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A.M. JUL 12 1990 P.M.

PIERCE COUNTY WASHINGTON
TED RUTT COUNTY CLERK
BY __________ DEPUTY

IN THE SUPERIOR COURT OF THE STATE OF WASHINGTON
FOR PIERCE COUNTY

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY, Plaintiff, v. KAISER ALUMINUM & CHEMICAL CORPORATION, Defendant.	No. 90- 90 2 06209 6 CONSENT DECREE

Table of Contents

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I. INTRODUCTION

A. Defendant Kaiser Aluminum & Chemical Corporation ("Kaiser") owns and operates an aluminum smelter on property located in Tacoma, Washington. Prior to 1974 Kaiser controlled air emissions from its Tacoma plant with a wet scrubber. Particulate emissions captured by the scrubber were consolidated into a sludge, and disposed of in an area west of the plant. The wet scrubber sludge management area, referred to herein as "the Site," is that area depicted in gray on Figures A-1 and A-2, and that area within the dotted lines in Figure A-3, Exhibit A to this Decree. Part of the Site is located on property owned by the Port of Tacoma.

B. Plaintiff the Washington Department of Ecology ("Ecology") has asserted jurisdiction over the Site under the Model Toxics Control Act ("MTCA"), ch. 70.105D RCW, alleging the release or threatened release of hazardous substances from the Site.

C. Ecology and Kaiser have developed a remedial action plan to consolidate and secure the Site.

D. Kaiser has demonstrated, and Ecology concludes, that the remedial action plan attached as Exhibit A to this Decree will protect public health and the environment by minimizing the potential for a release of wet scrubber sludge into the environment.

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E. The Complaint in this action is being filed simultaneously with this Decree. An answer has not been filed, and there has not been a trial on any issue of fact or law in this case. The parties wish to resolve the issues raised by Ecology's complaint and agree that settlement of these matters without litigation is reasonable and in the public interest and that entry of this Decree is the most appropriate means of resolving these matters.

F. In signing this Decree, Kaiser does not admit and retains the right to controvert any of the factual or legal statements or determinations made herein. Kaiser agrees, however, to the entry of this Decree and agrees to be bound by its terms.

G. By entering into this Decree the parties do not intend to discharge nonsettling parties from any liability they may have with respect to any release of hazardous substances from or affecting Kaiser's Tacoma property. Kaiser and Ecology retain the right to seek reimbursement in whole or in part from any responsible entities for sums expended pursuant to this Decree.

H. The wet scrubber sludge disposed of on the Site contains the following carcinogenic polynuclear aromatic hydrocarbon (PAH) compounds: benzo (a) pyrene, benzo (a) anthracene, benzo (b) fluoranthene, benzo (k) fluoranthene, chrysene, dibenzo (a,h) anthracene, and indeno (1,2,3-cd) pyrene. Whenever the phrase "carcinogenic PAH compounds" is used in this Decree, including the exhibits attached hereto,

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shall refer to the seven compounds listed in the preceding sentence.

I. The Court being fully advised of the reasons for entry of this Decree, and good cause having been shown, IT IS HEREBY ORDERED, ADJUDGED AND DECREED AS FOLLOWS:

II. JURISDICTION AND VENUE

A. This Court has jurisdiction over the subject matter and over the parties pursuant to RCW 70.105D.040(4) and 70.105D.050(5)(b). Venue is properly laid in Pierce County, the location of the property at issue.

B. On the basis of the results of the testing and analysis described in Section V of this Decree, Ecology has determined that a release or threatened release of a hazardous substance which will require remedial action pursuant to RCW 70.105D.030 has occurred at the Site.

C. Ecology has determined, pursuant to RCW 70.105D.040 and after providing notice and an opportunity for comment, that Kaiser is a potentially liable person for the Site. Kaiser has agreed to voluntarily undertake the actions specified in this Decree and consents to issuance of the Decree.

D. The actions to be taken pursuant to this Decree are necessary to protect public health and the environment.

III. PARTIES BOUND

This Decree shall apply to and be binding upon Kaiser and Ecology ("the Parties"), their agents, successors and assigns

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and upon all persons, contractors and consultants acting under or for the Parties. No change in ownership or corporate status shall alter Kaiser's obligations under this Decree. The undersigned representative of each Party certifies that he or she is fully authorized to enter into this Decree and to execute and legally bind such party to comply with the Decree.

IV. STATEMENT OF PURPOSE

The mutual objective of the Parties in entering into this Decree is to prevent the release of hazardous substances from the Site, to prevent contamination of the waters of the state, and to protect the public health, welfare and the environment. To accomplish these objectives and to resolve the matter constructively and without litigation, Kaiser consents to the actions required by this Decree.

V. STATEMENT OF FACTS

A. Kaiser, a Delaware corporation, owns and operates an aluminum smelter at 3400 Taylor Way in Tacoma, Washington. Kaiser acquired the smelter in 1947.

B. Aluminum smelting facilities were constructed in 1942 and operated until 1945 under the authority of the federal government to support the war effort. Operations have been continuous except for the periods 1945 through 1947 and 1958 through 1964. Production was expanded in 1955 and 1968.

C. Kaiser's Tacoma plant and the Site are located in the Port of Tacoma section of the City of Tacoma, on hydraulic fill between the upper reaches of two dredged waterways, the Hylebo

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and the Blair. The plant property includes approximately 96 acres, of which approximately 18 acres are the focus of this project. The location and boundaries of the Site are depicted on Figures A-1, A-2, and A-3 of Exhibit A to this Decree.

D. The Site is situated on deltaic deposits which have been extensively characterized by previous explorations to a depth of approximately 100 feet. The shallow aquifer system is comprised of three water-bearing zones. No known drinking water supply wells within at least one mile of the Site draw from the shallow aquifer. In addition to these shallow alluvial water-bearing zones, moderate to low permeability alluvial soils occur to depths of several hundred feet. A deeper, confined, glacial aquifer is located at a depth of over 700 feet beneath the Site. This deeper aquifer is separated from the shallow aquifers by a thick (approximately 85 foot) layer of low permeability (clay) soil.

E. Until 1974 Kaiser disposed of wet scrubber sludge at the locations shown on Figure A-2, Exhibit A, infra. Kaiser altered its air pollution control systems in 1974 and no sludge has been produced since that time. Between 1950 and 1974 Kaiser disposed of approximately 82,000 cubic yards of wet scrubber sludge on the Site.

F. Wet scrubber sludge contains aluminum oxide, carbon, inorganic fluoride compounds such as calcium fluoride, aluminum fluoride and cryolite, and condensed coal tar pitch constituents. The coal tar pitch constituents include 4- to

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(206) 753-6200

6-ring PAH compounds. Chemical analyses performed for Kaiser by Laucks Testing Laboratories in accordance with methods approved by Ecology indicate that the concentration of 4- to 6-ring PAH compounds in wet scrubber sludge is less than 1.0 percent. Analyses performed in 1989 by the Department of Ecology's Manchester Laboratory confirmed this finding. Based on this data, Ecology has determined that Kaiser wet scrubber sludge would not designate as an extremely hazardous waste under ch. 173-303 WAC. If generated today, the wet scrubber sludge would designate as carcinogenic dangerous waste under WAC 173-303-103(2)(b)(ii).

G. Beginning in 1983, Ecology and Kaiser conducted extensive studies on the Site, similar to the site hazard assessment and remedial investigation studies now contemplated by the MTCA. Kaiser consultant Landau Associates Inc. installed groundwater monitoring wells at locations selected to detect contaminants migrating from the Site. Data from two years of monitoring these wells shows PAH concentrations below analytical quantification limits. This finding is significant because sludge was first deposited on-site as early as 1950, and has been subjected to a high groundwater gradient caused by the ponding of water in the sludge ponds above the surrounding water table. The well monitoring data reflect the extremely low solubility of PAH compounds, the low permeability of the soils underlying the Site and the high PAH retention capacity of those soils. These data, summarized in a Landau Associates document

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Olympia, WA 98504-8071
(206) 753-6200

entitled Final Groundwater Monitoring Report, Kaiser Wet Scrubber Sludge Management Area (July 1987), show that the wet scrubber sludge has not and is not likely to impact groundwater quality in either the shallow or the deeper aquifer systems.

H. In 1988 Kaiser and Ecology jointly conducted a program of soil sampling to establish the background concentration of 4- to 6-ring PAH compounds in surface soils in the vicinity of the Site. The average total 4- to 6-ring PAH compound concentration of these samples was 8.2 parts per million, with a standard deviation of 7.5 parts per million.

I. In 1989 Ecology asked Kaiser to complete a risk assessment on several remedial action alternatives for the Site. The assessment was performed for Kaiser by Clement Associates Inc. It examined four remedial alternatives approved by Ecology, and concluded that consolidation and covering of the sludge on-site presents the lowest risk of human exposure or environmental contamination of the four alternatives examined. The methodology and conclusions of the risk assessment are presented in a report entitled: Assessment of Potential Risks of Existing Sludge Management Area and Several Remedial Alternatives (Clement Associates, Inc., August 1989).

J. In 1989 Ecology also asked Kaiser to conduct in-situ bioassays on rainbow trout living in water drawn from the sludge ponds. Kaiser retained E.V.S. Consultants to conduct the bioassays. Thirty fish were immersed for ninety-six hours in water drawn from the sludge ponds. There were no mortalities.

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K. Based on the above facts, Ecology has determined that the remedial action plan attached as Exhibit A to this Decree is protective of human health and the environment, and will lead to the most expeditious cleanup of hazardous substances in compliance with all applicable, relevant and appropriate cleanup standards, as defined in RCW 70.105D.030(2)(d).

