

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

SOLIDUS CORPORATION, a Washington corporation,

Plaintiff,

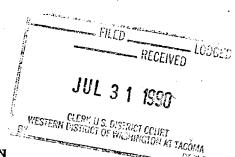
vs.

CHEMICAL PROCESSORS, INC., a Washington corporation, and DONALD E. OLINE and ALBA M. OLINE, a marital community,

Defendants.

NO. C88-637T

PRETRIAL ORDER



I. JURISDICTION

Plaintiff contends as follows: This court has jurisdiction over this action under § 113(b) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendment and Reauthorization Act of 1986, 42 U.S.C. § 90601 et. seq., 90613(b). This action is a controversy arising under CERCLA as amended.

The court has jurisdiction over this action pursuant to 28 U.S.C. § 1331 because this is a civil action which arises under the constitutional laws of the United States.

The court has jurisdiction over pendent state law claims pleaded in the "Complaint for Cost of Response Under CERCLA,

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Declaratory Judgment, Damages and Restitution" (hereafter the "Complaint") pursuant to the doctrine of pendent jurisdiction.

Defendant denies that Plaintiff has a CERCLA claim and therefore denies that this court has jurisdiction.

II. ADMITTED FACTS

- Solidus Corporation is a Washington company which owns and rents land in Tacoma, Washington. Solidus' President is Mr. Glenn R. Tegen.
- 2. In 1981 Solidus bought an approximately 1 acre parcel of land at 1701 Alexander Avenue in the "Tideflats" industrial area in Tacoma, Washington. (The property in question will be referred to in this case as "Parcel A"). The land was sold to Solidus by Defendants Donald and Alba Oline. The price was \$100,000.00. Solidus paid \$50,000.00 by check. A Note, secured by a Deed of Trust on the property requiring payments of \$700.00 a month and bearing an interest rate of 12 percent covered the remainder of the purchase price. About \$20,000.00 of the purchase price remains unpaid.
- 3. Defendants Donald and Alba Oline acquired Parcel A from Educators Manufacturing Company in January, 1969. At that time, the site was unoccupied.
- 4. Defendants Oline rented the property to Mr. Bruce
 Smith. Mr. Smith operated the facility on Parcel A under various
 names including Aero Oil and Acology Oil. Mr. Smith installed
 several tanks and a boiler and commenced a waste oil storage and

recycling operation on Parcel A. Mr. Smith constructed an earthen pond on Parcel A into which he allowed oil to be dumped.

Defendants Oline were aware of Mr. Smith's operations.

- 5. In 1973 a Washington corporation called Puget Sound Industrial Petroleum leased Parcel A from the Olines. Puget Sound Industrial Petroleum, Inc. ("PSIP") purchased the plant and equipment formerly operated by Mr. Smith and operated a waste oil storage and reclamation business on Parcel A. PSIP did not allow oil to be dumped in the pond on Parcel A.
- 6. In 1973, the officers and directors in PSIP included Mr. Stuart Springer, his wife, his mother-in-law, and a family friend. Beginning in 1974 through PSIP's dissolution in 1976, the officers and directors in PSIP included Mr. Springer, Mr. Ronald West, Mr. Newton Clark, III, and Mr. Marv Lennington. Mr. West at that time was President and majority shareholder in Chemical Processors, Inc. Mr. Clark at that time was Vice-President and shareholder in Chemical Processors, Inc. PSIP was acquired by Chem Pro of Oregon. Owners/Officers of Chem Pro of Oregon included Mr. Ron West, Mr. Stuart Springer, and Newton Clark III.
- 7. In October, 1975, Chemical Processors, Inc. (Chempro) began operating an oil storage and reclamation business on Parcel A formerly owned by Chem Pro of Oregon and PSIP. Chempro operated a used oil storage and reclamation business on Parcel A or a part thereof thereafter.
- 8. Chempro leased Parcel A from Defendants Oline from January 1, 1976 through December 31, 1981.

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In 1981 when Solidus purchased Parcel A, Chempro was operating a used oil storage and reclamation business and a hazardous waste storage and treatment business on the property. After negotiations in 1981 and 1982, Solidus and Chempro signed a lease of the property November 23, 1982. The term of the lease ran from January 1, 1982 to December 31, 1984 and with a two year extension through December 31, 1986.

- In 1982 Chempro purchased Parcel B as well as property 10. to the northwest of Parcel B known as Parcel C.
- In 1976 Congress passed the Resource Conservation 11. Recovery Act ("RCRA") which required the EPA to identify and regulate the management of hazardous waste. RCRA contemplates that facilities that manage hazardous waste, known as treatment, storage or disposal facilities or "TSD" facilities, obtain Recognizing that not all TSD facilities in the U.S. could be permitted immediately, Congress provided that existing facilities could obtain "interim status" and continue to operate without a final permit.
- Chempro obtained interim status for the TSD facility located on Parcel A in 1980. Primary authority for enforcing RCRA in the State of Washington subsequently was transferred from the EPA to the Department of Ecology for the State of Washington.
- In 1976 Chempro obtained a group of large rectangular 13. open top steel tanks from the Boeing Company and set them up on the site on an asphalt pad placed by Chempro on the north end of

the site. From 1977 through December 1986, these tanks were used to store and treat liquid chemical wastes. The chemicals received included acids, caustics, and metal-bearing waste. The chemicals received included wastes classified as "hazardous waste" under RCRA and under U.S. Environmental Protection Agency regulations and under Washington State Department of Ecology regulations.

Chempro's records indicate the volume of waste managed at Chempro's Tacoma facility a portion of which was located on Parcel A.

- 14. Chempro suffered spills or releases of hazardous waste in the course of its waste storage, treatment and management operations. Documents maintained by Ecology and Chempro disclose the amount of these spills.
- 15. Chempro submitted a closure plan for Parcel A in June, 1986 and began closure of the facilities on Parcel A in October, 1986. The first step in closing the TSD unit on Parcel A was the removal of the contents of the tanks, which consisted primarily of sludges.
- 16. In May 1987, Chempro and Solidus entered into an access agreement, pursuant to which Chempro agreed to complete the cleanup and closure of Parcel A, as well as conduct a monitoring program.
- 17. In the access agreement, Chempro agreed to remove its visually contaminated soils from Parcel A and to close the TSD unit. The access agreement provided for a phased cleanup, with the cleanup of the oil side occurring first.

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18. In January 1987 some metals contamination was present on the surface of Parcel A and soil stained with oil was visible on the surface of Parcel A.

19. The Department of Ecology has concluded that Parcel A has not yet been clean closed. The Department of Ecology has advised Chempro, if it cannot establish clean closure of Parcel A, a post-closure permit will be required.

20. Solidus did not have any operations of its own on Parcel A.

III. FACTS NOT ADMITTED BUT NOT CONTESTED

The Plaintiff alleges the following facts, which Defendants are not prepared to admit but do not contest:

1. Chempro operated the oil reclamation and storage business on Parcel A from October 1975, through 1986. According to records obtained from Chempro, from 1976 through 1986 Chempro received, managed and stored on the site waste oil/water and liquid chemical waste, classified as RCRA hazardous wastes because they were listed by EPA as hazardous wastes or because they possessed characteristics of hazardous waste, including that they contained chrome or were caustic or acidic. These wastes were obtained from the aerospace industry (principally from the Boeing Company) and from electroplating firms in the region.

The Defendants allege the following facts which Plaintiffs are not prepared to admit but do not contest:

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Following the October, 1985 spill, Ecology issued an order to Chempro requiring improvements to the Tacoma TSD Because the lease with Solidus was due to expire at the end of 1986 and required Chempro to remove all structures and improvements on Parcel A and close the facility in accordance with applicable state and federal law, it made no sense to construct improvements on Parcel A. Thus Chempro advised Ecology of its intent to replace the Parcel A facility with a new facility on Ecology advised Chempro that the new containment area and replacement tanks on Parcel C satisfied the order. then constructed a facility on Parcel C to replace the TSD unit on Parcel A.

FACTUAL CONTENTIONS IV.

The Plaintiff contends as follows:

- Defendants Oline owned Parcel A at the time that the activities of the Olines' tenants, including Mr. Smith, PSIP and Chempro, led to the site's becoming contaminated with oil and These activities took place with the hazardous substances. Olines' permission and, through payment of rent, worked to the Olines' benefit.
- At the time the plant and equipment assets on Parcel A were sold to PSIP in 1973 Defendants Oline were in charge of the The Olines remained in charge of the facility from some time in 1972 or 1973 until May 1973, when Mr. Stuart Springer and PSIP took over the operation.

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3. While initially PSIP was controlled by Mr. Springer, by 1974 the management of PSIP had been integrated with Chempro's then existing oil reclamation business.

- 4. In 1975 a "Sale of Assets" between Chem Pro of Oregon, Inc. and Chemical Processors, Inc. occurred without consideration and merely formalized Chemical Processors, Inc.'s control over the Tacoma plant on Parcel A. During Chempro's control over the facility, spills and leaks occurred which along with sloppy housekeeping practices resulted in the facility becoming contaminated with oil and hazardous substances. During that time Chempro operated a used oil storage and reclamation business on Parcel A and operated a liquid hazardous waste treatment and storage operation on Parcel A.
- through 1982, Chempro received 14,491,406 gallons of hazardous chemical waste at the site for handling, treatment and storage.

 The wastes included acids, caustics and metal-bearing wastes.

 From 1982 through 1986 (after EPA regulations took effect) Chempro reported managing 109,291,970 pounds of hazardous chemical waste at the site by handling, treatment and storing that waste.

 Chempro estimated that about 75 percent of the liquid chemical hazardous waste managed at the site contained metals such as lead and chromium. Remaining wastes were considered hazardous waste because of extreme acidity or alkalinity (i.e. ph less than 2 or greater than 12.5). Parcel A was contaminated with these materials and hazardous substances when Chempro's lease ended.

6. Solidus' President, Mr. Glenn Tegen, knew at the time he purchased Parcel A that Mr. Smith had recycled oil on the property and had stored used oil in a pond on the property.

- 7. Solidus Corporation purchased Parcel A in 1981.
 Solidus' President understood before he purchased the parcel that the oil pond was cleaned up by Chempro.
 - 8. In 1978 Chempro reported a spill of chromic acid.
- 9. In June 1981, Chempro suffered a spill of about 3,000 gallons of nitric/chromic acid.
- 10. In October 1985, a fiberglass tank on Parcel A ruptured, causing the spill of about 10,096 gallons of nitric acid containing chromium. After this incident, the Department of Ecology issued a formal order to Chempro requiring Chempro to make certain improvements to its Tacoma facility.
- 11. A site survey performed by a contractor for Solidus Corporation in January 1987, revealed extensive contamination of the surface of the site with a number of metals including cadmium, copper, nickel, chromium, lead and zinc as well as with oil and a variety of organic chemicals. Extensive analysis of soil and water samples obtained from Parcel A by consultants Chempro retained in 1987 indicated a wide spread of presence of metals such as lead, chromium, cadmium and zinc as well as a variety of organic chemicals.

Parcel A when the lease between Solidus and Chempro expired

December 31, 1986. Chempro performed clean up on the site after
that time under an "Access Agreement" between the parties but has
still failed to close the site under Department of Ecology and
U.S. Environmental Protection Agency Regulations. Oil and
hazardous substances contributed by Chempro and other of
defendants Olines' tenants remains on the site.

13. Chempro failed to provide "an acknowledgment" from Ecology or EPA that Chempro's facility on Parcel A has been closed "in accordance with the applicable state and federal laws and regulations" as required by the Solidus/Chempro lease.

Chempro has not offered or agreed to indemnify Solidus against all costs and expenses Solidus may incur as a result of Chempro's failure to achieve "clean closure" in the opinion of the Department of Ecology or against Ecology's requirement that "post-closure care" be provided on Parcel A.

- 14. Chempro failed to acquire and keep in force during the term of the Solidus/Chempro lease and during the two year extension a policy of environmental impairment coverage naming Solidus as an additional insured.
- 15. In 1988 and 1989 the Department of Ecology determined that some chrome and other waste remained on Parcel A and that material was imported to the site by Chempro.

 According to records obtained from Chempro, from 1976 through 1986

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Chempro received, managed and stored 4,920,469 gallons of waste oil/water on the site. Chempro also handled 123,783,376 gallons of liquid chemical waste, classified as RCRA hazardous wastes because they were listed by EPA as hazardous wastes or because they possessed characteristics of hazardous waste, including that they contained chrome or were caustic or acidic, on the site from 1977 through 1986. These wastes were obtained from the aerospace industry (principally from the Boeing Company) and from electroplating firms in the region.

- provide remedial action and plans to require work under a "post-closure permit" at the site. The contamination on-site which remains of concern to Ecology include the constituents of waste brought by Chempro to the site. To date Chempro has not closed the site or indemnified or held Solidus harmless as the lease requires.
- with CERCLA, has had the value of Parcel A reduced and has lost a permit which was on the property. The permit which Solidus lost had an economic value which can be estimated. The permit was lost to Solidus because Chempro constructed a replacement facility on Parcel C. Chempro did not ask or receive Solidus' permission to use the Parcel A permit in this way. Chempro provided no consideration to Solidus in exchange for removing the permit from Parcel A to Parcel C.

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Defendant Chempro contends as follows:

- Under the direction of Ecology, PSIP filled in the oil pond created by Bruce Smith on Parcel A.
- 2. In October 1975, Chempro purchased from Chem Pro of Oregon the assets of the used oil storage and reclamation business on Parcel A formerly owned by PSIP.
- 3. In early 1976 Chempro placed an asphalt pad on the north half of Parcel A, installed several large rectangular steel tanks on the asphalt and began storing and treating acid and caustic wastes and wastes containing heavy metals. The tank area was enclosed within a concrete berm. Chempro also installed treatment and storage equipment on Parcel B.
- 4. In 1982 Chempro purchased Parcel B as well as property to the northwest of Parcel B, known as Parcel C.
- 5. In 1985 Chempro made the improvements to its Tacoma facility under the supervision and to the satisfaction of the Department of Ecology.
- 6. Chempro could not complete the clean up of Parcel A by December 31, 1986, because the only facility in the region to which Chempro could transport these waste materials, located at Arlington, Oregon, refused to accept sludges due to uncertainty regarding proposed EPA regulations.
- 7. Because Chempro recognized closure of Parcel A could not be completed by the time the lease expired on December 31, Chempro representatives arranged to meet with Glenn Tegen, the

President of Solidus to discuss an extension of the lease. The lease provided that Chempro could hold over from month-to-month at the then applicable rental rates with the consent of Solidus. A meeting was held on December 4, 1986 at Chempro's offices at which Mr. Tegen consented to Chempro's holding over until closure could be accomplished. Solidus confirmed this agreement by letter dated December 30, 1986 which set out the 1987 monthly rent. Despite this agreement, Solidus locked Chempro out of Parcel A on January 2, 1987.

- 8. Without Chempro's knowledge, Solidus entered into a scheme with one of Chempro's competitors, Northwest EnviroServices, Inc. ("NW Enviro") to force Chempro to close its Tacoma operation so that Solidus and NW Enviro could operate a hazardous waste management facility on Parcel A. Solidus' actions in agreeing to extend the lease and then locking Chempro out of Parcel A were intended to further that scheme. Solidus waited until NW Enviro had filed suit against Chempro seeking an injunction closing Chempro's entire Tacoma operation before signing the access agreement.
- 9. Chempro removed visually contaminated surface soils on the oil side. In doing so, Chempro penetrated a layer of clean fill beneath the surface and discovered additional oil contamination resulting from the old oil pond that had been used by Bruce Smith.

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10. Although not responsible for this contamination,
Chempro removed contaminated soil to ground water. With
Department of Ecology and Solidus' approval, Chempro then lined
the excavation with an impermeable liner, filled the liner with
clean fill and covered the fill material with an impermeable liner.

- 11. Chempro then completed closure of the TSD unit on Parcel A. Chempro's intention was and remains to clean close this unit. Chempro is continuing to work with Ecology to accomplish clean closure of Parcel A.
- Chempro must establish it has removed wastes it managed on the site to background levels. Establishing background is complicated by the fact that Parcel A was filled (by predecessors to Chempro) with auto body fluff and lime sludge, both of which contain metals identical to those found in wastes managed by Chempro. Chempro has prepared a statistical evaluation to distinguish background levels from contamination caused by Chempro.
- 13. The contamination on Parcel A poses no threat to human health or the environment. Removal of contamination resulting from hazardous waste management operations is mandated under RCRA regulations. Although no regulations require cleanup of oil contamination on Parcel A, the Department of Ecology has the discretion to order further cleanup of oil. No removal or remedial action on Parcel A is or was ever required under CERCLA.

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Were not caused by the actions of Chempro and were not necessary to respond to a release of hazardous substances on the property. Had Solidus abided by its agreement to allow Chempro to hold over on Parcel A until the facility could be cleaned and closed, Solidus would not have incurred any costs with respect to the property.

The Defendants Donald and Alba Oline contend as follows:

- 1. There is no evidence of oil contamination occurring during the period of ownership of Parcel A by the Olines.
- 2. The site known as Parcel A was not contaminated with oil during the period of ownership by the Olines.
- 3. At no time were hazardous substances treated on the site during the period of ownership by the Olines.
- 4. The site known as Parcel A was not contaminated with hazardous substances during the period of ownership by the Olines.
- 5. The Olines were never in charge of any "facility" under Parcel A.
- 6. Parcel A is not now contaminated with oil or any hazardous waste and does not require further cleanup nor will further cleanup be required in the future.

V. ISSUES OF LAW

1. Whether Defendants Oline were "owners" of a "facility" at the time of the disposal of "hazardous substances" within the meaning of §§ 101 and 107 of CERCLA, 42 U.S.C. 9601, 9607?

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2. Whether Chemical Processors, Inc. operated a facility (i.e., Parcel A) at the time of disposal of hazardous substances within the meaning of CERCLA?

- 3. Whether Chempro by contract, agreement or otherwise arranged for the disposal or treatment or arranged for the transport for disposal or treatment of hazardous substances at Parcel "A" within the meaning of CERCLA?
- 4. Whether Chempro accepted hazardous substances for transport to a disposal or treatment facility (i.e., Parcel A) within the meaning of CERCLA?
- 5. Whether there has been a release or threatened release of a hazardous substance from Parcel A and whether that release or threatened release caused Solidus Corporation to incur response costs as those terms are defined in CERCLA?
- 6. Whether costs incurred by Solidus were incurred consistent with the National Contingency Plan?
- 7. Whether the liability under CERCLA of all parties is joint and several?
- 8. Whether the court should issue a declaratory judgment under CERCLA affixing joint and several liability on the respective parties for any future response costs incurred by the United States, the State of Washington, or any other person?
- 9. Whether Chemical Processors, Inc. breached the Solidus/Chempro lease by failing to provide an acknowledgment that the facility had been "closed" under all applicable regulations,

by failing to indemnify and hold Solidus harmless against governmental requirements to clean up Parcel A, for using the property without compliance with laws and regulations relating to oil and hazardous waste, for failing to provide access to the property to Solidus when requested and for failing to remove wastes, equipment and contaminated materials from the site at the time the term of the lease ended.

- 10. Whether Chempro's activities on the site including Chempro's spills of hazardous waste and failure to remove all hazardous wastes constituted unreasonable and unusual abuse and damage constituting waste of the leased premises.
- 11. Whether Chempro operated its facilities on Parcel A in violation of Washington State's laws and regulations concerning hazardous waste facilities, whether Chempro operated negligently on the site, whether Chempro's violations constitute negligence per se and whether Chempro's hazardous waste management on the site constituted an ultra hazardous activity which was miscarried.
- 12. Whether Chempro unjustly enriched itself by removing a permitted status from Parcel A to another location without Solidus' consent to Solidus' injury.
- 13. Whether Chempro and Defendants Oline had control over oil on the site and whether said oil entered waters of the state in violation of RCW 90.48.336.
- 14. Whether Chempro performed all its obligations under the access agreement between Chempro and Solidus.

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- 15. Whether Defendants Oline and Chemical Processors, Inc. must provide contribution and indemnity for Solidus' response costs and liabilities due to Defendants' carrying out of operations on the site for their own gain and benefit.
- 16. Whether Defendants are liable to Solidus Corporation for damages and for equitable relief?
- 17. Whether Solidus waived all breaches of the Chempro Solidus lease, if any, by agreeing to extend the lease beyond its termination date.
- 18. Whether Chempro's performance of the obligation to provide an acknowledgment of closure is excused by the Doctrine of Impossibility of Performance.
- 19. Whether the Doctrine of Ultra Hazardous Activity is applicable to hazardous waste management operations.
 - 20. Whether CERCLA is applicable to Parcel A.
- 21. Whether Solidus is entitled to be indemnified for costs incurred in connection with Parcel A.
- 22. Whether costs incurred by Solidus with respect to Parcel A were caused by the actions of Chempro and were necessary to respond to a release of hazardous substances on the property.
- 23. Whether costs or damages incurred by Solidus were caused by the conduct or negligence of persons who were not employees or agents of Chempro and over whom Chempro had no control.
- 24. Whether Solidus should be denied equitable relief and damages under the Doctrine of Unclean Hands.

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- 25. Whether Solidus has failed to mitigate its damages.
- 26. Whether Solidus is estopped from recovering costs or damages.
- 27. Whether Solidus is liable to Chempro under CERCLA, contribution and indemnity, and/or in implied contract for costs incurred by Chempro in cleaning up contamination of Parcel A not caused by Chempro.
- 28. Whether Solidus entered an oral agreement to extend the lease beyond December 31, 1986.
- 29. Whether Solidus is liable to Chempro for damages resulting from Solidus' unlawfully denying Chempro access to Parcel A after January 2, 1987, in breach of the oral agreement to extend the lease.
- 30. Whether Chempro is entitled to set off costs and damages for which Plaintiff is liable against any costs and damages Plaintiff may be entitled to recover.
- 31. If the court finds that CERCLA applies to Parcel A, whether Chempro has incurred response costs for which Solidus is liable in contribution.
- 32. Whether Solidus is liable to Chempro for costs of cleaning up contamination of Parcel A under the doctrine of implied contract or quantum meruit.
- 33. Whether Solidus may claim compensation or reimbursement for damages caused by its own actions including its own negligence and/or assumption of risk..

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VI. EXPERT WITNESSES

- (a) Each party shall be limited to one expert witness on each issue requiring an expert.
- (b) The names and addresses of the expert witnesses to be used by each party at the trial and the issue upon which each will testify is:
 - 1. On behalf of Plaintiff:

Mr. Frank Monahan Roy F. Weston, Inc. 201 Elliot Avenue West, Suite 500 Seattle, Washington 98119

Mr. Monahan will testify as both a fact and expert witness. As an expert witness, Mr. Monahan will testify to his evaluation of data obtained concerning contamination on Parcel A and whether the site is closed under laws and regulations, what the consequences of failing to "close" the site may be, whether the site will require remedial action under CERCLA or CERCLA's state law equivalent, the estimated costs, what actions will be needed on site and estimated costs of such actions.

Mr. James E. Bruya, Ph.D. Friedman & Bruya 3008-B 16th Avenue West Seattle, Washington 98119

Mr. Bruya will testify to the chemical constituents of waste oil from 1970 through 1986 and based on evaluation of contamination found on Parcel A whether it appears the waste oil management activities on Parcel A could have contributed the hazardous substances found there.

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Mr. Ed Greer Greer-Patterson & Associates, Inc. 7522 West 28th Street Tacoma, Washington 98466

Mr. Greer is an MAI appraiser. Mr. Greer will testify to the present fair market value of Parcel A assuming that no contamination problem exists under Parcel A. Mr. Greer will testify based on his expert opinion as to the effect the contamination on Parcel A has on Mr. Greer's analysis of the fair market value of the land.

Mr. David S. Jarrett, A.S.A. Jarrett & Associates 13802 N.E. 26th Place Bellevue, Washington 98005

Mr. Jarrett will testify as to his expert opinion of the value of the interim status permit for hazardous waste storage on Parcel A based on the loss of revenues from two stream waste which could have been managed using that interim status for that property.

2. On behalf of Defendant Chempro:

Dennis Goldman 18912 North Creek Parkway Bothell, Washington 98011

Mr. Goldman will testify as both a factual and an expert witness regarding the extent of contamination of Parcel A, the cleanup and closure of Parcel A, the history of the oil ponds in the area and the absence of a threat to human health or the environment from Parcel A.

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Mel Miller 2203 Airport Way South, Suite 400 Seattle, Washington 98134

Mr. Miller will testify as both a factual and an expert witness regarding the extent of contamination on Parcel A, the cleanup and the closure of Parcel A, and the presence of a layer of clean fill between the surface of the site and subsurface oil contamination.

Keith Riely 121 Stewart Street Seattle, Washington 98101

Mr. Riely is an MAI appraiser who may testify as an expert witness regarding the value of Parcel A.

Gary Roats 614 First Avenue North Seattle, Washington 98109

Mr. Roats is a certified public accountant and will give his expert opinion regarding an estimation of damages caused by the loss of interim status of Parcel A.

William Miner Chicago, Illinois

Mr. Miner will testify regarding RCRA permits.

VII. OTHER WITNESSES

The names and addresses of witnesses other than experts, to be used by each party at the time of trial and the general testimony of each are:

On behalf of the Plaintiff:

Mr. Glenn R. Tegen President, Solidus Corporation P.O. Box 817 Tacoma, Washington 98401

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Mr. Tegen will testify to Solidus Corporation's purchase of Parcel A in 1981, Solidus' negotiations and agreement on a lease with Chempro, Solidus' request for access to the property and conduct through contractors of investigations to access the extent of contamination caused by Chempro spills and activities on Parcel A. He will also testify to the incurrence of costs of removing waste, monitoring and assessing the potential that hazardous substances were present on Parcel A, that Solidus had no operations on Parcel A, that Solidus lost permitted "interim status" on Parcel A and lost business opportunities which required interim status or a permit and on related subjects.

Mr. Stuart G. Springer P.O. Box 2921 Riyadh Saudi Arabia 11461

Will testify by way of deposition. Mr. Springer will testify as to the operations of Puget Sound Industrial Petroleum in Parcel A from 1973 forward, through arrangements and relationships between PSIP and Chempro, Inc., concerning a "sale of assets" agreement including the price listed on the document and the lack of consideration provided for the sale, and regarding work done by Mr. Springer for Chemical Processors, Inc.

Mr. Jim Fleischman, Jr. 154 Harvard Avenue Fircrest, Washington 98466

Will testify by way of Deposition. Mr. Fleischman will testify to operations and facilities on Parcel A conducted by PSIP

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and by Chempro. Mr. Fleischman will testify concerning waste materials obtained by PSIP and Chempro. Mr. Fleischman will testify to the transition between Chempro and PSIP.

Mr. Dennis Clancy 11631 Waddell Creek Road S.W. Olympia, Washington 98502

Mr. Clancy may testify to operations on Parcel A conducted by PSIP and by Chempro. Mr. Clancy will testify that United Drain Oil supplied waste oil to the plant on Parcel A. Mr. Clancy will testify to the transition between Chempro and PSIP.

Mr. Donald Oline (adverse witness) 289 South Bank Road Montesano, Washington 98563

Mr. Oline will testify to Defendant Oline's acquisition and rental of Parcel A and to activities on-site at acquisition and afterwards.

Mr. Jim Oberlander
Department of Ecology
M.S.: PV-21
Olympia, Washington 98504

Mr. Oberlander will testify to his inspection notes and observations, in the capacity of a Department of Ecology employee, of PSIP and Chempro's oil and hazardous waste management operations on Parcel A. Mr. Oberlander will testify to the presence of oil on part of the site, to activities which led to the covering and filling of the pond area, and to spills, discharges and leaks of oil and hazardous substances on Parcel A.

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Mr. Thompson will testify to his inspection of Chemical Processors' facility in September, 1980, to his notes prepared recording observations of that inspection and to photographs taken at the site at the time.

Mr. Joe Nessel 14532 Ashworth North Seattle, Washington

Mr. Nessel will testify to site investigations and the results of analysis of samples obtained on Parcel A by Northwest EnviroService, Inc. as a contractor to Solidus Corporation, in January and February, 1987.

Mr. David Polivka
Department of Ecology
M.S.: PV-21
Olympia, Washington 98504

Mr. Polivka will testify that the Department of Ecology never approved a closure plan presented by Chempro for Parcel A. Mr. Polivka will testify that based on Ecology's review of the data "post-closure" care is required. Mr. Polivka will testify that post-closure care will entail a permit naming Solidus as a permittee and will entail requirements such as assessment of contamination on the site and installation of remedial measures.

Mr. Vincent Lascko, P.E. Applied Geotechnology, Inc. 300 - 120th Avenue N.E. Bellevue, Washington 98009

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Mr. Lascko will testify to work performed by AGI in making an assessment of and monitoring contamination of Parcel A.

Ms. Barbara Trejo 4350 - 150th Avenue N.E. Redmond, Washington 98052-5301

Ms. Trejo will testify to her observations, notes, photographs and work as an employee of Applied Geotechnology, Inc. on the site as Solidus' on-site representative in 1987.

Mr. Chares T. Ellingson Pacific Groundwater Group 2377 Eastlake Avenue E., #200 Seattle, Washington 98102

Mr. Ellingson will testify to work performed at and around the site and invoices rendered when Mr. Ellingson was employed by Hart Crower & Associates, Inc.

Julie Pederson 14209 South "C" Street, #C-1 Tacoma, Washington 98444

Ms. Pederson will testify as to the addition of the figures provided by Chempro and the Department of Ecology regarding the amount of wastes brought to Parcel A by Chempro.

2. On behalf of the Defendant:

Michael P. Keller 2203 Airport Way South, Suite 400 Seattle, Washington 98134

Mr. Keller will testify regarding the history of Chempro's operations on Parcel A, compliance with the Chempro/Solidus lease, negotiations with Solidus to extend the lease, and conditions on Parcel A as of the time the lease terminated.

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EISENHOWER, CARLSON, NEWLANDS, REHA, HENRIOT & QUINN ATTORNEYS-AT-LAW 1200 FIRST INTERSTATE PLAZA TACOMA, WASHINGTON 98402 TELEPHONE 206—572-4500 FAX 206—272-5732

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Defendants' Exhibits.

A-51 Graphic depiction of Smith's pond, filling of Parcel A and groundwater flow.

A-52 -A-56 Cross-sections of Parcel A.

IX. ACTION BY THE COURT

- (a) This case is scheduled for trial before a jury on August 20, 1990 at 9:00 a.m.
- (b) The trial brief shall be submitted to the court on or before August 3, 1990.
- (c) Jury Instructions requested by either party shall be submitted to the court on or before August 3, 1990.
- (d) Suggested questions of either party to be asked of the jury by the court on voir dire shall be submitted to the court on or before August 3, 1990.

This order has been approved by the parties as evidenced by the signatures of their counsel. Upon entry of this order, the pleadings pass out of the case. This order shall not be amended

PRETRIAL ORDER - 36 4697A/1416-005 EISENHOWER, CARLSON, NEWLANDS, REHA, HENRIOT & QUINN ATTORNEYS-AT-LAW

1200 FIRST INTERSTATE PLAZA TACOMA, WASHINGTON 98402
TELEPHONE 206—572-4500
FAX 206—272-5732

1	except by order of the court pursuant to agreement of the parties
2	or to prevent manifest injustice.
3	DATED AT TACOMA, WASHINGTON this day of July, 1990.
4	DATED AT TACOMA, WASHINGTON CALL
5	
	JACK E. TANNER, JUDGE
6	Form Approved:
7	Valles Wonthowall
8	CHARLES K DOUTHWAITE
9	Of Attorneys for Plaintiff Solidus Corporation
10	
11	Mal I. Dyn (Per fix instruction received 14:53 on 7/31/90)
12	WILLIAM D. MAER Of Attorneys for Defendant
13	Chemical Processors, Inc.
	Charles Back wante (agricul by telegone)
14	
15	Of Attorneys for Defendants Donald and Alba Oline
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EISENHOWER, CARLSON, NEWLANDS, REHA, HENRIOT & QUINN ATTORNEYS-AT-LAW 1200 FIRST INTERSTATE PLAZA TACOMA, WASHINGTON 98402 TELEPHONE 206—572-4500 FAX 206—272-5732 LAW OFFICES OF

JAMES F. HE VRIOT
H. EUGENE F JINN
RONALD A. ROBERTS
S. ALAN WEAVER
RICHARD D. TURNER
RICHARD A. JESSUP
DONALD L. ANDERSON
JAMES M. HUSHAGEN
KATHRYN J. NELSON
CHARLES K. DOUTHWAITE
V
ROBERT G. CASEY

EISENHOWER, CARLSON, NEWLYNDS, KEHA, HENRIOT & QUINN

1200 First Interstate Plaza 1201 Pacific Avenue Tacoma, Washington 98402 (206) 572-4500 FAX (206) 272-5732 1920 One Union Square 600 University Street Seattle, Washington 98101 (206) 382-1830 FAX (206) 382-1920 TERRENCE J. DONAHUE
MARK J. DYNAN
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REBECCA D. CRAG
RICHARD D. WALL
KERRY E. MANN
GUY J. STERNAL
STEPHEN G. SHEEHY
GIBBY M. STRATTON
OF COUNSEL
C. JOHN NEWLANDS
STANLEY P. WAGNER, JE

PLEASE REPLY TO TACOMA OFFICE

August 2, 1990

Mr. David Polivka Department of Ecology MS: PV-21 Olympia, WA 98504

Re: Solidus Corporation v. Chemical Processors, Inc. and

Donald and Alba Oline USDC W.D. Wa. C88-637T

Dear Mr. Polivka:

This letter is to advise you that you have been listed as a witness in the federal court trial of <u>Solidus Corporation v.</u>

<u>Chemical Processors, Inc. and Donald and Alba Oline</u>. You have been listed as a witness by the undersigned, counsel for Solidus Corporation, the plaintiff in this case.

We are writing to advise you that the trial in this case has been scheduled by the court to begin Monday, August 20, 1990. While the possibility of an out of court settlement still remains, we would appreciate it if you would contact this office (you may call me or Mark Dynan or Deidre Turnbull) to let us know of your availability during the week of August 20.

We will try to schedule your testimony so as to reduce the inconvenience to you. A subpoena will be provided from the Clerk of the Court requiring your attendance at trial.

The trial will be to the Honorable Jack E. Tanner, Judge, in Room 352 of the United States Courthouse at 11th and A Streets in Tacoma, Washington. We will be in further contact with you to describe the areas planned for your testimony. A copy of the Pretrial Order entered in this case is provided for background information.

Please call if you have any questions.

Very truly yours,

Charles K. Douthwaite

CKD: dmt Enc. 4699e/1416-5

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

SOLIDUS CORPORATION, a Washington corporation,

Plaintiff,

vs.

CHEMICAL PROCESSORS, INC., a Washington corporation, and DONALD E. OLINE and ALBA M. OLINE, a marital community,

Defendants.

C88-637T NO.

PRETRIAL ORDER

JURISDICTION

Plaintiff contends as follows: This court has jurisdiction over this action under § 113(b) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendment and Reauthorization Act of 1986, 42 U.S.C. § 90601 et. seq., 90613(b). This action is a controversy arising under CERCLA as amended.

The court has jurisdiction over this action pursuant to 28 U.S.C. § 1331 because this is a civil action which arises under the constitutional laws of the United States.

The court has jurisdiction over pendent state law claims pleaded in the "Complaint for Cost of Response Under CERCLA,

Declaratory Judgment, Damages and Restitution" (hereafter the "Complaint") pursuant to the doctrine of pendent jurisdiction.

Defendant denies that Plaintiff has a CERCLA claim and therefore denies that this court has jurisdiction.

II. ADMITTED FACTS

- Solidus Corporation is a Washington company which owns and rents land in Tacoma, Washington. Solidus' President is Mr. Glenn R. Tegen.
- of land at 1701 Alexander Avenue in the "Tideflats" industrial area in Tacoma, Washington. (The property in question will be referred to in this case as "Parcel A"). The land was sold to Solidus by Defendants Donald and Alba Oline. The price was \$100,000.00. Solidus paid \$50,000.00 by check. A Note, secured by a Deed of Trust on the property requiring payments of \$700.00 a month and bearing an interest rate of 12 percent covered the remainder of the purchase price. About \$20,000.00 of the purchase price remains unpaid.
- 3. Defendants Donald and Alba Oline acquired Parcel A from Educators Manufacturing Company in January, 1969. At that time, the site was unoccupied.
- 4. Defendants Oline rented the property to Mr. Bruce Smith. Mr. Smith operated the facility on Parcel A under various names including Aero Oil and Acology Oil. Mr. Smith installed several tanks and a boiler and commenced a waste oil storage and

recycling operation on Parcel A. Mr. Smith constructed an earthen pond on Parcel A into which he allowed oil to be dumped.

Defendants Oline were aware of Mr. Smith's operations.

- 5. In 1973 a Washington corporation called Puget Sound Industrial Petroleum leased Parcel A from the Olines. Puget Sound Industrial Petroleum, Inc. ("PSIP") purchased the plant and equipment formerly operated by Mr. Smith and operated a waste oil storage and reclamation business on Parcel A. PSIP did not allow oil to be dumped in the pond on Parcel A.
- 6. In 1973, the officers and directors in PSIP included Mr. Stuart Springer, his wife, his mother-in-law, and a family friend. Beginning in 1974 through PSIP's dissolution in 1976, the officers and directors in PSIP included Mr. Springer, Mr. Ronald West, Mr. Newton Clark, III, and Mr. Marv Lennington. Mr. West at that time was President and majority shareholder in Chemical Processors, Inc. Mr. Clark at that time was Vice-President and shareholder in Chemical Processors, Inc. PSIP was acquired by Chem Pro of Oregon. Owners/Officers of Chem Pro of Oregon included Mr. Ron West, Mr. Stuart Springer, and Newton Clark III.
- 7. In October, 1975, Chemical Processors, Inc. (Chempro) began operating an oil storage and reclamation business on Parcel A formerly owned by Chem Pro of Oregon and PSIP. Chempro operated a used oil storage and reclamation business on Parcel A or a part thereof thereafter.
- 8. Chempro leased Parcel A from Defendants Oline from January 1, 1976 through December 31, 1981.

After negotiations in 1981 and 1982, Solidus and Chempro signed a lease of the property November 23, 1982. The term of the lease ran from January 1, 1982 to December 31, 1984 and with a two year extension through December 31, 1986.

10. In 1982 Chempro purchased Parcel B as well as property to the northwest of Parcel B known as Parcel C.

11. In 1976 Congress passed the Resource Conservation

operating a used oil storage and reclamation business and a

hazardous waste storage and treatment business on the property.

In 1981 when Solidus purchased Parcel A, Chempro was

- Recovery Act ("RCRA") which required the EPA to identify and regulate the management of hazardous waste. RCRA contemplates that facilities that manage hazardous waste, known as treatment, storage or disposal facilities or "TSD" facilities, obtain permits. Recognizing that not all TSD facilities in the U.S. could be permitted immediately, Congress provided that existing facilities could obtain "interim status" and continue to operate without a final permit.
- 12. Chempro obtained interim status for the TSD facility located on Parcel A in 1980. Primary authority for enforcing RCRA in the State of Washington subsequently was transferred from the EPA to the Department of Ecology for the State of Washington.
- 13. In 1976 Chempro obtained a group of large rectangular open top steel tanks from the Boeing Company and set them up on the site on an asphalt pad placed by Chempro on the north end of

the site. From 1977 through December 1986, these tanks were used to store and treat liquid chemical wastes. The chemicals received included acids, caustics, and metal-bearing waste. The chemicals received included wastes classified as "hazardous waste" under RCRA and under U.S. Environmental Protection Agency regulations and under Washington State Department of Ecology regulations. Chempro's records indicate the volume of waste managed at Chempro's Tacoma facility a portion of which was located on Parcel A.

- 14. Chempro suffered spills or releases of hazardous waste in the course of its waste storage, treatment and management operations. Documents maintained by Ecology and Chempro disclose the amount of these spills.
- 15. Chempro submitted a closure plan for Parcel A in June, 1986 and began closure of the facilities on Parcel A in October, 1986. The first step in closing the TSD unit on Parcel A was the removal of the contents of the tanks, which consisted primarily of sludges.
- 16. In May 1987, Chempro and Solidus entered into an access agreement, pursuant to which Chempro agreed to complete the cleanup and closure of Parcel A, as well as conduct a monitoring program.
- 17. In the access agreement, Chempro agreed to remove its visually contaminated soils from Parcel A and to close the TSD unit. The access agreement provided for a phased cleanup, with the cleanup of the oil side occurring first.

18. In January 1987 some metals contamination was present on the surface of Parcel A and soil stained with oil was visible on the surface of Parcel A.

- 19. The Department of Ecology has concluded that Parcel A has not yet been clean closed. The Department of Ecology has advised Chempro, if it cannot establish clean closure of Parcel A, a post-closure permit will be required.
- 20. Solidus did not have any operations of its own on Parcel A.

III. FACTS NOT ADMITTED BUT NOT CONTESTED

The Plaintiff alleges the following facts, which Defendants are not prepared to admit but do not contest:

1. Chempro operated the oil reclamation and storage business on Parcel A from October 1975, through 1986. According to records obtained from Chempro, from 1976 through 1986 Chempro received, managed and stored on the site waste oil/water and liquid chemical waste, classified as RCRA hazardous wastes because they were listed by EPA as hazardous wastes or because they possessed characteristics of hazardous waste, including that they contained chrome or were caustic or acidic. These wastes were obtained from the aerospace industry (principally from the Boeing Company) and from electroplating firms in the region.

The Defendants allege the following facts which Plaintiffs are not prepared to admit but do not contest:

order to Chempro requiring improvements to the Tacoma TSD facility. Because the lease with Solidus was due to expire at the end of 1986 and required Chempro to remove all structures and improvements on Parcel A and close the facility in accordance with applicable state and federal law, it made no sense to construct improvements on Parcel A. Thus Chempro advised Ecology of its intent to replace the Parcel A facility with a new facility on Parcel C. Ecology advised Chempro that the new containment area and replacement tanks on Parcel C satisfied the order. Chempro then constructed a facility on Parcel C to replace the TSD unit on Parcel A.

IV. FACTUAL CONTENTIONS

The Plaintiff contends as follows:

- 1. Defendants Oline owned Parcel A at the time that the activities of the Olines' tenants, including Mr. Smith, PSIP and Chempro, led to the site's becoming contaminated with oil and hazardous substances. These activities took place with the Olines' permission and, through payment of rent, worked to the Olines' benefit.
- 2. At the time the plant and equipment assets on Parcel A were sold to PSIP in 1973 Defendants Oline were in charge of the facility. The Olines remained in charge of the facility from some time in 1972 or 1973 until May 1973, when Mr. Stuart Springer and PSIP took over the operation.

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3. While initially PSIP was controlled by Mr. Springer, by 1974 the management of PSIP had been integrated with Chempro's then existing oil reclamation business.

- 4. In 1975 a "Sale of Assets" between Chem Pro of Oregon, Inc. and Chemical Processors, Inc. occurred without consideration and merely formalized Chemical Processors, Inc.'s control over the Tacoma plant on Parcel A. During Chempro's control over the facility, spills and leaks occurred which along with sloppy housekeeping practices resulted in the facility becoming contaminated with oil and hazardous substances. During that time Chempro operated a used oil storage and reclamation business on Parcel A and operated a liquid hazardous waste treatment and storage operation on Parcel A.
- through 1982, Chempro received 14,491,406 gallons of hazardous chemical waste at the site for handling, treatment and storage. The wastes included acids, caustics and metal-bearing wastes. From 1982 through 1986 (after EPA regulations took effect) Chempro reported managing 109,291,970 pounds of hazardous chemical waste at the site by handling, treatment and storing that waste. Chempro estimated that about 75 percent of the liquid chemical hazardous waste managed at the site contained metals such as lead and chromium. Remaining wastes were considered hazardous waste because of extreme acidity or alkalinity (i.e. ph less than 2 or greater than 12.5). Parcel A was contaminated with these materials and hazardous substances when Chempro's lease ended.

- 6. Solidus' President, Mr. Glenn Tegen, knew at the time he purchased Parcel A that Mr. Smith had recycled oil on the property and had stored used oil in a pond on the property.
- 7. Solidus Corporation purchased Parcel A in 1981.
 Solidus' President understood before he purchased the parcel that
 the oil pond was cleaned up by Chempro.
 - 8. In 1978 Chempro reported a spill of chromic acid.
- 9. In June 1981, Chempro suffered a spill of about 3,000 gallons of nitric/chromic acid.
- 10. In October 1985, a fiberglass tank on Parcel A ruptured, causing the spill of about 10,096 gallons of nitric acid containing chromium. After this incident, the Department of Ecology issued a formal order to Chempro requiring Chempro to make certain improvements to its Tacoma facility.
- 11. A site survey performed by a contractor for Solidus Corporation in January 1987, revealed extensive contamination of the surface of the site with a number of metals including cadmium, copper, nickel, chromium, lead and zinc as well as with oil and a variety of organic chemicals. Extensive analysis of soil and water samples obtained from Parcel A by consultants Chempro retained in 1987 indicated a wide spread of presence of metals such as lead, chromium, cadmium and zinc as well as a variety of organic chemicals.

