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RECORD OF DECISION

COMMENCEMENT BAY NEARSHORE/ TIDEFLATS SUPERFUND SITE

OPERABLE UNIT 02

ASARCO TACOMA SMELTER FACILITY RUSTON AND TACOMA, WASHINGTON

March 1995

U.S. Environmental Protection Agency

Region 10

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DECLARATION FOR THE RECORD OF DECISION

Site Name and Location

Commencement Bay Nearshore/Tideflats Superfund Site
Operable Unit 02 -- Asarco Tacoma Smelter Facility and Slag Peninsula
Ruston and Tacoma, Washington

Statement of Basis and Purpose

This decision document presents the selected remedial action for the former Asarco Tacoma Smelter Facility and adjacent slag peninsula, in Ruston and Tacoma, Washington, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record for this site. The State of Washington concurs with the selected remedy.

This Record of Decision (ROD) describes the final cleanup remedy for soil, slag and surface water and disposal of hazardous soils, demolition debris, and residential soils. This ROD is intended to be an interim action for ground water.

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 or substantial endangerment to public health, welfare, or the environment.

Description of the Selected Remedy

EPA has divided the Commencement Bay/Nearshore Tideflats Superfund site into seven operable units (OUs) in order to facilitate the investigation, analysis, and cleanup of this very large site. Four of these OUs are associated with the former Asarco smelter:

- OU 02 Asarco Tacoma Smelter and Slag Peninsula
- OU 04 Asarco Off-Property (Ruston/North Tacoma Study Area)
- OU 06 Asarco Sediments
- OU 07 Asarco Demolition

The remedy described in this ROD addresses OU 02 and involves the cleanup of metal (e.g., arsenic, copper, lead) and organic contaminated soil, slag, and surface water and

ground water found at the former smelter facility and adjacent slag peninsula. This remedy will address the principal threats posed by conditions at the Site, which are areas that continue to act as the primary known sources (source areas) of contamination to ground water and surface water that are flowing into Commencement Bay. The remedy includes the following elements:

- Excavate source area soils and slag (approximately 160,000 cubic yards).
- Dispose of source area soils and demolition debris designated as hazardous waste (approximately 240,000 cubic yards total) in an on-site containment facility (OCF) that meets or exceeds regulatory standards for hazardous waste landfills.
- Cap the entire Site (plant site soils and slag and the slag peninsula). The low permeability cap will be composed of layers of clean soils, gravel, and clay. The contaminated residential soils excavated from the Ruston/North Tacoma Study Area will be used as a sub-base for the cap.
- Demolish the remaining buildings and structures.
- Replace the entire surface water drainage system.
- Armor portions of the plant site and slag peninsula shoreline.
- Continue to monitor the surface water and ground water.
- Sample marine sediments.
- Develop and implement an enforceable program of restrictions and guidelines to supplement the actual cleanup activities to ensure that the remedial action remains protective and that development activities do not impact the long-term effectiveness of the cleanup.

If it is determined that source control activities do not result in ground water that meets federal and state standards, additional cleanup activities, if practicable, will be identified in a separate ROD.

Statutory Determinations

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this Site. However, because treatment of the principal threats of the Site was found not to be practicable, this remedy does not satisfy the statutory preference for treatment as a principal element.

At this Site, EPA's determination that soil treatment was not practicable was based on several factors, including the effectiveness of an OCF at isolating contaminated soils and

debris from the environment, the community's stated preference during public comment for on-site containment of contaminated waste, and the nearly $30 million difference in cost between treatment and disposal of soil and disposal of soil without treatment in an OCF.

Because the remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted no less often than every five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Chuck Clarke
Regional Administrator
U.S. EPA Region 10

3/24/95
Date

DECISION SUMMARY

Commencement Bay Nearshore/Tideflats Superfund Site
Asarco Tacoma Smelter Site
Operable Unit 02
Tacoma/Ruston, Washington

1.0 SITE DESCRIPTION

The Asarco Tacoma Smelter Superfund site ("Asarco Site" or "the Site") is an operable unit (OU) of the larger Commencement Bay Nearshore/Tideflats (CB N/T) Superfund site. The CB N/T Superfund site was listed on the interim priority list by the U.S. Environmental Protection Agency (EPA) in 1981, and included in the first published National Priorities List in September 1983. The Site is located on the western shore of Commencement Bay and consists of 67 acres of property owned by Asarco, Inc. and a 23 acre slag peninsula, home of the Tacoma Yacht Club. The Town of Ruston, the City of Tacoma and the Metropolitan Park District are the three municipalities that have zoning and permitting jurisdiction at this Site. This Record of Decision (ROD) addresses contaminated soils, slag, demolition debris, surface water and ground water on the Site.

The general area of the former Asarco Smelter consists of steep slopes extending down to Commencement Bay producing bluffs along portions of the shoreline. Many of the original smelter buildings and structures were constructed on slag fill, which extended the existing shoreline when molten slag from smelting operations was poured into Commencement Bay. A car tunnel and railroad tunnel are located between the stack hill and the arsenic kitchen area. Some dense vegetation exists on steep slopes (for example, the stack hill) and along the bluffs above Commencement Bay, see Figure 1-1.

The adjacent slag peninsula is composed of different forms of slag (molten or granulated) that were poured or placed on many occasions between 1930 and 1970. Its primary surface features are the Tacoma Yacht Club building, a paved access road, and paved parking areas. An estimated 15 million tons of slag exist at the smelter property and slag peninsula.

Surface water features on the smelter property include surface water in the cooling pond and south and east stack hill areas and a number of springs and seeps around the stack hill and arsenic kitchen areas. Surface water drains into one of four drain systems and then into outfalls at the Site called the city (owned by the City of Tacoma), north, middle, and south outfalls. The latter three are owned by Asarco.

A complex pattern of ground water flows through or beneath the smelter property, including through the slag, into Commencement Bay. Three primary groundwater aquifers (water bearing zones) have been identified; two relatively shallow aquifers and one deep aquifer. A thick silt barrier exists between the shallow and deep aquifers throughout much of the Site. Because of the high degree of fractures in and porous nature of the slag, the tides bring seawater inland several hundred feet where it mixes with ground water. The ground water within each of the three aquifers is designated as either potential drinking water (Class IIB) or as non-potable water (Class III). No one is currently drinking the ground water at or near the Site.

Prior to 1890, a number of sawmills were active in the area and deposited wood waste along the shoreline. From 1890 through 1912, the property was used as a lead smelter and refinery. Asarco purchased the property in 1905 and converted it in 1912 into a facility to smelt and refine copper from copper-bearing ores and concentrates shipped in from other locations. By-products of the smelting operations were further refined to produce other marketable products, such as arsenic, sulfuric acid, liquid sulfur dioxide, and slag. Asarco ended operation of the smelter in 1985.

Metals were released into the soil, air, and Commencement Bay as a result of the smelting and refining operations. Some examples of the metals present at the Site are arsenic, cadmium, copper, lead, and zinc. Metals in slag or released into soil have migrated to surface and ground water at the Site. Ores that were smelted at the Site have left metals in the buildings and structures on the Site.

There are no listed Resource Conservation and Recovery Act (RCRA) wastes at the Site. In several areas, contaminated soils are RCRA characteristic waste because they fail the Toxicity Characteristic Leaching Procedure. Slag is not a RCRA waste under the Bevill exemption (40 C.F.R. §261.4).

There are no known floodplain zones or endangered species at this Site. There are several small areas of the Site, other than the cooling pond, that have been identified as potential wetlands. If these areas are confirmed as wetlands and if remediation occurs in these areas, the extent of mitigation will be determined during remedial design.

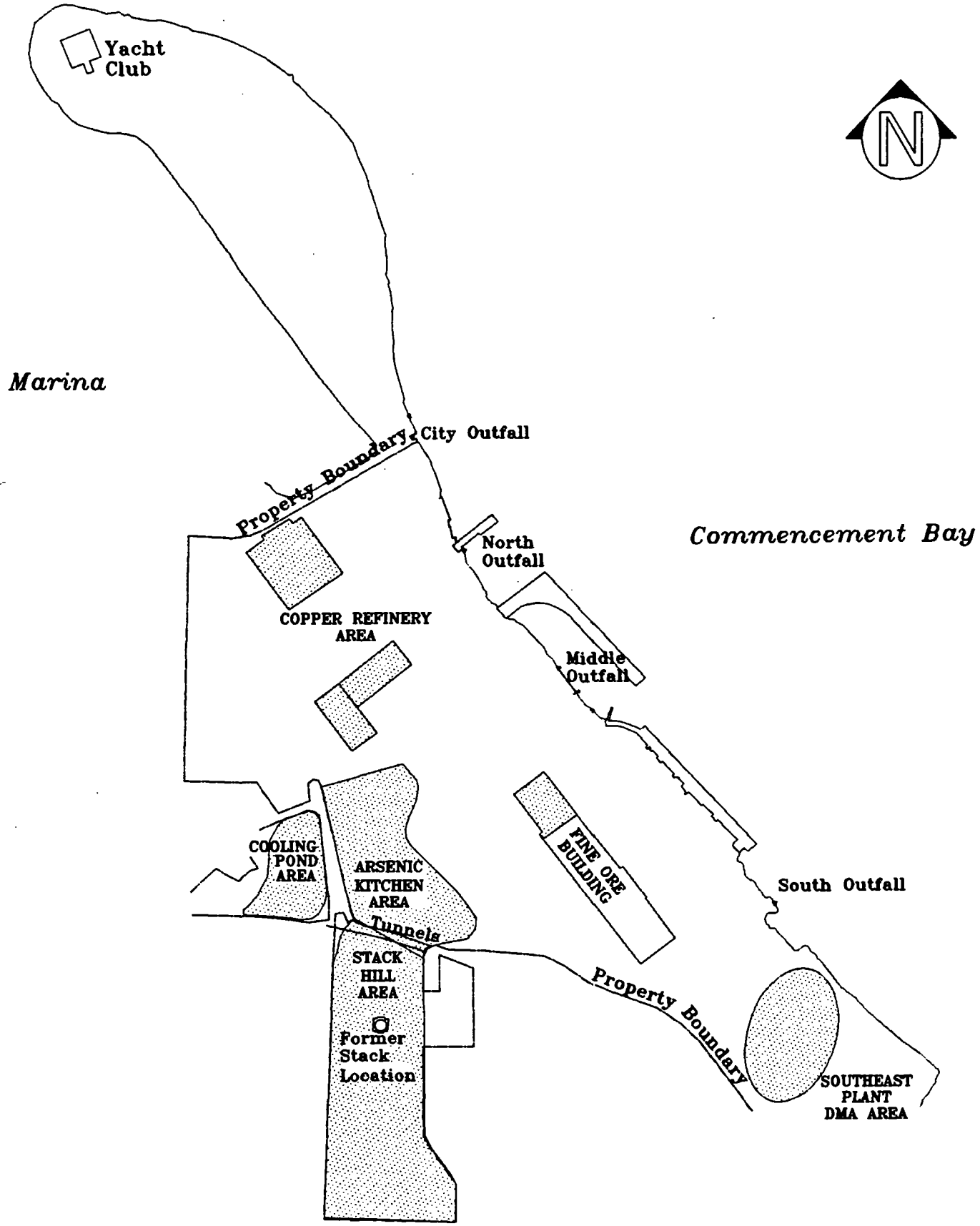

FIGURE 1-1: SMELTER SITE & SLAG PENINSULA

Key: Source areas (identified source areas of contamination to ground water)

Note: See Tables B-3 & B-4 in Appendix B for Soil and Class III Ground Water Concentrations

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 HISTORICAL SITE ACTIVITIES

During the active industrial life of the Asarco Tacoma Smelter, the primary product was refined copper. By-products of the copper smelting process 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 former Asarco Tacoma smelter.

1890	Began operation as a lead smelter under ownership of the Tacoma Smelter Company.
1902	Copper production was 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.
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. Since January 1987, Asarco has completed two phases of demolition activities at the Site. Facilities in the stack area associated with copper smelting and the production of both arsenic trioxide and metallic arsenic were demolished in 1987-1988 during Phase I Site Stabilization. The majority of the remaining building and structures, including the smelter stack, were demolished in 1992-1994 during Phase II Site Stabilization. Much of the Site (where these facilities were located) has been leveled and, to a minor extent, graded.

2.2 ENFORCEMENT ACTIVITIES

The history of regulatory activities affecting the former 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 to 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 July of 1983 EPA issued proposed standards for arsenic under Section 112 (National Emission Standards for Hazardous Air Pollutants) of the Clean Air Act. Inorganic arsenic had been

designated as a hazardous air pollutant in 1980 and the Asarco smelter was a major source of arsenic. The proposed standard for Asarco, requiring hoods on the converters used in the smelting process, was modified after public comment to require, in addition to the hoods, better management practices in handling arsenic contaminated materials. These regulations were never implemented due to a decision by Asarco to cease copper refining in 1985.

In September 1986, Asarco signed an Administrative Order on Consent (AOC) with EPA pursuant to Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), in which Asarco agreed to conduct a Remedial Investigation and Feasibility Study (RI/FS) and perform immediate site stabilization activities. Asarco's contractors began the RI/FS in 1987 under EPA oversight. Site stabilization, Phase I and II, were both conducted based on the information collected during the initial investigation of the Site.

In December 1990, EPA issued a ROD for demolition of structures and construction of a surface water diversion system. Asarco agreed to perform this work in a consent decree dated May 18, 1992.

The field investigation and evaluation of remedial alternatives for a final RI/FS was concluded by Asarco in January 1993 and was used to develop a final Site remedy.

In addition to the smelter property itself, Asarco is a responsible party for three closely related OU of the CB N/T Superfund Site, known as Ruston/North Tacoma Study Area, Asarco Sediments and Demolition. These units are reviewed below in the Section 4.0, "Scope and Role of Operable Units."

The following is a brief chronological summary of enforcement activities associated with the former Asarco Tacoma smelter.

1986	AOC for RI/FS and Phase I site stabilization signed.
1988	Phase I Site stabilization (demolition) activities completed.
1989	Draft RI/FS submitted.
1989	AOC for Expedited Response Action in Ruston/North Tacoma signed.
1990	Notice of Violation for RI/FS issued.
1990	Interim ROD for Phase II Site stabilization (demolition) and surface water controls issued.
1991	Additional investigation of soils and groundwater contamination commences.
1992	Notice of Violation resolved.
1992	Consent Decree for demolition entered in federal court.
1992	Fifth Amendment to the 1986 AOC revising the schedule for the draft and final RI/FS submittals signed.[1]
1993	Two stipulated penalties for late draft FS submittals paid by Asarco.
1993	ROD for Ruston/North Tacoma Study Area issued.
1993	Unilateral Administrative Order for Ruston/North Tacoma Study Area issued.
1993	Final RI/FS reports for smelter cleanup submitted and approved.
1994	AOC for Ground Water, Surface Water, Soil and Marine Sediments monitoring and sampling signed.

[1] Amendments 1-4 for the AOC also included revised schedules for the performance of RI/FS work.

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

Throughout the studies leading up to this ROD, EPA has taken steps to inform and involve the public about activities at the Asarco Smelter site. EPA conducted the activities summarized in this section because the agency believes that community involvement in its decision making process is a key element in developing a successful cleanup plan.

In addition to cleaning up contamination at the Asarco Site, the community is very interested in the future use of the property. Although it is EPA's primary mission to design a cleanup plan that protects public health and the environment, EPA believes this can be done with future development of the Site in mind. Therefore, EPA has considered all comments related to the future of the Asarco Site when selecting cleanup actions.

In order to provide a variety of opportunities for public participation in the cleanup decision making process, EPA developed a communications strategy in 1993 for its activities related to the Asarco Site. This strategy supplemented the existing Community Relations Plan, which included all of the Commencement Bay Nearshore/Tideflats and South Tacoma Channel Operable Units.

This section summarizes the outreach activities that EPA has conducted to date. In addition to the activities discussed below, EPA has complied with the specific requirements for public participation under CERCLA by publishing a Proposed Plan for public comment on August 12, 1994. The Proposed Plan was mailed to interested individuals and made available at local information repositories (listed in Table B-1 in Appendix B). The original public comment period ran from August 12 through October 11, 1994, and was extended until November 10 at the request of interested citizens. During the comment period EPA held two public meetings. In addition, a summary fact sheet was mailed to EPA's mailing list for the Asarco Site. EPA also published newspaper advertisements in the Morning News Tribune to announce the availability of the Proposed Plan, the comment period and the public meetings. Comments received during the public comment period are summarized along with EPA's responses in the attached Responsiveness Summary.

In addition to the public comment period, the following outreach activities were conducted by EPA:

Small Group Meetings. EPA staff members have attended meetings with groups upon request to share information about the agency's cleanup proposal, and to learn about different groups concerns and needs for information about the Site. These groups include: Black Collective Association; Izaak Walton League; Association of Builders and Contractors; Tacoma Environmental Commission; National Association of Women In Construction; Association of General Contractors; American Institute of Architects Southwest Washington; Environmental Task Force of Tacoma-Pierce County Chamber of Commerce; Kiwanis Club and Rotary Club.

EPA staff will continue to meet with small groups as requested.

Community Interviews. In November 1993 EPA staff met with individual citizens to understand better community concerns regarding cleanup.

Availability Sessions. In October, November and December 1993, EPA and Asarco held sessions where citizens could visit one-on-one with EPA and Asarco staff to discuss cleanup plans.

Community Workgroup Briefing. On May 19, 1994, EPA held a meeting for the Ruston/North Tacoma Community Workgroup. This workgroup was formed in 1989 to provide an avenue for citizens to become involved in residential investigation and cleanup activities. EPA presented a preview of its Preferred Cleanup Alternative at the meeting in order to get feedback and comments from the group.

Public Meetings. EPA held two public meetings during the 90-day public comment period on the Proposed Plan. At the meetings participants learned more about EPA's Proposed Plan and had the opportunity to provide public comments. Transcripts were taken of these two meetings (held August 30 and September 19, 1994) and are available in EPA's Administrative Record for the site.

Periodic Briefings. Briefings have been held for the Town of Ruston, City of Tacoma, Tacoma Environmental Commission, Congressman Dicks' Office and other interested local government officials.

Information Repositories. EPA has established and updates ten repositories where citizens can review detailed information about EPA's Superfund activities. New materials are periodically added to these repositories. Documents subject to public comment can also be found in these locations. The repositories are frequently advertised in fact sheets and in newspaper notices prepared by EPA.

Fact Sheets and Brochures. EPA prepares regular fact sheets for distribution to members of the community to provide current information on the status of site activities. Table B-2 in Appendix B, identifies a list of fact sheets and brochures published about the Asarco Site prior to this ROD.[2]

Coordinating Forum. In July of 1993, the Ruston/North Tacoma Coordinating Forum turned its attention to evaluating cleanup options for the Asarco Tacoma Smelter. The group was originally formed in March 1991 to facilitate discussion and coordination among the various entities involved and/or affected by the Ruston/North Tacoma Residential Study Area project.

In order to address issues associated with cleanup and future redevelopment of the Asarco smelter, the group formed two subcommittees: 1) land use, and 2) technical. The two committees worked for over a year on issues related to developing a cleanup plan for the smelter site. EPA participated directly in the technical subcommittee and received input from the land use committee. Input from both of these committees was instrumental to EPA in developing the Proposed Plan, which was published in August 1994. The following parties participated in the Forum subcommittees:

Land Use Subcommittee*:

Asarco
City of Tacoma
Metropolitan Parks District

[2] Fact sheets devoted exclusively to demolition activities are not included in this list.

Town of Ruston

* All land use subcommittee members were also represented on the technical committee.

Technical Subcommittee:

Agency for Toxic Substances and Disease Registry
Citizens for a Healthy Bay
Community Representative
Environmental Protection Agency
Puget Sound Air Pollution Control Authority
Puyallup Tribe of Indians
Tacoma-Pierce County Health Department
U.S. and State Fish and Wildlife Services
Washington Department of Ecology
Washington Department of Health
Washington Environmental Council

Technical Assistance Grant. In 1991 EPA awarded a Technical Assistance Grant (TAG) to the Citizens For A Healthy Bay. Citizens For A Healthy Bay have used these funds to have technical experts review and comment on cleanup design documents, prepare information for the general public on cleanup work, and prepare information for non-English speaking people who may fish or work on Commencement Bay. They have an office in downtown Tacoma which is open to the public and serves as an information repository for the Commencement Bay and Asarco Superfund sites. They also publish a quarterly newsletter which covers a wide-range on environmental issues associated with Tacoma.

4.0 SCOPE AND ROLE OF OPERABLE UNITS

Superfund response activities at the CB N/T Site currently are coordinated under seven separate OUs. Four of the OUs are related to the Asarco Superfund project. They are:

OU 02 - Asarco Tacoma Smelter
OU 04 - Asarco Off-Property (Ruston/North Tacoma)
OU 06 - Asarco Sediments
OU 07 - Asarco Demolition

The remedy described in this ROD addresses cleanup of OU 02, the Asarco Tacoma Smelter. It primarily involves the cleanup of metal-contaminated soils, slag, surface water and ground water. It also addresses the final disposal of demolition debris, the Expedited Response Action (ERA) soils and the Ruston/North Tacoma residential soils.

4.1 SCOPE OF CURRENT WORK

4.1.1 OU O2 - Asarco Tacoma Smelter

Based on its evaluation of human health and ecological risks associated with existing conditions at the Asarco Site, EPA believes that current conditions on the Asarco Site pose unacceptable risks over the long-term to future potential workers, residents and visitors, and to the ground water discharging to Commencement Bay. Therefore, cleanup actions are necessary. EPA's goal is to reduce potential exposures to metal and organic contaminants by removing contaminated soils that act as source areas to the surface water and ground water, by capping the Site (soil and slag) surfaces and by armoring the slag shoreline. Soil removal or capping contaminated soils and slag is expected to reduce the contaminants that are carried into Commencement Bay by surface water and/or ground water and prevent direct contact with the soil and slag by humans and animals.

This ROD describes the final cleanup remedy for soil, slag and surface water and disposal of hazardous soils, demolition debris and residential soils. This ROD is intended to be an interim action for ground water.

Site Development Planning

Concurrent with EPA's efforts to design a cleanup plan, Asarco, the Town of Ruston, the City of Tacoma, and the Metropolitan Park District formed a "land use committee" and hired consultants to help the group develop a Master Use Plan for future development of the Site after cleanup.

This effort involved significant citizen participation. Asarco and the land use committee held four week-long public forums called "Asarco Weeks" over an eight-month period to solicit ideas regarding the future use of the Asarco property. These efforts resulted in an "Agreement in Principle," negotiated by Asarco, the City of Tacoma, the Town of Ruston, and the Metropolitan Park District of Tacoma, that outlines a proposal for development of the Asarco Site, including responsibilities among the signatories for such development.

The "Agreement in Principle" adopts the "G-2.1" concept, the consensus approach resulting from the Asarco Weeks, and provides general guidelines for open space and development zones,

such as commercial, residential, recreational, marine, and mixed uses, and for surface roadways. The G-2.1 concept provides for a park centered on the Site with a setback traffic center and a crescent-shaped development area fronting on grassy areas facing Commencement Bay. The park would extend from Ruston Way to Point Defiance Park.

Although the "Agreement in Principle" and this ROD are separate documents, they contain some common elements. They are separate because they represent different objectives and types of decisions regarding the smelter property. The purpose of the ROD is to document EPA's cleanup decision for the Site. Under the Superfund law, EPA has the authority to select and implement cleanup actions. In contrast, the "Agreement in Principle" outlines a proposal for development of the property after cleanup. The property owners, Asarco and the Park District, and the local governments with jurisdiction over the property, Tacoma and Ruston, have the authority to determine how the property can be used in the future after the cleanup has been completed.

4.2 OTHER RELATED ACTIVITIES

4.2.1 OU O4 - Asarco Off-Property (Ruston/North Tacoma Study Area)

The initial action for the Ruston/North Tacoma Study Area was an ERA. In March 1989, Asarco and EPA entered into an agreement for Asarco to conduct the ERA in the Ruston/North Tacoma Study Area. The AOC issued under Section 106(a) of CERCLA, required Asarco to clean up and cap 11 publicly accessible properties in Ruston. Contaminated soils excavated from all of the properties are stored temporarily at the Site in a building known as the "fine ore bins building."

In June 1993, EPA issued a ROD requiring that arsenic and lead contaminated soils in residential yards and in public right of ways surrounding the former smelter facility be excavated or capped and disposed off-site. In November 1993, an Explanation of Significant Difference (ESD) was available for public comment and was subsequently signed by EPA, allowing for temporary storage of the Ruston/North Tacoma residential soils on the north end of the former smelter property. The ESD provided for these soils to be left on the former smelter site until either the final Site remedy was selected or until December 31, 1994. EPA issued a Fact Sheet in December 1994 stating that, in general, the community supported disposing these soils on site as a sub-base for a cap and that these soils would remain on site until the final smelter remedy was selected. By the end of 1994, 75 private properties had been cleaned up and 269 yards had been sampled.

4.2.2 OU O6 - Asarco Sediments

EPA issued a Supplemental Feasibility Study for the off-shore sediments in summer 1993. However, EPA, Ecology, Asarco, the Natural Resource Trustees and a community group believed that additional investigations and evaluation of the cleanup actions were necessary. In 1994, Asarco and EPA entered into an AOC requiring Asarco to collect and evaluate additional information regarding the off-shore marine sediments.

4.2.3 OU O7 - Demolition and Surface Water Controls

In November 1994, Asarco completed Phase II demolition of remaining Site structures under a federal Consent Decree signed in 1991 with EPA. Also under the Consent Decree, Asarco

controls surface water that runs onto the Site to minimize the contact of surface water with contaminated soil in the cooling pond.

The remainder of this ROD discusses only the source control activities for cleanup of OU 02, the former Asarco Smelter, and the final disposal of demolition debris, the ERA soils and the Ruston/North Tacoma residential soils.

5.0 SUMMARY OF SITE CHARACTERISTICS

Under EPA's oversight, Asarco collected and analyzed soil, slag, surface and ground water, and sediment samples at the Site.

Soil. The following contaminants were found in soils on the Site at levels that were of potential concern to human health and the environment:

Metals
Antimony, Arsenic, Cadmium, Copper, Lead, Mercury, Silver, Thallium, Zinc

Organic Chemicals
Polyaromatic Hydrocarbons (PAHs) and Polychlorinated Biphenyls (PCBs)

These contaminants in soil are of concern because (1) they are the primary source of contamination to ground water and surface water that is flowing into Commencement Bay; and (2) they are a potential health concern for humans and animal life that be exposed to the contaminants in the soil now or in the future.

Samples show that the principal threats to human health and the environment posed by the Asarco Site are the contaminated materials in the six "source areas" identified on Figure 1-1. These are areas that have either the highest measured concentrations of contaminants in the soils, appear to act as the primary known sources of contamination to ground water and surface water, and/or have large amounts of contaminated material based upon the historic uses of these areas.[3] These areas are the:

- Stack Hill
- Cooling Pond
- Arsenic Kitchen
- Copper Refinery Area
- Fine Ore Bins Building
- Southeast Area of the Plant

Soil and groundwater concentrations in the source areas are identified for both arsenic and copper in Tables B-3 and B-4, respectively, in Appendix B.

In addition to these six areas, elevated concentrations of metals were detected in soils and slag throughout the entire property. Even though certain areas are not considered principal threats to ground water, the concentrations generally are high enough throughout the Site to pose a threat if they are inhaled, ingested, or touched by people or animals.

Slag contains high concentrations of metals, including arsenic and lead, in a rock-like form. Concentrations of arsenic found in slag ranged from 100 to 24,950 ppm. The slag along the smelter shoreline is a poured matrix. The slag found on the slag peninsula is primarily fine grained, sand-like particles. The slag portions on the Site appear to contribute less

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[3] For example, the highest concentration of arsenic found in soil is 403,100 parts per million (ppm) near the arsenic kitchen area. This level is approximately 130 times higher than the highest concentration found in Ruston. The highest concentration of arsenic in ground water is located in monitoring well 111 with 52 ppm (.006 parts per million is EPA's preliminary remedial action objective). This monitoring well is down-gradient from the arsenic kitchen and fine ore bins area. See Table 3 for maximum concentrations of chemicals of concern.

contamination to ground water than the source areas described above. Slag poses a threat if ingested by people or animals. In addition, the fine slag particles on the peninsula are blown into Commencement Bay and potentially into the recreational areas of the Yacht Basin and Point Defiance Park.

The face of the slag shoreline appears to be impacted by the tidal activity in Commencement Bay. High energy currents and wave action cause erosion of the slag, which results in slag particles moving from the shoreline and being deposited into the off-shore sediments. Recently, a shoreline monitoring station was washed away.

Surface water samples were collected from seeps (ground water that surfaces from hillsides or in the tunnel), puddles, and at the outfalls that discharge into Commencement Bay. Asarco found that surface water on the Site, including seeps and small stagnant pools below the stack hill and in the arsenic kitchen area, and water in the cooling pond, is contaminated with metals at levels higher than federal or state standards for drinking water and for protection of sea life. The contaminants that exceed regulatory levels include arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel selenium, silver zinc, total petroleum hydrocarbons, and anilines.

The surface water investigation showed that the surface water drainage system on the Site is no longer adequate. The pipes and drains associated with the system may be cracked and/or the pipes filled with contaminated sediments. Surface water can become contaminated by contact with the contaminated sediments in the pipes. The contaminated surface water can then leak out of the system and migrate to ground water or discharge to Commencement Bay.

Ground Water. Three water-bearing zones (groundwater aquifers) were identified at the smelter property. The two shallowest aquifers, the slag and marine sands aquifers, show elevated levels of arsenic, copper, zinc, and other metals. A thick silt barrier between the shallow and deeper aquifers seems to have protected the deeper aquifer, the Pre-Vashon aquifer, from contamination. Only a few water samples from the deeper aquifer have elevated metal concentrations. The few exceptions may result from contamination migrating through a production well, which was drilled into the deeper aquifer during the smelter's operation. This well has now been plugged so that contamination is unlikely to continue migrating from this well into the deeper aquifer.

The three primary ways for metals to move into ground water are: (1) clean or contaminated surface water moving through contaminated soil into ground water; (2) contact between ground water and soil or slag that releases metals into ground water; and (3) leakage and spills, for example, from former process operations such as ore handling, storage, or refining, and from the existing sewer and drainage system.

Organic contamination caused by dimethylaniline (DMA) that was used in the production of sulfuric acid has been identified in the southeast corner of the smelter property. Wood debris and sawdust, left over from sawmill operations and now buried beneath the slag, are decomposing thus contributing to the release of metals, particularly arsenic, from the slag into ground water and Commencement Bay.

The metal levels in ground water decrease as ground water moves through the smelter property towards Commencement Bay. This decrease in contamination may be due to: (1) seawater or groundwater dilution; (2) metals adhering to the slag as ground water moves towards the bay; (3) metals being removed from the ground water through chemical reactions; or (4) the contaminant plume moving slowly through the smelter property.

The contaminants that exceed regulatory levels for ground water entering the bay are: arsenic, beryllium, cadmium, copper, lead, mercury, nickel, selenium, silver, zinc, total petroleum hydrocarbons, and anilines.

Air. Samples of dust were collected at 22 smelter property locations. A model was used to predict how much dust would move into the communities of Ruston and Tacoma if there were no cleanup. The results showed that the highest emissions would be on the smelter property and that emission levels decrease rapidly with distance from the smelter property.

6.0 DESCRIPTION OF SITE RISKS

This section of the ROD provides a brief summary of the "*On-Property Human Health Risk Assessment*" ("Risk Assessment") for the Asarco Tacoma Plant (Kleinfelder 1993). The document was prepared by Asarco, with EPA oversight, to assess the potential human heath risks from Site contamination and was completed according to national and regional EPA risk assessment guidelines. **It evaluates potential risks from exposure to contamination in soil, slag, surface water, ground water and air if no remedial action is taken on the Site. The results of this assessment were used to decide whether remedial action is appropriate and which exposure pathways and contaminants require remediation.**

OVERALL SUMMARY OF RISK ASSESSMENT

Potential health impacts were estimated using the risk assessment and assuming five possible land-use scenarios for the Site: residential, industrial, commercial, recreational and the existing non-use. The results showed that the estimated cancer risks and non-cancer health effects from the Site are the highest for possible future residents who may inadvertently ingest soils or drink ground water at the Site. For example, it was estimated that the lifetime chance of developing cancer from ingesting soil in the arsenic kitchen area, assuming residential use (e.g., daily ingestion of soil, a 70 kilogram adult, living on the Site for 30 years), may be as high as two in ten. Repeatedly ingesting soil in the stack hill area may pose a chance of four in a hundred of getting cancer. An unacceptable excess lifetime cancer risk for Superfund cleanups is in a range of approximately one in ten thousand to one in one million. Non-cancer impacts from the Site are likely to present appreciable risk of significant adverse effects to people over lifetime exposures (generally referred to as a hazard index (HI) greater than one).

Residential land use poses the highest potential for health impacts because it assumes that people will spend the most time at the property and therefore potentially be more exposed to contaminants. Other land use possibilities, such as recreational, industrial, commercial, and non-use, assume people will spend less time at the Site and have lower exposures to Site contaminants. Therefore, these other scenarios are estimated to have less potential for health impacts.

Arsenic exposure is responsible for most of the estimated cancer risk from contaminants in soil, slag, ground water and surface water at the Site. Arsenic levels in surface water and ground water that is discharged to the Bay substantially exceed EPA's water quality criteria for fish ingestion by people, and stat standards that protect marine life. Antimony, arsenic, chromium, copper, lead, manganese, and mercury are some of the chemicals of most concern for non-cancer effects such as organ damage, learning disabilities, and birth defects. A detailed discussion of all of the assumptions and the estimated numerical health impacts associated with each pathway can be found in the Risk Assessment report.

Risk assessments are performed using information on the toxicity of contaminants and *assumptions regarding the extent to which people may be exposed to them.* This summary of the Asarco Risk Assessment is divided into five sections: (6.1) identification of contaminants of concern (COCs), (6.2) exposure assessment, (6.3) toxicity assessment, (6.4) risk characterization,

which is an integration and summary of the information gathered and analyzed in the preceding sections, and (6.5) analysis of the uncertainty involved in developing a risk assessment. In addition, Section 6.6 is a summary of the qualitative ecological risk assessment (EPA 1993).

6.1 IDENTIFICATION OF CONTAMINANTS OF CONCERN (SCREENING ANALYSIS)

The selection of chemicals that potentially contribute to risks to human health at the Site, known as the COCs, was a two-step process. First a screening evaluation was done comparing the maximum chemical concentrations in soil, ground water, and air with conservative health-based concentrations and/or with appropriate criteria and standards. The chemicals selected in this first step were then evaluated, taking into account each chemical's frequency of detection, toxicity, persistence and mobility, in order to select the final COCs in each media. These are shown in Table 6-1.

Chemicals selected for soils, Class IIB ground water (potential drinking water) and air shown in Table 6-1 were selected using exposure parameters based on residential use of the Site.

Water from Class III wells is not suitable for drinking, it contains contaminants and can migrate into the bay. The COCs for Class III ground water were selected based upon the potential for humans to be exposed to these contaminants through consumption of seafood from the bay. Five metals were selected: arsenic, beryllium, lead, manganese and mercury.

All of the metals selected as COCs in ground water and soil were selected as COCs in surface water. Arsenic and lead were selected as COCs of concern in slag based upon information from the Ruston/North Tacoma Risk Assessment.

6.2 EXPOSURE ASSESSMENT

The exposure assessment estimates the type and magnitude of exposures to the COCs at the Site. It considers the current and potential future uses of the site, characterizes the potentially exposed populations, identifies the important exposure pathways and quantifies the intake of each COC from each medium for each population at risk. The result of the assessment is a calculated daily dose of each COC per body weight for each exposure medium.

6.2.1 Identification of Site Uses, Exposed Populations and Exposure Pathways

Site Use Scenarios. The exposure assessment for the Asarco Site considers five land-use scenarios involving different groups of potentially exposed populations. Of the five land-use scenarios considered, one represents the current use or "non-use," and four represent projected future uses: residential, commercial, heavy industrial, and recreational.

Potentially Exposed Populations. Each scenario described above has an associated population that may be exposed to COCs at the site. The populations assumed for each of the site uses are described below.

(1) Non-Use. Currently, the Site is not being used for any purpose other than for site investigation, monitoring and demolition. For this existing use scenario, potentially exposed populations are maintenance workers, guards, trespassers and nearby residents who may be exposed to dust from the Site.

TABLE 6-1. CONTAMINANTS OF CONCERN FOR SOIL, GROUND WATER AND AIR

Chemical	Soil	Drinking Water	Ground water Impacting the Bay	Air
Antimony	N	N		
Arsenic	C/N	C/N	C/N	C/N
Beryllium		C/N	C/N	
Cadmium	C/N	C/N		C/N
Chromium		C/N		C/N
Copper	N	N		
Lead	C/N	C/N	C/N	C/N
Manganese		N	N	
Mercury	N		N	N
Nickel		C/N		C/N
Selenium				
Silver	N	N		
Thallium	N			
Zinc	N			
Polycyclic Aromatic Hydrocarbons	C			
Polychlorinated Biphenyls	C			
Aniline Compounds	C		C	

C Cancer Causing Chemical
N Chemical Causing Non-Cancer Health Effects
C/N Chemical Causing Both Cancer and Non-Cancer Effect

(2) Residential. The Site would be developed for residential use. People would spend 30 years of their lifetime on the Site.

(3) Heavy Industrial. The Site would be developed for industrial purposes. Workers would spend 25 years of continuous employment at the Site.

(4) Recreational or Park. All or part of the Site would be developed as a park. Visiting children and adults would be exposed to Site contaminants.

(5) Commercial. Part or all of the Site would be redeveloped for commercial uses including office buildings and shops. Office workers and merchants would be the primary exposed populations.

Exposure Pathways. An exposure pathway is the mechanism by which chemicals migrate from their source or point of release to the population at risk. Four elements comprise a complete exposure pathway: (1) a source of a chemical release (e.g., contaminated soils); (2) movement of contaminants through environmental media (e.g., rain moving through contaminated soil into ground water); (3) a point of potential human contact with a contaminated medium (e.g., use of contaminated ground water for drinking water); and (4) entry into the body or exposure route (e.g., ingestion of drinking water).

The exposure pathways considered for the Risk Assessment varied depending on the land use being considered and on the population potentially exposed. For example, in assuming future residential land use of the Site, the following exposures were evaluated for adults and children: (1) ingestion of slag, soil, and dust; (2) dermal exposure to soil and dust; (3) ingestion of vegetables potentially contaminated by soil contaminants; (4) inhalation of contaminants in the air as a result of dust resuspension from the site; (5) ingestion of potable ground water on the Site; and (6) ingestion of contaminated surface water in pools and seeps on the Site.

In contrast, the potential exposures considered for a site maintenance worker under the current non-use scenario were: (1) ingestion of soil, dust, and slag; (2) dermal exposure to soil and dust; and (3) inhalation of contaminants in dust.

6.2.2 Calculation of Exposure

EPA's Superfund guidance requires that the reasonable maximum exposure (RME) be used to calculate potential health impacts at Superfund sites. The RME is the highest exposure that is reasonably expected to occur at the site. It is calculated using conservative assumptions in order to represent exposures that are both reasonable and protective. In the Risk Assessment, RMEs were estimated for the land-use scenarios and exposure pathways described above (see Table B-5 in Appendix B for the RME exposure assumptions for potential residential use). For the residential scenario, average exposures were calculated in addition to the RMEs to represent exposures of a more typical person.

To estimate exposure, data on the concentrations of COCs in the media of concern at the Site (the exposure point concentrations) are combined with information about the projected behaviors and characteristics of the people who may potentially be exposed to these media (exposure parameters). These elements of the Asarco Site are described below.

Exposure Point Concentrations: The Site was divided into six areas to calculate the contaminant levels for estimating exposure because the Site is large, the types and concentrations of contaminants vary by area, and there are several possible future land-use scenarios, see Figure 6-1. The areas are (1) the administrative area; (2) arsenic kitchen area; (3) cooling pond area; (4) stack hill area; (5) off-plant area; and (6) general plant slag area. Section 3.0 of the Risk Assessment presents details on the calculations and use of these exposure point concentrations.

Exposure Parameters: The parameters used to calculate the RME include body weight, age, contact rate, frequency of exposure and exposure duration. Exposure parameters provided in EPA Superfund guidance were used when available (i.e., for the residential and heavy industrial land uses). Parameters for the other land uses were developed for the Asarco Site using best professional judgement.

For all of the media, except surface water, exposures were estimated assuming long-term exposures to site contaminants (e.g., 30 years of daily use for residential use, 350 days/year, and 25 years, 8 hours/day for 5 days/week, for heavy industrial use). Potential risk from surface water was calculated assuming that a child accidently consumes water that has puddled on the Site. Since there were no data on contaminant levels in Commencement Bay for fish, potential risks from the consumption of fish and shellfish were estimated by comparing the levels of contaminants in selected shoreline wells with EPA's WQC for protection of human health from fish consumption.

6.3 TOXICITY ASSESSMENT

The purpose of the toxicity assessment is to provide, where possible, an estimate of the relationship between the extent of exposure to a contaminant and the increased likelihood and/or severity of adverse effects. This is done by weighing available evidence regarding the potential for particular contaminants to cause adverse effects in exposed individuals.

EPA has conducted toxicity assessments for many chemicals and publishes the resulting values, slope factors (Sfs) and reference doses (RfDs), on the Integrated Risk Information System (IRIS) or in the Health Effects Assessment Summary Tables (HEAST). With the exception of lead, which is assessed using the integrated uptake/biokinetic model (IUBK) developed by EPA, IRIS and HEAST were used as a source for Sfs and RfDs.

Sfs have been developed for estimating upper-bound excess lifetime cancer risks associated with exposure to potential cancer-causing chemicals. They are expressed in units of the inverse of milligrams per kilogram of body weight per day $(mg/kg\text{-}day)^{-1}$. Sfs are derived from the results of human epidemiological studies or chronic animal bioassays to which mathematical extrapolations from high to low dose and from animal to human have been applied, see Table B-6 in Appendix B.

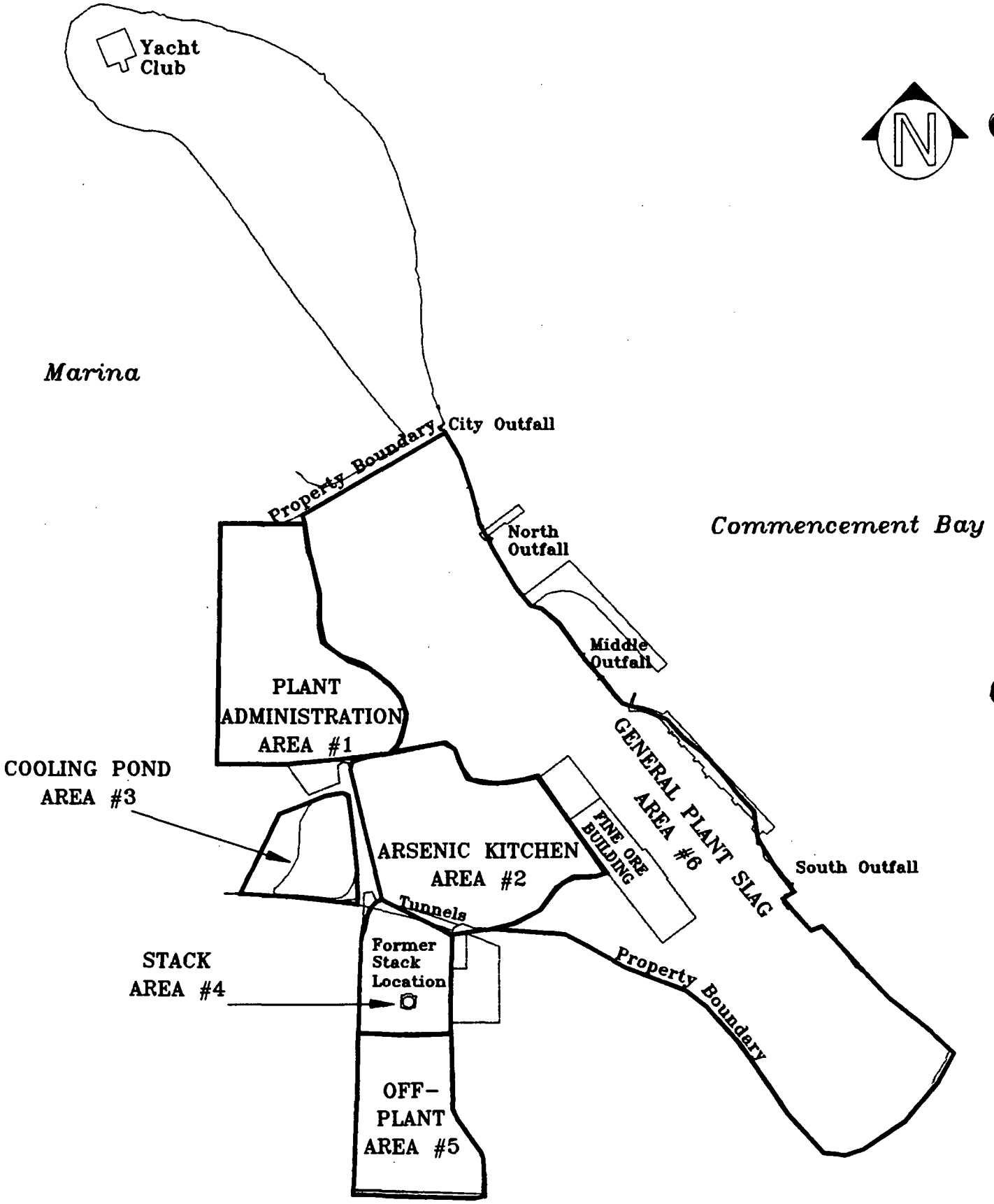

FIGURE 6-1: AREAS OF SITE USED FOR EXPOSURE ASSESSMENT

RfDs have been developed to indicate the potential for adverse health effects from ingestion of COCs that exhibit non-cancer effects, such as damage to organ systems (e.g., the nervous system, blood forming system, etc.) and learning disabilities. They are expressed in units of mg/kg-per day. RfDs are estimates within an order of magnitude, of lifetime daily exposure levels for people, including sensitive individuals, that are likely to be without risk of adverse effect. Estimated contact with contaminant(s) of concern from environmental media can be compared to the RfD (e.g., the amount of a contaminant(s) of concern ingested from drinking water or soil in mg/kg/day). Reference concentrations (RfCs) are used to indicate potential non-cancer health impacts from inhalation (usually expressed in milligram per cubic meter), see Table B-7 in Appendix B.

The standard non-cancer risk assessment method described above was not used for the assessment of lead in soil. For the residential scenario, EPA guidelines specify the use of the IUBK model for estimating acceptable lead levels in soil. EPA guidance recommends that soil lead concentrations should be low enough to ensure that blood lead levels do not exceed 10 micrograms per deciliter in 95% of the potentially exposed children. The IUBK model predicts a value of 500 ppm of lead in soil to meet this goal. The exposure point concentrations calculated for lead in soil at the Site were compared to this value of 500 ppm to assess its potential non-cancer impacts.[4]

6.4 RISK CHARACTERIZATION

Risk characterization is an integration and summary of the information gathered and analyzed in the preceding sections. Site-specific exposure estimates were combined with cancer Sfs and RfDs to assess potential health impacts.

To estimate cancer risk, the Sf is multiplied by the exposure expected for that chemical to provide an upper-bound estimate of the excess lifetime cancer risk. This estimate is the incremental probability of an individual developing cancer over a lifetime as a result of exposure to cancer-causing chemicals at a site.

The potential for non-cancer health impacts is evaluated by dividing the exposures calculated for each COC at the site by its RfD or RfC. The result is the Hazard Quotient (HQ). By adding the HQs for all contaminants via one exposure pathway, the HI is calculated.

The results of the Risk Assessment show that the estimated cancer and non-cancer impacts from exposure to Site contaminants in soil vary with the Site areas and with the projected future land-use. The estimated lifetime cancer risk from ingesting soil in the arsenic kitchen area, assuming residential land use, may be up to two chances in ten (2 in 10). Cancer risks in the other five areas of the Site, assuming residential land use, range from about 4 chances in 100 to 2 chances in a 1,000. These risks are lower primarily because contaminant levels are high in the arsenic kitchen area than in the rest of the Site.

Residential exposure to soils in the arsenic kitchen area is estimated to result in an excess cancer risk of 2 chances in 10, but the risks for the other possible site-uses (industrial, commercial, recreational and non-use) in the arsenic kitchen area range from 5 chances in 100

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[4] Since the Risk Assessment was completed, the IUBK model has been revised. The most recent version of the IUBK model results in lead levels of 400 ppm. EPA does not believe that this significantly alters any of the conclusions in the Risk Assessment and does not have an impact upon any Site cleanup decisions.

to 2 chances in 1,000. Residential use assumptions result in the highest risks because exposures occur more often and over longer periods of time, more exposure routes are possible and children have higher exposures than adults.

Cancer risks vary by route of exposure. For example, for residential exposures in the arsenic kitchen area, ingestion of soil contaminants results in the highest cancer risk (2 chances in 10) followed by exposure to contaminants in drinking water (about 4 chances in 100), eating vegetables (3 chances in 1,000), inhaling contaminants in dust (5 chances in 10,000) and dermal exposure to soils (5 chances in 100,000), see Figure B-1 in Appendix B.

According to the National Contingency Plan, which governs Superfund cleanup, if the cumulative cancer risk on a site is greater than approximately 1 in 10,000, a cleanup action is generally taken.

The estimated HI, which is used to evaluate non-cancer impacts, is 806 in the arsenic kitchen area assuming soil ingestion and residential land-use. HIs in this area for other land uses range from 7 to 205, see Figure B-2 in Appendix B. The HI for groundwater ingestion in the arsenic kitchen area assuming residential land use is 219. HIs above 1 are used in the Superfund program to indicate that site remediation may be necessary.

Arsenic is responsible for the majority of the cancer risk at the Site. Several metals, including arsenic, lead, and copper are responsible for the non-cancer impacts at the Site.

Exposures to arsenic, copper and lead in site surface water may result in acute hazard to children who swallow this surface water. The concentrations of four metals, arsenic, mercury, manganese and beryllium, in Class III ground water near the bay are in excess (above a 1 in 10,000 cancer risk or above RfDs) of EPA's water quality criteria for protection of human health from fish consumption. Aniline is in Class III ground water at concentrations that exceed a risk of 1 in 10,000 assuming fish consumption.

Although the Risk Assessment did not include an evaluation on the adjacent slag peninsula, potential health impacts in this area are expected to be similar to those in Area 6, the general plant slag area. Area 6 was evaluated in the Risk Assessment for arsenic exposure. Assuming residential exposures, cancer risk in Area 6 may be as high as 2 in 1,000 and the HI is above 1. Therefore, both the slag peninsula and the general plant slag area contain arsenic at levels that may result in cancer and non-cancer risks above Superfund levels of concern.

6.5 UNCERTAINTY ANALYSIS

The numerical results of a risk assessment (HQs and cancer risk values) are uncertain because of limitations in knowledge regarding exposure and toxicity. Where information is incomplete, assumptions must be made: the greater the uncertainty, the more conservative the assumptions to be protective of public health. Even when actual characteristics of a population are known, selected exposure parameters are biased toward over-estimating rather than under-estimating risk for the majority of the population. A discussion is presented below on how uncertainties in the risk assessment process might overestimate or underestimate risk.

Some of the factors that may lead to a possible **overestimation** of risk are as follows:

(1) The majority of the soil samples were collected in areas of the Site thought to be contaminated based on past smelter operations, so the whole Site might not be as contaminated as these samples indicate;

(2) Because of a lack of information, the exposure parameters (e.g., exposure frequency and duration) used in the risk assessment are derived in a conservative manner;

(3) EPA assumes that there is a cancer risk associated with all exposures to cancer causing chemicals and that this risk increases as exposure increases. This assumption may not be true for all carcinogens;

(4) RfDs are developed from animal data using uncertainty factors to take into account the differences between animals and people and the differences in experimental versus environmental exposures. For some chemicals, these uncertainty factors may be overly conservative.

Conversely, there are factors that may lead to a possible **underestimation** of risk. Some of these factors are as follows:

(1) Some of the unsampled areas of the site may have higher concentrations than those areas sampled;

(2) Soil exposure assumptions were made using surface soil concentrations; some subsurface soils on the Site have contaminant levels that are higher;

(3) The lack of data available for the derivation of exposure factors and toxicity factors (Sfs and RfDs) could result in factors that are too low, although the use of uncertainty factors makes this unlikely;

(4) Estimated cancer risks for arsenic, which is the contaminant of greatest concern at the Site, may be too low. They were evaluated using the Sf in the IRIS data base, which takes into account only arsenic's ability to cause skin cancer although more recent analyses have shown that arsenic ingestion can also elevate risks of internal organ cancers; and

(5) Contribution of site contaminants to fish ingestion exposure by surface water run-off, outfalls, sediments or existing contaminants in the Bay from past Site discharges were not evaluated.

For more detail regarding uncertainty, see Section 6.0 of the Risk Assessment.

6.5.1 Comparison of the Risk Assessment Results to Superfund Regulations and Guidance

The results of the Risk Assessment are evaluated to determine if the Site needs to be cleaned up and what cleanup actions are warranted. This evaluation is made by determining whether the cancer risks and the non-cancer health impacts exceed those considered to be of concern to EPA's Superfund program as defined in EPA's National Contingency Plan (NCP) and "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions," April 22, 1991, OSWER Directive No.9355.0-30.

Where the cumulative carcinogenic site risk to an individual based on RME for both current and future land use is less than approximately one in ten-thousand, and the non-cancer causing HQ is less than 1, cleanup on a site is generally not warranted unless there are adverse environmental impacts. As described above in the risk characterization section, the cancer risks and HIs calculated were in excess of these two criteria. Based on the results of the Risk Assessment, EPA has determined that cleanup is necessary at the Site.

6.6 ECOLOGICAL RISK ASSESSMENT

EPA developed an Ecological Risk Assessment to assess the impacts of contamination on sea life, plants and pets. EPA based its assessment on available literature and Site-related data. The assessment suggests that the metals in soils may have an impact Site vegetation. Based on exceedances of federal and state water quality criteria in ground water and surface water and exceedances of state sediment quality criteria in off-shore sediments, sea life in the off-shore sediments have been adversely affected by releases from the Site.

6.7 EPA'S CLEANUP OBJECTIVES AND TWO-PHASE APPROACH

Cleanup actions are necessary because current conditions at the smelter property and on the slag peninsula pose unacceptable long-term risks for current workers, possible future visitors or residents, and sea life and animals. EPA is recommending a comprehensive cleanup strategy in order to address the multiple sources of contamination at the smelter property and slag peninsula. EPA's objectives for the cleanup are identified in Table 6-2. The performance standards for the selected remedy are found in Section 9.

EPA will accomplish its cleanup objectives at the smelter property and slag peninsula in two phases. The first phase, which is described in this ROD, includes activities to control continuing sources of contamination at the smelter property and slag peninsula. These "source control" activities will remove or control portions of the property that are known to be contributing to the contamination of surface water and ground water. Such activities will also minimize possible exposure to contamination via direct contact, and therefore further reduce Site risks.

The second phase could include additional active clean up measures, if necessary, to restore surface water or groundwater quality and will be described in a subsequent ROD. An example of an active measure would be installing a groundwater pump and treat system at the Site. Further active measures would not be necessary if ground water or surface water clean up levels are achieved as a result of the source control measures. In this case, a "no-action" ROD would be issued.

TABLE 6-2. CLEANUP OBJECTIVES

CONTAMINATED SOIL, DUST AND SLAG	
(a)	Prevent ingestion and inhalation of contaminated soils slag and dust containing contaminants in concentrations above applicable or relevant and appropriate requirements (ARARs) or above risk-based goals when ARARs are not available or protective;
(b)	Reduce releases of contaminants from soil to ground water by:
	-- Removing the source areas where contaminants leach from soil to ground water
	-- Limiting the surface water that runs into soil and slag;
(c)	Limit the erosion of slag to the off-shore sediments.
ON-SITE GROUND WATER AND SURFACE WATER	
(a)	Prevent ingestion of potable (Class IIB) ground water and on-site surface water (e.g., seeps, puddles) containing contaminants above ARARs or above risk-based levels when ARARs are not available;
(b)	Reduce contact between contaminated soil, slag or fill and surface water and ground water.
GROUND WATER, SURFACE WATER, AND TREATED WATER DISCHARGED TO COMMENCEMENT BAY	
(a)	Reduce discharge to Commencement Bay of contaminated waters containing contaminants in concentrations above ARARs or risk-based goals when ARARs are not protective or not available;
(b)	Reduce leaks and spills of contaminated surface water from drainage and sewage systems.

Although sampling of ground water has been conducted since 1987, EPA believes that the following significant uncertainties remain regarding how contaminants move into and through the ground water at the smelter property.

- Impacts of clean up actions on groundwater quality.
- Extent to which concentrations of contaminants in the ground water are naturally being lowered through chemical reactions currently taking place in the ground water.
- Extent to which dilution by seawater or ground water may also be reducing concentrations of contaminants.
- Loadings of contaminants (for example, kilograms per day) discharged to Commencement Bay via groundwater pathways.

EPA will continue to require monitoring of ground water to provide a better assessment of ground water conditions, an evaluation of the effectiveness of soil and surface water clean up actions on groundwater quality and an evaluation of the practicability of groundwater remedial measures.

7.0 DESCRIPTION OF ALTERNATIVES

Asarco's Feasibility Study (FS) identified a range of alternatives to achieve the clean up objectives and remediation goals for the smelter property and slag peninsula (Table 7-1). The alternatives represent significantly different approaches to cleanup the Site and protect human health and the environment. The alternatives are different, for example, in terms of their effect on the contamination, what is necessary to maintain their effectiveness, and their cost.

The range of alternatives presents several choices for cleaning up contamination at the Site. EPA decided among the choices in order to select the cleanup remedy for the Site.

In addition to the various cleanup alternatives identified below, demolition of the remaining buildings and structures on the Site and use of the Ruston/North Tacoma residential soils as a sub-base for the Site wide cap were evaluated. In addition to the cleanup alternatives selected, long-term operation and maintenance of the cleanup activities and coordination with Site redevelopment is necessary.

The following section summarizes the cleanup activities under each of the FS alternatives and their estimated costs.

7.1 SUMMARY OF ALTERNATIVES

Plant Site Soils (and Slag Peninsula)

Several cleanup alternatives were evaluated in the FS for plant site soils (**PSS**), slag at the plant site, and the slag peninsula.

PSS-1 is "no action." This alternative means that no further cleanup actions would be performed. This alternative is included to serve as a baseline for the evaluation of other alternatives.

PSS-2 is "limited action" and would focus on restricting access to the Site by fences with warning signs and deed restrictions to prohibit wells from being drilled into contaminated ground water and future use or development on the Site. *The estimated cost of this alternative (capital plus operation and maintenance) for both PSS and the slag peninsula is $1.5 million and the estimated time to install fencing and warning signs is one month ($1.5 million and one month).*

PSS-3 includes two types of caps for the plant site and slag peninsula and three different possibilities for excavation and disposal of soil. In general, the purposes of a cap are to prevent the direct contact of people, animals, and surface water with contaminated soils and slag, to prevent contaminated soil from being wind-blown, and to reduce movement of soil contaminants through surface water into ground water. A cap can also be used to make drainage/grade improvements and to prevent contaminated surface water from pooling on the Site.

Caps:

PSS-3A A low permeability (10^{-7} seconds/centimeter) asphalt cap on areas of the plant site and the slag peninsula that are not currently paved *($6.3 million and three months).*

PSS-3B Soil cap over entire plant site and the slag peninsula that includes a Ruston/North Tacoma residential soils sub-base, low-permeability clay layer, gravel drainage layer, and clean topsoil, see Figure 7-1 *($7.6 million and five to seven years)*.

Excavation/Disposal:

PSS-3C Excavate soil and granular slag from the source areas (see Figure 1-1); dispose of materials, together with demolition debris and Study Area soils, in an OCF, a hazardous waste landfill with a low permeability liner and cap, leak detection, collection and removal system, leachate collection and removal system and surface run-on and run-off control systems, located in the current parking lot, see Figure 7-2 *($23.5 million and seven years)*.

PSS-3D Same as **PSS-3C** but dispose excavated materials in an OCF located in the plant slag area *($23.7 million and seven years)*.

PSS-3E Excavate, treat, and dispose source area soils and demolition debris in an off-site hazardous waste landfill *($75 million and six months)*.

Estimates of Materials To Be Excavated (in cubic yards)*

- Arsenic Kitchen 62,000.00
- Cooling Pond 18,100.00
- Stack Hill 54,000.00**
- Copper Refinery ... 14,050.00
- Fine Ore Bin 9,850.00
- Demolition Debris .. 82,000.00

SUBTOTAL 240,000.00

- Residential Soils .. 187,000.00

TOTAL 427,000.00

* The Southeast Area of the Plant is not included because it is not practicable to excavate the wood debris buried in slag that is contaminating the ground water, see Section 8 - Implementability.

** This estimate includes 39,700 cubic yards from and around the car and railroad tunnels.

TABLE 7-1. CLEANUP ALTERNATIVES

Plant Site Soils (PSS)		
PSS-1	No Action (used for comparison).	
PSS-2	Limited Action (fences and warning signs).	
PSS-3	Capping and/or Soil Excavation:	
	PSS-3A	Asphalt cap over unpaved areas on Site and slag peninsula.
	PSS-3B	Soil cap over entire Site and slag peninsula.
	PSS-3C	Excavate soil from source areas and dispose in OCF in parking lot.
	PSS-3D	Excavate soil from source areas and dispose in OCF in plant slag area.
		• Bermed structure in parking lot.
		• Three linear concrete cells with vertical walls in NE arsenic kitchen area.
		• Circular concrete tank, 525 feet in diameter in arsenic kitchen area.
		• Circular bermed structure, 600 feet in diameter, in NE arsenic kitchen area.
	PSS-3E	Excavate soil from source areas, treat and dispose in offsite landfill.
PSS-4	Treating Soil from Source Areas:	
	PSS-4A	Treat soil, put back treated soil in excavated areas, dispose demolition debris in OCF.
	PSS-4B	Treat soil, dispose treated soil in offsite landfill, dispose demolition debris in OCF.
Surface Water (SW)		
SW-1	No Action (used for comparison).	
SW-2	Monitoring Program	
SW-3	Cleanup Existing Surface Water Drainage System:	
	SW-3A	Repair leaks and abandon unused portions.
	SW-3B	Abandon entire system. Construct new drainage system.
	SW-3C	Slip line existing pipes.
	SW-3D	Re-route surface water to alternate outfalls.
SW-4	Collect and Treat Surface Water.	
Shoreline Armoring		
	• Riprap (place rocks on shoreline).	
	• Artificial beach nourishment (sand and gravel).	
Ground Water and Marine Sediments		
	• Additional monitoring and sampling.	

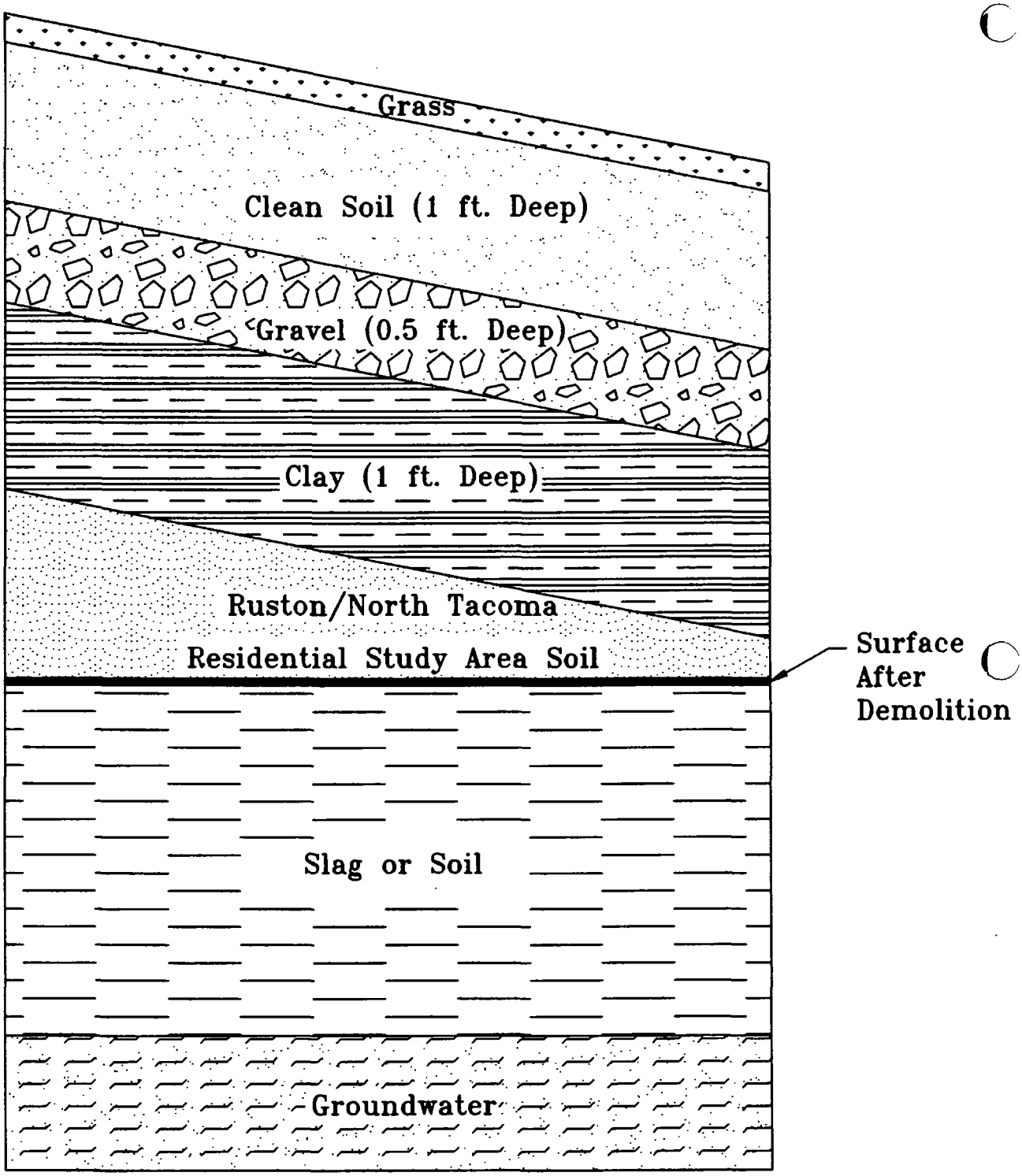

FIGURE 7-1: EXAMPLE OF MULTI-LAYER SOIL CAP

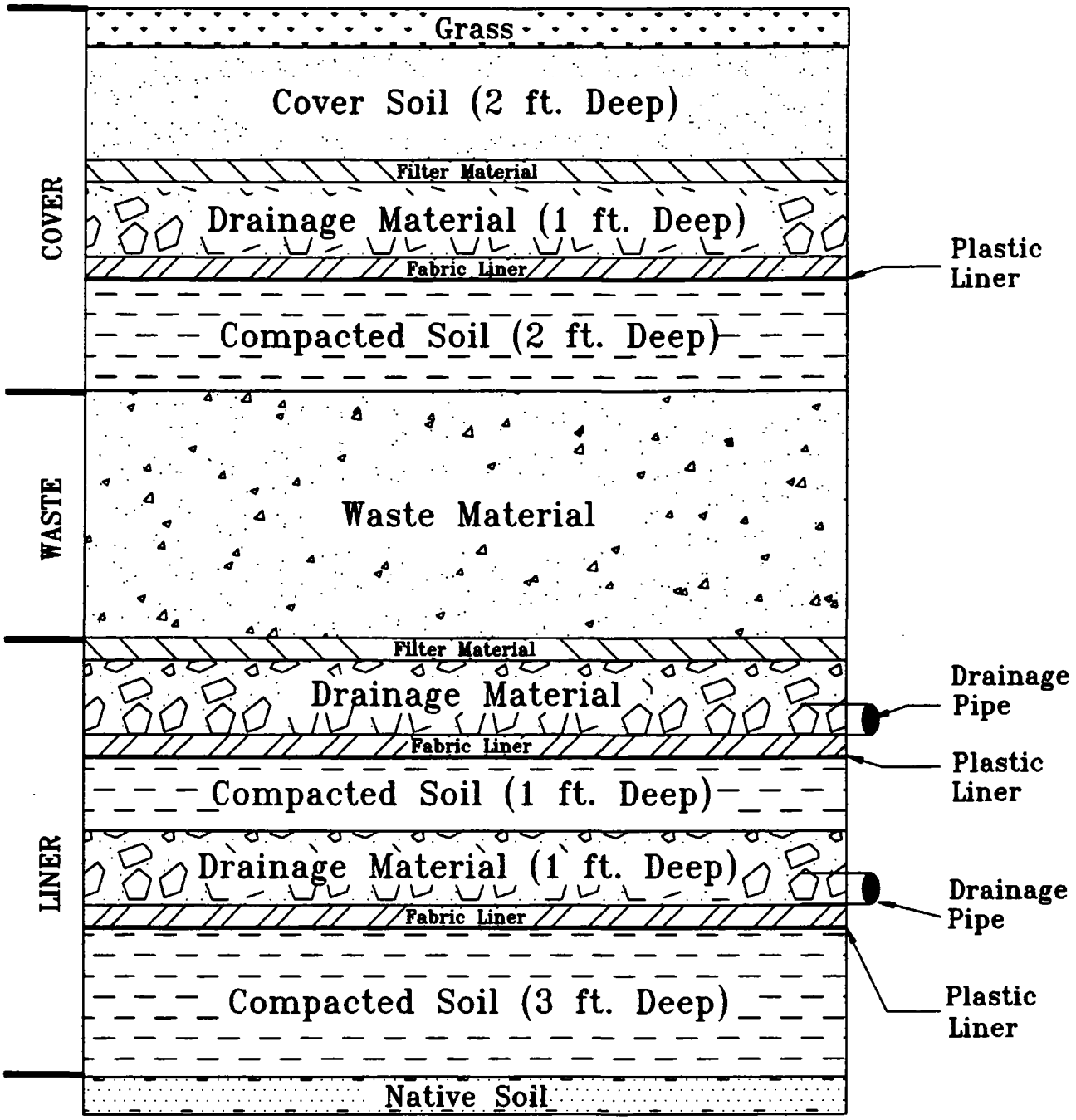

FIGURE 7-2: HAZARDOUS WASTE ON-SITE CONTAINMENT FACILITY (OCF)

Additional On-Site Disposal Alternatives:

After completion of the FS, Asarco submitted further alternatives for constructing an OCF with a capacity of 240,000 cubic yards as follows:

- Bermed structure in the parking lot built into the hillside and bermed on three sides *(estimated cost is $18 million), or*

- Three concrete cells in a row with vertical walls located northeast of the arsenic kitchen area. The approximate size of each cell is 200 by 1200 by 45 feet high *($32 million), or*

- Circular concrete tank, about 525 feet in diameter, located northeast of the arsenic kitchen area *($22 million), or*

- Circular bermed structure, about 600 feet in diameter, located northeast of the arsenic kitchen area *($22 million).*

Soil Treatment:

The two **PSS-4** alternatives involve treatment of contaminated soils at the plant site using chemical fixation and disposing of them in different locations. Chemical fixation means mixing excavated contaminated materials with cement and lime in order to reduce the mobility of the contaminants.

PSS-4A Put back treated soils in excavated areas on-site and cover the area with a cap. Demolition debris would be disposed in an OCF *($48.2 million and six months).*

PSS-4B Dispose of treated soils in an off-site landfill and demolition debris in an OCF *($86.4 million and six months).*

Surface Water

Several cleanup alternatives were evaluated to address contaminated surface water at the Site.

SW-1 is no action.

SW-2 relies on soil removal and groundwater remediation to reduce the release of contaminants (for example, arsenic) to surface water. A surface water monitoring program would evaluate the effectiveness of this approach. *The estimated cost of the monitoring program is $943,000 and the estimated duration is ongoing.*

SW-3 consists of four different measures with respect to the existing surface water drainage system:

SW-3A Repair leaks in the existing system; ongoing maintenance to prevent leaks in the future; plug and abandon portions of the existing system not used *($737,000 and three months).*

SW-3B Plug and abandon the entire existing system. Construct new drainage system, including pipes, inlets, and manholes, that prevents leaks and resists corrosion *($1.6 million and 3 months)*.

SW-3C Insert smaller PVC pipe (or slip lines) into existing pipelines; seal existing drains and sumps and manholes; replace open ditches with new pipes *($969,000 and three months)*.

SW-3D Re-route surface water that runs onto the Site to alternate drain outfalls *($439,000 and two months)*.

SW-4 would collect and treat contaminated surface water in a water treatment plant located on the plant site *($23.6 million and ongoing)*.

Shoreline Armoring

The most effective measure to prevent erosion of the slag shoreline into Commencement Bay is called **shoreline armoring**.

There are two main types of armoring:

- Line the shore along the smelter property and the slag peninsula with riprap (large rocks) underlain with 2 feet of smaller rock, see Figure 7-3. Riprap would not be installed on the interior portion of the slag peninsula because of the minimal slag erosion which occurs there *($6.2 million and from six to twelve months)*.

- Use artificial beach nourishment, which consists of depositing sand and gravel to form a pebble beach. Sand and gravel that erodes would need to be replaced on an annual basis *($1.4 million and two months for beach nourishment)*.

Mitigation for damage caused to natural resources (e.g., intertidal habitat) would be required for either of these options. The full extent and design of armoring is presently unknown, so the cost to complete mitigation (e.g., replacement of damaged resources) is not estimated. The time to complete mitigation could be up to 2 years, which could be done concurrently with or immediately after shoreline armoring.

7.2 SIGNIFICANT PUBLIC COMMENTS AND ADDITIONAL ANALYSES

EPA received many comments on its Proposed Plan for cleaning up the site. These comments are responded to in the Responsiveness Summary (Appendix A). In this section, EPA summarizes some of the most significant technical comments and describes the additional analyses that EPA conducted in response to such comments.

7.2.1 On-Site Containment Facility Comments

Several commenters recommended that if the OCF were selected, it should be comprised of multiple cells holding different concentrations of contaminated soil. The reasons given for an OCF with multiple cells were that it would provide one more level of protection against leaking, provide more precise monitoring capabilities, and be easier to remove soil in the future should an innovative treatment technology become available.

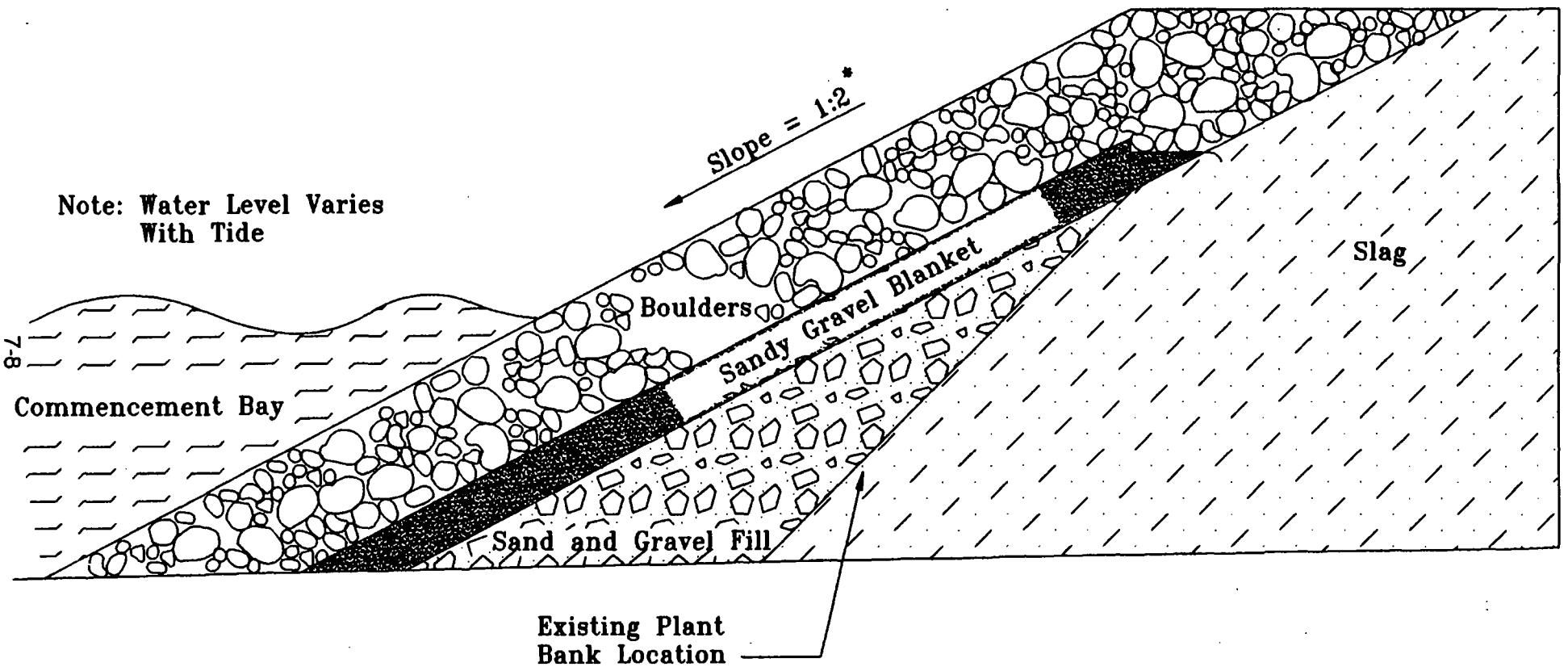

FIGURE 7-3: EXAMPLE OF SHORELINE ARMORING

* 1:2 Slope means 1 foot elevation change for every 2 feet horizontal change

Although there may be situations where multiple cells are appropriate for hazardous waste landfills, EPA does not agree that multiple cells are warranted for the OCF for this Site for several reasons.[5] First, the contaminated soil and debris that will be disposed is contaminated only with metals rather than a mixture of metals and organic contaminants. Therefore, even though a wide range of metal concentrations found is in soil, adverse reactions caused by different types of contaminants mixing together within the OCF are not likely to occur. Another reason adverse reactions are not expected is that contaminants leaching out of the soil are expected to decrease once the OCF is closed (i.e., when the contaminated soil and debris is isolated from surface and ground water).

EPA does not agree that multiple cells would allow for more precise monitoring of down-gradient ground water. The reason is that wastes with the same contaminants would be disposed in each of the cells so in the event that leachate move through the OCF liners and reaches the ground water it would be difficult to identify from which cell it came.

Operation and maintenance of several leachate collection and removal systems due to multiple cells would be more difficult than operating a single cell leachate collection and removal system. EPA does not believe that operating multiple leachate systems would significantly increase the effectiveness of the OCF. Finally, there do not appear to be any new promising treatment technologies on the horizon that would justify disposing soils with different levels of contamination in separate cells.

7.2.2 Soil Treatment Comments

Other commenters recommended that contaminated soil should be treated prior to disposing it in the OCF. The basis for this recommendation was to provide more protection should part of the OCF fail in the future and to be consistent with land disposal restrictions (LDR), which require treatment prior to disposal.

In response, EPA performed an analysis to determine whether treating soils prior to disposal in an OCF is necessary. EPA compared the potential for contaminants leaching from an OCF into underlying ground water if soils were not treated versus if <u>some</u> (15 percent) of the soils were treated. EPA used 15 percent to represent the percentage of soils that are most highly contaminated.

First, EPA assumed that the OCF had a "good" liner and a "good" cap, meaning that the liner and cap conformed to landfill performance requirements. EPA compared estimated leachate rates from this OCF if soils were not treated versus if 15 percent of soils were treated. In both cases, the predicted contaminant loading to ground water was minimal. Treatment did not provide a significant advantage in effectiveness.

Second, EPA assumed that the OCF had a "poor" cap and no liner. Again, EPA compared estimated leachate rates for no treatment versus 15 percent treatment. The predicted rate for no treatment was 106 grams of arsenic per day and the predicted rate for 15 percent treatment was

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[5] The reasons that landfills are normally separated into multiple cells is to (1) separate incompatible wastes and the leachate from those wastes and (2) to limit the open portion of a large landfill that will operate over many years so as to limit the area available for collection of precipitation. Under this scenario, each cell would be constructed and covered prior to constructing another cell. Neither of these reasons are relevant to the Asarco OCF as the waste to be placed is not incompatible and the time the OCF will be open is short.

93 grams of arsenic per day. EPA concluded that this difference is not significant and that treatment did not provide an advantage in effectiveness (but the analysis does show that maintenance of the OCF's cap and liners is important). See Appendix D.

Based on this analysis, EPA believes that treating soils prior to disposal in a properly maintained OCF is not necessary.

In response to the LDR comment, EPA's policy is that waste that is consolidated within an area of contamination is not "placement" and therefore does not require compliance with LDRs (i.e., treatment prior to disposal).

After the Proposed Plan was issued, Asarco submitted its final treatability analysis. One conclusion was that treating soils results in a 30 to 60 percent increase in the volume of soil. The analysis also reported results of additional TCLP and water leaching tests conducted on the treated soil. The TCLP data taken 28 days after treatment, although well below regulatory levels, is slightly higher than data taken immediately after treatment. It is not certain whether this indicates that treatment would be less effective over time in immobilizing contaminants. However, favorable results were obtained from water leaching tests, another measure of the effectiveness of stabilization/solidification. Asarco's analysis is in the administrative record.

7.2.3 Shoreline Armoring Comments

Several commenters questioned whether the slag shoreline was eroding, whether the eroded slag particles caused an adverse impact on the adjacent marine environment, and why the shoreline needed to be armored as it is already providing a suitable habitat for marine biota. If shoreline armoring was determined to be necessary, commenters also questioned how it would be anchored to the existing slag face and why riprap (large rocks) was selected instead of artificial beach nourishment (small rocks and sand) to armor the slag.

The need for shoreline armoring is based on the visual observation that slag is eroding in several locations along shoreline and on a report published by Battelle (Crecelius 1986) that showed that metals released from freshly exposed slag are toxic to marine organisms for up to three to four months. After evaluating the comments received, EPA still believes that some amount of shoreline armoring will be necessary. However, EPA has determined that before the design of the shoreline armoring begins additional data should be collected to determine (1) the extent of shoreline erosion; (2) how and where armoring should be placed; and (3) the impact of armoring to the existing marine biota versus the impact of not armoring slag to the marine biota over time.

After reviewing the most recent literature and discussing riprap versus artificial beach nourishment with the Corps of Engineers, EPA believes that the marine environment off-shore of the Asarco Site would not support artificial beach nourishment due to the high wave energy and fast currents in the area (See memo by ROY F. WESTON, Inc. in the Administrative Record, Section 2.4.1).

8.0 SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

EPA uses nine criteria to identify its preferred alternative for a given site or contaminant. With the exception of the no action alternative, all alternatives must meet the first two "threshold" criteria. EPA uses the next five criteria as "balancing" criteria for comparing alternatives and selecting a preferred alternative. After public comment, EPA may alter its preference on the basis of the last two "modifying" criteria.

This section evaluates both the alternatives developed by Asarco (described in Section 7.0) and the remedy selected by EPA (described in Section 9.0) based on the nine criteria described in Table 8-1. The purpose of this evaluation is to highlight the most significant advantages and disadvantages of the alternatives in relation to each of the nine criteria (a more detailed evaluation is provided in Table 5-4-1 of Asarco's FS).

All nine criteria are important; but they are weighed differently in the decision-making process depending on whether they describe a required level of performance (threshold criteria), provide for consideration of technical or socioeconomic merits (balancing criteria), or involve the evaluation of non-EPA reviewers that may influence an EPA decision (modifying criteria). The modifying criteria are generally considered in altering an otherwise viable alternative.

The no-action and limited action alternatives, discussed in Section 7.0, are not protective of human health and the environment and thus are not further evaluated under the nine criteria. Neither alternative effectively addresses contaminants moving into the ground water even though human health may be somewhat protected through administrative or legal measures identified under "limited actions."

(1) Overall Protection Of Human Health And The Environment

The key factor in evaluating the overall protection provided by each of the alternatives is the extent to which an individual's exposure to contaminated soil, slag or surface water is reduced or eliminated and the extent to which the contaminants moving into surface water and ground water are reduced or eliminated.

Plant Site Soils. Asphalt and multi-layer soil caps are protective because they reduce direct contact with contaminated soils and prevent wind-borne releases. Caps also reduce the migration of contaminants from soil to surface water or ground water by reducing surface water flowing through the soil. The more impermeable a cap is, the less surface water will penetrate the cap.

TABLE 8-1. EPA'S NINE EVALUATION CRITERIA

	THRESHOLD CRITERIA
1.	**Overall protection of human health and the environment** - How well does the alternative protect human health and the environment, both during and after construction?
2.	**Compliance with federal and state environmental standards** - Does the alternative meet all ARARs and state and federal laws?
Alternatives that are not protective or do not attain ARARs are not evaluated further under the remaining criteria.	
	BALANCING CRITERIA
3.	**Long-term effectiveness and permanence** - How well does the alternative protect human health and the environment after completion of cleanup? What, if any, risks will remain at the site?
4.	**Reduction of toxicity, mobility, or volume through treatment** - Does the alternative effectively treat the contamination to significantly reduce the toxicity, mobility, and volume of the hazardous substance?
5.	**Short-term effectiveness** - Are there potential adverse effects to either human health or the environment during construction or implementation of the alternative? How fast does the alternative reach the cleanup goals?
6.	**Implementability** - Is the alternative both technically and administratively feasible? Has the technology been used successfully on other similar sites?
7.	**Cost** - What are the estimated costs of the alternative?
	MODIFYING CRITERIA
8.	**State acceptance** - What are the state's comments or concerns about the alternatives considered and about EPA's preferred alternative? Does the state support or oppose the preferred alternative?
9.	**Community acceptance** - What are the community's comments or concerns about the preferred alternative? Does the community generally support or oppose the preferred alternative?

Soil excavation in source areas would significantly reduce migration of contaminants to ground water and would, therefore, be protective of off-shore sediments and sea life. Disposal of soils in an appropriate disposal facility, either on site or off site, would prevent direct contact to humans or animals and prevent releases to the environment in the future. Off-site disposal would be protective of ground water and nearby populations because it would permanently remove contaminated source area soils off the Site. An on-site disposal facility (OCF) in the parking lot area, on the plant slag, or in the arsenic kitchen area can be designed with the appropriate engineering measures and institutional controls to minimize or eliminate direct contact with the contaminated soils disposed in it. These measures will also reduce the potential for releases to the environment from the OCF. The OCF is a permanent disposal facility for soils and debris. Treatment of soils would also significantly reduce the potential for the release of chemicals into the environment.

Using the residential soils as a sub-base for a cap is protective because the soils would be placed under a low permeability clay layer and soil cap. The appropriate institutional controls would prevent disturbances of the cap. These soils have not been found to leach above regulatory levels.

In addition, these soils will be disposed on top of the non-source area soils and slag that are not located near ground water. Residential soils contain significantly lower concentrations of contaminants than the material they will be placed on. Therefore, disposing residential soils on site will not add to existing groundwater contamination.

Demolition. The conventional demolition techniques for dismantling buildings, 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 the maximum extent practicable to prevent release into the environment. The effectiveness of dust suppression activities will be evaluated with ambient air monitoring.

Surface Water. For surface water, the replacement of the existing drainage system is protective of the environment because contact between surface water and contaminated sediments in the pipes would be eliminated. Releases of contaminated surface water to ground water through leaks in the pipes would also be eliminated. Slip-lining or repairing the existing drainage system may achieve these benefits, however, the location of all of the existing pipes is not known and many of the existing pipes may not be large enough to be slip-lined. These reductions would result in lower discharges of contaminants to Commencement Bay. The diversion of surface water run-on away from contaminated soil would also control contact between surface water and contaminated soil.

Implementation of erosion controls and other best management practices during the cleanup would control contact between surface water and newly exposed contaminated soil and reduce the transport of contaminants to Commencement Bay. Treatment of surface water would permanently reduce contaminants currently discharged through outfalls to Commencement Bay, but unless the source(s) of contamination is removed, treatment time would be indefinite.

Ground Water. Although specific active groundwater cleanup activities (e.g., pump and treat) will not be conducted during this phase of cleanup, the contaminant loading to the ground water, and to Commencement Bay is expected to decrease significantly based on soil removal, capping of the soil and slag and replacing the surface water drainage system. The potential for exposure

to humans will be significantly decreased by placing deed restrictions on the property to prevent the use of ground water.

Shoreline Armoring. Both shoreline armoring and artificial beach nourishment are protective because they control the erosion of the slag shoreline into Commencement Bay and will reduce contaminant leaching from freshly exposed slag faces.

All actions are protective except the no-action, monitoring, or limited action alternatives.

(2) Compliance With Federal And State Environmental Standards

ARARs for all of the alternatives are identified in Table B-8 in Appendix B of this ROD. The following discussion highlights the more important ARARs for this cleanup.

All alternatives will comply with ARARs except the monitoring or limited action alternatives.

Plant Site Soils And Debris. For soil, an important requirement is attaining the soil cleanup levels and complying with the requirements for selecting cleanup actions under the state's Model Toxics Control Act (MTCA).

Residential standards for soil cleanup will be attained through removal of soil from the source areas and capping the Site (see Figure 7-1 for diagram of soil cap). Institutional controls would ensure that the integrity of the cap is maintained. Construction and maintenance of a cap would allow for a variety of potential uses, including residential, recreational, and commercial uses.[6] MTCA's requirement for selection of cleanup actions is discussed in Section 10.4 ("Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable").

Requirements for design, construction, and operation and maintenance of an OCF are set forth in federal and state law (see Section 9.9, performance standards for the OCF). Federal and state laws for hazardous/dangerous waste landfills include requirements for groundwater monitoring, closure and post-closure, and landfill design and construction.

Both EPA and the State of Washington have "Area of Contamination" policies that provide flexibility when consolidating hazardous or dangerous waste within the portion(s) of the Site that contain already-existing continuous contamination. For example, consolidation of soil and debris on site will not trigger requirements for treatment in order to comply with LDR.[7]

Under the Clean Water Act, mitigation measures must be conducted if capping or other cleanup measures will result in adverse impacts to wetlands or other natural resources.

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[6] A cap may not be necessary in some areas of the Site if the contaminant levels remaining in soil after excavation are below the action levels for the Ruston/North Tacoma residential cleanup (230 ppm arsenic, 500 ppm lead) or comparable levels for other contaminants as determined by EPA and Ecology. In such event, soil removal would be combined with adoption of appropriate components of the community protection measures program being used in Ruston/North Tacoma.

[7] The Proposed Plan referenced the Corrective Action Management Unit (CAMU) rule. Because treatment has not been selected for the cleanup, the CAMU rule is not an ARAR.

Demolition. The buildings remaining on site will be demolished as part of this cleanup. Requirements that were used during the previous demolition phase will be applicable to the remaining demolition (see EPA's ROD dated December 31, 1990). These requirements include testing of debris to determine whether it is a hazardous or dangerous waste and, if so, handling, storage, and disposal of such waste in accordance with federal and state standards. Temporary on-site storage of hazardous waste (e.g., materials removed from the fine ore bins building or source area soils that are excavated while the OCF is under construction) will comply with requirements for waste piles.