VI. WORK TO BE PERFORMED

This Decree contains a program designed to protect public health and welfare and the environment by consolidating and reducing the size of the sludge disposal area, by transferring all sludge and contaminated soil that contains carcinogenic PAH compounds in concentrations exceeding 14.2 ppm that is located within locations 13, 14, 15, and the dikes of location 11 shown on Figure A-2, into locations 1, 2, 3, 4 and 5; by transferring all sludge and contaminated soil that contains carcinogenic PAH compounds in concentrations exceeding 14.2 ppm that is located within locations 9 and 10 into locations 1, 2, 3, 4, and 5 or covering such areas with approximately two feet of imported soil; by minimizing the opportunity for human exposure to the sludge; and by instituting a compliance monitoring program to confirm that hazardous substances are not further being released into the environment. The remedial action measures to be performed are set forth in Exhibit A, the Remedial Action Plan. Exhibit B sets forth the schedule for implementing this work. Exhibit C sets forth provisions to protect the health and safety of workers implementing the remedial action plan. Exhibit D

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Olympia, WA 98504-8071
(206) 753-6200

sets forth the soil cleanup standard for locations from which sludge is removed. Exhibit E sets forth a Compliance Monitoring Plan. Exhibit F sets forth a public participation plan for the Consent Decree. Exhibit G contains a temporary permit authorizing Kaiser to enter onto Port of Tacoma property to perform work required under this Decree. Exhibits A through F are an integral and enforceable part of this Consent Decree. Except where performance by Ecology is expressly provided herein, Kaiser commits to implement the programs described in Exhibits A through E.

VII. DESIGNATED PROJECT COORDINATORS

On or before the entry of this Decree, Ecology and Kaiser shall each designate a project coordinator. Each project coordinator shall be responsible for overseeing the implementation of this Decree. The Ecology project coordinator will be Ecology's designated representative at the Site. To the maximum extent possible, communications between Kaiser and Ecology, and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Decree, shall be directed through the project coordinators. The project coordinators may designate working level staff contacts for all or portions of the work required by this Decree.

Any Party may change its respective project coordinator. To the extent possible, written notification shall be given to the other Party, in writing, at least ten (10) calendar days

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(206) 753-6200

prior to the change.

The initial project coordinator for Ecology is Paul Skyllingstad.

The initial project coordinator for Kaiser is Paul Schmeil.

VIII. PERFORMANCE

All construction work performed pursuant to this Decree shall be under the direction and supervision, as necessary, of a qualified professional engineer, or equivalent, with experience and expertise in hazardous materials. Kaiser shall inform Ecology as to the identity of such professional(s) and of the principal contractors and subcontractors to be used in carrying out the terms of this Decree, in advance of their involvement the Site where possible.

IX. ACCESS

Any Ecology authorized representative shall have the authority to enter and freely move about all property at the Site at all reasonable times for the purposes of implementing or enforcing the Decree, including, inter alia: inspecting records, operation logs, and contracts related to the work being performed; reviewing the progress in carrying out the terms of this Decree; conducting such tests or collecting samples as Ecology or the project coordinator may deem necessary; using a camera, sound recording, or other recording equipment to record work done pursuant to this Decree; and verifying the data submitted to Ecology by Kaiser. Consistent with Section X,

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Olympia, WA 98504-8071
(206) 753-6200

infra, Kaiser shall allow such persons to inspect and copy all records, files, photographs, documents, and other writings including all sampling and monitoring data pertaining to work undertaken pursuant to this Decree. All parties with access to the Site shall comply with applicable health and safety regulations including Kaiser's plant safety rules. Kaiser shall have the right to accompany any Ecology employees or representatives at the Site. Except in an emergency Ecology shall give Kaiser reasonable notice before entering the Site.

X. SAMPLING, DATA REPORTING AND AVAILABILITY

A. Kaiser shall make the results of all sampling, laboratory reports, and/or test results generated by Kaiser, or on Kaiser's behalf, under this Decree available to Ecology.

B. At the request of Ecology, Kaiser shall allow Ecology and/or its authorized representatives to take split or duplicate samples of any samples collected by Kaiser in the implementation of this Decree. Kaiser shall notify Ecology five (5) working days in advance of any sampling activities required under this Decree except where such notice is impractical. Ecology shall allow Kaiser or its authorized representatives to take split or duplicate samples of any samples collected by Ecology in the implementation of this Decree. Except in an emergency, Ecology shall notify Kaiser five (5) working days prior to any sample collection activity.

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Olympia, WA 98504-8071
(206) 753-6200

C. Ecology shall make all information gathered under this Decree available to Kaiser, except where such information is protected from public disclosure under the Public Disclosure Act, ch. 42.17 RCW.

XI. RETENTION OF RECORDS

Kaiser shall preserve for ten (10) years following the completion of all monitoring required in Exhibit E all records, reports, documents, and underlying data in its possession relevant to the implementation of this Decree and shall insert in contracts with project contractors a similar record retention requirement. Upon request of Ecology, Kaiser shall make all non-archived records available to Ecology and allow access for review. All archived records shall be made available to Ecolo within a reasonable period of time. Records may be retained on microfiche or other form of reproducible facsimile.

XII. TRANSFER OF INTEREST IN PROPERTY AND CONDEMNATION

A. No voluntary conveyance or relinquishment of Kaiser's title, easement, leasehold or other interest in any portion of the Site shall be consummated without provision for continued performance of all of Kaiser's obligations under this Decree. If an involuntary conveyance or relinquishment of such interest occurs, Kaiser shall, if possible, give prior written notice of this Decree to the transferee.

B. Within 90 days of entry of this Decree, Kaiser shall record a notice in the title records to that portion of the property underlying the Site over which Kaiser holds fee titl

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Olympia, WA 98504-8071
(206) 753-6200

The notice shall state that a Consent Decree entered in the above-captioned proceeding imposes certain restrictions on the use and improvement of the Site, and that said restrictions run with the land. Within 30 days of filing the notice with the Pierce County Auditor, Kaiser shall forward a copy of the notice to Ecology.

XIII. RESOLUTION OF DISPUTES

A. In the event a dispute arises as to an approval, disapproval, or other decision or action by Ecology's project coordinator, the Parties shall utilize the dispute resolution procedure set forth below:

(1) Upon receipt of the Ecology project coordinator's decision, Kaiser has fourteen (14) working days within which to notify Ecology's project coordinator of its objection to the decision.

(2) The Parties' project coordinators shall then confer in an effort to resolve the dispute. If the project coordinators cannot resolve the dispute within fourteen (14) working days, Ecology's project coordinator shall issue a written decision.

(3) Kaiser may then request Ecology management review of the decision. This request shall be submitted in writing to the Hazardous Waste Investigation & Cleanup Program Manager within seven (7) days of receipt of the Ecology project coordinator's written decision.

OFFICE OF THE ATTORNEY GENERAL
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PB-71
Olympia, WA 98504-8071
(206) 753-6200

(4) Ecology's Program Manager shall conduct a review of the dispute including, if requested, a meeting with Kaiser. Ecology's Program Manager shall issue a written decision regarding the dispute within thirty (30) days of Kaiser's request for review.

B. If Ecology's final written decision is unacceptable to Kaiser, Kaiser has the right to submit the dispute to the Court for resolution. The Parties agree that, to the extent permitted by the Court, one judge should retain jurisdiction over this case to resolve any dispute arising under this Decree.

C. Ecology and Kaiser agree to utilize the dispute resolution process in good faith and to expedite, to the extent possible, the dispute resolution process whenever it is used. Where either Party utilizes the dispute resolution process in bad faith or for purposes of delay, the other party may seek sanctions.

XIV. AMENDMENT OF DECREE

A. This Decree may be amended only by Court order or by a written stipulation among the Parties that is entered by the Court. Such amendment shall become effective upon entry by the Court. Agreement to amend shall not be unreasonably withheld by any Party.

B. If a Party wishes to amend the Decree, a proposed stipulation shall be submitted to the other Party for review. At the request of any Party, the Parties shall meet within ten (10) working days to discuss the proposed change unless they

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PB-71
Olympia, WA 98504-8071
(206) 753-6200

mutually agree to a longer time. Ecology shall indicate its approval or disapproval of the proposed amendments within ten (10) working days after such meeting. Reasons for any disapproval shall be stated in writing within the same period. If the Parties cannot agree, a Party may invoke the dispute resolution procedures described in Section XIII.A.

C. Nothing in this Section shall bar the Parties from holding additional meetings or taking such time as may be mutually agreeable to develop amendments or shall limit the Parties from holding preliminary discussions on possible amendments.

D. No guidance, suggestions, or comments by Ecology will be construed as relieving Kaiser of its obligation to obtain formal approval as may be required by this Decree. Except as otherwise provided by this Decree, no verbal communication by Ecology shall relieve Kaiser of the obligations specified herein.

E. Nothing in this Section shall require the Parties to amend the text of this Decree in order to make mutually agreed upon insubstantial revisions in the Exhibits herein.

F. Public notice of any proposed substantial amendments to this Decree shall be placed in the Site Register before the amendments are presented to the Court.

G. Ecology has not yet adopted as rules minimum cleanup standards for remedial actions pursuant to RCW 70.105D.030(2)(d). The cleanup standard that Ecology finally

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PB-71
Olympia, WA 98504-8071
(206) 753-6200

adopts for PAHs (carcinogenic) in industrial soil may be higher or lower than 14.2 ppm dry weight, the cleanup level established in this Decree. The Parties agree that, if the cleanup standard finally adopted by Ecology for PAHs (carcinogenic) in industrial soil is higher than 14.2 ppm dry weight, they will amend this Decree to allow Kaiser to attain the adopted cleanup standard rather than 14.2 ppm dry weight.