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Chempro failed to clean up and close its facility on Parcel A when the lease between Solidus and Chempro expired December 31, 1986. Chempro performed clean up on the site after that time under an "Access Agreement" between the parties but has still failed to close the site under Department of Ecology and U.S. Environmental Protection Agency Regulations. Oil and hazardous substances contributed by Chempro and other of defendants Olines' tenants remains on the site.

Chempro failed to provide "an acknowledgment" from Ecology or EPA that Chempro's facility on Parcel A has been closed "in accordance with the applicable state and federal laws and regulations" as required by the Solidus/Chempro lease.

Chempro has not offered or agreed to indemnify Solidus against all costs and expenses Solidus may incur as a result of Chempro's failure to achieve "clean closure" in the opinion of the Department of Ecology or against Ecology's requirement that "post-closure care" be provided on Parcel A.

- Chempro failed to acquire and keep in force during the 14. term of the Solidus/Chempro lease and during the two year extension a policy of environmental impairment coverage naming Solidus as an additional insured.
- In 1988 and 1989 the Department of Ecology determined 15. that some chrome and other waste remained on Parcel A and that material was imported to the site by Chempro.

According to records obtained from Chempro, from 1976 through 1986

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Chempro received, managed and stored 4,920,469 gallons of waste oil/water on the site. Chempro also handled 123,783,376 gallons of liquid chemical waste, classified as RCRA hazardous wastes because they were listed by EPA as hazardous wastes or because they possessed characteristics of hazardous waste, including that they contained chrome or were caustic or acidic, on the site from 1977 through 1986. These wastes were obtained from the aerospace industry (principally from the Boeing Company) and from electroplating firms in the region.

- provide remedial action and plans to require work under a "post-closure permit" at the site. The contamination on-site which remains of concern to Ecology include the constituents of waste brought by Chempro to the site. To date Chempro has not closed the site or indemnified or held Solidus harmless as the lease requires.
- with CERCLA, has had the value of Parcel A reduced and has lost a permit which was on the property. The permit which Solidus lost had an economic value which can be estimated. The permit was lost to Solidus because Chempro constructed a replacement facility on Parcel C. Chempro did not ask or receive Solidus' permission to use the Parcel A permit in this way. Chempro provided no consideration to Solidus in exchange for removing the permit from Parcel A to Parcel C.

pond created by Bruce Smith on Parcel A.

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In October 1975, Chempro purchased from Chem Pro of 2. Oregon the assets of the used oil storage and reclamation business on Parcel A formerly owned by PSIP.

Under the direction of Ecology, PSIP filled in the oil

- In early 1976 Chempro placed an asphalt pad on the north half of Parcel A, installed several large rectangular steel tanks on the asphalt and began storing and treating acid and caustic wastes and wastes containing heavy metals. The tank area was enclosed within a concrete berm. Chempro also installed treatment and storage equipment on Parcel B.
- In 1982 Chempro purchased Parcel B as well as property to the northwest of Parcel B, known as Parcel C.
- In 1985 Chempro made the improvements to its Tacoma facility under the supervision and to the satisfaction of the Department of Ecology.
- Chempro could not complete the clean up of Parcel A by December 31, 1986, because the only facility in the region to which Chempro could transport these waste materials, located at Arlington, Oregon, refused to accept sludges due to uncertainty regarding proposed EPA regulations.
- Because Chempro recognized closure of Parcel A could 7. not be completed by the time the lease expired on December 31, Chempro representatives arranged to meet with Glenn Tegen, the

President of Solidus to discuss an extension of the lease. The lease provided that Chempro could hold over from month-to-month at the then applicable rental rates with the consent of Solidus. A meeting was held on December 4, 1986 at Chempro's offices at which Mr. Tegen consented to Chempro's holding over until closure could be accomplished. Solidus confirmed this agreement by letter dated December 30, 1986 which set out the 1987 monthly rent. Despite this agreement, Solidus locked Chempro out of Parcel A on January 2, 1987.

- 8. Without Chempro's knowledge, Solidus entered into a scheme with one of Chempro's competitors, Northwest EnviroServices, Inc. ("NW Enviro") to force Chempro to close its Tacoma operation so that Solidus and NW Enviro could operate a hazardous waste management facility on Parcel A. Solidus' actions in agreeing to extend the lease and then locking Chempro out of Parcel A were intended to further that scheme. Solidus waited until NW Enviro had filed suit against Chempro seeking an injunction closing Chempro's entire Tacoma operation before signing the access agreement.
- 9. Chempro removed visually contaminated surface soils on the oil side. In doing so, Chempro penetrated a layer of clean fill beneath the surface and discovered additional oil contamination resulting from the old oil pond that had been used by Bruce Smith.

10. Although not responsible for this contamination,
Chempro removed contaminated soil to ground water. With
Department of Ecology and Solidus' approval, Chempro then lined
the excavation with an impermeable liner, filled the liner with
clean fill and covered the fill material with an impermeable liner.

- 11. Chempro then completed closure of the TSD unit on Parcel A. Chempro's intention was and remains to clean close this unit. Chempro is continuing to work with Ecology to accomplish clean closure of Parcel A.
- Chempro must establish it has removed wastes it managed on the site to background levels. Establishing background is complicated by the fact that Parcel A was filled (by predecessors to Chempro) with auto body fluff and lime sludge, both of which contain metals identical to those found in wastes managed by Chempro. Chempro has prepared a statistical evaluation to distinguish background levels from contamination caused by Chempro.
- health or the environment. Removal of contamination resulting from hazardous waste management operations is mandated under RCRA regulations. Although no regulations require cleanup of oil contamination on Parcel A, the Department of Ecology has the discretion to order further cleanup of oil. No removal or remedial action on Parcel A is or was ever required under CERCLA.

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14. Any costs incurred by Solidus with respect to Parcel A were not caused by the actions of Chempro and were not necessary to respond to a release of hazardous substances on the property. Had Solidus abided by its agreement to allow Chempro to hold over on Parcel A until the facility could be cleaned and closed, Solidus would not have incurred any costs with respect to the property.

The Defendants Donald and Alba Oline contend as follows:

- 1. There is no evidence of oil contamination occurring during the period of ownership of Parcel A by the Olines.
- 2. The site known as Parcel A was not contaminated with oil during the period of ownership by the Olines.
- 3. At no time were hazardous substances treated on the site during the period of ownership by the Olines.
- 4. The site known as Parcel A was not contaminated with hazardous substances during the period of ownership by the Olines.
- 5. The Olines were never in charge of any "facility" under Parcel A.
- 6. Parcel A is not now contaminated with oil or any hazardous waste and does not require further cleanup nor will further cleanup be required in the future.

V. <u>ISSUES OF LAW</u>

1. Whether Defendants Oline were "owners" of a "facility" at the time of the disposal of "hazardous substances" within the meaning of §§ 101 and 107 of CERCLA, 42 U.S.C. 9601, 9607?

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2. Whether Chemical Processors, Inc. operated a facility (i.e., Parcel A) at the time of disposal of hazardous substances within the meaning of CERCLA?

- 3. Whether Chempro by contract, agreement or otherwise arranged for the disposal or treatment or arranged for the transport for disposal or treatment of hazardous substances at Parcel "A" within the meaning of CERCLA?
- 4. Whether Chempro accepted hazardous substances for transport to a disposal or treatment facility (i.e., Parcel A) within the meaning of CERCLA?
- 5. Whether there has been a release or threatened release of a hazardous substance from Parcel A and whether that release or threatened release caused Solidus Corporation to incur response costs as those terms are defined in CERCLA?
- 6. Whether costs incurred by Solidus were incurred consistent with the National Contingency Plan?
- 7. Whether the liability under CERCLA of all parties is joint and several?
- 8. Whether the court should issue a declaratory judgment under CERCLA affixing joint and several liability on the respective parties for any future response costs incurred by the United States, the State of Washington, or any other person?
- 9. Whether Chemical Processors, Inc. breached the Solidus/Chempro lease by failing to provide an acknowledgment that the facility had been "closed" under all applicable regulations,

by failing to indemnify and hold Solidus harmless against governmental requirements to clean up Parcel A, for using the property without compliance with laws and regulations relating to oil and hazardous waste, for failing to provide access to the property to Solidus when requested and for failing to remove wastes, equipment and contaminated materials from the site at the time the term of the lease ended.

- 10. Whether Chempro's activities on the site including Chempro's spills of hazardous waste and failure to remove all hazardous wastes constituted unreasonable and unusual abuse and damage constituting waste of the leased premises.
- 11. Whether Chempro operated its facilities on Parcel A in violation of Washington State's laws and regulations concerning hazardous waste facilities, whether Chempro operated negligently on the site, whether Chempro's violations constitute negligence per se and whether Chempro's hazardous waste management on the site constituted an ultra hazardous activity which was miscarried.
- 12. Whether Chempro unjustly enriched itself by removing a permitted status from Parcel A to another location without Solidus' consent to Solidus' injury.
- 13. Whether Chempro and Defendants Oline had control over oil on the site and whether said oil entered waters of the state in violation of RCW 90.48.336.
- 14. Whether Chempro performed all its obligations under the access agreement between Chempro and Solidus.

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- must provide contribution and indemnity for Solidus' response costs and liabilities due to Defendants' carrying out of operations on the site for their own gain and benefit.
- 16. Whether Defendants are liable to Solidus Corporation for damages and for equitable relief?
- 17. Whether Solidus waived all breaches of the Chempro Solidus lease, if any, by agreeing to extend the lease beyond its termination date.
- 18. Whether Chempro's performance of the obligation to provide an acknowledgment of closure is excused by the Doctrine of Impossibility of Performance.
- 19. Whether the Doctrine of Ultra Hazardous Activity is applicable to hazardous waste management operations.
 - 20. Whether CERCLA is applicable to Parcel A.
- 21. Whether Solidus is entitled to be indemnified for costs incurred in connection with Parcel A.
- 22. Whether costs incurred by Solidus with respect to Parcel A were caused by the actions of Chempro and were necessary to respond to a release of hazardous substances on the property.
- 23. Whether costs or damages incurred by Solidus were caused by the conduct or negligence of persons who were not employees or agents of Chempro and over whom Chempro had no control.
- 24. Whether Solidus should be denied equitable relief and damages under the Doctrine of Unclean Hands.

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- 25. Whether Solidus has failed to mitigate its damages.
- 26. Whether Solidus is estopped from recovering costs or damages.
- 27. Whether Solidus is liable to Chempro under CERCLA, contribution and indemnity, and/or in implied contract for costs incurred by Chempro in cleaning up contamination of Parcel A not caused by Chempro.
- 28. Whether Solidus entered an oral agreement to extend the lease beyond December 31, 1986.
- 29. Whether Solidus is liable to Chempro for damages resulting from Solidus' unlawfully denying Chempro access to Parcel A after January 2, 1987, in breach of the oral agreement to extend the lease.
- 30. Whether Chempro is entitled to set off costs and damages for which Plaintiff is liable against any costs and damages Plaintiff may be entitled to recover.
- 31. If the court finds that CERCLA applies to Parcel A, whether Chempro has incurred response costs for which Solidus is liable in contribution.
- 32. Whether Solidus is liable to Chempro for costs of cleaning up contamination of Parcel A under the doctrine of implied contract or quantum meruit.
- 33. Whether Solidus may claim compensation or reimbursement for damages caused by its own actions including its own negligence and/or assumption of risk..

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Each party shall be limited to one expert witness on each issue requiring an expert. The names and addresses of the expert witnesses to be

- (b) used by each party at the trial and the issue upon which each will testify is:
 - On behalf of Plaintiff:

Mr. Frank Monahan Roy F. Weston, Inc. 201 Elliot Avenue West, Suite 500 Seattle, Washington 98119

Mr. Monahan will testify as both a fact and expert witness. As an expert witness, Mr. Monahan will testify to his evaluation of data obtained concerning contamination on Parcel A and whether the site is closed under laws and regulations, what the consequences of failing to "close" the site may be, whether the site will require remedial action under CERCLA or CERCLA's state law equivalent, the estimated costs, what actions will be needed on site and estimated costs of such actions.

> Mr. James E. Bruya, Ph.D. Friedman & Bruya 3008-B 16th Avenue West Seattle, Washington 98119

Mr. Bruya will testify to the chemical constituents of waste oil from 1970 through 1986 and based on evaluation of contamination found on Parcel A whether it appears the waste oil management activities on Parcel A could have contributed the hazardous substances found there.

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Mr. Ed Greer Greer-Patterson & Associates, Inc. 7522 West 28th Street Tacoma, Washington 98466

Mr. Greer is an MAI appraiser. Mr. Greer will testify to the present fair market value of Parcel A assuming that no contamination problem exists under Parcel A. Mr. Greer will testify based on his expert opinion as to the effect the contamination on Parcel A has on Mr. Greer's analysis of the fair market value of the land.

Mr. David S. Jarrett, A.S.A. Jarrett & Associates 13802 N.E. 26th Place Bellevue, Washington 98005

Mr. Jarrett will testify as to his expert opinion of the value of the interim status permit for hazardous waste storage on Parcel A based on the loss of revenues from two stream waste which could have been managed using that interim status for that property.

On behalf of Defendant Chempro:

Dennis Goldman 18912 North Creek Parkway Bothell, Washington 98011

Mr. Goldman will testify as both a factual and an expert witness regarding the extent of contamination of Parcel A, the cleanup and closure of Parcel A, the history of the oil ponds in the area and the absence of a threat to human health or the environment from Parcel A.

Mr. Miller will testify as both a factual and an expert witness regarding the extent of contamination on Parcel A, the cleanup and the closure of Parcel A, and the presence of a layer of clean fill between the surface of the site and subsurface oil contamination.

Keith Riely 121 Stewart Street Seattle, Washington 98101

Mr. Riely is an MAI appraiser who may testify as an expert witness regarding the value of Parcel A.

Gary Roats 614 First Avenue North Seattle, Washington 98109

Mr. Roats is a certified public accountant and will give his expert opinion regarding an estimation of damages caused by the loss of interim status of Parcel A.

William Miner Chicago, Illinois

Mr. Miner will testify regarding RCRA permits.

VII. OTHER WITNESSES

The names and addresses of witnesses other than experts, to be used by each party at the time of trial and the general testimony of each are:

1. On behalf of the Plaintiff:

Mr. Glenn R. Tegen President, Solidus Corporation P.O. Box 817 Tacoma, Washington 98401

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PRETRIAL ORDER - 22 4697A/1416-005 EISENHOWER, CARLSON, NEWLANDS, REHA, HENRIOT & QUINN ATTORNEYS-AT-LAW 1200 FIRST INTERSTATE PLAZA TACOMA, WASHINGTON 98402 TELEPHONE 206—572-4500

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Mr. Tegen will testify to Solidus Corporation's purchase of Parcel A in 1981, Solidus' negotiations and agreement on a lease with Chempro, Solidus' request for access to the property and conduct through contractors of investigations to access the extent of contamination caused by Chempro spills and activities on Parcel A. He will also testify to the incurrence of costs of removing waste, monitoring and assessing the potential that hazardous substances were present on Parcel A, that Solidus had no operations on Parcel A, that Solidus lost permitted "interim status" on Parcel A and lost business opportunities which required interim status or a permit and on related subjects.

Mr. Stuart G. Springer P.O. Box 2921 Riyadh Saudi Arabia 11461

Will testify by way of deposition. Mr. Springer will testify as to the operations of Puget Sound Industrial Petroleum in Parcel A from 1973 forward, through arrangements and relationships between PSIP and Chempro, Inc., concerning a "sale of assets" agreement including the price listed on the document and the lack of consideration provided for the sale, and regarding work done by Mr. Springer for Chemical Processors, Inc.

Mr. Jim Fleischman, Jr. 154 Harvard Avenue Fircrest, Washington 98466

Will testify by way of Deposition. Mr. Fleischman will testify to operations and facilities on Parcel A conducted by PSIP

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and by Chempro. Mr. Fleischman will testify concerning waste materials obtained by PSIP and Chempro. Mr. Fleischman will testify to the transition between Chempro and PSIP.

> Mr. Dennis Clancy 11631 Waddell Creek Road S.W. Olympia, Washington 98502

Mr. Clancy may testify to operations on Parcel A conducted by PSIP and by Chempro. Mr. Clancy will testify that United Drain Oil supplied waste oil to the plant on Parcel A. Mr. Clancy will testify to the transition between Chempro and PSIP.

> Mr. Donald Oline (adverse witness) 289 South Bank Road Montesano, Washington 98563

Mr. Oline will testify to Defendant Oline's acquisition and rental of Parcel A and to activities on-site at acquisition and afterwards.

> Mr. Jim Oberlander Department of Ecology M.S.: PV-21 Olympia, Washington 98504

Mr. Oberlander will testify to his inspection notes and observations, in the capacity of a Department of Ecology employee, of PSIP and Chempro's oil and hazardous waste management operations on Parcel A. Mr. Oberlander will testify to the presence of oil on part of the site, to activities which led to the covering and filling of the pond area, and to spills, discharges and leaks of oil and hazardous substances on Parcel A.

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Mr. Neal Thompson U.S. Environmental Protection Agency Region 10 1200 Sixth Avenue Seattle, Washington 98101

Mr. Thompson will testify to his inspection of Chemical Processors' facility in September, 1980, to his notes prepared recording observations of that inspection and to photographs taken at the site at the time.

Mr. Joe Nessel 14532 Ashworth North Seattle, Washington

Mr. Nessel will testify to site investigations and the results of analysis of samples obtained on Parcel A by Northwest EnviroService, Inc. as a contractor to Solidus Corporation, in January and February, 1987.

Mr. David Polivka Department of Ecology M.S.: PV-21 Olympia, Washington 98504

Mr. Polivka will testify that the Department of Ecology never approved a closure plan presented by Chempro for Parcel A. Mr. Polivka will testify that based on Ecology's review of the data "post-closure" care is required. Mr. Polivka will testify that post-closure care will entail a permit naming Solidus as a permittee and will entail requirements such as assessment of contamination on the site and installation of remedial measures.

Mr. Vincent Lascko, P.E. Applied Geotechnology, Inc. 300 - 120th Avenue N.E. Bellevue, Washington 98009 Mr. Lascko will testify to work performed by AGI in making an assessment of and monitoring contamination of Parcel A.

Ms. Barbara Trejo 4350 - 150th Avenue N.E. Redmond, Washington 98052-5301

Ms. Trejo will testify to her observations, notes, photographs and work as an employee of Applied Geotechnology, Inc. on the site as Solidus' on-site representative in 1987.

Mr. Chares T. Ellingson Pacific Groundwater Group 2377 Eastlake Avenue E., #200 Seattle, Washington 98102

Mr. Ellingson will testify to work performed at and around the site and invoices rendered when Mr. Ellingson was employed by Hart Crower & Associates, Inc.

> Julie Pederson 14209 South "C" Street, #C-1 Tacoma, Washington 98444

Ms. Pederson will testify as to the addition of the figures provided by Chempro and the Department of Ecology regarding the amount of wastes brought to Parcel A by Chempro.

2. On behalf of the Defendant:

Michael P. Keller 2203 Airport Way South, Suite 400 Seattle, Washington 98134

Mr. Keller will testify regarding the history of Chempro's operations on Parcel A, compliance with the Chempro/Solidus lease, negotiations with Solidus to extend the lease, and conditions on Parcel A as of the time the lease terminated.

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A-51 Graphic depiction of Smith's pond, filling of Parcel A and groundwater flow.

A-52 -A-56 Cross-sections of Parcel A.

Defendants' Exhibits.

IX. ACTION BY THE COURT

- (a) This case is scheduled for trial before a jury on August 20, 1990 at 9:00 a.m.
- (b) The trial brief shall be submitted to the court on or before August 3, 1990.
- (c) Jury Instructions requested by either party shall be submitted to the court on or before August 3, 1990.
- (d) Suggested questions of either party to be asked of the jury by the court on voir dire shall be submitted to the court on or before August 3, 1990.

This order has been approved by the parties as evidenced by the signatures of their counsel. Upon entry of this order, the pleadings pass out of the case. This order shall not be amended

PRETRIAL ORDER - 36 4697A/1416-005 EISENHOWER, CARLSON, NEWLANDS.
REHA, HENRIOT & QUINN
ATTORNEYSAT-LAW
1200 FIRST INTERSTATE PLAZA
TACOMA, WASHINGTON 98402
TELEPHONE 206—572-4500
FAX 206—272-5732

J	except by order of the court pursuant to agreement of the parties
2	or to prevent manifest injustice.
3	DATED AT TACOMA, WASHINGTON this day of July, 1990.
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6	JACK E. TANNER, JUDGE
7	Form Approved:
8	Charles Wonthwall
9	CHARLES K. DOUTHWAITE Of Attorneys for Plaintiff
10	Solidus Corporation
11	Mal I. Dyn (Par for instruction racioned 14:53 on 7/31/90)
12	WILLIAM D. MAER Of Attorneys for Defendant
13	Chemical Processors, Inc.
14	Clustestheuth waite (aproved by telegone)
15	JOHN T. ROBSON W / Of Attorneys for Defendants
16	Donald and Alba Oline
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DEPT. OF ECOLOGY

KELLER ROHRBACK

Law Offices
Suite 3200
1201 Third Avenue
Seattle, Washington 98101-3029
(206) 623-1900

MEMORANDUM OF TRANSMITTAL

Date:

November 26, 1990

To:

Marty Werner

Department of Ecology

Re:

Chempro/Solidus

Enclosed:

Findings of Fact and Conclusions of Law

KELLER ROHRBACK

By Lew Bourn

ENTERED ON NOV 1 9 1990

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CLERK HIS DISTRICT COURT WESTERN DISTRICT OF WASHINGTON AT TAUGUSA

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

AT TACOMA

LLPY FOR YOUR

SOLIDUS CORPORATION, a Washington corporation, Plaintiff,

C88-637T NO.

-vs-

CHEMICAL PROCESSORS, INC., a Washington corporation, and DONALD E. OLINE and ALBA M. OLINE, a marital community,

FINDINGS OF FACT AND

CONCLUSIONS OF LAW-

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THIS MATTER came on for trial before the above-entitled Court sitting without a jury. Both plaintiff and defendants being represented by counsel. The court having granted plaintiff's motion for partial summary judgment on the issue of Chempro's liability for breach of lease, this matter proceeded to trial on the issue of damages under the lease,

Defendant.

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FINDINGS OF FACT

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private Corporation is Plaintiff Solidus 1. corporation organized under the laws of Washington. Solidus

20 21 president is Glenn R. Tegen.

and the CERCLA claims.

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Washington.

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Defendant Chemical Processors, Inc., (hereafter CHEMPRO) is a private corporation organized under the laws of

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Washington and maintains its headquarters in Seattle,

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- 3. Defendants Donald and Alba Oline, at all times relevant hereto, comprised a marital community, and reside in the Western District of Washington.
- 4. This dispute concerns an approximately one acre parcel of land which will be called Parcel A. Parcel A is located at 1701 Alexander Avenue, Tacoma, Washington.
 - 5. Solidus Corporation presently owns Parcel A.
- 6. Solidus purchased Parcel A in 1981 from Defendants Donald and Alba Oline (hereafter Defendants Oline) for \$100,000.00. \$50,000.00 was paid by check, and a note secured by a deed of trust on the property requiring payments of \$700 a month and bearing an interest rate of 12% covered the remainder of the purchase price.
- 7. Defendants Oline acquired then unoccupied Parcel A from Educators Manufacturing Company in January 1969.
- 8. Defendants Oline leased Parcel A to Mr. Bruce Smith, who operated a waste oil storage and recycling facility on Parcel A under various names including Aero Oil and Ecology Oil.
- 9. In early 1973, Mr. Smith's facility on Parcel A was purchased by Stuart G. Springer of Puget Sound Industrial Petroleum (PSIP). PSIP leased Parcel A from defendants Oline.
- 10. In mid-1973, PSIP began to operate a used petroleum oil storage and recycling business on Parcel A.
 - 11. In 1974, all outstanding shares of stock in PSIP

were transferred to an Oregon corporation known as Chempro of Oregon, Inc. The outstanding shares of Chempro of Oregon, Inc. were, at that time, owned in equal shares by Mr. Springer and Messrs. West, Clark and Lennington.

- 12. Chempro began to make use of the facilities at Parcel A after PSIP's stock was purchased by Chempro of Oregon, Inc. Chempro stored oil in tanks at the facility on Parcel A.
- 13. On October 1, 1975, all of the assets of PSIP were sold to Chempro free and clear of any security interest.
- 14. Chempro leased Parcel A from Defendants Oline from January 1, 1976 through December 31, 1981.
- 15. In 1976, Chempro set up large, open-top steel tanks on Parcel A. From 1977 to 1986, Chempro stored and treated liquid chemical wastes in the steel tanks.
- 16. Chempro was the operator of a chemical waste oil/water management facility at the time of disposal of "hazardous substances" within the meaning of CERCLA!
- 17. The chemicals received for storage and treatment included material classified as "hazardous waste" under the Federal Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq., as amended and under U.S.Environmental Protection Agency regulations and Washington State Department of Ecology Regulations.
 - 18. Between 1977 and 1982, Chempro received 14,491,406

- 19. In June 1981, Chempro suffered a chromic acid spill of approximately 3,000 gallons. In October 1985, Chempro suffered a nitric acid spill of 10,096 gallons. During these spills, metals (principally chrome) were released to the soil.
- 20. In 1987 the presence of metals including chrome, lead, nickel, cadmium, and zinc was documented in the surface soils at Parcel A and in soils at depth.
- 21. Chempro's operations on Parcel A caused these chemicals and metals to be present in the soil on Parcel A.
- 22. In December 1985, Solidus requested access to Parcel A to test for soil contamination after the October 1985 nitric acid spill. Chempro refused access to Solidus for soil testing.
- 23. Chempro indicated that the site would be closed in accordance with a closure plan approved by the Environmental Protection Agency or Department of Ecology.
- 24. In February 1986, Solidus retained the consulting firm of Hart Crowser & Associates to obtain samples of soil and water in the area where the nitric acid spill had occurred.
 - 25. The Solidus/Chempro lease expired December 31, 1986.
- 26. Solidus' President, Glenn R. Tegen, re-entered the facility on January 2, 1987, and ordered Chempro's personnel

to vacate the site.

- 27. In January 1987, thousands of gallons of liquid hazardous waste and sludge remained on-site in open-top tanks.
- 28. A site assessment performed for Solidus at that time by Northwest EnviroService, Inc., and Applied Geotechnology, Inc., documented the presence of hazardous waste in tanks and the contamination of the surface soil.
- 29. Northwest EnviroService, Inc. provided site security and hauled chemical waste from the site for disposal because contaminated run-off threatened to overflow containment.
- 30. Solidus incurred costs totalling \$48,794.94 in the following amounts: \$24,449.45 for Northwest EnviroService's removal of waste and for work during Northwest's January 1987 preliminary assessement; \$14,599.49 for AGI's services in 1987; and \$9,746.00 for the services of Environmental Transport, Inc.
- 31. Solidus spent \$676.30 on cleanup efforts on April 1, 1987, and incurred costs of \$31.16 and \$356.96 for the services of Al Meier Building Centers and Tacoma Screw Products, respectively, on Parcel A between January 30, 1987 and February 3, 1987.
- 32. Chempro and Solidus entered into an "Access Agreement" in May 1987, whereby Chempro agreed to conduct soil and groundwater sampling on Parcel A, to remove asphalt and concrete paving, structures, and visually contaminated soil

from the site to an offsite disposal location, to evaluate sampling results, and to prepare a final site closure/stabilization plan. Solidus agreed to provide access to Parcel A to Chempro to perform the work.

- 33. Chempro started cleanup in May 1987, and worked through November 1987, removing waste, tanks, equipment, concrete and asphalt pads, debris and large amounts of soil from Parcel A.
- 34. Solidus retained Applied Geotechnology (AGI) to provide on-site observation during Chempro's cleanup operation. Solidus incurred \$30,393.62 in costs to AGI for site observation services through December 1987, and closure plan review through January 1988.
- 35. Solidus incurred costs of \$5,191.73 in retaining Roy F. Weston, Inc., for professional services from July 1988 through November 1988.
- 36. The DOE has never approved a closure plan for . Chempro's hazardous waste facility on Parcel A.
- 37. In August 1988, the DOE indicated that it was unable to certify that Parcel A was "clean closed." Ecology invited Chempro to submit a work plan and schedule for further data collection and response in pursuit of clean closure.
- 38. Ecology has concluded that Parcel A has not been clean closed.
 - 39. Ecology has determined that a post-closure permit

- 40. Contamination on the site from oil, or related to "auto fluff" is so intermixed with chemicals traceable to Chempro's operation that differentiation is impossible.
- 41. Contaminated soil and chemical wastes remained onsite after Chempro closed its cleanup operations in 1987.
- 42. The lease between Solidus and Chempro was in effect from January 1, 1982 through December 31, 1986.
- 43. The lease provided for "holding over" after the expiration of the lease term only with the consent of the lessor. Solidus did not consent to have Chempro hold over under the lease.
- 44. There is no evidence that Chempro maintained and kept in force a policy of environmental impairment coverage naming Solidus as an additional insured under paragraph 14 of the lease, or that Chempro provided an acknowledgement of clean closure from EPA or Ecology in lieu of insurance as provided in paragraph 14.
- 45. Paragraph 12 of the lease provided that Chempro would "...indemnify the lessor against all costs and expenses which the lessor incurs as a result of the imposition of any governmental requirements to clean up or remove any such pollution caused by the lessee on the leased premises..."

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- 46. Chempro has not indemnified Solidus against the state's requirements to clean up Parcel A.
- 47. Solidus has received no rent for payment of access fee for Parcel A from January 1988 through the time of trial (August 1990). A reasonable rental, assuming no contamination would be \$2,000.00 per month.
- 48. Solidus retained legal counsel to help Solidus respond to Chempro's contamination from the site when the lease term had expired.

From the foregoing Findings of Fact, the Court now makes the following:

CONCLUSIONS OF LAW

- 1. All Findings of Fact more appropriately termed Conclusions of Law are incorporated as set forth herein.
- 2. This action is a controversy arising under CERCLA. Jurisdiction is vested in this court by Section 113(b) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 42 U.S.C. 9613(b), as amended and pursuant to 28 U.S.C. 1331.
- 3. This court has jurisdiction over state law claims for breach of lease pursuant to the doctrine of pendent jurisdiction.
- 4. Defendants in this matter reside, may be found or have their principal residence in the Western District of Washington and the District Court for the Western District of

- 5. Section 107(a)(2)(B) of CERCLA creates a private cause of action for damages.
- 6. Solidus established a prima facie case of liability in its CERCLA cost recovery action under Section 107 of CERCLA by proving that (1) Parcel A is a "facility" as defined in Section 9601(9); defendant Chemical Processors is a "covered person" subject to liability under Section 9607(a); (3) a release or threatened release of a hazardous substance occurred on Parcel A; and (4) that the release or threatened release caused the plaintiff to incur response costs.
- 7. Defendants Oline are not "responsible persons" within the meaning of CERCLA and are not liable for costs of response.
- 8. Plaintiff Solidus Corporation incurred response costs because of the release or threatened release of hazardous substances on Parcel A.
- 9. Solidus has paid and incurred response costs in investigating and sampling contamination on the site, in providing monitoring and site security and in negotiating for cleanup with Chempro and the Department of Ecology and its attorneys.
- 10. Costs of response include the costs of such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances.

AO 72

11. Defendant Chemical Processors is liable for all costs of response action conducted consistent with the National Contingency Plan in circumstances warranting removal and implemented consistently with 40 CFR 300.65 et seq.

12. The response actions undertaken by Solidus which are consistent with the National Contingency Plan and therefore recoverable as response costs are as follows: Hart Crowser & Associates' investigation, sampling and consulting work (\$19,184.24); Site Monitoring and Assessment work by Applied Geotechnology, Inc. (AGI), and site monitoring, sampling, analysis, assessment, waste removal and site security work performed by Northwest EnviroService, Inc., and Environmental Transport, \$48,794.94); the preparation of a work plan and discussions with Ecology performed by Roy F. Weston, Inc., (\$5,191.73); \$1,064.42 for work done by Solidus, Al Meier Building Centers and Tacoma Screw Products; and \$30,393.62 for work performed by AGI.

Judgments Act, 28 U.S.C. 2201 and 2202, and under Section 113(g)(2) of CERCLA, 42 U.S.C. 9613(g)(2), to enter declaratory judgment on the issue of defendants' liability for cleanup costs incurred in the future with respect to Parcel A.

14. As between Solidus and Chemical Processors,
Defendant Chemical Processors is solely and entirely liable

under the Act for the existence and release of hazardous substances on Parcel A.

- 15. Defendant is solely and entirely responsible for any costs of compliance with a post-closure permit to be issued by the Department of Ecology regarding post-closure care.
- 16. The Solidus/Chemical Processors lease was in effect from January 1, 1982 until December 31, 1986, and constituted a valid and binding written agreement between the parties.
- 17. Chempro breached paragraph 13 by failing to provide a "acknowledgment" that Parcel A had been closed in accord with all applicable federal and state laws and regulations.
- 18. Chempro breached paragraph 12 by failing to hold harmless and defend Solidus against damages which arose from pollution caused by Chempro's activities on Parcel A and by failing to indemnify Solidus against costs and expenses which Solidus incurred to comply with CERCLA and with Ecology's requirements for cleanup on Parcel A.
- 19. Chempro breached paragraph 9 of the lease by failing to provide access onto Parcel A to Solidus in response to Glenn Tegen's request for access after the October 1985 nitric acid spill.
- 20. Solidus is entitled to lost rent calculated at \$2,000.00 per month from January 1988 through August 1990, for breach of the lease, reduced by a \$2,000.00 option payment.
 - 21. The SOlidus/Chempro lease provides that in an action

to enforce the lease, the prevailing party shall be awarded its attorney's fees and costs. Counsel for plaintiff is directed to submit Solidus' claim for attorney and witness fees by post-trial motion and affidavit.

- 22. Judgment shall be entered in favor of Solidus Corporation against Defendant Chemical Processors, Inc., as follows:
 - (a) \$104,628.95 for costs of response.
- (b) \$64,000.00 in lost rent (32 months at \$2,000 per month).
 - (c) Costs as taxed by the clerk.

 DATED this $\frac{\sqrt{2}}{C}$ day of November 1990.

UNITED STATES DISTRICT JUDGE

Jodi Gearon, ERC

CleanCare

3/30/93

Paul Stasch and CleanCare could not agree on salary. They received no stowing recommendations for him.

Now they are going to interview other candidates.

Teven stated that this was a "virgin" site, with no spills or releases. Now their partners are learning that wastes were used as fill on the property.

OSPT. OF FOUR JG

January 18, 1994

Dr. David B. Bartus Chemical Engineer U.S. Environmental Protection Agency, Region 10 1200 Sixth Avenue Seattle, Washington 98101

Subject:

CleanCare Corporation

RFI Work Plan

Dear Dave:

The purpose of this letter is to describe the revisions to the CleanCare Corporation RCRA Facility Investigation (RFI) Work Plan¹ as we discussed. The major difference is the use of a hollow stem auger to complete Tasks 1A and 1B rather than a geological probe device as originally described in the work plan. Schedule revisions are noted as the last item. The letter is formatted to follow the original RFI Work Plan contents.

1) Revised Task 1A - Initial Characterization of the Fill Aquifer.

Objectives. The objectives of Task 1A are to: 1) identify potential fill areas; 2) provide reconnaissance level data to assist with location of permanent monitoring wells on the CleanCare site; and 3) provide regional groundwater flow information. Task IA will provide the following information:

- groundwater flow direction and gradient;
- fill properties and distribution;
- groundwater and soil samples for screening purposes.

Technical approach. The objectives will be fulfilled by using a hollow stem auger to complete soil borings and installation of paired monitoring wells at four sites. Soil will be visually inspected for identification of auto-fluff and lime fill material. Wells will be installed at the water table and just above the aquitard to determine the presence of floating hydrocarbons, groundwater flow direction and vertical gradient.

¹RCRA Facility Investigation Work Plan, CleanCare Corporation, May 26, 1993 as revised July 9, 1993 and clarified by August 13, 1993 letter to D. Bartus, EPA from J. Gearon, ERC.

Soil boring and piezometer locations were originally shown on Figure 2 in the RFI Work Plan. The piezometer locations will be the location of permanent monitoring wells in place of temporary piezometers. Soil Borings are placed near MW-4 to look for the extent of the hydrocarbon plume. Adjustments to locations shown on Figure 2 may be made during the conduct of the work to accommodate obstructions and other unforeseen problems during installation of the soil probes and wells.

Revised 3.1.1 Soil Sample Collection and Analysis

Prior to use in sample collection, all sampling equipment and augers will be decontaminated by pressure washing and rinsing. If free phase hydrocarbons are encountered, a detergent wash will be added to the decontamination procedure.

Soil will be collected from a driven split spoon sampler for visual inspection of soil properties. The field log will indicate observations of hydrocarbons, auto fluff, lime or other fill materials. Samples will be collected at 2 foot intervals. One sample will be collected at ground level and then sampling will be resumed beginning at 4 feet below the surface and continue to 15 feet below the surface or the top of the aquitard, whichever is first encountered. Reconnaissance soil sample collection for specific SWMUs is discussed as a separate task in the RFI Work Plan. Visual inspection of the hydrocarbon soil material will be used to identify the extent of the plume. If lime sludge fill material is encountered, a sample will be sent to an offsite laboratory for analysis of Toxic Compounds List (TCL) volatile organics in accordance with Appendix B of the RFI Work Plan.

Probe holes will be backfilled or grouted and asphalt or concrete holes will be patched.

Revised 3.1.2 Monitoring Well Installation

Two wells will be installed at each location. The deeper well will be placed within the pilot hole created by sampling of soil. The screen of the deeper well will be placed as deep as possible within the aquifer, adjacent to relatively permeable stratum, as identified by soil logging. Any material removed from the aquitard will be backfilled with impermeable material prior to well installation. The shallow well will be placed within a few feet of the deeper well. The shallow well screen will be placed adjacent to the water table or oil/water interface as the case may be, based on soil logging.

The wells will be completed as described in the RFI Work Plan (Appendix C - Standard Operating Procedures, Shallow Monitoring Well) with a flush mount. Other well

construction details as presented in the August 13, 1993 letter from ERC to you include:

- Ten-slot (0.010-inch) schedule 40 PVC well screen will be used along with Colorado 20-40 sand, possibly in a pre-pack arrangement
- Filter sand will extend 2 feet above the well screen unless this precludes installation of a minimum 3 foot surface seal. No less than 1 foot of sand will be placed above the screen. The filter packs will be settled with water prior to seal installation
- A minimum 4-inch thick concrete surface pad will be poured around the
 well heads to secure the protective casings; within the well bore, this
 concrete will extend to approximately three feet depth.
- At-grade completions will be mounded to promote run off. For stickup casings, well caps will be vented. For at-grade completions, we recommend use of thermos-type caps without vents (at grade completions are prone to leakage).

Revised 3.1.3 Groundwater Sample Collection and Analysis

Groundwater grab samples will be obtained from the wells. These wells may or may not be included in the final monitoring program depending upon determination of groundwater flow. Samples can be collected by pump or a miniature stainless-steel bailer. If a pump is used, either a peristaltic or vacuum pump will be used to draw the sample to the surface through polyethylene tubing and a 10 micron filter for metals analysis. The method used will depend on several factors, including decontamination requirements, consideration for minimum disturbance and turbidity, efficient use of time and materials, analytical requirements, and the depth to groundwater. Sampling with a pump is preferred. If a pump is used, a slow and continuous pumping rate will be maintained to purge and sample the groundwater. An attempt will be made to "develop" turbid water out of the well with the pump and collect relatively non-turbid samples. All samples for metals analysis will be filtered through a 10 micron filter.

Prior to use in sample collection, all sampling equipment will be decontaminated by washing and rinsing. If free phase hydrocarbons are encountered, a detergent wash will be added to the decontamination procedure.

Groundwater samples for organic analyses will be collected in glass vials and analyzed by an offsite laboratory for TCL volatile organics and cadmium, chromium, copper, lead and zinc. Volatile analyses will be conducted on samples that do not contain floating products because the task of identifying the floating hydrocarbon phase is addressed separately for completion of this phase of the work plan. Routine quarterly monitoring will be used at a later date to determine contamination across the site. For inorganic analysis, ICP or atomic adsorption techniques as described in Appendix B of the RFI Work Plan will be applied to samples that have been passed through a 10-micron filter.

Quality assurance/quality control (QA/QC) guidelines will be maintained so the data collected from this survey are accurate and reliable. Field QC samples will be collected during each day of field activity. These QA/QC samples will consist of duplicate samples of groundwater, equipment blank samples and trip blanks.

Revised 3.1.4 Survey and Water and Product Level Measurements

Elevation of the wells will be surveyed by a professional surveyor to the nearest 0.01-foot.

Water level measurements will be made to assess vertical and horizontal hydraulic gradients. Hand tapes with or without paste, electric water level indicators, clear bailers, rods, and/or transducers will be used to attain depth to water and product measurements. Product level measurements in shallow wells are likely to be near enough to ground level to allow measurement with a hand tape or rod (use of an interface probe is not planned). Existing wells and new wells will be used in the water level measurement rounds. Data will be recorded to the nearest 0.01-foot.

Fluid level data collection will be coordinated with EPA and adjacent land owners.

2) Revised TASK IB - CHARACTERIZATION OF THE FLOATING PRODUCT NEAR MW-4

Objectives. The objectives of Task IB are to 1) identify the areal extent of soil hydrocarbon contamination near MW-4; and, 2) to identify the type of petroleum product and potential source(s).

Technical Approach. Shallow soil borings will be advanced with the hollow stem auger in the area of MW-4 as shown on Figure 2 of the RFI Work Plan. Soil samples for this purpose are denoted by a '+' on the figure. Soils will be continuously sampled from ground level to the water table. Samples of soil will be described by an on-site geologist

01/18/94 Letter to D. Bartus Page 5

using the Unified Soil Classification System (USCS). Visual observation for hydrocarbon presence will be made.

A sample of floating hydrocarbon will be collected from MW-4. After removal of weathered product, a hand tape or rod will be used to estimate product thickness. Samples will be collected in capillary tubes or other containers supplied by the laboratory. This sample will be collected coincident with Burlington Environmental's samples and analyzed by the same laboratory as Burlington Environmental to help determine whether or not original sources can be distinguished. Samples will be collected in accordance with procedures described in the RFI Work Plan, Appendix C, Standard Operating Procedures. Analyses will be conducted to determine products present in the hydrocarbon phase as a means of identifying the weathered product. Quality Assurance protocols are described in Appendix D. Methods proposed include a G.C. simulated distillation method (ASTM D2887 or P167) and a Paraffin/Olefin/Naphthalene/Aromatics (PONA) gel separation. Product density will also be measured. CleanCare will need assistance from EPA to help with coordination of the sampling event.

3) Schedule

The driller (Holt) is prepared to get started next week. Hydrogeological staff may not be able to get engaged in the field depending upon completion of another assignment. The latest that actual drilling would begin is January 31, 1994. Scheduling adjustments the tidal influence study and collection of weathered product samples by CleanCare and Burlington will need to be worked out with you. We understand that neither the Tidal Effects Survey nor the product sampling (Task 1B) will be conducted at this time and that this represents a change in our original schedule.

Please give me a call if you need additional information. We should discuss the schedule with respect to any coordination with the other facilities.

Thank you for your patience and continuing help.

Sincerely,

Jodi G. Gearon

cc: Gerald Lenssen, Ecology

Russell Bulman, CleanCare

Charles Ellingson, Pacific Groundwater Group



Driginal

July 14, 1995

Dr. David B. Bartus Chemical Engineer U.S. Environmental Protection Agency, Region 10 1200 Sixth Avenue Seattle, WA 98101

Subject:

CleanCare Corporation

Quarterly Report 2nd Quarter, 1995

Dear Dave:

This letter present CleanCare's Quarterly Report as required by the RCRA Corrective Action Order, Number 1090-07-26-3008, for the period ending June 30, 1995.

Activities Completed this Period

Monthly water level readings were collected in April in a coordinated effort with the surrounding TSD Alley sites. This completes twelve months of water level readings. Sealed wells were allowed to adjust to static pressure prior to measurement.

CleanCare has installed the new foundation pad. Re-analysis of the test pit samples was completed and summarized in a technical memorandum to Russell Bulman, CleanCare, from Charles T. Ellingson, Pacific Groundwater Group. Samples were analyzed for selected metals and Total Petroleum Hydrocarbon (TPH).

