activities are described in Section X below.

PRIMARY BALANCING CRITERIA

For those alternatives satisfying the threshold criteria, five primary balancing criteria are used to evaluate other aspects of the potential remedies. No one alternative will necessarily receive the highest evaluation for every balancing criterion. This phase of the comparative analysis is useful in refining the relative merits of candidate alternatives. The five primary balancing criteria are: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost.

3. Long-Term Effectiveness and Permanence

This criterion evaluates the ability of a remedial alternative to maintain reliable protection of human health and the environment over time, once cleanup goals have been achieved. Since this interim remedial action will be followed by a final ROD for the permanent remedy, clean-up goals are not being set. EPA intends that this interim remedial action will facilitate the performance of the final remedy selected for the Site.

The no action alternative would not result in acceptable risk reduction as judged by the baseline risk assessment in the Remedial Investigation. This alternative also does not address the risk of an uncontrolled smelter stack collapse as a result of its current instability nor does it control the washing of contaminants into surface water.

Several components to the remedy include permanent features and were the only alternatives considered. The demolition of structures and secure storage or disposal will be effective in eliminating the threat that contamination contained in the structures will migrate into the environment (see Exposure Pathways Study).

With regard to the stack, each demolition alternative would permanently prevent the uncontrolled collapse of the unstable smelter stack. The disposal alternatives for stack debris include two temporary measures and the permanent, off-site disposal measure. In-place containment of the stack bricks after they fall could be effective in preventing releases to the environment if the measure was constructed in conformance with hazardous waste pile requirements. However, the "in-situ" containment facility would also require construction and maintenance of a leachate collection and monitoring system in an area that presently has minimal contamination. This monitoring system is required for in-place storage, and not for the fine ore bins building storage, because water will be generated by dust suppression activities during the stack demolition and for effectively monitoring the impact of the falling bricks on the

plastic lining covering the trench. An "in-situ" containment area presents some uncertainty of effectiveness, in terms of a potential addition to surface and groundwater contamination, even in the near-term, until selection of the final disposal remedy.

Storage of the materials in the fine ore bins, which has adequate capacity and will protect the materials from surface water run-on, precipitation and wind, will provide a more effective long-term storage area. Off-site disposal of the debris in an appropriate hazardous or solid waste facility would provide a permanently effective remedy. The final remedy for the storage of demolition debris will address long-term effectiveness.

On-site incineration of the wood will permanently dispose of the materials. To the extent that materials are shipped off Site for disposal, the action will permanently and effectively eliminate any on-site risks. Materials suitable for decontaminating, reuse or recycling will be permanently removed from the Site.

4. Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion evaluated the anticipated performance of the various treatment technologies and addressed the statutory preference for selecting remedial actions that employ treatment technologies which permanently and significantly reduce toxicity, mobility, or volume of the hazardous substances. This preference is satisfied when treatment is used to reduce the principal threats at a site through destruction of toxic contaminants, irreversible reductions in contaminant mobility, or reductions in the total volume of contaminated media.

The no-action alternative does not employ treatment as a principal component of the remedy; toxicity, mobility and volume of the contamination would remain unchanged.

Certain alternatives act to reduce an aspect of toxicity, mobility and volume (TMV). Although washing structures could temporarily increase the mobility of contaminants, the diversion system will direct the wastewater to the evaporation sedimentation basins. Removal of contaminated dust, demolition of contaminated structures, and dust suppression activities will greatly reduce the mobility of the contaminated dust that could be released into the environment. Decontamination and the reuse of debris is also a reduction in volume of contaminants at the Site. Treatment of wood by incineration will meet this standard. Actions to divert surface waters from coming on Site will reduce the potential movement of contaminants in the soils to Commencement Bay and to groundwater.

The storage alternatives considered for interim action will not permanently and significantly reduce toxicity, mobility, and volume. Because this action does not constitute a final remedy for this operable unit, the preference for such remedies will be addressed by the final ROD for this operable unit. Off-site disposal will employ treatment where necessary to comply with land disposal restrictions.

5. Short-Term Effectiveness

The short-term effectiveness evaluation focused on short term risks which may occur during construction and remedial action, until cleanup goals are achieved.

The alternatives for demolishing and dismantling buildings and the smelter stack will be effective in safely removing the existing structures. However, short-term releases of dust and particulates will result from these activities that will be effectively controlled. Demolition will include dust suppression measures to minimize dust emissions to ambient air and to protect workers. Air monitoring devices will also be used to determine the air emissions. If air emissions exceed the standard determined to be acceptable, demolition activities will be temporarily discontinued or additional measures to reduce emissions will be undertaken as appropriate.

All the brick storage and disposal alternatives would present some risk of exposure to workers and residents from handling and moving the debris which can be minimized by using health and safety procedures and dust suppression methods. An "in-situ" containment facility presents some uncertainty of effectiveness in the near-term, in regard to a potential addition to surface and groundwater contamination. The fine ore bins building provides an effective short-term storage facility if the storage of materials meet waste pile requirements.

The alternative for diverting off-property surface waters from coming on Site will be effective in reducing the transport of contaminants in surface soils.

6. Implementability

This evaluation addresses the technical and administrative feasibility of implementing the alternatives including the availability of materials and services required to affect the remedy.

Explosive demolition, by implosion, of the stack is considered the only approach which is feasible to implement due

to the height and condition of the stack. The structural instability of the stack presents technical and worker safety problems.

Building demolition and dust suppression appear to be technically and administratively implementable because they employ conventional trade methods. The specific design of the wastewater collection system, which will involve collection, treatment and monitoring of wastewater will be completed during remedial design (RD) but also appears to be technically and administratively feasible.

Each alternative for stack brick storage and disposal is technically feasible. There is adequate capacity for on-site storage in the fine ore bins. Construction of an in-place storage area (i.e., at the base of the stack) meeting waste pile specifications can be accomplished. Adequate off-site disposal capacity is available.

Of the disposal options, only one alternative, to incinerate wood in an on-site converter incinerator, is technically feasible if the converter can be modified to meet emission and performance requirements.

Decontaminating, reusing and recycling demolition debris are all techniques which are implementable and will be based on an EPA-approved sampling plan.

7. Cost

Present worth costs are used to evaluate and compare the estimated monetary value of each remedial alternative. Present worth consists of the sum of estimated capital costs and estimates of discounted annual operation and maintenance (O&M) costs for each of the following components of the remedy.

Estimated costs for the demolition or dismantling of the structures other than the stack are $9,192,000, including dust removal and suppression, surface water containment and diversion, operation of the evaporator, demolition, and the preparation for disposal.

The cost of the explosive demolition of the stack is estimated at $720,500. Other types of manual and mechanical demolition costs were not gathered, with the exception of outrigger scaffolding, because these alternatives were not considered technically feasible. Estimated costs for the outrigger scaffold are $2,000,000.

Of the containment alternatives for the stack bricks, storage in the fine ore bins has capital costs estimated at $75,000 to $260,000. Constructing an in-place storage area would cost

approximately $100,000-$186,562 and would have higher O&M costs as a result of long-term groundwater monitoring and maintenance of the containment features. EPA estimates that disposal of the stack debris in an off-site landfill would cost from $3,960,000 to $4,996,500; disposal of other demolition debris in an off-site landfill is estimated to be $22,000,000. This cost could be reduced depending on the percentage of salvageable steel and the volume of other salvageable and combustible demolition debris that would not have to go to a landfill. This alternative has no further costs for O&M. Both on-site storage alternatives are only temporary and further costs would be necessary to relocate the bricks into final disposal on or off Site.

Modification of the converter incinerator and operation of the incinerator, including air monitoring, is estimated to cost $1,777,000.

The cost of diverting off-property surface waters to existing drainage systems of the City of Tacoma and the Town of Ruston is estimated between $1,869,500 to $2,891,600 based on the evaluation of costs in the draft Feasibility Study (FS). The actual costs of diverting the off-property surface water may be less than these estimated costs since the alternatives in the FS also included the capital costs of on-site surface water controls (see Alternatives 3A, 4.1A, and 7A in the Feasibility Study).

The range of estimated costs for the interim remedial action is from $11,764,500 to $38,686,000.

Modifying Criteria

The modifying criteria are used in the final analysis of remedial alternatives and are generally considered in altering an otherwise viable alternative rather than deciding between very different alternatives. The two modifying criteria are state and community acceptance.

8. <u>State Acceptance</u>

The Washington State Department of Ecology (Ecology) has been involved with the development and review of the Remedial Investigation and Feasibility Study for the Site, and with the development of the Proposed Plan for this interim remedial action. Ecology favors implementation of the interim measures in the Selected Remedy to stabilize the Site in preparation for selection of the final remedy in a subsequent ROD and has submitted a letter of concurrence (see Appendix II).

9. <u>Community Acceptance</u>

Many written and oral comments received during the 60-day

public comment period supported implementation of the demolition activities. Commentors encouraged EPA to approve the plan rapidly in order to get work underway. Although the majority of comments supported the plan, some members of the community felt the stack should be preserved. One commentor specifically proposed saving the bottom 50 feet as a memorial in recognition of the history of the Site. Additional concern has focused on the temporary on-site storage component of the remedy. Residents and local officials expressed concern that EPA only store the material temporarily, not permanently dispose of the materials on Site.

IX. THE SELECTED REMEDY

A. REMEDIAL OBJECTIVES

The objectives of the selected interim remedial measure are to:

1. Remove buildings and structures at the Site which are contaminated and present a hazard, and in anticipation of the need to further characterize and remediate the Site.

2. Demolish the increasingly unstable smelter chimney stack to eliminate the threat of a collapse.

3. Control the movement of surface water coming on the facility from adjacent areas in order to reduce the amount of water running through contaminated soil and slag, and to minimize transport of contaminants to groundwater and off Site.

The selected remedy addresses source areas on Site. As described in Section IV, Scope and Role of Response Action, this operable unit is an integral portion of the overall Site remedy. The interim activities selected in this ROD will contribute to the efficient performance of the long-term remedial actions under consideration for the Site. Based on evaluations conducted under the RI/FS, this interim action operable unit is neither inconsistent with nor will preclude implementation of the final remedy.

B. DESCRIPTION OF REMEDIAL COMPONENTS

EPA selected a plan to address the instability of the smelter stack, to remove the on-site structures in preparation of final remediation, and to control off-property surface water run-on at the Site.

1. Site Preparation. Several measures will be implemented before beginning the demolition phase of the interim remedial action.

a. Asbestos Abatement

Prior to demolition or any other disruptive activities, all buildings and structures will be inspected to locate and identify all asbestos-containing material (ACM). ACM from the on-site buildings shall be removed and disposed of off Site in accordance with applicable federal and state requirements.

b. Dust Removal

Buildings and structures at the Site (except the stack) will be vacuumed before beginning demolition activities. Dust removal will be accomplished by a vacuum truck pulling dusts into a collection chamber using wetting methods at the point of entry. Dust control methods will be in accordance with applicable federal and state requirements during the vacuuming procedure.

Areas of structures containing dust that are inaccessible for vacuuming will be washed down to curtail dust emissions. Dust washing will include measures to collect waste water, including concrete slabs, temporary curbing, or sandbags. Plastic sheeting may be used if the structure is not located on a concrete slab. Wastewaters generated from the dust suppression system will be collected at each demolition Site and routed to a wastewater evaporation system.

c. Road and Tunnel Survey

In response to comments, roads used for the transport of stack brick and for the transport of demolition debris off Site, will be surveyed before relocation of the debris commences. A rail and car tunnel survey will be completed before and after demolishing the smelter stack to confirm that no structural damage was caused by the impact of falling brick.

Transport of the debris from demolished Site structures, other than the stack, to the fine ore bins will not use Ruston roadways or the tunnel.

2. Demolition of structures

a. Buildings and Structures other than the Stack

Demolition of, or dismantling of the on-site structures will be accomplished by conventional trade demolition techniques. Approximately 73 structures listed on Appendix V to this ROD, as well as miscellaneous sheds, warehouses, tanks, bins and trestles, will be demolished or dismantled. Conventional

equipment, such as shears, grapples, loaders, and cranes, will be used where necessary to safely and efficiently dismantle the structures. To the best of EPA's knowledge there are no underground storage tanks at the Asarco facility as represented in the RI/FS.

High-pressure water fogging nozzles will be used to minimize dust emissions to the maximum extent possible during demolition. During demolition, surfaces newly exposed will be immediately wetted to control dust. The evaporation system, as described in Appendix A to the Asarco Site Stabilization Plan Phase II, will be designed to evaporate the water from solids. The solids will be collected and stored in the fine ore bins building or sent off Site for recycling.

b. Smelter Stack

The smelter stack will be demolished by a controlled explosive demolition technique known as implosion. The implosion will be designed so that the stack debris will collapse into a confined area in which a trench will be constructed to temporarily contain the stack bricks before moving the debris into the fine ore bins building.

A number of precautionary and safety measures are included in the remedy. A dust suppression system will be installed around the stack that is designed to prevent, to the maximum extent practicable, the release of dust and particulates during the demolition. If practicable, and if determined necessary to suppress dust, an encapsulant will be applied to the interior lining of the stack prior to the demolition. Seismograph and air blast meters will be installed to record ground vibration and air pressure generated by the explosive demolition. Residents living within 1,000 feet of the stack, which includes approximately 35 residences, will be asked to evacuate during the period of stack demolition. Evacuation procedures will be conducted with local officials. The demolition and monitoring of the demolition will be conducted in conformance with applicable federal and state occupational safety and health requirements, and will consider guidelines by the U.S. Bureau of Mines that pertain to open blasting.

The trench into which the stack debris will fall will be constructed to prevent any dust suppression wastewater from penetrating the underlying soils and ground water. The sides of the trench will be bermed with soils from the smelter stack area. A french drain system will cover the bottom of the trench. This drainage area will be covered with visqueen to prevent water penetration and a sufficient cover of sand to protect the visqueen from penetration by the stack bricks.

c. Surface water controls

During the demolition activities new surface soils will be exposed, and demolition debris will be temporarily stockpiled around the Site before moving it to the fine ore bins building. Precipitation contacting the demolition area and water generated from the demolition activities will come in contact with the exposed surfaces of the demolition debris, and exposed soils. There is a potential that the water may pick up contaminants and transport them off Site. Soil containment and surface water control measures will be implemented to minimize the potential for soil erosion and contaminant transport. The control measures include the following:

- Soil cover/traps
- Soil sealant/binders
- Surface water diversion ditches
- Soil berms/containment structures
- Grouting key drains to re-route potentially contaminated surface water to the water evaporation system
- Routing collected surface water to the evaporation system

As the demolition process takes place each of these measures will be considered on an area specific basis and the best measure or combination of measures will be implemented. Surface water discharge points from the Site will be monitored to ensure that outfall to Commencement Bay does not exceed discharge limits established by EPA and the State.

d. Air Monitoring

To ensure that these interim activities comply with federal and state air quality requirements, and to evaluate their impact on air quality, an ambient air monitoring program using high volume samplers to test for metal particulates and air sampling equipment for semi-volatile compounds, will be implemented during Site preparation work and all demolition and dismantling activities. Action levels will be determined based on ARARs under the Clean Air Act for specific contaminants, and other health risk based factors.

3. Disposal of materials from demolition activities

Demolition debris and materials from the Site will be disposed of in several ways, depending on the type of material and nature of contamination. The appropriate disposal option will be approved by EPA after approved protocols for sampling and analysis are used to assess the level of residual contamination and the potential for decontamination of the material. As demolition debris is generated, it will either be stored on Site in the fine ore bins building until a final disposal remedy is

selected or disposed in an off-site disposal site approved by EPA. Non- or de-contaminated debris can be reused or recycled.

a. Temporary On-Site Disposal In Fine Ore Bins Building

The fine ore bins, an enclosed concrete building with a roof within the area of contamination, will be used for the temporary storage of demolition debris to prevent the release of hazardous and dangerous wastes into the environment. The storage of demolition debris will meet the waste pile requirements of hazardous waste facilities (see footnote 5 below). All forms of demolition debris from buildings and the stack may be stored in the fine ore bins building pending selection of a permanent disposal remedy in the final ROD for this Site. Prior to storage in the fine ore bins, the materials will undergo a waste analysis to identify the type and level of contamination.

The stack bricks will be loaded into trucks from the trenched area and taken to the fine ore bins building. Hauling the stack debris will require travel on public roadways, and require decontamination of haul trucks at the loading/unloading areas.

Concrete, steel, wood, or other types of debris that cannot be decontaminated for reuse or recycled, or, in the case of wood, which cannot be incinerated, will be stored so that the materials may be segregated by type of material or contamination.

b. On-Site Incineration

Wood materials will be sampled to determine if they are dangerous or hazardous wastes. Wood which is not a hazardous or a dangerous waste will be incinerated on Site in a modified production vessel called a converter. Materials that are considered hazardous or dangerous waste will not be burned in the incinerator, which is not designed to comply with the hazardous waste incinerator requirements. The volume of wood is expected to be 10,500 cubic yards. If the incinerator cannot meet emission requirements, the wood debris will be either shipped off Site for disposal or stored on Site in the upgraded fine ore bins building pending selection of the final remedy.

c. Off-Site Disposal

(1) Demolition debris can be shipped off Site for disposal in an appropriate facility, depending on the nature of contamination. All material will undergo a waste analysis prior to shipment off Site. All off-site disposal facilities must be operating in compliance with applicable federal or state laws and EPA's off-site disposal policy before the material is shipped. Hazardous waste bound for off-site disposal must be disposed in a hazardous waste disposal facility. Dangerous waste will be evaluated to determine whether it is also a hazardous waste

before shipment to identify the type of facility that is appropriate. Asbestos-containing materials will be disposed at a facility operating in accordance with federal NESHAPs regulations and applicable state law. Waste materials that are only solid waste (not hazardous or dangerous) may be shipped off Site for disposal at a solid waste facility. All packaging, manifesting, and shipping of materials will comply with applicable federal Resource Conservation and Recovery Act (RCRA) and Department of Transportation (DOT) regulations for hazardous wastes and hazardous materials, and with state requirements.

(2) A number of materials at the Site may be adequately decontaminated, if necessary, and then reused or recycled. Steel and wood meeting decontamination requirements can be salvaged for reuse. Materials such as steel may be decontaminated on Site and then shipped to an off-site facility to be recycled by batch melting or resmelting. The lead and residuals collected in dust and wastewater sludge may also be shipped to an off-site facility to be recycled.

4. Drainage Control

Surface water from areas adjacent to the Site will be diverted to prevent it from entering the Site before demolition activities begin. In general, based on a conceptual design described in the Feasibility Study for final Site cleanup, diversion ditches and conduits will be used to ensure proper drainage of storm water from the surrounding areas and prevent the surface water from entering the Asarco facility. Surface water will be diverted to storm water outfalls that discharge to Commencement Bay, and the discharge will be monitored to determine whether it meets water quality standards. If the discharge exceeds water quality standards, the surface water will be evaluated to determine whether additional best management practices should be implemented or if treatment is necessary prior to discharge. The evaluation of additional controls will consider, among other things, AKARTs, water quality standards, background levels in area storm water and the quality of receiving waters.

X. STATUTORY DETERMINATIONS

EPA's primary responsibility under its CERCLA authorities is to ensure that remedial actions at Superfund sites are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that when complete, final remedial actions must comply with applicable or relevant and appropriate environmental standards unless a statutory waiver is justified. The selected remedy must also be cost-effective and utilize permanent solutions and alternative treatment technologies or

resource recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as their principal element.

The interim action operable unit remedy selected for the Asarco Smelter Superfund Site is consistent with statutory requirements of Section 121 of CERCLA and, to the extent practicable, the National Contingency Plan. This interim action operable unit is not inconsistent with nor will it preclude implementation of alternatives being considered for the final remedy for the Site.

A. Protection of Human Health and the Environment

The selected interim remedy will protect human health and the environment by demolishing and dismantling structures at the Site, and temporarily storing the demolition debris on Site, in a safe and protective manner pending selection of a final remedy for this operable unit.

The interim remedial action will be protective by removing the threat of an uncontrolled collapse of the smelter stack, resulting in releases of hazardous substances and in the danger from falling debris. Studies performed for the RI/FS at the Site indicate that the stack is unstable and poses the potential of collapse. The remedial alternative selected calls for stack demolition in a manner planned to be protective of workers and nearby residents. In addition, this interim remedy will remove most of the buildings and structures on the Site so that evaluation of the nature and extent of contamination at the Site can be completed in preparation for the final remedial action.

The selected demolition activities will be implemented in a manner that is protective of human health and the environment. Removal of the stack with explosive charges may result in some potential for air emissions and short-term risk. Engineering controls that are part of the remedy will be implemented to suppress emissions of dust and contaminants into the air due to demolition activities. It is expected that the magnitude of these risks and specific control methods will be evaluated in greater detail during the remedial design.

Extensive health and safety plans will be prepared to ensure the safety of and minimize exposures to the residents of the surrounding neighborhoods and on-site workers, and to mitigate releases to the environment, to the maximum extent practicable. Workers will follow strict guidelines meeting federal and state occupational safety and health standards to safeguard against

demolition accidents and from exposure to airborne contaminants.[3]

Residents within 1,000 feet of the smelter stack will be evacuated, if they choose, during stack demolition to prevent any exposure to airborne contaminants and debris. Air sampling and analysis will be conducted during remedial activities to monitor air quality and ensure that the measures are effective. Surface water control measures will be implemented to collect, to the extent practicable, contaminated water generated by dust suppression methods to prevent releases to Commencement Bay and the environment.

Similar protective measures will be implemented during the dismantling and demolition of buildings on the Site. Throughout the remedial action, actions to control surface water movement will be taken, as technically feasible, during and after the demolition to prevent the migration off Site of contaminated demolition debris and surface soils. Any structures that are not demolished or dismantled will be sampled and decontaminated as necessary to ensure their continued presence does not pose unacceptable risks pending selection and implementation of the final remedy for the smelter Site.

Materials generated by the demolition and dismantling actions will be stored in the fine ore bins building on Site in a manner that will prevent the release of hazardous and dangerous wastes into the environment. Some materials from the demolition and dismantling activities may be transported from the Site for off Site use or disposal. Materials that are not hazardous or dangerous wastes, or that can be decontaminated, may be salvaged for reuse. Decontamination procedures will be followed to ensure the materials are not hazardous or dangerous. The need for decontamination and the effectiveness of the decontamination procedures will be verified by sampling and analysis before final disposition.

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[3]Regulations under OSHA apply to the conduct of the remedial action as it involves workers at the Site. During implementation of response actions, control measures will ensure that worker exposures do not exceed any threshold limit values established for substances at the Site. Training of on-site workers will meet the requirements specified in 29 CFR 1910.120. Remedial activities will employ the specified type of safety equipment and procedures. Demolition activities will be conducted in conformance with Subpart T of 29 CFR 1910 (Demolition) and explosive demolition of the stack will comply with Subpart U of 29 CFR 1910 (Blasting and Use of Explosives). The remedial activities will also comply with applicable state occupational safety and health requirements.

Storm water from areas near the Site will be diverted away from the Site to reduce the transport of contaminants from on-site surface soils to Commencement Bay and to ground water.

B. Compliance with Applicable or Relevant and Appropriate Requirements

The selected interim remedial action will meet or attain all federal and more stringent state applicable or relevant and appropriate requirements (ARARs) that have been identified. No waiver of any ARAR is being sought or invoked for any component of the interim remedy. No ARARs for cleanup of groundwater, soil, or slag are included in this analysis, but will be evaluated as part of the final remedy for this Site. The laws and regulations of concern that are action-, chemical-, and location-specific include:

1. Action-specific ARARs.

a. Hazardous and Dangerous Wastes - On Site.

Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 et seq.; RCRA Regulations for Hazardous Waste Facilities, 40 CFR Part 264; RCRA Land Disposal Treatment Regulations, 40 CFR Part 268; Hazardous Waste Management Act, RCW 70.105; Washington State Dangerous Waste Regulations, WAC 173-303.

RCRA, as amended, and implementing federal regulations create a federal program for managing solid and hazardous wastes. Washington state has also enacted legislation and implementing regulations that address the management of solid, hazardous, and dangerous wastes. Responsibility for implementing most of the federal requirements have been delegated to the state program, so state dangerous waste regulations generally will be the ARARs for this remedial action.

Materials from the demolition or dismantlement of structures will be analyzed to determine whether they are a hazardous waste, including whether they exhibit the toxicity characteristic leachate procedure (TCLP) characteristic of a RCRA hazardous waste. In addition, materials will be analyzed to determine whether they are dangerous wastes under state requirements. Some wastes containing greater than 100 ppm arsenic are currently regulated as dangerous wastes by Washington.[4] Materials that meet the definitions of hazardous waste (federal) or dangerous waste (state) that are generated by the demolition and dismantling of Site structures and remain on Site will be

[4]Under state regulations, wastes containing greater than 0.01% of an International Agency for Research on Cancer (IARC) carcinogen are regulated as dangerous waste.

temporarily stored on Site in areas that conform with federal and state hazardous waste storage requirements for waste piles.[5] Specifically, the waste pile regulations at WAC 173-303-660 provide that a waste pile may be located inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated, provided that liquids or materials containing free liquids are not placed in the pile and other specified conditions are met. The federal and state hazardous waste regulations also specify facility management practices that will establish operating procedures for the Site during storage of the wastes.

Federal and state land disposal restrictions (LDR) will not apply to the consolidation of waste within the same area of contamination (AOC). The AOC at this Site includes the entire smelter facility because contamination is continuous throughout the facility.

b. Hazardous and Dangerous Waste - Off-Site Disposal.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9621(d)(3); Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 et seq.; RCRA Regulations for Transporters of Hazardous Waste Facilities, 40 CFR Parts 262 and 263; RCRA Land Disposal Treatment Regulations, 40 CFR Part 268; Department of Transportation Rules (DOT) for Transportation of Hazardous Materials, 49 CFR Parts 107, 171.1-172.558; Hazardous Waste Management Act, RCW 70.105; Washington State Dangerous Waste Regulations, WAC 173-303.

Actions to transport hazardous, dangerous, or solid waste off-site for disposal will comply with Sec. 121(d)(3) of CERCLA and applicable guidance, which provides, in part, that hazardous substances from Superfund sites may be only transferred for off Site disposal to a facility that is operating in compliance with RCRA or other applicable laws.

All hazardous and dangerous wastes that are to be shipped off Site for land disposal will be evaluated to establish that the federal and state land disposal restrictions do not preclude such off-site disposal. To the extent LDRs apply to the materials shipped off Site for disposal that are not covered by a national

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[5]The fine ore bins building is the location within the AOC at which the demolition debris that is hazardous or dangerous waste will be consolidated. The fine ore bins are not currently regulated as waste piles under 40 C.F.R. § 265.250 et seq or WAC 173.303.660. However, the requirements for construction of waste piles are relevant and appropriate to the fine ore bins building in order to provide protection from precipitation so that neither run-off nor leachate is generated.

capacity variance for debris, the materials either will comply with the applicable treatability standard or will be the subject of a treatability variance.

All hazardous and dangerous wastes that are to be shipped off-site for disposal will comply with all DOT and federal and state hazardous/dangerous waste requirements for packaging, labeling, manifesting, recordkeeping, and transporting such waste materials.

c. Air Pollution Controls - Control of Dust and Particulates

Clean Air Act (CAA), 42 U.S.C. §§ 7409, 7601; Nation Ambient Air Quality Standards (NAAQS), 40 CFR Part 50; Washington State Air General Regulations for Air Pollution Sources, WAC 173-400; Ambient Air Quality Standards for Particulate Matter, WAC 173-470. PSAPCA, Regulation 1, Articles 3, 9 and 10.

Concentrations of particulate matter and dust emissions from Site preparation and demolition activities will be designed to meet the requirements of the Clean Air Act and applicable state requirements. Particulate and dust emissions will be controlled to meet the relevant and appropriate maximum primary and secondary 24-hour concentration limits under the NAAQS.

2. Chemical-specific ARARs.

a. Air Pollution Controls - Wood Incineration.

Clean Air Act (CAA), 42 U.S.C. §§ 7409, 7601; Nation Ambient Air Quality Standards (NAAQS), 40 CFR Part 50; Washington State Air General Regulations for Air Pollution Sources, WAC 173-303, WAC 173-400, WAC 173-434, WAC 173-470; Puget Sound Air Pollution Control Agency (PSAPCA) Regulation I § 9.09 and PSAPCA BACT Policy.

Wood debris from Site demolition can be incinerated in an existing converter if such debris is neither a hazardous nor dangerous waste. Although under CERCLA §121 (e), permits are not required for activities conducted entirely on Site, PSAPCA has issued a permit to Asarco regulating performance of the converter. EPA can authorize Asarco to conduct a remedial action to fully comply with this permit under the authority of CERCLA §122 (e)(6). In the event EPA determines, however, that it is necessary to withdraw its authorization, any activity involving the converter must comply with substantive requirements under federal or state laws and regulations including those for emissions of particulates, arsenic, sulfur dioxide, hydrogen chloride and disposal of incinerator ash. Wood that is contaminated but that can be decontaminated to acceptable levels prior to burning may also qualify for incineration. Other

materials that are considered hazardous or dangerous waste will not be burned in the converter which is not designed to comply with the hazardous waste incinerator requirements of 40 CFR Subpart O.

b. Surface Water.

Clean Water Act (CWA), 33 U.S.C. § 1251 et seq.; National Permit Discharge Elimination System (NPDES), 40 CFR Parts 122 and 131; Washington State Water Pollution Control Act, RCW 90-48; NPDES Permit Program requirements, WAC 173-220; state water quality standards, WAC 173-201, state waste discharge program, WAC 173-216; RCW 90-54, Water Resources Act 1971.

Discharges to surface waters of the state are regulated under the State Waste Discharge Permit Program (WAC 173-216) unless the National Pollutant Discharge Elimination System Permit Program (NPDES) (WAC 173-220) applies. Both programs require treatment by all known available, and reasonable technology (AKART) if the contaminant levels exceed permitted levels which are generally water quality standards. For storm water discharges, the state considers Best Management Practices (BMP) to constitute AKARTs. Source control BMPs include measures to prevent the storm water from being contaminated in the first place.

Surface water, composed of storm water runoff coming from areas near the Site will be diverted so that it no longer crosses the Site. The surface water will be diverted from contaminated surfaces at the Site, thus using BMP to meet AKARTs. The diverted water will be monitored at the point of discharge from the point source created by the surface water diversion to determine compliance with water quality standards.

During the demolition activities, control measures will be taken to minimize surface water contact with contaminated soils and demolition debris that could be discharged to surface waters off Site. Precipitation from the demolition area and water generated from the demolition activities will be collected and routed through an EPA-approved evaporator system. Surface water discharge points from the Site will be monitored to ensure that discharges to Commencement Bay do not exceed the substantive discharge limits established by the NPDES Permit Program which will reduce further contaminant loading in the Bay.

c. Asbestos.

Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP), 40 CFR Part 763; Washington Dangerous Waste Regulations, WAC 173-303; Washington Labor and Industries Asbestos Removal regulations, WAC 296-65.

If friable asbestos materials, as defined by the asbestos

NESHAP, are found in buildings to be demolished or dismantled, the removal and disposal activities will be conducted in compliance with the applicable federal and more stringent state requirements for emission limits and occupational safety and health standards. Washington occupational safety and health requirements, which supplement the federal regulations with training and certification requirements, would also be met. State dangerous waste disposal requirements may apply to asbestos containing waste material that contains more than one percent asbestos by weight.

3. Location-specific ARARs.

a. Shoreline Management.

Washington Shoreline Management Act (SMA), RCW 90.58; Washington Department of Ecology interpretive rules, WAC 173-14 through 173-20; local shoreline management master program that has been approved by the state.

Development activities conducted on the Site in areas that are defined as shorelines (all areas 200 feet landward of ordinary high water, and adjacent wetlands) will conform with the substantive requirements of the SMA pursuant to the current master plan, as approved by the state (WAC 173.19.3514).

b. Wetlands Protection and Floodplains.

Statement of Procedures on Floodplain Management and Wetlands Protection, 40 CFR Part 6, Appendix A.

It appears at this time that the interim remedial action will not impact floodplains or wetlands. However, interim actions taken at the Site will include plans for evaluating whether there are issues and impacts involving floodplains and wetlands. 40 C.F.R. Part 6 describes how EPA will comply with the Executive Orders 11988 and 11990 on Floodplain management and protection of wetlands, respectively.

c. Endangered Species.

Endangered Species Act of 1973, as amended, 16 U.S.C. 1531.

Interim actions authorized on Site will not likely jeopardize the continued existence of endangered/threatened species or adversely modify or destroy critical habitats.

d. Cultural Resources.

National Historic Preservation Act, 16 U.S.C. 470 and implementing regulations at 36 CFR Part 60.4.

Under the National Historic Preservation Act, federal agencies must take into account possible effects of their actions on properties on or eligible for inclusion in the National Register of Historic Places (NRHP). The Site is not presently listed on the NRHP. Prior to undertaking demolition activities at the Site, EPA will determine whether the Site is eligible for the NRHP and will consider data recovery as a mitigation measure if appropriate.

4. Other federal criteria, advisories and guidance to be considered.

a. EPA guidance titled "Guide for Decontaminating Buildings, Structures, and Equipment at Superfund Sites," EPA/600/2-85/028, and other appropriate federal guidance documents will be considered in planning and implementing decontamination activities. Buildings, structures and equipment at the Site will be evaluated to determine whether decontamination is appropriate and feasible.

b. Guidelines by the U. S. Bureau of Mines titled "Structure Responses and Damage Produced by Ground Vibration from Surface Mining Blasting," Report of Investigation 8507 (1980), and "Structure Responses and Damage Produced by Air Blasts from Surface Mining," Report of Investigation 8485 (1980), and regulations by the Office of Surface Mining at 30 CFR § 816.67. These documents and regulations, which apply to blasting during mining activities, will be considered in designing and monitoring explosive demolition of the stack.

C. Cost-Effectiveness

The selected interim remedial action is cost-effective because it is protective of human health and the environment, attains ARARs and achieves an appropriate balance of long-term effectiveness and permanence, the reduction of toxicity, mobility, or volume and short-term effectiveness; i.e., the costs of the remedy are proportional to its overall effectiveness.

The cost of demolishing and dismantling buildings and structures other than the stack by conventional methods is estimated to cost $9,192,000, including the cost of sampling and analysis of materials for disposal or reuse, and environmental monitoring during demolition operations. Demolition of the stack, including environmental monitoring, is estimated to cost $720,500.

Cost estimates for disposal of materials generated by the demolition activities vary depending on the choice of disposal method. The cost of modifying the on-site incinerator to meet air pollution control requirements and to incinerate wood debris

is estimated at $1,777,000. The effectiveness of permanent disposal of the wood debris by on-site incineration is proportional to its costs. Wood and other materials from the Site can be decontaminated and may be salvaged for reuse. The non-wood debris that is not salvaged will be stored temporarily on-site in the fine ore bins building. Asarco estimates the cost of transporting and storage of debris from the stack demolition in the fine ore bins at $260,000. Pending the selection of a final remedy for disposal of the demolition wastes, the temporary storage on Site in the fine ore bins building is cost-effective.

The cost of diverting off-property surface waters to existing drainage systems of the City of Tacoma and the Town of Ruston is estimated to be up to $2,891,600, but may actually be lower. Implementation of these measures would be protective of human health and the environment. The estimated total cost of implementing these measures ranges from $11,764,500 to $38,686,000.

D. Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable

The selected interim remedial action to demolish structures at the Site does not provide permanent solutions to all contamination problems at the Site. However, there are several features of this selected remedy that provide a permanent solution. The primary purpose of this ROD is to start and safely clear structures from the Site in anticipation of the permanent remedial action that will be subsequently selected. EPA has determined that the interim remedial action selected in this ROD is not inconsistent with nor will it preclude implementation of the final remedy.

While the selected remedy is an interim measure, the remedy employs permanent solutions in several ways. Demolition of the stack will permanently eliminate the threat of an uncontrolled collapse. The remedy will permanently remove most structures on the Site, which will enable the Agency to plan the final remedy. In addition, this remedy provides for final disposition of many materials from the Site, to include salvaging reusable materials and incinerating most of the wood debris that is not a hazardous or dangerous waste. The remaining debris will be stored on Site until selection of a final disposal remedy in a subsequent ROD.

E. Preference for Treatment as a Principal Element

Demolition and temporary storage on Site provides an interim solution to contamination problems at the Site pending selection of a final, permanent remedy. Because this action does not constitute the final remedy for this operable unit, the statutory

preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element will be addressed by the final decision document for this Site. Subsequent actions are planned to address fully the principal threats posed by this Site.

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BY

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WESTERN DISTRICT OF WASHINGTON AT TACOMA
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IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WASHINGTON

UNITED STATES OF AMERICA, Plaintiff, v. ASARCO INCORPORATED, Defendant.	C91-5528 B Civil No. COMMENCEMENT BAY NEARSHORE/TIDEFLATS SUPERFUND SITE; ASARCO SMELTER INTERIM REMEDIAL ACTION CONSENT DECREE

U.S. DEPARTMENT OF JUSTICE
Envt. Enforcement, P.O. Box 7611
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(202) 514-1491

August 28, 1991

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CONSENT DECREE

I. BACKGROUND

1. The United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), filed a complaint in this matter pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. §§ 9606, 9607 and Section 7003 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6973 against ASARCO Incorporated ("Asarco").

2. The United States in its complaint seeks:

(A) Reimbursement of costs incurred by EPA and the Department of Justice for response actions conducted at

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the Asarco Site, which is located adjacent to Ruston and Tacoma, Washington, and within the Commencement Bay Nearshore/Tideflats Superfund site (the "CB N/T site"), together with accrued interest.

(B) Performance of certain response actions by Asarco at the Asarco Site in conformity with the Record of Decision (as defined below) and the National Contingency Plan, 40 C.F.R. Part 300 (as amended) ("NCP").

(C) Declaration of Asarco's liability for Future Response Costs.

(D) Such other relief as the Court finds appropriate.

3. In accordance with the NCP and Section 121(f)(1)(F) of CERCLA, 42 U.S.C. § 9621(f)(1)(F), EPA notified the State of Washington Department of Ecology (the "State") on March 29, 1991, of negotiations with Asarco regarding the implementation of the Remedial Design and Remedial Action for the Site, and EPA has provided the State with an opportunity to participate in such negotiations and be a party to this settlement.

4. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the federal, state, and Indian tribal natural resource trustees on March 29, 1991, of negotiations with Asarco regarding the release of hazardous substances that may have resulted in injury to the natural

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resources under their trusteeship and encouraged the trustees to participate in the negotiation of this Consent Decree. The natural resource trustees for the CB N/T site are: (A) the National Oceanic and Atmospheric Administration of the Department of Commerce, (B) the Department of Interior, (C) the State of Washington Department of Ecology (on behalf of the Washington Departments of Fisheries, Natural Resources, and Wildlife), (D) the Puyallup Tribe of Indians, and (E) the Muckleshoot Indian Tribe (hereinafter collectively referred to as the "Natural Resource Trustees").