XV. EXTENSION OF SCHEDULES

A. An extension of schedule in Exhibit B shall be granted only when a request for an extension is submitted in a timely fashion and good cause exists for granting the extension. All extensions shall be requested in writing. The request shall specify the reason(s) the extension is needed. An extension shall be granted only for such period as Ecology determines is reasonable under the circumstances. A requested extension shall not be effective until approved by Ecology, which shall be confirmed in writing. Ecology shall act upon all written requests for extension within ten (10) working days. It shall not be necessary to formally amend this Decree when a schedule extension is granted.

B. The burden shall be on Kaiser to demonstrate to the satisfaction of Ecology that good cause exists for granting an extension. Good cause includes, but is not limited to, the following:

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7th Floor, Highways-Licenses Building
PB-71
Olympia, WA 98504-8071
(206) 753-6200

(1) Circumstances beyond the reasonable control and despite the due diligence of Kaiser including delays caused by unrelated third parties or Ecology, such as (but not limited to) delays by Ecology in reviewing, approving, or modifying documents submitted by Kaiser.

(2) Delays directly attributable to any changes in or need to comply with permit terms or conditions or to appeals on or lack of a permit, concurrence, or approval needed to implement this Decree, if Kaiser filed a timely application for such permit;

(3) Acts of God, including weather, fire, flood, blizzard, extreme temperatures, storm, earthquake, wave or water conditions, strikes or other labor disputes or other unavoidable casualty; and

(4) Endangerment as described in Section XVI.

(5) Delays resulting from good faith implementation of the dispute resolution processes described in Section XIII.

However, neither increased costs of performance of the terms of this Decree nor changed economic circumstances shall be considered good cause for granting an extension.

C. If the start or completion of any activities provided for in this Decree is delayed by poor construction conditions, the deadline for completion of such activities shall be extended for a period of time after construction conditions improve equal to the delay caused by the poor construction conditions.

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(206) 753-6200

XVI. ENDANGERMENT

In the event Ecology determines that activities implementing or in compliance with this Decree, or any other circumstances or activities, are creating or have the potential to create a danger to the health or welfare of the people on the Site or in the surrounding area or to the environment, Ecology may order Kaiser to stop further implementation of this Decree for such period of time as needed to abate the danger or may petition this Court to amend the Decree. During any stoppage of work under this Section, Kaiser's obligations with respect to the work ordered to be stopped shall be suspended and the time periods for performance of that work, as well as the time period for any other work dependent upon the work which is stopped, shall be extended, pursuant to Section XV of this Decree, for such period of time as Ecology determines is reasonable under the circumstances.

In the event Kaiser determines that activities undertaken in furtherance of this Decree or any other circumstances or activities are creating an imminent and substantial endangerment to the people on the Site or in the surrounding area or to the environment, Kaiser may stop implementation of this Decree for such periods of time necessary for Ecology to evaluate the situation and determine whether Kaiser should proceed with implementation of the Decree or whether the work stoppage should be continued until the danger is abated. Defendant shall notify either Ecology field personnel on-site or the project

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Olympia, WA 98504-8071
(206) 753-6200

coordinator as soon as is possible, but no later than twenty-four (24) hours after such stoppage of work, and provide Ecology with documentation of its analysis in reaching this determination. If Ecology disagrees with Kaiser's determination, it may order Kaiser to resume implementation of this Decree. If Ecology concurs in the work stoppage, Kaiser's obligations shall be suspended and the time periods for performance of that work, as well as the time period for any other work dependent upon the work which was stopped, shall be extended, pursuant to Section XV of this Decree, for such period of time as Ecology determines is reasonable under the circumstances. Any disagreements pursuant to this clause shall be resolved through the dispute resolution procedures described in Section XIII.

XVII. COMPLETION AND ACCEPTANCE OF REMEDIAL WORK

A. When the work described in Exhibit A is complete, Kaiser shall ask an independent professional engineer to inspect the work and certify that all work performed meets accepted engineering standards. Kaiser shall submit the certification to Ecology and request Ecology to make a final inspection of the work. Ecology shall promptly inspect the work to determine if such work has been completed in accordance with the Remedial Action Plan. The inspection shall occur within ten (10) working days of the request unless the Parties agree to a later date.

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7th Floor, Highways-Licenses Building
PB-71
Olympia, WA 98504-8071
(206) 753-6200

B. Within ten (10) working days of the initial inspection Ecology shall issue to Kaiser a written Notice of Completion or shall specify any corrective work it believes to be needed. Kaiser shall notify Ecology of the completion of any necessary corrective work. Ecology shall reinspect if it deems necessary within ten (10) working days of the notification from Kaiser.

C. This procedure shall be utilized until Ecology determines that the work has been satisfactorily completed. Within ten (10) working days of determining the work has been satisfactorily completed, Ecology shall issue a Notice of Completion to Kaiser.

D. Within 60 days of Kaiser's receipt from Ecology of an executed Notice of Completion, Kaiser shall record a notation the deed to the property underlying those areas of the Site owned by Kaiser ("Residual Areas") in which wet scrubber sludge containing carcinogenic PAH compounds in concentrations exceeding 14.2 ppm dry weight will remain after completion of the remedial activities described in this Decree. The notation will advise any potential purchaser of property containing a Residual Area that the Residual Area contains wet scrubber sludge, and that this sludge contains carcinogenic PAH compounds. Within 30 days of recording the notation on the deed filed with the Pierce County Auditor, Kaiser shall forward to Ecology a copy of the deed in which the notation has been placed.

OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB-71
Olympia, WA 98504-8071
(206) 753-6200

E. Within 60 days of Kaiser's receipt from Ecology of an executed Notice of Completion, Kaiser also shall insert in the deed language that prohibits residential use of any portions of the Site owned by Kaiser that contain carcinogenic PAH compounds in concentrations greater than 1 ppm dry weight. Within 30 days of recording this language on the deed filed with the Pierce County Auditor, Kaiser shall forward to Ecology a copy of the deed in which the language has been placed.

F. The residential use restriction placed in Kaiser's deed pursuant to E, above, shall be removed if, as a result of amendments to the IRIS database changing the carcinogenic potency factor for carcinogenic PAH compounds, the soil clean-up level yielded by the following equation equals or exceeds the concentration of carcinogenic PAH compounds remaining on the Site after completion of the remedial action described in Exhibit A.

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(206) 753-6200

$$\text{Soil Cleanup Level} = \frac{\text{RISK x ABW x LIFE x UCF1}}{\text{CPF x SIR x AB1 x DUR x FOC}}$$

Where:

RISK = Acceptable cancer risk level (1 in 1,000,000)

ABW = Average body weight over the period of exposure (16 kg)

LIFE = Lifetime (70 years)

UCF1 = Units conversion factor (1,000,000 mg/kg)

CPF = Carcinogenic Potency Factor as published in the IRIS database (kg-day/mg) (currently 11.5)

SIR - Soil ingestion rate (average of 200 mg/day)

AB1 - Gastrointestinal absorption rate (1.0)

DUR - Duration of exposure (6 years)

FOC - Frequency of contact (average of 1.0);

Kaiser shall use methods set forth in Exhibit D to determine the concentration of carcinogenic PAH compounds remaining on the Site after completion of the remedial action. Kaiser shall consult with Ecology regarding the boundaries of any portions of the Site that Kaiser believes should no longer be restricted for residential use. Kaiser shall not remove any residential use restriction from its deed until the parties agree where those boundaries lie.

OFFICE OF THE ATTORNEY GENERAL
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Olympia, WA 98504-8071
(206) 753-6200

G. Within 60 days of Kaiser's receipt from Ecology of an executed Notice of Completion, Kaiser shall install barriers physically restricting access to all areas of the Site that contain wet scrubber sludge covered with geotextile. Kaiser shall consult with Ecology on the proper placement of any physical barriers prior to their installation. Kaiser will make no use of any areas of the Site that contain wet scrubber sludge covered with geotextile without first receiving approval from Ecology.

H. Notwithstanding issuance of a Notice of Completion Kaiser shall remain responsible for compliance monitoring as described in Exhibit E.

XVIII. COVENANT NOT TO SUE AND OTHER ACTIONS

In consideration of Kaiser's performance of the terms and conditions of this Decree, Ecology covenants not to institute legal or administrative actions against Kaiser regarding matters within the scope of this Decree. This covenant is strictly limited in its application to the Site defined in Exhibit A and to the carcinogenic PAH compounds in the wet scrubber sludge disposed of on the Site. This covenant is not applicable to any other hazardous substance or to any other property owned or operated by Kaiser.

Notwithstanding the covenant given above, Ecology reserves its right to take legal or administrative actions, including the

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PB-71
Olympia, WA 98504-8071
(206) 753-6200

issuance of orders and/or penalties, and to pursue cost recovery for any actions taken, under the following circumstances:

(1) If Kaiser fails to comply with or satisfactorily perform any term of this Decree;

(2) Upon Ecology's determination that action beyond the terms of this Decree is necessary to abate an imminent and substantial endangerment to public health or welfare or the environment;

(3) Where the monitoring conducted under Exhibit E or any other information reveals that any carcinogenic PAH compounds are or may be migrating from the Site into any waters of the state, including but not limited to groundwater underlying the Site, or from the Site onto any other land.

Ecology also reserves the right to apply to the court to amend this covenant not to sue where factors not known at the time of entry of this Decree are discovered and present a previously unknown threat to human health or the environment.

XIX. INDEMNIFICATION

A. Kaiser shall indemnify and save and hold the State of Washington ("the State"), its employees and agents harmless from any and all claims or causes of action for death or injuries to persons or for loss or damage to property arising from or on account of acts or omissions of Kaiser, its officers, employees, agents, or contractors in implementing this Decree.

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B. Kaiser shall not indemnify the State nor save nor hold its employees and agents harmless from any claims or causes of action brought by third parties arising out of acts or omissions of the State, or the employees or agents of the State, in implementing this Decree.

