PRI NW
FSN 1246

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

In the Matter of Remedial Action by:	) ENFORCEMENT ORDER
PRI Northwest Inc. (PRN)	) DE 95TC-S242
Occidental Chemical Corporation	)
F.O. Fletcher, Inc.	)

Site Location: 709 Alexander Avenue
Tacoma, Washington

TO: PRI Northwest Inc. (PRN)
733 Bishop Street
P.O. Box 3379
Honolulu, Hawaii 96842

Occidental Chemical Corporation
360 Rainbow Boulevard South
Niagra Falls, NY 14302-0728

Peter L. Hirschburg, President
F.O. Fletcher, Inc.
471 North Curtis Road
Boise, ID 83706

I.

Jurisdiction

This Enforcement Order ("Order") is issued pursuant to the authority of RCW 70.105D.050(1).

II.

Findings of Fact

The Department of Ecology (Ecology) makes the following Findings of Fact, without admission of such facts by PRI Northwest, Inc. (PRI), Occidental Chemical Corporation, and F.O. Fletcher, Inc.:

1. The Site under consideration is an abandoned industrial Site located on the northwestern shores of the Mouth of Hylebos Waterway in Commencement Bay, Tacoma, Washington. The Site is bordered by Alexander Avenue to the southwest, Occidental Chemical plant to the northwest, the Hylebos Waterway to the northeast, and Port of Tacoma property to the southeast. Figure 1 in Appendix B shows the Site and its location with respect to Hylebos Waterway. The Site area is approximately 4.4 acres.

2. The PRI property, formerly owned and operated by Fletcher Oil, had been the location of a bulk petroleum fuel storage and distribution terminal from the 1930s to the 1980s. Additionally, Fletcher Oil, and subsequently PRI, operated a tetraethyl lead plant, blending lead with gasoline at the Site during the late 1970s and the early 1980s. United Independent Oil operated a topping plant for crude oil distillation on the property in the 1970s and 1980s. At the present time, the Site is enclosed by a chain-link fence, and there are five empty above-ground storage tanks.

3. From 1979 to 1983 the following spills at the Site were documented:
   a. 1979 - Gasoline spill, 69 gallons.
   b. 1981 - Safety-Kleen (aliphatic solvent) spill, quantity unspecified.
   c. 1981 - Product spills from leaky valves noted, quantity unspecified.
   d. 1983 - Diesel fuel spill, 300 gallons, seeped into ground, did not enter Hylebos Waterway over land.

4. In 1989, Ecology and Environment, Inc., under contract EPA, performed a file review and inspection of the Site. As a part of this inspection, 12 ground water samples and 4 soil samples (3 subsurface and 1 surface) were collected to evaluate the Site. Groundwater samples were collected at 7 to 12 feet below ground surface (bgs).

   The ground water samples were analyzed for volatile organic compounds (VOCs), lead, and oil & grease. Selected ground water samples were analyzed for total metals, semi-volatile compounds, Polychlorinated Biphenyl (PCBs), and pesticides. Three soil samples were collected from three areas near the former gasoline leading facility and analyzed for lead only, and one soil sample was collected and analyzed for PCBs from an oil-stained soil area.

   Table A summarizes the results from the ground water and soil sampling performed by Ecology and Environment.

TABLE A

POLLUTANT	GROUNDWATER, ug/l	SOILS, mg/kg
Total Arsenic	2.8-90.8	--
Total Chromium	8.8-160	--
Total Copper*	7.8-355	--
Total Lead*	43.6-654	14
Total Mercury*	0.2-2.33	--
Total Nickel	10-242	--
Total Zinc*	50-2,270	--

TABLE A		
POLLUTANT	GROUNDWATER, ug/l	SOILS, mg/kg
Vinyl Chloride	10-270	--
1,2-Dichloroethene	1-90	--
Trichloroethene*	5-160	--
Tetrachloroethene*	5-1100	--
Toluene	1-350	--
Ethyl Benzene	2-120	--
Benzene	2-2500	--
PCBs (1260)*	--	10.90
PCBs (1254)*	--	13.4

* Identified as problem chemicals in the sediment in the Mouth of the Hylebos Waterway, as stated in Source Control Strategy – Commencement Bay Nearshore/Tideflats, Superfund Site, May 1992.

5. On April 8, 1992, Ecology's inspectors collected random samples of ground water seeps and fill material/soil on the bank of Hylebos Waterway along the Site. The samples were tested for priority pollutant metals and volatile organic compounds. The results are shown in Table B.

TABLE B		
POLLUTANT	BANK FILL/SOIL, ug/kg	GROUNDWATER SEEP, ug/l
Total Lead*	37,400,000	5,290**
Carbon Tetrachloride	5	--
Chloroform	20	--
Hexachlorobutadiene*	11	--
Trimethylbenzene	20	--
Tetrachloroethene*	9	42
Xylene	11	--
Total Zinc*	--	228**

TABLE B		
POLLUTANT	BANK FILL/SOIL, ug/kg	GROUNDWATER SEEP, ug/l
Total Copper*	--	97**
1,2 Dichloroethene	--	33
Trichloroethene*	--	35

* Identified as problem chemicals in the sediment in the Mouth of the Hylebos Waterway, as stated in Source Control Strategy -- Commencement Bay Nearshore/Tideflats, Superfund Site, May 1992.

** Total Recoverable

6. The Mouth and Head of the Hylebos Waterway are identified as problem areas with contaminated sediments in the Record of Decision (ROD) issued by EPA, Region 10, for the Commencement Bay Nearshore/Tideflats superfund site in September 1989. This Agreed Order is being issued to support the source control program being implemented in Commencement Bay to eliminate or reduce the hazardous substance release into the marine environment.

7. Under the Agreed Order No. DE 93TC-301, PRI Northwest performed a Site investigation study. The Site investigation study consisted of excavation and observation of subsurface soil and ground water conditions in ten test pits to determine the extent of gray sludge-like material in the soil, installation and testing of eight ground water monitoring wells (testing of ground water samples were performed during October 1994 and July 1994) , and testing of seeps from the Site into the Hylebos Waterway. In general, the Site investigation study confirmed the presence of the same compounds in soil, ground water, and seep water identified in Tables A and B.