5. In signing this Consent Decree, Defendant Asarco denies any and all legal and equitable liability under any federal, state, local or tribal statute, regulation, or common law for any endangerment, nuisance, response, removal or remedial costs incurred or to be incurred by the United States, the state of Washington, or other person as a result of the release or threat of release of hazardous substances to, at, from or near the Site. Pursuant to 42 U.S.C. § 9622(d)(1)(B), entry of this Consent Decree is not acknowledgement by Asarco that any release or threatened release of a hazardous substance constituting an imminent and substantial endangerment to human health or the environment has occurred or exists at the site. Asarco does not admit, and retains the right to controvert any of the factual or legal statements or determinations made in this Consent Decree or

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its appendices in any judicial or administrative proceeding, except an action to enforce this Consent Decree. Asarco does agree, however, to this Court's jurisdiction over this matter. This Consent Decree shall not be admissible in any judicial or administrative proceeding as proof of liability or an admission of any fact dealt with herein, but it shall be admissible in an action to enforce this Consent Decree.

6. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on September 8, 1983, 48 Fed. Reg. 40,658.

7. Because of the complexity of the CB N/T site, Superfund response actions at the CB N/T site are currently coordinated under seven separate operable units managed primarily by EPA and Ecology, including: (i) Operable Unit 01 -- CB N/T Sediments; (ii) Operable Unit 02 -- Asarco Tacoma Smelter; (iii) Operable Unit 03 -- Tacoma Tar Pits; (iv) Operable Unit 04 -- Asarco Off-Property; (v) Operable Unit 05 -- CB N/T Sources; (vi) Operable Unit 06 -- Asarco Sediments; and (vii) Operable Unit 07 -- Asarco smelter demolition. This Consent Decree involves Operable Unit 07.

8. Pursuant to an Administrative Order on Consent dated September, 1986, Asarco agreed to perform immediate site stabilization activities at the site and to conduct a remedial

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investigation/feasibility study (RI/FS) of the Asarco smelter and the surrounding area to determine the nature and extent of contamination and to evaluate alternatives for cleanup of the site.

9. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, and based on information in the draft remedial investigation and feasibility study, EPA issued the proposed plan for an interim Remedial Action at the Asarco smelter facility on July 16, 1990, and provided an opportunity for written and oral comment from the public on the proposed interim Remedial Action through September 18, 1990. A copy of the transcript of the public meeting on the proposed plan held on August 16, 1990, is available to the public as part of the administrative record upon which the Regional Administrator based the selection of the response action.

10. The decision by EPA on the interim Remedial Action to be implemented at the Site is embodied in a final Record of Decision ("ROD"), signed by the EPA Region 10 Regional Administrator on December 31, 1990, on which the state of Washington has given its concurrence. (A copy of the ROD is attached hereto as Appendix A.) The ROD includes a responsiveness summary to the public comments. Notice of the final plan was published in accordance with Section 117(b) of CERCLA.

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11. Based on the information presently available to EPA, EPA believes that the Work will be properly and promptly conducted by Asarco.

12. The interim Remedial Action selected by the ROD and the Work to be performed by Asarco shall constitute a response action taken or ordered by the President for the purposes of Section 113(j) of CERCLA.

13. The Parties recognize, and the Court by entering this Consent Decree finds, that implementation of this Consent Decree will expedite the cleanup of the Site and will avoid prolonged and complicated litigation between the Parties, that the Parties negotiated this Consent Decree in good faith, and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

II. JURISDICTION

14. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345, and 42 U.S.C. §§ 9606, 9607, and 9613(b). This Court also has personal jurisdiction over Asarco, which solely for the purposes of this Consent Decree and the underlying complaint, waives all objections and defenses that it may have to the jurisdiction of this Court or to venue in this District. Asarco shall not

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challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent Decree.

III. PARTIES BOUND

15. This Consent Decree applies to and is binding upon the United States and upon Asarco and its heirs, agents, successors and assigns. Any change in ownership or corporate status of Asarco including, but not limited to, any transfer of assets or real or personal property shall in no way alter Asarco's responsibilities under this Consent Decree.

16. Asarco shall provide a copy of this Consent Decree to each contractor hired to perform Work (as defined below) that is required by this Consent Decree and to each person representing Asarco with respect to the Site or the Work and shall condition all contracts entered into hereunder upon performance of the Work in conformity with the terms of this Consent Decree. Asarco or its contractors shall provide written notice of the Consent Decree to all subcontractors hired to perform any portion of the Work required by this Consent Decree. Asarco shall nonetheless be responsible for ensuring that its contractors and subcontractors perform the Work contemplated herein in accordance with this Consent Decree. With regard to the activities undertaken pursuant to this Consent Decree, each contractor and subcontractor shall be deemed to be in a contractual relationship

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with Asarco within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

IV. DEFINITIONS

17. Unless otherwise expressly provided herein, terms used in this Consent Decree which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Decree or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

(A) "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601 et seq.

(B) "Commencement Bay Nearshore/Tideflats Superfund site" ("CB N/T site") shall mean the area designated on the National Priorities List in September, 1983, as the CB N/T site, which is located at the southern end of the main basin of Puget Sound, near the City of Tacoma, Washington.

(C) "Consent Decree" shall mean this Decree and all appendices attached hereto. In the event of conflict between this Decree and any appendix, this Decree shall control.

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(D) "Contractor" or "Subcontractor" means the company or companies retained by or on behalf of Asarco to undertake and accomplish the Work and associated activities required by this Consent Decree.

(E) "Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal holiday, the period shall run until the close of business of the next working day.

(F) "Ecology" shall mean the State of Washington Department of Ecology.

(G) "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

(H) "Future Response Costs" shall mean all direct and indirect investigation, enforcement, and response costs that the United States, including EPA and the U.S. Department of Justice, incurs in overseeing the Work or otherwise implementing or enforcing this Consent Decree, that are not inconsistent with the National Contingency Plan. Future Response Costs shall also include all such costs incurred by the United States in

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connection with the Site between December 31, 1990, and the effective date of this Consent Decree.

(I) "General Contractor" shall mean the contractor retained by Asarco to carry out the Work under this Consent Decree.

(J) "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, including, but not limited to, any amendments thereto.

(K) "Operation and Maintenance" or "O&M" shall mean all activities required to maintain the effectiveness of the Remedial Action as required under the Operation and Maintenance Plan approved or developed by EPA pursuant to this Consent Decree and the Statement of Work (SOW).

(L) "Paragraph" shall mean a portion of this Consent Decree identified by an arabic numeral or an upper case letter.

(M) "Parties" shall mean the United States and Asarco.

(N) "Past Response Costs" shall mean all direct and indirect costs (as defined in Paragraph 17(H), "Future Response Costs," above) that the United States incurred

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with regard to the Site prior to December 31, 1990, and applicable interest.

(O) "Plaintiff" shall mean the United States.

(P) "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 et seq. (also known as the Resource Conservation and Recovery Act).

(Q) "Record of Decision" or "ROD" shall mean the EPA Record of Decision relating to Operable Unit 07 at the Site, signed on December 31, 1990, by the Regional Administrator, EPA Region 10, and all attachments thereto. (A copy of the ROD is attached hereto as Appendix A).

(R) "Remedial Action" shall mean those activities, except for Operation and Maintenance, to be undertaken by Asarco to implement the final plans and specifications submitted by Asarco pursuant to the Work Plans approved by EPA. Under the ROD and this Consent Decree, the Remedial Action is an interim Remedial Action at the Asarco smelter facility.

(S) "Remedial Design" shall mean those activities to be undertaken by Asarco to develop the final plans and specifications for the interim Remedial Action pursuant to Work Plans approved by EPA.

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(T) "Section" shall mean a portion of this Consent Decree identified by a roman numeral.

(U) "Settling Defendant" shall mean Asarco.

(V) "Settling Parties" shall mean the United States and Asarco.

(W) "Site," for purposes of this Consent Decree, shall mean the Asarco smelter facility, which is approximately sixty-seven (67) acres in size, located in Ruston and Tacoma, Washington, depicted more particularly on the map attached as Appendix C, and all suitable areas in very close proximity to the facility that are necessary for implementation of this interim Remedial Action.

(X) "State" shall mean the state of Washington Department of Ecology and any successor departments or agencies of the state.

(Y) "Statement of Work" or "SOW" shall mean the statement of work for implementation of the Remedial Design, Remedial Action, and Operation and Maintenance at the Site, as set forth in Appendix B to this Consent Decree and any modifications made in accordance with Section XXXIII (Modification) of this Consent Decree.

(Z) "United States" shall mean the United States of America.

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(AA) "Work" shall mean all activities that Asarco is required to perform under this Consent Decree, except those required by Section XXVI (Retention of Records).

(BB) "Work Plans" shall mean the Work Plans required under Paragraphs 31 and 32 of this Consent Decree and described in the Statement of Work.

V. GENERAL PROVISIONS

A. Objectives of the Parties

18. The objectives of the Settling Parties in entering into this Consent Decree are to protect public health and welfare and the environment from releases or threatened releases of hazardous substances, pollutants or contaminants from the Site by the design and implementation of the Remedial Action and Operation and Maintenance at the Site by Asarco and to reimburse response costs of the Plaintiff.

B. Commitments by Asarco

19. Asarco shall finance and perform the Work in accordance with this Consent Decree, as more fully described in the Statement of Work, and Asarco shall also reimburse the United States for Past Response Costs and Future Response Costs as provided in this Consent Decree.

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C. Compliance With Applicable Law

20. Consistent with CERCLA and/or the NCP, except as provided in paragraph 21 below, all activities undertaken by Asarco pursuant to this Consent Decree shall be performed in accordance with the requirements of all applicable federal and state laws and regulations. The United States has determined that the Work and the activities required to perform the Work under this Consent Decree are consistent with the NCP.

D. Permits

21. As provided in Section 121(e) of CERCLA and the NCP, no permit shall be required for any portion of the Work conducted entirely on the Site, provided, however, as specified in the ROD, operation of the on-site incinerator shall be in compliance with a permit issued by the Puget Sound Air Pollution Control Authority ("PSAPCA"). Where any portion of the Work requires a federal or state permit or approval, Asarco shall timely submit applications and take all other actions necessary to obtain all such permits or approvals in a timely manner.

22. Asarco may seek relief under the provisions of Section XIX (Force Majeure) of this Consent Decree for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit required for the Work.

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23. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

E. Notice of Obligations to Successors-in-Title

24. Within fifteen (15) days after the entry of this Consent Decree, Asarco shall submit for EPA approval under Section XII a legal description suitable for recording of the property comprising the Site and a summary of the terms of this Consent Decree. This summary shall include a description of where the full Consent Decree can be found. Upon approval of such property description and summary, Asarco shall have fifteen (15) days to submit for recording by the Recorder's Office, Pierce County, State of Washington, the summary of the terms of this Consent Decree approved by EPA. Thereafter, each deed, title, or other instrument of conveyance for property included in the Site shall contain a notice stating that the property is subject to this Consent Decree and any lien retained by the United States and shall reference the recorded location of the Consent Decree and any restrictions applicable to the property under this Consent Decree. Upon termination of this Consent Decree under Section XXX, Asarco may submit for recording the Order of this Court terminating this Consent Decree.

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25. The obligations of Asarco with respect to the provision of access under Section X (Access) shall be binding upon Asarco and any and all persons who subsequently acquire any interest in the Site or portion thereof (hereinafter "Successors-in-Title"). Within fifteen (15) days after the entry of this Consent Decree, Asarco shall record at the Recorder's Office, Pierce County, state of Washington, a notice of obligation to provide access under Section X (Access). Each subsequent deed to any such property included in the Site shall reference the recorded location of such notice and covenants applicable to the property.

26. Asarco and any Successor-in-Title shall, at least thirty (30) days prior to the conveyance of any interest in the Site or portion thereof, give written notice of this Consent Decree to the grantee and written notice to EPA of the proposed conveyance, including the name and address of the grantee, and the date on which notice of the Consent Decree was given to the grantee. In the event of any such conveyance, Asarco's obligations under this Consent Decree shall continue to be met by Asarco. In addition, if EPA approves, the grantee may perform some or all of the Work under this Consent Decree. In no event shall the conveyance of an interest in property that includes, or is a portion of, the Site release or otherwise affect the liability of Asarco to comply with the Consent Decree.

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27. In the event of an involuntary conveyance (including, but not limited to, condemnation by the state or a municipality) of an interest in property that includes all or a portion of the Site, Asarco's obligations under this Consent Decree shall continue to be met by Asarco. In the event of such involuntary conveyance, Asarco shall use its best efforts to secure access to the Site for Asarco and for EPA and its representatives in accordance with Paragraph 49 of this Consent Decree, as necessary to effectuate the provisions of this Decree. Any interference with Asarco's ability to effectuate the terms of this Decree by any entity that may take all or any portion of the property by involuntary conveyance may be considered a "Force Majeure" event, to be determined under the provisions in Section XIX of this Consent Decree. Nothing in this Paragraph or in this Decree shall be construed to waive or otherwise affect any liability that any entity taking all or any portion of the Site by involuntary conveyance may have under applicable law, including CERCLA.

VI. PERFORMANCE OF THE WORK BY ASARCO

A. Selection of General Contractor

28. All aspects of the Work to be performed by Asarco pursuant to Sections VI (Performance of the Work by Asarco), VII (Additional Response Actions), VIII (EPA Periodic Review), and IX

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(Quality Assurance, Sampling and Data Analysis) of this Consent Decree shall be under the direction and supervision of the General Contractor, the selection of which shall be subject to disapproval by EPA. Any disapproval by EPA of Asarco's selection of the General Contractor shall be subject to the provisions of Section XX (Dispute Resolution). Within sixty (60) days after the entry of this Consent Decree, Asarco shall notify EPA in writing of the name, title, and qualifications of any contractor proposed to be the General Contractor. If at any time thereafter, Asarco proposes to change the General Contractor, Asarco shall give notice to EPA of the proposed new General Contractor, the selection of which shall be subject to disapproval by EPA, before the new General Contractor performs, directs, or supervises any Work under this Consent Decree.

29. EPA will notify Asarco in writing of its disapproval of a proposed General Contractor. If EPA disapproves of the selection of any contractor as General Contractor, Asarco shall either invoke the provisions of Section XX (Dispute Resolution) or submit to EPA, a list of contractors, including the qualifications of each contractor, that would be acceptable to them within thirty (30) days of receipt of EPA's disapproval of the contractor previously selected. EPA will provide written notice of the names of the contractor(s) that it approves. Asarco may select any approved contractor from that list and

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shall notify EPA of the name of the contractor selected within twenty-one (21) days of EPA's designation of approved contractors. If EPA fails to provide written notice of its approval or disapproval of the names on the list as provided in this Paragraph and this failure prevents Asarco from meeting one or more deadlines in a plan approved by the EPA pursuant to this Consent Decree, Asarco may seek relief under the provisions of Section XIX (Force Majeure) hereof.

B. Remedial Design/Remedial Action

30. In order to expedite the design of the Remedial Action at the Site, Asarco may choose to commence work on the Work Plans described in Paragraphs 31 and 32 and in the Statement of Work (SOW) prior to entry of this Consent Decree by this Court. Such Work Plans must be approved by EPA pursuant to Section XII (Submissions Requiring EPA Approval) prior to implementation and all oversight response costs incurred by EPA in connection with the review of such Work Plans prior to the entry of the Consent Decree shall be reimbursed after entry in accordance with Section XVII (Reimbursement of Response Costs).

31. Within thirty (30) days after entry of this Consent Decree, Asarco shall submit to EPA, a Management Strategy Plan in accordance with the requirements of the Statement of Work.

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32. Within sixty (60) days after entry of this Consent Decree, Asarco shall submit to EPA, Work Plans for the design and implementation of the interim Remedial Action at the Site in accordance with the requirements of the Statement of Work. Upon approval of the Work Plans by EPA, they shall be incorporated into and become enforceable under this Consent Decree.

33. Upon approval of the Work Plans by EPA, Asarco shall implement the Work Plans. Asarco shall submit all plans, submittals, or other deliverables required under the approved Work Plans in accordance with the approved schedule for review and approval pursuant to Section XII (Submissions Requiring EPA Approval). Unless otherwise directed by EPA, Asarco shall not commence physical on-site activities to be performed under the Statement of Work prior to approval of the Work Plans.

34. Asarco shall, prior to any off-Site shipment of waste material from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator of such shipment of waste material. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed ten (10) cubic yards.

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35. Asarco shall include in the written notification required under Paragraph 34 the following information, where available:

(A) The name and location of the facility to which the waste material are to be shipped.

(B) The type and quantity of the waste material to be shipped.

(C) The expected schedule for the shipment of the waste material.

(D) The method of transportation.

Asarco shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the waste material to another facility within the same state, or to a facility in another state.

36. The identity of the receiving facility and state under Paragraph 34 will be determined by Asarco following the award of the contract for interim Remedial Action construction. Asarco shall provide the information required by Paragraph 35 as soon as practicable after the award of the contract and before the waste material is actually shipped.

VII. ADDITIONAL RESPONSE ACTIONS

37. In the event that EPA or Asarco determines that additional response actions are necessary to meet the

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requirements of this Consent Decree or the Statement of Work, notification of such determination shall be provided to the Project Coordinator for the other party.

38. Within thirty (30) days of receipt of notice from EPA pursuant to Paragraph 37 that additional response actions are necessary or such longer time as may be specified by EPA, Asarco shall submit for approval by EPA, a Supplemental Work Plan for the additional response actions. Upon approval of the Supplemental Work Plan pursuant to Section XII (Submissions Requiring EPA Approval), Asarco shall implement the plan for additional response actions in accordance with the schedule contained therein.

39. Any additional response actions that Asarco determines are necessary to meet the requirements of this Consent Decree or Statement of Work shall be subject to approval by EPA, and, if authorized by EPA, shall be completed by Asarco in accordance with plans, specifications, and schedules approved by EPA pursuant to Section XII (Submissions Requiring EPA Approval).

40. Asarco may invoke the procedures set forth in Section XX (Dispute Resolution) to dispute EPA's determination that additional response actions are necessary to meet the requirements of this Consent Decree or Statement of Work. Such a dispute shall be resolved pursuant to Section XX (Dispute Resolution) of this Consent Decree.

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VIII. EPA PERIODIC REVIEW

41. At least every five years, if required by CERCLA § 121(c) and any applicable regulation, Asarco shall conduct necessary and appropriate studies and investigations as requested by EPA in order to permit EPA to reconsider whether this interim Remedial Action is protective of human health and the environment. This requirement shall remain in effect until the final remedial action for the cleanup of the Asarco smelter site has been completed.

42. If required by Sections 113(k)(2) or 117 of CERCLA, Asarco and the public will be provided with an opportunity to comment on any further response actions proposed by EPA as a result of any review conducted pursuant to Section 121(c) of CERCLA and to submit written comments for the record during the public comment period. After the period for submission of written comments is closed, the Regional Administrator, EPA Region 10, or his/her delegate will determine in writing whether further response actions are appropriate.

43. If the Regional Administrator, EPA Region 10, or his/her delegate determines that information received, in whole or in part, during the review conducted pursuant to Section 121(c) of CERCLA, indicates that the Remedial Action is not protective of human health and the environment, Asarco shall

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undertake any further response actions EPA has determined are appropriate and that are not barred under the Covenant Not to Sue. Asarco shall submit a plan for such work to EPA for approval in accordance with the procedures set forth in Section VI (Performance of the Work by Asarco) and shall implement the plan approved by EPA. However, Asarco may invoke the procedures set forth in Section XX (Dispute Resolution) to dispute: (A) EPA's determination that the remedial action is not protective of human health and the environment, or (B) EPA's selection of the further response actions ordered. Such a dispute shall be resolved pursuant to Section XX (Dispute Resolution) of this Consent Decree.

IX. QUALITY ASSURANCE, SAMPLING, AND DATA ANALYSIS

44. Asarco shall use quality assurance, quality control, and chain of custody procedures for all environmental, treatability, design, compliance and monitoring samples in accordance with EPA's "Interim Guidelines and Specifications For Preparing Quality Assurance Project Plans," December 1980, (QAMS-005/80); "Data Quality Objective Guidance," (EPA/540/G87/003 and 004); "EPA NEIC Policies and Procedures Manual," May 1978, revised November 1984, (EPA 330/9-78-001-R); and subsequent amendments to such guidelines upon written notification to Asarco of such amendment by EPA. Amended guidelines shall apply only to

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procedures conducted after such notification. Prior to the commencement of any monitoring project under this Consent Decree, Asarco shall submit for approval by EPA, a Quality Assurance Project Plan ("QAPP") to EPA and the State that is consistent with the SOW, the NCP, and applicable guidance documents. If relevant to the proceeding, validated sampling data generated in accordance with the QAPP(s) and reviewed and approved by EPA shall be admissible as evidence, without objection, in any proceeding under this Decree. Asarco shall assure that EPA and its authorized representatives are allowed access to all laboratories utilized by Asarco in implementing this Consent Decree. In addition, Asarco shall assure that such laboratories shall analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring. Asarco shall ensure that the laboratories utilized by them for the analysis of samples taken pursuant to this Decree perform all analyses according to accepted EPA methods. Accepted EPA methods consist of those methods which are documented in the "Contract Lab Program Statement of Work for Inorganic Analysis" and the "Contract Lab Program Statement of Work for Organic Analysis," dated February 1988, and any amendments made thereto during the course of the implementation of this Decree. Asarco shall ensure that all laboratories used by them for analysis of samples taken pursuant

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to this Consent Decree participate in an EPA or EPA-equivalent QA/QC program.

45. Upon request, Asarco shall allow split or duplicate samples to be taken by EPA or its authorized representatives. Asarco shall notify EPA not less than ten (10) days in advance of any sample collection activity unless such sample collection activity is routine and part of a Work Plan approved by EPA. In addition, EPA shall have the right to take any additional samples related to the performance of the Work that EPA deems necessary. EPA shall provide reasonable notice to Asarco whenever such additional samples will be taken. Upon request, EPA shall allow Asarco to take split or duplicate samples of any samples EPA takes as part of EPA's oversight of Asarco's implementation of the Work.

46. Within seven (7) days of a request by EPA, Asarco shall submit to EPA, four (4) copies of the results of all sampling and/or tests or other data obtained or generated by or on behalf of Asarco with respect to implementation of this Consent Decree.

47. Notwithstanding any provision of this Consent Decree, the United States hereby retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA and any other applicable statutes or regulations.

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X. ACCESS

48. Commencing upon the date of entry of this Consent Decree, Asarco agrees that the United States and its representatives, including EPA and its contractors, shall have access to the Site and any other property to which access is required for the implementation of this Consent Decree, to the extent access to the property is controlled by Asarco, for the purposes of conducting any activity related to this Consent Decree including, but not limited to:

(A) Monitoring the Work.

(B) Verifying any data or information submitted to the United States in connection with this Consent Decree.

(C) Conducting such tests, investigations, or sample collections as deemed necessary to monitor compliance with this Consent Decree.

(D) Assessing the need for, planning, or implementing additional response actions at or near the Site.

(E) Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Asarco or its agents or contractors for the Work undertaken pursuant to this Consent Decree.

(F) Assessing Asarco's compliance with this Consent Decree.

49. To the extent that the Site or any other property to which access is required for the implementation of this Consent

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Decree is owned or controlled by persons other than Asarco, Asarco shall use best efforts to secure from such persons access for Asarco, as well as for the United States and its representatives, including, but not limited to, EPA and its contractors, as necessary to effectuate this Consent Decree. For purposes of this Paragraph "best efforts" includes the payment of compensation where required under law for use of the property to which access is obtained. If any access required to complete the Work is not obtained within forty-five (45) days of the date of entry of this Consent Decree, or within forty-five (45) days of the date EPA notifies Asarco in writing that additional access beyond that previously secured is necessary, whichever is later, Asarco shall promptly notify EPA, and shall include in that notification a summary of the steps Asarco has taken to attempt to obtain access. The United States may, as it deems appropriate, assist Asarco in obtaining access. Asarco shall reimburse the United States, in accordance with the procedures in Section XVII (Reimbursement of Response Costs), for all costs incurred by the United States in obtaining access.

50. Notwithstanding any provision of this Consent Decree, the United States retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statute or regulations.

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XI. REPORTING REQUIREMENTS

51. In addition to any other requirement of this Consent Decree, Asarco shall submit to EPA, four (4) copies of written monthly progress reports that:

(A) Describe the actions which have been taken toward achieving compliance with this Consent Decree during the previous month.

(B) Include a summary of all results of sampling and tests and all other data received or generated by Asarco or its contractors or agents in connection with implementation of this Consent Decree in the previous month unless such information has already been submitted to EPA.

(C) Identifies all work plans, plans, and other deliverables required by this Consent Decree completed and submitted during the previous month.

(D) Describe all actions, including, but not limited to, data collection and implementation of work plans, which are scheduled for the next month and provide other information relating to the progress of activities required by the approved Work Plans, including, but not limited to, critical path diagrams, Gantt charts, and Pert charts.

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(E) Include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays.

(F) Include any modifications to the work plans or other schedules that Asarco has proposed to EPA or that have been approved by EPA.

(G) Describe all activities undertaken pursuant to Section XXXII (Community Relations) in support of EPA's Community Relations Plan during the previous month and those to be undertaken in the next month.

Asarco shall submit these progress reports to EPA by the tenth day of every month following the entry of this Consent Decree until EPA notifies Asarco pursuant to Paragraph 70 of Section XV (Certification of Completion). If requested by EPA, Asarco shall also provide briefings for EPA to discuss the progress of the Work. Further, Asarco shall describe in a separate Close-Out Report how all activities required by this Consent Decree and Statement of Work have been accomplished. This Close-Out Report shall be submitted in conjunction with the Certification of Completion required under paragraph 68 below.

52. Asarco shall notify EPA of any change in the schedule described in the monthly progress report for the performance of

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any activity, including, but not limited to, data collection and implementation of work plans, no later than seven (7) days prior to the performance of the activity.

53. Upon the occurrence of any event during performance of the Work that Asarco is required to report pursuant to Section 103 of CERCLA or Section 304 of the Emergency Planning and Community Right-To-Know Act (EPCRA), Asarco shall within twenty-four (24) hours of the onset of such event orally notify the EPA Project Coordinator or the Alternate EPA Project Coordinator (in the event of the unavailability of the EPA Project Coordinator), or, in the event that neither the EPA Project Coordinator or Alternate EPA Project Coordinator is available, the Superfund Response/Investigation Section, EPA Region 10. These reporting requirements are in addition to the reporting required by CERCLA Section 103 or EPCRA Section 304. Within twenty (20) days of the onset of such an event, Asarco shall furnish to EPA a written report, signed by Asarco's Project Coordinator, setting forth the events which occurred and the measures taken, and to be taken, in response thereto. Within thirty (30) days of the conclusion of such an event, Asarco shall submit a report setting forth all actions taken in response thereto. Reports submitted in compliance with other laws that include information required by this Consent Decree may be submitted under this Consent Decree

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and may be appended to a regular monitoring report rather than submitted to EPA separately.

54. Until termination of this Consent Decree pursuant to Section XXX (Termination of Consent Decree), Asarco shall submit to EPA each year, within thirty (30) days of the anniversary of the entry of the Consent Decree, a report setting forth the status of the Work, which shall at a minimum include a statement of major milestones accomplished in the preceding year, a statement of tasks remaining to be accomplished, and a schedule for implementation of the remaining Work. Asarco shall submit four (4) copies of the report to EPA and two (2) copies to the State.

55. Asarco shall submit four (4) copies of all plans, reports, and data required by the SOW, the Work Plans, or any other approved plans to EPA in accordance with the schedules set forth in such plans. Asarco shall simultaneously submit two (2) copies of all such plans, reports and data to the State.

56. All reports and other documents submitted by Asarco to EPA (other than the monthly progress reports referred to above) which purport to document Asarco's compliance with the terms of this Consent Decree shall be signed by an authorized representative of Asarco.

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XII. SUBMISSIONS REQUIRING EPA APPROVAL

57. After review of any plan, report, or other item that is required to be submitted for approval pursuant to this Consent Decree, EPA shall:

(A) Approve, in whole or in part, the submission.

(B) Approve the submission upon specified conditions.

(C) Modify the submission to cure the deficiencies.

(D) Direct that Asarco modify the submission.

(E) Disapprove, in whole or in part, the submission, notifying Asarco of deficiencies, or

(F) Any combination of the above.

58. In the event of approval, approval upon conditions, or modification by EPA, Asarco shall proceed to take any action required by the plan, report, or other item, as approved or modified by EPA subject only to Asarco's right to invoke the Dispute Resolution procedures set forth in Section XX (Dispute Resolution) with respect to the modifications or conditions made by EPA.

59. Upon receipt of a notice of disapproval or a notice requiring a modification, Asarco shall, within fourteen (14) days or such other time as reasonably specified by EPA in such notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Notwithstanding the notice of disapproval or a notice requiring a modification, Asarco shall proceed, at the

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direction of EPA, to take any action required by any approved or unmodified portion of the submission.

60. In the event that a resubmitted plan, report, or other item, or portion thereof, is disapproved by EPA, EPA may again require Asarco to correct the deficiencies, in accordance with the preceding Paragraphs. EPA also retains the right to amend or develop the plan, report, or other item. Subject only to Asarco's right to invoke procedures set forth in Section XX (Dispute Resolution), Asarco shall implement any such plan, report, or item as amended or developed by EPA.

61. If, upon the first resubmission or upon any subsequent resubmission, the plan, report, or item is disapproved by EPA due to a material defect, Asarco shall be deemed to be in violation of the provision of this Consent Decree requiring Asarco to submit such plan, report, or item unless Asarco invokes the dispute resolution procedures set forth in Section XX (Dispute Resolution) and EPA's decision is reversed pursuant to that Section. The provisions of Section XX (Dispute Resolution) and Section XXI (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. Implementation of any non-deficient portion of a submission shall not relieve Asarco of any liability for stipulated penalties under Section XXI (Stipulated Penalties).

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62. All plans and other items containing activities to be performed by Asarco that are required to be submitted to EPA under this Consent Decree shall, upon approval by EPA, be deemed to be incorporated in and an enforceable part of this Consent Decree. In the event EPA approves a portion of a plan or other item required to be submitted to EPA under this Consent Decree, the approved portion shall be deemed to be incorporated in and an enforceable part of this Consent Decree.

XIII. PROJECT COORDINATORS

63. Within twenty (20) days of entry of this Consent Decree, Asarco and EPA will notify each other, in writing, of the name, address, and telephone number of their respective designated Project Coordinators and Alternate Project Coordinators. If a Project Coordinator or Alternate Project Coordinator initially designated is changed, the identity of the successor will be given to the other parties at least five (5) working days before the changes occur, unless impracticable, but in no event later than the actual day the change is made. Asarco's Project Coordinator shall be subject to disapproval by EPA, which disapproval shall not be unreasonably invoked, and shall have the technical expertise sufficient to adequately oversee all aspects of the Work. Asarco's Project Coordinator may assign other representatives, including other contractors, to

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serve as a Site representative for oversight of performance of daily operations during remedial activities.

64. Plaintiff may designate other representatives, including, but not limited to, EPA employees, and federal contractors and consultants, to observe and monitor the progress of any activity undertaken pursuant to this Consent Decree. EPA's Project Coordinator and Alternate Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager (RPM) by the NCP. In addition, EPA's Project Coordinator or Alternate Project Coordinator shall have authority, consistent with the NCP, to halt any Work required by this Consent Decree and to take any necessary response action when s/he determines that conditions at the Site constitute an emergency situation or may present an immediate threat to public health or welfare or the environment due to the release or threatened release of hazardous substances, pollutants or contaminants.

XIV. ASSURANCE OF ABILITY TO COMPLETE WORK

65. Within thirty (30) days of entry of this Consent Decree, Asarco shall establish and maintain sufficient financial assurance for performance of the Work in one of the following forms:

(A) A surety bond guaranteeing performance of the Work.

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(B) One or more letters of credit equalling the total estimated cost of the Work.

(C) A trust fund.

(D) A guarantee to perform the Work by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with Asarco.

(E) A demonstration that Asarco satisfies the financial test specified in 40 C.F.R. § 264.143(f).

66. If Asarco seeks to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Paragraph 65(D) of this Consent Decree, Asarco shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. § 264.143(f). If Asarco seeks to demonstrate its ability to complete the Work by means of the financial test or the corporate guarantee, it shall resubmit sworn statements conveying the information required by 40 C.F.R. § 264.143(f) annually, on the anniversary of the effective date of this Consent Decree. In the event that EPA determines at any time that Asarco has not met the financial test specified in 40 C.F.R. § 264.143(f) or one of the other methods of financial assurance set forth in Paragraph 65, such determination being subject to Section XX (Dispute Resolution), Asarco shall, within thirty (30) days of receipt of notice of EPA's determination, unless such determination is

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stayed by this Court, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 65 of this Consent Decree. Asarco's inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Consent Decree.

XV. CERTIFICATION OF COMPLETION

A. Completion of the Remedial Action

67. Within ninety (90) days after Asarco concludes that the Remedial Action has been fully performed, Asarco shall so notify EPA and shall schedule and conduct a pre-certification inspection to be attended by Asarco and EPA. If, after the pre-certification inspection, Asarco still believes that the Remedial Action has been fully performed, it shall submit a written report to EPA for approval pursuant to Section XII (Submissions Requiring EPA Approval) within thirty (30) days of the inspection. In the report, Asarco's Project Coordinator shall certify that the Remedial Action has been completed in full satisfaction of the requirements of this Consent Decree. The report shall contain the following statement, signed by a responsible corporate official of Asarco or Asarco's Project Coordinator:

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"I certify that the information contained in or accompanying this submission is true, accurate, and complete."

If, after completion of the pre-certification inspection and receipt and review of the written report, EPA determines that the Remedial Action or any portion thereof has not been completed in accordance with this Consent Decree, EPA will notify Asarco in writing of the activities that must be undertaken to complete the Remedial Action. EPA shall set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW or require Asarco to submit a schedule to EPA for approval pursuant to Section XII (Submissions Requiring EPA Approval). Asarco shall perform all activities described in the notice in accordance with the specifications and schedules established pursuant to this Paragraph, subject to Asarco's right to invoke the dispute resolution procedures set forth in Section XX (Dispute Resolution).

68. If EPA concludes, based on the initial or any subsequent Certification of Completion by Asarco, that the Remedial Action has been fully performed in accordance with this Consent Decree, EPA will so certify in writing to Asarco. This certification shall constitute the Certification of Completion of the Remedial Action for purposes of this Consent Decree, including, but not limited to, Section XXII (Covenants Not to Sue

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by Plaintiff) and Section XXX (Termination of Consent Decree). Certification of Completion of the Remedial Action shall not affect Asarco's obligations under this Consent Decree that continue beyond the Certification of Completion, including, but not limited to, access, Operation and Maintenance, record retention, indemnification, insurance, and payment of Future Response Costs and penalties.

B. Completion of the Work

69. Within ninety (90) days after Asarco concludes that all phases of the Work (including O & M), have been fully performed, Asarco shall so certify to EPA by submitting a written report certifying that the Work has been completed in full satisfaction of the requirements of this Consent Decree. The report shall contain the following statement, signed by a responsible corporate official of Asarco or Asarco's Project Coordinator:

> "I certify that the information contained in or accompanying this submission is true, accurate, and complete."

If, after review of the written report, EPA determines that any portion of the Work has not been completed in accordance with this Consent Decree, EPA will notify Asarco in writing of the activities that must be undertaken to complete the Work. EPA will set forth in the notice a schedule for performance of such

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activities consistent with the Consent Decree and the SOW or require Asarco to submit a schedule to EPA for approval pursuant to Section XII (Submissions Requiring EPA Approval). Asarco shall perform all activities described in the notice in accordance with the specifications and schedules established therein, subject to Asarco's right to invoke the dispute resolution procedures set forth in Section XX (Dispute Resolution).

70. If EPA concludes, based on the initial or any subsequent Certification of Completion by Asarco, that the Work has been fully performed in accordance with this Consent Decree, EPA will so notify Asarco in writing.

XVI. EMERGENCY RESPONSE

71. In the event of any action or occurrence during the performance of the Work which causes or threatens a release of a hazardous substance, pollutant or contaminant that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Asarco shall, subject to Paragraph 72, immediately take all appropriate action to prevent, abate, or minimize such release or threat of release, and shall immediately notify EPA's Project Coordinator, or, if the Project Coordinator is unavailable, EPA's Alternate Project Coordinator. If neither of these persons is available, Asarco shall notify the

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EPA Response/Investigations Section, EPA Region 10. Asarco shall take such actions in consultation with EPA's Project Coordinator or other available authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plans, the Contingency Plans, and any other applicable plans or documents developed pursuant to the SOW. In the event that Asarco fails to take appropriate response action as required by this Section, and EPA takes such action instead, Asarco shall reimburse EPA all costs of the response action not inconsistent with the NCP pursuant to Section XVII (Reimbursement of Response Costs).

72. Nothing in the preceding Paragraph or in this Consent Decree shall be deemed to limit any authority of the United States to take, direct, or order all appropriate action or to seek an order from the Court to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of a hazardous substance, pollutant or contaminant on, at, or from the Site.

XVII. REIMBURSEMENT OF RESPONSE COSTS

73. Within thirty (30) days of the effective date of this Consent Decree, Asarco shall pay to the United States three hundred and thirty-three thousand and five hundred dollars

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($333,500) in the form of a certified check or checks made payable to "EPA Hazardous Substance Superfund," and referencing CERCLA Number 1TGB10N658 and DOJ Case No. 90-11-2-698 in partial reimbursement of Past Response Costs. Asarco shall forward the certified check(s) to U.S. EPA Superfund, P.O. Box 360903M, Pittsburgh, Pennsylvania 15251, and shall send copies of the check to the U.S. Department of Justice and EPA as specified in Section XXVII (Notices and Submissions). Pursuant to CERCLA § 107(a), interest shall accrue on the unpaid balance of Past Response Costs from the date of the demand for payment for such costs.

74. Asarco shall reimburse the United States for all Future Response Costs not inconsistent with the National Contingency Plan incurred by the United States. EPA will send Asarco a demand for payment of all response costs, together with a summary accounting of the costs claimed, on a quarterly or annual basis at EPA's discretion. The summary shall include: (A) the Department of Justice's response costs, (B) EPA's payroll costs, including the name and titles of the persons charging time to the Site, the pay period, the number of hours and the applicable salary and benefits for such person, (C) EPA's travel costs, including the names of the persons charging such travel and the applicable transportation, per diem and incidental costs, (D) EPA's contract costs, including annual dollar amount and date(s)

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paid, invoice numbers for such payments and a brief summary of activities performed, and (E) EPA's indirect costs, including the amount computed on the basis of direct labor hours. If Asarco desires additional information, Asarco may request a copy of the CDMS Report (or its equivalent) and EPA's standard cost documentation package. Asarco shall make all payments within thirty (30) days of Asarco's receipt of each demand for payment, except as otherwise provided in Paragraph 75. Asarco shall make all payments required by this Paragraph in the manner described in Paragraph 73.