XX. RESERVATION OF RIGHTS

By agreeing to the entry of this Decree Kaiser agrees to abide by its terms. The execution and performance of the Decree is not, however, an admission by Kaiser of any fact or liability relating to any issue dealt with in the Decree. Performance by Kaiser as is required under the Decree is undertaken without waiver of or prejudice to any claims or defenses whatsoever that may be asserted in the event of further litigation about or relating to the Site, with the exception of an action by Ecology to enforce this Decree. Nor is the execution or the performance of the Decree an agreement by Kaiser to take any action at the Site other than that described in this Decree.

XXI. COMPLIANCE WITH APPLICABLE LAWS

All actions carried out by Kaiser pursuant to this Decree shall be done in accordance with all applicable federal, state, and local requirements.

XXII. OVERSIGHT COSTS

A. Kaiser agrees to reimburse the State Toxics Control Account for the following oversight costs associated with

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Ecology's activities at the Site, subject to the provisions of Paragraph B, infra:

(1) the sum of $37,099.63 for costs incurred by Ecology up to the date of this Decree;

(2) For costs incurred by Ecology after the date of this Decree, Kaiser shall reimburse the State Toxics Control Account for Ecology's costs of direct activities, support costs of direct activities and interest charges at 12 percent per annum for delayed payments.

B. The parties agree that the scope of oversight costs payable by Kaiser may be reopened in the event that WAC 173-340-550(2) is amended, or is overturned on appeal based on a finding that Ecology has exceeded its authority to recover amounts spent for investigative and remedial actions and orders. The regulation will be deemed to have been "overturned on appeal" only if a court of competent jurisdiction has entered an order declaring the regulation invalid, and Ecology has not appealed that order within the time set by law or court rule. If Ecology appeals such an order, then the regulation will not be deemed to have been overturned on appeal until the highest court to which Ecology appeals enters an opinion, order, or judgment declaring the regulation invalid. Under no circumstances will Ecology reimburse Kaiser for any costs already paid pursuant to paragraph A., supra, if WAC 173-340-550(2) is amended or overturned on appeal.

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C. Kaiser shall pay the amount set forth in Paragraph A(1), supra, within 90 days of the date of entry of this Decree. With regard to future oversight costs, Ecology shall, within 90 days of the end of each fiscal quarter, submit to Kaiser an itemized statement documenting Ecology's expenses for the quarter. Upon request, Ecology also shall provide Kaiser with any available back-up documentation of the costs reflected in the statement. Within 90 days of receiving this statement, Kaiser shall pay into the State Toxics Control Account the required sum.

XXIII. DURATION OF DECREE

This Decree shall remain in effect and the remedial program described in this Decree shall be maintained and continued until the end of the compliance monitoring period described in Exhibit E.

XXIV. EFFECTIVE DATE

This Decree is effective upon the date it is entered by the Court.

XXV. WITHDRAWAL OF CONSENT

This Decree shall be subject to public notice and comment under RCW 70.105D.040(4)(a). Ecology reserves the right to withdraw or withhold its consent to the proposed Consent Decree if the comments received by Ecology disclose facts or considerations that indicate that the proposed Decree is inappropriate, improper, or inadequate.

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If the Court withholds or withdraws its consent, this Decree shall be null and void at the option of any Party. In such an event, no Party shall be bound by the requirements of this Decree.

KAISER ALUMINUM & CHEMICAL CORPORATION

By _____, 6/29/90 Date

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

By Carol L. Fleskes 7/11/90 Date

ATTORNEY GENERAL
OF WASHINGTON

By Tanya Barnett 7/11/90 Date

This DECREE is approved and IT IS SO ORDERED this 12 day of JULY, 1990.

_____
SUPERIOR COURT JUDGE

126/kaiser

CONSENT DECREE
EXHIBIT A

DESCRIPTION OF REMEDIAL ACTIONS

Kaiser shall perform the following remedial action tasks at the site (Figure A-1):

TASK 1. EXCAVATE SLUDGES PRESENT UNDER THE LOG SORT YARD ACCESS ROAD AND ADJACENT AREAS (LOCATION 13, LOCATION 14, AND LOCATION 15)

Sludge and contaminated soil present within the Log Sort Yard Access Road (Figure A-2) Location 14 and Location 15 will be excavated and secured separately in Location 10 (west end) for later placement in Locations 1 through 4. This task will be completed initially so that all sludge and sludge-contaminated soil can be secured within the Kaiser property boundary. Available survey data indicate that in Location 13 an average of about 19 inches of granular fill is present over the sludge, and that the thickness of sludge under the road fill varies from 0 inches, adjacent to Location 12, to about 14 inches near the southern boundary of Location 9. In Locations 14 and 15 all sludge was removed to a level of 70-170 ppm.

A backhoe or Gradall will be used to excavate and load the contaminated soil road fill, sludge, and up to 3 inches of underlying native soil into trucks for placement in Location 10. These materials will be segregated in the western portion of Location 10 until they can be placed with other sludge into Locations 1 through 4. After cleanup of sludge from beneath the Log Sort Yard Access Road and Locations 14 and 15 (see Exhibit D), Location 13 and, if necessary, Locations 14 and 15 will be covered with clean fill.

TASK 2. BLOCK FLOW OF DITCH IN LOCATION 16 TO ELIMINATE POTENTIAL FOR OFFSITE MOVEMENT OF SLUDGE

The flow of water in the ditch that runs adjacent to Locations 7 and 8 will be blocked during the remedial activities. This will be done to preclude movement of sludge material to the triangular stormwater retention pond located near Taylor Way. The ditch will be blocked at a point in Location 16 which allows Location 16 to provide retention volume. This project must take

advantage of seasonal dry weather to minimize buildup of runoff in the ditch.

TASK 3. PUMP WATER FROM LOCATION 5 TO DEWATER THE EXISTING SLUDGE IN LOCATIONS 1 AND 2

Water will be removed from the Location 5 pond by means of existing pumps. The dewatering facilities will be installed near the Parshall flume structure at the south end of Location 5 (Figure A-2). Suspended particulate in the water will be allowed to settle for a limited time before water is pumped from Location 5. Water ponding over the sludge will be pumped off, routed through temporary piping and discharged into the Location 11 infiltration/evaporation basin (Figure A-2). The pumping rate required to handle water displaced by sludge placement into Locations 1 and 2 is estimated to be approximately 70 gallons per minute. The required pumping rate is dependent on the rate at which the sludge consolidation activity is conducted. Location 12 may also be required as an additional infiltration/ evaporation basin. Field observations will be used to determine the need to expand the infiltration area.

TASK 4. CONSTRUCT AN EARTHEN DIKE WITH AN OVERFLOW WEIR IN THE LOCATION 5 POND TO CONFINE THE EXISTING SLUDGE IN LOCATIONS 1, 2, AND 4

This dike (Figure A-2) could potentially be constructed prior to any dewatering of the ponds in Locations 1 through 4; however, lowering of the water level in the Location 1, 2, 4, and 5 ponds prior to dike construction will facilitate proper placement and compaction of the dike fill material. The exact placement and structural description of this dike will be determined during final project design.

TASK 5. CONSTRUCT TEMPORARY ACCESS ROADS ACROSS THE DITCH

Prior to transfer of sludge from Locations 9 and 10 to Locations 1 through 4, one or more temporary access roads across the ditch will be required. These roads will allow passage of trucks and construction equipment between Location 8 and the ponds in Locations 1 through 4. A temporary culvert will be placed in the ditch prior to placing any fill. (Note: If permanent culverting of the ditch is completed prior to sludge consolidation activities, access road crossings must be designed to preclude damage to that permanent drainage system.)

TASK 6. EXCAVATE SLUDGE IN LOCATIONS 9 AND 10 AND PLACE THE MATERIAL IN THE PONDS IN LOCATIONS 1 THROUGH 4

As shown on Figure A-2, sludge is present in Locations 9 and 10. Sludge and soil previously removed from property west of the Log Sort Yard Access Road, from the Log Sort Yard Access Road, (Task 1) from Location 14 and Location 15 and from Location 11 are (or will be) stockpiled in Locations 9 and 10. Because of the need to prevent intermixing of sludge with the native soil and to limit the excavation of soil underlying the sludge to a maximum depth of 3 inches, it is necessary that appropriate equipment be used during sludge excavation. Prior to any excavation in Locations 9 and 10, all shrubs and woody plants will be cleared and removed for offsite disposal. Grasses, stumps, and roots will be placed along with sludge and soil near the base of the general sludge fill in Locations 1 and 2.

It is anticipated that temporary roads will be necessary in Location 9 and 10 to provide a trafficable surface for trucks hauling material through these locations and across the existing fill in Location 8 for placement in Locations 1 through 4. The dike along the southern boundary of Location 9 may also be graded to the south as required to provide a trafficable surface between the Log Sort Yard Access Road and Location 8.

It is estimated that approximately 10,500 cubic yards of sludge and sludge-containing soil will be excavated and placed within the ponds in Locations 1 through 4. The dikes located along the east and a portion of the southern side of Location 11 were constructed using potentially sludge-containing soil. After terminating use of Location 11 as a temporary infiltration/ evaporation basin, it may be necessary to excavate sediment deposits remaining in the basin and contaminated dikes. After removal of all visible sludge and sludge-containing soil from Locations 9 through 15, cleanup confirmation sampling will be conducted as described in Exhibit D. Locations 9-12 will then be graded to drain to the ditch adjacent to Locations 7 and 8. Clean fill will be imported as necessary to establish final grades sufficient to prevent ponding of surface water at Locations 9-12. Locations 13, 14, and 15 will be graded for drainage to Alexander Avenue.