Results of the preliminary Site investigation indicated the following:

a. Chemical constituents detected in soil and ground water samples included chlorinated hydrocarbons such as tetrachloroethene (PCE), trichloroethene (TCE), chloroform; semi-volatile compounds such as hexachlorobutadiene; and metals such as arsenic, chromium, copper, lead, nickel, and zinc. Only arsenic and nickel were detected as dissolved constituents in more than one ground water sample. Some soil samples contained petroleum hydrocarbons dominated by diesel-range or heavier hydrocarbons, and semi-volatile compounds.

b. Seeps which directly discharge into the Hylebos Waterway showed concentrations of PCE (2 - 58 ppb), TCE (2 - 36 ppb), 1,2- Dichloroethene (Total) (12 - 58 ppb), and

Vinyl Chloride (1 - 4 ppb). The seep samples also showed a concentration of 6.6 ppb dissolved zinc in January 1994.

c. The pH of several ground water samples ranged from 11.0 to 16.0.

d. The source of the chemical constituents in the soil, ground water, and seep samples identified to be the backfill debris containing graphite anodes and white fibrous sludge-like material similar in appearance to waste historically derived from industrial processes at the Occidental Chemical property. The vertical extent of backfill debris varies from 9 to 13 feet below grade with an average depth of 11 feet. The horizontal extent of backfill debris is approximately 210 feet with an average thickness of 105 feet. The depth to ground water below the ground surface is approximately 9 feet at the contaminated areas. Therefore, the backfill debris is in direct contact with the ground water. The approximate in-place volume of the backfill debris is 9000 cubic yards, of which approximately 2,000 cubic yards consist of white fibrous sludge-like material, graphite anodes, other industrial debris such as rubber, metal, and ceramic fragments, and concrete debris. The remaining is silty fill material. Figure 2 in Appendix B shows the locations of the backfill debris, ground water monitoring wells and seep.

8. On November 28, 1994, and April 10, 1995, PRI Northwest submitted two documents evaluating remedial actions to eliminate the release of hazardous substances into the Hylebos Waterway. The attached Cleanup Action Plan (CAP) in Appendix A, Exhibit C, describes in detail the possible remedial actions for eliminating the release of hazardous substances into the Hylebos Waterway.

9. On May 14, 1995, Ecology faxed copies of the Agreed Order, and the CAP to PRI Northwest for their comments/signature. As of August 16, 1995, we have not received the signed copies of these documents or PRI's comments on these documents. This is causing delays in implementing the site cleanup. Therefore, Ecology is issing an Enforcement Order jointly to PRI Northwest Inc., Occidental Chemical Corporation, and F.O. Fletcher, Inc. for completing the site cleanup.

III.

Ecology Determinations

1. Pacific Resources, Inc., is an owner as defined at RCW 70.105D.020(6) of a "facility" as defined in RCW 70.105D.020(3).

2. The facility is known as PRI Northwest Inc., and is located at 709 Alexander Avenue, Tacoma, Washington.

3. The substances found at the facility as described above are "hazardous substances" as defined at RCW 70.105D.020(5).

4. Based on the presence of these hazardous substances at the facility and all factors known to Ecology, there is a release or threatened release of hazardous substances from the facility, as defined at RCW 70.105D.020(10).

5. On February 5, 1993, and March 10, 1993, Ecology notified PRI Northwest Inc., and F O. Fletcher, Inc., respectively, informing them of their status as "potentially liable person" under RCW 70.105D.040 after notice and opportunity for comment.

6. On September 23, 1994, Ecology notified Occidental Chemical Corporation informing it of its status as a "potentially liable person" under RCW 70.105D.040 after notice and opportunity for comment.

7. Pursuant to RCW 70.105D.030(1) and 70.105D.050, Ecology may require potentially liable persons to investigate or conduct other remedial actions with respect to the release or threatened release of hazardous substances, whenever it believes such action to be in the public interest.

8. Based on the foregoing facts, Ecology believes the remedial action required by this Order is in the public interest.

9. For this Order and the attached documents the word "PLPs" means PRI Northwest Inc., F.O. Fletcher, Inc. and Occidental Chemical Corporation.

IV.

Work To Be Performed

Based on the foregoing facts and determinations, it is hereby ordered that PLPs take the following remedial actions and that these actions be conducted in accordance with Chapter 173-340 WAC unless otherwise specifically provided for herein.

Perform the Site Remedial Action in accordance with reports dated November 28, 1994 and April 10, 1995 and the attached CAP in Appendix A, Exhibit C. The Attachments to this Order in Appendix A (Exhibits A, B, and C) are incorporated by reference and are integral and enforceable parts of this Order.

V.

Terms and Conditions of Order

1. Definitions: Unless otherwise specified, the definitions set forth in Chapter 70.105D RCW and Chapter 173-340 WAC shall control the meanings of the terms used in this Order.

2. Public Notices: RCW 70.105D.030(2)(a) requires that, at a minimum, this Order be subject to concurrent public notice. Ecology shall be responsible for providing such public notice and reserves the right to modify or withdraw any provisions of this Order should public comment disclose facts or considerations which indicate to Ecology that the Order is inadequate or improper in any respect.

3. Remedial Action Costs: PLPs shall pay to Ecology costs incurred by Ecology pursuant to this Order. These costs shall include work performed by Ecology or its contractors for investigations, remedial actions, and Order preparation, oversight, and administration. Ecology costs shall include costs of direct activities; e.g., employee salary, laboratory costs, travel costs, contractor fees, and employee benefit packages; and agency indirect costs of direct activities. PLPs shall pay the required amount within 90 days of receiving from Ecology an itemized statement of costs that includes a summary of costs incurred, an identification of involved staff, and the amount of time spent by involved staff members on the project. A general description of work performed will be provided upon request. Itemized statements shall be prepared quarterly. Failure to pay Ecology's costs within 90 days of receipt of an itemized statement of costs will result in interest charges. Nothing in this section shall preclude Ecology or other federal, state, or local governmental entities from seeking to recover other costs incurred by such entities for which respondents are liable.

4. Designated Project Coordinators:

The project coordinator for Ecology is:

Mohsen Kourehdar
Department Of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

The project coordinator for PLPs are:

George T. Aoki
PRI Northwest Inc.
733 Bishop Street
Honolulu, HI 96842

Alastair McGregor, Manager, Special Programs
Occidental Chemical Corporation
360 Rainbow Boulevard South
Niagra Falls, NY 14302-0728

Peter L. Hirschburg, President
F.O. Fletcher, Inc.
471 North Curtis Road
Boise, ID 83706

The project coordinator(s) shall be responsible for overseeing the implementation of this Order. To the maximum extent possible, communications between Ecology and PLPs and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order, shall be directed through the project coordinator(s). Should Ecology or change project coordinator(s), written notification shall be provided to Ecology or PLPs at least ten (10) calendar days prior to the change.

5. Performance: All work performed pursuant to this Order shall be under the direction and supervision, as necessary, of a professional engineer or hydrogeologist, or similar expert, with appropriate training, experience, and expertise in hazardous waste Site investigation and cleanup. PLPs shall notify Ecology as to the identity of such engineer(s) or hydrogeologist(s), and of any contractors and subcontractors to be used in carrying out the terms of this Order, in advance of their involvement at the Site. PLPs shall provide a copy of this Order to all agents, contractors, and subcontractors retained to perform work required by this Order and shall ensure that all work undertaken by such agents, contractors, and subcontractors will be in compliance with this Order.

Except where necessary to abate an emergency situation, PLPs shall not perform any remedial actions at 709 Alexander Avenue, Tacoma, Washington, outside that required by this Order unless Ecology concurs, in writing, with such additional remedial actions.