75. Asarco may contest payment of any Future Response Costs under Paragraph 74 if it determines that the U.S. Department of Justice or EPA has made an accounting error or if it alleges that a cost item that is included represents costs that are inconsistent with the NCP. Such objection shall be made in writing within thirty (30) days of receipt of the demand for payment and must be sent to EPA pursuant to Section XXVII (Notices and Submissions). Any such objection shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, Asarco shall within the thirty (30) day period pay all uncontested Future Response Costs to the United States in the manner described in Paragraph 73. Simultaneously, Asarco shall establish an interest bearing escrow account in a bank duly chartered in the State of Washington and

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remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. Asarco shall send to the U.S. Department of Justice and EPA, as provided in Section XXVII (Notices and Submissions), a copy of the transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, Asarco shall initiate the Dispute Resolution procedures in Section XX (Dispute Resolution). If the United States prevails in the dispute, within five (5) days of the resolution of the dispute, Asarco shall direct the escrow holder to remit the escrowed monies (with accrued interest) to the United States in the manner described in Paragraph 73. If Asarco prevails concerning any aspect of the contested costs, Asarco shall direct the escrow holder to remit payment for that portion of the costs (plus associated accrued interest) for which it did not prevail to the United States in the manner described in Paragraph 73; Asarco shall be disbursed the balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XX (Dispute Resolution) shall be

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the exclusive mechanisms for resolving disputes regarding Asarco's obligation to reimburse the United States for its Future Response Costs.

76. In the event that the payments required by Paragraph 73 are not made within thirty (30) days of the effective date of this Consent Decree or the payments required by Paragraph 74 are not made within thirty (30) days of Asarco's receipt of the bill, Asarco shall pay interest on the unpaid balance at the rate established pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607. The interest on Past Response Costs shall begin to accrue thirty (30) days after the effective date of the Consent Decree. The interest on Future Response Costs shall begin to accrue thirty (30) days after Asarco's receipt of the demand for payment. Payments made under this Paragraph shall be in addition to such other remedies or sanctions available to Plaintiff by virtue of Asarco's failure to make timely payments under this Section.

XVIII. INDEMNIFICATION AND INSURANCE

77. The United States does not assume any liability by entering into this Consent Decree or by virtue of any designation of Asarco as EPA's authorized representative under Section 104(e) of CERCLA. Asarco shall indemnify, save and hold harmless the United States and its officials, agents, employees, contractors,

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subcontractors, or representatives for or from any and all claims or causes of action arising from, or on account of, acts or omissions of Asarco, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Consent Decree, including, but not limited to, any claims arising from any designation of Asarco as EPA's authorized representative under Section 104(e) of CERCLA. The United States shall not be held out as a party to any contract entered into by or on behalf of Asarco in carrying out activities pursuant to this Consent Decree. Neither Asarco nor any such contractor shall be considered an agent of the United States.

78. Asarco waives all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Asarco and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Asarco shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Asarco and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

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79. No later than fifteen (15) days after the effective date of this Consent Decree, Asarco shall secure, and shall maintain, until the first anniversary of EPA's Certification of Completion of the Remedial Action pursuant to Paragraph 68 of Section XV (Certification of Completion), comprehensive general liability insurance with an annual aggregate amount of not less than Ten Million Dollars ($10,000,000) with the first Two Million Dollars ($2,000,000) self-insured by Asarco. In addition, Asarco shall secure and shall maintain automobile liability insurance as follows: Bodily injury liability -- Five Hundred Thousand Dollars ($500,000) each person, One Million Dollars ($1,000,000) each occurrence; Property damage liability -- Five Hundred Thousand Dollars ($500,000) each occurrence. All insurance policies shall name the United States as an additional insured. In addition, for the duration of this Consent Decree, Asarco shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Asarco in furtherance of this Consent Decree. Prior to commencement of the Work under this Consent Decree, Asarco shall provide to EPA certificates of such insurance and a copy of each insurance policy. Asarco shall resubmit such certificates and copies of policies each year on the anniversary of the effective date of

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this Consent Decree. If Asarco demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Asarco need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

XIX. FORCE MAJEURE

80. "Force Majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of Asarco or of any entity controlled by Asarco, including, but not limited to, its contractors and subcontractors, that delays or prevents the performance of any obligation under this Consent Decree despite Asarco's best efforts to fulfill the obligation. The requirement that Asarco exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential "Force Majeure" event and best efforts to address the effects of any potential "Force Majeure" event: (A) as it is occurring and (B) following the "Force Majeure" event, such that the delay is minimized to the greatest extent possible. "Force Majeure" does not include financial inability to complete the Work.

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81. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a "Force Majeure" event, Asarco shall immediately notify EPA's Project Coordinator or, in his or her absence, EPA's Alternate Project Coordinator or, in the event both of EPA's designated representatives are unavailable, the Director of the Hazardous Waste Management Division, EPA Region 10, within forty-eight (48) hours of when Asarco first knew or should have known that the event might cause a delay. Within five days thereafter, Asarco shall provide in writing to EPA the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Asarco's rationale for attributing such delay to a "Force Majeure" event if it intends to assert such a claim; and a statement as to whether, in the opinion of Asarco, such event may cause or contribute to an endangerment to public health, welfare, or the environment. Asarco shall include with any such notice all available documentation supporting its claim that the delay was attributable to a "Force Majeure" event. Failure to comply with the above requirements shall preclude Asarco from asserting any claim of "Force Majeure" for that event. Asarco shall be

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deemed to have notice of any circumstance of which its contractors or subcontractors had or should have had notice.

82. If EPA agrees that the delay or anticipated delay is attributable to a "Force Majeure" event, the time for performance of the obligations under this Consent Decree that are affected by the "Force Majeure" event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the "Force Majeure" event shall not, of itself, extend the time for performance of any subsequent obligation that is not affected by the "Force Majeure" event. If EPA does not agree that the delay or anticipated delay has been or will be caused by a "Force Majeure" event, EPA will notify Asarco in writing of its decision. If EPA agrees that the delay is attributable to a "Force Majeure" event, EPA will notify Asarco of the length of the extension, if any, for performance of the obligations affected by the "Force Majeure" event.

83. If Asarco elects to invoke the dispute resolution procedures set forth in Section XX (Dispute Resolution), it shall do so no later than fifteen (15) days after receipt of EPA's notice. In any such proceeding, Asarco shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a "Force Majeure" event, that the duration of the delay or the extension

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sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Asarco complied with the requirements of Paragraphs 80 and 81, above. If Asarco carries this burden, the delay at issue shall be deemed to have been caused by a "Force Majeure" event.

XX. DISPUTE RESOLUTION

84. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree and shall apply to all provisions of this Consent Decree. However, the procedures set forth in this Section shall not apply to actions by the United States to enforce obligations of Asarco that have not been disputed in accordance with this Section.

85. Any dispute which arises under or with respect to this Consent Decree shall in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations shall not exceed twenty (20) days from the time the dispute arises, unless it is modified by agreement of the parties to the dispute. The dispute shall be considered to have arisen when one party notifies the other parties in writing that there is a dispute.

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86. In the event that the parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by EPA shall be considered binding unless, within ten (10) days after written notice from EPA that the informal negotiation period has ended, Asarco invokes the formal dispute resolution procedures of this Section by serving on the United States a written statement of position on the matter in dispute, including, but not limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by Asarco.

87. Formal dispute resolution for disputes pertaining to the selection or adequacy of any response action and all other disputes that are accorded review on the administrative record under applicable principles of administrative law shall be conducted pursuant to the procedures set forth in this Paragraph and § 113(j) of CERCLA, 42 U.S.C. § 9613(j). For purposes of this Paragraph, the adequacy of any response action includes, without limitation: (i) the adequacy or appropriateness of plans, procedures to implement plans, or any other items requiring approval by EPA under this Consent Decree; and (ii) the adequacy of response actions performed pursuant to this Consent Decree. Nothing in this Consent Decree shall be construed to allow any dispute by Asarco regarding the validity of the ROD's provisions.

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(A) An administrative record of the dispute shall be maintained by EPA and shall contain all statements of position with regard to the dispute, including supporting documentation, submitted pursuant to this Paragraph and Paragraph 86.

(B) Within fourteen (14) days after receipt of Asarco's statement of position submitted pursuant to Paragraph 86, EPA will serve on Asarco its statement of position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by EPA, in response to Asarco's statement of position. Within five (5) days after receipt of EPA's responsive submission, Asarco may submit a supplemental or reply statement of position.

(C) The Director of the Waste Management Division, EPA Region 10, will then issue a final administrative decision resolving the dispute based on the administrative record described in Paragraph 87(A). This decision shall be binding upon Asarco, subject only to the right to seek judicial review pursuant to Paragraphs 87(D) and (E).

(D) Any administrative decision by EPA pursuant to Paragraph 87(C) shall be reviewable by this Court,

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provided that a notice of judicial appeal is filed by Asarco with the Court and served on all Parties within ten (10) days of receipt of EPA's decision. The notice of judicial appeal shall include a description of the matter in dispute, the efforts made by the Parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this Consent Decree. The United States may file a response to Asarco's notice of judicial appeal.

(E) In proceedings on any dispute governed by this Paragraph, Asarco shall have the burden of demonstrating that the decision of the Waste Management Division Director is arbitrary and capricious or otherwise not in accordance with law. In accordance with § 113 of CERCLA, 42 U.S.C. § 9613, judicial review of EPA's decision shall be on the administrative record compiled pursuant to Paragraphs 87(A) and (B).

88. Formal dispute resolution for disputes that neither pertain to the selection or adequacy of any response action nor are otherwise accorded review on the administrative record under applicable principles of administrative law, shall be governed by this Paragraph.

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(A) Following receipt of Asarco's statement of position submitted pursuant to Paragraph 86, the EPA Region 10 Waste Management Division Director will issue a final decision resolving the dispute. The Waste Management Division Director's decision shall be binding on Asarco unless, within ten (10) days of receipt of the decision, Asarco files with the Court and serves on all Parties a notice of judicial appeal setting forth the matter in dispute, the efforts made by the Parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of the Consent Decree. The United States may file a response to Asarco's notice of judicial appeal.

(B) Notwithstanding Paragraph 12 of Section I (Background) of this Consent Decree, judicial review of any dispute governed by this Paragraph shall be governed by applicable provisions of law.

89. The invocation of formal dispute resolution procedures under this Section shall not of itself extend, postpone, or affect in any way any obligation of Asarco under this Consent Decree, unless EPA finds or this Court orders otherwise, except that payment of stipulated penalties with respect to the disputed matter shall be stayed pending resolution of the dispute as

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provided in Paragraph 97. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Consent Decree. In the event that Asarco does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XXI (Stipulated Penalties).

XXI. STIPULATED PENALTIES

90. Asarco shall be liable for stipulated penalties in the amounts set forth in Paragraphs 91 and 92 to the United States for failure to comply with the requirements of this Consent Decree specified below, unless excused under Section XIX ("Force Majeure"). "Compliance" by Asarco shall include completion of the activities under this Consent Decree or any Work Plan or other plan approved under this Consent Decree identified below in accordance with all applicable requirements of law, this Consent Decree, the SOW, and any plans or other documents approved by EPA pursuant to this Consent Decree and within the specified time schedules established by and approved under this Consent Decree.

91. For purposes of this Consent Decree, three tiers of stipulated penalties shall apply:

(A) Tier I Noncompliance shall be defined as follows:

(1) Conducting the Work without EPA approval, or

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(2) Failure to perform the Work in accordance with requirements set forth in this Consent Decree and Statement of Work.

(B) Tier II Noncompliance shall be defined as the failure to submit on time each of the following documents or to perform on time or adequately each of the following activities:

(1) Submission of Management Strategy Plan within thirty (30) days of entry of this Consent Decree.

(2) Submission of all other Work Plans within sixty (60) days of entry of this Consent Decree.

(3) Submission of corrected or revised Work Plans in accordance with Section XII (Submissions Requiring EPA Approval).

(4) Initiation of remedial action activity within seven (7) days after approval of the Work Plan for that activity.

(5) Completion of remedial action activities in accordance with schedules submitted in the monthly reports required under Paragraph 51(D) of this Consent Decree.

(C) Tier III Noncompliance shall be defined as the failure to submit on time versions of each of the following

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documents, or to perform on time the following activities:

(1) Monthly progress reports.

(2) Certification of insurance coverage.

(3) Financial information.

92. Stipulated Penalties for the violations described in Paragraph 91 above shall accrue in the following amounts:

Period of Failure to Comply	Penalty per Violation per Day
Tier I Noncompliance:	
1st through 30th Day	$5,000
31st through 60th Day	$10,000
61st Day and beyond	$15,000
Tier II Noncompliance:	
1st through 30th Day	$3,000
31st through 60th Day	$6,000
61st Day and beyond	$12,000
Tier III Noncompliance:	
1st through 30th Day	$500
31st through 60th Day	$1,000
61st Day and beyond	$2,500

The United States may, in its discretion, not subject to dispute resolution or judicial review, waive or suspend the accrual or payment of any stipulated penalties due to it under this Paragraph.

93. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the

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correction of the noncompliance or completion of the activity. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Decree.

94. Following a determination by EPA that Asarco has failed to comply with any requirement of this Consent Decree, EPA shall give Asarco written notification of the violation and describe the noncompliance. EPA shall use best efforts to issue such notification within ten (10) days of its determination of a violation; provided, however, that penalties shall accrue as provided in the preceding paragraph regardless of whether EPA has notified Asarco of a violation. EPA's notice shall also indicate the amount of penalties currently due and the rate of accrual for continuing violations.

95. All penalties owed to the United States under this section shall be due and payable within thirty (30) days of Asarco's receipt from EPA of a demand for payment of the penalties, unless Asarco invokes the Dispute Resolution procedures under Section XX (Dispute Resolution). All payments under this Section shall be paid by certified check made payable to "EPA Hazardous Substances Superfund," shall be mailed to U.S. EPA Superfund, P.O. Box 360903M, Pittsburgh, Pennsylvania 15251, and shall reference CERCLA Number TFA10NPL6 and DOJ Case Number 90-11-2-698. Copies of check(s) paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to the

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U.S. Department of Justice and EPA as provided in Section XXVII (Notices and Submissions).

96. Neither the invocation of dispute resolution procedures under Section XX (Dispute Resolution) nor the payment of penalties shall alter in any way Asarco's obligation to complete the performance of the Work required under this Consent Decree.

97. Penalties shall continue to accrue as provided in Paragraph 93 during any dispute resolution period, but need not be paid until the following:

(A) If the dispute is resolved by agreement or by a decision of EPA that is not appealed to this Court, accrued penalties shall be paid to EPA within fifteen (15) days of the agreement or the receipt of EPA's decision or order.

(B) If the dispute is appealed to this Court and the United States prevails in whole or in part, Asarco shall pay all accrued penalties owed to EPA within sixty (60) days of receipt of the Court's decision or order, except as provided in Subparagraph C below.

(C) If the District Court's decision is appealed by any Party, Asarco shall pay all accrued penalties into an interest-bearing escrow account within sixty (60) days of receipt of the Court's decision or order. Penalties shall be paid into this account as they continue to

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accrue, at least every sixty (60) days. Within fifteen (15) days of receipt of the final appellate court decision, the escrow agent shall pay the balance of the account to the United States or to Asarco to the extent that they prevail.

98. (A) If Asarco fails to pay stipulated penalties when due, the United States may institute proceedings to collect the penalties, as well as late charges and interest. Asarco shall pay interest on the unpaid balance, which shall begin to accrue at the end of the thirty-day period at the rate established pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607.

(B) Nothing in this Section shall be construed as prohibiting, altering, or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of Asarco's violation of this Decree or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA.

(C) No payments made under this Section shall be tax deductible for federal tax purposes.

XXII. COVENANTS NOT TO SUE BY PLAINTIFF

99. In consideration of the actions that will be performed and the payments that will be made by Asarco under the terms of the Consent Decree, and except as specifically provided in

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Paragraphs 100, 101, and 103 of this Section, the United States covenants not to sue or to take administrative action against Asarco pursuant to Sections 106 and 107(a) of CERCLA and Section 7003 of RCRA for performance of the Work and for recovery of Past Response Costs and Future Response Costs that are actually paid to the United States pursuant to Paragraphs 73 and 74 of Section XVII (Reimbursement of Response Costs). These covenants not to sue are limited to and shall take effect upon the receipt by EPA of the payments required by Paragraphs 73 and 74 of Section XVII (Reimbursement of Response Costs). These covenants not to sue are conditioned upon the complete and satisfactory performance by Asarco of its obligations under this Consent Decree. These covenants not to sue extend only to Asarco and do not extend to any other person.

100. United States' Pre-Certification Reservations. Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel Asarco: (i) to perform further response actions relating to the Site or (ii) to reimburse the United States for additional costs of response if, prior to Certification of Completion of the Remedial Action:

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(A) Conditions at the Site relating to those areas of the Site addressed by the Work, previously unknown to the United States, are discovered after the entry of this Consent Decree; or

(B) Information relating to those areas of the Site addressed by the Work is received, in whole or in part, after the entry of this Consent Decree;

and these previously unknown conditions or this information together with any other relevant information indicates that the Remedial Action is not protective of human health or the environment.

101. United States' Post-Certification Reservations. Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel Asarco: (i) to perform further response actions relating to the Site or (ii) to reimburse the United States for additional costs of response if, subsequent to Certification of Completion of the Remedial Action:

(A) Conditions at the Site relating to those areas of the Site addressed by the Work, previously unknown to the United States, are discovered after the certification of completion, or

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(B) Information relating to those areas of the Site addressed by the Work is received, in whole or in part, after the certification of completion,

and these previously unknown conditions or this information together with other relevant information indicate that the Remedial Action is not protective of human health or the environment.

102. For purposes of Paragraph 100, the information previously received by and the conditions known to the United States shall include only that information and those conditions set forth in the Record of Decision for the Site, the administrative record supporting the Record of Decision, and the administrative record supporting CB N/T Operable Units 01, 02, 04, 05, 06, and 07. For purposes of Paragraph 101, the information previously received by and the conditions known to the United States shall include only that information and those conditions set forth in the Record of Decision, the administrative record supporting the Record of Decision, the administrative record supporting CB N/T Operable Units 01, 02, 04, 05, 06, and 07, and any information received by the United States pursuant to the requirements of this Consent Decree prior to Certification of Completion of the Remedial Action.

103. General reservations of rights. The covenants not to sue set forth above do not pertain to any matters other than

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those expressly specified in Paragraph 99. The United States reserves, and this Consent Decree is without prejudice to, all rights against Asarco with respect to all other matters, including but not limited to, the following:

(A) Subject to Paragraph 84 of this Consent Decree, claims based on a failure by Asarco to meet a requirement of this Consent Decree.

(B) Liability arising from the past, present, or future disposal, release, or threat of release of hazardous substances, pollutants or contaminants outside of the Site.

(C) Liability for damages for injury to, destruction of, or loss of natural resources.

(D) Liability for response costs that have been or may be incurred by the Natural Resource Trustees identified in Paragraph 4.

(E) Criminal liability.

(F) Liability for violations of federal or state law which occur during or after implementation of the Remedial Action.

(G) Liability for additional operable units at the Site or the final response action.

(H) Liability for future releases at the Site attributable to Asarco.

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104. If Asarco fails to implement the Work under this Consent Decree, EPA shall provide written notice to Asarco of such failure. Asarco may invoke the procedures set forth in Section XX (Dispute Resolution) to dispute EPA's determination that Asarco failed to implement the Work in an adequate or timely manner. Consistent with this Consent Decree, EPA may require Asarco to perform, or EPA may perform, any or all portions of Work necessary to correct a failure to perform the Work. EPA reserves its rights under Section XXI (Stipulated Penalties) to assess stipulated penalties. Costs incurred by the United States in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Asarco shall pay pursuant to Section XVII (Reimbursement of Response Costs).

105. Notwithstanding any other provision of this Consent Decree, the United States retains all authority and reserves all rights to take any and all response actions authorized by law.

XXIII. COVENANTS BY ASARCO

106. Asarco hereby covenants not to sue and agrees not to assert any claims or causes of action against the United States with respect to the Work or this Consent Decree, including, but not limited to, any direct or indirect claim for reimbursement from the Hazardous Substance Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through CERCLA

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Sections 106(b)(2), 111 or 112, or any other provision of law, or any claims arising out of response activities at the Site pursuant to this Consent Decree. However, Asarco reserves, and this Consent Decree is without prejudice to, actions against the United States based on negligent actions taken directly by the United States (not including oversight of or approval of Asarco's plans or activities) that are brought pursuant to any statute other than CERCLA and for which the waiver of sovereign immunity is found in a statute other than CERCLA. Nothing in this Consent Decree shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XIV. EFFECT OF SETTLEMENT

107. Nothing in this Consent Decree shall be construed to create any rights in, or grant any cause of action to, any person not a party to this Consent Decree. The preceding sentence shall not be construed to waive or nullify any rights that any person not a signatory to this Consent Decree may have under applicable law. Each of the Settling Parties expressly reserves any and all rights (including, but not limited to, any right to contribution), defenses, claims, demands, and causes of action which each party may have with respect to any matter,

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transaction, or occurrence relating in any way to the Site against any person not a party hereto.

108. Asarco agrees that with respect to any suit or claim for contribution brought by it for matters related to this Consent Decree it will notify the United States in writing no later than sixty (60) days prior to the initiation of such suit or claim. Asarco also agrees that with respect to any suit or claim for contribution brought against it for matters related to this Consent Decree they will notify in writing the United States within twenty (20) days of service of the complaint on them.

109. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, Asarco shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in Section XXII (Covenants Not to Sue by Plaintiff).

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XXV. ACCESS TO INFORMATION

110. Subject to the provisions of Paragraph 112 below, Asarco shall provide to EPA, upon request, copies of all documents and information within its possession or control or that of its contractors or agents relating to activities regarding the Work or to the implementation of this Consent Decree, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information. Subject to Paragraphs 111 and 112, Asarco shall also make available to EPA for purposes of investigation, information gathering, or testimony relating to the Work or implementation of this Consent Decree, employees, agents or representatives employed by Asarco or its agents or representatives at the time of the request who have knowledge of relevant facts concerning the performance of the Work or implementation of the Consent Decree.

111. Asarco may assert business confidentiality claims covering part or all of the documents or information submitted to Plaintiff under this Consent Decree to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim

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of confidentiality accompanies documents or information when they are submitted to EPA, or if EPA has notified Asarco that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA, the public may be given access to such documents or information without further notice to Asarco.

112. Asarco may assert that certain documents, records, and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Asarco asserts such a privilege, it shall provide EPA with the following:

(A) The title of the document, record, or information.

(B) The date of the document, record, or information.

(C) The name and title of the author of the document, record, or information.

(D) The name and title of each addressee and recipient.

(E) A description of the contents of the document, record, or information.

(F) The privilege asserted by Asarco.

However, no documents, reports, or other information created or generated pursuant to the requirements of the Consent Decree shall be withheld on the grounds that they are privileged.

113. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or

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engineering data, or any other documents or information related to conditions at the Site addressed by the Work.

XXVI. RETENTION OF RECORDS

114. Until ten (10) years after Asarco's receipt of EPA's notification pursuant to Paragraph 70 of Section XV (Certification of Completion), Asarco shall preserve and retain all records and documents that come into its possession or control that relate in any manner to conditions at the Site addressed by the Work, to response actions to be conducted at the Site, or that relate substantially to the liability of any person for a release or threat of release at the Site, regardless of any corporate retention policy to the contrary. Until ten (10) years after Asarco's receipt of EPA's notification pursuant to Paragraph 70 of Section XV (Certification of Completion), Asarco shall also instruct its contractors and agents to preserve all documents, records, and information of whatever kind, nature, or description relating to the performance of the Work. Asarco need not retain all records and documents now in its possession or control that relate to conditions at the Site, response actions conducted at the Site, or the liability of any person for a release or threat of release at the Site, but shall first provide EPA an opportunity to review such documents prior to their destruction or removal from the Site.

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115. At the conclusion of this document retention period, Asarco shall notify EPA at least ninety (90) days prior to the destruction of any such records or documents, and, upon request by EPA, Asarco shall deliver any such records or documents to EPA. Asarco may assert that certain documents, records, and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Asarco asserts such a privilege, it shall provide EPA with the following:

(A) The title of the document, record, or information.

(B) The date of the document, record, or information.

(C) The name and title of the author of the document, record, or information.

(D) The name and title of each addressee and recipient.

(E) A description of the subject of the document, record, or information.

(F) The privilege asserted by Asarco.

However, no documents, reports or other information created or generated pursuant to the requirements of the Consent Decree shall be withheld on the grounds that they are privileged.

116. Asarco hereby certifies that it has fully complied with any and all EPA requests for information pursuant to Section 104(e) and 122(e) of CERCLA and Section 3007 of RCRA.

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XXVII. NOTICES AND SUBMISSIONS

117. Whenever, under the terms of this Consent Decree, written notice is required to be given or a report or other document is required to be sent by one party to another, it shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other parties in writing. Written notice as specified herein shall constitute complete satisfaction of any written notice requirement of the Consent Decree with respect to the United States, EPA, Asarco, and the state of Washington, respectively.

As to the U.S. Department of Justice:

One copy to:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044

Re: DOJ Case No. 90-11-2-698.

As to EPA:

Four copies to:

Margaret Justus
EPA Project Coordinator
Hazardous Waste Division (HW-113)
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

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One copy to:

Tod Gold, Assistant Regional Counsel
Office of Regional Counsel (SO-125)
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

As to Asarco:

Thomas L. Aldrich
Site Manager
ASARCO Incorporated
North 51st and Baltimore Streets
(P.O. Box 1677)
Tacoma, WA 98402

Michael R. Thorp
Heller, Ehrman, White & McAuliffe
1400 First Interstate Plaza
1201 Pacific Avenue
Tacoma, WA 98402-4308

As to the state of Washington, one copy to:

Bruce Cochran
Department of Ecology
Hazardous Waste Investigations and Cleanup Program
Mail Stop PV-11
Olympia, Washington 98504-8711.

XXVIII. EFFECTIVE DATE

118. The effective date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court.

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Ben Franklin Station
Washington, D.C. 20044-7611
(202) 514-1491

XXIX. RETENTION OF JURISDICTION

119. This Court retains jurisdiction over both the subject matter of this Consent Decree and Asarco for the duration of the performance of the terms and provisions of this Consent Decree for the purpose of enabling any of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this Consent Decree, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XX (Dispute Resolution) hereof.

XXX. TERMINATION OF CONSENT DECREE

120. After approval by EPA of a Certification of Completion in accordance with Paragraph 70, this Consent Decree shall be terminated upon motion of either party and order of this Court. Termination of this Consent Decree shall not affect the requirements set forth in Section VIII (EPA Periodic Review), Section XXII (Covenant Not To Sue by Plaintiff), Section XXIII (Covenants by Asarco), Section XXIV (Effect of Settlement), and Section XXVI (Retention of Records).

XXXI. APPENDICES

121. The following appendices are attached to and incorporated into this Consent Decree:

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"Appendix A" is the ROD.

"Appendix B" is the SOW.

"Appendix C" is the description of the Site.

XXXII. COMMUNITY RELATIONS

122. Asarco shall propose to EPA its participation in the Community Relations Plan to be developed by EPA. EPA will determine the appropriate role for Asarco under the Plan. Asarco shall also cooperate with EPA in providing information regarding the Work to the public. As requested by EPA, Asarco shall participate in the preparation of such information for dissemination to the public and in public meetings which may be held or sponsored by EPA to explain activities at or relating to the Site. Nothing in this Paragraph shall be construed to preclude Asarco from conducting its own community relations activities regarding the Work or this Consent Decree.

XXXIII. MODIFICATION

123. Schedules for completion of the Work specified in this Consent Decree may be modified by agreement of EPA and Asarco. All such modifications shall be made in writing and a copy shall be filed with the Court.

124. No material modifications shall be made to this Consent Decree or Statement of Work without written notification

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to and written approval of the Parties and the Court. Modifications that do not materially alter those documents may be made by written agreement between the Parties. A copy of any such modification shall be filed with this Court.

125. Nothing in this Section shall be deemed to alter the Court's power to supervise or approve modifications to this Consent Decree.

XXXIV. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

126. This Consent Decree shall be lodged with the Court for a period of not less than thirty (30) days for public notice and comment in accordance with Section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), and 28 C.F.R. § 50.7. Asarco consents thereafter to the entry of this Consent Decree without further notice. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations which indicate that the Consent Decree is inappropriate, improper, or inadequate.

127. If for any reason the Court should decline to approve this Consent Decree in the form presented, this agreement is voidable at the sole discretion of any party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

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XXXV. SIGNATORIES/SERVICE

128. Each undersigned representative of Asarco, the Assistant Attorney General for Environment and Natural Resources of the Department of Justice, and the U.S. Environmental Protection Agency certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such party to this document.

129. Asarco hereby agrees not to oppose entry of this Consent Decree by this Court or to challenge any provision of this Consent Decree unless the United States has notified Asarco in writing that it no longer supports entry of the Consent Decree.

130. Asarco shall identify, on the attached signature page, the name and address of an agent who is authorized to accept service of process by mail on behalf of that party with respect to all matters arising under or relating to this Consent Decree. Asarco hereby agrees to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons.

SO ORDERED THIS 18th DAY OF May, 1992.

Robert J. Bryan
United States District Judge

U.S. DEPARTMENT OF JUSTICE
Envt. Enforcement, P.O. Box 7611
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Washington, D.C. 20044-7611
(202) 514-1491

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. ASARCO Incorporated relating to the Commencement Bay Nearshore/Tideflats Superfund Site.

FOR THE UNITED STATES OF AMERICA

Date: 12/18/91

Barry M. Hartman
Acting Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

Thomas W. Swegle
Environmental Enforcement Section
Environment and Natural Resources Division
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THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. ASARCO Incorporated, relating to the Commencement Bay Nearshore/Tideflats Superfund Site.

FOR ASARCO INCORPORATED

Date: August 28, 1991

Augustus B. Kinsolving

Augustus B. Kinsolving
Vice President, General Counsel and Secretary
ASARCO Incorporated
180 Maiden Lane
New York, New York 10038

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Michael R Thorp

Michael Thorp
Heller, Ehrman, White & McAuliffe
1400 First Interstate Plaza
1201 Pacific Avenue
Tacoma, WA 98402-4308

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CLERK U.S. DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON AT TACOMA
BY DEPUTY

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WASHINGTON

UNITED STATES OF AMERICA,
Plaintiff,
v.
ASARCO INCORPORATED,
Defendant.

Civil No C91-5528 B

NOTICE OF LODGING

Pursuant to Section 122(d)(2) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. § 9622(d)(2), and 28 C.F.R. § 50.7, a proposed Consent Decree in this action is being lodged herewith the Court, after having been agreed to and signed by all parties. Notice of lodging of the Consent Decree will be published in the Federal Register. During pendency of the public comment period provided under CERCLA § 122(d)(2) and 28 C.F.R. § 50.7, no action is required of the Court. After expiration of the comment period and evaluation of the comments, if any, the

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Court will be advised as to entry of the Consent Decree or any further action that may be required.

Respectfully submitted,

Dated: 12/24, 1991

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Acting Assistant Attorney General
Environment and Natural Resources Division

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Trial Attorney
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August 26, 1991

ASARCO SMELTER SITE
INTERIM REMEDIAL ACTION

STATEMENT OF WORK

STATEMENT OF WORK

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I. PURPOSE

The purpose of this Statement of Work (SOW) for the Asarco Smelter Demolition Operable Unit No. 7 of the Commencement Bay Nearshore/ Tide-flats (CB N/T) Superfund Site is to implement the Record of Decision (ROD) that was signed by the United States Environmental Protection Agency (EPA) Regional Administrator on December 31, 1990. It shall be the responsibility of Asarco to prepare, submit for approval, and fully implement work plans for incorporating each element of this SOW. All EPA guidance (i.e., the EPA Superfund Remedial Design and Remedial Action Guidance), the Record of Decision, the Consent Decree, and this Statement of Work (SOW), as applicable, shall be followed in designing, implementing, and submitting deliverables for Remedial Design and Remedial Action at the Asarco site.

II. DESCRIPTION OF INTERIM REMEDIAL ACTION

The Record of Decision specifies the interim remedial action for demolition activities at the Asarco site in Ruston and Tacoma, Washington. The interim action is intended to stabilize the site and includes: (1) demolishing contaminated buildings and structures to clear the site for the completion of the Remedial Investigation/Feasibility Study (RI/FS), (2) demolishing the smelter stack, and (3) implementation of measures for control of surface water and control of certain surface waters run-on to the site so as to reduce contact of surface water with contamination during demolition activities. The interim remedial action includes:

A. Demolish certain on-site buildings and structures using conventional demolition techniques.

B. Demolish the smelter stack by implosion.

C. Air monitoring of interim remedial activities.

D. Control dust and particulate emissions during demolition activities so that the activities are protective of human health and the environment.

E. If necessary, decontaminate buildings or structures remaining permanently on the site after demolition.

F. Representative sampling of debris to determine the level of contamination.

G. Implement measures to minimize contact of on-site surface water with newly exposed soils and to maximize the collection of surface water in the demolition areas into the waste water treatment system.

H. Implement measures to reduce surface water run-on from coming in contact with property contamination. In addition, evaluate further measures to reduce such contacts.

I. Collect and treat waste water from dust suppression activities.

J. Remove the ship-to-shore oil line and ensure that any residual oil is not released.

K. Dispose of demolition debris, including stack debris, in one of the following ways:

(1) Temporary storage in the fine ore bins building, or another on-site temporary storage area, in compliance with relevant and appropriate requirements for waste piles, as specified in this statement of work, until selection of a final disposal remedy, as determined in the Record of Decision for final remediation of the smelter site. Any significant increases in soil or ground-water contamination as a result of disposal in any temporary storage area will be Asarco's responsibility under the final cleanup at the Asarco smelter site.

(2) Off-site disposal of debris that is hazardous, dangerous, or solid waste in an appropriate disposal facility that is operating in compliance with applicable federal and state requirements.

(3) Salvage for reuse or recycling of decontaminated or non-contaminated material.

(4) Incineration of combustible materials, determined not to be hazardous or dangerous waste, in accordance with a permit from the Puget Sound Air Pollution Control Agency.

L. Dispose of sludge from the waste water treatment system and dusts from the vacuuming of on-site structures.

III. MANAGEMENT STRATEGY PLAN FOR THE COMPLETION OF THE INTERIM REMEDIAL ACTION

A. Asarco shall submit to EPA for review and approval a Management Strategy Plan which shall document the overall management strategy and schedule for performing the design, construction, operation and maintenance, and monitoring of the interim remedial action at the Asarco facility. Asarco shall submit the Plan according to the schedule and specifications described in Section IX of this SOW. The Management Strategy Plan shall also include:

(1) Procedures for submission of requests for remedial action and operation and maintenance contract bid proposals.

(2) Method of selection of remedial action contractors.

(3) The responsibility and authority of all organizations and key personnel involved in conducting the interim remedial actions.

(4) A discussion of how the design strategy meets the requirements of the Consent Decree and Statement of Work, and

(5) Procedures to ensure that all construction plans and specifications meet standard professional engineering practices, and that any final construction drawings are sealed by a professional engineer.

B. The Management Strategy Plan will further include summary narrative descriptions and schedules for all tasks and sub-tasks to be performed in developing the work plans described in Sections IV - VIII. These plans include:

(1) Surface Water Run-On Control Plan.

(2) Pre-Demolition Work Plan.

(3) Demolition and Disposal Work Plan.

(4) Comprehensive Requirements Work Plan, and

(5) Operation and Maintenance Plan.

C. All work plans shall specifically describe how activities to be performed comply with the ARARs identified in the Record of Decision (ROD), and the requirements of the Consent Decree and SOW.

IV. SURFACE WATER RUN-ON CONTROLS

A Surface Water Run-On Control Plan shall be submitted for EPA review and approval. The plan shall include the following measures:

A. Before demolition, construct a ditch around the north and west sides of the cooling pond to prevent run-on from entering the cooling pond.

B. Before demolition, and where practicable, control stack area run-off from leaving the property, and direct to the waste water treatment system.

C. Design improvements to the existing diversion flume to the capacity of the middle outfall. An engineering calculation shall be provided to demonstrate existing and proposed capacity of the cooling pond and middle outfall.

D. During normal hydrologic conditions, all cooling pond water shall be pumped and treated to the extent practicable. In the event that cooling pond water is discharged to the middle outfall, EPA will be notified and daily samples will be gathered during the period of overflow and analyzed for copper, arsenic, lead, and zinc.

E. Record pumping and maintenance activities associated with the cooling pond.

F. In the event of overflow of the diversion system to the cooling pond, Asarco shall use best efforts to treat the overflow using the maximum engineered capacity of the existing on-site storage and treatment capacity.

G. Operate and maintain existing ditches and piping around the pond to prevent obstruction which may cause water to overflow and enter the cooling pond. Evaluate if improvements are necessary to prevent obstruction.

H. Submit results of recent seep sampling in stack area. If copper, arsenic, or zinc are greater than an interim threshold level of 0.5 ppm, then evaluate measures for preventing ground water seepage from contacting contaminated soils. If the results are less then 0.5 ppm, confirm that seepage in the stack area discharges to the middle outfall. If not, route seepage in the stack area to the middle outfall. This threshold level bears no relationship to what may be determined as the cleanup standards for the final cleanup action at the Asarco smelter site.

I. Evaluate alternatives for diversion of surface water run-on from adjacent areas to the South outfall.

J. If the monthly average of discharge levels of copper, arsenic, or zinc in any of the three outfalls exceed 0.5 ppm, then an evaluation of alternatives to further reduce contaminated concentrations to the interim threshold level shall be performed. Measures identified shall be evaluated as part of the feasibility study for the smelter site.

V. PRE-DEMOLITION WORK

The Pre-Demolition Work Plan shall be submitted for EPA approval to ensure that all work is carried out in a manner that is protective of human health and the environment. This plan shall address the following:

A. Removal and Disposal of Contaminated Materials and Dust.

(1) Buildings and Structures. Plans shall be submitted for EPA approval ensuring that, to the extent practicable, potentially contaminated materials and dust within each building and structure are removed prior to demolition. If necessary, buildings or structures, other than those used for the temporary storage of waste materials in accordance with the provisions of this SOW, that are not demolished shall be inspected for contamination at the end of site demolition and where necessary shall be decontaminated. Vacuuming or high pressure water wash shall be used to remove these materials.

Materials contaminated with hazardous waste shall be shipped to a Resource Conservation and Recovery Act (RCRA) approved hazardous waste disposal facility or stored on-site until a final disposal remedy is selected. EPA guidance (i.e., Guide for Decontaminating Buildings, Structures, and Equipment at Superfund Sites- EPA/600/2-85/028), and other appropriate federal or state guidance documents, shall be followed, to the extent practicable, when planning and implementing decontamination activities.

(2) **Waste Piles.** Plans shall be submitted for EPA approval ensuring that the fine ore bins building or other temporary storage areas comply with waste pile requirements. For purposes of this SOW, waste pile requirements mean:

(a) Waste pile requirements for temporary storage in fine ore bins building (40 C.F.R. § 264.251 (c), (d), (e), and (f)). Control of wind dispersal and operation and maintenance of run-on and run-off control systems by:

(i) Enclosure of openings in roof, walls, and doors, as necessary, to prevent wind dispersal and to protect the building interior from precipitation.

(ii) Alteration of existing main doorway structure(s) to preclude water from running into or out of the building.

(iii) Routine removal of water from the floor of the building by pumping or vacuuming with subsequent treatment in the waste water treatment system.

(b) Waste pile requirements for temporary storage in a newly constructed facility (40 C.F.R. § 264.250(a), (c)(1)-(4)):

(i) The proposed location of the waste pile on-site must be identified in Asarco's request for approval to construct a waste pile. In areas that are not significantly contaminated, EPA will determine whether a liner will be required.

(ii) The waste pile shall be located inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated.

(iii) Best management practices shall be used to minimize the introduction of liquids into the structure, particularly during inclement weather. Best management practices shall include minimizing the introduction of free liquids into the structure from vehicles transporting demolition debris.