Surface Water. Best management practices (BMP) will be used during soil excavation to reduce contact between surface water and newly exposed contaminated soils. Examples of BMPs include sediment ponds, silt fences, diversion ditches, and cut and fill slopes.

The objective of surface water cleanup is to attain requirements for stormwater discharges and surface water cleanup standards under MTCA (see Section 9.9 for surface water performance standards). It may be necessary to establish a mixing zone to attain the discharge limitations for surface water from the point source discharges at the Site (the three surface water outfalls). A mixing zone measures compliance at a location in the surface water near, rather than at, the point of discharge and is authorized under WAC 173-201A-100. Whether a mixing zone is appropriate and, if so, the parameters of a mixing zone, will be determined during remedial design.

Ground Water. EPA will implement a two-step approach with respect to restoring ground water. The first step is removing the contaminated soils that are the sources of contamination in ground water and continued monitoring to determine the impacts of source control on groundwater quality. The second step would include further active measures to cleanup ground water, if necessary and as feasible, to attain the required groundwater cleanup levels under MTCA.

The source control measures in the first step are in effect an interim action with respect to ground water. Because it is not certain that source control measures alone will restore groundwater quality to required levels under MTCA, EPA is using the interim measures waiver for groundwater ARARs. This means that attainment of the ground-water cleanup levels is deferred until the effectiveness of source control can be evaluated. EPA's preliminary remediation goals for ground water (see Section 9.9) will be used as benchmarks for this evaluation.

In the interim, EPA will require Asarco to implement institutional controls (deed restrictions) to ensure that ground water at the Site is not used for drinking water.

Shoreline Armoring. Under the Clean Water Act, mitigation measures must be conducted if armoring will result in adverse impacts to intertidal habitat.

(3) Long-Term Effectiveness And Permanence

Plant Site Soils. The alternatives that excavate contaminated soils in source areas would be more effective over the long-term in restoring ground water and surface water quality and preventing direct contact and ingestion than alternatives that leave such soils in place, even if capped. Permanently removing the primary sources of contamination is a key factor in cleaning up ground water and surface water.

The most widely discussed issue for this cleanup has been how to dispose the contaminated soil that is excavated from the source areas. The alternatives range from disposing the soils in an OCF, treating the soils by solidifying them using a cement and lime matrix and using the treated soil as sub-base for a site cap, treating such soils and disposing them in an on-site solid waste landfill, or transporting the soils to be disposed in an off-site hazardous waste landfill.

The following paragraphs discuss the effectiveness of each of these alternatives over time.

Plant Site Soils - Treatment. An effective treatment method for the metal-contaminated soils at the Asarco smelter is solidification/stabilization. This method does not destroy or detoxify the contaminants in the soil but rather binds the contaminated soil with lime and cement to create a concrete matrix. The contaminants are less able to migrate through the soils into other media, for example, ground water, surface water, or air.

Asarco has performed pilot tests on nearly 500 cubic yards of contaminated soil from source areas at the smelter. The results, some of which were received after the Proposed Plan was issued (see Appendix C for a summary of the report), generally show that treatment will effectively bind the contaminants for a long time. The potential for contaminants to migrate into the ground water or surface water if the treated soil comes into contact with water is expected to be minimal, if the concrete matrix remains stable.

This method of treatment, however, has been used on contaminated soils at other sites only in the last several years. Therefore, it has not yet been proven that actual results of solidification over many years will match the predicted results from pilot tests. Also, TCLP leaching results taken 28 days after soil treatment show a slight increase compared to TCLP results taken immediately after treatment. Although both sets of results are below hazardous waste levels, it is not certain whether this is indicative of a long-term trend towards increased leaching.

In addition, there are other long-term concerns with selecting treatment at this Site. Many of these concerns relate to the compatibility of cleanup with future uses of the Site. It should be noted that Asarco's land use plans were based on an OCF. Disposing treated soil on site is not necessarily compatible with these plans for the reasons noted below. These "disadvantages" compared to disposal in an OCF arise because land use plans based on treatment were not developed. Current land use proposals do not discuss whether the development "disadvantages" of disposing treated soils on site can be made compatible with land use plans.

The primary concern is that mixing in the treatment additives increases the volume of the contaminated soil approximately 30 to 60 percent. It is not certain that treated soil can be compacted to significantly reduce the increased volume. Because it is important that the concrete matrix remain relatively undisturbed and because the treated soil may not be stable enough to support buildings above it, disposing of an increased volume of material on site may impact plans for future construction on the property. Treated soil would have to be disposed only in areas where no construction is likely to occur.

It would also be necessary to monitor the Site to verify the continued effectiveness of treatment. Because sampling treated soil through a site cap is not recommended (punching holes through a low permeability cap is not a good practice), EPA most likely would require continued monitoring of ground water to detect whether concentrations of contaminants in ground water are increasing as a result of metals leaching out of the treated soil. If treated soil is widely dispersed on-site and problems in ground water are detected, it may be difficult to determine

which specific areas of treated soil are responsible, thus making it harder to correct the problem. Disposal of treated soil in a solid waste landfill would eliminate many of the problems associated with future Site development and monitoring of the treated soils beneath a Site cap.

Another concern is that the effectiveness of treatment was not demonstrated on oversize material (greater than 2 inches in diameter) such as gravel, cobbles, bricks, wood, concrete and other masonry and building debris. Whether a modified process, which could include crushing the oversize material into smaller pieces, would be effective is not known. Accordingly, it is possible that even if treatment was selected, there may still be a significant volume of oversize materials from the Asarco Site that would need to be disposed in another manner.

The last concern is that because concentrations of contaminants are not reduced, it would still be necessary to cover the treated soil with a cap. The cap would need to be inspected and maintained on a regular basis in order to ensure that people do not come into contact with the treated soil in the future. Earthquakes or landslides that affect the cap would need to be responded to in order to prevent contact with the treated soil. It should be noted, however, that because contaminated soil and slag outside the source areas will remain at the Site, a cap over the entire Site will be necessary, and will require inspections, regardless of whether treatment is used.

Plant Site Soils - Disposal in an OCF. This option calls for disposal of contaminated soil and debris in a landfill that would be constructed on site known as the OCF. The design, construction and operation of the OCF would conform to requirements for hazardous waste landfills. Three important issues are discussed in this section regarding an OCF: what type of structure will be built, how that structure will be maintained, and where it will be located on the Site.

The purpose of the OCF is to isolate the contaminated source area soils and debris in a confined area so that contaminants do not migrate into the environment. The OCF will be composed of multiple layers of clean soil and clay that are several feet thick with synthetic liners above, below and around the contaminated soil. These multiple layers serve two primary purposes: to prevent rainwater and ground water from moving into the OCF (water coming into contact with contaminated soil and debris increases the movement of contaminants) and to collect, remove and dispose of any liquids from inside the OCF. As long as these multiple layers are designed, constructed and maintained properly, the OCF will be effective over the long-term in isolating the contaminated materials. Proper design and construction of the OCF will include safeguards to prevent or minimize damages resulting from earthquakes or landslides to the maximum extent practicable.

In addition to the multiple layers of the OCF acting as a barrier to groundwater infiltration, a groundwater diversion system will be constructed in order to re-route ground water away from the OCF.

The primary disadvantage of the OCF option is that the soil and debris will not be treated and will continue to contain high concentrations of contaminants. If there is a breach of the OCF structure, the soil and debris could pose a threat to human health and the environment. Two examples of structural concerns are the finite life of the synthetic liners that will be part of the OCF structure and the potential for the cover to fail. See Section 7.2 above for discussion of EPA's analysis of whether to treat soils prior to disposal in an OCF.

In order to address these concerns, a consistent and reliable operation and maintenance (O&M) program is necessary to ensure the continued effectiveness of an OCF. Important components of the O&M program would include a leak detection system and collection and removal of leachate. The clay portion of the liner should have an indefinite life. One objective in designing the OCF will be to provide as much access as practicable to the walls and cover of the OCF for maintenance and repair.

Maintaining the effectiveness of the cover is also important. Water and wind erosion, lack of vegetation, excessive sunlight, and disturbance by animals or people are all potential problems for landfill covers. Methods to address these potential problems include burying the cover below many feet of soil, ensuring that surface water drains properly over the top of the structure, diverting ground water away from the structure, and maintaining healthy vegetation over the cap to minimize soil erosion.

A program to monitor ground water downgradient from an OCF would be required to ensure that contaminants are not moving out of the structure and into the environment. One potential advantage of the OCF over treatment is that, because the wastes will be confined to a specific area of the Site, it would be easier to monitor downgradient ground water and perhaps to identify and correct problems.

Different kinds of designs for an OCF or landfill were evaluated in the FS, such as linear/concrete cells, circular tanks, and circular bermed structures. The circular earth berm is most like a conventional landfill and it can more readily comply with the requirements for hazardous or solid waste landfills than the linear or concrete tank alternatives.

The vertical walls that are part of the linear, concrete cells would be more difficult to design and construct to meet containment requirements. Another disadvantage is that it would be more difficult to divert ground water below and around a linear system than it would be for the circular systems.

Another important issue with respect to long-term effectiveness for an OCF is its location at the Site. All of the proposed locations for an OCF would be protective of the local community and the surrounding environment. The parking lot is the closest location at the Site to existing residences. The arsenic kitchen and plant slag areas are considerably further removed from residential areas. The depth to ground water in the parking lot ranges from 40 to 90 feet, compared to approximately 5 feet in the arsenic kitchen and approximately 10 feet in the slag fill.

The arsenic kitchen area was selected as the location of the OCF because that location is most compatible with future land use plans. Because ground water is relatively shallow in the arsenic kitchen area, however, an OCF in this location would have to be well-engineered and maintained in order to be protective of ground water. "Well-engineered and maintained" refers to the liners, leachate collection and removal systems, cover, diversion system, and other components described above. For example, well-maintained impermeable and drainage layers would need to be part of the bottom liner in order to be protective of ground water.[8]

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[8] The bottom liner will be a double liner system. The first liner collects leachate (water that passes through the waste and is contaminated). The leachate is pumped from a trench and treated and/or removed. The second liner is below the first and collects any leachate that may have passed through the first liner.

Plant Site Soils - Off-Site Disposal Options. Another disposal alternative is transport and disposal of soil and debris in an off-site hazardous waste landfill. This would eliminate the problems described above associated with managing such waste on site. It should be recognized that slag and contaminated soil in non-source areas would remain on-site and still would have to be addressed by capping.

Plant Site Soils - Capping. The above paragraphs discussed management of soils that are significant sources of contamination to ground water. Soil and slag in other areas are believed to have a lower potential for contaminants to migrate into ground water, however, these areas still have elevated levels of chemicals for which a cleanup action is necessary. Leaving such soils in place and placing a multi-layer soil cap on top of them to reduce surface water infiltration will be the most effective in protecting surface water and ground water over the long-term. Further, the soil cap will reduce leaching in the Southeast Plant area which is impracticable to excavate (see Section 8.6 below).

Either a soil or asphalt cap would be effective in: eliminating the risk of direct contact with or ingestion of contaminated soils and slag; preventing erosion of contaminated soil or fine grain particles of slag into Commencement Bay; reducing the extent to which surface water comes into contact with contaminants in soil and transports them directly or via ground water to Commencement Bay; and preventing the pooling of contaminated water on site. In order for either type of cap to be effective over the long-term, inspections, maintenance, and restrictions on digging below the cap would be necessary. An asphalt cap will require more inspections and maintenance than a soil cap to prevent, detect, and repair cracks and other defects.

An effective long-term solution for disposal of soil from the Ruston/North Tacoma residential cleanup is to use such soil as sub-base for the smelter site cap on top of slag. The site cap would prevent direct contact with the residential soil and reduce surface water coming into contact with the soil. A soil sub-base still would be required on the Site even if Ruston/North Tacoma residential soils were not used.

Demolition. Several buildings remain on site, such as the fine ore bins building, which is used for storage of contaminated materials, the administration building, the surface water evaporation system, and the transformer buildings. The demolition of remaining structures and disposal of the debris will remove the potential for contact with contamination in the buildings and structures. Disposal of materials stored in the fine ore bins building in the OCF (hazardous waste demolition debris, contaminated ERA soils, and calcine deposits) will eliminate the threat that contamination from the demolition debris and the calcine deposits will migrate into the environment. Materials in the fine ore bins building are suspected of contributing to groundwater contamination.

Surface Water. For cleanup of surface water, plugging and abandoning the existing drainage system and replacing it with a new surface water drainage system is the most effective approach over the long term. This alternative will eliminate releases of soil and water from the existing system into ground water and eliminate contact between surface water and contaminated sediments in the pipes.

It would be less effective to attempt to repair leaks and to clean out contaminated sediments because the location of all existing pipes is not certain. Inserting slip lines into pipes with cracks would also be somewhat effective but could not be done in all pipes due to the small diameter

and deteriorating condition of some of the existing pipes. Some pipes may need to be replaced even if sliplining were selected as the remedy.

Rerouting surface water that runs onto the Site, from Ruston for example, would reduce contact with contaminated Site soil but would not affect surface water on the Site itself, i.e., rainfall. A new or repaired on-site drainage system would still be necessary.

EPA evaluated treating surface water before it discharges into Commencement Bay even before contaminated soil from the source areas is excavated. Removing the source areas is a necessary first step in any cleanup scenario. Unless the source areas are removed, treatment of surface water could be required indefinitely. Although treatment of contaminated surface water is potentially effective, it may be difficult to consistently achieve cleanup levels given the volumes of water requiring treatment, estimated to be up to 900 gallons per minute. Also, treatment of all surface water may not be possible during significant rainfalls. Bypass flow could be necessary during such events.

Because the cleanup includes source removal, a new drainage system, and a site cap, it is likely that remaining contaminated surface water, if any, would be from off-site areas. One objective of the new drainage system would be to avoid recontamination of the site cap by surface water run-on. Also, if surface water run-on from off-site areas is contaminated, this problem may need to be addressed in the future.

Ground Water. It is anticipated that groundwater contamination will decrease over the long term because the most significant sources of the contamination will be removed and the entire site will be capped. One purpose of the site cap is to reduce surface water flow into the remaining on-site contaminated soils, which should further reduce the movement of contaminants from soil into ground water.

Shoreline Armoring. The use of large rocks or boulders to armor the shoreline has a better potential to withstand current and wave action and remain in place compared to using the smaller pebbles described in the artificial beach nourishment alternative. If artificial beach nourishment were used, it would be necessary to include measures such as stone face dikes or breakwaters to decrease the effects of the currents and wave energy to prevent extensive erosion of small rocks and sand. If small rocks and sand had to be replaced frequently, recolonization of marine life would be difficult.

In addition, neither riprap nor beach nourishment are typically placed on slopes as steep as those found at this Site; a cutback would be required for either alternative. Areas that are steeper than 1 (horizontal) to 1.5 (vertical) will need a cut back. The toe of the riprap would need to be constructed 1.5 to 2 times the wave height below the water line. Established construction techniques would be used to anchor the toe and face of the armoring. Although stone faced dikes, breakwaters and revetments are commonly constructed, it is uncertain whether it will be possible to place these types of structures at the Asarco Site.

(4) Reduction Of Toxicity, Mobility, Or Volume Through Treatment

Plant Site Soils and Surface Water. Soil treatment by solidification/stabilization of source area soils ranks the highest for this criterion. The mobility of contaminants in the soil would be significantly decreased by binding them up in a cement matrix. However, the toxicity of the

contaminants would not be decreased and the volume of soil would increase by approximately 30-60 percent. Soil excavation and disposal in an OCF does not satisfy this requirement.

Treatment of surface water is the only surface water alternative that would reduce the mobility, toxicity, and volume of contaminants. Disposal of contaminated sludges from the surface water treatment process would be necessary.

(5) Short-Term Effectiveness

Plant Site Soils. All alternatives involving soil excavation would result in dust emissions, surface soil erosion, noise and truck traffic. Air monitoring, dust control measures (for example, wetting the soil prior to excavation) and using established transportation routes would be required to mitigate these effects. Also best management practices would be used to control surface water coming into contact with newly exposed contaminated soil. Other traffic control measures could be implemented, such as cleaning truck wheels and lining and covering truck beds when transporting contaminated materials on public roads.

Health and safety procedures would be required under all of the alternatives for workers involved with the handling of contaminated soil.

The construction of any of the alternatives for landfills would result in the short-term release of dust, increased impact of trucks and excavation equipment on site and on public roadways surrounding the site. Safety and dust controls measures would be implemented.

The primary potential short-term risk of off-site disposal is from the large number of trucks hauling material off the site. All transportation and safety requirements would be required.

Capping the soil in place with an asphalt or soil cap would pose limited short-term risks from heavy equipment movement and dust generated from grading the Site. Asphalt capping would take approximately 3 months if Ruston/North Tacoma residential soils are not used as sub-base. If all of the Ruston/North Tacoma residential soils are used as a sub-base, soil capping would take approximately 7 to 8 years. If all residential soils are not disposed on the site, soil capping and regrading could be completed within 12 months. Residential soil that is excavated after the cap is in place would be disposed in an appropriate off-site facility pursuant to EPA's ROD and Ecology's Dangerous Waste exemption for Ruston/North Tacoma.

The stabilization treatment system would be fully enclosed thus preventing releases of contaminants into the air and would, therefore, cause the least short-term risk. The system used during the pilot-scale study effectively controlled releases and similar measures are feasible for a full-scale project.

Demolition. The alternatives for demolishing and dismantling buildings will be effective in safely removing the existing structures. However, short-term releases of dust and particulates will result from these activities and will need to 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 whether air emissions exceed the standards used during previous demolition activities; if so, demolition activities will be temporarily discontinued or additional measures to reduce emissions will be undertaken as appropriate. Demolition of all remaining buildings would take 6 months, but are not likely no begin until 1996.

Surface Water. With respect to altering the existing drainage system, maintenance of the existing system would cause the least short-term risk since little, if any, soil would be disturbed. Slip lining the existing pipes would present some risks to the workers associated with routine plant site construction but no adverse effects are expected in the general community. This alternative may present the most risk to the environment if sediments within the drainage pipes were pushed out of the pipes while inserting the liners. Diversion of off-site surface water run-on would present additional short-term construction risks and risks to the community since implementation of this activity would take place off of the smelter property. Plans to prevent traffic and road construction hazards would be necessary.

Completely replacing the drainage system could cause dust to be temporarily generated since some soil excavation and construction will be necessary. This would present short-term risks to site workers and the near-by residents. If the new drainage system were completely constructed within the clean soil of the cap, some of this risk (i.e., posed by contaminated soil) would be eliminated. Many of the original drainage pipes can be sealed and grouted, although, removal of some of these pipes may be necessary. In this case, some soil and/or slag excavation may be necessary. A new surface water drainage system would be installed at the same time the soil cap is being put in place, so sequencing these activities with respect to trucks and workers would be important.

All of these drainage system cleanup approaches would take 2-3 months to implement. Replacing the entire system would need to coincide with placing the cap; the other surface water alternatives would occur before the cap placement.

Surface water treatment also poses short-term risk because it would include the construction of a new surface water treatment facility and installation of a new drainage system. Even though transportation routes and operating hours can be established, more noise and truck traffic would be expected. Constructing a surface water treatment plant would take 9 months from ground breaking; it would likely be operated forever if source control measures are not also taken.

Ground Water. In the short-term, metal concentrations in ground water are expected to increase due to the dust-suppression measures (water to control dust enters the soil and moves into underlying ground water) and to the disturbance of contaminated soil within the aquifer. Generally, these higher levels are expected to decrease within a year. Regular long-term monitoring began in the spring 1994, so baseline groundwater data can be used as a reference to determine if elevated levels are temporary or if additional cleanup measures are necessary. Due to groundwater diversion measures, the volume of ground water moving through the Site may be significantly decreased; thereby temporarily increasing the concentration of contaminants because less dilution would occur.

Shoreline Armoring. Placing larger rocks (riprap) as armoring along the shoreline may result in the temporary suspension of finer-grained sediments. Temporary release of metals from newly fractured slag particles in Commencement Bay also may occur if it is necessary to cut back the angle of the shoreline in order to place the riprap. In addition, armoring with riprap would significantly impair or destroy much of the intertidal marine biota that currently exists on or along the shoreline. But riprap can be designed and constructed so that intertidal biota would recolonize this area. Placing riprap would take approximately 12 months.

Mitigation measures, such as replacing valuable habitat, will be required to replace or augment any damage incurred with armoring. The extent of replacement or augmentation is not currently

known; it is estimated that this could take up to two years. In order to mitigate damage caused by armoring, the creation of pocket beaches, mudflats and vegetated shallows will be evaluated. Sloping and/or cutbacks may be used and shoreline irregularity can be designed to support future mitigation of the marine biota. Mitigation may occur at the Asarco Site or another location off the Asarco property.

(6) Implementability

Treatment of source area soils using a solidification/ stabilization method is implementable.

With the exception of the following practical limitations, excavation of source area soils is implementable. Some of the practical limitations on excavating soil from the source areas include:

(a) Natural features. In the arsenic kitchen area soil excavation will be limited due to the presence of a silt aquitard that is beneath the soils. The aquitard acts as a natural protective barrier preventing metals from moving into the deepest groundwater aquifer on the site. EPA believes that it would be detrimental to the lower aquifer to excavate some or all of this protective silt barrier even though the upper portions of it may contain metals with elevated concentrations of contaminants.

(b) Man-made features. It is estimated that 15 million tons, or approximately 40 acres, of slag make up the plant area and the slag peninsula. Previous plant site investigations show that slag contains up to 25,000 parts per million arsenic, copper and lead. Excavation of all of this slag is not practicable, however, because of its large volume, the potential for fractured slag to reach the bay during excavation, and the cost to dispose this volume of material.

The copper refinery and the fine ore bins areas include both contaminated soil and slag. If, after soil removal, these areas continue to act as significant sources of groundwater contamination, EPA will evaluate whether further excavation of slag is necessary.

In the southeast plant area, the combination of organic constituents such as DMA and buried sawdust appear to enhance the mobility of metals in slag, resulting in high concentrations of metals in ground water. The sawdust, however, is buried 25 to 30 feet in slag and under saturated, highly permeable conditions adjacent to the shoreline. Excavation through the slag to remove the sawdust at these depths is not technically practicable.

Otherwise, soils in the arsenic kitchen, stack hill, cooling pond, copper refinery and fine ore bins area can be removed with conventional excavation techniques. Diversion trenches and other techniques to dewater source area soils prior to excavation would need to be used and are implementable when carefully designed and constructed. Treatment or disposal of contaminated water resulting from dewatering is implementable.

OCF

An OCF can be built in either the parking lot or arsenic kitchen areas of the Site. One concern regarding implementability is whether the OCF will have sufficient capacity for on-site soils and debris. Adding some capacity to the bermed structure in the parking lot and to the circular earth berm in the arsenic kitchen area prior to completion of the structure may be possible by

increasing its height. However, the ability to "add" height is limited by the need for structural stability and by future uses of the Site. Capacity could also be added to the linear design. Capacity could not be added once the circular concrete tank is constructed.

Off-site disposal would probably require the construction of a staging area. Currently there is no railroad access to the site and trucks would have to be used to transport excavated soils and demolition debris to the staging area.

Capping the Site

Capping with either low permeability asphalt or soil is possible. For either type of cap it would be necessary to regrade the site and assure that several drainage and ponding areas on the site are eliminated. In general, capping would use common conventional construction techniques that have been proven reliable. Maintenance would be required for both types of caps but would be more intensive for the asphalt cap and would require annual crack sealing and seal coats. Both caps would require guidelines to minimize overall disturbances after they are installed.

Portions of either type of cap would need to be removed if future cleanup activities are necessary (e.g., installing a ground-water pump and treat system).

Surface Water. Repair or replacement of the existing surface water drainage system is feasible but must be coordinated with soil excavation and capping activities. Conducting repair/replacement activities prior to placing the cap would not be difficult to implement. Once a cap is in place, maintenance, repair or replacement of the existing drainage system or the slip-lined system would be the most difficult since it would require breaking through the cap.

Sliplining most pipes in the current drainage system is technically feasible for most, but not all, of the drain pipes. Also, in order to find and access some of the drainage pipes for slip-lining, it may be necessary to excavate some of the slag. In general, slag excavation is more difficult than removing soil and newly fractured pieces of slag tend to be more leachable in surface and ground water. Over the long-term, it would be most practicable to build a new drainage system for several reasons: (1) blueprints of the new system would be available to future workers, owners, etc.; (2) a new drainage system can be constructed within the cap thus workers would not be exposed to contaminated soils beneath the cap when making repairs; and (3) the protective clay layer of the cap would probably not need to be breached if repairs or replacement of new drainage pipes are necessary. Property access from adjacent land owners for installation of some parts of a new system would be necessary.

Diversion of surface water run-on is also technically feasible. Property access for installation of the surface water diversion system from adjacent land-owners, the Town of Ruston and the City of Tacoma would be necessary and is believed possible. In addition, the City would have to verify that there was sufficient capacity at the City and/or Edwards Street outfalls to accept the diverted surface water.

Demolition. Building demolition and dust suppression are technically and administratively implementable because they employ conventional trade methods.

Ground Water. Groundwater monitoring is possible and has been conducted on this Site for many years. Bi-annual monitoring is currently being performed. Quarterly monitoring would begin as soon as soil excavation is complete and before a cap is installed.

Shoreline Armoring. See discussion above under "long-term effectiveness and permanence."

(7) Cost

EPA has grouped Asarco's cost estimates into two major categories. The first group contains these elements of the cleanup that EPA believes are essential under any acceptable cleanup alternative. The total cost of these "essential elements" is $22.5 million. The estimated costs of essential elements and the disposal alternatives are shown in Table 8-2.

(8) State Acceptance

The State of Washington concurs with the selected remedy and phased approach described in this ROD for the former Asarco Tacoma Smelter Facility. The combination of measures to excavate and consolidate the more highly contaminated soils and debris in a containment facility with a design equivalent to federal hazardous waste disposal standards, to cap the entire Site, and to provide certain Site restrictions is appropriate and protective against exposure to such soils. This current ROD provides for measures to divert surface waters from contact with contaminants, however, the ROD also provides that additional remedial measures may be taken on surface water should such further measures be necessary. Ground water will be addressed in a separate, second phase ROD which will be prepared after the impacts of the soils actions and water diversion measures under this ROD have been evaluated. This approach and selected remedy are deemed to be in compliance with the environmental laws and regulations of the State.

(9) Community Acceptance

EPA held a 90-day public comment period on the cleanup activities for the Site. It received approximately 900 comments either directly, or through Asarco or the Tacoma City Club. In addition, EPA has considered public comments in developing its selected remedy by tracking the land use planning strategy and through contacts with and input from the public. Much of the public interest appears to be focused on what to do with the Asarco Site after the cleanup, however, there were many specific comments on the elements of EPA's Preferred Alternative.

EPA believes that its selected remedy will be acceptable to the community based on the public comment received and their continued involvement in implementation of this cleanup.

To date, the most debated public issue regarding the cleanup itself has been whether to dispose contaminated soil and other materials in an OCF. Many members of the community, including the elected leaders and local business leaders, expressed support for an OCF. It appears that most of the support for on-site disposal was a result of Asarco's promise, in the "Agreement in Principle," with Ruston, Tacoma, and the Park District, to fund an estimated $15-20 million of future development activities on the Site.

Although the OCF provision in the Agreement in Principle is not binding on EPA, the overwhelming community support for an OCF is a significant factor in EPA's final remedy selection. Several commenters who generally supported an OCF suggested design modifications for the disposal facility such as treating soil before disposal, constructing separate cells within the unit for more precise monitoring and segregated disposal of soil (see Section 7.2 for EPA's responses to these comments). In addition, several commenters encouraged EPA to select the remedy that would be the most protective of human health and the environment over the long-

TABLE 8-2. COST

Essential Elements:

Activity	Capital Cost	Operation & Maintenance (annual)	Present Worth
Plant Site Soils:			
Capping the Site			
Smelter	$6.4 m	$6,000	$6.5 m
Slag Peninsula	$923,000	$5,500	$1 m
Demolish fine ore bins building	$1.4 m	$0	$1.4 m
Interception trenches *(for dewatering and diverting ground water)*	$710,000	$0	$710,000
Surface Water:			
Replace drainage system with new drainage system	$1.4 m	$7,200	$1.5 m
Shoreline Armoring:			
Shoreline armoring (riprap)			
Smelter	$3.4 m	$12,000	$3.6 m
Slag Peninsula	$2.5 m	$11,000	$2.6 m
Ground Water and Marine Sediments:			
Abandon production well	$9,750	$0	$9,750
Monitoring of ground water and sediments	$650,000	$263,000	$4.7 m
Other Elements:			
Institutional controls	$500,000	$0	$500,000
Essential Elements Total			$22.5 m

Plant Site Soils (Excavation/Treatment/Disposal)

Activity	Capital Cost	Operation & Maintenance (annual)	Present Worth
(a) Excavation and treatment of soil and materials from source areas; treated soil put back below Site cap	$38.2 m	$0	$38.2 m*
And			
(b) Off-site disposal of debris	$12.7 m*	$0	$12.7 m
SUBTOTAL			$50.9 m

* *Please note that Asarco recently revised its estimated cost of on-site treatment ($38.2 million) from the estimate that was used for Alternative PSS-4A in Section (F) above ($48.2 million).*

Or			
(c) Excavation and disposal of soil and debris in RCRA OCF (no treatment)	$22.6 m	$12,000	$22.8 m
Or			
(d) Excavation and treatment of soil and disposal of treated soil and debris in on-site hazardous waste landfill	$65.3 m	$12,000	$65.5 m
Or			
(e) Excavation and treatment of soil and disposal of treated soil in on-site solid waste landfill, debris in off-site hazardous waste landfill	$70 m	$12,000	$70.2 m
Or			
(f) Excavation, and off-site treatment and disposal of soil and debris	$75.1 m	$0	$75.1 m

Essential Elements		*Excavation/Treatment/Disposal*		*TOTAL Cleanup Costs*
$22.5 million	+	(a) plus (b) $50.9 million	=	$73.4 million
$22.5 million		(c) $22.8 million		$45.3 million
$22.5 million		(d) $65.5 million		$88 million
$22.5 million		(e) $70.2 million		$92.7 million
$22.5 million		(f) $75.1 million		$97.6 million

*This amount includes an estimated cost of $200,000 to fill the tunnel. Removing the tunnel is estimated to cost $2.2 million. decision whether to remove or fill will be made during remedial d n.

term and not be influenced by Asarco's promise of future development. Based on EPA's belief that an OCF can be designed to be protective over the long-term and the overwhelming community support, EPA has significantly modified this component of its Preferred Alternative and selected disposal in an OCF rather than treatment.

EPA has received other significant comments on its proposed approach to cleanup the Site. Several natural resource trustee agencies and environmental groups have actively participated in EPA's technical meetings on cleanup and have submitted written comments. They have stated that EPA needs to develop an environmentally sound cleanup for the Site that ends current chemical contamination and that is not compromised or undermined by potential future land uses. EPA believes that its cleanup meets those objectives and that it will be important for these groups and local citizens to continue be involved with the review of the remedial design plans for this Site.

In addition, the Department of Natural Resources, the U.S. Fish and Wildlife Department, Citizens for a Healthy Bay and Asarco raised questions regarding the need for armoring the slag based on the amount of slag erosion and the design of shoreline armoring. Although it is visually apparent that slag is eroding, EPA agrees with the commenters that the extent and location of erosion should be determined first (e.g., using durability tests). After this step, EPA has determined that additional design studies will be conducted to determine the location and extent of armoring, including cutbacks or excavation in order to anchor the base of the armoring.

EPA also received many comments that encouraged site cleanup to progress as quickly as possible. Therefore, EPA has decided that if the Site is ready to be capped, but all of the Ruston/North Tacoma residential soils have not been removed from the Study Area, the Site will be capped and an appropriate off-site disposal facility will be selected for these soils as per Ecology's dangerous waste exemption.

9.0 THE SELECTED REMEDY

EPA's selected remedy combines elements from several of the media-specific alternatives described above. The selected remedy meets the requirements of the two mandatory threshold criteria, protection of human health and the environment and compliance with ARARs, and provides the best balance of benefits and trade-offs for the former Asarco Tacoma Smelter site.

Several proposed actions described in EPA's Preferred Alternative have either been initiated or completed since the public comment period. Ground water and sediments monitoring is underway (October 1994). In addition, EPA has allowed Asarco to abandon the production well (December 1994).

The following are the individual components of EPA's Selected Remedy.

9.1 PLANT SITE SOILS

9.1.1 Excavate Soil and Granular Slag From Five Source Areas[9]

Contaminated soil that fails the TCLP test in the stack hill, cooling pond and arsenic kitchen areas and contaminated soil and granular slag from the copper refinery and fine ore bins building areas will be excavated to the extent feasible. The party (EPA or Asarco) conducting the cleanup will perform the following activities during soil excavation:

(a) Asarco will submit the additional soil borings data required under the AOC (October 1994) to EPA during remedial design.

(b) Use interception trenches, or other applicable technology, to divert ground water where necessary to allow for easier excavation of soils.

(c) Control soil erosion and contaminated stormwater runoff by using best management practices (for example, sediment ponds, silt fences, diversion ditches, cut and fill slopes).

(d) Confirm that all necessary excavation has been performed.

(e) Remove or fill the car tunnel to allow for future land use plans. Whether the railroad tunnel will remain will be determined after discussions with Burlington Northern railroad.

(f) Conduct a wetlands assessment at the Site.

(g) Use capping material (see Section 9.1.3) to fill and regrade the excavated areas.

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[9] Excavation of the sixth source area, the southeast plant area, is impracticable (see "Implementability" in Section 8.0 above.)

9.1.2 On-Site Disposal

(a) Construct an OCF northeast of the arsenic kitchen area. The OCF will be an approximately 600-foot diameter circular earth berm with an estimated capacity of 240,000 cubic yards. The liner, cap, leak detection, collection and removal system, leachate collection and removal system and surface run-on and run-off control systems will meet federal and state standards for a hazardous waste landfill, see performance standards in Section 9.9.

(b) Construct surface water and groundwater diversion controls (for example, interception trenches and grout wall) around the OCF to prevent surface water and ground water from coming into contact with the OCF.

(c) Dispose the soils excavated from the source areas, the bricks temporarily stored on the stack hill, and the hazardous waste materials temporarily stored in the fine ore bins building in the OCF. Materials that are not on-site as of the date of this ROD will not be disposed in the OCF.

(d) Crush or shred over-sized debris prior to disposal.

(e) Conduct the appropriate seismic studies in order to construct the OCF to withstand earthquakes and landslides to the extent practicable.

(f) Monitor air quality to ensure that dust is not generated when soil and debris are excavated and disposed in the OCF (see other "safety measures" below).

(g) Do not dispose wet materials, including marine sediments, in the OCF.

(h) In the design plans for the OCF, allow for a limited amount of additional capacity in the event more than the estimated 160,000 cubic yards of soil or 80,000 cubic yards of demolition debris require disposal. In the event the amount of waste to be disposed is greater than the maximum capacity of the OCF, this material will be disposed off-site in an appropriate facility.

(i) Develop a plan for the closure of Ruston Way adjacent to the Site when construction of the OCF occurs.

(j) Maintain the OCF in perpetuity.

9.1.3 Capping the Site (PSS and slag and the slag peninsula)

After excavation of materials from the source areas, cap the entire Site (with the exception of the OCF and the possible exception of the Stack Hill area, see performance standards below) with, from bottom to top, soil excavated during the residential Study Area cleanup, a low permeability clay liner, a gravel drainage layer, at least 12 inches of clean topsoil (i.e., below MTCA residential cleanup levels), and sod, see Figure 7-1. The cap will meet the performance standards identified in Section 9.9. Capping of the Site includes the following elements:

(a) Grade and prepare the Site for capping, including grading the ramp constructed from Thorne Road slag. Use contaminated residential soils as a sub-base for the

cap only in areas of the Site where they will not come into contact with ground water, for example, the slag portions of the Site. Stockpile contaminated residential soils on-site until they are ready to be used for capping.

(b) If the Site is ready to be capped, but not all of the residential soils have been excavated from the Ruston/North Tacoma Study Area, an appropriate off-site disposal facility (see Ecology's dangerous waste exemption dated December 20, 1993) will be selected. Whether a temporary staging area, on- or off-site, will be necessary will be determined during remedial design.

(c) Assure that existing asphalt and building pads on the site will not cause pooling and standing water beneath the cap. Eliminate pooling of surface water on the surface of the cap.

(d) Incorporate planning for future development, such as site grading, utilities, surface water drainage systems, landscaping and terracing, into design and construction of the cap to the extent possible.

(e) Fence and plant low lying shrubs in areas determined to be too steep to cap (e.g., the east and west gully slopes of the stack hill). Apply a geotextile material to the soil to provide erosion protection, as well as a means for supporting vegetative development.

(f) Perform mitigation activities if wetlands or aquatic ecosystems are adversely impacted by soil removal or capping. Evaluate the feasibility of setting aside areas on the slag peninsula to allow marine birds to feed and roost.

(g) Maintain the cap.

9.2 DEMOLISH REMAINING BUILDINGS AND STRUCTURES

Demolish all of the remaining buildings and structures on the smelter site. The sequence of building demolition and construction of the OCF will be determined during remedial design.

(a) Prior to demolition, inspect all remaining buildings and structures to locate and identify all asbestos-containing material (ACM). Remove ACM from the on-site buildings and dispose of it off-site in accordance with applicable federal and state requirements.

(b) Vacuum and wash buildings and structures at the Site before beginning demolition activities. Wash areas of structures containing dust that are inaccessible for vacuuming to curtail dust emissions. Collect wastewaters generated from the dust suppression system at each demolition site and route to a wastewater evaporation system, or dispose in an appropriate manner.

(c) Reactivate the air monitoring stations which were used during previous demolition activities (e.g., Site Stabilization--Phase 2).

(d) Use conventional trade demolition techniques for the demolition of, or dismantling of the remaining on-site structures. Use conventional equipment, such as shears, grapples, loaders, and cranes, where necessary to safely and efficiently dismantle the structures.

(e) Sample all debris from demolition of remaining buildings before disposal. Dispose any material other than wood waste that is determined to be hazardous waste using the TCLP test (e.g., steel, concrete, metal) in the OCF. Dispose debris that is not hazardous waste, but fails the wipe test, either off-site pursuant to a dangerous waste exemption issued by Ecology dated May 23, 1994, or in the OCF. Where appropriate, pressure wash debris. Recycle metal materials that pass both TCLP and the wipe test. Dispose all wood debris in an appropriate off-site disposal facility.

9.3 SURFACE WATER

(a) Plug and abandon or remove the entire existing surface water drainage system and install a new drainage system, including outfalls, in the smelter site cap to collect or divert water that runs onto the Site from the off-site drainage basins and from precipitation that originates on the site. In addition, ensure that seeps on the stack hill and other areas of the Site do not run on the Site.

(b) Monitor surface water quality during and after implementation of repair and replacement of the drainage system, soil removal, and capping. If surface water quality continues to exceed federal and state standards, treatment of surface water will be evaluated.

(c) Maintain the surface water drainage system.

9.4 SHORELINE ARMORING

Shoreline armoring of the plant site and slag peninsula, see Figure 7-3.

(a) Determine the extent of shoreline erosion by performing durability tests on the slag (e.g., specific gravity, absorption, accelerated expansion, abrasion tests, freeze/thaw test) and visual observation.

(b) Determine where shoreline armoring should be placed based on erosion tests.

(c) Anchor armoring on the slag face on the bayward side of the slag face along the plant site and slag peninsula, as appropriate, to prevent erosion of the slag due to currents, waves and tidal action. The interior portion of the Yacht Club basin will not require armoring.

(d) Remove abandoned structures, debris and waste (treated pilings, cables) near the shoreline along the slag peninsula as necessary.

(e) Mitigate or compensate for shoreline armoring activities that may result in adverse impacts to intertidal habitat. Identify and analyze potential mitigation measures following the guidelines under the Clean Water Act and the state's hydraulic code rules. EPA will work during the design phase of the cleanup with the federal and state trustees of natural resources to develop a mitigation plan.

Required mitigation measures to remedy the impact to the marine environment from shoreline armoring may include shoreline pull back and sloping, development of pocket beaches, mudflats, vegetated shallows, and shoreline irregularity, and may occur on-site or off the Asarco property.

(f) Maintain the shoreline armoring.

9.5 GROUND WATER AND MARINE SEDIMENTS

(a) Continue monitoring surface water and ground water and sampling marine sediments. Future sampling programs may include further monitoring of marine sediments to evaluate whether discharges from the Site after this cleanup are continuing to contaminate the sediments. Remedial measures to address offshore sediments will be included in a separate ROD.

(b) To control contaminants from entering the deeper ground water, EPA directed Asarco in December 1994 to "abandon" the production well, a deep well in the central area of the site that supplied water for smelter activities. Abandoning the well involved making small holes in and filling the well casing (the walls of the well) with grout, a concrete-like material.

9.6 OTHER ELEMENTS OF THE SELECTED REMEDY

9.6.1 Safety Measures

During cleanup, safety measures include, at a minimum, air monitoring with Hi-vol and PM_{10} air particulate monitors, using dust suppression techniques during excavation and disposal activities, lining and covering truck beds when transporting contaminated materials on public roads, removing soils from truck wheels before they travel on public roads (for example, from the stack hill area to the lower Site), developing a transportation plan to establish local truck routes to minimize disruption to the community, and temporarily storing hazardous waste on-site in compliance with waste pile requirements.

9.6.2 Integrating Cleanup With Land Use Plans

Develop an enforceable program of restrictions and guidelines to supplement the actual cleanup activities. Such measures are necessary to ensure that development activities do not affect the long-term effectiveness of the cleanup and will include, but are not limited to the following:

(a) Establish a maintenance and monitoring program to ensure the continued integrity of the low-permeability soil cap, the OCF and shoreline armoring.

(b) Establish guidelines to ensure that future cleanup measures (including, if necessary, remediation of ground water and/or surface water) will not be prevented or hindered by development activities.

(c) Establish guidelines for conducting construction and maintenance activities to ensure that little or no remaining contamination is exposed or released during future (post-cleanup) excavation. Develop additional guidelines to identify the appropriate actions if contaminant exposure or release occurs (e.g., Asarco's responsibility for disposal of contaminated soil). Activities addressed by these procedures will include installation of underground utilities, basements or elevator shafts and roadways.

(d) Use deed restrictions to prohibit the use of ground water at the Site and to ensure compliance with the program and guidelines described in (a), (b), and (c) above.

(e) Develop public educational materials and markers or signs for future users and occupiers of the Site. The materials and markers or signs will describe the cleanup and explain what the users and occupiers should and should not to maintain the effectiveness of the cleanup.

9.6.3 Periodic Review

The protectiveness of the cleanup will be reviewed at least every five years.

9.7 CLEANUP SCHEDULE

EPA estimates that the selected remedy will take five years to complete. It is possible that soil removal and/or capping in one area of the Site (for example, the stack hill or parking lot) can be completed so that development activities can start prior to completion of the cleanup of the entire Site.

EPA will not allow development to begin in any area, however, until it determines that cleanup in that area is complete, that development is safe given cleanup activities taking place elsewhere on-site, and that development would not interfere with potential cleanup measures in the future.

9.8 COST OF THE SELECTED REMEDY

EPA estimates that the cost to perform the Selected Remedy will be $45.3 million. These costs are estimated and are considered to be accurate to within -30% to +50%. Costs are described using the present worth methodology with a discount rate equal to five percent. The cost estimate includes direct and indirect capital costs, as well as annual operations and maintenance costs. Operation and maintenance (O & M) costs have been estimated for 30 years but O & M activities will be required in perpetuity. See Section 8(7) and Table 8-2 for a more complete breakdown of costs.

9.9 PERFORMANCE STANDARDS

The final Site cleanup levels will be adjusted so that the overall cancer risk from all of the media and the exposure pathways will be equal to or less than 1×10^{-5} and the non-cancer effects will be equal to or less than 1.0

PLANT SITE SOILS

In order to obtain the Cleanup Objectives described in Section 6.7, performance standards and/or remediation goals have been established for each medium that will be cleaned up.

Source Areas. The boundaries of the source areas that require excavation generally will be defined by soils that exceed hazardous waste levels as determined by the TCLP test, see below, and by practical limits on excavation, see Section 8 - Implementability. If soils outside the source areas exceed hazardous waste levels, EPA will evaluate whether further excavation is warranted. These numbers do not represent remediation goals but rather serve as markers for areas to be excavated. Because all areas of the Site will be addressed by soil/slag removal, the OCF, or the Site cap, specific remediation goals for PSS have not been selected.

Chemical	mg/L
Arsenic	5.0
Cadmium	1.0
Chromium	5.0
Lead	5.0
Mercury	0.2
Selenium	1.0
Silver	5.0

Site Cap

The entire site, excavated source and non-source areas, will be capped. The cap will meet the requirements described herein. If, however, after excavation, soil in the stack hill area is below levels comparable to the action levels set for the Ruston/North Tacoma cleanup, a less stringent cap using only soil and a vegetative cover will be required. "Comparable" levels will be determined by EPA and Ecology.

Cover System

A low hydraulic conductivity layer including a minimum of one (1) feet of compacted soil over the soil and slag with a maximum hydraulic conductivity of 1×10^{-7} cm/sec, which is to be designed, constructed, operated and maintained to maximize removal of water by the overlying drainage layer and to minimize infiltration of water into the contaminated soil, and slag.

A drainage layer of at least .5 feet or greater granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/sec or equivalent. The drainage layer, which is placed above the low hydraulic conductivity layer, must be designed to minimize the amount and residence time of water coming into contact with the low hydraulic conductivity layer, thereby decreasing the potential for leachate generation.

A top cover comprised of two (2) layers. The top component is vegetation designed to impede erosion while still allowing surface runoff from major storm events. The lower component is a minimum of one (1) foot of soil capable of sustaining plant species that will minimize erosion.

The cover system must be designed and constructed to meet the following performance standards:

(a) Prevent direct contact of people, animals, and surface water with contaminated soils and slag.

(b) Prevent contaminated soil from being wind-blown.

(c) Provide long-term minimization of migration of liquids through the Asarco Smelter site.

(d) Function with minimum maintenance.

(e) Promote drainage and minimize erosion or abrasion of the cover.

(f) Accommodate settling and subsidence so that the cover's integrity is maintained.

(g) A construction quality assurance (CQA) program shall be established for the cover system to ensure that the constructed cover meets or exceeds all design criteria and specifications.

Modifications of the cover system in areas where development will occur will need to be approved by EPA on a case-by-case basis.

Post Closure Care

Maintain the integrity and effectiveness of the final cover, including periodic inspections and making repairs to the soil cap as necessary to correct the effects of settling, subsidence, erosion, or other events.

Prevent run-on and run-off from eroding or otherwise damaging the final cover.

ON-SITE CONTAINMENT FACILITY

The following performance standards are based on requirements in 40 C.F.R. Part 264 for hazardous waste landfills.[10]

Bottom Liner System (40 CFR Sections 264.301(c)(i), 264.301(a))(1)(i), (ii), and (iii))

A composite top liner including a minimum of one (1) foot of compacted soil with a maximum hydraulic conductivity of 1×10^{-7} cm/sec overlain by a flexible membrane liner.

A composite bottom liner including a minimum of three (3) feet of compacted soil with a maximum hydraulic conductivity of 1×10^{-7} cm/sec overlain by a flexible membrane liner designed to prevent the migration of hazardous constituents into the upper components.

The upper component of the top and bottom composite liner will be designed and constructed to prevent migration of hazardous constituents into this component during the active life and post-closure period. The lower component of the top and bottom composite liner will be designed and constructed to minimize the migration of hazardous constituents if a breach in the upper component were to occur.

The liner system shall be designed and constructed to comply with 40 CFR Sections 264.301 (a)(1)(i), (ii), and (iii) to assure that it is engineered to withstand the chemical and physical stresses it will be subjected to while containing the waste. The liner system shall be located, designed, constructed, and operated to be completely above the seasonal high water table.

Leachate Collection and Removal System (40 CFR Sections 264.301(c)(2)) and 264.301(c)(3)(iii) and (iv))

The leachate collection and removal system immediately above the top liner must be designed, constructed, operated, and maintained to collect and remove leachate from the landfill during the active life and post-closure care period. It shall be designed and operated to ensure that leachate depth over the liner does not exceed one (1) foot.

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[10] Specific references to federal regulations only are set forth in this section. The requirements of this section are intended to also comply with state requirements for landfills set forth in WAC 173-303-665.

The leachate collection and removal system immediately above the top liner shall be designed and constructed to comply with 40 CFR Sections 264.301 (c)(3) (iii) and (iv) to assure that it is engineered to withstand the chemical and physical stresses it will be subjected to and to minimize clogging.

Whether leachate will be treated and discharged on-site or disposed off-site will be determined during remedial design.

Leak Detection Collection and Removal System (40 CFR Sections 264.301(c)(3)(i-v), 264.301(c)(4), 264.302, and 264.304).

The leak detection, collection and removal system in between the liners shall be constructed with a bottom slope of one percent or more of granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/sec and a thickness of 12 inches or more, or with synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m2/sec or more and it shall be constructed with sumps and liquid removal methods that shall be operated to minimize the head on the bottom liner system in accordance with 40 CFR Sections 264.301(c)(3)(v) and 264.301(c)(4). An action leakage rate and response action plan will be established for the OCF in accordance with 40 CFR Sections 264.302 and 264.304 to address design flow rates in the leak detection system which will result in a head greater than a foot on the bottom liner system.

The leak detection, collection and removal system in between the liners shall be designed and constructed to comply with 40 CFR Sections 264.301 (c)(3)(iii) and (iv) to assure that it is engineered to withstand the chemical and physical stresses it will be subjected to and to minimize clogging.

Surface Run-on Control System (40 CFR Sections 264.301(g) and (i))

Design, construct, operate and maintain a run-on control system capable of preventing flow onto the active portion of the landfill during peak discharge from at least a 25-year storm. Collection and holding facilities which are associated with this system must be emptied expeditiously after storms to maintain design capacity of the system.

Surface Run-off Control System (40 CFR Sections 264.301(h) and (i))

Design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 24 hour, 25-year storm. Collection and holding facilities which are associated with this system must be emptied expeditiously after storms to maintain design capacity of the system. Discharges to Commencement Bay shall comply with surface water performance standards.

Control of Particulate (40 CFR Section 264.301(j))

The OCF shall be operated to control wind dispersal of contaminated soil, slag and debris placed in it.

Monitoring, Inspection and Construction Quality Control (40 CFR Sections 264.303, and 264.19)

A CQA program shall be established for the OCF to ensure that the constructed unit meets or exceeds all design criteria and specifications in accordance with 40 CFR Sections 264.19 and 264.303. The landfill systems must be inspected during operation and the leak detection system after closure. Inspection of the landfill during operations will be in accordance with 40 CFR Section 264.303.

Cover System (40 CFR Sections 264.310 and 264.19)

A composite low hydraulic conductivity layer including a minimum of two (2) feet of compacted soil over the waste with a maximum hydraulic conductivity of 1×10^{-7} cm/sec overlain by a flexible membrane liner designed, constructed, operated and maintained to maximize removal of water by the overlying drainage layer and to minimize infiltration of water into the contaminated soil, slag and debris in the OCF.

A drainage layer of one (1) foot or greater granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/sec and a thickness of 12 inches or more, or with synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m2/sec or more overlain by filter layer to prevent clogging of the drainage layer. The drainage layer, which is placed above the composite low hydraulic conductivity layer, must be designed to minimize the amount and residence time of water coming into contact with the composite low hydraulic conductivity layer, thereby decreasing the potential for leachate generation.

A top cover layer comprised of two (2) layers. The top component is vegetation designed to impede erosion, but allowing the surface runoff from major storm events. The lower component *is a minimum of two (2) feet of soil capable of sustaining plant species that will minimize erosion.*

The cover system must be designed and constructed to meet the following performance standards specified under 40 CFR Sections 264.111 and 264.310:

(a) Minimize the need for further maintenance.

(b) Control, minimize or eliminate, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere.

(c) Provide long-term minimization of migration of liquids through the closed OCF.

(d) Function with minimum maintenance.

(e) Promote drainage and minimize erosion or abrasion of the cover.

(f) Accommodate settling and subsidence so that the cover's integrity is maintained.

(g) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

(h) A CQA program shall be established for the OCF cover system to ensure that the constructed cover meets or exceeds all design criteria and specifications in accordance with 40 CFR Section 264.19.

Closure Certification and Post Closure Care of the OCF (40 CFR Sections 264.310, 264.115, 264.116, 264.117, 264.118, 264.119, and 264.120)

The closure certification, monitoring, operation, maintenance and record keeping requirements of 40 CFR Sections 264.310, 264.115, 264.116, 264.117, and 264.118 must be adhered to after closure of the OCF. The post-closure period for the OCF shall be indefinite.

DEMOLITION/EXCAVATION/DISPOSAL

(a) Air. Hi-vol and PM_{10} air particulate monitors will be used to confirm that the following levels are not exceeded.

Chemical	mg/L[11]
Arsenic	0.2
Lead	0.75
PM_{10}	75

(b) Dust Control. A "no-visible dust" standard will be in effect.

SURFACE WATER

The remedial goals identified for surface water in EPA's September 1993 document entitled, "*EPA's Preliminary Remedial Action Objectives,*" (Table 9-1) are the performance standards that surface water discharging into Commencement Bay must meet. Whether a mixing zone for point source discharges is necessary will be determined during remedial design.

Shoreline Armoring

Minimize the release of slag particles into the bay.

Ground Water

The preliminary remediation goals for Class III ground water impacting surface water (water that is not suitable for drinking) (Table 9-2) will be used as a benchmark to determine the effectiveness of source control activities. Final groundwater remediation goals will be selected in a final ROD for ground water.

[11] The arsenic level is based on 5×10^{-5} risk-based levels over a 10 year period. The lead level is based on 1/2 the allowable PSAPCA level. PM_{10} levels are based on half of the quarterly allowable 24-hour allowance.

TABLE 9-1. REMEDIATION GOALS FOR SURFACE WATER IMPACTING PUGET SOUND

CONTAMINANT	REMEDIATION GOAL (µg/L)	REFERENCE
Arsenic	2.0	MTCA B, PQL[a] based on the CRDL[b]
Beryllium	1.0	MTCA B, CRDL
Cadmium	8.0	MTCA B, WQS for aquatic life
Chromium VI	50	MTCA B, WQC/WQS for aquatic life
Copper	10.0	MTCA B, PQL based on EPA Method 1220.2 which has an IDL of 1.0 to 2.0
Lead	5.8	MTCA B, WQS
Mercury	0.2	MTCA B, PQL based on CRDL
Nickel	7.9	MTCA B, WQS
Selenium	71	MTCA B, WQC/WQS for aquatic life
Silver	1.2	MTCA B, WQS
Zinc	76.6	MTCA B, WQS
Total Petroleum Hydrocarbons	10,000.0	MTCA B, Ecology's Guideline for Discharges Containing Oil and Grease of Mineral Origin
Aniline	1.3-37	Preliminary criteria for the protection of aquatic life
4-Chloroaniline	29-61	Preliminary criteria for the protection of aquatic life
N-Methylaniline	160	MTCA B, risk-based
N-Nitrosodi-phenylamine	10	MTCA B, PQL based on CRDL

a Practical Quantitation Limit
b Contract Required Detection Level

NOTE: If use of a mixing zone is appropriate, the compliance point for the surface water discharge would be at the edge of the designated mixing zone in Puget Sound. These values have not been adjusted to take into account the background levels of these contaminants in uncontaminated surface water on land or in surface water in Puget Sound.

TABLE 9-1. REMEDIATION GOALS FOR SURFACE WATER IMPACTING PUGET SOUND

CONTAMINANT	REMEDIATION GOAL (µg/L)	REFERENCE
Arsenic	2.0	MTCA B, PQL[a] based on the CRDL[b]
Beryllium	1.0	MTCA B, CRDL
Cadmium	8.0	MTCA B, WQS for aquatic life
Chromium VI	50	MTCA B, WQC/WQS for aquatic life
Copper	10.0	MTCA B, PQL based on EPA Method 1220.2 which has an IDL of 1.0 to 2.0
Lead	5.8	MTCA B, WQS
Mercury	0.2	MTCA B, PQL based on CRDL
Nickel	7.9	MTCA B, WQS
Selenium	71	MTCA B, WQC/WQS for aquatic life
Silver	1.2	MTCA B, WQS
Zinc	76.6	MTCA B, WQS
Total Petroleum Hydrocarbons	10,000.0	MTCA B, Ecology's Guideline for Discharges Containing Oil and Grease of Mineral Origin
Aniline	1.3-37	Preliminary criteria for the protection of aquatic life
4-Chloroaniline	29-61	Preliminary criteria for the protection of aquatic life
N-Methylaniline	160	MTCA B, risk-based
N-Nitrosodi-phenylamine	10	MTCA B, PQL based on CRDL

a Practical Quantitation Limit
b Contract Required Detection Level

NOTE: If use of a mixing zone is appropriate, the compliance point for the surface water discharge would be at the edge of the designated mixing zone in Puget Sound. These values have not been adjusted to take into account the background levels of these contaminants in uncontaminated surface water on land or in surface water in Puget Sound.

TABLE 9-2. PRELIMINARY REMEDIATION GOALS FOR CLASS III GROUND WATER IMPACTING SURFACE WATER IN PUGET SOUND

CONTAMINANT	EPA REMEDIATION GOAL (µg/L)	REFERENCE
Arsenic	6	MTCA B, background [MTCA B number (10^{-6} risk) for fish consumption is 0.14
Beryllium	1.0	MTCA B, PQL based on CRDL [MTCA B number (10^{-6} risk) for fish consumption is 0.08
Cadmium	8.0	MTCA B, Water Quality Standards (WQS) for aquatic life
Chromium VI	50	MTCA B, Water Quality Criteria (WQC)/WQS for aquatic life
Copper	40	MTCA B, background (WQS is 2.5)
Lead	12	MTCA B, background (WQS is 5.8)
Mercury	0.2	MTCA B, PQL based on CRDL (WQS/WQC are 0.025)
Nickel	0.2	MTCA B, background (WQS is 7.9)
Selenium	71	MTCA B, WQC/WQS for aquatic life
Silver	1.2	MTCA B, WQS for aquatic life
Zinc	98	MTCA B, background (WQS is 76.6)
Total Petroleum Hydrocarbons	10,000.0	MTCA B ARAR, Ecology Guideline for Discharges Containing Oil and Grease of Mineral Origin (using TPH analysis)
Aniline	1.3-37	Preliminary criteria for the protection of aquatic life
4-Chloroaniline	29-61	Preliminary criteria for the protection of aquatic life
N-Methylaniline	160	MTCA B, risk-based (10^{-6})
N-Nitroso-diphenylamine	10	MTCA B, PQL based on CRDL [MTCA B number (10^{-6} risk) for fish consumption is 6.1

10.0 STATUTORY DETERMINATIONS

10.1 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The selected remedy will eliminate, reduce, or control exposure to contaminants on the Site at the former Asarco Smelter facility. Risks from exposure to soil, slag, and surface water will be eliminated by removing and isolating source area soils, capping contaminated soil and slag, demolishing the remaining buildings, replacing the existing drainage system with a new drainage system and armoring portions of the shoreline.

An enforceable program consisting of legal, engineering and administrative restrictions and guidelines will also be developed to supplement the actual cleanup activities. This program is required in order to assure that the cleanup activities remain protective (e.g., cap, armoring and OCF maintenance), to prohibit certain activities (e.g., drinking ground water), and to address the residual risk of the contaminants left on site.

Accordingly, the selected remedy is protective of human health and the environment.

10.2 COMPLIANCE WITH ARARs

The selected remedy will attain ARARs under federal and state law (see Table B-8 in Appendix B). Compliance with requirements for selection of cleanup actions under MTCA are discussed in Section 10.4 below. The interim measures waiver will be used for the state ARAR for restoring ground water. EPA will select a final remedial action for ground water that will attain the ARAR or provide a justification for its waiver.

10.3 COST-EFFECTIVENESS

The cost of the selected remedy is proportional to its overall effectiveness and it represents a reasonable value for the money to be spent. EPA made this determination by comparing the cost and effectiveness of treating soil versus disposing untreated soil and debris in an OCF based on the significant community support for on-site disposal.

EPA believes that excavating soil from the source areas is the key step to reducing contaminant concentrations in ground water and surface water. How to dispose of the contaminated soil has been the most significant issue in this cleanup. Treating contaminated soil with a solidification/stabilization process will bind contaminants in a cement-like mixture (but will not detoxify or reduce concentrations). Contaminants in treated soil are unlikely to move out of the soil into other media. The treated soil can be used as sub-base for a site cap. The estimated cost of treating soil is $38.2 million. If soil treatment were selected, the estimated cost for off-site disposal of contaminated debris (which cannot be treated) is $12.7 million, for a cost of $50.9 million.[12]

Both soil and debris can be disposed in an OCF. The OCF option will attain a similar objective to treatment, which is minimizing the movement of contaminants into other media, by containing the contaminated soil in a large on-site landfill. The most significant technical difference between

[12] The $50.9 million is in addition to the estimated cost of $22.5 million for the "essential elements" of the remedy (see Section 8.7 above).

treatment and the OCF is that active measures, other than monitoring, would not have been necessary for the treated soil but a permanent operation and maintenance (O&M) program is required to maintain the integrity of the OCF. The O&M program will be a legally enforceable component of the cleanup. The estimated cost for disposal in an OCF is $22.8 million.

The difference in estimated costs between the treatment and OCF options is $28 million. EPA concludes that because the ability of the OCF to isolate contaminants from the environment is as effective as treating contaminated soil, and because of the strong community support for on-site disposal, the OCF is a cost-effective solution.

It should be noted that the estimated cost to transport and dispose soil and debris in an off-site landfill is $75.1 million, over $50 million higher than the OCF option. Although off-site disposal would permanently avoid all potential problems associated with leaving contamination on-site, EPA believes that, in comparison, the OCF still represents the best value for the money. This determination is also based on the fact that significant contamination, e.g., 15 million tons of slag would remain at the Site even if contaminated soils from the source areas were disposed off-site. Off-site disposal does not mean that problems at the Site are eliminated.

EPA has determined that the other components of the selected remedy are also cost-effective because they represent a reasonable cleanup value for the money.

10.4 UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

The NCP states that this requirement is fulfilled by selecting the alternative that is protective, complies with ARARs, and provides the best balance of trade-offs in terms of the five balancing criteria (numbers 3 through 7 in Section 8.0). The modifying criteria (numbers 8 and 9) shall also be considered. Under MTCA Section 173-340-360(5), very similar criteria are used to select permanent solutions to the maximum extent practicable and to select from among the hierarchy of cleanup technologies in 173-340-360(4).

Again, the crucial decision at this Site is how to manage soil excavated from the source areas and demolition debris. The alternatives range from treating soil to disposing soil and debris, without treatment, in an OCF, to disposing soil and debris off-site. EPA believes that each of these alternatives is protective and complies with ARARs. For the following reasons, EPA has determined that disposing soil and debris, without treatment, in an OCF provides the best balance of trade-offs considering the balancing and modifying criteria, (e.g., community acceptance).

The most important differences in the alternatives are with respect to long-term effectiveness, cost, and community acceptance. Treating soils with a solidification/stabilization technology appears to be effective in preventing the movement of contaminants out of soils into other media. Treatment will not destroy or reduce the toxicity of contaminants, thus requiring long-term monitoring to ensure that treatment remains effective. Treated soils might have been put back on the Site as sub-base for a cap but not in areas where construction is likely to occur, making it less accommodating of future uses than an OCF. The estimated cost of treatment is $38.2 million, plus $12.7 million for disposing debris that cannot be treated, for a total of 50.9 million. In addition, during the 90-day public comment period, approximately 830 out of 900 local residents, businesses and local officials supported an OCF and future development of the Site.

Disposing soil and debris in an off-site landfill would be the most effective solution for the Site over the long-term because the problems associated with on-site management of this soil and debris would be eliminated. It is, however, important to remember that regardless of which alternative is selected, an estimated 15 million tons of slag, which contains hazardous substances, and contaminated soil not within the source areas will remain at the Site because it is impracticable to remove and dispose it elsewhere. Although slag and non-source area soil currently contribute less than the source areas to groundwater contamination, these are still contaminated areas that cannot be left alone. Their contribution to groundwater contamination can further be reduced by capping these areas. Thus, even if EPA selected off-site disposal of soil and debris, long-term management of the contamination that remains on-site would still be an important component of EPA's cleanup. Off-site disposal, excluding management of remaining slag and soil on-site, is estimated to cost $75.1 million. In addition, 830 out of 900 commenters supported an OCF and future development of the Site.

The OCF option, which consolidates the most contaminated soil and debris in a landfill on-site, is an effective solution over the long-term if it is designed and constructed properly and continuous attention is paid to its operation and maintenance.[13] Its estimated cost of $22.8 million is significantly less than the $50.9 million for treatment and the $75.1 million for off-site disposal. Further, Asarco has demonstrated that the OCF can be constructed on-site so as not to interfere with plans for future development of the property. Comments from individuals and groups in the community overwhelmingly endorsed this approach because of their desire to see such development at the Site. Accordingly, because it is an effective method to isolate contaminants from the environment, costs significantly less than other options, and is most accommodating of future uses desired by the community, EPA has determined that the OCF option provides the best balance of tradeoffs and, therefore, is the permanent solution to the maximum extent practicable for cleanup of the Asarco Site. For the same reasons, under MTCA, selecting disposal in an engineered facility is appropriate even though immobilization of hazardous substances is more preferred in the regulations.

EPA has determined that other components of the selected remedy are also permanent to the maximum extent practicable.

10.5 PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT.

As explained in Section 10.4 above, none of the components of the selected remedy will satisfy the preference for treatment. If treatment of surface water is necessary in the future, the preference for treatment would be satisfied.

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[13] EPA's analysis shows that treating soil before it is placed in an OCF does not provide significant benefits in terms of reducing contaminants moving into the environment should there be a structural failure of the OCF in the future. Therefore, this option has not been selected. See Section 7.2 and Appendix D.

11.0 DOCUMENTATION OF SIGNIFICANT CHANGES

In the Proposed Plan, EPA recommended treatment of contaminated source area soils because treated soils did not significantly leach above regulatory levels and EPA believed that the community and the elected officials were strongly opposed to an OCF based on meetings held in the community over the past several years. During the public comment period on the Proposed Plan, EPA received comments from the majority of the public and their elected representatives strongly encouraging the selection of an OCF in lieu of soil treatment (solidification/stabilization) and disposal.

The two approaches for these soils are comparable in terms of their overall protectiveness but differ primarily with respect to their cost and compatibility with future land use and community acceptance. For the reasons stated above, EPA's selected remedy provides for the on-site containment of excavated source area soils. Soils will not require treatment before disposal in the OCF.

In the Proposed Plan, EPA recommended that the slag shoreline along the Asarco Site and the slag peninsula be armored with riprap. During the public comment period, several commenters wondered whether the shoreline was eroding, whether the erosion was causing an adverse impact on the adjacent marine sediments and if more harm than good would be caused if by adversely impacting existing habitat which lived on the current slag face.

Several commenters questioned whether the slag shoreline was eroding, whether the eroded slag particles caused an adverse impact on the adjacent marine environment, and why the shoreline needed to be armored since it is already providing a suitable habitat for marine biota. If shoreline armoring was determined to be necessary, commenters also questioned how it would be anchored to the existing slag face and why riprap (large rocks) was selected instead of artificial beach nourishment (small rocks and sand) to armor the slag.

After evaluating the comments received and finding out that a shoreline monitoring station, consisting of large rocks piled against the shoreline was destroyed by tidal action and strong shoreline currents, EPA still believes that some amount of shoreline armoring will be necessary to prevent erosion of slag particles, which cause adverse effects to marine organisms in the Bay. However, EPA has determined that before the design of the shoreline armoring begins, additional data should be collected to determine (1) the extent of shoreline erosion; (2) how and where armoring should be placed; and (3) the impact of armoring to the existing marine biota versus the impact of not armoring slag to the marine biota over time. EPA will encourage other state and federal resource agencies and community groups to participate in the development of the shoreline armoring.

APPENDIX A
RESPONSIVENESS SUMMARY

ASARCO
RECORD OF DECISION
RESPONSIVENESS SUMMARY

March 1995

U.S. Environmental Protection Agency
Region 10

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LIST OF ACRONYMS USED IN THIS DOCUMENT

AIP	Agreement in Principle
ANS	American Nuclear Society
ARARs	Applicable or Relevant and Appropriate Requirements
Asarco Site	The Former Asarco Smelter Site
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CHB	Citizens for a Healthy Bay
DNR	Washington State Department of Natural Resources
EPA	U.S. Environmental Protection Agency
MWEP	Municipal Waste Extraction Procedure
NPL	National Priorities List
OCF	On-Site Containment Facility
Park District	The Metropolitan Park District
ppm	parts per million
PRP	Potentially Responsible Party
Puyallup Tribe	The Puyallup Tribe of Indians
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
Ruston	Town of Ruston
SARA	Superfund Amendments and Reauthorization Act of 1986
Tacoma	City of Tacoma
TCLP	Toxicity Characteristic Leaching Procedure
WDFW	Washington Department of Fish and Wildlife

1.0 OVERVIEW

The U.S. Environmental Protection Agency (EPA) has written this Responsiveness Summary to respond to public comments received regarding the Proposed Plan for cleanup of the former Asarco Smelter Site. EPA initially held a public comment period from August 12 through October 11, 1994. At the request of members of the community, the comment period was extended to November 10, 1994. This document reflects all of the comments that were either voiced at one of the two public meetings held during the comment period, or submitted in writing. Questions that were asked and answered at the public meetings, held on August 30 and September 19, 1994, are recorded in the meeting transcripts, and are not included in this document. The transcripts are available in the Administrative Record for the Site is located at EPA Region 10, the Main Branch of the Tacoma Public Library and all of the Information Repositories listed in Table B-1 in Appendix B.

In addition to EPA's efforts, Asarco solicited public comments on EPA's Proposed Cleanup Plan as well as on an "Agreement in Principle" between the company and local governments for future development of the site. Comments received by Asarco in response to its request have been summarized and are included with Asarco's comments on the Proposed Plan, Section 3.0 of this document. The Responsiveness Summary meets the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

1.1 SITE BACKGROUND

The former Asarco Smelter project is part of the Commencement Bay Nearshore/Tideflats Superfund Site in Tacoma, Washington. The Commencement Bay Site was placed on the National Priorities List (NPL) in September 1983. The Asarco Smelter Facility and the adjacent Tacoma Yacht Club breakwater (slag peninsula) are located along the shoreline in Tacoma and Ruston, Washington.

The former Asarco Smelter Site (the Asarco Site) consists of the 67-acre smelter property and the 23-acre adjacent peninsula. Many of the facility buildings and structures were erected on slag fill (a black, rock-like byproduct from the smelting process), which extended the existing shoreline when molten slag material was poured into Commencement Bay during smelting operations. An estimated 15 million tons of slag exist on the smelter property and along the slag peninsula.

Metal smelting and refining operations were active at the Asarco Site from the late 1800s until 1985 when the smelter facility was closed. During that time, lead and copper were refined from metal-bearing ores and by-products of the smelting operations were further refined to produce other marketable products such as arsenic, sulfuric acid and sulfur dioxide. Metals and organic compounds were released into the air, soil, and Commencement Bay as a result of these operations. Metals in the slag, or that were released into the soil have migrated into the Bay and into groundwater underneath the Asarco Site.

Over the past several years, samples of soil, slag, surface, and groundwater have been taken at the Asarco Site. Elevated concentrations of heavy metals and some organic compounds were detected in soil and slag throughout the property as well as in the Bay, groundwater and off-shore sediments. The contaminants of most concern for possible effects to public health and

the environment include: arsenic, cadmium, chromium, copper, lead, nickel, silver, zinc, and dimethylaniline.

Samples show that the principal threat to human health and the environment is the contaminated material in the "source areas." EPA and Asarco have identified the following six source areas: the Stack Hill, Copper Refinery Area, Cooling Pond, Arsenic Kitchen, Fine Ore Bins Building, and the Southeast Area of the Plant. These are areas that have the highest known concentrations of metals and/or organic compounds and continue to act as the primary known sources of contamination to the Bay and groundwater. Elevated arsenic concentrations ranging up to 403,100 parts per million (ppm) were detected in soil samples at one source area at the Asarco Site. Highly mobile organic compounds are also considered a principal threat because they are leaching out into surface and groundwater that is flowing into Commencement Bay.

Cleanup actions are necessary at the Asarco Site because it currently poses long-term cancer risks for workers, possible future visitors or residents, sealife, and animals. EPA has selected a comprehensive cleanup strategy in order to address the multiple sources of contamination at the smelter property and along the slag peninsula. EPA identified a range of alternatives (series of choices) to achieve cleanup objectives and goals for the Asarco Site. These alternatives are summarized in Table 7-1 of the Record of Decision. EPA has evaluated the choices and public comments on the Proposed Plan, and has selected the Phase I (source control) cleanup remedy for the Asarco Site. In addition to evaluating cleanup options, representatives of Asarco, the City of Tacoma (Tacoma), the Town of Ruston (Ruston), and the Metropolitan Park District (the Park District) have formed a "land use committee" which has negotiated an "Agreement in Principle" that calls for preparation of a consensual Master Use Plan for future development of the Asarco Site after cleanup.

1.2 PROPOSED PLAN FOR CLEANUP

One of EPA's objectives in issuing the Proposed Plan is to enable the public to participate in the process for selection of a cleanup approach for the Asarco Site. Public comments are solicited to determine whether the range of approaches is adequate, whether the discussion of differences between approaches is reasonable and comprehensive, whether EPA has made good choices in developing a preferred alternative, and whether the choices made will meet community objectives for the Asarco Site.

In developing the Proposed Plan, EPA considered the following nine legally mandated Superfund evaluation criteria:

(1) Overall protection of human health and the environment;
(2) Compliance with federal and state environmental standards;
(3) Long-term effectiveness and permanence;
(4) Reduction of toxicity mobility, or volume through treatment;
(5) Short-term effectiveness;
(6) Implementability;
(7) Cost;
(8) State acceptance; and
(9) Community acceptance.

The Preferred Alternative, outlined in EPA's Proposed Plan, addressed contamination of plant site soils, the slag peninsula, groundwater, and surface water. It was based on the alternatives

summarized in Table 7-1 in the Record of Decision, plus additional elements that EPA believes were necessary for a comprehensive cleanup. The individual components of the Preferred Alternative included excavation and treatment of soils from the source areas; disposal of soil and other materials; capping the entire Asarco Site; demolition of the remaining buildings; replacement of the entire surface water drainage system; shoreline armoring of the plant site and slag peninsula; abandonment of the production well; monitoring of surface and groundwater and sampling of marine sediments; safety measures; integration of cleanup with land use plans; cleanup schedule; and costs.

1.3 SELECTED REMEDY

EPA has carefully evaluated all of the cleanup alternatives and public comments received on the Proposed Plan, and has selected a cleanup remedy to control the source of contamination at the Asarco Site. This selected remedy is Phase I of the comprehensive cleanup plan, and is described in detail in Section 9.0 of the Record of Decision. In general, the selected remedy for source control of the contamination at the Asarco Site includes excavation of source area soils, demolition of the remaining buildings and structures, disposal of the source area soils and demolition debris in an on-site containment facility (OCF) which meets or exceeds regulatory standards for hazardous waste landfills, cap the entire Site except for the OCF which has its own cover, replace the entire surface water drainage system, armor portions of the plant site and slag peninsula shoreline, continue to monitor the surface water and groundwater, sample marine sediments and develop and implement an enforceable program of restrictions and guidelines to supplement the actual cleanup activities to ensure that the remedial action remains protective.

1.4 SUMMARY OF COMMUNITY INVOLVEMENT AND CONCERNS

EPA has placed a high priority on community involvement because many Ruston and North Tacoma property owners and residents may be affected by EPA's chosen cleanup approach. EPA recognizes that, in addition to cleaning up contamination at the Asarco Site, the community is very interested in the future use of this property. Although the primary mission of the EPA is to design a cleanup that protects human health and the environment, EPA believes that this can be accomplished with future development of the Asarco Site in mind. To achieve this goal, significant citizen participation has been important to EPA's process for selecting a remedy. The following activities were undertaken by EPA to seek public input:

- Availability Sessions where citizens could visit one-on-one with EPA and Asarco to discuss cleanup plans,
- Meetings with interested small groups to discuss investigation findings and cleanup alternatives;
- Interviews with individual citizens to improve understanding of community concerns;
- A 90-day public comment period to provide citizens with an opportunity to review the Proposed Plan and other documents related to the cleanup and submit comments to EPA;
- Two public meetings, held on August 30 and September 19, 1994, to answer questions and obtain citizen input on EPA's Proposed Plan; and

- Meetings with the Ruston/North Tacoma Coordinating Forum which is comprised of representatives from local, state and federal municipalities or agencies.

Transcripts of the August 30 and September 19 public meetings and the public comment letters and cards received by EPA are part of the Asarco Smelter Administrative Record, which is available for viewing at EPA Region 10, the Main Branch of the Tacoma Public Library and all of the information repositories listed in Table B-1 in Appendix B. In general, the commenters expressed concerns about the soil, groundwater, and surface water contamination, and its health effects; the longevity and stability of on-site containment/disposal; the effects on future land use; and issues involving the cleanup plan design, costs, and benefits to the community from future development.

The next six paragraphs provide a summary of comments received and are followed by a detailed response section to specific comments. During the comment period, numerous commenters expressed preferences regarding the cleanup of the contaminated soils. Some commented specifically in relation to the future development of the Asarco Site. Many commenters stated a preference for on-site containment of the contaminated soils, reasoning that only by approving the less expensive OCF alternative would there be money left over to develop the Asarco Site. Many stated a preference for on-site containment, reasoning that an OCF is safe, environmentally effective, and the most economical alternative. Other commentors opposed on-site containment because of concerns regarding the stability, longevity, and safety of an OCF, and stated that development should not be an issue in choosing the best cleanup decision. Several commenters felt that the development money Asarco has offered may have already tainted the cleanup decisions of EPA and the local communities. Other commenters suggested that a combination of on-site containment, treatment, and/or off-site disposal would be the most effective remedy for the contaminated soils and other materials.

Contamination in the groundwater, surface waters, and sediments was a concern of some of the commentors; they felt that EPA did not adequately address this issue in the Proposed Plan and offered opinions and suggestions regarding the remediation of these areas.

Many commenters voiced their opinions or suggestions regarding the proposed treatment of soils at the Asarco Site. Some commenters expressed a preference for on-site treatment prior to disposal; others opposed on-site treatment because of issues regarding stability, post-cleanup monitoring, and cost of treatment. Several commenters made suggestions of alternative treatment methods for the contaminated soils.

Many commenters also voiced their opinions and offered suggestions regarding the nature of future development at the Asarco Site. Some commenters expressed appreciation for the efforts of Ruston, Tacoma, the Park District and Asarco in negotiating a Master Development Plan and were eager to see development of the site. Other commenters disagreed, referring to the plan as a "bribe" to the nearby residents of Ruston and Tacoma to influence their acceptance of a less expensive OCF without treatment.

Some commenters expressed appreciation for past and current efforts on the part of EPA and Asarco; others expressed criticism of one or both organizations. Several commenters indicated disapproval of Asarco and what they viewed as action motivated only by organizational self-interest, which was seen as running counter to public interest. Some commenters expressed the opinion that Asarco had excessively endangered public health in its pursuit of profits.

Asarco provided comments to EPA that are included in Section 3 of this Responsiveness Summary. Additional public comments received by Asarco are also included in this section. The next section (Section 2) provides detailed responses to public comments communicated verbally during the public meetings, and written communications received by EPA during the 90-day public comment period.

2.0 PUBLIC COMMENTS AND EPA RESPONSES

2.1 SOIL TREATMENT

1. COMMENT: Several commentors recommended against treatment of contaminated soil. Several commentors questioned the long-term effectiveness of the proposed soil treatment. Some commentors stated that encapsulation/stabilization is an unproven technology, is difficult to monitor over the long-term, does not reduce the volume of the contaminants, and/or is not cost effective. Some commentors expressed the opinion that there may be serious risks if the resulting mixture were spread over the Site, because the small concrete particles may break down with an end result that is worse than the current situation. Several commentors added that this would have a devastating impact on future Site development. One commentor also stated that, due to the unknown long-term effectiveness of stabilization, this option does not meet the nine evaluation criteria.

   RESPONSE: Although EPA is not selecting soil stabilization/solidification for the Asarco cleanup, it has been used at a number of Superfund sites around the country. These technologies are relatively new, such that no data exists that would show how the stabilized material would hold up 50 or 100 years from now. However, tests have been developed to simulate conditions in the future.

   EPA believes that many commentors expressed a valid concern about the future monitoring of the treated soils if the soils were placed in various areas beneath a site cap. Although EPA believes that an effective monitoring system could be designed to detect if treated soils were contributing to groundwater contamination, it believes that the leak detection and collection system for the OCF is better with respect to identifying any future problems. Monitoring any Superfund remedy over the long-term always presents site specific challenges and EPA believes that a successful monitoring program can be developed for the Asarco cleanup.

2. COMMENT: A few commentors, including the City of Tacoma Environmental Commission and Citizens for a Healthy Bay (CHB), expressed the opinion that long-term monitoring of the Asarco Site after the cleanup activities were completed would be more difficult and costly if the soil were treated because the treated material would be placed throughout the Site. CHB also expressed the concern that deed restrictions would be necessary.

   RESPONSE: In EPA's original proposal, treated soils would have been consolidated in the excavated or other areas on the Site not impacted by groundwater, not spread around. The groundwater monitoring program that EPA would have required for treated soils would have been equivalent to that selected for the OCF.

   Deed restrictions and institutional controls will be necessary regardless of the remedy selected because some hazardous contaminants will remain on site under all of the alternatives.

3. COMMENT: Several commentors stated a preference for on-site treatment of metals and other contaminants of concern prior to disposal. One commentor cited off-site health risks, Potentially Responsible Party (PRP) liability, and cost benefits as reasons for on-site treatment.

RESPONSE: EPA has selected disposal of excavated source area soils in an on-site containment facility (OCF) without requiring soil treatment prior to disposal. As discussed in section 7.2 in the Record Of Decision (ROD), EPA compared the potential movement of contaminants out of the OCF of treated and untreated soil. EPA found that the potential difference in leachate between treated and untreated soil disposed in an OCF was minimal if the good quality of the cap and bottom liner was maintained.

EPA believes that disposing the source area soil in an OCF and capping the rest of the Site will alleviate any potential health risks to adjacent neighborhoods. Asarco will be responsible for the cleanup regardless of the remedy selected. Most of the public comments received supported an OCF more than soil treatment because an OCF cost less and would allow future development to occur. EPA believes that the additional cost for soil treatment would not result in a more effective remedy over the long-term.

4. COMMENT: One commentor suggested that EPA perform a series of small pilot tests to determine the effectiveness of the proposed treatment on the contaminated soil prior to engaging in final cleanup activities.

RESPONSE: In May 1994, EPA, Asarco and Asarco's contractor ITEX, conducted a pilot-scale treatment project that solidified approximately 500 cubic yards of soil at the former Asarco Smelter Site. The results are described in Appendix C of the ROD. Additional information can be found in section 2.5 of the Administrative Record.

5. COMMENT: One commentor expressed concern that treating the soil with lime may create a different mixture of contaminated elements, and wondered if the EPA has conducted tests to ensure that this does not occur.

RESPONSE: The pilot-treatability study used lime, or calcium oxide, as one of the primary additives. EPA found that "a different mixture of contaminated elements" was not created, rather the metals were simply bound up within the cement. The results of this study can be found in the Asarco Smelter Administrative Record and are described in Appendix C of the Record of Decision (ROD).

6. COMMENT: Citizens for a Healthy Bay (CHB) does not support soil stabilization and commented that there are no assurances that the treated soil will remain stable and will not leach 10, 50, or 100 years from now. They stated that the long-term leachability of the stabilized material is difficult to determine because the method used to evaluate the long-term mobility, the Municipal Waste Extraction Procedure (MWEP), utilizes a 30-day test, and the results of some of the leachability tests were not made available to the public.

RESPONSE: MWEP and the Toxicity Characteristic Leaching Procedure (TCLP) are reasonably good predictors of future leaching, but the treatment technology is so new that actual results of how well treatment works over a long period of time are not available. EPA believes that the MWEP and ANS 16.1 water leaching tests, which are frequently used today at municipal waste facilities, are good predictors of the future impacts of rainwater and surface water coming into contact with treated soils. A summary of the results of both of these tests are attached in Appendix C and the complete document is located in the Administrative Record for this Site.

7. COMMENT: The Tacoma-Pierce County Health Department stated that it would only support treatment if EPA could assure that treatment would be a "permanent fix that would never leach."

RESPONSE: EPA cannot make this guarantee for either disposal option for contaminated soils at the Site. The only alternative that may be able to meet this criterion is "off-site disposal." However, off-site disposal is much more expensive than other available options. Further, even with off-site disposal, it is not possible to remove all contaminated material so some contaminated soil and slag would still remain on Site and need to be capped. For more information on the reasons for this decision to select an OCF, see Section 8.0 in the ROD.

Alternative Treatment Methods

8. COMMENT: Several commentors indicated that additional treatment technologies exist to remove and/or destroy metals in the soil and that these technologies should be considered in the cleanup plan. Citizens for a Healthy Bay (CHB) requested that the time to consider different cleanup options at the Site be extended to assess the results of alternative treatment studies and allow for public review. CHB also requested that copies of all information received by EPA regarding treatment technologies be sent to their office for review and publication. Two commentors stated that the public comment period should be reopened when the results of any treatment technology are received by EPA.

RESPONSE: Under an EPA Administrative Order on Consent, Asarco conducted a literature search for treatment technologies which would eliminate metal contamination from soils at the former smelter site (see the "Treatability Literature Study Report," May 12, 1992 in Section 2.5.5 of the Administrative Record). Through this literature search it appeared that soil stabilization/solidification was the most appropriate treatment technology for the contamination at this Site. During the public comment period, another treatment vendor claimed that his company's soil-washing technology could remove the metals from the soils for approximately the same cost as on-site containment. EPA has been working with this vendor since the first public meeting, but as yet, has not received additional information which indicates that this treatment process is effective. EPA has informed the vendor of its continued willingness to receive information. The additional soil treatability information on the MWEP test was sent to Citizens for a Healthy Bay. EPA did extend the public comment period for an additional 30 days.

9. COMMENT: Several commentors suggested that chemically extracting the metals from some of the more contaminated soils would be an environmentally and economically sound alternative to stabilization and/or land disposal.

RESPONSE: To date EPA has not identified a chemical-extraction process which is effective for the metals which are found on Site.

10. COMMENT: Several commentors suggested a variety of additional treatment technologies for contaminated soils and/or groundwater. Some of the soil technologies recommended are: (1) bioremediation, (2) combining the metal-contaminated soil with excavated clay and melting the mixture in an on-site kiln, (3) "closed incineration" which is used by oil companies, and (4) the use of any in-situ technologies where possible. In

addition, a commentor suggested using wet oxidation of organics, electro-filtration of heavy metals and ozone treatment for groundwater.

RESPONSE: EPA required Asarco to conduct a treatability literature search report, see reference in Response No. 8. In this report all of the applicable technologies for treatment of metals contamination in soils were evaluated.

(1) Bioremediation. EPA believes that the commentor is referring to the bioremediation of metals in an artificial wetland environment. If this is the case, there are microbes that can be used to alter the oxidation state of metals, which in some cases may result in the metals becoming less mobile, but this process would not remove the metals from the environment. Biological treatment of leachate that is generated at some sites has also been used, but this type of treatment does not favorably impact the **source** of the contamination. Conceptually, *Desulfouibrio spp.* (a type of microbe) can cause metals to be precipitated in sulfides, but this type of treatment has not been shown to be effective on the type or concentrations of waste at the smelter site.

(2) In-situ vitrification of metals in soil, or combining clay with contaminated soils at high temperatures, was explored, but determined not to be cost-effective. One company, Geosafe, has conducted field demonstrations (small scale) of soil vitrification, which would bake the soil into a slag-like matrix. This has not been proved to be effective at full-scale yet.

(3) Closed Incineration. EPA spoke to the project manager of "Seaview" (Bluebell, Pennsylvania) who developed the technology for "incinerating" hazardous compounds, primarily hydrocarbons, found in off-shore drilling materials. This process involves heating the contaminated materials until the hydrocarbons are burned out of the sediments. EPA does not believe that this treatment process would be effective for treating the contaminated soils found at the Asarco Site.

(4) In-situ technologies, such as soil flushing or vitrification could potentially be used at the Site. However, environmentally dangerous chemicals (e.g., strong acids and chelating agents) would have to be used for soil flushing and it would be necessary to be absolutely sure that all of these chemicals could be captured before they discharged into the bay. Additionally, this could be a lengthy and expensive process due to the high metal concentrations found at this Site.

Following completion of the actions under this ROD, EPA will evaluate the need for remedial measures for surface and groundwater. If surface water treatment is necessary, Asarco will be required to evaluate these approaches, along with others. In-situ treatment technologies will be considered where appropriate.

11. COMMENT: One commentor suggested using sulfur instead of lime in the proposed treatment, because the higher pH of lime would increase the solubility of arsenic.

RESPONSE: EPA recognizes that sulfur chemicals are another set of treatment reagents that could be used to produce insoluble species of arsenic. Like the cement and lime based solidification methods, sulfur reagents have to be tested to make sure they are compatible with the particular waste that is being treated. The concerns that EPA has with sulfur chemicals are (1) the treated soil would be "soil-like" which would mean that

surface/groundwater would be more likely to come into contact with the treated soil particles and (2) although sulfides are stable in a low oxidation environment, if they are exposed to air, the sulfides can oxidize and release a more soluble form of arsenic and sulfate.

2.2 ON-SITE CONTAINMENT FACILITY (OCF)

12. COMMENT: Numerous commentors expressed their support of the Master Development Plan and stated a preference for on-site containment without treatment. A majority of the commentors reasoned that only by approving the less expensive alternative would there be money available to invest in development of the Asarco Site. In addition, some people expressed the opinion that, besides saving money, on-site containment without treatment would save time. Other commentors reasoned that, as the soil treatment and OCF options are equally protective, the additional dollars that would be required for treatment are better spent on preparing the land for development. One person added that an OCF can always be dug up later if it is determined to be a hazard.

    RESPONSE: EPA is required to select a remedy which is protective of human health and the environment. Both soil treatment and on-site containment are protective cleanup options. In this case, EPA further considered the compatibility of protective cleanup plans with future land use plans. EPA believes that the future use of this Site is important and has tried to select cleanup activities that will not prevent reasonable future uses of the Site. EPA has also considered the cost effectiveness of the alternatives. However, it should be noted that EPA's determination that the selected remedy is cost-effective is based on a comparison of the various cleanup approaches described in the Proposed Plan, not on Asarco's ability to afford land development activities.

    Contrary to the commentors belief, soil treatment would be completed faster than designing and constructing an OCF. The pilot-treatability test indicated that the soil treatment would take approximately 6 months. However excavating and disposing soils in an OCF could take approximately 2 years.