6. Access: Ecology or any Ecology authorized representative shall have the authority to enter and freely move about the Site at all reasonable times for the purposes of, inter alia: inspecting records, operation logs, and contracts related to the work being performed pursuant to this Order; reviewing the progress in carrying out the terms of this Order; conducting such tests or collecting samples as Ecology or the project coordinator may deem necessary; using a camera, sound recording, or other documentary type equipment to record work done pursuant to this Order; and verifying the data submitted to Ecology by PLPs. When entering the Site

under Chapter 70.105D RCW, Ecology shall provide reasonable notice prior to entering the Site unless an emergency prevents notice. Ecology shall allow split or replicate samples to be taken by PLPs during an inspection unless doing so interferes with Ecology's sampling. PLPs shall allow split or replicate samples to be taken by Ecology and shall provide seven (7) days notice before any on-Site field activities (e.g., excavating, sampling).

7. Public Participation: PLPs shall prepare and/or update a public participation plan for the Site. Ecology shall maintain the responsibility for public participation at the Site. PLPs shall help coordinate and implement public participation for the Site.

8. Retention of Records: PLPs shall preserve in a readily retrievable fashion, during the pendency of this Order and for ten (10) years from the date of completion of the work performed pursuant to this Order, all records, reports, documents, and underlying data in its possession relevant to this Order. Should any portion of the work performed hereunder be undertaken through contractors or agents of PLPs, then PLPs agrees to include in their contract with such contractors or agents a record retention requirement meeting the terms of this paragraph.

9. Dispute Resolution: PLPs may request Ecology to resolve disputes which may arise during the implementation of this Order. Such request shall be in writing and directed to the signatory, or his/her successor(s), to this Order. Ecology resolution of the dispute shall be binding and final. PLPs are not relieved of any requirement of this Order during the pendency of the dispute and remains responsible for timely compliance with the terms of the Order unless otherwise provided by Ecology in writing.

10. Reservation of Rights:

Ecology reserves all rights to issue additional orders or take any action authorized by law in the event or upon the discovery of a release or threatened release of hazardous substances not addressed by this Order, upon discovery of any factors not known at the time of issuance of this Order, in order to abate an emergency, or under any other circumstances deemed appropriate by Ecology.

Ecology reserves the right, however, to require additional remedial actions at the Site should it deem such actions necessary.

Ecology also reserves all rights regarding the injury to, destruction of, or loss of natural resources resulting from the releases or threatened releases of hazardous substances from 709 Alexander Avenue, Tacoma, Washington.

In the event Ecology determines that conditions at the Site are creating or have the potential to create a danger to the health or welfare of the people on the Site, the surrounding area, or to

the environment, Ecology may order PLPs to stop further implementation of this Order for such period of time as needed to abate the danger.

11. Transference of Property: No voluntary or involuntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the Site shall be consummated by PLPs without provision for continued implementation of all requirements of this Order and implementation of any remedial actions found to be necessary as a result of this Order.

Prior to transfer of any legal or equitable interest PLPs may have in the Site or any portions thereof, PLPs shall serve a copy of this Order upon any prospective purchaser, lessee, transferee, assignee, or other successor in such interest. At least thirty (30) days prior to finalization of any transfer, PLPs shall notify Ecology of the contemplated transfer.

12. Compliance With Other Applicable Laws: Pursuant to RCW 70.105D.090(1), all actions carried out by the PLPs pursuant to this Order shall be done in accordance with all applicable federal, state, and local requirements including requirements to obtain necessary permits, except as specified in subsection (a).

a. In the event that the PLPs would otherwise be required to obtain permits or approvals from local governments for any remedial actions to be conducted at the Site, the PLPs shall be exempt from compliance with the procedural requirements of those permitting laws, exempt from the procedural requirements of those permitting laws, and shall likewise be exempt from the procedural requirements of Chapters 70.94, 70.95, 70.105, 75.20, 90.48, and 90.58 RCW.

The PLPs shall consult with state and local government agencies and shall obtain a written determination of the applicable substantive requirements of Chapters 70.94, 70.95, 70,105, 75.20, 90.48, and 90.58 RCW and the substantive provisions of any laws requiring, or authorizing, local government permits or approvals for remedial actions. Ecology shall make the final determination on which substantive requirements, once established, shall be incorporated into an amendment to this Order and shall become enforceable requirements under this Order and the PLPs shall meet those requirements while conducting any remedial actions at the Site.

The public participation plan shall include an opportunity for public comment on the identified substantive requirements.

b. Pursuant to RCW 70.105D.090(2), in the event that Ecology determines that the exemption from complying with the procedural requirements of the laws referenced in subsection (a) would result in the loss of approval from a federal agency which is necessary for the state to administer and federal law, the exemption shall not apply and the PLPs shall be required to comply with both the procedural and substantive requirements of the laws referenced in subsection (a).

VI.

Satisfaction of this Order

The provisions of this Order shall be deemed satisfied upon PLPs's, receipt of written notification from Ecology that PLPs has completed the remedial activity required by this Order, as amended by any modifications, and that all other provisions of this Order have been complied with.

VII.

Enforcement

1. Pursuant to RCW 70.105D.050, this Order may be enforced as follows:

   a. The Attorney General may bring an action to enforce this Order in a state or federal court.

   b. The Attorney General may seek, by filing an action, if necessary, to recover amounts spent by Ecology for investigative and remedial actions and orders related to the Site.

   c. In the event PLPS refuse, without sufficient cause, to comply with any term of this Order, PLPs will be liable for:

      (1) up to three times the amount of any costs incurred by the state of Washington as a result of its refusal to comply; and

      (2) civil penalties of up to $25,000 per day for each day it refuses to comply.

   d. This Order is not appealable to the Washington Pollution Control Hearings Board. This Order may be reviewed only as provided under Section 6 of Chapter 70.105D RCW.

Effective date of this Order: September 5, 1995

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

By Mike Z Blum for D. Jansen
Dave Jansen, P.E.
Southwest Region Supervisor
Toxics Cleanup Program

Appendix A

Exhibit A. Scope of the Work

Exhibit B. Declaration of Restrictive Covenant

Exhibit C. Cleanup Action Plan

Exhibit A

SCOPE OF WORK

All work performed at and around the Site pursuant to this Order shall be accomplished in accordance with Chapter 173-340 WAC, and plans prepared by PLPs shall be submitted for review and approval by Ecology.

Task 1 - Safety and Health Plan

All work, including sampling and other field data-gathering activities, shall be performed under an appropriate health and safety plan for the protection of workers and the surrounding community in accordance with Ecology and WISHA requirements. PLPs shall submit this plan to Ecology prior to commencing any action on the Site. PLPs shall be solely responsible for ensuring that the plan satisfies applicable laws and requirements.
Submit a completed SEPA checklist.

Schedule: Within one month of the effective date of this Order.

Task 2 - Draft Remedial Design Report

Submit a draft remedial design report for implementation of the preferred remedial alternative.

Schedule: Within 45 days of the effective date of this Order.

Task 3 - Final Remedial Design Report

Submit final remedial design report, which addresses Ecology's comments on the draft remedial design report, for Ecology approval.

Schedule: Within one month of receipt of Ecology's comments on the draft remedial design report.

Task 4 - Recording of Restrictive Covenant

PLPs shall record the attached Declaration of Restrictive Covenant in the Site property deed and provide a signed copy of the Property deed and legal description of the Site to Ecology.