Placement of sludge and sludge-containing soil in the Location 1 through 4 ponds will be accomplished by end-dumping material onto areas already filled above the

water level. A tracked dozer will be used to spread the dumped material forward into the ponds in a controlled manner that will: 1) minimize suspension of sludge particulate in the pond water, and 2) prevent fill failures or creation of uncontrolled mud waves. The sludge and soil will be compacted by "walking" the tracked dozer over the material. Filling and grading activities will displace the water from the ponds located north of the Location 5 earthen dike, causing that water to rise until it flows across the overflow weir in the dike and into the Location 5 pond.

All sludge and sludge-containing soil will be placed on the north side of the earthen dike constructed in Location 5. Final filling of the south portion of the Location 5 pond will be accomplished by placing common fill up to the final cover subgrade elevation.

TASK 7. PLACE A SOIL COVER OVER THE SLUDGE CURRENTLY EXPOSED IN LOCATION 7

The sludge in Location 8 has been covered with fill (approximately 4 to 8 feet thick). The sludge in Location 7 is exposed and subject to potential wind and water erosion. The exposed sludge in Location 7 will be graded to facilitate placement of a soil cover. A relatively small portion of existing Location 8 fill material will then be graded onto Location 7. Location 7 will then be covered with at least 12 inches of compacted sand and gravel, placed over a layer of geotextile. The geotextile will provide reinforcement for the soil cover material (design subgrade shear strength is assumed to be about 2.5 pounds per square inch [psi]). The soil cover will be graded to provide positive drainage toward the catch basins installed during culverting of the ditch.

If post-remediation overflow of stormwater from the Locations 11 and 12 infiltration/evaporation ponds is allowed to drain across the Location 7 soil cover, surfacing along the overflow drainage paths will be upgraded to include erosion control materials.

Earthwork activities associated with remediation of Location 8 will be limited to: 1) transfer of sludge, pumped into the temporary ponds created during the 1984 sludge dewatering test program, back to the ponds in Locations 1 and 2 and backfilling those excavations with clean fill soil, and 2) relatively minor site grading as required to provide a final surface that is adequately

sloped to facilitate stormwater runoff toward the catch basins installed during culverting of the ditch.

TASK 8. PLACE A SOIL COVER OVER THE PONDS IN LOCATIONS 1 THROUGH 5

Following consolidation of sludge and sludge-containing soil from Locations 9 through 15 into the ponds in Locations 1 through 4 and backfilling of the pond in Location 5 with common fill, the surface of the sludge and fill material will be graded to achieve a cover subgrade that: 1) drains toward the ditch with a slope of about 0.5 percent, and 2) provides for final cover grades that will adequately blend with the existing ground surface elevations around Locations 1 through 5. The filled ponds in Locations 1 through 5 will then be covered with at least 14 inches of compacted sand and gravel placed over a layer of geotextile. The geotextile will provide subgrade reinforcement for the soil cover material to be placed over relatively weak sludge (design subgrade shear strength is assumed to be about 1.7 psi). The soil cover will be graded to provide positive drainage toward the catch basins installed during culverting of the ditch.

TASK 9. CULVERT THE DITCH ADJACENT TO LOCATIONS 7 AND 8

(Note that permanent culverting of the ditch could be accomplished either before or after sludge excavation/consolidation activities; the sequencing of construction activities will be established during final design.) As shown on Figure A-2, two sections of the ditch have existing culvert sections in place. A 36-inch diameter culvert section exists in the part of the ditch west of Location 5. An 18-inch culvert section exists in the part of the ditch leading to Location 14. Installation of a culvert along the remaining open portion of the ditch on site will minimize the potential for introduction of sludge or sludge-containing soil to surface waters. Any sludge or sludge-containing soil excavated during culvert construction will be placed either in the ponds in Locations 1 through 4 prior to final covering, or used as pipe backfill up to about 2 feet below the final ground surface.

Pipe sizes, invert elevations, and locations of manholes and catch basins will be determined during final design. However, the remedial plan is based on the installation of about 750 feet of 18-inch diameter culvert between

the north end of the existing 36-inch culvert and the south end of the existing 18-inch culvert. Manholes, catch basins, and about 2 feet of clean backfill, as a final soil cover over the culvert alignment, are planned.

TASK 10. CULVERT THE KAISER DITCH (LOCATION 16)

Culverting of the Kaiser Ditch between Taylor Way and the Hylebos Waterway (see Figure A-1) will require a pipeline extension of Outfall Number 001, and a separate parallel storm drain pipeline for connection to City of Tacoma storm drainage lines on Taylor Way. Total pipeline length along the drainageway alignment is approximately 1,300 feet. Preliminary hydraulic evaluation has identified a need for minimum pipeline sizes of 24- and 36-inch diameter (smooth-walled) for the Kaiser outfall and City storm drain extensions, respectively. Extruded polyethylene pipe with fusion-welded joints shall be used to eliminate potential for leakage or ground water infiltration. Manhole structures for maintenance access will be included at regular intervals along the pipelines. The City storm drainage pipeline extension will include catch basins at topographically low points to intercept runoff from adjacent property.

Pipeline installation will require placement of suitable compacted bedding material over existing drainageway sediments. Compacted imported pipe-zone material will be utilized after pipeline placement for pipeline loading lateral support. Tidal influence during the construction period will be eliminated by temporarily securing the existing tidal gate in a closed position. Drainageway inflows from the Kaiser outfall and City storm drains at Taylor Way will be impounded by cofferdam and diverted by temporary pump and discharge line during the pipeline installation period. Independent tidal backflow control gates will be installed for each storm line at the outfall. Approximately 18,000 cubic yards of clean fill material will be placed over the installed pipelines.

This task is independent of the onsite work described elsewhere in this exhibit and will be completed by the end of 1991. Thirty days prior to beginning construction, Kaiser will submit to Ecology for approval final plans for the Kaiser Ditch Culvert project, including a groundwater monitoring plan for carcinogenic PAH compounds.

TASK 11. IMPLEMENT POST-REMEDIATION MONITORING AND COVER INSPECTION/MAINTENANCE PLAN

This task will be conducted in accordance with Exhibit E.

126/exhibita

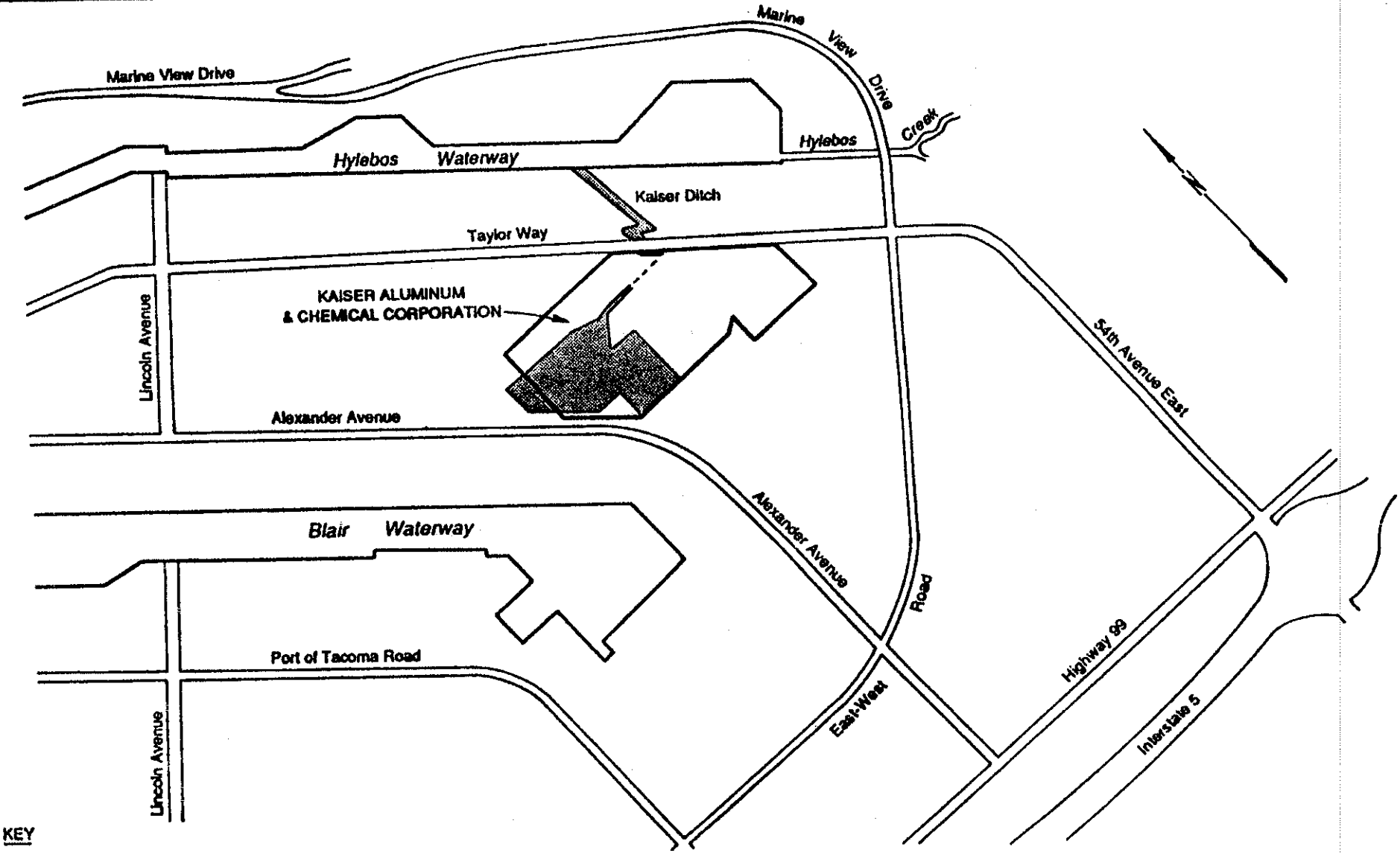


Figure A-1

LANDAU ASSOCIATES, INC.