(iv) The structure shall be constructed, or some other method must be used, to protect the pile from surface water run-on.

(v) The structure shall be designed and operated to control dispersal of the waste by wind.

(vi) The pile shall not generate leachate through decomposition or other reactions.

(vii) The structure shall be constructed, or some other method must be used, to control run-off from the pile. Run-off control shall include, but not be limited to, routine removal of water from the floor of the building by pumping or vacuuming with subsequent treatment in the waste water treatment system.

(viii) If the structure is to be located on top of asphalt paving or concrete, any cracks in the asphalt paving or concrete shall be sealed prior to construction of the structure.

Note: See Section VI.C. below for description of waste pile requirements for temporary storage area located near the existing stack.

B. Removal and Disposal of Asbestos-Containing Materials.

(1) All asbestos related activities shall be conducted in accordance with National Environmental Standards for Hazardous Air Pollutants (NESHAP) and EPA guidance.

(2) Prior to any demolition work, a survey shall be conducted in each building or structure to determine whether friable asbestos-containing materials are present. The survey results shall be submitted to EPA. In the event that friable asbestos is found in the building or structure to be demolished, notification shall be sent to the appropriate agencies prior to any removal actions. Removal of friable asbestos-containing materials shall be done in accordance with appropriate federal regulations. Removal shall be completed before demolition activity by a certified contractor.

C. Removal and Disposal of Reusable Equipment.

(1) Description of reused materials. Asarco shall submit a description of any materials, items, or equipment that will be reused either on-site or off-site. To the extent practicable, this description shall be set forth in the pre-demolition work plan. If necessary, an addendum to the work plan shall be submitted with an updated description, and no equipment shall be shipped off-site until it is approved.

(2) Inventory. Many reusable items of equipment in structures to be demolished have previously been salvaged or removed. Some potentially reusable equipment remains on-site. These items may include certain electrical transformers, motor control center equipment, instrumentation, pumps, and fans. Asarco shall provide a description of items Asarco plans to reuse. The plan shall include a description of any plans for transporting material off-site. Asarco shall demonstrate that all reusable items are non-contaminated or will be decontaminated as necessary for transportation and future use.

(3) Tracking/Shipping Materials. Certain materials resulting from demolition activities may be shipped off-site for re-smelting, salvage, remelting, or reuse. A tracking system shall be established for

transporting and for receipt of all transported material. All applicable federal and state regulations (including RCRA and Department of Transportation) shall be adhered to when manifesting and transporting hazardous materials.

D. Road and Tunnel Survey.

Roads that may be used for transporting demolition debris shall be surveyed before demolition. A railroad and car tunnel survey will be completed before and after demolishing the smelter stack to confirm that no structural damage was caused by the impact of falling brick or demolition charges.

E. Removal of the Ship-to-Shore Oil Line.

Special precautions shall be implemented when removing the ship-to-shore oil line to ensure that there is no release of oil to Commencement Bay. These precautions shall include vacuuming, cleaning as much of the remaining oil as possible before installing a "sea curtain" on the water to contain any oil that is accidentally released, and providing a contingency plan for potential discharges of oil.

VI. DEMOLITION AND DISPOSAL

A. Asarco shall submit for EPA approval the Demolition and Disposal Work Plan that describes the demolition and disposal of site buildings and structures and also describes the environmental controls that will be implemented. All conventional trade demolition techniques shall comply with the Hazardous Waste Site Regulations (29 CFR 1910.120), as well as applicable Occupational Health and Safety Administration (OSHA) construction and demolition regulations (29 CFR 1926), and Puget Sound Air Pollution Control Agency (PSAPCA) regulations. Conventional equipment, such as shears, grapples, loaders, and cranes will be used where necessary to safely and efficiently dismantle on-site structures.

B. Procedures shall be included in the work plan to decontaminate all equipment used in the demolition process before such equipment is removed from the site.

C. The Demolition and Disposal Work Plan shall include the following:

(1) <u>On-Site Surface Water and Waste Water Collection and Disposal</u>. Procedures shall be developed to control, to the extent practicable, waste water generated by demolition activities and on-site surface water resulting from precipitation in demolition areas. To the extent practicable, waste water and surface water will be controlled so as to prevent entry into Commencement Bay or the ground water. These procedures must, at a minimum, include the following elements:

(a) Description of existing surface water collection and treatment system.

(b) Description of how surface water, waste water, and decontamination water associated with the interim action will be collected, contained, and treated.

(c) Description of any proposed improvements to the existing collection and treatment system that are necessary to conduct this interim action.

(d) All basements and sumps that do not lead to waste water collection systems must be isolated to prevent water entry into Commencement Bay or the groundwater.

(e) Disposal of sludge from waste water system.

(f) Source and estimated volumes of decontamination water, and

(g) Monitoring and disposal of collected surface water, decontamination water, and waste water as necessary.

(2) <u>Building Demolition and Disposal</u>.

(a) The Demolition and Disposal Work Plan shall include procedures for demolishing all industrial buildings and structures in the smelter work areas (See Figures 3-a through 3-i of Attachment 1). Procedures utilizing standard demolition and construction techniques shall comply with applicable state and federal regulations.

(b) Various types of materials may be generated during demolition of structures including steel and other metals (in flue dust and waste piles), brick, concrete, fiberglass, wood, and other miscellaneous materials. A sampling and analysis plan will be prepared and submitted to EPA for review and approval. This plan shall detail procedures for determining on a representative basis whether debris is a hazardous or dangerous waste. A quality assurance plan shall be submitted in conjunction with the sampling and analysis plan.

(3) Disposal options. The following is a review of disposal options for the primary types of material to be generated:

(a) Steel and other metals. Procedures shall be developed to dispose of these materials in one or more of the following ways:

(i) Shipment to an appropriate facility for recycling or reuse by batch melting in a furnace. Tracking and shipping requirements contained in Section V.C. shall apply to scrap metal shipments.

(ii) Transport to an approved hazardous waste, dangerous waste, or solid waste landfill, as appropriate, given the type and level of contamination.

(iii) Transport to the fine ore bins building or other temporary storage area until a final disposal remedy is selected.

(b) Brick and concrete. Procedures shall be developed to dispose of brick and concrete in one of the following ways:

(i) Transport to an approved hazardous waste, dangerous waste, or solid waste landfill, as appropriate, given the type and level of contamination.

(ii) Transport to the fine ore bins building or other temporary storage area until a final remedy is selected.

(c) Fiberglass. Procedures shall be developed to dispose of fiberglass in one or more of the following ways:

(i) Transport to an approved hazardous waste, dangerous waste, or solid waste landfill, as appropriate, given the type and level of contamination.

(ii) Transport to the fine ore bins building or other temporary storage area until a final disposal remedy is selected.

(d) Wood. Procedures shall be developed to dispose of wood in one or more of the following ways:

(i) Incineration of non hazardous or dangerous waste in a Puget Sound Air Pollution Control Agency (PSAPCA) approved incinerator. Wood debris will be sampled on a representative basis to determine if it is a hazardous or dangerous waste, prior to incineration. The incinerator must comply with the terms of the PSAPCA permit.

(ii) Transport to an approved hazardous waste, dangerous waste, or solid waste landfill, as appropriate, given the type and level of contamination.

(iii) Transport to the fine ore bins building or other temporary storage area until a final disposal remedy is selected.

(e) Other materials. Asarco shall submit for EPA approval procedures to reuse or salvage other materials (e.g., electrical wiring, ceramics).

(4) Stack Demolition And Disposal. Asarco shall submit a plan for EPA approval that details the stack demolition (Section 1). At a minimum, the plan shall include:

(a) Site Security.

(b) Evacuation Zone and Procedures.

(c) Adjacent Property Protection.

(d) Coordination with Local Authorities.

(e) Dust Control.

(f) Air Monitoring.

(g) Seismic Monitoring.

(h) Trench construction for stack debris.

(i) Description of implosion method to be used.

(j) Unless impracticable, as agreed to by EPA, the stack will be the first structure or building to be demolished.

(k) Asarco shall move the stack bricks and stack demolition debris from any temporary storage area to a permanent disposal area as specified in the final remedy for the Site or for the portion of the Site where the temporary storage area is located.

(l) Debris Disposal, including on-site storage of stack debris in a temporary storage area in compliance with waste pile requirements, or off-site disposal. Waste pile requirements for purposes of a temporary storage area located near the existing stack mean:

(i) Cover the pile so that wind dispersal is controlled and infiltration from precipitation is prevented.

(ii) Construct, maintain and operate run-on and run-off control systems.

(iii) Construct soil berms and base for temporary storage area on existing ground level (i.e., do not excavate soil in this area unless necessary for grading or installation of french drain system). See Attachment A for location and dimensions of temporary storage area. Install french drain system within bermed area to collect leachate for treatment in the waste water collection system.

(iv) After demolition of stack, consolidate bricks and other debris within berms.

(v) If necessary, replace monitoring wells abandoned before or damaged by impact of demolition or temporary storage.

VII. COMPREHENSIVE REQUIREMENTS

A. Health and Safety Plan.

Asarco shall submit for EPA review a Health and Safety Plan prepared in accordance with OSHA requirements (29 CFR 1910 and 1926). This plan shall be designed to protect demolition workers, site visitors, and the adjacent community and environment. This plan shall include the following:

(1) Introduction.

(a) Scope and Applicability of the Site Health and Safety Plan.

(b) Employees.

(c) Visitors.

(d) Adjacent Community.

(2) Identification of Key Health and Safety Personnel.

(a) Key Personnel.

(b) Site-Specific Health and Safety Personnel.

(c) Organizational Responsibility.

(3) Site Hazard Identification.

(a) List of Contaminants.

(b) Known Levels of Contaminants.

(c) Health Hazards Associated with Contaminants

(d) Safety Hazards.

(4) Task and Operation Safety and Health Risk Analysis.

(a) Historical Overview of the Site.

(b) Task by Task Analysis.

(c) Standard Operating Procedures for Tasks.

(5) Personnel Training Requirements.

(a) Pre-assignment Training.

(b) Site Supervisors Training.

(c) Site-Specific Training/Briefing Topics.

(6) Personal Protective Equipment To Be Used.

(a) Levels of Protection.

(b) Level A.

(c) Level B.

(d) Level C.

(e) Level D.

(f) Reassessment of Protection Program.

(g) Specific Levels of Protection Planned for the Asarco site.

(h) Standard Operating Procedures for Respiratory Protection.

(7) Medical Surveillance Requirements.

(a) Baseline Monitoring.

(b) Periodic Monitoring.

(c) Site-Specific Monitoring.

(d) Exposure/Injury Medical Support.

(8) Frequency and Types of Personnel Monitoring.

(a) Monitoring Instruments.

(b) Personnel Monitoring Frequency/Schedule.

(9) Site Control Measures.

(a) Buddy System.

(b) Site Communications Plan.

(c) Work Zone Definition.

(d) Nearest Medical Assistance.

(e) Safe Work Practices.

(10) Decontamination Plan.

(a) Equipment Decontamination.

(b) Disposition of Decontamination Wastes.

(11) Emergency and Accident Contingency Plan.

(a) Pre-emergency Planning.

(b) Lines of Authority.

(c) Emergency Recognition and Prevention.

(d) Evacuation Routes and Procedures.

(e) Emergency Equipment and Facilities.

(f) Emergency Notification System.

(g) Explosion.

(h) Spills or Leaks.

(12) Confined Space Entry Procedures.

(a) Definitions.

(b) Procedures for Confined Space Entry.

(c) Confined Space Observer.

B. Fire Protection Plan.

A Fire Protection Plan shall be submitted for EPA approval. The plan shall contain the following:

(1) Specific locations, quantities, and concentrations of hazardous substances and/or flammable materials within the building or structure.

(2) Possible routes of access for fire-fighting equipment.

(3) Location and route of access to the nearest water supply for fire-fighting purposes.

(4) A description of provisions to ensure that permanent, all-weather access for fire trucks to all water hydrants or reservoirs at the complex shall be maintained; provided, that some water lines will be removed once demolition in an area is completed.

(5) Identification of physical and chemical hazards for which fire-fighting personnel should be prepared in the event of a fire.

(6) Fire protection procedures during demolition activities that use heat (i.e., cutting and welding) must ensure that, at a minimum, a 20 pound Class ABC fire extinguisher be located at each of the immediate work areas; a fire watch should be maintained for two hours after conclusion of such activities, and

(7) Procedures to ensure that each area, containing cutting torches, welding torches, or other equipment capable of igniting wood or melting metal, be thoroughly wet down at the end of day.

C. Dust Control Plan.

Procedures shall be developed to ensure that all interim action activities are conducted in a manner that is protective of human health and the environment, and are in accordance with PSAPCA regulations. All dusts shall be controlled in a manner that prevents visible dust from leaving the site. Proven dust control methods such as sprays or fogging nozzles shall be used.

D. Air Quality Monitoring Plan.

Asarco shall submit for EPA approval an air quality monitoring plan that contains procedures to evaluate potential emissions of contaminants into the ambient air as a result of implementation of the remedial action. All sampling and data gathering methods to be used must be described in detail, including sampling activities, sample size, locations, frequency of testing, acceptance/rejection criteria, turn around time, and plans for correcting problems. The plan must address the following:

(1) Baseline Air Monitoring.

(2) Air Monitoring Locations On-Site.

(3) Air Monitoring Locations Off-Property, if necessary.

(4) Air Monitoring Performance Standards.

(5) Action Levels for Contaminants of Concern, and

(6) Corrective Actions for Exceedances of Action Levels.

E. Cultural Resource Plan.

Asarco shall submit for EPA approval a Cultural Resource Plan to demonstrate compliance with the Endangered Species Act and the National Historic Preservation Act.

F. Construction Quality Assurance Plan.

Asarco shall submit for EPA approval a Construction Quality Assurance Plan to ensure that any construction tasks of the interim action meet or exceed all design criteria, plans, and specifications and that the construction tasks will perform satisfactorily and conform with project requirements. The plan shall include a description of how change orders will be reviewed for design consistency, and a description of procedures for maintaining and updating activity logs.

VIII. OPERATION AND MAINTENANCE

Asarco shall submit for EPA approval a long-term operation and maintenance plan for the following:

A. Temporary Storage Areas.

B. Surface Water Run-On Control System.

C. Surface Water and Waste Water Treatment System, and

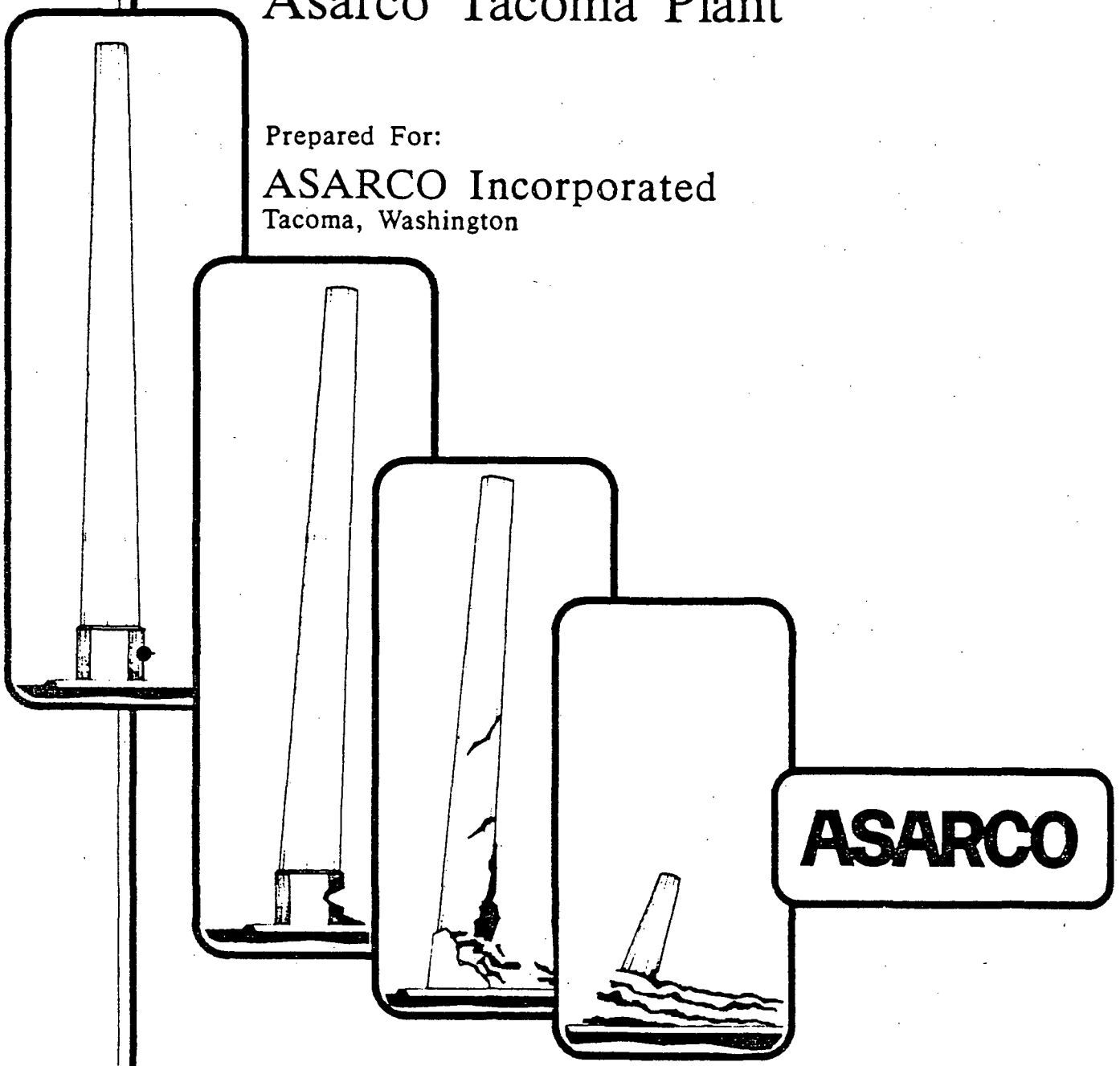
D. Air Monitoring Network.

IX. SCHEDULE FOR SUBMISSION OF MAJOR DELIVERABLES

A summary of the schedule for submission of major documents to EPA for approval is presented below.

Submission	Due Date
A. Management Strategy Plan	30 days After Entry of Consent Decree
B. Surface Water Run-on Control Plan	60 days After Entry of Consent Decree
C. Pre-Demolition Plan	60 days After Entry of Consent Decree
D. Demolition/Disposal Plan	60 days After Entry of Consent Decree
E. Comprehensive Requirements Plan	60 days After Entry of Consent Decree
F. Operation and Maintenance Plan	60 days After Entry of Consent Decree

Demolition and Disposal Plan For Interim Remedial Action Asarco Tacoma Plant



Prepared For:

ASARCO Incorporated
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DEMOLITION AND DISPOSAL PLAN
FOR INTERIM REMEDIAL ACTION
ASARCO TACOMA PLANT

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May 12, 1992

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DEMOLITION AND DISPOSAL PLAN
FOR INTERIM REMEDIAL ACTION
ASARCO TACOMA PLANT

1.0 INTRODUCTION

On December 31, 1990, the United States Environmental Protection Agency (EPA) signed a Record of Decision (ROD) for an interim remedial action at the Asarco Tacoma Plant site. The interim action consists of three primary elements:

1. Demolition of buildings and structures including the smelter stack,

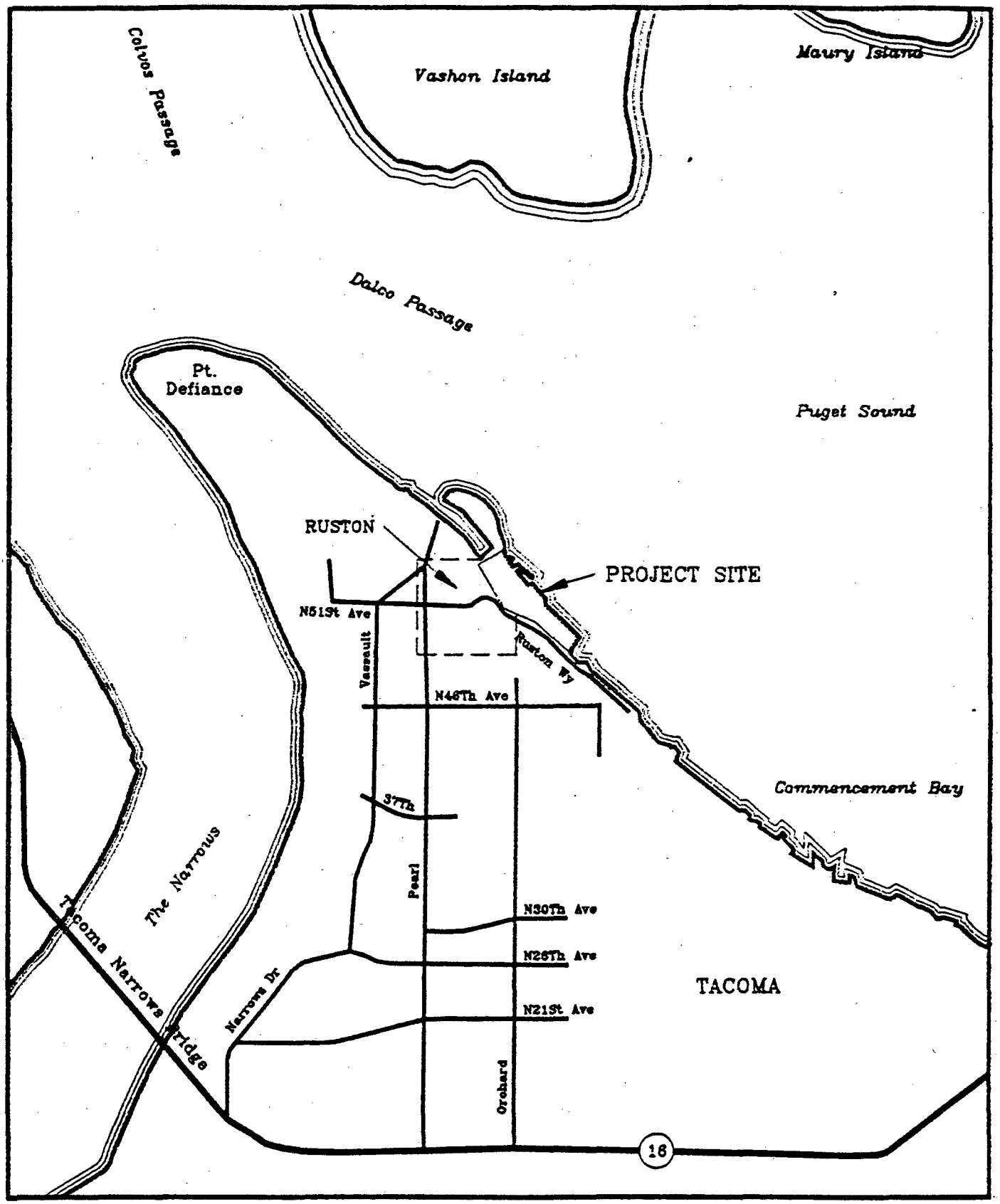
2. Disposal of demolition debris, and

3. Implementation of surface water run-on controls.

EPA and Asarco signed a Consent Decree to implement the interim remedial action ROD on August 28, 1991. A Statement Of Work (SOW), which outlines requirements for implementation of the ROD, is an attachment to the Consent Decree.

1.1 SITE DESCRIPTION AND HISTORY

The Asarco Tacoma Plant site is located on about 67 acres in the municipalities of Ruston and Tacoma, Washington, adjacent to Commencement Bay (Figure 1-1). The plant operated from 1890 to 1985 and processed copper and other base metals.



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NORTH

Approx. Scale: 1" = 4000'

Figure 1-1
ASARCO Tacoma Location Map

Major features of the site include over 70 buildings, a 562-foot-high stack, slag fill, and a pond formerly used for processing cooling water. Much of the present facility is built on slag fill, which has been used to extend the shoreline into Commencement Bay. Major features of the facility are shown on Figure 1-2.

1.2 INTERIM REMEDIAL ACTION DESCRIPTION

The interim remedial action ROD detailed several tasks including:

1. Demolition of on-site buildings and structures using conventional demolition techniques,

2. Demolition of the stack by implosion,

3. Air monitoring,

4. Particulate emissions and dust control,

5. Decontamination (if necessary) of buildings and structures remaining after demolition,

6. Representative sampling of debris,

7. Implementation of surface water controls to:

   - reduce surface water run-on to the property,

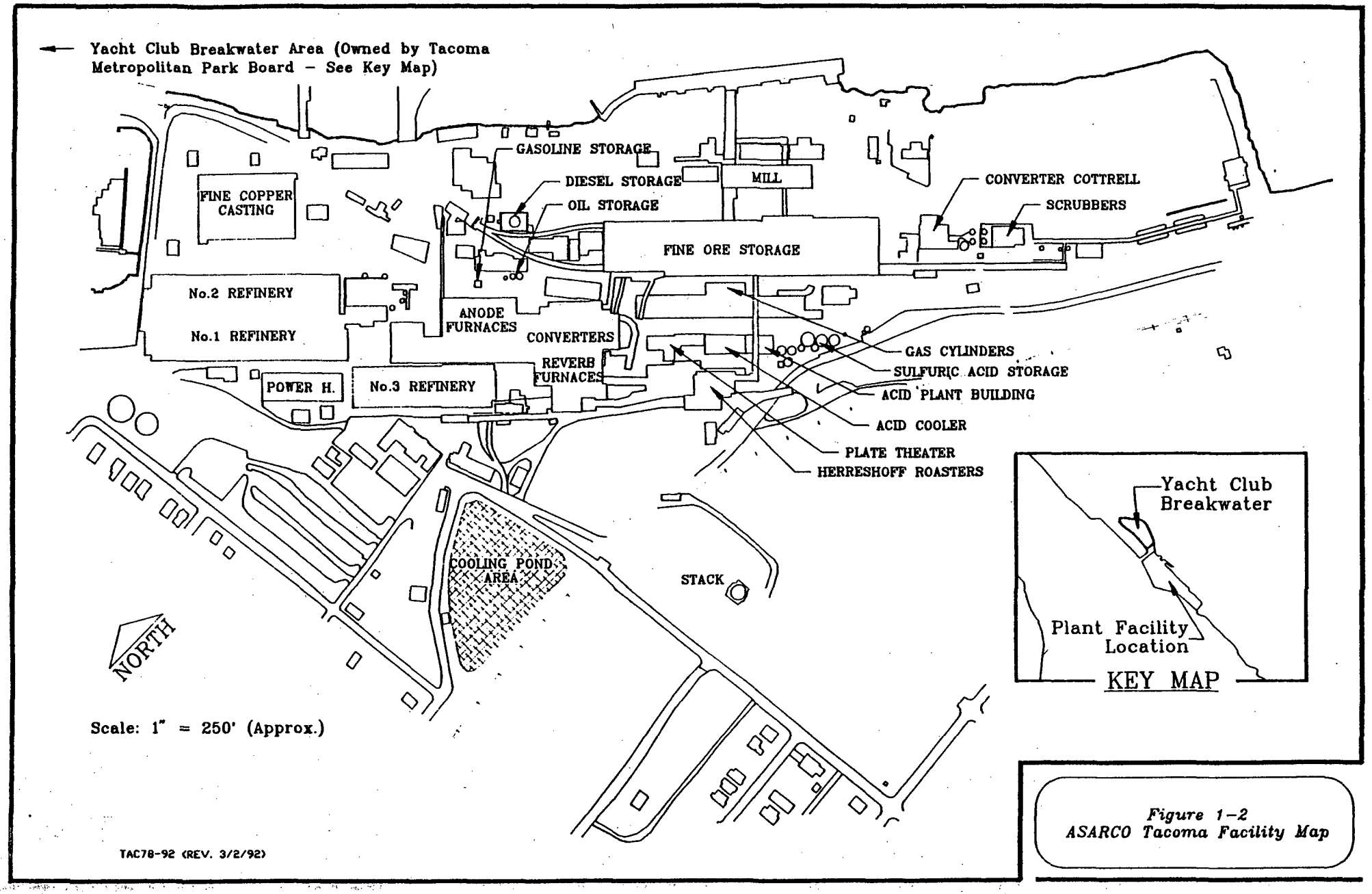


Figure 1–2
ASARCO Tacoma Facility Map

- minimize surface water contact with newly exposed soils and maximize collection in demolition areas,

- collect and evaporate water from dust suppression areas,

8. Removal of ship-to-shore oil line,

9. Disposal of demolition debris by:

   - temporary storage onsite in fine ore bins or other structures,

   - off-site disposal,

   - salvaging or recycling materials,

   - incineration of combustible materials, and

10. Disposal of water evaporation residue.

1.3 PURPOSE AND SCOPE - DEMOLITION WORK PLAN

This plan addresses demolition work requirements outlined in the Consent Decree and the SOW including:

- Decontamination procedures for equipment used in the demolition process.

- On-site surface water and dust suppression water collection and disposal including:

  - Description of the existing water collection and evaporation system.

  - Modifications to the existing system.

  - Collection of surface water and dust suppression water in demolition areas.

  - Monitoring and disposal of water generated during the demolition process.

  - Source and estimated volume of decontamination water.

- Building demolition and disposal.

- Demolition and disposal options for wood, steel, brick and concrete, asbestos, lead, stainless steel, fiberglass, and other miscellaneous demolition materials.

- Evaporation residue disposal.

- Materials tracking.

- Stack demolition and disposal procedures including:

  - Site security.

  - Evacuation zone and procedures.

  - Adjacent property protection.

  - Coordination with local authorities.

  - Dust control.

  - Air monitoring.

  - Seismic monitoring.

  - Trench construction for stack debris.

  - Stack removal alternatives including explosive demolition procedures.

  - Temporary storage of stack debris.

This work plan contains procedures necessary for compliance with ARARs listed in the ROD, the Consent Decree, and the SOW including:

- Hazardous waste site regulations (29 CFR 1910.120); and waste pile regulations (WAC 173-303-660).

- Occupational Health and Safety Administration (OSHA) construction and demolition regulations (29 CFR 1926).

- Puget Sound Air Pollution Control Agency (PSAPCA) regulations; Clean Air Act (CAA), 42 U.S.C §§ 7409, 7601; National Ambient Air Quality Standards (NAAQS), 40 CFR Part 50; Washington State general regulations for air pollution sources, WAC 173-400, and ambient air quality standards for particulate matter, WAC 173-470.

- Clean Water Act (CWA), 33 U.S.C. § 1251 et seq.; National Permit Discharge Elimination System (NPDES), 40 CFR parts 122 and 131; Washington State Water Pollution Control Act RCW 90-48, and Water Resources Act 1971, RCW 90-94; WAC 173-220, WAC 173-201 and WAC 173-216.

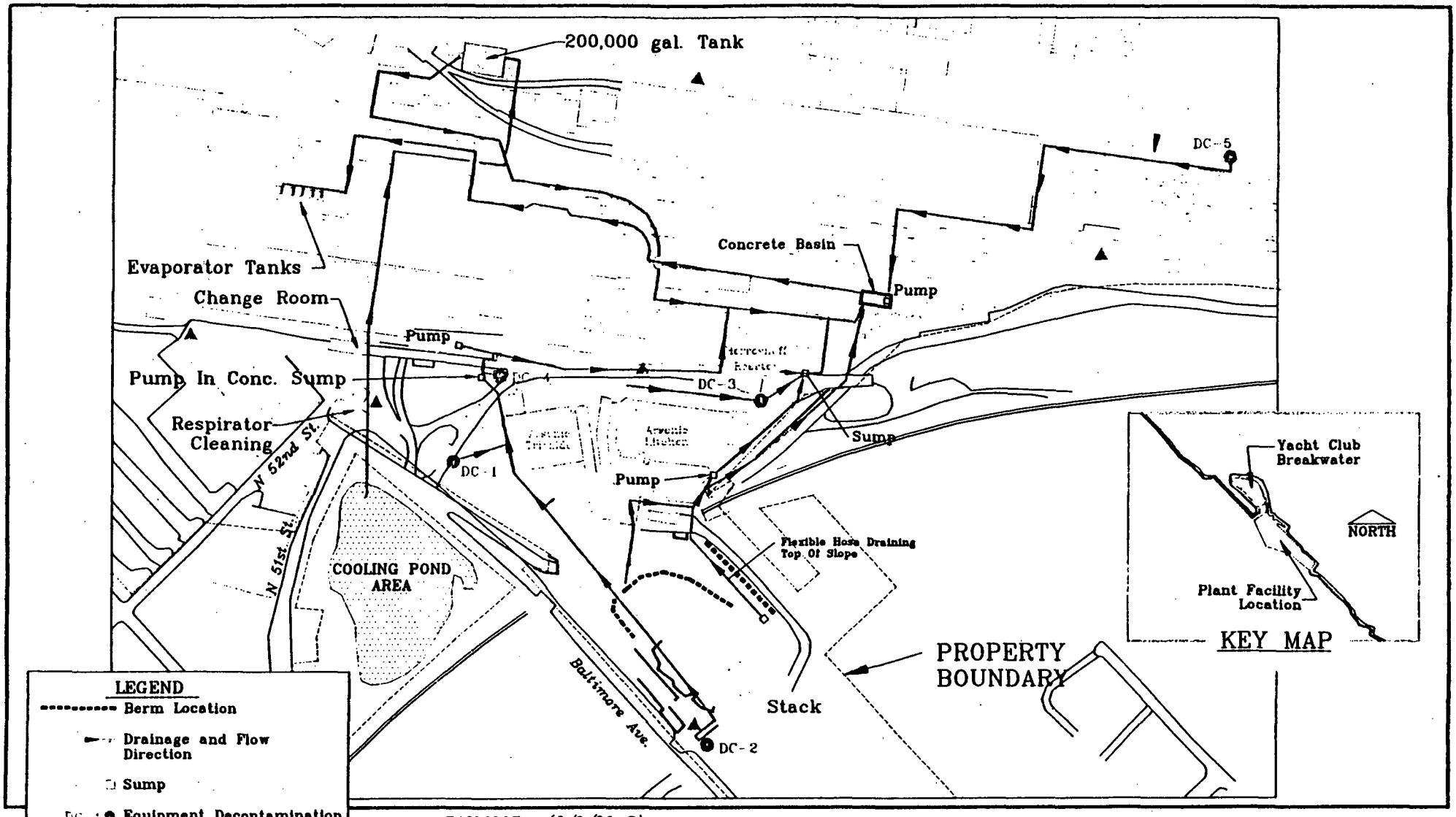
- Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61; Washington Dangerous Waste Regulations, WAC 173-303; Washington Labor and Industries Asbestos Removal regulations, WAC 296-65 and WAC 296-62-077.

2.0 DECONTAMINATION PROCEDURES FOR EQUIPMENT USED IN THE DEMOLITION PROCESS

The primary demolition contractor(s) will be bringing equipment on site to perform work associated with the demolition project. This equipment could include heavy machinery such as cranes, loaders, haul trucks, or forklifts. It could also include smaller pieces such as hand tools or personal protective equipment. Before removal from the site, this equipment will be properly decontaminated. Below are general decontamination guidelines.

To accommodate cleaning of heavy equipment, decontamination stations will be established at convenient locations on the site. To the extent possible, cleaning stations will be located near existing drains which discharge to the existing water evaporation system. Where drains do not exist, decontamination pads will be constructed to collect rinse waters for diversion to water collection drains, or for containment in drums and transportion to the evaporation system. Three existing equipment decontamination areas (DC-1, DC-2 and DC-3) have been established (see Figure 2-1). They will be supplemented with additional stations when the prime contractor makes preparations for demolition.

Decontamination station DC-1 is a gravel pad located adjacent to the old boiler tube storage building south of the main gate (Figure 2-1). Drainage from this area is diverted to a line which leads to the concrete sump located in the reverb area. Water from the sump is transported to the water evaporation system.



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Scale: 1" = 175 feet (Approx.)

Figure 2-1. Decontamination Facilities and Surface Water Drainage and Evaporation System

Decontamination station DC-2 is located at the top of the hill near the main stack entry gate. Water from this station would be pumped from a collection sump to ditches which allow gravity flow through the stack area to collection points for the water evaporation system (Figure 2-1). Ditches used in the stack area would be temporarily lined to minimize leakage.

Station DC-3 is located at the SO_2 Plant near the mist precipitator building. It is equipped with a lined sump and pumping system. Water is transferred from this point to the collection basin at the acid plant (see Figure 2-1).

Vehicles and heavy equipment will be decontaminated using low volume, high pressure spray nozzles. In most cases, ordinary tap water will be used. The objective will be to remove visible evidence of dust or accretions before the equipment is allowed to leave the site. For the most part, decontamination personnel will be instructed to wash the wheels and the undercarriage of vehicles. Other equipment will be washed as necessary.

Lighter equipment, such as hand tools, electric power tools, personal protective equipment or other hand-carried items, will be decontaminated as necessary in the decontamination reduction zone established for each area. These areas will be established by Asarco in conjunction with the primary demolition contractor once the demolition project commences. Cleaning procedures could include a combination of wiping or washing each device. More detailed procedures are discussed in Attachment D of the Health and Safety Plan.

3.0 ON-SITE SURFACE RUNOFF, WASH AND DUST SUPPRESSION WATER COLLECTION AND DISPOSAL

3.1 EXISTING SURFACE WATER COLLECTION AND EVAPORATION SYSTEM

The existing surface water collection and evaporation system is shown on Figure 2-1. This basic drainage system will be supplemented with additional pumps, lines, hoses, and other equipment to manage decontamination water generated during the demolition process.

3.1.1 Drainage Lines

As shown in Figure 2-1, surface water runoff from the No. 1 and No. 2 brick flues and from arsenic plant areas flow into surface drains which proceed along the passageway between the Godfrey roasting area and the Herreshoff roaster building. This water flows to a collection sump at the south end of the Herreshoff roaster building. As water fills the sump, it flows by gravity through an above-ground PVC line to three settling tanks located south of the acid plant area. After settling of solids, water overflows from the tanks to a concrete basin located immediately east of the tanks.

Surface water runoff is also collected from the stack area in two drainage lines. One line collects water near the north end of the plateau on top of the hill. Water runs by gravity through a flexible line into a PVC pipe at the base of the hill. This line transfers runoff down the remainder of the slope to the concrete sump in the pit near the changehouse. This water is then pumped from the sump through a line directly to the settling tanks at the acid plant. Water from the laundry (changehouse area) is also pumped into this line.

The second drainage line from the stack area collects water along the east side of the plateau, and feeds it by gravity through a flexible pipe down the east slope to a trench in the arsenic plant area. This drainage passes through a pipe to the sump at the southwest end of the arsenic plant. Water is then pumped by overhead line to the collection box at the south end of the Herreshoff roaster building.

There are two additional sources of storm water entering the acid plant concrete basin: water draining through a subsurface line from the vehicle tunnel, and water draining through an underground line which extends along the base of the bank southeast of the Herreshoff roaster building. There are other lines feeding water to the system from the acid and liquid SO_2 plants, but these are used only periodically.

During the interim remedial action, water used for dust suppression will be collected and contained within each specific demolition area, as described in Section 3.2 of this Demolition and Disposal Plan. In most cases, a collection system will be constructed to pump this water into the water evaporation and collection system. All wash waters from cleaning or decontamination activities will be routed to the water evaporation system to prevent entry into Commencement Bay or groundwater.