A draft groundwater flow assessment was prepared and summarized in a technical memorandum to Russell Bulman, CleanCare, from Charles T. Ellingson, Pacific Groundwater Group. Data was obtained from the Burlington and Sol-Pro facilities. The assessment indicates a mound beneath the Burlington facility with a flow to the east across CleanCare property. Further interpretive work on the vertical and horizontal flow vectors is ongoing.

7/14/95 Letter to D. Bartus/US EPA Page 2

Summary of Significant Findings

Test pit analysis indicates elevated levels of lead and arsenic in one test pit. The slag-looking material has chemical characteristics of slag. Groundwater flow was determined to be east across CleanCare property. A groundwater mound exists beneath the Burlington facility.

Work to be Conducted Next Quarter and Beyond

- 1. Produce a reasonably accurate area map based on file provided by Burlington in conjunction with CleanCare's basemap.
- 2. Completion of groundwater flow analysis based on water level observations in the newly installed wells and from other facilities. This will be prepared during the third and fourth quarters of 1995. Included in the analysis will be:
- Tidal effects study
- Recommendation of additional well placement for quarterly groundwater monitoring if needed.
- Confirmation of analytical parameters.
- 3. Determination of Action Levels as necessary based on discussion with EPA for those constituents o bserved that do not have action levels.
- 4. Stormwater system analysis. A confirmation of the stormwater collection system will be conducted this quarter. Stormwater evaluation will be completed
- 5. Completion of Tank Farm 1 SWMU reconnaissance soil sampling (Task 1C). The workplan calls for soil sampling and hand auguring in the area of Tank Farm 1. Other SWMU reconnaissance sampling was completed during the initial investigation. Sampling at this location was delayed due to a stormwater storage tank release.

Attachments

The following information is attached to this quarterly report:

- April, May, and June 1995 water level measurements
- Re-analysis of test pit samples
- Groundwater flow direction assessment

7/14/95 Letter to D. Bartus/US EPA Page 3

Please update your records to indicate myself as official contact for CleanCare Corporation. If you have questions or require further information, please contact me at (206) 627-3925.

Sincerely, Tupan Weller

Ryan Weller

Regulatory Affairs Manager

enclosure

cc: Gerald Lenssen, Washington State Department of Ecology

Tacoma Public Library Citizens for a Healthy Bay

John Stiller, Burlington Environmental

John Spencer, Sol Pro

TECHNICAL MEMORANDUM

To: Russell Bulman, CleanCare; Jodi Gearon, ERC

From: Pony Ellingson, Stephen Swope; Pacific Groundwater Group

Re: Groundwater Level Monitoring

Date: July 10, 1995

This memorandum summarizes data collected on the CleanCare, Burlington, and Sol-Pro facilities to assess groundwater flow directions across the three contiguous sites. Water levels were measured monthly at the CleanCare facility between May 1994 and April 1995 for a total of 12 rounds. Table 1 presents water level data collected.

Four time increments were chosen as representitive snapshots of water levels during the four quarters of the water year: May 13, 1994; August 16, 1994; November 15, 1994; and February 2, 1995. The November 15, 1994 event was selected because it was in the middle of the fall groundwater recharge event. This is indicated by the sharp increase in water levels during this time as shown on Figures 1, 2, and 3. The other events were selected to be three, six, and nine months from the November event.

Figures 4 through 7 present water level contour maps of the area during the four representative events. The wells included in the maps are screened in the fill aquifer. Although well logs for the Burlington wells were not reviewed, cross sections shown in Figures 13 and 14 of the RFA were used to infer screened intervals. All Burlington wells were used in the study except CTMW-7, CTMW-9, and CTMW-12.

The CleanCare CCMW series wells were installed in pairs with two-foot screens completed between four and seven feet apart vertically. In order to use these wells in conjunction with the Burlington wells (which have screens at least five feet in length) an average water level was calculated for each of the CCMW well pairs. No screen information was available for the Sol-Pro wells so they were assumed to be in a comparable interval.

The water levels were adjusted if free product was noted. The product thickness was multiplied by an assumed density of 0.8 and added to the water level.

Discrepencies in water level elevations were found between those submitted by Burlington and those calculated by PGG. We have assumed our calculations are correct. Nonetheless, all Tables and Figures have been stamped draft. Evaluation of the cause is underway.

Figures 4 through 7 indicate the following:

A consistent groundwater mound exists beneath the Burlington facility.

- A consistent groundwater divide extends south of the mound to the area near MW-3.
- The steepest gradient off of the mound is to the southeast. If hydraulic conductivities are consistent across the area, flow may be concentrated in that direction. High conductivities may also cause flow to occur in that direction.
- Groundwater flow is towards the east across the CleanCare property.

Further interpretive work on the vertical and horizontal flow vectors is ongoing.

The work was performed and this memorandum prepared in accordance with generally accepted hydrogeologic practices at this time, and in this area, for the exclusive use of CleanCare Corporation and their designated consultants for specific application to the Port of Tacoma facility. No other warranty, express or implied, is made.

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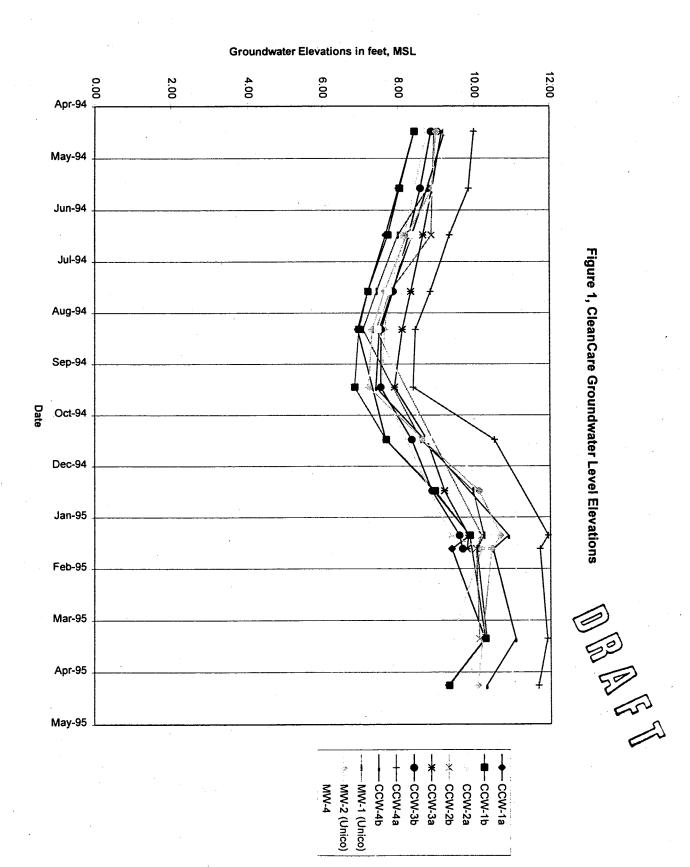
Table 1, Water Level Elevations

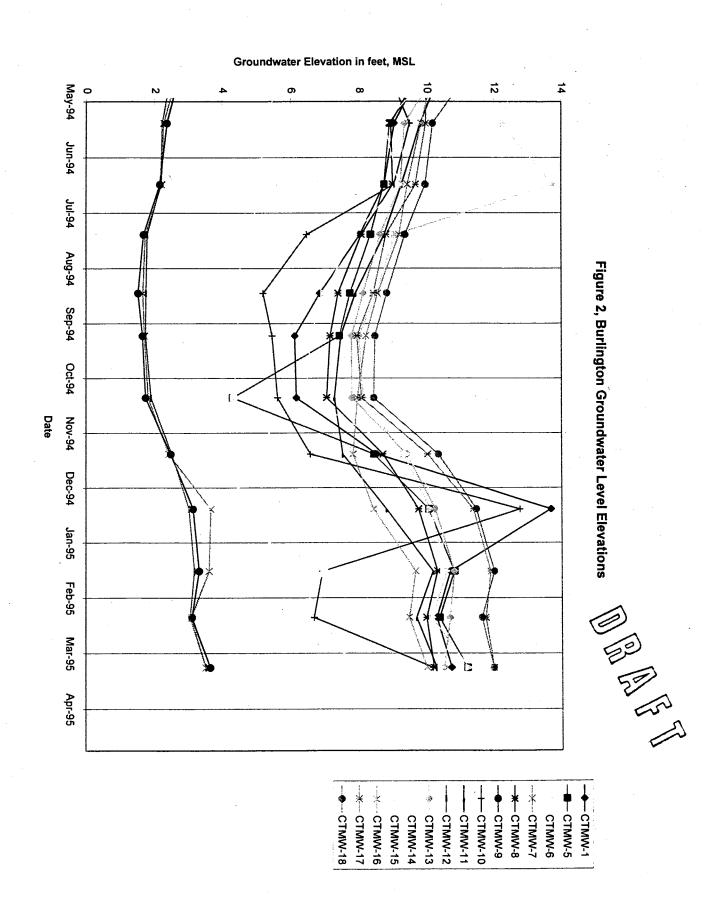
Well Burlington CTMW-1 CTMW-6 CTMW-7 CTMW-10 CTMW-11 CTMW-12 CTMW-13 CTMW-14 CTMW-15 CTMW-16 CTMW-16 CTMW-17	9.04 8.90 12.24 2.27 8.94 9.81 2.23 9.81 2.23 9.81 5.01 8.76 9.83 9.97	June 94 8.75 8.74 13.75 2.22 9.00 2.16 9.04 9.26 2.19 9.23 5.29 9.18 9.43	July 94 8.03 8.34 9.06 1.73 8.07 1.68 6.47 8.75 1.79 8.63 4.70 7.86 9.19 8.80		Sept 94 6.12 7.42 8.00 1.71 7.15 1.65 5.46 7.46 1.74 7.78 4.50 6.59 8.21	·))	8.52 8.43 9.30 2.43 8.70 2.49 6.57 7.52 2.52 9.40 5.99 9.39 7.82	Dec 94 13.69 10.05 10.09 3.66 9.75 3.14 112.77 8.80 3.02 10.25 3.51 10.44 8.42 11.36	Jan 95 10.69 10.80 10.58 3.61 10.31 3.32 6.92 10.17 3.18 10.80 6.97 10.49 9.66 11.88	Feb 95 10.29 10.37 10.15 3.09 9.99 3.11 6.68 9.69 3.05 10.68 6.24 10.16 9.47	Mar 95 10.19 10.27 10.95 2.92 10.05 3.00 9.45 7.48 2.81 10.64 6.31 10.30 10.07 11.64	
CTMW-7 CTMW-8 CTMW-9	2.27 8.94 2.37	2.22 9.00 2.16	1.73 8.07 1.68	1.66 7.38 1.52	1.71 7.15 1.65	1.82 7.05 1.74	2.43 8.70 2.49	3.66 9.75 3.14	3.61 10.31 3.32	3.09 9.99 3.11		2.92 10.05 3.00
CTMW-10	9.49	2.16 9.04	6.47	5.20	5.46	5.62	6.57	12.77	6.92	6.68		9.45 7.48
TMW-11	9.81 2.23	9.26 2.19	8.75 1.79	7.89 1.75	7.46 1.74	7.27 1.90	7.52 2.52	8.80 3.02	10.17 3.18	9.69 3.05		7.48 2.81
CIMW-12	2.23 9.34	2.19 9.23	8.63	8.12	7.78	7.79	9.40	10.25	10.80	10.68		10.64
CTMW-14	5.01	5.29	4.70	4.40	4.50	4.34	5.99	3.51	6.97	6.24		6.31
CTMW-15	8.76	9.18	7.86	6.98	6.59	£ 4.	9.39	10.44	10.49	10.16		10.30
CTMW-16	9.83	9.43	9.19	8.55	8.21	~ 3≠	7.82	8.42	9.66	9.47		10.07
CTMW-17	9.97 10.17	9.67 9.96	9.36) Z	8.43	10.02	11.45	11.99	11.62		11.73
CleanCare				(د	1	,						
CCW-1a	8.42	8.02	7.68	7.21//	6.94		7.68	8.93	9.87	9.40		10.26
CCW-1b	8.42	8.04	7.74	7.21	6.97	6.86	7.69	8.96	9.87		•	10.27
CCW-2a	8.75		8.17	7.78	7.66	7.58			9.36	10.18		9.39
CCW-2b	8.94		8.87	7.80	7.43	!) •	10.18	10.04		10.12
CCW-3a	9.14 8 86	8.89 8.89	8.65 8.78	8.33 7.87	8.11 7.56	7.91 7.55	8.75 8.35	9.21 8.88	9.84 9.60	9.68 9.68		
CCW-4a	9.99	9.86	9.35	8.84	8.45	8.39	10.52		11.94	11.72		11.91
CCW-4b	9.22	8.76	8.36	7.85	7.51	7.42	8.68		10.89	10.48		11.07
MW-I (Unico)		8.78	8.00	7.44	7.08		8.59	9.96	10.24	10.06		10.31
MW-2 (Unico)	8.99	8.90	8.23	7.65	7.32	7.23	8.64	10.12	10.68	10.44		
MW-4	9.29	8.99	8.37	7.74	7.47		8.79	10.74	11.32	10.95		11.55
Sol-Pro												
MW-I	8.70	8.48	7.93	7.45	7.21		8.30	9.77	10.25	9.99		20 01
MW-2	8 77	8.57	8.16	6 44	7 27	7.18			10.64			ة نز
	1			-	٠.,٠	7.18 7.29	8.95	10.64		9.83		

CleanWLs.mdb

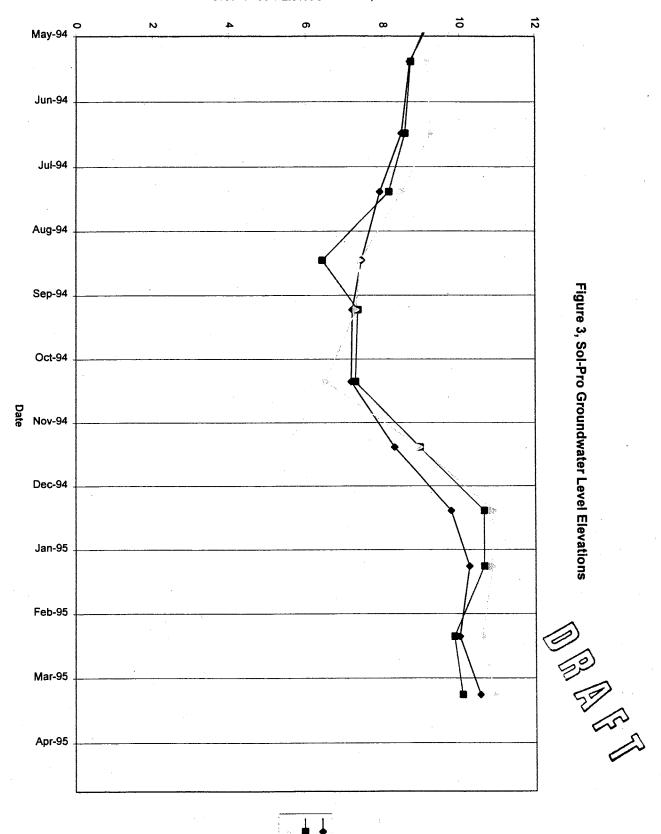
Elevations reported in feet above MSL

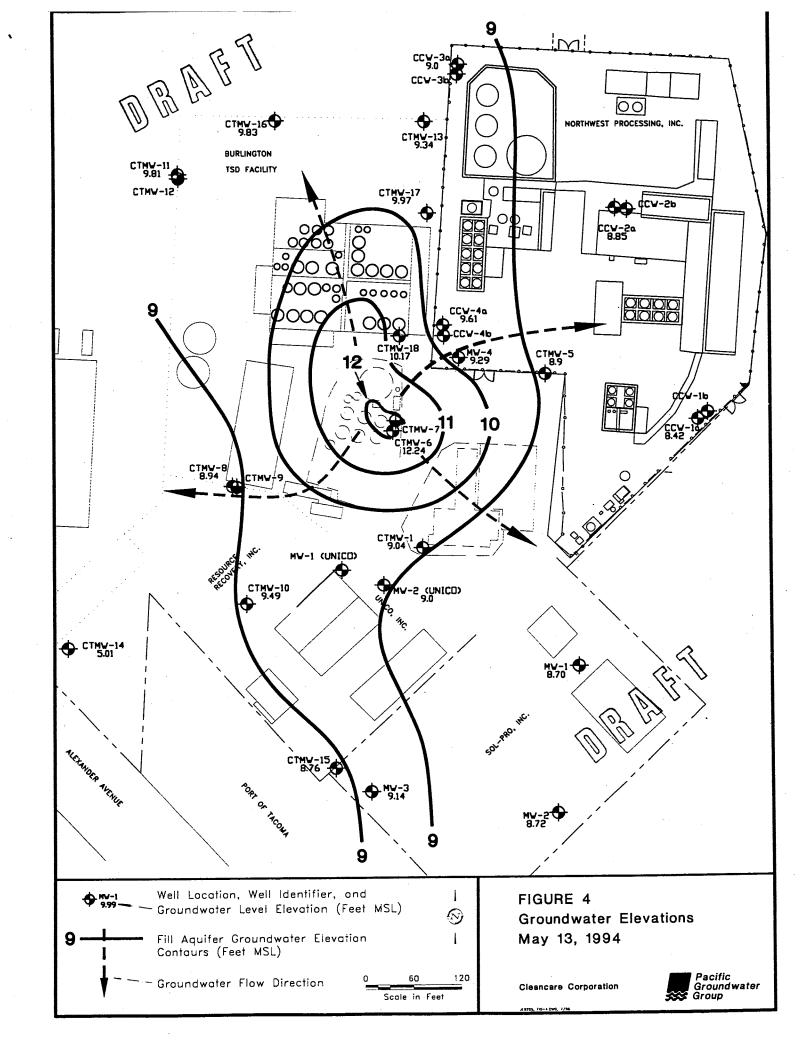
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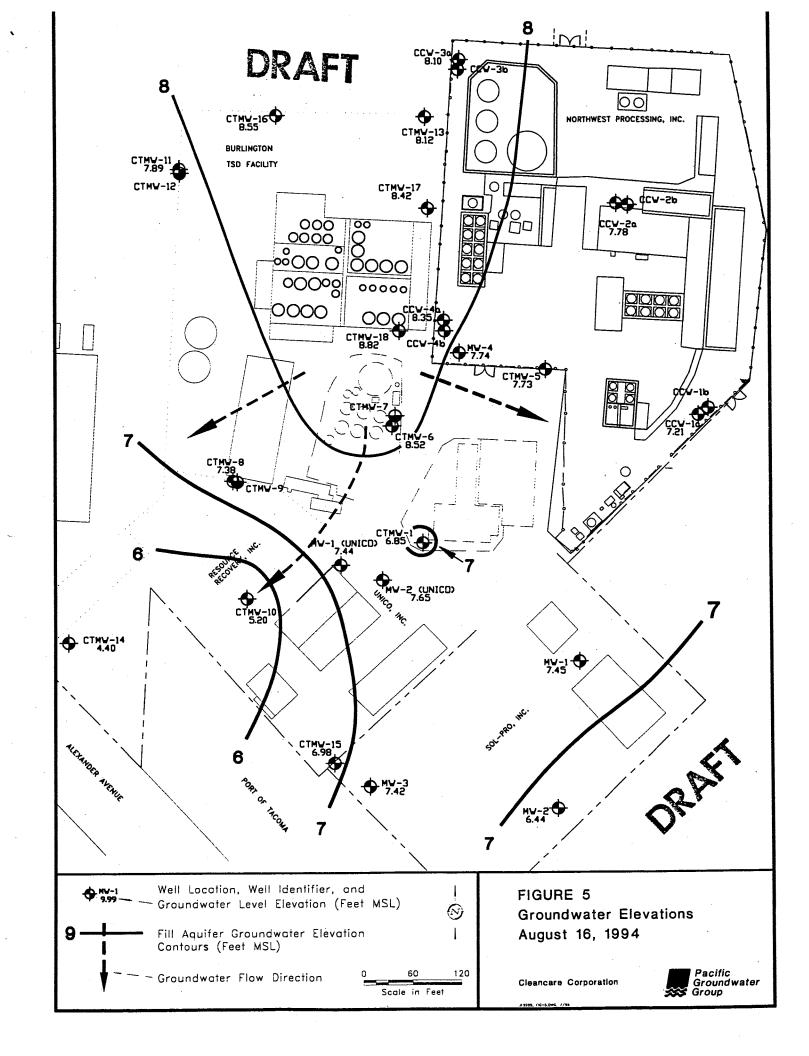


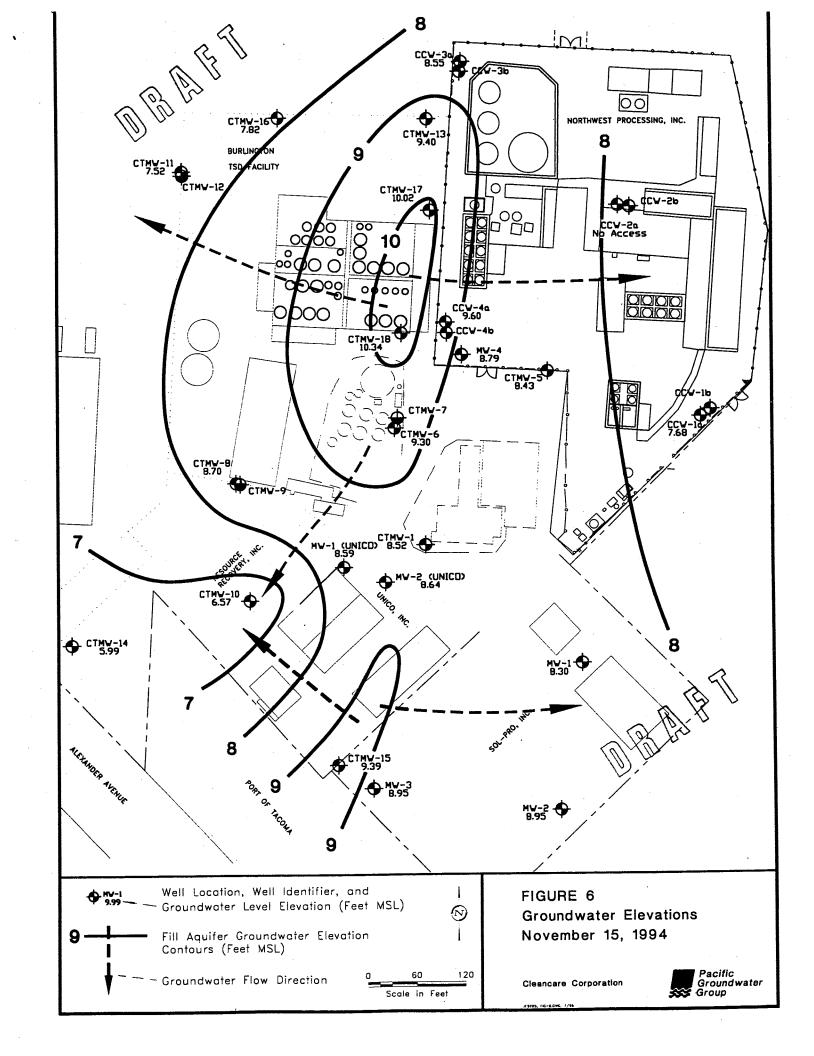


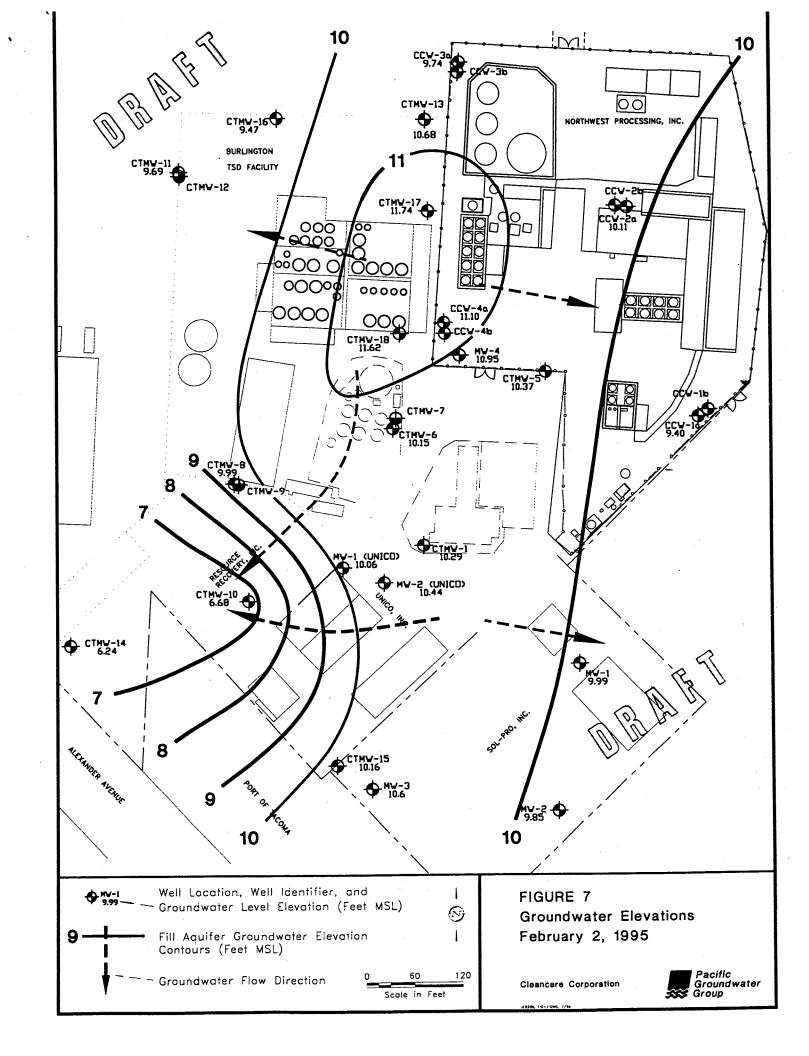
Groundwater Elevations in feet, MSL











TECHNICAL MEMORANDUM

To: Russell Bulman, CleanCare

From: Charles T. Ellingson, Pacific Groundwater Group

Re: Soil Sampling Below New Building Foundation Pad

Date: July 13, 1995

This technical memorandum summarizes excavation of test pits and soil sampling below the new building foundation pad at CleanCare's Port of Tacoma facility. The dimensions of pad are 82 feet by 60 feet, elongated in an east-west direction. It is located contiguous to, and immediately east of, a series of 10 tanks and immediately south of the vacuum distillation facilities on the property. The pad is a floating slab-on-grade without pilings; however, 12 roof support beams are founded on shallow spread footings.

Our scope of work consisted of:

- excavation of four backhoe test pits to depths of seven feet below ground surface (bgs)
- sampling of soils over the explored depth
- analysis of composite samples for Total Petroleum Hydrocarbons (TPH)
- analysis of descrete samples for total lead and arsenic
- consultation with CleanCare regarding implications of pad construction on possible remediation

The work was performed and this memorandum prepared in accordance with generally accepted hydrogeologic practices at this time, and in this area, for the exclusive use of CleanCare Corporation and their designated consultants for specific application to the Port of Tacoma facility. No other warranty, express or implied, is made.

Summary of Findings

- Materials encountered in the subsurface include gravel fill; green silty sand; a fill unit with auto fluff, silty sand, and a trace of gravel; slag-like sand with wood; and hydraulic fill. Figure 1 presents a site plan and Figure 2 presents two cross-sections through the test pits. The four test pit logs are also attached.
- Analysis of six samples for arsenic and lead indicates that the slag-looking material (samples TP1-4 and TP1-5) has chemical characteristics of slag. Lead concentrations in the apparent slag are above RFI action levels. Arsenic concentrations are also elevated above background but the RFI did not establish action levels for arsenic. Table 1 summarizes chemical analyses performed by Sound Analytical. Raw data and a QA/QC report are attached.

- Analysis of seven composite samples for TPH indicates that fill materials above the hydaulic fill contain petroleum hydrocarbons in concentrations above RFI action levels. The TPH is predominantly in the diesel and heavier molecular weight range.
- The soils and groundwater in the pad area may require remediation at some time. The only remedial alternative that is precluded by construction of the pad is removal of soil. Removal of soil below this pad area will probably not eliminate possible groundwater contamination because other adjacent and inaccessable areas also likely contain contaminated soils.

attachments:

Table 1 - Analytical Results from Test Pit Samples in Building Foundation Pad Area

Figure 1 - Site Plan Sketch

Figure 2 - Cross Sections

Test Pit Log TP-1

Test Pit Log TP-2

Test Pit Log TP-3

Test Pit Log TP-4

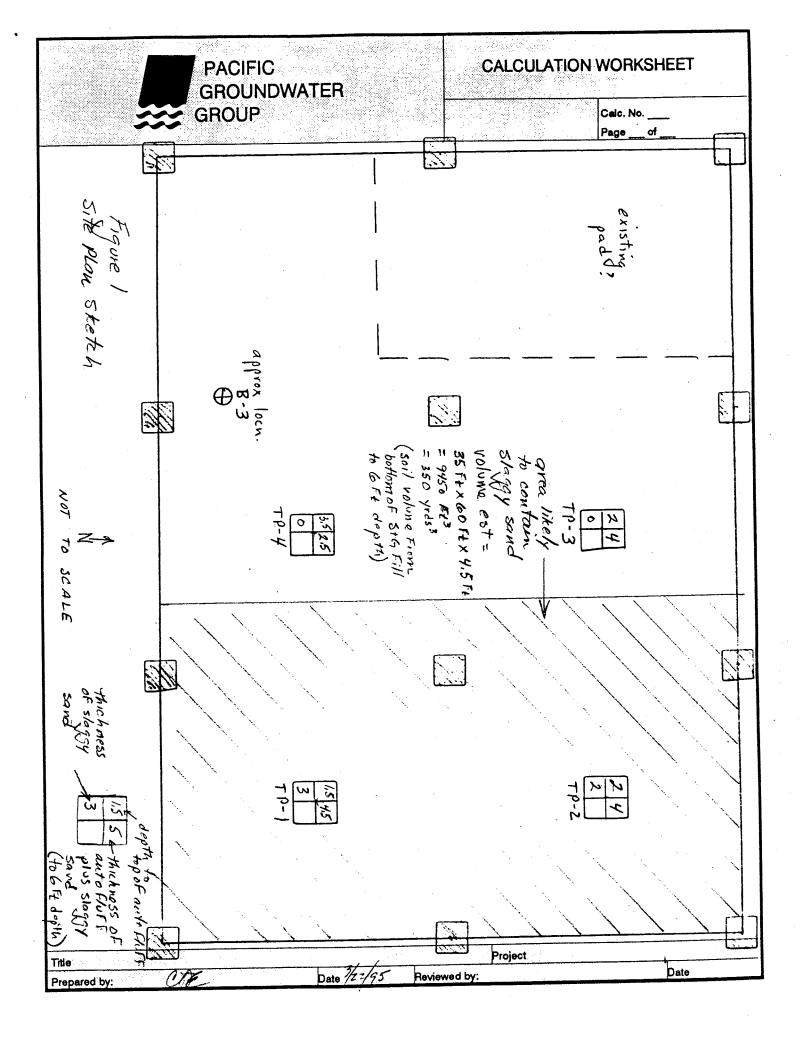
QA/QC Report

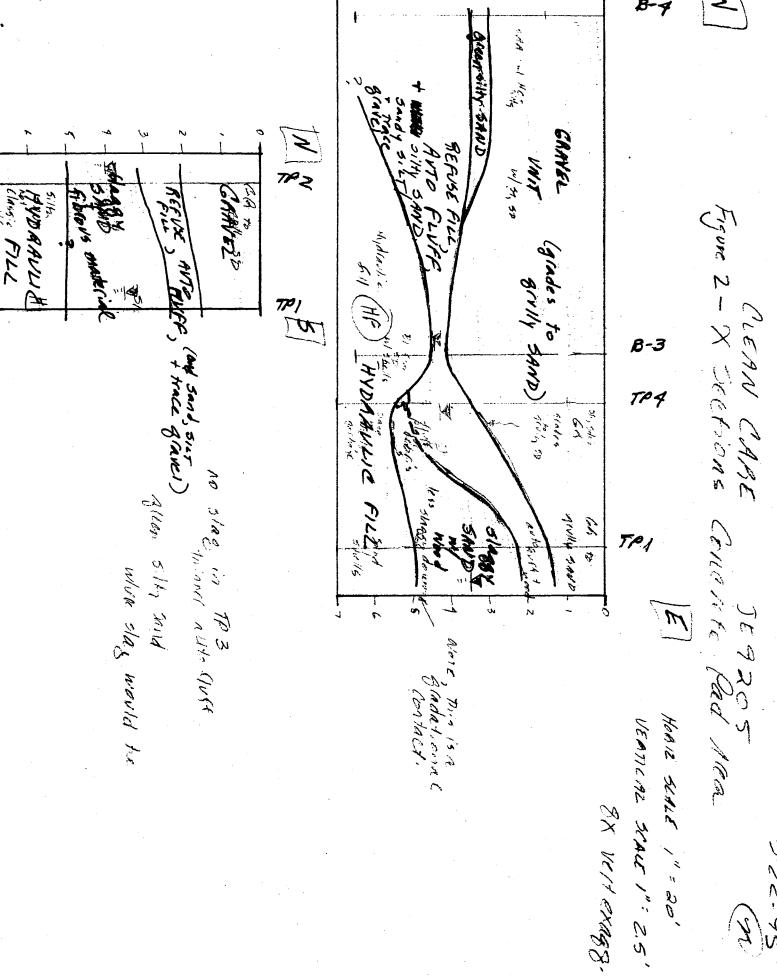
Raw Laboratory Data

Table 1 - Analytical Results from Test Pit Samples in Building Foundation Pad Area CleanCare Corp.

TPcomp1	in feet				WTPH-G				
TPcomp1	1	gas	diesel	oil			418.1	arsenic	lead
TPcomp1		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	0-1	>20	>50	>100	1100	280	810	NA	NA
TPcomp2	1-2	<20	>50	>100	NA	NA	NA	NA	NA
TPcomp3	2-3	<60	>150	>300	NA	1200	2800	NA	NA
TPcomp4	3-4	<60	>150	>300	NA	NA	NA	NA	NA
TPcomp5	4-5	<60	>150	>300	NA	3400	7800	NA	NA
TPcomp6	5-6	<20	>50	>100	NA	NA	NA	NA	NA
TPcomp7	6-7	<20	>50	>100	NA	<32	<100	NA	NA
TP1-1	0-1	NA	NA	NA	NA	NA	NA .	79	150J
TP3-1	0-1	NA	NA	NA	NA	NA	. NA	11	53J
TP4-1	0-1	NA	NA	NA	NA	NA	NA	<9.4	19J
TP2-1	0-1	NA	NA	NA	NA	NA	NA	9.6	44J
TP1-4	3-4	NA	NA	NA ·	NA	NA	NA ·	5400	4800J
TP1-5	4-5	NA	NA	NA	NA	NA	NA	1200	2100J
					·				
STANDARDS									
RFI action level						200	200	TBD	1000
MTCA-A(i)					100	200	200	200	1000
MTCA-B	as carcinogen							1.3	na
	non-carcinogen							60	na
MTCA-C	as carcinogen							57.1	na
	non-carcinogen							240	na
MTCA-C(i)	as carcinogen							188	па
	non-carcinogen	*.				·		2620	na
]								
BACKGROUND 90°	% (Natural Backg	round Soi	Metals Co	ncentrati	ons in Was	hington S	tate (Ecolo	gy, 1994)	
Puget Sound								7	24
Point Defiance Park	·							>50	

J = Estimated quantity; matrix spike recovery for lead was 200%. Sample was reanalyzed with similar results.





56.22.8

	Sample Number	PID Headspace Reading	Depth (feet)	SOIL DESCRIPTIONS
	1		0.0 -	
	TP1-1	0.0	0.5	Damp, brown, slightly sandy, slightly silty GRAVEL with organics and garbage—like odor.
	TP1-2	0.0	1.0	Damp, green-gray, silty, gravelly, medium SAND. Thin rust-colored zone at 1.0 feet.
			1.5	AUTO FLUFF (hoses, wires, metallic debris) with abundant
	TP1-3	0.4	2.0	branches and fibers in a silty SAND matrix
			+	
			2.5	
	TP1-4	0.0	3.0	Damp to wet, black, silty fine SAND with wood debris. SAND consists of fine particles of SLAG. SLAG particles
_	-		3.5	have an oily, slightly metallic luster.
-			_ 4	
			4.0	
	TP1-5	0.1	4.5	
			5.0	
			1	
	TP1-6	1.0	5.5	Wet, black, fine to medium SAND with shells. Some
			6.0	orange—brown grains, some fibrous organic material.
	TP1-7	0.0	6.5	
		0.0	0.5	
			7.0	
			7.5	Bottom of pit at 7.0 feet 3/17/95
			8.0	
			8.5	
	•	•	9.0 ᆜ	

PROJECT NAME: Clean Care New Pad DRILLING METHOD: Excavator OPERATOR: FIRM: DATE: 03/17/95

CONSULTING FIRM: Pacific Groundwater Group REPRESENTATIVE: Nancy Riccia



	Sample Number	PID Headspace Reading	(feet)	SOIL DESCRIPTIONS
	TP2-1	0.0	0.0	Damp, brown—gray, slightly sandy, slightly silty GRAVEL
	TP2-2	0.0	1.0	Damp, tan, slightly silty, gravelly, fine SAND with occasional clay clumps and refuse
			2.0	
	TP2-3	0.0	2.5	Damp, dark brown, slightly gravelly, very silty SAND with abundant wood refuse, some auto fluff, and
			3.0	occasional clay clumps
			3.5	Moist, black SAND with cardboard-like and fibrous
<u>_</u>	TP2-4	0.0	4.0	organic waste material; SAND consists of slag—like granules
			4.5	Less fibrous organic material; some rock fragments
	TP2-5	0.0	5.0	Gradational contact
			5.5	Wet, dark brown, silty SAND with wood & other
	TP2-6	0.0	6.0	debris
	700 7	0.0	6.5	
	TP2-7	0.0	7.0	
	,		7.5	Bottom of pit at 7.0 feet 3/17/95
			8.0	
			8.5	
			9.0	

PROJECT NAME: Clean Care New Pad DRILLING METHOD: Excavator OPERATOR: FIRM: DATE: 03/17/95

CONSULTING FIRM: Pacific Groundwater Group REPRESENTATIVE: Nancy Riccio



	Sample Number	PID Headspace Reading	Depth (feet)	
	TP3-1	0.0	0.0	Damp, brown—gray, slightly sandy, slightly silty GRAVEL
	TP3-2	0.0	1.5 - 2.0 -	Damp, gray—tan, silty, sandy GRAVEL
	TP3-3	0.3	2.5	AUTO FLUFF, SILT, WOOD, & PAPER DEBRIS Damp, brown, slightly silty SAND with some gravel, refuse
	TP3-4	0.0	3.5	— — — — — Gradational contact— — — — — — Moist, brown & green, silty SAND & GRAVEL with some wood debris
	-		4.5 -	grading to
<u></u>	TP3-5	0.3	5.5	Wet, salt & pepper, slightly gravelly, silty SAND with
	TP3-7	0.0	7.0	roots & wood debris
			7.5 –	Bottom of pit at 7.0 feet 3/17/95
			9.0	

PROJECT NAME: Clean Care New Pad DRILLING METHOD: Excavator OPERATOR: FIRM: DATE: 03/17/95

CONSULTING FIRM: Pacific Groundwater Group REPRESENTATIVE: Nancy Riccio



Soil Descriptions and Stratum lines are interpretive and actual changes may be gradual

	Sample Number	PID Headspace Reading	Depth (feet)	SOIL DESCRIPTIONS
	TP4-1	176	0.0	Damp, red-brown, slightly silty, slightly sandy GRAVEL; some gray layers
	TP4-2	5.5	1.5	Damp, brown, slightly silty, very gravelly, fine to medium SAND; some cobbles. More gravel in bottom 6 inches
	TP4-3	0.0	2.5	Damp, dark brown, gravelly, fine SAND with plant fibers; some cobbles
·	TP4-4	0.0	3.0 - 3.5 - 4.0 -	Damp to moist, black, SILT, SAND, & REFUSE; abundant plant debris; mixed with auto fluff in
<u>_</u>	TP4-5	0.0	4.5 - 5.0	lower foot
	TP4-6		6.0	Wet, black, slightly silty, fine SAND with shells; some refuse
	TP4-7	0.0	7.0	Bottom of pit at 7.0 feet 3/17/95
			8.0 — 8.5 —	
			9.0	

PROJECT NAME: Clean Care New Pad DRILLING METHOD: Excavator OPERATOR: FIRM: DATE: 03/17/95

CONSULTING FIRM: Pacific Groundwater Group REPRESENTATIVE: Nancy Riccio



QUALITY ASSURANCE/QUALITY CONTROL REVIEW

March 1995 Sampling of Soils Below New Pad at CleanCare Corporation

Review of the Quality Assurance/Quality Control (QA/QC) data was performed as part of this report to assess the validity of analytical results. Sound Analytical Services, Inc. was the analytical laboratory for this data set. Thirteen soil samples were submitted to the lab. The samples were collected on March 17, 1995.

In summary, the analytical results were found to be acceptable with respect to the QA/QC objectives. The analytical results were generally found to meet the Department of Ecology (DOE) guidelines for Total Petroleum Hydrocarbons Analytical Methods (1992), Contract Laboratory Program (CLP) (Environmental Protection Agency (EPA), 1985) limits or guidelines, Functional Guidelines for Evaluating Inorganic Analyses (EPA, 1988), and EPA Method specifications or project-acceptable requirements.

The following summarizes the findings of the QA/QC review:

1. METHODOLOGY: Acceptable

Samples were analyzed using acceptable EPA and standard methods as listed on each page of the analytical results. The methods used correspond to those requested on Chain-of-Custody (COC) forms.

2. **HOLDING TIMES:** Acceptable

The holding times were met for all analyses.

3. SURROGATE SPIKES: Acceptable

Surrogates spikes are known concentrations of compounds not normally found in samples which are added to samples in order to check for analytical interferences in every sample.

Surrogates were added to all samples for all analyses except for metals, EPA Method 6010; and TPH, Method 418.1. These methods do not recommend that surrogates be added. The surrogates for TP COMP5 was diluted-out during WTPH-HCID analysis. The surrogates for TP COMP1 were also diluted-out during WTPH-G analysis. The surrogate percent recovery ranges for all methods were within the acceptable ranges.

4. MATRIX SPIKES/MATRIX SPIKE DUPLICATE (MS/MSD): Acceptable

Matrix Spikes/Matrix Spike Duplicates (MS/MSD) are known concentrations of analytes added to one sample in 20 to check for matrix interferences in recovering the analyte from

the sample matrix; the duplicate is then run to check analytical duplication. Laboratory control sample (spiked deionized water) is also used for lab internal precision control.

MS/MSD were run for all analytical methods except for method WTPH-HCID which was not requested. MS for WTPH-418.1 was diluted-out during analysis. MS/MSD recovery and Relative Percent Difference (RPD) values for WTPH-418.1 and recovery values for WTPH-G were outside advisory QC limits due to high contaminant levels. No qualifier is being used as recommended by guidelines. MS recovery for lead was 200% which is outside the advisory QC limits and was re-analyzed with similar results. A "J" qualifier indicating an estimated value, is being used as recommended by guidelines. Other MS/MSD results indicate acceptable recovery of analytes and acceptable RPDs.

5. METHOD BLANKS: Acceptable

Method Blanks were run by the laboratory to check for possible laboratory contamination. Blanks were analyzed for all analytes in all analytical batches at a rate of at least one in 20. No laboratory contamination was detected.

6. METHOD DETECTION LIMITS: Acceptable

Practical Quantitation Limits (PQLs) were found to be lower or equivalent to those required by the analytical methods for all analyses except for metals. PQLs for metals varied as they are sample dependent and may vary as the sample matrix varies.

7. FIELD DUPLICATES: Not Applicable

No field duplicates were collected.

8. FIELD BLANKS: Not Applicable

No field blanks were collected.

9. TENTATIVELY IDENTIFIED COMPOUNDS: Not Applicable

The QAP and chain of custody (COC) did not request the analysis of tentatively identified compounds nor do they make provisions for the evaluation of them; therefore; this report does not include a discussion of those results.

10. CHAIN OF CUSTODY/SAMPLE CONTAINERS AND PRESERVATION: Acceptable

Appropriate containers and methods of preservation were used in sample collection. The samples were stored and transported according to the requirements outlined in the QAP. Chain of custody was maintained at all times.