Vicinity Map
Kaiser Aluminum & Chemical Corporation

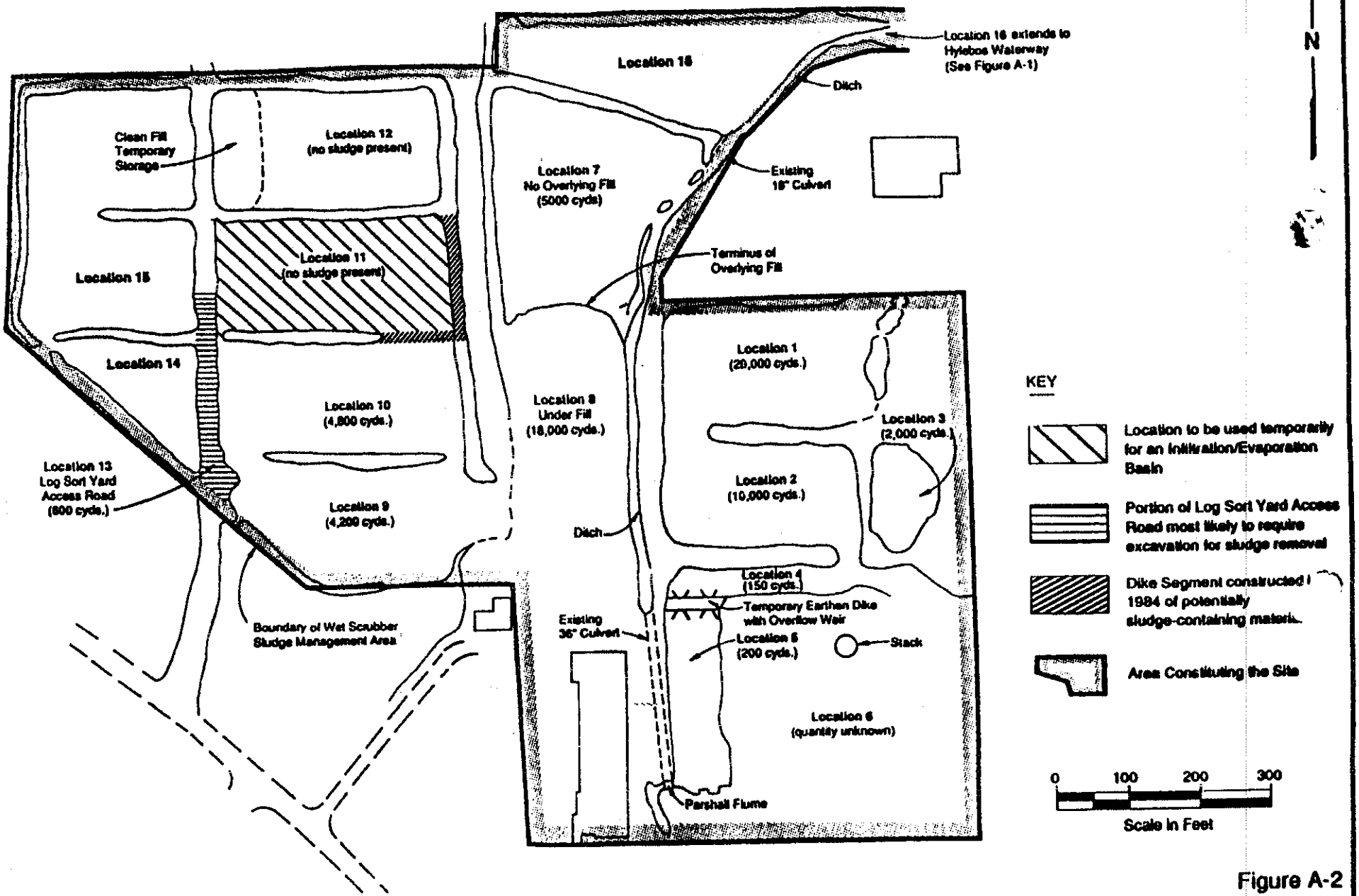


Figure A-2

LANDAU ASSOCIATES, INC.