    It is true that an OCF could be "dug up" in the future if it is determined that the OCF is not as effective as once thought and/or if a new treatment technology is discovered. However, EPA believes that the likelihood of this happening is small. EPA is selecting a hazardous waste facility (the OCF) as part of its cleanup option because it believes that this unit can be constructed in a manner which will effectively isolate the waste from the environment and be protective of human health and the environment over the long-term.

13. COMMENT: Several commentors questioned the integrity and effectiveness of on-site disposal, stating that OCF technology is still new and unproven and other waste disposal sites, over time, have all experienced leakage. Two people cited the example of Gas Works Park in Seattle, where the public was assured the soil was safe, but the soil was later discovered to be unsafe and had to be removed at great expense to the taxpayer. Another commentor referred to an example several years ago when Tacoma encouraged the development of apartments near its refuse site. The contaminants eventually surfaced and the public had to purchase the apartments at a high price following lawsuits. Additionally, several commentors questioned the leachability of contaminants to groundwater and surface waters from an OCF.

RESPONSE: Many of the landfills which have failed in the past have been municipal solid waste landfills that have not been constructed with multiple liners and caps which would be required at the Asarco Site. These landfills have contained a variety of wastes (e.g., solids, liquids, and hazardous constituents). Over time, many of these incompatible wastes have mingled creating either the release of toxic leachate or methane gas. The OCF, which has been selected for this Site, will not contain different types of wastes, rather it will contain "inert wastes" (wastes that are not chemically reactive with each other) such as contaminated soil and demolition debris (excluding wood). Since the metals in the source area soils have been found to become mobile when water passes through them, it will be important to design a cap which strictly controls surface and groundwater infiltration.

14. COMMENT: Several commentors raised questions regarding the stability of an OCF or landfill in what they considered to be the probable event of a major earthquake. One of these commentors expressed the belief that, due to the geology of the area, an earthquake-triggered (or other naturally-occurring) slide would carry contaminated materials into the bay. One commentor wondered if the Site was fundamentally suited for an OCF.

RESPONSE: Preliminary seismic evaluations of the smelter plant area were conducted during the Feasibility Study. These evaluations indicate that this area is suitable for an OCF (e.g., it is not located on a fault line). However, an additional seismic evaluation of the area where the OCF will be constructed will be a requirement of the Remedial Design/Remedial Action work plans that are developed after the ROD is signed.

15. COMMENT: Several commentors expressed the opinion that if the OCF alternative is chosen a multiple cell approach should be used, with the more contaminated soils stored and/or treated and disposed in a separate cell. They reasoned that this approach would allow for one more level of protection for a leaking OCF and enable removal of the contaminated soils in the future if necessary. Another commentor added that separate cells would offer more precise monitoring capabilities, because the contaminated material ranges over three orders of magnitude in contaminant concentration. Another commentor suggested that, by using separate cells, the more contaminated soils could be treated when new technologies become available.

RESPONSE: Because the type of material to be placed in the OCF is relatively similar (metal contaminated soil and debris) EPA does not believe that there are significant advantages to storing the waste in separate cells. Segregating soils based on the metals concentration may be appropriate if there were a promising soil treatment technology pending and EPA believed that certain soils would be a good candidate for treatment. However, this is currently not the case.

The reasons that landfills are normally separated into multiple cells is to (1) separate incompatible wastes and the leachate from those wastes and (2) to limit the open portion of a large landfill that will operate over many years so as to limit the area available for collection of precipitation. Under this scenario, each cell would be constructed and covered prior to constructing another cell. Neither of these reasons are relevant to the Asarco OCF as the waste to be placed is not incompatible and the duration the OCF will be open is short.

16. COMMENT: One commentor stated that EPA did not present soil treatment before disposal in an OCF as an option in the Proposed Plan, and that treating the most contaminated soils may be a way to mitigate the high costs of remediation and still allow for future development.

RESPONSE: EPA presented this alternative, soil treatment before disposal in an OCF, in Section (H)(7) of the Proposed Plan. The estimated cost of this alternative was $65.5 million. When the Proposed Plan was issued, EPA did not believe that it would be necessary to dispose treated soil in a hazardous waste landfill. Therefore, the costs of disposing treated soils were calculated based on a solid waste landfill. This cost was $70.2 million because hazardous demolition debris would still need to be properly disposed off-site. Disposing treated soil and debris would be **more** expensive than using an OCF.

17. COMMENT: Two commentors expressed concern that tourists, families, developers, and/or restaurateurs would be hesitant to visit or build on a hazardous waste site that may potentially leak.

RESPONSE: The hazardous waste to be disposed in the OCF would be isolated from potential access by people through a multilayer cover and the legal restrictions requiring that the cover be maintained. Further, as part of the future land use activities sponsored by Asarco, Tacoma, Ruston and the Metropolitan Park District, interviews were conducted with bankers and future developers to determine if there would be a market for development on a remediated Superfund site. The research indicates that constructing an on-site landfill does not appear to pose significant barriers to future uses of and investment in the Site.

18. COMMENT: One commentor stated that the option of including both soil and demolition debris in an OCF should have been presented in EPA's evaluation of cleanup options.

RESPONSE: This option was included in EPA's Preferred Alternative, on page 14 in Section (G)(1)(b) and (c).

19. COMMENT: One commentor suggested that the "ditch" leading up to the railroad tunnel would be an ideal location for the OCF, because it is unattractive and in need of remediation.

RESPONSE: EPA does not believe that this would be an "ideal" location because the gully located on the south side of the stack hill is private property and may potentially be considered a wetland. In addition, there are many areas along the hillsides where groundwater exits and creates small ponds and marshes at the base of the gully. It is important to select an area for disposal of contaminated materials where surface water and groundwater can be controlled.

20. COMMENT: One commentor inferred that, because Hydrometrics (the contractor hired by Asarco to design the OCF in the Feasibility Study) is a subsidiary of Asarco, their assurances regarding the safety and stability of an OCF cannot be taken seriously.

RESPONSE: EPA expects Hydrometrics to perform all of its work in accordance with appropriate professional standards regardless of who owns the company. In addition,

EPA and its own consultant, ICF/Kaiser Engineers, Inc., have carefully reviewed Hydrometrics' work to ensure that Hydrometrics' data-gathering, analyses, findings, and conclusions, including with respect to the construction of an OCF, have been performed in accordance with acceptable methods and legal requirements. Further, EPA's in-house technical personnel have conducted their own independent analysis of an OCF and have concluded that it can be constructed in a manner that is protective of human health and the environment.

21. COMMENT: One commentor requested that EPA provide an example of an OCF that has been around for 50 years in a geographically similar area and exposed to an equivalent amount of water runoff. He also added the question: If the soil is so stable, why then is there contamination in the surface water?

    RESPONSE: Because there were no requirements for double-lined landfills with separate leachate detection and collection systems before 1984, specific examples of the performance of double-lined landfills more than 10 years old are not available.

    The contamination that is found in the surface water is primarily from soil particles being carried by the water (total metals) and not from metals leaching off soil particles into the water (dissolved metals).

22. COMMENT: One representative from the Washington and North Idaho District Council of Labor expressed opposition to on-site containment because of the poor labor relationship that his union is currently experiencing with Hydrometrics or Asarco.

    RESPONSE: EPA has no authority to mediate labor disputes between Asarco and its contractors. EPA requires, however, that Asarco comply with worker health and safety requirements at all times during performance of cleanup work.

23. COMMENT: One commentor supported the use of pre-stressed concrete in the construction of an OCF.

    RESPONSE: Although concrete liners and caps could be constructed to prevent contaminants from migrating out of the OCF or prevent water from migrating into the OCF, concrete has a higher tendency to fracture. If this occurred in the liner, it would be irreparable, whereas clay has the capability to reseal itself if water were to contact it in the future. Experience has demonstrated that concrete, or asphalt caps, generally require more maintenance than clay and synthetic caps.

24. COMMENT: One commentor stated that concentrating contaminated residential soils in an OCF close to the shoreline would further aggravate the local environment.

    RESPONSE: Residential soils will not be disposed in an OCF, but will be used as a sub-base to the low permeability cap (see Figure 5 in the ROD) that will be placed on the Site.

25. COMMENT: One commentor asked if releases from an OCF could be monitored if the Site is already contaminated and wondered if existing contamination would make it more difficult or unlikely to detect leaks from an OCF.

RESPONSE: EPA has many years of groundwater data from this Site that can serve as a baseline prior to construction of the OCF. EPA plans to continue groundwater monitoring before, during and after cleanup. Therefore, we will be able to evaluate the groundwater contamination trends before and after construction of the OCF. In the event that contaminants begin to leach out of the OCF, they will be detected as increases above then existing conditions via the groundwater monitoring program.

26. COMMENT: One commentor stated that a hazardous waste facility, under Resource Conservation and Recovery Act (RCRA) siting requirements, would not typically be located in a wet climate with full public access and immediately adjacent to an exceptional water body, such as Commencement Bay. For these reasons, if soil treatment is ineffective, the proposed OCF should be modified to use additional clean soil as a cover to diminish future exposure, with the contaminated soils segregated by level of contamination into separate cells. This commentor added that the OCF should be built like any other RCRA facility, with the soils receiving the same amount of treatment as would be required if they were to go to the RCRA facility in Arlington, Oregon.

RESPONSE: EPA agrees that a new hazardous waste landfill typically would not be sited in this type of location, assuming that the area was relatively clean. EPA and the State try to avoid introducing contaminants to pristine or clean areas. But the smelter site is not such an area and it is generally recognized that a significant amount of contamination, such as 15 million tons of slag, cannot be removed from this location. Accordingly, EPA believes that construction of a landfill in accordance with federal and state requirements at this location, given existing contaminated conditions, is an acceptable part of the overall cleanup. EPA is not requiring treatment of soil prior to disposal in the OCF because the OCF can effectively isolate the soil from the environment, see Section 9.9 of the ROD. See Response to Comment No. 15 regarding construction of separate cells.

27. COMMENT: One commentor stated that the siting decision for the OCF needs to carefully consider the hydrogeology of the Asarco Site. An impermeable structure, such as an OCF, is likely to alter the current groundwater system and raise the water table around the OCF. He expressed the opinion that the OCF should not be constructed atop a shallow aquifer if other more protective locations exist. Other commentors wondered if there would be any way to pump out water that may seep into the OCF before it moves from the OCF into Commencement Bay.

RESPONSE: All groundwater and surface water which currently flows across or through the central area of the Site, where the OCF will be located, will be rerouted through new drainage systems or diversion trenches. It is not likely that the groundwater table will rise as a result of these activities.

In addition, a thick silt aquitard lies beneath the shallow aquifer in this location and will prevent rerouted or displaced groundwater from migrating to the deeper aquifer.

The OCF will be designed so that groundwater is unlikely to come into contact with the OCF and so that surface water (rain water) will be diverted. In addition, EPA believes that the minimal amount of leachate which may be generated inside the OCF will be handled by the leachate collection and removal system before it is released into the groundwater or the bay.

28. COMMENT: A few commentors believe that EPA should consider the potential for including contaminated sediments in the OCF. In contrast, the Town of Ruston commented that it is opposed to using the OCF for the disposal of dredged, dewatered marine sediments, due to the necessity of reopening a closed OCF, the potential for adverse chemical reaction with materials in the OCF, and its adverse impact on future development. Tacoma, the Metropolitan Park District and Asarco also opposed disposing sediments in the OCF.

RESPONSE: At this time, it has not been determined that off-shore sediments need to be dredged and disposed. However, Ruston, Tacoma, the Metropolitan Park District and Asarco have presented several reasons why this material should not be disposed in the OCF should dredging and disposal be required in the future: (1) the sediments will be very wet and may introduce water into the OCF that could mobilize the metals on the soils, and (2) there may not be enough room remaining in the OCF after the soils and demolition debris are disposed. Although sediments could be dried before they are disposed, it is unlikely that sufficient capacity could be added for the sediments without interfering with land use plans. For these reasons, EPA agrees with the commentors opposed to disposing sediments in the OCF. Other alternatives for disposing dredged sediments will be evaluated by Asarco and EPA.

29. COMMENT: One commentor stated that because the Tacoma Asarco Smelter processed ores that other smelters did not want, all of the contaminated soils should be consolidated on the site.

RESPONSE: EPA agrees that consolidation of soils on site makes sense but not necessarily for the reason provided by the commentor.

30. COMMENT: The Puyallup Tribe of Indians (the Puyallup Tribe) is concerned that the construction of an OCF before implementation of a source control strategy may preempt the future remediation of groundwater, therefore they request the construction of the OCF not occur until after the groundwater studies are completed. The Tribe stated that a source control strategy must develop specific plans for control of permitted and unpermitted point source and non-point source discharges and that "No remediation should begin unless source control can be implemented and enforced." The Tribe added that the cleanup of this Site must ensure that there will be no further pollutants entering the environment from any source.

RESPONSE: The Tribe appears to be stating that EPA should directly reduce levels of contaminants in surface water and groundwater prior to removing contaminated soil and constructing an OCF for disposal of such soil. The Tribe's concept of "source control" appears to be to treat contaminated surface water and groundwater prior to discharge.

EPA agrees with the Tribe's proposed result but not with its recommended sequence of cleanup activities. Because contaminated soils existing at the Site are the primary source of contaminants found in surface water and groundwater, EPA believes it is important to first remove the most contaminated soils from the primary source areas and isolate them from surface water and groundwater so the connection between the sources of contamination and the discharges to Commencement Bay is severed.

After the sources are removed and isolated in the OCF, the entire Site is capped, and a new surface water drainage system is installed, EPA will monitor the levels of contaminants in discharges from the Site. If these levels continue to exceed acceptable requirements, EPA will determine what further actions, including water treatment, are necessary to reduce the discharge of contaminants into Commencement Bay. EPA notes that the cleanup levels for surface water are consistent with the Tribe's water quality standards. By promulgating its water quality standards, the Tribe appears to recognize that there are acceptable levels for pollutant discharges other than "no further pollutants."

2.3 CAPPING

31. COMMENT: One commentor preferred that Asarco cap the land "as is" rather than excavating and consolidating the contaminated soils.

RESPONSE: The soils located in areas identified by EPA as "source areas" have very high concentrations of contaminants which are mobilized by contact with groundwater. In order to address the significant groundwater problem at the Site, EPA believes it is necessary to remove these soils before capping the entire Site.

32. COMMENT: There were several comments regarding the capping materials that were proposed to be used for a Site cap. Two commentors believe that the "clean" soils from Pt. Defiance are probably also contaminated with Asarco emissions; another commentor was concerned about contaminants from the excavated Study Area soils potentially leaching into the Bay and another commentor suggested that contaminated sediments as well as Study Area soils should be included in the cap.

RESPONSE: All soils used for the top layers of the cap will be sampled to verify that they are clean. Although the Ruston/North Tacoma soils do not leach metals into surface water or groundwater, EPA believes that the cap will protect the contaminated soil particles from being washed into the bay by surface water. At this time, EPA is not sure whether sediments will need to be dredged or not.

33. COMMENT: Several commentors expressed the opinion that the capping or OCF soil cover should be greater than 2 feet so more substantial vegetation can be planted on top without breaching the cap. One commentor added the opinion that a 1-2 foot soil cap would not be sufficient to ensure permanent protection of construction, public access, utility work, and other activities that may occur on site.

RESPONSE: The total thickness of a multilayer soil cap is at least two and a half feet; for an OCF the thickness is at least five feet. The 1-2 foot soil cap required for the OCF would be <u>in addition</u> to filter material, one foot of drainage material, a fabric liner and two feet of compacted clay. For the soils cap, the one foot of clean soil would be <u>in addition</u> to 6 inches of gravel and one foot of clay. EPA notes that plans for development of the Site may result in even thicker layers of soil in the cap or above the cover of the OCF.

34. COMMENT: Two commentors stated that clay capping is susceptible to cracking. One of these commentors suggested using a geomembrane liner in combination with the low permeability soils as a substitute for clay capping. A few commentors are concerned about sulfide formation if anything other than a "soil only" cap is used or if waste is buried deeper than four feet (sulfides increase the possibility of a "reducing" environment).

RESPONSE: Although clays that dry out are susceptible to cracking, the advantage of clay is that once surface water does begin to migrate through the cracks it rehydrates the clay and the cracks are resealed. Although synthetic liners are often used in conjunction with clay, it is for this reason that synthetics are rarely used alone. A synthetic liner may be used as part of the cap and liner of the OCF and will not be used as part of the site wide cap.

EPA has not experienced sulfide formation at sites where wastes were buried deeper than four feet. Also, see Response to Comment No. 11.

35. COMMENT: The Tacoma-Pierce County Health Department's comment letter expressed the opinion that the placement of contaminated residential soils under a cap containing one foot of low permeability soils is not appropriate because the soil would be considered dangerous waste if generated elsewhere in the state. It stated that the original plan was for the residential soils to be disposed at an off-site landfill and asks how this fits into the proposal to use soils as fill material on the Asarco Site. The Town of Ruston supported using Ruston/North Tacoma soils as a sub-base for a cap on the Site.

RESPONSE: The Health Department later clarified its comment to EPA's project manager and stated that their primary concern about the Ruston/North Tacoma residential soils was their potential to leach. After EPA explained that the data indicated that these soils do not significantly leach above regulatory standards with acid or water extraction, the health department representative agreed that the proposed method of disposal was sufficient.

The Ruston/North Tacoma Study Area Record Of Decision (June, 1993) stated that the residential soils would be disposed off site unless an alternative method of disposal was selected in the ROD for smelter cleanup. To determine whether it would be acceptable to the community, EPA proposed using these soils as a sub-base for a cap in the Proposed Plan for the smelter cleanup.

36. COMMENT: One commentor suggested that the contaminated Ruston/North Tacoma soils should not be placed under future parks, open space, or in areas such as streams crossing the Site.

RESPONSE: Since these soils will be beneath a protective cap, EPA believes that these types of restrictions for the placement of residential soils are not necessary. In the event that trees or vegetation that have deeper roots will be planted in parks or open spaces, the thickness of the soil covering can be modified appropriately. Presently, EPA is not aware of any streams crossing the Site.

37. COMMENT: One person was concerned that capping soils in place may still allow contaminants to leach into groundwater aquifers and the bay. He stated that the soil should be removed if the concentrations are dangerous.

RESPONSE: The most highly contaminated soils will be excavated. The Site soils which will not be excavated do not appear to be primary sources of groundwater contamination. However, because rainwater does contact these soils, soil particles are washed into the bay. EPA believes that a clean soil and clay cap will prevent rainwater from coming into

contact with the contaminated soils and will prevent contaminated soil particles from washing into the bay.

38. COMMENT: A commentor stated that the cap should be designed to accommodate underground parking.

RESPONSE: EPA's paramount interest is maintaining the integrity of the cap. If an underground parking lot can be constructed so as not to compromise the integrity of the cap, EPA will consider it along with other land uses that may be proposed.

2.4 SHORELINE

39. COMMENT: One person commented that the entire slag face should be securely enclosed so that no leaks are possible.

RESPONSE: If a non-permeable (leak proof) barrier of some type is placed securely against the slag face a "bathtub" effect will be created on the Site. Right now, hundreds of gallons of groundwater move through the Site each day. Placing a barrier at the slag face would cause this water to back up. EPA believes that the shoreline armoring approach will prevent erosion, but still allow groundwater to move into the bay.

40. COMMENT: The Washington Department of Natural Resources (DNR) expressed the opinion that the alteration of the existing shoreline during Site cleanup, as described in the Proposed Plan, may result in the exposure of new slag faces. They believe that this may lead to additional contamination of the bay due to increased toxicity and mobility of contaminants, as well as increase the volume of slag requiring treatment/disposal. DNR cannot support any activities that would create freshly exposed slag and believes that this issue has not been adequately evaluated in the nine criteria analysis. DNR recommended that a quantitative analysis of leaching associated with freshly exposed slag be performed prior to finalizing any plans to cut back the slag.

RESPONSE: EPA anticipates that at least some shoreline armoring will be necessary. EPA shares DNR's concern about exposing too many freshly cut surfaces to bay water since this is the condition when metals in the slag are most leachable. Prior to armoring, EPA will determine if significant erosion is occurring. If it is, and armoring is necessary, DNR, other Natural Resource Trustees, and interested members of the community will be asked to be involved in the development of the remedial design work plans associated with shoreline armoring.

41. COMMENT: DNR stated that armoring and careful design aimed at creating an area which habitat would repopulate is preferred without cutbacks which may lead to further contamination of Commencement Bay.

RESPONSE: EPA agrees with this recommendation.

42. COMMENT: One commentor stated that implementability criteria, overall protection of human health and the environment criteria, community acceptance criteria, and land use plans have not included the analysis of shoreline armoring design.

RESPONSE: Analysis of this alternative has been included in Section 8.0 in the ROD. However, EPA agrees that additional studies will be necessary to determine the extent and location of armoring and the specific design for anchoring the toe (bottom) of the riprap.

43. COMMENT: Citizens for a Healthy Bay and other commentors stated that the Preferred Alternative does not give an adequate description of the remediation proposed for the shoreline. They suggested that before the ROD is written, more information regarding the range of alternatives considered, the benefits and drawbacks of each alternative, and site-specific information regarding how this or any other alternative would be implemented needs to be made publicly available. They also questioned whether the riprap will be placed on top of the existing slag face, or if the slag face will be cut away and then covered with riprap as shown in the feasibility study.

RESPONSE: In the ROD, EPA has modified the Proposed Plan's approach with respect to shoreline armoring based on public comments received. Before developing the design for shoreline armoring, Asarco will be required to conduct additional studies to determine where and to what extent the shoreline is eroding. Sections of the shoreline that are significantly eroding will be armored. At that time, site-specific information will be collected to determine whether cutbacks are necessary and how the riprap will be anchored in order to design the armoring. Citizens for a Healthy Bay, the Natural Resource trustees and other members of the public will be encouraged to participate in this process. Also, see Responses to Comment Nos. 40 and 41.

44. COMMENT: The Puyallup Tribe agreed with the proposal for shoreline armoring. Another commentor requested that the shoreline armoring requirements be flexible enough to accommodate different shoreline needs.

RESPONSE: The shoreline armoring will be designed to accommodate future land uses. Preservation and mitigation of shoreline habitat will also be an objective of shoreline armoring.

45. COMMENT: One commentor stated that a minimum slope of 2.5 (horizontal) to 1 (vertical) needs to be used for any riprap placed on the slag face. It was further added that the explanation was inadequate regarding how this alternative will be implemented without interfering with future sediment remediation. He also stated that it is unclear as to how the armoring will be held in place.

RESPONSE: EPA has been advised by the Corps of Engineers that in most locations, the steepest slope that should be used for riprap armoring is 1 to 1.5, and that areas with slopes greater than this would require cutbacks. Sequencing shoreline armoring and sediment remediation activities will be necessary but at this time the extent of sediment cleanup is not known. By the time work plans will be required for shoreline armoring design, EPA should know what portion of the sediments are contaminated and how these sediments can be cleaned up (e.g., capping, dredging or natural recovery). In many places a "toe" can be excavated out of the slag in order to anchor the armoring. The specific design details of armoring will be determined at a future date. EPA will encourage members of the community to participate in this process.

Natural Resources

46. COMMENT: Several commentors indicated that more emphasis should be placed on developing a range of alternatives for restoration of the natural habitat of the bay, nearshore, and shoreline areas. One commentor suggested that EPA establish an ambitious whole-watershed restoration program as part of the site remediation plan; one commentor stated that shoreline treatment and natural resource restoration options should be explored before a final cleanup design is developed; and one commentor requested that the effects of shoreline armoring on existing habitat be evaluated.

    RESPONSE: EPA will work closely with community members and Natural Resource Trustees to develop a comprehensive design plan to try to address all of the commentors concerns. EPA will evaluate whether the mitigation/restoration sites identified by the U.S. Army Corps of Engineers, EPA, U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration (NOAA) in the Commencement Bay Cumulative Impact Study, Volumes I and II (May/June 1993) and the "Vision Document for Commencement Bay," by the Commencement Bay Cleanup Action Committee (November 19, 1993) are appropriate for the Asarco cleanup.

    Although EPA does not believe that "shoreline treatment" is possible, it will identify the effects of armoring on the existing habitat and will explore mitigation opportunities while designing shoreline armoring.

47. COMMENT: Several commentors suggested that the area be returned to a pre-industrial wilderness.

    RESPONSE: Although this is a nice idea, it does not appear to be practicable, particularly given the 15 million tons of slag at the Site. EPA's objective is to cleanup the Site so that it will not pose a threat to human health and the environment in the future.

48. COMMENT: Two commentors suggested that the EPA should coordinate its design/cleanup efforts with resource agencies such as National Oceanic & Atmospheric Administration and the Natural Resource Damage Assessment Trustees.

    RESPONSE: EPA has been working with these agencies during the RI/FS and decision-making phases and will continue to do so during remedial design and remedial action activities.

49. COMMENT: One commentor expressed the opinion that the alternatives presented (OCF or soil stabilization) are not adequate to accomplish the cleanup correctly. He believes the cleanup should integrate public health issues with the restoration of both aquatic and terrestrial habitats, and the economic thresholds necessary to facilitate quality development.

    RESPONSE: The cleanup activities which have been selected are intended to prevent or minimize the contaminant exposure to humans, animals and sealife. Preservation of habitat (or mitigation for adverse impacts to habitat) are also an objective of this cleanup. EPA intends to continue working with the local community regarding the future development of the Site so that "quality development" after the cleanup will also be possible.

50. COMMENT: The U.S. Fish and Wildlife Service commented that they were pleased to see that EPA recognizes mitigation for habitat losses associated with remediation activities as a necessary element in the overall success of the preferred alternative.

RESPONSE: EPA hopes that the U.S. and State Fish and Wildlife Services will continue to be involved in this project.

51. COMMENT: One commentor stated that restoration should be considered while a remediation plan is being developed and that EPA should consider restoring the two natural streambeds that were on the Site. Two commentors requested that as the site remediation plan is finalized, the OCF, liners, and other infrastructure should be made consistent with the restoration of natural streambeds and areas near the shoreline. One commentor suggested that water-sensitive site design that allows natural infiltration of stormwater runoff and reestablishment of natural vegetation be adapted in the location of the two former small streams on the Asarco Site.

RESPONSE: EPA recommends that stream bed restoration be considered under the future development process. EPA notes that CERCLA § 107(f)(1) does not allow for recovery where damages to natural resources have occurred wholly before December 11, 1980. "Natural infiltration" of stormwater runoff is not a good idea if it means that stormwater will come in contact with contaminated soils beneath the Site cap.

Sediments

52. COMMENT: One commentor expressed the opinion that guidelines must be developed for further maintenance and repair of the existing pier structures to minimize impact to sediments.

RESPONSE: EPA's selected cleanup remedy does not address the existing piers. If these piers are to be used for future land use activities, the repair and maintenance will need to be addressed by the Public Development Authority established to oversee future development activities.

2.5 SURFACE WATER

53. COMMENT: One commentor advised that plugging the present drainage system should be done in such a manner as to prevent all water from leaching into the pipes and potentially draining into the bay, and that care should be taken to avoid incidental flushing of the contaminated drain sediments into the bay. This commentor also stated that if applicable and relevant and appropriate requirements (ARARs) are not reached through these surface water measures, surface water treatment be required regardless of its cost. He also wondered if any drainage system presently exists on the slag peninsula. The Puyallup Tribe noted that treatment of surface water (and groundwater) would be difficult particularly during peak flows. The design of the treatment system must account for the worst case scenario instead of allowing for waivers of water quality standards or by-passes.

RESPONSE: Under EPA's selected remedy, all of the existing surface water drainage system will be plugged. If the surface water that flows through the new drainage system does not meet the remedial action objectives (see Section 9.9), surface water treatment

will be required to the maximum extent practicable. There is no drainage system on the slag peninsula.

54. COMMENT: The Town of Ruston commented that any surface and stormwater management and drainage systems must be designed in consultation with Ruston, Tacoma, and the Park District and meet or exceed all local, state and, federal standards and regulations. The Town of Ruston stated that the surface water drainage system should not be designed as to make routine maintenance and/or any required repair prohibitive.

RESPONSE: EPA will work with the Town of Ruston to accomplish these objectives by involving the Town in development of the Statement of Work and work plans for the design and implementation of the cleanup.

55. COMMENT: The Puyallup Tribe commented that the existing surface water drainage system needs to be plugged and abandoned and a new system constructed. If surface water quality fails to meet federal and state standards, treatment of surface water must be required regardless of cost. The Tribe also requested the creation of detention facilities, such as small streams and drainages, to provide natural areas for wildlife and help control surface water during peak flows. In addition, it requested that Site cleanup ensure that no additional contaminants be released into the environment (e.g., recontaminate the sediments). The Tribe objected to the use of a mixing zone.

RESPONSE: EPA agrees with the need to plug and abandon the existing surface water system and build a new one (see Section 9.3 of the ROD). If surface water cleanup levels are not attained as a result of the new system and capping the Site, the need for treatment will be evaluated.

Detention facilities, silt fences, diversion ditches, cut and fill slopes, will be used as appropriate when soil is being excavated in order to reduce contaminated runoff from excavated areas. Once a soil cap is placed on the Site, EPA will evaluate whether such measures are needed as part of the new surface water drainage system. See Response to Comment No. 51 regarding streams on the Site. EPA believes that construction of a surface water drainage system will prevent the release of contaminants into the bay from surface water. EPA notes that mixing zones are authorized under both state law and Section 9 of the Tribe's Water Quality Standards. Whether a mixing zone is appropriate for the Asarco Site will be determined during remedial design.

56. COMMENT: One commentor stated that the former cooling pond area should be fully remediated to become part of the overall natural area on the Asarco Site, and added that the contaminated soil in the cooling pond area should not be capped in place but removed.

RESPONSE: Approximately seven feet of contaminated soil will be removed from the cooling pond area. If contaminated soil exists beneath this depth it will be capped. Whether this area becomes a "natural area" or a "development zone" will be determined with community participation during future land use meetings.

2.6 GROUNDWATER

57. COMMENT: Several commentors stated that passive treatment of groundwater and surface water is not adequate and that a source control strategy for point source and non-point source discharges should be implemented prior to commencement of soil remediation. One commentor added that the mass loading of hazardous releases from groundwater and surface water should be fully documented, and a cleanup strategy developed to ensure that contaminants will not continue to enter Commencement Bay. Another commentor requested that the EPA provide more detail on how groundwater will be remediated, and stated that groundwater remediation would result in a significant reduction of ongoing injuries to the bay's natural resources. Two commentors stated that if monitoring reveals that the groundwater fails to meet federal and state standards, the Master Development Plan must allow for the construction and operation of a treatment facility or other contingency plan. The Puyallup Tribe commented that the remediation of soil may interfere with the future remediation of groundwater.

    RESPONSE: Efforts to document and evaluate surface water and groundwater contamination are presently underway with the collection of surface water data every month and the collection of groundwater data twice a year. EPA believes that the source control activities selected will significantly reduce contaminant loading into surface and groundwater. See Response to Comment No. 30 regarding the sequencing of cleanup activities and the basic premise of EPA's source control strategy.

    If it is determined that active measures are necessary to clean up surface water and groundwater, a separate analysis and proposal regarding such measures will be issued for public review. EPA does not agree that soil remediation will interfere with the future remediation of groundwater because removal and disposal of soil does not preclude active measures for groundwater.

58. COMMENT: One commentor stated that the preferred alternative will fail to achieve cleanup goals for groundwater because EPA's preferred alternative proposes a waiver of applicable or relevant and appropriate requirements (ARARs) relating to groundwater cleanup and deferral of sediment remediation.

    RESPONSE: At this time it is not certain whether source control activities selected by EPA will attain the federal and state groundwater cleanup goals. Accordingly, a temporary waiver of the requirement to meet such goals <u>for this action</u> is appropriate. EPA will continue to monitor the Site and will take the appropriate groundwater cleanup measures if necessary and to the maximum extent practicable.

59. COMMENT: One commentor recommended continual groundwater monitoring at the Site until it is determined that contamination no longer exists.

    RESPONSE: EPA and Asarco agreed to a long-term groundwater monitoring plan in October 1994 that requires groundwater monitoring until 1999. EPA anticipates that a cleanup decision for the groundwater will be made by then.

2.7 OFF-SITE DISPOSAL

60. COMMENT: Several commentors expressed a preference for the removal of contaminated soil and off-site disposal citing concerns for the longevity, stability, and future exposure risks of on-site disposal. Some commentors suggested that leaving contaminated materials on site would not provide a permanent solution and would only be a toxic legacy for future generations. Another commentor expressed the opinion that any material hauled off site would be a liability for another community.

RESPONSE: EPA agrees with the commentor's description of the advantages of off-site disposal. But a significant disadvantage is the cost of off-site disposal, nearly $50 million **more** than disposal in an OCF. Together with the fact that not all contamination will be removed from the Site under any alternative (e.g., 15 million tons of slag cannot be removed) EPA has determined that the cost-effective cleanup solution at the Site is disposal of source area soils in an OCF and placement of a soil cap over the entire Site.

If materials were disposed off-site, it would most likely be placed in a permitted and regulated hazardous waste facility which has already been constructed and permitted and should, therefore, not be a liability for another community.

61. COMMENT: One commentor expressed the opinion that development of the Asarco Site should not be allowed unless the soil is removed off site.

RESPONSE: EPA believes that the Site can be safely developed if the contaminated soil that remains on site is either isolated in an OCF or capped in place.

2.8 MONITORING/LONG-TERM CONTROLS

62. COMMENT: Several commentors expressed the opinion that any contaminated material remaining on site in an OCF or underneath a cap should be surrounded by monitoring wells and tested regularly. One commentor asked if a program would be established and funded to ensure ongoing monitoring and repairs when necessary. Another commentor wondered who would be responsible for ensuring that the post-cleanup monitoring is performed.

RESPONSE: Fifty-eight monitoring wells are being used for sampling under the long-term monitoring program. EPA and Asarco have agreed to install additional groundwater monitoring wells after source areas soils have been excavated (see the "*Post-RI Long Term Monitoring Sampling and Analysis Plan,*" October 1994). All of the wells in the source areas will be sampled quarterly. During the design of the OCF, EPA will ensure that monitoring wells are in appropriate locations to detect problems with the OCF should they occur in the future. Asarco will be responsible for maintaining and repairing all wells as necessary. EPA will ensure that Asarco monitors the Site after all cleanup activities are completed.

63. COMMENT: One commentor suggested that local land trusts, public agencies (Housing Authorities), and environmental groups should be involved in future site monitoring and management responsibilities.

RESPONSE: EPA believes it is most appropriate for Asarco to have responsibility for all future monitoring activities. But, EPA is planning to involve other entities in monitoring and management activities.

64. COMMENT: One commentor suggested that deed restrictions and other legal means for ensuring institutional controls for the Asarco Site need to be strict to ensure a permanent protection for the soil cap placed across the Site and any containment facility built on the Site.

RESPONSE: EPA agrees (see Section 9.6.2 (a) of the ROD) and will include requirements in the future agreements with Asarco to implement institutional controls including deed restrictions.

65. COMMENT: One citizen commented that the Park District and Tacoma cannot be counted on to keep their promise of post-development monitoring because they have not kept previous promises.

RESPONSE: Asarco will be responsible for conducting all future Site monitoring, including monitoring after the cleanup has been completed.

66. COMMENT: One commentor stated that regardless of whether Asarco treats the soil or disposes it in an OCF; monitoring, cap maintenance, air monitoring, and surface water monitoring must be required.

RESPONSE: EPA agrees that monitoring is necessary; these measures are required in the selected remedy found in Section 9.0 of the ROD.

2.9 HEALTH

67. COMMENT: Two commentors were concerned about health effects from contaminants on site and believe that some of their close family members have suffered from chronic health problems and may have died prematurely as a result of working at the Asarco Smelter.

RESPONSE: EPA expresses its regret for this commentors situation. EPA's cleanup decision is based on the health risks posed by current conditions at the Site. EPA cannot evaluate the extent to which workers' health may have been affected while employed at the smelter, but EPA can assure that any future population which comes into contact with the Site will not be adversely impacted.

68. COMMENT: One representative from the Washington and North Idaho District Council of Labor voiced concerns about the health and safety of site workers participating in the cleanup operation. He expressed the opinion that Hydrometrics has demonstrated continuing disregard for worker safety and health concerns by allowing contaminated vehicle/equipment rinse water to be discharged directly into Commencement Bay via storm sewers.

RESPONSE: EPA requires Asarco to submit health and safety plans for all of the cleanup activities that occur on the Site. During any cleanup activities, EPA has an oversight contractor on site to ensure that the work plans and the health and safety plans are being

followed appropriately. Any concerns about worker safety should be forwarded directly to the Washington Department of Labor and Industries. See also Response to Comment No. 22. During soil excavation and disposal activities, EPA will require Asarco to control discharges of contaminated water.

69. COMMENT: The Puyallup Tribe requested that EPA take into consideration their hunting, fishing and other subsistence activities on and near the Puyallup Reservation and added that the living resources in Commencement Bay and human population that depends on these resources must not be subject to the bioaccumulation of hazardous chemicals. The Puyallup Tribe also stated that the protection of anadromous fish (species which live in fresh and salt water), on which much of the tribe relies for spiritual subsistence and economic survival, is of paramount importance. The Tribe requested that EPA conduct a fish consumption study prior to issuing the ROD for the smelter cleanup.

RESPONSE: EPA has not evaluated how much fish from Commencement Bay is consumed by the Puyallup Tribe in making its cleanup decisions in this ROD. EPA has agreed, however, to consider this information when making its cleanup decision regarding groundwater.

EPA is and will continue to take into account the concerns of the Puyallup Tribe, which encompass the existence of contamination in all of Commencement Bay, not just that associated with the Asarco Site. EPA has set its cleanup goals at levels which it believes are protective of human health and the environment. Because "protectiveness" includes minimizing contamination in fish that may be consumed by humans, EPA is particularly focusing on contaminant levels in fish in its continued investigation of marine sediments off-shore of the Site.

70. COMMENT: Two commentors felt that the health risks associated with the contamination of the Asarco Site may be exaggerated because they have not experienced adverse health effects from living near the Site. One commentor suggested that stress from the cleanup process is probably more debilitating than the arsenic contamination, and the other commentor expressed the opinion that EPA should offer a real-life comparisons of the alleged increased health risks from exposure to lead and arsenic.

RESPONSE: The potential health risks that have been identified at the Site in the Risk Assessment are primarily based on predicted adverse effects posed by current Site conditions to potential residents, workers, recreational visitors or trespassers, i.e., people who may spend varying amounts of time at the smelter in the future. Because residents, workers, etc. are not living/working/playing on the Site now, it is not possible to give real-life examples. The evaluation of potential increased health risks from lead and arsenic are summarized in Section 4.2 of the Risk Assessment (Kleinfelder, 1993).

Residential:

71. COMMENT: One person questioned whether or not it is safe to eat home grown produce from the area.

RESPONSE: The Risk Assessment conducted for the Ruston/North Tacoma Study Area indicated that the risk from eating fruits and vegetables that are grown in the area is very small. Precautions which are recommended by the local health department include,

thoroughly washing leafy produce such as lettuce, and produce which is grown underground, such as carrots and radishes.

72. COMMENT: One person expressed the opinion that Asarco has been given "special treatment" because the level of arsenic and lead contamination that it has been ordered to excavate is greater than the Action Levels established by the State.

RESPONSE: EPA believes this commentor is referring to action levels for the residential area. EPA disagrees that Asarco has been given "special treatment." EPA has selected safe cleanup levels for the soils. Decisions regarding the cleanups of both the Ruston/North Tacoma Study Area and the Smelter Site, including the specific determinations of action levels, have been made in accordance with federal and state requirements, and with the concurrence of the Washington Department of Ecology.

2.10 DEVELOPMENT/LAND USE

73. COMMENT: Numerous commentors expressed specific opinions regarding the development that should occur at the Asarco Site after cleanup. One person commented that, if the Asarco Site is beautified, surrounding property values would be elevated and residents would be angered by the resulting increase in property taxes. One commentor expressed the opinion that Asarco is living up to the public trust by their commitment to invest 15 to 20 million dollars beyond the cleanup cost to encourage future development. Another person commented that redevelopment would not compensate for the legacy of pollution that Asarco will leave behind.

RESPONSE: All of the comments received by EPA regarding future development will be forwarded to the Land Use Group which includes representatives from the City of Tacoma, the Town of Ruston, the Metropolitan Park District and Asarco. EPA believes that the cleanup of the smelter site will reverse the legacy of pollution from the operation of the smelter. EPA is not in the position to evaluate the potential for property taxes to change based on Site development activities.

74. COMMENT: Many commentors were concerned that only financial benefits, and not environmental and/or long-term human health considerations, have been considered in the Master Development Plan. Two of these commentors expressed the opinion that the development plan was designed primarily to enable Asarco to save significant cleanup costs. One person commented that when a company pollutes an area so badly it achieves the distinction of worst Superfund site, a cursory cleanup for the sake of profit and added local taxes does not meet the intent of Superfund legislation.

RESPONSE: EPA has selected cleanup measures that will comprehensively address contamination at the Site and that are fully in accordance with the Superfund law. Further, the primary intent of the Master Development Plan is to provide for future development of the Site once cleanup has been completed. Accordingly, other than the need to maintain the protectiveness of the cleanup measures, it is reasonable that the Master Development Plan not focus on environmental considerations.

75. COMMENT: Several commentors suggested that development would hinder remediation of groundwater and surface water and restoration of natural habitat and that development should not be allowed until that portion of the Site is fully remediated. One commentor

suggested that the cleanup be modified to include a provision that development may not hinder remediation or restoration, and another commentor stated that development should not occur until the effectiveness of a permanent remedy is clearly established for surface water, groundwater, and sediments.

RESPONSE: The selected remedy requires that development activities not interfere with potential cleanup activities, including the possibility that surface water and/or groundwater treatment will be necessary in the future (see Sections 9.3 and 9.5 in the ROD).

76. COMMENT: Two commentors requested that Asarco separate the cleanup effort from the commercial development of the Asarco site; one of these commentors requested that Asarco acknowledge this separation publicly.

RESPONSE: These two processes are separate but contain common elements. EPA is determining the environmental cleanup of the Site. The local municipalities and Asarco will be facilitating the development of the Site.

However, EPA and the other parties involved recognize the advantage of combining some of the planning elements for future development with the design of site cleanup activities. For example, if Asarco and the local governments can identify the type and locations of development (number of people, type of services necessary) then it can design the water, sewer, electricity and phone lines at the same time Asarco and EPA are designing a cap for the Site. This will allow the cap, with the necessary utilities, to be installed at one time rather than installing the cap and digging it up later to install utilities.

77. COMMENT: Two people commented that if Asarco conducted the cleanup and did not have enough money left over for development, the Asarco Site would be redeveloped anyway because it is prime valuable property. Two people added the comment that a pollution free site and community would be the biggest asset to encourage development in the area, and another commentor suggested that Asarco will redevelop the Site based on economic reasons alone, regardless of any "Principles of Agreement" with the local communities. One commentor expressed the opinion that the property would be more valuable if there was not an OCF on the Site.

RESPONSE: By signing the "Agreement in Principle," Asarco and the local governments committed to using their best efforts to develop the property. EPA hopes that all of these parties will honor their commitments and that the former smelter will be returned to productive uses for the community. EPA has no opinion on whether the Site would be redeveloped if Asarco had insufficient funds.

78. COMMENT: The Town of Ruston commented that an important element necessary for future development is EPA providing an appropriate release indemnification from liability for Ruston, Tacoma, the Park District, the Public Development Authority, and future lessees and lenders.

RESPONSE: At the national level, EPA Headquarters is committed to encouraging development and reuse of Superfund sites. National policies and guidance regarding such matters, including the potential liability associated with Superfund sites, are being revised. EPA Region 10 will work with Headquarters' policies and guidance to provide

as much certainty to potential owners, investors and tenants at the Asarco Site as possible.

79. COMMENT: The Town of Ruston commented that the design and implementation of remediation must support the Master Development Plan by allowing appropriate areas of the Asarco Site to be cleaned in a timely manner, thus opening these areas to development prior to completion of the remediation of the entire Site.

RESPONSE: EPA's intent is to allow development of the Site in a timely manner. However, EPA's primary concern is the safety and well-being of the site workers, surrounding residents and any potential future users of the Site. Development activities will be allowed to proceed when it is certain they will not interfere with cleanup of the Site.

2.11 COSTS

80. COMMENT: Several commentors expressed the opinion that Asarco has made great financial gains at the expense of the environment and should be held financially accountable for a thorough cleanup. One commentor expressed the opinion that the revenue generated by Asarco during its operation and the revenue that will be generated after development will far exceed the cost of any cleanup.

RESPONSE: Under the Superfund law, Asarco is liable to perform (or pay for) the cleanup selected by EPA. The cleanup must attain specific statutory mandates, including protection of human health and the environment. The amount of money that may have been generated by Asarco while the smelter was operating (or could be generated after cleanup) does not influence the extent of cleanup necessary to be protective and therefore is not considered by EPA when selecting a cleanup.

81. COMMENT: Several commentors indicated that the extra cost for treatment of the contaminated soils should not be a factor in determining the best cleanup alternative.

RESPONSE: One of the requirements for cleanups selected under the Superfund law is that they are cost-effective. EPA uses several factors to determine whether cleanup measures are cost-effective, including comparing the relative costs and effectiveness of various cleanup alternatives. Based on EPA's analysis and review of the comments received, EPA believes that the additional "effectiveness" provided by treating soils is not worth the increased cost compared to disposing soils in an OCF.

82. COMMENT: One commentor posed two cost-related questions: How much will it cost to treat the soil and store it in an OCF, and how much will it cost to clean the aquifers?

RESPONSE: EPA estimates that it would cost $70 million to treat source area soils, dispose the treated soils in an on-site solid waste landfill, and dispose the demolition debris in an off-site hazardous waste landfill. (This option is approximately $20 million more than soil treatment/disposal beneath the Site cap and $47 million more than soil disposal without treatment and debris disposal in the OCF.)

Asarco has estimated that the cost of pumping and treating groundwater for 2 years and 30 years at $15.6 million and $20.1 million, respectively. Using an in-situ (in place) groundwater treatment method would cost $1.3 million and using in-situ groundwater

treatment by seawater injection would cost $1.5 million for 30 years. Given the uncertainty of whether these groundwater measures would be effective in cleaning up the aquifers, EPA has determined that it is appropriate to take the source control measures identified in the selected remedy and then evaluate what, if any, further groundwater cleanup activities are necessary.

83. COMMENT: One citizen expressed the opinion that the billions of dollars spent on the Superfund program in the U.S. is disgraceful and has shown very few results.

RESPONSE: EPA disagrees. Accomplishments under the Superfund program include performing thousands of short-term removal actions (e.g., responding to emergency spills, etc.), completing major cleanup construction activities at over 278 sites, and starting major cleanup activities at more than 430 sites.

84. COMMENT: One commentor expressed the view that millions of dollars have already been wasted trying to determine the best cleanup method for the Asarco Site.

RESPONSE: EPA and Asarco have spent significant time and money to determine the types and locations of contamination on the Site and how the Site can be cleaned up. These evaluations are necessary and worthwhile and will result in an efficient cleanup.

85. COMMENT: One commentor expressed the opinion that Asarco should have been responsibly setting aside money for cleanup every year since the Site was deemed to be part of a Superfund site. Another commentor stated that Asarco had a savings account for contamination cleanup in excess of $150 million dollars.

RESPONSE: Asarco will be required to fund the amount necessary for cleanup of the Site. How Asarco chooses to pay for the cleanup is its own decision.

86. COMMENT: One citizen was dismayed at the amount of money Asarco was spending on its public relations campaign, stating that the money spent sending her leaflets, correspondence, and Christmas cards would be better spent on cleanup of the Asarco Site.

RESPONSE: EPA will not credit or deduct the amounts Asarco has spent on public relations campaigns from the amount it will be required to spend on cleanup.

2.12 PUBLIC INVOLVEMENT

87. COMMENT: Many commentors expressed the opinion that Asarco is trying to pressure the public into accepting the provisions of the "Agreement in Principle," including the less expensive on-site containment option, in exchange for development money. Two commentors suggested that Asarco has "bought off" the officials from Ruston, Tacoma, the Park Board, and other community agencies. Another commentor expressed frustration with Asarco's "carrot and stick" tactics to keep contamination on the Site and requested that EPA weigh-in on the side of the public when making its decision. One of these commentors suggested that there will be a lot of alienation against the EPA if the OCF is not approved.

RESPONSE: EPA believes that the community participation in planning for the future development of Site was important and beneficial to the community. The local governments and Asarco succeeded in providing many sessions for community members to express their point of view and then took their comments and used them to develop an overall design strategy for the project.

It appears that one reason Asarco spent a lot of time and money on the development project was in hopes that a less expensive cleanup option would be supported by the community. For the past 4-6 years elected representatives of the community had been strongly opposed to an OCF. During the land development sessions, the facilitators were able to understand what the objections and concerns were about on-site disposal and were able to design a preliminary development plan to address these objections and concerns.

Asarco's efforts were very public, as was the approval of the "Agreement in Principle," by the councils in Ruston and Tacoma, and the Park Districts' board. The local governments recommended to EPA that an OCF be selected. The charge that Asarco has "bought off" public officials is unfounded. During the public comment period, EPA received approximately 830 out of a total of 900 cards and letters of support for an OCF and future development. EPA shares the opinion of these commentors that an on-site containment facility can be constructed to protect human health and the environment.

Independent of the land use community participation sessions, EPA sponsored 2 public meeting and spoke at 10 meetings with local community groups such as the Rotary Club and the Environmental Commission of the Chamber of Commerce. The overwhelming message heard at all of these meetings was support for on-site disposal of soil and debris.

88. COMMENT: Several people commented that the EPA should make the best and safest cleanup decision possible, without public influence, pressure from the land use committee and/or development considerations. Some of these commentors suggested that the propaganda and development money offered by Asarco may be tainting the approach by the federal government to the cleanup and that EPA should keep these considerations separate from the cleanup decision. One commentor was disturbed by Asarco's seemingly "manipulative" pamphlet. Conversely, two commentors expressed the opinion that the EPA use a more democratic process to decide the cleanup method for the Asarco Site and give greater consideration to public opinion.

RESPONSE: Public comment on EPA's cleanup decision is an important part of the remedy selection process. In this case, EPA encouraged the land use process to occur prior to issuance of EPA's Proposed Plan in order for the agency to fully understand the needs of the community and not preclude future development options needlessly. Nonetheless, EPA's paramount concern is protection of human health and the environment, which will be achieved by the cleanup remedy that EPA has selected for the smelter site.

89. COMMENT: Several commentors commended Asarco, the municipalities, and the community for coming together to work on a major urban revitalization plan. Some commentors stated that this project is a demonstration of how EPA can work with the community to promote environmental remediation and economic development.

RESPONSE: Although we are not done yet, EPA is also pleased with the work the Land Use Group has completed and believes that working on Site cleanup together with future development of Superfund sites is an effective approach.

90. COMMENT: One citizen would like to know what she can do to help, and which politicians have expressed concern or provided assistance.

RESPONSE: There will be many opportunities for community involvement during the development of the environmental cleanup design work plans. EPA will send out Fact Sheets that describe ongoing work and also provide notice of opportunities for the public to participate. In addition, EPA anticipates that the Land Use/Development Group will continue to sponsor community sessions in order to refine the uses for the "development zones."

Many of the elected and appointed representatives of Ruston, Tacoma and the Park District have been involved in the land use and cleanup processes, such as:

Phil Parker, Mayor of Ruston
Charlene Hagen, Ruston Town Council
Ray Corpuz, City Manager of Tacoma
Paul Miller, Tacoma City Council
Jim Montgomerie, Metropolitan Park District

91. COMMENT: One person was dismayed by the course of events at the Pierce County Council meeting because she felt that the environmental aspects of the cleanup were not adequately addressed, only development and financial topics were discussed in detail. She also expressed the opinion that most of the people in the community are not adequately informed of EPA's cleanup proposal.

RESPONSE: EPA was not notified of the County Council meeting. EPA uses various ways to keep the public informed, such as Fact Sheets, public meetings, news ads, mailing lists, TAG Grants and information repositories. We are always open for any suggestions, so please let us know of your ideas. EPA believes that by the end of its 90-day public comment session and the Asarco Week #4 meetings that hundreds of local community members were aware of and had participated in the cleanup and planning decisions for this Site.

2.13 MISCELLANEOUS

92. COMMENT: One commentor believes that the following statement is not complete and does not address the other characteristics of dangerous wastes as defined in Washington State Dangerous Waste Regulations (WAC 173-303): "Waste that is not a federal hazardous waste but has the potential to migrate into the environment would be disposed in a solid waste landfill that meets state requirements (Page 23, Paragraph 5 of the Proposed Plan)." He asked if the Toxicity Characteristic Leaching Procedure (TCLP) is the only criterion that was used to make the determination.

RESPONSE: The statement in the Proposed Plan was intended to clarify that soils not regulated under federal law (e.g., treated soils that pass the TCLP test) may still need to be disposed in a landfill that met state solid waste landfill requirements. This

determination would have been based on the results of water leaching tests showing that disposal of treated soil would not be protective of the environment. The state has specified its requirements for disposal of dangerous waste in WAC 173-303. The state's determination of "dangerous waste" can be based on metal concentration as well as TCLP leachate concentration.

Because EPA has selected the OCF, the untreated soils that will be disposed on site are a federal hazardous waste. Therefore, the OCF will meet both federal and state hazardous and dangerous waste requirements for landfills.

93. COMMENT: One person suggested that Asarco has profited at the expense of the environment because of the lack of environmental concern on behalf of the local governments. This commentor stated that the "Tacoma Aroma" is symbolic of the way the local governments have been dominated by industry. This commentor added the example of the local water treatment plant that has been in violation of EPA standards for years, however the city has chosen to pay the fine rather than remedy the problem.

RESPONSE: EPA encourages the commentor to express his/her views directly to the appropriate local governments.

94. COMMENT: Several commentors expressed the opinion that the EPA has done a good job in its development and presentation of the preferred alternative and Proposed Plan.

RESPONSE: EPA appreciates the comment.

95. COMMENT: Several public agencies, the Washington Department of Natural Resources, Citizens for a Healthy Bay, and the Puyallup Tribe commented that they would like to have greater involvement and input in the development and planning of the Preferred Alternative/Proposed Plan. Additionally, the Puyallup Tribe requested that EPA act in concert with Federal Indian Policy and consult with the tribe on whether the Proposed Plan is consistent with Environmental Justice policies.

RESPONSE: All of these organizations participated on the Coordinating Forum (local, state and federal representatives with an interest in the Asarco Smelter project) which was convened in July 1993. Policy makers and staff members from local government, local, state and federal health departments, and environmental representatives participated in all aspects of reviewing and commenting on the cleanup alternatives and future land use concepts. EPA will encourage these same organizations to participate in remedial design.

Consistent with EPA's Indian Polich, EPA's Regional Administrator met with representatives of the Puyallup Tribe on March 16, 1995, to consult on a government-to-government basis on all of the Tribes concerns. EPA believes that the Proposed Plan is consistent with its regional Environmental Justice principles.

96. COMMENT: The Puyallup Tribe reiterated the Clinton Administration's policy that "people of color and the economically disenfranchised should not be forced to bear unfair environmental burdens" (Executive Order 12898, Federal Register 7629).

RESPONSE: EPA believes that the cleanup it has selected is fully in accordance with the objectives and requirements of Executive Order 12898.

97. COMMENT: Several commentors were troubled by the estimated time for completion of the cleanup. They believe that the cleanup action has taken too long already and/or that the cleanup process and consequent development should be expedited. Other commentors requested EPA to take time to carefully consider public comments and to make scientifically sound decisions.

RESPONSE: EPA has reviewed all of the comments received during the public comment period. It is EPA's intent to work with Asarco and the local municipalities so that cleanup activities can begin as soon as possible. One approach to ensure that Site cleanup will not be delayed is that when the Site is ready to be capped, even if all of the residential soils from the surrounding neighborhoods have not been removed, a cap will be installed and the Ruston/North Tacoma soils will be disposed in an appropriate off-site disposal facility, see Section 9.0 of the ROD.

98. COMMENT: One commentor expressed concern about the noise that the cleanup project would generate.

RESPONSE: Heavy equipment and machinery will be used during the cleanup but EPA will require Asarco to reduce the noise to the extent possible by limiting the work hours and selecting dedicated routes that trucks and traffic can use. Local residents and government will have an opportunity to participate in the development of these plans.

99. COMMENT: One commentor believed that the stack bricks would be removed after demolition, however was surprised to learn that they would only be covered with dirt.

RESPONSE: The stack bricks were covered with dirt after the stack was demolished in January 1993. However, the selected remedy calls for these bricks to be unburied and permanently disposed in the OCF.

100. COMMENT: The Puyallup Tribe commented that the nine criteria used to analyze the alternatives should not all be given equal weight. They stated that the protectiveness of human health and the environment and compliance with ARARs are the most important threshold criteria.

RESPONSE: Section 8.0 of the ROD explains how EPA evaluated the cleanup alternatives using the nine criteria. EPA emphasizes the importance of protectiveness and compliance with ARARs by designating them as "threshold criteria." This means that an alternative was not evaluated further if it did not meet these criteria.

101. COMMENT: One commentor expressed the opinion that, given the hazardous waste sites for which Asarco may also be responsible for in Montana and Colorado, Asarco is the fifth worst polluter in the country and possibly the world. This commentor also expressed the opinion that "Asarco's long-standing policy appears to be coverup and not cleanup."

RESPONSE: Asarco will be held responsible for cleaning up the former Asarco Tacoma smelter as well as other sites.

102. COMMENT: One commentor expressed the opinion that Asarco should have been forced to clean up and redevelop the Site years ago, and that Asarco has needlessly delayed clean up and redevelopment of the Site through endless litigation.

RESPONSE: Actually, to date there has not been litigation associated with the cleanup itself. Since 1986, EPA and Asarco have focused on the investigation of the Site, the analysis of potential cleanup alternatives, and the demolition of smelter buildings and structures.

103. COMMENT: One person commented that the cleanup method and development plan are irrelevant as long as his commute to work is not affected, and the new development is clean, legal, and profitable.

RESPONSE: EPA believes that the cleanup method and development plan are very relevant to the future of the community overall. EPA notes, however, that the community should expect that roads around the smelter may need to be closed during parts of the cleanup.

104. COMMENT: One commentor requested that the public comment period be extended past the October 11, 1994, deadline.

RESPONSE: The public comment period was extended to November 10, 1994, based on citizens' requests.

105. COMMENT: One commentor requested that interested parties be provided with a straightforward comparison between EPA's preferred alternative and the alternative proposed by the land use committee.

RESPONSE: The majority of the cleanup activities identified in EPA's selected cleanup remedy are also identified in Paragraph 7 of the "Agreement in Principle. However, EPA's selected remedy, see Section 9.0 of the ROD, provides more detail than the "Agreement in Principle" as to why many of the cleanup measures are necessary. Both the "Agreement in Principle" and the Selected Remedy require the cleanup to be protective of human health and the environment over the long term.

<u>Common Elements of the "Agreement in Principle" and EPA's Preferred Alternative.</u>

- Utilization of Ruston/North Tacoma residential soils as the sub-base for the plant and breakwater (slag peninsula) cap
- Monitoring and institutional controls
- Abandonment of the production well
- Installation of groundwater/surface water interceptor trenches
- Replacement of the existing drainage system, including outfalls
- Shoreline armoring

<u>Additional Elements of EPA's Proposed Plan.</u>

- Treatment of source area soils by solidification/stabilization and disposal as a sub-base to the site-wide cap
- Demolition of remaining buildings and structures
- Mitigation measures if wetlands or intertidal habitat are adversely impacted by cleanup activities
- Safety measures
- Integration of cleanup with land use plans

It should be noted that EPA's Selected Remedy in the Record of Decision selected disposal of soil without treatment in an OCF rather than soil treatment with solidification/stabilization. The "Agreement in Principle" also identified disposal of soil without treatment in an OCF. Other elements of the Selected Remedy are very similar to the elements in the Preferred Alternative described above.

106. COMMENT: One Metropolitan Park Board member commented that he did not sign the "Agreement in Principle" because he did not have the opportunity to fully analyze the situation and he was pressured, lied to, and threatened. He also stated that the Metropolitan Park Board has not agreed, passed, or discussed the "Agreement in Principle," nor have they authorized any letters to be directed to EPA.

RESPONSE: EPA's understanding is that the Metropolitan Park Board did pass and sign the "Agreement in Principle" with all but one supporting vote. EPA suggests that this member talk directly with fellow Board members.

107. COMMENT: One commentor expressed the opinion that, based on the information on page 13 of EPA's Proposed Plan, it appears that all of the approaches are protective of public health and the environment and that it is difficult to determine which options are truly protective.

RESPONSE: On page 9 of the Proposed Plan, EPA provided all of the cleanup alternatives that were considered. On page 21, EPA explained that "the no-action alternatives are not protective of human health and the environment and thus were not further evaluated under the nine criteria." Otherwise, EPA believes that any of the remaining alternatives (other than monitoring and limited action) would have been protective of human health and the environment.

108. COMMENT: The Town of Ruston requested that EPA respect the permitting processes of the local governments (Ruston, Tacoma, Park District) and not preclude or usurp their authorities to require Asarco to obtain any and all infrastructure permits, and that these municipalities would like to review remediation plans.

RESPONSE: EPA agrees that it is important to work within the established permit processes of the local governments. EPA's expectation, however, is that these processes will not result in delays to cleanup activities.

3.0 ASARCO'S COMMENTS AND EPA RESPONSES

As part of an effort to obtain public comment regarding the Master Development Plan, Asarco distributed self-addressed, postage-paid comment cards to the public at several community meetings. Two different card types were distributed by Asarco during this effort, the first batch of cards were entitled, "Tell EPA what you think of the Asarco Land Use Plan", and included the statement, "I want the Asarco Site redeveloped;" the second batch of cards were entitled "Tell EPA You Support the Asarco Master Development Plan," and included two statements to select from: "I support development of the Asarco Site and the on-site containment facility" and "I would like additional information about the plan and community meetings." Additional space was provided on both cards to include comments and the respondent's address/phone number.

A total of 673 comment cards were forwarded to EPA by Asarco during the public comment period. Based upon the type of comment card and the nature of the reply received, EPA has tallied and separated the cards into the five following general categories with regard to cleanup preference:

- 547 comment cards were marked in favor of the development of the Asarco Site including an on-site containment facility.
- 69 of the comment cards, respondents offered specific comments and suggestions for development of the Asarco Site, but not a preferred cleanup method.
- 24 of the comment cards, respondents indicated that they would like additional information and/or expressed specific questions, but did not state a cleanup preference. The questions have been summarized and responded to in Section 2.
- 19 respondents indicated that they were either opposed to the OCF or suggested a combination of on-site containment and treatment.
- 14 of the comment cards, respondents offered miscellaneous suggestions and comments, but did not indicate their cleanup preference.

EPA notes that many individual commentors sent their letters and "reply cards" directly to EPA and that most of these commentors also stated they were in favor of future development and an OCF.

In addition to comments received from citizens, local officials, and Natural Resource Trustees, EPA received comments from Asarco, Inc., the Potentially Responsible Party for this Site. The comments below summarize Asarco's overall concerns as well as its specific technical concerns with the Proposed Plan. As a member of the Land Use Group, Asarco did not support EPA's **Preferred Alternative** of soil treatment based on cost, long-term effectiveness and because it believes that treatment would preclude the implementation of future land development plans.

GENERAL COMMENTS

1. COMMENT: Asarco believes that although the cleanup decision is separate from the plans for future use of the Site, that the terms of the "Agreement In Principle" should be a significant factor to modify EPA's remedy when using the nine criteria analysis. Asarco believes that even if soil treatment and on-site containment facility (OCF) were "equal" with respect to the threshold and balancing criteria, that the community support for and on-site containment should compel EPA to select and OCF.

   RESPONSE: As a modifying criteria, community acceptance, could result in EPA favoring a feasibility study alternative that was otherwise equal with respect to all of the other threshold and balancing criteria. As stated in the Proposed Plan, EPA recognizes that in addition to cleaning up contamination at the Asarco Site, that the community is very interested in Site development as well. As a result, EPA received numerous comments from community members, community leaders and local businesses and groups supporting an OCF and future site development. It was these comments, in addition to the "Agreement in Principle," that convinced EPA that the selection of the OCF would be the best cleanup remedy.

2. COMMENT: Asarco stated that on-site containment meets both of the threshold criteria described in the "nine criteria:" (1) Protection of human health and the environment and (2) all Applicable and Relevant and Appropriate Requirements (ARARs) and on-site containment facilities (OCFs) have shown their effectiveness over the long term at sites throughout the country.

   RESPONSE: EPA agrees that either soil treatment or on-site soil containment meet the two threshold criteria and that an OCF can be designed to be protective over the long-term.

3. COMMENT: Asarco stated that EPA's Proposed Plan is not "cost-effective," nor does it "utilize a permanent solution and alternate treatment technologies or resource recovery to the maximum extent practicable" which are two of five balancing criteria described in the "nine criteria." Asarco believes that cost-effectiveness is a "**condition** (emphasis added) for remedy selection, not merely a consideration during remedial design and implementation," (55 F. Reg. 8726), and that "cost-effectiveness" is based on the selected remedy's <u>overall effectiveness</u> which is described in § 300.430 (f)(1)(i)(B) of the National Contingency Plan (NCP) as long-term-effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, and short-term effectiveness.

   RESPONSE: EPA has made a determination in the ROD that disposal in the OCF is the cost-effective remedy (see section 10.3 of the ROD). This determination is based on EPA's finding that disposal in an OCF is an effective approach for isolating soil and debris from the environment and because disposal in an OCF is estimated to cost nearly $30 million less than treatment of soil. In addition, the community clearly stated that it believed that selecting an OCF would allow future development opportunities at the Site.

4. COMMENT: Asarco also stated that increased cost of treatment would not result in a commensurate decrease in risk at the Site.

RESPONSE: EPA believes that the primary issue raised by the choice between treatment and soil was not the reduction in risk, which would be comparable, but the ability to select a remedy that would remain protective over the long-term and be compatible with future plans for the Site.

5. COMMENT: In addition, Asarco identified several additional reasons why soil treatment should not be selected. These reasons are:

- there is no evaluation of the effectiveness of treatment over many years;
- the cost of treatment is prohibitively high ($150/ton);
- the amount of additive required results in a low density product resulting in a significant increase in volume of treated material;
- the physical properties of the treated material raise implementability questions with respect to future plans for Site development; and
- the longer time for remediation would have serious negative effects on future land use plans.

RESPONSE: EPA's response is as follows:

(1) EPA agrees. Although as noted in Response No. 21 in Section A, landfills have also not been around for a significant number of years either. (2) The cost of treatment, re-evaluated in context of the responses received from the community, indicated that a less costly and equally protective cleanup was preferred. (3) Although it is not clear how/if the increased soil volume would have impacted Site development, EPA believes that this could have been factored into Site plans in the future. (4) EPA agrees that the appropriate places on the Site would have had to have been identified to ensure comparability of soil treatment with Site development. (5) EPA is not sure why Asarco believes that soil treatment would take longer than construction and filling an OCF. The Feasibility Study states that treatment would take 6 months and the OCF alternative could take up to 2 years.

6. COMMENT: The overwhelming community support for the "Agreement in Principle" should result in the selection of a containment alternative as the remedy and the NCP allows EPA to select an alternative favored by the community over an equally protective alternative.

RESPONSE: EPA has selected an OCF as part of its selected remedy, see Section 9.0 in the ROD.

7. COMMENT: The ROD should acknowledge the work currently being conducted under the Administrative Order on Consent which was signed by EPA and Asarco in 1994, and allows maximum future flexibility in any modifications to the current shoreline so that the uplands and marine remedial actions can be integrated in a reasonable and cost-effective manner. In addition, Asarco stated that CERCLA does not authorize EPA acting alone to impose habitat restoration or mitigation as part of a remedial action, but instead, states that restoration measures may be agreed upon by the PRP and the natural resource trustees.

RESPONSE: EPA acknowledges that sampling and analysis activities are being conducted under the 1994 AOC. Integration of the cleanup of sediments and cleanup of

uplands portions of the Site is a worthwhile objective but is not a specific provision of the AOC. During the development of the work plans for Site cleanup, EPA will work in conjunction with Asarco, the natural resource trustees and the community to develop the necessary mitigation measures for the Site, see Section 9.0 of the ROD. EPA agrees that restoration measures (i.e., to compensate for past injuries to natural resources) will be determined by Asarco and the natural resource trustees.

8. COMMENT: The ROD should resolve the issue of the Ruston/North Tacoma Study Area residential soils disposal and should set performance standards, rather than numerical remediation goals, for groundwater monitoring.

RESPONSE: The selected remedy for the Ruston/North Tacoma residential soils is to place them beneath a cap (e.g., used as a sub-base) in areas that will not be impacted by groundwater, see Section 9.0 of the ROD. The ROD identifies measures to control the sources to groundwater (e.g., soil excavation, containment and capping and replacing the surface water drainage system) and monitors the effect of these activities. The Class III preliminary remediation goals will be used as bench marks to evaluate the impact of source control activities on groundwater that enters Commencement Bay.

9. COMMENT: There are some fundamental differences between EPA's preferred remedy and the remedial actions proposed as part of the Agreement in Principle. The primary differences involve how soil is handled after excavation from source areas.

RESPONSE: EPA has selected disposal of source area soil in an OCF in the Record of Decision.

10. COMMENT: Treatment of a portion of excavated soils, the arsenic kitchen soils for example, would be prohibitively costly.

RESPONSE: EPA believes that treatment of any part of the excavated soils before disposal in an OCF would certainly add to the overall cost of the cleanup. Because several commenters recommended that some or all of the soils be treated before placing them in an OCF, EPA evaluated the environmental benefits of treatment. In this analysis, see Appendix D, EPA has determined that treatment of the most contaminated source area soils would not substantially decrease the potential impact on groundwater from leachate. EPA has not selected treatment of soils as part of the ROD.

11. COMMENT: Over 70 physical, chemical, biological and thermal treatment processes were examined for potential application for the smelter site. Among the technologies investigated for site specific applications for the site were soil washing, soil acid leaching, and soil fixation.

The studies showed that soil washing and/or leaching was not applicable for the site because of difficulties with physical and chemical conditions of site soils. Technical problems with soil leaching included incomplete removal of arsenic, failure of leached or washed materials to pass TCLP after treatment, and additional treatment requirements associated with acid fluid treatment and subsequent disposal.

Two commercial vendors were able to demonstrate, in the short term, attainment of treatment objectives. However, projected treatment costs are high and considerably more expensive than other soil options including the use of an OCF.

RESPONSE: EPA believes that soil treatment by solidification/stabilization could be effective over the long-term. The additional studies conducted by Asarco indicate that the TCLP test results are slightly less effective after 28-day testing (but are still significantly below hazardous waste regulatory threshold levels for treatment) and that the volume of the treated material increased by approximately 60%. EPA did not select treatment, however, because soil can effectively be isolated in an OCF, the OCF was much less expensive than treatment, and because the majority of commenters supported disposal in an OCF in conjunction with land use plans.

SPECIFIC COMMENTS

All of the following comments from Asarco refer to EPA's Proposed Plan, dated August 10, 1994.

12. COMMENT: **Page 4, fourth paragraph, first sentence.** The sentence should read "surface water features on the smelter property include surface water in the cooling pond...." There is no longer surface water flow into the pond and surface water flow has been diverted around the cooling pond since Spring 1993.

    RESPONSE: This comment has been incorporated into the "Background" section of the ROD and it now states that, "Surface water features on the smelter property include surface water in the cooling pond..."

13. COMMENT: **Page 5, legend to Figure.** "known sources" should be changed to "identified source areas"

    RESPONSE: The clarification has been made in revised Figure 1-1.

14. COMMENT: **Page 6, first paragraph, last sentence.** The remedial investigation identified six areas as source areas of arsenic and metal concentrations to groundwater, based primarily on the association of these areas with elevated concentrations in groundwater. Of these areas, the arsenic kitchen and the southeast plant area have subsurface soil data that support the hypothesis that these areas contribute arsenic and metals to groundwater. The stack hill contributes arsenic and metals to surface water where groundwater "daylights" through soils that contain elevated arsenic and metals. Available soil and water data from the cooling pond suggest there are little impacts to groundwater, from this source; however, the pond is considered a source area because of its total sediment arsenic and metal concentrations and because of its historic use as a process water pond that stored water containing elevated arsenic and metals. The remaining areas (copper refinery area and fine ore bins area) are assumed groundwater sources primarily because of their association with elevated groundwater concentrations and known history of these facilities. Soils in these areas were assumed to be sources to groundwater for feasibility study purposes; however, insufficient data are available to positively establish soils from these areas as groundwater arsenic and metal sources.

    The sentence would be more representative of actual site conditions if it read "These are areas that appear to act as the primary sources".

RESPONSE: The ROD states that, "These are areas that have either the highest measured concentrations of contaminants in the soils, appear to act as the primary known sources of contamination to groundwater and surface water, and/or have large amounts of contaminated material based upon the historic uses of these areas."

15. COMMENT: **Page 6, second paragraph, first sentence.** The first sentence is not true. First, the areas have not been identified based on the presence of the "highest known concentrations" but, instead, based on their association with highest groundwater concentrations of arsenic and metals. In some cases, such as the arsenic kitchens and stack hill areas, these areas do contain some of the highest total soil metal concentrations, but, more importantly, also the highest leachate soil concentrations. However, some of the identified source areas are not associated with confirmed total soil data. For example, to date the soil quality underneath the fine ore building has not been tested. Second, not all metals and/or organic chemicals are "highly mobile and leaching out of soils or slag." The sentence should be changed from "...which are highly mobile and are leaching out of soils or slag..." to "...which may be leaching out of soils or slag..." Also, the suggestion that high metal values automatically result in principal threats to groundwater is not correct. High metal values in themselves are not an indication of a threat to groundwater, as demonstrated by slag. The threat to groundwater is determined by leachability and subsequent mobility of a chemical.

RESPONSE: See response to Comment No. 14.

16. COMMENT: **Page 6, fourth paragraph,, last sentence.** The statement that, "Most of the slag portions of the Site appear to contribute less contamination... as compared to the source areas..." is incorrect. All slag contributes less than the source areas. However, this effect can be obscured by other sources, such as is the case for the slag located in the plume down-gradient from the arsenic kitchen. It would be representative of actual conditions if this sentence was changed to read: "Slag appears to contribute less metals to groundwater...as compared to the source areas..."

RESPONSE: The ROD states that, "The slag portions of the Site appear to contribute less contamination to groundwater as compared to the source areas described."

17. COMMENT: **Page 6, sixth paragraph, second sentence.** It is not certain pipes are filled with sediment or that they are cracked. Because of the age of the plant, an assumption was made in the FS that drainage lines were cracked and that sediment in pipes was possible. A suggested change to the sentence is "pipes may be cracked and/or contain contaminated sediment."

RESPONSE: The ROD states that, "The pipes and drains associated with the system may be cracked and/or the pipes filled with contaminated sediments."

18. COMMENT: **Page 6, ninth paragraph, last two sentences.** Based on site data, it is apparent that smelter site groundwater arsenic and metals are more affected by low redox conditions associated with the presence of organic material than by resultant pH conditions. The presence of seawater apparently buffers groundwater in the southeast plant area and pH concentrations are typically above 8 indicating acidic conditions at this location are not occurring.

RESPONSE: The language in the ROD is revised to read that wood waste buried in the slag is decomposing, thus contributing to the release of metals, particularly arsenic, from the slag.

19. COMMENT: **Page 6, last paragraph, first sentence.** The metal levels in groundwater do more than just "appear" to decrease as groundwater moves toward the bay; the data indicate that this decrease is a fact. We suggest changing this sentence to read; "The metal levels in groundwater decrease as groundwater moves through smelter property toward Commencement Bay". Although the cause of the decrease remains a subject of debate, as pointed out by the description of potential causes in the following sentence, the metals levels decrease is documented by validated data.

RESPONSE: The ROD states that, "The metal levels in groundwater decrease as groundwater moves through the smelter property towards Commencement Bay." EPA agrees that the reason(s) why this decrease occurs has not yet been established.

20. COMMENT: **Page 7, first paragraph, last sentence.** No large cracks as described in the proposed plan have been identified during the RI/FS. The crack hypothesis is entirely of regulatory origin. Although one well had a higher test permeability than surrounding wells, the significance of the well test relative to groundwater metal transport is not clear. All available evidence indicates that dilution and/or adsorption are occurring to the same degree in the central portion of the site. If anything, dilution and/or adsorption are probably most effective in the central portion of the site, as evidenced by the substantial decrease in metals concentrations over relatively short distances.

RESPONSE: This sentence was not included in the ROD.

21. COMMENT: **Page 7, EPA's Cleanup Objectives, first sentence, cleanup actions necessary because of "long-term cancer risks for workers".** Long-term cancer risks to sealife and animals were not evaluated as the sentence implies.

RESPONSE: Risks to sealife and animals were qualitatively evaluated in EPA's ecological risk assessment. EPA's conclusion was that sealife has been adversely impacted by releases from the Site and that the Site posed risks to terrestrial animals and vegetation.

22. COMMENT: **Page 8, Contaminated Soil Dust and Slag, Objective c, "Prevent the erosion of slag to the off-shore sediments".** Existing data suggest the significance of slag erosion is highly overestimated in the Proposed Plan. Although slag contains elevated concentrations of total metals, available data show in the marine environment, slag and sediment that contain slag have a very low leachability. In addition, no detrimental effects of slag on sea life have been documented. In fact, the off-shore community at the smelter is viable and healthy. Slag has been used on the plant site and on the Yacht Club breakwater because its physical properties (coarse grain size and massive texture) made the material an ideal medium for shoreline armoring construction. Armoring of the slag would be primarily cosmetic with little, if any, benefit to the marine environment. While slag armoring could provide a habitat niche for marine life, installation of armoring will, at least temporarily, adversely affect presently established communities.

RESPONSE: EPA believes that slag is eroding to some degree, and therefore exposing faces that leach metals more readily than weathered faces. As part of the remedial

design, EPA will require that additional studies are conducted to indicate which part of the slag shoreline is eroding and where shoreline armoring should be placed.

23. COMMENT: **Page 11, Shoreline Armoring.** This section appears to begin with the premise that shoreline erosion is a substantive issue. Although shoreline armoring was among alternatives evaluated in the FS, to date no information has been produced to document that shoreline erosion is a substantial source of slag to the marine sediments of Commencement Bay.

This question is raised for two reasons. Slag was directly placed in Commencement Bay and its sediments by disposal actions over a 75-year period. Visually obvious erosion could only account for a very small fraction of the slag present in Commencement Bay sediments.

Erosion is visually obvious at some locations along the slag peninsula and smelter property. However, many portions of this area show no obvious evidence of erosion. This raises the question of whether armoring the total shoreline is appropriate, or if armoring is at all appropriate?

It is also reasonable to question whether slag erosion is causing any environmental effects other than those produced by physical erosion of natural substrates. The study of freshly cut slag by Battelle (Crecelius, 1986) showed that marine larvae settle as rapidly on slag as on basalt rock and concrete. Although this study showed metals are released from freshly cut slag for three to four months, this brief period would produce very minor contributions of metals to Commencement Bay waters or sediments at the visually apparent erosion rates.

The EPA discussion assumes that a 5 foot thick layer of riprap over a 2 foot layer of small rock is necessary, to prevent erosion. Although total armoring for the shoreline was assumed in alternatives presented in the FS, it will be necessary to conduct an engineering analysis of shore processes along the smelter property and slag peninsula to determine what design is most appropriate, as well as if and where protection might be required.

The existing slope along the north portion of the bayward face of the slag peninsula may be too steep to make armoring practical without major shoreline modification. The steep slope at the north end of the Yacht Club breakwater extends to great depths (at least to 200 feet) indicating that major dredging or cut back at this location may be required to establish a foundation for shoreline monitoring.

Combined plant site and breakwater shoreline armoring costs would be $6.2 million dollars based on assumptions presented in the FS and cost projections presented in the Proposed Plan. This expense would be incurred for primarily cosmetic alterations to the shoreline and provide little environmental benefit. In fact, shoreline armoring will have a significant impact on diverse and apparently healthy communities already established in shoreline slag.

RESPONSE: EPA agrees that additional engineering studies are necessary to determine the extent of shoreline armoring that will be needed in areas that are eroding. EPA does

not believe that shoreline armoring will be conducted for cosmetic purposes only, but will be placed in those areas which pose a threat to the off-shore environment.

24. COMMENT: **Page 14, Plant Site Soils, 1c.** It should be noted that, in many cases, sampling results will not determine the feasible extent of excavation, but will provide documentation on post-excavation conditions. Excavation in some areas, particularly in the fine ore bins area and the copper refinery areas, will be limited by equipment capabilities, and by limitations associated with high water table and high permeability conditions.

    RESPONSE: EPA recognizes that some materials in the source areas will not be able to be excavated, see "Implementability" in Section 8.0. In addition, Asarco will be required to confirm that all necessary source area excavation, as practicable, has been performed.

25. COMMENT: **Page 14, Plant Site Soils, 1d.** In addition to demolition materials, some soil contains coarse grained fractions that are greater than 2 inches in size. During pilot scale testing, these sizes were simply screened out and were not treated. If treatment were to be implemented on a large scale, these fractions would either have to be ground to a finer size for incorporation in the treatment process, or disposed with demolition debris. Either action involves an increase of material handling, processing and costs over those associated with the soil fixation process activities demonstrated during the pilot scale tests.

    RESPONSE: EPA understands that there may be some additional costs associated with a full-scale treatment project. However, treatment has not been selected in this ROD for this Site.

26. COMMENT: **Page 14, Plant Site Soils, 1e.** Removal of the car tunnel was not included in the primary remedial action scenarios evaluated during the FS and this action is not included in the Proposed Plan cost estimates. The FS assumed removal of the car tunnel and railroad tunnels as available options and responsibilities of the owners: Tacoma/Ruston, and Burlington Northern railroad, respectively. Since the tunnel is associated with seeps that have poor water quality, it is possible that concrete from the tunnel, if removed, would require disposal as a hazardous waste. It is estimated that removal of the tunnel, including demolition costs, would increase present cost estimates as high as $2.2 million. Filling the tunnel may be more cost effective than demolition and removal. In addition, the car tunnel is part of a unit construction with the rail tunnel which would be impacted by removal of the car tunnel portion of the structure.

    RESPONSE: The determination of whether the tunnel is removed or filled in will be made during the design phase of the project. As noted in Section 9.0 of the ROD, the OCF will be designed to allow for a limited amount of additional capacity in the event there is more than the estimated 160,000 cubic yards of soil and more than the estimated 80,000 cubic yards of demolition debris that requires disposal, see Section 9.1.2. EPA notes that Paragraph 4 of the Agreement in Principle states that: "Asarco agrees to fill or remove the existing tunnel..."

27. COMMENT: **Page 15, 3a, use of fabric as marker.** A marker would not be necessary for most of the plant site to identify the base of an imported soil cap. The presence of slag which has a very dark color and coarse grained texture that would be significantly

different in color and texture from fill, and topsoil imported to the site would provide easy identification when the base of the cap was penetrated. In addition, remaining man-made features such as concrete slabs, foundation or pavement would also easily be identified at the base of the cap.

Ruston soils would also easily be identified. These soils will be incorporated under a drainage gravel layer which is, in turn, underlain by a clay layer. These distinctly different soil types would be easily identified and would mark the locations of the base of imported topsoil as well as the top of underlying Ruston residential soils.

RESPONSE: EPA agrees that a visual marker will not be necessary since the clay layer will serve this function as clay will be located above the slag, building pads and foundations and the Ruston/North Tacoma residential soils.

Asarco is incorrect in stating that the clay layer will underlie the residential soils. The residential soils will be used as a sub-base below the clay on the Site cap. Residential soils can be placed in areas of the site not likely to be impacted by groundwater.

28. COMMENT: **Page 16, Figure 3 (in Proposed Plan), Hazardous Waste On-Site Containment Facility (OCF).** The figure is not correct. The part of the cover that includes a 1 foot layer, which underlies the filter material, would not consist of compacted soil as shown in the figure but, instead, would consist of a drainage layer.

RESPONSE: In the cap, beneath the one foot of drainage material, there will be a fabric liner and two feet of compacted soil above the waste material, see Figure 7-2.

29. **Page 18, Surface Water, second paragraph, last sentence.** As noted several times in the FS, large scale treatment of surface water to consistently meet low standards associated with arsenic and metal marine criteria may not be technically feasible. This is particularly true for the relatively large flows (200 gpm or greater) associated with surface water discharge from drainage areas above the plant site.

RESPONSE: EPA will evaluate the need for, and the feasibility of, surface water treatment after the source control activities in the ROD are completed.

30. COMMENT: **Page 18, Shore Line Armoring of the plant site and slag peninsula. "One goal for the shoreline would be to restore aquatic habitat that would benefit eelgrass, salmon and other sea life. Methods may include shoreline pull back and sloping, development of pocket beaches, mudflats, vegetated shallows, and shoreline irregularity."** There is no evidence that shoreline armoring would provide any aquatic habitat more suitable for marine biota than the existing slag surfaces. The armoring might provide less suitable habitat because of the loss of physical irregularities that the slag provides. Rock riprap provides a generally even, flat surface inhabited by fewer species and number of organisms than the highly irregular surfaces of slag.

Neither slag nor shoreline armoring provide a suitable habitat for eelgrass. Shallow water wave energies that require hard substrates (armoring) prevent eelgrass growth. Eelgrass also requires slit to sand-gravel substrates, not hard surfaces. Salmon and other sea life are capable of using the existing slag habitat, and are unlikely to benefit from shoreline armoring.

Development of pocket beaches, mudflats, shoreline pullback, etc., goes far beyond shoreline armoring. These actions would require great modification of the existing conditions and would result in environmental and economic costs far greater than traditional shoreline armoring as presented in the Feasibility Study. Existing features that have present or potential future economic or environmental value such as the off-shore piers may not survive modifications associated with modifications of features as discussed in EPA's plan. The additional economic costs are not factored in the costs presented in the FS or in the Proposed Plan. Preliminary estimates to include features described in the Proposed Plan as part of shoreline armoring indicate costs would be increased $6 million to $9 million above the $6.25 million presented in the, Proposed Plan for plant site and shoreline armoring costs. Since, as noted above, the area is by nature not suited for many of features such as mudflats, eelgrass, and pocket beaches, as well as shoreline cut backs would involve significant alteration to existing conditions. For instance, off-shore features such as breakwaters would probably be necessary to encourage fine-grained environments that maintain features such as mudflats and eelgrass. presently not possible in the relatively fast moving coarse grained deposition environment typical to not only the Asarco Site but the adjacent gravel beach areas outside the plant site off-shore area. Obviously, implementation of features that require such an alteration of existing conditions would require considerable study as part of preliminary remedial design efforts.

RESPONSE: The riprap itself is not expected to provide a more suitable habitat than the slag; however, the armoring can be designed to have ledges or irregularities that <u>are</u> more supportive of marine biota than the slag. These areas could be constructed with gravel and on a more gentle slope than the slope of the present Site. A habitat conducive to epibenthic species (organisms living on the sea floor) could be created, which would, in turn, be beneficial to salmon.

EPA agrees that low-energy habitats would not likely persist along the Asarco shoreline. However, a moderately active environment, such as a gravelly/sandy area conducive to other types of aquatic species, may be able to be created off the Asarco Site. Although on-site mitigation is a preference, a habitat that is conducive to eelgrass could be created as part of an off-site mitigation effort.

EPA agrees that reducing the effects of the currents on the exposed face of the Asarco Site would require extensive effort, including the use of groins or breakwaters. These costs, which would be weighed against their benefits, are not part of the shoreline armoring costs in the FS, but rather can be part of the mitigation costs since they would benefit the mitigation efforts. These costs could also be weighed against their overall benefit and/or be compared to other mitigation efforts with similar costs.

Shoreline pullback, sloping, and shoreline irregularity are possible at the Site and can be part of the shoreline armoring and/or mitigation efforts. For example, shoreline armoring, which is intended to reduce the erosion of slag, can be accomplished adjacent to an area that is cut back and less shallow, which could be intended as part of a mitigation site. The most appropriate habitats (e.g., those with the greatest chance of persistence) would then be chosen for these various post-remediation environments. The associated costs could be part of the shoreline armoring costs <u>and</u> the mitigation costs.

EPA will consider the existing features on-site and the planned uses of the site in the remedial design stage so as to ensure compatibility.

EPA acknowledges that much more about the sediments site will be learned from the ongoing and upcoming expanded RI/FS activities, including a better understanding of the amount of erosion at the site and potential disposal and mitigation sites.

31. COMMENT: **Page 18, Shoreline armoring of the plant site and slag peninsula. "Further, since armoring would adversely impact intertidal habitat of the shoreline, mitigation and/or restoration measures would be necessary."** The admission that adverse impact to intertidal habitat would occur is evidence that the existing habitat has substantial production and ecological value. Mitigation would apparently be required because this productive habitat would be degraded by shoreline armoring. Why conduct armoring unless the habitat would be degraded by shoreline armoring. Why conduct armoring unless the habitat is to be improved by this action? If it is improved, why require mitigation; isn't the action mitigation? Off-shore ecological impacts were noted in the FS evaluation as well as in the EPA Proposed Plan. As off-shore studies by Parametrix have shown, the area contains a diverse and productive environment that is essentially the same as other coarse grained bottom areas that are not located near or potentially impacted by existing or past smelter activities.

RESPONSE: EPA disagrees. EPA acknowledges that there is intertidal habitat that currently occupies the slag face at the Site; however, sampling activities on the off-shore sediment site provide evidence of adverse biological effects. The present expanded RI/FS activities at the sediments site will help quantify the harmful effects at the site with respect to the present communities and allow EPA to balance the benefits of armoring compared to the impacts to existing habitat caused by armoring. EPA agrees that replacing one community with a similar community is not a beneficial use of funds; however, if the present off-shore biological community is shown to be impacted, a replacement community and/or mitigation effort may be warranted.

32. COMMENT: **Page 18, Item (9), Safety Measures, lining and covering truck beds.** Lining and covering truck beds probably would not be necessary for on-site activities. Excavation in areas such as the arsenic kitchen area, the copper refinery area, or the fine ore bins would not require such precautions. However, it is noted transportation across public roads from areas such as the stack hill or the cooling pond may require some of the safety precautions described in the Proposed Plan.

RESPONSE: If trucks are just moving from one location to another on-site, lining truck beds would probably not be necessary. But lining of truck beds, and other safety measures, will be required for transportation of waste off-site.

33. COMMENT: **Page 19, Item 10 (b), guidelines to ensure disposal of dredged sediments would not be preventive or hindered by development activities.** Although an OCF could be designed to hold shoreline sediments, additional steps, that have not been completely evaluated, would be necessary to ensure compatibility with incorporation into the OCF. Contrary to the sediment handling procedures anticipated with either use on an OCF or treatment, off shore sediments would have to be dewatered, with subsequent disposal and/or treatment of the decant water. If incorporated into a treatment option for "upland" soils, marine sediments themselves would not require

treatment as all testing indicates the leaching potential is very low and most samples had leachable metal concentrations less than analytical limits. However, a key issue would be the increase in size of the OCF "foot print" to hold marine sediments and the resulting loss of available land area available for development. Vertical expansion limited by physical constraints, as well as constraints imposed by proposed road development and aesthetics and an increase of the "foot print" would be necessary. In addition to land needed for a larger foot print, more land area will be needed, at least temporarily, for sediment dewatering during construction, which would also complicate remediation and development logistics.