Facsimile Cover Sheet

To:	Ali		
Company:	P6G		
Fax:	206/329-6968		
From:	AS Riddell		
Phone: Fax:	(206) 922-2310 (206) 922-5047		
Date:	7/11/95	•	
Pages including this cover page:	2		
Comments:			
		·	
			•

4813 PACIFIC HIGHWAY EAST, TACOMA WASHINGTON 98424 • TELEPHONE 206-922-2310 • FAX 206-922-5647

DATA QUALIFIERS AND ABBREVIATIONS

The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity. J: This analyte was also detected in the associated method blank. The reported sample results have been adjusted for Bl: moisture, final exract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank). This analyte was also detected in the associated method blank. However, the analyte concentration in the sample B2: was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank). The concentration of this analyte exceeded the instrument calibration range. E: The reported result for this analyte is calculated based on a secondary dilution factor. D: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _ XI: Contaminant does not appear to be "typical" product. Further testing is suggested for identification. X2: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is X3: recommended. RPD for duplicates outside advisory QC limits. Sample was re-analyzed with similar results. X4: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation X4a: limit/detection limit. Matrix spike was diluted out during analysis. X5: Recovery of matrix spike outside advisory QC limits. Sample was re-analyzed with similar results. X6: Recovery of matrix spike outside advisory QC limits. Matrix interference is indicated by blank spike recovery data. X7: Recovery and/or RPD values for MS/MSD outside advisory QC limits due to high contaminant levels. X7a: Surrogate was diluted out during analysis. X8: Surrogate recovery outside advisory QC limits due to matrix composition. X9: See analytical narrative. N: ND: Not Detected Practical Quantitation Limit PQL:

MCL: Maximum Contaminant Level

MANUC CHECKLIST Sample date:

Job Number: JE 9 205. Clear Care Sample type: Data Set: Sound analytical Services 47217

METHODOLGY	MACTOLS (AS, Pb)	WIPH-HCID	WTPH - 418.1	WTPH-G	IWTPH-D
Method .	1 EVA 6010	J 4 ·		5	~
Date Sampled .	3/12/95	3/14/95	3/17/95	3/17/95	3/17/95
Date Analyzed	3/21/95	ext.:3/20/95	ext: 3/30/95	Prep. = 3/30/95	Prof 3/30/95
Holding Time	6 K	0/	0/2	0K	0/6
	•			1	1 0/C
SURROGATE SPIKES			is not recom.		
Surrogate		2 comfounds		1. Comfound	1 Comforms
Recoveries	·	all oK except	i	×8 '	OK
- unacceptable		TPCOMPS, 78		TPCOMPT,	0/
MS/MSD	on TP+-1	Not requested	on batch QC	on TP compl	on blank slik
Surrogate		·		1, 00,11,	
Recoveries	AS: OK.	-	×5, ×7a	X7a	0/C
- unacceptable	Pb: 7125%		7 7 7 5		0,2
	or 2 Sample vesult				
	> IDL . therefor			<u> </u>	
	We J estimates	-		· · · · · · · · · · · · · · · · · · ·	
METHOD BLANKS .	100 mic 26				
Parameters found	None	None	None	None	None
					7.576
Qualifiers.		•			
					•
VIDLs	Varies, is ox	oK.	OK	A1/.	OK
Met	SW- 346, limits are			0/2	
- high	Sample defendent				
- low	AS: 53 moll				
	oK				
DUPLICATES					
TELD.					-
- RPDs					•
• 11.					· .
AB	on TPI-1	en TP comp 2	on batch Qc	on TPCompi	on ?7
RPDs	oK.	OK	40%, 24	oK	
RIP BLANKS					
arameters found					
					· · · · · · · · · · · · · · · · · · ·
ualifiers .					
ос	Yes.	Yes	¥e3	Yes	Yes
ontainers .	o.K	016	- 0K	oK	oK.
		- / - 1			
eservation	OK.	016.	o.K	0K .	0 K

5117195

,50iL.

Note: For list of qualifiers, ie-x7a, refer to the lab :\keg\qachk.xls data qualifiers; aboveraintions sheet. c:\keg\qachk.xls



CALCULATION WORKSHEET

Calc. No. ____ Page of

Questions for Sound Analytical Services.

Lab Job # 47217

(D-Survoj-te recoveries for TP comP5

mexical WTPH-HCIO are NRs, what does

X8 mea-7

- (2) - NO MS/MSD for WTPH-HCID ? FIT is not recommended, it is your field method

(3) - WTBH-418.1 duplicate RPD 40% What does

(4) - MS/MSD WTPH-418-1 NENRS: flagged XS: (X7a)

(5) - Same as (5) ? For WTPH-G

16) - WTPH. C Surrodate recovery fraged x8?

H- Dug. for WTPH-D, what sample did you with on report
hove sample 1037338? - Batch Sample.

called Andrew J. Ribbell (AJ) 7/11/95:

- for questions land 3-6 he'll fax their qualifier sheet.

TIEME CALL MOLLE 05	Jamplin PA/Oc Project JE9205
benefold by Ali The Ali De	oro 7/11/0 C Barriawad by:

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

DATE: April 4, 1995

TO:

Clean Care

PROJECT:

JE9205

LABORATORY NUMBER:

47217

Enclosed are the original and one copy of the Tier II data deliverables package for Laboratory Work Order Number 47217. Thirty - five samples were received for analysis at Sound Analytical Services, Inc., on March 20, 1995.

Should there be any questions regarding this data package, please do not hesitate to call me at (206) 922-2310.

Sincerely,

Mudrus & Filalle Andrew J. Riddell

Project Manager

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: Clean Care

Date: April 4, 1995

Report On: Analysis of Soil

Lab No.: 47217

IDENTIFICATION:

Samples received on 03-20-95

Project: JE9205

ANALYSIS:

Lab Sample No. 47217-1

TP1-1 Client ID:

ICP Metals Per EPA Method 6010 Date Analyzed: 3-21-95

Units: mg/kg

<u>Parameter</u>	Result	POL
Arsenic	79	11
Lead	150	5.4

Lab Sample No. 47217-4

TP1-4 Client ID:

ICP Metals Per EPA Method 6010 Date Analyzed: 3-21-95

Units: mg/kg

<u>Parameter</u>	Result	POL
Arsenic	5,400	14
Lead	4,800	7.2

PQL - Practical Quantitation Limit

Clean Care

Project: JE9205 Lab No. 47217 April 4, 1995

Lab Sample No. 47217-5

Client ID: TP1-5

ICP Metals Per EPA Method 6010
Date Analyzed: 3-21-95
Units: mg/kg

<u>Parameter</u>	Result	\underline{POL}
Arsenic	1,200	16
Lead	2,100	8.0

Lab Sample No. 47217-8

Client ID: TP2-1

ICP Metals Per EPA Method 6010
Date Analyzed: 3-21-95
Units: mg/kg

<u>Parameter</u>	Result	<u>PQL</u>
Arsenic	9.6	9.4
Lead	44	4.7

PQL - Practical Quantitation Limit

Clean Care Project: JE9205 Lab No. 47217 April 4, 1995

Lab Sample No. 47217-15

Client ID: TP3-1

ICP Metals Per EPA Method 6010 Date Analyzed: 3-21-95 Units: mg/kg

<u>Parameter</u>	Result	POL
Arsenic	11	9.9
Lead	53	4.9

Lab Sample No. 47217-22

Client ID: TP4-1

ICP Metals Per EPA Method 6010 Date Analyzed: 3-21-95 Units: mg/kg

<u>Parameter</u>	Result	POL
Arsenic	ND	9.4
Lead	19	4.7

ND - Not Detected POL - Practical Quantitation Limit

Clean Care

Project: JE9205 Lab No. 47217 April 4, 1995

Lab Sample No. 47217-29

Client ID: TP Comp 1

WTPH-HCID

Date Extracted: 3-20-95
Date Analyzed: 3-21-95

Units: mg/kg

<u>Parameters</u>	Result	Flag
Gasoline (C7-C12)	> 20	
Diesel (> C12 - C24)	> 50	
Heavy Oil (C24+)	> 100	
•		

SURROGATE RECOVERY, %

1-chlorooctane	•	90
o-terphenyl		78

WTPH-418.1 Modified
Date Extracted: 3-30-95
Date Analyzed: 4-3-95
Units: mg/kg

<u>Parameter</u>	Result
a	•

Heavy petroleum oils 810

Clean Care

Project: JE9205 Lab No. 47217 April 4, 1995

Lab Sample No. 47217-30

Client ID: TP Comp 2

WTPH-HCID

Date Extracted: 3-20-95
Date Analyzed: 3-21-95

Units: mg/kg

<u>Parameters</u>	Result	<u>Flag</u>
Gasoline (C7-C12)	< 20	
Diesel (> C12 - C24)	> 50	
Heavy Oil	> 100	
SURROGATE RECOVERY, %		
1-chlorooctane o-terphenyl	77 66	

Clean Care

Project: JE9205 Lab No. 47217 April 4, 1995

Lab Sample No. 47217-31

Client ID: TP Comp 3

WTPH-HCID

Date Extracted: 3-20-95

Date Analyzed: 3-20-95

Units: mg/kg

<u>Parameters</u>	Result	<u>Flag</u>
Gasoline (C7-C12)	< 60	
Diesel (> C12 - C24)	> 150	· .
Heavy Oil (C24+)	> 300	
SURROGATE RECOVERY, %		
1-chlorooctane o-terphenyl	87 86	

WTPH-418.1 Modified
Date Extracted: 3-30-95
Date Analyzed: 4-3-95
Units: mg/kg

Units:

Result

Heavy petroleum oils

Parameter

2,800

Clean Care Project: JE9205 Lab No. 47217 April 4, 1995

Lab Sample No. 47217-32

Client ID: TP Comp 4

WTPH-HCID

Date Extracted: 3-20-95
Date Analyzed: 3-20-95

Units: mg/kg

<u>Parameters</u>	Result	Flag
Gasoline (C7-C12)	< 60	
Diesel (> C12 - C24)	> 150	•
Heavy Oil	> 300	
SURROGATE RECOVERY, %		
1-chlorooctane o-terphenyl	99 98	

Clean Care

Project: JE9205 Lab No. 47217 April 4, 1995

Lab Sample No. 47217-33

Client ID: TP Comp 5

WTPH-HCID

Date Extracted: 3-20-95

Date Analyzed: 3-20-95

Units: mg/kg

Parameters	Result	Flag
Gasoline (C7-C12)	< 60	
Diesel (> C12 - C24)	> 150	. ·
Heavy Oil	> 300	
SURROGATE RECOVERY, %		
1 ahlamaat ana	NR	X8

1-chlorooctane	NR	X8
o-terphenyl	NR	Х8

WTPH-418.1 Modified
Date Extracted: 3-30-95
Date Analyzed: 4-3-95
Units: mg/kg

<u>Parameter</u>

Result

Heavy petroleum oils

7,800

NR - Not Reported

Clean Care

Project: JE9205 Lab No. 47217

April 4, 1995

Lab Sample No. 47217-34

Client ID: TP Comp 6

WTPH-HCID

Date Extracted: 3-20-95

Date Analyzed: 3-21-95

Units: mg/kg

<u>Parameters</u>	Result	Flag
Gasoline (C7-C12)	< 20	
Diesel (> C12 - C24)	> 50	
Heavy Oil (C24+)	> 100	
SURROGATE RECOVERY, %		e.
1-chlorooctane o-terphenyl	93 82	

Clean Care

Project: JE9205 Lab No. 47217

April 4, 1995

Lab Sample No. 47217-35

Client ID: TP Comp 7

WTPH-HCID

Date Extracted: 3-20-95

Date Analyzed: 3-21-95

Units: mg/kg

<u>Parameters</u>	Result	<u>Flag</u>
Gasoline (C7-C12)	< 20	
Diesel (> C12 - C24)	> 50	•
Heavy Oil (C24+)	> 100	
SURROGATE RECOVERY, %		
1-chlorooctane o-terphenyl	94 83	

WTPH-418.1 Modified Date Extracted: 3-30-95 Date Analyzed: 4-3-95 mg/kg

Units:

Result Parameter

< 100 Heavy petroleum oils

 Client Name
 Clean Care

 Client ID:
 TP COMP 1

 Lab ID:
 47217-29

 Date Received:
 3/20/95

 Date Prepared:
 3/30/95

 Date Analyzed:
 3/31/95

 % Solids
 94.72

Gasoline by WTPH-G

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
Trifluorotoluene	-	X8	50	150

Sample results are on a dry weight basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	1100	100	X2

Client Name
Client ID:
'Lab ID:

Clean Care
TP COMP 1 - dup
47217R29
3/20/95
3/30/95

Date Received: Date Prepared: Date Analyzed: % Solids 3/20/95 3/30/95 3/31/95 94.72

Gasoline by WTPH-G

Surrogate Trifluorotoluene % Recovery

Flags X8 Recovery Limits Low High 50 150

Sample results are on a dry weight basis.

Analyte
Gasoline (Toluene-nC12)

Result (mg/kg) 990

PQL 100

Flags X2

 Client Name
 Clean Care

 Client ID:
 TP COMP 1

 Lab ID:
 47217-29

 Date Received:
 3/20/95

 Date Prepared:
 3/30/95

 Date Analyzed:
 3/31/95

 % Solids
 94.72

Diesel by WTPH-D

Surrogate % Recovery Flags Low High o-Terphenyl 83 50 150

Sample results are on a dry weight basis.

 Result

 Analyte
 (mg/kg)
 PQL
 Flags

 Diesel (>nC12-nC24)
 280
 26
 X2

 Client Name
 Clean Care

 Client ID:
 TP COMP 3

 Lab ID:
 47217-31

 Date Received:
 3/20/95

 Date Prepared:
 3/30/95

 Date Analyzed:
 3/31/95

 % Solids
 85.36

Diesel by WTPH-D

Surrogate % Recovery Flags Low High 50 150

Sample results are on a dry weight basis.

Result

Analyte (mg/kg) PQL Flags

Diesel (>nC12-nC24) 1200 280 X2

Client Name
Client ID:
Lab ID:
Date Received:
Date Prepared:
Date Analyzed:
% Solids

Clean Care TP COMP 5 47217-33 3/20/95 3/30/95 3/31/95 73.72

Diesel by WTPH-D

Surrogate o-Terphenyl % Recovery

Flags

Recovery Limits Low High 50 150

Sample results are on a dry weight basis.

Analyte
Diesel (>nC12-nC24)

Result (mg/kg) 3400

PQL 330 Flags X2

 Client Name
 Clean Care

 Client ID:
 TP COMP 7

 Lab ID:
 47217-35

 Date Received:
 3/20/95

 Date Prepared:
 3/30/95

 Date Analyzed:
 3/31/95

 % Solids
 77.13

Diesel by WTPH-D

			Recove	ry Limits
Surrogate o-Terphenyl	% Recovery 76	 Flags	Low 50	High 150

Sample results are on a dry weight basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	32	

ANALYTICAL & ENVIRONMENTAL CHEMISTS

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QUALITY CONTROL REPORT

Total Metals

Client: Clean Care Lab No: 47217qc1 Units: mq/kq

Date Analyzed: 3-21-95

METHOD BLANK

Parameter	Result	PQL
Arsenic	ND	10
Lead	ND	5.0

ND = Not Detected

PQL = Practical Quantitation Limit

DUPLICATE

Dup No. 46217-1

Parameter	Sample	Duplicate	RPD
Arsenic	79	82	3.7
Lead	150	200	28

RPD = Relative Percent Difference

MATRIX SPIKE

MS No. 46217-1

Parameter	Sample Result	Spiked Sample Result	Spike Added	&R	Flag
Arsenic	. 79	440	410	88	
Lead	. 150	350	100	200	х6

%R = Percent Recovery

ANALYTICAL & ENVIRONMENTAL CHEMISTS

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QUALITY CONTROL REPORT

WTPH-HCID

Client:

Clean Care

Lab No:

47217qc2

Units:

mg/kg

Date Extracted: 3-20-95

Date Analyzed:

3-20-95

METHOD BLANK

031R0201.D

BIAIR NO. USIRUZUI.D		
Parameter	Result	Flags
Gasoline (C ₇ ·C ₁₂)	< 20	·
Diesel (>C ₁₂ -C ₂₄)	< 50	·
Heavy Petroleum Oil	< 100	
SURROGATE RECOVERY, % 1-chlorooctane o-terphenyl	82 75	

QUALITY CONTROL REPORT.

WTPH-HCID

Client: Lab No: Clean Care

47217qc2

Units:

mg/kg

Date Extracted: 3-20-95 3-20-95 Date Analyzed:

DUPLICATE

Dup No. 47217-30 Sample Duplicate RPD Flags Parameter (S) (D) < 20 < 20 NC Gasoline $(C_7 - C_{12})$ NC > 50 Diesel 50 (>C₁₂-C₂₄) > 100 NC Heavy Petroleum Oil > 100 (C_{24}^+) SURROGATE RECOVERY, % 78 77 1-chlorooctane 69 o-terphenyl

= Not Calculated

RPD = Relative Percent Difference

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

WTPH-418.1 Modified

Client: Lab No:

Clean Care 47217qc3

Units:

mg/kg

Date Extracted: 3-30-95 Date Analyzed: 4-3-95

METHOD BLANK

Parameter	Result
Heavy Petroleum Oils	< 100

DUPLICATE

Parameter	Sample Result	Duplicate Result	RPD	Flag
Heavy Petroleum Oils	27,000	18,000	40	X4

RPD = Relative Percent Difference

MATRIX SPIKE / MATRIX SPIKE DUPLICATE

MS/MSD	No. 472	47-16 Ba	tch Qc			-			
Parameter	Sample Result	MS Amount	MS Result	MS %R	MSD Amount	MSD Result	MSD %R	RPD	Flag
Heavy Oil	27,000	615	11,300	NR	610	26,500	NR	NR	X5,X7a
R = Perce	nt Recov	erv			RPD = Re	lative	Percen	t Diff	erence

= Percent Recovery ۶R

= Not Reported NR

= Matrix Spike ſS

ISD = Matrix Spike Duplicate

21

Lab ID:

Method Blank - GB286

Date Received:

Date Prepared: Date Analyzed:

% Solids

3/30/95

3/30/95

Gasoline by WTPH-G

Surrogate

Trifluorotoluene

% Recovery

85

Flags

Recovery Limits

Low High

50 150

Sample results are on an as received basis.

Analyte

Result

(mg/kg)

PQL

Flags

Gasoline (Toluene-nC12)

ND

Blank Spike Report

Lab ID: Date Prepared: Date Analyzed: QC Batch ID: GB286 3/30/95 3/30/95 GB286

Gasoline by WTPH-G

BS Blank Spike Result Result BS **Amount** (mg/kg) (mg/kg) % Rec. Flag **Parameter Name** (mg/kg) 100 12 12 Gasoline (Toluene-nC12) 0

Duplicate Report

Client Sample ID:

Lab ID:

Date Prepared: Date Analyzed:

QC Batch ID:

TP COMP 1

47217-29

3/30/95

3/31/95

GB286

Gasoline by WTPH-G

	Sample Result	Duplicate Result	RPD	
Parameter Name	(mg/kg)	(mg/kg)	%	Flag
Sasoline (Toluene-nC12)	1100	990	11.0	

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:

Lab ID:

Date Prepared:

Date Analyzed:

QC Batch ID:

TP COMP 1

47217-29

3/30/95

3/31/95

GB286

Gasoline by WTPH-G

	Sample	Spike	MS		MSD			
	Result	Amount	Result	MS	Result	MSD		
Compound Name	(mg/kg)	(mg/kg)	(mg/kg)	% Rec.	(mg/kg)	% Rec.	RPD	Flag
Gasoline (Toluene-nC12)	1100	1200	970	0	1300	13	200.0	X7a

· Lab ID:

Method Blank - DI245

Date Received:

Date Prepared:

Date Analyzed:

% Solids

3/30/95

3/31/95

Diesel by WTPH-D

Surrogate o-Terphenyl % Recovery 86 Flags

Recovery Limits

Low 50 High 150

Sample results are on an as received basis.

Analyte

Diesel (>nC12-nC24)

Result (mg/kg)

ND

PQL

25

Flags

Blank Spike Report

Lab ID: Date Prepared: Date Analyzed: QC Batch ID: DI245 3/30/95 3/31/95 DI245

Diesel by WTPH-D

Blank BS Spike Result Result **Amount** BS % Rec. Flag Parameter Name (mg/kg) (mg/kg) (mg/kg) Diesel (>nC12-nC24) 100 250 250 0

Duplicate Report

Client Sample ID:

Lab ID:

Date Prepared: Date Analyzed:

QC Batch ID:

Parameter Name

Diesel (>nC12-nC24)

37338

47375-02

3/30/95 3/31/95

DI245

Diesel by WTPH-D

Sample Result

(mg/kg)

340

Duplicate

Result

480

(mg/kg)

RPD

% . 34.0 Flag X4

Tacoma, Washingtor 3424 (206) 922-2310 • FAX (206) 922-5047

ANALYTICAL & ENVIRONMENTAL CHEMISTS

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COUNT AWALL HOAL CERVICES, INC.

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Tacoma, Washingto. 38424 JOUND ANALTHICAL GENVICES, INC

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CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

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Tacoma, Washington 38424 (206) 922-2310 • FAX (206) 922-5047

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HOOKER CHEMICAL S-AREA

- NEW YORK
- EPA ID# NYD980651087
- EPA REGION 2
- CONGRESSIONAL DIST. 29
- NIAGARA COUNTY
- ALONG THE NIAGARA RIVER

Site Description

The Hooker Chemical SArea site is an 8acre industrial landfill owned by the Occidental Chemical Corporation. It is located at the southeast corner of OCC's Buffalo Avenue chemical plant in Niagara Falls, New York, along the Niagara River. Adjacent to the landfill is the City of Niagara Falls (City) drinking water treatment plant (DWTP). The Province of Ontario, Canada, is located across the Niagara River, a distance of approximately two miles. The landfill lies atop approximately 30 feet of soil, clay, till, and manmade fill on an area reclaimed from the Niagara River. Beneath these materials is fractured bedrock. OCC disposed of approximately 63,000 tons of chemical processing wastes into the landfill from 1947 to 1961. The landfill also was used by OCC for disposal of other wastes and debris, a practice that ended in 1975. Two lagoons for nonhazardous waste from plant operations were located on top of the landfill and were operated under New York State permits until 1989, when OCC discontinued operating these lagoons. During an inspection of the DWTP in 1969, chemicals were found in the bedrock water intake structures. In 1978, sampling of the structures and bedrock water intake tunnel revealed chemical contamination. The site is located in a heavily industrialized area of Niagara Falls. There is a residential community of approximately 700 people within 1/4 mile northeast of the site. The DWTP serves an estimated 70,000 people.

Site Responsibility:

This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY

Proposed Date: 12/01/82 Final Date: 09/01/83

Threats and Contaminants

On and offsite ground water and soil are contaminated with toxic chemicals occurring as both aqueous (water soluble) phase liquids (APLs) and nonaqueous (immiscible) phase liquids (NAPLs). These chemicals include primarily chlorinated benzenes. Dioxin is also present in ground water at trace levels. The main health threat to people is the risk from eating fish from the lower Niagara River/Lake Ontario Basin. Consumption of drinking water from the City's DWTP is not presenting health risks at present. However, the site, because of its proximity to the DWTP, presents a potential public health threat to the consumers of drinking water from the plant.

Cleanup Approach

The site is being addressed in three phases: immediate actions and two longterm remedial phases focusing on cleanup of the entire site and construction of a municipal drinking water treatment plant.

Response Action Status

Immediate Actions: The City closed the contaminated main intake tunnel at the DWTP and put an emergency tunnel into service to alleviate the threat of contaminating drinking water.

Entire Site: EPA selected a containment remedy to prevent further chemical migration from the landfill toward the DWTP and into and under the Niagara River. The remedy includes: (1) a slurry cut-off wall (barrier wall) to encompass the landfill and offsite areas contaminated with chemicals in overburden soils, (2) an overburden collection system located within the barrier wall and comprised of horizontal drains and groundwater extraction wells to contain and collect both APL and NAPL chemicals, (3) a bedrock remedial system consisting of groundwater extraction wells and NAPL recovery wells; (4) an onsite leachate storage facility for separating and storing APL and NAPL chemicals prior to treatment; (5) a carbon adsorption facility for treating APL chemicals; (6) incineration of NAPL chemicals; (7) a final cap; and (8) monitoring programs to determine the effectiveness of the remedy. All components of the remedy selected for the landfill, with the exception of the final cap and monitoring programs, have been constructed. Operational startup of the remedial systems began in 1996. An evaluation of the remedial systems performances is ongoing.

The evaluation of the overburden drain collection system revealed that it was not operating or functioning as designed. Upon further inspection, the horizontal drain pipe was found to be crushed at several locations. The damaged drain collection system was replaced in 1999. The final cap, once scheduled for completion in 1999, will be installed in the year 2000.

City of Niagara Falls Drinking Water Treatment Plant: The remedy selected to address contamination at the DWTP includes the construction of a new plant at a new location and demolition and cleanup of the old plant property. The new plant was built and on-line by the end of March 1997. Demolition of the old plant was completed in late 1997. The remedy selected for the old plant property includes (1) a slurry cut-off wall (an extension of the S-Area barrier wall) to contain NAPL and APL chemicals, (2) a drain collection system to prevent APL chemicals in overburden soils from migrating to the Niagara River, (3) grouting of the old bedrock raw-water intake tunnel, and (4) capping. Engineering designs were completed in 1997. The slurry cut-off wall, drain collection system and cap were constructed in 1998. The tunnel grouting project is scheduled for 2000.

Site Facts: In 1979, the U.S. Department of Justice, acting on behalf of the EPA, filed a complaint against the parties potentially responsible for the site contamination. The State of New York joined in the suit and a Settlement Agreement was signed by the parties in January 1984. It was approved and entered by the District Court of Western New York in April 1985. The Agreement called for a potentially responsible party to conduct an investigation at the site, to recommend cleanup standards for the site, and to conduct site cleanup activities. A second agreement was signed by the parties in September 1990 and approved by the Court in April 1991. This Agreement, which amended the original 1985 Settlement Agreement, included an expanded cleanup program to address offsite areas and the construction of a new DWTP.

Cleanup Progress

The construction of a new \$70 million DWTP at a new location addresses the threat to the drinking water supply from S-Area. The new plant replaces the old facility, which supplied drinking water to city residents for the past 83 years. The S-Area barrier wall and remedial systems provide physical and hydraulic containment of the 63,000 tons of chemical waste buried in the landfill. Their operations have also reduced the loadings of toxic chemicals to the Niagara River. Approximately 320,000 gallons of contaminated ground water are treated per day, with the treated effluent discharged to the Niagara River via a permitted outfall. Since the startup of the S-Area remedial systems in 1996, approximately 350 million gallons of contaminated ground water have been treated. Approximately 65,000 gallons of

NAPL have been collected for incineration.

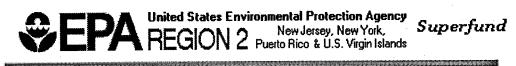
Site Repository

USEPA Public Information Office, Carborundum Center, Suite 530, 345 Third Street, Niagara Falls, New York, 14303

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All electronic requests for information on FOIA (Freedom of Information Act) may be executed by: Region 2 Online FOIA Request Form

URL: http://www.epa.gov/region02/superfnd/site_sum/0202150c.htm
This page last updated on August 07, 2000



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National Priority Site Fact Sheet

LOVE CANAL

- NEW YORK
- EPA ID# NYD000606947
- EPA REGION 2
- CONGRESSIONAL DIST. 29
- NIAGARA COUNTY
- NIAGARA FALLS

Other Names:

Hooker Chemicals Love Canal

Site Description

The fenced 70acre Love Canal site (Site) encompasses the original 16acre hazardous waste landfill and a 40-acre clay/synthetic liner cap. Also, a barrier drainage system and leachate collection and treatment system is in place and operating. The Site includes the "original" canal that was excavated by Mr. William T. Love in the 1890's for a proposed hydroelectric power project but was never implemented. Beginning in 1942, the landfill was used by Hooker Chemicals and Plastics (now Occidental Chemical Corporation (OCC)) for the disposal of over 21,000 tons of various chemical wastes, including halogenated organics, pesticides, chlororbenzenes and dioxin. Dumping ceased in 1952, and, in 1953, the landfill was covered and deeded to the Niagara Falls Board of Education (NFBE). Subsequently, the area near the covered landfill was extensively developed, including the construction of an elementary school and numerous homes. Problems with odors and residues, first reported in the 1960's, increased during the 1970's, as the water table rose, bringing contaminated groundwater to the surface. Studies indicated that numerous toxic chemicals had migrated into the surrounding area directly adjacent to the original landfill disposal site. Runoff drained into the Niagara River, approximately three miles upstream of the intake tunnels for the Niagara Falls water treatment plant. Dioxin and other contaminants migrated from the landfill to the existing sewers, which had outfalls into nearby creeks. In 1978 and 1980, President Carter issued two environmental emergencies for the Love Canal area. As a result, approximately 950 families were

evacuated from a 10squareblock area surrounding the landfill. The Federal Emergency Management Agency (FEMA) was directly involved in property purchase and residential relocation activities. In 1980, the neighborhoods adjacent to the Site were identified as the Emergency Declaration Area (EDA), which is approximately 350 acres and is divided into seven separate areas of concern. Approximately 10,000 people are located within one mile of the Site; 70,000 people live within three miles. The Love Canal area is served by a public water supply system; the City of Niagara Falls water treatment plant serves 77,000 people. The Site is 1/4 mile north of the Niagara River. The contamination problem discovered at the Site ultimately led to the passage of Federal legislation, governing abandoned hazardous waste sites.

On December 21, 1995, a consent decree, as a cost recovery settlement between the United States and OCC, was lodged with the United States District Court. As part of the settlement, OCC and the

United States Army have agreed to reimburse the Federal government's past response costs, related directly to response actions taken at the Site. The primary portion of OCC's reimbursement is \$129 million; OCC has also agreed to reimburse certain other Federal costs, including oversight costs, and to make payments in satisfaction of natural resource damages claims. In a second part of this decree, the United States Army agreed to reimburse \$8 million of the Federal government's past response costs; these funds have now been directed specifically into EPA Superfund and FEMA accounts.

Also, \$3 million of the settlement funds will be directed, over a six-year project period, to the Agency for Toxic Substances and Disease Registry (ATSDR) for the development of a comprehensive health study using the Love Canal Health Registry. ATSDR has awarded a grant to the New York State Department of Health (NYSDOH) to conduct this study, which is currently in its fourth year of development.

Site Responsibility:

This Site is being addressed through Federal, State and potentially responsible party actions.

NPL LISTING HISTORY

Proposed Date: 10/01/81 Final Date: 09/01/83

Threats and Contaminants

As a result of the landfill containment, the leachate collection and treatment system, the groundwater monitoring program and the

removal of contaminated creek and sediments and other clean up efforts, the Site does not present a threat to human health and the environment.

Cleanup Approach

This Site has been addressed in seven stages: initial actions and six longterm remedial action phases, focusing on 1) landfill containment with leachate collection, treatment and disposal; 2) excavation and interim storage of the sewer and creek sediments; 3) final treatment and disposal of the sewer and creek sediments and other Love Canal wastes; 4) remediation of the 93rd Street School soils; 5) EDA home maintenance and technical assistance by the Love Canal Area Revitalization Agency (LCARA), the agency implementing the Love Canal Land Use Master Plan; and, 6) buyout of homes and other properties in the EDA by LCARA.

Three other short-term remedial actions: a) the Frontier Avenue Sewer remediation, b) the EDA 4 soil removal, and c) the repair of a portion of the Love Canal cap, were completed in 1993 and are discussed below.

Response Action Status

Initial Actions: In 1978, New York State Department of Environmental Conservation (NYSDEC) installed a system to collect leachate from the Site. The landfill area was covered and fenced and a leachate treatment plant was constructed. In 1981, EPA erected a fence around Black Creek and conducted environmental studies.

Landfill Containment: In 1982, EPA selected a remedy to contain the landfill by constructing a barrier drain and a leachate collection system; covering the temporary clay cap with a synthetic material to prevent rain from coming into contact with the buried wastes; demolishing the contaminated houses adjacent to the landfill and nearby school; conducting studies to determine the best way to proceed with further site cleanup; and, monitoring to ensure the cleanup activities are effective. In 1985, NYSDEC installed the 40-acre cap and improved the leachate collection and treatment system, including the construction of a new leachate treatment facility.

Sewers, Creeks, and Berms: In May1985, as identified in a Record of Decision (ROD), EPA implemented a remedy to remediate the sewers and the creeks which included 1) hydraulically cleaning the sewers; 2) removal and disposal of the contaminated sediments; 3) inspecting the sewers for defects that could allow contaminants to migrate; 4) limiting access, dredging and hydraulically cleaning the Black Creek culverts; and, 5) removing and storing Black and Bergholtz creeks' contaminated sediments. [The remediation of the 102nd Street outfall area, as

originally proposed in the 1985 ROD, has been addressed under the completed remedial action for the 102nd Street Landfill Superfund site.] The State cleaned 62,000 linear feet of storm and sanitary sewers in 1986. An additional 6,000 feet were cleaned in 1987. In 1989, Black and Bergholtz creeks were dredged of approximately 14,000 cubic yards of sediments. Clean riprap was placed in the creek beds, and the banks were replanted with grass. Prior to final disposal, the sewer and creek sediments and other wastes [33,500 cubic yards] were stored at OCC's Niagara Falls RCRA-permitted facilities.

Thermal Treatment of Sewers and Creeks Sediments: In October 1987, as identified in a second ROD, EPA selected a remedy to address the destruction and disposal of the dioxin-contaminated sediments from the sewers and creeks: 1) construction of an onsite facility to dewater and contain the sediments; 2) construction of a separate facility to treat the dewatered contaminants through high temperature thermal destruction; 3) thermal treatment of the residuals stored at the Site from the leachate treatment facility and other associated Love Canal waste materials; and, 4) on-site disposal of any nonhazardous residuals from the thermal treatment or incineration process. In 1989, OCC, the United States and the State of New York, entered into a partial consent decree (PCD) to address some of the required remedial actions, i.e., the processing, bagging and storage of the creek sediments, as well as other Love Canal wastes, including the sewer sediments. Also, in 1989, EPA published an Explanation of Significant Differences (ESD), which provided for these sediments and other remedial wastes to be thermally treated at OCC's facilities rather than at the Site. In November 1996, a second ESD was issued to address a further modification of the 1987 ROD to include off-site EPA-approved thermal treatment and/or land disposal of the stored Love Canal waste materials. In December 1998, a third ESD was issued to announce a 10 ppb treatability variance for dioxin for the stored Love Canal waste materials. The sewer and creek sediments and other waste materials were subsequently shipped off-site for final disposal; this remedial action was deemed complete in March 2000.

93rd Street School: The 1988 ROD selected remedy for the 93rd Street School property included the excavation of approximately 7500 cubic yards of contaminated soil adjacent to the school followed by on-site solidification and stabilization. This remedy was reevaluated as a result of concerns raised by the NFBE, regarding the future reuse of the property. An amendment to the original 1988 ROD was issued in May 1991; the subsequent selected remedy was excavation and off-site disposal of the contaminated soils. This remedial action was completed in September 1992. Subsequently, LCARA purchased the 93rd Street School property from the NFBE and demolished the building in order to return the resulting vacant land to its best use.

Home Maintenance: As a result of the contamination at the Site, the Federal government and the State of New York purchased the affected

properties in the EDA. LCARA is the coordinating New York State agency in charge of maintaining, rehabilitating and selling the affected properties. Pursuant to Section 312 of CERCLA, as amended, EPA has been providing funds to LCARA for the maintenance of those properties in the EDA and for the technical assistance during the rehabilitation of the EDA. EPA awards these funds to LCARA directly through an EPA cooperative agreement for home maintenance and technical assistance. The rehabilitation and sale of these homes have been completed. Since the rehabilitation program began, approximately 260 homes have been sold. Also, a new senior citizen housing development has been constructed on vacant property in the habitable portion of the EDA. EPA expects to close out this cooperative agreement with LCARA in 2000.

Property Acquisition: Section 312 of CERCLA, as amended, also provided \$2.5M in EPA funds for the purchase of properties (businesses, rental properties, vacant lots, etc.) which were not eligible to be purchased under the earlier FEMA loan/grant. EPA awarded these funds to LCARA through a second EPA cooperative agreement. EPA expects to close out this cooperative agreement with LCARA in 2000.

Short-Term Remedial Actions: 1) The Frontier Avenue Sewer Project required excavation and disposal of contaminated pipe bedding and replacement with new pipe and bedding--excavated materials have been transported for off-site thermal treatment and/or land disposal. 2) The EDA 4 Project required the excavation and disposal of a hot spot of pesticide contaminated soils in the EDA and backfill with clean soils; excavated materials were disposed of off-site. 3) The Love Canal Cap Repair required the liner replacement and regrading of a portion of the cap. These short-term remedial actions were completed in September 1993. Cleanup Progress

In 1988, EPA issued the Love Canal EDA Habitability Study (LCHS), a comprehensive sampling study of the EDA to evaluate the risk posed by the Site. Subsequent to the issuance of the final LCHS, NYSDOH issued a Decision on Habitability, based on the LCHS's findings. This Habitability Decision concluded that: 1) Areas 1-3 of the EDA are not suitable for habitation without remediation but may be used for commercial and/or industrial purposes and 2) Areas 4-7 of the EDA may be used for residential purposes, i.e., rehabitation.

The following represent the make up of the various Love Canal waste materials:

Sewer and Creek Sediment Wastes 38,900 yards³ @ 1.6 tons/yard³ = 62,240 tons

Collected DNAPL 19,000 gallons
Filtered DNAPL 12,000 gallons
Carbon Filter Wastes 240,000 pounds
Treated Groundwater Approximately 3 MG/year

As shown above, numerous cleanup activities, including landfill containment, leachate collection and treatment and the removal and ultimate disposition of the contaminated sewer and creek sediments and other wastes, have been completed at the Site. These completed actions have eliminated the significant contamination exposure pathways at the Site, making the Site safe for nearby residents and the environment.

As a result of the revitalization efforts of LCARA, new homeowners have repopulated the habitable areas of the Love Canal EDA. More than 260 formerly-abandoned homes in the EDA have been rehabilitated and sold to new residents, thus creating a viable new neighborhood.

OCC is responsible for the continued operation and maintenance of the leachate treatment facility and groundwater monitoring. The Site is monitored on a continual basis through the numerous monitoring wells which are installed throughout the area. The yearly monitoring results show that the Site containment and leachate collection and treatment facility are operating as designed.

Site Repository

EPA Public Information Office @ (716) 285-8842, Carborundum Center-Room 530, Niagara Falls, New York 14303.

Region 2 Main Page | Search Region 2 | Comments | EPA Main Page

All electronic requests for information on FOIA (Freedom of Information Act) may be executed by: Region 2 Online FOIA Request Form

URL: http://www.epa.gov/region02/superfnd/site_sum/0201290c.htm This page last updated on **June 13, 2000**

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About OxyChem

Occidental Chemical Corporation (OxyChem) is a wholly owned subsidiary of Occidental Petroleum Corporation and is a leading chemical manufacturer, with interests in basic chemicals, vinyls, petrochemicals, and specialty products. The company is based in Dallas, Texas, and has manufacturing facilities in the United States and six foreign countries.

OxyChem is a Responsible Care® company committed to safety and the environment. Our philosophy continues to go beyond compliance to making good safety and environmental performance



Occidental Tower Dallas, Texas

an objective of our overall business strategic plan. We have established systems with measurable objectives and performance milestones. The overall impact is a positive force in motivating our employees to promote a strong culture for protection of human health and the environment. Dramatic advances in our Health, Environment, and Safety processes have enhanced every OxyChem business. Our methods of managing risk continue to benefit us and have been recognized by our peers to be among the best in the chemical industry.

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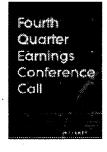




Occidental Petroleum Corporation has operations in two main businesses: oil and gas and chemicals. Net sales and operating revenues were \$7.6 billion in 1999.

Occidental's oil and gas operations focus on the United States,

the Middle East and Latin America, with production and active



Occidental's OxyChem subsidiary is a leading chemical manufacturer, with interests in basic chemicals, vinyls, petrochemicals and specialty products.



Occidental was founded in 1920 as a California oil and gas production company and remained a modest operation until the 1950s, when it began expanding and diversifying. Since the early 1990s, the company has been focusing on its core oil and gas and chemical businesses.







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OCCIDENTAL PETROLEUM CORPORATION



Financial Summary

Dollar amounts in millions, except per-share amounts

For the years ended December 31,

Occidental Petroleum Corporation and Subsidiaries

1997

1998

1999







For the years ended becamber 51,		1000		1000		1007
HIGHLIGHTS	***************************************		***********			***************************************
Net sales and operating revenues	\$	7,610	\$	6,596	\$	8,016
Income from continuing operations	\$	568	\$	325	\$	217
Discontinued operations, net	\$		\$	38	\$	(607)
Extraordinary loss	\$	(107)	\$	– '	\$	_
Cumulative effect of changes in accounting principles, net	\$	(13)	\$. –	\$	
Net income(loss)	\$	448	\$	363	\$	(390)
Earnings before special items ^(b)	\$	253	\$	104	\$	691
Distributions on Trust Preferred Securities	\$	(41)	\$	_	\$	_
Preferred dividend requirements	\$	7	\$ -	17	\$	88
Dividends on common stock	\$	358	\$	354	\$	335
Capital expenditures	\$	601	\$	1,074	\$	1,549
Working capital	\$	(279)	\$	(136)	\$	46
Total assets	\$	14,125	\$	15,252	\$	15,291
Stockholders' equity	\$	3,523	\$	3,363	\$	4,286
PER SHARE DATA						
Basic earnings (loss) per common share	\$	1.24	\$.99	\$	(1.43)
Diluted earnings (loss) per common share	\$	1.24	\$.99	\$	(1.43)
Dividends per common share	\$	1.00	\$	1.00	\$	1.00
Book value per common share	. \$	9.58	\$	8.97	\$	9.11
KEY FINANCIAL RATIOS				•		
Current ratio		0.86		0.95		1.02
Ratio of earnings to fixed charges		2.80		1.93		1.55
Return on average stockholders' equity ^(a)		16.5 %		8.5 %		4.6 %
Total debt divided by total capitalization(c)		59.1 %		61.3 %		54.8 %
COMMON STOCK						
•		367,916		347,722		341,127
Shares outstanding at year-end (in thousands)		211,526		224,000		262,000
Number of common stockholders at year-end		211,020		224,000		202,000
Common stock prices		3.		oo 7.		oo 3.
High		24 ³ / ₁₆		30 ⁷ / ₁₆		30 ³ / ₄
Low		14 ³ / ₄		16 ⁵ / ₈		21 ³ / ₄
PERSONNEL						
Oil and Gas		1,953		2,600		4,480
Chemical		5,974		5,850		7,350
Corporate, shared services and other	*****	774		740	**********	550
		8,701		9,190		12,380

- (a) Based on income from continuing operations
- (b) Earnings before special items reflect adjustments to net income (loss) to exclude the after-tax effect of certain infrequent transactions that may affect comparability between years. See the <u>Special Items</u> table for the specific nature of these items in 1999, 1998 and 1997. Management believes the presentation of earnings before special items provides a meaningful comparison of earnings between years to the readers of the consolidated financial statements. Earnings before special items is not considered to be an alternative to operating income in accordance with generally accepted accounting principles.
- (c) Total debt includes long-term debt, current maturities, notes payable, capital leases, natural gas delivery commitment and trust preferred securities. Total capitalization includes total debt, minority interest and equity.