Wet Scrubber Sludge Management Area Map

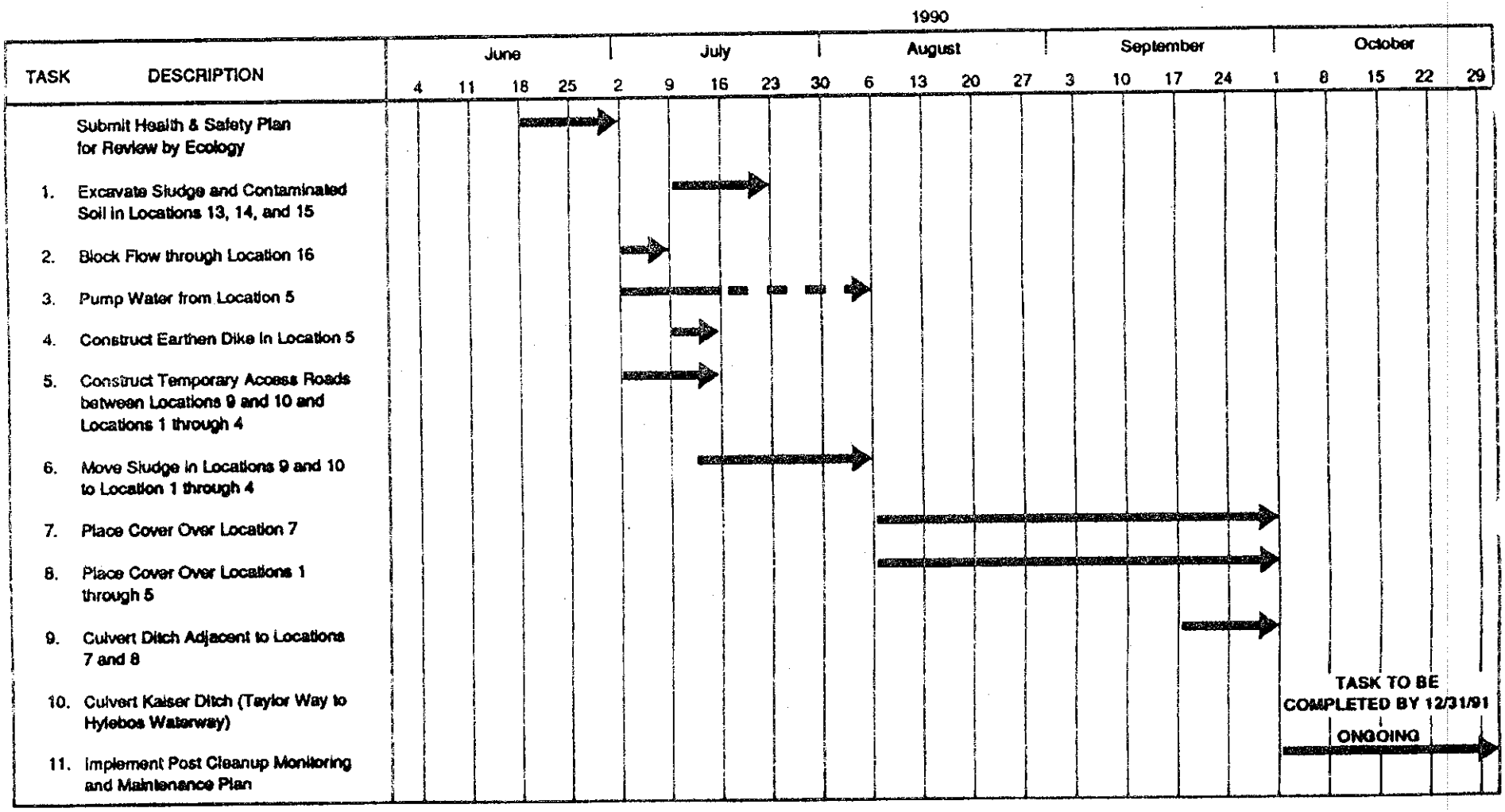
Consent Decree

EXHIBIT B

Kaiser Aluminum & Chemical Corporation

Tacoma Works

Schedule for Wet Scrubber Sludge Cleanup Project*



* Schedule dates are dependent on timing of Consent Decree

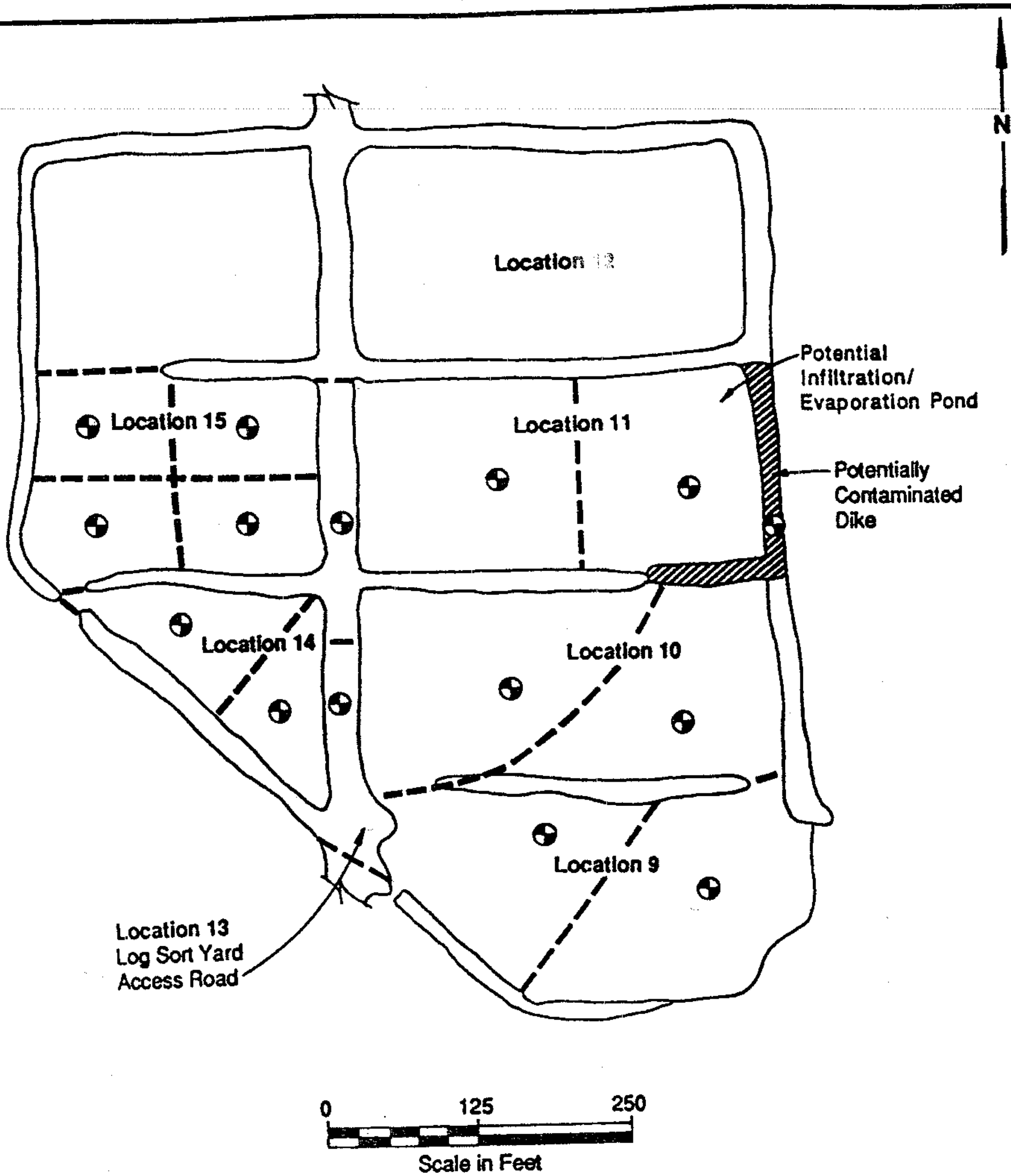
LANDAU ASSOCIATES, INC.	Schedule for Kaiser Wet Scrubber Sludge Cleanup Project

CONSENT DECREE
EXHIBIT C

HEALTH AND SAFETY PLAN

No less than 10 working days prior to the commencement of Site work under this decree, Kaiser's Contractor shall submit a safety and health plan for Ecology's review and comment. The safety and health plan will be consistent with Chapter 49.17 RCW and regulations promulgated pursuant thereto.

126/exhibitc



KEY

- - - Composite Sampling Grid within a Location

⊕ General Location of Clean-Up Confirmation Composite Samples

Figure D-1

LANDAU ASSOCIATES, INC.	Composite Sampling Grid

CONSENT DECREE
EXHIBIT D

SOIL CLEANUP STANDARD

The soil cleanup standard of 14.2 ppm dry weight of carcinogenic PAH compounds shall apply to Locations 9 through 15. If soil concentrations in Locations 9 through 12 exceed this level after completion of remedial activities, Kaiser will cover such areas with approximately 2 feet of imported soil.

Sampling Procedure

Sampling will be conducted only after all visible traces of sludge have been removed from the subject areas. Sampling to document compliance with the cleanup standard will be performed on the exposed surface soils (upper 2 inches).

The subject area will be divided into a grid as shown on Figure D-1. One 10-point sample composite will be obtained from each of the grid sections. The composite from each grid section will be mechanically homogenized at the laboratory prior to isolation of a sample for analysis. Analysis will be performed on the soil fraction less than two millimeters in size.

EPA analytical Method 8310 (Test Methods for Evaluating Solid Waste, SW-846, Third Edition, U.S. EPA) will be used to evaluate the concentration of carcinogenic PAH compounds in the soil samples (both fluorescent and UV detectors will be used). This method provides concentrations for the individual carcinogenic PAH compounds. Significant interference due to other organic compounds is not expected during analysis of the cleanup confirmation samples. In the event that significant interferences are detected, appropriate sample cleanup steps will be incorporated into the analytical procedure. Chemical data from this testing program will be evaluated as follows:

1. The mean carcinogenic PAH compound concentration will be determined (based on the total of the seven carcinogenic PAH compounds identified above, for each sample).

2. The 90% upper confidence limit of the population mean will be determined using the statistical method defined in SW-846, Chapter 9, Table 9-1, Equation (6).

3. If the 90% upper confidence limit of the population mean is less than 14.2 ppm dry weight, Kaiser will have complied with the cleanup standard.

4. If the 90% upper confidence limit of the population mean is greater than 14.2 ppm dry weight, but all composite samples are less than 14.2 ppm dry weight, Kaiser will have complied with cleanup standard.

5. If the 90% upper confidence limit of the population mean is greater than 14.2 ppm dry weight and one or more of the composite samples is greater than 14.2 ppm dry weight, the grid sections represented by the exceeding samples will be subjected to further cleanup. Cleanup of grid sections for which composite samples are less than 14.2 ppm dry weight will be complete and no further work will be required.

6. The grid sections that exceed 14.2 ppm dry weight will be cleaned and resampled as described previously using a 10-point compositing technique. The resulting carcinogenic PAH compound concentrations will be used to replace the original data for those grid sections in the original data set (Step 1 above).

7. Steps 2 through 6 above may be repeated until the area (Locations 9-15) meets the cleanup completion criteria. Kaiser may choose to cover areas in Locations 9-12 that exceed 14.2 ppm dry weight with two feet of clean fill in lieu of repeated cleanup attempts. Data associated with grid sections covered by two feet of soil will be excluded from the cleanup confirmation data set for Locations 9-15.

Sampling Protocol

All containers used for collecting samples will be obtained from the laboratory and will be certified clean by the manufacturer. As samples are collected, the container label will be filled out completely and a record of the sample maintained in the field log. Disposable sampling utensils will be used to the extent possible to avoid cross contamination of composites. Chain-of-custody forms will be prepared.

Decontamination procedures will be followed carefully to avoid any cross contamination between samples from the sampling equipment.

Chain-Of-Custody

Each transfer of soil samples will be recorded on a chain-of-custody form, from the time of original sampling through completion of laboratory analysis, to minimize potential for sample misidentification and maximize accountability and confidence in sampling data. At each such transfer, the condition of the sample containers (including seals) will be inspected and any significant observations noted; the two parties involved in the sample transfer will both sign the chain-of-custody form. Copies of all chain-of-custody forms will be retained in the project file. Each sample container will be entered on a separate line on these forms. Each physical sample will be assigned a unique coded identification.

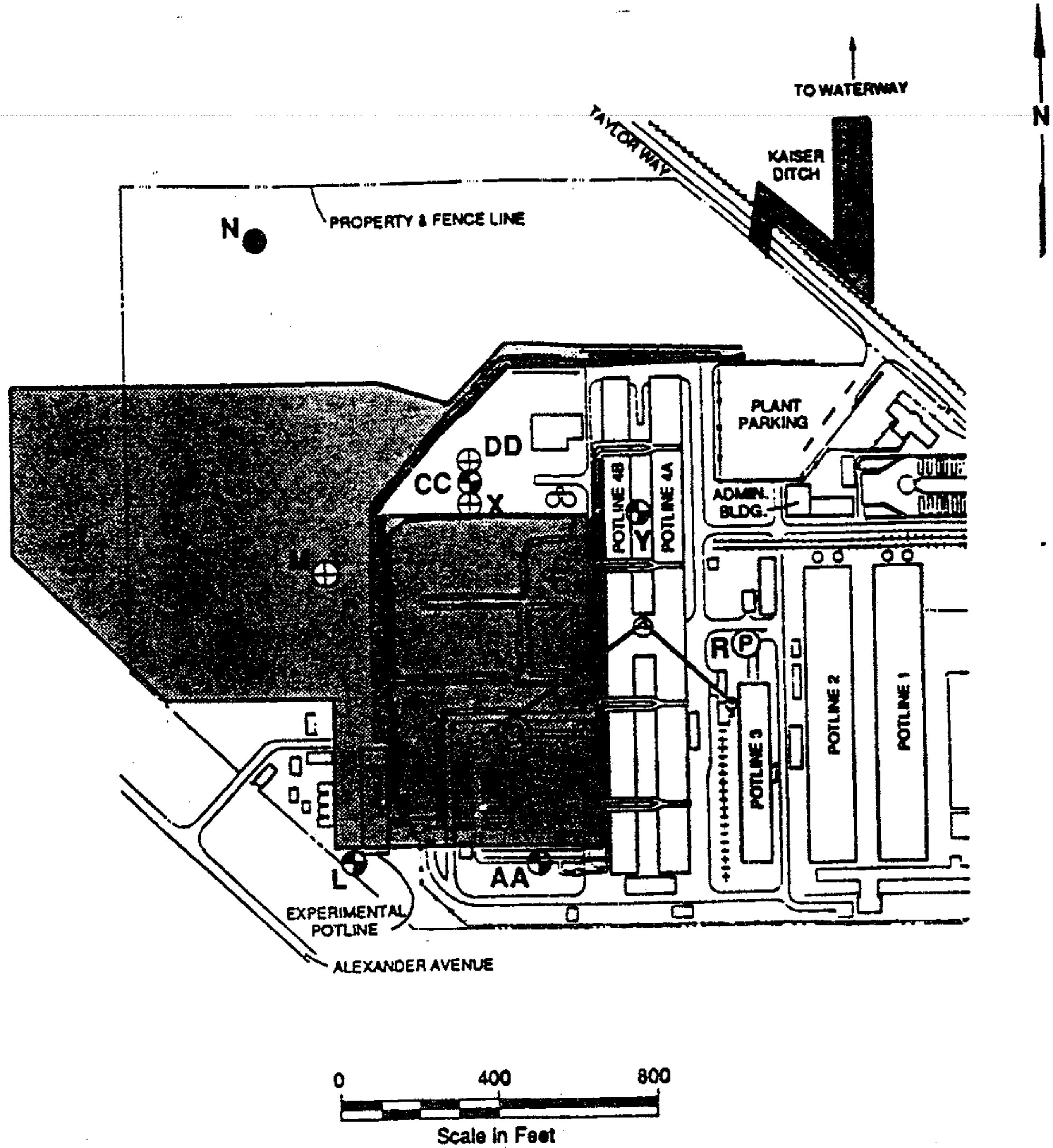
Quality Assurance/Quality Control (QA/QC) Analyses

The sampling and laboratory analysis activities included in the Kaiser Wet Scrubber Sludge Management Program will be supported by the following QA/QC analyses.