Schedule: Within two months of the effective date of this Order.

Task 5 - Implement Remedial Action

Implement cleanup actions as outlined in the Ecology-approved final remedial design report.

Schedule: In accordance with the schedule contained in the approved final remedial design report.

Task 6 - As-Built Plans

At the completion of the final remedial action, submit a Site layout drawing which shows the areas at the Site where the backfill debris remains in place. The report shall also contain an opinion from the professional engineer, based on testing results and inspections, as to whether the cleanup action has been accomplished in compliance with the final remedial design document.

Schedule: Within two months of completion of contaminated soil removal and treatment.

Progress Report:

PLPs shall submit progress reports every two months to Ecology by the tenth (10th) day of each month. These reports shall detail the work performed pursuant to this Agreed Order and specify any deviations from the schedule of deliverables outlined in Scope of Work along with a plan of how the project will be brought back on schedule.

Ground Water and Seep (s) Monitoring Plan:

At a minimum, the monitoring plan shall be presented with a description of procedures used for field sampling and data analysis; locations of sample collection; a schedule for sample collection; laboratory analysis procedures; detection limits; laboratory and field quality assurance/quality control procedures; data reduction, validation and reporting procedures; and preventative maintenance requirements for the equipment used in field sampling and/or field analysis (i.e., routine and documented care of equipment and material used in the sampling effort or field analysis of samples).

Schedule Within two months of the effective data of this Order.

Ground Water and Seep (s) Monitoring Submittal:

The ground water monitoring results shall be submitted to Ecology subsequent to each semiannual monitoring event.

Schedule Subsequent to completion of each monitoring event.

Exhibit B

DECLARATION OF RESTRICTIVE COVENANT

The property that is the subject of this Restrictive Covenant is the subject of remedial action under Chapter 70.105D RCW. The work done to clean up the property (hereafter the "Cleanup Action") is described in Washington State Department of Ecology Agreed Order No. 95TC-S242. This Restrictive Covenant is required by WAC 173-340-440 because the implementation of the Cleanup Action at the Site will result in leaving approximately 9,000 cubic yards of contaminated soil at the Site.

PRI Northwest Inc., is the fee owner of real property in the county of Pierce, State of Washington, hereafter referred to as the "Site." As a result of the Cleanup Action, approximately 9,000 cubic yards of contaminated soil will remain in-place at the Site. The Site will also include monitoring wells and a ground water extraction network.

PRI Northwest Inc., makes the following declaration as to limitations, restrictions, and uses to which the Site may be put, and specifies that such declarations shall constitute covenants to run with the land, as provided by law, and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Site.

Section 1: The Site may be used only for industrial uses as defined in and allowed under the City of Tacoma's zoning Regulations codified in the Tacoma City Code as of the date of this Restrictive Covenant.

Section 2: Any activity on the Site that may interfere with or reduce the effectiveness of the Cleanup Action or any operation, maintenance, monitoring, or other activity required by the Order (or any Ecology-approved modification or amendment to the Order) is prohibited. Any activity on the Site that may result in the release of a hazardous substance that was contained as a part of the Cleanup Action is prohibited.

Section 3: The owner of the Site must give written notice to Ecology, or to a successor agency, of the owner's intent to convey any interest in the Site. No conveyance of title, easement, lease, or other interest in the Site shall be consummated by the owner without adequate and complete provision for the continued operation, maintenance, and monitoring of the Cleanup Action.

Section 4: The owner must notify and obtain approval from Ecology, or from a successor agency, prior to any use of the Site that may be inconsistent with the terms of this Restrictive Covenant. Ecology, or its successor agency, may approve such a use only after public notice and comment.

Section 5: The owner shall allow authorized representatives of Ecology, or of a successor agency, the right to enter the Site at reasonable times for the purpose of evaluating compliance with the Cleanup Action Plan and the Order, to take samples, to inspect

Cleanup Actions conducted at the Site, and to inspect records that are related to the Cleanup Action.

Section 6: The owner of the Site and owner's assigns and successors in interest reserve the right under WAC 173-340-730 and to request the recording of an instrument which provides that this Restrictive Covenant shall no longer limit the use of the Site or be of any further force or effect. However, such an instrument may be recorded only with the consent of Ecology, or of a successor agency. Ecology, or a successor agency, may consent to the recording of such an instrument only after public notice and comment.

PRI Northwest Inc., agrees to file this Restrictive Covenant in the Site property deed with the Pierce County Auditor and provide the Department of Ecology with a signed copy and proof of filing within 30 days of the effective date of this Agreed Order.

_____

PRI Northwest Inc.

Exhibit C

CLEANUP ACTION PLAN

PRI Northwest, Inc.
Occidental Chemical Corporation
F.O. Fletcher, Inc.
Tacoma, Washington

I. INTRODUCTION

This Cleanup Action Plan (CAP) has been prepared to describe the alternatives for remediation at 709 Alexander Avenue, Tacoma, Washington (hereafter referred to as "the Site"). This CAP is presented to satisfy the requirements of the Model Toxics Control Act (MTCA) (Chapter 70.105D RCW). The purposes of this CAP are: (1) to describe briefly the alternatives presented for remedial action in Feasibility Study, and (2) to identify the preferred alternative. Additional information is also presented to provide sufficient background about the Site, which includes the Site description and the nature and extent of contaminants.

The alternatives and information described in this plan are evaluated in detail in Site investigation reports conducted pursuant to Agreed Order No. 93TC-301.

II. SITE BACKGROUND

1. The Site under consideration is an abandoned industrial Site located on the northwestern shores of the Mouth of Hylebos Waterway in Commencement Bay, Tacoma, Washington. The Site is bordered by Alexander Avenue to the southwest, Occidental Chemical plant to the northwest, the Hylebos Waterway to the northeast, and Port of Tacoma property to the southeast. Figure 1 in Appendix B shows the Site and its location with respect to Hylebos Waterway. The Site area is approximately 4.4 acres.

2. The PRI property, formerly owned and operated by Fletcher Oil, had been the location of a bulk petroleum fuel storage and distribution terminal from the 1930s to the 1980s. Additionally, Fletcher Oil, and subsequently PRI, operated a tetraethyl lead plant, blending lead with gasoline at the Site during the late 1970s and the early 1980s. United Independent Oil operated a topping plant for crude oil distillation on the property in the 1970s and 1980s. At the present time, the Site is enclosed by a chain-link fence, and there are five empty aboveground storage tanks.

3. From 1979 to 1983, the following spills at the Site were documented:

   a. 1979 - Gasoline spill, 69 gallons.
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   c. 1981 - Product spills from leaky valves noted, quantity unspecified.
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4. In 1989, Ecology and Environment, Inc., under contract with EPA, performed a file review and inspection of the Site. As a part of this inspection, 12 ground water samples and four soil samples (three subsurface and one surface) were collected to evaluate the Site. Ground water samples were collected at 7 to 12 feet below ground surface (bgs).