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OCCIDENTAL PETROLEUM CORPORATION



Consolidated Statements of Operations

In millions, except per-share amounts

Occidental Petroleum Corporation and Subsidiaries



For the years ended December 31,	vov ee 000000	1999	***********	1998		1997
REVENUES						
Net sales and operating revenues				•		
Oil and gas operations	\$	4,572	\$	3,621	\$	3,667
Chemical operations		3,038		2,975		4,349
		7,610		6,596		8,016
Interest, dividends and other income		913		261		88
Gains (losses) on disposition of assets, net		(13)		546		(4)
Income (loss) from equity investments		41		(22)		1
		8,551		7,381	·····	8,101
COSTS AND OTHER DEDUCTIONS						
Cost of sales		5,059		4,462		5,060
Selling, general and administrative and other operating expenses		645		678		797
Write-down of assets		212		30		205
Depreciation, depletion and amortization of assets		805		835		822
Environmental remediation		_		_		136
Minority interest		58		1		_
Exploration expense		75		128		119
Interest and debt expense, net		498		559		434
	******	7,352	•••••	6,693		7,573
INCOME FROM CONTINUING OPERATIONS BEFORE TAXES		1,199		688		528
Provision for domestic and foreign income and other taxes		631		363		311
INCOME FROM CONTINUING OPERATIONS		568		325		217
Discontinued operations, net		_		38		(607
Extraordinary loss, net		(107)		-		_
Cumulative effect of changes in accounting principles, net		(13)				
NET INCOME (LOSS)	\$	448	\$	363	\$	(390
EARNINGS (LOSS) APPLICABLE TO COMMON STOCK	\$	442	\$	346	\$	(478
DAGIO FARNINGO DER COMMON CUARE	100000	***************************************		000000000000000000000000000000000000000	000000000000000000000000000000000000000	***************************************
BASIC EARNINGS PER COMMON SHARE		4.50				00
Income from continuing operations	\$	1.58	\$.88	\$.39
Discontinued operations, net		400.		.11		(1.82
Extraordinary loss, net		(.30)		_		_
Cumulative effect of changes in accounting principles, net	-00004	(.04)			**************	-
		1.24	\$.99	\$	(1.43

DILUTED EARNINGS (LOSS) PER COMMON SHARE

1.24

\$

.99

(1.43)

-44



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OCCIDENTAL PETROLEUM CORPORATION



Consolidated Balance Sheets

In millions, except share amounts

Assets at December 31,

Occidental Petroleum Corporation and Subsidiaries







				,		
CURRENT ASSETS			•••••	***************************************	en personano	•
Cash and cash equivalents	\$	214	\$	96	\$	113
Trade receivables, net of reserves of \$24 in 1999 and \$23 in 1998		559	٠	340		603
Receivables from joint ventures, partnerships and other		215		1,586		210
Inventories		503		500		604
Prepaid expenses and other		197		181		386
Federal income taxes receivable		_		92		9
Total current assets		1,688		2,795		1,925
LONG-TERM RECEIVABLES, NET	•••••	168		121		153
EQUITY INVESTMENTS	*****	1,754	***************************************	1,959	***************************************	921
PROPERTY, PLANT AND EQUIPMENT, AT COST			**********	***************************************	*****	***************************************
Oil and gas operations		11,816		11,690		9,039
Chemical operations		4,437		3,549		6,077
Corporate and other		1,451		1,440		1,441
		17,704		16,679		16,557
Accumulated depreciation, depletion and amortization		(7,675)		(6,774)		(7,967)
		10,029		9,905		8,590
OTHER ASSETS	*******	486	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	472		470
NET ASSETS OF DISCONTINUED OPERATIONS	******	_	*************	······································	***************************************	3,232
	\$	14,125	\$	15,252	\$	15,291

Consolidated Balance Sheets

In millions, except share amounts

Occidental Petroleum Corporation and Subsidiaries

Liabilities and Equity at December 31,	**************	1999	1998	1997
CURRENT LIABILITIES				
Current maturities of long-term debt and capital lease liabilities	\$	5 \$	1,400	6
Notes payable	-	29	30	35
Accounts payable		812	613	717
Accrued liabilities Dividends payable		738 93	774 91	957 106
Obligation under natural gas delivery commitment		122	91	100
Domestic and foreign income taxes		168	23	58
Total current liabilities	>	1,967	2,931	1,879
LONG-TERM DEBT, NET OF CURRENT MATURITIES AND	*****	······································	***************************************	***************************************
UNAMORTIZED DISCOUNT		4,368	5,367	4,925
DEFERRED CREDITS AND OTHER LIABILITIES	400000	***************************************	***************************************	***************************************
Deferred and other domestic and foreign income taxes		995	825	1,028
Obligation under natural gas delivery commitment		411	503	
Other		2,123	2,258	3,173
	2000000	3,529	3,586	4.201
CONTINGENT LIABILITIES AND COMMITMENTS	*****	***************************************		***************************************
MINORITY INTERESTS		252	5	_
OCCIDENTAL OBLIGATED MANDATORILY REDEEMABLE TRUST PREFERRED SECURITIES OF A SUBSIDIARY TRUST HOLDING SOLELY				
SUBORDINATED NOTES OF OCCIDENTAL		486		_
	******	***************************************		***************************************
STOCKHOLDERS' EQUITY				
ESOP preferred stock, \$1.00 par value; authorized 1.4 million shares		_		1,400
Unearned ESOP shares		. <u>-</u>	-	(1,348)
Nonredeemable preferred stock, \$1.00 par value; authorized 50 million shares			243	1,125
Common stock, \$.20 par value; authorized 500 million shares		73	69	68
Additional paid-in capital		3,787	3,814	4,149
Retained earnings(deficit) Accumulated other comprehensive income		(286) (51)	(734) (29)	(1,097 (11
/ southernor and south oriented mounts	••••	3,523	3.363	4,286
	>+++++++++++++++++++++++++++++++++++++		*********************	**********
	*	14,125 \$	15,252	15,291





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OCCIDENTAL PETROLEUM CORPORATION



Consolidated Statements of Cash Flows

In million

Occidental Petroleum Corporation and Subsidiaries







	1998	1997
\$ 568 \$	325 \$	217
805	835	822
12	22	11
183	275	(9)
275	10	426
(762)	(546)	4
(41)	22	(1)
75	128	119
(269)	54	(125)
27	(43)	(20)
13		(75)
90	• •	13
263	• •	(66)
(195)	(275)	(185)
1,044	324	1,131
	(244)	266
1,044	80	1,397
	***************************************	***************************************
(601)	(1,074)	(1,549)
52	3,378	120
775	_	_
1,395		_
(17)	(41)	(21)
• •	• •	(22)
114	55	46
1,591	(1,210)	(1,426)
	(6)	(79)
1,591	(1,216)	(1,505)
835	1,775	105
(2,201).	811	667
(1,305)	(679)	(374)
21	29	21
508	_	
	_	_
	500	_
	300	_
	805 12 183 275 (762) (41) 75 (269) 27 13 90 263 (195) 1,044 — 1,044 (601) 52 775 1,395 (17) (127) 114 1,591 — 1,591 835 (2,201) (1,305) 21	805 835 12 22 183 275 275 10 (762) (546) (41) 22 75 128 (269) 54 27 (43) 13 (65) 90 (176) 263 (242) (195) (275) 1,044 324 — (244) 1,044 80 (601) (1,074) 52 3,378 775 — 1,395 — (17) (41) (127) (3,528) 114 55 1,591 (1,210) — (6) 1,591 (1,216) 835 1,775 (2,201) 811 (1,305) (679) 21 29 508 —

Cash and cash equivalents - end of year	<u></u>	214 \$	96 \$	113
Increase (decrease) in cash and cash equivalents Cash and cash equivalents - beginning of year	÷	118 96	(17) 113	(145) 258
Net cash provided (used) by financing activities		(2,517)	1,119	(37)
Financing cash flow from discontinued operations		(2,517) —	1,119 —	(90) 53
Repurchase of common stock Cash dividends paid Other financing, net		— (363) —	(937) (387) 11	(119) [°] (422) 15
Proceeds (payments) of notes payable, net		9	(4)	17







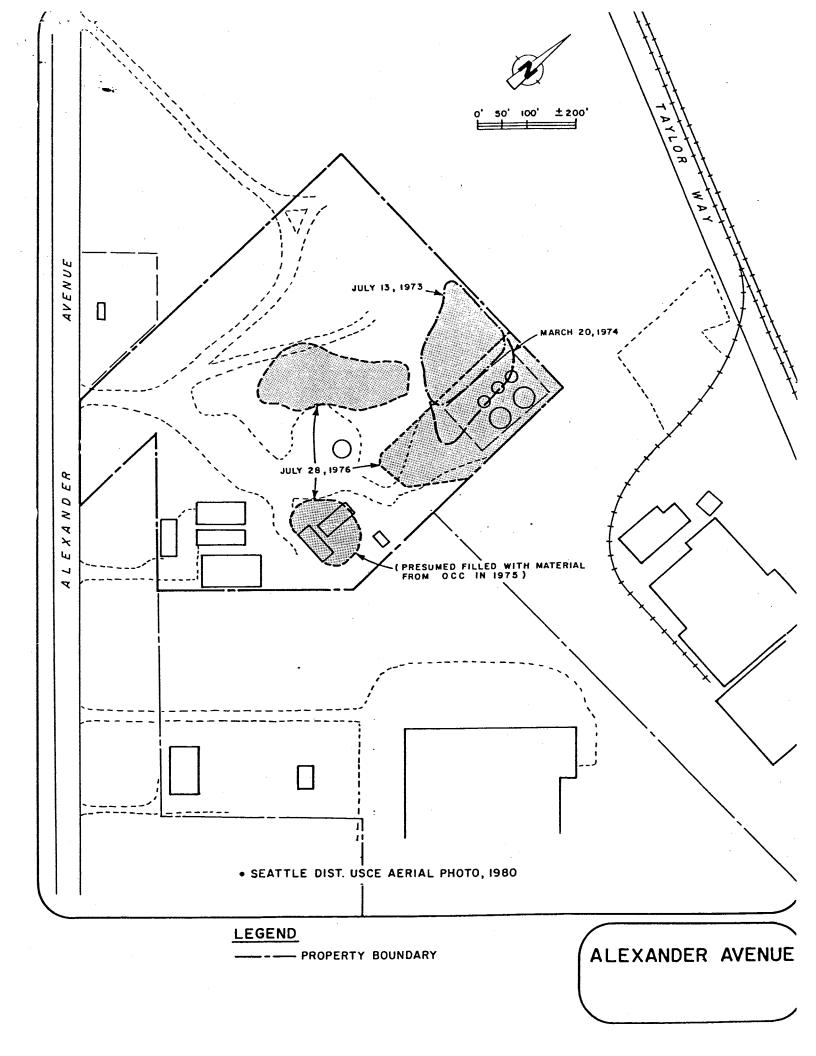
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HISTORICAL PHOTOGRAPHY

• Alexander Avenue







ALEXANDER AVENUE DECEMBER 13 1967





<u>LEGEND</u> ------ - PROPERTY BOUNDARY

ALEXANDER AVENUE MARCH 10 1970





1" = 200'

ALEXANDER AVENUE AUGUST 30 1972





1" = 200'

LEGEND

--- - PROPERTY BOUNDARY

- -SUSPECTED DISPOSAL AREA OF OCC WASTE

ALEXANDER AVENUE)
JULY 13 1973





ALEXANDER AVENUE MARCH 20 1974





--- - PROPERTY BOUNDARY

ALEXANDER AVENUE
JULY 28 1976





1" = 200

ALEXANDER AVENUE AUGUST 25 1980

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Product Search

World Headquarters, Research & Development

Product Bulletins

Reichhold

PO Box 13582

Research Triangle Park, NC

27709-3582

919-990-7500

Locations

■Corporate HQ USA ■Latin America European Polyesters **≢**European Coating Resins

Shipping Address:

Reichhold 2400 Ellis Road

Durham, North Carolina 27703





1927 by founder Henry Reichhold

Annual Sales:

\$1.3 Billion US (1999)

Employees:

Headquarters: 550

Total: 3500

Manufacturing:

Facilities in North America, South America and Europe

Parent:

Dainippon Ink and Chemical (DIC) Tokyo, Japan

Primary Business:

Formulated adhesives, coating resins, emulsions (synthetic latex), compo (polyester resins)

Product Information Center:

800-431-1920

productinfo@reichhold.com

Corporate Contact Info

Media Inquiries:

Corporate Communications Manager - Beth Roden



919-990-7800

Information Technology:

Vice President, Information Technology - <u>Ron Ridge</u> 919-558-2377

Environmental, Health & Safety, North America:

Sr. Director, EH&S and Engineering - <u>Dave Bright</u> 919-558-7184

Financial Information:

Senior Vice President, Finance and Corporate Planning - <u>Rick Holcombe</u> 919-990-7519

Human Resources:

Vice President, Human Resources - <u>Mitzi Van Leeuwen</u> 800-449-3973

Logistics & Exports:

Sr. Director, Logistics & Export Services - <u>Mike Beaver</u> 919-558-2765

Equal Opportunity Employer M/F/D/V

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STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000 November 7, 1989

Tø:

File - Northwest Processing

From:

Dave Polivka

Subject:

File Review for RFA Research

I have reviewed the Ecology SWRO files for Northwest Processing. This facility has also been known as Lillyblad Petroleum, Poligen, and Solidus. Lillyblad Petroleum also has a facility in another part of the Tacoma Tideflats industrial area. Solidus is actually the land holding company owning the land upon which the facility sits. Through all of the name changes the owner, Mr. Glen Tegen, has remained the same. Northwest Processing is a facility that processes a variety of off-specification petroleum products including waste oil, spent solvents, and other non-RCRA regulated fuels.

The materials reviewed for this summary includes inspection reports, spill reports, correspondence, orders, and miscellaneous reports. In addition to the files, I have reviewed historical aerial photographs of the area. The Northwest Processing facility is east of the Chempro Tacoma Facility (Figure 1). That facility's files have also been reviewed and are summarized in a separate memo. The most information regarding the area at and near the Northwest Processing facility has come from the review of the aerial photographs and a draft PLP search on the Chempro Parcel A site prepared by PTI Environmental in October, 1989.

Prior to the early 1960's the Northwest Processing site was a wetlands area with two ponds that extended onto the site from adjacent areas to the west and northeast (Figure 2). Beginning in approximately the late 1960's the area was filled. By 1972, the western portion of the site was being used for some type of storage as evidenced by two tanks on a 1972 aerial photograph (Figure 3). Title records show that Poligen/Northwest Processing began leasing the northwest portion of the property in 1974 and bought it in 1981 along with the parcel to the south leased by Chempro (Parcel A). Either at the same time or shortly thereafter Poligen bought the two adjacent parcels to the east and southeast. Currently, Northwest Processing is operating on all parcels except the parcel that was leased by Chempro and is undergoing closure (Parcel A).

Sixteen Solid Waste Management Units (SWMUs) have been identified on the Northwest Processing site.

- 1) The two ponds identified in a 1961 aerial photograph,
- 2) The area of tanks identified in the 1972 aerial photograph,

- 3) An area of approximately 250 drums identified by PTI in a 1973 aerial photograph,
- 4) The original tank farm area operated by Poligen,
- 5) A pond created by Poligen on the eastern parcel prior to 1982.
- 6) An area of stored drums identified in a 1983 aerial photograph,
- 7) The current process unit and adjacent tank farm on the western parcel,
- 8) A tank farm on the eastern parcel,
- 9) An area of portable tanks in the southern portion of the site,
- 10) An area of portable tanks along the eastern fence of the site,
- 11) A drum storage building on the eastern portion of the property,
- 12) An area of drum storage in the northeastern portion of the site.
- 13) A truck maintenance area in the northern portion of the site.
- 14) A maintenance workshop in the northeastern portion of the facility,
- 15) Tanks located in the southeastern corner of the site, and,
- 16) A warehouse in the central portion of the facility.

Many of the SWMUs overlap and collectively they cover the entire property owned or controlled by Solidus/Poligen/Northwest Processing. Some of the SWMUs appear to extend off site. The exact extent of some of the units and if there has been a release to the environment is unknown.

SWMU 1

There were two ponds identified in a 1961 aerial photograph of the area (Figure 2). One pond was estimated by PTI to cover approximately 4 acres and the second pond covered approximately 6 acres. The four acre pond was located in the western portion of the site and extended to the west onto what is currently Chempro's site. The majority of the pond was west of the Northwest Processing site. The six acre pond was in the northeastern portion of the site and extended to the northeast toward property currently owned or operated by Gateway Consolidators. As with the four acre pond the majority of the six acre pond was not on the Northwest Processing property.

After 1961 the entire area was filled. The six acre pond was reportedly filled by Buffalo Don Murphy although this can not be confirmed in the files. By 1974, the entire pond was filled. Some of the fill used, both to fill the pond and afterwards, was reported to be lime sludge from Hooker Chemical (Occidental). The sludge was the by-product of trichloroethylene (TCE) and tetrachloroethylene (Perc) production. Analyses of the lime sludge by Ecology in 1982 indicated that the sludge contained concentrations of both TCE and Perc and possibly other volatile organic compounds (VOCs) along with concentrations of metals (Attachment A). Analyses by Chempro of lime sludge on their property indicated the presence of VOCs (Attachment B). In addition, the ground-water beneath the lime sludge on the Chempro property to the west has a very high pH (Approximately pH 12) (Attachment C). Based on pH, the lime sludge would designate as dangerous waste under the State of Washington Dangerous Waste Regulations (WAC 173-303). fluff from General Metals was used as fill in other areas nearby and may have been used on the Northwest Processing site. Analyses of the auto fluff by Chempro indicates that it contains concentrations of metals and possibly cyanide (Attachment D). Test pits dug by Poligen in 1982 indicated that a variety of fill material was used to fill the current Northwest Processing property (Attachment E).

The four acre pond and the entire area around it was filled after 1961. The primary fill material for the pond was lime sludge from Pacific Lime (Continental Lime) and Hooker Chemical (Occidental). At times auto fluff and dredge spoils from the Hylebos Waterway were used as fill. By 1974, the portion of the pond on the Northwest Processing site was filled. The lime sludge from the filling operations appears to extend on to the Northwest Processing site (Figure 4).

SWMU 2

A 1972 aerial photograph shows several tanks located on the western portion of the Northwest Processing site adjacent to the remnant of the four acre pond (Figure 3). It is not known what the tanks were used for or by whom. The property at the time was owned by Donald Oline.

SWMU 3

PTI identified on a 1973 aerial photograph a potential area of approximately 250 to 500 drums stored to the east of the remnant of the four acre pond (Figure 5). It is not known what the drums were used for or who placed them there. The owner of the property at the time was Donald Oline and the only commercial facility in the area was Aero/Acology Oil on the property to the south. PTI also identified two potential surface impoundments and a pile of dark granular material at the same location (Figure 5).

SWMU 4

Beginning some time between 1974 and 1976 Northwest Processing began operation in the northwestern part of the current site. The original operation appeared to consist of two large tanks in an unpaved area with earthen berms (Figure 6). There also appears to be other tanks outside of the bermed area along with a storage area (Figure 6). By 1980, the number of tanks in the bermed area had increased to five large tanks and six to eight smaller tanks (Figure 7). An inspection report dated January 13, 1978 indicated that a hole had been cut in the berm and that there was effectively no containment around the tanks. EPA color aerial photographs dated 1981 and 1983 show possible staining in the bermed area surrounding the tanks (Figures 8 and 9). An inspection by Ecology in September 1988 revealed that one of the tanks in the tank farm contained 72,000 gallons of spent Safety Kleen solvents and that the tank was leaking on to the ground.

SWMU 5

Sometime prior to 1982, during site expansion, a pond was created on the portion of the property east of the tank farm as a result of excavation and shallow ground-water (Attachment F). The excavated material was illegally dumped at a landfill off site. The pond along with sludge adjacent to it was sampled by Ecology in January, 1982. At the time of sampling, Ecology observed heavy oil product on the north side of the pond and a light sheen on the water. Analyses of the samples indicated concentrations of several VOCs (Attachment F).

SWMU 6

Review of a 1983 EPA aerial photograph indicated that Northwest Processing had been storing drums in the eastern portion of the property (Figure 9). These drums were placed in an uncovered and uncontained area. It is not known what the drums contained, if anything.

The rest of the SWMUs on site relate to what was on site as of September, 1988. Some of the SWMUs existed prior to this time.

SWMU 7

In 1983, south of the original tank farm Poligen built the current processing unit and a smaller tank farm (Figures 9 and 10). These two adjacent areas are built on a concrete containment pad. During an Ecology inspection in September of 1983 it was noted that oil was being spilled from a cracking tower in the processing area (Attachment G). It is not known how long the leaking occurred and how much material was lost.

SWMUs 8 - 16

A 1987 aerial photograph (Figure 10) and a site plan figure from a September 1988 meeting (Figure 11) indicates that several SWMUs currently exist or existed on the site.

SWMU 8

A tank farm on the eastern portion of the site. It is not known at this time what is managed in this tank farm or if there have been any releases associated with the tanks. The tank farm is paved with concrete and appears to have containment berms.

SWMU 9

An area of portable tanks was observed in the southern portion of the property. These tanks were used to hold water and oil generated during cleaning of the oil/water separator system and the process area sumps. They were located in an uncontained and unpaved area.

SWMU 10

Eleven portable tanks were observed by Ecology along the eastern fence of the property (Figure 11 and Attachment G). The tanks contained liquid and were sampled. It is not known what the liquid was or whether the samples were analyzed. The area of the tanks was unpaved and did not have containment. The tanks ranged in size from 500 - 5000 gallons.

SWMU 11

The site plan indicated that there is a drum storage building on the eastern portion of the property. It is not known what is stored in the building. The drums, if any, could be product or waste. The building is covered but it is unknown if the floor is paved or if there is containment. The 1987 aerial photograph (Figure 10) shows that there were drums stored outside of the building both to the south and the east. Theses areas were not paved and did not have containment.

SWMU 12

A second drum storage building exists in the northeastern portion of the site. The building is covered but it is not known whether the floor is paved or if there is a containment system in the building. This building

also appeared to have drums stored outside on bare ground. According to the meeting notes of September 1988 (Attachment G), there were 366 drums in the building. They are reported to be from safety-kleen process. At the time of the September, 1988 meeting there were 54 drums stored outside the storage building. These drums were marked hazardous waste. It is not known what the waste was of if there were any releases.

SWMU 13

The site plan from the September meeting shows a truck maintenance area in the northern portion of the site (Figures 10 and 11). It is not known what type of maintenance was performed here or if waste was systematically released in this location.

SWMU 14

The site plan also shows a maintenance workshop in the northeastern portion of the site (Figures 10 and 11). Again, it is not known what type of maintenance was performed here or if waste was systematically released in this location.

SWMU 15

Review of a 1987 aerial photograph showed possible tank storage in the extreme southeast corner of the site (Figure 10). There appeared to be at least two tanks and possibly four at this location. It is not known if the tanks were being used or if they were just being stored.

SWMU 16

The site plan shows a warehouse in the central portion of the site (Figures 10 and 11). It is not known what the warehouse is used for or if hazardous materials are stored in it.

The file review also revealed that the Northwest Processing facility was issued an order and a fine by Ecology in January, 1989 for numerous dangerous waste regulation violations (Attachment H). The violations included among other things illegal storage of wastes, illegal transportation of waste, spills to the environment, and failure to maintain records.

The files also indicated that in 1984 there was a report of a black oily material seeping out from the Poligen property onto property to the northeast (Attachment I). The report did not indicate if the material was analyzed or how much material existed.

A letter from the Tacoma-Pierce County Health Department dated May 28, 1987 indicated that Poligen was in violation of their NPDES permit for oil and grease discharge. Analyses from the first in-line catch basin revealed 1400 ppm oil and grease. The permitted limit was 15 ppm.

AND USE

|sintenbal =

C = Commercial

V = Vacant

U = U

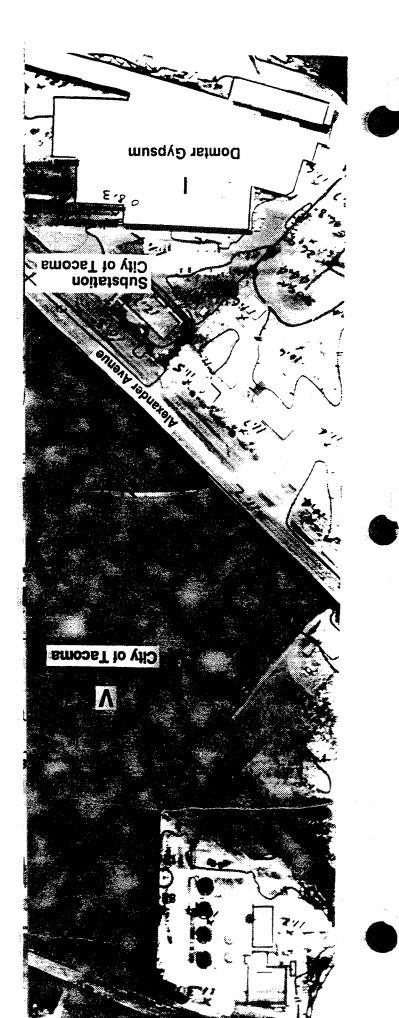


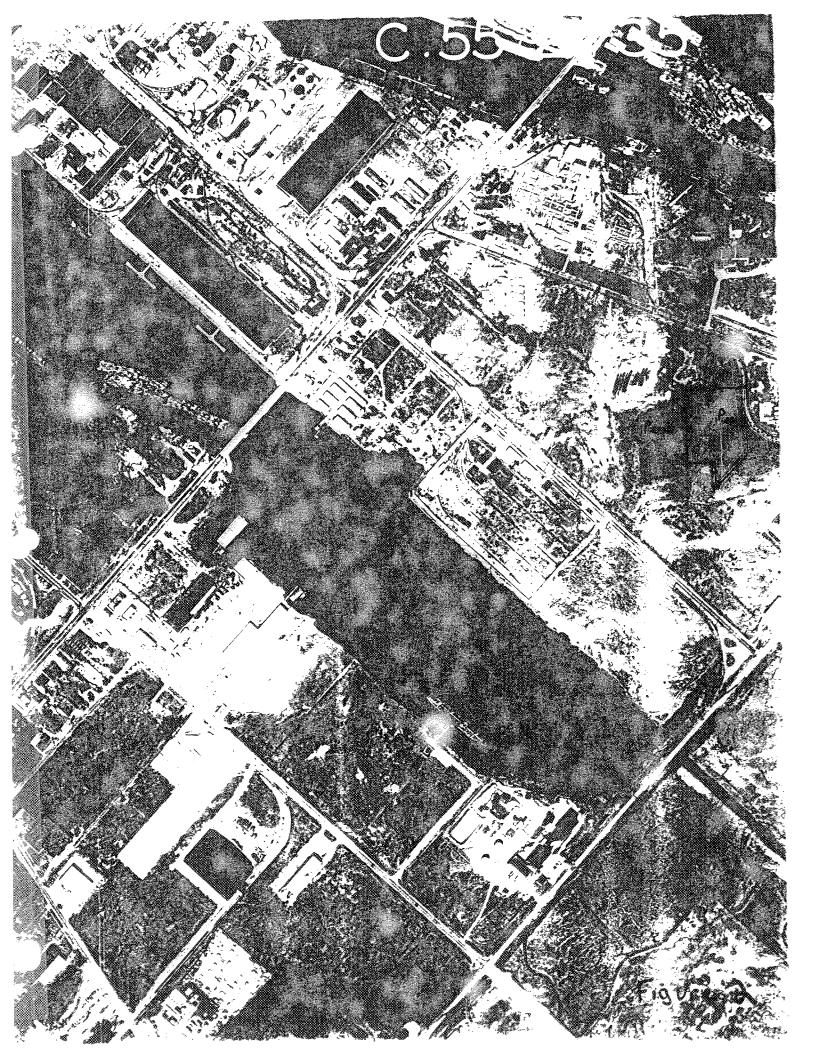
300

Contour interval = 1 foot All elevations are National Geodetic Vertical Datum of 1929 (NGVD)

FIGUREI

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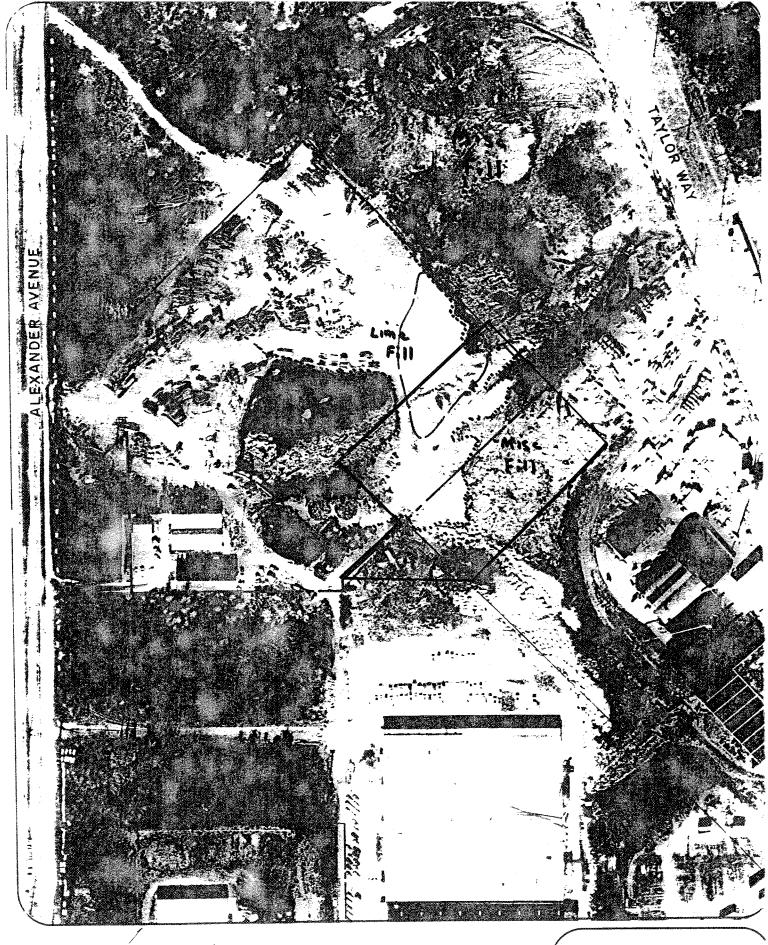
--- - PROPERTY BOUNDARY

1" = 200

ALEXANDER AVENUE

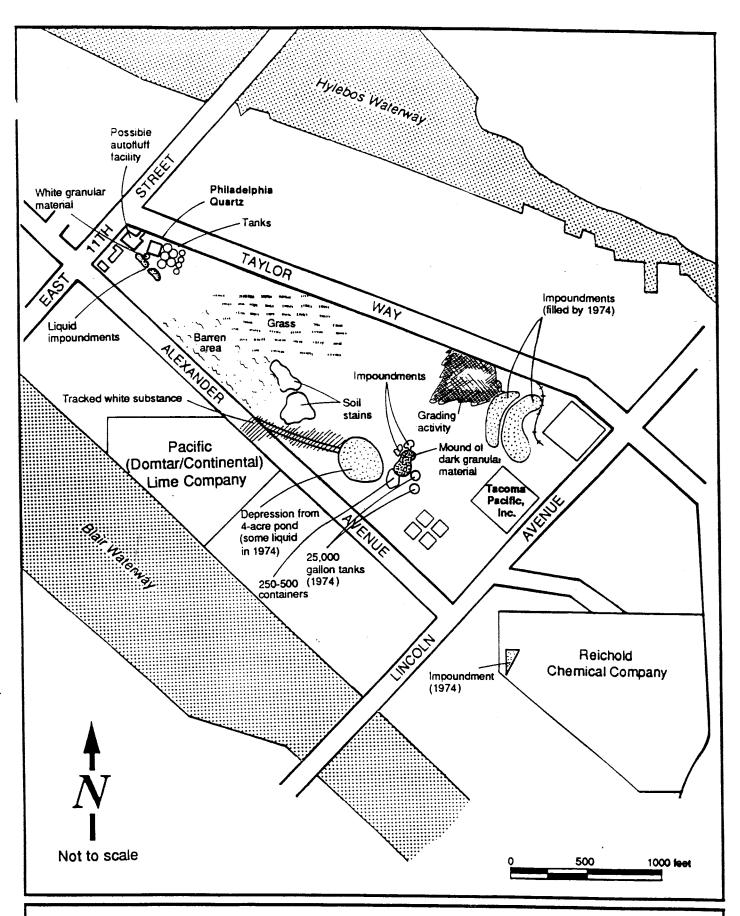
AUGUST 30 1972

Figure ?





ALEXANDER AVENUE
MARCH 20 1974
Figure 4



Prominent features and activities observed from Ecology (1973) and DOT (1974) photographs





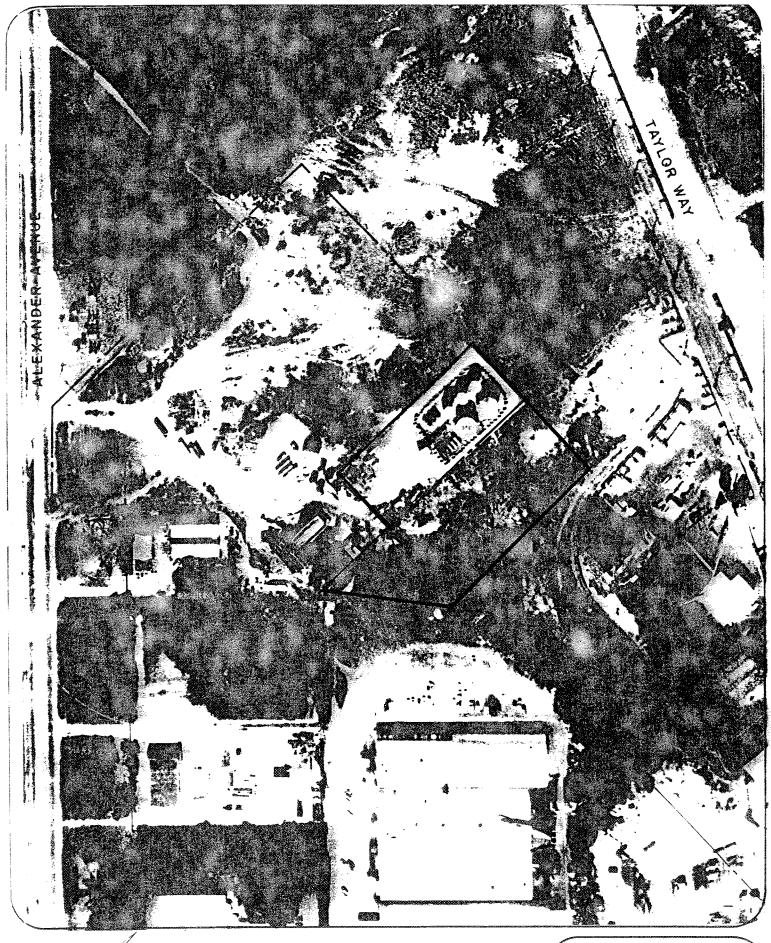
- - PROPERTY BOUNDARY

- - SUSPECTED DISPOSAL AREA OF OCC WASTE

ALEXANDER AVENUE

JULY 28 1976

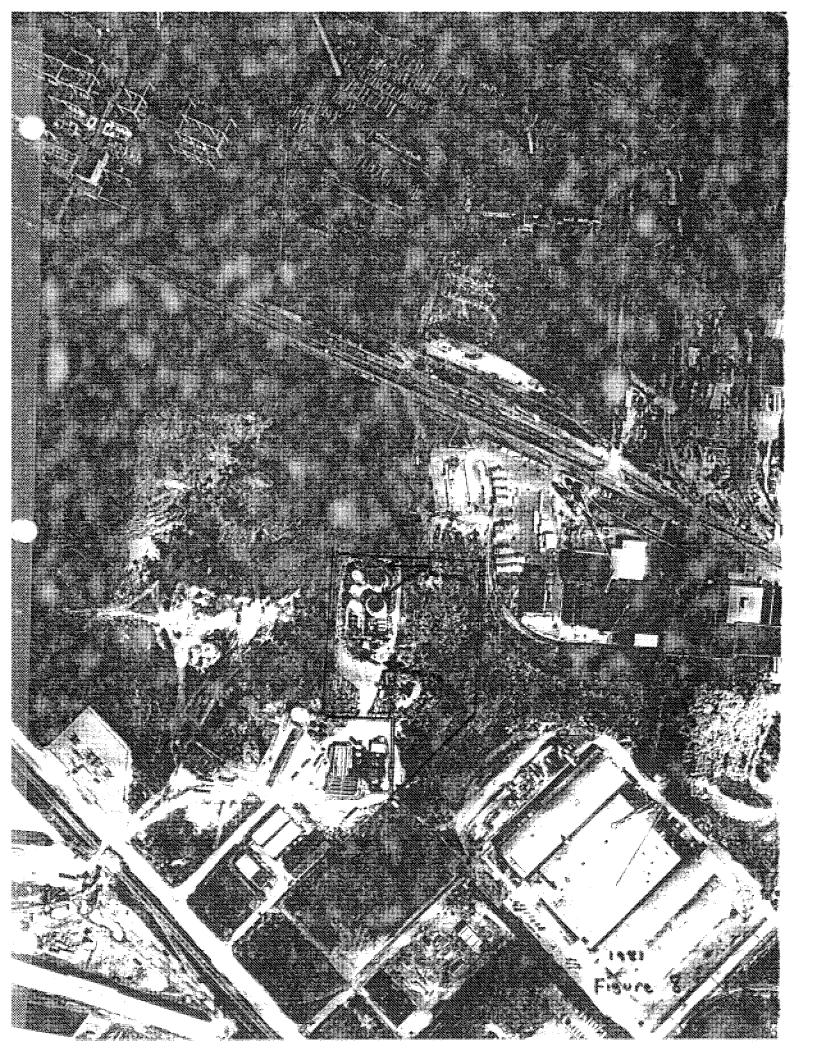
Figure 6

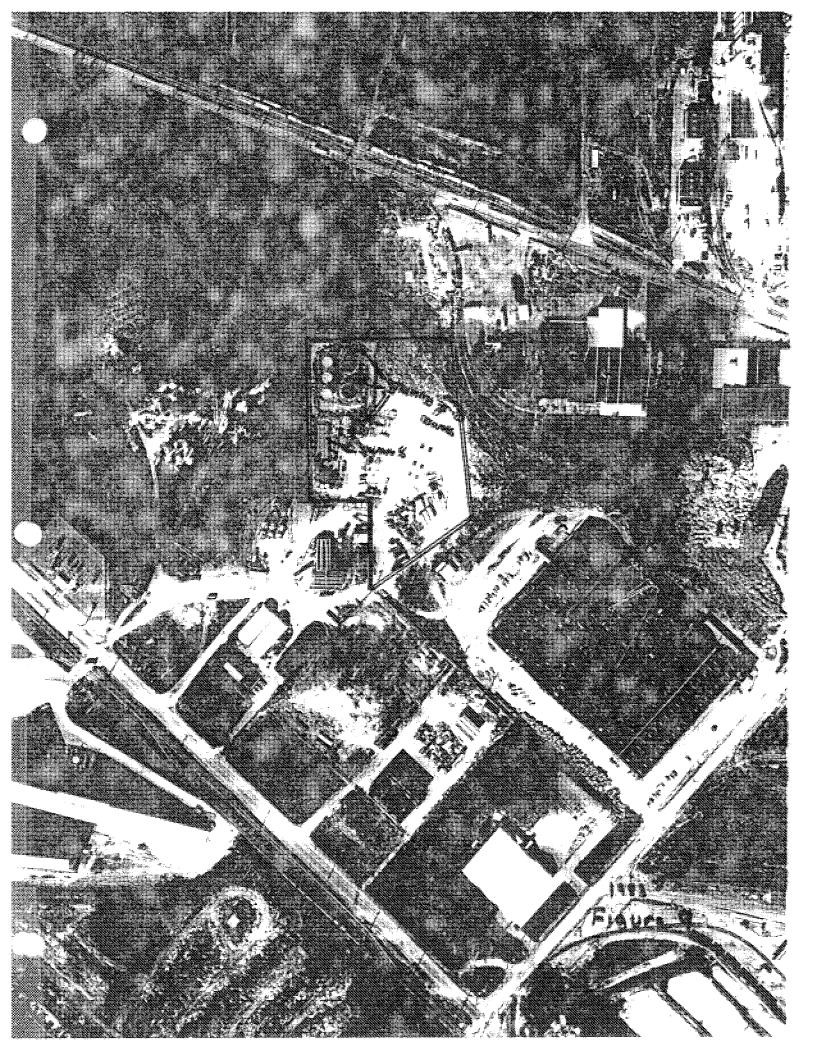




- PROPERTY BOUNDARY

ALEXANDER AVENUE
AUGUST 25 1980
Figure 7





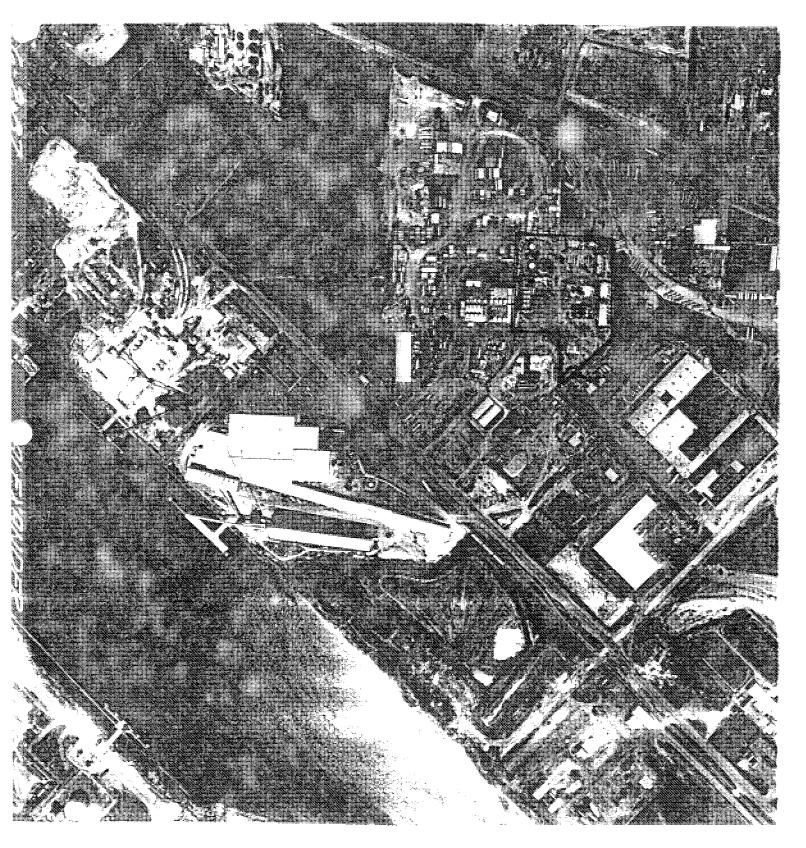
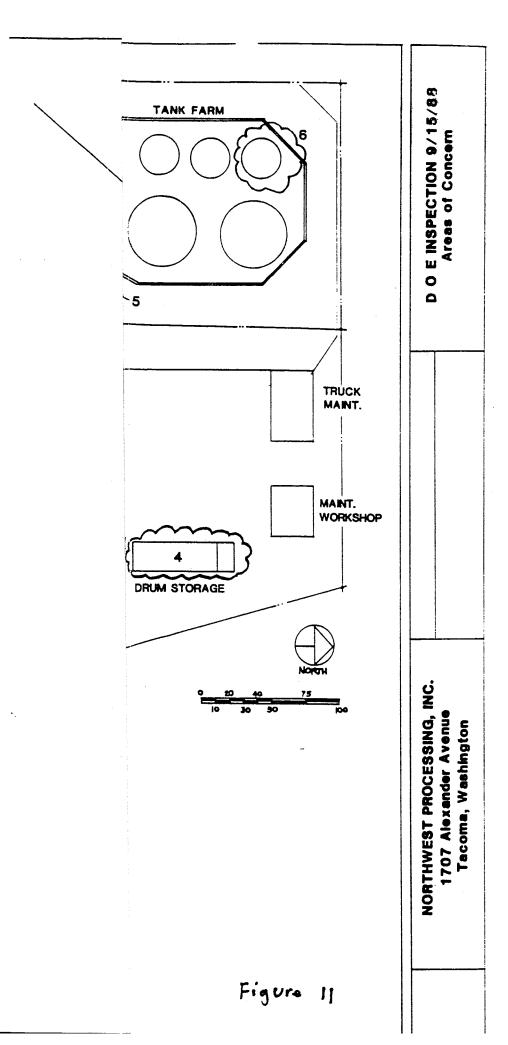


FIGURA 10



State of Washington Department of Ecology

INSPECTION REPORT

	Will Abercionlie
To District 3	Inspector Jim Oberlander
Date of Visit 1 - 6 - 8 2	Permit Number
Name of Entity Hooken Chamical Suspected delung	Permit Expires
City Ta Coma County Preser	New Industry
Person Contacted Lyle Feller -	
Type of Facility Chemical	
Receiving Water	
Type of Treatment System	
Operation:	Unsatisfactory
☐ Does not comply with permit conditions	
Describe Task Lyle Feller over to	the newly unever
gray/white sludge found on fily	blads property put
behind Chemical Processor. To-	le composite samples
I sludge with slower and	splet samples with
fyle. Also took sough of w	ate in hole dug
by Telyphad, water has light	product sheen and
beauty or product was found on Dil appears to be coming for	more sed of foul.
See attacked map. Took 35 mm ph	to
1-8-82 Talked with Glen Tegen	
Trucking (Bill 272-5656) did back	has and backing work
material was disposed of at two s	ites. One in Fel.
and the Cookie dump dump si	to blen said they
ion into heavy oil bettoms" (20 2	lord) which accounts
for heavy oil on pour senfore. I.	Bruce Smith, owner

N

Tank

Lily of

COMPOSITE SAMPLE TOOK

Chempro

Williams

Alexand File

PURGEAR'T HALOCARBON RESULTS - Tacoma, W. Trea

EPA REGION 10 LABORATORY

Pit (Pond) CHEM PRO Lily blad Pond Area
Sampled 1/6/82

<u>ab. No.</u>	Sampling Site Identification	1,2(Trans)-Dichloro- ethylene	Trichloro- ethylene	Tetrachloro ethylene	others
		Results in Microgram	n/liter		
2-	Liquid				
01010	Pit (Pond) behind Chem Pro	72.	1020.	4150.	99. Chlorofo 641,2 Di- chloro- ethane Other compourement that could not be identified.
		Results in Microgram	ns/kilogram		
1011	Soil composite Pit behind Chem Pro Material from under Poligen fence Line	Less than 10.	68.	7380.	Other comporpresent that could not be identified.
	Grey - brown, clay-like materia	<u>.</u>			

Sampleo Taken by: Jim Oberlander Will Abercrombie

L. Feller (Hooker Chemicals)

eof Sament Coosy

1 blad Pond Area

ENVIRONMENTAL LABORATORY DATA SUMMARY METALS

PAGE	OF
CRIGINAL TO:	LAB FILES
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COURCE MOOR	cer C	المناسات	G.,1.	side had	PROGRA	AM NUME	BER				
S ATE COLLECTED	1-6-	Fig. Rece	EIVED		COLLEC	TED BY	W.A.	lercn-	110,0	1. Obst.	Taraki
Sanple (Log) Number	Units	Standarck Deviation ± %	2 70037	i (olso	22-	1096					
Station:		± %	Co-100	ete Fran	pitó	hind C.	בת בם	Sludge	•		-
На	mg/20		F0.2	K-			·				
	31 4										
As	mg/129		5.5	 							
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NOTE: Dissolved Met	als: The	ose that will	pass thro	ugh a 0.45	μ membr	ane filter					

mg/L= ppm = μg/ml mg/kg = ppm = μg/gm μg/L= ppb = ng/ml μg/kg = ppb = ng/gm

Total Metals:

Suspended Metals: Those retained by a 0.45 μ membrane filter

"<" is "less than" and ">" is "greater than"

SUMMARIZED BY Julem

4-21-97

ECY 040-2-32 (c)

REVIEWED BY

Those found in the unfiltered, rigorously acid digested sample

Rav. 8/81

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3

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10

33

35

14

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.3

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13

:9

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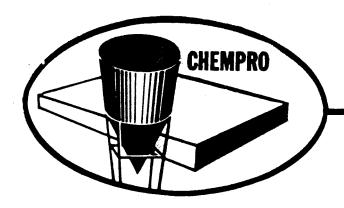
ઃડ

Poliaen Site

opened an oil valve one day, and it cost me several thousand bucks to clean that mess up. And from then on—and this was probably July of '73— from then on I had a night watchman plus weekend watchmen 24 hours around the clock until I left in November of '76. I don't know what has happened since then, but I was a little perturbed and felt that security was necessary. And my watchmen wouldn't let anyone dump anything, and this would include weekends, so I can't imagine how anyone could get in there with any material I didn't know about.