RESPONSE: EPA has decided not to dispose dredged sediments in the OCF. See the response to Comment No. 28 in Section A above.

34. COMMENT: **Page 21, Shoreline Armoring: "Shoreline armoring under the Preferred Alternative is protective because it controls the erosion of the slag shoreline into Commencement Bay".** It has not been demonstrated that all or most of the slag shoreline is eroding into the bay or that slag erosion is detrimental to the biological production at the smelter shoreline or slag peninsula.

RESPONSE: See the responses to Comment No. 43 in Section A above and Comment No. 22 in this Section.

35. COMMENT: **Page 22, Surface Water "EPA believes that it may be appropriate to establish a mixing zone when establishing discharge limitations for surface water".** Asarco concurs a mixing zone would be appropriate.

RESPONSE: The language on mixing zone is included in the ROD, see Section 9.9. regarding performance standards for surface water. The determination whether a mixing zone is appropriate and, if so, the parameters of the mixing zone will be made during remedial design.

36. COMMENT: **Page 22, Mitigation/Restoration.** The Proposed Plan states that mitigation and restoration would be necessary to compensate for "impacts to wetlands" during the cleanup. It is not clear which areas of the site EPA considers to be wetlands. During discussions about remediation of the site, some, parties have taken the position that any alternative which contemplates filling the cooling pond would need to comply with mitigation standards under section 404 of the Clean Water Act. However, the cooling pond is not a wetlands within the definition of "waters of the United States." and section 404 requirements do not apply to its modification during remediation. The Asarco pond was part of a waste treatment system and qualifies for the specific exemption for treatment ponds in 33 CFR §328.3 (a)(7). Consequently, to the extent that there may be other regulated wetlands on the site, the specific areas of the site involved should be specifically identified and should exclude the cooling pond.

RESPONSE: EPA agrees with Asarco's interpretation regulations that the cooling pond is not a wetland. Other areas of the Site, however, may be wetlands. A wetlands assessment will be required on the Site before remedial activities begin. If any wetlands are identified that will be adversely impacted by remedial activities, the appropriate mitigation measures will be required.

37. COMMENT: **Page 24, Surface Water, last sentence referring to surface water treatment relative to long-term effectiveness and permanence.** The long-term effectiveness of surface water treatment is questionable if large volumes are necessary to treat and discharge standards are extremely low. Volume control would be key to successful implementation. Treatment would be an on-going operation that would require periodic and relatively consistent maintenance. However, if lines are completely replaced and a design cap is implemented as proposed by EPA, surface water treatment should not be necessary to address sources from the plant site. In effect the treatment plant as proposed by EPA would be addressing off-site sources of arsenic and metals.

RESPONSE: EPA agrees that replacing the surface water drainage system should eliminate the need for surface water treatment. After cleanup activities under the ROD are completed, EPA will determine whether surface water discharging into the bay meets the remediation goals (see Section 9.9 of the ROD).

38. COMMENT: **Page 24, Shoreline Armoring, Preferred Alternative, large rock and boulder riprap instead of artificial beach nourishment as riprap has a better potential to withstand current and wave action and remain in place compared to using smaller pebbles under the artificial beach nourishment option."** Contrary to EPA's position, coastal engineering and design experts often promote beach nourishment over riprap structures. The Army Corps of Engineers and others prefer, in many cases, to use beach nourishment because it can provide better erosion/deposition control, than riprap design features (Mark Lorane, Applied Coastal Science Inc., personal communication). This is particularly true where a potential exists for riprap structures to result in changes in wave and current patterns which result in unexpected and/or uncontrolled erosion or deposition in adjacent unmodified areas.

RESPONSE: EPA recognizes that riprap structures should be constructed only when necessary, and erosion from water flowing around the ends of the slope protection (e.g., breakwater) can cause erosion. The slope protection can be constructed in order to minimize this type of erosion. The design characteristics for the Asarco Site, including the choice of beach nourishment versus riprap structures, can be determined during remedial design, when there is a better understanding of the wave action and current energy at the site.

39. COMMENT: **Page 25, Shoreline Armoring, "Slag pieces cause adverse impacts to sea life in off-shore sediments."** Adverse impacts of slag pieces to sea life have not been demonstrated by EPA's own admission.

RESPONSE: EPA disagrees. A report published by Battelle (Crecelius, 1986) concluded that metals released from freshly exposed slag are toxic to marine organisms for up to three to four months. Also, one of the objectives of the expanded sediments RI/FS is to evaluate whether slag pieces deposited in marine sediments are causing adverse impacts in the marine environment.

40. COMMENT: **Page 26, Interception Trench Costs.** These costs should be rounded to be consistent with other figures presented in this section.

RESPONSE: These numbers were rounded. See Table 8-2 in Section 8.0 of the ROD.

41. COMMENT: **Page 27, Surface Water Costs.** On Page 24, EPA states use of surface water treatment if necessary for plant site runoff surface water treatment costs are not presented in the Proposed Plan. The FS presented surface water treatment costs for all anticipated run-on to the site at $23,600,000, present value. EPA's proposal would only address treatment after replacement of the present drainage system and implementation of diversions as necessary. Assuming the majority of runoff is diverted, the EPA proposal could require treatment of some undetermined volume. Even modest volumes of water (50 to 100 gpm) requiring arsenic and metal treatment would result in a significant amount of costs not presented in the plan. Asarco's experience at the East Helena Superfund site, where a treatment plant was installed to address plant water gains of about 50 gpm, shows costs to treat constituents similar to those at the Tacoma site are about $7,000,000, However, if outfall drainage lines are completely replaced and a design cap is implemented as proposed by EPA, surface water treatment should not be necessary to address sources from the plant site. The treatment plant as proposed by EPA in effect would be addressing off-site sources of arsenic and metals.

RESPONSE: The need for, and feasibility of, surface water treatment will be evaluated should source control activities not attain performance standards for surface water.

42. COMMENT: **Page 27, Shoreline Armoring Costs.** Assuming riprap shoreline armoring costs as presented in the FS, the costs presented in the Proposed Plan are consistent with the FS. However, the costs do not reflect features discussed in the plan including pocket beaches, mudflats, eel grass, cut backs etc. Preliminary cost projections incorporating features as described in the Proposed Plan indicate shoreline armoring costs could increase $6 million to $9 million over the cost presented in the Proposed Plan. Four scenarios were considered:

1. Armoring as presented in the proposed plan.

2. Armoring assuming no encroachment in the bay and cut backs are necessary prior to riprap installation.

3. Shoreline armoring with advancing slopes and groins, and silt/sand fills needed to create vegetated shallows, pocket beaches and shoreline irregularities for aquatic habitat development.

4. Same as Scenario 3 but all cut backs and no advancing features.

While it is assumed for cost estimation purposes that features described in the four scenarios above could be implemented, it is far from certain incorporation of these features is technically feasible. A summary of preliminary cost estimates for the armoring scenarios is presented below:

Proposed Plan Costs #1	Capital	O&M	Present Worth
Plant site and Breakwater	$5.9 million	$23,000	$6,2 million
Scenario # 2	**Capital**	**O&M**	**Present Worth**
Plant site and Breakwater	$8-6 million	$24,000	$9.0 million
Scenario # 3	**Capital**	**O&M**	**Present Worth**
Plant site and Breakwater	$11.9 million	$48,000	$12.6 million
Scenario # 4	**Capital**	**O&M**	**Present Worth**
Plant site and Breakwater	$14.6 million	$48,000	$15.4 million

RESPONSE: The costs associated with mitigation activities will be in addition to the shoreline armoring costs. Mitigation costs can vary significantly, depending on the location of the site, the necessary preparation activities, and size of the site. Because EPA does not yet know the extent to which shoreline armoring will be required, EPA is not estimating the potential cost of mitigation.

43. COMMENT: **Page 27, Institutional Controls.** The $500,000 under the 0 & M (annual) column should be moved to the Present Worth column.

RESPONSE: This amount has been moved, see Table 8-2 in Section 8.0 of the ROD.

44. COMMENT: **Page 27, Plant Site Excavation Costs.** The excavation or demolition costs presented do not include removal or filling of the car tunnel. As explained in the FS, this option was presumed to be the responsibility of the owner. Removal of the tunnel would increase costs an estimated $2.2 million.

RESPONSE: In Paragraph 4 of the Agreement in Principle, Asarco agreed to remove or fill the car tunnel. EPA believes the approach to be used should be decided during remedial design.

45. COMMENT: **Page 29, first column - last sentence continuing to the second column.** This sentence is not comprehensible and needs revision.

RESPONSE: EPA corrected the error in subsequent editions of the Proposed Plan.

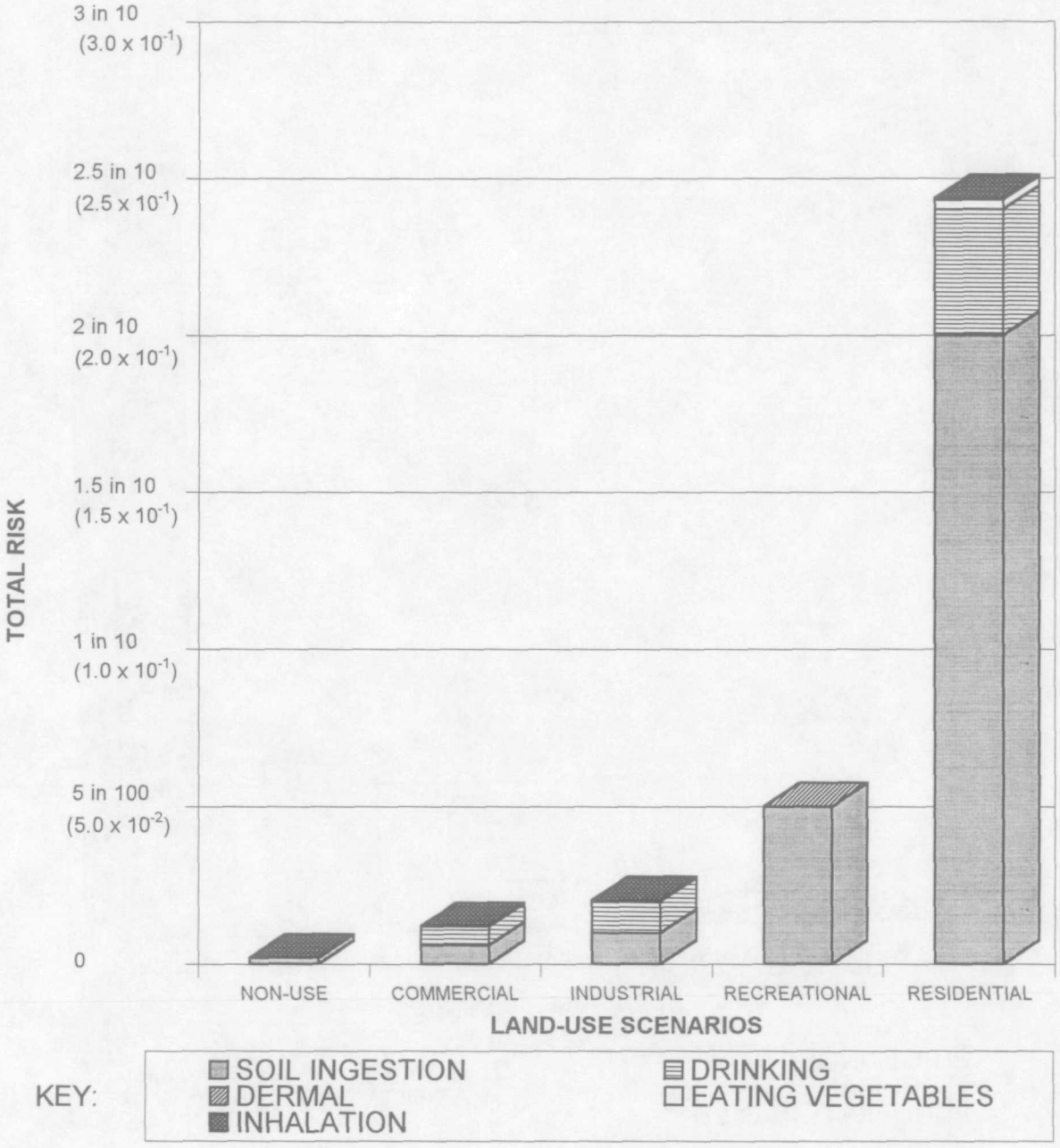
46. COMMENT: **Page 30, (1) Statutory Findings, "cost effective."** Asarco does not concur that soil treatment is cost effective compared to other equally protective alternatives such as containment in an OCF. EPA's preferred alternative is almost $30 million higher than that proposed in the Agreement in Principle between Ruston, Tacoma, the Metropolitan Park District and Asarco.

RESPONSE: EPA has determined in the ROD that disposal of soil and debris in an OCF is a cost-effective cleanup action.

APPENDIX B
FIGURES AND TABLES

Figure B-1

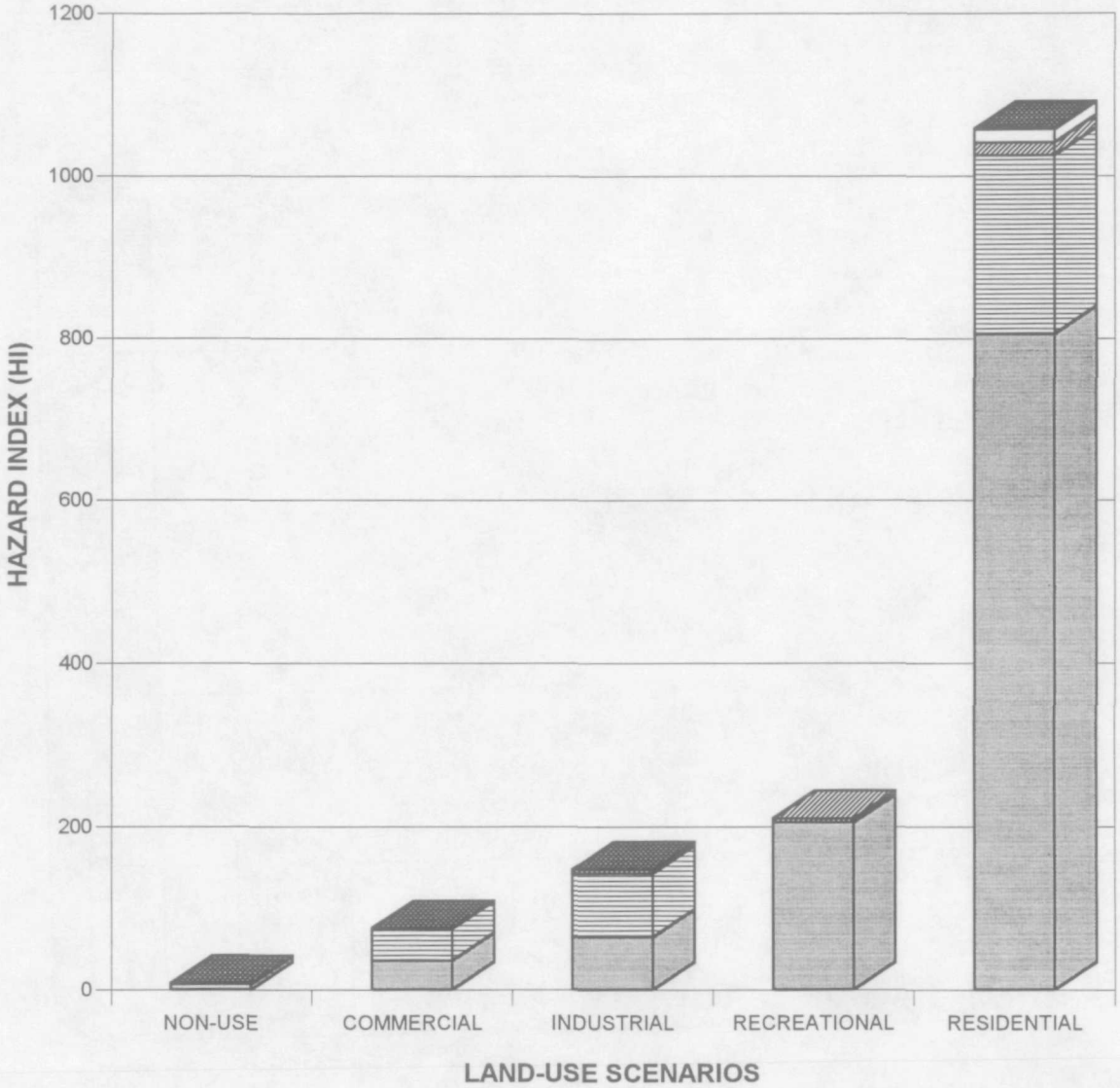
CANCER RISK in ARSENIC KITCHEN AREA (Area 2)



NOTE: Where the cumulative cancer risk on a site is greater than approximately 1 in 10,000 (1 x 10-4), a cleanup is generally required.

Figure B-2

NON-CANCER HAZARDS in ARSENIC KITCHEN AREA (Area 2)



KEY:

- SOIL INGESTION
- DERMAL
- INHALATION
- DRINKING
- EATING VEGETABLES

NOTE: Cleanup is generally required when significant health effects are likely to occur (Hazard index is greater than 1.0)

TABLE B-1. INFORMATION REPOSITORIES

In Ruston:	Ruston Town Hall 5117 North Winnifred Asarco Information Center 5311 North Commercial
In Tacoma:	Tacoma Public Library Main Branch 1102 Tacoma Avenue South, Northwest Room McCormich Regional Branch Library 3722 North 26th City of Tacoma 747 Market Street, Suite 420 Tacoma Pierce County Health Department 3633 Pacific Avenue Citizens for a Healthy Bay 771 Broadway Pacific Lutheran University Library 121st and South Park Avenue
In Olympia:	Washington Department of Ecology 300 Desmond Drive S.E.
In Seattle:	Environmental Protection Agency 1200 Sixth Avenue

TABLE B-2. LIST OF FACT SHEETS AND BROCHURES FOR THE ASARCO TACOMA SMELTER SITE

Date	Topic(s)
9/86	Fact sheet announcing an AOC between EPA and Asarco for an RI/FS, site stabilization, and an announcement of a public meeting.
10/86	Fact sheet announced a public meeting on November 6, 1986, for concerned citizens to hear about the results of the exposure pathways study for the Asarco Smelter.
4/87	Status Report published.
8/87	Status Report published.
3/88	Status Report published.
5/88	Status Report published.
7/88	Superfund update on the Asarco project.
8/88	Status Report published.
12/16/88	Fact sheet announced that EPA was to study arsenic contamination in the Ruston area, evaluate who might be at risk, and decide what actions need to be taken.
4/27/89	Fact sheet provided a status report of the smelter site RI/FS.
5/11/89	Fact sheet announced that EPA received the proposed work plan from Asarco for demolition of the structures and of the smelter stack.
7/14/89	Fact sheet requested Asarco to conduct the investigation to determine the extent of contamination at the smelter.
9/89	Update of all Superfund projects in Tacoma including information on the Asarco Smelter, and EPA's invitation to residents to join a community workgroup.
2/90	Update of all Superfund projects in Tacoma including a status report on the Asarco Smelter.
5/8/90	Fact sheet announced a Notice of Violation issued to Asarco by EPA.
7/16/90	Fact sheet announced the public meeting and comment period for the proposed plan for the initial site cleanup.
8/90	Update of all Superfund projects in Tacoma including a status report on Asarco.
1/14/91	Fact sheet announced the plan for the interim cleanup measures. This was the first ROD for the site.

TABLE B-2. LIST OF FACT SHEETS AND BROCHURES FOR THE ASARCO TACOMA SMELTER SITE (Continued)

Date	Topic(s)
2/13/91	Update of all Superfund projects in Tacoma including the Asarco Smelter cleanup measures. This fact sheet also included information on EPA's Community Workgroup and community interviews which were underway.
5/6/1991	Fact sheet provided an update of all of the Asarco Superfund projects including the status of the smelter investigation.
8/6/91	Update of all Superfund projects in Tacoma including the Asarco Smelter interim measures (demolition) and the overall site investigation which now includes Asarco sediments.
10/91	Brochure describing all of the Superfund activities related to the Asarco Smelter including; the Ruston North Tacoma Study Area, the smelter site investigation and demolition, and marine sediments.
1/9/92	Fact sheet announced the public meeting and comment period on EPA and Asarco's efforts to demolish structures on the site, including the smelter stack.
3/92	Update of all Superfund projects in Tacoma including the status of the smelter demolition, disposal of the debris, collecting surface water on the site, implementing controls to reduce the amount of surface water entering the site, and an overall site investigation.
7/14/92	Fact sheet updated all of the Asarco Superfund projects.
11/92	Update of all Superfund projects in Tacoma including a status report on the Asarco smelter.
1/11/93	Fact sheet updated all of the Asarco Superfund projects.
6/93	Update on all Superfund projects in Tacoma including the smelter demolition and the overall site investigation.
9/22/93	Fact sheet announced the availability of the RI/FS and Risk Assessment reports for the site.
1/24/94	Update on the hazardous waste cleanup project. EPA integrated the smelter facility and the slag peninsula cleanup activities with the cleanup for the off-shore sediments project.
3/94	Brochure (revision of 10/91 version) describing all of the Superfund activities related to the Asarco Smelter including; the Ruston North Tacoma Study Area, the smelter site investigation and demolition, and marine sediments. This brochure continues to be available to members of the community upon request, and is provided as a handout at all of EPA's public forums.

TABLE B-2. LIST OF FACT SHEETS AND BROCHURES FOR THE ASARCO TACOMA SMELTER SITE (Continued)

Date	Topic(s)
4/28/94	Fact sheet described a field test of a soil treatment technology, which was being considered for the Asarco Site.
8/94	Update on the hazardous waste cleanup projects in Tacoma, including the Asarco demolition activities and the smelter cleanup.
8/12/94	Summary of EPA's Proposed Plan, announcement of public comment period and public meetings.
10/5/94	Fact sheet announced EPA's proposal to allow slag to be moved from Thorne Road to the Asarco Smelter site. Public comments were invited from October 6 to November 4, 1994.
11/21/94	Fact sheet announced Asarco was moving the slag from Thorne Road in the Tacoma tideflats to the former Asarco Smelter in Ruston.
12/29/94	Fact sheet announced that all buildings slated for removal have been demolished and hazardous waste is being stored in the Fine Ore Bins building.

TABLE B-3. ARSENIC CONCENTRATIONS FOR SOIL AND CLASS III GROUND WATER IN THE SOURCE AREAS

ARSENIC KITCHEN								
Surface Soil (ppm)		Subsurface Soil >1.5 ft (ppm)		Class III GW Slag (µg/L)		Class III GW Marine Sands (µg/L)		EPA GW PRG (µg/L)
Max:	33,225	Max:	262,500	Max:	N/A	Max:	117	6
Mean:	16,174	Mean:	7,819					
Min:	2,020	Min:	6.6					
COPPER REFINERY								
Surface Soil (ppm)		Subsurface Soil >2.5 ft (ppm)		Class III GW Slag (µg/L)		Class III GW Marine Sands (µg/L)		EPA GW PRG (µg/L)
Max:	N/A	Max:	3,250	Max:	0.271	Max:	0.277	6
Mean:	N/A	Mean:	601					
Min:	N/A	Min:	3.3					
STACK HILL								
Surface Soil (ppm)		Subsurface Soil >1.5 ft (ppm)		Class III GW Slag (µg/L)		Class III GW Marine Sands (µg/L)		EPA GW PRG (µg/L)
Max:	1,840	Max:	3,150	Max:	N/A	Max:	95	6
Mean:	1,691	Mean:	363					
Min:	1,415	Min:	1					
COOLING POND								
Surface Soil (ppm)		Subsurface Soil >3 in (ppm)		Class III GW Slag (µg/L)		Class III GW Marine Sands (µg/L)		EPA GW PRG (µg/L)
Max:	3,450	Max:	3,025	Max:	N/A	Max:	4.542	6
Mean:	1,389	Mean:	402					
Min:	112	Min:	0.18					

TABLE B-3. ARSENIC CONCENTRATIONS FOR SOIL AND CLASS III GROUND WATER IN THE SOURCE AREAS (Continued)

FINE ORE BIN BUILDING								
Surface Soil (ppm)		Subsurface Soil >7 ft (ppm)		Class III GW Slag (µg/L)		Class III GW Marine Sands (µg/L)		EPA GW PRG (µg/L)
Max:	N/A	Max:	1,180	Max:	31	Max:	2.8	6
Mean:	N/A	Mean:	643					
Min:	N/A	Min:	8					
S.E. Plant Area								
Surface Soil (ppm)		Subsurface Soil >5 ft (ppm)		Class III GW Slag (µg/L)		Class III GW Marine Sands (µg/L)		EPA GW PRG (µg/L)
Max:	N/A	Max:	24,950	Max:	51.69	Max:	1.5	6
Mean:	N/A	Mean:	4,084					
Min:	N/A	Min:	10					

TABLE B-4. COPPER CONCENTRATIONS FOR SOIL AND CLASS III GROUND WATER IN THE SOURCE AREAS

ARSENIC KITCHEN								
Surface Soil (ppm)		Subsurface Soil >1.5 ft (ppm)		Class III GW Slag (µg/L)		Class III GW Marine Sands (µg/L)		EPA GW PRG (µg/L)
Max:	37,375	Max:	53,250	Max:	N/A	Max:	0.0051	40
Mean:	15,308	Mean:	2,669					
Min:	4,838	Min:	8					
COPPER REFINERY								
Surface Soil (ppm)		Subsurface Soil >2.5 ft (ppm)		Class III GW Slag (µg/L)		Class III GW Marine Sands (µg/L)		EPA GW PRG (µg/L)
Max:	N/A	Max:	16,700	Max:	0.914	Max:	2.8	40
Mean:	N/A	Mean:	2,159					
Min:	N/A	Min:	29					
STACK HILL								
Surface Soil (ppm)		Subsurface Soil >1.5 ft (ppm)		Class III GW Slag (µg/L)		Class III GW Marine Sands (µg/L)		EPA GW PRG (µg/L)
Max:	2,600	Max:	5,750	Max:	N/A	Max:	33	40
Mean:	2,309	Mean:	439					
Min:	2,068	Min:	2					
COOLING POND								
Surface Soil (ppm)		Subsurface Soil >3 in (ppm)		Class III GW Slag (µg/L)		Class III GW Marine Sands (µg/L)		EPA GW PRG (µg/L)
Max:	341,250	Max:	1,250	Max:	N/A	Max:	0.011	40
Mean:	59,423	Mean:	122					
Min:	201	Min:	0					

TABLE B-4. COPPER CONCENTRATIONS FOR SOIL AND CLASS III GROUND WATER IN THE SOURCE AREAS (Continued)

FINE ORE BIN BUILDING								
Surface Soil (ppm)		Subsurface Soil >7 ft (ppm)		Class III GW Slag (µg/L)		Class III GW Marine Sands (µg/L)		EPA GW PRG (µg/L)
Max:	N/A	Max:	1,980	Max:	0.14	Max:	10.2	40
Mean:	N/A	Mean:	1,230					
Min:	N/A	Min:	60					
S.E. PLANT AREA								
Surface Soil (ppm)		Subsurface Soil >5 ft (ppm)		Class III GW Slag (µg/L)		Class III GW Marine Sands (µg/L)		EPA GW PRG (µg/L)
Max:	N/A	Max:	10,975	Max:	0.122	Max:	0.008	40
Mean:	N/A	Mean:	2,246					
Min:	N/A	Min:	0.8					

TABLE B-5. REASONABLE MAXIMUM EXPOSURE ASSUMPTIONS FOR RESIDENTIAL USE

Exposure Group	Exposure Route	Age Group (years)	Body Weight (kg)	Contact Rate	Frequency (days/years)	Duration (years)
Onsite Residents	inhalation	0 - 30	70	20 m^3/day	350	30
	soil ingestion	0 - 6 6 - 30	15 70	200 mg/day 100 mg/day	350 350	6 24
	slag ingestion	0 - 6[1] 6 - 30[1] 0 - 6[0] 6 - 30[0]	15 70 15 70	110 mg/day 55 mg/day 22.5 mg/day 11.25 mg/day	350 350 350 350	6 24 6 24
	dermal[a]	0 - 6 6 - 30	15 70	3900 mg/day 1900 mg/day 5000 mg/day	350 263 87	6 24 24
	leafy vegs.	0 - 6 6 - 30	15 70	0.3 g/day 1.4 g/day	40 40	6 24
	root vegs.	0 - 6 6 - 30	15 70	1.5 g/day 2.5 g/day	69 69	6 24
	water	0 - 30	70	2 L/day	350	30
Offsite Residential	inhalation	0 - 30	70	20 m^3/day	350	30
Recreational Visitor	inhalation[b]	0 - 30				
	soil ingestion	0 - 6 6 - 30	15 70	90 mg/day 45 mg/day	208, 52, 12 208, 52, 12	6 24
	slag ingestion	0 - 6 6 - 30	15 70	90 mg/day 45 mg/day	208 208	6 24
	dermal[a]	0 - 6 6 - 30	15 70	12000 mg/day 1900 mg/day 5000 mg/day	208, 52, 12 156, 39, 9 52, 13, 3	6 24 24
	fish[c]	0 - 30				
Trespasser	inhalation[b]	6 - 30				
	soil ingestion	6 - 30	70	45 mg/day	24	24
	slag ingestion	6 - 30	70	45 mg/day	24	24
	dermal[a]	6 - 30	70	1900 mg/day 5000 mg/day	18 6	24 24

a Skin area available for contact per day in cm^2 is multiplied by a soil/skin adherence factor of 1.0 mg/mc^2, giving units in mg/day.
b Evaluated qualitatively.
c The fish pathway is evaluated by comparison of ground-water concentrations to ambient water quality criteria.
1 Indoor slag ingestion.
2 Outdoor slag ingestion.

TABLE B-6. SLOPE FACTORS FOR CANCER-CAUSING CHEMICALS

CHEMICAL	EXPOSURE ROUTE	CRITERIA VALUE[a]	WEIGHT OF EVIDENCE CLASS[b]	TOXIC ENDPOINT	SOURCE
Arsenic	Inhalation	15[c]	A	lung cancer	IRIS
	Oral	1.75	A	skin cancer	IRIS
Beryllium	Oral	4.3	B2	unspecified tumor locations by injection	IRIS
Cadmium	Inhalation	6.3	B1	lung tumors	IRIS
Chromium VI	Inhalation	42	A	lung tumors	IRIS
Lead			B2	renal tumors in rate, no criteria values set	IRIS
Nickel	Inhalation	0.84	A	lung cancer	IRIS[d]
PAHs[e]	Oral	7.3	B2	stomach tumors	IRIS
PCBs	Oral	7.7	B2	liver tumors	IRIS
	Dermal	9	B2	liver tumors	see text
Aniline	Oral[f]	0.0056	B2	spleen and body cavity tumors in rats	IRIS

IRIS Integrated Risk Information System, U.S. EPA (1993b).

a Units $(mg/kg/day)^{-1}$

b Classification definitions:
- A - Human Carcinogen, sufficient evidence in humans.
- B1 - Probable Human Carcinogen, limited human data available.
- B2 - Probable Human Carcinogen, sufficient evidence in animals, inadequate or no evidence in humans.
- C - Possible Human Carcinogen, limited animal evidence.

c The IRIS inhalation slope factor for arsenic is based on an administered dose from occupational exposure, see text.

d IRIS lists a unit risk factor is $\mu g/m^3$ equivalent to 0.84 $(mg/kg/day)^{-1}$ for nickel refinery dust.

e The 7 carcinogenic PAHs are: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and ideno(1,2,3-cd)pyrene.

f The exposure route for aniline is through ingestion of seafood exposed to aniline in Commencement Bay.

TABLE B-7. REFERENCE DOSES FOR NON-CANCER CAUSING CHEMICALS

CHEMICAL	EXPOSURE ROUTE	RFD/RFC[a]	UNCERTAINTY FACTOR	RFD/RFC CONFIDENCE	TOXIC ENDPOINT	SOURCE
Antimony	Oral	0.0004	1000	Low	reduced lifespan, altered cholesterol levels	IRIS
Arsenic	Oral	0.0003-0.0008	3	Medium	hyperpigmentation, hyperkeratosis of skin	Glass & SAIC (1992) IRIS
Beryllium	Oral	0.005	100	Low	no adverse effects at this dose	IRIS
Cadmium	Oral	0.0005 (water)	10	High	proteins present in urine	IRIS
		0.001 (food)	10	High		
	Dermal	0.000025		Low	proteins present in urine	see text
Chromium VI	Oral	0.005	500	Low	no adverse effects at this dose	IRIS
Copper	Oral	0.04			gastrointestinal irritation, flu-like disease	HEAST
Lead[d]	Oral	500 mg/kg			neurological and behavioral effect	U.S. EPA (1990e)
Manganese	Oral	0.005 (water)	1	Medium/Low	central nervous system effects	IRIS
		0.14 (food)	1	Medium	central nervous system effects	IRIS
Mercury	Oral	0.0003	1000		kidney effects	HEAST
	Inhalation	0.0003	30		neurotoxicity	HEAST
Nickel	Oral	0.02	300	Medium	neonatal mortality, dermatological effects	IRIS
Selenium	Oral	0.005	3	High	selenium poisoning, biochemical alterations	IRIS
Silver	Oral	0.005	3	Low	skin discoloration	IRIS
Thallium	Oral	0.00007	3000		hair loss, possible liver effects	HEAST
Zinc	Oral	0.2	10		ANEMIA	HEAST

IRIS Integrated Risk Information System, U.S. EPA (1993b).
HEAST Health Effects Assessment Summary Tables, U.S. EPA (1992d).
RfC Reference Concentration.
RfD Reference Dose.
a Unites of Oral RfD are mg/kg/day; Units of Inhalation RfC are mg/m^3, unless noted.
b Results of the uptake/biokinetic model (Glass and SAIC, 1992) is used to assess lead in soil for the residential scenario.

TABLE B-8. ARARs ANALYSIS

The following requirements are applicable or relevant and appropriate requirements (ARARs) for the cleanup of the Asarco Smelter.

ARARs	Summary	Comment
FEDERAL ARARs		
RCRA		
40 U.S.C. § 6901 et seq.		RCRA § 3001(b)(3)(A)(ii) and 56 FR 27300 exempt primary copper smelter slag from RCRA. Therefore, RCRA is not an ARAR for slag. Other wastes on-site may be characteristic hazardous waste in which case RCRA regulations are potential ARARs. There are no known listed wastes on-site.
40 CFR Part 261		
Identification and Listing of Hazardous Waste	Standards applicable in identifying solid wastes involved in site remediations that are subject to regulation as hazardous wastes.	
40 CFR Part 262		
Standards applicable to Generators of Hazardous Waste	These packaging and administrative requirements apply if hazardous waste is shipped off-site.	Pursuant to EPA's AOC policy, these requirements do not apply to on-site movement of hazardous waste. (55 Federal Register 8758, March 8, 1990).
40 CFR Part 264		
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities		The substantive standards detailed below are ARARs for the smelter site remediation if on-site treatment, disposal, or storage of hazardous remediation waste takes place.
40 CFR § 264.18(b)		
Location standard for floodplain	Standards require that washouts from a 100-year flood be prevented.	These requirements apply only to areas on-site deemed within a 100-year floodplain.
Subpart F: Release From Solid Waste Management Units		The requirements of Subpart F are applicable to construction and operation of an OCF.

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
40 CFR § 264.91		
Required programs	Substantive monitoring and response requirements may be applicable if hazardous constituents are detected at points of compliance.	
40 CFR § 264.92		
Groundwater protection standard	Standard requires that the hazardous constituent limits are not exceeded beyond the point of compliance in the uppermost aquifer underlying the waste management area.	
40 CFR § 264.93		
Hazardous constituents	Standards by which EPA identifies the hazardous constituents to which the above groundwater protection standard applies.	
40 CFR § 264.94		
Concentration limits	Concentration limits are set forth for the hazardous constituents identified under 40 CFR § 264.93.	
40 CFR § 264.95 - § 264.99		
Monitoring requirements	Monitoring requirements are set forth to ensure compliance and detect contamination.	
Subpart G: Closure and Post-closure		Subpart G ARARs are applicable to an OCF.
40 CFR § 264.111		
Closure performance standard	A TSD facility must be closed in a manner which minimizes the need for further maintenance and protects human health and the environment.	
40 CFR § 264.114		
Disposal or decontamination of equipment, structures and soils	All contaminated soils, equipment and structures must be properly disposed of or decontaminated.	

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
40 CFR § 264.117		
Post-closure care and use of property	Monitoring is required after closure is completed.	
Subpart L: Waste Piles		
40 CFR § 264.251		
Design and operating requirements	Requirements include protection from precipitation and surface water run on, control of dispersal of waste by wind, and no generation of leachate.	
Subpart N: Landfills		The requirements of Subpart N are applicable to construction of an OCF.
40 CFR § 264.301		
Design and operating requirements	Landfill standards require liners and leachate collection systems constructed of materials which provide sufficient protectiveness of human health and the environment.	
40 CFR § 264.303		
Monitoring and inspection	Monitoring of liner integrity required.	
40 CFR § 264.310		
Closure and post-closure care	Closure of a landfill requires a cover which minimizes migration of liquids, functions with minimum maintenance, and provides long-term integrity.	Monitoring and maintenance is required during the post-closure period identified by EPA.
40 CFR § 268		
Land Disposal Restrictions		
40 CFR § 268.35		
Waste specific prohibitions third-third wastes	Contaminated soil and debris that are hazardous wastes under RCRA are prohibited from off-site land disposal unless treated pursuant to treatment standards.	Under the EPA AOC policy, Land Disposal Restrictions (LDRs) are not applicable to disposal of remediation wastes within an area of contamination. If contaminated soil and debris are disposed of off-site, LDRs are applicable requirements.

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
40 CFR Part 268, Subpart D		
Treatment Standards	Contaminated soil and debris shipped off-site for disposal at a RCRA landfill must be treated before disposal.	If soil and debris are shipped off-site to a RCRA TSD facility and LDR treatment standards apply, a treatability variance may be necessary.
40 CFR § 257.3		
Criteria for classification of solid waste disposal facilities and practices.	A solid waste facility which disposes of non-hazardous waste must meet the following criteria or it will be considered an open dump and be prohibited under RCRA § 4004. A facility located in a floodplain must not wash out in the event of a flood. A facility must not jeopardize endangered species, violate ground water or surface water quality standards or violate air quality standards.	These requirements apply if non-hazardous wastes are disposed of on-site.
40 CFR Part 257, Appendix I	The appendix sets forth MCLs for both organic and inorganic chemicals for use in determining compliance with the ground-water criteria.	
CLEAN WATER ACT		
33 U.S.C. §§ 1251 et.seq.		
CWA §§ 303 and 304 (Federal Water Quality Criteria)	Pursuant to CERCLA § 121(d)(2)(B)(i), otherwise non-enforceable water quality criteria, developed by EPA for surface water, are ARARs. Two kinds of water quality criteria have been developed: one for protection of human health, and another for protection of aquatic life.	
33 U.S.C. § 404 and 40 CFR Part 230		
Discharge of Dredged or fill material	Mitigation measures required for potential adverse impacts to intertidal habitat or wetlands.	
40 CFR § 122.26		
Storm water discharges	NPDES permit standards may apply if it is determined that stormwater discharge contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the U.S.	

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
40 CFR Part 125 - Subpart A		
Criteria and Standards for Imposing Technology-based Treatment Requirements Under Sections 309(B) and 402 of the Act	Standards of control for direct dischargers must meet technology-based requirements. Best conventional pollution control technology (BCT) is applicable to conventional pollutants. Best available technology economically achievable (BAT) applies to toxic and non-conventional pollutants.	For CERCLA sites, BCT/BAT requirements are determined on a case-by-case basis using best professional judgment (BPJ).
40 CFR Part 125 - Subpart K	Best management practices (BMPs) must be observed when undertaking industrial activities which may result in significant amounts of pollutants reaching surface waters.	BMPs are applicable to control the release of hazardous pollutants into surface waters during the smelter cleanup.
40 CFR Part 125 - Subpart M		
Ocean Discharge Criteria	Discharges to marine waters are permitted as long as the discharge will not cause unreasonable degradation of the marine environment.	NPDES permit is not required if the discharge is within the site boundaries, however, substantive requirements that would otherwise be required under a permit are ARARs. A monitoring program may be required to assess impact of a discharge. Such a requirement is "relevant and appropriate".
40 CFR Part 6, App. A		
Statement of Procedures on Floodplain Management and Wetlands Protection	Requires federal agencies to conduct its activities to avoid, if possible, adverse impacts associated with the destruction or modification of wetlands and occupation or modification of floodplains.	
WASHINGTON INDIAN (PUYALLUP) LAND CLAIMS SETTLEMENT		
25 U.S.C. § 1773	Requires protection of fisheries through control of discharges to Commencement Bay. Compliance with the Settlement Act generally is attained through compliance with ARARs under federal or state law on discharges to surface water.	

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
RIVERS AND HARBORS ACT OF 1899		
33 U.S.C. § § 401 et seq.		
33 U.S.C. § 403		
Obstruction of navigable waters generally; wharves; piers, etc.; excavation and filling-in	Controls the alteration of the navigable waters (i.e., waters subject to ebb and flow of the tide shoreward to the mean high water mark). Activities controlled include construction of structures such as piers, berms, and installation of pilings.	Some minor activities may occur on-site along the shoreline during remediation. No permit is required for on-site activities.
SAFE DRINKING WATER ACT		
42 U.S.C. § § 300(f) et seq.		
40 CFR Part 141 - Subpart B		
Maximum Contaminant Levels	Maximum contaminant levels (MCLs) are enforceable drinking water standards which are protective of human health. The standards take into account available treatment technology and cost.	
40 CFR Part 141 - Subpart F		
Maximum Contaminant Level Goals	Maximum contaminant level goals (MCLGs) are strictly health-based goals for drinking water quality and are non-enforceable. CERCLA § 121(d)(2) outlines use of MCLGs in remedial actions (see also 55 FR 8750-53).	
CLEAN AIR ACT		
42 U.S.C. §§ 7401 et seq.		
40 CFR Part 50		
National Primary and Secondary Ambient Air Quality Standards	These regulations set forth the National Primary and Secondary Ambient Air Quality Standards (NAAQS) which were developed to protect the public health (allowing an adequate margin of safety).	Some on-site remedial activities, such as handling contaminated soil and using an air stripper may be minor sources of air emissions.

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
ENDANGERED SPECIES ACT		
16 U.S.C. §§ 1531 et seq.	Federal agencies must ensure that actions they authorize, fund, or carry out are not likely to adversely modify or destroy critical habitat of endangered or threatened species.	
MARINE MAMMAL PROTECTION ACT		
16 U.S.C. §§ 1361 et seq.	EPA must ensure that its actions do not involve the unauthorized taking of marine mammals.	
HAZARDOUS MATERIALS TRANSPORTATION ACT		
49 U.S.C. Ap. §§ 1801 et seq.		
49 CFR Parts 171-177		
U.S. Dept. of Transportation-Subchapter C - Hazardous Materials Regulations	Regulations provide for packaging, documentation, and transport of hazardous waste.	These regulations are requirements for any hazardous waste shipped off-site for disposal during remediation.
NATIONAL HISTORIC PRESERVATION ACT		
16 U.S.C. §§ 470 et seq.	This statute requires EPA to consider effects of remedial actions on historic properties. (This evaluation was conducted in connection with demolition activities.)	The administrative procedural requirements, such as the Cultural Resources Plan, are not ARARs.
ARCHEOLOGICAL AND HISTORICAL PRESERVATION ACT		
16 U.S.C. §§ 4699-1	In the event that significant scientific, prehistorical, or archeological data is present on a site, EPA must approve the remedial activities so that such data is preserved.	
STATE ARARS		The following state statutes and regulations are ARARs only if they result in more stringent standards than those required under federal statutes and regulations. (Requirements under federal programs that a state is authorized to implement need not be more stringent.)

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
MODEL TOXICS CONTROL ACT		
Chapter 70.105D RCW		
WAC 173-340-360		
Selection of cleanup actions	Requires that cleanup actions, to the extent practicable, comply with cleanup standards, use permanent solutions, provide for reasonable time frames, minimize amount of untreated hazardous substances, restore ground water, and utilize long-term monitoring and institutional controls if on-site disposal occurs.	Administrative requirements in this section regarding a cleanup action plan and public participation are not ARARs.
WAC 173-340-440		
Institutional controls	These measures are undertaken to limit or prohibit activities that may interfere with the integrity of a containment area or some other cleanup action.	
WAC 173-340-705		
Use of Method B	Method B cleanup levels are potentially applicable to all sites. Standards must be at least as stringent as applicable state and federal law and they must not result in adverse impact of aquatic and terrestrial life. For hazardous substances for which sufficiently protective standards have not been established, standards can be established by estimations which result in no acute or chronic toxic effects using a hazard quotient of (1); or for carcinogens, concentrations with upper bound excess cancer risk of 1×10^{-6}.	At this Site, Method B is applicable in setting cleanup levels.
WAC 173-340-706		
Use of Method C	Method C cleanup levels may be established at concentrations equal to background or at concentrations which minimize overall threats if attainment of A or B levels will increase the threat to human health and the environment. These levels must be estimated by using a hazard quotient of (1) and a 1×10^{-5} cancer risk for carcinogens.	

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
WAC 173-340-707		
Analytical considerations	When the cleanup level is below the practical quantitation limit (PQL), the PQL will become the standard as long as it is not greater than 10X the method detection limit.	
WAC 173-340-708		
Human health risk assessment procedures	This section sets forth the risk assessment framework utilized to establish cleanup standards.	Methodologies for determining background concentrations are potential ARARs.
WAC 173-340-720		
Ground water cleanup standards.	This section sets forth guidelines for ground water cleanup levels, points of compliance, and the ground water classification system. Ground water cleanup levels are based upon the highest beneficial use (i.e. drinking water) unless the ground water is not a potential source due to high concentrations of dissolved solids or insufficient yield. Further, if there is an extremely low probability that the ground water will be a future source of drinking water, the cleanup levels may be based on protection of nearby surface water.	
WAC 173-340-730		
Surface water cleanup standards	Method A cleanup levels are based on the state and federal water quality criteria. Method B cleanup levels require compliance with these criteria unless it can be shown that they are not relevant to the specific water body. Also cleanup levels that are estimated must result in no acute or chronic effects on fish or shellfish and a cancer risk less than or equal to 1×10^{-6}. Less stringent Method C levels may be used if consistent with applicable laws, all practicable methods of treatment are utilized, and institutional controls are implemented. This section also sets forth points of compliance and requires compliance monitoring.	At this Site, Method B is applicable to discharges to surface water.

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
WAC 173-340-740		
Soil cleanup standards	This section sets forth residential cleanup levels. For sites undergoing routine cleanup, Table 2, in this section, sets forth applicable standards. Method B allows cleanup standards not already established, to be calculated using concentrations that will not result in toxic effects, contamination of ground water, or a cancer risk that is no greater than 1×10^{-6}.	
WAC 173-340-745		
Soil cleanup standards for industrial sites	Industrial cleanup levels are less stringent than those set for residential areas. To be classified as an industrial site, the following criteria must be satisfied: the site is zoned industrial use; site was historically used for industrial purposes; adjacent property is currently used or designated industrial; the site will be zoned industrial for the foreseeable future; and the cleanup action provides for institutional controls. An amendment to state law provides that industrial properties include properties that are or have been characterized by or committed to traditional industrial uses.	
WAC 173-340-750		
Cleanup standards to protect air quality	Removal and containment measures which release hazardous substances to the air must be conducted in accordance with air standards. Residential standards are most stringent. Industrial standards may be established on a case-by-case basis as long as concentrations result in no toxic effects and cancer risk is no greater than 1×10^{-5}.	
WATER POLLUTION CONTROL		
WAC 173-201-035		
General considerations	Guidelines are set forth which apply to water quality criteria and classifications such as the antidegredation policy and criteria for short-term modification of water quality standards.	

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
WAC 173-201-045		
General water use and criteria classes	This section sets forth water quality criteria for each type of water classification. Criteria considered includes fecal coliform, dissolved oxygen, dissolved gas, temperature, pH, turbidity, toxics, and aesthetics.	
WAC 173-201-047		
Toxic substances	Water quality standards (fresh and marine water) are set forth for several substances deemed toxic. Such substances may not be introduced above natural background if they adversely affect characteristic water uses, public health, or cause acute or chronic conditions.	
WAC 173-216-060		
Prohibited Discharges	Discharges to a municipal sewage system must not interfere with the system's operation.	
WAC 173-220-120		
Prohibited discharges	Prohibits specific discharges into waters of the state such as pollutants that impair anchorage and navigation, and toxic pollutants prohibited under CWA § 307.	
WAC 173-220-130		
Effluent limitations, water quality standards, and other requirements and/or permits	This section sets forth substantive requirements for NPDES permits such as effluent limitations based on known, available, and reasonable methods of treatment. Effluent limitations may be more stringent than those standards developed under the CWA when necessary to meet water quality standards.	
WAC 173-220-210		
Monitoring, recording and reporting	Monitoring is required to ensure that discharges comply with effluent limitations.	Recording and reporting requirements in this section are administrative and, therefore, are not ARARs.
Chapter 173-240 WAC		
Submission of Plans and Reports for Construction of Wastewater Facilities	Construction requirements are set forth for wastewater facilities.	The engineering report and plan requirements in this section are administrative and, therefore, are not ARARs.

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
POLLUTION DISCLOSURE ACT OF 1971		
Chapter 90.52 RCW		
RCW 90.52.040		
Wastes to be provided with available methods of treatment prior to discharge into waters of the State.	Regardless of water quality and minimum water quality standards, all wastes must undergo all known, available, and reasonable methods of treatment prior to discharge, except as provided below.	
RCW 90.54.020		
General declaration of fundamentals for utilization and management of waters of the state.	Regardless of water quality, all discharges to the waters of the state must be provided with all known, available, and reasonable methods of treatment, except where overriding considerations of the public interest will be served.	
CONSTRUCTION PROJECTS IN STATE WATERS		
Chapter 220-110 WAC		
Hydraulic Code Rules	Requirements are set forth for construction projects along waterways, such as bulkhead construction and piling installation, that are designed to protect marine life.	A hydraulic project approval is not required since it is a type of administrative permit.
WELLWATER CONSTRUCTION		
Chapter 18.104 RCW		
WAC 173-160, Part 1		
General requirements	Requirements are set forth which pertain to design and construction of wells generally; such as preservation of natural barriers to prevent water flow between aquifers and permanent sealing.	Permit requirements and other administrative provisions in this section are not ARARs.

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
WAC 173-160, Part 3		
Resource protection wells	Specific design and construction requirements are set forth for the drilling and use of monitoring and observation wells.	
UNDERGROUND INJECTION CONTROL PROGRAMS		
Chapter 173-218 WAC	This program requires that injection wells not adversely affect the beneficial use of an underground source of drinking water.	If an injection well is utilized on the smelter site it will be used to inject salt water for treatment purposes and will not adversely affect existing groundwater. These wells would be considered Class V wells *that do not inject waste fluids.*
HAZARDOUS WASTE MANAGEMENT ACT	This statute provides statutory authority for the Dangerous Waste Regulations (DW) described below.	
Chapter 70.105A RCW		
WAC 173-303-016		
Identifying solid waste.	Guidelines are set forth which identify solid wastes that are also dangerous wastes.	
WAC 173-303-020		
Applicability	Dangerous waste regulations apply to generators, transporters, and owners and operators of TSD facilities.	According to the State's Area of Contamination (AOC) Policy, the movement of DW within an area of contamination is not considered generation. Therefore, the DW regulations are not automatically triggered but may be relevant and appropriate. Similarly, containment, treatment, and disposal of consolidated wastes within an AOC does not automatically trigger the DW regulations. (Interprogram Policy dated September 6, 1991).
WAC 173-303-060		
Notification and identification numbers	An ID# is required if any dangerous waste is shipped off-site.	Not an ARAR for on-site movement of wastes.
WAC 173-303-070		
Designation of dangerous waste	Procedure for determining whether or not a solid waste is a dangerous waste (DW) or an extremely hazardous waste (EHW).	

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
WAC 173-303-071		
Excluded categories of waste.	Certain categories of waste may be excluded from the requirements of the dangerous waste regulations. For example, under subsection (3)(i), PCB waste whose disposal is regulated pursuant to 40 CFR § 761.60 is exempt from most DW regulations.	
WAC 173-303-081		
Discarded chemical products.	A waste is designated a DW if it is a residue from management of chemicals listed on the Discarded Chemical Products List at WAC 173-303-9903.	
WAC 173-303-082		
Dangerous waste sources.	All wastes or residues from wastes listed on the Dangerous Waste Sources List are to be designated either DW or EHW depending on the circumstances.	
WAC 173-303-084		
Dangerous waste mixtures.	A waste mixture that has not been designated a DW must be evaluated to determine whether or not toxic constituents, specific hydrocarbons, or carcinogens are present. If present in sufficient quantities, they are to be treated as DW.	
WAC 173-303-090		
Dangerous waste characteristics	If a waste has characteristics of ignitability, corrosivity, reactivity, or toxicity, it could be designated a DW.	
WAC 173-303-100		
Dangerous waste criteria.	If a person has established that his waste meets the DW criteria, he is a generator and must comply with appropriate DW regulations for generators.	This requirement applies only to those DW which are transported off-site.

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
WAC 173-303-101		
Toxic dangerous wastes.	Methods are set forth for determining the toxicity of waste and whether it is a DW or EHW.	
WAC 173-303-102		
Persistent dangerous wastes.	Procedure is set forth to designate wastes that contain halogenated hydrocarbons and/or polycyclic aromatic hydrocarbons with more than three rings and less than seven rings (PAHs) as either DW or EHW.	
WAC 173-303-103		
Carcinogenic dangerous waste.	Method for designating a waste as carcinogenic.	
WAC 173-303-104		
Generic dangerous wastes.	Sets forth the DW number for each of the DW criteria designations.	This requirement is only relevant for wastes shipped off-site for disposal.
WAC 173-303-120		
Recycled, reclaimed, and recovered wastes.	Exempts some recycled DW from the DW regulations if it does not pose a threat to public health and the environment. For example, scrap metal is exempt from DW regulations.	
WAC 173-303-140		
Land disposal restrictions	May require some type of treatment of DW prior to off-site disposal. Treatment of EHW may be required prior to on-site disposal if practicable.	Pursuant to the State's Area of Contamination Policy, the State LDRs are not applicable unless DW is shipped off-site for disposal. Ecology and EPA have agreed to jointly decide the extent of treatment necessary prior to on-site or off-site disposal of EHW.
WAC 173-303-141		
Treatment, storage, or disposal of dangerous waste.	DW shipped off-site for disposal must be shipped to a properly permitted TSD facility.	On-site disposal of DW is subject to the state's AOC policy.
WAC 173-303-150		
Division, dilution, and accumulation.	The intent of the DW regulations may not be evaded by dividing or diluting wastes.	

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
WAC 173-303-160		
Containers.	Applicable procedure for measuring waste quantity when containers are utilized for shipment of DW off-site.	
WAC 173-303-161		
Overpacked containers (labpacks).	Requirements for overpacked drums such as use of non-leaking inside containers and use of non-reactive material for shipping of DW off-site.	
WAC 173-303-180		
Manifest.	Manifesting is required when DW is generated.	Manifesting required only if DW is transported off-site.
WAC 173-303-270		
Discharge during transport.	Notification requirements apply if a transporter spills DW during transport.	These requirements apply only in the event of a spill during transportation of DW off-site.
WAC 173-303-283		
Performance standards.	A DW facility must be designed and constructed, to the maximum extent practical, to prevent: degradation of ground water quality and air quality, destruction of flora and fauna, excessive noise, negative aesthetic impact, unstable hillsides, and endangerment of employees. Processes used must treat, detoxify, recycle, reclaim, and recover waste material to the extent economically feasible.	
WAC 173-303-550		
Special requirements for facilities managing special waste.	Guidelines by which Ecology will approve less stringent standards for facilities which handle "special wastes".	Special wastes are those that are not considered hazardous wastes under RCRA but are designated a DW under the more stringent state standards.
WAC 173-303-560		
Minimum standards for facilities managing special waste.	Minimum standards are set forth which Ecology may approve for "special waste" facilities.	

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
WAC 173-303-600		
Final facility standards.	This section specifies which TSD facilities are subject to closure requirements.	
WAC 173-303-610		
Closure and postclosure.	Closure and performance standards require that a facility be closed to minimize need for further maintenance and control, minimize, or eliminate the escape of DW to the environment. The land must also be returned to the appearance and use of surrounding land to the degree possible. All contaminated soils, equipment, and structure must be disposed of properly. Notice of disposal of waste must be recorded on the deed.	Survey plats, closure plan and certificate requirements in this section are administrative and, thus, are not ARARs. Monitoring to ensure closure integrity is required. Such a requirement is "relevant and appropriate."
WAC 173-303-645		
Releases from solid waste management units.	This section sets forth ground-water monitoring requirements for postclosure periods for facilities that are closed without all DW removed. Criteria is listed by which dangerous constituents are identified and concentration limits are determined. Such requirements are "relevant and appropriate."	
WAC 173-303-660	Requirements for temporary storage of dangerous waste, e.g., protection from precipitation.	
Waste Piles		
WAC 173-303-665		
Landfills.	Landfills must be constructed with a liner and leachate collection system. There must be systems to control run-on and run-off. Upon closure, the landfill must be covered with final cover that provides long-term integrity.	
WAC 173-303-9903		
Discarded chemical products list.	Lists of chemicals which are designated as either EHW or DW.	

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
WAC 173-303-9904		
Dangerous waste sources list.	All wastes listed are designated as DW.	
WAC 173-303-9905		
Dangerous waste constituents list.	List of chemically distinct components of a dangerous waste stream or mixture.	
WAC 173-303-9906		
Toxic dangerous waste mixtures graph.	Graph is utilized to determine whether a mixture containing toxics is either a DW or EHW.	
WAC 173-303-9907		
Persistent dangerous waste mixtures graph.	Graph is utilized to determine whether wastes containing certain percentages of persistent DW constituents are DW or EHW.	
Solid Waste Management Reduction and Recycling		
Chapter 70.95 RWC		
WAC 173-304-130		
Location Standards for Disposal Sites.	This section sets forth locational standards regulating proximity of facilities to faults, groundwater, surface water and floodplains.	
WAC 173-304-407		
General closure and post-closure requirements.	Closure performance standards are set forth which require that the need for further maintenance be minimized and threats to human health and the environment be controlled or eliminated.	The closure and post-closure plan requirements and other administrative procedures in this section are not ARARs.

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
WAC 173-304-460		
Landfilling standards.	These standards do not apply to inert wastes and demolition wastes but they do apply to problem wastes. Minimum functional standards require that landfills not contaminate ground water or surface water. A leachate collection system and liner is required. Also facilities located in floodplains must not restrict the flow of the base flood. Water run-on and run-off must be controlled. Also, dangerous waste disposal is prohibited in a solid waste landfill.	The documentation requirements such as operating plans are administrative and, therefore, are not ARARs.
WAC 173-304-461		
Inert waste and demolition waste landfilling facility requirements.	This section requires that fugitive dust be controlled, that combustible waste be covered to avoid a fire hazard, and that the site be leveled to the extent practicable at closure.	The permitting requirement and other documentation requirements in this section are administrative and, therefore, are not ARARs.
WAC 173-304-490		
Groundwater Monitoring Requirements.	Monitoring is required to ensure that groundwater quality is not affected by disposal site.	This requirement is "relevant and appropriate."
SHORELINE MANAGEMENT ACT OF 1971		
Chapter 90.58 RCW	Local shoreline master programs may set out substantive requirements that apply to construction activities within 200 feet of the shoreline.	Permitting requirements are not ARARs for on-site construction activities.

TABLE B-8. ARARs ANALYSIS (Continued)

ARARs	Summary	Comment
WASHINGTON CLEAN AIR ACT		
Chapter 70.94 RCW		
WAC 173-400-040		
General standards for maximum emissions	All "emission units" (i.e. any activity that emits contaminants to air) are required to use reasonably available control technology. Emissions must not violate opacity standards or cause particulate matter to deposit on adjacent property which interferes with its enjoyment. Further, reasonable precautions must be taken to prevent fugitive emissions and dust and to reduce odors. No emission is permitted that causes detriment to health, safety, and welfare of any person.	
WAC 173-460		
Controls For New Sources of Toxic Air Pollutants	An acceptable source impact level is set forth for arsenic. This standard may be an applicable and relevant requirement during the construction phase of the remediation.	
PSAPCA REGULATION 1		
Section 9.15		
Fugitive Dust: Emission Standard	Best available control technology must be used to control fugitive emissions. Dust emissions are prohibited if they are injurious to human health, plant or animal life or interfere with enjoyment of property.	

APPENDIX C
SUMMARY OF ADDITIONAL SOIL TREATABILITY PILOT-PROJECT FINDINGS

PILOT SCALE TREATABILITY TESTING

OF PLANT SITE SOILS AT THE ASARCO TACOMA SMELTER

ANALYTICAL SUMMARY SUPPLEMENT

Prepared for:

Mr. Thomas L. Aldrich
Plant Site Manager
ASARCO Incorporated
P.O. Box 1677
Tacoma, WA 98401

Prepared by:

Hydrometrics, Inc.
2727 Airport Rd.
Helena, MT 59601

December 1994

5.0 SUMMARY

As outlined in the Pilot Scale Treatability Sampling and Analysis Plan. specific objectives of the pilot scale testing project included:

1. establish an analytical testing program to assess the effectiveness of the treatment in reducing contaminant leachability;

2. optimize additive mix proportions so as to provide lowest cost treatment which meets or exceeds preliminary remediation goals;

3. evaluate sensitivity of treatment effectiveness to variations in feed material quality;

4. refine process operating ranges and monitoring procedures to assure consistent performance during full scale operation.

Extensive chemical and physical tests have been performed to characterize the effectiveness of the treatment method in reducing contaminant leachability. Leach test results on field control lot samples and laboratory compaction samples suggest that the ARCHON solidification/stabilization process successfully immobilized contaminants, resulting in undetectable or low leachable concentrations of Ag, As, Cd, Cu, Ni, Pb, Sb, Se, Tl, and Zn. This reduction in leachability was maintained for all treatment mixes, independently of any variations in pre-treatment soil feed or treatment mix percentages.

Physical parameter test results were less conclusive, as physical tests performed on sample molds are apparently not completely representative of actual large scale post-treatment physical properties. Differences in heat generation/retention and associated curing processes are believed to cause observed differences in percent volume change calculations, and may also result in differences between laboratory and field values of

permeability and/or compressive strength. Although tests conducted may provide some insight on the physical characteristics of post-treatment soil samples, it should be noted that conditions in the field are likely to be different than those implied by mold test results.

APPENDIX D
ASARCO SMELTER SITE ON-SITE CONTAINMENT FACILITY EVALUATION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply to
Attn of: HW-106

FEB 24 1995

MEMORANDUM

SUBJECT: Asarco Smelter Site
On-site Containment
Facility (OCF)

FROM: Catherine Massimino
Senior RCRA/Superfund
Technical Specialist

TO: Piper Peterson
Regional Project Manager
SF Management - II

This is in response to your request for assistance in reviewing the impact of treatment of 15% of the contaminated soils prior to placement in a landfill at the Asarco Smelter Site in Tacoma, Washington.

An evaluation of potential percolation from an on-site containment facility (OCF) located in the central area of the Asarco site as shown on Figure 6-3-6, of Asarco's Smelter Site January 1993, Remedial Investigation Report (RI), was performed. This evaluation bracketed an expected design scenario meeting RCRA landfill standards (hereafter referred to as Scenario A-OCF Good Cap and Liner), and a scenario reflective of long-term deterioration Scenario A of the OCF (hereafter referred to as Scenario B-OCF Poor Cap and No Liner). Both scenarios reflected 25 feet of waste and a landfill surface area of 18 acres. This will accommodate two (2) feet of contaminated soil in addition to the amount that Asarco had approximated on Exhibit A5-3-2 Volume 4-Appendices Asarco Tacoma Plant Feasibility Study (FS) of its conceptual OCF design as necessary to accommodate 240,000 cubic yards of wastes. This additional two (2) feet of waste should allow about a 10% safety factor for waste volume.

This review was performed utilizing the Hydrologic Evaluation of Landfill Performance (HELP) model Version 3.01 The OCF Good Cap and Liner configuration and layers modeled in this review are very similar to the scenario evaluated by Asarco under Appendix 5-2b of Volume 4 of the FS with the following major exceptions: a) used model synthetically generated precipitation data from Olympia, refined to include monthly precipitation data from Seattle-Tacoma International Airport instead of 20 years of historic daily precipitation data from

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Seattle-Tacoma International Airport, a waste layer depth of 25 feet versus 30 feet, a surface area of 18 acres, including OCF liner and cap components versus 10.5 acres, which including only the contaminated soil, SCS runoff curve number was computed by the model, input of leakage fraction for the flexible membrane liner (FML) was replaced by factoring into the model values reflective of good quality for pinhole density, installation defects and overall placement quality, and the model was run for 100 years versus 20. The detailed model inputs and outputs can be found in Attachment 1 to this memorandum.

The major differences in input values for the two scenarios can found on Table 1. The largest difference being the assumption for the Poor Cap and No Liner Scenario B that the bottom liner has so deteriorated that it is no longer functioning as a liner and the percolation being evaluated is from the bottom of the waste. The results of this modeling are summarized in Table 2.

The above HELP modeling results were utilized to estimate contaminate loading from the OCF into Commencement Bay without any pretreatment of the contaminated soils and with 15% of the contaminated soils pretreated. Based on this comparison, which is presented in Table 3, the difference between the arsenic loading from the OCF Scenario B (worst case percolation) of 106 grams per day, when none of the waste is treated versus 15% treated of 90 grams per day, is very minimal. Based on this evaluation, treatment of 15% of the waste can not be justified. As the HELP model is designed to be a comparative evaluation tool this data is not appropriate for use in performing an evaluation of the impact of this loading to Commencement Bay. In addition, it should be noted that this loading comparative determination did not account for dilution or absorption in the soil column of the contaminant during the travel of the percolation out of the OCF to Commencement Bay.

TABLE 1
HELP MODEL MAJOR INPUT VALUE DIFFERENCES BETWEEN SCENARIOS A & B

INPUT VALUES	A. OCF GOOD CAP AND LINER	B. OCF POOR CAP AND NO LINER
Hydraulic conductivity of low permeability soil layer in cap	1 X 10-7 cm/sec	1.2 X 10-6 cm/sec
FML Pinhole density Installation defects Placement Quality	 .75 holes/acre 2.0 holes/acre Good	 1 hole/acre 15 holes/acre Poor
SCS Runoff Curve #	50.40 based on a good stand of grass	74.40 based on a poor stand of grass
Maximum Leaf Area Index	3.5 based on a good stand of grass	1.0 based on a poor stand of grass
Bottom Liner System	Leachate Collection and Removal System FML Low permeability soil layer Leak Detection Collection and Removal System FML Low permeability soil layer	No functional bottom liner system

TABLE 2
HELP MODELING AVERAGE ANNUAL PERCOLATION RESULTS

OCF SCENARIO	CUBIC FEET/YEAR	CUBIC FEET/DAY
A. OCF GOOD CAP AND LINER	.2	0
B. OCF POOR CAP AND NO LINER	59,176	162

TABLE 3
ARSENIC CONTAMINATION LOADING TO WATERWAY

LOADING SCENARIO	LOADING TO WATERWAY (GRAMS/DAY)
OCF SCENARIO B 0% TREATMENT ARSENIC 23 PPM (TCLP)[1] (UNTREATED)	106
OCF SCENARIO B 15% TREATMENT ARSENIC 23 PPM (TCLP)[1] (UNTREATED) ARSENIC >5.0 PPM (TCLP) (MINIMUM ACCEPTABLE TREATMENT)	93
OCF SCENARIO B 15% TREATMENT ARSENIC 23 PPM (TCLP)[1] (UNTREATED) ARSENIC .07 PPM (TCLP)[1] (LOWEST TREATMENT LEVEL ACHIEVED)	90

1. Pilot Scale Treatability Testing of Plant Site Soils at the Asarco Tacoma Smelter, December 1994.

ATTACHMENT 1
OCF HELP MODEL INPUTS AND OUTPUTS

```
******************************************************************************
******************************************************************************
**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.01   (14 OCTOBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:     c:\help3\asar1.D4
TEMPERATURE DATA FILE:       c:\help3\ASAR2.D7
SOLAR RADIATION DATA FILE:   c:\help3\ASAR3.D13
EVAPOTRANSPIRATION DATA:     c:\help3\ASAR4.D11
SOIL AND DESIGN DATA FILE:   c:\help3\asar5.D10
OUTPUT DATA FILE:            c:\help3\asar7.OUT


TIME:   9: 5     DATE:   2/23/1995


******************************************************************************

     TITLE:  ASARCO OCF-GOOD CAP AND LINER

******************************************************************************


     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
                                  --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER   4
          THICKNESS                    =     24.00   INCHES
          POROSITY                     =      0.4370 VOL/VOL
          FIELD CAPACITY               =      0.1050 VOL/VOL
          WILTING POINT                =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.3896 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC
        NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  4.63
                 FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.
```

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 1

THICKNESS	=	12.00	INCHES
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4170	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	15.00	PERCENT
DRAINAGE LENGTH	=	600.0	FEET

LAYER 3

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.04	INCHES
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.75	HOLES/ACRE
FML INSTALLATION DEFECTS	=	2.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

LAYER 5

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 18

THICKNESS	=	300.00	INCHES
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL

```
INITIAL SOIL WATER CONTENT  =      0.2920 VOL/VOL
EFFECTIVE SAT. HYD. COND.   =  0.100000005000E-02 CM/SEC
```

LAYER 6

```
TYPE 2 - LATERAL DRAINAGE LAYER
  MATERIAL TEXTURE NUMBER   1
THICKNESS                   =     12.00   INCHES
POROSITY                    =      0.4170 VOL/VOL
FIELD CAPACITY              =      0.0450 VOL/VOL
WILTING POINT               =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT  =      0.0451 VOL/VOL
EFFECTIVE SAT. HYD. COND.   =  0.999999978000E-02 CM/SEC
SLOPE                       =      1.50   PERCENT
DRAINAGE LENGTH             =    600.0    FEET
```

LAYER 7

```
TYPE 4 - FLEXIBLE MEMBRANE LINER
  MATERIAL TEXTURE NUMBER  35
THICKNESS                   =      0.06   INCHES
POROSITY                    =      0.0000 VOL/VOL
FIELD CAPACITY              =      0.0000 VOL/VOL
WILTING POINT               =      0.0000 VOL/VOL
INITIAL SOIL WATER CONTENT  =      0.0000 VOL/VOL
EFFECTIVE SAT. HYD. COND.   =  0.199999996000E-12 CM/SEC
FML PINHOLE DENSITY         =      0.75   HOLES/ACRE
FML INSTALLATION DEFECTS    =      2.00   HOLES/ACRE
FML PLACEMENT QUALITY       =  3 - GOOD
```

LAYER 8

```
TYPE 3 - BARRIER SOIL LINER
  MATERIAL TEXTURE NUMBER  16
THICKNESS                   =     12.00   INCHES
POROSITY                    =      0.4270 VOL/VOL
FIELD CAPACITY              =      0.4180 VOL/VOL
WILTING POINT               =      0.3670 VOL/VOL
INITIAL SOIL WATER CONTENT  =      0.4270 VOL/VOL
EFFECTIVE SAT. HYD. COND.   =  0.100000001000E-06 CM/SEC
```

LAYER 9

```
TYPE 2 - LATERAL DRAINAGE LAYER
```

MATERIAL TEXTURE NUMBER 1

THICKNESS	=	12.00	INCHES
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	1.50	PERCENT
DRAINAGE LENGTH	=	600.0	FEET

LAYER 10

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.06	INCHES
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.75	HOLES/ACRE
FML INSTALLATION DEFECTS	=	2.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 11

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 4 WITH A GOOD STAND OF GRASS, A SURFACE SLOPE OF 15.% AND A SLOPE LENGTH OF 600. FEET.

SCS RUNOFF CURVE NUMBER	=	50.40	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	18.000	ACRES
EVAPORATIVE ZONE DEPTH	=	24.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	9.350	INCHES

UPPER LIMIT OF EVAPORATIVE STORAGE	=	10.488	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.128	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	133.780	INCHES
TOTAL INITIAL WATER	=	133.780	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
SEATTLE WASHINGTON

MAXIMUM LEAF AREA INDEX	=	3.50	
START OF GROWING SEASON (JULIAN DATE)	=	126	
END OF GROWING SEASON (JULIAN DATE)	=	287	
AVERAGE ANNUAL WIND SPEED	=	9.10	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	75.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	69.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	79.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR OLYMPIA WASHINGTON

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
8.50	5.77	4.85	3.13	1.85	1.44
0.76	1.34	2.36	4.68	7.58	8.70

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SEATTLE WASHINGTON

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
39.10	42.80	44.20	48.70	55.00	60.20
64.80	64.10	60.00	52.50	44.80	41.00

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SEATTLE WASHINGTON

STATION LATITUDE = 47.25 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 100

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	8.48	5.55	4.95	3.47	1.83	1.43
	0.73	1.17	2.24	4.85	7.17	8.99
STD. DEVIATIONS	2.48	1.86	1.62	1.29	0.92	0.75
	0.55	0.91	1.28	1.98	2.42	2.67
RUNOFF						
TOTALS	0.471	0.096	0.007	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.007	0.095
STD. DEVIATIONS	1.093	0.512	0.065	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.070	0.368
EVAPOTRANSPIRATION						
TOTALS	0.887	1.166	2.109	2.786	2.124	2.672
	0.803	0.963	1.843	1.378	0.854	0.781
STD. DEVIATIONS	0.130	0.124	0.234	0.561	0.713	0.733
	0.639	0.656	0.896	0.310	0.095	0.101
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	6.6818	5.5886	5.1586	3.3013	1.6522	0.8300
	0.3824	0.1291	0.0756	0.2970	2.4738	5.2597
STD. DEVIATIONS	1.3233	1.0815	0.9991	0.9407	0.5661	0.2387
	0.1023	0.0345	0.0815	0.3890	1.3277	1.3733
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0009	0.0008	0.0006	0.0003	0.0002	0.0001
	0.0000	0.0000	0.0000	0.0000	0.0003	0.0007
STD. DEVIATIONS	0.0003	0.0002	0.0002	0.0001	0.0001	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0002	0.0003
LATERAL DRAINAGE COLLECTED FROM LAYER 6						
TOTALS	0.0003	0.0003	0.0004	0.0004	0.0004	0.0004
	0.0003	0.0003	0.0003	0.0002	0.0002	0.0003
STD. DEVIATIONS	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH LAYER 8						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 9

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 11

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	23.0939	21.6862	15.6914	8.3893	3.8451	1.9959
	0.8900	0.3004	0.1817	0.6942	6.6162	16.35
STD. DEVIATIONS	6.7204	6.1436	5.4720	3.2647	1.3175	0.5740
	0.2380	0.0804	0.1960	0.9121	4.3865	6.7256

DAILY AVERAGE HEAD ACROSS LAYER 8

AVERAGES	0.0073	0.0087	0.0096	0.0097	0.0093	0.0086
	0.0078	0.0070	0.0063	0.0056	0.0053	0.0059
STD. DEVIATIONS	0.0014	0.0015	0.0016	0.0016	0.0015	0.0014
	0.0013	0.0011	0.0010	0.0009	0.0009	0.0011

DAILY AVERAGE HEAD ACROSS LAYER 11

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES	CU. FEET	PERCENT

PRECIPITATION	50.86	(6.475)	3323272.0	100.00
RUNOFF	0.676	(1.5808)	44185.56	1.330
EVAPOTRANSPIRATION	18.367	(1.9076)	1200101.62	36.112
LATERAL DRAINAGE COLLECTED FROM LAYER 2	31.83005	(4.97177)	2079775.620	62.58217
PERCOLATION/LEAKAGE THROUGH FROM LAYER 4	0.00395	(0.00083)	257.838	0.00776
AVERAGE HEAD ACROSS TOP OF LAYER 4	8.312	(1.829)		
LATERAL DRAINAGE COLLECTED FROM LAYER 6	0.00392	(0.00062)	255.990	0.00770
PERCOLATION/LEAKAGE THROUGH FROM LAYER 8	0.00001	(0.00000)	0.575	0.00002
AVERAGE HEAD ACROSS TOP OF LAYER 8	0.008	(0.001)		
LATERAL DRAINAGE COLLECTED FROM LAYER 9	0.00001	(0.00000)	0.409	0.00001
PERCOLATION/LEAKAGE THROUGH FROM LAYER 11	0.00000	(0.00000)	0.164	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 11	0.000	(0.000)		
CHANGE IN WATER STORAGE	-0.016	(2.8735)	-1048.51	-0.032

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	4.21	275081.406
RUNOFF	2.375	155191.7810
DRAINAGE COLLECTED FROM LAYER 2	0.32559	21273.99410
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000046	2.98295
AVERAGE HEAD ACROSS LAYER 4	36.000	
DRAINAGE COLLECTED FROM LAYER 6	0.00002	1.23588
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.000000	0.00233
AVERAGE HEAD ACROSS LAYER 8	0.013	
DRAINAGE COLLECTED FROM LAYER 9	0.00000	0.00145
PERCOLATION/LEAKAGE THROUGH LAYER 11	0.000000	0.00045
AVERAGE HEAD ACROSS LAYER 11	0.000	
SNOW WATER	5.93	387674.5310

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4370

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0371

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****

FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	7.7436	0.3226
2	5.0039	0.4170
3	0.0000	0.0000
4	10.2480	0.4270
5	87.6000	0.2920
6	0.5435	0.0453
7	0.0000	0.0000
8	5.1240	0.4270
9	0.5400	0.0450
10	0.0000	0.0000
11	15.3720	0.4270
SNOW WATER	0.000	

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******************************************************************************
******************************************************************************
**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.01   (14 OCTOBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:      c:\help3\asar1.D4
TEMPERATURE DATA FILE:        c:\help3\ASAR2.D7
SOLAR RADIATION DATA FILE:    c:\help3\ASAR3.D13
EVAPOTRANSPIRATION DATA:      c:\help3\ASAR4.D11
SOIL AND DESIGN DATA FILE:    c:\help3\asar10.D10
OUTPUT DATA FILE:             c:\help3\asar11.OUT