The ground water samples were analyzed for volatile organic compounds (VOCs), lead, and oil & grease. Selected ground water samples were analyzed for total metals, semi-volatile compounds, Polychlorinated Biphenyl (PCBs), and pesticides. Three soil samples were collected from three areas near the former gasoline leading facility and analyzed for lead only, and one soil sample was collected and analyzed for PCBs from an oil-stained soil area.

Table A summarizes the results from the ground water and soil sampling performed by Ecology and Environment.

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Total Zinc*	50-2,270	--
Vinyl Chloride	10-270	--
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PCBs (1260)*	--	10.90

TABLE A		
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PCBs (1254)*	--	13.4

* Identified as problem chemicals in the sediment in the Mouth of the Hylebos Waterway, as stated in Source Control Strategy -- Commencement Bay Nearshore/Tideflats, Superfund Site, May 1992.

5. On April 8, 1992, Ecology's inspectors collected random samples of ground water seeps and fill material/soil on the bank of Hylebos Waterway along the Site. The samples were tested for priority pollutant metals and volatile organic compounds. The results are shown in Table B.

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Xylene	11	--
Total Zinc*	--	228**
Total Copper*	--	97**
1,2 Dichloroethene	--	33
Trichloroethene*	--	35

* Identified as problem chemicals in the sediment in the Mouth of the Hylebos Waterway, as stated in Source Control Strategy -- Commencement Bay Nearshore/Tideflats, Superfund Site, May 1992.

** Total Recoverable

6. The Mouth and Head of the Hylebos Waterway are identified as problem areas with contaminated sediments in the Record of Decision (ROD) issued by EPA, Region 10, for the Commencement Bay Nearshore/Tideflats superfund site in September 1989. This Agreed Order is being issued to support the source control program being implemented in Commencement Bay to eliminate or reduce the hazardous substance release into the marine environment.

7. Under the Agreed Order No. DE 93TC-301, PRI Northwest, Inc. performed a Site investigation study. The Site investigation study consisted of excavation and observation of subsurface soil and ground water conditions in ten test pits to determine the extent of gray sludge-like material in the soil, installation and testing of eight ground water monitoring wells (testing of ground water samples were performed during October 1994 and July 1994), and testing of seeps from the Site into the Hylebos Waterway. In general, the Site investigation study confirmed the presence of the same compounds in soil, ground water, and seep water as in Tables A and B.
Results of the preliminary Site investigation indicated the following:

a. Chemical constituents detected in soil and ground water samples included chlorinated hydrocarbons such as tetrachloroethene (PCE), trichloroethene (TCE), chloroform; semi-volatile compounds such as hexachlorobutadiene; and metals such as arsenic, chromium, copper, lead, nickel, and zinc. Only arsenic and nickel were detected as dissolved constituents in more than one ground water sample. Some soil samples contained petroleum hydrocarbons dominated by diesel-range or heavier hydrocarbons, and semi-volatile compounds.

b. Seeps which directly discharge into the Hylebos Waterway showed concentrations of PCE (2 - 58 ppb), TCE (2 - 36 ppb), 1,2- Dichloroethene (Total) (12 - 58 ppb), and Vinyl Chloride (1 - 4 ppb). The seep samples also showed a concentration of 6.6 ppb dissolved zinc in January 1994.

c. The pH of several ground water samples ranged from 11.0 to 16.0.

d. The source of the chemical constituents in the soil, ground water, and seep samples identified to be the backfill debris containing graphite anodes and white fibrous sludge-like material similar in appearance to waste historically derived from industrial processes at the Occidental Chemical property. The vertical extent of backfill debris varies from 9 to 13 feet below grade with an average depth of 11 feet. The horizontal extent of backfill debris is approximately 210 feet with an average thickness of 105 feet. The depth to ground water below the ground surface is approximately 9 feet at the contaminated areas. Therefore, the backfill debris is in direct contact with the ground water. The approximate in-place volume of the backfill debris is 9000 cubic yards, of which approximately 2,000 cubic yards consist of white fibrous sludge-like

material, graphite anodes, other industrial debris such as rubber, metal, and ceramic fragments, and concrete debris. The remaining is silty fill material. Figure 2 in Appendix B shows the locations of the backfill debris, ground water monitoring wells and seep.

f. It was also concluded that the contaminated backfill debris/graphite anodes on the shoreline areas were source of contaminates into the Hylesbos waterway due to erosion.

8. On November 28, 1994, and April 10, 1995, PLPs submitted two documents evaluating remedial actions to eliminate the release of hazardous substances into the Hylebos Waterway.

III. MTCA CLEANUP STANDARDS

Ground Water Cleanup Standards: The release from this Site is into the Hylebos Waterway. Therefore, the ground water cleanup standards are set to be protective of both surface water organisms, and human health due to ingestion of contaminated seafood. The more stringent values for protection of water organisms and human health are to be the ground water cleanup standards at this Site which are in Table C. The point of compliance for ground water cleanup standards will be the property line of the parcel owned by PRI Northwest Inc.

Table C: Ground Water Cleanup Standards

Pollutant	Concentration, ug/l
Tetrachloroethene	8.85*
Trichloroethene	81*
1,1,2,2-Tetrachloroethane	11*
Hexachlorobutadiene	50*
Arsenic	0.14*
Copper	3***
Nickel	8**
Zinc	77**
Lead	6**

* Human health criteria for ingestion of organisms
** Marine chronic criteria
*** Marine acute criteria

IV. Summary of Cleanup Action Alternatives

A number of potential remediation alternatives were screened in the feasibility study process to select the most effective, implementable, and economical alternatives for more detailed evaluation. These alternatives are:

1. Ground water monitoring for 30 years, and placement of a restrictive covenant on the Site's deed. This alternative would rely on passive remediation or natural attenuation to cleanup the Site.

2. Excavation/separation of contaminated soil, on-Site treatment of contaminated soil, off-Site disposal of 9000 cubic yards of backfill debris, and ground water monitoring for 30 years.

3. Excavation and off-Site disposal of approximately 9000 cubic yards of backfill debris and semiannual monitoring of ground water for 30 years.

4. Partial excavation, segregation, and disposal of debris material from the shoreline area; installation of a vertical barrier to separate remaining debris material from the Hylebos Waterway; ground water extraction to depress ground water below debris materials; installation of a low permeability cover on top of debris materials; ground water monitoring and seep for 30 years; and placement of a restrictive covenant on the Site's deed.

The alternatives 1, 2, 3, and 4 are discussed in detail as below.

1. Alternative 1 - No Action

   This alternative consists of long-term ground water monitoring, and placement of a restrictive covenant on the Site's deed. This alternative would rely on passive remediation. This alternative does not meet the remedial action objective of eliminating the release of hazardous substances into the Hylebos Waterway. Therefore, it is rejected.