3.1.2 Evaporation System

The water drainage system concrete basin located at the acid plant (see Figure 2-1) has a capacity of approximately 28,125 gallons. Three settling tanks above the basin have a total capacity of 30,524 gallons. As water fills the basin from the settling tanks, it is pumped through an overhead PVC

line to one of five fiberglass tanks north of the anode furnace area. Three of the fiberglass tanks have a capacity of 7,000 gallons while the remaining two hold 5,000 gallons. This amounts to a capacity of 89,649 gallons for the entire evaporation system.

If additional volume is necessary to handle storm water runoff and water generated from demolition during the rainy season, a 200,000 gallon tank located east of the anode furnace area would be available to store additional water for eventual evaporation. Four lead-lined collectors in the No. 1 refinery would also be available for water storage, until demolition of this structure occurs. These collectors have a total capacity of 60,000 gallons. The total available storage capacity is 260,000 gallons.

Water is treated by evaporation using gas-fired submerged burners in the fiberglass tanks. As water evaporates, solids settle out in the various tanks. Since the evaporation system operates at approximately 180°F, it is well below the melting temperature or point of vaporization for the metals of concern. Based on evaporation rate, calculations using the natural gas consumption in 1990, and the amount of energy needed to evaporate a gallon, it is estimated the evaporation rate of the system is about 7 gallons per minute, or 10,080 gallons per day.

In order to estimate the storage capacity of this system during the demolition phase, records of operation during Phase I demolition in 1987 were examined. A monthly maximum of 411,587 gallons was pumped from the concrete basin during March of that year. This water included not only water used during dust suppression and decontamination activities, but also runoff

generated during rainfall events. This is an average of approximately 13,277 gallons per day. A review of monthly records kept during the last two years on the total gallons pumped from the concrete basin indicate that the typical daily average ranges from about 1,000 gallons per day to a maximum of 10,000 gallons per day. Assuming the March 1987 record is representative of the highest expected impacts, the expected monthly net gain to the system (13,277 gallons per day in - 10,080 gallons per day out) is 93,910 gallons or 37% of available storage. Therefore, it is anticipated that this system is capable of handling storm water entering the system, as well as water generated during the demolition phase.

Over a period of a few months, solids collect at the bottom of each of the tanks. Currently, solids are handled by first pumping most of the water from a particular tank to another tank. Solids are then vacuumed from the bottom of the tank using a vacuum truck. The residue is then stored at the north end of the fine ore bins.

Periodically, water in the concrete basin and settling tanks at the acid plant is completely pumped out, and residue is removed using a vacuum truck. This residue is also stored in the fine ore bins.

3.2 COLLECTION OF SURFACE WATER RUNOFF, DUST SUPPRESSION WATER AND DECONTAMINATION WATER DURING DEMOLITION

3.2.1 Modifications to Existing System

To enhance the on-site water collection and evaporation system described above, modifications will be made to the existing system. Some of these modifications have already been completed. For example, the 200,000 gallon tank described above was integrated into the system during August 1991 to

handle water from the cooling pond, as well as additional surface runoff water and water generated during the demolition process.

Different procedures for handling residue from the evaporation tanks will also be implemented. Solids will be collected periodically from each tank by first pumping most of the water from the tank to one of the other five tanks. The concentrated slurry of solids will then be centrifically pumped from the bottom of the tank to a holding tank. From this point, the material will be pumped from the holding tank using a slurry pump to a 36-inch-frame filter press. The filter cake will be deposited into a container, while the filtrate will be routed back to one of the evaporation tanks. In this manner, the residue can be dewatered and prepared for shipment to the East Helena lead smelter for recovery of metals. A schematic diagram of this process is shown on Figure 3-1.

Prior to conducting demolition in each area, each structure will be inspected by the contractor and Asarco to determine if any existing catch basins, drain lines, or sumps are present, which may convey water to one of the outfalls or the groundwater. The plant area outfall drainage system is shown on Exhibit 1. Sumps will be inspected to verify their integrity. Catch basins and/or lines which can potentially drain to one of the outfalls, or to groundwater will be blocked off or plugged to prevent water generated during the demolition process from entering these systems. During demolition, potential sources of water are:

- excess dust suppression water
- water used for decontamination, and
- surface runoff from precipitation events.

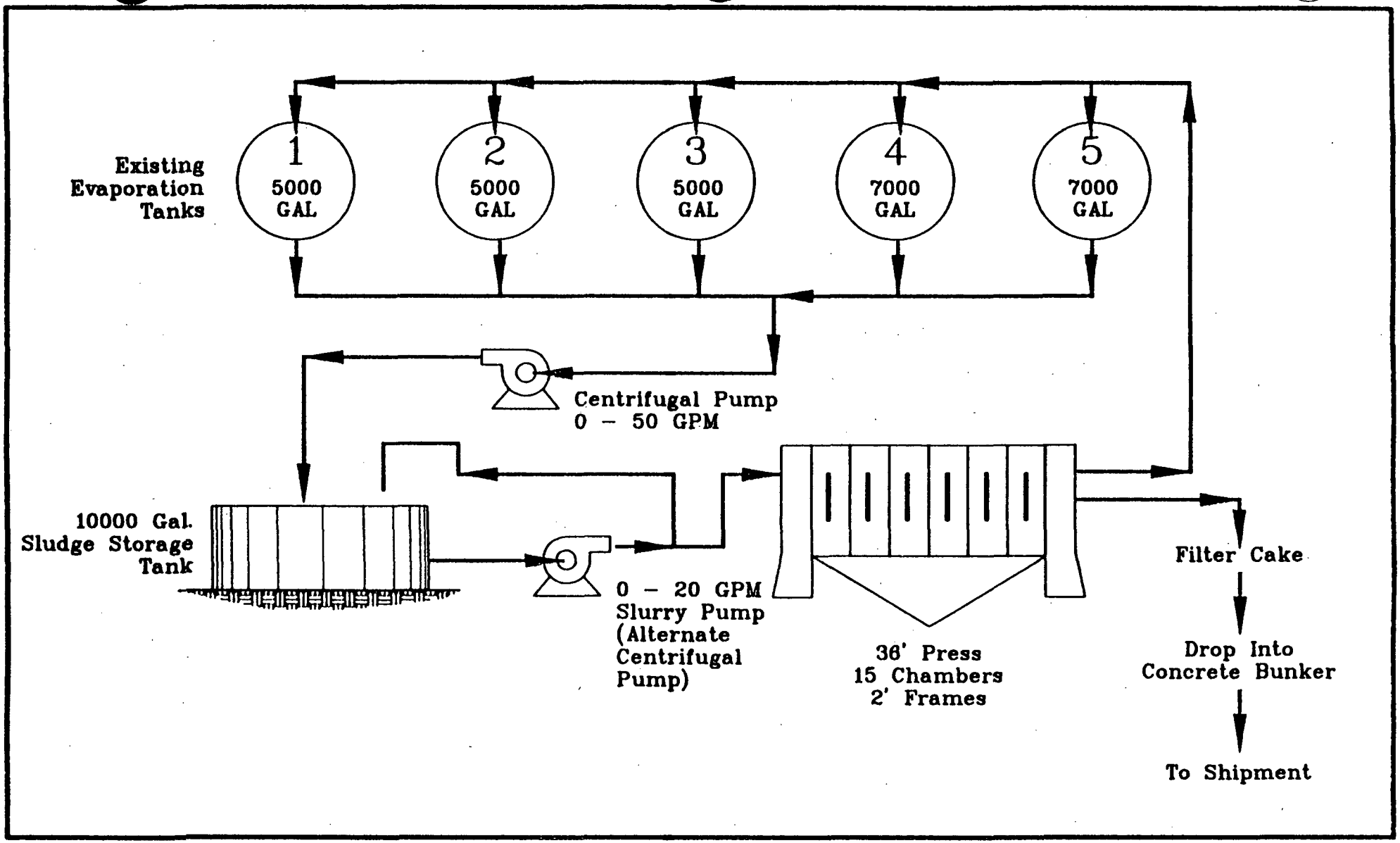

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Figure 3–1.
Schematic Flowsheet – Proposed Filtration of Evaporated Sludge At Tacoma

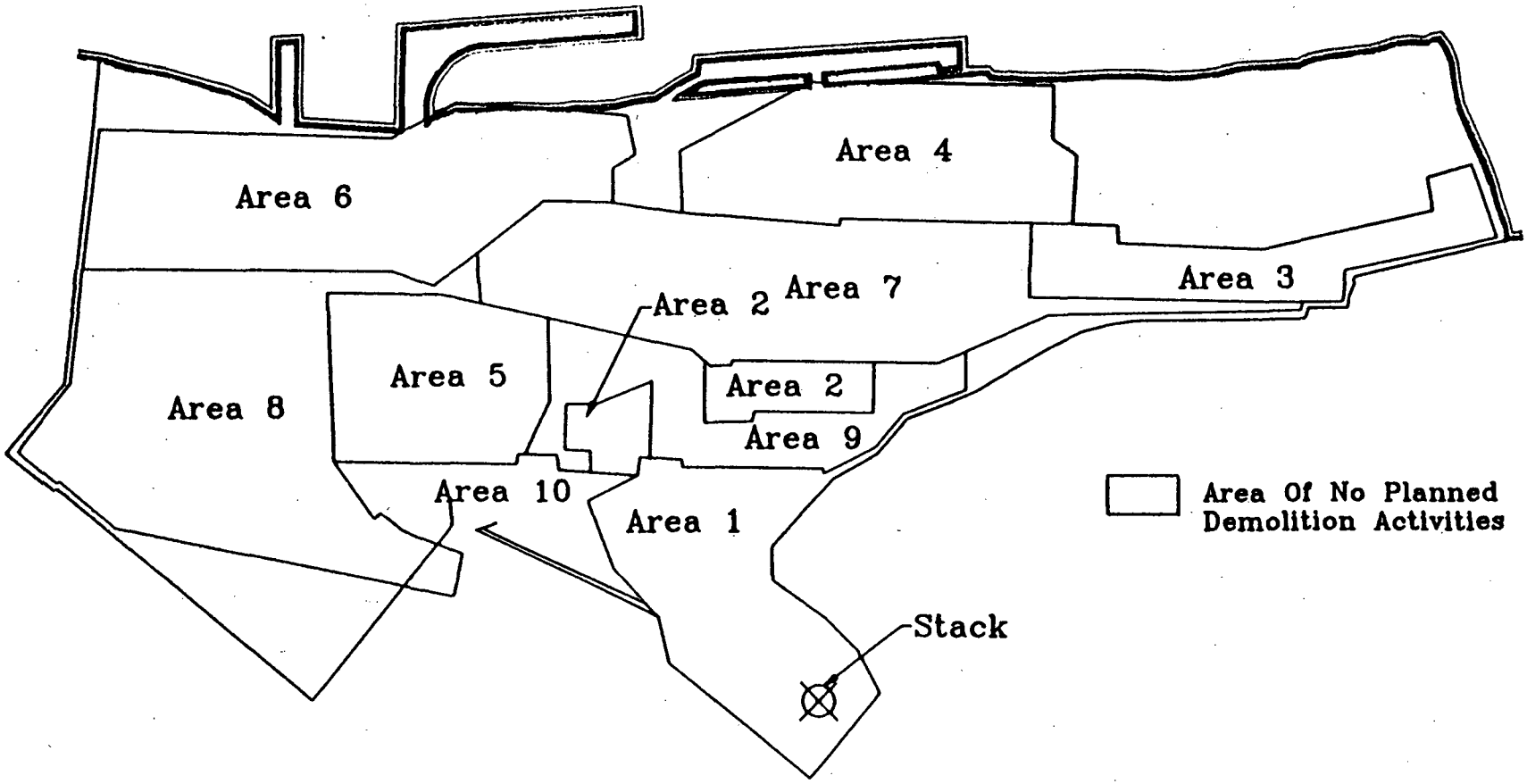
3.2.2 Collection of Surface Water and Dust Suppression Water in Demolition Areas

Ten general demolition areas identified in the Interim Action ROD are shown on Figure 3-2.

Although the modified system described in Section 3.2.1 is considered adequate for handling existing drainage conditions, additional modifications will have to be made for each demolition area to satisfy specifications of the SOW. Structures in each area identified for demolition and/or salvage are shown in Figures 3-3a through 3-7b. A brief description of requirements for each area, including existing features, drain line improvements, runoff containment berms, and other enhancements is presented below.

Area 2. This portion of the facility includes the sulfuric acid plant and the reverberatory furnace/boiler area (see Figure 3-3a). Both processes were integral parts of the smelting operations.

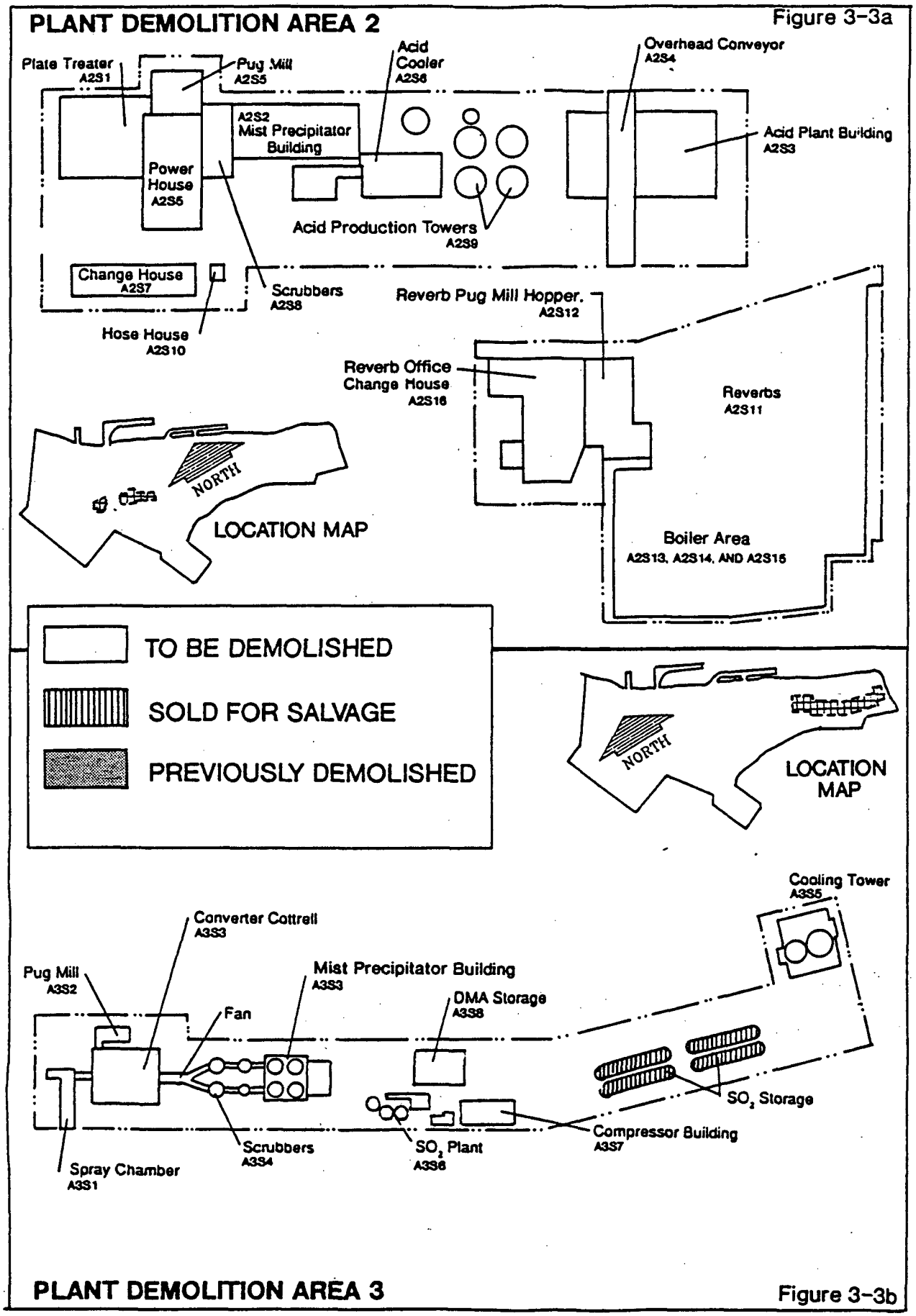
At the sulfuric acid plant, there are continuous concrete slabs in the Cottrell and mist precipitator buildings. Water will be contained in these areas by erecting sandbags and plastic to form a 2-foot wall around the perimeters of the buildings. Water will be pumped to a concrete containment sump in the acid cooler area. From this point, water will be pumped through the existing piping system to the water evaporation system concrete basin (see Figure 2-1).

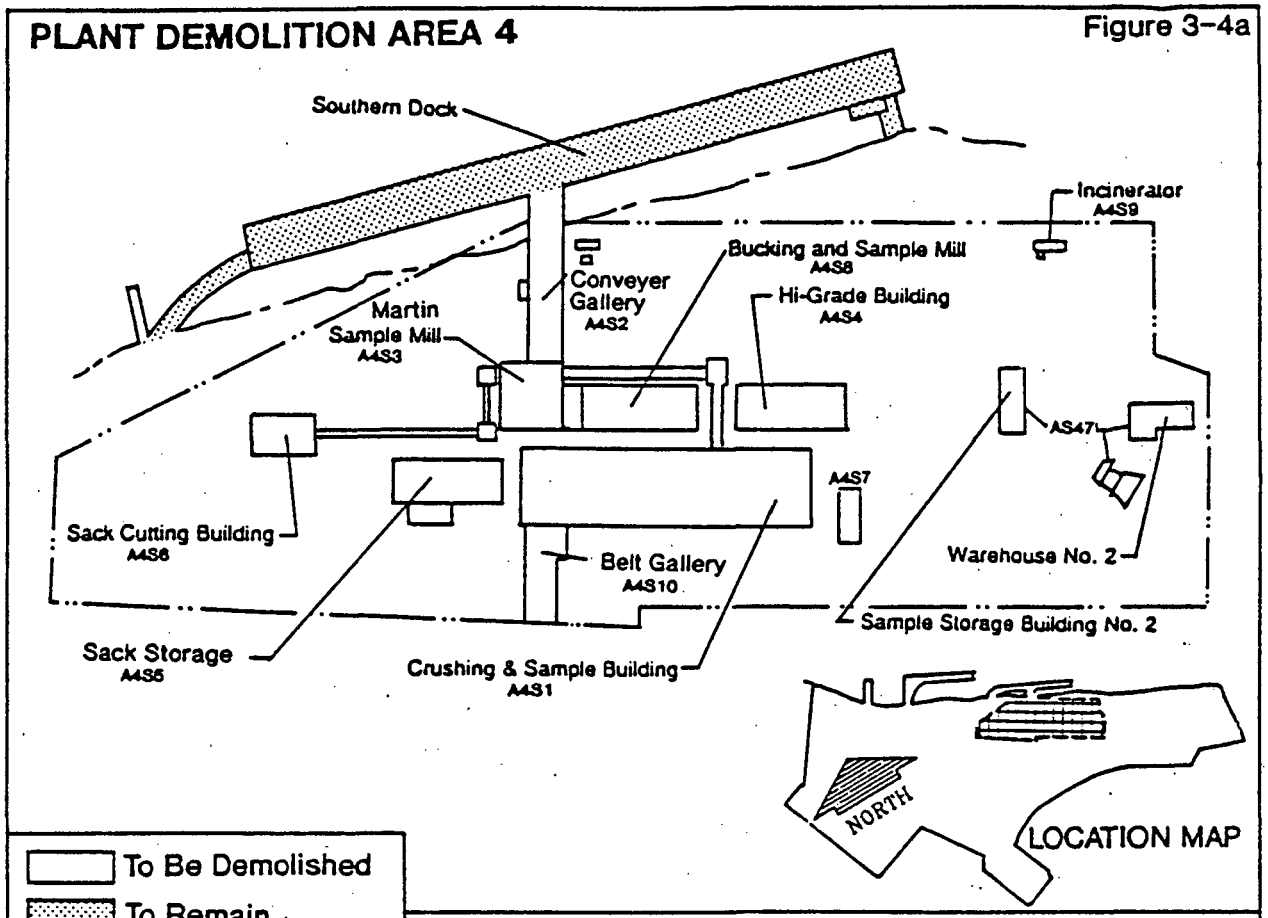


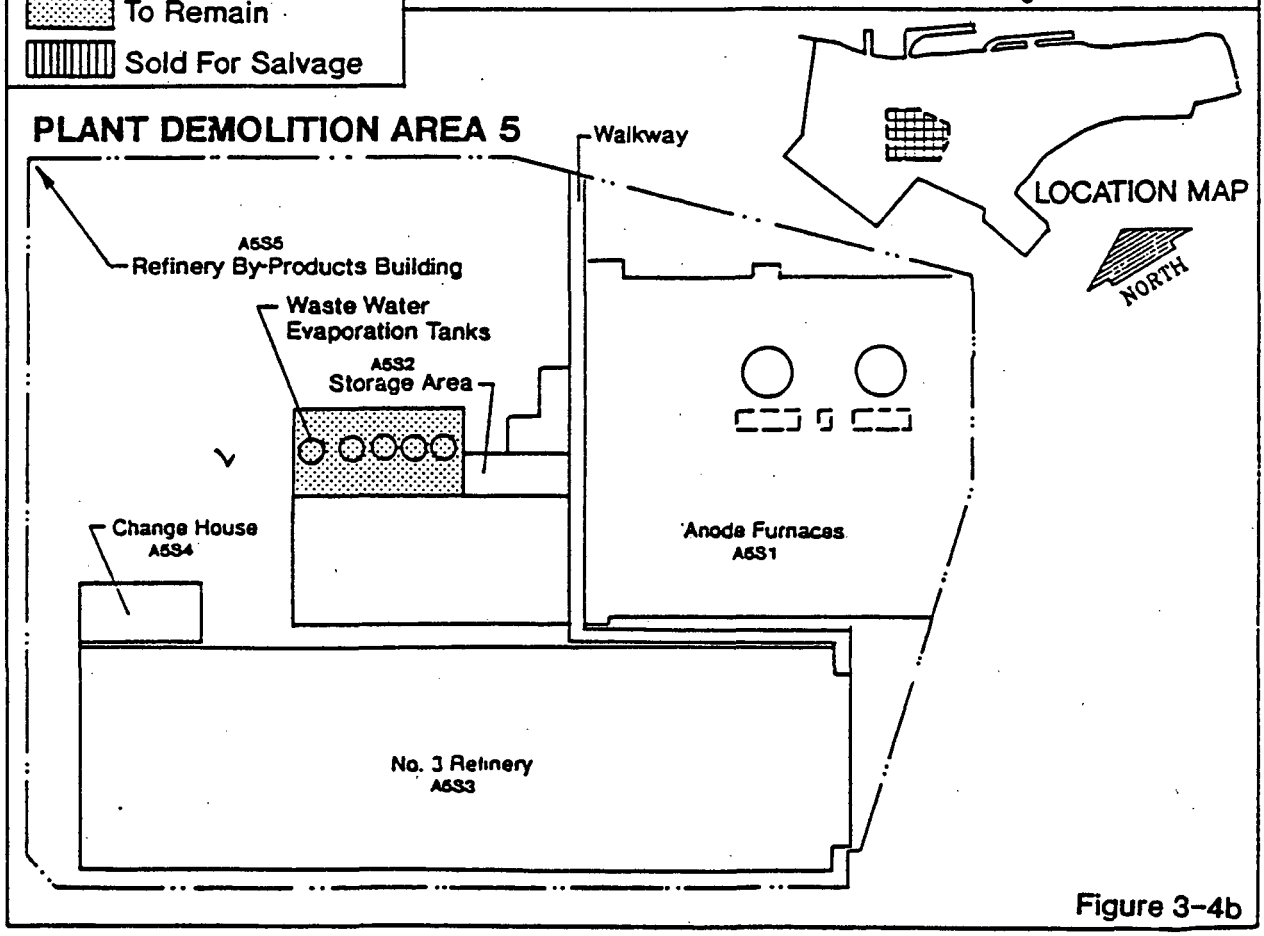
TAC9392F (3/24/92)

NORTH

Figure 3–2.
General Demolition Areas For The ASARCO Tacoma Plant


PLANT DEMOLITION AREA 2
Figure 3-3a
Plate Treater A2S1
Pug Mill A2S5
Acid Cooler A2S6
Overhead Conveyor A2S4
A2S2 Mist Precipitator Building
Acid Plant Building A2S3
Power House A2S5
Acid Production Towers A2S9
Change House A2S7
Scrubbers A2S8
Reverb Pug Mill Hopper. A2S12
Hose House A2S10
Reverb Office Change House A2S16
Reverbs A2S11
NORTH
LOCATION MAP
Boiler Area A2S13, A2S14, AND A2S15
TO BE DEMOLISHED
SOLD FOR SALVAGE
PREVIOUSLY DEMOLISHED
NORTH
LOCATION MAP
Cooling Tower A3S5
Converter Cottrell A3S3
Pug Mill A3S2
Mist Precipitator Building A3S3
DMA Storage A3S8
Fan
SO2 Storage
Compressor Building A3S7
Scrubbers A3S4
SO2 Plant A3S6
Spray Chamber A3S1
PLANT DEMOLITION AREA 3
Figure 3-3b


PLANT DEMOLITION AREA 4
Figure 3-4a
Southern Dock
Incinerator
A4S9
Bucking and Sample Mill
A4S8
Conveyer
Gallery
A4S2
Hi-Grade Building
A4S4
Martin
Sample Mill
A4S3
AS47
A4S7
Sack Cutting Building
A4S6
Belt Gallery
A4S10
Warehouse No. 2
Sample Storage Building No. 2
Sack Storage
A4S5
Crushing & Sample Building
A4S1
NORTH
LOCATION MAP
To Be Demolished
To Remain
Sold For Salvage


PLANT DEMOLITION AREA 5
Walkway
LOCATION MAP
NORTH
A5S5
Refinery By-Products Building
Waste Water
Evaporation Tanks
A5S2
Storage Area
Change House
A5S4
Anode Furnaces
A5S1
No. 3 Refinery
A5S3
Figure 3-4b

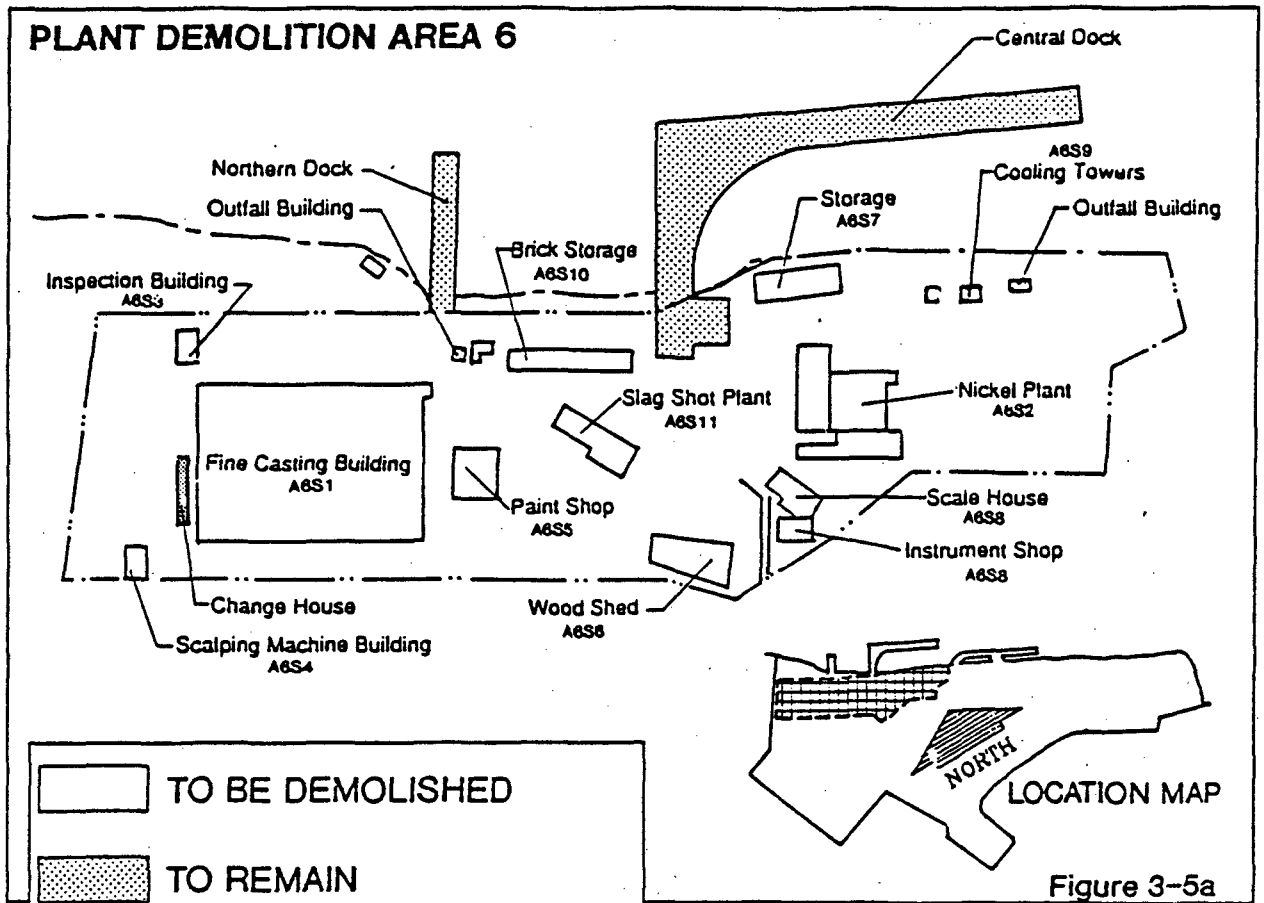
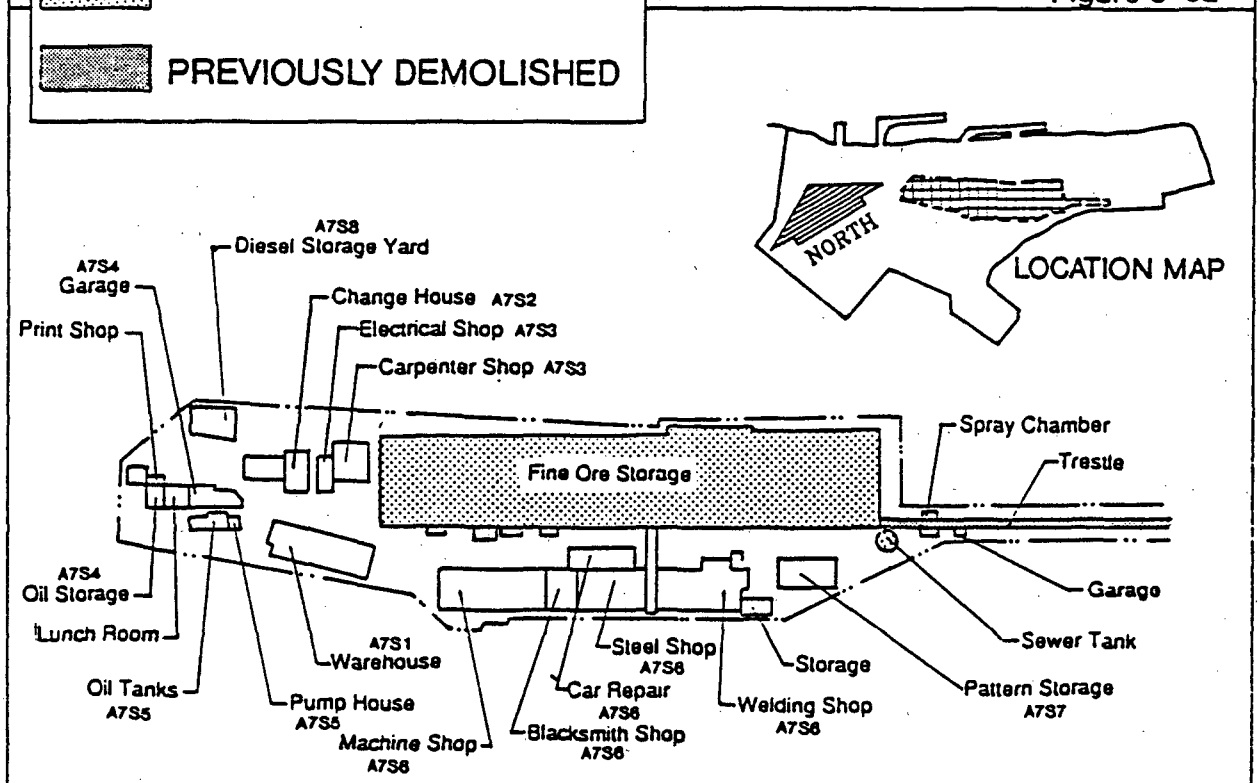