TIME:  12:23     DATE:   2/23/1995


******************************************************************************

     TITLE:  ASAR-OCF POOR CAP AND NO LINER

******************************************************************************


     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
                                  --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER   4
          THICKNESS                    =     24.00   INCHES
          POROSITY                     =      0.4370 VOL/VOL
          FIELD CAPACITY               =      0.1050 VOL/VOL
          WILTING POINT                =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.3946 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC
       NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  1.80
                FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.
```

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 1

THICKNESS	=	12.00	INCHES
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4170	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	15.00	PERCENT
DRAINAGE LENGTH	=	600.0	FEET

LAYER 3

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.04	INCHES
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	1.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	15.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	4 - POOR	

LAYER 4

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 28

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4520	VOL/VOL
FIELD CAPACITY	=	0.4110	VOL/VOL
WILTING POINT	=	0.3110	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4520	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.120000004000E-05	CM/SEC

LAYER 5

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 18

THICKNESS	=	300.00	INCHES
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL

INITIAL SOIL WATER CONTENT = 0.2585 VOL/VOL
EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 4 WITH A POOR STAND OF GRASS, A SURFACE SLOPE OF 15.% AND A SLOPE LENGTH OF 600. FEET.

SCS RUNOFF CURVE NUMBER	=	74.40	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	18.000	ACRES
EVAPORATIVE ZONE DEPTH	=	24.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	9.472	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	10.488	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.128	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	102.873	INCHES
TOTAL INITIAL WATER	=	102.873	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM SEATTLE WASHINGTON

MAXIMUM LEAF AREA INDEX	=	1.00	
START OF GROWING SEASON (JULIAN DATE)	=	126	
END OF GROWING SEASON (JULIAN DATE)	=	287	
AVERAGE ANNUAL WIND SPEED	=	9.10	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	75.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	69.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	79.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR OLYMPIA WASHINGTON

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
8.50	5.77	4.85	3.13	1.85	1.44
0.76	1.34	2.36	4.68	7.58	8.70

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING

COEFFICIENTS FOR SEATTLE WASHINGTON

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
39.10	42.80	44.20	48.70	55.00	60.20
64.80	64.10	60.00	52.50	44.80	41.00

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SEATTLE WASHINGTON

STATION LATITUDE = 47.25 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 100

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	8.48	5.55	4.95	3.47	1.83	1.43
	0.73	1.17	2.24	4.85	7.17	8.99
STD. DEVIATIONS	2.48	1.86	1.62	1.29	0.92	0.75
	0.55	0.91	1.28	1.98	2.42	2.67
RUNOFF						
TOTALS	0.759	0.211	0.020	0.000	0.000	0.000
	0.000	0.001	0.000	0.016	0.102	0.268
STD. DEVIATIONS	1.248	0.611	0.074	0.002	0.000	0.000
	0.000	0.007	0.001	0.042	0.245	0.489
EVAPOTRANSPIRATION						
TOTALS	0.905	1.192	2.135	2.799	1.971	1.667
	1.830	0.946	1.840	1.417	0.896	0.804
STD. DEVIATIONS	0.135	0.128	0.239	0.562	0.723	0.655
	0.594	0.625	0.784	0.311	0.093	0.102
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	6.0866	5.2809	5.0379	3.2242	1.5906	0.6625
	0.4098	0.3022	0.1549	0.3263	2.3414	4.9313
STD. DEVIATIONS	0.8787	0.8563	0.9630	0.9714	0.5746	0.2241
	0.1305	0.0716	0.0932	0.3827	1.2727	1.1089

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.1734	0.1474	0.1187	0.0632	0.0312	0.0140
	0.0091	0.0069	0.0038	0.0070	0.0476	0.1[illegible]
STD. DEVIATIONS	0.0541	0.0446	0.0434	0.0246	0.0103	0.0043
	0.0026	0.0015	0.0019	0.0074	0.0299	0.0479

PERCOLATION/LEAKAGE THROUGH LAYER 5

TOTALS	0.0976	0.0942	0.0939	0.0696	0.0424	0.0366
	0.0589	0.0809	0.0830	0.0849	0.0807	0.0828
STD. DEVIATIONS	0.0579	0.0490	0.0554	0.0556	0.0645	0.0646
	0.0626	0.0486	0.0411	0.0407	0.0376	0.0373

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	22.9199	21.7227	15.5777	8.2423	3.7024	1.5931
	0.9538	0.7033	0.3726	0.7612	6.1819	15.6073
STD. DEVIATIONS	7.4144	6.8048	5.9889	3.4758	1.3393	0.5390
	0.3036	0.1667	0.2241	0.8942	4.1311	6.6014

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES		CU. FEET	PERCENT
PRECIPITATION	50.86	(6.475)	3323272.0	100.00
RUNOFF	1.377	(1.8037)	89991.96	2.708
EVAPOTRANSPIRATION	18.403	(1.8619)	1202469.50	36.183
LATERAL DRAINAGE COLLECTED FROM LAYER 2	30.34872	(4.43701)	1982985.250	59.66967
PERCOLATION/LEAKAGE THROUGH FROM LAYER 4	0.74124	(0.16771)	48432.398	1.45737
AVERAGE HEAD ACROSS TOP OF LAYER 4	8.195	(1.963)		
PERCOLATION/LEAKAGE THROUGH FROM LAYER 5	0.90567	(0.58497)	59176.180	1.7806
CHANGE IN WATER STORAGE	-0.174	(2.9367)	-11351.36	-0.342

****

PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	4.21	275081.406
RUNOFF	2.396	156543.9220
DRAINAGE COLLECTED FROM LAYER 2	0.24520	16021.60160
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.008608	562.45880
AVERAGE HEAD ACROSS LAYER 4	35.941	
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.021394	1397.89368
SNOW WATER	5.93	387674.5310

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.4370
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0406

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FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	8.5417	0.3559
2	5.0039	0.4170
3	0.0000	0.0000
4	10.8480	0.4520
5	61.1068	0.2037
SNOW WATER	0.000	

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APPENDIX E
STATE DEPARTMENT OF ECOLOGY'S CONCURRENCE LETTER

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600 • (206) 407-6000 • TDD Only (Hearing Impaired) (206) 407-6006

March 22, 1995

Mr. Randy Smith
US EPA Region X
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Smith:

Re: Record of Decision for the Asarco Tacoma Smelter Facility

The State of Washington concurs with the selected remedy and phased approach described in this Record of Decision for the Asarco Tacoma Smelter facility. The combination of measures to excavate and consolidate the more highly contaminated soils and debris in a containment facility with design equivalent to federal hazardous waste disposal standards, to cap the entire site, and to provide certain site restrictions is appropriate and protective against exposure to such soils.

The current ROD provides for measures to divert surface waters from contact with contaminants, however, the ROD provides for additional remedial measures to be taken on surface water, should such further measure be necessary. The current ROD is an interim action for ground water. Final ground water remediation will be addressed in a separate, second-phase ROD that will be prepared after the impacts of the soils actions and water diversion measures have been evaluated. This approach and the selected remedy are deemed to be in compliance with the environmental laws and regulations of the state.

If you have any questions, please contact Bruce Cochran at (360)407-7227.

Sincerely,

Mary E. Burg

Mary E. Burg, Program Manager
Toxics Cleanup Program

MEB:gj

cc: Bruce Cochran, Ecology

APPENDIX F
ADMINISTRATIVE RECORD INDEX

TABLE OF CONTENTS
ASARCO - SMELTER FACILITY ADMINISTRATIVE RECORD (ASDAR)

March 30, 1995

0. 0 TABLE OF CONTENTS

1. 0 SITE IDENTIFICATION (Pre-1983) - See "old" ASARCO AR (code: ASAR)

2. 0 REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS)

2. 1 Correspondence

2. 1. 1 General Correspondence

2. 1. 2 Monthly Progress Meetings

2. 2 Sampling and Analysis Plan (to Dec. 31, 1989)

2. 2. 1 Correspondence

2. 2. 2 Sampling Activities

2. 2. 2. 1 Schedules

2. 3 Sampling and Analysis Plan (after Jan. 1, 1990)

2. 3. 1 Correspondence

2. 3. 2 Sampling Activities

2. 3. 2. 1 Schedules

2. 3. 2. 2 Sample Location/Maps - Sampling & Analysis Plan

2. 3. 2. 3 Health and Safety Plans

2. 3. 2. 4 Results/Chain of Custody/Validation

2. 3. 2. 5 QAPP and Comments

2. 3. 2. 6 EPA Field Oversight

2. 4 RI/FS Reports

2. 4. 1 Correspondence

2. 4. 2 FINAL Remedial Investigation

2. 4. 2. 1 Draft RI

2. 4. 2. 2 Technical Data Memorandum (I & II)

2. 4. 3 FINAL Feasibility Study

2. 4. 3. 1 Draft FS

2. 4. 4 FINAL Risk Assessment

0.0 TABLE OF CONTENTS

1.0 SITE IDENTIFICATION

Pre-1983 - See the original ASARCO Administrative Record for related documents, particularly Section 1.0-Site Identification.

Pre-1989 - See the Commencement Bay Nearshore/Tideflats Adminstrative Record (on microfilm) especially for Sediments-related documents. Of particular interest are the Remedial Investigation Report (Section 3.1.5) the Feasibility Study Report (Section 4.1.5) and the Record of Decision (Section 11.2).

2. 4. 4. 1 Workplan

2. 4. 4. 2 Draft Risk Assessment

2. 4. 5 FINAL Sediment Supplemental Feasibility Study

2. 4. 5. 1 Sediments Feasibility Study

2. 5 PRP/Other Technical Reports

2. 5. 1 Correspondence

2. 5. 2 Meeting Notes

2. 5. 3 On Site Containment Facility

2. 5. 4 Ground Water/Sediments Model

2. 5. 5 Treatability Study - Soils, Ground Water/Surface Water

2. 5. 5. 1 Literature Search Review and Analysis

2. 5. 5. 2 Statement of Work/Work Plan

2. 5. 5. 3 ITEX Vendor Information

2. 5. 6 Remedial Action Object. (RAOs)/Prelim. Remediation Goals (PRGs)

2. 5. 7 Ruston Road Project

2. 5. 8 Data Management Plan

2. 5. 9 Thorne Road Slag

2. 5.10 Site Specific Water Quality Criteria

2. 5.11 Seafood Studies

2. 5.12 Shoreline Monitoring Station

2. 5.13 Sediment Studies

3. 0 SITE STABILIZATION - PHASE I - 1987-1988

3. 1 Correspondence

3. 1. 1 Correspondence with PRP

4. 0 PROPOSED PLAN

4. 1 Correspondence

4. 2 Comments/Evaluations and Responses

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ASARCO - SMELTER FACILITY ADMINISTRATIVE RECORD (ASDAR)

March 30, 1995

5. 0 RECORD OF DECISION (ROD)

6. 0 STATE COORDINATION

6. 1 Correspondence

6. 1. 1 Department of Ecology

6. 1. 2 Department of Health

6. 2 State Certification of ARAR's

6. 3 Demolition Debris and Slag - Dangerous Waste Exemption

6. 4 Ruston/North Tacoma Residential Soil Exemption

7. 0 TRIBAL COORDINATION

7. 1 Correspondence

8. 0 COORDINATION WITH OTHER AGENCIES/ORGANIZATIONS

8. 1 Correspondence

8. 1. 1 City of Tacoma

8. 1. 2 Ruston/North Tacoma Coordinating Forum

8. 1. 3 Town of Ruston

8. 1. 4 Community Groups

8. 1. 5 State Agencies

8. 1. 6 Federal Agencies

9. 0 ENFORCEMENT

9. 1 Correspondence

9. 1. 1 Formal Correspondence

9. 1. 1.A Formal Correspondence - Second Folder

9. 1. 2 Handwritten Notes

9. 1. 3 FOIA Exempt Documents (CONFIDENTIAL)

9. 2 Notice of Violations (NOV)

9. 3 Administrative Order on Consent/Attachments

9. 3. 1 Work Plans

March 30, 1995

9. 3. 2 Amendments

9. 4 General Notice Letters and Responses

9. 4.A General Notice Letters and Responses - Folder 2

9. 5 Access

9. 5. 1 Access Agreements

9. 6 Legal Document

10. 0 ATSDR COORDINATION

10. 1 Correspondence

10. 2 Health Assessment

10. 3 Industrial Hygiene Inspections

10. 3. 1 Citations

11. 0 NATURAL RESOURCE TRUSTEES

11. 1 Correspondence

12. 0 CONGRESSIONAL INQUIRIES

12. 1 Correspondence

13. 0 PUBLIC PARTICIPATION

13. 1 Correspondence

13. 1. 1 Transmittal of Public Information

13. 1. 2 FOIA Requests/Responses

13. 2 Community Relations Plan

13. 3 Land Use - Public Process

13. 4 Fact Sheets/Press Releases

13. 5 Public Meeting Transcripts

13. 6 Newspaper/Journal/Magazine Articles

14. 0 TECHNICAL SOURCES/GUIDANCE DOCUMENTS

14. 1 **EPA Guidance**

14. 2 State Guidance

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ASARCO - SMELTER FACILITY ADMINISTRATIVE RECORD (ASDAR)

March 30, 1995

14. 3 Technical Sources/References

14. 3. 1 Related Technical Reports - Data

14. 3. 2 Reports on Other Superfund Sites

14. 3. 3 Scientific Articles

14. 3. 4 Related Technical Reports

HEADING: 2. 0. . REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS)

SUB-HEAD: 2. 1. 1. General Correspondence

2. 1. 1. - 0012002
DATE: 12/18/91 PAGES: 3
AUTHOR: Curtis E. Dungey/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter with enclosed letter from Hydrometrics explaining the role of additional 10 borings to be completed after demolition; conclusion that borings are useful but not critical to completion of study.

2. 1. 1. - 0012802
DATE: 09/29/92 PAGES: 1
AUTHOR: Jeff Cross/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Stack Demolition, abandonment of wells B-17 through B-22.

2. 1. 1. - 0012259
DATE: 12/31/92 PAGES: 5
AUTHOR: Jeff Cross/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Well Abandonment at Asarco Smelter Site.

2. 1. 1. - 0012880
DATE: 04/09/93 PAGES: 3
AUTHOR: James D. Krull/State of Washington Dept. of Ecology
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Notice of Intent (NOI) for Coverage Under the Storm Water Baseline General Permit.

SUB-HEAD: 2. 1. 2. Monthly Progress Meetings

2. 1. 2. - 0012004
DATE: 01/23/91 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting Minutes - January 1992.

2. 1. 2. - 0012971
DATE: 02/14/91 PAGES: 3
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda & Attendance List - Meeting on Asarco Smelter RI/FS.

1. 2. - 0012005
DATE: 02/28/91 PAGES: 3
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Meeting Record - Asarco/EPA.

2. 1. 2. - 0012896
DATE: 05/07/91 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting.

2. 1. 2. - 0012941
DATE: 05/07/91 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA/Asarco Progress Meeting Attendance List.

2. 1. 2. - 0012943
DATE: 05/21/91 PAGES: 2
AUTHOR: Tom Schadt/Parametrix, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal for meeting notes from project review meeting of April 9, 1991.

2. 1. 2. - 0012940
DATE: 05/31/91 PAGES: 3
AUTHOR: Tom Schadt/Parametrix, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal and Meeting Notes from May 7, 1991 progress/review meeting.

2. 1. 2. - 0012926
DATE: 06/04/91 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting.

2. 1. 2. - 0012009
DATE: 06/10/91 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Schedule - EPA/Asarco Progress Meetings for July - December 1991.

2. 1. 2. - 0012010
DATE: 06/13/91 PAGES: 4
AUTHOR: Tom Schadt/Parametrix, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Notes from June 4, 1991 progress/review meeting.

2. 1. 2. - 0012946
DATE: 06/21/91 PAGES: 2
AUTHOR: Margaret Justus/EPA
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Review and changes to February 14 & 18, 1991 meeting notes.

2. 1. 2. - 0012011
DATE: 07/02/91 PAGES: 9
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda/Attachments - EPA/Asarco Progress Meeting.

2. 1. 2. - 0012012
DATE: 07/08/91 PAGES: 5
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting Minutes - April to June 1991.

2. 1. 2. - 0012013
DATE: 07/16/91 PAGES: 3
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Notes from July 2, 1991 progress/review meeting

2. 1. 2. - 0012001
DATE: 07/22/91 PAGES: 1
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Receipt of Piper Peterson's letter from July 8, 1991 and Margaret Justus's June 21, 1991 letter regarding meeting notes; will not reply to each EPA comment

2. 1. 2. - 0012014
DATE: 08/01/91 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting Minutes - July 1991

1. 2. - 0012015
DATE: 08/06/91 PAGES: 11
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda/Attachments - EPA/Asarco Progress Meeting

2. 1. 2. - 0012016
DATE: 08/27/91 PAGES: 3
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Notes from August 6, 1991 progress/review meeting

2. 1. 2. - 0012017
DATE: 09/03/91 PAGES: 3
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda/Attendance List - EPA/Asarco Progress Meeting

2. 1. 2. - 0012018
DATE: 09/09/91 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting Minutes - August 1991

2. 1. 2. - 0012019
DATE: 09/11/91 PAGES: 3
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Notes from September 3, 1991 progress/review meeting

2. 1. 2. - 0012020
DATE: 09/20/91 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting Minutes - July 1991

2. 1. 2. - 0012021
DATE: 10/01/91 PAGES: 3
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda/Attendance List - EPA/Asarco Progress Meeting - October 1991

2. 1. 2. - 0012022
DATE: 10/15/91 PAGES: 5
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Notes from October 1, 1991 progress/review meeting

2. 1. 2. - 0012023
DATE: 10/23/91 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting Minutes - October 1991

2. 1. 2. - 0012024
DATE: 11/05/91 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda/Attendance List - EPA/Asarco Progress Meeting

2. 1. 2. - 0012025
DATE: 11/20/91 PAGES: 4
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Notes for November 5, 1991 Progress/Review Meeting

2. 1. 2. - 0012026
DATE: 11/25/91 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - Issues Resolution Meeting, EPA/Asarco

2. 1. 2. - 0012027
DATE: 11/26/91 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting Minutes - November 1991

2. 1. 2. - 0012028
DATE: 12/03/91 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda/Attendance List - EPA/Asarco Progress Meeting

1. 2. - 0012029
DATE: 12/09/91 PAGES: 5
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Notes from December 3, 1991 EPA/Asarco Progress Meeting

2. 1. 2. - 0012030
DATE: 12/16/91 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting Minutes - December 1991

2. 1. 2. - 0012868
DATE: 12/31/91 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA/Asarco Progress Meetings, January - October 1992, 9:30-12:30 p.m.

2. 1. 2. - 0012031
DATE: 01/07/92 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda/Attendance List - EPA/Asarco Progress Meeting

2. 1. 2. - 0012032
DATE: 01/13/92 PAGES: 5
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting notes from January 7, 1992 Progress Meeting

2. 1. 2. - 0012033
DATE: 02/04/92 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting

2. 1. 2. - 0012870
DATE: 02/04/92 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA/Asarco Progress Meeting Attendance List

2. 1. 2. - 0012919
DATE: 02/04/92 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA/Asarco Progress Meeting Attendance List

2. 1. 2. - 0012034
DATE: 02/12/92 PAGES: 5
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting notes from February 4, 1992 EPA/Asarco Progress Meeting

2. 1. 2. - 0012918
DATE: 03/02/92 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA/Asarco Progress Meeting Attendance List

2. 1. 2. - 0012924
DATE: 03/03/92 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting

2. 1. 2. - 0012036
DATE: 03/11/92 PAGES: 6
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/meeting notes from March 3, 1992 EPA/Asarco Progress Meeting

2. 1. 2. - 0012037
DATE: 03/20/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting Minutes - March 1992

2. 1. 2. - 0012039
DATE: 04/07/92 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting

. 1. 2. - 0012040
DATE: 04/17/92 PAGES: 4
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/meeting notes from April 7, 1992 EPA/Asarco Progress Meeting

2. 1. 2. - 0012041
DATE: 05/01/92 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting

2. 1. 2. - 0012042
DATE: 05/13/92 PAGES: 6
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Notes from May 5, 1992 Progress Meeting

2. 1. 2. - 0012043
DATE: 05/28/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting Minutes - May 1992

2. 1. 2. - 0012777
DATE: 06/02/92 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA/Asarco Progress Meeting Agenda

2. 1. 2. - 0012778
DATE: 06/02/92 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA/Asarco Progress Meeting Attendance List

2. 1. 2. - 0012044
DATE: 06/16/92 PAGES: 4
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/meeting notes from June 2, 1992 monthly progress meeting

2. 1. 2. - 0012045
DATE: 07/13/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting Minutes - June 1992

2. 1. 2. - 0012046
DATE: 08/04/92 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting

2. 1. 2. - 0012047
DATE: 08/24/92 PAGES: 5
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting notes from August 4, 1992 Progress Meeting

2. 1. 2. - 0012048
DATE: 09/08/92 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting

2. 1. 2. - 0012049
DATE: 09/08/92 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Attendance List - EPA/Asarco Progress Meeting

2. 1. 2. - 0012050
DATE: 09/21/92 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Notes from September 8, 1992 Progress Meeting

2. 1. 2. - 0012051
DATE: 10/06/92 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting

. 1. 2. - 0012052
DATE: 10/06/92 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Attendance List - EPA/Asarco Progress Meeting

2. 1. 2. - 0012053
DATE: 10/27/92 PAGES: 8
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting notes from October 6, 1992 EPA/Asarco Progress Meeting

2. 1. 2. - 0012054
DATE: 11/03/92 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting

2. 1. 2. - 0012055
DATE: 12/17/92 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting

2. 1. 2. - 0012056
DATE: 12/21/92 PAGES: 6
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Notes for November 3, 1992 EPA/Asarco Progress Meeting

2. 1. 2. - 0012003
DATE: 01/05/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: File/Unknown
DESCRIPTION: EPA - ASARCO Progress Meeting Attendance Sheet

2. 1. 2. - 0012057
DATE: 01/05/93 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting

2. 1. 2. - 0012058
DATE: 01/05/93 PAGES: 1
AUTHOR: EPA/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: January 5, 1993 Progress Meeting Follow-up Items

2. 1. 2. - 0012059
DATE: 01/12/93 PAGES: 5
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Notes from December 17, 1992 EPA/Asarco Progress Meeting

2. 1. 2. - 0012060
DATE: 01/12/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Response to Soil Leaching Memorandum (Hydrometrics) dated November 10, 1992

2. 1. 2. - 0012061
DATE: 02/22/93 PAGES: 4
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Notes from January 5, 1993 Progress Meeting

2. 1. 2. - 0012922
DATE: 02/23/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting Notes - December 1992

2. 1. 2. - 0012062
DATE: 03/09/93 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting

2. 1. 2. - 0012063
DATE: 03/09/93 PAGES: 3
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: March 9, 1993 EPA/Asarco Progress Meeting Minutes

. 1. 2. - 0012064
DATE: 03/09/93 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Attendance List - EPA/Asarco Progress Meeting

2. 1. 2. - 0012065
DATE: 03/10/93 PAGES: 1
AUTHOR: Pamela J. Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Meeting Minutes from March 9, 1993 Asarco Progress Meeting

2. 1. 2. - 0012066
DATE: 04/06/93 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - EPA/Asarco Progress Meeting

2. 1. 2. - 0012783
DATE: 04/06/93 PAGES: 4
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: April 6, 1993, EPA/Asarco Progress Meeting Minutes

2. 1. 2. - 0012923
DATE: 04/06/93 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA/Asarco Progress Meeting Attendance List

2. 1. 2. - 0012799
DATE: 05/04/93 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Progress Meeting Attendance List

2. 1. 2. - 0012810
DATE: 05/04/93 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA/Asarco Progress Meeting Agenda

2. 1. 2. - 0012930
DATE: 05/04/93 PAGES: 3
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: May 4, 1993, EPA/Asarco Progress Meeting Minutes

SUB-HEAD: 2. 2. 1. Correspondence

2. 2. 1. - 0012068
DATE: 01/09/86 PAGES: 13
AUTHOR: Bernard L. Cohen/University of Pittsburgh
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Comparison of Track-Etch and DBCA Methods for Measurement of Radon Levels in Indoor Air

2. 2. 1. - 0012069
DATE: 02/11/86 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Comments on Aquatic Biological Planning

2. 2. 1. - 0012070
DATE: 06/12/86 PAGES: 2
AUTHOR: T. R. Strong/Washington Department of Social and Health Services
ADDRESSEE: L. W. Lindquist/Asarco, Inc.
DESCRIPTION: Letter acknowledging receipt of Asarco letter dated Feb. 27, 1986 regarding elevated levels of radium in slag samples at Asarco

2. 2. 1. - 0012071
DATE: 12/09/86 PAGES: 2
AUTHOR: Gordon Ziegler/Washington Department of Social and Health Services
ADDRESSEE: Robert Mooney/Washington Department of Social and Health Services
DESCRIPTION: Proposed Immediate Action to Begin Characterization of Radon Levels from Asarco Slag

2. 2. 1. - 0012075
DATE: 07/19/88 PAGES: 8
AUTHOR: Unknown/Hart Crowser & Associates, Inc.
ADDRESSEE: Tom Schadt/Parametrix
DESCRIPTION: Responses to EPA June 29, 1988 Comments on Revised Phase II Groundwater Sampling Plan Asarco RI/FS

SUB-HEAD: 2. 2. 2. 1 Schedules

. 2. 2. 1 - 0012074
DATE: 05/26/87 PAGES: 5
AUTHOR: Robert R. Mooney/Washington Dept. of Social and Health Services
ADDRESSEE: Curtis Dungey/Asarco, Inc.
DESCRIPTION: Letter/Attachments - completion of in situ phase of radon monitoring study

2. 2. 2. 1 - 0012072
DATE: 11/30/87 PAGES: 384
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: 2.0 Analytical Results from Lancaster Laboratory (2.3 Organic Results for Wash and Well Water Samples)

2. 2. 2. 1 - 0012073
DATE: 03/10/88 PAGES: 423
AUTHOR: Unknown/Hart Crowser & Associates, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Data Package containing analytical results for quality assurance wash samples and monitor well samples from RI/FS

SUB-HEAD: 2. 3. 1. Correspondence

. 3. 1. - 1013964
DATE: 06/20/86 PAGES: 6
AUTHOR: Unknown/Sherwood Labs, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Faxed pages regarding certification for recording and tracking the movement of hazardous waste, hazardous materials certificate of registration, acknowledgement of notification of hazardous waste activity, interim certificate of approval fo

2. 3. 1. - 1002048
DATE: 10/01/90 PAGES: 6
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Transmittal - Sampling and Analysis Plan for Surface Soils and Subsurface Borings

2. 3. 1. - 1002049
DATE: 11/09/90 PAGES: 4
AUTHOR: Margaret V. Justus/EPA
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Review - Sampling and Analysis Plan (SAP) for Surface Soils and Subsurface Borings Phase III, Production Well Contamination

2. 3. 1. - 0012076
DATE: 11/15/90 PAGES: 30
AUTHOR: Carmen Martinez/Hart Crowser & Associates, Inc.
ADDRESSEE: Tom Schadt/Parametrix
DESCRIPTION: Asarco Tacoma Smelter RI/FS - Monitoring Well B-38 Installation and Sampling Report

2. 3. 1. - 0013000
DATE: 11/21/90 PAGES: 2
AUTHOR: Margaret V. Justus/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Response to Nov. 9, 1990 letter requesting status of EPA comments on the Soil Sampling and Hydraulic Conductivity Work Plan (SAP) and the Notice of Violations (NOV)

2. 3. 1. - 1002046
DATE: 02/08/91 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Peggy Justus/EPA
DESCRIPTION: Transmittal - RI/FS draft work plan

2. 3. 1. - 0012077
DATE: 02/27/91 PAGES: 2
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Asarco Tacoma Smelter RI/FS Supplemental Site Characterization Draft Sampling and Analysis Plan and Draft Quality Assurance Project Plan, Parametrix, Inc. January 1991

2. 3. 1. - 0012889
DATE: 02/28/91 PAGES: 1
AUTHOR: Mark Otten/Hart Crowser & Associates, Inc.
ADDRESSEE: Peggy Justus/EPA
DESCRIPTION: Transmittal for Monitoring Well B-38 Installation and Sampling Report

2. 3. 1. - 0012078
DATE: 03/01/91 PAGES: 7
AUTHOR: Margaret Justus/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Approval of Priority Monitoring Wells for the Asarco RI/FS

2. 3. 1. - 1002036
DATE: 03/11/91 PAGES: 1
AUTHOR: Gale Blomstrom/State of Washington Dept. of Ecology
ADDRESSEE: Todd Thornburg/Hart Crowser & Associates, Inc.
DESCRIPTION: Response to requests for variance to the minimum standards for construction and maintenance of wells

2. 3. 1. - 0012997
DATE: 03/12/91 PAGES: 3
AUTHOR: Margaret V. Justus/EPA
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Transmittal/Attachments - Bernie Zavala's comments on installation of monitoring wells and surface water samples

2. 3. 1. - 0012079
DATE: 03/20/91 PAGES: 1
AUTHOR: Margaret Justus/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Approval for the remaining Monitoring Wells (16) for the Asarco RI/FS

2. 3. 1. - 0012996
DATE: 03/22/91 PAGES: 5
AUTHOR: Margaret V. Justus/EPA
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Asarco Tacoma Smelter Supplemental RI/FS Site Investigations Work Plan

3. 1. - 1013641
DATE: 03/22/91 PAGES: 5
AUTHOR: Margaret V. Justus/EPA
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Asarco Tacoma Smelter Supplemental RI/FS Site Investigations Work Plan comments

2. 3. 1. - 1029291
DATE: 04/04/91 PAGES: 7
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Margaret V. Justus/EPA
DESCRIPTION: Cover letter and attached memorandum from Hydrometrics concerning the installation of wells along the shoreline.

2. 3. 1. - 0012080
DATE: 04/24/91 PAGES: 4
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Revised Monitoring Well Locations and Additional Wells

2. 3. 1. - 1002042
DATE: 05/03/91 PAGES: 3
AUTHOR: Todd Thornburg/Hart Crowser & Associates, Inc.
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Sampling Plan for Revised Well Locations and Additional Wells

2. 3. 1. - 1002034
DATE: 05/14/91 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Supplemental RI/FS Work: TCLP analysis of soil samples

2. 3. 1. - 1013654
DATE: 05/14/91 PAGES: 2
AUTHOR: Todd Thornburg/Hart Crowser, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Fax cover letter with attached May 1991 calendar re: Project Field Activities

2. 3. 1. - 0012081
DATE: 05/29/91 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Bernie Zavala/EPA
DESCRIPTION: Review of Quality Assurance Project Plan for Asarco Tacoma Smelter Groundwater Split Sampling Event, May 28, 1991

2. 3. 1. - 0012082
DATE: 05/30/91 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Summary of conference call discussion on May 24, 1991

2. 3. 1. - 0012161
DATE: 06/05/91 PAGES: 4
AUTHOR: Todd Thornburg/Hart Crowser & Associates, Inc.
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Summary of Results, Video Survey of Production Well Groundwater Sampling Plan for Production Well

2. 3. 1. - 1002045
DATE: 06/05/91 PAGES: 3
AUTHOR: R. Lazuk/Hydrometrics, Inc.
ADDRESSEE: Bernie Zavala/EPA
DESCRIPTION: Location for additional shoreline monitoring wells

2. 3. 1. - 0012083
DATE: 06/06/91 PAGES: 2
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response to EPA's letter re: conference call of May 24, 1991; need for additional near-shoreline monitoring wells

. 3. 1. - 0012164
DATE: 07/19/91 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Technical progress report for work completed on RI/FS for June 1991

2. 3. 1. - 0012998
DATE: 07/25/91 PAGES: 6
AUTHOR: Todd Thornburg/Hart Crowser & Associates, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Details of Proposed Tidal Study at Asarco

2. 3. 1. - 1013005
DATE: 08/01/91 PAGES: 1
AUTHOR: Theresa Michelson/PTI Environmental Services
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Listing of detection limits in the RI which were "too high"

2. 3. 1. - 0012084
DATE: 08/06/91 PAGES: 5
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Bernie Zavala/EPA
DESCRIPTION: Memorandum/Enclosed field notes, site map, and copies of data analyses from TCLP soil sampling uphill from stack (completed on June 19, 1991)

2. 3. 1. - 1013004
DATE: 09/13/91 PAGES: 3
AUTHOR: Teresa Michelsen/PTI Environmental Services
ADDRESSEE: Piper Peterson/Superfund Remedial Branch, HWD
DESCRIPTION: Detection limits for Spring Sampling, summary of conclusions reached at 9/13/91 meeting and reasons for requesting lowered detection limits for certain metals

2. 3. 1. - 1002050
DATE: 09/19/91 PAGES: 7
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal and attached memorandum (Hart Crowser) describing approach for further investigation concerning the production well

2. 3. 1. - 0012167
DATE: 09/20/91 PAGES: 3
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Detection Limits for Fall Sampling 1991

2. 3. 1. - 1002175
DATE: 09/24/91 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: RE: US EPA Split Sampling, Monitoring Wells for Fall 1991 Sampling

2. 3. 1. - 0012169
DATE: 09/26/91 PAGES: 11
AUTHOR: Tom Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Responses to August 27, 1991 comment letter pertaining to Supplemental Site Characterization Sampling and Analysis Plan

2. 3. 1. - 1013003
DATE: 09/26/91 PAGES: 10
AUTHOR: Tom Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter of response to 08/27/91 comment letter regarding Supplemental Site Characterization Sampling and Analysis Plan

2. 3. 1. - 0012170
DATE: 10/01/91 PAGES: 2
AUTHOR: Tom Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Clarification of position on detection limits and split samples

2. 3. 1. - 0012173
DATE: 10/03/91 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Sampling and Analysis Plan (June 1991) Revision Approval

2. 3. 1. - 0012174
DATE: 10/03/91 PAGES: 1
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Detection limits for aniline compounds

2. 3. 1. - 1002177
DATE: 10/03/91 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Additional Monitoring Well Installlation Associated with the Production Well.

. 3. 1. - 0012086
DATE: 10/04/91 PAGES: 1
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter confirming that ASARCO will be drilling additional wells to further investigate around the production well beginning October 15, 1991.

2. 3. 1. - 0012175
DATE: 10/14/91 PAGES: 5
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Selection of soil samples for Sequential Extraction

2. 3. 1. - 0012087
DATE: 10/17/91 PAGES: 1
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Clarification of timeline for sequential extraction

2. 3. 1. - 0012176
DATE: 10/23/91 PAGES: 3
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Comments on Asarco's response to Supplemental Remedial Investigation activities dated September 26, 1991

2. 3. 1. - 0012891
DATE: 11/05/91 PAGES: 1
AUTHOR: Laura Castrilli/EPA
ADDRESSEE: Vikki Denslow/EPA/Sample Management Office
DESCRIPTION: Request for re-solicitation of low level mercury SAS

2. 3. 1. - 0012177
DATE: 11/13/91 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Proposed Sequential Extraction and SW 924 Locations at the Asarco Smelter Facility

2. 3. 1. - 0012088
DATE: 11/15/91 PAGES: 59
AUTHOR: Julie Wukelic/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal/Enclosures - Revised SAP (excluding Appendix A); Revised Table 2 and Page 19 of the QAPP; diskette containing water level data

2. 3. 1. - 0012884
DATE: 11/15/91 PAGES: 1
AUTHOR: Kenneth V. B. Jennings/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Delay in Contract Award to Fourth Tier Laboratory

2. 3. 1. - 0012178
DATE: 12/03/91 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Approval of Sampling and Analysis Plan - November 1991

2. 3. 1. - 0012089
DATE: 12/13/91 PAGES: 10
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Enclosures - Addenda 1 and 4 for SAP

2. 3. 1. - 1002062
DATE: 01/13/92 PAGES: 2
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Groundwater Level Monitoring

2. 3. 1. - 0012090
DATE: 01/29/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Additional Water Level Measurements - January through May 1992 and Final Data Management Plan

2. 3. 1. - 1029292
DATE: 03/27/92 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter providing conditional approval of Yacht Club Breakwater Sampling and Analysis Plan (SAP) March 11, 1992.

2. 3. 1. - 0012091
DATE: 04/03/92 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Data Validation Summary for the Asarco Tacoma Smelter Phase III RI/FS, Spring 1991 Inorganic and Organic Chemical Data, Hydrometrics, Inc., February 1992

. 3. 1. - 0012960
DATE: 04/29/92 PAGES: 23
AUTHOR: Pam Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Comparison of EPA's data with the PRP's data for the Fall sampling event; enclosed data tables

2. 3. 1. - 0012092
DATE: 05/01/92 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of PRP Comparison of Asarco and EPA Spring Groundwater Data, Hart Crowser, February 11, 1992

2. 3. 1. - 0012093
DATE: 05/08/92 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Data Validation Summary for the Asarco Tacoma Smelter Phase III RI/FS, Fall 1991 Inorganic Chemical Data, Hydrometrics, Inc., April 1992

3. 1. - 0012094
DATE: 05/22/92 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Data Validation Summary for Soil Sequential Extraction, Asarco Tacoma Smelter, Metals Data, Hydrometrics, Inc., May 1992

2. 3. 1. - 0012095
DATE: 06/04/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: File/Unknown
DESCRIPTION: Disposal of Monitoring Well Cuttings on Yacht Club Breakwater (Slag) - Phone Conversation with Tom Aldrich

2. 3. 1. - 0012097
DATE: 07/23/92 PAGES: 2
AUTHOR: Randy M. Pugh/Hydrometrics, Inc.
ADDRESSEE: Bruce Cochran/State of Washington Dept. of Ecology
DESCRIPTION: Asarco Tacoma Smelter Project - Self Extraction Instructions for EPA Lotus Data Files

2. 3. 1. - 0012098
DATE: 08/07/92 PAGES: 1
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Additional Groundwater Sampling at the Yachtclub Breakwater

2. 3. 1. - 0012099
DATE: 01/27/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Data Validation for Yacht Club Breakwater Remedial Investigation

2. 3. 1. - 1029293
DATE: 03/05/93 PAGES: 2
AUTHOR: Kris Downs/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Memorandum regarding responses to comments on the Data Validation Summary for Yacht Club Breakwater Remedial Investigation, Asarco Tacoma Smelter Facility.

2. 3. 1. - 1029325
DATE: 03/26/93 PAGES: 3
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter re: Sampling and Analysis Plan Shoreline Monitoring Station.

2. 3. 1. - 0012972
DATE: 04/15/93 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Clarification on Review of Data Validation Summary for ASARCO Tacoma Smelter Breakwater, Inorganics Data, Hydrometrics, Inc., January 1993 (memo dated: 3-16-93)

2. 3. 1. - 0012811
DATE: 04/30/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Sampling and Analysis Plan for Shoreline Monitoring Station - Comments.

2. 3. 1. - 0012877
DATE: 05/17/93 PAGES: 2
AUTHOR: Pamela Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Groundwater Bailer impact

. 3. 1. - 1013748
DATE: 05/23/93 PAGES: 19
AUTHOR: Thomas N. Poole/United States Dept. of Defense
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Comments and enclosures on the Draft Statement of Work

2. 3. 1. - 1002022
DATE: 07/16/93 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Sampling & Analysis Plan, Shoreline Monitoring Station, Asarco Tacoma Smelter, Hydrometrics, Inc., 7/93

2. 3. 1. - 1013652
DATE: 07/19/93 PAGES: 5
AUTHOR: Pamela J. Bridgen/ICF Technology Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Observations and concerns of the Shoreline Monitoring Well - EPA Work Assignment #59-17-OP58 - attached diagrams

2. 3. 1. - 1002119
DATE: 07/29/93 PAGES: 5
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Memo re: sampling of ASARCO shoreline monitoring station and review of Sample and Analysis Plan, July 1993

2. 3. 1. - 1002118
DATE: 08/02/93 PAGES: 5
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: RE: Shoreline Monitoring Station Installation and Shoreline Sampling and Analysis Plan -- Asarco Smelter Facility

2. 3. 1. - 1013273
DATE: 08/20/93 PAGES: 50
AUTHOR: Bruce A. Cochran/State of Washington, Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Toxics Cleanup Program Database Material - data submission material attached

2. 3. 1. - 1002117
DATE: 08/31/93 PAGES: 8
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: RE: Oversight Report for Sampling of Shoreline Monitoring Station -- Asarco Smelter Facility

2. 3. 1. - 1013002
DATE: 12/03/93 PAGES: 6
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Memo and report regarding Hydrometrics, Inc. sampling and analytical results monitoring Well B-34

2. 3. 1. - 1013001
DATE: 12/21/93 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Investigative Results Shoreline Monitoring Station, Asarco Tacoma Smelter, Hydrometrics, 12-1-93

2. 3. 1. - 1013274
DATE: 01/13/94 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Analytical results from monitoring Well B34 of the Tacoma Asarco Smelter Facility.

2. 3. 1. - 1013275
DATE: 01/25/94 PAGES: 15
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Proposal for ground water monitoring

2. 3. 1. - 1013276
DATE: 02/22/94 PAGES: 1
AUTHOR: Don A. Essig/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for draft copy of the document Pilot Scale Treatability Testing of Plant Site Soils at the ASARCO Tacoma Smelter - Sampling and Analysis Plan, document not attached

2. 3. 1. - 1013277
DATE: 02/22/94 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Transmittal letter for review copy of Tacoma Smelter Pilot Project - Site Specific Health and Safety Plan, document not attached

2. 3. 1. - 1013278
DATE: 03/09/94 PAGES: 6
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter stating that ITEX needed Sampling and Analysis Plan (SAP) regarding further revisions

2. 3. 1. - 1013279
DATE: 03/16/94 PAGES: 3
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Re: Remedial Design/Remedial Action Sampling and Analysis Plan

2. 3. 1. - 1013280
DATE: 03/17/94 PAGES: 3
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Health and Safety Plan for ITEX Pilot Project, specific comments

2. 3. 1. - 1013954
DATE: 03/31/94 PAGES: 1
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for five (5) copies of the "Post-RI, Long-Term Monitoring Sampling and Analysis Plan, Asarco Smelter Site, Tacoma, Washington." Copies not attached.

2. 3. 1. - 1013577
DATE: 04/04/94 PAGES: 1
AUTHOR: Bill Myers/State of Washington, Dept. of Ecology
ADDRESSEE: Robert Miller/Hydrometrics, Inc.
DESCRIPTION: Toxics clean up program database material

2. 3. 1. - 1013746
DATE: 05/18/94 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Re: Ground water sampling dates

2. 3. 1. - 1013797
DATE: 05/18/94 PAGES: 5
AUTHOR: Russ McMillan/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Re: Comments on Draft Statement of Work for an expanded Remedial Investigation and Feasibility Study for the Asarco Sediments site.

2. 3. 1. - 1013955
DATE: 06/01/94 PAGES: 3
AUTHOR: Victor Sletten/Hydometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for: 1) attached responses to comments of April 28, 1994 and 2) five copies of replacement pages for the "Post-RI Sampling and Analysis Plan, Asarco Smelter Site of Tacoma, Washington. Copies not attached.

2. 3. 1. - 1013956
DATE: 06/13/94 PAGES: 2
AUTHOR: Vic Sletten/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Fax cover letter and attached revised Table 4-1; Analytical Methods, Procedures and Detection Limits.

2. 3. 1. - 1013957
DATE: 06/14/94 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter regarding acceptance and approval of Asarco's Post-Remedial Investigation, Long-Term Monitoring Sampling and Analysis Plan (SAP) revisions dated June 1, 1994.

2. 3. 1. - 1013958
DATE: 06/27/94 PAGES: 1
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter regarding post RI/FS monitoring surface water PAHs.

2. 3. 1. - 1013959
DATE: 08/02/94 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for copy of letter from Hydrometrics regarding the scheduling of post RI soil borings for the first or second week in October 1994; Hydrometrics letter attached.

2. 3. 1. - 1013961
DATE: 09/27/94 PAGES: 1
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for revised pages 3-13 and 4-5 of the Post-RI, Long-Term Monitoring Sampling and Analysis Plan for Asarco Smelter Site; pages not attached.

2. 3. 1. - 1013962
DATE: 09/29/94 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Dave Corbett/CH2M Hill
DESCRIPTION: Cover letter requesting the filing of "Fit-Factors" information for the U.S. EPA project managers and technical staff that may potentially require a respirator while on site; "Fit-Factors" information on reverse side of letter.

3. 1. - 1013963
DATE: 10/05/94 PAGES: 5
AUTHOR: Unknown/Treatment Technologies
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Fax cover sheet with attached memorandum from Gloria Poling to David Listiak regarding attached copies of Associated Laboratories California DHS certification for those fields of testing required for the analysis of metals.

2. 3. 1. - 1029248
DATE: 02/14/95 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Robert Miller/Hydrometrics, Inc.
DESCRIPTION: Follow-up letter to telephone conversation of 2/14/95 requesting omitted SOP HF-SOP-19-8193 identified in section 3.4.4 on page 3-13 in the Post-RI, Long Term Monitoring Sampling and Analysis Plan dated Oct. 1994.

2. 3. 1. - 1029282
DATE: 02/21/95 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for surface water sampling SOP which is to be included in the Post RI Long-Term Monitoring Work Plan Appendix A - SOP not attached.

2. 3. 1. - 1029288
DATE: 03/03/95 PAGES: 1
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Replacement Pages for Long-Term Monitoring SAP - pages not attached.

SUB-HEAD: 2. 3. 2. 1 Schedules

2. 3. 2. 1 - 1002041
DATE: / / PAGES: 8
AUTHOR: Unknown/Hart Crowser & Associates, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Monitoring well/Groundwater Sampling charts, information

2. 3. 2. 1 - 0012294
DATE: 05/14/91 PAGES: 2
AUTHOR: Todd Thornburg/Hart Crowser & Associates, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Schedule for Field Activities this Month at Asarco

2. 3. 2. 1 - 1002004
DATE: 09/25/91 PAGES: 4
AUTHOR: Unknown/Hart Crowser & Associates, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Monitoring Wells - EPA Splits

2. 3. 2. 1 - 0012904
DATE: 09/26/91 PAGES: 4
AUTHOR: Mark Otten/Hart Crowser & Associates, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Daily schedule for groundwater sampling for the Asarco plant in Tacoma, WA

2. 3. 2. 1 - 1002037
DATE: 10/17/91 PAGES: 1
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Clarification of timeline for sequential extraction

2. 3. 2. 1 - 1013751
DATE: 05/27/94 PAGES: 2
AUTHOR: Jeff Cross/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Re: Hydrometrics Post-RI, Long-term Monitoring and anticipated sampling schedule

2. 3. 2. 1 - 1013960
DATE: 08/30/94 PAGES: 2
AUTHOR: Jeff Cross/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Anticipated sampling schedule for the Post-RI Long Term Monitoring at Asarco Smelter Facility in Ruston, Washington.

SUB-HEAD: 2. 3. 2. 2 Sample Location/Maps - Sampling & Analysis Plan

2. 3. 2. 2 - 0012102
DATE: / / PAGES: 2
AUTHOR: Hydrometrics, Inc./Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Laboratory Operating Procedure, Sequential Extraction of Metals from Soils (modification from 1/16/91 Work Plan SAP)

2. 3. 2. 2 - 1013967
DATE: 04/14/86 PAGES: 39
AUTHOR: Unknown/American Nuclear Society
ADDRESSEE: Unknown/Unknown
DESCRIPTION: American National Standard Measurement of the Leachability of Solidified Low-Level Radioactive Wastes by a Short-Term Test Procedure.

2. 3. 2. 2 - 0012158
DATE: 03/22/91 PAGES: 5
AUTHOR: Margaret Justus/EPA
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Asarco Tacoma Smelter Supplemental RI/FS Site Investigations Work Plan

2. 3. 2. 2 - 0012160
DATE: 04/04/91 PAGES: 3
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Tom Schadt/Parametrix, Asarco, Hart Crowser
DESCRIPTION: Hydrometrics' responses to EPA letter of March 22, 1991 - Supplemental RI/FS Site Investigation

2. 3. 2. 2 - 1002072
DATE: 04/24/91 PAGES: 4
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Revised Monitoring Well Locations and Additional Wells

2. 3. 2. 2 - 0012103
DATE: 05/09/91 PAGES: 2
AUTHOR: Michael W. Ehlebracht/Hart Crowser & Associates, Inc.
ADDRESSEE: Bernie Zavala/EPA
DESCRIPTION: Transmittal/Surface Water Sampling Figure

2. 3. 2. 2 - 1002035
DATE: 06/04/91 PAGES: 1
AUTHOR: Unknown/Hart Crowser & Associates, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Surface Soil Sampling Summary Meeting Handout

2. 3. 2. 2 - 0012105
DATE: 09/19/91 PAGES: 6
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Note and attached memorandum from Hart Crowser describing approach for further investigation of production well.

2. 3. 2. 2 - 0012106
DATE: 09/24/91 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: RE: US EPA Split Sampling Monitoring Wells for Fall 1991 Sampling

2. 3. 2. 2 - 0012107
DATE: 10/03/91 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: RE: Additional monitoring well installation associated with the production well

2. 3. 2. 2 - 0012119
DATE: 10/04/91 PAGES: 115
AUTHOR: Kenneth V. B. Jennings/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco, Inc. Tacoma Smelting Company Final Field Sampling Plan for RI/FS Activities

2. 3. 2. 2 - 0012109
DATE: 01/13/92 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter regarding Hart Crowser's groundwater level monitoring through May 1992.

2. 3. 2. 2 - 0012108
DATE: 01/31/92 PAGES: 194
AUTHOR: Unknown/Parametrix (with HartCrowser, Hydrometrics)
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Tacoma Smelter Supplemental RI/FS Site Investigations

2. 3. 2. 2 - 0012186
DATE: 03/27/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Yacht Club Breakwater Sampling and Analysis Plan (SAP) - March 11, 1992

2. 3. 2. 2 - 0012110
DATE: 04/13/92 PAGES: 22
AUTHOR: Todd Thornburg/Hart Crowser & Associates, Inc.
ADDRESSEE: Bernie Zavala/EPA
DESCRIPTION: Asarco Well Development Logs

2. 3. 2. 2 - 0012795
DATE: 03/26/93 PAGES: 3
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Sampling and Analysis Plan Shoreline Monitoring Station, additional details

2. 3. 2. 2 - 0012995
DATE: 07/08/93 PAGES: 24
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Sampling and Analysis Plan - Shoreline Monitoring Station

2. 3. 2. 2 - 1013281
DATE: 02/01/94 PAGES: 60
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Pilot Scale Treatability Testing of Plant Site Soils at the Asarco Tacoma Smelter - Draft Report

2. 3. 2. 2 - 1013282
DATE: 02/01/94 PAGES: 107
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Remedial Design/Remedial Action Sampling and Analysis Plan - Groundwater

2. 3. 2. 2 - 1013966
DATE: 03/31/94 PAGES: 109
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Report: Post-RI, Long Term Monitoring Sampling and Analysis Plan - Asarco Smelter Site, Tacoma, Washington.

2. 3. 2. 2 - 1013965
DATE: 09/14/94 PAGES: 196
AUTHOR: Unknown/Parametrix, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Sampling and Analysis Plan; Expanded Remedial Investigation and Feasibility Study - Asarco Sediments Superfund site.

SUB-HEAD: 2. 3. 2. 3 Health and Safety Plans

2. 3. 2. 3 - 0012111
DATE: 06/30/87 PAGES: 82
AUTHOR: Unknown/Parametrix, HartCrowser
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Health and Safety Plan for the Asarco Tacoma Smelter Remedial Investigation

2. 3. 2. 3 - 0012112
DATE: 03/31/91 PAGES: 33
AUTHOR: Hart Crowser/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Health and Safety Plan for Subsurface Exploration, Sampling, and Testing; Asarco RI/FS; Tacoma, Washington

2. 3. 2. 3 - 0012890
DATE: 05/06/91 PAGES: 2
AUTHOR: Catherine Bell/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Health and Safety Plan for Subsurface Exploration, Sampling, and Testing - RI/FS

2. 3. 2. 3 - 0012113
DATE: 07/01/91 PAGES: 7
AUTHOR: Greg Higgins/Hart Crowser & Associates, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Health and Safety Plan Review (Second author: Mark Otten)

2. 3. 2. 3 - 1029326
DATE: 09/06/91 PAGES: 27
AUTHOR: Kenneth V. B. Jennings/ICF Technology, Inc.
ADDRESSEE: Piper L. Peterson/EPA
DESCRIPTION: Cover letter for attached Site Health and Safety Plan.

2. 3. 2. 3 - 1029327
DATE: 09/20/91 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Kenneth Jennings/ICF Technology, Inc.
DESCRIPTION: Cover letter and attached memo of review comments of Health and Safety Plan for field oversight at Asarco from Cathe Bell of EPA.

2. 3. 2. 3 - 1013283
DATE: 02/01/94 PAGES: 40
AUTHOR: Unknown/ITEX Environmental Services, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Tacoma Smelter Pilot Project - Site Specific Health and Safety Plan

SUB-HEAD: 2. 3. 2. 4 Results/Chain of Custody/Validation

2. 3. 2. 4 - 0012893
DATE: 10/17/90 PAGES: 20
AUTHOR: Jeff Webb/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Results from EPA split of groundwater samples taken Aug. 15, 1990; validation report; QAPP; request for submittal of workplan

2. 3. 2. 4 - 1013006
DATE: 10/17/90 PAGES: 20
AUTHOR: Jeff Webb/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Results from the EPA split of the groundwater sample collected by Hart-Crowser on 08/15/90 from the old production well, validation report and the QAPP

2. 3. 2. 4 - 0012907
DATE: 10/24/90 PAGES: 6
AUTHOR: Katherine S. G. York/CSC/EPA
ADDRESSEE: Bernie Zavala/EPA
DESCRIPTION: Asarco Tacoma Smelter data for samples numbered 90332000-2001

2. 3. 2. 4 - 0012114
DATE: 03/13/91 PAGES: 12
AUTHOR: Unknown/Hart Crowser & Associates, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Sample Custody Record

2. 3. 2. 4 - 0012680
DATE: 03/13/91 PAGES: 9
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Peggy Justus/EPA
DESCRIPTION: Summary of existing data in terms of ranges of EP Tox values

2. 3. 2. 4 - 0012115
DATE: 05/22/91 PAGES: 27
AUTHOR: Michael Ehlebracht/Hart Crowser & Associates, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Sample Custody Forms

2. 3. 2. 4 - 0012888
DATE: 06/24/91 PAGES: 1
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Receipt for Samples

2. 3. 2. 4 - 0012117
DATE: 07/03/91 PAGES: 9
AUTHOR: Emily Carfioli/Analytical Technologies, Inc.
ADDRESSEE: Mike Ehlebracht/Hart Crowser & Associates, Inc.
DESCRIPTION: Analysis of Two Water Samples - Production Well

2. 3. 2. 4 - 0012902
DATE: 08/06/91 PAGES: 9
AUTHOR: Unknown/Hart Crowser & Associates, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Tacoma RI/FS Monthly Water Level Monitoring (from Progress Meeting)

2. 3. 2. 4 - 0012903
DATE: 08/06/91 PAGES: 5
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Bernie Zavala/EPA
DESCRIPTION: TCLP soil sampling uphill from stack

2. 3. 2. 4 - 0012118
DATE: 10/03/91 PAGES: 50
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: EPA's Spring Split Sample Data

2. 3. 2. 4 - 0012172
DATE: 10/03/91 PAGES: 3
AUTHOR: Michael Ehlebracht/Hart Crowser & Associates, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Arsenic Speciation in Well Water Tables

2. 3. 2. 4 - 0012279
DATE: 11/04/91 PAGES: 7
AUTHOR: Todd Thornburg/Hart Crowser & Associates, Inc.
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Results of Tidal Study Analysis

2. 3. 2. 4 - 0012120
DATE: 11/18/91 PAGES: 1
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Chronology regarding the analyte Mercury from field collection to laboratory analyses from 9/30 to 11/18/91 (groundwater)

2. 3. 2. 4 - 0012121
DATE: 12/13/91 PAGES: 12
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Gerald Muth/EPA
DESCRIPTION: Asarco Data Validation Report and Performance of Participating SAS Eligible Laboratories, SAS #6763J-02, Mercury Analysis

2. 3. 2. 4 - 0012122
DATE: 12/13/91 PAGES: 12
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Data Validation Report and Performance of Participating SAS Eligible Laboratories, SAS #6763J-02, Mercury Analysis

2. 3. 2. 4 - 0012123
DATE: 12/19/91 PAGES: 6
AUTHOR: M. Katherine Parker/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Metals analysis by ICP-AES for Asarco

2. 3. 2. 4 - 0012124
DATE: 12/24/91 PAGES: 30
AUTHOR: M. Katherine Parker/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Thallium analysis by ICP-MS for Asarco

2. 3. 2. 4 - 0012125
DATE: 12/24/91 PAGES: 25
AUTHOR: M. Katherine Parker/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Metals analysis by ICP-AES for Asarco

2. 3. 2. 4 - 0012126
DATE: 12/30/91 PAGES: 156
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Data Validation Report and Performance of Participating SAS Eligible Laboratories, SAS #6763J-02, Mercury Analysis, Samples 6763J02-30 thru -38

2. 3. 2. 4 - 0012127
DATE: 12/31/91 PAGES: 30
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Data Validation Report for SAS 36763J-01, Semi-Volatile Analysis, Samples 6763J01-01 thru -04

2. 3. 2. 4 - 0012128
DATE: 01/22/92 PAGES: 12
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Data Validation Report for SAS #6889J, Mercury Analysis, Samples 6889J-01 thru -04

2. 3. 2. 4 - 0012129
DATE: 01/22/92 PAGES: 25
AUTHOR: Isabel Chamberlain/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Waters Metals Analysis

2. 3. 2. 4 - 1002063
DATE: 02/07/92 PAGES: 13
AUTHOR: Todd Thornburg/Hart Crowser & Associates, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Monthly Water Level Data through January 1992

2. 3. 2. 4 - 0012180
DATE: 02/25/92 PAGES: 21
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Comparison of Asarco and EPA Spring Groundwater Data

2. 3. 2. 4 - 0012130
DATE: 02/28/92 PAGES: 121
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Final Validation Summary of Organic Analysis Asarco Tacoma Smelter Phase III RI/FS; Spring 1991 Data

2. 3. 2. 4 - 1002065
DATE: 03/03/92 PAGES: 14
AUTHOR: Unknown/Hart Crowser & Associates, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Monthly Water Level Monitoring - Well Specifications -- Handout at March 3, 1992 Progress Meeting

2. 3. 2. 4 - 0012181
DATE: 03/04/92 PAGES: 1
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Data Validation, RI/FS

2. 3. 2. 4 - 0012131
DATE: 03/31/92 PAGES: 238
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Final Data Validation Summary for the Asarco Tacoma Smelter Phase III RI/FS Spring 1991 Inorganic Chemical Data

3. 2. 4 - 1002031
DATE: 04/03/92 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Data Validation Summary for the Asarco Tacoma Smelter Phase III RI/FS, Spring 1991 Inorganic and Organic Chemical Data, Hydrometrics, Inc., February 1992

2. 3. 2. 4 - 1002051
DATE: 04/07/92 PAGES: 4
AUTHOR: Unknown/Hart Crowser & Associates, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Monthly Water Level Monitoring, Table A-3.2 - Handout at Progress Meeting

2. 3. 2. 4 - 1002064
DATE: 04/13/92 PAGES: 22
AUTHOR: Todd Thornburg/Hart Crowser & Associates, Inc.
ADDRESSEE: Bernie Zavala/EPA
DESCRIPTION: Asarco Well Development Logs

2. 3. 2. 4 - 0012132
DATE: 04/14/92 PAGES: 146
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Final Data Validation Summary for the Asarco Tacoma Smelter Phase III RI/FS Fall 1991 Inorganic Chemical Data

2. 3. 2. 4 - 1002030
DATE: 05/08/92 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Data Validation Summary for the Asarco Tacoma Smelter Phase III RI/FS, Fall 1991 Inorganic Chemical Data, Hydrometrics, Inc., April 1992

2. 3. 2. 4 - 0012133
DATE: 05/14/92 PAGES: 55
AUTHOR: Scott Mason/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Enclosed Data Validation Summary for Soil Sequential Extractions for Asarco Tacom RI/FS

2. 3. 2. 4 - 0012892
DATE: 05/22/92 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Data Validation Summary for Soil Sequential Extraction, Asarco Tacoma Smelter, Metals Data, Hydrometrics, Inc., May 1992

2. 3. 2. 4 - 0012134
DATE: 05/26/92 PAGES: 2
AUTHOR: Kris Downs/Hydrometrics, Inc.
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Letter/Enclosed Data Validation summary and validated data for soil sample MW-153 S-2

2. 3. 2. 4 - 0012135
DATE: 06/02/92 PAGES: 6
AUTHOR: Hart Crowser/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Monthly Water Level Monitoring

2. 3. 2. 4 - 0012136
DATE: 12/31/92 PAGES: 31
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Validation Summary Groundwater Organics Data, Asarco Tacoma Breakwater

2. 3. 2. 4 - 1013286
DATE: 03/01/93 PAGES: 80
AUTHOR: Unknown/Parametrix, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Asarco Supplemental Marine Survey Yacht Basin Survey Results

2. 3. 2. 4 - 1029328
DATE: 05/14/93 PAGES: 10
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for attached result of summary of the soil treatability bench scale testing conducted as part of the Tacoma Smelter Site FS - covers Section 4.2 of Feasibility Study report and will be included in the final FS report.

2. 3. 2. 4 - 1013970
DATE: 07/25/94 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for missing soil data; Pilot Scale Pre-Treatment Soil Analytical Results. Data not attached.

3. 2. 4 - 1013971
DATE: 09/16/94 PAGES: 14
AUTHOR: Milan Mraz/Asarco, Inc.
ADDRESSEE: Jenny Vanek/Hydrometrics, Inc.
DESCRIPTION: Cover letter and attached analytical results for nine soil samples collected from Asarco Tacoma Plant on 5/4/94.

2. 3. 2. 4 - 1013972
DATE: 11/28/94 PAGES: 7
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover memorandum and attached Environmental Service Assistance Teams - Zone 2 QA Review of Asarco Post-RI Long Term Groundwater Monitoring.

2. 3. 2. 4 - 1013969
DATE: 12/06/94 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Field sample data and chain of custody sheet.

2. 3. 2. 4 - 1029286
DATE: 03/08/95 PAGES: 4
AUTHOR: Ken Wilson/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: FAXed cover sheet and attached monitoring results for the first week of slag placement operations (ramp building).

2. 3. 2. 4 - 1029294
DATE: 03/09/95 PAGES: 4
AUTHOR: Ken Wilson/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: FAXed cover sheet with attached air monitoring results - transfer of slag from Thorne Rd. into Smelter.

2. 3. 2. 4 - 1029295
DATE: 03/16/95 PAGES: 4
AUTHOR: Ken Wilson/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: FAXed cover sheet with attached air monitoring - Smelter (Asarco Tacoma) information.

2. 3. 2. 4 - 1029338
DATE: 03/22/95 PAGES: 4
AUTHOR: Ken Wilson/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: FAXed cover sheet with attached air monitoring results - high volume suspended particulate.

SUB-HEAD: 2. 3. 2. 5 QAPP and Comments

2. 3. 2. 5 - 0012137
DATE: 05/28/91 PAGES: 9
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Quality Assurance Project Plan, Asarco Tacoma Smelter Groundwater Sampling Event, Suppllemental Investigation - RI/FS

2. 3. 2. 5 - 0012138
DATE: 08/17/92 PAGES: 50
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Laboratory Protocol and Quality Assurance Program

2. 3. 2. 5 - 1013753
DATE: 06/01/94 PAGES: 10
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Qulaity Assurance Project Plan; Project Name: Asarco Tacoma Smelter Post-RI Long-Term Monitoring Ground Water Sampling Event Spring 1994 in Tacoma, Washington

2. 3. 2. 5 - 1013973
DATE: 08/22/94 PAGES: 10
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Quality Assurance Project Plan - Asarco Tacoma Smelter Post-RI Long Term Monitoring Ground Water Sampling Event, Fall 1994, Tacoma, Washington.

SUB-HEAD: 2. 3. 2. 6 EPA Field Oversight

2. 3. 2. 6 - 0012139
DATE: 01/24/92 PAGES: 1
AUTHOR: Stanley Peterson/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal of the Field Oversight Report

2. 3. 2. 6 - 0012140
DATE: 01/31/92 PAGES: 149
AUTHOR: Unknown/ICF Technology, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Tacoma Smelter Split Sample Collection and Field Oversight

2. 3. 2. 6 - 0012141
DATE: 06/12/92 PAGES: 4
AUTHOR: Pamela Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Enclosed completed Field Oversight Checklist for Yacht Club Breakwater

2. 3. 2. 6 - 1029296
DATE: 08/13/92 PAGES: 2
AUTHOR: David Moe/ICF
ADDRESSEE: Unknown/EPA
DESCRIPTION: Field oversight checklist - Asarco; Yacht Breakwater Monitoring Well Sampling.

2. 3. 2. 6 - 1013285
DATE: 02/22/94 PAGES: 3
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Subject: Field visit for final location of the Shoreline Monitoring Stations

SUB-HEAD: 2. 4. 1. Correspondence

2. 4. 1. - 1029285
DATE: / / PAGES: 3
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article: Revetments - Design Considerations.

2. 4. 1. - 0012195
DATE: 04/13/89 PAGES: 5
AUTHOR: Don Weitkamp/Parametrix
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Summary table of position on aquifer clasification, ARARs, and points of compliance for the major media and pathways at Asarco site

2. 4. 1. - 0012196
DATE: 04/28/89 PAGES: 13
AUTHOR: Raleigh Farlow/Jacobs Engineering Group, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Preliminary List of Potential Chemical and Location-Specific ARARs and TBCs

2. 4. 1. - 0012197
DATE: 06/07/89 PAGES: 2
AUTHOR: Raleigh Farlow/Jacobs Engineering Group, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Potential Chemical and Location-Specific ARARs and TBCs

2. 4. 1. - 0012144
DATE: 06/19/89 PAGES: 8
AUTHOR: Joyce Tsuji/Environmental Toxicology International, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Memo/Enclosed response to EPA's comments on the Baseline Health Risk Assessment

2. 4. 1. - 0012146
DATE: 08/14/89 PAGES: 4
AUTHOR: Michael Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Explanation of differences between EPA and Asarco cleanup objectives tables in draft feasibility study

2. 4. 1. - 0012147
DATE: 08/17/89 PAGES: 6
AUTHOR: Nigel Blakely/State of Washington Dept. of Ecology
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Comments on the Preliminary Draft Asarco Smelter Feasibility Study, dated July 1989

2. 4. 1. - 0012148
DATE: 08/24/89 PAGES: 3
AUTHOR: Keith Rose/EPA
ADDRESSEE: Michael Thorp/Heller Ehrman White & McAuliffe
DESCRIPTION: Summary of meeting between EPA and Asarco on Thursday, August 17, 1989

2. 4. 1. - 0012149
DATE: 08/29/89 PAGES: 4
AUTHOR: Michael Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Response to August 24, 1989 letter re: outstanding issues related to Feasibility Study

4. 1. - 0012747
DATE: 09/30/89 PAGES: 14
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Response to Comments on Asarco Facility Study, September 1989 Draft Report

2. 4. 1. - 0012151
DATE: 10/23/89 PAGES: 11
AUTHOR: Joyce Tsuji/Environmental Toxicology
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Response to EPA comments on the Baseline Risk Assessment

2. 4. 1. - 0012152
DATE: 01/25/90 PAGES: 2
AUTHOR: Nigel Blakley/State of Washington Dept. of Ecology
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Review of ARARs section dealing with solid waste disposal for remedial alternative 8C (page 5-89 of the January 15, 1990, Asarco Feasibility Study report)

2. 4. 1. - 0012153
DATE: 04/13/90 PAGES: 4
AUTHOR: Marian Abbett/State of Washington Dept. of Ecology
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: State Dangerous Waste Regulations, Land Bans

2. 4. 1. - 0012154
DATE: 07/10/90 PAGES: 8
AUTHOR: Nigel Blakley/State of Washington Dept. of Ecology
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Outstanding policy and ARAR issues involving state regulations as they apply to Asarco

2. 4. 1. - 0012155
DATE: 08/13/90 PAGES: 2
AUTHOR: Marian Abbett/State of Washington Dept. of Ecology
ADDRESSEE: Linda Larson/Heller Ehrman White & McAuliffe
DESCRIPTION: Summary Letter of Asarco Tacoma Smelter: Policy Work Group Meetings of June 22, 1990 and July 31, 1990

2. 4. 1. - 0012677
DATE: 08/14/90 PAGES: 14
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Asarco Tacoma Smelter RI/FS: Remedial Action Objectives Issues: Outline of Asarco's proposal for revisions to Chapter 2 of FS

2. 4. 1. - 0012156
DATE: 01/15/91 PAGES: 2
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Peggy Justus/EPA
DESCRIPTION: Terms used to describe soil and fill materials in the Tacoma RI/FS

2. 4. 1. - 0012157
DATE: 03/13/91 PAGES: 9
AUTHOR: Tom Aldrich/Asarco, Inc.
ADDRESSEE: Peggy Justus/EPA
DESCRIPTION: Letter discussing potential Conflict between existing soils analyses which followed EP Toxicity protocol and future analyses using TCLP protocol

2. 4. 1. - 1002043
DATE: 04/01/91 PAGES: 8
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Hydrogeochemical Modeling, Asarco-Tacoma Plant

2. 4. 1. - 0012159
DATE: 04/03/91 PAGES: 6
AUTHOR: Mike Ehlebracht/Hart Crowser & Associates, Inc.
ADDRESSEE: EPA Region 10/Unknown
DESCRIPTION: RE: Proposed Wet Season Surface and Near-Surface Water Sampling, Asarco Tacoma Plant

2. 4. 1. - 1002044
DATE: 04/04/91 PAGES: 3
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Tom Schadt/Parametrix, Asarco, Hart Crowser
DESCRIPTION: Hydrometrics' responses to EPA letter of March 22, 1991 (modeling)

2. 4. 1. - 1013030
DATE: 04/21/91 PAGES: 5
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review comments, Technical Memorandum II conceptual model of site conditions Asarco Tacoma Smelter

2. 4. 1. - 0012100
DATE: 05/30/91 PAGES: 5
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal for revised schedule for RI/FS; responses to EPA letter dated May 7, 1991

4. 1. - 1013669
DATE: 06/04/91 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Handout at Progress meeting re: modeling

2. 4. 1. - 0012165
DATE: 08/16/91 PAGES: 3
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Clarification of contents of technical memos identified in the Asarco RI/FS project schedule

2. 4. 1. - 0012166
DATE: 08/27/91 PAGES: 7
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Comments on: 1.)RI/FS Supplemental Site Characterization Sampling and Analysis Plan (SAP) - June 1991, 2.)Tidal Study, 3.)conceptual and predictive groundwater models, 4.)technical memoranda in RI/FS schedule, 5.)RI/FS Schedule

2. 4. 1. - 0012699
DATE: 10/23/91 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Receipt of Technical Data Memorandum - October 15, 1991 Asarco Smelter Facility

2. 4. 1. - 0012999
DATE: 10/23/91 PAGES: 3
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Comments on Asarco's response to Supplemental Remedial Investigation activities dated September 26, 1991

2. 4. 1. - 1002061
DATE: 11/21/91 PAGES: 4
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Draft Environmental Services Division Guidelines Hydrogeologic Modeling

2. 4. 1. - 1029298
DATE: 12/18/91 PAGES: 2
AUTHOR: Curtis E. Dungey/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter with attached copy of letter from Raymond Lazuk of Hydrometrics, Inc. regarding role of the additional 10 borings to be completed after demolition to the overall conceptual model development.

2. 4. 1. - 0012182
DATE: 03/04/92 PAGES: 2
AUTHOR: Don Sternitzke/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Conference Call; slag fill as significant source of groundwater contamination

2. 4. 1. - 0012183
DATE: 03/11/92 PAGES: 5
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: RI/FS; Yacht Club Breakwater Investigation

2. 4. 1. - 1002056
DATE: 03/20/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/EPA
DESCRIPTION: Technical Data Memorandum #1 - March 3, 1992

2. 4. 1. - 1013027
DATE: 03/31/92 PAGES: 1
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal regarding Technical Memorandum #2 which details conceptual model of site.

2. 4. 1. - 0012187
DATE: 04/07/92 PAGES: 2
AUTHOR: Unknown/Kleinfelder, Inc.
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Risk Assessment Workplan for the Tacoma Plant site

2. 4. 1. - 0012776
DATE: 04/14/92 PAGES: 3
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Ground Water Classifications for the newly installed Monitoring Wells for Phase III

2. 4. 1. - 1013026
DATE: 04/15/92 PAGES: 6
AUTHOR: Pam Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Comments on the Asarco Inc. Smelter RI/FS Technical Memorandum Conceptual Model of Site Conditions Memorandum, Draft

2. 4. 1. - 1013024
DATE: 04/16/92 PAGES: 5
AUTHOR: Michael Kuntz/State of Washington Dept. of Ecology
ADDRESSEE: Bruce Cochran/Unknown
DESCRIPTION: Review of Asarco 03/31/92 Technical Memorandum

2. 4. 1. - 1013025
DATE: 04/16/92 PAGES: 1
AUTHOR: Bill Myers/State of Washington Dept. of Ecology
ADDRESSEE: Bruce Cochran/Unknown
DESCRIPTION: Asarco Data Submittal memorandum, Draft

2. 4. 1. - 0012707
DATE: 04/17/92 PAGES: 2
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Yacht Club Breakwater Investigation, Tacoma Smelter Site; Hydrometrics' response to the March 27, 1992 EPA letter

2. 4. 1. - 0012188
DATE: 04/20/92 PAGES: 2
AUTHOR: Joyce S. Tsuji/Kleinfelder, Inc.
ADDRESSEE: Dana Davoli/EPA
DESCRIPTION: Non-Use Scenario for the Tacoma Plant Risk Assessment Workplan

2. 4. 1. - 1013023
DATE: 04/20/92 PAGES: 5
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Comments on TDM II 4/20/92 for internal EPA/Ecology use only

2. 4. 1. - 1013022
DATE: 04/21/92 PAGES: 5
AUTHOR: Bruce Cochran/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Hydrogeochemical Model Technical Memorandum dated 03/31/92, Draft

4. 1. - 0012190
DATE: 04/24/92 PAGES: 7
AUTHOR: Todd Thornburg/Hart Crowser & Associates, Inc.
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Aquifer Classification at the Asarco Tacoma RI/FS Site

2. 4. 1. - 0012191
DATE: 04/30/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Addition of No-Use Scenario for Final Workplan for Completion of Draft Human Health Risk Assessment

2. 4. 1. - 0012192
DATE: 05/11/92 PAGES: 14
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Dana Davoli/EPA
DESCRIPTION: Tacoma On-property Risk Assessment - Chemicals Lacking Toxicity Criteria

2. 4. 1. - 0012193
DATE: 05/18/92 PAGES: 2
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Interpretation of the Tacoma Plant Risk Assessment Workplan

2. 4. 1. - 0012194
DATE: 05/20/92 PAGES: 32
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Results of Chemical Screening and Toxicity Criteria for the Tacoma Plant Risk Assessment

2. 4. 1. - 0012198
DATE: 05/27/92 PAGES: 94
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Results of Chemical Screening for Soil, Updated Toxicity Criteria Information, and Exposure Assumptions for the Tacoma Plant Risk Assessment

2. 4. 1. - 0012199
DATE: 05/28/92 PAGES: 5
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Joyce Tsuji/Kleinfelder, Inc.
DESCRIPTION: Receipt of letter dated May 18, 1992; comments on letter and sections of the first deliverable

2. 4. 1. - 0012200
DATE: 05/28/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Bob Miller/Hydrometrics, Inc.
DESCRIPTION: Request for copy of draft Remedial Investigation report be sent to various people

2. 4. 1. - 0012201
DATE: 05/28/92 PAGES: 1
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal - Signature page to Letter dated May 27, 1992

2. 4. 1. - 0012202
DATE: 06/03/92 PAGES: 1
AUTHOR: Mark Bennett/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Draft RI Report - revised pages

2. 4. 1. - 0012203
DATE: 06/03/92 PAGES: 3
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Joyce Tsuji/Kleinfelder, Inc.
DESCRIPTION: Comments regarding results of the chemical screening for soil, updated toxicity criteria information, and the exposure assumptions for Risk Assessment

2. 4. 1. - 0012204
DATE: 06/05/92 PAGES: 17
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Effect of New Toxicity Criteria on Chemical Screening; PAH Vegetable Uptake

2. 4. 1. - 0012206
DATE: 06/08/92 PAGES: 2
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: List of Chemicals for Average Exposures; Proposed Method for Combining Risks Associated with Different Exposure Pathways

2. 4. 1. - 0012205
DATE: 06/09/92 PAGES: 4
AUTHOR: Dana Davoli/EPA
ADDRESSEE: Joan Dollarhide/EPA
DESCRIPTION: Request for Toxicity and Bioaccumulation Values for the Asarco Facility in Tacoma, Washington

2. 4. 1. - 0012207
DATE: 06/11/92 PAGES: 43
AUTHOR: Joan S. Dollarhide/EPA
ADDRESSEE: Dana Davoli/EPA
DESCRIPTION: Systemic and carcinogenic toxicity information for acenaphthene, acenaphthylene, methane, chloromethane, etc.

2. 4. 1. - 0012208
DATE: 06/12/92 PAGES: 7
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Chemical Screening; Area 6; Worker Exposure to Volatile Chemicals in Water

2. 4. 1. - 1002003
DATE: 06/19/92 PAGES: 20
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Responses to EPA's May 1, 1992 comments on the March 31, 1992 Technical Memorandum describing development of the conceptual hydrogeochemical model of the Tacoma Smelter

2. 4. 1. - 1013671
DATE: 06/19/92 PAGES: 20
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter with attached Hydrometrics' responses to EPA May 1, 1992 comments on Asarco Technical Data Memorandum II conceptual model of site conditions

2. 4. 1. - 1029299
DATE: 06/23/92 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Linda Larson/Heller Ehrman White & McAuliffe
DESCRIPTION: Response to request for deadline extension for Baseline Risk Assessment - EPA approves Asarco's request for an extension until August 3, 1992.

2. 4. 1. - 0012211
DATE: 06/25/92 PAGES: 2
AUTHOR: Dana Davoli/EPA
ADDRESSEE: Craig Barber/EPA
DESCRIPTION: Development of Bioaccumulation Factors for the Asarco Superfund Site

4. 1. - 1029330
DATE: 06/29/92 PAGES: 12
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Section 6.6 of Draft RI Report with handwritten notes.

2. 4. 1. - 0012213
DATE: 06/30/92 PAGES: 1
AUTHOR: Robert C. Anderson/Hydrometrics, Inc.
ADDRESSEE: Joyce Tsuji/Kleinfelder, Inc.
DESCRIPTION: RI/FS Soils Concentration Maps

2. 4. 1. - 0012214
DATE: 07/01/92 PAGES: 138
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Review and Comments on Asarco Tacoma Plant Remedial Investigation (RI), June 1992

2. 4. 1. - 0012215
DATE: 07/02/92 PAGES: 22
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Revised Chemical Screening Tables

2. 4. 1. - 0012216
DATE: 07/07/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Section 6.6 of Draft Tacoma Plant Remedial Investigation Report - June 29, 1992

2. 4. 1. - 0012217
DATE: 07/10/92 PAGES: 2
AUTHOR: Bill Ryan/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Air Quality Components of Asarco Remedial Investigation - June 1992

2. 4. 1. - 0012218
DATE: 07/14/92 PAGES: 2
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Issues for Consideration Regarding the Tacoma Plant Risk Assessment - Onsite Surface Water Evaluation; Average Scenario; Subsurface Soil; Toxicity Criteria

2. 4. 1. - 0012219
DATE: 07/17/92 PAGES: 1
AUTHOR: Robert C. Anderson/Hydrometrics, Inc.
ADDRESSEE: Joyce Tsuji/Kleinfelder, Inc.
DESCRIPTION: Asarco Tacoma Smelter Soil Concentration Maps

2. 4. 1. - 0012096
DATE: 07/22/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Bruch Cochran/State of Washington Dept. of Ecology
DESCRIPTION: EPA Timeline for Review and Comment on the Revised Remedial Investigation Report for the Asarco Smelter Facility

2. 4. 1. - 0012221
DATE: 07/23/92 PAGES: 9
AUTHOR: Randy M. Pugh/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Self Extraction Instructions for EPA Lotus Data Files

2. 4. 1. - 0012222
DATE: 07/27/92 PAGES: 1
AUTHOR: Victor W. Sletten/Hydrometrics, Inc.
ADDRESSEE: Joyce Tsuji/Kleinfelder, Inc.
DESCRIPTION: Asarco Tacoma Smelter Soil Concentration Maps

2. 4. 1. - 1013378
DATE: 07/28/92 PAGES: 7
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Maps/schematic drawings of Asarco site and surrounding areas.

2. 4. 1. - 0012223
DATE: 07/29/92 PAGES: 4
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Joyce Tsuji/Kleinfelder, Inc.
DESCRIPTION: Response to Chemical of Concern Selection and Other Issues Regarding the Asarco On-Site Risk Assessment

2. 4. 1. - 0012224
DATE: 08/03/92 PAGES: 2
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal - Revised text sections for RI report

4. 1. - 0012225
DATE: 08/10/92 PAGES: 3
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Summary of Phone Meeting with Dana Davoli - August 6, 1992

2. 4. 1. - 0012226
DATE: 08/18/92 PAGES: 54
AUTHOR: Bert Bledsoe/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Statistical Analysis of 1991 Aresenic, Copper, Lead, and Zinc Data for SW-924 and Sequential Extraction Data, Asarco Site (91-R10-002)

2. 4. 1. - 1013021
DATE: 08/20/92 PAGES: 4
AUTHOR: Lori Cohen/EPA
ADDRESSEE: Jim Pankanin/PRC Engineering
DESCRIPTION: Technical Enforcement Support, Zone 4 EPA Contract No. 68-W9-009, Work Assignment 12C10006 Supplemental Feasibility Study for Asarco Sediment, comments on Draft Supplmental Feasibilty Study

2. 4. 1. - 0012227
DATE: 08/27/92 PAGES: 2
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Maximum Concentration Summary Data and 95th Percentile Exposure Statistics; Proposed Completion Date of the Risk Assessment

2. 4. 1. - 0012228
DATE: 08/31/92 PAGES: 30
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Updated Chemical Screening and Toxicity Criteria

2. 4. 1. - 0012229
DATE: 09/03/92 PAGES: 13
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Comments on Asarco's Revised Draft Remedial Investigation Report (July 31, 1992) and Response to Asarco's letter dated August 3, 1992

2. 4. 1. - 0012230
DATE: 09/10/92 PAGES: 67
AUTHOR: Bert Bledsoe/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Continued Analysis of Inorganic Data from the Asarco Tacoma Site

2. 4. 1. - 0012231
DATE: 09/11/92 PAGES: 12
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Risk Calculations for the Tacoma Plant Site

2. 4. 1. - 0012232
DATE: 09/14/92 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal - Feasibility Study Report

2. 4. 1. - 0012233
DATE: 09/18/92 PAGES: 5
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Updated Vegetable Risk Calculations for the Tacoma Plant Site

2. 4. 1. - 0012234
DATE: 09/23/92 PAGES: 2
AUTHOR: Unknown/ICF Kaiser
ADDRESSEE: Dana Davoli/EPA
DESCRIPTION: ICF's Review of Asarco On-Site Risk Characterization for On-Site Residents

2. 4. 1. - 0012235
DATE: 09/24/92 PAGES: 2
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Request for meeting to discuss EPA's September 3, 1992 letter regarding comments on the revised draft Remedial Investigation report

2. 4. 1. - 0012308
DATE: 09/30/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Receipt of Asarco's letter dated September 25, 1992, and Recent Asarco Deliverables, Confirmation of meeting

2. 4. 1. - 1013020
DATE: 10/09/92 PAGES: 1
AUTHOR: Lori Cohen/EPA
ADDRESSEE: Karen M. Stash/Roy F. Weston, Inc.
DESCRIPTION: Background information for the Asarco Supplemental FS

4. 1. - 0012238
DATE: 10/13/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Joyce Tsuji/Kleinfelder, Inc.
DESCRIPTION: Review of letters dated August 31, September 11, September 18, 1992

2. 4. 1. - 0012239
DATE: 10/15/92 PAGES: 19
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: EPA Comments on Draft Remedial Investigation Report (July 31, 1992)

2. 4. 1. - 0012240
DATE: 10/19/92 PAGES: 4
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Tables and Figures for EPA letter dated October 15, 1992

2. 4. 1. - 0012241
DATE: 10/20/92 PAGES: 44
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: EPA/WDOE comments on draft Feasibility Study received September 14, 1992

2. 4. 1. - 0012242
DATE: 10/23/92 PAGES: 16
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Inhalation Reference Concentration for Chromium

2. 4. 1. - 0012243
DATE: 10/30/92 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal - Asarco Tacoma Smelter RI Responses to September 3, 1992 EPA Comment Letter

2. 4. 1. - 0012244
DATE: 10/30/92 PAGES: 28
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response to EPA Comments of September 3, 1992 Regarding Asarco Tacoma Plant Revised Draft Remedial Investigation (RI) Report (July 31, 1992) and Responses to Asarco's Letter dated August 3, 1992

2. 4. 1. - 0012245
DATE: 11/03/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Clarification of EPA Position on Submission of Final Remedial Investigation

2. 4. 1. - 0012247
DATE: 11/12/92 PAGES: 28
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Remedial Investigation Responses to October 15, 1992 EPA Comment Letter

2. 4. 1. - 0012248
DATE: 11/12/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Issues for Videoconference

2. 4. 1. - 1002054
DATE: 11/12/92 PAGES: 6
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Detailed Analysis of Final Alternatives (Applied Geotechnology Inc.) - Example of outline for a detailed analysis of final FS alternatives

2. 4. 1. - 1002053
DATE: 11/19/92 PAGES: 6
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Asarco Smelter Feasibility Study - Distributed at meeting with Asarco on 11/19/92 after meeting several times to discuss 10/20/92 FS comment letter

2. 4. 1. - 0012250
DATE: 11/23/92 PAGES: 5
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Additional Information Pertaining to Production Well

2. 4. 1. - 0012251
DATE: 11/23/92 PAGES: 3
AUTHOR: Dana Davoli/EPA
ADDRESSEE: Steve Bradbury/EPA
DESCRIPTION: Assistance in Developing Water Quality Criteria for Anilines and Substituted Anilines

2. 4. 1. - 0012254
DATE: 12/15/92 PAGES: 3
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Remedial Investigation comments on letters dated October 30, 1992 and November 12, 1992

2. 4. 1. - 0012255
DATE: 12/16/92 PAGES: 11
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Comments regarding Asarco Tacoma Plant Yacht Club Breakwater Remedial Investigation Draft - October 1992

2. 4. 1. - 0012256
DATE: 12/17/92 PAGES: 3
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Packages of Alternatives for Asarco Smelter Feasibility Study - DRAFT

2. 4. 1. - 0012257
DATE: 12/18/92 PAGES: 3
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Bruce Cochran/State of Washington Dept. of Ecology
DESCRIPTION: Use of Sequential Extraction and SW-924 results for calculation of percentages

2. 4. 1. - 0012261
DATE: 01/05/93 PAGES: 10
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Summary of EPA's Notes on Feasibility Study Discussions

2. 4. 1. - 0012262
DATE: 01/06/93 PAGES: 1
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Judy Hockett/Department of Natural Resources
DESCRIPTION: Transmittal - Yacht Club Breakwater Remedial Investigation Report dated October 1992

2. 4. 1. - 0012263
DATE: 02/04/93 PAGES: 1
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Jim Montgomerie/Metropolitan Park District of Tacoma
DESCRIPTION: Transmittal - Yacht Club Breakwater Remedial Investigation dated January 1993

2. 4. 1. - 0012264
DATE: 02/04/93 PAGES: 1
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Judy Hockett/Washington Department of Natural Resources
DESCRIPTION: Transmittal - Yacht Club Breakwater Remedial Investigation Report dated January 1993

2. 4. 1. - 0012265
DATE: 02/04/93 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal - revised Feasibility Study Report

2. 4. 1. - 0012268
DATE: 02/08/93 PAGES: 87
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Responses to Comments dated October 20, 1992 on the Draft Feasibility Study Report

2. 4. 1. - 0012772
DATE: 03/15/93 PAGES: 20
AUTHOR: Pamela J. Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Comments on the Revised Asarco Tacoma Plant Yacht Club Breakwater Remedial Investigation Report (January 1993)

2. 4. 1. - 0012270
DATE: 03/18/93 PAGES: 5
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Bruce Cochran/State of Washington Dept. of Ecology
DESCRIPTION: Sequential Extraction and SW 924 Data for Slag from Asarco Tacoma Smelter Site and Tacoma Yachtclub Breakwater

2. 4. 1. - 0012271
DATE: 03/24/93 PAGES: 73
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: EPA's Comments on Interim Final Feasibility Study

2. 4. 1. - 1029300
DATE: 03/29/93 PAGES: 39
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached narrative descriptions, detailed analysis and cost estimates for the yacht club breakwater - with handwritt notes.

2. 4. 1. - 0012272
DATE: 03/30/93 PAGES: 2
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: EPA's Comments on Interim Final Feasibility Study

2. 4. 1. - 0012774
DATE: 04/08/93 PAGES: 7
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: EPA's comments on Draft Risk Assessment (December 1992)

2. 4. 1. - 0012779
DATE: 04/15/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Transmittal - Ecological Risk Assessment

2. 4. 1. - 0012782
DATE: 04/22/93 PAGES: 5
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Comments on Revised Yacht Club Breakwater Remedial Investigation (January 29, 1993)

2. 4. 1. - 0012784
DATE: 04/26/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Feasibility Study - response to letter dated March 30, 1993; confirmation of final FS deadline

2. 4. 1. - 0012809
DATE: 05/03/93 PAGES: 5
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA's and Asarco's agreed upon responses on EPA's FS comment letter dated March 24, 1993

2. 4. 1. - 1013284
DATE: 05/05/93 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Transmittal of revised copy of Ecological Risk Assessment

2. 4. 1. - 0012873
DATE: 05/14/93 PAGES: 4
AUTHOR: Pamela J. Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Summary of Results of Sequential Extraction of Soils

2. 4. 1. - 0012927
DATE: 05/17/93 PAGES: 1
AUTHOR: B. Duncan/EPA
ADDRESSEE: Joyce Tsuji/Kleinfelder, Inc.
DESCRIPTION: Derivation of "Final Acute Value" for Aniline, based on available data through 12/91 and following procedures in Stephan et al., 1985 (p 31 and Appendix 2)

2. 4. 1. - 0012874
DATE: 05/18/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Revised Risk Assessment submittal of text and tables

2. 4. 1. - 1029301
DATE: 05/18/93 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: EPA decision that submittal of only the revised text and tables for the Risk Assessment shall be submitted by Asarco by June 1, 1993 and will note additional modifications if necessary after review.

2. 4. 1. - 0012883
DATE: 05/21/93 PAGES: 12
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response to EPA Comments on Revised Yacht Club Breakwater Remedial Investigation (Jan. 29, 1993)

2. 4. 1. - 0012908
DATE: 05/24/93 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal for Asarco Tacoma FS Report

2. 4. 1. - 0012882
DATE: 05/25/93 PAGES: 4
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Yacht Club Breakwater Feasibility Study Alternatives - Comments

2. 4. 1. - 0012917
DATE: 05/28/93 PAGES: 143
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response to EPA and Washington State Department of Ecology's Comments (dated April 8, 1993) on the Draft Risk Assessment for the Tacoma Plant

2. 4. 1. - 0012974
DATE: 06/02/93 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA's and Asarco's agreed upon responses for EPA's comments on Asarco's HELP Model Evaluation dated March 24, 1993

2. 4. 1. - 1013674
DATE: 06/11/93 PAGES: 10
AUTHOR: Pamela J. Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper L. Peterson/EPA
DESCRIPTION: Evaluations of Tidal Data Distribution and the Conceptual Flow Model at the Asarco Yacht Club Breakwater

2. 4. 1. - 0012965
DATE: 06/14/93 PAGES: 6
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal and Response to EPA comments letters on the Yacht Club Breakwater FS (dated May 25, 1993)

2. 4. 1. - 1002026
DATE: 06/16/93 PAGES: 3
AUTHOR: Unknown/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Soil Target Levels

2. 4. 1. - 1013677
DATE: 06/24/93 PAGES: 2
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Memorandum subject: Final review comments on the Feasibility Study, May 1993

2. 4. 1. - 1002076
DATE: 06/28/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Review of Asarco's Responses to EPA Comment Letter dated April 22, 1993, regarding the Revised Yacht Club Breakwater Remedial Investigation Report (January 29, 1993)