2. Alternative 2

   This alternative consists of excavation/separation of backfill debris into three fractions as follows:

   The graphite and white fibrous sludge-like material, and other industrial waste debris, would be removed by hand sorting or mechanical screening (this material may be classified as RCRA

hazardous waste for disposal purposes); the concrete debris and other construction-like oversize material (i.e., concrete blocks) would be removed by mechanical screening and classified for disposal as non-hazardous problem waste; the remaining soil would be stabilized on Site if necessary to reduce the leachability of metals and classified as non-hazardous problem waste. The material classified as RCRA hazardous waste would be shipped to Ensco Incineration facility in Arkansas. The backfill debris classified as non-hazardous waste would be shipped to the Roosevelt Regional Landfill in Washington or a similar disposal Site. The ground water monitoring wells would be monitored for 30 years, semiannually.

3. Alternative 3

Alternative 3 is identical to alternative 2, except that no on-site treatment of the soil would take place and all excavated materials would be classified for disposal as RCRA hazardous waste. Excavated material designated as RCRA-listed hazardous waste would be shipped to Ensco Incineration facility in Arkansas or a similar facility. The RCRA hazardous waste would be shipped to the Chemwaste Landfill in Arlington, Oregon, or a similar facility.

4. Alternative 4

Soil and debris material currently in contact with the Hylebos Waterway would be excavated to reduce the potential for contaminant migration through erosion. The maximum depth of excavation would be one foot below the depth of debris material as documented in the Site investigation report. Following the excavation, soil samples would be taken and tested for priority pollutant metals and volatile and semi-volatile halogenated organic compounds. Excavation would be conducted from the landward side of the berm using a trackhoe. The graphite anodes and sludge-like material which have been identified to be the source of halogenated hydrocarbons would be segregated from the concrete debris and soil, manifested and shipped off Site for disposal as RCRA hazardous waste. The concrete and other large construction debris would be segregated from the soil by hand sorting and/or mechanical screening. This material would be classified, manifested, and shipped off Site for disposal as a non-hazardous Washington State problem waste. The remaining soil would be placed on top of the berm area pending final capping. Following the excavation of debris materials along the edge of the waterway, a sealable sheet pile vertical barrier would be installed to separate the remaining debris material from the waterway and minimize tidal influence to the berm. The bottom of the vertical barrier would extend to a minimum depth of 10 feet into the sandy, clayey silt to very silty sand formation, well below the mean lower low tide level in the Hylebos Waterway. The sheet piling would act as a bulkhead. The proposed sheet pile would be a sealable Waterloo Barrier. The interlocking joints between individual sheet piles incorporates a cavity that is filled with sealant after driving to prevent leakage through the joints. Figure 3 in Appendix B shows the location of proposed the vertical barrier.

A series of ground water extraction wells would be installed on the landward side of the sheet pile vertical barrier to allow for ground water extraction to depress the water table below the

remaining debris material. The extracted ground water would be pumped to the existing treatment facility at the Occidental Chemical Corporation, the property to the north. The treated discharge would be discharged into the Hylebos Waterway through Occidental Chemical's NPDES permitted discharge. A pumping test would be performed to determine the design flow and radius of influence of each well in the extraction network. A low permeability asphalt cover (i.e., permeability of less than $1x10^{-7}$ cm/s) would be installed to prevent exposure to on-Site workers through direct contact with the chemical constituents contained in the debris layer and to minimize migration of chemical constituents contained in the debris layer through infiltration and leaching to the underlying ground water. Site restoration activities would consist of providing adequate surface drainage away from the berm area which contains the backfill debris. This remedial action would include 30 years, semiannual ground water and seep monitoring. A restrictive covenant would be placed on the Site's deed.

V. Selection of Preferred Alternative for the Remedial Action

The driving force behind this remedial action is to support the source control program being implemented in Commencement Bay to reduce/eliminate the hazardous substance release into the marine environment. Specifically, chlorinated hydrocarbons and metals seepage into the Hylebos Waterway. Alternatives 2 and 3 propose the complete removal/treatment/disposal of the backfill debris/contaminated soil which is a source of TCE, PCE, and metals into the Hylebos Waterway. Alternatives 2 and 3 do not include a hydraulic control of the contaminated ground water. Therefore, in the short run, implementing alternatives 2 and 3 would not reduce or eliminate the hazardous releases into the Hylebos Waterway. Alternative 4 has been chosen as a preferred alternative for implementation at this Site. This alternative includes removal of contaminated soil closest to the waterway, low permeability cap and hydraulic containment (pump/treat, and vertical barrier) which results in reduction/elimination of chlorinated hydrocarbons, and metals discharge into the Hylebos Waterway.

VI. ANALYSIS OF CLEANUP ACTION ALTERNATIVES

The following is an evaluation of the preferred cleanup action alternative using MTCA criteria.

1. Protection of Human Health and Environment

The implementation of the preferred alternative 4 would achieve the following:

a. It would be protective of organisms in the marine environment as a result of reduction/elimination of releases of halogenated hydrocarbons and metals into the Hylebos Waterway.

b. It would be protective against human health problems resulting from ingestion of contaminated fish.

c. It would be protective of human health as a result of direct contact with the backfill debris.

2. Compliance with Cleanup Standards

The implementation of preferred alternative would result in compliance with the ground water cleanup standards.

3, Compliance with Applicable or Relevant and Appropriate Requirements

All alternatives would comply with the applicable or relevant and appropriate state and federal requirements (ARARs).

4. Restoration Time Frame

The implementation of preferred alternative would result in reduction/elimination of the releases of hazardous substances into the Hylebos Waterway, which is the primary objective of this cleanup action. The time frame for implementation of preferred alternative is 9 to 12 months.

5. Short-Term Effectiveness

The implementation of the preferred alternative would result in short run (i.e., next 9 to 12 months) in reduction/elimination of releases of halogenated hydrocarbon and metals into the Hylebos Waterway by removing contaminated backfill debris in direct contact with Hylebos Waterway and prevent ground water discharge through the use of a barrier wall and a pump and treat system.

6. Long-Term Effectiveness

The preferred alternative is effective by keeping the backfill debris dry and elimination of releases into the Hylebos Waterway.

7. Reduction of Toxicity, Mobility, and Volume

Implementing the preferred alternatives would result in reduction/elimination of leachate discharge from the fill debris into the Hylebos Waterway.

8. Implementability

All the considered technologies/procedures for the soil and ground water treatment are fully developed and have been used at other Sites and, therefore, are implementable.

9. Community Concerns

Community comments have been solicited during a 30-day comment period (June 9, to July 11, 1994). ???

VII. Cost

1 Cost for Implementing Alternatives 1, 2, 3, and 4

Table D shows the present worth cost for implementing each alternative. As seen in Table D, Alternatives 2 and 3 are 9 and 16 times more costly than the preferred Alternative 4, respectively. The goal of this CAP is to reduce/eliminate the release of halogenated hydrocarbons and metals into the Hylebos Waterway, and all the alternatives are effective in achieving this task in the long run. It is clear that implementing alternatives 2 or 3 would be excessively expensive for accomplishing the same task in comparison with alternative 4.

Table D: Present Worth Cost Comparison of Proposed Remedial Alternatives

Remedial Alternative	Present Worth ($)
1	12,500
2	5,495,600
3	9,550,600
4[(1)]	592,700

(1) The preferred Alternative: The present worth costs do not include the 30-year monitoring cost, since 30 years of monitoring is part of implementing each alternative.