- Q (Mr. Kouklis) Just to recap, then, you were concerned throughout this time about the ecological effects of any hazardous waste being dumped on any of those properties; is that right?
- Well, we almost had to be. Mr. Oberlander at that time was with the Department of Ecology and a fellow by the name of Ron Robinson was his boss, and I'll say this, they were very helpful and had a lot of suggestions, but they were watching me like a hawk, and the first misstep— they had told me they were going to close me down if I didn't have a program of continuous upgrading. And, of course, we did. The place was never closed down.

 O Do you have any photographs, pictures, of the area that
- Do you have any photographs, pictures, of the area that we are discussing here?



CHEMICAL PROCESSORS, INC.

5501 AIRPORT WAY SO. SEATTLE, WASHINGTON 98108

PHONE: (206) 767-0350

185 AGD -5 Pil:14

August 1, 1985

Mr. Rick Pierce Washington Dept. Of Ecology 7272 Cleanwater Lane Olympia, WA 98504

Dear Ms. Pierce:

As part of our plans to rebuild our Tacoma facility to conform with Part B standards, we have retained Sitts and Hill, a local consulting engineering company, to design the structural requirements. After evaluating past soil studies, it was concluded by them that the "auto fluff" and lime material would have to be removed and replaced with good quality fill since they were too elastic and spongy to serve as a good structural base for heavy tanks.

Because the lime in the area underneath the proposed plant location was purported to be from Hooker Chemical in the Harper Owes 1982 study, I obtained a sample and had it analyzed for chlorinated compounds and EP toxic metals. The results of the analysis are as follows:

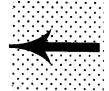
LIME SAMPLE

Chlorinated Compounds

Tetrachloroethylene		2.900	mg./l
Trichloroethylene		0.300	11
Methylene Chloride		11.700	11
Chloroform		0.150	11
Carbon Tetrachloride		<0.500	"
Dichloroethane		0.167	11
1,1,1-Trichloroethane		0.190	Ħ
	Total	15.190	mg./l

EP Toxic Metals

Cr	<0.2	mg./l
Cu	<0.2	
Ni	< 0.2	***
Pb	<0.2	ti .
Cd	<0.2	11
Zn	<0.2	11



As you can see from these test results, the material does not contain sufficient chlorinated compounds to be a persistent dangerous waste. In addition the EP toxic metals tested were also well below levels which would cause it to be designated.

In addition I had a sample of the "auto fluff" taken and analyzed for EP toxic metals. The results were as follows:

Auto	Fluff	EP	Toxic	Metals
Cı	r	<	(0.2 mg	g/l
Cı	ı	<	0.2	11
N	i		1.2	11
Pł	D		1.0	11
Co	i		0.5	11
Zr	า	4	19.0	11

The only significant extractable metal in this group is zinc, which is not on the EP toxic metals list.

We recognize that these tests do not complete the designation process under Washington rules. However, they do demonstrate that the materials are not exceptionally hazardous since the parameters tested are the ones that would be expected to be present based on the sources of the material.

In order to proceed with our planned fill requirements at Tacoma in a timely manner, we propose to excavate the material and stock pile it on our property while completing the necessary designation process so that this will not delay the ground preparation for the new facility. Our concern is that preloading requirements provide a built in delay factor already so we want to complete the fill activity this fall. Our intention is to begin building the new tank containment pad and structures next spring or early summer after plan review by DOE.

This letter is to inform you of our proposed holding of the excavated material and to request your comments
and concerns. Once the material is designated, we will
then proceed with appropriate disposal.

Please give me your comments as soon as possible so that we may proceed with the needed work during this construction season.

Sincerely,

Dennis Stefani

cc: Frank Monahan

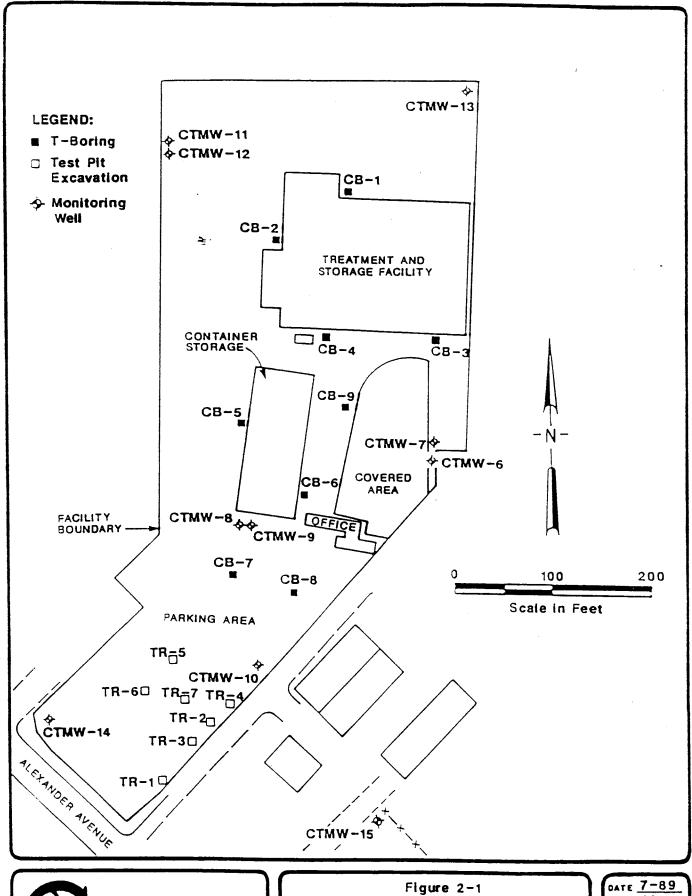
VOLUME 1

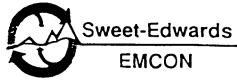
PHASE II
HYDROGEOLOGIC INVESTIGATION
PARCELS B AND C
TACOMA
August 17, 1989

Submitted to:
U.S. Environmental Protection Agency
Region 10
Seattle, WA

Prepared for:
Chemical Processors, Inc.
2203 Airport Way S.
Suite 400
Seattle, WA 98134

Prepared by:
Sweet-Edwards/EMCON, Inc.
18912 North Creek Parkway, Suite 210
Bothell, Washington 98011
Project No. S94-03.10





CHEMPRO TACOMA
SITE EXPLORATION MAP

DWN. JA
APPR. AU
REVIS.
PROJECT NO
S9403.10

KUKER-RANKEN INC./ 128502

Table 3-3
SUMMARY OF GROUND WATER FIELD MEASUREMENTS
TACOMA FACILITY

T-BORING	SAMPLE				
OR WELL NUMBER	COLLECTED	SAMPLE I.D.	рH	SPECIFIC COND. (us/cm)	TEMP.
CB-1	T-boring	CB-1-A CB-1-B	9.21	267	16.4
CB-2	T-boring	CB-2-A CB-2-B	12.69	9030	13.4
CB-3	T-boring	CB-3-A CB-3-B	7.46	2860	14.0
CB-4	T-boring	CB-4-A CB-4-B	6.95	575	15.0
CB-5	T-boring	CB-5-A CB-5-B	11.17	1411	15.0
CB-6	T-boring	CB-6-A CB-6-B	7.49	1249	15.5
CB-7	T-boring	CB-7-A CB-7-B	12.26	4200	13.8
CB-8	T-boring	CB-8-A CB-8-B	6.81	1510	14.0
Œ - 9	T-boring	CB-9-A CB-9-B	6.95	8 420	13.7
CIMW-13	T-boring	CIMW-13-A CIMW-13-B	6.79	85 8	13.8
CIMW-14	T-boring	CIMW-14-C CIMW-14-D	7.29	774	12.5
CIMW-15	T-boring	CIMW-15-A CIMW-15-B	7.42	2450	14.2
Materials Blank	Driller's Water	CIMW-13-C CIMW-13-D	8.62	88	14.3

Table 3-3 (continued)

SUMMARY OF GROUND WATER FIELD MEASUREMENTS
TACOMA FACILITY

T-BORING OR WELL NUMBER	SAMPLE COLLECTED FROM	SAMPLE I.D.	рH	SPECIFIC COND. (US/cm)	1 EMP . (°C)
CIMW-6	Monitoring Well	CT-589-11	7.64	22300	16
CIMW-6 (duplicat	Monitoring Well (e)	CT-589-13	7.64	22300	16
CIMM-7	Monitoring Well	CT-589-8	7.19	8210	16
CIMW-8	Monitoring Well	CI-589-5	10.84	8960	14
CIMW-9	Monitoring Well	CI-589-7	7.16	3 98 0	14
CIMW-10	Monitoring Well	CT-589-14	7.00	752	15
CIMV-11	Monitoring Well	CT-589-3	10.45	9410	13
CIM-12	Monitoring Well	CT-589-4	7.09	3270	14
CIM-13	Monitoring Well	CT-589-1	6.72	840	13
CIMW-13 (duplicat	Monitoring Well ce)	CI-589-2	6.72	840	13
CIMW-14	Monitoring Well	CT-589-9	7.67	9 90	14
CIMW-15	Monitoring Well	CT-589-10	7.04	2370	16

PARCEL A CLOSURE AUTO FLUFF TESTING AND ANALYSIS

CHEMICAL PROCESSORS, INC.

January 1989

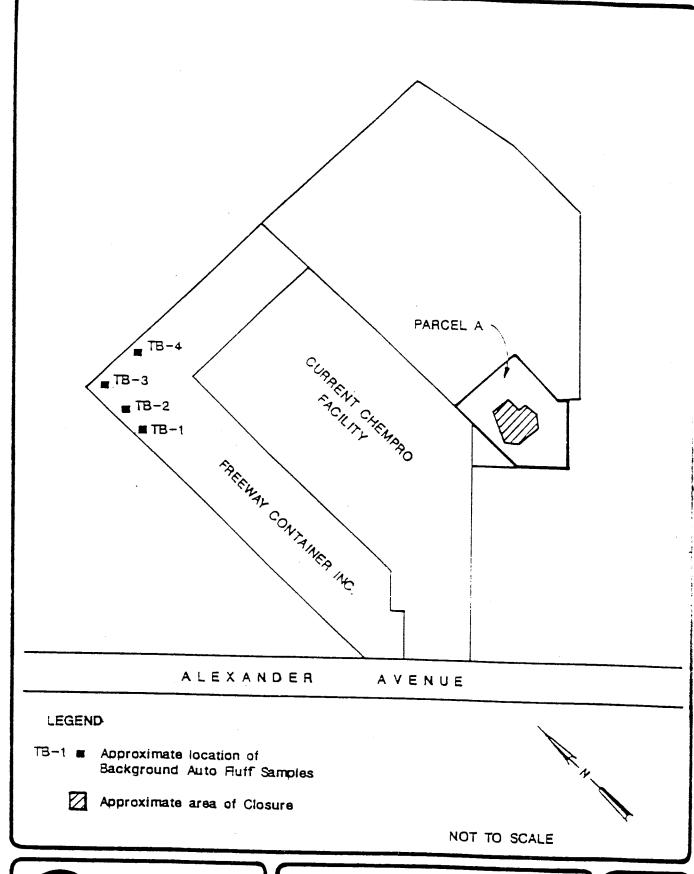
Prepared for:

Chemical Processors, Inc. 2203 Airport Way S., Suite 400 Seattle, WA 98134

Prepared by:

Sweet-Edwards/EMCON, Inc. 18912 North Creek Parkway; Suite 210 Bothell, WA 98011

Project No. S94-03.09



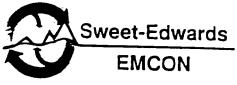
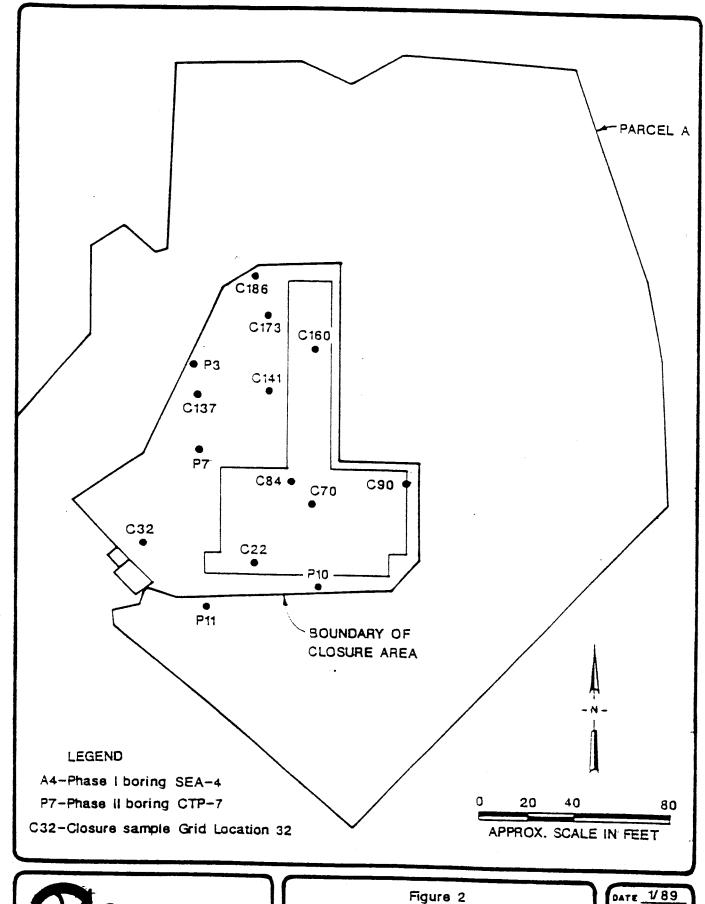


Figure 1

LOCATION OF BACKGROUND AUTO FLUFF SAMPLING SITES

DATE 1/89
DWN. MP

PROJECT NO. 59403.09





AUTO FLUFF SAMPLING LOCATIONS WITHIN PARCEL A CLOSURE AREA

DATE 1/89
DWN. MP
APPR.
REVIS.
PROJECT NO.
S9403.09

TABLE 2 SURMANY OF LABORATORY RESULTS TOTAL METALS (mg/kg)

10	ARSENIC	-						MILITARIO	STIVER	CYANIDE	CYANIDE	₹ 3.
BACKGROUND AUTO FLU 09/28/88 TB-1A		BARION	CADMIUM	CHROMITON	o MOTHONIO		HERCORI	SELENION				, i
09/28/88 TB-1A	FF SAMPLES			f 1 1 1 1 1 1 1 1 1								
		;	Ċ	•	4	29.70	2.0	•	10	3.5	3.5	9
	151	2050	9 1	017	1 4	0777	. ~	45	6.1	4.2	4.2	6.9
09/28/86 TB-1B	12	1880	9 7	/ 87					•	* •	0.5	7.1
09/28/88 TB-2A	22	1360	3 7	A				-	1.5 +	1.3	1.3	7.1
09/28/88 TB-2B	22	1720	7	171		0417			· ·	. 0	5.0	6.3
09/28/88 TB-3A	9	2600	53	230	60.0	1150	4 4	•				6.3
09/28/88 TB-3B	58	3490	67	523	0.05	8230	C ;	•	•			7
	7.7	9 09	12	83	0.05	1080	0.67	-	• •	, ,		
	10	407	0.6	38	0.05	558	0.79	-	• ~	n .		-
		,	ć	d	a	Œ	œ	60	60	9	60	80
count -	80	30	.	D (•	, ,,,,	2 0 45	6 6375	3.85	1.6875	1.6875	6.9
mean : std.dev :	50.337	2538.8 1857.6	53.25 43.398	81.764	n 0	2567.0	1.1686	14.504	3.0618	1.4163		0.4031
CLOSURE AREA AUTO FLUFF SAMPLE	TUFF SAMPLE	5 1										
		99	7 3	386		120	0.2	* 5.0	• •	1.8		
09/21/8/ CTP-3B F1		0501	22	11		2250			•			
09/21/8/ CIF=/8 F2	,	3440	4 3	7 + 1		3300		0.5	# 10 /			
09/2//8/ CIF-10E #2		1260	37	262		9750	(.)	•	22.5	• •		
		16	0.5	11		21		•				
22-24		629	12	76	2.5	5061	2.0		-			
	12	714	18	7.4	2.5	4389	0.7	* 5	m 1			
	25	1925	Ç	139	2.5	3252	9 '	e .	Λ.			
	23	825	28	117	2.5	6722	6 .0	• •	• -			
10/13/87 90-19	8	16	• si.o	13	• (0)	C .			•			
11/25/87 137-19	23	1173	63	(*) (*)		9695	1.1	•	• -			
11/25/87 141-19	e	58	4 5.0	12		Ç .			•			
		•	 0 ·	<u>.</u>	•	061	1 0	0.5	-			
11/25/87 173-30	7	E C	n .	A .) 	9 0		* 50	on			
11/25/87 186-30	.	0	•	9 9 9 1		:	•					
`.		;	,		đ	1.5	14	14	14	e		
count -	, •	•		- C		3170	1 2571	0 7285	4.4714	1.1		
	28.5	663.42	18.446	248.53	4.7555	C 107		97.0	5 5087	5 0484		
atd.dev =	56.167	621.17	19.498	410.12	5.5815	7867.0	1.0433	25.0			3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	1
T-TEST CALCULATIONS:	-	Laval of significance 0.100	nc• 0.100	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		 	: : : : : : : : : : : : : : : : : : :	- 1 1 8 8 6 1 1 7 8 1 1 1 2 1 2 1 2 1 1 2 1 1 1 1 1 1 1 1				
							ţ	Ġ	ć	đ		
Deg of F :	50	20	21	21		21	50	07	07	7040		
;	1.004	-2.768	-2.155	0 106 0		-0.518	-1.306	751 1	345.0	1 ac .		
thresholds	1.325	1.325	1.323	1.323		1.323	1.325	1.365		1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		
	DISON	PISON	NOSIG	NOSIC		NOBIC	NOS16	NON	NON I	7100		
1 incress								3	16.141	178.51		
over background -	-43.38	-73.86	- 65.35	66.104		9 . 9 .	- 3 0 · 0.5					

TABLE 3
SUMMARY OF LABORATORY RESULTS
RP-TOX EXTRACT (mg/kg)

BUCKEROUND AUTO FLOPF SAMPLES 99/28/87 TB-18 99/28/87 TB-18 99/28/87 TB-18 90/28/87 TB-18	ND AUTO FLUFF SAMPLES TEB-1A 0.055 * 6.4 0.91 0.005 * 1.7 TEB-1A 0.055 * 2.1 0.27 0.005 * 1.3 TEB-2A 0.05 * 2.5 0.29 0.005 * 1.6 TEB-2A 0.05 * 1.3 0.24 0.005 * 0.24 TEB-1A 0.05 * 1.3 0.24 0.005 * 0.24 TEB-1A 0.05 * 1.5 0.16 0.005 * 0.24 TEB-1A 0.05 * 1.5 0.97 0.005 * 0.24 TEB-1A 0.05 * 1.5 0.97 0.005 * 0.24 TEB-1A 0.05 * 1.5 0.97 0.005 * 0.07 TEB-1A 0.05 * 1.5 0.97 0.005 * 0.097 TEB-1A 0.05 * 0.07 0.005 * 0.003 TEB-1A 0.005 * 0.07 0.005 * 0.003 TEB-1A 0.005 * 0.007 0.005 * 0.003 TEB-1A 0.005 * 0.007 0.005 * 0.003 TCTP-1B \$1 0.005 * 0.007 0.005 * 0.005 TCTP-1B \$2 0.005 * 0.007 0.005 * 0.005 TCTP-1B \$4 0.005 * 0.007 0.007 TOTP-1B \$4 0.005 * 0.007 TOTP-1B \$4 0.007		
28/87 TB-18	TEB-18 0.05 * 0.4 0.91 0.005 * 1.4 TEB-18 0.05 * 2.1 0.27 0.005 * 1.7 TEB-18 0.05 * 2.1 0.27 0.005 * 1.9 TEB-28 0.05 * 2.6 0.29 0.005 * 1.6 TEB-38 0.05 * 1.3 0.24 0.005 * 0.24 TEB-48 0.05 * 1.5 0.97 0.005 * 0.24 TEB-48 0.05 * 1.5 0.97 0.005 * 0.97 TEB-48 0.05 * 1.5 0.97 0.005 * 0.97 TEB-48 0.05 * 1.5 0.97 0.005 * 0.097 TEB-48 0.05 * 0.07 0.028 0.005 * 0.097 TEB-48 0.05 * 0.07 0.028 0.005 * 0.003 TEB-48 0.005 * 0.07 0.028 0.005 * 0.003 TEB-48 0.005 * 0.007 0.028 0.005 * 0.003 TCTP-18 \$1 0.005 * 0.007 0.018 0.005 * 0.106 TCTP-18 \$2 0.005 * 0.007 0.018 0.005 * 0.106 TCTP-18 \$4 0.005 * 0.007 0.005 * 0.003 * 0.005 TCTP-18 \$4 0.005 * 0.007 0.005 * 0.003 * 0.005 TOTP-19 0.005 * 0.00 0.003 * 0.005 * 0.003 TOTP-19 0.005 * 0.00 0.003 * 0.005 * 0.003 TOTP-19 0.005 * 0.00 0.003 * 0.005 * 0.003 TOTP-19 0.005 * 0.00 0.003 * 0.005 * 0.003 TOTP-19 0.005 * 0.00 0.003 * 0.005 * 0.003 TOTP-19 0.005 * 0.00 0.003 * 0.005 * 0.005 TOTP-19 0.005 * 0.00 0.003 * 0.005 * 0.005 TOTP-19 0.005 * 0.00 0.003 * 0.005 * 0.005 TOTP-19 0.005 * 0.00 0.003 * 0.005 * 0.005 TOTP-19 0.005 * 0.10 0.003 TOTP-19 0.005 * 0.10 0.005 T		
28/87 TB-18	TEB-18 0.05 * 0.4 0.91 0.005 * 1.4 TEB-28 0.05 * 2.1 0.27 0.005 * 1.5 TEB-28 0.05 * 2.5 0.18 0.005 * 1.6 TEB-28 0.05 * 1.3 0.24 0.005 * 0.24 TEB-38 0.05 * 1.5 0.24 0.005 * 0.24 TEB-48 0.05 * 1.5 0.97 0.005 * 0.97 TEB-48 0.05 * 1.5 0.97 0.005 * 0.97 TEB-48 0.05 * 1.5 0.97 0.005 * 0.97 TEB-48 0.05 * 0.07 0.028 0.005 * 0.97 TEB-48 0.005 * 0.07 0.028 0.005 * 0.97 TEB-48 0.005 * 0.07 0.028 0.005 * 0.003 * 0.73 TEB-48 0.005 * 0.007 0.008 0.005 * 0.003 * 0.73 TCTP-18 #2 0.005 * 0.007 0.005 * 0.003 * 0.16 TCTP-18 #4 0.005 * 0.00 0.007 0.005 * 0.003 * 0.16 TCTP-18 #4 0.005 * 0.00 0.007 0.005 * 0.003 * 0.005 * 0.003 * 0.005 *	4	4
28/67 TB-18 0.055 8.2 1.0 0.055 1.1 0.0005 1.1 0.0005 2.2 0.055 2.	TEB-18 0.05 * 8.2 1.0 0.005 * 1.7 TEB-18 0.05 * 2.1 0.27 0.005 * 1.6 TEB-28 0.05 * 2.1 0.27 0.005 * 1.6 TEB-28 0.05 * 2.5 0.18 0.005 * 1.6 TEB-28 0.05 * 2.5 0.18 0.005 * 1.6 TEB-28 0.05 * 1.6 0.05 * 0.07 0.05 * 0.07 0.05 * 0.07 0.05 * 0.07 0.05 * 0.07 0.05 * 0.07 0.05 * 0.005 * 0.07 0.05 * 0.005 * 0.003 * 0.005 * 0.	60.0	
28/87 TB-28	TEB-2B 0.05 * 2.1 0.27 0.005 * 1.3 1 18-2B 0.05 * 2.5 0.18 0.005 * 0.16 1 18-2B 0.05 * 2.5 0.18 0.005 * 0.16 1 18-2B 0.05 * 2.5 0.18 0.005 * 0.16 1 18-2B 0.05 * 1.5 0.18 0.005 * 0.24 0.005 * 0.24 0.005 * 0.24 1 18-4B 0.05 * 1.5 0.97 0.005 * 0.97 0.005 * 0.97 1 18-4B 0.05 * 1.5 0.97 0.005 * 0.97 0.005 * 0.97 0.005 * 0.97 0.005 * 0.97 0.005 * 0.97 0.005 * 0.097 0.005 * 0.097 0.005 * 0.003 * 0.005 * 0.003 * 0.005 * 0.003 * 0.005 * 0.003 * 0.003 * 0.005 * 0.005 * 0.005 * 0.003 * 0.005		- 500
28/87 TB-2B	TYB-2B 0.05 * 2.6 0.29 0.005 * 1.6 1 TYB-2B 0.05 * 1.5 0.18 0.005 * 0.06 1 TYB-1B 0.05 * 1.5 0.18 0.005 * 0.24 1 TYB-1B 0.05 * 1.5 0.97 0.005 * 0.24 1 TYB-4B 0.05 * 1.5 0.97 0.005 * 0.97 1 TYB-4B 0.05 * 1.5 0.97 0.005 * 0.97 1 TYB-4B 0.05 * 1.5 0.97 0.005 * 0.97 0.005 * 0.97 1 TYB-4B 0.05 * 1.4067 0.005 * 0.007 0.007 0.005 * 0.007 0.007 0.005 * 0.007 0.007 0.005 * 0.007 0	00.0	
28/87 TB-38	TEB-3A 0.05 * 2.5 0.18 0.005 * 0.24 7 TB-3B 0.05 * 1.3 0.24 0.005 * 0.24 7 TB-4B 0.05 * 1.5 0.97 0.005 * 0.24 7 TB-4B 0.05 * 1.5 0.97 0.005 * 0.97 7 TB-4B 0.05 * 1.5 0.97 0.005 * 0.97 7 TB-4B 0.05 * 1.275 0.9075 0.005 * 0.97 7 0.005 * 0.97 7 0.005 * 0.97 7 0.005 * 0.97 7 0.005 * 0.005 7 0.005 * 0.003 * 0.005 7 0.005 * 0.005 7 0.005 * 0.005 7 0.005 * 0.005 7 0.005 * 0.005 7 0.005 * 0.005 7 0.005 * 0.005 7 0.005 * 0.005 7 0.005 7 0.005 * 0.005 7 0.005	0.03	600
28/87 TB-3B	7 TB-3B	• 0.05	• 500
28/87 TB-48 0.05 * 1.6 3.4 0.005 * 3.4 0.0005 * 0.0	7 TB-48	• 0.05 •	. 500
The color of the	AREA AUTO FLUFF SAMPLES AREA AUTO FLUFF SAMPLES CTP-18 #2 0.005 * 0.007 0.028 0.005 * 0.003 * 0.73 CTP-18 #2 0.005 * 0.007 0.018 0.005 * 0.73 CTP-18 #2 0.005 * 0.007 0.018 0.005 * 0.73 CTP-118 #3 0.01 2.3 0.016 0.005 * 0.003 * 0.007 CTP-118 #4 0.005 * 0.009 0.003 * 0.005 * 0.003 * 0.007 CTP-118 #4 0.005 * 0.00 0.007 0.005 * 0.005 * 0.003 * 0.005 CTP-118 #4 0.005 * 0.00 0.007 0.005 * 0.005 * 0.007 T 22-24 0.005 * 0.00 0.007 0.005 * 0.005 * 0.007 T 22-24 0.005 * 0.00 0.007 0.005 * 0.005 * 0.007 T 32-19 0.005 * 0.00 0.007 0.005 * 0.005 * 0.007 T 32-19 0.005 * 0.00 0.007 0.005 * 0.005 * 0.005 T 37-19 0.005 * 0.00 0.003 * 0.005 * 0.005 T 37-19 0.005 * 0.00 0.003 * 0.005 * 0.005 T 137-19 0.005 * 0.00 0.003 * 0.005 * 0.005 T 137-19 0.005 * 0.00 0.003 * 0.005 * 0.005 T 137-19 0.005 * 0.10 0.003 * 0.005 * 0.005 T 186-30 0.005 * 0.10 0.003 T 100012 0.005 * 0.003 T 100012 0.0050 T 100012 0.0050	• 0.05 •	. 500
The line	AREA AUTO FLUFF SAMPLES AREA AUTO FLUFF SAMPLES CTP-3B #1 0.005 * 0.07 0.028 0.005 * 0.003 * 0.73	• 0.05 •	• 500
UNE AREA AUTO FLUFF SAMPLES UNE AREA AUTO FLUFF SAMPLES 1487 CTP-38 1 0.005 0.005 0.005 0.000	AREA AUTO FLUFF SAMPLES AREA AUTO FLUFF SAMPLES 7 CTP-3B #1 0.005 * 0.07 0.028 0.005 * 0.003 * 0.73		Œ
UNE AREA AUTO FLUFF SAMPLES 24/67 CTP-18 #1 0.005 * 0.07 0.028 0.005 * 0.003 * 0.0005 * 0.005	AREA AUTO FLUFF SAMPLES AREA AUTO FLUFF SAMPLES G 2.4061 0.9992 0 0.08915 G 2.4061 0.9992 0 0.003 * 0.003 * 0.73 G 2.4061 0.9992 0 0.003 * 0.003 * 0.73 G 2.4061 0.9992 0 0.003 * 0.003 * 0.73 G 2.4061 0.005 * 0.005 * 0.005 * 0.005 * 0.003 * 0.005 G 2.4061 0.005 * 0.005 * 0.005 * 0.005 * 0.005 G 2.4061 0.005 * 0.005 * 0.005 * 0.005 * 0.003 * 0.005 G 2.2-24 0.005 * 0.09 0.007 0.005 * 0.003 * 0.005 G 2.2-24 0.005 * 0.09 0.007 0.005 * 0.003 * 0.005 G 3.4 0.005 * 0.005 * 0.005 * 0.005 * 0.005 G 3.4 0.005 * 0.005 * 0.005 * 0.005 G 3.4 0.005 * 0.005 * 0.005 * 0.005 G 3.4 0.005 * 0.005 G 3.4 0.005	y	
URE AREA AUTO FLUFF SAMPLES 24/67 CTP-3B #1 0.005 * 0.028 0.005 * 0.0	AREA AUTO FLUFF SAMPLES 7 CTP-3B #1 0.005 * 0.07 0.028 0.005 * 0.003 * 0.73 7 CTP-7B #2 0.005 * 0.64 0.018 0.005 * 0.73 7 CTP-10B #2 0.005 * 0.005 * 0.350 7 CTP-11B #3 0.001 2.3 0.016 0.005 * 0.16 7 CTP-11B #4 0.005 * 0.09 0.003 * 0.005 * 0.16 7 22-24 0.005 * 0.68 0.242 0.005 * 0.003 * 0.005 * 1.2 7 22-24 0.005 * 0.68 0.242 0.005 * 0.003 * 1.9 7 70-19 0.005 * 0.46 0.242 0.005 * 0.03 7 70-19 0.005 * 0.70 0.146 0.01 (3.4 1.9 7 90-19 0.005 * 0.10 0.003 * 0.005 * 0.13 7 141-19 0.005 * 0.10 0.003 * 0.005 * 0.025 * 0.13 7 173-30 0.005 * 0.10 0.003 * 0.005 * 0.025 * 0.025 * 0.00		
24/87 CTP-38 #1 0.005 * 0.07 0.028 0.005 * 0.003 * 0.0005 * 0.005 * 0.005 * 24/87 CTP-18 #2 0.005 * 0.018 0.005 * 0.00	TCTP-3B #1 0.005 * 0.07 0.028 0.005 * 0.003 * 0.73 CTP-10B #2 0.005 * 0.064 0.018 0.005 * 0.73 CTP-10B #2 0.005 * 0.005 * 0.350 0.005 * 0.35 CTP-11B #3 0.001 2.3 0.016 0.005 * 0.005 * 0.016 CTP-11B #4 0.005 * 0.09 0.003 * 0.005 * 0.003 * 0.005 * 0.005 T 22-24 0.005 * 0.80 0.007 9.005 * 0.003 * 1.0 T 22-24 0.005 * 0.80 0.007 9.005 * 0.003 * 1.0 T 22-19 0.005 * 0.00 0.007 9.005 * 0.003 * 0.005 * 0.0		
24/87 CTP-7B \$2 0.005 * 0.64 0.018 0.005 * 0.73 0.0005 * 0.005 * 24/87 CTP-10B \$2 0.005 * 0.00	CTP-18 #2 0.005 * 0.64 0.018 0.005 * 0.73 CTP-108 #2 0.005 * 0.005 * 0.350 0.005 * 0.32 CTP-118 #3 0.01 2.3 0.016 0.005 * 0.16 CTP-118 #4 0.005 * 0.09 0.003 * 0.005 * 0.16 7 22-24 0.005 * 0.80 0.007 9.005 * 0.003 * 0.005 7 32-19 0.005 * 0.80 0.007 9.005 * 0.003 * 0.005 7 32-19 0.005 * 0.40 0.007 9.005 * 0.003 * 0.005 7 10-19 0.005 * 0.70 0.146 0.01 (3.4) 9 0.00 * 0.005 * 0.10 0.005 * 0.10 7 137-19 0.005 * 0.10 0.003 * 0.005 * 0.12 7 137-19 0.005 * 0.10 0.003 * 0.005 * 0.025 * 0.12 7 173-30 0.005 * 0.10 0.003 * 0.005 * 0.025 * 0.005 7 186-30 0.005 * 0.10 0.003 * 0.005 * 0.025 * 0.005 7 186-30 0.005 * 0.10 0.003 * 0.005 * 0.025 * 0.005 7 186-30 0.005 * 0.10 0.003 * 0.005 * 0.005 7 186-30 0.005 * 0.10 0.003 * 0.005 * 0.005 7 186-30 0.005 * 0.10 0.003 * 0.005 * 0.005 7 186-30 0.005 * 0.10 0.003 * 0.005 * 0.005 7 186-30 0.005 * 0.10 0.003 * 0.005 * 0.005 7 186-30 0.005 * 0.10 0.003 * 0.005 * 0.005 7 186-30 0.005 * 0.10 0.003 * 0.005 * 0.005 8 14 14 14 14 14 14 14 14 14 14 14 14 14	* 00.00 *	* 500
24/87 CTP-108 #2. 0.005 * 0.055 * 0.055 * 0.00	7 CTP-10B #2 0.005 * 0.005 * 0.350 0.005 * 0.35 7 CTP-10B #3 0.005 * 0.005 * 0.016 0.005 * 0.36 7 CTP-11B #4 0.005 * 0.09 0.003 * 0.005 * 0.003 * 7 22-24 0.005 * 0.09 0.007 9.005 * 0.003 * 7 22-24 0.005 * 0.09 0.007 9.005 * 1.0 7 32-19 0.005 * 0.10 0.013 0.005 * 0.03 * 7 70-19 0.005 * 0.70 0.117 0.005 * 0.03 * 7 10-19 0.005 * 0.10 0.003 * 0.005 * 0.12 7 131-19 0.005 * 0.14 0.003 * 0.005 * 0.025 * 7 173-30 0.005 * 0.14 0.003 * 0.005 * 0.025 * 7 186-30 0.005 * 0.14 0.003 * 0.005 * 0.025 * 8 14 14 14 14 14 14 14 14 14 14 14 8 0.005 * 0.10 0.032 0.034 0.005 * 8 0.005 * 0.10 0.032 0.034 0.005 * 8 0.005 * 0.10 0.032 0.034 0.005 * 8 0.005 * 0.10 0.032 0.034 0.005 * 8 0.005 * 0.10 0.032 0.034 0.005 * 8 0.005 * 0.10 0.032 0.034 0.005 * 9 0.005 * 0.10 0.035 0.034 0.005 * 9 0.005 * 0.10 0.035 0.034 0.005 * 9 0.005 * 0.10 0.035 0.034 0.005 * 9 0.005 * 0.10 0.035 0.034 0.005 * 9 0.005 * 0.10 0.003 0.005 * 9 0.005 * 0.10 0.003 0.005 * 9 0.005 * 0.10 0.003 0.005 * 9	* 500 0	* 500
24/87 CTF-118 #4 0.005 * 0.01 0.005 *	7 CTP-118 #3 0.01 2.3 0.016 0.005 # 0.16 7 CTP-118 #4 0.005 * 0.09 0.003 * 0.005 # 0.003 # 7 22-24 0.005 * 0.09 0.007 9.005 * 1.0 7 32-19 0.005 * 0.68 0.242 [0.04 1.9 7 70-19 0.005 * 0.70 0.146 0.005 * 0.03 # 7 10-19 0.005 * 0.70 0.146 0.005 * 0.03 # 7 137-19 0.005 * 0.05 0.003 * 0.005 * 0.12 7 137-19 0.005 * 0.14 0.003 * 0.005 * 0.12 7 173-30 0.005 * 0.14 0.003 * 0.005 * 0.025 * 7 173-30 0.005 * 0.14 0.003 * 0.005 * 0.025 * 7 186-30 0.005 * 0.14 0.003 * 0.005 * 0.025 * 7 186-30 0.005 * 0.148 0.1035 0.031 0.689 7 ICCULATIONS: Level of significance 0.050	* 00.00 *	005
24/87 CTP-118 4 0.005 0.003 0.005 0.00	7 CTP-11B #4 0.005 * 0.09 0.003 * 0.005 * 0.003 * 0.005 * 0.003 * 0.005 * 0.009	* 0000	* 500
13/87 (217-1118 #4 0.005 * 0.007 9.005 * 0.005 * 0.005 * 13/87 22-14 0.005 * 0.68 0.0242 1.0 0.005 * 0.005 * 13/87 70-19 0.005 * 0.137 0.005 * 0.63 0.005 * 0.005 * 13/87 90-19 0.005 * 0.70 0.146 0.01 (3.4) 0.005 * 13/87 90-19 0.005 * 0.003 * 0.005 * 0.005 * 0.005 * 13/87 137-19 0.005 * 0.003 * 0.005 * 0.005 * 25/87 137-19 0.005 * 0.117 (0.02 1.3 0.005 * 25/87 141-19 0.005 * 0.117 (0.02 1.3 0.005 * 25/87 141-30 0.005 * 0.14 0.003 * 0.005 * 0.005 * 25/87 186-30 0.005 * 0.10 0.003 * 0.005 * 0.005 * 25/87 186-30 0.005 * 0.10 0.003 * 0.005 * 0.005 * 25/87 186-30 0.005 * 0.10 0.005 * 0.005 * 0.005 * 25/87 186-30 0.005 * 0.10 0.005 * 0.005 * 0.005 * 25/87 186-30 0.005 * 0.10 0.005 * 0.005 * 0.005 * 25/87 186-30 <td< td=""><td>7 22-24 0.005 * 0.09 0.003 0.0</td><td>1 4 60</td><td></td></td<>	7 22-24 0.005 * 0.09 0.003 0.0	1 4 60	
13/87 22-14 0.005 0.00	7 32-19 0.005 * 0.68 0.242 (0.04 1.9 1.2 1.2 1.9 0.005 * 0.68 0.242 (0.04 1.9 1.9 0.005 * 0.70 0.146 0.01 1.9 0.005 * 0.005 * 0.17 0.005 * 0.003 * 0.005 * 0.003 * 0.005 * 0.003 * 0.005 * 0.017 (0.02 1.3 1.13 1.9 0.005 * 0.10 0.003 * 0.005 * 0.12 1.3 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4		
13/87 34-13 0.005 0.005 0.137 0.005 0.00	7 32-13 7 70-19 7 70-19 7 70-19 7 70-19 8 4-19 8 0.005 * 0.70 8 0.146	•	
13/87 90-15	7 137-19 0.005 * 0.70 0.146 0.01 (3.4) 7 90-19 0.005 * 0.70 0.146 0.003 * 0.003 * 7 137-19 0.005 * 0.92 0.117 (0.02 1.3) 7 141-19 0.005 * 0.10 0.003 * 0.005 * 0.12 7 173-30 0.005 * 0.14 0.003 * 0.005 * 0.025 * 7 186-30 0.005 * 0.10 0.032 0.033 0.025 * 7 186-30 0.005 * 0.10 0.032 0.033 0.025 * 8 0.005 * 0.10 0.032 0.033 0.056 * 8 0.0072 0.048 0.1035 0.0831 0.9368 8 0.0012 0.048 0.1035 0.0831 0.9368		* 500
13/87 19-15 13/87 20-15 25/87 113-19 0.005 * 0.005 * 0.17 0.005 * 0.107 13/87 113-30 0.005 * 0.10 0.005 * 0.107 0.005 * 0.107 0.005 * 0.0005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.0005 * 0.005 * 0.005 * 0.0005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.0005 * 0.0005 * 0.005 * 0.005 * 0.005 * 0.005 * 0.0005 * 0.0005 * 0.005 *	7 90-19 0.005 0.05 0.017 0.003 0.005 0.003 7 137-19 0.005 0.005 0.117 (0.02 1.3 1713-19 0.005 0.010 0.003 0.005 0.12 0.13 0.005 0.005 0.10 0.003 0.005 0.12 0.12 0.005 0		* 500
25/87 137-19 0.005 * 0.92 0.117 (0.02 1.3 0.055 * 0.055 * 0.17 (0.02 1.3 0.055 * 0.055 * 0.17 (0.02 1.3 0.055 * 0.055 * 0.10 0.003 * 0.005 * 0.025 * 0.005 * 0	7 137-19 0.005 0.92 0.003 0.003 1.00	•	
25/87 141-19 0.005 * 0.10 0.003 * 0.005 * 0.12 0.005 *	141-19 0.005 0.10 0.003 0.005 0.10 141-19 0.005 0.10 0.003 0.005 0.10 1713-30 0.005 0.10 0.003 0.005 0.005 186-30 0.005 0.10 0.003 0.005 0.005 0.10 0.0149 0.032 0.689 0.0012 0.6148 0.1035 0.0831 0.9368 **CCULATIONS: Level of significance 0.050		
25/87 141-19 0.005 0.10 0.004 0.005 0.12 0.12 0.005 25/87 173-30 0.005 0.14 0.005 0.	7 141-19 0.005 0.10 0.003 0.005 0.12 7 173-30 0.005 0.14 0.003 0.005 0.0025 0.0025 7 186-30 0.005 0.10 0.032 0.033 0.025 0.025 0.0025 0		
15/87 173-30 0.005 0 0 14 0.003 0.005 0.025 0.00	7 173-30 0.005 0.14 0.003 0.005 0.025 0.025 0.025 0.025 0.005 0.005 0.007 0.032 0.033 0.025 0.025 0.007 0.00		
15/67 186-30	7 186-30 0.005 * 0.10 0.032 0.33 0.025 * 14 14 14 14 14 14 14 14 14 14 14 14 14		
14 14 14 14 14 5 14 5 14 5 14 5 14 5	14 14 14 14 14 14 14 14 14 14 14 14 14 1		• 500
- 0.0053 0.5567 0.0789 0.0321 0.689 0.0005 0.005	0.0053 0.5567 0.0789 0.0321 0.689 0.0012 0.6148 0.1035 0.0831 0.9368		•1
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	ALCULATIONS: Lavel of significance 0.050		0
Laval of	70 70		
ALCULATIONS: Level of	-4 747 -2.337		
-TEST CALCULATIONS: Lavel of significance 0.050 ag of F = 20 20 -2.337	1.325 1.325		
ALCULATIONS: Level of significance 0.050 20 20 20 4.747 -2.337 -1.7 1.325 1.325 1.325 1.3	DISCN		
ALCULATIONS: Level of significance 0.050 20 20 4 747 -2.337 1.325 1.325 NOSIG NOSIG	* indrease		
CULATIONS: Lavel of Alguificance 0.050 20 20 4 747 -2.337 1.325 NOSIG NOSIG	over background = -62.99 -91.30 -51.09		



STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

7272 Cleanwater Lane LU-11 • Olympia. Washington 98504 • (206) 753-2353

MEMORANDUM

TO:

File

FROM:

Jim Oberlander

SUBJECT:

"Lilyblad Pond" and Related Fill, Tacoma

DATE:

March 5, 1982

This property, once a tidal wet land, has been filled with a mix of waste from local industrial activity. The general location is centered between 11th and Lincoln Avenue, Taylor Way and Alexander Avenue; near Chemical Processors, Poligen and behind the Washington Educators factory.