2. 4. 1. - 1002005
DATE: 06/29/93 PAGES: 16
AUTHOR: Bruce A. Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Comments on Asarco Draft Final Feasibility Study, Dated May 24, 1993

2. 4. 1. - 1002075
DATE: 06/29/93 PAGES: 3
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Joyce S. Tsuji/Kleinfelder, Inc.
DESCRIPTION: EPA's Response to Comments to Kleinfelder letter dated May 28, 1993, regarding Draft Human Health Risk Assessment

2. 4. 1. - 1002083
DATE: 07/01/93 PAGES: 4
AUTHOR: Bruce Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Comments on Soil Treatability Studies, Section 4.2 and Appendix 4-2 of the Asarco Draft Final Feasibility Study

2. 4. 1. - 1002078
DATE: 07/09/93 PAGES: 14
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Comments on Asarco's final Remedial Investigation Report, dated January 22, 1993, final Feasibility Study, dated May 24, 1993, and responses to EPA's Yacht Club Breakwater Feasibility Study comments dated May 25, 1993

2. 4. 1. - 1002040
DATE: 07/12/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Additional Comment on Asarco's final Feasibility Study, dated May 24, 1993

2. 4. 1. - 1002120
DATE: 07/26/93 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Regarding Final Feasibility Study page revisions-Asarco Smelter Facility.

4. 1. - 1002123
DATE: 08/10/93 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Re: RI/FS Reports Comment Letter dated July 9, 1993 and July 12, 1993

2. 4. 1. - 1002121
DATE: 08/16/93 PAGES: 3
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: RE: EPA Comments on Asarco's RI/FS Reports Response to Comments Letter dated August 10, 1993-Asarco Smelter Facility

2. 4. 1. - 1002122
DATE: 08/16/93 PAGES: 18
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Joyce S. Tsuji/Kleinfelder, Inc.
DESCRIPTION: RE: Comments on Final Asarco Tacoma Plan On-Property Baseline Human Health Risk Assessment, dated July 1993

2. 4. 1. - 1002178
DATE: 08/27/93 PAGES: 2
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: RE: copies sent of plant site RI, FS and Breakwater RI

2. 4. 1. - 1002150
DATE: 08/30/93 PAGES: 2
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: RE: Asarco Tacoma RI and FS Reports Replacement Pages

2. 4. 1. - 1013014
DATE: 10/01/93 PAGES: 1
AUTHOR: Robert J. Miller/Hydometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Tacoma RI and FS Graphics Presentation Request by EPA

2. 4. 1. - 1013012
DATE: 10/08/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Errata sheet for the final Feasibility Study (8/20/93) Asarco Smelter Facility

2. 4. 1. - 1013290
DATE: 01/25/94 PAGES: 2
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Tacoma FS - Fine ore bins and other remaining structure demolition costs

2. 4. 1. - 1013578
DATE: 04/01/94 PAGES: 3
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Celia Barton/Washington State Department of Natural Resources
DESCRIPTION: Leaching behavior of freshly exposed slag at the Asarco Tacoma Smelter site

2. 4. 1. - 1013754
DATE: 05/02/94 PAGES: 6
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and cost estimate summary table for Feasibility Study alternatives and modifications using recent information developed relative to new OCF concepts, the post-RI/FS monitoring program and soil treatability cost updates.

2. 4. 1. - 1013968
DATE: 05/02/94 PAGES: 6
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Same as document #1013754 with notations.

2. 4. 1. - 1013755
DATE: 06/01/94 PAGES: 3
AUTHOR: Bob Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Fax transmittal cover sheet and attached site wide action cost estimates tables

2. 4. 1. - 1013976
DATE: 07/22/94 PAGES: 3
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Cover letter and attached cost comparison summaries of EPA's proposed plan summary and FS alternatives.

4. 1. - 1013977
DATE: 08/16/94 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter regarding tasks associated with OCF O & M costs.

2. 4. 1. - 1029302
DATE: 08/16/94 PAGES: 3
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter regarding tasks associated with OCF O & M costs with attached site wide action cost estimates - handwritten notes in margins.

2. 4. 1. - 1013978
DATE: 08/18/94 PAGES: 2
AUTHOR: Pamela Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter providing requested map concerned with soil volume estimates outside of known source areas - photo copy of map attached.

2. 4. 1. - 1013980
DATE: 12/06/94 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter giving Asarco requested authorization to abandon production well on the Asarco Smelter site.

2. 4. 1. - 1013981
DATE: 12/13/94 PAGES: 1
AUTHOR: Jeff Cross/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter stating Hydrometrics' intent to abandon the production well at the Asarco property in Ruston, Washington on Dec. 19 and 21 of 1994, and MW-123 on Dec. 20, which was damaged during demolition activities and is not part of Post RI.

2. 4. 1. - 1029249
DATE: 01/09/95 PAGES: 3
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Richard Grotzke/Bureau of Reclamation
DESCRIPTION: Letter requesting independent analysis of cost estimates for cleanup at the former Asarco Tacoma Smelter Superfund site in Tacoma/Ruston, Washington.

2. 4. 1. - 1029250
DATE: 02/07/95 PAGES: 15
AUTHOR: Robert A. Baumgarten/U.S. Department of the Interior
ADDRESSEE: Piper L. Peterson/EPA
DESCRIPTION: Cover letter with attached Review of Cost Estimates - Former Asarco Tacoma Smelter Superfund Site.

2. 4. 1. - 1029281
DATE: 02/24/95 PAGES: 1
AUTHOR: Todd Farish/Unknown
ADDRESSEE: Bob Miller/Unknown
DESCRIPTION: Memorandum: Re: Precipitation Data for Tacoma, WA.

2. 4. 1. - 1029297
DATE: 03/11/95 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Michael Isensee/Citizens for a Healthy Bay
DESCRIPTION: Cover letter for Pilot Scale Treatability Testing/Analytical Summary Supplement - Summary not attached.

2. 4. 1. - 1029333
DATE: 03/16/95 PAGES: 6
AUTHOR: Karen M Stash/Roy F. Weston, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter and attached Roy F. Weston responses to EPA's Jan. 19, 1995 list of questions regarding the technical feasibility of shoreline armoring.

SUB-HEAD: 2. 4. 2. FINAL Remedial Investigation

2. 4. 2. - 0012660
DATE: 03/31/93 PAGES: 625
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Volume 2 - Appendices, Asarco Tacoma Plant Remedial Investigation Tacoma, Washington

2. 4. 2. - 0012661
DATE: 03/31/93 PAGES: 553
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Volume 3 - Appendices, Asarco Tacoma Plant Remedial Investigation Tacoma, Washington

4. 2. - 0012659
DATE: 08/20/93 PAGES: 446
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Volume 1 - Text, Asarco Tacoma Plant Remedial Investigation Tacoma, Washington (Most of volume is 3/31/93 version, with revised pages as of 8/20/93)

SUB-HEAD: 2. 4. 2. 1 Draft RI

2. 4. 2. 1 - 0012949
DATE: 08/31/89 PAGES: 183
AUTHOR: Unknown/Environmental Toxicology International, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Volume 4 - Baseline Risk Assessment; Final Report, Asarco Tacoma Smelter Remedial Investigation

2. 4. 2. 1 - 0012652
DATE: 06/01/92 PAGES: 367
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Superseded Draft RI Report Volume 1 material, replaced by July 1992 revisions

2. 4. 2. 1 - 0012212
DATE: 06/29/92 PAGES: 12
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Draft RI/FS Report Section 6.6

2. 4. 2. 1 - 0012653
DATE: 06/30/92 PAGES: 347
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Superseded Draft RI Volume 2 material, replaced with July 1992 revisions

2. 4. 2. 1 - 0012654
DATE: 06/30/92 PAGES: 377
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Superseded Draft RI Volume 3 material, replaced with July 1992 revisions

2. 4. 2. 1 - 0012656
DATE: 07/31/92 PAGES: 267
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Superseded RI Volume 1 Material replaced with January 1993 revisions

2. 4. 2. 1 - 0012657
DATE: 07/31/92 PAGES: 210
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Superseded RI Volume 3 material, replaced with January 1993 revisions

2. 4. 2. 1 - 0012655
DATE: 08/03/92 PAGES: 392
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter incl. comments/Superseded RI Volume 1 material, replaced with January 1993 revisions

2. 4. 2. 1 - 0012742
DATE: 10/30/92 PAGES: 132
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Asarco Tacoma Plant Yacht Club Breakwater Remedial Investigation Tacoma, Washington - Draft Report

2. 4. 2. 1 - 1002151
DATE: 01/22/93 PAGES: 5
AUTHOR: Hydrometrics, Inc./Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Pages of draft Remedial Investigation Report that were revised with replacement pages on August 20, 1993

2. 4. 2. 1 - 0012743
DATE: 01/29/93 PAGES: 153
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Asarco Tacoma Plant Yacht Club Breakwater Remedial Investigation Tacoma, Washington, revised January 1993 (See document 2.4.2.1-1002189 for revised pages dated August 23, 1993)

4. 2. 1 - 0012658
DATE: 03/18/93 PAGES: 63
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: RI Report Appendix B and Exhibit 2-1, Updates/superseded material dated July 1992

2. 4. 2. 1 - 1002189
DATE: 08/23/93 PAGES: 2
AUTHOR: Hydrometrics, Inc./Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Revised pages to Asarco Tacoma Plant Yacht Club Breakwater Remedial Investigation Report that is dated 1/29/93 (See document 2.4.2.1-0012743 dated 1/29/93 for full report)

SUB-HEAD: 2. 4. 2. 2 Technical Data Memorandum (I & II)

2. 4. 2. 2 - 0012662
DATE: 10/15/91 PAGES: 253
AUTHOR: Unknown/Parametrix
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Tacoma Smelter Supplemental RI/FS Site Investigations Technical Data Memorandum

2. 4. 2. 2 - 0012739
DATE: 03/31/92 PAGES: 402
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Asarco Incorporated Smelter RI/FS Technical Memorandum Conceptual Model of Site Conditions

2. 4. 2. 2 - 1002086
DATE: 03/31/92 PAGES: 9
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Superseded Pages from Asarco Tacoma Smelter RI/FS Technical Memorandum Conceptual Model of Site Conditions

2. 4. 2. 2 - 1013683
DATE: 03/31/92 PAGES: 8
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Report: Asarco Tacoma Smelter RI/FS Technical Memorandum - Conceptual Model of Site Conditions - Revised June 19, 1992

2. 4. 2. 2 - 0012736
DATE: 06/19/92 PAGES: 29
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response to EPA comments on the March 31, 1992 Technical Memorandum describing development of the conceptual hydrogeochemical model of the Tacoma Smelter

SUB-HEAD: 2. 4. 3. FINAL Feasibility Study

2. 4. 3. - 0012966
DATE: 05/24/93 PAGES: 12
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Pages from Final FS (5/24/93), Volume 1 & Volume 5, replaced with 6/14/93 revisions

2. 4. 3. - 1002145
DATE: 08/01/93 PAGES: 631
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Feasibility Study Volume 3 - Appendices

2. 4. 3. - 1002146
DATE: 08/01/93 PAGES: 535
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Feasibility Study Volume 1 - Text & Exhibits

2. 4. 3. - 1002147
DATE: 08/01/93 PAGES: 566
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Feasibility Study Volume 2 - Appendices

2. 4. 3. - 1002148
DATE: 08/01/93 PAGES: 453
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Feasibility Study Volume 4 - Appendices

2. 4. 3. - 1002149
DATE: 08/01/93 PAGES: 374
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Feasibility Study Volume 5 - Appendices

SUB-HEAD: 2. 4. 3. 1 Draft FS

2. 4. 3. 1 - 0012815
DATE: 05/01/89 PAGES: 29
AUTHOR: Unknown/Parametrix, Hart Crowser
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Remedial Alternatives Identification, Asarco Tacoma Smelter RI/FS, Draft Report

2. 4. 3. 1 - 0012814
DATE: 07/09/92 PAGES: 32
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Feasibility Study for the Asarco Tacoma Plant - Table of Contents, Initial Screening of Technologies and Process Options, Evaluation of Potentially Applicable Process Options

2. 4. 3. 1 - 0012663
DATE: 09/30/92 PAGES: 255
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Volume 1 - Text & Exhibits, Asarco Tacoma Plant, Feasibility Study Tacoma, Washington

2. 4. 3. 1 - 0012664
DATE: 09/30/92 PAGES: 571
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Volume 2 - Appendices, Asarco Tacoma Plant Feasibility Study Tacoma, Washington

2. 4. 3. 1 - 0012665
DATE: 02/02/93 PAGES: 341
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Volume 1 - Text & Exhibits, Asarco Tacoma Plant Feasibility Study Tacoma, Washington

2. 4. 3. 1 - 0012666
DATE: 02/02/93 PAGES: 611
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Volume 2 - Appendices, Asarco Tacoma Plant Feasibility Study Tacoma, Washington

2. 4. 3. 1 - 0012667
DATE: 02/02/93 PAGES: 378
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Volume 3 - Appendices, Asarco Tacoma Plant Feasibility Study Tacoma, Washington

2. 4. 3. 1 - 0012775
DATE: 04/07/93 PAGES: 41
AUTHOR: Donna Elser/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal/Report - Preliminary Breakwater Remedial Action Alternatives

2. 4. 3. 1 - 0012792
DATE: 04/22/93 PAGES: 16
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Tacoma Smelter FS - Breakwater Alternative Comparative Analysis

2. 4. 3. 1 - 1002152
DATE: 05/24/93 PAGES: 346
AUTHOR: Hydrometrics, Inc./Unknown
ADDRESSEE: Asarco/Unknown
DESCRIPTION: ASARCO TACOMA PLANT, FEASIBILITY STUDY, Tacoma, WA- Pages from May 1993 draft report that have been replaced with August 1993 revised pages. See Section 2.4.3 for final report.

SUB-HEAD: 2. 4. 4. FINAL Risk Assessment

2. 4. 4. - 0012894
DATE: 04/30/93 PAGES: 12
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Tacoma Smelter Superfund Site Operable Unit 02, Technical Memorandum: Ecological Risk Assessment

2. 4. 4. - 1002088
DATE: 07/23/93 PAGES: 153
AUTHOR: Unknown/Kleinfelder, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Final On-Property Baseline Human Health Risk Assessment, Asarco Tacoma Plant, Tacoma, Washington

2. 4. 4. - 1002190
DATE: 09/01/93 PAGES: 38
AUTHOR: Joyce S. Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/ASARCO Incorporated (sic, Ms. Peterson is EPA
DESCRIPTION: Cover letter and revised pages for Final Health Risk Assessment for the Tacoma Plant Site

SUB-HEAD: 2. 4. 4. 1 Workplan

2. 4. 4. 1 - 0012670
DATE: 03/27/92 PAGES: 19
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Workplan for Completion of the Draft Risk Assessment.

2. 4. 4. 1 - 0012189
DATE: 04/22/92 PAGES: 18
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Final Workplan for Completion of Draft Risk Assessment

SUB-HEAD: 2. 4. 4. 2 Draft Risk Assessment

2. 4. 4. 2 - 0012669
DATE: 08/31/89 PAGES: 183
AUTHOR: Unknown/Environmental Toxicology International, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Volume 4 - Baseline Risk Assessment, Final Report, Asarco Tacoma Smelter Remedial Investigation

2. 4. 4. 2 - 0012671
DATE: 12/07/92 PAGES: 151
AUTHOR: Joyce Tsuji/Kleinfelder, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Draft Health Risk Assessment for the Tacoma Plant Site

2. 4. 4. 2 - 1002089
DATE: 01/05/93 PAGES: 10
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Asarco On Site Preliminary Ecological Assessment - DRAFT

SUB-HEAD: 2. 5. 1. Correspondence

2. 5. 1. - 1013982
DATE: / / PAGES: 9
AUTHOR: Thomas W. Nobles/Treatment Technology Group, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter out-lining bench-scale laboratory treatability study for acid extraction of contaminated soils from the Asarco Tacoma Smelter Superfund site - multiple attachments.

2. 5. 1. - 1013983
DATE: 10/01/87 PAGES: 23
AUTHOR: Margaret Stinson/Washington State Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Report titled: Metals Concentrations in Asarco Discharges and Receiving Waters Following Plant Closure; report co-authored by Dale Norton - dated Oct. 1987.

2. 5. 1. - 0012672
DATE: 05/09/89 PAGES: 5
AUTHOR: Keith Rose/EPA
ADDRESSEE: Curtis Dungey/Asarco, Inc.
DESCRIPTION: Asarco Cleanup Objectives for the Feasibility Study

2. 5. 1. - 0012673
DATE: 06/26/89 PAGES: 2
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Asarco Cleanup Objectives/ARARs

2. 5. 1. - 0012674
DATE: 08/14/89 PAGES: 4
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Explanation of why the remedial action objectives table in the draft feasibility study differs from the cleanup objective table provided by EPA in May 9, 1989 letter

2. 5. 1. - 0012752
DATE: 09/15/89 PAGES: 6
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Notes from meeting with Asarco on August 31, 1989, Two topics (1) compliance monitoring at the shoreline and (2) Letter addressed to Keith Rose from Asarco dated August 29, 1989

2. 5. 1. - 0012676
DATE: 05/31/90 PAGES: 14
AUTHOR: Unknown/State of Washington Transportation Improvement Board
ADDRESSEE: Verna Holbrook/Town of Ruston
DESCRIPTION: Transportation Improvement Account Small City Preliminary Prospectus

2. 5. 1. - 0012678
DATE: 08/16/90 PAGES: 6
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Asarco Tacoma Smelter RI/FS; Parametrix memorandum dealing with Commencement Bay background concentrations of copper

2. 5. 1. - 0012916
DATE: 10/17/90 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Technical Meeting Attendance List

2. 5. 1. - 0012679
DATE: 11/26/90 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Robert M. Pudlo/Town of Ruston
DESCRIPTION: Realignment of Ruston Way, Asarco's concerns

2. 5. 1. - 0012959
DATE: 03/13/91 PAGES: 9
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Peggy Justus/EPA
DESCRIPTION: Summary of existing data for evaluation in terms of ranges of EP Tox values (TCLP protocol)

2. 5. 1. - 0012681
DATE: 04/25/91 PAGES: 3
AUTHOR: Teresa Michelsen/PTI Environmental Services
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: MTCA Review of Asarco RAOs...Enforcement Support for Demolition at the Asarco Upland Site

2. 5. 1. - 0012682
DATE: 04/30/91 PAGES: 5
AUTHOR: Teresa Michelsen/PTI Environmental Services
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Asarco's Proposed Background Copper Concentration...Enforcement Support for Demolition at the Asraco Upland Site

2. 5. 1. - 1013055
DATE: 05/01/91 PAGES: 8
AUTHOR: Unknown/PTI Environmental Services
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Technical Memorandum NO. 2: Comments on Proposed Groundwater RI/FS Activities for the Asarco Upland Site

2. 5. 1. - 1013056
DATE: 05/24/91 PAGES: 9
AUTHOR: Teresa Michelsen/PTI Environmental Services
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of detection limits and MCLs, Minutes of RAO meeting and enforcement support for demolition at the Asarco Upland Site

2. 5. 1. - 0012683
DATE: 06/04/91 PAGES: 4
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: EPA/WDOE approach to requirement to evaluate treatment alternatives as part of the feasibility study

2. 5. 1. - 0012684
DATE: 06/04/91 PAGES: 5
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Background Water Quality in Commencement Bay - Copper

2. 5. 1. - 0012685
DATE: 06/24/91 PAGES: 3
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Comments on Hydrometric's memorandum dated April 1, 1991, "Hydrogeochemical Modeling, Asarco - Tacoma Plant"

2. 5. 1. - 0012686
DATE: 06/24/91 PAGES: 6
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Evaluation of the On-Site Containment Facility Siting Report

2. 5. 1. - 0012687
DATE: 07/23/91 PAGES: 5
AUTHOR: Unknown/David Evans and Associates, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Alternative Alignment's Map, typical road sections

5. 1. - 0012688
DATE: 07/25/91 PAGES: 13
AUTHOR: Ray Lazuk/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Hydrometrics' response to EPA letter of June 24, 1991 concerning hydrogeochemical modeling of the Tacoma smelter site

2. 5. 1. - 1013984
DATE: 07/26/91 PAGES: 7
AUTHOR: Teresa Michelsen/PTI Environmental Services
ADDRESSEE: Peggy Justus/EPA
DESCRIPTION: Draft review of stack data and evaluation of the need for a bottom liner in the interim storage area near the stack.

2. 5. 1. - 0012689
DATE: 08/01/91 PAGES: 3
AUTHOR: Tom Schadt/Parametrix, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Initial response to EPA comments of June 24, 1991, pertaining to the On-Site Containment Facility Siting Report

2. 5. 1. - 1029331
DATE: 08/01/91 PAGES: 3
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Initial response to EPA comments of June 24, 1991, pertaining to the On-Site Containment Facility Siting Report - with handwritten notes.

2. 5. 1. - 1013054
DATE: 08/11/91 PAGES: 2
AUTHOR: Teresa Michelsen/PTI Environmental Services
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Remedial action objectives for the Asarco On-property Operable Unit Preliminary Review Draft, enforcement support for demolition at the Asarco Upland site

2. 5. 1. - 0012691
DATE: 08/20/91 PAGES: 5
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover Letter and distribution list pertaining to vendors being solicited for treatment evaluation information

2. 5. 1. - 0012692
DATE: 08/22/91 PAGES: 3
AUTHOR: Teresa Michelsen/PTI Environmental Services
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Remedial Action Objectives for the Asarco On Property Operable Unit

2. 5. 1. - 0012693
DATE: 08/26/91 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Bob Stamnes/EPA
DESCRIPTION: Invitation to participate in a technical team to direct a literature review to be performed by Asarco

2. 5. 1. - 0012945
DATE: 08/27/91 PAGES: 7
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Comments on: 1.)RI/FS Supplemental Site Characterization Sampling and Analysis Plan (SAP) - June 1991; 2.)Tidal Study; 3.)conceptual and predictive groundwater models; 4.)technical memoranda in RI/FS project schedule; 5.)RI/FS Schedule

2. 5. 1. - 0012694
DATE: 09/03/91 PAGES: 1
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Request for information to assist in review of the proposed Remedial Action Objectives

2. 5. 1. - 0012695
DATE: 09/22/91 PAGES: 18
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Supporting Information for Proposed Remedial Action Objectives

2. 5. 1. - 0012696
DATE: 09/27/91 PAGES: 3
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Data Management Plan Revisions

2. 5. 1. - 0012697
DATE: 10/09/91 PAGES: 4
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Responses address comments pertaining to the Smelter Site RI/FS Data Management Plan as transmitted in EPA September 27, 1991 letter

2. 5. 1. - 0012698
DATE: 10/09/91 PAGES: 3
AUTHOR: Kenneth Wilkowski/EPA
ADDRESSEE: Robert Stamnes/EPA
DESCRIPTION: List of Vendors not on Asarco site list

2. 5. 1. - 1029334
DATE: 10/15/91 PAGES: 1
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for three copies of the Technical Data Memorandum - copies not attached.

2. 5. 1. - 1029303
DATE: 11/19/91 PAGES: 13
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached materials regarding preliminary summary of the work completed to date by Parametrix regarding the Treatability Literature study.

2. 5. 1. - 1002179
DATE: 12/09/91 PAGES: 4
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco smelter - requirements under federal and state law for treatment and disposal of contaminated soil

2. 5. 1. - 0012700
DATE: 12/20/91 PAGES: 14
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Comments on Treatability Literature Review - dated November 19, 1991

2. 5. 1. - 0012702
DATE: 01/15/92 PAGES: 1
AUTHOR: James M. Gillie/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Sending one copy of the Asarco Tacoma Smelter RI/FS On-Site Containment Facility Siting Report

2. 5. 1. - 1002032
DATE: 01/29/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Additional Water Level Measurements - January through May 1992 and Final Data Management Plan

2. 5. 1. - 0012703
DATE: 01/30/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Receipt of On-Site Containment Facility Report - Asarco Smelter Facility, January 28, 1992

2. 5. 1. - 0012905
DATE: 02/26/92 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Revised Data Management Plan for the Asarco Tacoma Smelter Remedial Investigation, Parametrix, Inc., February 14, 1992

2. 5. 1. - 0012704
DATE: 03/02/92 PAGES: 6
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Evaluation of the On-Site Containment Facility Siting Report (January 1992)

2. 5. 1. - 1013686
DATE: 03/20/92 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Confirming receipt of information for the first Technical Data Memorandum #1 - March 3, 1992

2. 5. 1. - 1002055
DATE: 03/23/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Comments regarding Asarco's Treatability Technologies Literature Review - February 7, 1992

2. 5. 1. - 1013053
DATE: 03/31/92 PAGES: 1
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Hydrogeochemical model technical memorandum

5. 1. - 0012708
DATE: 05/01/92 PAGES: 15
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: EPA comments on Asarco's Technical Data Memorandum II and Conceptual Model of Site Conditions

2. 5. 1. - 0012710
DATE: 05/18/92 PAGES: 5
AUTHOR: Kenneth Wilkowski/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Potential Remediation Technologies for Application to the Asarco Site in Tacoma, WA

2. 5. 1. - 0012713
DATE: 07/13/92 PAGES: 6
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Onsite Containment Facility Siting Report response to comments

2. 5. 1. - 0012714
DATE: 08/28/92 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal for Asarco Tacoma Smelter Treatability Work Plans

2. 5. 1. - 0012715
DATE: 08/31/92 PAGES: 1
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal for Asarco's response paper for Tacoma Plant Site RAOs and report describing development of a soil leaching and solute transport model

2. 5. 1. - 0012716
DATE: 09/02/92 PAGES: 1
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal for RAO and Soil Leaching/Solute Transport Model documents

2. 5. 1. - 0012718
DATE: 09/08/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Bill Sullivan/Puyallup Tribe of Indians
DESCRIPTION: Asarco Draft Reports for the Tacoma Smelter Facility - Predictive Model, Proposed RAOs

2. 5. 1. - 0012719
DATE: 09/10/92 PAGES: 67
AUTHOR: Bert Bledsoe/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Continued Analysis of Inorganic Data from the Asarco Tacoma Site

2. 5. 1. - 0012307
DATE: 09/30/92 PAGES: 2
AUTHOR: Bruce Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Smelter Site-Specific Seafood Residue Study

2. 5. 1. - 0012646
DATE: 09/30/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Receipt of Asarco's letter dated September 25, 1992, and Recent Asarco Deliverables - Asarco Tacoma Smelter, Operable Unit 02, confirmation of meeting

2. 5. 1. - 0012720
DATE: 10/02/92 PAGES: 20
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: EPA's comments on Asarco's Analysis of Soil Metal Leaching and Solute Transport in Groundwater (August 31, 1992)

2. 5. 1. - 0012722
DATE: 10/14/92 PAGES: 22
AUTHOR: Steven D. Acree/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Statistical Evaluation of Inorganic Data - copy of pages 5-7; Scatter Diagrams (Figures 1-16)

2. 5. 1. - 0012723
DATE: 10/14/92 PAGES: 4
AUTHOR: Kenneth Wilkowski/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of Document on Soil Treatability Testing Program for the Asarco Site in Tacoma, WA

2. 5. 1. - 0012724
DATE: 10/15/92 PAGES: 1
AUTHOR: Catherine Massimino/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco On-Site Containment Facility - Comments

5. 1. - 0012725
DATE: 10/19/92 PAGES: 4
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Tables and Figures for EPA letter dated October 15, 1992

2. 5. 1. - 0012726
DATE: 10/19/92 PAGES: 7
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Soils, Ground Water and Surface Water Treatability Work Plans - Asarco Smelter Facility

2. 5. 1. - 0012727
DATE: 11/10/92 PAGES: 9
AUTHOR: Raymond Lazuk/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: EPA Comments on Soil Leaching and Solute Transport Model, Tacoma Smelter Site

2. 5. 1. - 0012939
DATE: 11/26/92 PAGES: 65
AUTHOR: Michael Elias/Clement International Corporation
ADDRESSEE: Dana Davoli/EPA
DESCRIPTION: Supporting documents for development of preliminary surface water criteria for the aniline compounds detected at the Asarco site

2. 5. 1. - 0012951
DATE: 12/01/92 PAGES: 253
AUTHOR: Steven Bradbury/EPA
ADDRESSEE: Dana Davoli/EPA
DESCRIPTION: Memo - Assistance in Developing Hazard Levels for Anilines and Substituted Anilines; Attachments

2. 5. 1. - 0012728
DATE: 12/15/92 PAGES: 3
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Review of Ground Water and Surface Water Treatability Work Plan - August 1992

2. 5. 1. - 0012729
DATE: 01/06/93 PAGES: 7
AUTHOR: Sally Marquis/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Water Quality Standards Issues Related to Asarco

2. 5. 1. - 0012644
DATE: 01/12/93 PAGES: 1
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response to request for scope of work on two projects that Parametrix is working on

2. 5. 1. - 0012645
DATE: 01/12/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Response to Soil Leaching Memorandum (Hydrometrics) dated November 10, 1992 - Asarco Tacoma Smelter Facility

2. 5. 1. - 0012269
DATE: 02/17/93 PAGES: 13
AUTHOR: Unknown/David Evans and Associates, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Ruston Wetland Inventory

2. 5. 1. - 0012730
DATE: 02/23/93 PAGES: 5
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Tacoma Smelter FS - Comment Responses on the Water Treatability Work Plan

2. 5. 1. - 0012731
DATE: 02/23/93 PAGES: 5
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Soil Treatability Work Plan Comment Responses, and Procedure Revisions

2. 5. 1. - 0012273
DATE: 04/06/93 PAGES: 3
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: EPA's Comments on Shoreline Monitoring Station

2. 5. 1. - 0012797
DATE: 04/12/93 PAGES: 5
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response to EPA Comments on Proposed Shoreline Monitoring Station

5. 1. - 0012977
DATE: 04/14/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Comments Regarding Well B-34 -- Asarco Tacoma Smelter Facility

2. 5. 1. - 0012780
DATE: 04/19/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Sequential Extraction - clarification of protocol used by Asarco to conduct sequential extraction on slag and soils located at facility

2. 5. 1. - 0012790
DATE: 04/27/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Pete Katich/Tacoma Public Works Department
DESCRIPTION: Transmittal - documents regarding Installation of Shoreline Monitoring Station

2. 5. 1. - 0012791
DATE: 04/27/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Randy Carman/Department of Fisheries
DESCRIPTION: Transmittal - documents regarding Installation of Shoreline Monitoring Station

2. 5. 1. - 1029304
DATE: 04/28/93 PAGES: 3
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: FAXed cover letter and attached material relating to the Water Treatability Work Plan Comment letter dated Feb. 23, 1993 - parameter list for the work plan (Table 8-1).

2. 5. 1. - 0012812
DATE: 04/30/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Revised Shoreline Monitoring Station Comments

2. 5. 1. - 0012807
DATE: 05/03/93 PAGES: 1
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Sequential Extraction - Protocol Clarification

2. 5. 1. - 0012881
DATE: 05/20/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Groundwater/Surface Water and Soils Treatability Studies

2. 5. 1. - 0012909
DATE: 05/27/93 PAGES: 2
AUTHOR: Kathlyn C. Mills/City of Tacoma, Dept. of Public Works
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Installation of Shoreline Monitoring Station at Asarco Tacoma Smelter Facility - Comments

2. 5. 1. - 0012968
DATE: 06/01/93 PAGES: 5
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response to EPA Comment Letters dated April 30, 1993, regarding 1) Sampling and Analysis Plan for Shoreline Monitoring Station, and 2) Revised Shoreline Monitoring Station Comments

2. 5. 1. - 0012872
DATE: 06/02/93 PAGES: 3
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Standard Operating Procedure for Sampling Shoreline Monitoring Station

2. 5. 1. - 0012958
DATE: 06/03/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Substantive Requirements for Shoreline Monitoring Well

2. 5. 1. - 0012982
DATE: 06/11/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Approval of Shoreline Monitoring Station and Response to Asarco's letters dated June 1 and June 2, 1993, regarding the Shoreline Monitoring Station and Sampling and Analysis Plan - Asarco Smelter Facility

5. 1. - 0012991
DATE: 06/14/93 PAGES: 3
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal and Response to EPA Comments (dated May 20, 1993) on Treatability Studies

2. 5. 1. - 1013688
DATE: 06/24/93 PAGES: 18
AUTHOR: Pamela J. Bridgen/ICF Technology Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Literature search for articles concerning tidal influences on groundwater in peninsulas

2. 5. 1. - 1013689
DATE: 06/30/93 PAGES: 2
AUTHOR: Kenneth Wilkowski/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of result of treatability studies for the Asarco site

2. 5. 1. - 1013690
DATE: 07/01/93 PAGES: 6
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Malcom Field/EPA
DESCRIPTION: Request for assistance regarding a potential for conducting a Tracer Test at the Asarco site

2. 5. 1. - 1002085
DATE: 07/26/93 PAGES: 1
AUTHOR: Linda S. Schofield/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Tacoma Smelter Treatability Literature Study Report

2. 5. 1. - 1013052
DATE: 08/17/93 PAGES: 59
AUTHOR: Pamela J. Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Graphs for concentration vs depth for metals

2. 5. 1. - 1013051
DATE: 09/16/93 PAGES: 75
AUTHOR: Catherine Massimino/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response to request for assistance in reviewing the impact of the addition of Ruston residential soil to Asarco Smelter Site

2. 5. 1. - 1013050
DATE: 09/23/93 PAGES: 13
AUTHOR: Pamela J. Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Status report on Treatability studies for removal of arsenic and metals from groundwater and surface water and stabilization of arsenic and metals

2. 5. 1. - 1013048
DATE: 09/28/93 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Michael Thorp/Heller Ehrman White & McAuliffe
DESCRIPTION: Preliminary Remediation Goal (PRG) for arsenic - Asarco Smelter Facility

2. 5. 1. - 1013049
DATE: 09/28/93 PAGES: 1
AUTHOR: Allan W. Nye/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Drill cuttings disposal

2. 5. 1. - 1013047
DATE: 10/07/93 PAGES: 23
AUTHOR: Bruce Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letters regarding data inputs required to use the WASP 4 model and copies of Sediment Standard Users Manuals

2. 5. 1. - 1013046
DATE: 10/20/93 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Review of modification to the Consent Decree, USA v. Asarco, Inc.

2. 5. 1. - 1013044
DATE: 10/26/93 PAGES: 1
AUTHOR: Bruce A. Cochran/State of Washington, Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco inquiry on the RAO for arsenic in groundwater for the Smelter site.

2. 5. 1. - 1013045
DATE: 10/26/93 PAGES: 1
AUTHOR: Allan W. Nye/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Tacoma Smelter monitoring wells modifications.

5. 1. - 1029305
DATE: 10/27/93 PAGES: 3
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter of confirmation that the EPA and the Department of Ecology believe a second phase of the soils treatability study is necessary to determine the efficacy of the plant site soil solidification/stabilization.

2. 5. 1. - 1013043
DATE: 11/08/93 PAGES: 1
AUTHOR: Allan W. Nye/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Sanitary sewer holding tanks; proposal that tanks be eliminated.

2. 5. 1. - 1029306
DATE: 11/08/93 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Suggestions for contractors who have experience with the design and construction of landfills in residential areas - EPA suggestions provided by Catherine Massimino.

5. 1. - 1013042
DATE: 11/09/93 PAGES: 5
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Bruce Cochran/State of Washington, Dept. of Ecology
DESCRIPTION: EPA/Ecology sediments modeling meeting summary - Smelter facility and offshore sediments projects

2. 5. 1. - 1013041
DATE: 11/23/93 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Tacoma Smelter monitoring wells modification approval - Asarco Smelter Facility.

2. 5. 1. - 1029307
DATE: 11/24/93 PAGES: 2
AUTHOR: Irfan Toor/ITEX Environmental Services, Inc.
ADDRESSEE: James M. Gillie/Hydrometrics, Inc.
DESCRIPTION: Discussion detailing understanding of the reactions that are believed to be responsible for lowering arsenic solubility in treated materials.

2. 5. 1. - 1013040
DATE: 11/30/93 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Sanitary sewer holding tanks - Smelter facility

2. 5. 1. - 1013039
DATE: 12/01/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter regarding drill cuttings storage in fine ore bins building

2. 5. 1. - 1013038
DATE: 12/03/93 PAGES: 1
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Information regarding soil stabilization provided by ITEX

2. 5. 1. - 1013037
DATE: 12/06/93 PAGES: 2
AUTHOR: Dave Corbett/CH2M Hill
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Tranmittal of information regarding Hydrometrics, Inc. data concerning sanitary sewer tanks

2. 5. 1. - 1013036
DATE: 12/21/93 PAGES: 2
AUTHOR: Jerald LaVassar/Dept. of Ecology
ADDRESSEE: Mike Kuntz/Dept. of Ecology
DESCRIPTION: Liquefaction susceptibility of Asarco Plant site [Note: margin note to Piper Peterson regarding storage facility]

2. 5. 1. - 1013289
DATE: 01/19/94 PAGES: 5
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Shoreline Monitoring Station Report

2. 5. 1. - 1013288
DATE: 01/21/94 PAGES: 4
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Re: Statement of work for ITEX Treatability Study

5. 1. - 1013294
DATE: 01/25/94 PAGES: 4
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Shoreline Monitoring Station Report

2. 5. 1. - 1013295
DATE: 02/02/94 PAGES: 5
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Shoreline Monitoring Stations

2. 5. 1. - 1013296
DATE: 02/08/94 PAGES: 10
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Shoreline Monitoring Station - Response to comments

2. 5. 1. - 1013297
DATE: 02/09/94 PAGES: 16
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response to EPA's comments on Statement of Work for ITEX Treatabiliy Study

2. 5. 1. - 1013298
DATE: 02/09/94 PAGES: 4
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Shoreline Monitoring Stations, groundwater monitoring plan

2. 5. 1. - 1013299
DATE: 02/17/94 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda for meeting held 02/17/94 at Seattle EPA location re: Ground Water Monitoring Plan

2. 5. 1. - 1013300
DATE: 02/18/94 PAGES: 3
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: ITEX Treatability Study and Pilot Scale Treatment Work Plan.

2. 5. 1. - 1013301
DATE: 02/18/94 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Shoreline Monitoring Stations; proposed additional locations stipulations

2. 5. 1. - 1013302
DATE: 02/28/94 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for additional copies of Pilot Scale Treatability Testing of Plant Site Soils at Asarco, documents not attached

2. 5. 1. - 1029311
DATE: 03/03/94 PAGES: 1
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Concept graph drawing titled: Shoreline Monitoring Station - Tacoma Yacht Club/Boat Basin.

2. 5. 1. - 1013303
DATE: 03/07/94 PAGES: 4
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Design requirements for an on-site containment facility

2. 5. 1. - 1013304
DATE: 03/07/94 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Shoreline Monitoring Station response to Hydrometrics' 2/8/94 letter

2. 5. 1. - 1013305
DATE: 03/09/94 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Jim Giley/Hydrometrics, Inc.
DESCRIPTION: On-site Containment Facility pre-design meeting

2. 5. 1. - 1013306
DATE: 03/14/94 PAGES: 8
AUTHOR: James M. Gillie/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Proposed Tacoma Smelter OCF conceptual design, includes conceptual figures showing design details of possible containment facility

5. 1. - 1013307
DATE: 03/15/94 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda for meeting held 03/15/94 at Seattle EPA location regarding ground water monitoring

2. 5. 1. - 1013308
DATE: 03/16/94 PAGES: 3
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Installation of Shoreline Monitoring Stations

2. 5. 1. - 1013579
DATE: 03/28/94 PAGES: 8
AUTHOR: Piper L. Peterson/EPA.
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Summary of Soil Treatability conference call of 3/23/94

2. 5. 1. - 1013580
DATE: 04/01/94 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter regarding transmittal of Tacoma Smelter Pilot Scale Soil Treatment; Revised Work Plans - no attachment

2. 5. 1. - 1013615
DATE: 04/01/94 PAGES: 3
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Celia Barton/State of Washington Dept. of Natural Resources
DESCRIPTION: Leaching behavior of freshly exposed slag at the Asarco Tacoma Smelter site

2. 5. 1. - 1029309
DATE: 04/06/94 PAGES: 8
AUTHOR: Jim Gillie/Hydrometrics, Inc.
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Memorandum of a summary of the configurations for the OCF that has been recently investigated.

2. 5. 1. - 1013581
DATE: 04/13/94 PAGES: 2
AUTHOR: Pam Bridgen/ICF Technology,Inc.
ADDRESSEE: Bernie Zavala/EPA
DESCRIPTION: Subject: Brief description of the alternative designs and locations of the on-site containment facility (4/5/94)

2. 5. 1. - 1013582
DATE: 04/15/94 PAGES: 3
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Pilot scale treatability testing of plant site soils

2. 5. 1. - 1013617
DATE: 04/19/94 PAGES: 14
AUTHOR: Don A. Essig/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Remedy of inconsistencies between Tacoma Pilot Scale WP and SAP, revised pages attached

2. 5. 1. - 1013756
DATE: 04/26/94 PAGES: 2
AUTHOR: Carl E. Samuelson/Washington State Dept. of Fish and Wildlife
ADDRESSEE: Celia Barton/Department of Natural Resources
DESCRIPTION: Letter re: Asarco freshly exposed slag leaching, 4/1/94 memorandum from Rens Verburg (Hydrometrics) to Celia Barton (DNR)

2. 5. 1. - 1013629
DATE: 04/28/94 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Revised Tacoma Pilot Scale Work Plan and Sampling and Analysis Plan 4/19/94

2. 5. 1. - 1013630
DATE: 04/28/94 PAGES: 3
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Post RI, Long-term Monitoring Sampling & Analysis Plan (March 1994) comments

2. 5. 1. - 1013757
DATE: 05/10/94 PAGES: 1
AUTHOR: Kevin Rochlin/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Letter to approve requests by Asarco: 1) delay demolition of main office building and plastic shop for 12-18 months, 2) demolish two brick power houses and wooden trestle over Ruston Way at this time

2. 5. 1. - 1013758
DATE: 05/17/94 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Re: Pilot Treatability Study and any changes/reasons for that may be necessary, request for TCLP results as they become available and suggestion to use coring method for collecting additional TCLP

samples from various control lots

2. 5. 1. - 1013985
DATE: 07/26/94 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for additional copies of the Pilot Scale Treatability Tesing Analytical Summary - copies not attached.

2. 5. 1. - 1013986
DATE: 07/28/94 PAGES: 3
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Philip Parker/Town of Ruston
DESCRIPTION: Letter to Mayor Philip Parker requesting comments from the Town of Ruston regarding movement of approximately 7100 tons of slag from Asarco property at 1721 Thorne Road in Tacoma to former Asarco Smelter site in Ruston.

2. 5. 1. - 1013987
DATE: 08/02/94 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter regarding Hydrometrics' observations during sampling of shoreline monitoring stations of PVC pipe not extending all the way into the water during certain low tide levels and consequent request for Hydrometrics to survey the shoreline

2. 5. 1. - 1013988
DATE: 08/02/94 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter regarding Hydrometrics abandonment of the production well - photo copy of Hydrometrics letter regarding same subject attached.

2. 5. 1. - 1013989
DATE: 08/10/94 PAGES: 3
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Letter regarding Pilot Scale Soil Treatment Preliminary Results Report of July 18, 1994 and Additional Testing Program (letter dated July 28, 1994) - Asarco Smelter Facility.

2. 5. 1. - 1013990
DATE: 09/16/94 PAGES: 3
AUTHOR: Michael Borst/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Memorandum regarding acid leaching potential for the Asarco site - summary states: "While acid extraction may be an appropriate technology to remove the arsenic from the soil, I have many

reservations and unanswered questions..."

2. 5. 1. - 1013991
DATE: 09/16/94 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas Nobles/Environmental Consulting and Reclamation
DESCRIPTION: Letter regarding ERC's request for an opportunity to apply its treatment process, which is primarily a soil washing technique, to treat contaminated source area soils found at the Asarco smelter in a bench scale project.

2. 5. 1. - 1013992
DATE: 09/30/94 PAGES: 26
AUTHOR: Molly R. Marciano/City of Tacoma
ADDRESSEE: Unknown/City of Tacoma Public Works Department
DESCRIPTION: Cover memo requesting comments on attached environmental checklist and Determination of Nonsignificance for the project of cleanup of 7100 cu. yds. of slag at 1721 Thorne Rd. to be transported to the Asarco site for temporary storage.

2. 5. 1. - 1013994
DATE: 10/11/94 PAGES: 6
AUTHOR: David P. Corbett/CH2M Hill
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter regarding contract 68-W9-0031, work assignment 31-62-OP58; Asarco Soil Treatability Study Oversight Technical Analysis of Water Leach Tests - attachments.

2. 5. 1. - 1013996
DATE: 10/19/94 PAGES: 2
AUTHOR: Tom Nobles/Treatment Technology Group
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Unsigned FAX regarding water recycling and recycling or disposal of extracted metals.

2. 5. 1. - 1029289
DATE: 10/19/94 PAGES: 10
AUTHOR: Tom Nobles/Treatment Techology Group
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Request for site soil sample and operations procedures for bench-scale and full scale treatment. (This document is in the CBI [Confidential Business Info.] portion of the Admin. Record located at EPA Region 10 Headquaters in Seattle, WA.)

5. 1. - 1013997
DATE: 10/21/94 PAGES: 3
AUTHOR: M. Borst/EPA
ADDRESSEE: P. Peterson/EPA
DESCRIPTION: FAXed memo documenting Tom Noble's (Treatment Technology Group) responses to EPA's questions.

2. 5. 1. - 1013998
DATE: 11/01/94 PAGES: 2
AUTHOR: Michael Gearheard/EPA
ADDRESSEE: Tom Nobles/Treatment Technology Group, Inc.
DESCRIPTION: Letter regarding Bench-Scale Treatability Study for Asarco.

2. 5. 1. - 1013999
DATE: 11/16/94 PAGES: 2
AUTHOR: Tom Nobles/Treatment Technology Group, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Unsigned FAX regarding soil sampling authorization - attached related transmittal from Robert A. Webber of Associated Laboratories.

2. 5. 1. - 1014000
DATE: 11/16/94 PAGES: 1
AUTHOR: Allan W. Nye/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter stating two large pits containing parts of the crusher and sampling plant conveyor systems have been exposed as a result of demolition; proposal to backfill.

2. 5. 1. - 1013975
DATE: 11/23/94 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Clinton Doucett/Unknown
DESCRIPTION: Response letter regarding support of EPA's proposal to allow Asarco to move slag from 1721 Thorne Road in Tacoma tideflats to former Asarco smelter site in Ruston.

2. 5. 1. - 1029001
DATE: 11/23/94 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Doug Pierce/Citizens For A Healthy Bay
DESCRIPTION: Response letter regarding support of EPA's proposal to allow Asarco to move slag from 1721 Thorne Road in Tacoma tideflats to former Asarco smelter site in Ruston.

2. 5. 1. - 1029005
DATE: 11/23/94 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Judith Lorbeir/City of Tacoma
DESCRIPTION: Response letter regarding telephone conversation of Nov. 17, 1994 concerned with EPA's proposal to allow Asarco to move slag from 1721 Thorne Road in Tacoma tideflats to former Asarco smelter site in Ruston.

2. 5. 1. - 1029002
DATE: 11/28/94 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Response letter of approval to backfill two large pits that contained parts of the cusher and sampling plant conveyor systems exposed as a result of the demolition activities.

2. 5. 1. - 1029003
DATE: 12/21/94 PAGES: 3
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for copies of Soil Treatability Analytical Supplement for Pilot Scale testing of smelter site soils - supplement not attached.

2. 5. 1. - 1029004
DATE: 12/27/94 PAGES: 1
AUTHOR: Patrick Splichal/PRC Environmental Management, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter of thanks regarding oversight of soil sampling on the Asarco site during the week of Dec. 5, 1994.

2. 5. 1. - 1029283
DATE: 02/27/95 PAGES: 3
AUTHOR: Barry C. Harris/Bridgeview Management Co., Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter to provide notice of a remedial action to be performed under the state Model Toxics Control Act provisions for independent remedial action at 1721 Thorne Road ("the site").

2. 5. 1. - 1029310
DATE: 03/01/95 PAGES: 2
AUTHOR: Waymon Gay/CH2M Hill
ADDRESSEE: Dave Corbett/Unknown
DESCRIPTION: Memorandum concerning site inspection conducted Feb. 14, 1995 to check progress on the new haul road being constructed at the Asarco property.

SUB-HEAD: 2. 5. 2. Meeting Notes

2. 5. 2. - 1013309
DATE: 03/15/89 PAGES: 14
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Asarco RI/FS Progress Meeting agenda, attendance list, notes and Applicable or Relevant and Appropriate Requirements (ARAR) draft copy

2. 5. 2. - 0012732
DATE: 05/16/91 PAGES: 6
AUTHOR: Jim Wiley/David Evans and Associates, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Ruston - 51st Street/Gallagher Way, Transmittal for summary of meeting on April 15, 1991; EPA Draft RI/FS Schedule

2. 5. 2. - 0012733
DATE: 08/27/91 PAGES: 3
AUTHOR: Unknown/David Evans and Associates, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Meeting Minutes - N 51st Street/Gallagher Way

5. 2. - 1013058
DATE: 02/23/93 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revisions to EPA/Asarco Progress Meeting of 12/1992

SUB-HEAD: 2. 5. 3. On Site Containment Facility

2. 5. 3. - 1029312
DATE: 03/13/91 PAGES: 35
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/EPA
DESCRIPTION: Asarco Tacoma Smelter RI/FS On-Site Containment Facility Siting Report of March 1991; prepared in accordance with Fourth Amendment to RI/FS Work Plan EPA Consent Order No. 1086-04-24-106.

2. 5. 3. - 0012734
DATE: 01/31/92 PAGES: 8
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Pages from January 1992 On-Site Containment Facility Siting Report replaced with February 1992 revisions

2. 5. 3. - 0012735
DATE: 02/28/92 PAGES: 116
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Asarco Tacoma Smelter RI/FS On-Site Containment Facility Siting Report January 1992, revised February 1992

SUB-HEAD: 2. 5. 4. Ground Water/Sediments Model

2. 5. 4. - 1002027
DATE: 06/04/91 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: EPA handout at Progress Meeting regarding modeling - Response to Comment 17

2. 5. 4. - 0012737
DATE: 08/31/92 PAGES: 36
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Analysis of Soil Metal Leaching and Solute Transport in Groundwater

SUB-HEAD: 2. 5. 5. Treatability Study - Soils, Ground Water/Surface Water

2. 5. 5. - 1013759
DATE: / / PAGES: 77
AUTHOR: Unknown/ITEX Environmental Services, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: ITEX Environmental Services, Inc. Statement of Qualifications; Project No: SOQ-0293

2. 5. 5. - 0012738
DATE: 08/06/91 PAGES: 21
AUTHOR: Unknown/Parametrix
ADDRESSEE: Unknown/Parametrix
DESCRIPTION: Soils Treatment Technologies - Heavy Metals Contamination NTIS Database Citations

2. 5. 5. - 0012875
DATE: 05/14/93 PAGES: 10
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Soil Treatability Result Summary

5. 5. - 1013796
DATE: 11/22/93 PAGES: 2
AUTHOR: Charlie Coleman/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Handwritten notes regarding ITEX Environmental Services, Inc. Statement of Qualifications; Project No: SOQ-0293

2. 5. 5. - 1029006
DATE: 01/01/94 PAGES: 37
AUTHOR: Unknown/ITEX Environmental Services, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Report: Pilot Scale Treatment Work Plan for Tacoma Smelter Complex.

2. 5. 5. - 1013760
DATE: 05/02/94 PAGES: 4
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Pictures of Soil Treatability Pilot Project - (EPA)

2. 5. 5. - 1029008
DATE: 07/13/94 PAGES: 10
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Report: Inorganic Analyses Data Package: Group No. Project #ASTA-07; Project No. Tacoma RI/FS, Lab Batch No. 94-149, QC Report No. 94-149.

2. 5. 5. - 1029007
DATE: 07/18/94 PAGES: 337
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Report: Pilot Scale Treatability Testing of Plant Site Soils at the Asarco Tacoma Smelter - Analytical Summary.

2. 5. 5. - 1029009
DATE: 07/18/94 PAGES: 12
AUTHOR: Milan Mraz/Asarco, Inc.
ADDRESSEE: Jenny Vanek/Hydrometrics, Inc.
DESCRIPTION: Cover letter and attached analytical results, quality control data and all other deliverables for 9 untreated soil samples collected between May 4, 1994 from the Tacoma site - samples analyzed for total and TCLP arsenic, copper and lead.

2. 5. 5. - 1029010
DATE: 07/25/94 PAGES: 8
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Summary of water quality analyses - DataMan Program.

2. 5. 5. - 1029013
DATE: 11/29/94 PAGES: 109
AUTHOR: Gloria Poling/Sherwood Labs Corporation
ADDRESSEE: Lucas Csee/Unknown
DESCRIPTION: Associated Laboratories' Quality Assurance Manual with attached memo from Gloria Poling of Sherwood Labs. Corp. requesting Lucas C. See send the manual to Piper Peterson of the Region 10 EPA office.

2. 5. 5. - 1029012
DATE: 12/21/94 PAGES: 70
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Report: Pilot Scale Treatability Testing of Plant Site Soils at the Asarco Tacoma Smelter - Analytical Summary Supplement.

2. 5. 5. - 1029253
DATE: 01/31/95 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Bob Baumgarten/Bureau of Reclamation
DESCRIPTION: Response memorandum regarding Asarco Smelter cleanup alternatives information.

2. 5. 5. - 1029251
DATE: 02/14/95 PAGES: 7
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Tom Nobles/Treatment Technology Group Inc.
DESCRIPTION: Bench-Scale Treatability Study for Asarco soils; specific EPA comments on submitted Study.

2. 5. 5. - 1029254
DATE: 02/14/95 PAGES: 1
AUTHOR: Curtis D. Stahlecker/Hydrometrics, Inc.
ADDRESSEE: Garin Schrieve/Department of Ecology
DESCRIPTION: Letter co-addressed to Piper Peterson of the EPA stating that the mobilization and remedial activities at 1721 Thorne Road site are scheduled to begin 2/15/95 in accordance with the Dept. of Ecology letter dated 12/20/94.

SUB-HEAD: 2. 5. 5. 1 Literature Search Review and Analysis

5. 5. 1 - 0012274
DATE: 08/14/91 PAGES: 3
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Treatability Study Literature Search

2. 5. 5. 1 - 0012275
DATE: 11/19/91 PAGES: 13
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Treatability Study Literature Review

2. 5. 5. 1 - 0012276
DATE: 03/23/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Comments Regarding Asarco's Treatability Technologies Literature Review - February 7, 1992

2. 5. 5. 1 - 0012989
DATE: 05/12/92 PAGES: 224
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Treatability Literature Study Report, Asarco Tacoma Plant, Tacoma, Washington

2. 5. 5. 1 - 0012709
DATE: 05/18/92 PAGES: 33
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Tacoma Smelter RI/FS - Superseded Pages and Responses to Comments on the Treatability Literature Study Report; replaced with 5/12/92 revisions

SUB-HEAD: 2. 5. 5. 2 Statement of Work/Work Plan

2. 5. 5. 2 - 0012740
DATE: 08/27/92 PAGES: 67
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Treatability Testing Work Plan for Removal of Arsenic and Metals from Groundwater and Surface Water at the Asarco Tacoma Plant

2. 5. 5. 2 - 0012741
DATE: 08/27/92 PAGES: 75
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Soil Treatability Testing Program Asarco Tacoma Plant

2. 5. 5. 2 - 0012721
DATE: 10/08/92 PAGES: 6
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal for Asarco Tacoma Smelter Soil and Water Treatability Work Plans Revised Pages - attached are the SUPERSEDED pages; revisions have been inserted into respective Work Plans

2. 5. 5. 2 - 0012808
DATE: 04/28/93 PAGES: 3
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: February 23, 1993 Letter Enclosure - Water Treatability Work Plan Comment letter

2. 5. 5. 2 - 1013057
DATE: 12/15/93 PAGES: 18
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Statement of Work for pilot treatability study of Asarco Tacoma Smelter Soils

2. 5. 5. 2 - 1013311
DATE: 01/01/94 PAGES: 300
AUTHOR: Unknown/ITEX Environmental Services, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Report: Pilot Scale Treatment Work Plan for Tacoma Smelter Complex

2. 5. 5. 2 - 1013739
DATE: 04/01/94 PAGES: 140
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Report: Pilot Scale Treatability Testing of Plant Site Soils at the ASARCO Tacoma Smelter; Work Plan, Sampling and Analysis Plan, Health and Safety Plan

2. 5. 5. 2 - 1029014
DATE: 07/28/94 PAGES: 11
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached related documents concerning Pilot Scal Soil Treatment - Additional Testing Program.

2. 5. 5. 2 - 0103993
DATE: 09/30/94 PAGES: 2
AUTHOR: Curtis Stahlecker/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Memorandum with attached requested site map of Thorne Road slag.

SUB-HEAD: 2. 5. 5. 3 ITEX Vendor Information

2. 5. 5. 3 - 1013065
DATE: 01/12/90 PAGES: 69
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Pre-qualified Offerors Procurement Strategy (PQOPS) For Fixation/Stabilization System (FSS).

2. 5. 5. 3 - 1013063
DATE: 07/03/91 PAGES: 18
AUTHOR: Unknown/United States Patent Office
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Patent documentation for: Apparatus for mixing solid or semi-solid wastes with additives, patent number 5,028,010

5. 5. 3 - 1013062
DATE: 08/10/93 PAGES: 23
AUTHOR: Unknown/ITEX Environmental Services, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: ITEX Remediation Methodology for Tacoma Smelter Complex

2. 5. 5. 3 - 1013061
DATE: 08/17/93 PAGES: 3
AUTHOR: Irfan Toor/ITEX Environmental Services, Inc.
ADDRESSEE: Rens Verburg/Unknown
DESCRIPTION: ITEX reports for the Tacoma sites

2. 5. 5. 3 - 1013060
DATE: 11/24/93 PAGES: 2
AUTHOR: Irfan Toor/ITEX Environmental Services, Inc.
ADDRESSEE: James M. Gillie/Hydrometrics, Inc.
DESCRIPTION: Formation of insoluble arsenic compounds in treated arsenic kitchen material

2. 5. 5. 3 - 1029131
DATE: 12/03/93 PAGES: 27
AUTHOR: Rens Verburg/Hydrometrics, Inc.
ADDRESSEE: Piper L. Peterson/EPA
DESCRIPTION: Cover letter with attached material regarding Soil Stabilization provided by ITEX.

SUB-HEAD: 2. 5. 6. Remedial Action Object. (RAOs)/Prelim. Remediation

2. 5. 6. - 0012282
DATE: 11/30/86 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Concentrations (ppb) of Arsenic & Copper

2. 5. 6. - 0012283
DATE: 04/30/91 PAGES: 12
AUTHOR: Unknown/PTI Environmental Services
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Technical Memorandum No. 1, MTCA Review of the Proposed Remedial Action Objectives for the Asarco Upland Site

2. 5. 6. - 0012284
DATE: 07/01/91 PAGES: 17
AUTHOR: Teresa Michelsen/PTI Environmental Services
ADDRESSEE: Dana Davoli/EPA
DESCRIPTION: Asarco RAOs

2. 5. 6. - 0012285
DATE: 08/22/91 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Proposed Remedial Action Objectives for the Asarco Smelter Site

2. 5. 6. - 0012286
DATE: 08/31/91 PAGES: 37
AUTHOR: Unknown/PTI Environmental Services
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Technical Memorandum No. 4, Remedial Action Objectives for the Asarco On property Operable Unit; Preliminary Draft

2. 5. 6. - 0012260
DATE: 01/05/93 PAGES: 4
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Preliminary Remedial Action Objectives - DRAFT

2. 5. 6. - 0012277
DATE: 01/05/93 PAGES: 5
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Preliminary Remedial Action Objectives

5. 6. - 0012460
DATE: 02/03/93 PAGES: 3
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Table B-3 EPA Chronic Toxicity Factors (Ingestion Route)

2. 5. 6. - 0012266
DATE: 02/04/93 PAGES: 12
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Revised Preliminary Remediation Goals

2. 5. 6. - 0012885
DATE: 04/19/93 PAGES: 72
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Transmittal and Preliminary Remedial Action Objectives and Preliminary Remediation Goals for the Asarco Tacoma Site, April 1993 (prepared by ICF Technology Inc.)

2. 5. 6. - 1013066
DATE: 09/17/93 PAGES: 55
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter regarding finding of error in Table C-1 of the Remedial Action Objectives and Preliminary Remediation Goals for Asarco - errata sheet and corrections included

SUB-HEAD: 2. 5. 7. Ruston Road Project

2. 5. 7. - 0012987
DATE: 09/30/92 PAGES: 47
AUTHOR: Unknown/David Evans and Associates, Inc.
ADDRESSEE: Unknown/Town of Ruston
DESCRIPTION: Design Memorandum - Realignment of 51st Street/Gallagher Way (from) Winnifred Street to Ruston Way

2. 5. 7. - 0012975
DATE: 06/11/93 PAGES: 1
AUTHOR: Robert M. Pudlo/Town of Ruston
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Realignment of 51st Street/Gallagher Way from Winnifred Street to Ruston Way

SUB-HEAD: 2. 5. 8. Data Management Plan

2. 5. 8. - 0012639
DATE: 04/11/91 PAGES: 19
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Peggy Justus/EPA
DESCRIPTION: Data Management Plan

2. 5. 8. - 0012895
DATE: 08/12/91 PAGES: 25
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Data Management Plan for RI

2. 5. 8. - 0012897
DATE: 11/27/91 PAGES: 18
AUTHOR: Unknown/Parametrix
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Data Management Plan for The Asarco Tacoma Smelter Remedial Investigation

2. 5. 8. - 0012701
DATE: 01/14/92 PAGES: 9
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Appendices to Data Management Plan

2. 5. 8. - 0012278
DATE: 02/14/92 PAGES: 26
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Data Management Plan

2. 5. 8. - 0012906
DATE: 02/28/92 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Tacoma Smelter RI/FS Revised Data Management Plan Review and Approval Sign-off Sheet

SUB-HEAD: 2. 5. 9. Thorne Road Slag

2. 5. 9. - 1013993
DATE: 09/30/94 PAGES: 2
AUTHOR: Curtis Stahlecker/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Memorandum with attached site map for the Thorne Road slag.

SUB-HEAD: 2. 5.10. Site Specific Water Quality Criteria

5.10. - 0012717
DATE: 09/07/92 PAGES: 9
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal/Site-Specific Water Quality Calculations for Arsenic and Copper at the Asarco Tacoma Smelter Site Using the Indicator Species Procedure: Scope of Services

2. 5.10. - 0012280
DATE: 09/30/92 PAGES: 3
AUTHOR: Unknown/Parametrix
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Site-Specific Water Quality Calculations for Arsenic and Copper at the Asarco Tacoma Smelter Site Using the Indicator Species Procedure: Scope of Services

SUB-HEAD: 2. 5.11. Seafood Studies

2. 5.11. - 0012281
DATE: 09/07/92 PAGES: 6
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Remedial Action Objectives and the Reanalysis of Risks to Human Health from Consuming Seafood Collected at Site

SUB-HEAD: 2. 5.12. Shoreline Monitoring Station

2. 5.12. - 0012813
DATE: 03/17/93 PAGES: 5
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Conceptual design schematic of Shoreline Monitoring Station

2. 5.12. - 0012798
DATE: 04/14/93 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Shoreline Monitoring Station Dimensions

2. 5.12. - 0012806
DATE: 05/04/93 PAGES: 1
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Purpose for Shoreline Monitoring Station

2. 5.12. - 1029015
DATE: 12/06/93 PAGES: 171
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Report: Investigative Results; Shoreline Monitoring Station, Asarco Tacoma Smelter.

2. 5.12. - 1013312
DATE: 03/02/94 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Map/drawing titled: Shoreline Monitoring Station Tacoma Yacht Club Boat Basin Concept Drawing

HEADING: 3. 0. . SITE STABILIZATION - PHASE I - 1987-1988

SUB-HEAD: 3. 1. . Correspondence

3. 1. . - 0012293
DATE: 10/26/89 PAGES: 3
AUTHOR: Greg A. Griffith/Washington Department of Community Development,
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Asarco facility may have important historical associations

SUB-HEAD: 3. 1. 1. Correspondence with PRP

3. 1. 1. - 1029016
DATE: 11/02/84 PAGES: 39
AUTHOR: Unknown/Earth Technology Corporation
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Draft Report: Geohydrological and Engineering Feasibility Assessment of a Proposed French Drain.

3. 1. 1. - 0012463
DATE: 07/07/87 PAGES: 2
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: Asarco Tacoma Smelter Wood Burning Project

3. 1. 1. - 0012288
DATE: 07/11/88 PAGES: 9
AUTHOR: Curtis E. Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Property Map south of Stack to be Enclosed by Cyclone Fencing

3. 1. 1. - 0012289
DATE: 11/30/90 PAGES: 1
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Dave Corbett/SAIC
DESCRIPTION: Monthly Implementation Plan for December 1990

3. 1. 1. - 0012290
DATE: 01/02/91 PAGES: 1
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Dave Corbett/SAIC
DESCRIPTION: Monthly Implementation Plan for January 1991

3. 1. 1. - 0012291
DATE: 01/29/91 PAGES: 1
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Dave Corbett/SAIC
DESCRIPTION: Monthly Implementation Plan for February 1991

3. 1. 1. - 0012292
DATE: 02/28/91 PAGES: 1
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Dave Corbett/SAIC
DESCRIPTION: Monthly Implementation Plan for March 1991

HEADING: 4. 0. . PROPOSED PLAN

SUB-HEAD: 4. 0. . PROPOSED PLAN

4. 0. . - 1013816
DATE: 08/12/94 PAGES: 31
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA Proposed Plan for Cleanup - Asarco Tacoma Smelter Superfund Site; Ruston and Tacoma, Washington (Public Comment Period on Cleanup Alternatives: August 12 through October 11, 1994).

SUB-HEAD: 4. 1. . Correspondence

4. 1. . - 1029314
DATE: / / PAGES: 2
AUTHOR: Richard Jeng/Unknown
ADDRESSEE: Dave Bennett/EPA
DESCRIPTION: Note discussing remedy selection for the Commencement Bay, Asarco Smelting site, Ruston and Tacoma, WA and fulfillment of regional consultation requirement.

4. 1. . - 1013610
DATE: 04/18/94 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Bill Glasser/EPA
DESCRIPTION: Memorandum re: Review of Draft Asarco Tacoma Smelter Proposed Plan (Additional recipients: J. Schwarz, M. Pirzadeh, A. Legare, B. Cochran)

4. 1. . - 1013761
DATE: 04/29/94 PAGES: 1
AUTHOR: Pamela J. Bridgen/ICF Technology Incorporated
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Subject: Recalculated estimates of potentially excavated soil per criteria provided by the WAM

4. 1. . - 1029261
DATE: 10/13/94 PAGES: 3
AUTHOR: Bruce A. Cochran/State of Washington Department of Ecolgoy
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached memo from Lynn Coleman regarding treatment or containment for Asarco Smelter site slag and soils.

4. 1. . - 1013979
DATE: 10/27/94 PAGES: 1
AUTHOR: Carol Reifschneider/National Association of Women in Construction
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter of invitation to present a dinner program at the NAWC-Tacoma Chapter meeting to be held November 7, 1994.

4. 1. . - 1029021
DATE: 11/07/94 PAGES: 1
AUTHOR: Unknown/National Association of Women in Construction
ADDRESSEE: Unknown/Unknown
DESCRIPTION: General membership meeting agenda and program showing Piper Peterson, Super Fund Project Manager; EPA as program speaker.

4. 1. . - 1029017
DATE: 11/10/94 PAGES: 1
AUTHOR: Carol Reifschneider/National Association of Women in Construction
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter of thanks for presentation given on the Asarco site.

4. 1. . - 1029018
DATE: 11/15/94 PAGES: 1
AUTHOR: Tod A. Gold/EPA
ADDRESSEE: Richard A. Du Bey/Stoel Rives Boley Jones & Grey
DESCRIPTION: Letter confirming desire to meet and discuss comments in letter of Oct. 12, 1994 written on behalf of the Puyallup Tribe, concerning EPA's Proposed Plan for the Asarco smelter cleanup.

4. 1. . - 1029019
DATE: 12/01/94 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter regarding public comments received after EPA's 90-day public comment period ending Nov. 10, 1994 - Responsiveness Summary will be worked on through Dec. 1994 and will be unable to include any comments received after this date.

4. 1. . - 1029284
DATE: 02/24/95 PAGES: 23
AUTHOR: Catherine Massimino/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response to request for assistance in reviewing the impact of treatment of 15% of the contaminated soils prior to placement in a landfill at the Asarco Smelter Site in Tacoma, Washington - review material attached.

1. . - 1029315
DATE: 03/06/95 PAGES: 7
AUTHOR: William C. Sullivan/Puyallup Tribe of Indians
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Proposed agenda for the March 16, 1995 meeting among representatives of the Puyallup Tribe and Regional Adminstrator Clarke.

4. 1. . - 1029316
DATE: 03/07/95 PAGES: 2
AUTHOR: Marian Abbett/State of Washington Department of Ecology
ADDRESSEE: Bruce Cochran/Unknown
DESCRIPTION: Memo with attachment regarding RAO tables in Asarco ROD.

4. 1. . - 1029336
DATE: 03/17/95 PAGES: 8
AUTHOR: Bruce A. Cochran/Washington State Department of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: State concurrence language and comments on EPA's Draft Final (Edition 8) of the Record of Decision (ROD) for the Asarco Smelter Facility.

4. 1. . - 1029337
DATE: 03/22/95 PAGES: 3
AUTHOR: Tod Gold/EPA
ADDRESSEE: Asarco Smelter Administrative Record/EPA
DESCRIPTION: Memo to summarize the meeting between the US EPA and the Puyallup Tribe of Indians on March 16, 1995, regarding EPA's plans for cleanup of the former Asarco Tacoma Smelter.

4. 1. . - 1029339
DATE: 03/24/95 PAGES: 10
AUTHOR: Chuck Clarke/EPA
ADDRESSEE: William Sullivan/Puyallup Tribe of Indians
DESCRIPTION: Puyallup Tribe of Indians public comments on the Asarco Smelter site cleanup activities.

SUB-HEAD: 4. 2. . Comments/Evaluations and Responses

4. 2. . - 1029153
DATE: / / PAGES: 6
AUTHOR: Dick Badham/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Handwritten response card concerned with Asarco development plan with attached article titled: Prestressed Concrete Tanks for Hanzardous Liquids.

4. 2. . - 1029154
DATE: / / PAGES: 3
AUTHOR: Mrs. Titus/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Handwritten letter from widow of Wayne R. Titus, former Asarco worker.

4. 2. . - 1029262
DATE: / / PAGES: 4
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Paper titled: Questions Regarding Shoreline Armoring at the Asarco Smelter.

4. 2. . - 1029216
DATE: 10/10/34 PAGES: 4
AUTHOR: Dick Bartells/City of Tacoma Environmental Committee
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029024
DATE: 08/12/94 PAGES: 13
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029156
DATE: 08/12/94 PAGES: 1
AUTHOR: M. Clark Dyer/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Suggestion that Proposed Plan involve a capped facility and in-situ treatment.

4. 2. . - 1029266
DATE: 08/12/94 PAGES: 10
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/EPA
DESCRIPTION: Photo copy of Asarco Public Comment Notecards received from Aug. 12 through Nov. 10, 1994 - Against OCF/ Prefers other alternatives.

2. . - 1029267
DATE: 08/12/94 PAGES: 9
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/EPA
DESCRIPTION: Photo copy of Asarco Public Comment Notecards received from Aug. 12 through Nov. 10, 1994 - Requests for more information.

4. 2. . - 1029268
DATE: 08/12/94 PAGES: 6
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/EPA
DESCRIPTION: Photo copy of Asarco Public Comment Notecards received from Aug. 12 through Nov. 10, 1994 - Miscellaneous.

4. 2. . - 1029269
DATE: 08/12/94 PAGES: 25
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/EPA
DESCRIPTION: Photo copies of Asarco Public Comment Notecards received from Aug. 12 through Nov. 10, 1994 - Comments on site development.

4. 2. . - 1029270
DATE: 08/12/94 PAGES: 191
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/EPA
DESCRIPTION: Photo copy of Asarco Public Comment Notecards received from Aug. 12 through Nov. 10, 1994 - Support of (OCF) On-site Containment Facility and Development Plan.

4. 2. . - 1029157
DATE: 08/17/94 PAGES: 1
AUTHOR: Jean W. Musser/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029158
DATE: 08/18/94 PAGES: 1
AUTHOR: Nils Lucander/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter concerned with state of the Asarco site and its future.

4. 2. . - 1029159
DATE: 08/22/94 PAGES: 1
AUTHOR: A. M. Crawford/Unknown
ADDRESSEE: Michelle Pirzadah/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029160
DATE: 08/23/94 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Handwritten Asarco comment letter proposing that site soils be left untreated and disposed of in "the ditch leading up to the railroad tunnel."

4. 2. . - 1029161
DATE: 08/23/94 PAGES: 3
AUTHOR: Unknown/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029162
DATE: 08/25/94 PAGES: 1
AUTHOR: Frank H. Russell/Professional Services Unified, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington stating support for OCF.

4. 2. . - 1029163
DATE: 08/25/94 PAGES: 1
AUTHOR: John W. Austin/Toray Composites (American) Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029164
DATE: 08/25/94 PAGES: 1
AUTHOR: Robert L. Shedd/Weyerhaeuser Real Estate Conmpany
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

2. . - 1029165
DATE: 08/26/94 PAGES: 1
AUTHOR: Stan Hammer/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029166
DATE: 08/29/94 PAGES: 1
AUTHOR: John R. Long/Franciscan Health System
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029167
DATE: 09/02/94 PAGES: 1
AUTHOR: Scott Pierson/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco comment letter proposing rendering metals and other contaminants less harmful by combining with local glacial clay till and melting the mixture - this person has used local till to create a glaze for pottery.

4. 2. . - 1029168
DATE: 09/02/94 PAGES: 1
AUTHOR: Richard J. Brooks/Brooks Rand, Ltd.
ADDRESSEE: Randy Smith/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029169
DATE: 09/05/94 PAGES: 1
AUTHOR: Barbara Erickson/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco comment letter urging "that the U.S. Environmental Protection agency not make any exceptions in the disposal of the Asarco site soil."

4. 2. . - 1029170
DATE: 09/08/94 PAGES: 1
AUTHOR: Cathy J. Brewis/The News Tribune
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco comment letter; person writing as "Treasurer of the Tacoma-Pierce County Chamber of Commerce, to voice support for the plans that have been formulated for the Asarco Smelter site."

4. 2. . - 1029171
DATE: 09/12/94 PAGES: 1
AUTHOR: Michael and Patti Honey/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029172
DATE: 09/14/94 PAGES: 1
AUTHOR: Barbara J. Erickson/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco comment letter stating "the EPA should make their own decisions on what they feel is the safest method for the public in the long run and not what people 'think' is the quickest method to proceed with the development of Asarco site.

4. 2. . - 1029173
DATE: 09/14/94 PAGES: 1
AUTHOR: Grahame J. Fenton/Pacific Rim Real Estate Group, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029174
DATE: 09/14/94 PAGES: 2
AUTHOR: Unknown/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Handwritten Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029175
DATE: 09/15/94 PAGES: 3
AUTHOR: Ingrid T. Fuhriman/Environmental Technologies Internatinal, LLC
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco comment letter with attached pamphlet about a biodegration system for remediation of hydrocarbon contamination resulting from crude oil and refined petroleum products.

4. 2. . - 1029176
DATE: 09/19/94 PAGES: 3
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/EPA
DESCRIPTION: Handwritten Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029177
DATE: 09/19/94 PAGES: 1
AUTHOR: Richard Moe/Metropolitan Park District of Tacoma
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter stating that at the Sept. 12, 1994 meeting of the Board of Park Commissioners of the Metropolitan Park District of Tacoma approved the "Agreement in Principle" between Asarco, Tacoma, Ruston and Park District.

4. 2. . - 1029178
DATE: 09/19/94 PAGES: 1
AUTHOR: David B. Allen/Executive Council for a Greater Tacoma
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter stating that the Executive Council for a Greater Tacoma would like to register its support for the on-site containment alternative for the clean up of the Asarco site in Tacoma.

4. 2. . - 1029179
DATE: 09/19/94 PAGES: 1
AUTHOR: Gordon Pickering/Pick Pickering Laminates
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029180
DATE: 09/20/94 PAGES: 2
AUTHOR: William G. Bradbrooke/Tacoma Pierce County Marina Operators
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029181
DATE: 09/20/94 PAGES: 1
AUTHOR: Patti J. Krueger/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Comment letter expressing concern about the Asarco site cleanup regarding contaminated materials in a large on-site containment facility and possibility of any sort of failure of a facility.

4. 2. . - 1029182
DATE: 09/21/94 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Handwritten Asarco Comment Letter and cost questions - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029183
DATE: 09/23/94 PAGES: 2
AUTHOR: Heather Ballash/Tahoma Audubon Society
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter written on behalf of the Tahoma Audubon Society - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029184
DATE: 09/23/94 PAGES: 1
AUTHOR: Ingrid T. Fuhriman/Environmental Technologies International, LLC
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Follow-up letter regarding information on Metals Recovery and Recycling System (MRRS) as alternative to a on-site containment facility (OCF).

4. 2. . - 1029185
DATE: 09/23/94 PAGES: 21
AUTHOR: Unknown/Environmental Technologies Internatinal, LLC
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Metals Recovery and Recycling System (MRRS) publication mentioned in document 1029184.

4. 2. . - 1029186
DATE: 09/24/94 PAGES: 1
AUTHOR: Durfee L. Day/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029187
DATE: 09/26/94 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Asarco Smelter Administrative Record/EPA
DESCRIPTION: Record of Communication with Paul Hunter of Federal Way to have his opinion on record that the development planned by the Metropolitan Park Dept. and Asarco is "fantastic" and would be even better if Asarco would pay for it; supports OCF.

4. 2. . - 1029188
DATE: 09/28/94 PAGES: 2
AUTHOR: Karen Pickett/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Affidavit of Karen Pickett stating she is competent to testify and make statements of her own personal knowledge regarding her position and duties as an Asarco employee.

4. 2. . - 1029189
DATE: 09/28/94 PAGES: 3
AUTHOR: Sandy Bassett/Pierce County Office of the County Council
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Cover letter and attached copy of Pierce County Resolution No. R94-122, passed on Sept. 27, 1994; A Resolution of the Pierce County Council pledging its support for the Agreement in Principle made between Asarco, Tacoma, Ruston, Metro. Park

4. 2. . - 1029190
DATE: 09/28/94 PAGES: 1
AUTHOR: Don Johnson/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029191
DATE: 09/29/94 PAGES: 1
AUTHOR: Lawrence W. Lindquist/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Handwritten Asarco comment letter from a former manager of the Asarco smelter in Ruston urging the EPA to approve construction of an on-site containment facility (OCF).

4. 2. . - 1029192
DATE: 09/29/94 PAGES: 1
AUTHOR: Edward G. Hudson/Smith Alling Lane
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter saying that EPA should prepare a straightforward comparison between the 'preferred alternative' and the alternative approved by the City of Tacoma, Asarco, Ruston and the Metropolitan Park District.

4. 2. . - 1029193
DATE: 09/30/94 PAGES: 2
AUTHOR: Charles K. Douthwaite/Eisenhower & Carlson
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029194
DATE: 10/02/94 PAGES: 1
AUTHOR: Dave McKeever/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Handwritten Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington; in favor of

OCF.

4. 2. . - 1029195
DATE: 10/03/94 PAGES: 2
AUTHOR: David R. Wright/Black & Veatch Waste Science, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029196
DATE: 10/04/94 PAGES: 1
AUTHOR: Willie Jackson/Unknown
ADDRESSEE: Unknown/EPA
DESCRIPTION: Handwritten Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington; in favor of OCF.

4. 2. . - 1029197
DATE: 10/04/94 PAGES: 1
AUTHOR: Ron Kimball/Unknown
ADDRESSEE: Unknown/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029198
DATE: 10/04/94 PAGES: 1
AUTHOR: Kathi Willis/US West Communications
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029199
DATE: 10/04/94 PAGES: 1
AUTHOR: Susan Shirley/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

2. . - 1029200
DATE: 10/04/94 PAGES: 4
AUTHOR: Philip R. Parker/Town Of Ruston
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029201
DATE: 10/05/94 PAGES: 2
AUTHOR: Robert Grajeda/United Steelworkers of America District 38
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029202
DATE: 10/05/94 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Asarco Smelter Administrative Record/EPA
DESCRIPTION: Record of Communication with Bill Kellis to have his opinion on record that he has no problem with burying the waste at the smelter and that he supports the OCF.

4. 2. . - 1029203
DATE: 10/05/94 PAGES: 1
AUTHOR: David W. Graybill/Tacoma-Pierce County Chamber of Commerce
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029204
DATE: 10/05/94 PAGES: 2
AUTHOR: David C. Frederick/U. S. Department of the Interior
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter offering comments, recommendations and current position and significant concerns regarding the EPA Aug. 12, 1994 Proposed Plan for Asarco Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029205
DATE: 10/05/94 PAGES: 1
AUTHOR: Paul Shirley/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029206
DATE: 10/05/94 PAGES: 5
AUTHOR: Bill Sullivan/Puyallup Tribe of Indians
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco comment letter of the Puyallup Tribe of Indians on the Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029207
DATE: 10/06/94 PAGES: 1
AUTHOR: Mike Kreidler/United States Congress
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and state support of OCF.

4. 2. . - 1029208
DATE: 10/06/94 PAGES: 1
AUTHOR: John F. Shaw/Tacoma Yacht Club
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Personal comment letter written on Tacoma Yacht Club letterhead regarding the Asarco Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029209
DATE: 10/06/94 PAGES: 1
AUTHOR: R. J. Evans/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and state support of OCF.

4. 2. . - 1029210
DATE: 10/06/94 PAGES: 1
AUTHOR: Jerry Hagedorn/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029211
DATE: 10/08/94 PAGES: 1
AUTHOR: Ingrid T. Fuhriman/Environmental Technologies Internatinal, LLC
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter of thanks for referring ETI to Thomas Aldrich at Asarco regarding applications of various technology.

2. . - 1029214
DATE: 10/08/94 PAGES: 1
AUTHOR: Franklyn L. Hruza/University of Puget Sound
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029212
DATE: 10/10/94 PAGES: 1
AUTHOR: Ruth Fisher/State of Washington House of Representatives
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029213
DATE: 10/10/94 PAGES: 1
AUTHOR: Bert E. Brown/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to stress consideration of removal of slag.

4. 2. . - 1029215
DATE: 10/10/94 PAGES: 3
AUTHOR: Jeff Glander/City of Tacoma Beautification Committee
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029217
DATE: 10/10/94 PAGES: 3
AUTHOR: Roy L. Hays/AmeriCal Environmental Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter of introduction to emerging innovative technologies developed by AmeriCal Environmental Technologies, Inc. (AETi).

4. 2. . - 1029218
DATE: 10/10/94 PAGES: 3
AUTHOR: Celia Barton/Washington State Department of Natural Resources
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter offering comments, recommendations and to state that DNR will want to be involved in the development and planning of the preferred alternative as it impacts state-owned aquatic lands.

4. 2. . - 1029219
DATE: 10/11/94 PAGES: 2
AUTHOR: Carl E. Samuelson/Washington State Department of Fish and Wildlife
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter offering comments regarding the EPA Aug. 12, 1994 Proposed Plan for Asarco Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029220
DATE: 10/11/94 PAGES: 2
AUTHOR: Pamela McAllister/People for Puget Sound
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and to state concerns that the Plan may not "go far enough in restoring fish and wildlife habitat on the site.

4. 2. . - 1029221
DATE: 10/12/94 PAGES: 5
AUTHOR: Richard A. Du Bey/Stoel Rives Boley Jones & Grey
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Supplemental comments of the Puyallup Tribe of Indians on the Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site.

4. 2. . - 1029222
DATE: 10/12/94 PAGES: 1
AUTHOR: Gregory Thomas/Agency for Toxic Substances and Disease Registry
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: WPO message containing ATSDR's comments on the Proposed Plan: 1) range of approaches - adequate 2) discussions of #1 reasonable and comprehensive 3) EPA has made good choices in Preferred Alternatives as described in documents.

4. 2. . - 1029223
DATE: 10/14/94 PAGES: 1
AUTHOR: Don Zemek/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029224
DATE: 10/17/94 PAGES: 4
AUTHOR: Dale L. Carlisle/City Club of Tacoma
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter with attached Club newsletters - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029225
DATE: 10/20/94 PAGES: 1
AUTHOR: R. Terry Fenton/Tacoma-Pierce County Association of Realtors
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029226
DATE: 10/24/94 PAGES: 3
AUTHOR: Greg Duras/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state doubts about OCF.

4. 2. . - 1029228
DATE: 10/24/94 PAGES: 2
AUTHOR: Wes Edwards/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Handwritten Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state doubts about OCF.

4. 2. . - 1029229
DATE: 10/24/94 PAGES: 2
AUTHOR: Lyle F. Hardin/Hardin & Associates
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco comment letter cosigned by Patti L. Hardin - Proposed Plan: Comments concerned with cleanup alternatives for the Ruston/Tacoma neighborhoods and Asarco property.

4. 2. . - 1029227
DATE: 10/25/94 PAGES: 2
AUTHOR: Ray Evans/Northwest Steelhead & Salmon Council
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029230
DATE: 10/25/94 PAGES: 3
AUTHOR: Andy Comstock/Tacoma-Pierce County Health Department
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter that serves to transmit the Tacoma-Pierce County Health Dept.'s comments on the US EPA Proposed Plan for the Clean up of the Asarco Tacoma Smelter Superfund site.

4. 2. . - 1029232
DATE: 10/25/94 PAGES: 3
AUTHOR: Andy Comstock/Tacoma-Pierce County Health Department
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Duplicate of document #1029230 with handwritten notes: Letter that serves to transmit the Tacoma-Pierce County Health Dept.'s comments on the US EPA Proposed Plan for the Clean up of the Asarco Tacoma Smelter Superfund site.

4. 2. . - 1029231
DATE: 10/27/94 PAGES: 1
AUTHOR: Slade Gorton/United States Senate
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter written on behalf of the City of Tacoma and Asarco to lend support for the on-site containment alternative for the clean up and redevelopment of the former Asarco smelter property in Tacoma.

4. 2. . - 1029233
DATE: 10/31/94 PAGES: 1
AUTHOR: Bob Skanes/Tacoma/Pierce Boater Association
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF

4. 2. . - 1029273
DATE: 11/01/94 PAGES: 1
AUTHOR: Thomas B. Marshall/American Institute of Architects - Southwest
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029234
DATE: 11/03/94 PAGES: 1
AUTHOR: Diane M. Cameron/Natural Resources Defense Council
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - writing to urge the EPA establish an ambitious whole-watershed restoration program as part of the site remediation efforts at Commencement Bay.

4. 2. . - 1029235
DATE: 11/07/94 PAGES: 1
AUTHOR: Barbara Barronian/Point Defiance Zoo and Aquarium Advisory Council
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superf Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029236
DATE: 11/07/94 PAGES: 2
AUTHOR: Shirley Winsley/Washington State Senate
ADDRESSEE: Chuck Clarke/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029274
DATE: 11/07/94 PAGES: 1
AUTHOR: Doug Sutherland/Commencement Bay Cleanup Action Committee
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029025
DATE: 11/09/94 PAGES: 6
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper L. Peterson/EPA
DESCRIPTION: Letter commenting on EPA's Proposed Plan for Cleanup for the Asarco Tacoma Smelter Superfund Site dated August 12, 1994.

4. 2. . - 1029155
DATE: 11/09/94 PAGES: 1
AUTHOR: Karen Pickett/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Declaration of Karen Pickett regarding her position and duties as an Asarco employee.

4. 2. . - 1029237
DATE: 11/09/94 PAGES: 1
AUTHOR: Ray E. Corpuz/City of Tacoma
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Statement of support of the Asarco Land Use Group's recent Agreement-in-Principle to collectively work together on a plan for future development and use of the Asarco smelter site.

4. 2. . - 1029238
DATE: 11/09/94 PAGES: 1
AUTHOR: Unknown/ASUPS Earth Activists
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029239
DATE: 11/09/94 PAGES: 4
AUTHOR: Barbara Matheson/Town of Ruston
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington; Ruston Town Council Resolution in supportive of.

4. 2. . - 1029240
DATE: 11/09/94 PAGES: 6
AUTHOR: Doug Pierce/Citizens for a Healthy Bay
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029241
DATE: 11/09/94 PAGES: 2
AUTHOR: John C. Guadnola/Point Defiance Zoological Society
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029243
DATE: 11/09/94 PAGES: 2