Figure 3-5a

TO BE DEMOLISHED

TO REMAIN

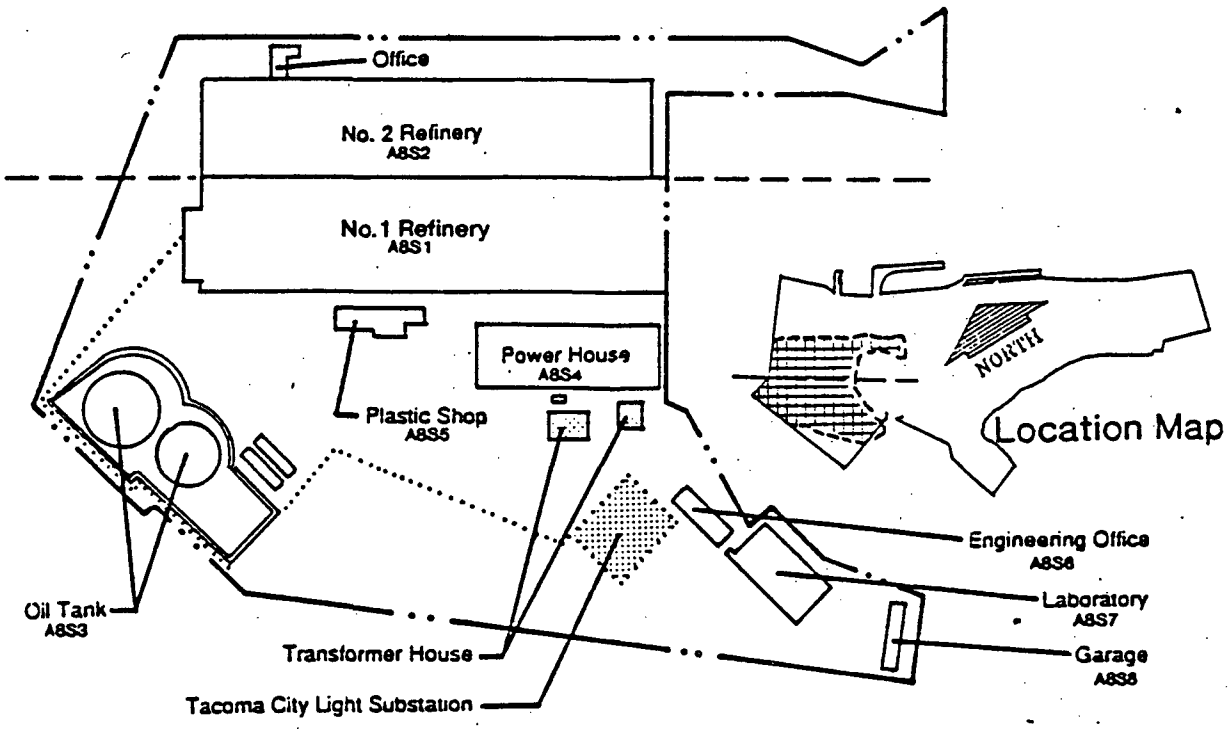
PREVIOUSLY DEMOLISHED



PLANT DEMOLITION AREA 7

Figure 3-5b

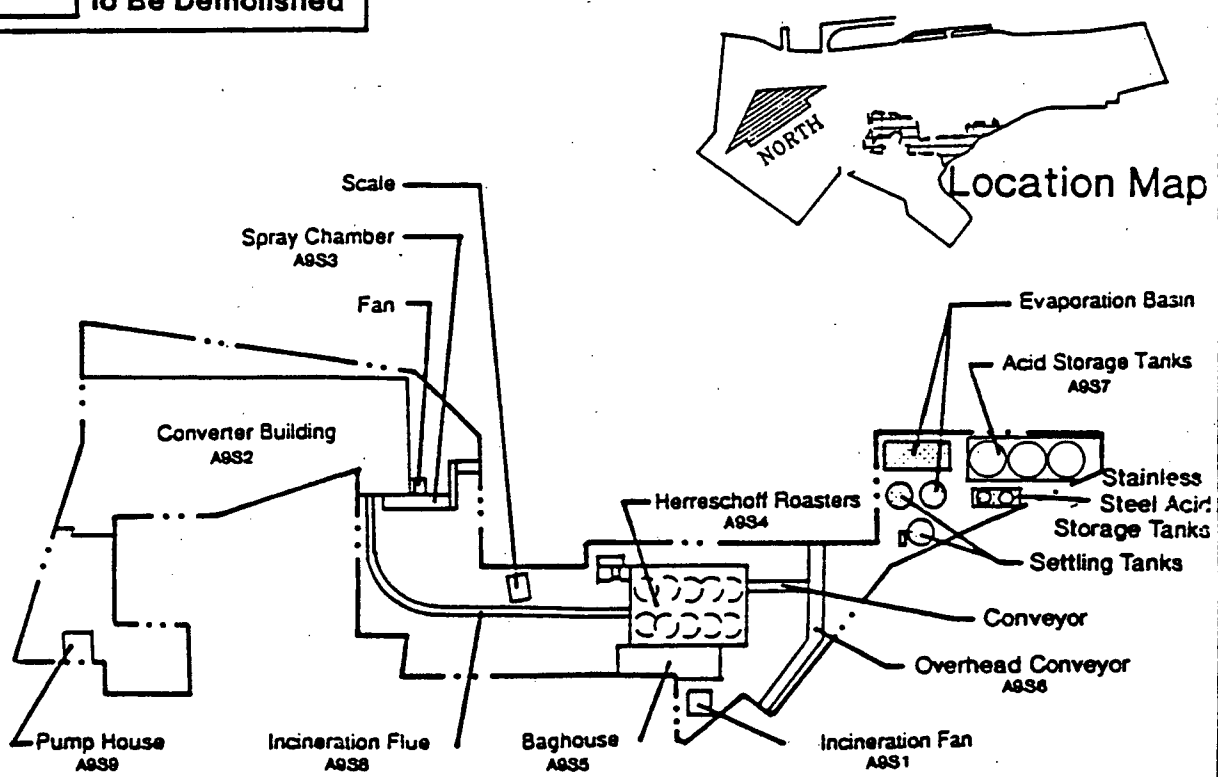
PLANT DEMOLITION AREA 8



To Remain

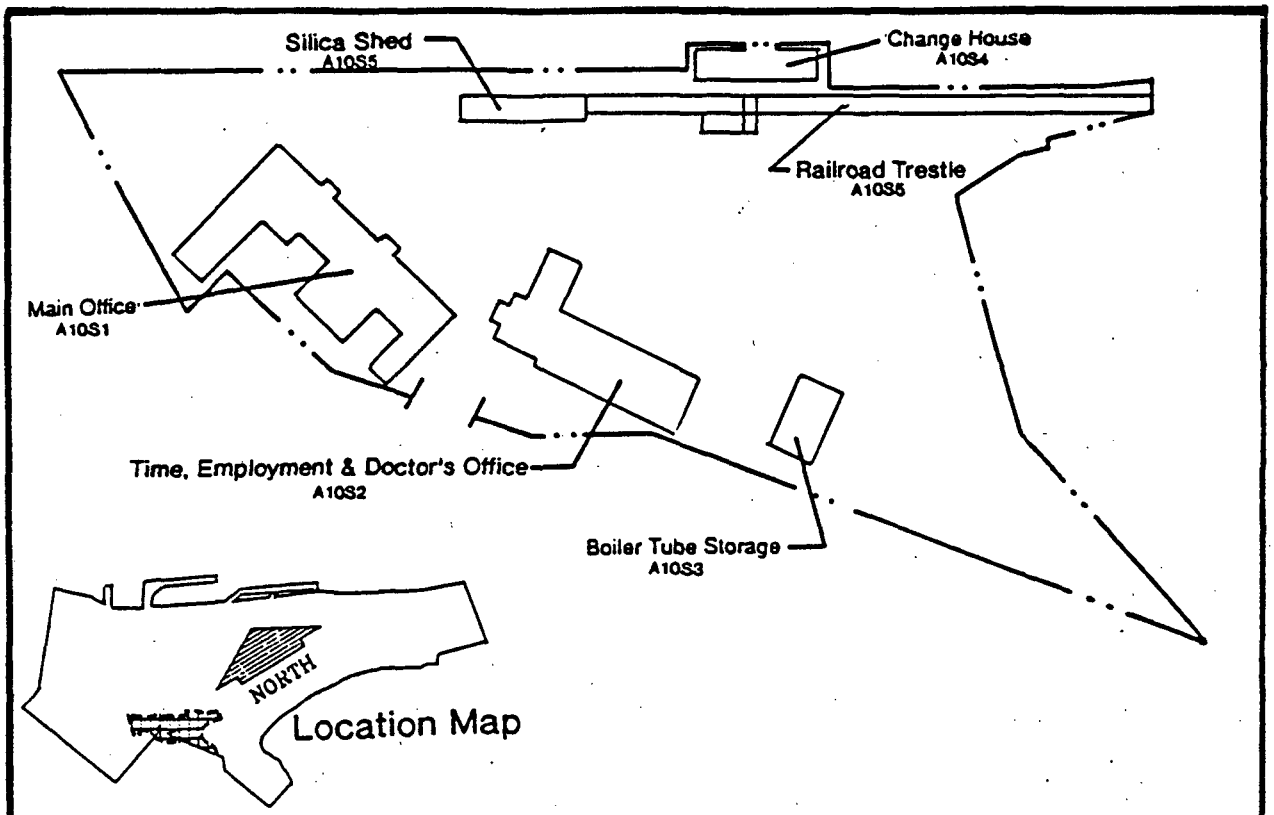
To Be Demolished

Figure 3-6a



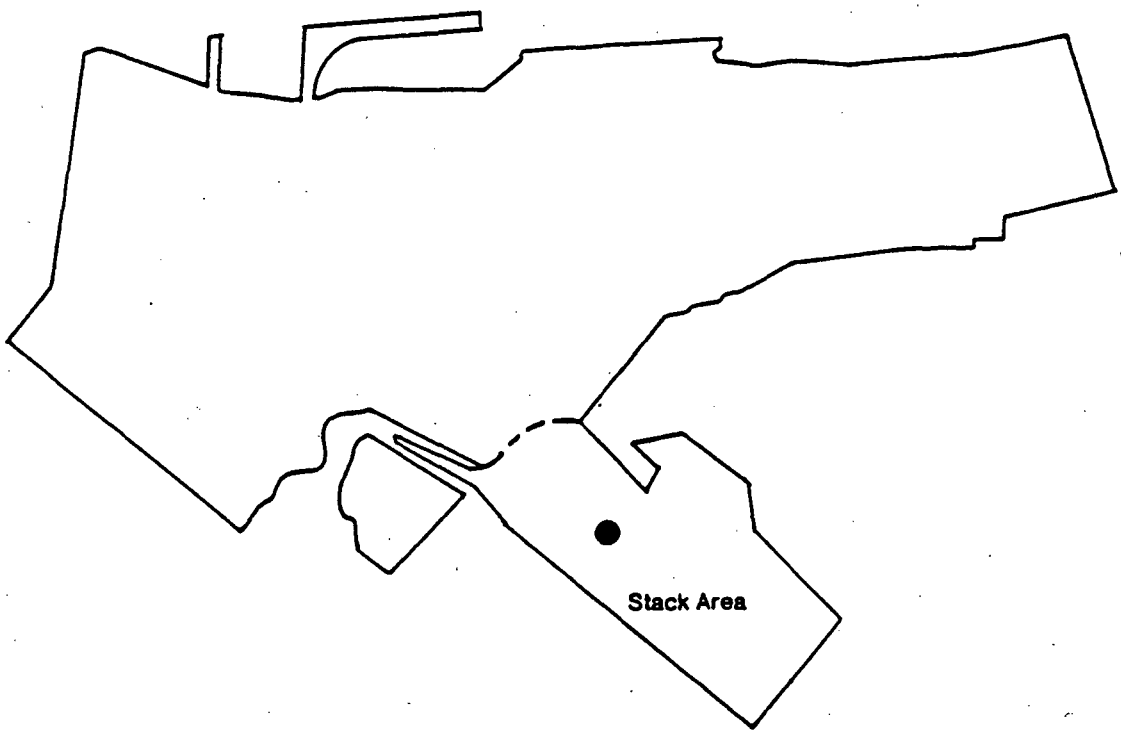
PLANT DEMOLITION AREA 9

Figure 3-6b



To Be Demolished

PLANT DEMOLITION AREA 10 Figure 3-7a



PLANT DEMOLITION AREA 1 (STACK) Figure 3-7b

Although the acid plant building has been constructed on a concrete slab, there are no foundation walls, and drain lines leading to the south outfall exist on the east side of the structure (Exhibit 1). During demolition of this building, temporary berms will be constructed around the structure to contain water within this area, and to prevent water from escaping to drainage lines outside the building. Catch basins in the structure which lead to the south outfall drain lines will be sealed off to prevent seepage.

Water used in the cleaning process at the reverb area will be directed to the concrete-lined ditch that transverses the base of the slope immediately north of the reverb/boiler area (Exhibit 1). A concrete-lined sump collects water flowing from the ditch and pumps it through an overhead PVC line to the concrete basin at the acid plant (Figure 2-1). Several drains exist in the reverb area just east of the old slag train tracks. These will be sealed off during demolition of this structure.

Decontamination of steel components associated with this area can be cleaned either in the reverb area along the old slag train tracks or in the acid plant area. In this way, water can be either directed to the concrete-lined sump at the reverb or the containment area in the acid plant.

<u>Area 3</u>. This portion of the facility includes the former liquid SO_2 plant (Figure 3-3b).

The Cottrell building basement includes a continuous concrete slab. Water will be contained in this area by erecting sandbags and plastic to form a 2-foot wall around the perimeter of the building. Water will be pumped from this area to a concrete-lined sump outside the mist precipitator building (Exhibit 1 and Figure 3-3b). This sump was used during plant operations to

collect water from cleaning arsenic trioxide hopper cars. From this point, water will be pumped, using the existing piping system, to the water evaporation system concrete basin located at the acid plant (Figure 2-1).

At the mist precipitator building (Figure 3-3b), water will flow from each mist precipitator unit to the concrete pad at the base of the building. The pad is sloped to a stainless steel-lined drain around the perimeter of the building. This drain flows to the concrete sump described previously in this section. Water will be pumped from this point to the water evaporation system concrete basin at the acid plant.

As steel components are dismantled, decontamination will be implemented at the sump area, near the mist precipitator building.

Area 4. This area mainly encompasses the crushing and mill buildings of the smelter facility (Figure 3-4a). These buildings have features which allow relatively easy containment of water.

The crushing and sampling building has a concrete-lined pit located in the north end of the building. It was formerly used as part of the belt conveyor system. Water used in the demolition process will be routed to this area by surrounding the building with a berm formed chiefly of sandbags. If necessary, water will be pumped from one portion of the bermed area to the pit for temporary containment. From this point, water will be pumped from the pit to a collection point for the water evaporation system.

In the Martin mill (sample mill in Figure 3-4a), water used for dust suppression will be contained in a small pit located in the basement of the building. This pit was formerly associated with the weighing and sampling

process. Water will be directed into this unit by a combination of temporary berms and pumps located inside the building. From this point, water will be pumped to the water evaporation system.

Water used in the bucking and sampling building will be routed to the pit under the Martin (sample) mill building. From there, water will be pumped to the water evaporation plant, in the manner described above.

There are several drains which lead to the south outfall located in the general vicinity of these structures (Exhibit 1). Most of the drains are located on the west side of the crushing plant, and the south end of this area between the crushing building and the old hi-grade sampling area. The drains will be sealed to prevent water from entering the south outfall system.

It is expected that most decontamination will be conducted within one of the bermed areas. Water generated from this process will be collected in one of the pits and handled as described above.

<u>Area 5</u>. The main structures in this area include the No. 3 refinery and the anode furnace area (Figure 3-4b). The evaporation tanks used as part of the water evaporation system are located in the north portion of the anode structure.

It is anticipated that very little dust will be associated with demolition of the refinery building. However, fogging nozzles will be positioned in event they are needed to suppress dust. Excess water will be collected in the basement of the refinery building. From this point, it can be easily pumped to the adjacent evaporation system. Drains located in the basement and/or

around the perimeter of the building will be blocked or sealed to prevent potential drainage to either the north or middle outfalls (Exhibit 1). Sumps located in the basement will be inspected to ensure their integrity.

Although the anode furnace building will be thoroughly decontaminated before disassembly, it is anticipated that some water will be needed during the demolition process. Most of the drain lines in this area are located between the converter and anode structures (Exhibit 1). These drains will be plugged to prevent water from entering the middle outfall. Other drains in the north portion of the facility will also be blocked to prevent discharge to the north outfall. Water used during dust suppression will be collected and routed to the extent possible to the old anode wheel area. Water will be pumped from this location directly to one of the evaporation tanks or to the 200,000 gallon storage tank.

Decontamination of steel structures can be conducted in the remnants of the No. 3 refinery basement. Water can be pumped from this location directly to the evaporation system.

Area 6. This area includes the fine casting building, the nickel plant, and other miscellaneous structures (Figure 3-5a). Wash water will be collected in the fine casting building on the concrete floor and directed to the wirebar sump. From this point, it will be pumped to the water evaporation plant.

Drain lines from the casting building will be sealed to isolate dust suppression water from the north outfall drainage system (see Exhibit 1). Steel from structures outside of the casting building in Area 6 can also be decontaminated on site at the wirebar sump (Figure 3-5a). Water will then be pumped to the water evaporation facility.

It is not anticipated that dust suppression will be necessary in the nickel plant. Operations in the nickel plant did not produce significant quantities of dust, and the structure is of recent origin.

Area 7. This portion of the plant contains numerous small buildings, which were mostly used for maintenance shops (Figure 3-5b). The largest of these structures are the main shop building and the warehouse.

In the vicinity of the warehouse and the garage there are drains lines which lead to the middle outfall (see Exhibit 1) which will be blocked off during demolition of this area. Drains near the main shop will also be plugged to ensure water does not enter the south outfall. During building demolition, precautions will be taken to prevent water from entering any of these drainage areas.

Most of the demolition debris from this area will be masonry or wood. Steel requiring decontamination will be washed in the containment facility for the old oil storage area. Water will probably be pumped from this point to a 200,000 gallon storage tank located north of the anode furnace building (Section 3.1).

Area 8. The primary structures in this area are the two refinery buildings (Figure 3-6a). Other buildings include offices and the powerhouse.

It is expected that dust suppression water and decontamination water used for the demolition of the No. 1 and No. 2 refineries will be collected in the basements of these two buildings. Prior to demolition, floor sumps will be inspected to ensure they are capable of handling water requirements. Water will either be contained in the floor areas or the lead-lined collectors

located inside the structures. Outfall drainage lines (see Exhibit 1) located in and around the buildings will be plugged.

Area 9. The main structures included in this portion of the site are the converter building, the Herreshoff roaster building, and the baghouse (see Figure 3-7a). One of the disposal options presently being considered is use of one of the converters located in the converter building for incineration of wood debris. As a result, demolition of these structures is expected to be postponed until near the end of the demolition phase. The potential use of a converter for wood incineration is discussed in detail in Section 5.1.1.

The outfall drainage system for this area is shown on Exhibit 1. Drains located on the east side of the converter building will be blocked to prevent water from entering the middle outfall. Dust suppression water used in the roaster and baghouse areas will be collected in drainage lines leading directly to the concrete collection basin located south of the acid plant (Figure 2-1).

Dust control in the roaster area will be channeled to drains leading to the concrete basin at the acid plant area using temporary sandbags and plastic barriers on the west and north ends of the building. Steel located in the converter area will be decontaminated in the reverb area, as described above for Area 2.

Area 10. This portion of the site includes the main office buildings and changehouse (Figure 3-7a). Due to the prior use of these structures, it is not expected that significant dust suppression or decontamination water will be needed in this area. Drains located in the paved parking areas and other locations (Exhibit 1) will be blocked to ensure water does not drain to one of the outfalls.

3.2.3 Monitoring and Disposal of Water Generated During the Demolition Process

As described throughout this portion of the plan, water generated from each of the areas will be directed to the water evaporation system. Residue recovered from the operation will be managed as detailed in previous sections of this plan.

3.2.4 Source and Estimated Volumes of Decontamination Water

Potable water from the City of Tacoma will be used for decontamination water and for dust control. Several water mains and hydrant locations are available throughout the plant and are shown on Exhibit 3.

Decontamination water rate consumption is dependent on the volume of steel or other materials being washed, total surface areas, expected water requirements per unit area, and worker water management procedures. Consumptive water rates for decontamination activities in this section are preliminary estimates based on unit water consumption rates of decontamination equipment.

For the purposes of this work plan, 5 decontamination sites, each equipped with 2 high pressure/low volume washer wands, are assumed. The consumption rate per washer wand is about 3 gallons per minute (gpm). It is assumed, all five decontamination stations will be operated for 8 hours per day. Actual washing time accounting for demolition debris manipulation and worker down time (i.e. breaks and other miscellaneous interuptions) is estimated to average about 30 minutes per hour. The daily consumption rate is estimated to be:

30 gpm x 60 min/hr x 8 hrs x 30/60 minutes = 7,200 gallons per day.

This water use rate is within the 10,080 gallon per day capacity of the existing water evaporation system (see Section 3.1.2).

Fogging nozzles used for dust control are expected to add very little to the consumptive decontamination water use rate. High pressure/low water consumption fogging nozzles apply a water mist at a rate of about 1 gpm at 80 psi. Area coverage per nozzle is about 4 square feet. Assuming area coverage is about 1000 square feet (this would provide dust control for a building surface of 20 feet tall by 50 feet wide), the estimated water rate use is about 60 gallons per minute. However, most, if not all, of this water is expected to be evaporated or absorbed in building dust or porous surfaces. Water application rates will be managed in accordance with weather conditions and the material and dust capacity for water retention to prevent excesses that would require water storage and treatment.

4.0 BUILDING DEMOLITION AND DISPOSAL

This section describes the procedures used to demolish each structure. Particular attention is given to necessary environmental controls. Disposal of the various types of materials generated is mentioned only briefly, with further detail provided in Section 5.0 of this plan.

Throughout the discussion of demolition work, reference is made to the use of high pressure water fogging nozzles to reduce the possibility of fugitive dust emissions. Before demolition begins in a given demolition area, water fogging nozzles will be mobilized in that area at locations where they would be expected to be most effective in dust control. Other dust control methods were considered, such as the use of wetting agents and polymers. However, these methods are more suitable for controlling dust from exposed surfaces that are to remain undisturbed. During demolition, new surfaces will be continually exposed and disturbed. Furthermore, Asarco has used wetting agents in the past in connection with the handling of feedstocks and found them to be no more effective than water. In most cases, water associated with dust suppression will be contained in a portion of the structure and pumped to the water evaporation system. Each area will be checked for storm drains leading to an outfall. These drains will be blocked off to prevent discharge to the bay.

Table 4-1 lists all structures by demolition area as shown in Figures 3-3a through 3-8b.

TABLE 4-1. STRUCTURAL UNITS IDENTIFICATION LIST

Structural Unit Number	Structure Description
Area 2	
A2S1	Acid Cottrell Plate Treater
A2S2	Acid Mist Precipitator
A2S3	Acid Plant Building
A2S4	Overhead Conveyor
A2S5	Powerhouse/Pug Mill
A2S6	Acid Cooler
A2S7	Change Houses
A2S8	Scrubbers
A2S9	Acid Production Tower
A2S10	Hose House
A2S11	Reverbs - Feed Floor Area
A2S12	Reverb Pug Mill Hopper/Converter Aisle
A2S13	Boiler Ash Hoppers
A2S14	Flues from Boilers
A2S15	Floor Areas below Flues
A2S16	Reverb Office/Change House
Area 3	
A3S1	Spray Chamber
A3S2	Pug Mill
A3S3	Cottrell & Mist Precips.
A3S4	Scrubbers & Flues
A3S5	Cooling Tower
A3S6	SO_2 Recovery Plant
A3S7	Compressor Building
A3S8	DMA Storage
Area 4	
A4S1	Crushing & Sample Building
A4S2	Conveyor Gallery
A4S3	Sample (Martin) Mill
A4S4	Hi-Grade Building
A4S5	Sack Storage
A4S6	Sack Cutting Building
A4S7	Miscellaneous Outbuildings
A4S8	Bucking and Sample Mill
A4S9	Dunnage Incinerator
A4S10	Belt Gallery

TABLE 4-1 (Continued)

Structural Unit

Number	Structure Description
Area 5	
A5S1	Anode Furnace Area
A5S2	Storage Area
A5S3	#3 Refinery
A5S4	Change House
A5S5	Refinery By-Products Bldg.
Area 6	
A6S1	Fine Casting Building
A6S2	Nickel Plant
A6S3	Inspection Building
A6S4	Scalping Machine Building
A6S5	Paint Shop
A6S6	Wood Shed
A6S7	Storage
A6S8	Scale House/Instrument Shop
A6S9	Cooling Towers
A6S10	Brick Storage
A6S11	Slag Shot Plant
Area 7	
A7S1	Warehouse
A7S2	Change House
A7S3	Elect./Carpenter Shops
A7S4	Oil Storage/Garage
A7S5	Oil Tanks/Pump House
A7S6	Maintenance Shop Building
A7S7	Pattern Storage
A7S8	Diesel Storage Yard
Area 8	
A8S1	#1 Refinery
A8S2	#2 Refinery
A8S3	Oil Tanks
A8S4	Power House
A8S5	Plastic Shop
A8S6	Engineering Office
A8S7	Laboratory
A8S8	Garage

TABLE 4-1 (Continued)

Structural Unit

Number	Structure Description
Area 9	
A9S1	Fan Bldg.
A9S2	Converter Bldg.
A9S3	Spray Chamber
A9S4	Herreshoff Roasters
A9S5	Baghouse and Ductwork
A9S6	Overhead Conveyor
A9S7	3 - Steel Acid Storage Tanks
A9S8	Incineration Flue and Trestle
A959	Pump House
Area 10	
A10S1	Main Office
A10S2	Employment Office
A10S3	Boiler Tube Storage
A10S4	Change House
A10S5	Silica Shed & Trestle

Some structures to be demolished have concrete floors or slabs. Any concrete floors and slabs remaining after demolition of structures will be left in place pending results of the RI/FS. Final removal of concrete floors and slabs will be determined as part of the final smelter site remediation plan.

Demolition will be initiated by dismantling structures in Areas 4 and 6, as depicted in Figures 3-4a and 3-5a. As these projects are underway, demolition will also commence in Areas 2 and 3, as shown in Figures 3-3a and 3-3b. Procedures for removal of these structures are described in this section. Procedures for removing structures in other areas to be included as part of interim remedial action are also described in this section.

4.1 AREA 4

In general, the structures affected by demolition work in Area 4 include the conveyor gallery connecting the ore dock to the Martin mill sampling building; the crushing and sampling mill; the belt gallery connecting the crushing and sampling mill to the fine ore storage area; the sample storage building; the Martin mill sampling building; the bucking and sampling building; the sack cutting building; the No. 2 sample storage building; the No. 2 warehouse; the dunnage incinerator; and miscellaneous sheds, warehouses, and outbuildings associated with the above-named structures (see Figure 3-4a).

Asbestos materials in structures in Area 4 have been removed. Removal and disposal were performed according to WISHA and PSAPCA regulations. All buildings will be reinspected for the presence of asbestos before any demolition work is initiated in Area 4. To prepare for Area 4 structure

demolition, all structures were thoroughly vacuumed, including the ore dock and conveyor gallery. For on-land structures, water fogging nozzles will be positioned to control dust. During demolition, surfaces newly exposed will be immediately wetted to control dust.

The ore dock itself will not be demolished; however, it has been vacuumed. The overhead cranes on the ore dock will be removed and cut up. Cranes on the ore dock will be lifted from the dock and placed on land before being cut up. This will be accomplished by use of a crane staged on the shoreline. Steel will be handled in accordance with Section 5.2 of this plan.

The conveyor gallery, including idlers and drives that connect the ore dock to the Martin mill, will be removed. Piping on the south end of the ore dock will be removed. A car puller on the north end will also be removed. These materials will be treated as scrap steel in accordance with Section 5.2 of this plan.

The ore crushing and sampling plant will be demolished. It is a steel structure with light gauge siding. Before demolition, the building will be vacuumed and washed down with water from a high-pressure hose. Water for washing and fogging will be handled as described above in Section 3.0. Demolition will be accomplished by picking off pieces of the building using a grapple or shears. Steel in the building will be cut up and handled as described previously in this plan.

The bucking and sampling building will be demolished. The building will be emptied, vacuumed, and washed with water from a high-pressure hose before

demolition. Steel supports in the building will be removed with the shears or grapple. Remaining concrete walls will be taken down with a grapple. All metal items removed from the building will be treated as scrap steel. Concrete and wood will be disposed of in accordance with demolition debris disposal options. Washdown water will be contained on the concrete slab floor. Water will be routed to the pit under the Martin mill building and pumped to the water evaporation plant as described in Section 3.2.

The Martin mill sampling building will be demolished. It is a steel structure with light gauge steel sides. The upper floors are made of wood. Structural steel members will be either picked off using a crane or dropped. Steel members will be cut up for scrap. The building will be vacuumed, emptied, and washed in the same manner as other buildings mentioned previously. Water used for washing and fogging will be contained in a sump in the basement of the building. From there, it will be pumped to the water evaporation system.

Remaining buildings in Area 4 are of relatively minor importance. They include the sack cutting building, the roto-clone, the incinerator, No. 2 warehouse, and No. 2 sampling storage building. These buildings will be vacuumed, emptied and washed down in the manner described in Section 3.2. Water washing may be minimal as these buildings have very little residual dust remaining in them. These buildings will be taken down using either a grapple or a loader. Scrap materials will be disposed of in accordance with Section 5.0.

Throughout the process of demolition in Area 4 water fogging nozzles will be used to reduce the possibility of fugitive dust emissions.

4.2 AREA 6

Structures scheduled for demolition in Area 6 are shown in Figure 3-5a. The copper dock (also called the central dock) itself will not be demolished. Because copper concentrates were not handled on this dock, there is no need for vacuuming at this location. Piping and a car puller located on the copper dock will be removed. These materials will be treated as scrap steel pursuant to this plan. Special precautions will be employed when removing the ship-to-shore oil line to ensure that there is no release of oil to Commencement Bay. These precautions are discussed in the Pre-Demolition Plan, prepared pursuant to the SOW.

The nickel plant will be demolished or salvaged. Any salvage of the building will be conducted in accordance with the salvage plan approved by EPA (U.S. EPA, 1989). If the structure is to be demolished, the following process will be followed. The nickel plant is a relatively new (1975) building. It is a steel frame building with a light-gauge corrugated metal siding. The building will be vacuumed to remove dust (as necessary). Asarco does not plan to high pressure wash the nickel plant. Asarco's operations in the nickel plant did not produce significant quantities of dust, and the nickel plant is of recent origin. Demolition will be accomplished either by picking off sections of the building with a crane or by cutting and dropping the structure in pieces. Steel will be cut up for scrap. If the structure is salvaged, the steel walls will be removed in sections for reassembling at another location.

The fine copper casting building will be demolished. It is a building with a structural steel frame and light-gauge metal siding. The roof is made of wood. The building will be emptied of equipment which may remain in storage. It will then be vacuumed, and washed down as necessary before demolition. Wash water will be collected on the concrete slab floor and directed to the wirebar sump. From there, water will be pumped to the water evaporation plant. Demolition will be conducted by either picking off sections of the building with a crane or by cutting the building into sections and dropping the sections. The structural steel in the building and any equipment not removed will be treated as scrap steel according to Section 5.0 of this plan.

Three cooling towers are located within Area 6. All three cooling towers will be demolished. The primary component in the cooling towers is light-gauge sheet aluminum. This material will be treated as scrap and handled in accordance with procedures in Section 5.0. The wood and steel parts of the cooling towers will be cut up for incineration or scrap.

Various related structures in Area 6 include a wood shed, a slag shot plant, brick storage shed, the paint shop, a scale house, and an inspection building. These structures are constructed mostly of wood and steel, although the inspection building and scale house are brick structures. All incidental structures will be cleaned as necessary and washed down before demolition. Where possible, water will be captured on existing concrete slabs and pumped to the treatment building. Where necessary, temporary curbing or sandbag water impoundments will be installed. Plastic sheeting will be incorporated into the impoundment if the structure is not located on a concrete slab. Either a grapple or a loader will be used to demolish these

buildings. Demolition materials taken from the structures will be handled in accordance with Section 5.0.

4.3 AREA 2

Area 2 consists of two discrete parts. One portion of Area 2 is the sulfuric acid plant, which was used to process the gas stream from the converter operation. The other portion is the reverberatory furnace/boiler area, which was the centerpiece of the copper smelting operation. Roasted calcines were smelted in one of two reverberatory furnaces to produce matte and slag. Off-gases were directed through waste heat boilers.

As depicted in Figure 3-3a, structures to be demolished at the acid plant include the pug mill, scrubbers, mist precipitator building, powerhouse, change house, acid cooler area, remains of the acid production towers, Cottrell building (plate treater) and the acid plant building. The overhead conveyor that passes above the acid plant building will also be dismantled at this time. Structures to be demolished at the reverb/boiler area include all roof and steel superstructure portions of this building as far as the converter aisle, as shown in Figure 3-3a.

All asbestos materials, including transite, insulation on pipes, boilers, and plant exchangers throughout Area 2 have been removed. This project was performed by a licensed contractor in accordance with WISHA and PSAPCA regulations. All buildings will be reinspected for the presence of asbestos before demolition work is initiated.

Before demolition begins on any structure in Area 2, water fogging nozzles will be positioned to control dust. During demolition, newly exposed surfaces will be immediately wetted to control dust.

Before demolition begins in the acid plant area, structures associated with the dust-cleaning portion of the facility will be thoroughly vacuumed to remove dust accumulations on beams, floors, and walkways. These structures include the Cottrell, powerhouse, and mist precipitator buildings. Because treater units in the Cottrell and mist precipitator areas are inaccessible by vacuuming, they will be washed down. Provisions will be made to collect water generated from cleaning these units, as described above in Section 3.0.

The Cottrell building and powerhouse shall be demolished using a grapple and crane if necessary. Steel will be precut where necessary and removed in sections. Electrical equipment, such as transformers, shall be removed before demolition. The disposition of steel and concrete debris generated from this stage of the project will be in accordance with Section 5.0 of this plan.

The two steel scrubbers and associated ductwork will be demolished using a grapple. Metal and brick linings will be handled as described in Section 5.0.

The mist precipitator building is primarily a steel structure. The building will be demolished by cutting and removing the steel in sections using either the shears or grapple. Steel includes the surrounding superstructure, decking, ductwork, and the two treater units. Lead is also present in the treater units. It will be shipped to an appropriate facility for recycling.

Various steel components in the acid cooler area will be removed and cut up for scrap. Transformers as shown in the Pre-Demolition Plan will be removed and salvaged. Exposed surfaces in the acid plant building were thoroughly cleaned during asbestos removal. The building will be demolished by lifting off attached sections of the overhead conveyor and tail gas flue with a crane. The steel superstructure of the building will be removed by precutting selected sections and pulling them away with a grapple. Remaining steel shells of the heat exchangers and acid production towers located outside the building (see Figure 3-3a) will be cut in sections and removed. Steel will be handled in accordance with Section 5.2 of this plan.

The reverb/boiler area will be thoroughly cleaned by vacuuming and water washdown in preparation for demolition. The two reverberatory furnaces were removed in 1985 after plant closure. Removal included all refractories and furnace bottoms 20 to 25 feet below base furnace grade. Refractories in the boilers were removed as part of the asbestos removal project. All that remains, therefore, is building superstructure, decks, walkways, piping, and tubes associated with the boiler units.

The building will be demolished in a stepwise fashion, starting with the boiler area. Superstructure will be removed by precutting selected sections and removing them with either the crane or a grapple, depending on height restrictions. Boiler tubes and decking will be dismantled as removal equipment moves east through the building. Special care will be taken during removal of ductwork in the boiler area, as dust may have accumulated. If possible, dust will be vacuumed as pipes are removed to minimize dust dispersal. Overhead superstructure up to the converter aisle will be

removed. This will include ductwork and equipment associated with the preheater unit that was used in conjunction with the furnace. The reverb office/changeroom will also be demolished at this time. Because this building is a concrete block structure, it can easily be removed using a grapple.

Water used in the cleaning process will be directed to the concrete-lined ditch that traverses the base of the slope immediately north of the reverb/boiler area (see Exhibit 1). A concrete-lined sump collects water flowing from the ditch and pumps it through an overhead PVC line directly to the water evaporation system.

4.4 AREA 3

The portions of Area 3 considered for demolition are shown in Figure 3-3b. In general, structures to be demolished are those portions of the liquid SO_2 plant not included in a previous sale to Olympic Chemical Corp. These portions are: the spray chamber, Cottrell building, scrubbers, mist precipitator building, certain remaining portions of the SO_2 gas processing plant, the compressor building, and the office/vault building. The cooling tower at the far south end of the plant property will also be demolished as part of this phase.

Structures in Area 3 were inspected for asbestos before development of this plan. Because the liquid SO_2 plant is of recent origin (1974), asbestos materials were not found. If asbestos should be discovered in the course of demolition, it will be handled in accordance with all local, state, and federal requirements.

To prepare for demolition, cleaning will be conducted in some structures to reduce the potential for dust emissions during dismantling. Cleaning will include vacuuming of dust accumulations on floors and beams, followed by washing inaccessible portions with water. Provisions will be made to collect water generated from cleaning each structure. Decontamination water will be pumped directly to the water evaporation system using pumps and existing equipment. Before demolition begins on any structure in Area 3, water fogging nozzles will be positioned to control dust. During demolition, newly exposed surfaces will be immediately wetted to control dust.

The spray chamber at the north end of the liquid SO_2 plant is a concrete structure. It will be demolished using a grapple. Water will be used to wet the material as it is being removed to minimize dust emissions. Concrete rubble will be sampled in accordance with the Sampling and Analysis Plan (SAP) (included as Appendix 1 in this plan) to determine the method of disposal.

To prepare the Cottrell building for demolition, the top floor and basement will be vacuumed. This will be followed by washing the treater units down with water from the top floor to remove dust accumulations inaccessible by vacuuming. Because screw conveyors at the bottom of each hopper would restrict water flow, they will be removed before starting the washdown procedure. The basement floor is a continuous concrete slab. Water will be contained in this area by erecting sandbags and plastic to form a 2-foot wall around the perimeter of the building. Water will be pumped from this area to the concrete-lined sump outside the mist precipitator building. This sump was used during plant operations to collect water from cleaning arsenic

trioxide hopper cars. From this point, water will be pumped using the existing piping system to the concrete basin, which is a collection point for the water evaporation system at the acid plant.

Demolition of the Cottrell treater building will commence by removing the roof to gain access to the interior steel and plates associated with the treater units. All steel, including screw conveyors, plates, hot frames, cold frames, wires, insulators, dampers, cell wall sheets, and miscellaneous items including corrugated plastic sheets, will be removed, cleaned, and disposed in accordance with this plan. Demolition will be accomplished by using either a grapple or shears to cut up steel in the building. During demolition, dust emissions will be controlled by water spray as discussed at the beginning of this section.

The four steel scrubbers and associated flues will be prepared for demolition by flushing each unit with water to remove excess dust remaining on the interior portions. Scrubbers and ductwork will be cut up using either a grapple or shears. The metal portions, including walls and gratings inside the units, will be handled as scrap. Numerous plastic saddles and fiberglass flues will also be generated from the demolition of the scrubbers, which will be handled as discussed in Section 5.0 of this plan.

The mist precipitator building is primarily a steel superstructure with corrugated fiberglass siding on the outside of the building. The treater units are constructed of lead and steel. The building will be prepared for demolition by washing down each unit with water to remove remaining dust adhering to walls inside the treaters. Water will flow from each unit to the

concrete pad at the base of the building. The pad is sloped to a stainless steel-lined drain around the perimeter of the building. This drain flows to the concrete sump described previously in this section. Water will be pumped from this point to the concrete basin and the water evaporation system. The building will be demolished by cutting and removing the steel in sections using either the shears or a grapple. The steel will be handled in accordance with sampling and analysis requirements. Lead will be shipped to an appropriate facility for recycling. Corrugated fiberglass will either be reused on site or disposed of off site as described in Section 5.0.

The office/vault building is a concrete block structure, which was used as an operations control center and an electrical equipment storage vault. To prepare this building for demolition, all electrical equipment will be removed from the vault area and it will be demolished using a grapple.

The cooling tower is a large wood and metal structure that was used to recirculate non-contact cooling water for processes at the liquid SO_2 plant. It will be dismantled using the shears or a grapple. Metal and wood will be disposed of using one of the options listed in Section 5.0.

The compressor building is a steel frame structure with fiberglass siding. After removal of the fiberglass, the steel crossbars will be cut with the shears for scrap. The two compressors and other steel components inside the structure will also cut up for scrap.

A number of the components in the gas treatment area are stainless steel. These include piping, the absorption tower, stripping tower, and the drying

tower. All of these pieces of equipment were decontaminated in 1988-89, when Olympic Chemical was making preparations to salvage these materials. These materials will now be either salvaged or scrapped.

4.5 AREA 5

As depicted in Figure 3-4b, portions of the plant to be demolished in this area include the anode furnace building, No. 3 refinery building, the refinery changehouse, a storage area and the refinery by-products building. A small portion of the roof adjacent to the anode furnace area will be left intact. This roof structure provides shelter for equipment associated with the water evaporation system.

Asbestos materials in Area 5 structures have been removed. Removal and disposal were performed according to WISHA and PSAPCA regulations. All buildings will be reinspected for the presence of asbestos before any demolition work is initiated in Area 5.

The anode furnace building is that portion of the converter building north of the converter and reverberatory furnace operations. The dividing point is approximately at the large access area on the east side of the building where green poles were formerly brought to the anode furnace department. The building is essentially a simple superstructure of steel beam construction with either a metal or wooden roof and light gauge metal siding. The remains of two uptake flues for the anode furnaces are located in the center of this area and lead to a short, fire brick stack exiting through the building's roof. A small concrete-block office building is located near the north end

of this area. At the far north end of the anode furnace area is a wooden roof supported by wooden pillars used for equipment and material storage.

The building will be prepared for demolition by pre-cutting and separating the anode furnace building from the remainder of the converter building. Demolition will be accomplished by either picking off sections of the building with a crane or by cutting the building into sections and dropping the sections. In that the potential for some dust generation exists during the demolition process, water fogging nozzles will be positioned at appropriate locations to assist in controlling airborne dust emissions. Scrap steel, wood, and brick generated from this process will be handled in accordance with Section 5.0.

The No. 3 refinery building is a brick tile structure constructed on a deep concrete foundation, which forms a basement at the bottom of this building. The roof is constructed of wood at the north end, and concrete and steel at the newer southern portion. The interior has a concrete floor and remains of walls that formed the electrolytic tanks. The building was cleaned and all lead linings were removed after the building was decommissioned in 1979.

Demolition will be accomplished by removing the brick structure with a grapple. Most of the concrete foundation, including concrete support pillars for the tank walls will also be removed. However, it may be necessary to leave a portion of the west wall to help support the hillside sloping down from the main office building. If necessary, the roof portion may be removed in sections with a crane. Brick and concrete will be tested in accordance

with the Sampling and Analysis Plan and handled accordingly. Wood and steel will also be tested and disposed of using these procedures.

The concrete block changehouse located adjacent the No. 3 refinery building will be demolished using a grapple. The concrete blocks will be disposed of in accordance with Section 5.0.

Most of the refinery by-products building has already been demolished. What remains are several concrete walls and some steel cross-pieces that were part of the roof. Remaining portions will be demolished using a grapple. Demolition materials will be disposed of in accordance with Section 5.0.

4.6 AREA 7

Area 7 includes many structures in the central portion of the plant site. Structures to be demolished in this area are the main shop building, warehouse, carpenter/electric shops, pattern storage building, main changehouse, oil house and tanks, garage, diesel storage tank, trestles, and conveyor galleries (see Figure 3-5b).

The main shop building is a large woodframe structure that was used in conjunction with many of the maintenance activities at the plant. In the center of the building is a conveyor gallery, which passes over the top of the building. To prepare this building for demolition, all tar-coated roofing paper remaining on the building will be removed beforehand. This material was left in order to protect remaining equipment inside the building. Removal will be performed in case the tar coatings contain asbestos fiber. This work will be conducted in compliance with all regional,

state, and federal regulations. Other asbestos-bearing materials, such as pipe insulation, were removed previously as described in the Pre-Demolition Plan.

The main shop building will be demolished using a grapple by removing sections of the structure at one end and moving in sequence to other portions of the building. The overhead conveyor gallery will be removed in sections with the crane and lowered to the ground. If necessary, exposed portions of the building will be wetted with water sprays to reduce the possibility of dust dispersal. Wood from this demolition phase will be handled in accordance with the debris disposal options described below.

The warehouse is a two-story brick structure with a wooden roof. To prepare this building for demolition, remaining tar-coated roofing will have to be removed. As described previously, this material was left on the building to protect remaining equipment inside the structure. After the roofing material and remaining equipment are removed, the building will be demolished using a grapple. Water sprays will be positioned to wet material as it is being removed to reduce the possibility of dust emissions. The concrete floor and foundation will be left in place. Brick will be sampled and handled accordingly as described in Section 5.0.

The carpenter and electric shops are woodframe buildings that were previously used for maintenance activities. Again, to prepare for demolition of these structures, the tar-coated roofing paper will have to be removed as described previously. After remaining equipment and supplies are removed, the buildings will be demolished using a grapple.

The pattern storage building, main changehouse, and garage are all brick structures located within Area 7. All structures were associated with non-production related activities. After removal of tar-coated roofing materials on the garage, all three structures will be demolished using a grapple. Brick from each structure will be sampled and handled as described in Section 5.0 of this Demolition and Disposal Plan.