Mr. Glenn Tegen of Lilyblad Petroleum, also part owner of the Poligen Petroleum Tank Farm, wishes to develop a ten-acre site, southeast of the Poligen area. Fill removal and site grading exposed the present pond and revealed an unusual waste.

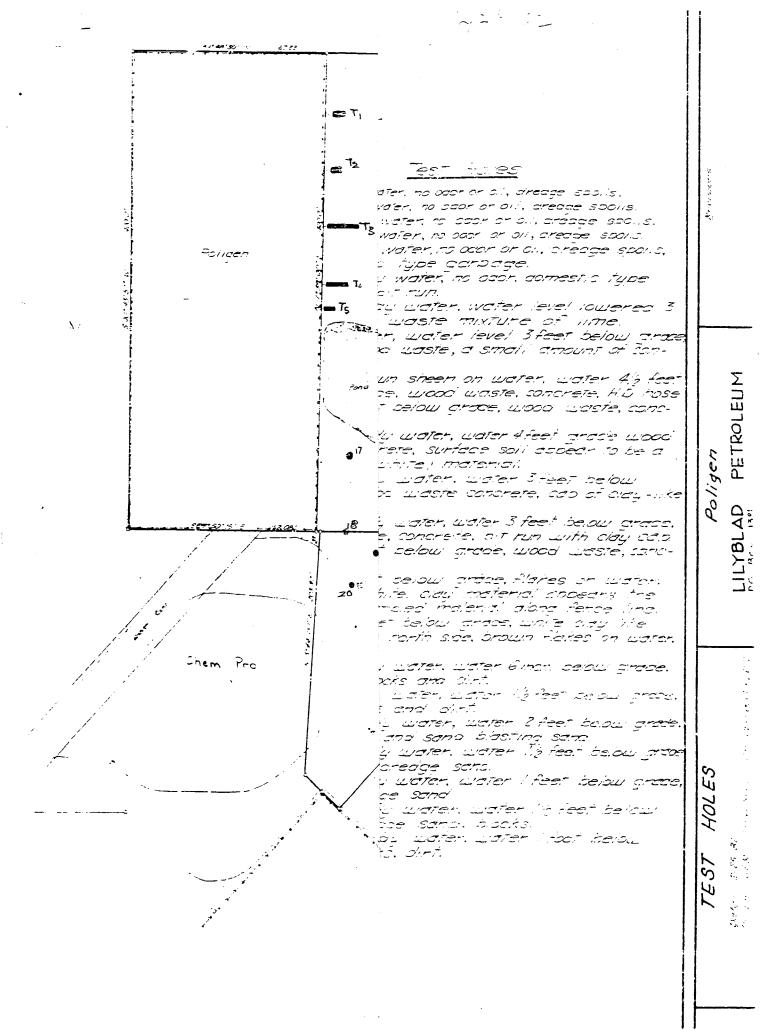
Working closely with Mr. Tegen, 23 test (backhoe) pits and several trenches were dug on the proposed site for observation and necessary reviews.

The following comments were recorded while reviewing each recently dug pit. A map with pit station location and property layout is attached. An area photo was taken as well as 35 mm photo of some of the pits. Some samples were also taken.

The field inspections February 18, and February 22, 1982, were conducted after a period of very heavy rains.

J0:c1

Attachment



FEBRUARY 18, 1982

PIT NO.

- 1. Clear Water
 No Oil
 No Odor
 All Dredge Soil Sand
 Ground Water at Surface
- 2. Clear Water No Oil No Odor Dredge Sand Spoils Ground Water at Surface
- 3. Clear Water No Oil Dredge Spoils Ground Water near Surface
- 4. Clear Water No Odor Dredge Spoil Ground Water near Surface
- 5. Clear Water No Odor Dredge Spoils and Some Old Domestic Garbage Ground Water near Surface
- 6. Clear Water No Odor Pit Run and Some Domestic Garbage Ground Water at Surface
- 7. Clear Water
 Mix of Wood and a Little White Lime
 Ground Water 3' Below Grade
- 8. Clear Water
 No Oil
 No Odor
 Woodwaste and a Little Concrete
 Ground Water 3' Below Grade
- Minor Unknown Sheen on Water Woodwaste and Concrete Ground Water 4½' Below Grade
- 10. Clear Water
 Woodwaste and Concrete
 Ground Water 4' Below Grade

FEBRUARY 18, 1982

Page 2

- 11. Woodwaste and Concrete
 Surface Soil Cap of Clay Like/White unknown Material
 Ground Water 4' Below Grade
 Sample Taken of Clay Material
- 12. Clear Water Woodwaste and Concrete Lots of a Clay Like White Unknown Material Cap
- 13. Clear Water
 Woodwaste, Concrete, Pit Run and Clay Like White Unknown Material
 Ground Water 3' Below Grade

FEBRUARY 22, 1982

- 14. Clear Water Woodwaste and Concrete Ground Water 3' Below Grade
- 15. "Flakes on Water"
 Concrete and Clay Like, White Unknown Material
 Ground Water 2' Below Grade
- 16. Brown Flakes on Water Concrete Blocks and N.E. Side of Hole Clay Like White Unknown Material Ground Water 18" Below Grade
- 17. Clear Water
 Concrete Blocks and Dirt
 Ground Water 6" Below Grade
- 18. Clear Water Dirt and Stone Blocks Ground Water 18" Below Grade
- 19. Clear (muddy) Water
 Dirt, Stone Blocks and Sand Blasting Sand
 Ground Water 2' Below Grade
- 20. Clear (muddy) Water Stone Blocks, Dirt and Dredge Sand Ground Water 18" Below Grade
- 21. Clear (muddy) Water Stone Blocks and Dredge Sand Ground Water 12" Below Grade
- 22. Clear (muddy) Water
 Stone Blocks and Mostly Dredge Sand
 Ground Water 18" Below Grade
- 23. Clear (muddy) Water
 Stone Blocks and Dirt
 Ground Water 12" Below Grade

TRENCHES

Along Poligen Fence

T-1 All woodwaste with a little clay like, white unknown material on top.

Ground Water 3' Below Grade

- T-2 A little oil on water (from Poligen Tank Farm drain)
 Mostly woodwaste with a little white clay
 Ground Water 3' Below Grade
- T-3 Water appeared to be woodwaste leachate Woodwaste with "white clay" material below
- T-4 Woodwaste but mostly white clay material Ground Water $2\frac{1}{2}$ Below Grade
- T-5 Mostly "white clay"
 Ground Water 3' Below Grade

This field data was gathered working with Greg Allen of Lilyblad.

J0:cl

cc: Greg Allen
Will Abercrombie, DOE
Doug Pierce, Pierce Cty. Health

State of washington Department of Ecology



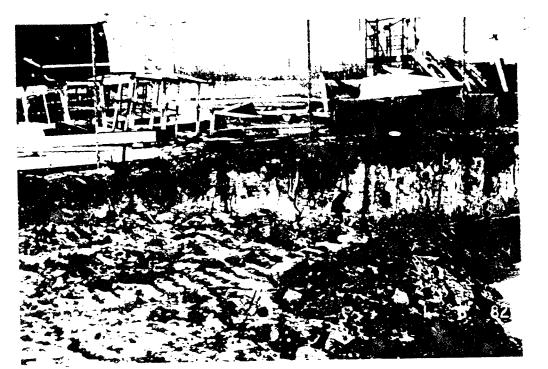
INSPECTION REPORT

		i	
$[\omega, H]$	1	Dercrom	b. 6

To Dist	Inspector Jim Charlanne
Date of Visit / - 27 - 82	Permit Number
Name of Entity Lilyblad Fond	Permit Expires
City Jacoma County	New Industry
Person Contacted Non e	
Type of Facility	
Receiving Water	
Type of Treatment System	
Operation: Satisfactory Fair	Unsatisfactory
Does not comply with permit conditions To mposite Describe Sample Taken for priority Several Trenchs due	plutante scan.
good N. N. E. along fence	The "class" (?)
shows in several = The	Elay
to commine from Lily bods	parties area su
ett. I've casted Lily floo t	o class of the
Floo found stormwater + al. H.	- Land
tank form dike (forger)	discharge to
Plus found and Fittler	siend water
dewatering our statem seems	J. U.
35mm photo's Taker	ire alto.
Letter to Libelia to be written.	
MAP OVER	

· composite sample

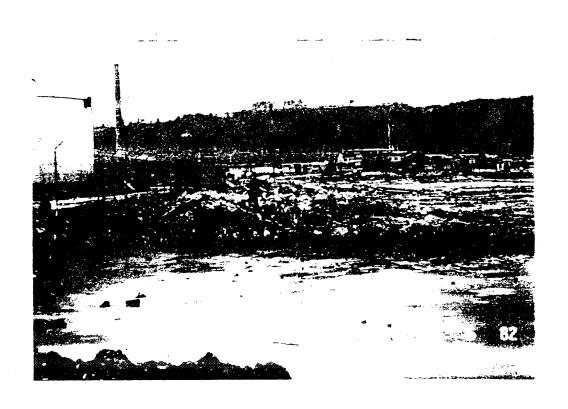
oil sprage



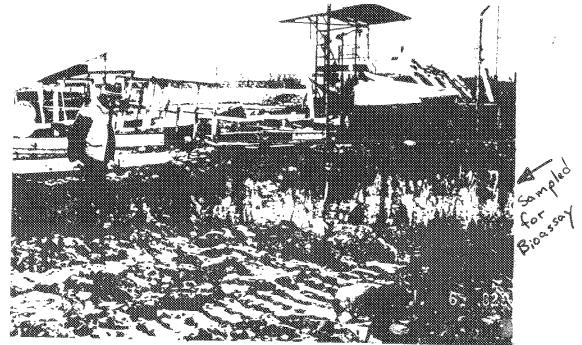
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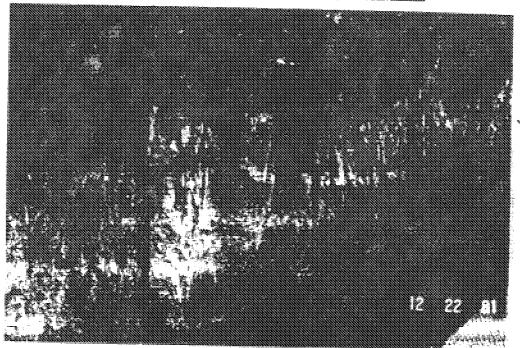
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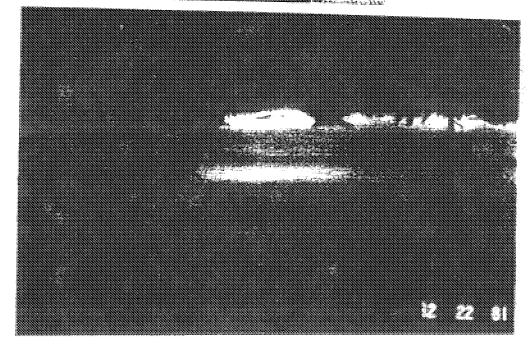
\$21.05



Terier Harris









STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

Mail Stop PV-11 • Olympia, Washington 98504 • (206) 753-2800

TO:

Merley McCall

FROM:

D. Huntamer 907

SUBJECT:

Analysis of Water Samples from Commencement Bay,

Tacoma and International Paper, Longview, WA.

DATE:

March 4, 1982

The following water samples were received at the EPA Region 10 Environmental Laboratory for analysis of organic acid, baseneutral and volatile compounds.

	EPA#	<u>DOE#</u>	Received	
1	04511		1-27-82	Lilyblad Pond behind Chem Pro
3	04512		1-27-82	96" Storm Drain - City Waterway,
	04513	82-0327	2-1-82	Tacoma International Paper Storm Water Ditch
	04514	82-0328	2-1-82	International Paper Discharge Pond #2
	04515	-	2-1-82	Field Blank
	06500	82-0575	2-11-82	International Paper - Well #2A

The analysis results are attached

1. ou.d Composite

(1)+(2) Samples by Jim Oberlander

Will Abercrombie

	COMPILED BY	y: ()	11 RI	1000	ich DA	TE: 3-3-x2
LABORATORY: RELIEN X - EPA-R	REVIEWED BY:	: 💯	nsl	13 Nevi	DAT	TE: <u>3-3-82</u> E: <u>3-3-82</u>
	4		·ly blad			n posite
SAMPLE # :	04571	04512	04513	04514	04575	0680
UNIT: :	ug/2	49/2	i	1	110/8	49/2
LOQ :		-		0		
l. acrolei:	10011	10m-	->_	50u	104	50g
2. acrylonitrile	50 U	5n-	->	25 M	54	25/1
3. benzene	20 M	24-	\rightarrow	10m	1 1	10M
4. carbon tetrachloride	20 u	211-	->	10 M	3m	(0) 11
5. chlorobenzene	20m	2u	10u	iva	24	10 4
6. 1,2-dichloroethane	20 M	24-	_ ` >	101	$\frac{\partial u_1}{\partial u_1}$	10 11
7. 1,1,1-trichloroethane	20 1.	2m	24	1011	341	1011
3. l,l-dichloroethane	i i	24	}	101	20	10U
9. 1,1,2-trichloroethane	1 1	211	10.u	104	24	104
10. 1,1,2,2-tetrachloroethane	20u	24	10 tt	1012	241	1041
ll. chloroethane	2011	24	`	104	241	10 h
12. 2-chloroethylvinyl ether	30 u	24	\rightarrow	1011	24	1021
13. chloroform	1 1/1	3,1	24	- 1	24	104
14. l,l-dichloroethylene	20u	24	\rightarrow	1021	24	1001
15. 1,2-trans-dichloroethylene	250	2m	2u	10m	Q_{ℓ_1}	104
16. 1,2-dichleropropane		241	\rightarrow	ion	24	104
17. l,3-dichloropropylene	30 U	241	10m	100	241	104
18. ethylbenzene.		2m	10	650	24	63
19. methylene chloride	300	24	\rightarrow	10 m	241	104
20 methyl chloride	204	24	1	100	242	/0u
_l. methyl bromide	1 1	2,41	-7	100	241	104
22. bromoform	i i		10u1		321	104

BASE/NEUTRAL COMPOUNDS

BASE	/NEUTRAL COMPOUNDS
	TEWED BY: M Klaserich DATE: 3-3-82
BORATORY: ROSEMX - EPA REV	TIEWED BY: (M Blazench DATE: 3-3-82
SAMPLE # :	04511 04512 04513 04514 04515 6150
UNITS :	450/0 Ma/8 45/2 11/2
L0Q :	13/2 ha/2 ha/2
1. acenaphthene	50 u 0,5 u 68 310,000 1 3300
2. benzidine	12011 1211 121 2110
3. 1,2,4-trichlorobenzene	4011 411 4011 60
4. hexachlorobenzene	2011 211 201 4011
5. hexachloroethane	401 411 40 811
6. bis(2-chloroethyl) ether	1012 114 101 201
7. 2-chloronapthalene	711 0.71 071 1411
1,2-dichlorobenzene	30 14 104 204 10
9. 1,3-dichlorobenzene	1011 1 10 20 D
10. 1,4-dichlorobenzene	54. 05. 05 13
11. 3,3'-dichlorobenzidine	1204 121, 1201 20
12. 2,4-dinitrotoluene	30 4 2 h 2 h 40 h 2 h
13. 2,6-dinitrotoluene	304 34 30 10
14. 1,2-diphenylhydrazine (as/aZobenzene)	24 1224 (2) 41
15 61	11. Vida
16. 4-chlorophenyl phenyl ether	7, 9, 0
	7M 9M 9M 180U 13M

BASE/NEUTRAL COMPC INDS (continued)

PROJECT: DOE	COMPILED BY: Milwerich DATE: 3-3-82
LABORATORY: ETA Region X	REVIEWED BY: Milyerich DATE: 3-3-82
SAMPLE # :	04511 04512 04513 04514 04515 06500
UNIT7 :	49/8 419/2 49/2 49/2 49/2 49/2
L00 :	
39. acenaphinylene	14 0.14 0.64 404 1 .14
40. anthracene	44 0,4m 41 950 Z 110
41. benzo(ghi)perylene	604 64 64 1204 C 064
42. fluorene	2u 0,2u 49 940 320
43. phenanthrene	34 0,44 0,44 84 0,44
44. dibenzo(a,h)anthracene	60 n 6 n 6 n 120 n 6 l
45. Mdeno(1,2,3-cd)pyrene	604 64 64 120 n 5 64
46. pyrene	440.447 170 m 12
47. TCDD	ND ND ND ND ND

U = not detected value less than Letection limit m = detected, but less them limit of
quantification

ND = not eleticled

TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT: DOE COMPILED BY: MBlagarch DATE: 3-3-82

LABORATORY: EPA REGION X REVIEWED BY: MBlagarch DATE: 3-3-82

ACID/BN/	1	1					
FRACTION AMPLE # :	045]]	045 D	04513	04574	04515	06500	
CAS # YAME	j=ı+	Fit	F,+	F,+		F, +	
114-3 lengene, lethyl-2-methy	2953	982	ND	968	1	MD	
218-5 decane	920	ND		ND			
363-6 Lenzene, 1, 2, 4-trimethyl	932			972	-		
42769 1,3-britadiene, 1,1,3,4- 4-38-0 -tetrachloro	940		,	ND	1		
4926 cerclo researce, 5-90-3 1-2thyl-1-methyl.	917						
563 616-6 hexane, 3,3-disnethisk	922				V S		
374 Sengene, 1-ethyl-2,41 741-9 - dimethyl	830			761	dir		
535 877-3 lengene, 1-mithyl-3-(1-mithylethyl)	985			ND	3		
922-3 undecane, 2,5-dimethyl	920			i			
10.57-62 methylmaphthalene	834	V		V			

TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT: DOE COMPILED BY: Mylagenel DATE: 3-3-82

LABORATORY: EPA Region X REVIEWED BY: Mylagenel DATE: 3-3-82

2 = 12 / 1/2								
FRACTION:	SAMPLE # :	04511	U4572	C4573	04514	04515	02500	
CAS #	MAME	1-,+	F.+	F,t	F,+	F.t	Fit	
921 21-47-1	hissone, 2, 3, 4-trimethy	ND	ND	ND	915		ND	
108 22-994	Pyridine, 3-methyl)	· ·	\ \ \ \	852		10 1	
108	1 1 1 2 1 2 2 2				100	0	·	
23-48-5	Pysidine 2,6-Simethyl				945			
103 2 465-1	benzene owns				967	5	976	
766 2597-2	benzene, 1-ethyrugh				984	224	ND	
1074	Dingere, 1-methyl				825	74		
1074	benzene, i-methyl				850	7		-
1120	Undecene				948			
4265	benzofwan, 2-meth	1	- - -		1748		V	
2925-2	(^			934		955	
99 3077-6	himen, 1-mithyl - 4-13-mithyl -	V	1.11		987		ND	

TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT: DOE COMPILED BY: Milminic DATE: 3-3-82

LABORATORY: FINA REGION X REVIEWED BY: M Blagenin DATE: 3-3-82

ACID/B/II			,					
ACID/B/II FRACTION:	SAMPLE # :	04511	045/2	04513	(4J14)	04515	06565	
·CAS #	MARE	F. +	F,+	F,t		与 ナ	FF	
92	1 1 hinha o	1	2/15	NIO		,	- 117	<u>_</u>
14315	1,1-Duphenyl	M	/Vt)	MI)	14	ガル	982	
4211-8	bingo [6] thisphere 4-min	1 ND	M	NN	1		794	
2219	phenol, 4-ethyl			· , , ,		0	177	
4373-0	- 2- nother						785	
4565 4432-6	benzo [6] Physhenes							
95	2,3-dehydr					\mathcal{N}	864	
45. 87-4	showl, 2,5-dimeth	le				27	934	
105	phenol, 2, 4-dimetry	e				29		
76.267		<u> </u>				~	992	
47 58-8	1 H indere 12,3-dehydro						915	
104	benzonitrile,							
4885-8 106	4-methyl						929	
4944-5	shewl, 4-methy						950	
766 50. 97-2	- 4-methyl					1		
Ju. 41-2	1- minny	1	V/		\!/	1	786	



INSPECTION REPORT

The state of the s	
ToDistrict III	Will Abercrombie Inspector Jim Oberlander 3.0.
Date of Visit October 15, 1982	РМ
Name of Entity Poligen Site - Lilyblad	Permit Number
City County	Permit Expires
	New Industry
Person Contacted Greg Allen	
Type of Facility	
Receiving WaterBlair	
Type of Treatment System	
Operation: Satisfactory Factory	air Unsatisfactory
	Unsatisfactory
Does not comply with permit conditions	
Describe Walked site prior to meeting to re	econfirm drainages. Sample and photos of
white sludge (DW) recently removed by B 8	L Trucking at Lilyblad's request to the
Coski landfill, 5-6 loads. Information w	as from Lilyblad on October 14 1982
meeting. Removed 1-2 mns. ago. Told t	them - may be necessary to nick up.
to North Dry Drainage south not flowing,	but standing water: water sample to
Est. 12 monitoring wells recently place	d on adjoining Chem Pro property. Showed
Greg sites to monitor surface waters, Oct	ober 14 1002 DM :
Oberlander, Ambercrombie willing to manit	or surface water and add wells, requested
olan prior to construction. Also, was its	or surface water and add wells, requested
Dlan prior to construction. Also, we will	I try to keep out of TSD permit system -
'Recycled Waste".	

State of Vasalington Department of Ecology

ENVIRONMENTAL LABORATORY DATA SUMMARY METALS

PAGE OF
ORIGINAL TO: LAB FILES
COPIES TO;
I'm Oborlander
will Adorcromby
• .

SOURCE	0/198	n/Lily blad	/a CD " / PROG	RAM NUME	SER	alona	Wa.	Educa
DATE COLLECTE	10 fr	H2 RECEIVED_	COLL	ECTED BY	-imC	Cerande	e Goza	Hlle
Sample (Log) Num	ber Units	Standard 5478 Deviation ± %						1
Station:		± %				 	 	-
cu , Total	mg/L	0.05						
zn, Total	ing/L	0.69			-			
	1/*				 			
Fe				+				
vi total	47/2	<0.02						
ir, Total	mg/L	<0.01						
10120	17/0	70,01						·
d, Total	ing/L	0-005			·			
								
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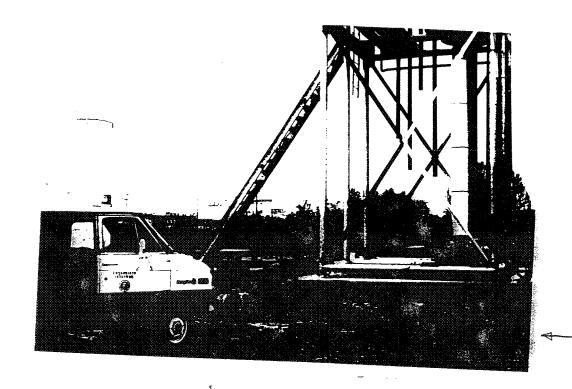
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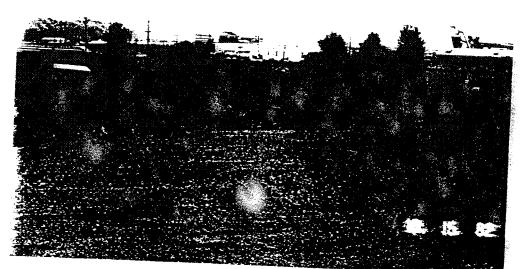
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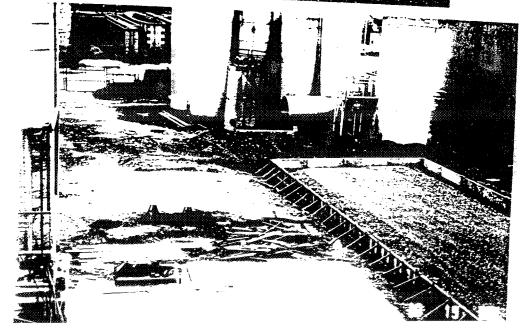
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Elucie Emplie





September 27, 1988 9:00 a.m.

MEETING WITH:

Department of Ecology Southwest Regional Office 7272 Cleanwater Lane, MS LV-11

Olympia, WA 98504-6811 753-3275 or 586-2711

ATTENDING:

Department of Ecology

Suzanne E. Milham, Hazardous Waste Sepcialist

Toby M. Michelena, Regional Toxicologist

Northwest Processing

Glenn R. Tegen, President Steve Drury, Vice President

ATTACHMENTS:

- 1. Narrative of waste by area
- 2. Site plan of NWP by area
- 3. Disposal/recovery timeline by area
- 4. Lab analysis: composite of area 3
- 5. Safety-Kleen Solvent Process Flow Diagram
- 6. Transporters
- 7. TSDF Sites
- 8. Safety-Kleen summary sheets (4/25 9/15/88)

ARRATIVE OF WASTE BY AREA

AREA 1 9 PORTABLE TANKS:

These tanks contained water and oil generated during routine ACTION: cleaning of oil/water separator system and process area sumps.

They were combined with two other jumbos associated with the centrifuges.

On September 19, 1988 these tanks were pumped out and cleaned. The oil, water and sludge was separated.

11 tanks = 2,800 gallons

Oil recovered and put back into the system = 416 gallons.

Waste water to holding tank = 2,365 gallons Sludge put into a drum and dated = 20 gallons The cleaned empty jumbos were put back into area 2.

Please note that this is routine procedure.

AREA 2 PORTABLE TANKS ALONG THE EAST FENCE:

Eleven of these tanks contain liquids. They were sampled on September 19 and sent out for analysis. When the analytical ACTION: results are available the contents of the tanks will be disposed of as appropriate.

AREA 3 DRUMS WITH HAZARDOUS WASTE LABELS:

There are 54 drums with hazardous waste labels. ACTION samples were taken in June, 1988. Individual samples were taken September 21. Drums were reinventoried.

DRUMS FROM SAFETY-KLEEN PROCESS: AREA 4

ACTION: There are 170 drums in this category. They will be (1)transported to Safety-Kleen for further recovery and recycling. (2) of her hansk

ACTION: There are 196 drums in this category. Many of these are products or for recovery. Sampling and characterization is in progress. Gample Alum , with line 14 -5 Marit obcide

AREA 5 DRUMS OF SLUDGE FROM CENTRIFUGE OPERATION:

ACTION: There were 12 in this category. They were drums consolidated into eight drums. These drums were sampled, sealed and moved to a bermed, no outlet area on September 19. They are being held for further processing.

AREA 6 TANK CONTAINING DIRTY SOLVENT:

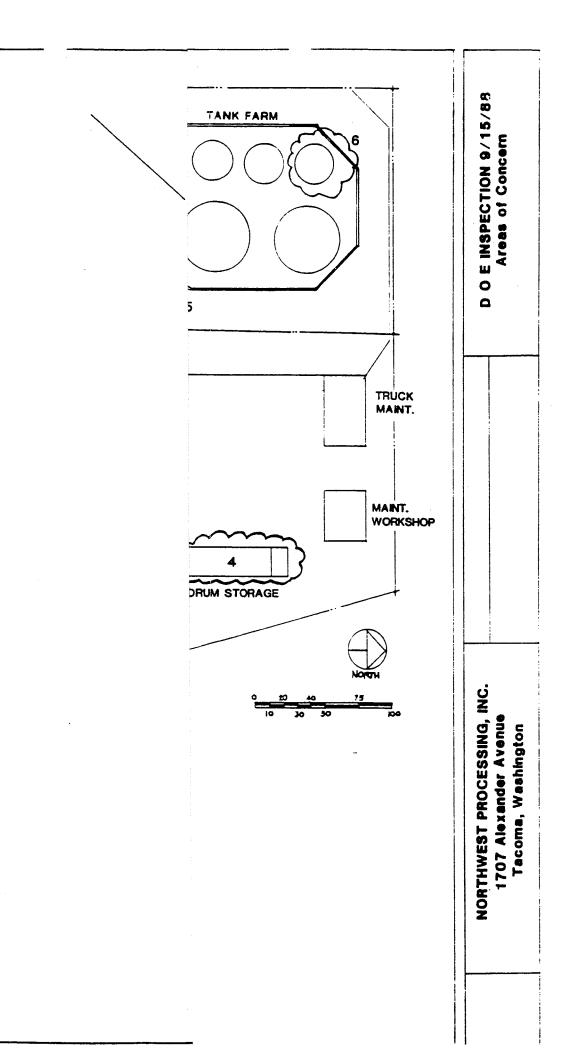
Two possible disposal scenarios

- (1) Recover at Northwest Processing
- (2) Recover at Lilyblad Petroleum

NORTHWEST PROCESSING, INC. 1707 Alexander Avenue Tacoma, WA 98421

DISPOSAL/RECOVERY TIMELINE BY AREA

WEEK 1	WEEK 2	MEEK 3	WEEK 4	WEEK 5	WEEK 6
Area 1 Completed	Mariner -				
Area 2 Completed (inaiuses	İ .			
Area 3 Disposal	anyer- singe	sc gampii	rydone _w	ont mera as	much
Area 4 (1) Further	Area 4 (1) 2 Further Processing	· ~ / -	to CA.	rucine.	
	٠	recovery	Area 4 (2) Recovery Disposal	RACOVATA	
Area 5 Completed	icanis – Lind	ign 20 - 20a) canade		
Area 6 Recovery	Area 6	Area 6 Recovery	Area 6 Recovery	Area 6 Recovery	Area 6 Recovery



DEPARTMENT OF ECOLOGY

IN THE MATTER OF THE COMPLIANCE BY NORTHWEST PROCESSING POLIGEN PLANT/GLENN TEGEN, OWNER with Chapter 70.105 RCW and the Rules and Regulations of the Department of Ecology

ORDER No. DE 88-S334

To: Northwest Processing Poligen Plant Attn: Mr. Glenn Tegen, Owner P. O. Box 940 1707 Alexander Avenue Tacoma, Washington 98401-0940

Chapter 173-303 WAC, entitled "Dangerous Waste Regulations," designates those solid wastes which are dangerous or extremely hazardous to the public health and environment; and provides for surveillance and monitoring of dangerous wastes until they are detoxified, reclaimed, neutralized, or disposed of safely.

On September 15, 1988 a state dangerous waste inspection was performed by Ms. Suzanne E. Powers and Mr. Toby Michelena at the Northwest Processing Foligen plant (Poligen). This inspection revealed that the Poligen plant is acting as an unpermitted dangerous waste storage facility and is in violation of many of the generator and dangerous wastes facility requirements of WAC 173-303. Moreover, dangerous waste and other unknown materials are being stored and handled in a manner which constitutes a threat to public health and/or the environment.

According to observations made during the inspection and counts provided in the September 22, 1988 submittal from Poligen: Four hundred and thirty-two (432) 55 gallon drums of waste are being stored on-site. Two hundred and thirty-six (236) drums are known to contain dangerous wastes. Fifty-four (54) drums were labeled as dangerous wastes having been generated in 1987 by Lilyblad, Port of Tacoma Road. One hundred and seventy drums (170) contained Safety Kleen process sludges and still bottoms which are also known to be dangerous wastes. Twelve (12) drums contained centrifuge sludge generated by Poligen and have been designated as dangerous wastes since the inspection. One hundred and ninety-six (196) drums contain unknown wastes which have not been designated.

Northwest Processing Poligen Plant Order No. DE 88-5334 Page 2

Approximately three hundred and seventy-eight (378) drums were without labels and one hundred and fifty (150) of the Safety Kleen process dangerous waste drums were without lids. Several drums labeled as dangerous waste had holes and were leaking to the environment. Many drums were rusty and in poor condition.

According to Poligen and Lilyblad employees, all drums had been on-site in excess of one year. There are no manifests to document the transport of dangerous wastes from Lilyblad to Poligen. Drums and bulk dangerous wastes shipped to or generated by Lilyblad have been illegally transported to and stored at Poligen.

According to Poligen and Lilyblad employee statements made during the inspection and documentation provided by Poligen and Safety Kleen Inc. 72,000 gallons of spent Safety Kleen solvents which are designated as dangerous wastes have been stored in Poligen's tank farm for approximately one and one-half years. The tank containing these dangerous wastes was noted to be leaking to the ground during the inspection.

There are also eleven movable tanks along the east fence of the property. These tanks ranged from 500 - 5000 gallons and contain potentially dangerous wastes. Poligen could not provide information as to the tanks contents during or since the inspection.

Mr. Tegen has been using Northwest Processing Poligen plant as a dangerous waste storage facility. Dangerous Wastes have been transported to this site without manifests and stored without a permit or Interim Status. Because Poligen has not adhered to recycling conditions, they do not qualify for exempt recycling process status. Poligen, therefore must fully comply with the generator and applicable facility standards of WAC 173-303.

The Northwest Processing, Poligen plant is in violation of the following dangerous waste regulations:

1.	WAC 173-303-070:	Failure to designate dangerous wastes	
----	------------------	---------------------------------------	--

- 2. WAC 173-303-145: Discharge and spills of dangerous waste into the environment.
- 3. WAC 173-303-170: Failure to comply with generator and TSD facility requirements.
- 4. WAC 173-303-180: Failure to manifest dangerous waste for transport and disposal.
- 5. WAC 173-303-190(1): Failure to package dangerous wastes correctly for transport.
 - WAC 173-303-190(2): Failure to Tabel dangerous wastes.

Northwest Processing Poligen Plant Order No. DE 88-S334 Page 3

WAC 173-303-190(3): Failure to properly mark dangerous waste for transport.

6. WAC 173-303-200(1)(a)(b): Accumulating dangerous wastes on site longer then 90 days.

WAC 173-303-200(1)(c): Failure to mark tanks and drums with WAC 173-303-630(3) accumulation dates.

WAC 173-303-200(1)(d): Failure to mark all containers and tanks of dangerous wastes.

WAC 173-303-200(1)(e): Failure to comply with the requirements for personnel training, preparedness and prevention, Contingency plan and emergency procedures.

- 7. WAC 173-303-210(1)(2)(3)(4)(5): Generator recordkeeping: Failure to maintain manifests and designation tests on-site.
- 8. WAC 173-303-220(1)(a)(b): Failure to accurately report dangerous waste activities.
- 9. WAC 173-303-280(1): Illegally operating a storage and treatment WAC 173-303-800: facility without a permit. WAC 173-303-120(4)(d):
- 10. WAC 173-303-300: Failure to have and carry out a waste analyses program/plan.
- 11. WAC 173-303-310: Failure to have proper facility security.
- 12. WAC 173-303-320: Failure to carry out and keep record of general facility inspections.
- 13. WAC 173-303-330: Failure to have a personnel training program, plans or records.
- 14. WAC 173-303-340(1): Failure to have a preparedness and prevention program.
 - WAC 173-303-340(1)(a): No internal alarm or communication system.
 - WAC 173-303-340(1)(b): No device to summon emergency assistance in dangerous waste storage areas.

Northwest Processing Poligen Plant Order No. DE 88-S334 Page 4

WAC 173-303-340(1)(c): No fire extinguishers in dangerous waste storage areas. No spill control equipment.

WAC 173-303-340(1)(d): No sprinklers or fire extinguishers spill control or inspection records.

WAC 173-303-340(3): Failure to maintain adequate aisle space.

WAC 173-303-340(4)(a)(b)(c)(d): Failure to make arrangements with appropriate authorities.

15. WAC 173-303-350: Failure to have a contingency plan and emergency procedures.

16. WAC 173-303-360: Failure to have an emergency coordinator or emergency procedures.

17. WAC 173-303-370: Failure to have a manifest system.

18. WAC 173-303-380: Failure to maintain facility records.

19. WAC 103-303-950(2): Transferring, treating and storing dangerous wastes without a permit.

RCW 70.105.095 reads in part: "Whenever on the basis of any information the department determines that a person has violated or is about to violate any provision of this chapter, the department may issue an order requiring compliance either immediately or within a specified period of time."

In view of the foregoing and in accordance with the provisions of RCW 70.105.095.

IT IS ORDERED THAT Northwest Processing Poligen plant shall, upon receipt of this Order, take appropriate action in accordance with the following instructions:

1. WAC 173-303-145:

Immediately upon receipt of this order, cease discharge of any hazardous substances into the environment including but not limited to any contact stormwater runoff or process water discharges to the unpermitted ditch outfall. Over pack all leaking drums of dangerous wastes, repair or empty all leaking tanks. Seal all sumps in the dangerous waste and product storage areas.

2. WAC 173-303-200: WAC 173-303-120:

Northwest Processing Poligen Plant Order No. DE 88-S334 Page 5

Immediately cease and desist acceptance of any dangerous waste at the Poligen facility until determined by Ecology to be in compliance with the dangerous waste regulations. Immediately upon receipt of this order, properly label and secure all drums and tanks on site. If it is unknown what is in a drum or tank, it must be handled as a dangerous waste until proven otherwise by designation analyses. Label all product drums and submit written documentation which relates the contents of all drums and tanks on site to their location on the site map submitted October 25, 1988.

3. WAC 173-303-070:

- A. Within 10 days of receipt of this order, submit a sampling and analysis plan for review and approval.
- 8. Within 10 days of Ecology's approval of the sampling and analysis plan, all unknown wastes or materials shall be sampled. The samples shall be submitted to a qualified testing laboratory for dangerous waste designation testing per the State Dangerous Waste Regulations, Chapter WAC 173-303-070. This testing must follow the characteristic and criteria procedures including the static acute fish toxicity test. Testing may exclude the oral rat toxicity test. The Department may waive specific criteria tests if acceptable documentation exists which excludes the need for such tests.
- C. Submit designation and analyses results within 60 days of Ecology's approval of the sampling plan.

4. WAC 173-303-200:

Within 30 days of receipt of this order, remove all spent Safety Kleen solvents from the large tank in the tank farm and all other known dangerous wastes from the site to a permitted or Interim Status TSD facility. These wastes must include all Safety Kleen sludges, still bottoms and all drums presently bearing dangerous wastes labels on site. Provide written notifications to Safety Kleen, Lilyblad and any other generators whose waste is on site of the movement of all affected waste.

5. WAC 173-303-200:

Within 90 days of designation as dangerous waste, remove all other dangerous wastes not included in #4 above from the site and send to a permitted TSD facility.

6. WAC 173-303-330:

Within 30 days of receipt of this order, develop and initiate a personnel training program that complies with WAC 173-303-330 for the Northwest Processing, Poligen plant.

Northwest Processing Poligen Plant Order No. DE 88-5334 Page 6

7. WAC 173-303-340:

Within 30 days of receipt of this order, develop and initiate a preparedness and prevention program for the Northwest Processing Poligen facility. This program must comply with the requirements of WAC 173-303-340.

8. WAC 173-303-350:

Within 30 days of receipt of this order develop a contingency plan for emergency procedures for the Northwest Processing Poligen plant and submit to Ecology for review and approval. This plan must meet the requirements of WAC 173-303-350.

9. WAC 173-303-360:

Within 10 days of receipt of this order designate an emergency coordinator for the Northwest Processing, Poligen plant.

Any person who fails to take corrective action as specified in a compliance order shall be liable for a civil penalty of not more than ten thousand dollars for each day of continued noncompliance. In addition, the department may suspend or revoke any permits and/or certificates issued under the provisions of this chapter to a person who fails to comply with an order directed against him.

DATED this 10 day of January 1989 at Olympia, Washington.

Thomas Eaton, Program Manager Solid and Hazardous Waste Department of Ecology State of Washington

TE:sf



ENVIRONMENTAL COMPLAINT

DATE	5-4-84
TIME	0857 0 am 00

MWATER QUALITY	□ WATER RIGHTS	SHORELANDS	DAIR
_		OTHER	
□ HAZARDOUS WASTES Region 5 \(\omega\)	SOLID WASTES District	County $\frac{\hat{\mathcal{K}}}{f}$	une
	Will Abercron		
Complaint received by	VIII HOEFERON	10, 6	
1. Does the complainant wit	sh to remain anonymous?	☐ Yes	&⊈_ No
2. Complaint reported by:	·		
Name		Telephone No.	
Address	_		
3. Date(s) of violation			
		block material	
		ist is seeping	
from Pol	igen onto Ac	OL Express proj	rety (old Bufflin
		I like their p	
Polluted.	Jody Snyder	has been on	site. She
can't id	entife material	•	
6. Alregea violator or sour			
Name 7 Po	liven	City	
Acdress Als	du de lace	. *	
7. Where did the violation			
Directions to place of i	ncident: Between Poli	um & AOL expresion	es (seemas)
Watercourse, if any	Swamp.		
8. Description of damage	(dead fish, etc.)		
Referred to	fo	or investigation on	Date
(Use back of this form	Name for sketch, map, additional notes	, etc.)	J eu





CHEMPRO TACOMA FACILITY POTENTIALLY LIABLE PARTY SEARCH

For

Washington Department of Ecology Solid and Hazardous Waste Program Olympia, Washington **PTI** Environmental Services 15375 SE 30th Place Suite 250 Bellevue, Washington 98007

CHEMPRO TACOMA FACILITY POTENTIALLY LIABLE PARTY SEARCH

By

P. Canterbury, A. MacDonald, and P. Booth PTI Environmental Services

and

G. Floyd and M. Loo Geo/Resource Consultants, Inc.

For

Washington Department of Ecology Solid and Hazardous Waste Program 7272 Cleanwater Lane Olympia, Washington 98504-6811

Ecology Contract C0089008 PTI Contract C704-05

December 1989

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1. INTRODUCTION

This potentially liable parties (PLP) search report focuses on five parcels of property located in Tacoma, Washington on Alexander Avenue between East 11th Street and Lincoln Avenue. These properties (referred to as the study area) have been contaminated with a variety of hazardous materials. Chemical Processors, Inc. (ChemPro) and several other companies and individuals may be responsible for historical contamination of the parcels. The objectives of this report are to identify the various PLP and determine how their activities may be related to contamination of the study area.

This report was prepared for the Washington Department of Ecology (Ecology). The project was managed at PTI by Mr. Pieter Booth. Mr. Robert Barrick provided senior management oversight and Dr. Thomas Ginn provided corporate quality control. Under the direction of Mr. Gary Floyd, Geo/Resource Consultants, Inc. (GRC) provided PTI with technical support and American Title Insurance Company performed the title search. The Washington Department of Ecology (Ecology) contract officer is Jan Swanberg, and the Ecology project manager is Suzanne Powers, Solid and Hazardous Waste Program.

SITE BACKGROUND AND ENVIRONMENTAL CONCERNS

The study area is located in the tideflats area of the Commencement Bay Superfund site on Alexander Avenue between the Hylebos and Blair waterways (Figures 1 and 2). The area was originally wetlands that were gradually filled in. Fill materials were first brought to the site in 1967 and included sludge from Occidental/Hooker Chemical Company, dredge spoils, lime wastes, and auto fluff (i.e., ground-up glass, plastic, foam rubber, wire, leather, rubber, cloth, vinyl, string, and tires). (Hart Crowser 1986a).

The study area has been used by waste oil recyclers and chemical processors since 1970. The site has a long, intensive history of waste oil spills and chemical spills, including spills of chromic acid and metal hydroxide sludge. An unlined pond was constructed on the site and was used to store oil from approximately 1971 to 1975.