AUTHOR: Joseph Cunnane/Seattle University Law Students (Tacoma)
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter cosigned by Ken Lederman submitted to voice opposition to Proposed Plan and to recommend that PSS-4B or a similar alternative be used to dispose of treated soils and demolition debris in an offsite landfill.

4. 2. . - 1029277
DATE: 11/09/94 PAGES: 18
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Comments with handwritten notes regarding Proposed Plan for Cleanup - Asarco Tacoma Smelter Superfund Site.

4. 2. . - 1029244
DATE: 11/10/94 PAGES: 1
AUTHOR: Bob Oke/Washington State Senate
ADDRESSEE: Chuck Clarke/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington.

4. 2. . - 1029245
DATE: 11/10/94 PAGES: 1
AUTHOR: Steve Conway/State of Washngton House of Representatives
ADDRESSEE: Chuck Clark/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029246
DATE: 11/10/94 PAGES: 1
AUTHOR: James R. Merritt/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Comment Letter - Proposed Plan: Comments on EPA's Proposed Plan for Cleanup and Redevelopment, Asarco Tacoma Smelter Superfund Site, Ruston and Tacoma, Washington and to state support for OCF.

4. 2. . - 1029020
DATE: 11/21/94 PAGES: 1
AUTHOR: Al Schmauder/Clover Creek Council
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter stating that Clover Creek Council "...will be very disappointed if EPA does not take action to ensure the two small, former salmon bearing streams on the Asarco site are restored."

4. 2. . - 1029247
DATE: 11/22/94 PAGES: 3
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Asarco Comment Cards.

4. 2. . - 1029022
DATE: 11/28/94 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Administrative Record/Asarco Smelter Facility
DESCRIPTION: Record of communication regarding Bob Zoebel, Ruston resident who called to express strong feelings against on-site storage of hazardous waste and to protest Asarco bringing 500 truckloads of slag from Thorne Road to the smelter site.

4. 2. . - 1029026
DATE: 12/08/94 PAGES: 3
AUTHOR: Judith Lorbeir/City of Tacoma
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Routing Slip from Lorbeir with attached letter and envelope from Brad Green to forward on public comment regarding Asarco site.

4. 2. . - 1029023
DATE: 12/19/94 PAGES: 2
AUTHOR: Karen Pickett/Asarco
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter with attached comment card regarding redevelopment/remediation plan and acknowledgement that even if it cannot officially be considered in the the decision process, public had been told all cards would be forwarded to EPA.

4. 2. . - 1029263
DATE: 01/16/95 PAGES: 2
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Asarco Comment Cards.

4. 2. . - 1029264
DATE: 01/30/95 PAGES: 2
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Asarco Comment Cards.

4. 2. . - 1029278
DATE: 03/06/95 PAGES: 6
AUTHOR: William C. Sullivan/Puyallup Tribe of Indians
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter and attached requested proposed agenda for the March 16, 1995 meeting among representatives of the Puyallup Tribe and Regional (EPA) Administrator Clarke - outlines goals and objectives the Puyallup Tribe has for the meeting.

4. 2. . - 1029287
DATE: 03/06/95 PAGES: 10
AUTHOR: Bruce A. Cochran/State of Washington Department of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter with attached Ecology comments on EPA Draft Responsiveness Summary for the Asarco Tacoma Smelter Site.

HEADING: 5. 0. . RECORD OF DECISION (ROD)

SUB-HEAD: 5. 0. . RECORD OF DECISION (ROD)

5. 0. . - 1029344
DATE: 03/24/95 PAGES: 269
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Record of Decision: Commencement Bay Nearshore/Tideflats Superfund Site; Operable Unit 02; Asarco Tacoma Smelter Facility; Ruston and Tacoma, Washington; March 1995; U.S. EPA; Region 10 (page count excludes attached AR index page count).

5. 0. . - 1029343
DATE: 03/25/95 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: ROD concurrence initialed by P. Peterson, B. Glasser. M. Gearheard, R. Smith, T. Gold and E. Kowalski.

HEADING: 6. 0. . STATE COORDINATION

SUB-HEAD: 6. 1. . Correspondence

6. 1. . - 0012295
DATE: 06/19/85 PAGES: 4
AUTHOR: Lynda L. Brothers/State of Washington Dept. of Ecology
ADDRESSEE: Persons Who Handle PCB Wastes/Unknown
DESCRIPTION: Designation of PCB Wastes; Concentration Limits

6. 1. . - 1013313
DATE: 11/22/93 PAGES: 23
AUTHOR: Marcia Newlands/Heller Ehrman White & McAlliffe
ADDRESSEE: Kaia Petersen/Washington Dept. of Ecology
DESCRIPTION: Petition for Exemption of Slag

6. 1. . - 1013070
DATE: 12/01/93 PAGES: 2
AUTHOR: Bruce Cochran/State of Washington, Dept. of Ecology
ADDRESSEE: Marian Abbett/Unknown
DESCRIPTION: Asarco Project Review meeting announcement

6. 1. . - 1013069
DATE: 12/22/93 PAGES: 2
AUTHOR: Kaia Petersen/State of Washington, Dept. of Ecology
ADDRESSEE: Marcia Newlands/Heller Ehrman White & McAuliffe
DESCRIPTION: Response to letter of 11/22/93 in which Asarco presented a protocol for testing slag

6. 1. . - 1013314
DATE: 01/11/94 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Meeting attendance list for: Meeting on Final Decision - Asarco Petition to Exempt Residential Soils from the Ruston and North Tacoma Area - January 11, 1994 Klickitat County, Ecology and EPA

6. 1. . - 1013318
DATE: 01/11/94 PAGES: 5
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda for: Meeting on Final Decision; Asarco Petition for Exemption of Residential Soils from the Ruston and North Tacoma area

1. . - 1013319
DATE: 01/13/94 PAGES: 1
AUTHOR: Tom Moughon/Klickitat County Public Works
ADDRESSEE: Mary Kay Voytilla/EPA
DESCRIPTION: FAX letter conveying pleasure of meeting with EPA personnel and to "reaffirm Ed Hoyle's invitation for you, Piper, and others of your choosing to visit the Regional Landfill."

6. 1. . - 1013315
DATE: 01/18/94 PAGES: 1
AUTHOR: Thomas Eaton/Washington Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Letter to "Persons Interested in the Asarco Petitions for Exemption" with subject: Final Decision on Residential Soils in the Ruston and North Tacoma Area

6. 1. . - 1013316
DATE: 02/01/94 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Kaia Petersen/State of Washington, Dept. of Ecology
DESCRIPTION: Dangerous waste exemptions for demolition debris and slag - Asarco Tacoma Smelter

1. . - 1013317
DATE: 02/10/94 PAGES: 21
AUTHOR: Kaia Petersen/State of Washington, Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Letter to "Person Interested in the Asarco Petition for Exemption" with subject: Drafts of tentative decisions on demolition debris and slag

6. 1. . - 1013320
DATE: 03/04/94 PAGES: 1
AUTHOR: Kaia Petersen/Washington Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Letter to "Persons Interested in the Asarco Petitions for Exemption" with subject of tentative decisions on demolition debris and slag

6. 1. . - 1013762
DATE: 05/09/94 PAGES: 3
AUTHOR: Bruce Cochran/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Subject: Asarco, Tacoma - Project Monthly Review Meeting for May to - 17 various addressees and organizations

-HEAD: 6. 1. 1. Department of Ecology

6. 1. 1. - 0012318
DATE: 07/10/90 PAGES: 9
AUTHOR: Marian Abbett/State of Washington Dept. of Ecology
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Outstanding Policy and ARAR Issues involving State Regulations as they apply to Asarco

6. 1. 1. - 0012311
DATE: 06/20/91 PAGES: 2
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Carol Fleskes/Hazardous Waste Investigations and Cleanup
DESCRIPTION: Asarco Petition for Exemption from Dangerous Waste Regulations

6. 1. 1. - 0012319
DATE: 06/28/91 PAGES: 2
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Dave Jansen/State of Washington Dept. of Ecology
DESCRIPTION: Request for identification of State ARARs requirements

6. 1. 1. - 0012312
DATE: 07/10/91 PAGES: 3
AUTHOR: Marian Abbett/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Comments on MTCA Review of Proposed Remedial Action Objectives fo the Asarco Upland site

6. 1. 1. - 0012313
DATE: 07/17/91 PAGES: 5
AUTHOR: Lon Kissinger/State of Washington Dept. of Ecology
ADDRESSEE: Marian Abbett/State of Washington Dept. of Ecology
DESCRIPTION: Technical support information for calculation of MTCA cleanup levels at the Asarco site

6. 1. 1. - 0012314
DATE: 08/01/91 PAGES: 3
AUTHOR: Marian Abbett/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Dangerous Waste Siting Criteria - Exemption for Superfund Sites

6. 1. 1. - 1029319
DATE: 08/15/91 PAGES: 2
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Judith Lorbeir/Unknown
DESCRIPTION: Following letter to the EPA's letter dated June 28, 1991 to Dave Jansen of the Washington State Dept. of Ecology requesting that Ecology identify potential ARARs under state law for the Superfund cleanup of Aug. 15, 1991.

1. 1. - 1029318
DATE: 08/16/91 PAGES: 11
AUTHOR: Marian Abbett/Washington State Department of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Unsigned letter regarding identification of State ARARs for the Asarco Smelter site.

6. 1. 1. - 0012321
DATE: 08/20/91 PAGES: 7
AUTHOR: Unknown/State of Washington Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Interprogram Policy, Area of Contamination

6. 1. 1. - 0012320
DATE: 08/21/91 PAGES: 54
AUTHOR: Marian Abbett/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Identification of State ARARs for the Asarco Smelter Site

6. 1. 1. - 1029320
DATE: 09/09/91 PAGES: 7
AUTHOR: Unknown/Washington State Department of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: FAXed copy of Interprogram Policy - Area of Contamination: Purpose of policy is to clarify the definitions of generation and disposal as they apply to waste, soil and debris found at MTCA sites.

6. 1. 1. - 0012315
DATE: 10/02/91 PAGES: 17
AUTHOR: Marcia Newlands/Heller Ehrman White & McAuliffe
ADDRESSEE: Carol Fleskes/State of Washington Dept. of Ecology
DESCRIPTION: Petition for Exemption of Residential Soils from Dangerous Waste Regulations

6. 1. 1. - 0012322
DATE: 11/12/91 PAGES: 3
AUTHOR: Bruce Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: State ARARs for the Asarco Smelter Site - Revised

6. 1. 1. - 0012632
DATE: 01/15/92 PAGES: 2
AUTHOR: Bruce A. Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: EHW Treatment Interpretation and Disposal

6. 1. 1. - 1029321
DATE: 02/24/92 PAGES: 2
AUTHOR: Bruce Cochran/Washington State Department of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Ecology's comments on the ARARs section of the Asarco On-Site Containment Facility Report.

6. 1. 1. - 0012300
DATE: 03/20/92 PAGES: 2
AUTHOR: Carol Kraege/State of Washington Dept. of Ecology
ADDRESSEE: Jerry Ackerman/State of Washington Dept. of Ecology
DESCRIPTION: Permit Issues at the Asarco Smelter, Tacoma

6. 1. 1. - 0012301
DATE: 06/30/92 PAGES: 1
AUTHOR: Carl E. Samuelson/Washington Department of Fisheries
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Smelter Superfund Site Remedial Action Participation, Replacement of Washington Department of Fisheries representative

6. 1. 1. - 0012302
DATE: 07/17/92 PAGES: 1
AUTHOR: Bruce Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Ecology Comments on Section 6.6 of the Draft Asarco Smelter Site Ri

6. 1. 1. - 0012303
DATE: 07/17/92 PAGES: 1
AUTHOR: Bruce Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Plant Site Risk Assessment Issues

6. 1. 1. - 0012304
DATE: 07/24/92 PAGES: 2
AUTHOR: Julie Sellick/State of Washington Dept. of Ecology
ADDRESSEE: Ken Casten/Industrial Services
DESCRIPTION: Reuse of Spent Sandblast Grit and Foundry Sand at Holman Cement in Seattle

6. 1. 1. - 0012305
DATE: 09/10/92 PAGES: 6
AUTHOR: Tim L. Nord/State of Washington Dept. of Ecology
ADDRESSEE: Carol Fleskes/State of Washington Dept. of Ecology
DESCRIPTION: Toxic Cleanup Program's Monthly report, August 1, 1992 - August 31, 1992

1. 1. - 0012309
DATE: 12/09/92 PAGES: 2
AUTHOR: Ann Remsberg/State of Washington Dept. of Ecology
ADDRESSEE: Bruce Cochran/State of Washington Dept. of Ecology
DESCRIPTION: Review of Asarco Smelter Cleanup Feasibility Study with Respect to Wetlands

6. 1. 1. - 0012267
DATE: 02/05/93 PAGES: 8
AUTHOR: Bruce A. Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Water Discharges at Remediation Sites; Information for Consideration at the Asarco Smelter Site

6. 1. 1. - 0012931
DATE: 05/25/93 PAGES: 6
AUTHOR: Tod Gold/EPA
ADDRESSEE: Bruce A. Cochran/State of Washington Dept. of Ecology
DESCRIPTION: State Laws that are NOT ARARs for Remedial Actions at the Asarco Smelter and the Ruston/North Tacoma Study Area

6. 1. 1. - 0012979
DATE: 05/26/93 PAGES: 1
AUTHOR: Peter C. Brooks/State of Washington Dept. of Ecology
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: Acknowledgement of 4/7/93 letter re: Termination of NPDES Permit for Asarco Smelter site

6. 1. 1. - 1013691
DATE: 06/16/93 PAGES: 14
AUTHOR: Charles San Juan/State of Washington, Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal of proposal from USGS to study arsenic fate and mobility, document attached

6. 1. 1. - 0012973
DATE: 06/17/93 PAGES: 5
AUTHOR: Bruce Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Comments on Asarco Draft Final Feasibility Study, dated May 24, 1993

6. 1. 1. - 0012978
DATE: 06/18/93 PAGES: 3
AUTHOR: Bruce Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: State Laws as ARARs for Remedial Actions at the Asarco Smelter and the Ruston/North Tacoma Study Area

6. 1. 1. - 1002081
DATE: 06/25/93 PAGES: 13
AUTHOR: Kaia Petersen/State of Washington Dept. of Ecology
ADDRESSEE: Marcia Newlands/Heller Ehrman White & McAuliffe
DESCRIPTION: Transmittal & enclosed drafts of WDOE initial decision on petitions for slag and demolition debris

6. 1. 1. - 1013693
DATE: 07/01/93 PAGES: 3
AUTHOR: Bruce A. Cochran/State of Wahington, Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter re: WAC 173-304 minimum functional standards for solid waste handling as ARARs for the Asarco site

6. 1. 1. - 1002020
DATE: 07/15/93 PAGES: 7
AUTHOR: Richard Szymarek/State of Washington Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Changes to the Water Well Construction Act (1971)

6. 1. 1. - 1002126
DATE: 08/09/93 PAGES: 2
AUTHOR: Tod A. Gold/EPA
ADDRESSEE: Peter C. Brooks/Department of Ecology
DESCRIPTION: RE: Asarco's NPDES Permit

6. 1. 1. - 1002125
DATE: 08/23/93 PAGES: 4
AUTHOR: Bruce A. Cochran/Department of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: RE: Asarco-Additional Soil Treatability Work

6. 1. 1. - 1002124
DATE: 08/26/93 PAGES: 2
AUTHOR: Tod A. Gold/EPA
ADDRESSEE: Bruce A. Cochran/Department of Ecology
DESCRIPTION: RE: Remaining State ARARs Issues

6. 1. 1. - 1013072
DATE: 11/24/93 PAGES: 4
AUTHOR: Steve Robb/State of Washington, Dept. of Ecology
ADDRESSEE: Unknown/State of Washington, Dept. of Ecology
DESCRIPTION: Practical Quantitation limits as Cleanup Standards

1. 1. - 1013073
DATE: 11/29/93 PAGES: 1
AUTHOR: Bruce Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Project Review memorandum, proposed cleanup plan

6. 1. 1. - 1029028
DATE: 06/03/94 PAGES: 2
AUTHOR: Bruce A. Cochran/State of Washington Department of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter supporting EPA schedule for the Asarco ROD and as noted in attached memo from Marian Abbett, the sum of the Remedial Action Objectives may not exceed 1 in 100,000.

6. 1. 1. - 1029029
DATE: 06/14/94 PAGES: 24
AUTHOR: Marcia Newlands/Heller Ehrman White & McAuliffe
ADDRESSEE: Kaia Petersen/Washington State Department of Ecology
DESCRIPTION: Cover letter and attached material regarding Rabanco's proposal for disposal services for Asarco's demolition debris, soils and slag.

6. 1. 1. - 1029030
DATE: 06/24/94 PAGES: 2
AUTHOR: Lucy Harter/State of Washington Department of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter for three draft copies of the Wash. State Dept. of Health Final Report: Mortality Study of Children Residing Near ASARCO Copper Smelter in Ruston, Wash. Copies not attached. Attached is a copy of the public notice of Study.

6. 1. 1. - 1029031
DATE: 06/27/94 PAGES: 18
AUTHOR: Kaia Petersen/State of Washington Department of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Nine copies of letter to various community officials stating the Dept. of Ecology received a proposal from Asarco for off-site disposal of material from the smelter; approval of plan was expected.

6. 1. 1. - 1029032
DATE: 07/08/94 PAGES: 5
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Rachel Friedman-Thomas/Department of Ecology
DESCRIPTION: Cover letter for electronic copy and hard copy of all sediment chemistry, bioassays, biomass and benthic abundance data related to Asarco surveys. Copies attached.

6. 1. 1. - 1029033
DATE: 07/08/94 PAGES: 4
AUTHOR: Kaia Petersen/State of Washington Department of Ecology
ADDRESSEE: Marcia Newlands/Heller Ehrman White & McAuliffe
DESCRIPTION: Response/comment letter to proposal submitted by Asarco on June 14, 1994 for off-site disposal of material from smelter.

6. 1. 1. - 1029027
DATE: 07/11/94 PAGES: 2
AUTHOR: Michael T. Llewelyn/State of Washington Department of Ecology
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter, co-signed by Carol Kraege, stating the Washington State Depart. of Ecology (Ecology) has determined that the extension of the permit authorized by a letter from Ecology dated March 17, 1980 is invalid 60 days from receipt of letter.

6. 1. 1. - 1029035
DATE: 07/14/94 PAGES: 10
AUTHOR: Marcia Newlands/Heller Ehrman White & McAuliffe
ADDRESSEE: Kaia Petersen/Department of Ecology
DESCRIPTION: Response letter to correspondence of July 8, 1994 requesting additional information before Ecology gives final approval for off-site disposal of Asarco wastes; comments made by K. Petersen are followed by Asarco's responses.

6. 1. 1. - 1029036
DATE: 07/18/94 PAGES: 8
AUTHOR: Marcia Newlands/Heller Ehrman White & McAuliffe
ADDRESSEE: Kaia Petersen/Department of Ecology
DESCRIPTION: Cover letter with attached revised table to replace table provided June 14, 1994 titled: Comparison of Ecology's Off-site Management Standards With Disposal at Roosevelt Regional Landfill.

6. 1. 1. - 1029037
DATE: 07/25/94 PAGES: 2
AUTHOR: Kaia Petersen/State of Washington Department of Ecology
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter regarding need for Asarco to prepare a transportation plan which includes the proposed route to be taken for the transport of wastes through Ruston, Tacoma, Pierce County and any other roadways.

6. 1. 1. - 1029038
DATE: 08/02/94 PAGES: 3
AUTHOR: Thomas Eaton/State of Washington Department of Ecology
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter of concurrence from the Dept. of Ecology with the proposal described by Asarco in its June 14 submittal and in subsequent submittals on July 14 & July 18 as meeting the off-site management standards specified by Ecology.

SUB-HEAD: 6. 1. 2. Department of Health

6. 1. 2. - 1029039
DATE: 10/13/94 PAGES: 2
AUTHOR: Gary Bickett/Southwest Washington Health District
ADDRESSEE: Richard H. Morck/Regional Disposal Company
DESCRIPTION: Letter with attached addressed envelope regarding acceptance of management plan submitted by Heller Ehrman White & McAuliffe regarding solid waste handling procedures for the Asarco generated waste and comments from Dept. of Ecology.

SUB-HEAD: 6. 2. . State Certification of ARAR's

6. 2. . - 1013584
DATE: 07/20/87 PAGES: 11
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Hydraulic Code Guidelines

6. 2. . - 0012296
DATE: 09/04/92 PAGES: 9
AUTHOR: Bruce A. Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Washington Department of Natural Resources ARARs for Asarco, Tacoma Smelter Site (Operable Unit 02) and Related Offshore Sediments Site (Operable Unit 6)

6. 2. . - 1013075
DATE: 09/13/93 PAGES: 2
AUTHOR: Carol Kraege/State of Washington Dept. of Ecology
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: Response to letter of 08/05/93 regarding DOE's opinion of statutory restriction of EHW disposal within Washington and sediments management standards.

SUB-HEAD: 6. 3. . Demolition Debris and Slag - Dangerous Waste Exemption

6. 3. . - 1013230
DATE: / / PAGES: 400
AUTHOR: Unknown/State of Washington Dept. of Ecology
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Petition for Exemption of Demolition Debris

6. 3. . - 1013321
DATE: 03/02/94 PAGES: 195
AUTHOR: Unknown/State of Washington, Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Tentative Decision Documents: Asarco Petition for Exemption of Demolition Debris from the Asarco Tacoma Smelter from Washington State's Dangerous Waste Regulations Chapter 173-303 WAC; Asarco Petition for Exemption of slag

6. 3. . - 1013763
DATE: 03/25/94 PAGES: 5
AUTHOR: Roberta M. Young/Puyallup Tribe of Indians
ADDRESSEE: Kaia Petersen/Department of Ecology
DESCRIPTION: Re: Comments regarding proposed decision on disposal of Asarco Demolition debris and slag - attached copies of related letters from Harold G. Moss, Mayor of Tacoma and Michael Isensee, Citizens for a Healthy Bay

6. 3. . - 1013764
DATE: 05/23/94 PAGES: 44
AUTHOR: Unknown/Washington State Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Responsiveness Summary to Tentative Decision Documents: Asarco Petition for Exemption of Demolition Debris from Washington State's Dangerous Waste Regulations and of Slag that exists as a result of smelting operations

6. 3. . - 1029341
DATE: 06/10/94 PAGES: 90
AUTHOR: Tom Eaton/Washington State Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Cover letter and attached Final Decision Documents on Asarco Petition for Exemption of Demolition Debris from Washington State's Dangerous Waste Regulations Chapter 173-303 WAC.

SUB-HEAD: 6. 4. . Ruston/North Tacoma Residential Soil Exemption

6. 4. . - 1013322
DATE: 12/20/93 PAGES: 208
AUTHOR: Unknown/State of Washington, Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Final Decision Document: Asarco Petition for Exemption of Residential Soil in the Ruston and North Tacoma Area from Washington State's Dangerous Waste Regulation Chaper 173-303 WAC

4. . - 1013078
DATE: 12/21/93 PAGES: 14
AUTHOR: Kaia Petersen/State of Washington Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Copy of final decision on Asarco petition for exemption of residential soils in Ruston and N. Tacoma areas from Washington State's Dangerous Waste Regulations

6. 4. . - 1013077
DATE: 12/22/93 PAGES: 30
AUTHOR: Kaia Petersen/State of Washington Dept. of Ecology
ADDRESSEE: Randy Smith/EPA
DESCRIPTION: Copy of resonsiveness summary addressing comments received during comment period on DOE's proposed decision for Asarco's petition for exemption of residential soils in the Ruston and N. Tacoma area

HEADING: 7. 0. . TRIBAL COORDINATION

SUB-HEAD: 7. 1. . Correspondence

7. 1. . - 1013079
DATE: 07/06/93 PAGES: 1
AUTHOR: Unknown/Puyallup Tribe of Indians
ADDRESSEE: Unknown/Tribal Council Members
DESCRIPTION: List of officers and members for the Puyallup Tribal Council [NOTE: The Puyallup Tribe's correspondence regarding the Proposed Plan is included in section 4.2].

HEADING: 8. 0. . COORDINATION WITH OTHER AGENCIES/ORGANIZATIONS

SUB-HEAD: 8. 1. . Correspondence

8. 1. . - 1013323
DATE: 02/01/94 PAGES: 2
AUTHOR: Carl E. Samuelson/Washington Dept. of Fisheries
ADDRESSEE: Piper L. Peterson/EPA
DESCRIPTION: Subject: Ruston/Tacoma Asarco Site Aquatic Habitat Remediation

8. 1. . - 1013324
DATE: 02/28/94 PAGES: 3
AUTHOR: Carl E. Samuelson/Washington Dept. of Fisheries
ADDRESSEE: Piper L. Peterson/EPA
DESCRIPTION: Subject: Asarco Site Nearshore Aquatic Habitat Restoration

8. 1. . - 1029040
DATE: 06/26/94 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Paul Shirley/Unknown
DESCRIPTION: Response letter to correspondence received June 24, 1994 regarding the Tacoma/Pierce Boater Association's position on the boat landing at South Asarco and other accompanying materials; Association was placed on mailing list for Prop. Plan.

8. 1. . - 1029041
DATE: 07/08/94 PAGES: 2
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Land Use Group Members
DESCRIPTION: Memo with attached comment letter written by Wendell Brown of Pierce County, Office of County Council stating support for the inclusion of a boat ramp at the south end of "your property."

8. 1. . - 1029042
DATE: 07/29/94 PAGES: 2
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Land Use Group Members
DESCRIPTION: Memo with attached comment letter written by Barbara Skinner of Pierce County Office of the County Council stating support for the inclusion of a public boat launch ramp in the Asarco re-development.

SUB-HEAD: 8. 1. 1. City of Tacoma

8. 1. 1. - 1013696
DATE: / / PAGES: 16
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Memorandum and attached Memorandum of Agreement between the Washington Dept. of Ecology and EPA Region 10 defining roles of and responsibilities between the two agencies: Superfund/HW Cleanup Program Memorandum of Agreement

8. 1. 1. - 0012990
DATE: 10/26/89 PAGES: 9
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Superfund Program/EPA
DESCRIPTION: Transmittal/Attached Superfund/Hazardous Waste Cleanup Program Memorandum of Agreement

8. 1. 1. - 0012910
DATE: 08/31/90 PAGES: 24
AUTHOR: Unknown/City Club of Tacoma
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Arsenic and an Old Smelter, Asarco Site Cleanup Study.

8. 1. 1. - 0012911
DATE: 09/11/90 PAGES: 2
AUTHOR: Philip H. Brandt/Graham & Dunn
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: City Club of Tacoma: Evening Meeting, November 7, 1990: Asarco Cleanup

8. 1. 1. - 0012912
DATE: 10/24/90 PAGES: 2
AUTHOR: Philip H. Brandt/Graham & Dunn
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: City Club of Tacoma: Discussion of Asarco Cleanup and Site - request for confirmation of attendance at Nov. 7, 1990 meeting

8. 1. 1. - 0012913
DATE: 06/25/91 PAGES: 10
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: City of Tacoma, Town of Ruston Joint Study Session Agenda

8. 1. 1. - 1002180
DATE: 08/15/91 PAGES: 2
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Judith Lorbeir/City of Tacoma
DESCRIPTION: Letter regarding Department of Ecology ARARs and role of EPA, Sta and City.

8. 1. 1. - 1013358
DATE: 09/10/93 PAGES: 2
AUTHOR: Unknown/Tacoma Environmental Commission
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda for Environmental Commission: Regular Meeting 9/13/93.

8. 1. 1. - 1013357
DATE: 10/01/93 PAGES: 3
AUTHOR: Unknown/City of Tacoma
ADDRESSEE: Unknown/Unknown
DESCRIPTION: City of Tacoma Environmental Commission Roster of Members, Technical Liaison Group Roster, Membership Biographical Information

8. 1. 1. - 1013624
DATE: 04/25/94 PAGES: 2
AUTHOR: Unknown/Tacoma Environmental Commission
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda for Environmental Commission meeting of 4/25/94.

8. 1. 1. - 1013765
DATE: 04/25/94 PAGES: 6
AUTHOR: Unknown/Tacoma Environmental Commission
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Minutes of Environmental Commission regular meeting held Monday, April 25, 1994 at the Tacoma Municipal Building

8. 1. 1. - 1013766
DATE: 05/31/94 PAGES: 1
AUTHOR: Ray E. Corpuz/City of Tacoma
ADDRESSEE: Randy Smith/EPA
DESCRIPTION: Letter requesting additional time for the City of Tacoma, Town of Ruston, Metropolitan Park District and Asarco to reach agreement in principle on the Asarco smelter site Record of Decision - delay until June 30, 1994.

8. 1. 1. - 1029043
DATE: 06/24/94 PAGES: 2
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Land Use Group Members
DESCRIPTION: Memo with attached comment letter written by Bill Hudak of Tacoma, Wash. stating support for the inclusion of a boat ramp at the Asarco facility.

8. 1. 1. - 1029044
DATE: 08/22/94 PAGES: 4
AUTHOR: Unknown/Tacoma Environmental Commission
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Minutes of meeting held Monday, August 22, 1994.

8. 1. 1. - 1029045
DATE: 09/26/94 PAGES: 2
AUTHOR: Unknown/Tacoma Environmental Commission
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Minutes of meeting held Monday, September 26, 1994.

SUB-HEAD: 8. 1. 2. Ruston/North Tacoma Coordinating Forum

8. 1. 2. - 1029046
DATE: / / PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Public notice that the Ruston/North Tacoma Coordinating Forum Meeting of May 23, 1994 has been cancelled and will be rescheduled for an early June time.

8. 1. 2. - 1029047
DATE: / / PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Public notice that the Ruston/North Tacoma Coordinating Forum Meeting has been set for August 11, 1994 at the Ruston School located at 5219 Shirley.

8. 1. 2. - 1002006
DATE: 07/07/93 PAGES: 3
AUTHOR: Randy Smith/EPA
ADDRESSEE: Roleen Hargrove/Puyallup Tribe
DESCRIPTION: Asarco Smelter Site Cleanup - Community Involvement

8. 1. 2. - 1002007
DATE: 07/07/93 PAGES: 3
AUTHOR: Randy Smith/EPA
ADDRESSEE: Carl Sagerser/State of Washington Department of Health
DESCRIPTION: Asarco Smelter Site Cleanup - Community Involvement

8. 1. 2. - 1002008
DATE: 07/07/93 PAGES: 3
AUTHOR: Randy Smith/EPA
ADDRESSEE: Darlene Madenwald/Washington Environmental Council
DESCRIPTION: Asarco Smelter Site Cleanup - Community Involvement

1. 2. - 1002009
DATE: 07/07/93 PAGES: 3
AUTHOR: Randy Smith/EPA
ADDRESSEE: Robert Williams/ATSDR/DHAC/RPB
DESCRIPTION: Asarco Smelter Site Cleanup - Community Involvement

8. 1. 2. - 1002011
DATE: 07/07/93 PAGES: 3
AUTHOR: Randy Smith/EPA
ADDRESSEE: Laurie Halvorson/Puget Sound Air Pollution Control Agency
DESCRIPTION: Asarco Smelter Site Cleanup - Community Involvement

8. 1. 2. - 1002012
DATE: 07/07/93 PAGES: 3
AUTHOR: Randy Smith/EPA
ADDRESSEE: Jim Montgomerie/Metropolitan Park District of Tacoma
DESCRIPTION: Asarco Smelter Site Cleanup - Community Involvement

8. 1. 2. - 1002013
DATE: 07/07/93 PAGES: 3
AUTHOR: Randy Smith/EPA
ADDRESSEE: Karen Vialle/City of Tacoma
DESCRIPTION: Asarco Smelter Site Cleanup - Community Involvement

8. 1. 2. - 1002014
DATE: 07/07/93 PAGES: 3
AUTHOR: Randy Smith/EPA
ADDRESSEE: Ray E. Corpuz/City of Tacoma
DESCRIPTION: Asarco Smelter Site Cleanup - Community Involvement

8. 1. 2. - 1002015
DATE: 07/07/93 PAGES: 3
AUTHOR: Randy Smith/EPA
ADDRESSEE: Ron Wilkinson/State of Washington Division of Industrial
DESCRIPTION: Asarco Smelter Site Cleanup - Community Involvement

8. 1. 2. - 1002016
DATE: 07/07/93 PAGES: 3
AUTHOR: Randy Smith/EPA
ADDRESSEE: Robert Pudlo/Town of Ruston
DESCRIPTION: Asarco Smelter Site Cleanup - Community Involvement

8. 1. 2. - 1002017
DATE: 07/07/93 PAGES: 3
AUTHOR: Randy Smith/EPA
ADDRESSEE: Alfred M. Allen/Tacoma-Pierce County Health Department
DESCRIPTION: Asarco Smelter Site Cleanup - Community Involvement

8. 1. 2. - 1002018
DATE: 07/07/93 PAGES: 3
AUTHOR: Randy Smith/EPA
ADDRESSEE: George W. Anderson/Asarco, Inc.
DESCRIPTION: Asarco Smelter Site Cleanup - Community Involvement

8. 1. 2. - 1013325
DATE: 07/07/93 PAGES: 100
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Ruston North Tacoma Coordinating Forum Meeting Summaries - Vol. I

8. 1. 2. - 1002079
DATE: 07/09/93 PAGES: 4
AUTHOR: Alice Shorett/Triangle Associates
ADDRESSEE: Participants at 5/28/93 Meeting at McCormic Lib./Unknown
DESCRIPTION: Review of Themes from Follow-up Phone Calls

8. 1. 2. - 1029340
DATE: 07/26/93 PAGES: 258
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Ruston/North Tacoma Coordinating Forum Meeting Summaries - Vol. I including handwritten notes.

8. 1. 2. - 1013363
DATE: 09/17/93 PAGES: 2
AUTHOR: Paul W. Agid/Landau Associates, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Re: Asarco Smelter Facility Technical Work Group agenda items for 09/27 meeting

8. 1. 2. - 1013362
DATE: 09/27/93 PAGES: 2
AUTHOR: Robert C. Williams/US Dept. of Health & Human Services
ADDRESSEE: Randall F. Smith/EPA
DESCRIPTION: Confirmation that the Agency for Toxic Substances would like to participate in the process to select a cleanup remedy for Asarco

8. 1. 2. - 1013361
DATE: 11/01/93 PAGES: 3
AUTHOR: Unknown/City of Tacoma
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Letter sent to those interested in participating in a series of workshops for the redevelopment of the Asarco property

8. 1. 2. - 1013359
DATE: 11/09/93 PAGES: 6
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Robert Taylor/Damage Assessment and Restoration Center NW
DESCRIPTION: Re: Ruston/North Tacoma Coordinating Forum - Asarco, invitation and agenda

8. 1. 2. - 1013360
DATE: 11/15/93 PAGES: 14
AUTHOR: Laura Ames/Elgin Syferd DDB Needham
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Week packet of papers/scheduled events/goals, etc.

8. 1. 2. - 1013589
DATE: 03/16/94 PAGES: 4
AUTHOR: Celia Barton/Washington State Dept. of Natural Resources
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Comments on future land use plans of the Asarco Tacoma Smelter site

8. 1. 2. - 1013590
DATE: 03/25/94 PAGES: 4
AUTHOR: David C. Frederick/United States Dept. of Interior
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Comments on the Asarco site preliminary land use and On-site Containment design

8. 1. 2. - 1013591
DATE: 03/30/94 PAGES: 5
AUTHOR: Sheri Tonn/Citizens for a Healthy Bay
ADDRESSEE: Jim Merritt/Merritt & Pardini
DESCRIPTION: Comments on the on-going redevelopment and cleanup plans for Asarco. Letter also sent to Piper Peterson, EPA and Tom Aldrich, Asarco, Inc.

8. 1. 2. - 1013625
DATE: 04/18/94 PAGES: 66
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Ruston/North Tacoma Coordinating Forum Meeting Summaries - Vol. II

8. 1. 2. - 1029048
DATE: 08/11/94 PAGES: 3
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Harold Moss/Tacoma City Council
DESCRIPTION: Cover letter to inform addressee of 60-day public comment period (8/12-10/11/94) and for copies of the U.S. EPA's Proposed Plan for the Cleanup of the Asarco Smelter, Slag Peninsula and Summary Fact Sheet (not attached) with mailing list.

8. 1. 2. - 1029049
DATE: 09/19/94 PAGES: 2
AUTHOR: Unknown/Ruston Town Council
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Resolution No. 298: A resolution of the Ruston Town Council not opposing the importation of 1700 tons of slag material from Asarco's property located at 1721 Thorne Road to the Asarco Smelter site.

SUB-HEAD: 8. 1. 3. Town of Ruston

8. 1. 3. - 0012562
DATE: 11/09/88 PAGES: 2
AUTHOR: Loretta Prettyman/Town of Ruston
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: Copy of Ordinance No. 826 Prohibiting Waste Disposal Sites

8. 1. 3. - 0012914
DATE: 06/17/91 PAGES: 1
AUTHOR: Charlene Hagen/Town of Ruston
ADDRESSEE: Charles E. Findley/EPA
DESCRIPTION: Solicitation for comments regarding shoreline and/or Town of Ruston's Master Program for Shoreline Development

8. 1. 3. - 0012915
DATE: 06/17/91 PAGES: 23
AUTHOR: Unknown/City of Tacoma
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Shoreline Master Program Amendments "S-6" Ruston Way Shoreline District

8. 1. 3. - 0012967
DATE: 08/12/91 PAGES: 33
AUTHOR: James J. Mason/Preston Thorgrimson Shidler Gates & Ellis
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: Transmittal and enclosed preliminary draft of the Town of Ruston Shoreline Master Program (author: Wayne E. Fuiten of David Evans and Assoc., Inc.)

1. 3. - 1013365
DATE: 09/18/93 PAGES: 2
AUTHOR: Hagen/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Re: Letter from Tom Aldrich dated 09/09/93

8. 1. 3. - 1013364
DATE: 09/20/93 PAGES: 4
AUTHOR: Unknown/Town of Ruston
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Town of Ruston meeting of the town council; Agenda, Mary Kay Voytilla, EPA Presentation outline, elements of the Record of Decision for Ruston/North Tacoma study area

8. 1. 3. - 1013767
DATE: 05/03/94 PAGES: 3
AUTHOR: James J. Mason/Preston Gates & Ellis
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: Letter regarding Town of Ruston and City of Tacoma discussions as to the correct location of their mutual boundary - photo-copy of map attached

8. 1. 3. - 1013768
DATE: 05/24/94 PAGES: 1
AUTHOR: James J. Mason/Preston Gates & Ellis
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: Re: title company take-off of an order of the Board of State Land Commissioners dated 10/01/03 vacating Enell St., Eaton St. and Front St. Since Ruston was incorporated in 1906 they did not become Town streets and the Town has no claim

8. 1. 3. - 1029050
DATE: 08/18/94 PAGES: 3
AUTHOR: James J. Mason/Preston Gates & Ellis
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter to clarify boundary between Ruston and Tacoma - attached map and letter from David J. Maroon of City of Tacoma; Public Works Department, supporting Mason's boundary corrections.

8. 1. 3. - 1029051
DATE: 09/12/94 PAGES: 1
AUTHOR: Unknown/Environmental Commission
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Environmental Commission meeting agenda for Monday, September 12, 1994.

SUB-HEAD: 8. 1. 4. Community Groups

8. 1. 4. - 1013769
DATE: / / PAGES: 12
AUTHOR: Unknown/Citizens for a Healthy Bay
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Publication: Where The River Meets The Bay - 1994 State of Commencement Bay Report

8. 1. 4. - 1029059
DATE: / / PAGES: 12
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Multi-page document with site description, photograph, maps, etc. from the Boat Ramp Study Task Force Report.

8. 1. 4. - 1029060
DATE: / / PAGES: 4
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Letter of credentials for Andrew O. Lamb, shallow survey of potential launch ramp area and accompanying "Paul Shirley observations."

8. 1. 4. - 1013377
DATE: 12/08/92 PAGES: 75
AUTHOR: Unknown/Washington Dept. of Natural Resources
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Publication titled: Aquatic Lands - Strategic Plan with attached letter from Brian Boyle, Commissioner of Public Lands

8. 1. 4. - 1013369
DATE: 10/08/93 PAGES: 4
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Letter sent to Community Workgroup Members Re: Ruston/North Tacoma Community Workgroup Phase I Remedy Selection

8. 1. 4. - 1013371
DATE: 10/22/93 PAGES: 1
AUTHOR: Unknown/Commencement Bay Cleanup Action Committee
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda for CBCAC Steering Committee Meeting for 10/22/93

8. 1. 4. - 1013368
DATE: 11/03/93 PAGES: 2
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Unknown/Community Workgroup Member
DESCRIPTION: Letter announcing Workgroup meeting to be held 11/16/93 - member list attached

8. 1. 4. - 1013366
DATE: 11/16/93 PAGES: 2
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda and list of attendees for Ruston/North Tacoma Community Workgroup meeting of 11/16/93

8. 1. 4. - 1013367
DATE: 11/16/93 PAGES: 21
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda and packet of pertinent documents for Ruston/North Tacoma Community Workgroup Meeting

8. 1. 4. - 1013370
DATE: 11/19/93 PAGES: 14
AUTHOR: Unknown/Commencement Bay Cleanup Action Committee
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda and Supplemental Feasibility Study document for the CBCAC Quarterly meeting

8. 1. 4. - 1013376
DATE: 11/22/93 PAGES: 4
AUTHOR: Sheri Tonn/Citizens for a Healthy Bay
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter of concern to Piper Peterson and Robert Taylor (NOAA) regarding how the cleanup, restoration and redevelopment at the ASARCO site is proceeding

8. 1. 4. - 1013374
DATE: 11/29/93 PAGES: 2
AUTHOR: Charles K. Douthwaite/Eisenhower & Carlson
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Note to confirm invitation extended on behalf of the Environmental Task Force of the Tacoma-Pierce County Chamber of Commerce to attend Task Force meeting of 12/08/93

8. 1. 4. - 1013373
DATE: 12/08/93 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Environmental Task Force Tacoma-Pierce County Chamber of Commerce meeting outline

8. 1. 4. - 1013744
DATE: 01/31/94 PAGES: 5
AUTHOR: Paul Shirley/Tacoma/Pierce Boater Association
ADDRESSEE: Unknown/Asarco Study Group
DESCRIPTION: Letter voicing concern that Asarco decisions include public boat launch ramps

8. 1. 4. - 1013770
DATE: 04/25/94 PAGES: 10
AUTHOR: Bob Shakes/Tacoma/Pierce Boater Association
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Letter and annotated attached study: Pierce County Boat Launch Study Phase I - Saltwater, Public Review Draft 03/21/94

8. 1. 4. - 1013771
DATE: 04/28/94 PAGES: 11
AUTHOR: Paul Shirley/Tacoma/Pierce Boater Association
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Letter and attached material regarding no provisions for a trailered boat launch in either Asarco plan released for public comment. Other addressees include: Michael Varner (Asarco, Inc.) and Ron Thomas (Merritt & Pardini Architects)

8. 1. 4. - 1013772
DATE: 04/30/94 PAGES: 1
AUTHOR: George R. Meyer/Unknown
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Citizen's letter stating interest in Asarco plans that would include public boat launch ramps

8. 1. 4. - 1013773
DATE: 05/03/94 PAGES: 1
AUTHOR: James R. Merritt/Merritt & Pardini Architects
ADDRESSEE: Paul Shirley/Tacoma/Pierce Boater Association
DESCRIPTION: Letter regarding Asarco - 93060 Pierce County Boat Launches, response to April 28 letter.

8. 1. 4. - 1013774
DATE: 05/03/94 PAGES: 2
AUTHOR: Jon Ortgiesen/Pierce County Boat Launch Task Force
ADDRESSEE: Jim Merritt/Asarco Planning Team Merritt & Pardini
DESCRIPTION: Letter regarding the Pierce County Boat Launch Task Force's intent to encourage incorporation of a boat launching facility at the Asarco site.

1. 4. - 1013775
DATE: 05/04/94 PAGES: 2
AUTHOR: Earl E. Engman/Tacoma Poggie Club, Inc.
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter from the Tacoma Poggie Club to state that they are extremely disappointed that there are no plans for a trailered boat launch ramp in the development of the Asarco site. Second addressee is Ron Thomas, Merritt & Pardini Architects

8. 1. 4. - 1013776
DATE: 05/05/94 PAGES: 4
AUTHOR: Doug Miller/Metropolitan Park District of Tacoma
ADDRESSEE: Ron Thomas/Merritt & Pardini Architects
DESCRIPTION: Letter to state interest in having land-use plans include access to and from the water by boat via a launch ramp at the southern most corner of the Asarco site. Second addressee: Tom Aldrich (Asarco, Inc.)

8. 1. 4. - 1013777
DATE: 05/05/94 PAGES: 1
AUTHOR: Jan Wolcott/Pierce County Parks, Recreation & Community Services
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Re: Potential boat launch facility

8. 1. 4. - 1013778
DATE: 05/05/94 PAGES: 1
AUTHOR: Jim McAfee/Pierce County Sportsmen's Council
ADDRESSEE: Ron Thomas/Merritt & Pardini Architects
DESCRIPTION: Letter to voice support of including a trailered boat launch facility be included in proposed plan for the Asarco property

8. 1. 4. - 1013779
DATE: 05/11/94 PAGES: 2
AUTHOR: Paul Nee/Northwest Steelhead & Salmon Council
ADDRESSEE: Jim Merritt/Merritt & Pardini Architects
DESCRIPTION: Letter to express dismay that no provision has been made for a boat launch at the south Asarco site

8. 1. 4. - 1013780
DATE: 05/11/94 PAGES: 2
AUTHOR: Sarah Casada/State of Washington House of Representatives
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Form letter to Aldrich and Ron Thomas (Merritt & Pardini Architects) to recommend that a boat launch be included in this proposal of the Asarco property to accommodate sports people in the 25th District

8. 1. 4. - 1013781
DATE: 05/12/94 PAGES: 1
AUTHOR: Brian Ebersole/State of Washington House of Representatives
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Letter written in support of a proposal by the Tacoma/Pierce Boaters Association to include facilities for a boat launch at the Asarco redevelopment site

8. 1. 4. - 1013782
DATE: 05/12/94 PAGES: 1
AUTHOR: Susan Coffey/Metropolitan Park District
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Letter stating that the Park District found the Asarco site to be one of the most desirable locations for a boat launch facility

8. 1. 4. - 1013783
DATE: 05/13/94 PAGES: 2
AUTHOR: C. Dan Mulholland/Metropolitan Park District
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Letter stating that the lack of provision for a boat launch ramp in either Asarco plan is disturbing

8. 1. 4. - 1013784
DATE: 05/13/94 PAGES: 7
AUTHOR: Bob Miller/HB 2055 Oversight Committee
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Letter expressing distress over an Asarco construction scheme under way that might deny public boat launch access to tens of thousands of Tacoma area boaters for over a year

8. 1. 4. - 1013785
DATE: 05/17/94 PAGES: 1
AUTHOR: Steve Conway/State of Washington House of Representatives
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Letter to indicate support for the effort of the Tacoma/Pierce County Boater Association to have boat launch facilities included in the South Asarco redevelopment property project plan

8. 1. 4. - 1013786
DATE: 05/19/94 PAGES: 2
AUTHOR: Dick Moe/Metropolitan Park District
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Fax cover sheet for telephone memo in support of a major boat launch if it could be screened to some extent - provide north only exit out of parking area

1. 4. - 1013787
DATE: 05/19/94 PAGES: 1
AUTHOR: Sally W. Walker/Pierce County Council
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Letter expressing support of and need for the planned development of Asarco's property to include a boat launch ramp at the south end of the property

8. 1. 4. - 1013788
DATE: 05/20/94 PAGES: 1
AUTHOR: Marcus S. Gaspard/Washington State Senate
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Letter in support of Paul Shirley of the Tacoma/Pierce Boater Association's request for a public boat launch facility in connection with the proposed development plans for the Asarco site

8. 1. 4. - 1013789
DATE: 05/25/94 PAGES: 1
AUTHOR: Chuck Tyler/Tacoma Sportsmen's Club, Inc.
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Letter in support of the Tacoma/Pierce Boater Association's position regarding the need for a boat launch at the Asarco site

1. 4. - 1013790
DATE: 05/26/94 PAGES: 1
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter informing EPA of a recent push from the boat launch community to include a large boat launch facility in the redevelopment plans - handwritten P.S. saying the Planning Group met and probably would not include a launch in final plan

8. 1. 4. - 1013791
DATE: 05/31/94 PAGES: 18
AUTHOR: Paul Shirley/Tacoma/Pierce Boater Association
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter and attached pictures and information package concerning proposed boat launch site

8. 1. 4. - 1029054
DATE: 06/10/94 PAGES: 12
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Land Use Group Members
DESCRIPTION: Memo and attached material relating to comments on future land use plans of the Asarco-Tacoma smelter site and Jim Merritt response letter to comments.

8. 1. 4. - 1029055
DATE: 06/24/94 PAGES: 2
AUTHOR: Paul Shirley/Tacoma/Pierce Boater Association
ADDRESSEE: Dick Smyth/Unknown
DESCRIPTION: Unsigned letter of comments regarding June 14, 1994 letter from David C. Frederick, State Supervisor of the US Dept. of the Interior; Fish and Wildlife Service; Ecological Services sent to Piper Peterson of the Region 10 office of the EPA.

8. 1. 4. - 1029058
DATE: 06/27/94 PAGES: 2
AUTHOR: Paul Shirley/Tacoma/Pierce Boater Association
ADDRESSEE: Unknown/Unknown
DESCRIPTION: "Ramblings by Paul Shirley" titled: South Asarco Boat Launch Ramp - Storm Water and It's Road Oil.

8. 1. 4. - 1029056
DATE: 06/29/94 PAGES: 1
AUTHOR: Paul Shirley/Tacoma/Pierce Boater Association
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter regarding intertidal and sub-tidal Asarco lands south of the slag fill with bank run sand and gravel.

8. 1. 4. - 1029057
DATE: 06/30/94 PAGES: 4
AUTHOR: Richard Moe/Metropolitan Park District of Tacoma
ADDRESSEE: Harold G. Moss/City of Tacoma Mayor
DESCRIPTION: Letter to state that the Board of Park Commissioners requires more information before making a final recommendation to "other stakeholders" on the issue of a public boat launch. Position paper attached.

8. 1. 4. - 1029061
DATE: 07/06/94 PAGES: 14
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Letters and comments from various parties concerning future land use plans of the Asarco-Tacoma smelter site.

SUB-HEAD: 8. 1. 5. State Agencies

8. 1. 5. - 1029062
DATE: 05/31/94 PAGES: 2
AUTHOR: Robert Turner/State of Washington Department of Fish & Wildlife
ADDRESSEE: Jim Merritt/Merritt & Pardini Architects
DESCRIPTION: Letter signed by Judith Freeman; Deputy and co-addressed to Tom Aldrich of Asarco, Inc. regarding support of the south Asarco site as a new boat launch site.

SUB-HEAD: 8. 1. 6. Federal Agencies

8. 1. 6. - 1029064
DATE: 06/14/94 PAGES: 4
AUTHOR: David C. Frederick/US Department of the Interior Fish & Wildlife
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response letter to EPA's request for comments on letter of April 28 1994 from the Tacoma/Pierce Boater Association concerning proposed south Asarco boat ramp.

8. 1. 6. - 1029065
DATE: 06/16/94 PAGES: 2
AUTHOR: Kathy Marshall/State of Washington Department of Natural Resources
ADDRESSEE: Paul Shirley/Tacoma/Pierce Boater Association
DESCRIPTION: Letter regarding boat ramp proposal at the south Asarco property.

HEADING: 9. 0. . ENFORCEMENT

SUB-HEAD: 9. 1. . Correspondence

9. 1. . - 0012101
DATE: 09/17/91 PAGES: 3
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/Enclosed revised project schedule for RI/FS

9. 1. . - 0012326
DATE: 04/20/92 PAGES: 1
AUTHOR: Clark J. Davis/Davies Pearson, P. C.
ADDRESSEE: Philip G. Millam/EPA
DESCRIPTION: Metropolitan Park District, Request for Extension on Response to 104(e) Request

9. 1. . - 0012327
DATE: 04/24/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Clark J. Davis/Davies Pearson, P. C.
DESCRIPTION: Extension to General Notice Letter Granted

SUB-HEAD: 9. 1. 1. Formal Correspondence

9. 1. 1. - 0012340
DATE: / / PAGES: 2
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Superfund Enforcement Strategy/Policy for Nearshore/Tideflats Area of Commencement Bay

9. 1. 1. - 0012341
DATE: / / PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Delegation Briefing, Asarco Smelter, Pierce County, Washington

9. 1. 1. - 0012342
DATE: / / PAGES: 1
AUTHOR: Keith Rose/EPA
ADDRESSEE: Curtis Dungey/Asarco, Inc.
DESCRIPTION: Transmittal - Second Amendment to RI/FS Workplan

1. 1. - 0012343
DATE: / / PAGES: 3
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Biographical Information on Company

9. 1. 1. - 0012344
DATE: 03/18/82 PAGES: 2
AUTHOR: William Sullivan/EPA
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Notice of PRP status

9. 1. 1. - 0012345
DATE: 08/04/82 PAGES: 2
AUTHOR: Cheryl Koshuta/EPA
ADDRESSEE: Michael Johnston/EPA
DESCRIPTION: Commencement Bay Air Work Group - Air Emissions Component of Cercla Activities at Commencement Bay

9. 1. 1. - 0012346
DATE: 01/07/84 PAGES: 1
AUTHOR: Barbara J. Lither/EPA
ADDRESSEE: Michael Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot and
DESCRIPTION: EPA Request for Information from Asarco Inc.

9. 1. 1. - 0012347
DATE: 04/18/84 PAGES: 1
AUTHOR: F. Henry Habicht/Department of Justice
ADDRESSEE: James R. Moore/EPA
DESCRIPTION: Request that routine customary portion of case development contain request concerning the existence of insurance and copies of policies in effect during period in question

9. 1. 1. - 0012385
DATE: 06/03/84 PAGES: 1
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Jane Gardner/Office of Regional Counsel
DESCRIPTION: Anaconda Proposal for Flue Dust Treatment Pilot Test

9. 1. 1. - 0012348
DATE: 08/02/84 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Lawrence Lindquist/Asarco, Inc.
DESCRIPTION: Certified Letter Receipt

9. 1. 1. - 0012349
DATE: 08/27/84 PAGES: 1
AUTHOR: Barbara J. Lither/EPA
ADDRESSEE: Michael Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot & Quinn
DESCRIPTION: Request for Extension of Time to Respond to EPA's CERCLA/RCRA Request has been granted

9. 1. 1. - 0012948
DATE: 12/31/84 PAGES: 1
AUTHOR: Dana Davoli/EPA
ADDRESSEE: Jim Krull/EPA
DESCRIPTION: Asarco Computer Records - request for assistance

9. 1. 1. - 0012356
DATE: 01/28/86 PAGES: 1
AUTHOR: Carol R. Thompson/EPA
ADDRESSEE: Gil Haselberger/EPA
DESCRIPTION: Release of PCBs into environment at Asarco

9. 1. 1. - 0012357
DATE: 02/03/86 PAGES: 4
AUTHOR: Gil Haselberger/EPA
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: Potential PCB Contamination at Asarco Smelter

9. 1. 1. - 0012358
DATE: 03/31/86 PAGES: 1
AUTHOR: Carol Thompson/EPA
ADDRESSEE: Michael Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot & Quinn
DESCRIPTION: Confirmation of Meeting on April 2, 1986; final administrative order on consent

9. 1. 1. - 0012359
DATE: 06/27/86 PAGES: 8
AUTHOR: Mark Hooper/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Sensitivity of CERCLA Consent Order being negotiated by Asarco & EPA

9. 1. 1. - 0012360
DATE: 08/13/86 PAGES: 2
AUTHOR: Michael Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot & Quinn
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: Tacoma News Tribune Article, WDOE grant to Health Department

1. 1. - 0012361
DATE: 09/10/86 PAGES: 1
AUTHOR: Charles K. Douthwaite/Eisenhower, Carlson, Newlands, Reha, Henriot
ADDRESSEE: Charles E. Findley/EPA
DESCRIPTION: Asarco, Incorporated - Administrative Order on Consent

9. 1. 1. - 0012363
DATE: 10/06/86 PAGES: 1
AUTHOR: Carol Thompson/EPA
ADDRESSEE: Jim Puckett/Greenpeace NW
DESCRIPTION: Transmittal - Administrative Order of Consent

9. 1. 1. - 0012364
DATE: 10/22/86 PAGES: 1
AUTHOR: Carol Thompson/EPA
ADDRESSEE: E. Haase/Phelps Dodge Corporation
DESCRIPTION: Transmittal - Administrative Order on Consent

9. 1. 1. - 0012365
DATE: 11/05/86 PAGES: 2
AUTHOR: T. R. Strong/Washington Department of Social and Health Services
ADDRESSEE: L. W. Lindquist/Asarco, Inc.
DESCRIPTION: Review of Attachment B to Administrative Order on Consent, Remedial Investigation/Feasibility Study

9. 1. 1. - 0012366
DATE: 11/14/86 PAGES: 9
AUTHOR: Curtis E. Dungey/Asarco, Inc.
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: Monthly Progress Report for September 10 - October 31, 1986

9. 1. 1. - 0012367
DATE: 11/20/86 PAGES: 1
AUTHOR: Carol Thompson/EPA
ADDRESSEE: Charles K. Douthwaite/Eisenhower, Carlson, Newlands, Reha, Henriot
DESCRIPTION: Transmittal only for signed original, copy of First Amendment to RI/FS Work Plan appended to the Administrative Order on Consent

9. 1. 1. - 0012368
DATE: 11/26/86 PAGES: 1
AUTHOR: Carol Thompson/EPA
ADDRESSEE: Robert R. Mooney/Washington Department of Social and Health
DESCRIPTION: Transmittal - Tacoma News Tribune Article

9. 1. 1. - 0012369
DATE: 12/05/86 PAGES: 2
AUTHOR: Michael Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot & Quinn
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: Asarco Tacoma Smelter Consent Order - unresolved items

9. 1. 1. - 0012370
DATE: 12/05/86 PAGES: 7
AUTHOR: Michael Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot & Quinn
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: Asarco Incorporated RI/FS Work Plan; clarification of Asarco's responsibilities under section 2.6 of Work Plan

9. 1. 1. - 0012371
DATE: 12/12/86 PAGES: 4
AUTHOR: Curtis E. Dungey/Asarco, Inc.
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: Monthly Progress Report for November 1-30, 1986

9. 1. 1. - 0012372
DATE: 12/15/86 PAGES: 3
AUTHOR: Michael Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot & Quinn
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: Request for Amendment to Site Stabilization Plan which is Attachment A to the Administrative Order on Consent - Sept. 10, 1986

9. 1. 1. - 0012373
DATE: 12/16/86 PAGES: 1
AUTHOR: Richard F. White/EPA
ADDRESSEE: Dom Reale/Washington Dept. of Ecology
DESCRIPTION: Request for Review of proposed amendment to the Site Stabilization Plan

9. 1. 1. - 0012374
DATE: 12/22/86 PAGES: 1
AUTHOR: Doug Pierce/Tacoma-Pierce County Health Department
ADDRESSEE: Rick White/EPA
DESCRIPTION: Comments on revision to site stabilization plan

9. 1. 1. - 0012375
DATE: 12/23/86 PAGES: 1
AUTHOR: Arthur R. Dammkoehler/Puget Sound Air Pollution Control Agency
ADDRESSEE: Richard White/EPA
DESCRIPTION: Review of Proposed Asarco Site Stabilization Plan Amendment

1. 1. - 0012376
DATE: 01/02/87 PAGES: 1
AUTHOR: Richard F. White/EPA
ADDRESSEE: Curtis Dungey/EPA
DESCRIPTION: Amendment to Asarco Site Stabilization Plan, Review

9. 1. 1. - 0012377
DATE: 01/14/87 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: Monthly Progress Report for December 1-31, 1986

9. 1. 1. - 0012379
DATE: 02/13/87 PAGES: 8
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: Monthly Progress Report for January 1-31, 1987

9. 1. 1. - 0012380
DATE: 02/27/87 PAGES: 2
AUTHOR: Carol R. Thompson/EPA
ADDRESSEE: James Everts/EPA
DESCRIPTION: Consistency of Asarco's RI/FS Work with SARA

9. 1. 1. - 0012381
DATE: 03/13/87 PAGES: 21
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: Monthly Progress Report for February 1-28, 1987

9. 1. 1. - 0012382
DATE: 04/14/87 PAGES: 17
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: Monthly Progress Report for March 1-31, 1987

9. 1. 1. - 0012383
DATE: 04/24/87 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: R. F. White/EPA
DESCRIPTION: Monthly Implementation Plan for May 1987

9. 1. 1. - 0012384
DATE: 05/14/87 PAGES: 15
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: Monthly Progress Report for April 1-30, 1987

9. 1. 1. - 0012386
DATE: 06/09/87 PAGES: 3
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Curtis Dungey/Asarco, Inc.
DESCRIPTION: Summary of Points from meeting - June 8, 1987

9. 1. 1. - 0012387
DATE: 06/10/87 PAGES: 7
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: Asarco Tacoma Smelter Wood Burning Project

9. 1. 1. - 0012388
DATE: 06/15/87 PAGES: 9
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: Monthly Progress Report for May 1-31, 1987

9. 1. 1. - 0012389
DATE: 06/23/87 PAGES: 2
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Curtis Dungey/Asarco, Inc.
DESCRIPTION: Applicability of State Air Pollution Regulations to the Asarco Tacoma Smelter Wood Burning Project

9. 1. 1. - 0012390
DATE: 07/14/87 PAGES: 6
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: Monthly Progress Report for June 1-30, 1987

9. 1. 1. - 0012391
DATE: 09/14/87 PAGES: 9
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: Monthly Progress Report for August 1-31, 1987

1. 1. - 0012392
DATE: 10/14/87 PAGES: 6
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: Monthly Progress Report for September 1-30, 1987

9. 1. 1. - 0012393
DATE: 11/13/87 PAGES: 7
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: Monthly Progress Report for October 1-31, 1987

9. 1. 1. - 0012394
DATE: 12/02/87 PAGES: 1
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Curtis Dungey/Asarco, Inc.
DESCRIPTION: Notification of Keith Rose assumption of responsibility as EPA Project Coordinator

9. 1. 1. - 0012395
DATE: 12/11/87 PAGES: 8
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for November 1-30, 1987

9. 1. 1. - 0012396
DATE: 01/14/88 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for December 1-31, 1987

9. 1. 1. - 0012397
DATE: 02/12/88 PAGES: 7
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for January 1-31, 1988

9. 1. 1. - 0012398
DATE: 03/14/88 PAGES: 5
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for February 1-29, 1988

9. 1. 1. - 0012399
DATE: 04/15/88 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for March 1-31, 1988

9. 1. 1. - 0012400
DATE: 05/12/88 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for April 1-30, 1988

9. 1. 1. - 0012401
DATE: 06/13/88 PAGES: 6
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for May 1-31, 1988

9. 1. 1. - 0012402
DATE: 06/20/88 PAGES: 3
AUTHOR: Michael Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot & Quinn
ADDRESSEE: Allan Bakalian/EPA
DESCRIPTION: Site Stabilization Activities at Asarco Tacoma Smelter

9. 1. 1. - 0012403
DATE: 08/11/88 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for July 1-31, 1988

9. 1. 1. - 0012404
DATE: 09/14/88 PAGES: 5
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for August 1-31, 1988

9. 1. 1. - 0012405
DATE: 10/12/88 PAGES: 6
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for September 1-30, 1988

1. 1. - 0012406
DATE: 11/08/88 PAGES: 6
AUTHOR: Michael Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot & Quinn
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Request for approval of Third Amendment to RI/FS Workplan

9. 1. 1. - 0012407
DATE: 12/13/88 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for November 1-30, 1988

9. 1. 1. - 0012408
DATE: 12/20/88 PAGES: 1
AUTHOR: Michael Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot & Quinn
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Reminder to EPA that "we are waiting" for receipt of amendment to RI/FS Consent Order, amendment to original Site Stabilization Plan

9. 1. 1. - 0012409
DATE: 01/13/89 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for December 1-31, 1988

9. 1. 1. - 0012410
DATE: 01/31/89 PAGES: 1
AUTHOR: Allan Bakalian/EPA
ADDRESSEE: Michael Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot & Quinn
DESCRIPTION: 1985 Consent Order Amendments - Third Amendment to RI/FS Work Plan; decision to incorporate Site Stabilization Plan Amendment into new Consent Order

9. 1. 1. - 0012411
DATE: 02/13/89 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for January 1-31, 1989

9. 1. 1. - 0012412
DATE: 03/14/89 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Mothly Progress Report for February 1-28, 1989

9. 1. 1. - 0012413
DATE: 04/14/89 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for March 1-31, 1989

9. 1. 1. - 0012414
DATE: 05/01/89 PAGES: 1
AUTHOR: Keith Rose/EPA
ADDRESSEE: Curtis Dungey/Asarco, Inc.
DESCRIPTION: Fourth Amendment to Asarco Smelter RI/FS

9. 1. 1. - 0012415
DATE: 05/15/89 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for April 1-30, 1989

9. 1. 1. - 0012416
DATE: 06/15/89 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for May 1-31, 1989

9. 1. 1. - 0012417
DATE: 07/14/89 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for June 1-30, 1989

9. 1. 1. - 0012418
DATE: 07/25/89 PAGES: 3
AUTHOR: Donald A. Robbins/Asarco, Inc.
ADDRESSEE: On-Scene Coordinator/EPA
DESCRIPTION: Pursuant to Final Rule on Radionuclides Reportable Quantities under CERCLA, notification to EPA for mining and mineral processing plants across country

9. 1. 1. - 0012419
DATE: 08/14/89 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for July 1-31, 1989

1. 1. - 0012421
DATE: 08/30/89 PAGES: 3
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: George Anderson/Asarco, Inc.
DESCRIPTION: Response to letter dated August 18, 1989

9. 1. 1. - 0012423
DATE: 09/14/89 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for August 1-31, 1989

9. 1. 1. - 0012424
DATE: 10/13/89 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for September 1-30, 1989

9. 1. 1. - 0012425
DATE: 11/17/89 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for October 1-31, 1989

9. 1. 1. - 0012426
DATE: 12/12/89 PAGES: 5
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for November 1-30. 1989

9. 1. 1. - 0012427
DATE: 01/16/90 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for December 1-31, 1989

9. 1. 1. - 0012428
DATE: 02/15/90 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Monthly Progress Report for January 1-31, 1990

9. 1. 1. - 0012429
DATE: 03/14/90 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Monthly Progress Report for February 1-28, 1990

9. 1. 1. - 0012430
DATE: 04/16/90 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Monthly Progress Report for March 1-28, 1990

9. 1. 1. - 0012431
DATE: 05/04/90 PAGES: 3
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Response to certain statements attributed to Jeff Webb in Morning News Tribute article published on May 3, 1990

9. 1. 1. - 0012432
DATE: 05/09/90 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Monthly Progress Report for April 1-30, 1990

9. 1. 1. - 0012433
DATE: 06/15/90 PAGES: 5
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Monthly Progress Report for May 1-30, 1990

9. 1. 1. - 0012434
DATE: 07/16/90 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Monthly Progress Report for June 1-30, 1990

9. 1. 1. - 0012435
DATE: 08/15/90 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Monthly Progress Report for July 1-31, 1990

1. 1. - 0012436
DATE: 09/18/90 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Monthly Progress Report for August 1-31, 1990

9. 1. 1. - 1002071
DATE: 09/20/90 PAGES: 4
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Draft schedule for field work portion of tasks, incorporating data into RI addendum

9. 1. 1. - 0012437
DATE: 12/13/90 PAGES: 5
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Margaret Justus/EPA
DESCRIPTION: Monthly Progress Report for November 1-30, 1990

9. 1. 1. - 0012438
DATE: 01/15/91 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Margaret Justus/EPA
DESCRIPTION: Monthly Progress Report for December 1-31, 1990

9. 1. 1. - 1002060
DATE: 01/30/91 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Peggy Justus/EPA
DESCRIPTION: Proposed Supplemental Winter Sampling

9. 1. 1. - 1013329
DATE: 02/04/91 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and progress report which has been prepared pursuant to Section VI of the AOC (EPA Docket No. 1086-04-24-106)

9. 1. 1. - 1002183
DATE: 02/12/91 PAGES: 6
AUTHOR: Tod Gold/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter in response to addressee's letter of Feb. 8, 1991

9. 1. 1. - 0012439
DATE: 02/20/91 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Margaret Justus/EPA
DESCRIPTION: Monthly Progress Report for January 1-31, 1991

9. 1. 1. - 1013109
DATE: 02/27/91 PAGES: 42
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco 1990 Annual Report

9. 1. 1. - 0012640
DATE: 03/19/91 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Margaret Justus/EPA
DESCRIPTION: Monthly Progress Report for February 1-28, 1991

9. 1. 1. - 1002073
DATE: 03/21/91 PAGES: 2
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Peggy Justus/EPA
DESCRIPTION: Revised RI/FS project schedule - includes a September groundwater sampling

9. 1. 1. - 0012641
DATE: 03/29/91 PAGES: 1
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Dave Corbett/SAIC
DESCRIPTION: Monthly Implementation Plan for April 1991

9. 1. 1. - 0012440
DATE: 04/18/91 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Margaret Justus/EPA
DESCRIPTION: Monthly Progress Report for March 1-31, 1991

9. 1. 1. - 1002059
DATE: 05/07/91 PAGES: 5
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Tom Aldrich/Asarco, Inc.
DESCRIPTION: Review - proposed schedule for completing the RI/FS

1. 1. - 0012441
DATE: 05/22/91 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for April 1-30, 1991

9. 1. 1. - 0012642
DATE: 05/24/91 PAGES: 1
AUTHOR: Curtis E. Dungey/Asarco, Inc.
ADDRESSEE: Dave Corbett/SAIC
DESCRIPTION: Monthly Implementation Plan for June 1991

9. 1. 1. - 0012992
DATE: 05/30/91 PAGES: 5
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal for revised schedule for RI/FS; responses to EPA letter dated May 7, 1991

9. 1. 1. - 0012162
DATE: 06/10/91 PAGES: 5
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Comments for Supplemental Remedial Investigation/Feasibility Study Schedule

9. 1. 1. - 0012442
DATE: 06/25/91 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for May 1-31, 1991

9. 1. 1. - 0012643
DATE: 06/28/91 PAGES: 1
AUTHOR: Curtis E. Dungey/Asarco, Inc.
ADDRESSEE: Dave Corbett/SAIC
DESCRIPTION: Monthly Implementation Plan for July 1991.

9. 1. 1. - 1002074
DATE: 07/02/91 PAGES: 2
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Asarco Tacoma Smelter RI/FS Project Schedule

9. 1. 1. - 1002066
DATE: 07/05/91 PAGES: 3
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Revised Asarco Tacoma Smelter RI/FS Project Schedule as per July 2, 1991 meeting

9. 1. 1. - 1013107
DATE: 07/25/91 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: File/EPA
DESCRIPTION: Removal Assessment at NPL Sites - No Additional Action Recommended, Asarco OU 02 and OU 07

9. 1. 1. - 1002182
DATE: 08/06/91 PAGES: 2
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Tacoma Smelter RI/FS Project Schedule

9. 1. 1. - 1013106
DATE: 08/06/91 PAGES: 2
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Tacoma Smelter RI/FS revised Project Schedule

9. 1. 1. - 0012443
DATE: 08/15/91 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for July 1-31, 1991

9. 1. 1. - 0012944
DATE: 08/27/91 PAGES: 7
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Comments on: 1.)RI/FS Supplemental Site Characterization Sampling and Analysis Plan (SAP) - June 1991; 2.)Tidal Study; 3.)conceptual and predictive groundwater models; 4.)technical memoranda in RI/FS project schedule; 5.)RI/FS Schedule

9. 1. 1. - 0012444
DATE: 09/11/91 PAGES: 3
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for August 1-31, 1991

1. 1. - 1002067
DATE: 09/17/91 PAGES: 3
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Revised RI/FS project schedule

9. 1. 1. - 1002181
DATE: 09/17/91 PAGES: 3
AUTHOR: Tom Schadt/Parametrix, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter enclosing project schedule for RI/FS

9. 1. 1. - 0012168
DATE: 09/22/91 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Proposed Revisions to Supplemental RI/FS Project Schedule

9. 1. 1. - 0012171
DATE: 10/03/91 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Approval for Asarco's Remedial Investigation/Feasibility (RI/FS) Project Schedule Changes

9. 1. 1. - 0012316
DATE: 10/06/91 PAGES: 30
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco's Petition to Ecology for Exemption of Slag from Dangerous Waste Regulations

9. 1. 1. - 0012445
DATE: 10/14/91 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for September 1-30, 1991

9. 1. 1. - 1013326
DATE: 11/13/91 PAGES: 3
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA/Asarco Sediments Informational Meeting of 11/13/91

9. 1. 1. - 0012446
DATE: 11/15/91 PAGES: 4
AUTHOR: Curtis Dungey/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for October 1-31, 1991

9. 1. 1. - 0012933
DATE: 11/25/91 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Issues Resolution Meeting Agenda EPA/Asarco

9. 1. 1. - 1002068
DATE: 11/26/91 PAGES: 2
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: DRAFT Asarco Tacoma Smelter RI/FS Project Schedule

9. 1. 1. - 1013717
DATE: 12/11/91 PAGES: 10
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached copies of Addenda 1 and 4 to RI/FS

9. 1. 1. - 0012447
DATE: 12/13/91 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for November 1-30, 1991

9. 1. 1. - 0012994
DATE: 12/13/91 PAGES: 4
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal/Attachments - Addenda 1 & 4 for the SAP

9. 1. 1. - 0012179
DATE: 01/14/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Mike Stoner, Carol Rushin/EPA
DESCRIPTION: Transmittal for Revised RI/FS Schedule/AOC Amendment #5

1. 1. - 0012448
DATE: 01/14/92 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for December 1-31, 1991

9. 1. 1. - 0012449
DATE: 02/05/92 PAGES: 2
AUTHOR: Rochelle Randazzo/Asarco, Inc.
ADDRESSEE: Superfund Accounting/EPA
DESCRIPTION: Cashier's check for $9,500 for Commencement Bay Nearshore/Tideflats Site, Asarco Smelter Operable Unit 02

9. 1. 1. - 0012035
DATE: 02/14/92 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter/monthly progress report for January 1-31, 1992

9. 1. 1. - 1002033
DATE: 02/28/92 PAGES: 1
AUTHOR: Tod Gold/EPA
ADDRESSEE: Linda Larson/Heller Ehrman White & McAuliffe
DESCRIPTION: Transmittal - Fifth Amendment to Asarco Administrative Order on Consent

9. 1. 1. - 0012804
DATE: 03/03/92 PAGES: 3
AUTHOR: Tod Gold/EPA
ADDRESSEE: Lynn Williams/EPA
DESCRIPTION: Removal of Documents from Asarco Administrative Record

9. 1. 1. - 0012450
DATE: 03/17/92 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for February 1-29, 1992

9. 1. 1. - 0012038
DATE: 04/01/92 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda - Issues Resolutions Meeting

9. 1. 1. - 0012324
DATE: 04/08/92 PAGES: 5
AUTHOR: Tod Gold/EPA
ADDRESSEE: Michael Thorp/Heller Ehrman White & McAuliffe
DESCRIPTION: Administrative Order on Consent - Revised Fifth Amendment DRAFT

9. 1. 1. - 0012325
DATE: 04/15/92 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for March 1 - 31, 1992

9. 1. 1. - 0012328
DATE: 04/27/92 PAGES: 2
AUTHOR: Linda R. Larson/Heller Ehrman White & McAuliffe
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: Revised Schedule for Tacoma Smelter RI/FS

9. 1. 1. - 0012329
DATE: 05/15/92 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for April 1 - 30, 1992

9. 1. 1. - 0012209
DATE: 06/15/92 PAGES: 2
AUTHOR: Linda Larson/Heller Ehrman White & McAuliffe
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Baseline Risk Assessment - request for extension of deadline for submittal of draft risk assessment

9. 1. 1. - 0012330
DATE: 06/19/92 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for May 1-31, 1992

9. 1. 1. - 0012210
DATE: 06/23/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Linda Larson/Heller, Ehrman, White, and McAuliffe
DESCRIPTION: Approval of Request for Deadline Extension for Baseline Risk Asssessment

1. 1. - 0012331
DATE: 07/17/92 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for June 1-30, 1992

9. 1. 1. - 1002168
DATE: 08/18/92 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Mike Stoner/EPA
DESCRIPTION: RE: Asarco Off-Shore Sediments Operable Unit

9. 1. 1. - 0012332
DATE: 08/21/92 PAGES: 1
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Progress Report for July 1992

9. 1. 1. - 0012451
DATE: 08/21/92 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for July 1-31, 1992

9. 1. 1. - 0012333
DATE: 08/28/92 PAGES: 2
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: EPA's refusal to modify the RI/FS schedule

9. 1. 1. - 0012334
DATE: 09/14/92 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for August 1-31, 1992

9. 1. 1. - 0012335
DATE: 10/12/92 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for September 1-30, 1992

9. 1. 1. - 0012249
DATE: 11/15/92 PAGES: 2
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Overview RI/FS Schedule from 11/92 - Tasks and Manhours for Completion

9. 1. 1. - 0012336
DATE: 11/18/92 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for October 1-31, 1992

9. 1. 1. - 0012337
DATE: 12/11/92 PAGES: 4
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Submission of Draft Feasibility Study

9. 1. 1. - 0012952
DATE: 12/15/92 PAGES: 1
AUTHOR: Unknown/Hydrometrics, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Feasibility Study Timeline

9. 1. 1. - 0012878
DATE: 12/16/92 PAGES: 3
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for November 1992

9. 1. 1. - 0012338
DATE: 12/28/92 PAGES: 3
AUTHOR: Tod Gold/EPA
ADDRESSEE: File/Unknown
DESCRIPTION: Meeting with Attorneys for Asarco on Completion of Asarco's Feasibility Study for the Smelter Site

9. 1. 1. - 0012339
DATE: 01/05/93 PAGES: 5
AUTHOR: Tod Gold/EPA
ADDRESSEE: Linda Larson/Heller Ehrman White & McAuliffe
DESCRIPTION: Submission of Feasibility Study, Confirmation of EPA position

1. 1. - 0012452
DATE: 01/11/93 PAGES: 5
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for December 1-31, 1992

9. 1. 1. - 0012454
DATE: 01/12/93 PAGES: 4
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Amended Monthly Progress Report for November 1992

9. 1. 1. - 1002184
DATE: 01/15/93 PAGES: 1
AUTHOR: Tod Gold/EPA
ADDRESSEE: Michael Thorp/Heller Ehrman White & McAuliffe
DESCRIPTION: Letter regarding Preliminary Remedial Action Objectives

9. 1. 1. - 0012455
DATE: 01/25/93 PAGES: 2
AUTHOR: Tod Gold/EPA
ADDRESSEE: Linda R. Larson/Heller Ehrman White & McAuliffe
DESCRIPTION: Instructions for Payment of Penalty

9. 1. 1. - 0012323
DATE: 01/28/93 PAGES: 4
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Administrative Order on Consent - Amendment 5 - DRAFT

9. 1. 1. - 0012456
DATE: 02/11/93 PAGES: 4
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for January 1-31, 1993

9. 1. 1. - 1029332
DATE: 02/25/93 PAGES: 2
AUTHOR: Tod Gold/EPA
ADDRESSEE: Linda R. Larson/Heller Ehrman White & McAuliffe
DESCRIPTION: Letter to confirm verbal agreements made to continue discussions on potential disputes under the Administrative Order on Consent dated Sept. 1986 for the Asarco Smelter site - potential disputes involve submission of interim final FS and ID

9. 1. 1. - 0012457
DATE: 03/05/93 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for February 1-28, 1993

9. 1. 1. - 0012459
DATE: 04/03/93 PAGES: 4
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Report on Well B-34

9. 1. 1. - 0012458
DATE: 04/06/93 PAGES: 3
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for March 1-31, 1993

9. 1. 1. - 0012786
DATE: 04/27/93 PAGES: 4
AUTHOR: Marcia Newlands/Heller Ehrman White & McAuliffe
ADDRESSEE: Kaia Petersen/State of Washington Dept. of Ecology
DESCRIPTION: Letter requesting expected completion dates for decision on Asarco's Petitions for Exemptions of Slag and Demolition Debris

9. 1. 1. - 0012879
DATE: 05/11/93 PAGES: 4
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report for April 1993

9. 1. 1. - 0012980
DATE: 06/02/93 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly progress report for May 1993

9. 1. 1. - 1002080
DATE: 06/29/93 PAGES: 11
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: Asarco Tacoma Smelter RAOs - additional information

1. 1. - 1002077
DATE: 07/06/93 PAGES: 3
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report - June 1-30, 1993

9. 1. 1. - 1002084
DATE: 07/06/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Marcia Newlands/Heller, Ehrman, White, & McAuliffe
DESCRIPTION: Request for Review - Draft Asarco Smelter Administrative Record and Table of Contents.

9. 1. 1. - 1002127
DATE: 08/24/93 PAGES: 2
AUTHOR: Tod Gold/EPA
ADDRESSEE: Michael R. Thorp/Heller Ehrman White & McAuliffe
DESCRIPTION: RE: Instructions for Payment of Penalty for Interim Final FS

9. 1. 1. - 1013104
DATE: 09/09/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Re: Public Availability Session

9. 1. 1. - 1013103
DATE: 09/10/93 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report: 08/1-31/93

9. 1. 1. - 1013102
DATE: 09/20/93 PAGES: 2
AUTHOR: Rochelle Randazzo/Asarco, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Copy of check for payment for Commencement Bay Nearshore/Tideflats and Smelter - Operable Unit 02

9. 1. 1. - 1013101
DATE: 09/23/93 PAGES: 2
AUTHOR: Richard A. DuBey/Stoel Rives Boley Jones & Grey
ADDRESSEE: Peter C. Brooks/State of Washington Dept. of Ecology
DESCRIPTION: Re: Puyallup Tribe's request for Administrative Action regarding Asarco, Inc.'s Application For Renewal of NPDES

9. 1. 1. - 1013100
DATE: 10/04/93 PAGES: 3
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report: 09/1-30/93

9. 1. 1. - 1013099
DATE: 11/03/93 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly Progress Report: 10/1-31/93

9. 1. 1. - 1013113
DATE: 11/05/93 PAGES: 1
AUTHOR: Tom Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Request for information concerning Supplemental FS (Weston 1993)

9. 1. 1. - 1013098
DATE: 11/08/93 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Re: Landfill Experts

9. 1. 1. - 1013097
DATE: 11/09/93 PAGES: 1
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Tacoma Smelter - Completion of RI/FS and Baseline Risk Assessment

9. 1. 1. - 1013096
DATE: 11/12/93 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Request to remove driveway slag of property at 9801 Golden Givens Road, Tacoma

9. 1. 1. - 1013095
DATE: 11/16/93 PAGES: 2
AUTHOR: James E. Alexander/US Dept. of Agriculture
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: CSS Management - Apex Mill Site

1. 1. - 1013084
DATE: 12/03/93 PAGES: 2
AUTHOR: Michael O. Varner/Asarco, Inc.
ADDRESSEE: Ray E. Corpuz, Jr./Tacoma City Manager
DESCRIPTION: Letter regarding Tacoma Smelter off-shore sediments remediation of Ruston/N. Tacoma residential areas.

9. 1. 1. - 1013085
DATE: 12/03/93 PAGES: 2
AUTHOR: Michael O. Varner/Asarco, Inc.
ADDRESSEE: Nancy McKay/Puget Sound Water Quality Authority
DESCRIPTION: Letter regarding Tacoma Smelter off-shore sediments and remediation of Ruston/N. Tacoma residential area.

9. 1. 1. - 1013086
DATE: 12/03/93 PAGES: 2
AUTHOR: Michael O. Varner/Asarco, Inc.
ADDRESSEE: Jim Montgomerie/Metropolitan Park District of Tacoma
DESCRIPTION: Re: Tacoma Smelter off-shore sediments and remediation of Ruston/N. Tacoma residential area

9. 1. 1. - 1013087
DATE: 12/03/93 PAGES: 2
AUTHOR: Michael O. Varner/Asarco, Inc.
ADDRESSEE: Bill Sullivan/Puyallup Tribe
DESCRIPTION: Re: Tacoma Smelter off-shore sediments and remediation of Ruston/N. Tacoma residential area

9. 1. 1. - 1013088
DATE: 12/03/93 PAGES: 2
AUTHOR: Michael O. Varner/Asarco, Inc.
ADDRESSEE: Robert A. Taylor/NOAA
DESCRIPTION: Re: Tacoma Smelter off-shore sediments and remediation of Ruston/N. Tacoma residential area

9. 1. 1. - 1013089
DATE: 12/03/93 PAGES: 2
AUTHOR: Michael O. Varner/Asarco, Inc.
ADDRESSEE: Phil Hertzog/Washington Dept. of Natural Resources
DESCRIPTION: Re: Tacoma Smelter off-shore sediments and remediation of Ruston/N. Tacoma residential area

9. 1. 1. - 1013090
DATE: 12/03/93 PAGES: 2
AUTHOR: Michael O. Varner/Asarco, Inc.
ADDRESSEE: Carl Samuelson/Washington Dept. of Fisheries
DESCRIPTION: Re: Tacoma Smelter off-shore sediments and remediation of Ruston/N. Tacoma residential area

9. 1. 1. - 1013091
DATE: 12/03/93 PAGES: 2
AUTHOR: Michael O. Varner/Asarco, Inc.
ADDRESSEE: Kate Benkert/US Fish & Wildlife Svcs. - DOE
DESCRIPTION: Re: Tacoma Smelter off-shore sediments and remediation of Ruston/N. Tacoma residential area

9. 1. 1. - 1013092
DATE: 12/03/93 PAGES: 2
AUTHOR: Michael O. Varner/Asarco, Inc.
ADDRESSEE: Phil Parker/Ruston Town Council
DESCRIPTION: Re: Tacoma Smelter off-shore sediments and remediation of Ruston/N. Tacoma residential area

9. 1. 1. - 1013093
DATE: 12/03/93 PAGES: 2
AUTHOR: Michael O. Varner/Asarco, Inc.
ADDRESSEE: Rod Malcom/Muckleshoot Indian Tribe
DESCRIPTION: Re: Tacoma Smelter off-shore sediments and remediation of Ruston/N. Tacoma residential area

9. 1. 1. - 1013094
DATE: 12/03/93 PAGES: 3
AUTHOR: Michael O. Varner/Asarco, Inc.
ADDRESSEE: Randall F. Smith/EPA
DESCRIPTION: Proposal to have coordinating forum to consider Tacoma Smelter offshore sediment issues

9. 1. 1. - 1013083
DATE: 12/06/93 PAGES: 1
AUTHOR: Mary Kay Voytilla/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Re: Recent conversation with Mike Thorp of Heller Ehrman White & McAuliffe regarding cost recovery for various projects

9. 1. 1. - 1013082
DATE: 12/07/93 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Completion of 1986 Administrative Order on Consent

9. 1. 1. - 1013080
DATE: 12/10/93 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monthly progress report for 11/1-30/93

1. 1. - 1013327
DATE: 01/05/94 PAGES: 1
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Re: Completion of AOC No. 1086-04-24-106 Asarco Smelter Facility, treatability pilot testing

9. 1. 1. - 1013328
DATE: 01/10/94 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal and progress report for December 1993

9. 1. 1. - 1013593
DATE: 02/23/94 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Kevin Rochlin/EPA
DESCRIPTION: Re: Fire in wood chips stored in fine ore bin - Tacoma Smelter

9. 1. 1. - 1013331
DATE: 03/07/94 PAGES: 1
AUTHOR: Marcia Newlands/Heller Ehrman White & McAuliffe
ADDRESSEE: K. Seiler/Washington Dept. of Ecology
DESCRIPTION: Re: Temporary exemption from Dangerous Waste Regulations at Tacoma Smelter

9. 1. 1. - 1013332
DATE: 03/07/94 PAGES: 3
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Transmittal and monthly progress report for Feb. 1994

9. 1. 1. - 1013333
DATE: 03/11/94 PAGES: 1
AUTHOR: Marcia Newlands/Heller Ehrman White & McAuliffe
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: Re: Storage of slag at Tacoma Smelter site.

9. 1. 1. - 1013594
DATE: 03/28/94 PAGES: 2
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Tod A. Gold/EPA
DESCRIPTION: Re: EPA proposal to modify Asarco Tacoma Smelter Demolition Consent Decree

9. 1. 1. - 1013595
DATE: 04/04/94 PAGES: 3
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and monthly progress report for period March 1 through 31, 1994

9. 1. 1. - 1013792
DATE: 05/09/94 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter and attached monthly technical status report for the period April 1 through 30, 1994.

9. 1. 1. - 1029068
DATE: 05/31/94 PAGES: 1
AUTHOR: Ray E. Corpuz/City of Tacoma
ADDRESSEE: Randy Smith/EPA
DESCRIPTION: Letter regarding City of Tacoma, Town of Ruston, Metropolitan Park District and Asarco's request for additional time to reach agreement in principle on the Asarco smelter site Record of Decision (ROD).

9. 1. 1. - 1029069
DATE: 06/06/94 PAGES: 2
AUTHOR: Randall F. Smith/EPA
ADDRESSEE: Ray E. Corpuz/City of Tacoma
DESCRIPTION: Letter to Mayor Corpuz stating reasons EPA will support request to wait until June 30, 1994, or later, before issuing a Proposed Plan for the cleanup of the Asarco smelter.

9. 1. 1. - 1029070
DATE: 06/13/94 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Monthly Report for period May 1, 1994 to May 31, 1994.

9. 1. 1. - 1029071
DATE: 07/01/94 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Monthly Report for period June 1, 1994 to June 30, 1994.

1. 1. - 1029072
DATE: 07/05/94 PAGES: 3
AUTHOR: M. O. Varner/Asarco, Inc.
ADDRESSEE: Unknown/Land Use Group Members
DESCRIPTION: Letter addressed to six members (Corpuz, Miller, Parker, Hagen, Madsen, Montgomerie) of the Principal Land Use Group Members concerning the EPA Proposed Plan for Tacoma Smelter Remediation.

9. 1. 1. - 1029073
DATE: 07/05/94 PAGES: 3
AUTHOR: M. O. Varner/Asarco, Inc.
ADDRESSEE: Randall F. Smith/EPA
DESCRIPTION: Letter regarding Asarco's position on the Proposed Plan before its release to the public.

9. 1. 1. - 1029074
DATE: 07/07/94 PAGES: 3
AUTHOR: Randall F. Smith/EPA
ADDRESSEE: Unknown/Land Use Group Members
DESCRIPTION: Letter addressed to seven members (Varner, Corpuz, Miller, Parker, Hagen, Madsen, Montgomerie) of the Principal Land Use Group Members concerning separation of the substance of the EPA Proposed Plan from the question of its timing.

9. 1. 1. - 1029075
DATE: 07/07/94 PAGES: 4
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Formal letter of request from Asarco for EPA approval of placement of the slag at the smelter site. Related memorandum from Curtis Stahlecker of Hydrometrics, Inc. and map attached.

9. 1. 1. - 1029076
DATE: 07/27/94 PAGES: 3
AUTHOR: Tod Gold/EPA
ADDRESSEE: Asarco Smelter Administrative Record/EPA
DESCRIPTION: Memorandum: Meeting to discuss Land Use Agreement - July 22, 1994 Told Gold, Piper Peterson and Randy Smith of the Environmental Protection Agency met with representatives of Asarco, the City of Tacoma, the Town of Ruston, Metropolitan Pk.

9. 1. 1. - 1029077
DATE: 08/10/94 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Monthly Report for period July 1, 1994 to July 31, 1994.

9. 1. 1. - 1029078
DATE: 08/15/94 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Reponse to letter of August 2, 1994 to abandon the production well at the Tacoma Smelter site.

9. 1. 1. - 1029079
DATE: 08/16/94 PAGES: 1
AUTHOR: Unknown/State of Washington Department of Ecology
ADDRESSEE: Marcia Newlands/Heller Ehrman White & McAuliffe
DESCRIPTION: Letter to provide Department of Ecology's requirements for addressing the site located at 1721 Thorne Road in Tacoma.

9. 1. 1. - 1029080
DATE: 09/14/94 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Monthly Report for period August 1, 1994 to August 31, 1994.

9. 1. 1. - 1029081
DATE: 10/07/94 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Monthly Report for period September 1, 1994 to September 30, 1994.

9. 1. 1. - 1029082
DATE: 10/13/94 PAGES: 1
AUTHOR: Tod A. Gold/EPA
ADDRESSEE: Linda Larson/Heller Ehrman White & McAuliffe
DESCRIPTION: Cover letter co-addressed to Leslie Nellermoe for signed copy of the Administrative Order on Consent. AOC not attached.

9. 1. 1. - 1029083
DATE: 10/21/94 PAGES: 3
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter to notify EPA that 1721 Thorne Road project is ready to proceed. Building Permit Application of Oct. 5, 1994 and Building and Land Use Services Improvement Permit of Oct. 20, 1994 attached.

1. 1. - 1029084
DATE: 11/28/94 PAGES: 2
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter regarding precautions that should be taken during the transport and disposal of slag from the 1721 Thorne Road location.

9. 1. 1. - 1029086
DATE: 12/17/94 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Monthly Report for period November 1, 1994 to November 30, 1994.

9. 1. 1. - 1029255
DATE: 01/10/95 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Monthly Report for period December 1, 1994 to December 31, 1994.

9. 1. 1. - 1029256
DATE: 01/27/95 PAGES: 2
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper L. Peterson/EPA
DESCRIPTION: Follow-up letter to telephone conversation of Jan. 26, 1995 stating Hydrometrics' intentions to drill bore holes 150 and 151 within the next two weeks to avoid conflicts that could potentially be associated with a truck transportation ramp.

9. 1. 1. - 1029257
DATE: 01/31/95 PAGES: 1
AUTHOR: Robert J. Miller/Hydrometrics, Inc.
ADDRESSEE: Piper L. Peterson/EPA
DESCRIPTION: Unsigned FAX regarding suggested language for monitoring period reporting requirements for surface water discharge.

9. 1. 1. - 1029258
DATE: 01/31/95 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Letter stating the US EPA approves of the boring, bore hole 151, to be drilled on February 1, 1995 in the vicinity of the slag ramp to be constructed later in the month.

9. 1. 1. - 1029259
DATE: 02/01/95 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Robert Miller/Hydrometrics, Inc.
DESCRIPTION: Modification of surface water monitoring requirements suggested language with additional paragraph to provide an example.

9. 1. 1. - 1029260
DATE: 02/07/95 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Monthly Report for period January 1, 1994 to January 31, 1994.

9. 1. 1. - 1029087
DATE: 02/17/95 PAGES: 1
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper L. Peterson/EPA
DESCRIPTION: Follow-up letter for telephone conversation about the format for data reports for long-term monitoring of the Asarco Tacoma smelter site pursuant to the September 1994 Administrative Order on Consent.

9. 1. 1. - 1029335
DATE: 03/15/95 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Monthly Report for period February 1, 1995 to February 28, 1995.

SUB-HEAD: 9. 1. 2. Handwritten Notes

9. 1. 2. - 0012464
DATE: 09/20/90 PAGES: 2
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Agreeement on further studies, schedule for when new work will occur

9. 1. 2. - 0012465
DATE: 10/04/91 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: RI/FS Oversight Costs at Selected Superfund Sites

SUB-HEAD: 9. 1. 3. FOIA Exempt Documents (CONFIDENTIAL)

1. 3. - 0012466
DATE: / / PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Detection Limits, Remedial Investigation at the Asarco Smelter Facility (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 0012467
DATE: 04/03/86 PAGES: 1
AUTHOR: Jeff Weathersby/Unknown
ADDRESSEE: CRT/Unknown
DESCRIPTION: Record of Communication - Asarco not doing an EIS (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 0012468
DATE: 04/09/86 PAGES: 1
AUTHOR: CRT/EPA
ADDRESSEE: Dan Reale, Bill Bachus/Unknown
DESCRIPTION: Asarco, Thorp's SOW, EIS (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA).

1. 3. - 0012803
DATE: 12/01/92 PAGES: 8
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Briefing Packet for Carol Rushin: Timeline, Notes (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 0012801
DATE: 12/23/92 PAGES: 3