The pump house and Bunker C oil tanks located north of the warehouse were used to store and circulate fuel for the various smelting furnaces. Before demolition, all tanks and pump equipment will be inspected for oil residue and cleaned if necessary. The brick pump house will be demolished using a grapple. Pump equipment inside the building will either be salvaged or cut up for scrap. The three above-ground oil storage tanks will be demolished using a grapple or shears after disconnection of associated piping. The concrete retaining area for the tanks will be left in place.

The diesel storage tank area consists of one above-ground tank surrounded by a concrete retaining area. The tank was emptied of all fuel and cleaned in 1985 using standard tank cleaning procedures for such vessels. It will be used during the demolition process to store excess water from dust suppression activities and decontamination. When its use is no longer necessary, the tank will be demolished using either a grapple or shears.

4.7 AREA 8

Structures in this portion of the plant are shown in Figure 3-6a. To be demolished are the No. 1 and 2 refinery buildings, the powerhouse, plastic

shop, oil storage tanks, engineering office, laboratory, and garage. The transformer houses will remain to store electrical equipment.

The two refinery buildings were part of the site's electrolytic copper refinery, which was decommissioned in 1979. Most recently, electrolytic cells in both buildings have been used to evaporate water collected as part of the water evaporation system. Before demolition of these structures, tanks, collectors, and associated equipment will be cleaned of remaining residue from the water evaporation operation. Lead linings will then be removed from all tanks, compressed, and shipped to the Asarco Omaha lead refinery for recovery of lead and other metals. Wooden boards that were part of the electrolytic cells will be removed and stored for disposal in accordance with Section 5.0. Concrete tank structures will then be removed and sampled to determine the appropriate disposal technique. Basement areas will be cleaned and/or washed down to collect remaining material that may contain recyclable or precious metals. The remaining structures will be demolished using a grapple or a combination of crane and grapple if it is deemed necessary to remove the roofs separately. All wood, steel, brick, and concrete generated from these structures will be handled in accordance with Section 5.0.

The powerhouse is a brick structure with a wooden roof located adjacent to the No. 1 refinery. To prepare this building for demolition, tar-coated roofing material will be removed beforehand. If the roofing material contains a small amount of asbestos in the tar coating, it will be loaded into roll-off boxes for shipment to a hazardous waste disposal facility. Remaining compressors, generators, blowers, and other equipment will be

removed for scrap. The building will then be demolished mainly by a grapple and/or crane. Brick and other materials will be sampled to determine their disposition under Section 5.0.

The oil storage tanks were thoroughly cleaned in 1985. They will be inspected before demolition to ensure significant oil residue does not remain. The tanks will then be demolished using either a grapple or shears.

The plastic shop is a small concrete block maintenance building north of the powerhouse. It will be demolished using a grapple once it is determined that it is no longer useful.

The laboratory is constructed mainly of concrete. Laboratory and ductwork hoods used to fume perchloric acid are located in three rooms starting from the southwest side of the building. A water rinsing procedure is a precautionary measure to prevent any possibility of explosions due to the presence of unstable perchlorates. Before demolition, remaining laboratory hoods and ducts will be evaluated to ensure that those used to fume perchloric acid are carefully cleaned with a water rinse and removed beforehand.

Similar precautions will also be taken in removing the concrete 2-foot drain line underneath the building. This line was used historically to collect wash down water from laboratory hoods during plant operations. This line will also be washed thoroughly with water to avoid the possibility of explosion hazards. After the precautionary measures are implemented, the building will be demolished using a grapple and/or cat loader.

The engineering building and carport/garage are both relatively small wooden structures. They will both be demolished using a grapple.

4.8 AREA 9

As described in Section 3.2.2, Area 9 includes many of the structures that may be returned as part of a converter wood incineration system (additional details on wood incineration are discussed in Section 5.1.1. As depicted on Figure 3-6b, this portion of the plant includes the converter building, larry car trestle (incineration flue), Herreshoff roaster building, baghouse, spray chamber, arsenic plant fan building (fan), pump house and remains of the overhead conveyor. The evaporation basin and settling tanks will remain for interim use as a collection point for on-site surface water runoff, demolition dust control and decontamination water. The two stainless steel acid storage tanks will remain for continued use as a storage and shipment point for sulfuric acid. The three steel tanks formerly used to store sulfuric acid will be cleaned of remaining residue, and demolished. Asbestos materials in Area 9 have been removed as described previously in the Pre-Demolition Plan. All buildings will be reinspected for the presence of asbestos before any demolition is initiated in Area 9.

The converter building is primarily a steel superstructure with either light gauge metal or fiberglass siding. Its main function was to provide shelter for smelting activities in the converter aisle. The two reverberatory furnaces were removed in 1985. Four copper converter furnaces and associated uptake flues, balloon flues, cyclones, and other ductwork remain. Brick linings have already been removed from three of the four furnaces (converters No. 2, No. 5 and No. 4). However, the brick lining has not yet been removed

from the No. 1 converter because this is the furnace being considered for wood incineration (see Section 5.1.1).

Before demolition of the converter building, areas with dust accumulations on walkways, beams, and platforms will be vacuumed. If dust accumulations exist in the balloon flues or cyclones, they will also be vacuumed as much as possible to reduce the possibility of dust dispersal during removal. Salvageable equipment, including the No. 4 converter, fans, motors, and electrical gear will be removed beforehand. Water sprays will be positioned in appropriate areas to minimize dust emissions during equipment removal.

The converter building will be demolished for the most part by cutting and dropping the structure. Interior portions, such as the converter shells, flues and other equipment will be picked off as the building is taken down. Scrap materials will be handled in accordance with Section 5.0 of this plan.

The incineration flue leading to the Herreshoff roaster building rests on the larry car trestle. This entire structure is also situated in part above the acid plant spray chamber. During dismantling, the trestle and flue will be demolished by cutting and removing the structure in sections with the crane. Water will be used to suppress dust generated during trestle removal. The disposition of wood will be determined using one of the options outlined in Section 5.0 below.

The concrete spray chamber will be demolished using a grapple. Water will be used to wet the material as it is being removed to minimize dust emissions.

Concrete rubble will be sampled in accordance with the Sampling and Analysis Plan, and handled in accordance with Section 5.0 of this plan.

The Herreshoff roaster building is a large three-story structure which was used to house ten roasters used in the smelting process. All roasters exhaust to a common brick flue which traverses the length of the building. Brick linings have been stripped from some of the roasters while others remain intact. To prepare this area for demolition, the building will be cleaned to the extent feasible to reduce the potential for dust emissions during dismantling. Pre-demolition cleaning will include vacuuming of dust accumulations on floors, beams, walkways, and inside roasters and the brick flue, to the extent that is technically and safely practical. During demolition, water fogging nozzles will also be positioned at appropriate locations to control dust. Cleaning and/or dust control water will be collected, as discussed in Section 3.0.

The Herreshoff roaster building will be demolished by cutting and removing upper sections of the structure with a crane and/or grapple. During this phase, remaining conveyor galleries at the south end of the building will be cut and lowered to the ground for dismantling. After removal of the top sections, lower floors, including the roasters and brick flue, will be demolished using a grapple. Steel, brick, and wood generated from this phase of demolition will be handled using one of the options described below.

To prepare the baghouse for demolition or salvage, bags in each of the seventeen cells will be removed, and the cells vacuumed. Outside walkways and platforms will also be vacuumed if necessary. The baghouse will then be

removed by lowering sections of the structure to the ground for handling. The unit will be demolished by cutting sections into pieces using the shears.

The fan building is primarily steel beam construction, and its main purpose was to support flues and provide shelter for fans associated with the baghouse. Demolition will be initiated by removing remaining flues with the crane, and lowering them to the ground for final disposition. Care will be taken when removing the flues, to minimize settled dust disturbance. It may be necessary to vacuum dust from these structures before the flues are cut into sections for scrap. Because of its proximity to the road, upper sections of the building will probably be removed by crane. Lower sections of the structure, including two small concrete block buildings, will probably be demolished by a grapple. Scrap steel and other materials produced from this process will be handled in accordance with Section 5.0. Water generated from dust suppression efforts in this area will be diverted to a sump at the south end of the Herreshoff roaster building. Water will flow by gravity from this point to the settling tanks and concrete basin at the acid plant for pumping to the water evaporation system.

4.9 AREA 10

Area 10 includes the main administrative office building, employment office building, concrete changehouse, boiler tube storage building, the silica shed, and railroad trestle.

These structures should present no environmental problems during demolition. They can be demolished relatively easily by taking the structures down

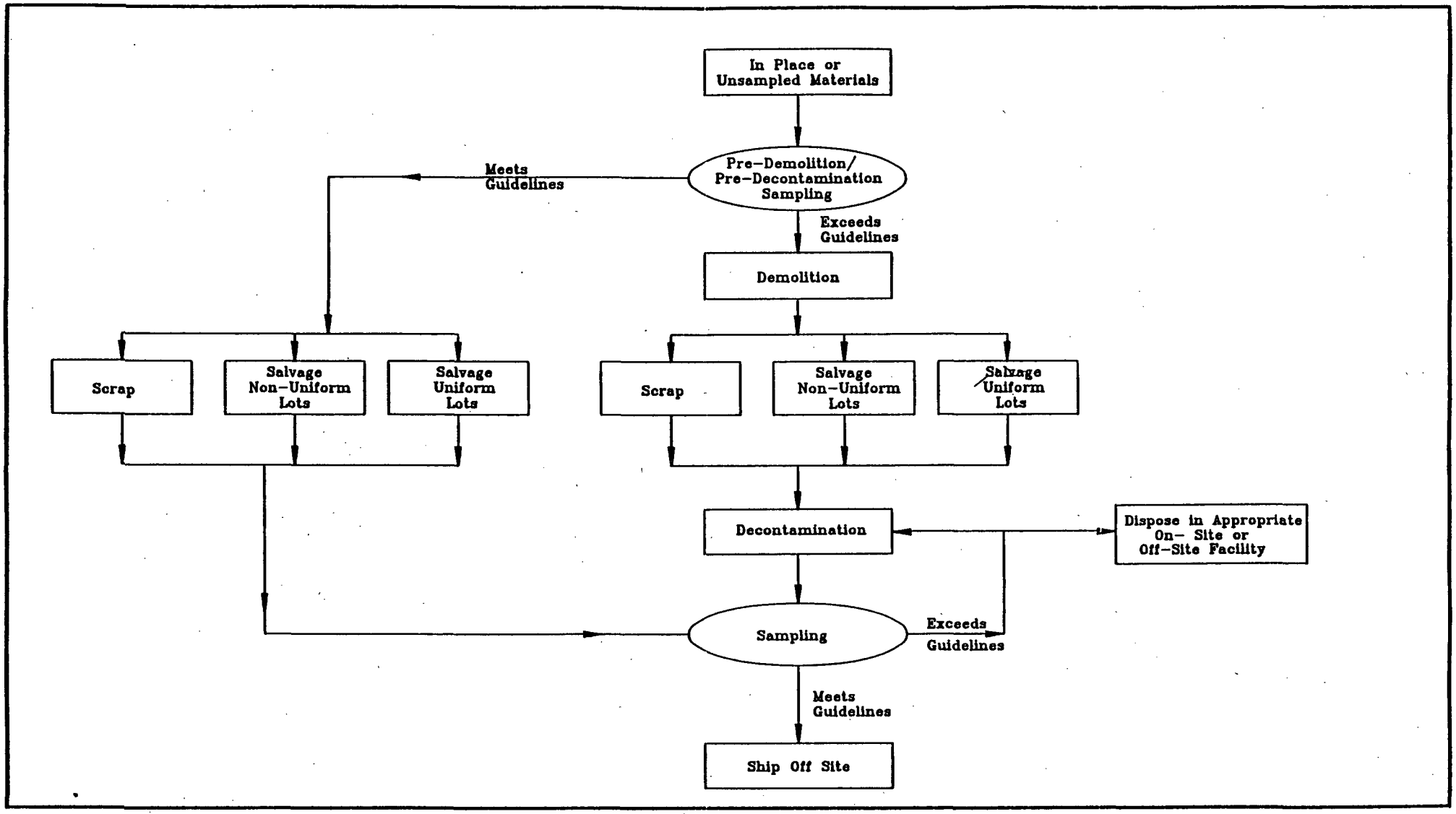
systematically with a grapple. Concrete and wood generated from this process will be handled in accordance with Section 5.0.

4.10 AREA 1

Asarco will remove the stack in accordance with the stack removal plan described in Section 8.0.

4.11 DEMOLITION DEBRIS SAMPLING AND ANALYSIS

During the on-site demolition process, various structural materials will be sampled to determine their final disposition. These materials include steel, brick, concrete, fiberglass, wood, and other miscellaneous materials. To assist in classifying such materials, a Sampling and Analysis Plan (SAP) has been prepared to detail procedures for collection of different types of samples, determining representativeness, and establishing criteria. A quality assurance project plan has been included as part of the overall approach to provide information regarding the acceptance of data from the field sampling program. The Sampling and Analysis Plan is included as Appendix 1 of this Demolition and Disposal Plan. Based on a comparison of sample results with practicable objective criteria, the on-site remedial manager will decide if additional decontamination procedures are necessary, or if the materials are acceptable for off-site shipment. Figure 4-1 outlines the decision process.



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Revised 4/29/92

Figure 4-1:
Conceptual Model of
Demolition Sample Program

5.0 DEMOLITION DEBRIS DISPOSAL OPTIONS

Materials generated during the demolition process will consist primarily of wood, steel, brick and concrete. Other materials generated during demolition may include ceramics, plastics, electrical wiring, etc. The following sections describe options for transport and disposal of the various demolition materials. Whether Asarco selects a given disposal option will depend on material testing results using procedures and protocols described in the Sampling and Analysis Plan for Interim Remedial Action (Appendix 1). No disposal option will be utilized unless the material has been tested in accordance with the appropriate protocol and meets the disposal criteria set forth for that option.

In accordance with CERCLA, the National Contingency Plan, and applicable EPA guidance documents, selection of a disposal option will, to the extent practicable, do the following:

- Give priority to those options that provide protection of human health and the environment.
- Comply with applicable or relevant and appropriate requirements under federal and state law.
- Have long-term effectiveness and permanence.
- Reduce the toxicity, mobility and volume of the material.

- Have short-term effectiveness.

- Be implementable and cost-effective.

- Have state and community acceptance.

Therefore, priority will be given to recycling material and permanent disposal solutions. It is recognized that the landfilling of contaminated material is generally not favored under federal or state law and that relatively little of the demolition material will be available for reuse.

The selection of an appropriate disposal option will be dependent in part on the applicability of the state's Dangerous Waste Regulations, Chapter 173-303 WAC. Asarco has petitioned the Department of Ecology for an exemption from the regulations for demolition debris that does not otherwise pose a substantial present or potential hazard to human health, wildlife or the environment. Ecology's response to that petition will affect the disposal options available.

In most cases, materials awaiting transport and disposal will be stored at the point of generation on the site. Wood will be transported to the converter aisle or fine ore bins for storage before incineration. Brick, concrete, and other debris will be stored in the fine ore bins or shipped off site for disposal.

If materials are tested to determine their disposition, the test results will accompany the shipment to its destination. Off-site disposal of hazardous materials shall comply with the EPA Off-site Policy.

Demolition disposal options are discussed below:

5.1 INCINERATION

This option would be applicable to wood demolition debris only. If this option is selected by Asarco, wood determined to be either non-hazardous or non-dangerous waste would be incinerated in a former production furnace called a converter. Figure 5-1 is a schematic diagram of the converter operation. Converter No. 1, located in the converter building in Area 9 (see Figure 3-6b), would be modified to meet performance specifications as approved by the Puget Sound Air Pollution Control Agency (PSAPCA). Particulates from the incineration process would be collected by a state-of-the-art baghouse. Incineration would substantially reduce the volume of material requiring transport and disposal. The residual ash would be shipped to an appropriate facility for recovery of metals. To ensure that incineration will not result in excessive emissions, the converter would be monitored during use. The performance and monitoring program for the converter is set forth in the performance evaluation program, as approved by PSAPCA. To implement this option, wood would have to be tested using procedures described in the Sampling and Analysis Plan.

Timber, roofing and other similar combustible items will be delivered by a wrecking contractor to an area near the converter for immediate incineration. It is expected that most wood will be prepared for incineration by shredding

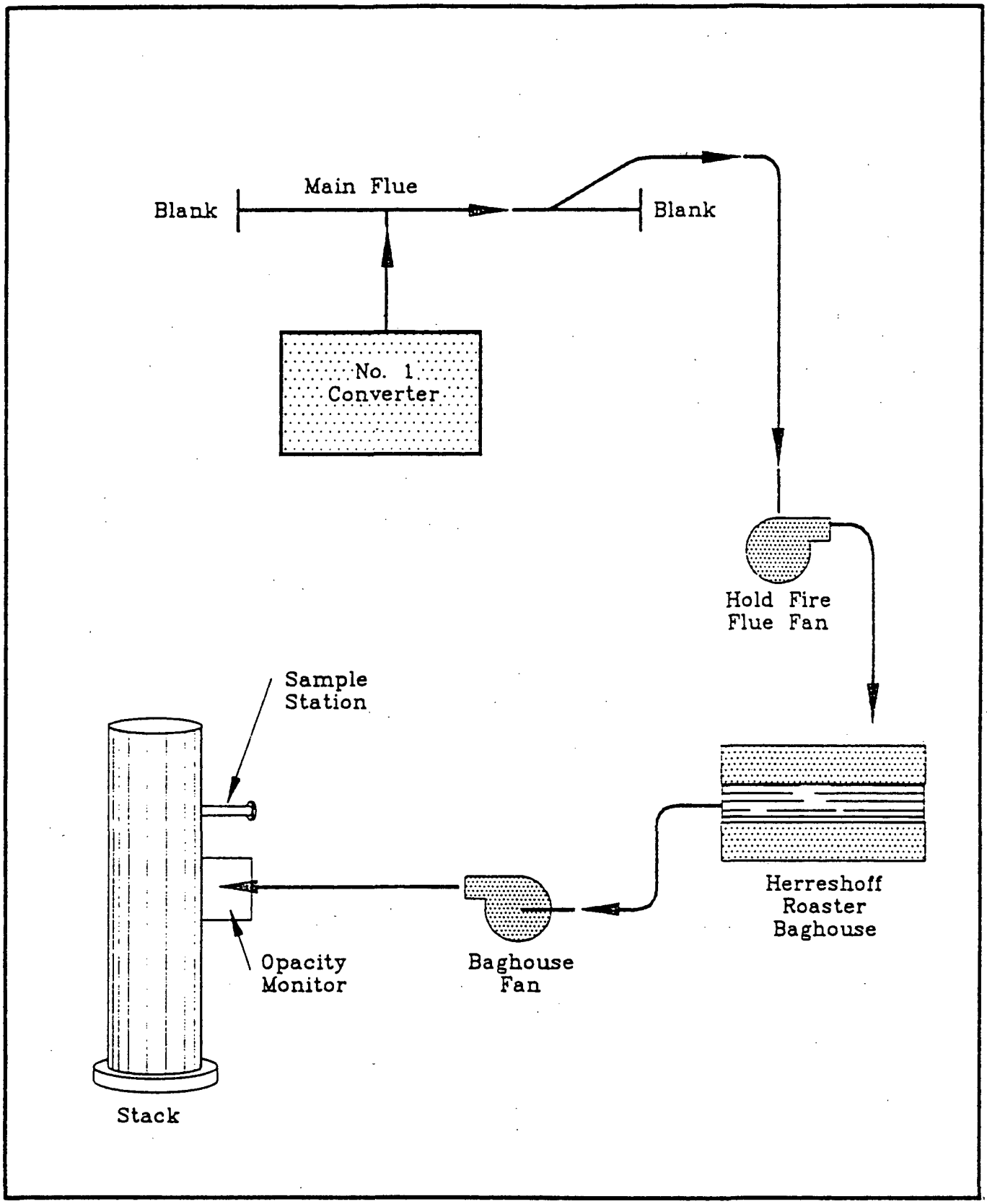

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Figure 5-1.
Diagram of Converter Operation

it to an even size for direct feed into the converter. The contractor will reduce these materials to a size suitable for a shredder with a feed inlet size of 75 by 45 inches. If the material cannot be burned immediately, it will either be stored under cover in the converter aisle, or in the fine ore bins, which are also covered (see Section 5.1.5). Materials will be loaded onto trucks for transport.

The diagram of converter operation (Figure 5-1) shows how the No. 1 converter will be used for incineration. Chunks of wood will be loaded onto a vibratory conveyor located in front of the converter vessel. The conveyor will be situated to allow continuous feed of the material to the conveyor while maintaining the position of the opening under the primary hood ventilation system. During incineration, exhaust gases and fugitive emissions will be captured by the primary hood ventilation system and transported to the roaster baghouse for particulate collection.

The performance of the system will be monitored during operation. Performance standards to be met during operation and modifications to the current system are those set forth in the performance evaluation of the #1 converter system, as provided to and approved by PSAPCA.

5.2 TRANSPORTATION TO A SOLID WASTE LANDFILL

This option consists of transportion to a solid waste landfill, such as the Waste Management Inc. solid waste landfill in Arlington, Oregon, or the Rabanco landfill in southwestern Washington. This option could be applicable to all demolition material types including wood, steel, brick and concrete, fiber glass and asbestos (following applicable regional, state and federal

regulations) and other miscellaneous debris materials. To implement this option, representative testing would have to be conducted on the debris material to ensure it was below the hazardous and/or dangerous waste criteria.

5.3 PLACEMENT IN AN RCRA-EQUIVALENT ON-SITE CONTAINMENT FACILITY (OCF)

This option consists of material debris placement in a RCRA-equivalent On-Site Containment Facility (OCF). Assuming an OCF is constructed following issuance of the EPA Record of Decision for the smelter site, this option would be applicable for all demolition material types. Representative testing would also be required to assess potential treatment requirements for this option.

5.4 TRANSPORTATION TO AN OFF-SITE RCRA FACILITY

This option consists of transportion of debris materials to an off-site RCRA hazardous waste disposal facility. This option is applicable to all demolition material types. If Asarco chooses to use this option, materials would be tested to meet profile requirements of the disposal facility. At the time of disposal, it would be determined if any treatment requirements are in effect. These would have to be taken into account in preparing the material for disposal.

5.5 TEMPORARY STORAGE IN THE FINE ORE BINS

This option consists of temporary placement of debris material in the fine ore bins or other temporary on-site storage facility. This option would be applicable to most demolition debris material types including wood, steel, brick and concrete, fiberglass and other miscellaneous materials. Temporary

storage would be implemented until a permanent disposal option is selected. For example, if wood is to be incinerated, it can either be stored at this location, or in the converter aisle. Temporary storage may also be implemented if storage in an on-site OCF is ultimately selected as the permanent option.

5.6 SHIPMENT FOR RECYCLING

This option consists of shipping demolition materials to appropriate facilities for recycling, salvage or reuse. This option would be appropriate for steel, lead, and stainless steel materials from the plant site.

5.6.1 Steel

Steel would be shipped to an appropriate facility for recycling by batch melting in a blast furnace. To verify that steel shipped by the Tacoma Plant is accepted as a batch for batch processing, a tracking form as shown in Figure 5-2 will be used. The steel will be pressure washed using low-volume, high-pressure water cleaning techniques or equivalent before off-site shipment. Cleaning would include all exterior surfaces, and interior surfaces as much as possible. The purpose of this procedure would be to remove any remaining accretions adhering to the equipment. Structures will be washed in place to the maximum extent possible.

To provide confirmation of the effectiveness of the pressure washing procedure, representative demonstration testing shall be conducted by Asarco, following the protocol outlined in the Sampling and Analysis Plan (Appendix 1). If it is determined materials are initially below the criteria presented in the SAP, or meet these levels after decontamination, EPA and Asarco will confer regarding the need for continued sampling.

FIGURE 5-2. MATERIAL TRACKING FORM

Type and Source of Material:

Location on Site:

Shipment Number:

Date Shipped:

Total Weight:

Destination of Material Shipment:

Intended Use of the Material:

	As	Pb	Cd
Potential Residual Metal Concentrations:			

The above material is from the Asarco Tacoma Smelter. An inspection of this material indicates that it has adequately been decontaminated for the intended purpose as described below in accordance with the Demolition and Disposal Plan for this project.

_____ _____

Asarco Representative EPA Designated Representative

This certifies that the above shipment of material was received on _____ by _____ (Company), and is accepted for _____ (remelting, re-smelting, salvage, or reuse) at _____.

_____

Company Representative

Once this form is signed by the compny representative, the signed original should be returned to the Asarco Tacoma Smelter.

5.6.2 Lead

All lead generated from demolition of structures described in this interim remedial action shall be retained by Asarco. It will be flattened and shipped to an appropriate refinery for remelting and processing.

5.6.3 Stainless Steel

Numerous pieces of stainless steel equipment exist in the liquid SO_2 area. This material will be removed for salvage or sale to a scrap dealer. All removal, handling, and cleaning will be in accordance with the Third Amendment to Site Stabilization Plan, EPA Docket No. 1086-04-24-106.

5.6.4 Wood

Numerous timbers used from buildings and other structures will be removed during the demolition process. Representative drill core samples of the timbers will be collected in accordance with procedures outlined in the Sample and Analysis Plan (Appendix 1 of this Demolition and Disposal Plan). Representative samples will be analyzed for arsenic, lead and cadmium using the TCLP leach testing procedure. Samples will also be analyzed for total arsenic concentrations. It is possible that the outer perimeter of large timbers may have elevated concentrations of arsenic which exceed TCLP or DW criteria. Since wood is a moderately porous material, elevated arsenic and metal concentrations may be present in large timbers slightly below the surface. Based on testing results, recyclable interior wood or wood selected for incineration will be prepared by planing the contaminated exterior perimeter. The uncontaminated interior wood can then be shipped off site for recycling, or incineration as described in Section 5.1.

5.7 ASBESTOS-BEARING MATERIAL

As discussed in the Pre-Demolition Plan, all known asbestos-bearing materials will be removed before demolition. It is possible, however, that insulation materials will be discovered during the course of dismantling buildings. Any such materials will be removed and handled using applicable regional, state, and federal regulations.

6.0 EVAPORATION SYSTEM RESIDUE

Residue that accumulates in the water evaporation system will be shipped to an appropriate facility for recovery of metals. Shipment will be in covered railroad cars or metal drums. The handling of residue from the water evaporation system before shipment is described above in Section 2.0.

7.0 TRACKING OF MATERIALS

Various materials described above may be shipped off site for re-smelting, salvage, remelting or reuse. To verify that materials shipped from the Tacoma Plant reach their intended destination, a form (Figure 5-2) shall accompany the straight bill of lading that describes the shipment. This form will be used in addition to manifests or other shipping documentation requirements. This form will include information on the type and source of material, shipment number, the day shipped, the destination of the material, the weight of the material, the intended use of the material, and the potential levels of contamination.

The form will be signed by Asarco's On-Site Coordinator (OSC) or a designated representative before shipment from Tacoma. The receiver will return signed copies of the form to Asarco and copies will be made available to EPA. All shipments must be secured as necessary to prevent exposing the public to either the materials or fugitive emissions from the materials.

8.0 STACK DEMOLITION AND DISPOSAL

This Stack Removal Plan has been developed by Asarco as part of the Interim Remedial Action for the Asarco Tacoma smelter. The purpose of this Stack Removal Plan is to allow removal of the main stack at the Asarco Tacoma smelter in a way which protects the environment and provides maximum protection for the workers involved in the stack removal. It is anticipated that this portion of the demolition plan will be implemented prior to dismantling of any structures on the lower part of the plant site.

The stack at the Tacoma smelter has not been used since 1985 and has deteriorated considerably. Water has penetrated the mortar joints and combined with acidic dust to cause accelerated sulfation. As the cement mortar joints sulfate their strength decreases causing the stack to become increasingly unstable. It is the judgment of Asarco that the stack should be removed as expeditiously as possible in accordance with this Stack Removal Plan.

This Stack Removal Plan was developed by Asarco to meet the above objectives. It is also based upon a report prepared by Scientific Service, Inc. entitled *Survey of Demolition Techniques for the Tacoma Chimney* (October, 1988). That report recommends explosive demolition as the only feasible method of removing the Tacoma smelter stack. The report concluded that any other method would expose demolition workers to extremely hazardous conditions for long periods of time and would be a violation of OSHA and other safety regulations.

This Stack Removal Plan has been designed to provide maximum protection for the environment. A dust suppression system will be installed to cover the the stack demolition area. Dust suppression will consist of a sprinkler system utilizing rainbird commercial-grade impactor sprinklers capable of dispersing more than 500 gallons of water per minute over an 89-foot radius. The sprinklers will be mounted on 16-foot-high rain towers and placed on top of an earthen embankment into which the stack will fall. These sprinklers will discharge water over the area at an elevation in excess of 36 feet above the existing ground level. An embankment will be constructed 6 feet above existing ground level from excavated material located within the fall area. Surface water runoff generated by the hydraulic envelope will be collected and treated. This use of a hydraulic envelope in the fall area is expected to minimize emissions from the stack demolition.

8.1 DESCRIPTION OF THE MAIN STACK

The main stack at the Asarco Tacoma smelter is a brick chimney which was completed on December 22, 1917. It is approximately 562 feet high, 50 feet in diameter at the base and 27 feet in diameter at the top. It has a battered (receding upward slope) profile with a load bearing peripheral brick wall and a corbel supported brick lining. When constructed, 2,453,270 paving bricks were used of which 26,900 were used in the lining. The weight of the chimney is approximately 12,700 tons.

The chimney is constructed of ordinary rectangular paving brick. The mortar of both the chimney proper and the lining is a mixture of cement, fire clay, and sand.

There are two breachings which enter the stack on opposite sides at ground level. They are approximately 15 feet wide by 30 feet tall.

8.2 RESULTS OF STACK SAFETY/STABILITY INVESTIGATIONS

When the Tacoma Smelter was in operation, Asarco routinely had the main stack inspected as part of its maintenance program. The last inspection during plant operation was made in August 1983 by Industrial Chimney Company, Inc., P.O. Box 416 Hayward, California 94543. That report documented that the stack was not in good condition.

Industrial Chimney made another inspection in April 1986 approximately one year after the Tacoma Smelter was shut down. That report documented that the stack was in a condition of serious deterioration. Specifically, the report noted the following:

- A number of chimney bands were broken or seriously deteriorated.

- The top 22 feet of the stack bulges badly to the outside at the west and south sides presenting an extremely hazardous condition.

- The liner has fallen in several places from the 525-foot elevation to the top.

- The liner has many blisters approximately 3 feet in diameter beginning at 500 feet and continuing to the top.

- The top 50 feet of the stack leans to the northeast approximately 2 feet out of plumb.

In October 1988, Scientific Investigations, Inc., 35 Arch Street, Redwood City, California 94062, inspected the stack to determine potential demolition techniques for the chimney. Scientific Investigations, Inc. confirmed that the stack is seriously deteriorated. Photographs taken from Industrial Chimney Company's 1983 and 1986 reports document the serious deterioration of the stack.

8.3 STACK REMOVAL ALTERNATIVES CONSIDERED

In preparing this stack removal plan Asarco has studied and considered all available demolition alternatives. Those alternatives are as follows.

8.3.1 Manual Demolition on Scaffolding

Manual demolition of the stack by workers on scaffolding was considered. Three types of scaffolding were evaluated: (1) pole, (2) outrigger and (3) mechanical.

1) Pole Scaffolding. Pole scaffolding consists of an assembly of poles or tubing normally constructed around a structure. Platforms are then constructed on the assembly and workers are stationed on the platform or tubing to conduct demolition. Pole scaffolding was discarded as an alternative for this project because such scaffolding is not available for heights such as those involved with the Tacoma Smelter stack. Another problem that precludes the use of this type of scaffolding is the

possibility of debris hitting one of the support columns and dislodging the entire structure.

2) Outrigger Scaffolding. This type of scaffolding is attached directly to the chimney using cables wrapped around the chimney. This type of scaffolding was also discarded because the scaffolding would have to be attached to the same area of the stack being demolished. In addition, it has been determined that the stack is too unstable to have heavy equipment and workers affixed to it.

3) Mechanical Scaffolding. This scaffolding is similar to that used by window washers on high-rise buildings and is called a two-point suspension or a swinging scaffold. While suitable for light work such as cleaning windows, painting, and light repairs, it is not suitable for supporting the heavy mechanical equipment required to demolish the stack. It was also eliminated from further consideration because it would require affixing scaffolding to the stack itself.

8.3.2 Mechanical Demolition

Mechanical demolition involves the use of a crane and heavy steel ball (commonly termed a headache ball) to batter the chimney into pieces. The problem with this method is the height of the chimney. A typical height limit for this type of demolition is around 100 feet. Thus, it could not be used for demolishing a stack of approximately 562 feet. Manual demolition on scaffolding and mechanical demolition would also generate dust emissions over

a lengthy period of time as these methods would require a substantial number of worker-hours.

8.3.3 Washing or Otherwise Cleaning the Inside of the Stack

Some method of washing or otherwise encapsulating material on the inside of the stack was considered. Such an operation was discarded for several reasons. First, it is not considered necessary. Photos of the interior of the stack taken in 1986 reveal that the interior of the stack is relatively clean. There is no heavy coating of material and the brick liner and mortar is readily visible. This is attributed to a 1984 stack fire and to precipitation entering the stack since plant closure in March 1985. It is believed that the interior of the stack is now even cleaner than it was when the photos were taken in 1986.

In addition, it has been determined that there is no safe, practical method for either washing or painting the inside of the stack. These alternatives would require that a platform be constructed on top of the stack and that individuals or equipment be lowered into the stack for the washing/painting operation. Because of the structural instability of the stack, it would not be possible to construct such a platform.

8.3.4 No Action

Asarco has considered leaving the stack in place. This option has been discarded because of the instability of the stack. It is possible that if left in place portions of the stack could collapse without warning. Therefore, Asarco has determined that removal of the stack is necessary.

8.3.5 Explosive Demolition

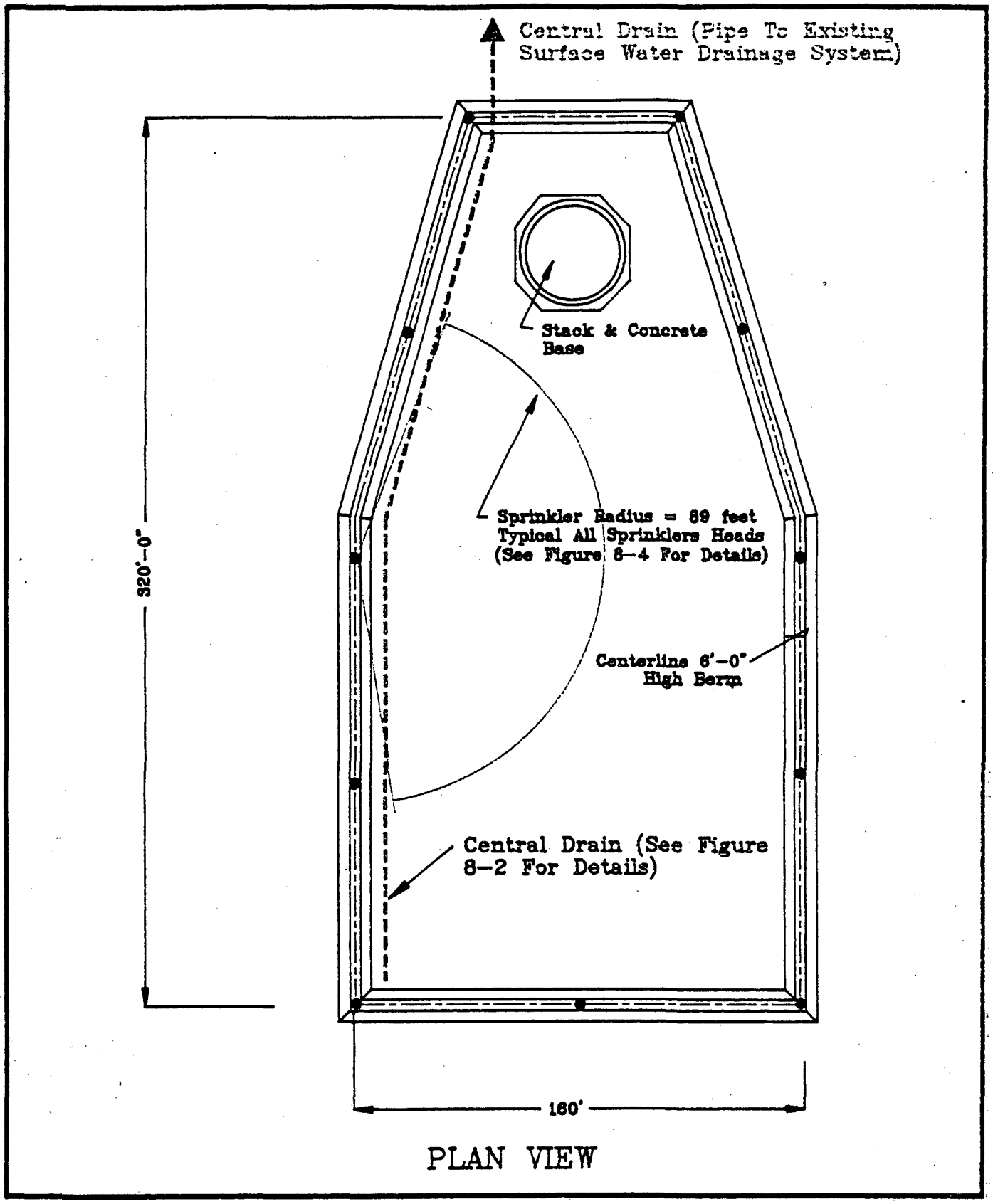
Asarco and its contractors have concluded that explosive demolition is the only suitable method for demolition of the Tacoma Smelter Stack. It requires minimal worker exposure to hazardous conditions and can be conducted under current safety regulations. In addition, suitable precautions can be taken to protect the environment during demolition.

8.4 TRENCH CONSTRUCTION FOR STACK DEBRIS

There is a totally open area of fall for the stack away from residences and a right-of-way adjacent to the site. This stack will be tilted approximately 15 degrees out of vertical so that it can be telescoped into a confined area close to the base of the structure for containment of any dust generated at ground level by this type of demolition. There is virtually no exposure of falling debris to adjacent properties because there is adequate distance at the site between the stack and surrounding structures. Figure 8-1 is a map that shows the area into which the stack will be collapsed.

The stack will be brought down into a trench constructed from soils excavated in the smelter stack area. For the most part, these soils will be removed from the bank immediately south of the stack area.

The trench will consist of a 6-foot-high berm surrounding the stack area, and extending 320 feet to the south of the structure. The bermed area will be 160 feet wide at the southern most point of the containment area. The floor of the containment area for the stack debris will be constructed so any excess water from the water suppression system will be collected within the structure.



TACD0992 (3/23/92) NOT TO SCALE

Figure 8-1.
Containment Area For Stack Demolition

The drainage system will consist of a central drain of crushed rock (French Drain) or similar type of construction which will allow water to be channeled from different portions of the containment area. The drain will be covered with a sufficient amount of sand to protect the system from the impact of the debris. The floor will be sloped such that water can flow into this device, and be directed to the north end of the bermed area (see Figure 8-2). From this point, water will be collected and pumped through a PVC line to a collection point for the water evaporation system. This collection point would most likely be the trench located on the east side of the stack hill.