* Laboratory analytical instruments will be calibrated based on the analysis of standards.

* Blanks, matrix spike, and matrix spike duplicate samples will be analyzed by the laboratory at a ratio of approximately 10 percent of the total number of samples.

126/exhibitd



KEY

Area Constituting the Cleanup Project Site

⊕ Single-Level Monitoring Location

Two-Level Monitoring Location

● Three-Level Monitoring Location

Ⓟ Water Level Monitoring Only

Figure E-1

LANDAU ASSOCIATES, INC.	Post-Remediation Ground Water Monitoring System Wet Scrubber Sludge Cleanup Project

CONSENT DECREE
EXHIBIT E

COMPLIANCE MONITORING AND COVER MAINTENANCE PLAN

Ground water monitoring will be conducted semi-annually for five years. Water levels will be measured and ground water will be analyzed for the wet scrubber sludge indicator parameter, carcinogenic PAH compounds. If none of the ground water samples analyzed during the 5 year period exceed a carcinogenic PAH compound concentration of 10 ppb, subsequent sampling will be conducted once each year for 25 years. All monitoring results will be submitted to Ecology within 30 days after Kaiser receives them.

The post-remediation ground water monitoring system is shown on Figure E-1. Water level measurements and ground water samples will be collected from background well N (S,I,D) and downgradient wells AA(S,I), CC(I), DD(S), L, (I,D), M(I), X(D), and Y(S,I*). In addition, only water level measurements will be taken in well R(D).

Detections in ground water of carcinogenic PAH compounds at levels exceeding 10 ppb will be confirmed by follow-up sampling at two-week intervals for three successive analyses. In the event such initial detections are confirmed, Ecology will reopen the remedial action process.

Procedures for collecting and chemically analyzing ground water samples during the post-remediation period will be identical or equivalent to procedures used to date on this project and will follow standard QA/QC protocol. Sample collection procedures are described in the Ground Water Monitoring Plan (Landau Associates, Inc., 1985), and the First Quarterly Progress Report (Landau Associates, Inc., 1985).

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* Well identifications are coded to signify the water-bearing zone screened. The expressions (S), (I), and (D) signify shallow, intermediate, and deep zones, respectively.

Cover Inspection/Maintenance Plan

Portions of the site that receive a clean soil cover will be inspected quarterly by Kaiser personnel during regularly scheduled facility maintenance activities. The frequency of final cover inspections will be modified, as required, to reflect changes in post-remediation site conditions and use.

Maintenance requirements for the final cover will include grading to maintain site drainage, and repair of any erosion or distressed areas.

Kaiser's Tacoma plant operates continuously. The plant's security program is designed to prevent unauthorized entry and to protect and secure company property. These measures are in place to secure all plant operations and are not exclusive to the Site. Company security measures include security guard monitoring and patrol, plant perimeter fencing, controlled access/egress, and warning signs.

Signs will be installed at regularly spaced intervals around Locations 1 through 8, which contain or are believed to contain wet scrubber sludge. These signs will prohibit disturbance of covered portions of the Site and will minimize the risk of human exposure to material under the cover.

126/exhibite

CONSENT DECREE
EXHIBIT F

PUBLIC PARTICIPATION PLAN

INTRODUCTION

This plan describes public participation activities for the Kaiser Aluminum and Chemical Corporation wet scrubber sludge hazardous waste cleanup site (Kaiser sludge site). It has been tailored to the needs of the public based on the stage and nature of the cleanup, the level of public concern, and the risks posed by the site. The plan covers the consent decree for final cleanup activities at the site.

POTENTIALLY AFFECTED VICINITY

The Kaiser sludge site is located at 3400 Taylor Way on the Tacoma Tide Flats. Land use in the vicinity of the site is heavy industry. The nearest residents are located at least 4,000 feet east of the site. Surface water in the vicinity of the site includes the Hylebos and Blair Waterways. There is a small wetland located south of the site. The source of drinking and process water for the plant is a deep aquifer located more than six hundred feet below the site. The source of drinking water for surrounding businesses is Tacoma Public Utility. There are no public parks or schools located near the site.

CHEMICAL CONTAMINATION

Problems at the facility arise from the past disposal of wet scrubber sludge containing polynuclear aromatic hydrocarbons. The scrubber sludge was produced from 1950 to 1974 by the then-current emissions control technology. The pollution control equipment utilized water sprays to scrub pollutants from process gases that were vented from the plant aluminum reduction cells. The scrubber water flowed to a settling basin where solids were separated and disposed. In twenty-four years of operation, the system generated 82,000 cubic yards of solids or sludge that remain on site.

Wet scrubber sludge consists of alumina, with lessor amounts of carbon, fluoride compounds and coal tar pitch derivatives. The coal tar pitch derivatives contain polynuclear aromatic hydrocarbon (PAH) compounds. PAH compounds include a broad grouping of organic chemicals, some of which are known or suspected human carcinogens. Kaiser wet scrubber sludge contains several individual compounds

listed by the International Agency for Research on Cancer as possible or known carcinogens. The carcinogenic PAH compounds are the principal substances of concern in the scrubber sludge.

Cancer risks for PAH compound inhalation, direct contact and incidental ingestion pathways exist at the facility but are considered low. The PAH compound constituents are not found in ground water at the facility.

ACTIVITIES THAT WILL ADDRESS PUBLIC CONCERNS

Ecology will conduct the following community relation activities at the Kaiser sludge site.

1. Ecology has encouraged public participation in the consent decree processes by mailing an information circular to all interested parties found on the EPA Commencement Bay Superfund mailing list when consent decree negotiations began.

2. The public comment period for the final consent decree will be advertised with:

   A. A display ad in the Tacoma Morning News Tribune.

   B. A press release.

   C. A mailing to interested parties generated from the Commencement Bay Superfund mailing list.

3. Ecology will place in the Site Register notice of the availability for public review of the proposed consent decree.

4. The public comment period for the proposed consent decree shall run for thirty days from June 1, the date that public notice will appear in the Tacoma Morning News Tribune.

5. Copies of the proposed decree will be placed by Ecology in the following locations:

   A. Tacoma Pierce County Health Department
   3629 South "D"
   Tacoma, WA 98408-6897

B. Tacoma Public Library
Main Library
1102 Tacoma Ave. South
Tacoma, WA 98402

C. Washington State Department of Ecology
Industrial Section, Suite 260
2404 Chandler Court S.W.
Olympia, WA 98501

6. If there is a significant interest or concern regarding the site, a public meeting will be scheduled before the public comment period ends. Ten or more requests for a public meeting shall constitute significant interest. The time and place for such a meeting will be announced in the Tacoma Morning News Tribune.

7. Ecology will hold a public hearing on the proposed consent decree on June 25 at 7:00 p.m. at the Tacoma Pierce County Health Department, 3629 South "D", Tacoma, WA.

8. Public notice of any proposed substantial amendments to the consent decree will appear in the Site Register.

126/exhibitf

PORT of TACOMA U.S.A.

CONSENT DECREE
EXHIBIT G

TEMPORARY ACCESS PERMIT

June 19, 1990

Mr. John E. Daniel
Works Manager
Kaiser Aluminum and Chemical Co.
3400 Taylor Way
Tacoma, WA 98421

Dear Mr. Daniel:

This letter serves as a temporary permit authorizing Kaiser Aluminum and Chemical Corp. ("Kaiser") to enter onto certain property owned by the Port of Tacoma (described in Exhibit A, attached hereto and incorporated herein by reference) ("the Property") for the sole purpose of performing Kaiser's obligations under the Consent Decree to be entered in Pierce County Superior Court, Cause 90-_____ (State of Washington Department of Ecology v. Kaiser Aluminum & Chemical Corp.) ("Consent Decree") subject to the terms of this temporary permit.

Kaiser agrees to defend and save harmless the Port of Tacoma against any and all claims for personal injuries by third parties arising from Kaiser's exercise of its rights under this authorization or from the presence or activities of Kaiser's agents, employees or business invitees in connection with such activities.

Contingent only upon the performance by Kaiser of its obligations under the Consent Decree, the Port hereby releases and discharges Kaiser from any and all claims for damage, loss or liability sustained by the Port, arising out of the presence on the Property of carcinogenic PAH compounds, as that term is defined in Section I(H) of the Consent Decree. This release applies only to carcinogenic PAH compounds, and only to the Property.

P.O. Box 1837 • Tacoma, Washington 98401-1837 • Telephone (206) 383-5841 • Telex 32-7473

The term of this temporary permit shall commence on the date Kaiser executes this letter and shall terminate upon issuance by the Department of Ecology of a Notice of Completion, as provided in Section XVII of the Consent Decree, or one year from the date of execution, whichever is earlier.

Sincerely,

John J. Terpstra
Executive Director

Agreed to:

KAISER ALUMINUM AND CHEMICAL CORP.

By _____

Its TACOMA PLANT MANAGER

DATED: 6/29/90