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA Strategy for Asarco Feasibility Study - DRAFT [Briefing package for Carol Rushin] (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1002185
DATE: 12/29/92 PAGES: 3
AUTHOR: Linda R. Larson/Heller Ehrman White & McAuliffe
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: RE: Schedule for Completion of Asarco Tacoma Smelter RI/FS (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1002052
DATE: 01/12/93 PAGES: 2
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: Tacoma Smelter RI/FS - EPA RAOs (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1013721
DATE: 01/12/93 PAGES: 2
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: Letter re: Tacoma Smelter RI/FS-EPA RAOs (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 0012469
DATE: 02/01/93 PAGES: 7
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Smelter Schedule for Interim Final FS, Dispute Resolution Briefing, Outline for Briefing Paper (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 0012938
DATE: 02/02/93 PAGES: 3
AUTHOR: Pamela J. Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Draft Longterm Monitoring Plan Input (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 0012470
DATE: 02/25/93 PAGES: 1
AUTHOR: Tod Gold/EPA
ADDRESSEE: Linda Larson/Heller Ehrman White & McAuliffe
DESCRIPTION: Potential Dispute Resolution, confirmation of verbal agreements (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 0012471
DATE: 03/08/93 PAGES: 2
AUTHOR: Tod Gold/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Meeting with Attorneys for Asarco, Potential Penalty for late submission of interim final Feasibility Study (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

1. 3. - 0012793
DATE: 04/28/93 PAGES: 2
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Briefing for Randy Smith (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 0012794
DATE: 04/28/93 PAGES: 3
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Communications Strategy - DRAFT - Asarco Smelter Site Phase 1 Remedy Selection (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 0012898
DATE: 05/25/93 PAGES: 7
AUTHOR: Bruce Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monitoring and Testing Program for the Asarco Smelter Site (Long Term Monitoring) (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

1. 3. - 0012899
DATE: 05/25/93 PAGES: 17
AUTHOR: Bruce Cochran/State of Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Monitoring and Testing Program (Charles San Juan's memorandum) (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfu nd Branch in Seattle, WA)

9. 1. 3. - 0012981
DATE: 06/07/93 PAGES: 7
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Long-term Groundwater Monitoring Approach for the Asarco Smelter, Draft (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1013722
DATE: 06/11/93 PAGES: 1
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Ken Jennings/ICF
DESCRIPTION: Letter re: Long-term monitoring plan comments (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1013723
DATE: 06/11/93 PAGES: 16
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Memorandum and attached brochure subject: Long-term groundwater monitoring approach for the Asarco Smelter, Draft (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1002025
DATE: 06/25/93 PAGES: 25
AUTHOR: Pamela J. Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Draft Consolidated Long-Term Monitoring Plan (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1013724
DATE: 06/25/93 PAGES: 26
AUTHOR: Pamela J. Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Cover letter and attached Draft Consolidated Long-term Monitoring Plan (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1002038
DATE: 07/06/93 PAGES: 1
AUTHOR: Tod Gold/EPA
ADDRESSEE: Linda Larson/Heller Ehrman White & McAuliffe
DESCRIPTION: Transmittal - Asarco Smelter Feasibility Study - Draft Statement of Position on Stipulated Penalty (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1013727
DATE: 07/14/93 PAGES: 1
AUTHOR: Doug Bowen/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Original of faxed letter; barcode 1013726 (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1013728
DATE: 07/19/93 PAGES: 2
AUTHOR: Pamela J. Bridgen/ICF Technology, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Summary of long-term Monitoring conference call (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

1. 3. - 1002130
DATE: 07/22/93 PAGES: 6
AUTHOR: Charles San Juan/Department of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: RE: Proposed Long-Term Monitoring Plan - Asarco, Tacoma (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1002129
DATE: 08/05/93 PAGES: 3
AUTHOR: Tod A. Gold/EPA
ADDRESSEE: Carol Kraege/Department of Ecology
DESCRIPTION: RE: State ARARs for Asarco Smelter Cleanup (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1002128
DATE: 08/25/93 PAGES: 3
AUTHOR: Steven D. Acree/US EPA, Ada, Oklahoma
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: RE: Asarco Tacoma Plant Superfund Site, Consolidated Long Term Monitoring Plan (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1013336
DATE: 01/06/94 PAGES: 3
AUTHOR: Tod A. Gold/EPA
ADDRESSEE: Carol Kraege/Washington State Dept. of Ecology
DESCRIPTION: Re: State ARARs for Asarco Smelter Cleanup (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

9. 1. 3. - 1013793
DATE: 05/18/94 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda: Asarco Tacoma Smelter and Slag Peninsula Proposed Plan Briefing (This CONFIDENTIAL document located at USEPA Region 10 Records Center, Superfund Branch in Seattle, WA)

SUB-HEAD: 9. 2. . Notice of Violations (NOV)

9. 2. . - 0012746
DATE: 09/30/89 PAGES: 14
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Response to Comments on Asarco Facility Study, September 1989 Draft Report

9. 2. . - 0012745
DATE: 10/04/89 PAGES: 20
AUTHOR: Bernie Zavala/EPA
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Review of Asarco Tacoma Smelter Feasibility Study September 1989 Draft Report

9. 2. . - 0012760
DATE: 10/10/89 PAGES: 1
AUTHOR: Keith Rose/EPA
ADDRESSEE: Curtis Dungey/Asarco, Inc.
DESCRIPTION: Transmittal for review comments on Draft Feasibility Study

9. 2. . - 0012757
DATE: 11/01/89 PAGES: 1
AUTHOR: Keith Rose/EPA
ADDRESSEE: Curtis Dungey/Asarco, Inc.
DESCRIPTION: Response to Feasibility Study Issues

9. 2. . - 0012758
DATE: 01/12/90 PAGES: 5
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Transmittal for revised version of FS; letter outlines changes

9. 2. . - 0012472
DATE: 04/26/90 PAGES: 24
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: Curtis Dungey/Asarco, Inc.
DESCRIPTION: Asarco Incorporated, Pierce County, Washington Facility, Consent Order No. 1086-04-24-106, Notice of Violation

9. 2. . - 0012753
DATE: 05/07/90 PAGES: 9
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA & Asarco Workgroups for Resolution of May 7, 1990 NOV Issues, Summary of Unresolved Comments

9. 2. . - 0012754
DATE: 05/07/90 PAGES: 27
AUTHOR: Charles F. Findley/EPA
ADDRESSEE: Armand L. Labbe/Asarco, Inc.
DESCRIPTION: Notice of Violation of the September 10, 1986 Administrative Order on Consent No. 1086-04-24-106

2. . - 0012755
DATE: 05/14/90 PAGES: 5
AUTHOR: George W. Anderson/Asarco, Inc.
ADDRESSEE: Charles E. Findley/EPA
DESCRIPTION: Response to May 7, 1990 letter concerning Notice of Violation of Consent Order No. 1086-04-24-106

9. 2. . - 0012759
DATE: 05/21/90 PAGES: 33
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Charles E. Findley/EPA
DESCRIPTION: Response to comments of May 7, 1990 letter

9. 2. . - 0012649
DATE: 06/04/90 PAGES: 1
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Ed Kowalski/EPA
DESCRIPTION: Asarco Plant Site RI/FS confirmation of meeting being rescheduled

9. 2. . - 0012761
DATE: 06/19/90 PAGES: 3
AUTHOR: Linda R. Larson/Heller Ehrman White & McAuliffe
ADDRESSEE: Ed Kowalski/EPA
DESCRIPTION: Follow Up to June 14, 1990 meeting regarding Feasibility Study; formation of technical working groups

9. 2. . - 0012762
DATE: 07/11/90 PAGES: 8
AUTHOR: Philip A. Spadaro/Hart Crowser & Associates, Inc.
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Issues discussed at June 22, 1990 and July 5, 1990 meetings

9. 2. . - 0012764
DATE: 07/24/90 PAGES: 5
AUTHOR: Joyce Tsuji/Environmental Toxicology International, Inc.
ADDRESSEE: Dana Davoli/EPA
DESCRIPTION: Notes from past meeting to discuss health risk issues

9. 2. . - 0012763
DATE: 07/31/90 PAGES: 7
AUTHOR: Tom Schadt/Parametrix
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Meeting notes from first FS Work Group meeting held June 28, 1990

9. 2. . - 0012473
DATE: 08/02/90 PAGES: 6
AUTHOR: Linda Larson/Heller Ehrman White & McAuliffe
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Asarco Tacoma Smelter: Policy Work Group Meetings of June 22, 1990 and July 31, 1990

9. 2. . - 0012766
DATE: 08/13/90 PAGES: 2
AUTHOR: Marian L. Abbett/State of Washington Dept. of Ecology
ADDRESSEE: Linda Larson/Heller Ehrman White & McAuliffe
DESCRIPTION: Clarification of Summary Letter on Asarco Tacoma Smelter: Policy Work Group Meetings of June 22, 1990 and July 31, 1990

9. 2. . - 0012768
DATE: 08/14/90 PAGES: 3
AUTHOR: Philip A. Spadaro/Hart Crowser & Associates, Inc.
ADDRESSEE: Michael R. Thorp/Heller Ehrman White & McAuliffe
DESCRIPTION: Detection Limits and Remediation Goals

9. 2. . - 0012986
DATE: 08/14/90 PAGES: 9
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Asarco Tacoma Smelter RI/FS - Remedial Action Objectives Issues

9. 2. . - 0012770
DATE: 08/15/90 PAGES: 6
AUTHOR: Philip A. Spadaro/Hart Crowser & Associates, Inc.
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Summary of issues discussed at the Asarco RI/FS July 20, 1990 Meeting

9. 2. . - 0012474
DATE: 09/25/90 PAGES: 367
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Jeff Webb/EPA
DESCRIPTION: Asarco Tacoma Smelter RI/FS Status; Asarco has prepared comprehensive document which details the exchange of correspondence between EPA and Asarco relative to each of the comments contained in EPA's May 7, 1990 letter

9. 2. . - 0012756
DATE: 10/31/90 PAGES: 208
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Peggy Justus/EPA
DESCRIPTION: EPA Comments and Asarco Responses Regarding Tacoma Smelter RI/FS compilation of notebook, missing letters

9. 2. . - 1002002
DATE: 11/21/90 PAGES: 2
AUTHOR: Margaret V. Justus/EPA
ADDRESSEE: Thomas L. Aldrich/Asarco, Inc.
DESCRIPTION: Response to Nov. 9, 1990 letter requesting status of EPA comments on the Soil Sampling and Hydraulic Conductivity Work Plan (SAP) and the Notice of Violations (NOV)

9. 2. . - 1002187
DATE: 01/31/91 PAGES: 143
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: Michael R. Thorp/Heller Ehrman White & McAuliffe
DESCRIPTION: Letter RE: Asarco Tacoma Smelter RI/FS w/numerous attachments

9. 2. . - 1002047
DATE: 02/08/91 PAGES: 2
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: Peggy Justus/EPA
DESCRIPTION: Transmittal - RI/FS draft work plan

9. 2. . - 1002186
DATE: 07/02/91 PAGES: 11
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Resolution of NOV issues

9. 2. . - 1013538
DATE: 10/01/91 PAGES: 10
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Resolution of Notice of Violation Issues

9. 2. . - 0012476
DATE: 01/22/93 PAGES: 4
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Outstanding Items Regarding NOV Wrap Up Issues

SUB-HEAD: 9. 3. . Administrative Order on Consent/Attachments

9. 3. . - 0012477
DATE: 05/03/85 PAGES: 2
AUTHOR: Arthur R. Dammkoehler/Puget Sound Air Pollution Control Agency
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Order of the Air Pollution Control Officer.

9. 3. . - 0012479
DATE: 09/10/86 PAGES: 22
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Proceeding Under Section 106(a) of CERCLA, EPA Docket No. 1086-04-24-106.

9. 3. . - 1029088
DATE: 10/03/94 PAGES: 43
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Administrative Order on Consent for Ground Water, Surface Water, Soil and Marine Sediments Monitoring and Sampling.

SUB-HEAD: 9. 3. 1. Work Plans

9. 3. 1. - 1029090
DATE: 06/01/86 PAGES: 54
AUTHOR: Unknown/Parametrix, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: June 1986 Draft Project Work Plan for the Remedial Investigation/Feasibility Study, Asarco Smelter in Tacoma, Washington.

9. 3. 1. - 1029091
DATE: 08/01/86 PAGES: 56
AUTHOR: Unknown/Parametrix, Inc.
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: August 1986 Draft 2 of Project Work Plan for the Remedial Investigation/Feasibility Study, Asarco Smelter in Tacoma Washington.

9. 3. 1. - 1029089
DATE: 06/26/87 PAGES: 25
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Aquatic and Biological Sampling and Analysis Plan

SUB-HEAD: 9. 3. 2. Amendments

9. 3. 2. - 0012773
DATE: / / PAGES: 11
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Fourth Amendment/Attachments to Site Stabilization Plan (unsigned); EPA Docket No. 1086-04-24-106.

3. 2. - 1013541
DATE: / / PAGES: 4
AUTHOR: Keith A. Rose/EPA
ADDRESSEE: Curtis E. Dungey/Asarco, Inc.
DESCRIPTION: Third Amendment to RI/FS Work Plan

9. 3. 2. - 1013539
DATE: 11/20/86 PAGES: 2
AUTHOR: Carol Rushin Thompson/EPA
ADDRESSEE: Curtis E. Dungey/Asarco, Inc.
DESCRIPTION: First Amendment to RI/FS Work Plan, Attachment B to Administrative Order on Consent

9. 3. 2. - 0012378
DATE: 01/29/87 PAGES: 1
AUTHOR: Carol Rushin Thompson/EPA
ADDRESSEE: Curtis Dungey/Asarco, Inc.
DESCRIPTION: Transmittal - Signed Original, Copy of First Amendment to Site Stabilization Plan appended to the Administrative Order on Consent

9. 3. 2. - 0012483
DATE: 01/13/88 PAGES: 6
AUTHOR: Allan B. Bakalian/EPA
ADDRESSEE: Michael Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot & Quinn
DESCRIPTION: Asarco Tacoma Smelter - SO(2) Plant Removal, Certified Copy of the Third Amendment

9. 3. 2. - 1013540
DATE: 02/17/88 PAGES: 4
AUTHOR: Keith A. Rose/EPA
ADDRESSEE: Curtis E. Dungey/Asarco, Inc.
DESCRIPTION: Second Amendment to RI/FS Work Plan, Attachment B to Consent Order

9. 3. 2. - 0012485
DATE: 02/25/88 PAGES: 1
AUTHOR: Allan Bakalian/EPA
ADDRESSEE: Michael R. Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot &
DESCRIPTION: Transmittal only for the Second Amendment to RI/FS Work Plan

9. 3. 2. - 0012486
DATE: 01/31/89 PAGES: 5
AUTHOR: Allan Bakalian/EPA
ADDRESSEE: Michael R. Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot &
DESCRIPTION: Asarco Tacoma Smelter - 1985 Consent Order Amendments

9. 3. 2. - 0012488
DATE: 04/21/89 PAGES: 6
AUTHOR: Allan Bakalian/EPA
ADDRESSEE: Michael R. Thorp/Heller Ehrman White & McAuliffe
DESCRIPTION: Fourth Amendment to Asarco Tacoma Smelter Site RI/FS

9. 3. 2. - 0012489
DATE: 11/29/89 PAGES: 4
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Asarco Tacoma Smelter - Fourth Amendment to Site Stabilization Plan

9. 3. 2. - 0012490
DATE: 01/08/90 PAGES: 4
AUTHOR: Unknown/Heller Ehrman White & McAuliffe
ADDRESSEE: Unknown/EPA
DESCRIPTION: Proceeding Under 106(a) of CERCLA EPA Docket No. 1086-04-24-106
Fourth Amendment to Site Stabilization Plan

9. 3. 2. - 0012491
DATE: 05/07/92 PAGES: 16
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Proceeding under 106(a) of CERCLA EPA Docket No. 1086-04-24-106
Fifth Amendment to RI/FS Workplan

SUB-HEAD: 9. 4. . General Notice Letters and Responses

9. 4. . - 0012492
DATE: / / PAGES: 54
AUTHOR: Unknown/Metropolitan Park District of Tacoma
ADDRESSEE: Unknown/Tacoma Yacht Club, Inc.
DESCRIPTION: Lease Agreement for the Expansion, Operation and Maintenance of Boat Moorage and Related Facilities in Connection with the Operation of Point Defiance Park

9. 4. . - 0012493
DATE: 04/12/82 PAGES: 2
AUTHOR: James L. Woods/Asarco, Inc.
ADDRESSEE: Kathe L. Summerlee/EPA
DESCRIPTION: Commencement Bay - Tacoma Washington, response to letter dated March 18, 1982 from William A. Sullivan, potential responsible party

4. . - 0012494
DATE: 02/21/86 PAGES: 5
AUTHOR: Michael R. Thorp/Eisenhower, Carlson, Newlands, Reha, Henriot &
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: December 13, 1985 Notification to Asarco Incorporated of Potential Liability for Metals Contamination of the Environment in the Vicinity of Asarco's Tacoma Smelter and Request for Information

9. 4. . - 0012495
DATE: 01/22/92 PAGES: 11
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: Agreement between Metropolitan Park District of Tacoma and Asarco

9. 4. . - 0012496
DATE: 02/05/92 PAGES: 3
AUTHOR: Dennis Sivak/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Asarco Smelter PRP Evaluation

9. 4. . - 0012961
DATE: 03/20/92 PAGES: 5
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Ann Essko/Washington State Department of Natural Resoures (Div. of
DESCRIPTION: General Notice Letter Request for Information

9. 4. . - 0012962
DATE: 03/20/92 PAGES: 5
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Neil A. Ofstun/Metropolitan Park District of Tacoma
DESCRIPTION: General Notice Letter Request for Information

9. 4. . - 0012963
DATE: 04/20/92 PAGES: 52
AUTHOR: Ann J. Morgan/Washington State Department of Natural Resources
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: General Notice Response

9. 4. . - 0012964
DATE: 05/21/92 PAGES: 535
AUTHOR: Neil A. Ofstun/Metropolitan Park District of Tacoma
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Response to Information Request

SUB-HEAD: 9. 5. 1. Access Agreements

9. 5. 1. - 0012497
DATE: 05/19/92 PAGES: 9
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Access Agreement signed between Asarco Incorporated and The Metropolitan Park District of Tacoma

SUB-HEAD: 9. 6. . Legal Document

9. 6. . - 1013121
DATE: 08/05/93 PAGES: 113
AUTHOR: Unknown/DHHS
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Addendum to Public Health Assessment for CB/NSTF

9. 6. . - 1013120
DATE: 11/10/93 PAGES: 13
AUTHOR: Sharon Eng/EPA
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Ball park $$ for Asarco - reply

HEADING: 10. 0. . ATSDR COORDINATION

SUB-HEAD: 10. 1. . Correspondence

10. 1. . - 0012498
DATE: 10/04/83 PAGES: 3
AUTHOR: Medical Epidemiologist/Department of Health and Human Services
ADDRESSEE: File/Unknown
DESCRIPTION: Trip report: Seattle-Tacoma, WA, Sept. 26-28, 1983; Possible Studies of Community Arsenic Exposures

10. 1. . - 0012499
DATE: 11/07/84 PAGES: 2
AUTHOR: Dana Davoli/EPA
ADDRESSEE: Bob McGaughy/EPA
DESCRIPTION: Data from Dr. Douglas Frost on Arsenic as an Essential Nutrient

10. 1. . - 0012500
DATE: 01/07/85 PAGES: 2
AUTHOR: Larry L. Needham/Department of Health & Human Services
ADDRESSEE: Larry Butler/EPA
DESCRIPTION: Audit Review; Quality Control

10. 1. . - 0012501
DATE: 04/25/85 PAGES: 1
AUTHOR: Larry L. Needham/Department of Health & Human Services
ADDRESSEE: David A. Kalman/University of Washington
DESCRIPTION: Response to Letter of March 4, 1985

10. 1. . - 0012502
DATE: 12/02/88 PAGES: 1
AUTHOR: Keith Rose/EPA
ADDRESSEE: Joel Mulder/Agency for Toxic Substances and Disease Registry
DESCRIPTION: Assistance in Forming a Health Committee for the Asarco/Ruston Superfund Site

10. 1. . - 0012503
DATE: 10/04/89 PAGES: 2
AUTHOR: Gregory D. Thomas/Department of Health & Human Services
ADDRESSEE: Phil Millam/EPA
DESCRIPTION: Asarco Preliminary Health Assessment Addendum

SUB-HEAD: 10. 2. . Health Assessment

10. 2. . - 0012504
DATE: 08/31/89 PAGES: 4
AUTHOR: Unknown/ATSDR
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Addendum to Preliminary Health Assessment American Smelting and Refining Company, Tacoma, Washington

10. 2. . - 1013121
DATE: 08/05/93 PAGES: 113
AUTHOR: Unknown/US Dept. of Health and Human Services
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Addendum to Public Health Assessment for Commencement Bay-Nearshore/Tideflats

SUB-HEAD: 10. 3. Industrial Hygiene Inspections

10. 3. . - 0012505
DATE: 03/02/87 PAGES: 2
AUTHOR: D. Lofgren/State of Washington Division of Industrial Safety and
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Industrial Hygiene Inspection Summary for: Roberts Environmental Services Inc. 1719 Irving Rd., Eugene, Oregon 97402, @ Asarco Plant, Tacoma

10. 3. . - 0012506
DATE: 03/05/87 PAGES: 3
AUTHOR: D. Lofgren/State of Washington Division of Industrial Safety and
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Industrial Hygiene Inspection Summary for: Invirex 1359 New York Ave., Huntington Station, NY 11746 @ Asarco Plant, Tacoma

10. 3. . - 0012507
DATE: 03/05/87 PAGES: 3
AUTHOR: D. Lofgren/State of Washington Division of Industrial Safety and
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Industrial Hygiene Inspection for: Howie's Power-Vac Inc., 19243 Ashworth N., Seattle, WA 98133 @ Asarco Plant, Tacoma

SUB-HEAD: 10. 3. 1. Citations

10. 3. 1. - 0012508
DATE: 02/24/87 PAGES: 59
AUTHOR: Unknown/State of Washington Division of Industrial Safety and
ADDRESSEE: Invirex Demolition/Unknown
DESCRIPTION: Citation & Notices for various companies and various dates

HEADING: 11. 0. . NATURAL RESOURCE TRUSTEES

SUB-HEAD: 11. 1. . Correspondence

11. 1. . - 1013338
DATE: 03/27/92 PAGES: 3
AUTHOR: Richard A. DuBey/Stoel Rives Boley Jones & Grey
ADDRESSEE: Mike Stoner/EPA
DESCRIPTION: Re: Asarco Superfund Site: Proposed Consent Decree with Asarco re Demolition Operable Unit.

11. 1. . - 0012935
DATE: 05/15/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Bob Taylor/NOAA - GC/Damage Assessment NW
DESCRIPTION: Transmittal - Executive Summary and EPA/Ecology comment letter RE: Inc. Smelter RI/FS Technical Memorandum and Conceptual Model of Site Conditions for the Asarco Smelter Facility of the Commencement Bay Nearshore/Tideflats Superfund Site

11. 1. . - 0012934
DATE: 06/03/92 PAGES: 3
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Bill Sullivan/Puyallup Tribe; NOAA; Stoel, Rives, Boley, Jones, &
DESCRIPTION: Letters to three addressees regarding Draft Remedial Investigation (RI) Report for the Asarco Smelter Superfund Site (Operable Unit 02)

11. 1. . - 0012950
DATE: 06/03/92 PAGES: 9
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Barry Stein/U.S. Dept. of Interior; Muckleshoot Indian Tribe; WA
DESCRIPTION: Transmittals to nine addressees for the Executive Summary, Table of Contents and List of Appendices for the Asarco Smelter Superfund Site (Operable Unit 02) Draft Remedial Investigation (RI) Report

11. 1. . - 0012509
DATE: 06/12/92 PAGES: 3
AUTHOR: Richard A. DuBey/Stoel Rives Boley Jones & Grey
ADDRESSEE: Mike Stoner/EPA
DESCRIPTION: Asarco Superfund Site; Concerns of the Puyallup Tribe Regarding Surface Water Controls

11. 1. . - 1013339
DATE: 06/12/92 PAGES: 3
AUTHOR: Richard A. DuBey/Stoel Rives Boley Jones & Grey
ADDRESSEE: Mike Stoner/EPA
DESCRIPTION: Re: Asarco Superfund Site: Concerns of the Puyallup Tribe regarding surface water controls

11. 1. . - 1013340
DATE: 07/10/92 PAGES: 2
AUTHOR: Richard A. DuBey/Stoel Rives Boley Jones & Grey
ADDRESSEE: Mike Stoner/EPA
DESCRIPTION: Re: Asarco CERCLA Consent Order Site Cleanup

11. 1. . - 0012220
DATE: 07/22/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Robert Taylor/NOAA-GS/Camage Assessment NW
DESCRIPTION: EPA Timeline for Review and Comment on the Revised Remedial Investigation Report for the Asarco Smelter Facility

11. 1. . - 1013341
DATE: 09/02/92 PAGES: 3
AUTHOR: Unknown/Puyallup Tribe
ADDRESSEE: Unknown/EPA
DESCRIPTION: Re: Asarco cleanup: status of issues.

11. 1. . - 0012929
DATE: 09/08/92 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Bill Sullivan/Puyallup Tribe of Indians
DESCRIPTION: Transmittal for Asarco Draft Reports for the Tacoma Smelter Facility - Predictive Model, Proposed RAOs

11. 1. . - 0012937
DATE: 12/29/92 PAGES: 13
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Barry Stein/U.S. Department of Interior
DESCRIPTION: Receipt of Asarco's Draft Risk Assessment (December 1992) - Asarco Tacoma Smelter Facility; Transmittal for Executive Summary from report

11. 1. . - 0012511
DATE: 01/29/93 PAGES: 1
AUTHOR: Richard A. DuBey/Stoel Rives Boley Jones & Grey
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Coordination between EPA and the Natural Resource Trustees

11. 1. . - 0012936
DATE: 02/08/93 PAGES: 2
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Kate Benkert/U.S. Fish and Wildlife Service
DESCRIPTION: Receipt of Asarco's Final Remedial Investigation report, revised Feasibility Study and Revised Yacht Club Breakwater report - Asar Smelter Facility

11. 1. . - 1002131
DATE: 08/10/93 PAGES: 7
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Proposed Agenda, Commencement Bay NRDA Trustee Council, Asarco Briefing, Tuesday, August 10, 1993, and attachments

11. 1. . - 1013122
DATE: 11/09/93 PAGES: 3
AUTHOR: Mike Salazar/NOAA
ADDRESSEE: Commencement Bay Trustees/Unknown
DESCRIPTION: Memorandum re: technical evaluation of Asarco Video by parametrix

11. 1. . - 1013342
DATE: 03/08/94 PAGES: 2
AUTHOR: Robert Taylor/Puyallup Tribe
ADDRESSEE: Unknown/EPA
DESCRIPTION: Proposed agenda: Commencement Bay NRDA Coordinating Committee

11. 1. . - 1013337
DATE: 03/14/94 PAGES: 2
AUTHOR: Fred Gardner/Washington Dept. of Ecology
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter offering some comments about the Asarco actions in Tacoma

HEADING: 12. 0. . CONGRESSIONAL INQUIRIES

SUB-HEAD: 12. 1. . Correspondence

12. 1. . - 0012513
DATE: / / PAGES: 2
AUTHOR: Dana Rasmussen/EPA
ADDRESSEE: Slade Gorton/United States Senate
DESCRIPTION: Response to letter dated February 16, 1992 regarding a constitutent's concerns over several activities near the Asarco Smelter

12. 1. . - 0012751
DATE: / / PAGES: 4
AUTHOR: Dana Rasmussen/EPA
ADDRESSEE: Nils Lucander/Unknown
DESCRIPTION: Response to January 22, 1993 letter to President Clinton Regarding the Ruston/North Tacoma Superfund Site

12. 1. . - 0012514
DATE: 06/05/91 PAGES: 4
AUTHOR: Slade Gorton/United States Senate
ADDRESSEE: Dana A. Rasmussen/EPA
DESCRIPTION: Asarco Superfund site, multi-year delays in the realignment of Ruston Way

12. 1. . - 0012515
DATE: 06/21/91 PAGES: 2
AUTHOR: Dana A. Rasmussen/EPA
ADDRESSEE: Chuck Nordhoff/State Director
DESCRIPTION: Asarco Superfund Site and Ruston Way Realignment, response to letter dated June 5, 1991 from Senator Slade Gorton

12. 1. . - 1013124
DATE: 08/09/91 PAGES: 2
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Outline: Briefing for Congressman Norm Dicks

HEADING: 13. 0. . PUBLIC PARTICIPATION

SUB-HEAD: 13. 1. . Correspondence

13. 1. . - 0012516
DATE: / / PAGES: 2
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Citizen's Advisory Committee

13. 1. . - 0012647
DATE: 11/06/84 PAGES: 2
AUTHOR: Donald M. Carmichael/Tacoma/Pierce County Superfund Advisory Group
ADDRESSEE: Doug Pierce/Tacoma-Pierce County Health Department, WDOE
DESCRIPTION: Request for meeting on November 28, 1984; series of questions pertaining to structure and progress of Superfund and related activities

13. 1. . - 0012517
DATE: 11/09/84 PAGES: 7
AUTHOR: Donald M. Carmichael/University of Puget Sound School of Law
ADDRESSEE: Nicola/Tacoma-Pierce County Health Department
DESCRIPTION: Remarks to the Tacoma-Pierce County Board of Health regarding the Superfund Citizens Advisory Committee (November 7, 1984)

13. 1. . - 0012518
DATE: 03/04/85 PAGES: 1
AUTHOR: Doug Pierce/Tacoma-Pierce County Health Department
ADDRESSEE: Unknown/Superfund Citizens Advisory Committee
DESCRIPTION: Meeting on March 14, 1985

13. 1. . - 0012519
DATE: 05/13/85 PAGES: 2
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Notes, Citizen's Advisory Committee

13. 1. . - 0012520
DATE: 07/06/89 PAGES: 2
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Comments on Asarco Community Update Vol. 1 No. 2 July 1989

13. 1. . - 0012521
DATE: 03/06/91 PAGES: 1
AUTHOR: Thomas Aldrich/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Opening of the Asarco Information Center

13. 1. . - 0012522
DATE: 07/21/91 PAGES: 1
AUTHOR: F. Hermann Rudenberg/Unknown
ADDRESSEE: Unknown/EPA
DESCRIPTION: Request for technical information concerning slag produced in copper smelters

13. 1. . - 0012523
DATE: 10/07/91 PAGES: 8
AUTHOR: John L. Wingard/Unknown
ADDRESSEE: Unknown/EPA
DESCRIPTION: Abandonment of the small stream running from North Tacoma through Ruston into Commencement Bay

13. 1. . - 0012524
DATE: 10/17/91 PAGES: 1
AUTHOR: F. Hermann Rudenberg/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Thanks for extensive information package

13. 1. . - 0012525
DATE: 11/16/91 PAGES: 1
AUTHOR: F. Hermann Rudenberg/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Thanks again for information concerning the copper slag in Tacoma

13. 1. . - 0012526
DATE: 02/16/92 PAGES: 9
AUTHOR: Slade Gorton/United States Senate
ADDRESSEE: Congressional Liaison/EPA
DESCRIPTION: Request information for assisting a constituent (John L. Wingard)

13. 1. . - 0012527
DATE: 07/28/92 PAGES: 10
AUTHOR: Lori Cohen/EPA
ADDRESSEE: Andrew Scott/National Strategies, Inc.
DESCRIPTION: Commencement Bay Nearshore/Tideflats Superfund site, Tacoma Washington, response to request of June 23, 1992 that the EPA review a draft summary that was prepared by National Strategies regarding activities at the CB/NT site

1. . - 1013343
DATE: 01/21/94 PAGES: 6
AUTHOR: Bruce Cochran/Washington Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Project Review sent out to various pertinent parties

13. 1. . - 1013344
DATE: 01/31/94 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Mr. and Mrs. Vinko Buric/Unknown
DESCRIPTION: Letter to community interview participants regarding Asarco cleanup process

13. 1. . - 1013345
DATE: 01/31/94 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Joseph Geier/Unknown
DESCRIPTION: Letter to community interview participants regarding cleanup process

13. 1. . - 1013346
DATE: 02/01/94 PAGES: 10
AUTHOR: Bruce Cochran/Washington Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Letter sent to various agency/program representatives encouraging involvement in project review meeting to be held 02/23/94

13. 1. . - 1013596
DATE: 03/24/94 PAGES: 1
AUTHOR: Robert Sussman/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Robert Sussman Draft Itinerary - Tacoma Site Visit

13. 1. . - 1029094
DATE: 10/11/94 PAGES: 1
AUTHOR: Kenneth R. Ewen/Unknown
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Note co-signed by Florence P. Ewen asking when their building site in Ruston, WA will be cleaned up.

SUB-HEAD: 13. 1. 1. Transmittal of Public Information

13. 1. 1. - 0012528
DATE: 05/20/83 PAGES: 2
AUTHOR: Henry Yates/State of Washington Dept. of Ecology
ADDRESSEE: Ats Kiuchi/State of Washington Dept. of Ecology
DESCRIPTION: Commencement Bay Nearshore/Tideflats Meeting

13. 1. 1. - 0012529
DATE: 06/06/83 PAGES: 1
AUTHOR: Henry Yates/State of Washington Dept. of Ecology
ADDRESSEE: Bob Jacobsen/EPA
DESCRIPTION: Commencement Bay Media Tour

13. 1. 1. - 0012530
DATE: 06/15/83 PAGES: 2
AUTHOR: Frank W. Jackson/Vashon-Maury Island Community Council
ADDRESSEE: John F. Spencer/State of Washington Dept. of Ecology
DESCRIPTION: Urging for high priority to the identification and cleanup of the arsenic and cadmium polluion on Vashon-Maury Island

13. 1. 1. - 0012531
DATE: 08/25/83 PAGES: 1
AUTHOR: Hank Droege/State of Washington Dept. of Ecology
ADDRESSEE: John Spencer/State of Washington Dept. of Ecology
DESCRIPTION: Proposed Press Release by the Department of Social and Health Services

13. 1. 1. - 0012532
DATE: 08/30/83 PAGES: 3
AUTHOR: Alexandra B. Smith/EPA
ADDRESSEE: John Beare/Division of Health
DESCRIPTION: Comments on Press Release and Data received at the August 23, 1983 meeting

13. 1. 1. - 0012533
DATE: 09/14/83 PAGES: 1
AUTHOR: Doug Pierce/Tacoma-Pierce County Health Department
ADDRESSEE: Jim Krull/State of Washington Dept. of Ecology
DESCRIPTION: Community Relations Reimbursement

13. 1. 1. - 0012534
DATE: 09/28/83 PAGES: 1
AUTHOR: Unknown/Tacoma-Pierce County Health Department
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Citizen's Advisory Committee for Nearshore/Tideflats Superfund Project

13. 1. 1. - 0012535
DATE: 10/03/83 PAGES: 2
AUTHOR: Joe Geier/Unknown
ADDRESSEE: Air Pollution Control Agency/Unknown
DESCRIPTION: Soil sample from residence, report from Arizona Testing Laboratories

1. 1. - 0012536
DATE: 10/05/83 PAGES: 1
AUTHOR: J. D. Krull/State of Washington Dept. of Ecology
ADDRESSEE: Doug Pierce/Tacoma-Pierce County Health Department
DESCRIPTION: September 14, 1983 letter regarding Community Relations Reimbursement

13. 1. 1. - 0012537
DATE: 01/20/84 PAGES: 1
AUTHOR: Ernesta B. Barnes/EPA
ADDRESSEE: Jack Allard/Department of Social and Health Services
DESCRIPTION: Response to letter of January 20, 1984

13. 1. 1. - 0012538
DATE: 01/24/84 PAGES: 3
AUTHOR: Floyd Frost/Department of Social and Health Services
ADDRESSEE: Air Work Group Agencies/Unknown
DESCRIPTION: Draft letter reporting summary results of the Tacoma-area lung cancer study

13. 1. 1. - 0012539
DATE: 01/30/84 PAGES: 4
AUTHOR: Floyd Frost/State of Washington Department of Social and Health
ADDRESSEE: William D. Ruckelshaus/EPA
DESCRIPTION: Elevated incidence of arsenic-induced lung cancer in the Tacoma area

13. 1. 1. - 0012540
DATE: 02/03/84 PAGES: 1
AUTHOR: Floyd Frost/State of Washington Dept. of Social and Health Services
ADDRESSEE: Bud Nicola/TPCHD
DESCRIPTION: Prior Review Agreement

13. 1. 1. - 0012541
DATE: 04/17/84 PAGES: 1
AUTHOR: Robert S. Sjulson/Unknown
ADDRESSEE: Office of Field Operations/State of Washington Dept. of Ecology
DESCRIPTION: Concerned that beef may contain unacceptable levels of dangerous substances due to grazing on pasture grasses

13. 1. 1. - 0012542
DATE: 05/03/84 PAGES: 2
AUTHOR: James D. Krull/State of Washington Dept. of Ecology
ADDRESSEE: Robert S. Sjulson/Unknown
DESCRIPTION: Reply to April 17, 1984 letter, testing of beef

13. 1. 1. - 0012543
DATE: 06/27/84 PAGES: 3
AUTHOR: L. W. Lindquist/Asarco, Inc.
ADDRESSEE: Alexandra B. Smith/EPA
DESCRIPTION: Notification that the Tacoma Smelter will terminate copper smelting operations prior to June 30, 1985 and will shut down plant

13. 1. 1. - 0012544
DATE: 09/12/84 PAGES: 4
AUTHOR: Douglas V. Frost/Unknown
ADDRESSEE: Dana Davoli/EPA
DESCRIPTION: Information re: arsenic cancer in humans association

13. 1. 1. - 0012546
DATE: 03/22/85 PAGES: 13
AUTHOR: Ernesta B. Barnes/EPA
ADDRESSEE: Charles O'Donohue/United Steelworkers of America
DESCRIPTION: Response to Request for EPA study under Section 321 of the Clean Air Act of the reasons for the closure of the Asarco Smelter in Tacoma

13. 1. 1. - 0012547
DATE: 04/18/85 PAGES: 1
AUTHOR: Doug Pierce/Tacoma-Pierce County Health Department
ADDRESSEE: Superfund Citizens Advisory Committee/Unknown
DESCRIPTION: May 13, 1985 Meeting, 5:00 PM, Nursing Conference Room

13. 1. 1. - 0012548
DATE: 05/22/85 PAGES: 1
AUTHOR: Dana Davoli/EPA
ADDRESSEE: Emily Taggart/Unknown
DESCRIPTION: Information on Asarco to help write paper

13. 1. 1. - 0012549
DATE: 07/10/85 PAGES: 6
AUTHOR: James D. Mullins/Unknown
ADDRESSEE: L. Edwin Coats/EPA
DESCRIPTION: Regarding letter from EPA to Senator Slade Gorton concerning Arsenic Poisoning

13. 1. 1. - 0012550
DATE: 12/19/85 PAGES: 1
AUTHOR: Carol Rushin Thompson/EPA
ADDRESSEE: Jeff Weathersby/Tacoma News Tribune
DESCRIPTION: Response to request for copy of letter of "Notification of Potential Liability for Metal Contamination of the Environment in the Vicinity of Asarco, Inc., Ruston, Washington and Request for Information" sent to Lawrence Lindquest

13. 1. 1. - 0012551
DATE: 06/13/86 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Chuck/Unknown
DESCRIPTION: Doug Pierce of Pierce County Health Department said that this newly discovered site is the "love canal" of Tacoma

13. 1. 1. - 0012552
DATE: 08/11/86 PAGES: 1
AUTHOR: Dave Bradley/State of Washington Dept. of Ecology
ADDRESSEE: Jeff Weathersby/Tacoma News Tribune
DESCRIPTION: Response to Request for draft Exposure Pathways Study Report written by Kim Lowry and others from Fred Hutchinson Cancer Research Center and/or University of Washington

13. 1. 1. - 0012553
DATE: 09/03/86 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Tacoma and Pierce County Public Libraries

13. 1. 1. - 0012554
DATE: 11/19/86 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: ROC - call to Sophia Smith - Hart Crowser regarding Asarco FOIA

13. 1. 1. - 0012555
DATE: 01/11/87 PAGES: 1
AUTHOR: Keith A. Rose/EPA
ADDRESSEE: Arthur L. Beimborn/Unknown
DESCRIPTION: Response to letter expressing concern about the streets in neighborhood paved with slag from Asarco Smelter

13. 1. 1. - 0012556
DATE: 04/01/87 PAGES: 1
AUTHOR: Cynthia Wanless/Tacoma-Pierce County Health Department
ADDRESSEE: Carol Thompson/EPA
DESCRIPTION: Response to questions concerning the development of a mailing list for the Asarco Site Stabilization Status Reports

13. 1. 1. - 0012557
DATE: 07/12/87 PAGES: 2
AUTHOR: Arthur L. Beimborn/Unknown
ADDRESSEE: Unknown/EPA
DESCRIPTION: Worried about streets next to him; was paved with smelter slag

13. 1. 1. - 0012558
DATE: 08/19/87 PAGES: 3
AUTHOR: Douglas V. Frost/Unknown
ADDRESSEE: Phil Taylor/National Cancer Institute
DESCRIPTION: Letter/Editorial challenging the reality of selenium cancer

13. 1. 1. - 0012559
DATE: 10/21/87 PAGES: 1
AUTHOR: Unknown/Tacoma-Pierce County Health Department
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: Determination of best format for conducting public meeting regarding the Asarco Tacoma Smelter

13. 1. 1. - 0012560
DATE: 11/23/87 PAGES: 1
AUTHOR: Cynthia Wanless/Tacoma-Pierce County Health Department
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Confirmation of plans for informal discussion on the Asarco Tacoma Smelter

13. 1. 1. - 0012563
DATE: 12/19/88 PAGES: 1
AUTHOR: Lynn Williams/EPA
ADDRESSEE: Gary Reese/Tacoma Public Library
DESCRIPTION: Update for the Asarco Administrative Record

13. 1. 1. - 0012564
DATE: 02/22/89 PAGES: 1
AUTHOR: Lynn Williams/EPA
ADDRESSEE: Gary Reese/Tacoma Public Library
DESCRIPTION: Updated index for the Asarco Administrative Record

13. 1. 1. - 0012565
DATE: 04/21/89 PAGES: 2
AUTHOR: Keith Rose/EPA
ADDRESSEE: Steve Spranger/Unknown
DESCRIPTION: Response to request for documents from Chem-Security Systems Inc. for the Asarco and Paccor sites for month of October 1987

13. 1. 1. - 0012566
DATE: 05/30/89 PAGES: 2
AUTHOR: Anita J. Frankel/Puget Sound Air Pollution Control Agency
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: Comments on Asarco Smelter Property Project, Tacoma WA

1. 1. - 0012567
DATE: 07/14/89 PAGES: 1
AUTHOR: Janet B. O'Hara/EPA
ADDRESSEE: Public Information Coordinator/Tacoma Pierce County Health
DESCRIPTION: Request for placement of enclosed document in the Commencement Bay/Asarco information repository

13. 1. 1. - 0012568
DATE: 07/14/89 PAGES: 1
AUTHOR: Janet B. O'Hara/EPA
ADDRESSEE: Public Information Coordinator/Tacoma Public Library, Main Branch
DESCRIPTION: Request for placement of enclosed document in the Commencement Bay/Asarco information repository

13. 1. 1. - 0012569
DATE: 07/14/89 PAGES: 1
AUTHOR: Janet B. O'Hara/EPA
ADDRESSEE: Public Information Coordinator/Ruston Town Hall
DESCRIPTION: Request for placement of enclosed document in the Commencement Bay/Asarco information repository

13. 1. 1. - 0012570
DATE: 08/01/89 PAGES: 1
AUTHOR: Judith Lorbeir/City of Tacoma Environmental Commission
ADDRESSEE: Keith Rose/EPA
DESCRIPTION: City of Tacoma Environmental Commission Presentation

13. 1. 1. - 0012571
DATE: 09/27/89 PAGES: 2
AUTHOR: Phil Millam/EPA
ADDRESSEE: Phil Carpenter/City of Tacoma Environmental Commission
DESCRIPTION: Response to request for extension of public comment period, granted

13. 1. 1. - 0012572
DATE: 05/11/90 PAGES: 2
AUTHOR: Disgusted Taxpayer from the Northend/Unknown
ADDRESSEE: EPA Project Manager/EPA
DESCRIPTION: "Make Work Projects"

13. 1. 1. - 0012573
DATE: 09/25/90 PAGES: 1
AUTHOR: Lynn Williams/EPA
ADDRESSEE: Gary Reese/Tacoma Public Library
DESCRIPTION: Update for the Asarco Administrative Record

13. 1. 1. - 0012574
DATE: 10/12/90 PAGES: 1
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Susan McDonald/Pacific Lutheran University Library
DESCRIPTION: Addition of transcript from August 16, 1990 public meeting to other public information

13. 1. 1. - 0012575
DATE: 10/12/90 PAGES: 1
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Kim Coble/Tacoma-Pierce County Health Department
DESCRIPTION: Addition to public information being held

13. 1. 1. - 0012576
DATE: 10/12/90 PAGES: 1
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Kathy Reed/State of Washington Dept. of Ecology
DESCRIPTION: Addition of transcript to other public information being held

13. 1. 1. - 0012577
DATE: 03/19/91 PAGES: 1
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Patricia Miraldi/McCormick Regional Branch
DESCRIPTION: Update for Asarco information being held

13. 1. 1. - 0012578
DATE: 03/19/91 PAGES: 1
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Marie Metsker/Vashon Memorial Library
DESCRIPTION: Update for Asarco information being held

13. 1. 1. - 0012579
DATE: 03/19/91 PAGES: 1
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Susan McDonald/Pacific Lutheran Library
DESCRIPTION: Update for Asarco information being held

13. 1. 1. - 0012580
DATE: 03/19/91 PAGES: 1
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Judith Lorbeir/City of Tacoma Environmental Commission
DESCRIPTION: Update for Asarco information being held

1. 1. - 0012581
DATE: 03/19/91 PAGES: 1
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Kathy Reed/State of Washington Dept. of Ecology
DESCRIPTION: Update for Asarco information being held

13. 1. 1. - 0012582
DATE: 03/19/91 PAGES: 1
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Kim Coble/Tacoma Pierce County Health Department
DESCRIPTION: Update for Asarco Information being held

13. 1. 1. - 0012583
DATE: 03/19/91 PAGES: 1
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Gary Reese/Tacoma Public Library
DESCRIPTION: Update for Asarco information being held

13. 1. 1. - 0012584
DATE: 03/19/91 PAGES: 1
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Verna Holbrook/Ruston Town Hall
DESCRIPTION: Update for Asarco information being held

13. 1. 1. - 0012771
DATE: 08/09/91 PAGES: 2
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Outline: Briefing for Congressman Norm Dicks with attached Remedial Action Alternatives

13. 1. 1. - 0012585
DATE: 01/10/92 PAGES: 1
AUTHOR: Kevin Rochlin/EPA
ADDRESSEE: Walt McGlassan/Unknown
DESCRIPTION: Requested documents for Commencement Bay Nearshore/Tideflats; Asarco Smelter

13. 1. 1. - 0012586
DATE: 04/13/92 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Phil Herzog/Division of Aquatic Lands
DESCRIPTION: Documents requested per phone conversation April 13, 1992

13. 1. 1. - 0012800
DATE: 07/01/92 PAGES: 2
AUTHOR: Bruce M. Diamond/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Largest Penalty Ever Imposed for Noncompliance with a CERCLA Section 104(e) Information Request in United States v. Asarco, Inc., Kansas City Structural Steel Superfund Site, Kansas City, Kansas

13. 1. 1. - 1002023
DATE: 05/25/93 PAGES: 2
AUTHOR: Karen L. R. Vialle/City of Tacoma
ADDRESSEE: Deena Fashedi/Unknown
DESCRIPTION: Response to attached letter regarding concern about cleanup of Asarco

13. 1. 1. - 1002188
DATE: 08/28/93 PAGES: 7
AUTHOR: Michelle Pirzadeh/Community Relations
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Cover letters to send Remedial Investigation and Feasibility Study reports to AR repository and various information repositories

13. 1. 1. - 1013130
DATE: 09/09/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas L. Alrich/Asarco, Inc.
DESCRIPTION: Re: public availability sessions

13. 1. 1. - 1002191
DATE: 09/23/93 PAGES: 1
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Gary Reese/Tacoma Public Library
DESCRIPTION: Transmittal letter for Asarco Smelter Facility Administrative Record

13. 1. 1. - 1013156
DATE: 10/15/93 PAGES: 4
AUTHOR: Unknown/EPA
ADDRESSEE: Ron Boisture/Morning News Tribune
DESCRIPTION: Newspaper billing and announcement write-up of Availability Sessions being held for public education and input

1. 1. - 1013157
DATE: 10/23/93 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Sign-in sheet for EPA Public Availability Session held 10/23/93

13. 1. 1. - 1013160
DATE: 11/01/93 PAGES: 5
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Erling Mork/Tacoma-Pierce County Economic Development Council
DESCRIPTION: Invitation to review with public, findings regarding Asarco - four additional addressees

13. 1. 1. - 1013129
DATE: 11/02/93 PAGES: 13
AUTHOR: Michelle Pirazadeh/EPA
ADDRESSEE: Gary Turney/Unknown
DESCRIPTION: Letter of invitation to state comments and concerns regarding cleanup of Asarco Smelter Facility - 12 addressees

13. 1. 1. - 1013161
DATE: 11/02/93 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Invitation to public to participate in series of workshops pertaining to redevelopment of Asarco property to be held 11/15-19/93 at Ruston School

13. 1. 1. - 1013162
DATE: 11/03/93 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Attendee list for Asarco Smelter Cleanup Availability Session 11/3/93

13. 1. 1. - 1013128
DATE: 11/07/93 PAGES: 1
AUTHOR: Joseph C. Adams/Unknown
ADDRESSEE: Mary Kay Voytilla/EPA
DESCRIPTION: Letter stating concerns regarding Asarco's copper smelting plant on Ruston Way

13. 1. 1. - 1013127
DATE: 11/30/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Thomas Aldrich/Asarco, Inc.
DESCRIPTION: Response letter to letter received dated 11/12/93 regarding slag at John Holloway's property

13. 1. 1. - 1013163
DATE: 12/06/93 PAGES: 11
AUTHOR: Piper L. Peterson/EPA
ADDRESSEE: Joseph Amos/Unknown
DESCRIPTION: Response letter regarding Mr. Amos' concerns on cleanup activities on residential soil

13. 1. 1. - 1013626
DATE: 04/08/94 PAGES: 1
AUTHOR: Robert M. Sussman/EPA
ADDRESSEE: Carol Rushin/EPA
DESCRIPTION: Letter of thanks regarding tour given of Commencement Bay

13. 1. 1. - 1029097
DATE: 08/03/94 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Barbara Skinner/Tacoma City Council
DESCRIPTION: Response to letter written to Thomas Aldrich, July 25, 1994, in support of the public boat launch ramp in the Asarco re-development project clairifying actions outlined in the Proposed Plan for Cleanup of the Asarco Smelter site.

13. 1. 1. - 1029092
DATE: 09/12/94 PAGES: 5
AUTHOR: Unknown/Tacoma Environmental Commission
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Minutes of meeting held September 12, 1994.

13. 1. 1. - 1029093
DATE: 09/19/94 PAGES: 19
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda and subject sheets for an Asarco Tacoma Smelter Site & Slag Peninsula Public Meeting scheduled for September 19, 1994 at Mason Middle School in Tacoma, Washington.

13. 1. 1. - 1029095
DATE: 09/26/94 PAGES: 4
AUTHOR: Unknown/Tacoma Environmental Commission
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Minutes of meeting held September 26, 1994.

1. 1. - 1029096
DATE: 11/04/94 PAGES: 3
AUTHOR: Judith Lorbeir/City of Tacoma
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Letter stating City feels the slag from 1721 Thorne Road should be placed on the Asarco site on a temporary basis only pending a clearer understanding of the environmental impacts to the smelter site. Attached addressed envelope.

SUB-HEAD: 13. 1. 2. FOIA Requests/Responses

13. 1. 2. - 0012545
DATE: 12/17/84 PAGES: 1
AUTHOR: Bob Kievit/EPA
ADDRESSEE: Vivian Helewicz/EPA
DESCRIPTION: Asarco FOIA 10-RIN-315-84

13. 1. 2. - 0012587
DATE: 04/09/91 PAGES: 1
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Robert Hill/Unknown
DESCRIPTION: Freedom of Information Act (FOIA) Request Number 10-RIN-462-91

1. 2. - 0012588
DATE: 04/12/91 PAGES: 1
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Marcia Newlands/Heller Ehrman White & McAuliffe
DESCRIPTION: FOIA Request Number 10-RIN-311-91

13. 1. 2. - 0012589
DATE: 05/30/91 PAGES: 2
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Lori Bolno/ROD Scan
DESCRIPTION: FOIA Request Number 10-RIN-549-91

13. 1. 2. - 0012590
DATE: 01/29/92 PAGES: 3
AUTHOR: Joseph Ficek/Ridel Environmental Engineering Co.
ADDRESSEE: Mary Nielson/EPA
DESCRIPTION: FOIA Request No. 10-RIN-88-92

13. 1. 2. - 0012591
DATE: 05/29/92 PAGES: 2
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Melinda J. Ryan/Bliss Riordan
DESCRIPTION: FOIA Request Number 10-RIN-681-92

13. 1. 2. - 0012592
DATE: 06/23/92 PAGES: 3
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Sandra Lee/Riddell, Williams, Bullitt & Walkinshaw
DESCRIPTION: FOIA Request Number 10-RIN-897-92

13. 1. 2. - 1013168
DATE: 06/25/92 PAGES: 7
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Melina J. Ryan/Bliss Riordan
DESCRIPTION: FOIA request #: 10-RIN-795-92

13. 1. 2. - 1013166
DATE: 07/23/92 PAGES: 6
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Michael P. Guccione/Peterson Consulting
DESCRIPTION: FOIA request #: 10-RIN-918-92

13. 1. 2. - 0012593
DATE: 08/13/92 PAGES: 3
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Mary Ann Cochran/Freedman, Levy, Kroll & Simonds
DESCRIPTION: FOIA Request Number 10-RIN-01024-92

13. 1. 2. - 0012594
DATE: 08/13/92 PAGES: 2
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Sandra K. Lee/Riddell, Williams, Bullitt & Walkinshaw
DESCRIPTION: FOIA Request Number 10-RIN-01058-92

13. 1. 2. - 0012595
DATE: 10/29/92 PAGES: 4
AUTHOR: Carol A. Rushin/EPA
ADDRESSEE: Mark O. Bennett/Hydrometrics, Inc.
DESCRIPTION: FOIA Request Number 10-RIN-1456-92

13. 1. 2. - 1013167
DATE: 02/11/93 PAGES: 3
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Sandi Doughton/Morning News Tribune
DESCRIPTION: FOIA #: 10-RIN-00113-93

1. 2. - 0012983
DATE: 05/20/93 PAGES: 3
AUTHOR: Carol Rushin/EPA
ADDRESSEE: K. D. Ferguson/Placer Dome, Inc.
DESCRIPTION: Freedom of Information Act (FOIA) Request Number 10-RIN-00652-93

13. 1. 2. - 0012984
DATE: 06/01/93 PAGES: 2
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Abbott DePree/Macon Cowles & Associates
DESCRIPTION: Freedom of Information Act Request 10-RIN-660-93

13. 1. 2. - 1013165
DATE: 09/07/93 PAGES: 5
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Melissa Mather/Morrison & Foerster
DESCRIPTION: FOIA request # 10-RIN-01203-93

13. 1. 2. - 1013176
DATE: 10/06/93 PAGES: 3
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Melissa Mather/Morrison & Foerster
DESCRIPTION: FOIA request #: 10-RIN-1304-93

13. 1. 2. - 1013740
DATE: 10/08/93 PAGES: 3
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Allison S. Wallin/Weyerhaeuser
DESCRIPTION: Response to request dated 09/18/93, FOIA #: 10-RIN-1314-93

13. 1. 2. - 1013169
DATE: 10/14/93 PAGES: 3
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Allison S. Wallin/Weyerhaeuser
DESCRIPTION: Response to request dated 10/11/93, FOIA #: 10-RIN-1383-93

13. 1. 2. - 1013164
DATE: 11/08/93 PAGES: 3
AUTHOR: Linda O'Neil/Riddell Williams Bullitt & Walkinshaw
ADDRESSEE: Vivian Warden/EPA
DESCRIPTION: FOIA request: 10-RIN-1556-93

13. 1. 2. - 1013732
DATE: 11/16/93 PAGES: 3
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Kristi Helgeson/Stoel Rives Boley Jones & Grey
DESCRIPTION: FOIA #10-RIN-01485-93 response letter

13. 1. 2. - 1013597
DATE: 04/11/94 PAGES: 3
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Kathryn Johnson/Johnson Environmental Concepts
DESCRIPTION: FOIA request 10-RIN-444-94

13. 1. 2. - 1013627
DATE: 04/15/94 PAGES: 3
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Christina T. Ulrich/Covington & Burling
DESCRIPTION: RE: FOIA No. 10-RIN-503-94

13. 1. 2. - 1013794
DATE: 05/01/94 PAGES: 2
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Kathryn Johnson/Johnson Environmental Concepts
DESCRIPTION: Re: FOIA No. 10-RIN-615-94 regarding Section 6.7 of the Asarco Tacoma Plant Remedial Investigation

13. 1. 2. - 1029099
DATE: 07/25/94 PAGES: 6
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Tina Stotz/Hart Crowser, Inc.
DESCRIPTION: Response letter to FOIA #10-RIN-917-94.

13. 1. 2. - 1029085
DATE: 08/10/94 PAGES: 1
AUTHOR: Carol Rushin/EPA
ADDRESSEE: Wendie I. Johnson/Riddell Williams Bullitt & Walkinshaw
DESCRIPTION: Reponse letter to FOIA No. 10-RIN-1076-94; attached copy of letter of request for information.

13. 1. 2. - 1029098
DATE: 11/21/94 PAGES: 4
AUTHOR: Michael F. Gearheard/EPA
ADDRESSEE: David Himelfarb/Covington & Burling
DESCRIPTION: Response letter to FOIA #10-RIN-01423-94.

SUB-HEAD: 13. 2. . Community Relations Plan

2. . - 0012596
DATE: / / PAGES: 5
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco, Incorporated, Tacoma Plant; Background, Questions, Problems, "When Will the Immediate Remedies be Implemented?," etc.

13. 2. . - 0012597
DATE: / / PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Site Clean-up Community Relations Activities

13. 2. . - 0012598
DATE: 07/17/86 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Community Relations Meeting Notes

SUB-HEAD: 13. 3. . Land Use - Public Process

13. 3. . - 1013171
DATE: / / PAGES: 1
AUTHOR: Jim Merritt/Merritt & Pardini Architects
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Asarco Week Participant announcement regarding Asarco remediation.

13. 3. . - 1013347
DATE: / / PAGES: 1
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Flyer announcing meeting between City of Tacoma, Asarco, Inc., Metropolitan District of Tacoma and Town of Ruston regarding redevelopment of Asarco property located along shores of Commencement Bay to be held 01/18-20/94.

13. 3. . - 1029102
DATE: / / PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Blank card reading: "Tell EPA you support the Asarco Master Development Plan," with space for respondent's name, address, etc. and request for additional information.

13. 3. . - 1029107
DATE: / / PAGES: 1
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Week 4 August 22-26 Workshop Schedule flyer titled: "Come See Your Vision Taking Shape."

13. 3. . - 1029108
DATE: / / PAGES: 1
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Week 4 August 22-26 Workshop Schedule flyer titled: "Find Out More About Plans For Developing the Asarco Property." with attached mailing list and response card.

13. 3. . - 1029109
DATE: / / PAGES: 1
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco August 30 and September 19, 1994 Community Meeting flyer titled: "The Asarco Site, Ruston/Tacoma Washington, Now It's Up To You," with attached mailing list and response card.

13. 3. . - 1029110
DATE: / / PAGES: 12
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Community Meeting flyer titled: "The Asarco Site, Ruston/Tacoma Washington, Your Vision Is Taking Shape."

13. 3. . - 1029115
DATE: / / PAGES: 3
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/Asarco, Inc.
DESCRIPTION: Handwritten note at sheet top reads: "Fact sheet developed by Asarco for Asarco Week 4, August 22-26, 1994," sheet bears title reading: "Fact Sheet; Asarco On-Site Containment Facility."

13. 3. . - 1013175
DATE: 10/07/93 PAGES: 6
AUTHOR: Unknown/Merrit & Pardini
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Draft Tacoma Site Master Planning Scope of Services

3. . - 1013173
DATE: 10/08/93 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Merritt Pardini & Sasaki
DESCRIPTION: Handout for meeting between EPA and Merritt Pardini & Sasaki

13. 3. . - 1013172
DATE: 10/19/93 PAGES: 2
AUTHOR: Marcia Newlands/Heller Ehrman White & McAuliffe
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Re: Update on progress of Ruston/N. Tacoma Coordinating Forum Land Use Group

13. 3. . - 1013348
DATE: 01/18/94 PAGES: 16
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Folder with several handouts for Asarco Week Two, January 18-21, 1994

13. 3. . - 1013599
DATE: 04/11/94 PAGES: 13
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Packet of Public Relations documents regarding Asarco Week Three - Community Workshops held during April 11-14, 1994

13. 3. . - 1013600
DATE: 04/11/94 PAGES: 10
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Week Three Public Workshop hand-out packet

13. 3. . - 1029101
DATE: 08/02/94 PAGES: 2
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Land Use Group Members
DESCRIPTION: Cover sheet and attached letter from Patricia McLain of the State of Washington Department of Fish and Wildlife regarding Asarco boat launch proposal.

13. 3. . - 1029103
DATE: 08/10/94 PAGES: 2
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Land Use Group Members
DESCRIPTION: Cover sheet and attached letter from Barbara J. Erickson of Tacoma, Washington regarding Asarco boat launch proposal.

13. 3. . - 1029104
DATE: 08/10/94 PAGES: 2
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Land Use Group Members
DESCRIPTION: Cover sheet and attached letter from Art Peterson of Tacoma, Washington offering a comment statement he has written and would like "read into the hearing and considered by those responsible for planning for future uses of the [Asarco] site.

13. 3. . - 1029105
DATE: 08/15/94 PAGES: 22
AUTHOR: Michael R. Thorp/Heller Ehrman White & McAuliffe
ADDRESSEE: Randall F. Smith/EPA
DESCRIPTION: Letter and attached copy of Proposed Tacoma Smelter Agreement in Principle and related newspaper articles.

13. 3. . - 1029111
DATE: 08/18/94 PAGES: 1
AUTHOR: Unknown/Merritt & Pardini
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Map titled: Asarco Proposed Master Plan Scheme G-2.1, issued August 1994.

13. 3. . - 1029106
DATE: 08/22/94 PAGES: 1
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Asarco Week 4 August 22-26 Workshop Schedule flyer.

13. 3. . - 1029112
DATE: 08/23/94 PAGES: 1
AUTHOR: Unknown/Merritt & Pardini
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Agenda list of items for meeting date of August 23, 1994 at 11am at Ruston School.

13. 3. . - 1029113
DATE: 08/24/94 PAGES: 1
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Flyer titled: Asarco Week 4 August 22-26 Community Group Workshop with list of locations, dates and times of meeting.

3. . - 1029114
DATE: 08/25/94 PAGES: 1
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Tom Aldrich/EPA
DESCRIPTION: Memorandum regarding presentation to Tacoma/Pierce County Black Collective; stating Peterson is scheduled on the agenda for a half-hour presentation and question session.

13. 3. . - 1029116
DATE: 08/29/94 PAGES: 1
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Tom Aldrich/EPA
DESCRIPTION: Memorandum listing scheduled community meetings for presentations on the Asarco site dating from September 3 through November of 1994.

13. 3. . - 1029117
DATE: 09/09/94 PAGES: 5
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Unknown/Land Use Group Members
DESCRIPTION: Cover sheet and attached comments received by Jim Merritt from Boaters Association.

3. . - 1029118
DATE: 09/14/94 PAGES: 1
AUTHOR: Karen Pickett/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Memorandum listing scheduled community meetings for presentations on the Asarco site dating from September 15 through November of 1994.

SUB-HEAD: 13. 4. . Fact Sheets/Press Releases

13. 4. . - 1002133
DATE: / / PAGES: 2
AUTHOR: ASARCO, Inc./Unknown
ADDRESSEE: Community/Unknown
DESCRIPTION: Update newsletter-Idaho Communities Working with EPA to Develop Community Protection Measures

13. 4. . - 1029128
DATE: / / PAGES: 2
AUTHOR: Unknown/Citizens For A Healthy Bay
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Flyer reading: "The Time To Decide is Now! EPA's Public Comment Period on the Cleanup of the Asarco Site; Comment now until October 11, 1994."

13. 4. . - 1013231
DATE: 05/01/90 PAGES: 2
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Community Update bulletin: Cleanup Alternative: Excavation and Offsite Disposal

13. 4. . - 0012599
DATE: 02/13/91 PAGES: 5
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Public
DESCRIPTION: Update of Hazardous Waste Cleanup Projects Tacoma, Washington

13. 4. . - 1013232
DATE: 03/01/91 PAGES: 2
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Michelle L. Pirzadeh/EPA
DESCRIPTION: Community Update bulletin: ASARCO Information Center to Open

13. 4. . - 0012600
DATE: 05/06/91 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Public
DESCRIPTION: Superfund Fact Sheet, Asarco Superfund Projects, Tacoma, Washingt

13. 4. . - 0012601
DATE: 06/30/91 PAGES: 1
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/Public
DESCRIPTION: Asarco's Community Update, Vo. 2 No. 3

13. 4. . - 0012602
DATE: 08/06/91 PAGES: 5
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Public
DESCRIPTION: Update of Hazardous Waste Cleanup Projects, Tacoma, Washington

13. 4. . - 0012603
DATE: 08/31/91 PAGES: 1
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/Public
DESCRIPTION: Asarco's Community Update, Vol. 2 No. 5

4. . - 0012604
DATE: 11/30/91 PAGES: 2
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/Public
DESCRIPTION: Asarco's Community Update, Vol. 2 No. 7

13. 4. . - 1002132
DATE: 12/01/91 PAGES: 1
AUTHOR: ASARCO, Inc./Unknown
ADDRESSEE: Community/Unknown
DESCRIPTION: Community Update newsletter-ASARCO Releases Risk Assessment on Ruston Area

13. 4. . - 0012605
DATE: 01/31/92 PAGES: 1
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/Public
DESCRIPTION: Asarco's Community Update, Vol. 11 No. 1

13. 4. . - 0012606
DATE: 03/31/92 PAGES: 6
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Public
DESCRIPTION: Update on Hazardous Waste Cleanup Projects, Tacoma, Washington

13. 4. . - 1002134
DATE: 04/01/92 PAGES: 2
AUTHOR: ASARCO, Inc./Unknown
ADDRESSEE: Community/Unknown
DESCRIPTION: Community Update - Asarco to Study Everett Site and Perform Cleanup of Exposed Soil

13. 4. . - 1002135
DATE: 05/07/92 PAGES: 1
AUTHOR: ASARCO, Inc./Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Page with number to call if questions about Asarco's study of Everett site

13. 4. . - 1002136
DATE: 07/01/92 PAGES: 1
AUTHOR: ASARCO, Inc./Unknown
ADDRESSEE: Community/Unknown
DESCRIPTION: Community Update newsletter - Residents Say "Not in my Back Yard"

13. 4. . - 0012607
DATE: 07/14/92 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Public
DESCRIPTION: Superfund Fact Sheet, Asarco Superfund Projects, Tacoma, Washington

13. 4. . - 1002137
DATE: 08/01/92 PAGES: 1
AUTHOR: ASARCO, Inc./Unknown
ADDRESSEE: Community/Unknown
DESCRIPTION: Community Update - Interim Actions to Begin This Summer

13. 4. . - 1002138
DATE: 09/01/92 PAGES: 1
AUTHOR: ASARCO, Inc./Unknown
ADDRESSEE: Community/Unknown
DESCRIPTION: Community Update newsletter - EPA Opens Official Public Comment Period for Residential Cleanup

13. 4. . - 1002139
DATE: 10/01/92 PAGES: 1
AUTHOR: ASARCO, Inc./Unknown
ADDRESSEE: Community/Unknown
DESCRIPTION: Community Update newsletter - Residents Voice Opinions on EPA's Residential Cleanup Plan

13. 4. . - 0012608
DATE: 10/31/92 PAGES: 1
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/Public
DESCRIPTION: Asarco's Community Update, Vol. 3 No. 6

13. 4. . - 0012609
DATE: 11/30/92 PAGES: 5
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Public
DESCRIPTION: Superfund Fact Sheet, Update on Hazardous Waste Cleanup Projects, Tacoma, Washington

13. 4. . - 1013190
DATE: 12/01/92 PAGES: 2
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Communiy Update bulletin: Asarco To Demolish Its Stack in January

4. . - 0012816
DATE: 02/28/93 PAGES: 4
AUTHOR: Unknown/California Environmental Protection Agency
ADDRESSEE: Public/Unknown
DESCRIPTION: Fact Sheet - Selby Slag Site, Completion of Interim Remedial Measures

13. 4. . - 1002140
DATE: 04/01/93 PAGES: 1
AUTHOR: ASARCO, Inc./Unknown
ADDRESSEE: Community/Unknown
DESCRIPTION: Community Update newsletter - Soil Removal Presents Greater Risk than Leaving Soil In Place and "Blast the Stack" Raffle

13. 4. . - 1002141
DATE: 04/01/93 PAGES: 2
AUTHOR: ASARCO, Inc./Unknown
ADDRESSEE: Community/Unknown
DESCRIPTION: Community Update newsletter - Study of Everett Site Moving Forward and ASARCO Gives $5000 Interest-free Loans to Help Residents Understand Cleanup Program

13. 4. . - 1013188
DATE: 04/01/93 PAGES: 2
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Community Update bulletin: Soil Removal Presents Greater Risk Than Leaving Soil in Place

13. 4. . - 1013189
DATE: 06/01/93 PAGES: 2
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Community Update bulletin: Readers Respond to Community Update

13. 4. . - 1002069
DATE: 06/30/93 PAGES: 4
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Public
DESCRIPTION: Superfund Fact Sheet - Update on Hazardous Waste Cleanup Projects Tacoma, Washington

13. 4. . - 1013179
DATE: 09/22/93 PAGES: 9
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA Superfund Fact Sheet: Asarco Tacoma Smelter and Related Projects - Tacoma, Washington; Investigation reports available for public review

13. 4. . - 1013180
DATE: 09/24/93 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA News Release: developments relating to the Superfund cleanup at the old Asarco smelter in Ruston.

13. 4. . - 1013181
DATE: 10/27/93 PAGES: 1
AUTHOR: Unknown/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: News release concerning the election of Michael O. Varner as Vice President of Environmental Operation for Asarco, Inc.

13. 4. . - 1029119
DATE: 01/01/94 PAGES: 10
AUTHOR: Unknown/Citizens For A Healthy Bay
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newsletter of Summer/Fall 1994 titled: "It's A Celebration! The 1994 Commencement Bay Maritime Fest."

13. 4. . - 1013349
DATE: 01/24/94 PAGES: 6
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Superfund Fact Sheet: Update on Hazardous Waste Cleanup Projects, Tacoma, Washington.

13. 4. . - 1013631
DATE: 04/28/94 PAGES: 3
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Superfund Fact Sheet: Asarco Tacoma Smelter - Ruston and Tacoma, Washington.

13. 4. . - 1029120
DATE: 07/19/94 PAGES: 4
AUTHOR: Kathleen Deakins/Jacobson Ray McLaughlin & Fillips
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Fax cover sheet with attached news releases from the City of Tacoma and Asarco, Inc. and other parties announcing agreement in principle on redevelopment of abandoned site.

4. . - 1029121
DATE: 07/19/94 PAGES: 2
AUTHOR: Judith Lorbeir/City of Tacoma
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Fax cover sheet with attached news releases from the City of Tacoma and Asarco, Inc. and other parties announcing agreement in principle on redevelopment of abandoned site.

13. 4. . - 1029125
DATE: 08/01/94 PAGES: 10
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Superfund Fact Sheet - Asarco Smelter Site of Ruston, Tacoma, Washington: Update on Hazardous Waste Cleanup Projects.

13. 4. . - 1013817
DATE: 08/12/94 PAGES: 6
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Superfund Fact Sheet - Asarco Smelter Site of Ruston, Tacoma, Washington: EPA Announces Proposed Plan for Cleanup of the Asarco Smelter and Slag Peninsula.

4. . - 1029126
DATE: 10/05/94 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Superfund Fact Sheet - Asarco Smelter Site of Ruston, Tacoma, Washington: EPA Proposes to Allow Move of Slag From Tideflats To Asarco Smelter Site; Public Comments Invited From October 6, November 4, 1994.

13. 4. . - 1029124
DATE: 11/21/94 PAGES: 3
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Superfund Fact Sheet - Asarco Smelter Site of Ruston, Tacoma, Washington: Asarco To Move Slag From Tideflats to Asarco Smelter Site.

13. 4. . - 1029123
DATE: 12/29/94 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Superfund Fact Sheet - Asarco Smelter Site of Ruston, Tacoma, Washington: Smelter Demolition: We're Almost There!

13. 4. . - 1029265
DATE: 02/01/95 PAGES: 2
AUTHOR: Unknown/Asarco, Incc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: FAXed Asarco News release titled: Asarco, Plaintiffs Settle Tacoma Class Action Suit.

13. 4. . - 1029342
DATE: 03/27/95 PAGES: 6
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Public
DESCRIPTION: Superfund Fact Sheet; Former Asarco Smelter Site - Ruston and Tacoma, Washington: EPA's Cleanup Plan Calls For On-Site Containment.

SUB-HEAD: 13. 5. . Public Meeting Transcripts

13. 5. . - 1029290
DATE: 08/30/94 PAGES: 75
AUTHOR: Gerald D. Kohler/Bayside Reporters
ADDRESSEE: Unknown/EPA
DESCRIPTION: Proceedings transcriptions from Public Meeting held by EPA at the Mason Middle School in Tacoma to provide information about EPA's proposal for cleanup of the Asarco smelter site - Piper Peterson and Michelle Pirzadeh presenting.

13. 5. . - 1029131
DATE: 09/12/94 PAGES: 96
AUTHOR: Gerald D. Kohler/Bayside Reporters
ADDRESSEE: Unknown/EPA
DESCRIPTION: Proceedings transcriptions from Public Meeting held by EPA at the Mason Middle School in Tacoma to provide information about EPA's proposal for cleanup of the Asarco smelter site - Piper Peterson and Michelle Pirzadeh presenting.

SUB-HEAD: 13. 6. . Newspaper/Journal/Magazine Articles

13. 6. . - 0012610
DATE: / / PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Public/Unknown
DESCRIPTION: Asarco Agrees to Pay $500,000 to Settle Charges by OSHA

13. 6. . - 0012611
DATE: / / PAGES: 1
AUTHOR: Unknown/Tacoma News Tribune
ADDRESSEE: Public/Unknown
DESCRIPTION: Superfund follies aren't reassuring

6. . - 0012613
DATE: / / PAGES: 1
AUTHOR: Thomas L. Aldrich/Asarco, Inc.
ADDRESSEE: General Public/The Morning News Tribune/Unknown
DESCRIPTION: Asarco's vision, conscience are clear on smelter cleanup

13. 6. . - 0012614
DATE: / / PAGES: 1
AUTHOR: Barbara Felver/Gateway
ADDRESSEE: Public/Unknown
DESCRIPTION: Plans at Asarco site move slowly

13. 6. . - 1013187
DATE: / / PAGES: 1
AUTHOR: Tom Aldrich/Asarco, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Public flyer announcing $5000 reward for information leading to arrest and conviction of those responsible for damaging 40 trees on Asarco Information Center property

13. 6. . - 1013193
DATE: / / PAGES: 16
AUTHOR: Thompson/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Summary of Louisiana-Pacific Corp. -vs- Asarco, Inc. before Circuit Judges: Environmental Law/Hazardous Waste

13. 6. . - 1013354
DATE: / / PAGES: 1
AUTHOR: Linda Woo/News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Alternatives for Asarco Property to be discussed

13. 6. . - 1013598
DATE: / / PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper advertisement: "Help Improve the View. Come see and discuss the Asarco Redevelopment Plan."

13. 6. . - 1013604
DATE: / / PAGES: 2
AUTHOR: David Seago/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article titled: Old Ideas Tumble When It Comes to Building a New Future for the Site Where the Tacoma Smelter Stood for Decades

13. 6. . - 0012623
DATE: 07/30/82 PAGES: 1
AUTHOR: Associated Press/Seattle Times
ADDRESSEE: Public/Unknown
DESCRIPTION: Ruling may complicate cleanup of toxic sites

13. 6. . - 0012615
DATE: 07/31/83 PAGES: 3
AUTHOR: Unknown/The News Tribune
ADDRESSEE: Public/Unknown
DESCRIPTION: How copper ore is smelted here

13. 6. . - 1013186
DATE: 01/04/91 PAGES: 2
AUTHOR: Sandi Doughton/Morning New Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: News article: Asarco Receives Government OK to Blow Its Stack

13. 6. . - 0012616
DATE: 02/14/91 PAGES: 1
AUTHOR: John Gillie/The News Tribune
ADDRESSEE: Public/Unknown
DESCRIPTION: Asarco must help pay for log yards' cleanup.

13. 6. . - 0012612
DATE: 04/21/91 PAGES: 2
AUTHOR: Mary Ann Gwinn/The Seattle Times/Seattle Post-Intelligencer
ADDRESSEE: Public/Unknown
DESCRIPTION: The Sound's quiet crisis.

13. 6. . - 0012617
DATE: 05/09/91 PAGES: 1
AUTHOR: Graham Fysh/The News Tribune
ADDRESSEE: Public/Unknown
DESCRIPTION: Smelter cleanup assailed, Rep. Swift says he'll get involved.

13. 6. . - 0012618
DATE: 06/07/91 PAGES: 1
AUTHOR: Larry Lange/Seattle Post-Intelligencer
ADDRESSEE: Public/Unknown
DESCRIPTION: Heavy metals, 'runny' liver found in dead gray whale.

6. . - 0012619
DATE: 09/20/91 PAGES: 1
AUTHOR: Rob Tucker/The News Tribune
ADDRESSEE: Public/Unknown
DESCRIPTION: Cascades acid rain sharply cut by Asarco closure, study finds

13. 6. . - 0012620
DATE: 09/22/91 PAGES: 1
AUTHOR: Unknown/Seattle Times
ADDRESSEE: Public/Unknown
DESCRIPTION: Smelter's closure cut acid rain, study says

13. 6. . - 0012621
DATE: 10/07/91 PAGES: 1
AUTHOR: Bob Myrick/Unknown
ADDRESSEE: The News Tribune/Unknown
DESCRIPTION: Asarco stack's helpful

13. 6. . - 0012622
DATE: 07/27/92 PAGES: 1
AUTHOR: Ricardo Sookdeo/Fortune
ADDRESSEE: Public/Unknown
DESCRIPTION: Asarco, Why to Buy Big in Bad Times

13. 6. . - 0012624
DATE: 08/08/92 PAGES: 2
AUTHOR: Sandi Doughton/The News Tribune
ADDRESSEE: Public/Unknown
DESCRIPTION: 'Dirty' dirt would go in new smelter plan

13. 6. . - 0012625
DATE: 08/23/92 PAGES: 4
AUTHOR: Barbara Clements, Addy Natch/The News Tribune
ADDRESSEE: Public/Unknown
DESCRIPTION: The Best View in Town

13. 6. . - 0012626
DATE: 09/30/92 PAGES: 1
AUTHOR: Barbara Clements/The News Tribune
ADDRESSEE: Public/Unknown
DESCRIPTION: Tacoma says 'no' to Asarco, Peninsula

13. 6. . - 0012627
DATE: 12/06/92 PAGES: 1
AUTHOR: Barbara Clements/The News Tribune
ADDRESSEE: Public/Unknown
DESCRIPTION: Asarco-Tacoma zoning feud goes to court

13. 6. . - 1013184
DATE: 01/02/93 PAGES: 3
AUTHOR: Unknown/EPA
ADDRESSEE: Ron Boisture/Morning News Tribune
DESCRIPTION: Advertising order for newspaper text regarding EPA Asarco public sessions

13. 6. . - 0012876
DATE: 01/28/93 PAGES: 1
AUTHOR: Sandi Doughton/The Morning News Tribune
ADDRESSEE: Public/Unknown
DESCRIPTION: EPA fines Asarco for overdue smelter cleanup plan

13. 6. . - 1002142
DATE: 02/03/93 PAGES: 1
AUTHOR: Federal Way News/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA Fines Asarco for tardy cleanup plan

13. 6. . - 1002019
DATE: 06/24/93 PAGES: 2
AUTHOR: Unknown/Mealey Publications, Inc.
ADDRESSEE: Unknown/Public
DESCRIPTION: Mealey's Litigation Reports - Superfund

13. 6. . - 1013734
DATE: 06/24/93 PAGES: 2
AUTHOR: Unknown/Mealey's
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Publication: Mealey's Litigation Reports; Superfund, Vol. 6. #6, $35 Million Soils Remediation and Damages Settlement Announced

13. 6. . - 1013192
DATE: 07/01/93 PAGES: 2
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Journal article: Arsenic Contamination of Well Water: Case Studies (source unknown)

6. . - 1002024
DATE: 07/07/93 PAGES: 1
AUTHOR: George A. Hoivik/Tacoma
ADDRESSEE: Public/Unknown
DESCRIPTION: Asarco should donate cleaned-up property (letter to editor)

13. 6. . - 1013735
DATE: 07/07/93 PAGES: 1
AUTHOR: George A. Hoivik/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper clipping: Asarco should donate cleaned-up property

13. 6. . - 1013198
DATE: 09/06/93 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper picture with caption: Nevada stack tumbles

13. 6. . - 1013197
DATE: 09/12/93 PAGES: 2
AUTHOR: Sandi Doughton/News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Turning a Poisoned Land Mostly Pristine; Asarco Will Spend Millions to Clean Up the Smelter Mess

13. 6. . - 1013185
DATE: 09/15/93 PAGES: 3
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper editorial: Room For Dealing On Asarco Cleanup

13. 6. . - 1013199
DATE: 09/26/93 PAGES: 1
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper announcement of Availability Session

13. 6. . - 1013196
DATE: 10/03/93 PAGES: 2
AUTHOR: Sandi Doughton/News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper article: OK Likely for Asarco to Dump Contaminated Dirt in Landfill.

13. 6. . - 1013194
DATE: 10/21/93 PAGES: 1
AUTHOR: Linda Woo/News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Mayor Mum, But Foe Pushes for Change

13. 6. . - 1013195
DATE: 11/02/93 PAGES: 3
AUTHOR: Ron Boisture/News Tribune
ADDRESSEE: Piper Peterson/EPA
DESCRIPTION: Newspaper announcement for Availability Session

13. 6. . - 1013183
DATE: 11/12/93 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper announcement about ASARCO WEEK public sessions

13. 6. . - 1013182
DATE: 11/16/93 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper announcement of ASARCO WEEK public sessions

13. 6. . - 1013350
DATE: 01/12/94 PAGES: 1
AUTHOR: Unknown/News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper announcement of Public Sessions for January 18-21, 1994

13. 6. . - 1013351
DATE: 01/16/94 PAGES: 1
AUTHOR: James Merritt/News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Visions of Life After the Stack

13. 6. . - 1013352
DATE: 02/10/94 PAGES: 1
AUTHOR: Kristen Fadden/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: EPA Environmental News release: EPA Will Proceed with Dredging New Bedford Harbor Hot Spots

6. . - 1013353
DATE: 02/23/94 PAGES: 1
AUTHOR: Unknown/News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Promising Ideas for Asarco Site

13. 6. . - 1013628
DATE: 02/28/94 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper clipping with title: Promising Ideas for Asarco Site

13. 6. . - 1013602
DATE: 03/25/94 PAGES: 1
AUTHOR: Russ Carmack/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper photo: Pollution prowl. Robert Sussman, deputy administrator for the U.S. Environmental Protection Agency, looks out Thursday on the former Asarco smelter site in Ruston and North Tacoma

13. 6. . - 1013603
DATE: 04/10/94 PAGES: 1
AUTHOR: Sandi Doughton/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article titled: Asarco Plan for Cleanup Takes Shape

13. 6. . - 1013795
DATE: 05/04/94 PAGES: 1
AUTHOR: Bob Mottram/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article titled: Launch site not in plan; Latest version angers boaters.

13. 6. . - 1029132
DATE: 06/26/94 PAGES: 1
AUTHOR: Editor/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article titled: Asarco Site Talks Hit Crucial Stage.

13. 6. . - 1029133
DATE: 07/20/94 PAGES: 1
AUTHOR: Barbara Clements/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article co-authored by Sandi Doughton titled: Asarco Can Bury Its Dirt; Tacoma, Ruston, Metro Parks back off, agree to arsenic tomb at old smelter site.

13. 6. . - 1029134
DATE: 07/21/94 PAGES: 1
AUTHOR: Sandi Doughton/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article co-authored by Barbara Clements titled: Bury the dirt if..., environmentalists say.

13. 6. . - 1029152
DATE: 07/22/94 PAGES: 1
AUTHOR: Unknown/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article starting out by saying: "They're getting creative when it come to figuring out what to call the old Asarco site when, and if, it becomes pristine."

13. 6. . - 1029135
DATE: 07/31/94 PAGES: 1
AUTHOR: Unknown/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Full-page advertisement with map announcing Asarco Week 4 (August 22-26, 1994) meetings and events.

13. 6. . - 1029272
DATE: 08/09/94 PAGES: 1
AUTHOR: Ken Lederman/The New Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper article titled: Asarco's destructive legacy lives on.

13. 6. . - 1029136
DATE: 08/12/94 PAGES: 1
AUTHOR: Sandi Doughton/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article titled: Plan would sink Asarco site development.

13. 6. . - 1029139
DATE: 08/14/94 PAGES: 1
AUTHOR: Editor/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Editorial titled: EPA should back local cleanup plan.

13. 6. . - 1029140
DATE: 08/21/94 PAGES: 3
AUTHOR: Unknown/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article titled: A site to behold - Agreement on the old smelter property points the way to a dramatic transformation on the waterfront.

6. . - 1029141
DATE: 08/21/94 PAGES: 1
AUTHOR: Editor/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Editorial titled: Community should back Asarco deal.

13. 6. . - 1029138
DATE: 08/22/94 PAGES: 3
AUTHOR: Unknown/ENR Magazine
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article titled: Previews of coming attractions.

13. 6. . - 1029142
DATE: 08/24/94 PAGES: 1
AUTHOR: Unknown/The New Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper article headlined: The Area Briefly; Tacoma Council OKs Asarco redevelopment plan.

13. 6. . - 1029143
DATE: 08/25/94 PAGES: 1
AUTHOR: Unknown/The New Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper article titled: First step for Asarco plan.

13. 6. . - 1029271
DATE: 09/02/94 PAGES: 1
AUTHOR: Unknown/The New Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper article titled: Asarco site could become an urban village.

13. 6. . - 1029144
DATE: 09/15/94 PAGES: 1
AUTHOR: Unknown/The New Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Newspaper article titled: EPA's final hearing is Monday on cleaning up Asarco site.

13. 6. . - 1029137
DATE: 10/13/94 PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Photo copy of article titled: Comment on Asarco cleanup extended.

13. 6. . - 1029280
DATE: 12/16/94 PAGES: 1
AUTHOR: Rob Tucker/The News Tribune
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Title: Asarco settles port suit for $18 million.

HEADING: 14. 0. . TECHNICAL SOURCES/GUIDANCE DOCUMENTS

SUB-HEAD: 14. 1. . EPA Guidance

14. 1. . - 0012628
DATE: 05/31/89 PAGES: 79
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Stabilization/Solidification of CERCLA and RCRA Wastes, Physical Tests, Chemical Testing Procedures, Technology Screening, and Field Activities

14. 1. . - 0012629
DATE: 12/31/89 PAGES: 87
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Guide for Conducting Treatability Studies Under CERCLA, Interim Final

14. 1. . - 0012789
DATE: 01/31/90 PAGES: 8
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Handbook on In Situ Treatment of Hazardous Waste-Contaminated Soils

14. 1. . - 0012630
DATE: 10/17/91 PAGES: 9
AUTHOR: Kenneth A. Poirier/EPA
ADDRESSEE: Dana Davoli/EPA
DESCRIPTION: Grouping Chemicals with Similar Toxic Endpoints to Estimate Hazard Indices and Remedial Action Objectives (Asarco Site/Tacoma, WA)

14. 1. . - 1013356
DATE: 03/18/94 PAGES: 4
AUTHOR: Piper Peterson/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: List of EPA guidances for this Administrative Record - lists related and pertinent guidances used for Asarco

SUB-HEAD: 14. 2. . State Guidance

14. 2. . - 0012631
DATE: 09/12/91 PAGES: 2
AUTHOR: Lon Kissinger/State of Washington Dept. of Ecology
ADDRESSEE: Marian Abbett/State of Washington Dept. of Ecology
DESCRIPTION: Gastrointestinal absorption of arsenic from arsenic contaminated soil and lead cleanup levels

14. 2. . - 0012633
DATE: 05/28/92 PAGES: 3
AUTHOR: Beth C. Doan/Landau Associates, Inc.
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Developing Cost-Effective Cleanup Solutions under MTCA

SUB-HEAD: 14. 3. 1. Related Technical Reports - Data

14. 3. 1. - 1013200
DATE: / / PAGES: 19
AUTHOR: Joseph F. Keely/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Ground Water Issue; Performance Evaluations of Pump-and-Treat Remediations; Robert S. Kerr Environmental Research Laboatory - Ada, OK

14. 3. 1. - 1013205
DATE: / / PAGES: 55
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Project Summary; Laboratory experiments indicate that seawater and freshwater leach As, Ag, Cu and Pb from Asarco copper smalter slag, but little or no Cd, Hg, Ni, and Zn

14. 3. 1. - 1013209
DATE: / / PAGES: 73
AUTHOR: Thomas C. Greengard/Rockwell International
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Soil and Water Quality Monitoring Programs

14. 3. 1. - 1013210
DATE: / / PAGES: 12
AUTHOR: R. Carpenter/University of Washington
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Sources, sinks and Cycling of Arsenic in the Puget Sound Region

14. 3. 1. - 1002169
DATE: 04/01/86 PAGES: 64
AUTHOR: E. A. Crecelius/Marine Research Laboratory, Sequim, WA-Battelle
ADDRESSEE: Prepared for ASARCO/Unknown
DESCRIPTION: Release of Trace Metals to Water from Slag and Bioaccumulation in Marine Animals

3. 1. - 1013204
DATE: 04/01/86 PAGES: 9
AUTHOR: Phyllis Frank/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Project Summary; Arsenic (III) Oxidation and Removal From Drinking Water.

14. 3. 1. - 1029149
DATE: 10/01/89 PAGES: 12
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Risk Reduction Eng. Lab publication CERI-89-222: Immobilization Technology Seminar; Speaker Slide Copies & Supporting Information. Handwritten note on front reads: examples of measurement types; examples of variability observed.

14. 3. 1. - 1029148
DATE: 12/01/89 PAGES: 8
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Office of Research and Development publication EPA/540/2-89/058: Guide For Conducting Treatablity Studies Under CERCLA - Interim Final. Handwritten note on front reads: examples of parameters to be measured in bench & pilot treat. test.

14. 3. 1. - 1029146
DATE: 02/01/91 PAGES: 5
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Office of Research and Development publication EPA/600/8-91/005: Preparation Aids for the Development of Category III Quality Assurance Project Plans. Has handwritten note on front that reads: example of parameters & acceptance criteria.

14. 3. 1. - 1013202
DATE: 04/01/91 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Water Quality Progress Report; Duwamish River, Washington

14. 3. 1. - 1013201
DATE: 06/01/91 PAGES: 7
AUTHOR: Dennis Clifford/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Project Summary; Arsenic (III) and Arsenic (V) Removal from Drinking Water in San Ysidro, New Mexico

14. 3. 1. - 1013206
DATE: 10/15/91 PAGES: 6
AUTHOR: Jaret C. Johnson/JBF Scientific Corporation
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Environmental Research Brief: Stabilization, Testing and Disposal of Arsenic Containing Wastes.

14. 3. 1. - 1013203
DATE: 11/25/91 PAGES: 2
AUTHOR: Dermot O'Sullivan/C&EN
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Soil Remediation Gains Momentum

14. 3. 1. - 0012638
DATE: 04/29/92 PAGES: 15
AUTHOR: Unknown/Battelle
ADDRESSEE: Unknown/EPA
DESCRIPTION: Arsenic Treatability Panel Report on Stabilization/Solidification of Arsenic-Containing Waste

14. 3. 1. - 1029279
DATE: 03/09/93 PAGES: 9
AUTHOR: D. M. Kargbo/Environmental Geology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article (co-authored by D.S. Fanning, H.I. Inyang, R.W. Duell) titled: Environmental significance of acid sulfate "clays" as waste covers.

14. 3. 1. - 1029147
DATE: 05/01/93 PAGES: 4
AUTHOR: Judy Hessling/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Office of Research and Development publication EPA/600/SR-93/051: Project Summary; Onsite Engineering Report for Solidification/Stabilization Treatment Testing of Contaminated Soils.

14. 3. 1. - 1002082
DATE: 05/31/93 PAGES: 4
AUTHOR: Judy Hessling/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Project Summary: Onsite Engineering Report for Solidification/Stabilization Treatment Testing of Contaminated Soils

3. 1. - 1029145
DATE: 04/01/94 PAGES: 2
AUTHOR: Tom Wood/Water Environment and Technology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Journal publication titled: New Metals Remediation Possibilities To Be Studied.

SUB-HEAD: 14. 3. 2. Reports on Other Superfund Sites

14. 3. 2. - 0012785
DATE: 12/31/88 PAGES: 8
AUTHOR: Leo Weitzman/Acurex/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Evaluation of Solidification/Stabilization as a Best Demonstrated Available Technology

14. 3. 2. - 0012985
DATE: 02/28/93 PAGES: 2
AUTHOR: EPA/Unknown
ADDRESSEE: Public/Unknown
DESCRIPTION: Fact Sheet - Selby Slag Site

14. 3. 2. - 1013211
DATE: 09/01/93 PAGES: 14
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Anaconda Smelter Superfund Site: Old Works/East Anaconda Development Area Operable Unit PROPOSED PLAN

SUB-HEAD: 14. 3. 3. Scientific Articles

14. 3. 3. - 0012787
DATE: / / PAGES: 12
AUTHOR: R. Carpenter/University of Washington
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Sources, Sinks, and Cycling of Arsenic in the Puget Sound Region

14. 3. 3. - 1013215
DATE: / / PAGES: 6
AUTHOR: Patrick H. Masscheleyn/Center for Wetland Resources
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Article: Effect of Redox Potential and pH on Arsenic Speciation and Solubility in a Contaminated Soil

14. 3. 3. - 1013217
DATE: / / PAGES: 26
AUTHOR: Unknown/John Wiley & Sons
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Kirk-Othmer Encyclopedia of Chemical Technology - 3rd Edition, Vol. 3; Antibiotics (Phenazines) to Bleaching Agents

14. 3. 3. - 1013220
DATE: / / PAGES: 14
AUTHOR: Michael A. Callahan/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Water-Related Environmental Fate of 129 Priority Pollutants; Vol. I: Introduction and Technical Background

14. 3. 3. - 1002173
DATE: 08/08/73 PAGES: 11
AUTHOR: E. A. Crecelius/University of Washington; Dept. of Oceanography
ADDRESSEE: Presented at First Annual NSF Trace Contaminants C/onference, Oak
DESCRIPTION: Arsenic Distribution in Waters and Sediments of the Puget Sound Region

14. 3. 3. - 0012634
DATE: 08/31/87 PAGES: 29
AUTHOR: Dale Norton/State of Washington Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Metals Concentrations in Asarco Discharges and Receiving Waters Following Plant Closure

14. 3. 3. - 1029323
DATE: 01/10/88 PAGES: 16
AUTHOR: Leo Weitzman/Acurex Corporation
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Evaluation of Solidification/Stabilization as a Best Demonstrated Available Technology; co-authored by Edwin Barth of Hazardous Waste Engineering Research Laboratory of the US EPA in Cincinnati, OH.

14. 3. 3. - 0012635
DATE: 06/07/89 PAGES: 73
AUTHOR: Thomas C. Greengard/Rockwell International
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Soil and Water Quality Monitoring Programs, add'l docs from Proceedings: Int'l Sympos. on the Design of Water Quality Info. Sys., Spons. by Colo. St. Univ. and EPA, June 7-9, 1989. Info. Series, No. 61, Colo. Water Resources Research Inst.

3. 3. - 1029322
DATE: 06/07/89 PAGES: 20
AUTHOR: Thomas C. Greengard/Rockwell International
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Soil and Water Quality Monitoring Programs; attached additional document titled: Draft Report RI/FS Valley Wood Preserving, Inc. of Turlock California prepared by GeoSystem Consultants, Inc. dated June 1991.

14. 3. 3. - 0012788
DATE: 08/18/89 PAGES: 45
AUTHOR: Unknown/Camp Dresser & McKee, Inc.
ADDRESSEE: Mohsen Mehran/Geosystem Consultants, Inc.
DESCRIPTION: The Characterization, Leachability, and Fixation of Soil Chromium

14. 3. 3. - 1013212
DATE: 01/01/91 PAGES: 200
AUTHOR: Unknown/NOAA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: NOAA Data Report ERL PMEL; Trace Metal and Ancillary Data in the Watersheds and Urban Embayments of Puget Sound

14. 3. 3. - 1013207
DATE: 04/14/91 PAGES: 2
AUTHOR: George W. Butler/Intera Inc.
ADDRESSEE: Unknown/American Chemical Society
DESCRIPTION: Preprint Extended Abstract: Geochemically-Engineered Design for Arsenic Immobilization in a Contaminated Aquifer

14. 3. 3. - 0012805
DATE: 02/28/92 PAGES: 5
AUTHOR: Chan S. Yim/ENVIRON Corporation
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Simulation of Tidal Effects on Contaminant Transport in Porous Media

14. 3. 3. - 0012636
DATE: 06/30/92 PAGES: 9
AUTHOR: S. R. Wild/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Organic Chemicals in the Environment, Polynuclear Aromatic Hydrocarbon Uptake by Carrots Grown in Sludge-Amended Soil

14. 3. 3. - 0012637
DATE: 07/31/92 PAGES: 68
AUTHOR: Jennifer C. Nener/Canada Department of Fisheries and Oceans
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Survival and Water Quality Results of Bioassays on Five Species of Aquatic Organisms Exposed to Slag from Cominco's Trail Operations

14. 3. 3. - 0012817
DATE: 01/31/93 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Public/Unknown
DESCRIPTION: Summary Paper: Basic Concepts of Contaminant Sorption

SUB-HEAD: 14. 3. 4. Related Technical Reports

14. 3. 4. - 1029276
DATE: 02/01/92 PAGES: 11
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: ORDW Handbook: Vitrification Technologies For Treatment of Hazardous and Radioactive Waste.

14. 3. 4. - 1029324
DATE: 04/29/92 PAGES: 15
AUTHOR: Unknown/Battelle
ADDRESSEE: Unknown/EPA
DESCRIPTION: Report prepared for US EPA of Cincinnati, Ohio titled: Arsenic Treatability Panel Report; Stabilization/Solidification of Arsenic-Containing Waste.

14. 3. 4. - 1029275
DATE: 12/01/94 PAGES: 1
AUTHOR: Carolyn Esposito/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Ground Water Currents; Developments in Innovative Ground Water Treatment - Sponge Technology For Ground Water Treatment Of Metals.