8.5 STACK REMOVAL PLAN

8.5.1 Management

The demolition contractor will have overall management responsibility for this project subject to the supervision of Asarco. While neither the contractor nor any other Asarco contractor is under the supervision of EPA or EPA representatives, EPA retains the right to approve any work plans required. The contractor will assign a management team headed by a project manager to be responsible for overseeing the project. An on-site office will be provided. Working as a subcontractor for the contractor, an explosives demolition contractor will supply an explosives engineer and support personnel to design the demolition, coordinate with other on-site activities, observe implementation and preparations, and perform explosives operations on the stack. The explosives demolition contractor will have demonstrated experience in the controlled felling of similarly constructed chimneys, towers and silos.

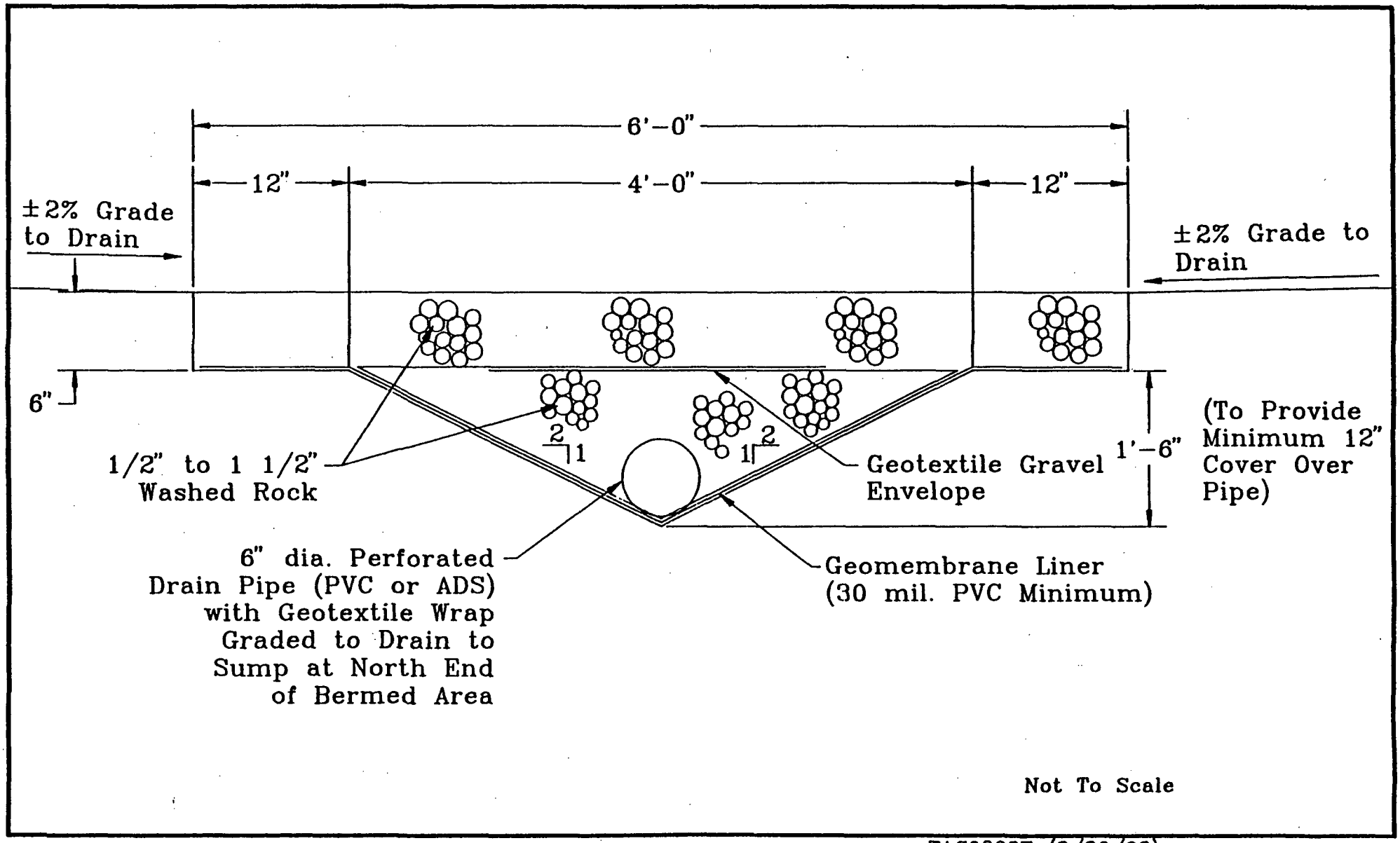


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Figure 8-2. Central Drain Detail

8.5.2 Project Coordination

CDI or an equivalent explosives contractor will contact Asarco and the primary contractor to coordinate the explosives phase of the project. Before demolition, there will be periodic meetings held at the site between representatives from the explosives contractor, the demolition contractor, Asarco and other involved parties, including EPA. At these meetings, this plan will be reviewed and updated. Additional details will be discussed and all questions raised by the meeting attendees will be addressed.

8.5.3 Drilling and Preparation Work

The demolition contractor personnel and equipment will arrive at the site approximately one week before the demolition. They will begin drilling the stack according to specifications outlined in blue line drawings which will be generated following notice to proceed on this project. Implementing a plan similar to one outlined by CDI, a wet system will be needed to drill approximately 250 horizontal holes up to 2-feet deep and 1-3/4 inches in diameter in the lower 30-feet of the stack as laid out by the explosive contractor site superintendent. Once drilling is completed, the superintendent will ensure that the holes meet field tolerances required for the explosive contractor's operations.

8.5.4 Type of Explosives

The following are the types and approximate quantities of explosives to be used on this project:

1. Rockmaster Electric Millisecond Blasting Caps as manufactured by the Atlas Powder Company (or their technical equivalent) will be

used as initiators. Each explosives unit including initiators weighs less than .01 pound.

2. The approximate total weight of explosives to be used in the entire project would not exceed 125 pounds.

8.5.5 Routing of Explosives

CDI (or an equivalent explosives contractor) will coordinate delivery of explosives with the appropriate local officials and Asarco. Delivery will be made less than 24 hours before the intended demolition of the stack and work will proceed in accordance with applicable regulations.

CDI's (or equivalent's) project superintendent will go over all aspects of the explosives delivery and security measures during the site meeting before the demolition. Implementation of agreed upon measures will be refined by the explosives contractor project superintendent through communications with the contractor, Asarco, and all appropriate agencies.

8.5.6 Initiation System

The charges placed by CDI (or equivalent) will be detonated by a capacitor discharge (CD) blasting machine located at a designated command post several hundred feet away from the stack.

The wiring circuit will be designated and assembled in accordance with guidelines suggested in Dupont's Blasting Handbook and the Institute of Makers of Explosives (IME) Handbook on Electric Blasting. The entire initiation system will be triple checked by CDI before the detonation of

preliminary and final shots. The final circuit continuity will be checked within one ohm tolerance up to within 30 seconds before the demolition.

8.5.7 Loading and Detonation Procedures

Beginning approximately 16 hours before the implosion, explosives will be assembled and placed in demolition contractor-drilled holes in the base of the stack. Explosives will be first placed and initiated to create the precise "hinges" required to control the fall of the structure. Explosive charges for the final detonation sequence will be assembled and placed by experienced CDI (or equivalent explosives contractor) personnel in accordance with manufacturer's recommendations and guidelines established by the Institute of Makers of Explosives.

All explosive charges will be checked and rechecked to ensure accurate positioning before the detonation. Beginning one hour before the demolition CDI (or equivalent) will (1) recheck the circuits and inspect all protective cover and (2) coordinate with the demolition contractor, Asarco and other involved parties to ensure that the safety perimeter (to be established) is in force.

Five minutes before the proposed detonation time a single 15-second siren will be sounded to advise all non-essential personnel to clear the area. CDI (or equivalent) will move to ensure that the 500-foot general safety radius (for explosives contractor's personnel) adjacent to the base of the stack is enforced and clear.

One minute before detonation, two five-second sirens will be sounded. At this time, CDI (or equivalent) will check by radio contact with the security command post that the site is totally clear.

At 15 seconds, three one-second sirens will be sounded and the countdown will be halted until the final check has been made by radio to all security personnel.

Upon being given the all clear, the countdown will proceed from 15 seconds to zero with the detonation occurring at zero. The stack will impact the ground within eight seconds following the explosives demolition sequence.

In accordance with OSHA regulations, CDI (or an equivalent explosives contractor) will make a thorough check to confirm that no hazard exists as related to undetonated explosives. This is certainly not expected to occur but compliance with regulations is mandatory. Once that inspection is completed (within five minutes) a 15-second siren will be sounded to signify all clear. At this point, all operations may resume as normal and the contractor or Asarco will assume control of the site.

8.5.8 Rough Delay Pattern

Explosives charges will be detonated on a millisecond interval to guarantee fragmentation of the brick. This millisecond delay sequence also helps control vibration and ensure that there is no back break into the hinge which is to remain for the final demolition sequence. CDI's unique method of controlling the fall of the structure by explosives (which CDI refers to as its DIVELCON System) has been perfected as a result of over 500 chimney

demolition projects performed over the last 45 years. (If another equivalent contractor is selected, a similar system will likely be used).

8.5.9 Stack Collapse

The stack will collapse approximately eight seconds after the initiation of explosives in the final demolition sequence.

Minor amounts of dust and soot generated from both the detonation of the explosives and the impact of the structure at grade will occur. As detailed below, the contractor will install a hydraulic misting envelope to precipitate this dust within the demolition area. Exhibit 2 illustrates the stack collapse and the dust suppression system.

8.6 SEISMOGRAPH MONITORING

One seismograph will be installed to record ground motion and air pressure generated by the demolition activity. The location of this seismograph will be determined at the site meeting to be held between CDI (or equivalent), the demolition contractor, Asarco, EPA and involved parties.

Due to the small amount of explosives detonated in the delay sequence, CDI anticipates that air over pressure readings will be well within the safe zone as it relates to the guidelines set by the U.S. Bureau of Mines for open blasting. Adjacent improvements are not expected to be affected by vibration generated by explosive demolition of this structure.

8.7 ADJACENT PROPERTY PROTECTION

Any debris displaced by the detonation of the explosives at the base of the stack will be contained by use of a chain link fence and corrugated metal or plywood placed according to CDI's (or equivalent's) design.

8.8 SITE SECURITY

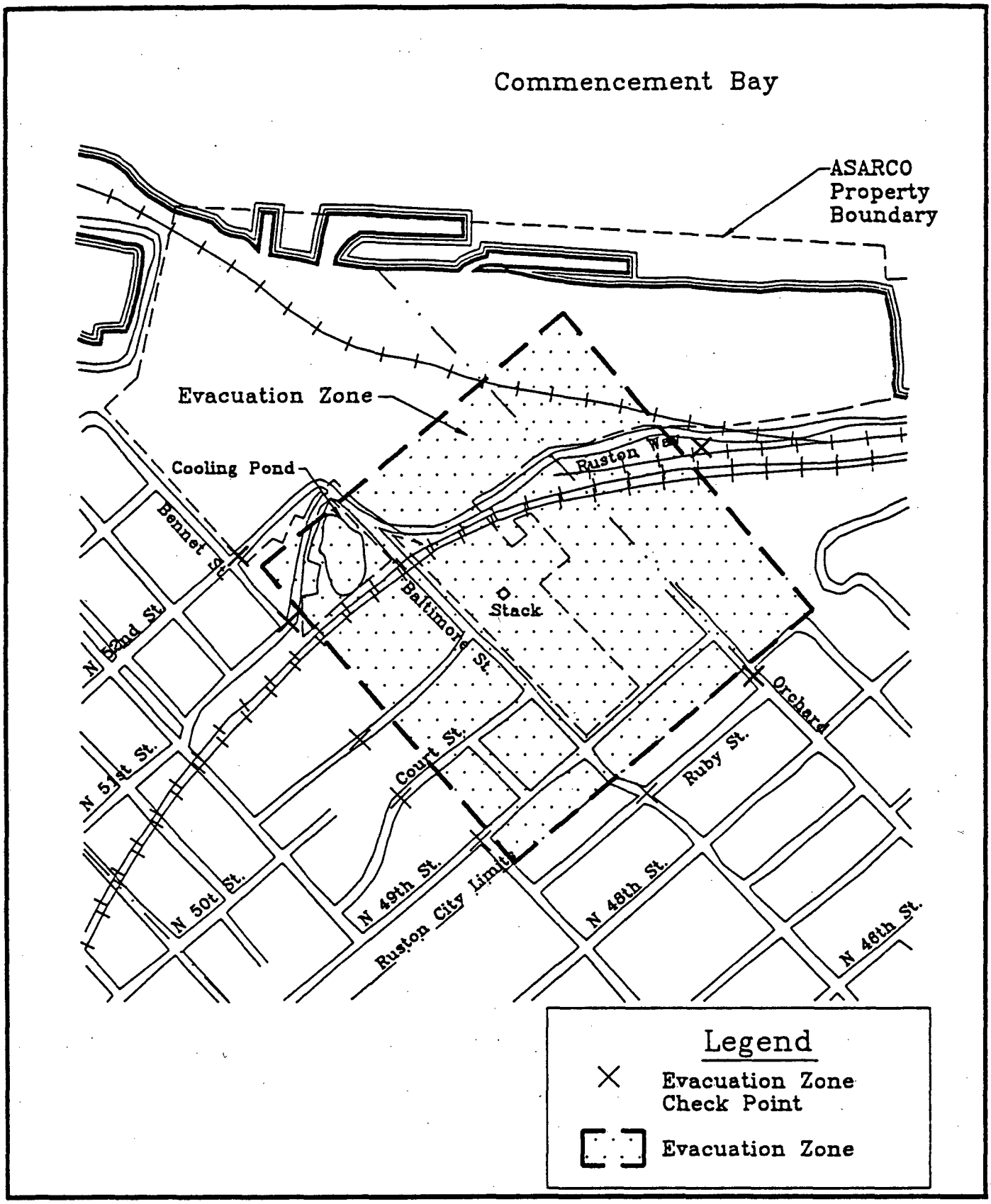
Before demolition, a safety perimeter will be established by the explosive contractor and the demolition contractor. This safety perimeter will be cordoned off to prevent access by unauthorized personnel. Area-wide security will be coordinated with appropriate local officials including police and fire departments. Asarco will provide additional security personnel as necessary.

8.9 EVACUATION ZONE AND PROCEDURES

As part of site security measures established to implement the stack removal plan, individuals living within an approximate radius of 1,000 feet from the stack will be evacuated as a precautionary measure during the period of stack collapse. Although it is anticipated that all stack debris will be contained within 200 feet southeast of the structure, the explosives experts recommend evacuating all residents at a distance of approximately twice the height of the stack (the stack is 562 feet high) as an extra safety precautionary measure. It is estimated there are approximately 36 homes within a 1,000-foot radius of the stack (Figure 8-3).

8.10 COORDINATION WITH LOCAL AUTHORITIES

All evacuation measures and community relations planning will be coordinated with the appropriate agencies including local police and fire departments.



Scale: 1" = 600 feet

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NORTH

Figure 8-3.
Evacuation Zone During
Stack Collapse

With the assistance of CDI (or another equivalent contractor), Asarco will coordinate procedures with the appropriate authorities early on in the planning process for the stack demolition. This will include contacting residents located within the immediate evacuation area, planning the event with the Town of Ruston and the City of Tacoma to ensure adequate security is provided. This may require Asarco to provide for some of the additional security needed to complete this project.

8.11 HEALTH AND SAFETY PLAN

The prescribed measures presented in the Asarco Health and Safety Plan will be closely observed and adhered to. All requirements will be met including those related to instruction materials and training, use of worker protective equipment, use of shower facilities and change rooms, personal air sampling, and medical monitoring.

Blasting procedures to be followed are in the Demolition Safety Manual as prepared by the National Association of Demolition Contractors under funding by the United States Department of Labor and Occupational Safety and Health Administration. These measures will be incorporated into the contractor's operation specific health and safety plan.

8.12 DUST CONTROL

Photos of the interior of the stack taken in 1986 reveal that the interior of the stack is relatively clean and little dust remains. There is no heavy coating of material and the brick liner and mortar are readily visible. However, it is expected that some dust would be generated during the demolition process. Consequently, all practicable precautions will be

implemented during the demolition process to prevent fugitive dust emissions from being discharged into the atmosphere. Applicable or relevant and appropriate requirements of federal, state and local laws and regulations, including those of the Puget Sound Air Pollution Control Agency will be followed.

A dust suppression system will be installed covering the area where the stack will be demolished to assist the immediate precipitation and suppression of any resulting dust emissions. The demolition contractor will construct a water curtain system to provide the most effective workable suppression system to contain the emissions in the area designated at the fall area.

This system will utilize rain-bird commercial-grade impactor sprinklers with 1-1/4-inch-diameter intake, capable of disbursing more than 500 gallons of water per minute over an 89-foot radius thereby blanketing the entire potential risk area. This type of impactor sprinkler, when mounted on a 16-foot-high rain tower and placed on top of an earthen embankment, will discharge water over the area at an elevation in excess of 36 feet above the existing ground level. An embankment will be constructed 6 feet above existing ground level from excavated material located within the fall area. The embankment provides a margin of safety by containing the demolished stack in addition to providing a more effective elevation for the hydraulic envelope. Figure 8-4 shows the stack collapse area and the dust suppression sprinkler system.

After the embankment and sprinkler system has been built, the dust suppression system will be tested. The drain system installed in the base of

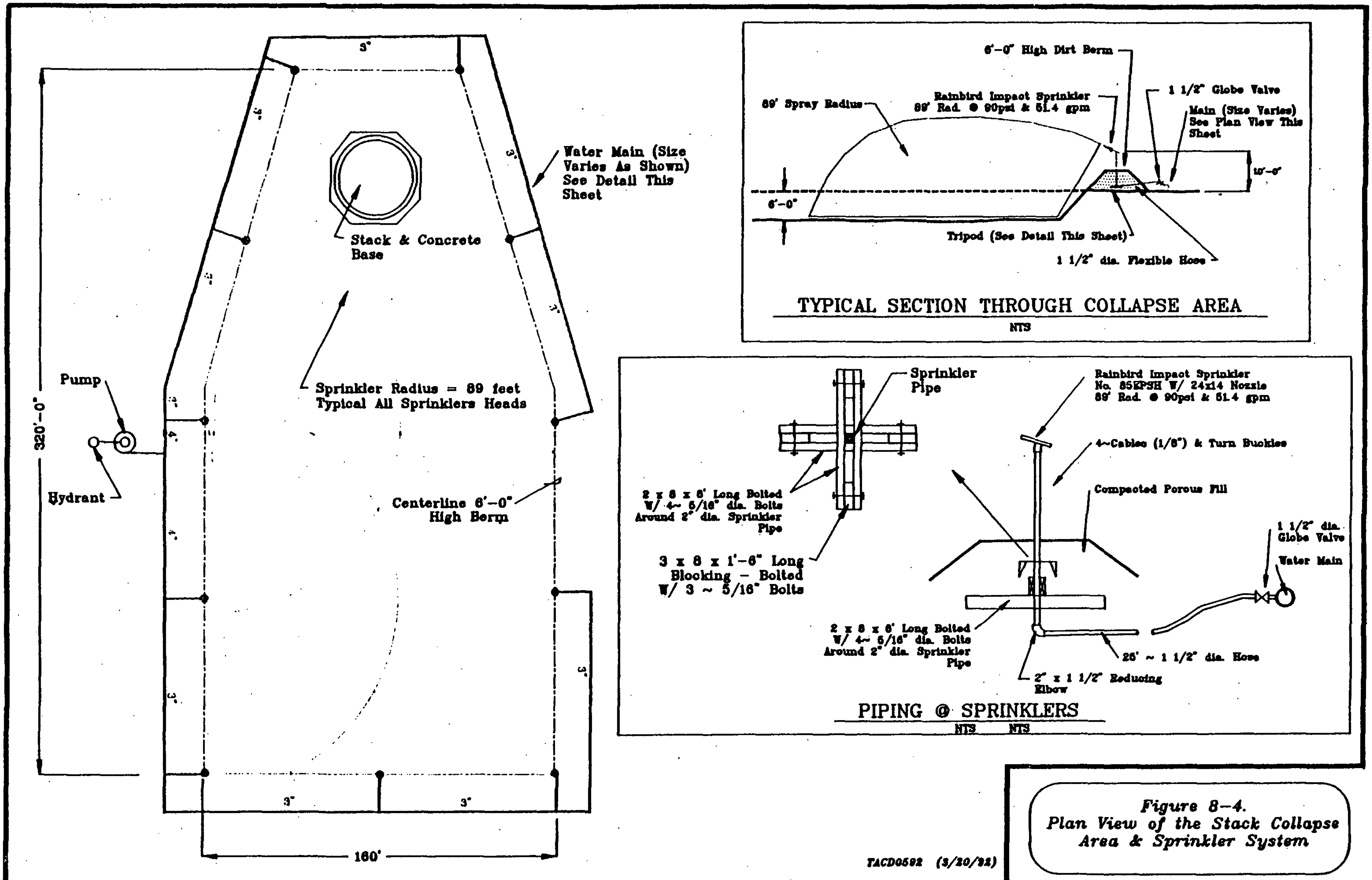

Figure 8-4.
Plan View of the Stack Collapse Area & Sprinkler System

this containment will collect and prevent penetration of water into the ground.

8.13 AIR MONITORING

For 24 hours before the actual demolition of the stack and for 24 hours following that demolition, Asarco will operate four low-vol air monitoring stations in the vicinity of the stack. Location of the four low-vol samplers will be as agreed to by EPA and Asarco. Following monitoring, the samples will be analyzed for arsenic, lead and cadmium at the Asarco Technical Services laboratory in Salt Lake City. Results of the sampling will be made known to EPA as soon as it is available. Additional air monitoring details are presented in the Interim Action Air Monitoring Plan.

8.14 TEMPORARY STORAGE OF STACK DEBRIS

After stack demolition is completed, the demolition contractor will consolidate and smooth out the pile of debris, so it is evenly distributed throughout the bermed area. The debris will then be covered with artificial cover, such as a plastic liner or clean soil to control wind dispersal and infiltration from precipitation.

A drainage line will be installed to transfer water which enters the French drain system underlying the storage pile to the water evaporation system. If necessary, water will be pumped from the debris storage area to the waste water evaporation system. The nearest location for connection to the system evaporation is on the east side of the stack hill area.

After the pile is consolidated, the vicinity around the storage area will be inspected to ensure surface water runoff does not enter the pile or undermine the storage facility. If necessary, diversion channels will be constructed and maintained to prevent this from occurring. Surface water controls are addressed in detail in the Surface Water Run-on Plan.

The pile also will be inspected to ensure water is not running off the area which has come into contact with potentially contaminated debris.

During the stack demolition process, at least seven groundwater monitoring wells may have to be abandoned. These wells are identified as MW-11, B-17, B-22, B-19, B-20, B-18, and B-21 (see Figure 8-5). For the most part, these wells are shallow, and are not producing water. Prior to demolition, all wells will be properly abandoned pursuant to all applicable state regulations. Following demolition of the stack and securing the storage pile, the need for well replacement will be evaluated. Well replacement will be dependent on any future ongoing monitoring program requirement relative to on going studies of the smelter site.

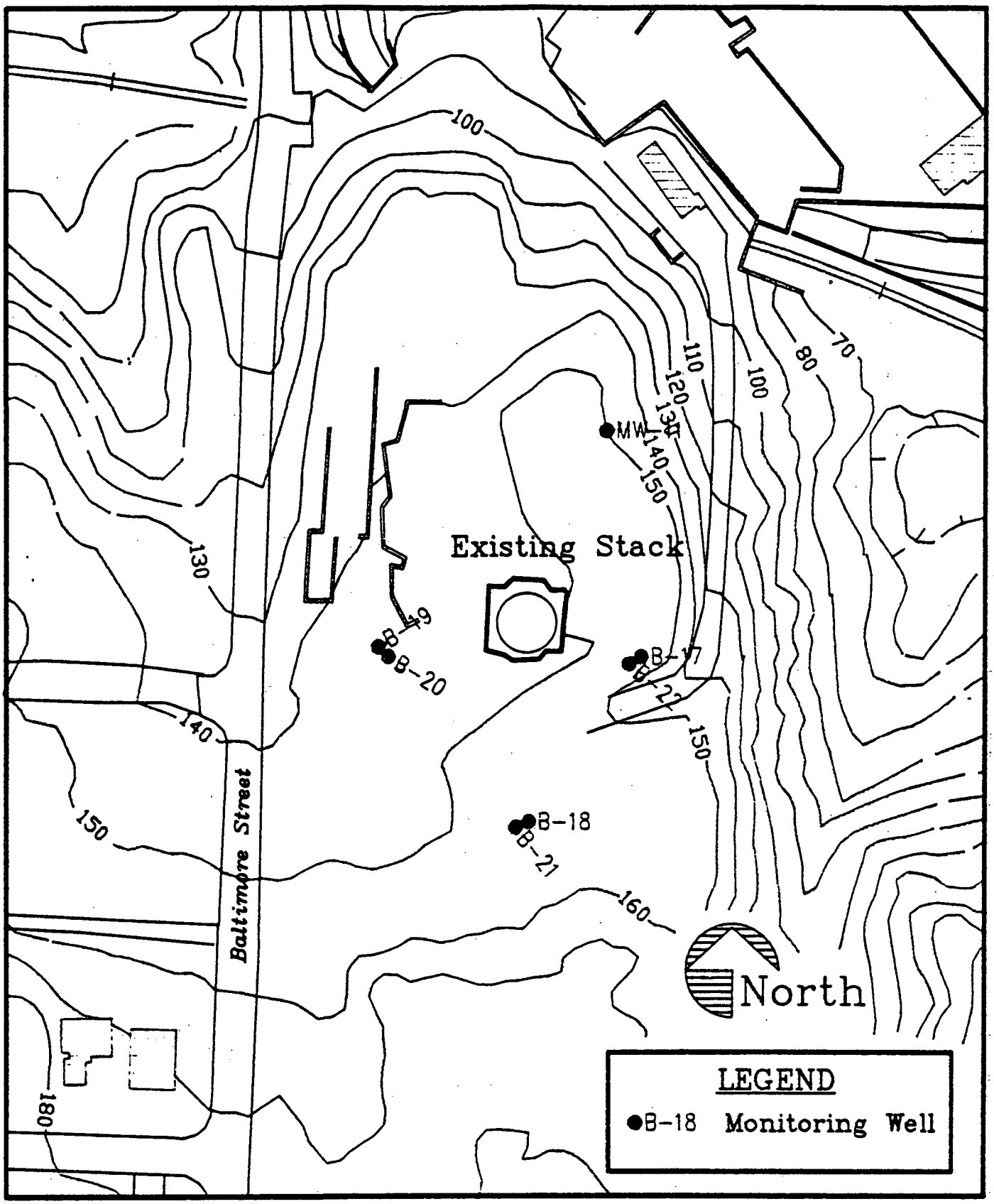

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Figure 8-5.
Stack Area Monitoring Wells

9.0 INTERIM REMEDIAL ACTION DEMOLITION PLAN SCHEDULE

The interim remedial action schedule is in Table 9-1. The timing of many elements of the interim remedial action, including document preparation, are interrelated and somewhat dependent on timing of the entering of the consent decree. Preparation of bid documents is dependent on the timing of completed work plan documents which are to be attachments to the packages and provide necessary information to potential contractors.

An estimate of the time required for construction work associated with plant site demolition is also presented in Table 9-1. Best estimates presently available indicate about 104 weeks, or two years would be required for demolition of plant site structures. The present schedule details will probably change somewhat as contractors are procured, on-site plans are refined, and as information from the selected demolition and construction contractors becomes available.

09-Apr-92

Table 9-1 Interim Action Management Strategy Plan Schedule.

PROJECT or EVENT	KEY ACTIVITY	TARGET DATE/ DELIVERABLE DUE	TIME LINE 1992 J	F	M	A	M	J	J	A	S	O	N	D	1993 J	F	M	A	M	J	J	A	S
Consent Decree	Enter Decree in Federal Court	04/15/92 **				++																	
	Submit Support Documents to EPA (Proof of insurance, terms summary, financial assurance, payment etc.)	04/30/92 **				----																	
Document Requirements	Management Strategy Plan	02/13/92 **	----	-!																			
	EPA Review and Comment	03/01/92		++	!																		
	Revised Management Strategy Plan	04/06/92 **			---	!																	
	Surface Water Run-on Plan	04/06/92 **	--	----	----	!																	
	Pre-Demolition Work Plan	04/06/92 **		----	----	!																	
	Demolition and Disposal Work Plan	04/13/92 **		----	----	-!																	
	Sample and Analysis Plan	04/13/92 **	--	----	----	-!																	
	Comprehensive Requirements Work Plan		>>>>	>>>>	>>>>	>>>>	>																
	Health and Safety Plan	04/13/92 **		----	----	-!																	
	Fire Protection Plan	04/13/92 **		----	----	-!																	
	Dust Control Plan	04/06/92 **		----	----	!																	
	Air Quality Monitor Plan	04/27/92 **		----	----	---																	
	Cultural Resources Plan	04/06/92 **		----	----	!																	
	Construction and QA Plan	04/27/92 **		----	----	---																	
	O and M Work Plan	05/04/92 **		----	----	----	-																
Contractor(s) Selection	Prepare Bid Packages and Distribute To Contractors for Proposals ***	06/21/92 **		----	----	----	----	---															
	Review and Rank Proposals	07/07/92						-	-														
	Prepare Contracts	07/15/92			----	----	----	----	--														
	Select Contractor(s)	07/22/92							-														

>>>> Overall Project Time Line --- Interim Action Time Line. +++ Agency Action Time Line for Review. ! Milestone Completion.

** Document requirements are contingent on timing of entering of the Consent Decree; however, earlier preparation and submittal to EPA will be implemented when possible.

*** Work plans are a necessary part of the bid package, and successful bids and project implementation cannot be completed without work plans as project guidance.

9-Apr-92

able 9-1 continued) Interim Action Management Strategy Plan Schedule.

ROJECT or VENT	KEY ACTIVITY	TARGET DATE/ DELIVERABLE DUE	TIME LINE 1992 J	F	M	A	M	J	J	A	S	O	N	D	1993 J	F	M	A	M	J	J	A	S
ontractor(s) election	Notify EPA of General Contractor	07/27/92																					
PA Review nd Approval	Review and approval of all plans by EPA. ***	06/15/92				+++	++++	++															
urface Run-on odifications	Cooling Pond Area Run-On Controls and Stack Hill Run-On Controls	10/01/92								----	----												
	Prepare Decontamination Water Control Areas and Dust Suppression Water Control Areas	10/01/92								----	----												
re-Demolition ctivities	Modify Ore Enclosure or Prepare Sprung Structure for Temporary Disposal area.	12/01/92									----	----	----										
	Prepare Wood Converter System	12/01/92									----	----	----										
	Remove and Dispose Materials, Reusable Equipment, and Dust with Elevated Metal Concentrations from Buildings and Structures.	Dependent on Demolition Schedule																					
	Remove and Dispose Asbestos-Containing Materials	Dependent on Demolition Schedule																					
	Remove Ship to Shore Oil Line	Dependent on Demolition Schedule																					
	Survey of Roads and Tunnels Potentially Used for Transportation.	09/15/92								----	--												

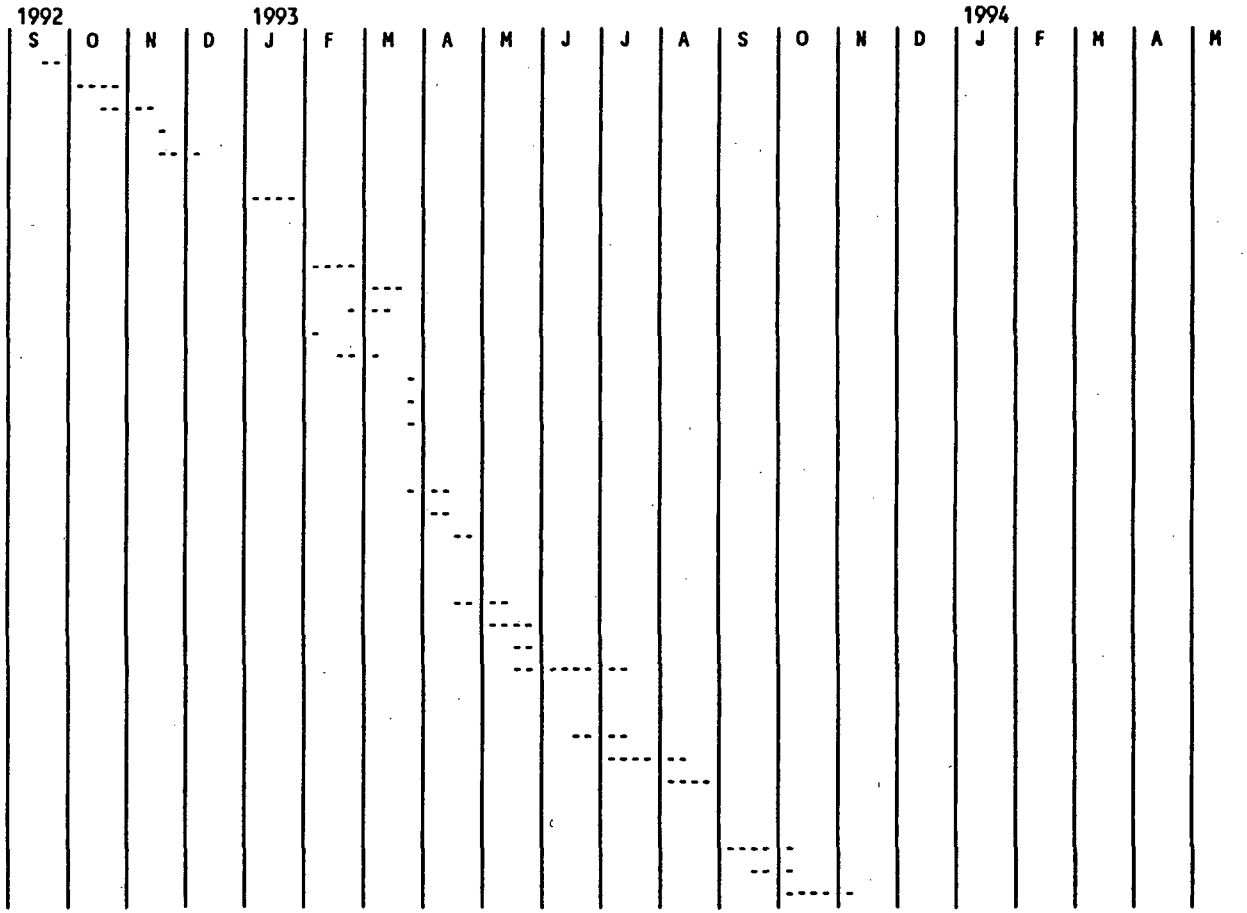
---- Interim Action Time Line. +++ Agency Action Time Line for review.

*** Work plans are a necessary part of the bid package, and successful bids and project implementation can not be completed without work plans as project guidance.

09-Apr-92

Table 9-1 (continued) Interim Action Management Strategy Plan Schedule.

PROJECT or EVENT	KEY ACTIVITY	TARGET DATE/ DELIVERABLE DUE	TIME LINE
Demolition Stack	Mobilization	Dates are Approximate and Subject to Change.	
	Trench Construction		
	Drilling Prep Work		
	Stack Collapse		
	Debris Consolidation and Cover		
Demolition Plant Structures	Mobilization		
	Area 4		
	Crushing and Sampling Mill		
	Martin Mill		
	Conveyor Gallery		
	Belt Gallery		
	Bucking Mill		
	Sack Cutting Building		
	Sack Storage		
	Miscellaneous		
	Area 6		
	Fine Casting Building		
	Nickel Plant		
	Miscellaneous		
	Area 2		
	Acid Plant Building		
	Plate Treater Building		
	Mist Precipitator Building		
	Reverb/Boiler		
	Area 3		
	Converter Cottrell		
	Mist Precipitator and Scrubbers		
	Sulfuric Acid Plant		
	Area 5		
	Anode Area		
	Refinery By-Products Area		
	Number 3 Refinery		



--- Interim Action Time Line. Dates are approximate and may change as additional details are received from demolition contractors.

Table 9-1 (continued) Interim Action Management Strategy Plan Schedule.

PROJECT or EVENT	KEY ACTIVITY	TARGET DATE/ DELIVERABLE DUE	TIME LINE 1993 S	O	N	D	J	F	M	A	1994 M	J	J	A	S	O	N
Demolition Plant Structures	Area 7																
	Main Shops and Building				---												
	Carpenter/Electric Building				--												
	Main Changehouse				--												
	Warehouse					-											
	Oil House and Tanks					---											
	Garage				--												
	Pattern Storage					--											
	Area 8																
	Number 1 Refinery						----	--									
	Number 2 Refinery							----	--								
	Powerhouse								--								
	Oil Storage Tank									-							
	Engineering/Laboratory/Plastic Shop									---							
	Area 9																
	Converter Building										----	--					
	Herreshoff Roaster												----				
	Baghouse											----					
	Arsenic Fan Building													--			
	Acid Storage Tanks													--			
	Overhead Conveyors				--												
	Area 10																
	Main Office														--		
	Employment Office														--		
	Changehouse														--		
	Boiler Tube Storage														-	--	
	Silica Shed														-	--	
	Demobilization															--	--

--- Interim Action Time Line. Dates are approximate and may change as additional details are received from demolition contractors.

10.0 REFERENCES

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Puget Sound Air Pollution Control Agency

Registration No. 10093

Notice of Construction No. 3652

Date OCT 2 3 1990

HEREBY ISSUES AN ORDER OF APPROVAL TO CONSTRUCT, INSTALL, OR ESTABLISH

The use of Converter No. 1, 30' long by 13' diameter, to incinerate wood; controlled by 11 modules of the Fuller Baghouse formerly used to control the Herreshoff Roasters (NC1629) at 220,000 cfm (max) and 44,133 cfm (expected average) at 245F.

CURTIS DUNGEY

APPLICANT
ASARCO INC
PO BOX 1677
TACOMA WA 98401-1677

OWNER
ASARCO INC
PO BOX 1677
TACOMA WA 98401-1677

INSTALLATION ADDRESS

ASARCO INC, N 51ST & N BALTIMORE ST, RUSTON, WA, 98402

THIS ORDER IS ISSUED SUBJECT TO THE FOLLOWING RESTRICTIONS AND CONDITIONS

1. Approval is hereby granted as provided in Article 6 of Regulation I of the Puget Sound Air Pollution Control Agency to the applicant to install, alter or establish the equipment, device or process described hereon at the INSTALLATION ADDRESS in accordance with the plans and specifications on file in the Engineering Division of PSAPCA.
2. Compliance with this ORDER and its conditions does not relieve the owner or operator from the responsibility of compliance with Regulations I, II or III, RCW 70.94 or any other emission control requirements, nor from the resulting liabilities and/or legal remedies for failure to comply.
3. This approval does not relieve the applicant or owner of any requirement of any other governmental agency.
4. ASARCO shall construct and operate this equipment in accordance with the "Final Performance Specification for the No. 1 Converter Furnace for the Incineration of Wood Demolition Debris".

HARRY A. WATTERS
Reviewing Engineer

HAW

Anita J. Frankel
Air Pollution Control Officer

Form 50-118, (1/85)