VIII. Proposed Alternative

The proposed alternative for remedial action at the Site is summarized below:

1. Partial excavation, segregation, and disposal of backfill debris material (graphite anodes, gray sludge) from the shoreline area and under the dock. The approximate extent of this excavation is shown in Figure 3 of Appendix B.

2. Installation of a vertical barrier to separate the remaining backfill debris material from the Hylebos Waterway and to prevent the discharge of contaminated water into the Hylebos Waterway via seep. PRI Northwest Inc., shall propose a method to examine the integrity of the vertical barrier after installation. This proposal shall be in the ground water monitoring and the seep(s) plan.

3. Installation of a ground water extraction network and treatment of the contaminated water in Occidental's NPDES permitted ground water treatment plant.

4. Installation of a low permeability asphalt cover on the berm area and grading to divert the storm water runoff from the backfill debris area.

5. Placement of restrictive covenant on the property deed limiting the Site's future use to industrial activities.

6. Monitoring ground water wells and seeps into the Hylebos Waterway for 30 years, semiannually.

References

Ecology Files 1980-1992.

Ecology & Environment, Special Study Report, May 1990.

Commencement Bay Nearshore/Tideflats, Record of Decision (ROD), EPA Region 10, September 1989.

Source Control Strategy, Commencement Bay, Nearshore/Tideflats Superfund Site, EPA region 10, May 1992.

Site Investigation Reports Dated June 14, 1994 and December 20, 1994.

Screening-Level Feasibility Study Dated November 28, 1994.

Correspondence dated April 10, 1995 from HartCrowser to Ecology.

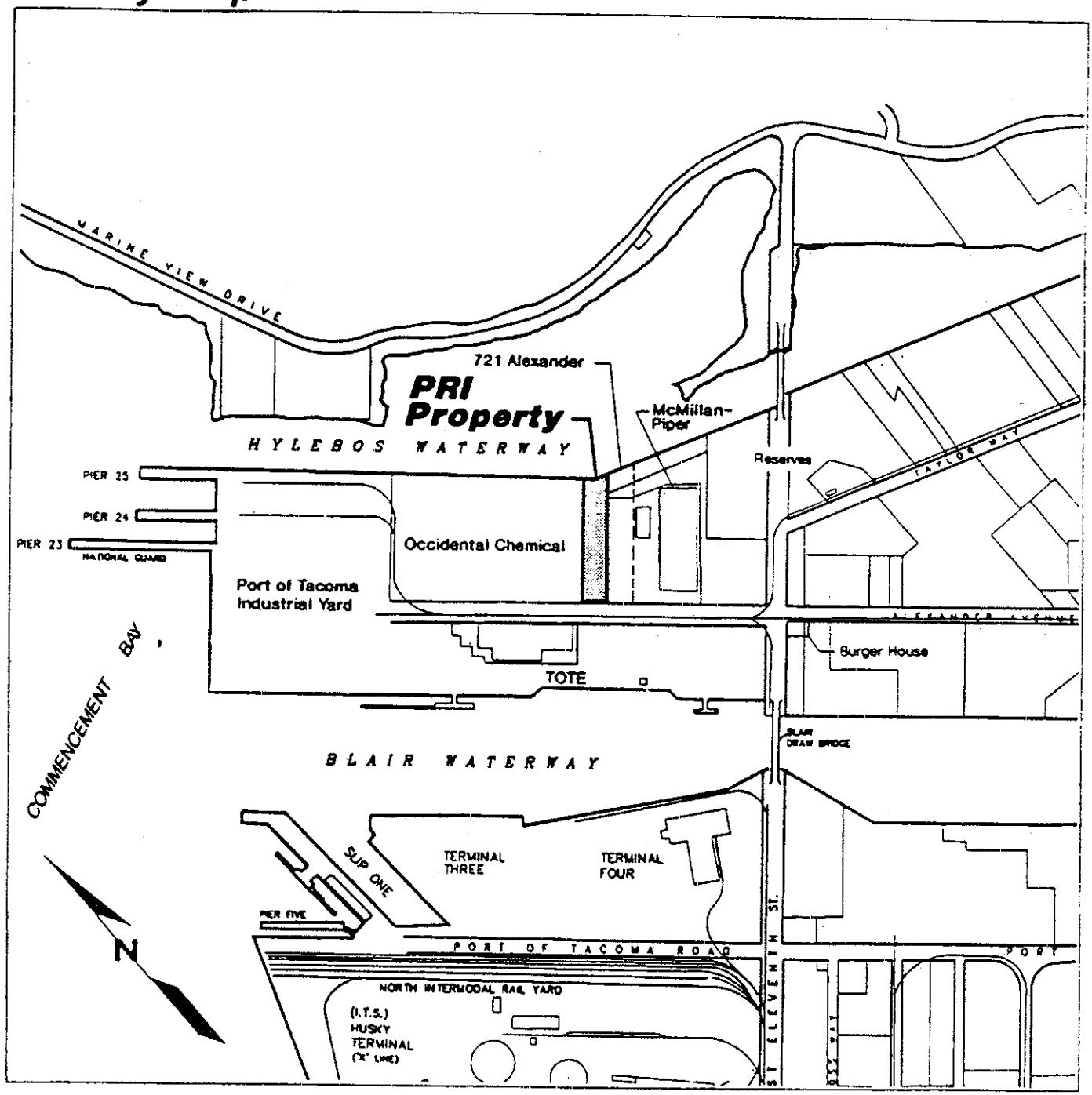
APPENDIX B

Figure 1: Site location.

Figure 2: Location of backfill debris, ground water monitoring wells, and seep into the Hylebos Waterway.

Figure 3: Berm area and conceptual remediation.

Vicinity Map



0 1200 2400

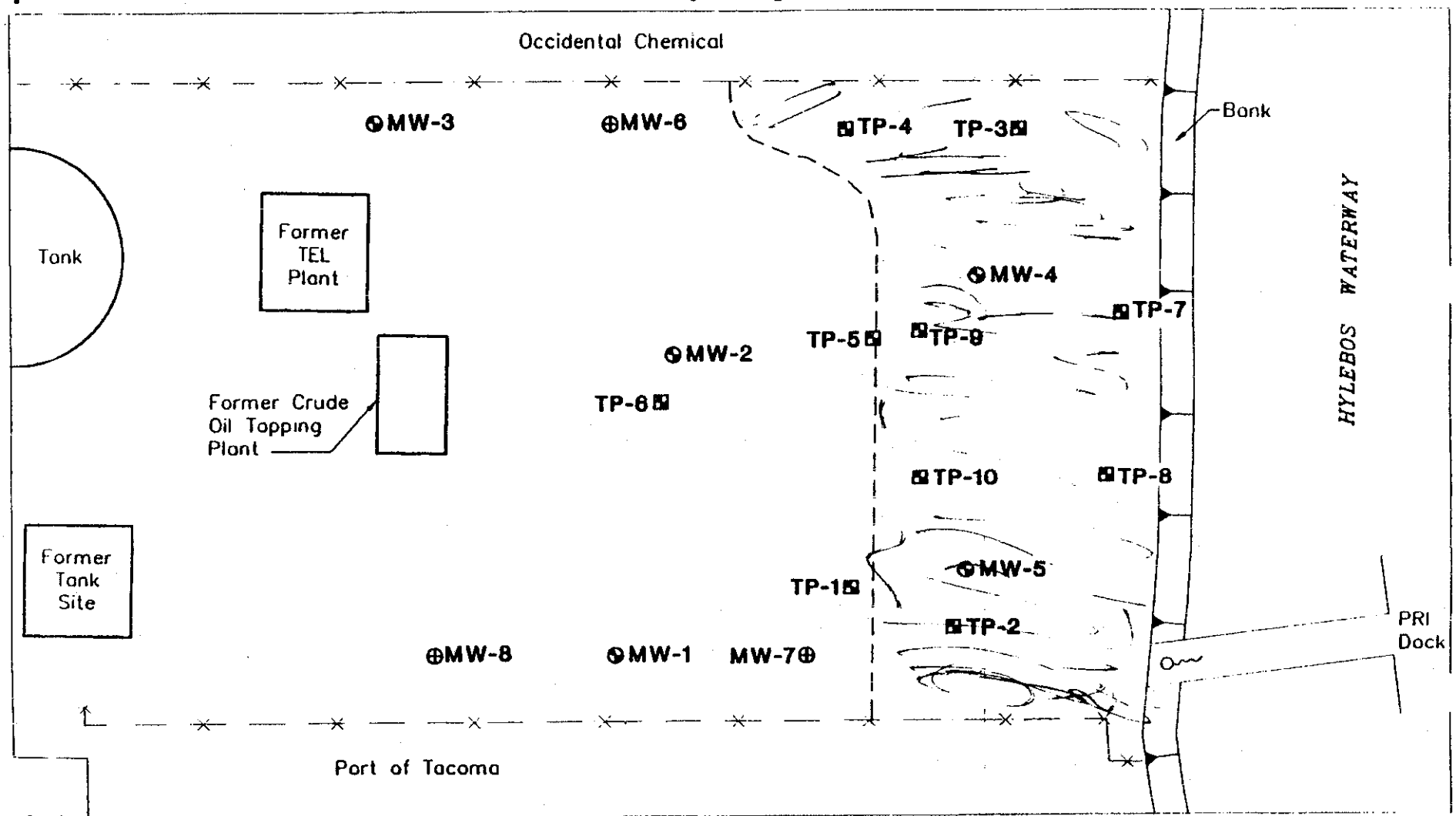
Scale in Feet

HARTCROWSER

J-3712-07 12/94

Figure 1

Exploration Plan - PRI Tacoma Property



Exploration Location and Number (Installation Date)

- MW-3 — Monitoring Well (January 1994)
- TP-6 — Test Pit (January 1994)
- MW-6 — Monitoring Well (October 1994)
- Groundwater Seep
- Property Boundary Fence
- Approximate Extent of Backfill Debris Material on Berm Area

N

0 50 100

Scale in Feet

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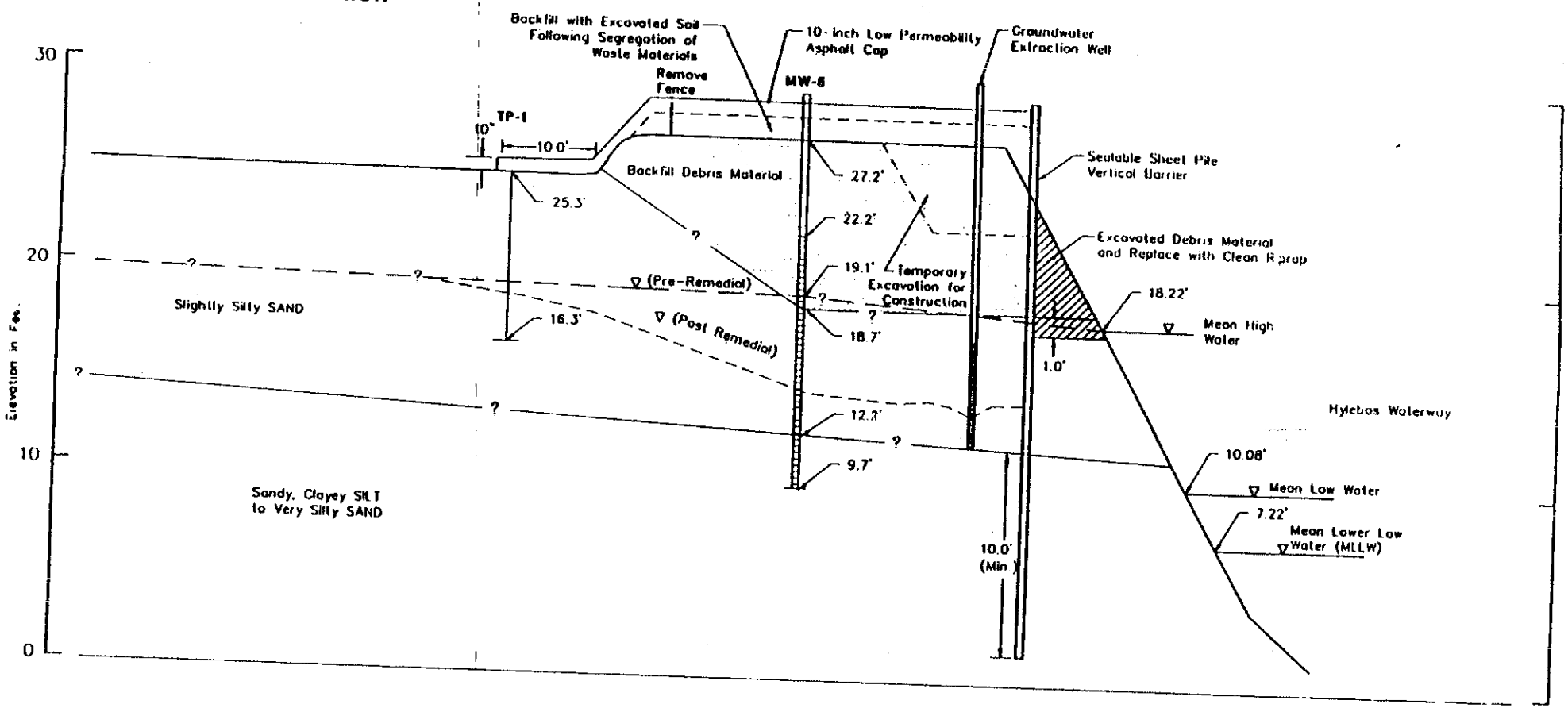
Figure 2

Berm Area Conceptual Remediation Cross Section
Southeast Cross Section



Southeast Cross Section D 4 | 6

Horizontal Scale in Feet
0 10 20
0 5 10
Vertical Scale in Feet
Vertical Exaggeration x 2

Note: Reference Elevation Datum = City of Tacoma (Port of Tacoma Datum + 7.22 feet)

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Figure 6

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