The soil, groundwater, and surface water at the study area have been contaminated as a result of disposal and filling activities, inadequate waste oil storage, and numerous chemical and waste oil spills. Sampling efforts conducted by Ecology and several private contractors have indicated that the following substances are present at the site:

- Pesticides and fertilizers
- Semivolatile organic chemicals
- Volatile organic chemicals
- Polychlorinated biphenyls (PCB)
- Asbestos

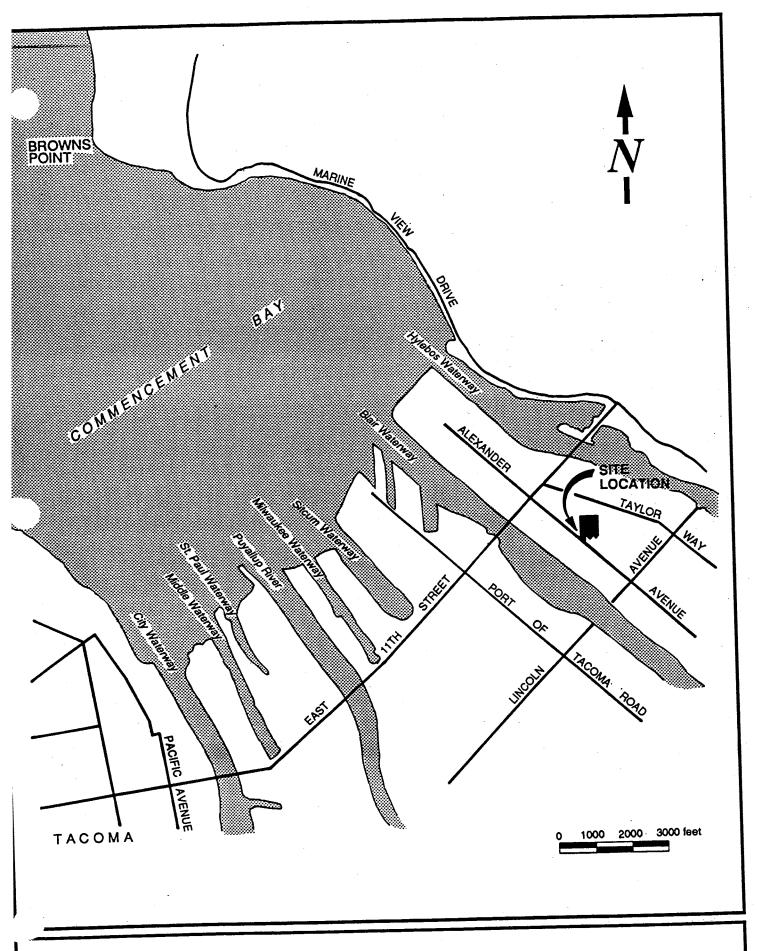
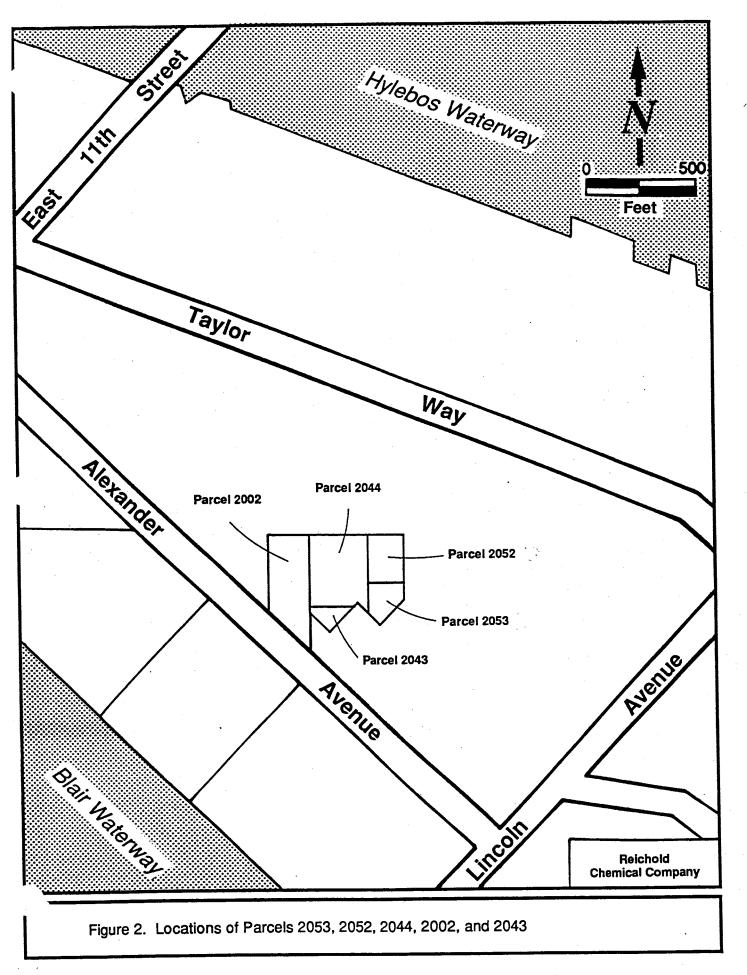


Figure 1. Study area location



- Phenols
- Cyanides
- Heavy metals
- Lime sludges.

APPROACH

The PLP search was conducted predominantly by compiling and analyzing existing information about owners and operators associated with the study area. Information was compiled by conducting the following activities:

- Agency file reviews
- A title search
- Review of interrogatories and depositions
- Review of aerial photographs
- Interviews with PLP and other interested parties.

File Reviews

The purpose of the file reviews was to locate all documents relevant to the PLP search. Copies of all the relevant documents were filed into a project library and microfiched for delivery to Ecology. Entries in the library are organized chronologically by PLP.

Site related files were reviewed at the offices of Ecology (primarily the southwest regional office), U.S. Environmental Protection Agency's (EPA) Superfund and RCRA (Resource Conservation and Recovery Act of 1976) sections, the Tacoma-Pierce County Health Department, the Tacoma County auditor, and the Tacoma Fire Department. The documents reviewed include inspection reports, environmental complaints, reports prepared by consultants (for regulatory agencies and PLP), data reports from sampling events, and intra- and interagency correspondence. The initial file reviews focused on the following companies and individuals identified by Ecology as PLP:

- Donald Oline
- Wallace M. Clark, Emmerson H. Potter, and D. Gordon Potter
- Chemical Processors, Inc.
- Chemical Processors of Oregon
- Freeway Container Corporation
- Domtar

- Occidental/Hooker Chemical Corporation
- General Metals
- John Brazier (Brazier Lumber Company)
- Glenn Tegen (Poligen and Solidus Corporation)
- Unico
- Reichhold Chemical Company
- Buffalo Don Murphy (deceased).

While the file reviews were being conducted, the following additional information sources were identified for investigation:

- Stewart Springer (Puget Sound Industrial Petroleum)
- Northwest Processing (Poligen)
- Lilyblad Petroleum, Inc.
- Tacoma Lime (also known as Continental Lime)
- Sound Refining
- Zydell
- Educators Manufacturing Company
- Former owners of ChemPro including Mike Mattingly, Ron West (deceased), Gary Beremensolo, and Michael Keller
- D&C Trucking.

Title Search

A title search was conducted by American Title Insurance Company on the five parcels covering the period from 1920 to the present. A title search reveals real estate information including tax lot numbers, owners, recorded lessees, and claims against the property. American Title reviewed files at their office and at the Pierce County Auditor's office to collect relevant information on the parcels. The title search report is included in this report as Appendix A.

Interrogatories and Depositions

The Washington Environmental Council (WEC) made available a copy of interrogatories completed by Stewart Springer in January 1988.

Donald Oline was deposed in July 1989 and a list of questions by PTI and GRC were submitted for his responses. A copy of the deposition was not made available to PTI or GRC, but

Oline's responses to the questions were provided by WEC (Riley, R., 4 July 1989, personal communication).

Aerial Photographs

Aerial photographs spanning the period from 1936 to 1988 were available for viewing at Ecology, the Washington Department of Transportation (DOT), U.S. Army Corps of Engineers (COE), Walker & Associates, and the University of Washington Suzzallo Library. Copies of some of the photographs were obtained and are included in the project library. Appendix B contains photocopies of the photographs in the project files. The photographs were analyzed to extract information relevant to activities on the parcels of concern and activities on adjacent parcels when appropriate. Several photographs were on record, but were not available for viewing.

Interviews

When there were data gaps in available records, PTI and GRC attempted to contact the appropriate PLP either by telephone or by mail. In all cases, the companies or individuals successfully contacted were unable to offer any additional information, reportedly because the information requested regarding the 1970s and earlier was no longer available to them.

PTI was contacted by Glenn Tegen's attorney, Charles Douthwaite, and by WEC's attorneys at the law firm of Kehler Rohrback, who volunteered information. A telephone conference was conducted with Douthwaite and he related extensive information about historical operations at the study area. In addition, Douthwaite sent PTI and GRC two reports by Hart Crowser (1986a,b).

Tegen was sent a set of written questions in late July 1989 by PTI (Canterbury, P. 31 July 1989, personal communication) but had not responded to them as of this writing.

Data Analysis and Waste Allocation

Upon completion of the above tasks, all documents were screened and categorized in terms of their content. A qualitative determination of the validity of data and information presented in the documents was made based on professional judgment. For example, information presented in documents that were produced by agencies such as Ecology and EPA or that were subject to agency review was judged to be accurate. When the source or validity of information could not be verified, appropriate comments were noted in the text of this report.

Information was extracted from all available documents and compiled with the results of the title search and aerial photograph interpretation to characterize the following site attributes:

- Historical property ownership and use
- Historical features of land use and facility operations
- Operational and regulatory history of onsite facilities
- Onsite contamination from historical activities.

All available historical information was analyzed to determine (to the extent possible) responsibility for onsite waste disposal and contamination among PLP (waste allocation). When data were available, waste allocation was quantitative (i.e., amounts and types of wastes), otherwise qualitative determinations were made.

Report Organization

The remainder of this report is organized into five sections and two appendices. Section 2 presents the results of the title search and aerial photograph interpretation. Section 3 presents historical information regarding onsite operations, regulatory actions, and environmental sampling by PLP. Section 4 presents available information regarding the allocation of onsite waste disposal organized by PLP. Section 5 summarizes PLP activities and presents recommendations for additional research. Section 6 contains the list of references cited in the body of the report. Appendix A contains the title search report, Appendix B contains photocopies of aerial photographs that are in the project files, and Appendix C contains information uncovered during the PLP search regarding businesses or properties outside the study area. Appendix B was compiled to assist Ecology in other PLP search activities not directly related to this project.

2. PROPERTY OWNERSHIP AND HISTORICAL LAND USE ACTIVITIES

This section presents the results of the title search and the interpretation of aerial photographs of the study area.

PROPERTY OWNERSHIP AND LEASES

A title search was conducted to determine all owners and recorded lessees of five properties (historically referred to as Parcels A-E) located on Alexander Avenue in Pierce County (Figure 2). The title search covers the period from January 1920 through August 1989. For tax purposes, Pierce County has assigned each of the five parcels a tax lot number. The designation of the parcels as A through E has been an unofficial, random assignment that has been used throughout the years. The area that has been historically referred to as Parcel A is Tax Lot 0321352053 and has occasionally included Tax Lot 0321352052. The five tax lot numbers associated with the parcels are as follows:

- **a** 0321352002 (Parcel 2002)
- **a** 0321352043 (Parcel 2043)
- 0321352044 (Parcel 2044)
- 0321352052 (Parcel 2052)
- 0321352053 (Parcel 2053).

A summary of all owners and lessees is presented in Table 1.

Parcel 2002

The earliest date that recorded documents were available for this parcel is June 1942. In 1942 the property was sold by Puget State Bank and the Puget Sound Bank & Trust Company to Albert Wekell and Thomas Johnson. Wekell and Johnson owned the property until 1959 when it was sold to Bank of California, N.A. In 1963 the Bank of California sold the property to B.R. and Inez L. Magnuson and Elwin and Marjorie Deyo who owned it until 1965. The property was purchased by Donald and Alba Oline in April 1965. The Olines leased the property (with an option to buy) to D. Gordon and Virginia K. Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter in January 1976. In October 1980 the leased property was bought by the above-mentioned lessees from the Olines. Chemical Processors, Inc, a Washington corporation, purchased the property in March 1982 and owned the property as of August 1989. Freeway Container, Inc. currently leases this parcel. Information about businesses that have operated on this parcel in the past was not available.

TABLE 1. SUMMARY OF PARCEL OWNERS AND LESSEES

Parcel Number	Owner	Start Date	End Date	Lessees	Start Date	End Date
2002	Albert Wekell and Thomas Johnsen	06/04/21	10/16/59			
	Bank of California	10/16/59	10/09/63			
	B.R. and Inez Magnuson and Elwin and Marjorie Deyo	10/09/63	04/30/65			•
	Donald and Alba Oline	04/30/65	10/27/80	D. Gordon and Virginia Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter	01/01/76	10/27/80
	D. Gordon and Virginia Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter	10/27/80	03/12/82			
	Chemical Processors, Inc. (ChemPro)	03/12/82	Present	Freeway Container, Inc.		Present
2043	Pierce County	12/07/26	02/03/42			
	Port of Tacoma	02/03/42	12/07/61			•
	Educators Manufacturing Company	12/07/61	02/28/69			
	Donald and Alba Oline	02/28/69	10/27/80	D. Gordon and Virginia Potter, Wallace and Edna Clark, and Lillian and Emmerson Potter	01/01/76	10/27/80
	D. Gordon and Virginia Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter	10/27/80	03/12/82			
	ChemPro	03/12/82	Present			
2044	Ellen Johnsen, Betty Race (formerly Betty Wekell), Albert and Rosella Wekell	1	10/15/59			
	Bank of California	10/16/59	10/09/63			
	B.R. and Incz Magnuson and Elwin and Marjorie Deyo	10/09/63	10/30/65			

TABLE 1. Continued)

Dependency Owner Sart Date End Date Leasees Start Date End Date							
December 2017 December 3 10/27/80 December 3 Dec	Parcel Number	Owner	Start Date	End Date	Lessees	Start Date	End Date
D. Gordon and Virginia Potter. 10/27/80 G3/12/82 Present ChemPro -1980 Chend-Pro Galas Clark, and Emmerson and Lillian Potter G3/12/82 Present Present Present Kae Harrison Aline Harrison Taylor 10/06/41 - 12/07/61 2/28/69 6/24/81 Poligen/Lilyblad 06/20/74 Port of Tacoma 12/07/61 02/28/69 04/24/81 Poligen/Lilyblad 06/20/74 Poligen, Inc. 04/24/81 10/02/81 Present Northwest Processing 01/07/87 Solidus Linc 10/02/81 Present Northwest Processing 01/07/87 Aline Harrison 10/06/41 - 10/06/41 - Port of Tacoma 02/28/69 05/13/81 Acro Oil (Acology Oil) 1970 Bducators Manufacturing Company 12/07/61 02/28/69 05/13/81 Acro Oil (Acology Oil) 1970 Donald and Alba Oline 02/28/69 05/13/81 Present Northwest Processing 1970/77 Solidus Corporation 05/13/81 Present	2044	Donald and Alba Oline	04/30/65	10/27/80	D. Gordon and Virginia Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter	01/01/76	10/27/80
Kate Harrison 02/03/26 10/06/41		D. Gordon and Virginia Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter	10/27/80	03/12/82	ChemPro	~1980	Present
Kate Harrison 02/03/26 10/06/41 - 12/07/61 - 12/07/61 - 12/07/61 -		ChemPro	03/12/82	Present			
Aline Harrison Taylor	2052	Kate Harrison	02/03/26	10/06/41			
Port of Tacoma - 12/07/61 02/28/69 Poligen/Lilybiad 06/20/74 Bducators Manufacturing Company 02/28/69 04/24/81 Poligen/Lilybiad 06/20/74 Poligen, Inc. 04/24/81 10/02/81 Northwest Processing 01/07/87 Solidus 10/02/81 Present Northwest Processing 01/07/87 Kate Harrison 02/03/26 10/06/41 Acrossing 01/07/87 Port of Tacoma 10/06/41 Acrossing 03/28/62 Educators Manufacturing Company 02/28/69 05/13/81 Acro Oil (Acology Oil) 1970 Donald and Alba Oline 02/28/69 05/13/81 Present Acro Oil (Acology Oil) 1973 Solidus Corporation 05/13/81 Present Present 10/01/75		Aline Harrison Taylor	10/06/41	4			
Educators Manufacturing Company 12/07/61 02/28/69 04/24/81 Poligen/Lilyblad 06/20/74 Donald and Alba Oline 04/24/81 10/02/81 Present Northwest Processing 01/07/87 Solidus 10/02/81 Present Northwest Processing 01/07/87 Aline Harrison 4 line Harrison Taylor 10/06/41		Port of Tacoma	ŀ	12/07/61			
Donald and Alba Oline 02/28/69 04/24/81 10/02/81 Poligen/Lilyblad 06/20/74 Solidus Solidus 10/02/81 Present Northwest Processing 01/07/87 Kate Harrison Q2/03/26 10/06/41 10/06/41 10/07/61 Port of Tacoma 12/07/61 - 10/07/61 12/07/61 Bducators Manufacturing Company 12/07/61 Q2/28/69 City of Tacoma (Basement only) 03/28/62 Donald and Alba Oline 02/28/69 05/13/81 Aero Oli (Acology Oli) 1970 ChemPro ChemPro ChemPro 10/01/75 Polidus Corporation 05/13/81 Present 05/10/77		Educators Manufacturing Company	12/07/61	02/28/69			
Poligen, Inc. 04/24/81 10/02/81 Present Northwest Processing 01/07/87 Solidus 10/02/81 Present Northwest Processing 01/07/87 Kate Harrison 02/03/26 10/06/41 - 10/06/41 Aline Harrison Taylor - 10/06/41 - 10/07/61 Port of Tacoma Educators Manufacturing Company 12/07/61 02/28/69 City of Tacoma (Basement only) 03/28/62 Donald and Alba Oline 02/28/69 05/13/81 Aero Oil (Acology Oil) 1970 ChemPro ChemPro ChemPro 1974 ChemPro ChemPro 10/01/75 Poligen/Northwest Processing 05/13/81 Present Solidus Corporation 05/13/81 Present 05/10/77		Donald and Alba Oline	02/28/69	04/24/81	Poligen/Lilyblad	06/20/74	1987
Solidus 10/02/81 Present Northwest Processing 01/07/87 Kate Harrison 4 line Harrison Taylor 10/06/41 - 10/06/41 - Port of Tacoma - 10/07/61 City of Tacoma (Basement only) 03/28/62 Bducators Manufacturing Company 12/07/61 02/28/69 City of Tacoma (Basement only) 03/28/62 Donald and Alba Oline 02/28/69 05/13/81 Aero Oil (Acology Oil) 1970 Petroleum Petroleum 1973 ChemPro 1973 Solidus Corporation 05/13/81 Present (Basement only) 05/10/77		Poligen, Inc.	04/24/81	10/02/81			
Kate Harrison 02/03/26 10/06/41 - 10/06/41 - 10/06/41 - 10/06/41 - 10/07/61 - 10/07/61 - 10/07/61 - 10/07/61 03/28/62 - - 10/07/61 03/28/62 -		Solidus	10/02/81	Present	Northwest Processing	01/07/87	Present
Aline Harrison Taylor Port of Tacoma Educators Manufacturing Company Donald and Alba Oline Donald and Alba Oline Solidus Corporation L10/05/41 10/07/61 02/28/69 05/13/81 Aero Oil (Acology Oil) Puget Sound Industrial Petroleum ChemPro of Oregon 1973 ChemPro ChemPro ChemPro (Easement only) 05/13/81 Present 05/13/81 Present 05/11/81 Present	2053	Kate Harrison	02/03/26	10/06/41			
- 10/07/61 12/07/61 02/28/69 City of Tacoma (Basement only) 03/28/62 02/28/69 05/13/81 Aero Oil (Acology Oil) 1970 Puget Sound Industrial Parcoleum ChemPro of Oregon 1974 ChemPro ChemPro ChemPro Oil (Basement only) 05/10/77 (Easement only) 05/10/77		Aline Harrison Taylor	10/06/41	1			
12/07/61 02/28/69 City of Tacoma (Basement only) 03/28/62 02/28/69 05/13/81 Aero Oil (Acology Oil) 1970 Puget Sound Industrial 1973 Petroleum 1974 ChemPro of Oregon 1974 ChemPro Foligen/Northwest Processing (Easement only) 05/10/77		Port of Tacoma	i	10/01/61			
02/28/69 05/13/81 Aero Oil (Acology Oil) 1970 Puget Sound Industrial 1973 Petroleum 1974 ChemPro of Oregon 1974 ChemPro Poligen/Northwest Processing (Easement only) 05/10/77		Educators Manufacturing Company	12/01/61	02/28/69	City of Tacoma (Basement only)	03/28/62	
Petroleum ChemPro of Oregon 1974 ChemPro ChemPro Poligen/Northwest Processing (Easement only) 05/13/81 Present		Donald and Alba Oline	02/28/69	05/13/81	Aero Oil (Acology Oil) Proget Sound Industrial	1970	1973
Poligen/Northwest Processing 105/10/77 (Easement only) 05/10/77 05/10/77					Petroleum ChemPro of Oregon	1973 1974 10/01/75	1974 10/01/75 12/31/86
05/13/81	٠				Poligen/Northwest Processing (Easement only)	05/10/77	
		Solidus Corporation	05/13/81	Present			

Parcel 2043

Parcel 2043 was owned by Pierce County from 1926 to 1942 when it was sold to the Port of Tacoma. The Port of Tacoma sold the property to Educators Manufacturing Company in 1962. The property was then purchased by Donald and Alba Oline in February 1969. In 1976 the Olines leased the property with an option to buy to D. Gordon and Virginia K. Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter. An easement to the property was granted by Donald Oline to Poligen, Inc. in May 1977. The Potters and Clarks purchased the property in October 1980 and then sold it to Chemical Processors, Inc., a Washington corporation, in March 1982. The property was owned by Chemical Processors, Inc. as of August 1989. No information was available about the businesses that have operated on this parcel.

Parcel 2044

The earliest recorded information available for this parcel is from 1959 when Ellen Johnsen, Betty M. Race (formerly Betty M. Wekell), and Albert and Rosella Wekell sold the property to the Bank of California, N.A.. The Bank of California sold the property in 1963 to B.R. and Inez Magnuson and Elwin and Marjorie Deyo. Donald and Alba Oline purchased the property in April 1965 and leased it with an option to buy to D. Gordon and Virginia Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter in January 1976. Auto fluff, lime wastes, and sludge were disposed of on this parcel while the Olines owned it. Donald Oline also granted Poligen, Inc. an easement in May 1977. The Potters and Clarks purchased the property in October 1980. Chemical Processors, Inc. purchased the parcel in March 1982 and owned the parcel as of August 1989. An easement was granted to the City of Tacoma in 1984. ChemPro began using this parcel as early as 1980 for chemical waste recycling. In January 1987, ChemPro expanded its chemical waste facility and moved their waste oil facility from Parcel 2053 to Parcel 2044. ChemPro is currently operating on Parcel 2044.

Parcel 2052

In February 1926 Arthur and Mattie Prichard sold Parcel 2052 to Kate Harrison. Harrison owned the property until 1941 when it was purchased by Aline Harrison Taylor. The Port of Tacoma filed a claim against the property in 1952 and later sold the property to Educators Manufacturing Company in 1961. Educators Manufacturing Company granted an easement to the City of Tacoma in 1962. In February 1969 the parcel was purchased by Donald and Alba Oline who owned it until 1981. From 1969 to 1981, lime wastes, auto fluff, and sludge were disposed of on this parcel. Poligen, Inc., a division of Lilyblad, leased the parcel in June 1974 and constructed a small tank farm on the parcel in 1975. Poligen began operating a chemical and petroleum recycling facility on the parcel in the late 1970s. The Solidus Corporation, which owns Poligen/Lilyblad, purchased the parcel in October 1981 and, as of August 1989, Solidus still owned the property. Poligen, now called Northwest Processing, is currently operating the chemical and petroleum recycling facility on this parcel.

Parcel 2053

This parcel was purchased by Kate Harrison from Arthur and Mattie Prichard in 1926. The property was then deeded to Aline Harrison Taylor in 1941. The Port of Tacoma filed a claim

against the property in 1952 and later sold the property to Educators Manufacturing Company in 1961. Educators Manufacturing Company granted an easement to the City of Tacoma in 1962. In February 1969 the parcel was purchased by Donald and Alba Oline who owned it until May 1981. Lime wastes, auto fluff, and sludge were disposed of on this parcel while the Olines owned it. Acology/Aero Oil (1970-1973), Puget Sound Industrial Petroleum (1973-1974), ChemPro of Oregon (1974-1975), and ChemPro (1975-1986) operated on this parcel while Don and Alba Oline were owners. Oline also granted an easement to Poligen, Inc. in May 1977. In May 1981, the property was sold to the Solidus Corporation. Solidus owned the parcel as of August 1989. ChemPro continued to operate on the parcel until December 1986. The parcel is currently vacant.

HISTORICAL LAND USE PATTERNS

Historical land use patterns were interpreted from various aerial photographs. The focus of the aerial photo interpretation was expanded beyond the parcels of concern to include the area bounded by Taylor Way, Lincoln Avenue, Alexander Avenue, and East 11th Street (Figure 1). Significant activities were noted for some parcels adjacent to this area if they were deemed to be relevant.

The aerial photographs examined were taken during overflights conducted in 1936, 1941, 1946, 1961, 1965, 1967, 1969, 1973, 1974, 1976, 1977, 1979, 1983, 1985, 1987, and 1988. The photographs were in a variety of formats, including black and white, color (panchromatic), and infrared. None of the available sets of photographs were of an ideal quality, coverage, or scale for a detailed evaluation of the parcels of concern. All of the photographs, except the single 1977 and the 1987 pair, were at a scale too small to easily distinguish the smallest individual tanks. Only part of the site was shown on the 1977 photograph (Parcel 2052 and the northern half of Parcels 2044 and 2002), while only a photocopy of one of the 1987 EPA photographs was available. Table 2 presents details of each available photograph or photograph pair.

The review focused on the following activities and features:

- Topographic features, vegetation patterns, and soil tone
- Grading activity
- Prominent building construction
- Prominent building removal or demolition
- Prominent open storage areas for products and raw materials
- Above-ground storage tanks, ponds, debris piles, and liquid impoundments
- Railroad and truck activity.

The photographs or photograph pairs are discussed in chronological order. The narratives for each year discuss activities and features beginning at the Taylor Way and Lincoln Avenue intersection (the eastern corner) and moving clockwise through the review area.

TABLE 2. AERIAL PHOTOGRAPHS A LYZEU IN CHEWIFRO FLE SEARCH

Photograph Date	Source	Identification Numbers	View	Film	Photograph Scale	Actual Scale of Parcel ^a
1936 ^b	Walker & Associates	KC36-826 KC36-838	Stereo vertical	Black & White	1:12,000	N/D¢
1941 ^b (flown)	University of Washington Suzzalo Library	G4281s A4	Single vertical	Black & White	1:20,000	N/D
1946 ^b	Walker & Associates	C46-7,8	Stereo vertical	Black & White (Xerox)	1:12,000	1:11,320
, 09/08/61	Washington Department of Transportation	C-55.21-35,36	Stereo vertical	Black & White	1:12,000	1:12,343, 1:12,476
05/07/65	University of Washington Suzzalo Library (Maps)	WF-7-41,42	Stereo vertical	Black & White	1:60,000	N/D
12/13/67	Walker & Associates	24-1,2 RF6822	Stereo vertical	Black & White	1:12,000	Q/N
1/25/69	Walker & Associates	W6-19-1,2	Stereo vertical	Black & White	1:60,000	N/D
5/=/c >07/13/73	Ecology (Shorelands)	MLM-73 20-3A, & 19A-3,4,5	Stereo vertical	Color	1:24,000	1:24,480,
96/12/74	Washington Department of Transportation	7-16-321,322	Stereo vertical	Black & White	~1:24,000	1:26,472, 1:25,753
92/20/90	Ecology (Shorelands)	NW-C-76 20B-6,7	Stereo vertical	Color	1:24,000	N/D
11/11/30	Fcolow (Shorelands)	DOE 2:31 PIERCE 808	Single vertical	Color	1:6,000	1:6,857
11/11/00	Ecology	DOE-PIERCE 13-45,46,48	Oblique	Color	N/A	N/D
6L/9Z/90 APH	Washington Department of Transportation	SEABLOCK 28-661,662	Stereo vertical	Black & White	1:24,000	1:25,254, 1:25,315
1082b	Ecology (Shorelands)	S83020-44A-2(072)	Single vertical	Color Infared	1:24,000	1:24,483
08/23/85	University of Washington Suzzalo Library (Maps)	8550BLK	Stereo vertical	Black & White	~1:24,000	N/D
06/02/87	U.S. EPA	ALEXANDER AVE 1-2	Stereo vertical	Color (Black & White Xerox)	1:5,000	1:4,900
06/18/87	Ecology (Shorelands)	S87009-46-28 (165)	Single vertical	Color Infared	1:24,000	1:22,923
07/18/88	University of Washington Suzzalo Library (Maps)	88 SOUND BLOCK 23 1044, 1045	Stereo vertical	Color Infared	1:30,000	N/D

13

Check

Determined by measuring from the centerline of East 11th Street to the centerline of Lincoln Avenue along Alexander Avenue and comparing to known distance unless noted. Known distance determined from USGS Tacoma North 7.5' quadrangle.

^b Month and day not available.

c N/D = Not determined.

Stereo Photographs (Walker and Associates 1936)

A large commercial lumber facility (tentatively identified as the Mutual Fir Column Lumber Company) was visible near the Taylor Way and Lincoln Avenue intersection. Piled vegetation and slash from clearing activities were evident in the western half of the review area. Two small, unidentifiable buildings, estimated to be 250 square feet each, were located on a semicircular drive in the center of the northern portion of the area along Taylor Way. Most of the review area (i.e., 99 percent of the area) was tidal marsh with a distinct southwest-flowing dendritic drainage pattern. These wetlands were densely vegetated with shrubby species. Several parcels outside the immediate review area were also wetlands.

Aerial Photograph Map (U.S. COE 1944)

The facility tentatively identified as the Mutual Fir Column Lumber Company was again present. A facility was developed in the immediate southwest corner of the review area near the intersection of Alexander Avenue and East 11th Street. Another facility was constructed approximately 500 feet east of the intersection of Taylor Way and East 11th Street. This facility may be the initial development of the Philadelphia Quartz Company of California (i.e., it coincides with the location shown in an assessor's map dated approximately 1960-1965). The Philadelphia Quartz Company produces sodium silicates. Three above-ground storage tanks were evident at the facility. The area adjacent and central to the south side of Taylor Way appeared to be undergoing some form of development. Eighty percent of the review area was still wetlands. Several properties outside the immediate review area were also still wetlands.

Stereo Photographs (Walker and Associates 1946)

Grading activity was evident south and east of the facility, near the corner of Taylor Way and Lincoln Avenue. This activity may have been the foundation work for a facility later occupied by the Buffelen Woodworking Company. The remainder of the eastern one-third of the review area, as well as the outside properties of interest, were wetlands. The western corner of the review area was characterized by structures that appear to be drying racks for utility poles or storage racks for large-diameter conduit or dredge piping. Similar structures were also present in the lot immediately across from the review area on Alexander Avenue.

A development not present in earlier photographs was evident at the intersection of East 11th Street and Taylor Way (directly east of the tentatively identified Philadelphia Quartz Company). Poor photograph resolution (the photographs available were reproductions) did not permit an accurate identification of the type of business conducted at this facility, although it appears to be an extension of the Philadelphia Quartz Company operation. Two large, above-ground tanks (approximately 50,000-100,000 gallons) and three smaller above-ground tanks (approximately 10,000-15,000 gallons) were visible on the property. Two uncontained piles of a white granular material, each estimated at 50 feet in diameter, were evident along the southwest boundary of the tentatively identified Philadelphia Quartz Company. Grading activity was evident in the central portion of the review area adjacent to Taylor Way. Poor photograph resolution prevented a detailed interpretation of this development.

Stereo Photographs (DOT 1961)

When these photographs were taken, the majority of the Mutual Fir Column Lumber Company yard (tentatively identified) consisted of exposed soil or vegetation. A single track railroad siding extended almost around the perimeter of the property from northwest to southeast and separated the facility from a crescent-shaped pond estimated to cover 3 acres southwest of the facility. This pond appears to extend onto Parcel 2052. A commercial building approximately 150,000 square feet in area (believed to be Tacoma Pacific, Inc.) was developed along the central portion of the area along Lincoln Avenue. Approximately 120 automobiles were parked on the margins of the paved parking lot (not seen in previous photographs) at the facility. A small building, estimated to be 9,000 square feet in area, was present in the southern corner of the property at the intersection of Lincoln Avenue and Alexander Avenue. Portions of three distinct holding ponds were visible on the Reichhold Chemical Company property to the east of the intersection of Lincoln Avenue and Alexander Avenue.

No additional specific developments were noted in the eastern one-third of the review area, although sufficient fill had been placed on the property to convert the tidal marsh to grassed fields. A pond (surface area estimated to be 3.7 acres) covered most of Parcel 2044. No signs of recent excavation, filling, or grading were visible around the pond. Based on the photographic coverage available, the pond was constructed sometime after 1946, but had been there long enough prior to 1961 (i.e., several years) to allow the establishment of grass and shrubs in the vicinity.

A baseball field was visible in the western one-third of the review area along the southwest boundary. This area appeared to be a utility pole or pipe storage area in the 1946 photograph. A circular, barren area (estimated to be 100 feet in diameter) was present northwest and adjacent to the baseball field. This structure coincides with the tentatively identified Port of Tacoma property (as shown in an assessor's map with an estimated date of 1960-1965). One small commercial building was present at the intersection of Alexander Avenue and East 11th Street with a paved parking lot adjacent to the structure. No development was evident along Alexander Avenue.

The commercial facility identified in the 1946 photograph at the intersection of East 11th Street and Taylor Way appeared active and in good condition. Two commercial/maintenance buildings were constructed to the southeast of the original facility. An L-shaped building, estimated to be three stories tall, was located along the central portion of East 11th Street. The tentatively identified Philadelphia Quartz Company increased its tank inventory from two to four 50,000- to 100,000-gallon above-ground tanks and added two small (approximately 10,000-gallon) tanks. Rail sidings entering the property were active, with four rail tanker cars loading or unloading next to the four large tanks. A single pile (covering an estimated area of 7,500 square feet) of a white, granular-to-blocky material was present immediately behind the tentatively identified Philadelphia Quartz Company property. Impounded liquid was evident south of the tanks. The liquid was contained by a topographic depression approximately 1,000 feet long with an estimated average width of 55 feet (depth could not be discerned). This depression and pond could have been present onsite in 1946, but could not be specifically identified on the 1946 photographs due to poor photograph quality.

The property located in the central portion of the review area, adjacent to Taylor Way and north of Parcels 2002 and 2044, showed considerable activity. A small shed, constructed next to Taylor Way on this central property, was potentially owned by S. Hayes (as shown in an assessor's map with an estimated date of 1960-1965). Recent fill, probably including lime or quartz waste and construction rubble, was being redistributed onsite. Nine liquid-filled trenches, each 80-100

Prost so a tanks

feet long, and three discrete mounds of fill material are visible. Overhead electrical power lines, supported by wooden utility poles, traversed this area.

Stereo Photographs (University of Washington 1965)

The crescent-shaped pond west of the tentatively identified Mutual Fir Column Lumber Company (noted in the 1961 DOT photographs) appeared to have been expanded into two ponds. An unidentifiable divider was visible between the two adjacent ponds. The commercial property, tentatively identified as Tacoma Pacific, Inc., located along the central portion of the Lincoln Avenue property boundary, showed tonal changes indicative of recently improved or constructed pavement. No vehicles were parked in the lot.

The holding ponds located on the Reichhold Chemical Company property, southeast of the intersection of Lincoln Avenue and Alexander Avenue, appeared to have increased in surface area by approximately 20 percent. Two small ponds containing an opaque liquid and a light-colored, granular substance were present in the fill area west of the tentatively identified Mutual Fir Column Lumber Company. An access road was constructed from Alexander Avenue to the pond in the center of the review area. The estimated 100-foot diameter barren area first noticed in 1961 in the southwest corner of the review area was still present.

Stereo Photographs (Walker and Associates 1967)

The pond northwest of the tentatively identified Mutual Fir Column Lumber Company appeared to have been filled, and only the original 3-acre, crescent-shaped pond was evident. Two small commercial buildings southwest of the facility are believed to belong to Tacoma Pacific, Inc. Both facilities apparently operated conveyor systems, and a light colored substance was observed on the roof of each facility.

The pond in the center of the review area was apparently in the process of being filled with a light colored, powder-to-granular material. This material appeared to have been generated by the current tenants of a parcel southwest of the review area and adjacent to the central portion of Alexander Avenue (believed to be Pacific Lime Company). Large piles of the light colored material were also visible on this property. The light colored material was apparently dispersed by vehicles across Alexander Avenue along an access road to the pond. The circular barren area near the western corner of the review area first observed in the 1961 DOT photographs was no longer visible.

Substantial amounts of debris were noted at the commercial facility located at the intersection of East 11th Street and Taylor Way. Two ponds were visible immediately southwest of the tentatively identified Philadelphia Quartz Company, and a substantial amount of soil grading was evident in the immediate area. Approximately 200 bales of an unidentifiable material (possibly hay) were covered with a homogeneous and fibrous sheeting along the central portion of Taylor Way.

Stereo Photographs (Walker and Associates 1969)

The pond in the central portion of the review area exhibited continued filling activities. The central portion of the review area along Taylor Way showed signs of increased activity and the appearance of more baled material. The graded and developed portion of the central area increased in size by approximately 20 percent since 1967. The small utility building remained visible in this central area.

The grading in the southwest corner of the review area, which began in 1967, appeared more complete, with roads or alleys. The northwest portion of the review area showed additional grading and construction of several more buildings. This activity was in the vicinity of the pole and pipe storage area observed in the 1946 photographs.

Stereo Photographs (Ecology 1973)

No changes were evident at the former (tentatively identified) Mutual Fir Column Lumber Company facility, which was now occupied by Lindal Cedar Homes. Grading activity was visible at the property to the immediate southeast, tentatively identified as the Buffelen Woodworking Company. Five graded swaths ran perpendicular to Lincoln Avenue, and one north-to-south diagonal swath bisected the area. A large commercial building (approximately 10,000 square feet) and adjacent paved parking lots were constructed in the southern corner of the review area. No physical changes were evident at the Tacoma Pacific, Inc. property, located along the central portion of Lincoln Avenue.

A relatively large, crescent-shaped mound of a dark, granular solid (dimensions could not be determined from the photographs) that was evidently a result of excavation, was present in the central portion of the review area. Two or three small unimproved surface impoundments appeared in the general vicinity of the mound. Rust-colored containers (apparently metal) were present in the immediate area of the mound. Four tall, small-diameter tanks (or refracting towers) were present west and north of this mound. Due to their dimensions and positioning, the containers could have been used for the transportation of the granular substance (e.g., by truck or rail). Unimproved roads traversed the central portion of the southwestern boundary of the area. The eastern half of the 3.7-acre pond is also filled with the dark granular solid. Dark soil tones were noticeable to the west of the barren depression. Four buildings (two appearing to be Quonset huts) were present on the parcel between Alexander Avenue and Parcels 2044 and 2053.

The southwest section of the area was vacant and showed 12 distinct graded swaths constructed perpendicular to Alexander Avenue and crossing the entire width of the property. There was variation in soil tones in this area.

Three buildings, miscellaneous containers, and private automobiles were present along East 11th Street. To the northeast there appeared to be a maintenance building and parking lot. This facility is believed to be a salvage yard for auto fluff. Although there is accumulation of a substance suspected to be auto fluff, the property did not appear to be as cluttered as in previous years.

The tank inventory at the Philadelphia Quartz Company facility (tentatively identified) remained unchanged from 1961. The impoundments and the pile of light colored, granular-to-blocky material behind Philadelphia Quartz Company were still evident.

Stereo Photographs (DOT 1974)

Most of the yard/parking lot at the Lindal Cedar Homes facility was paved. Numerous lumber drying racks were evident in the yard. The 3-acre, crescent-shaped pond was completely filled. No changes from the 1973 photographs were noted in the area adjacent to the intersection of Taylor Way and Lincoln Avenue. The Reichhold Chemical Company appeared in this set of photographs and only one surface impoundment (estimated at 5,000 square feet in area) was visible at their facility.

Two 25,000-gallon upright tanks appeared since 1973 next to the 3.7-acre pond north of Alexander Avenue, probably on Parcel 2053 (Puget Sound Industrial Petroleum). A distinct trail of light colored powder-to-granular material extended from the Pacific Lime Company property (tentatively identified), southwest of the central portion of Alexander Avenue, across Alexander Avenue, along an unimproved road extending into the review area toward the pond in the center of the area. The central portion of the review area contained the same four buildings seen in the 1973 photograph. The remaining portion of the central review area was vegetated with grasses.

No significant development was evident in the northern corner and along the East 11th Street boundary of the review area.

The Philadelphia Quartz Company (tentatively identified) appeared relatively unchanged, but the pile of light colored granular-to-blocky material appeared approximately 25 percent larger than in the 1961 photograph. The two surface impoundments southwest of the facility decreased in size.

Stereo Photographs (Ecology 1976)

No significant changes from 1974 were evident along Lincoln Avenue. An unidentifiable development, possibly a new building, was constructed adjacent to the tanks near the central pond. This pond was completely filled, and a new, smaller pond was visible about 800 feet south of the two prominent tanks in the approximate area of Parcel 2053. The stockpile of dark granular material first noticed in 1973 was no longer evident, but a small pile of rubble or slag was present in the same area.

The vacant eastern portion of the area, that showed 12 distinct graded swaths in 1973, was completely cleared. The parcel now consisted entirely of exposed soil showing slight discoloration in the central portion. Immediately across Alexander Avenue to the southwest, the tentatively identified Pacific Lime company appeared to be in operation. A light colored, powder-to-granular material was tracked onto Alexander Avenue apparently by haul vehicles. Adjacent to and northwest of the Pacific Lime Company (tentatively identified), the surface soil exhibited extremely heavy, dark staining.

Around the six buildings along East 11th Street miscellaneous containers were strewn about and very dark surface soil staining was evident. No other significant changes from the 1974 photographs were evident.

Single Photograph (Ecology 1977a)

The entire eastern corner of the review area, occupied by Lindal Cedar Homes and Buffelen Woodworking Company (both tentatively identified), was paved except for a small vegetated parcel to the southwest. Desiccated vegetation was visible to the southwest of these facilities. There were three new 25,000- to 50,000-gallon (approximately) upright, above-ground tanks tentatively located on Parcel 2052.

No development was evident in the central portion of the review area. Approximately 70 percent of the area was vegetated. Trees can now be identified as dominantly conifers due to a larger photograph scale than previously available.

The L-shaped office building along East 11th Street, first noted in the 1961 photographs, appeared to maintain improved external housekeeping. The apparent auto fluff facility in the northern corner of the property was active, with minimal soil staining. Four rail tanker cars were present adjacent to the large above-ground tanks, and one rail tanker was located adjacent to the smaller tanks on the tentatively identified Philadelphia Quartz Company property. For the first time at this facility, four 10,000-gallon (approximate volume) above-ground tanks were visible on the west side of the main building. The pile of light colored, granular-to-blocky material behind the facility (first noticed in 1961) had increased in size and was sloughing into the northwest side of the pond. The pond appeared highly turbid. The Philadelphia Quartz Company property (tentatively identified) exhibited little or no surface soil staining. The vegetation adjacent to the southeast corner of the pond appeared stressed (possibly due to weather conditions), while the remaining vegetation around the perimeter of the facility appeared to be healthy.

Oblique Photographs (Ecology 1977b)

The Reichhold Chemical Company was visible in these photographs, and there were no significant developments on this property. A small elongated pond (approximately 400×50 feet) with an adjacent rail siding was visible on the property southwest of Alexander Avenue. The rail siding was active, with six tanker cars parked adjacent to the pond. According to the county assessor's map (estimated date 1960-1965), this parcel was owned by the Occidental/Hooker Chemical Company.

Signs of early development were now evident throughout the central portion of the review area. The southeastern section of the central portion (probably Parcel 2053) contained six 10,000-to 25,000-gallon (approximate volumes) above-ground tanks or refracting towers in addition to those visible on the single vertical 1977 photograph, along with two associated sheds. Soil on Parcel 2044 was stained both rust and black where the 3.7-acre pond was filled. Unidentifiable large blocks were also present in this area. A small paved area was visible immediately west of Parcel 2002 along Alexander Avenue, and small unidentifiable structures were present in the center of the pad. The remainder of the central portion of the review area appeared barren.

The Pacific Lime Company (tentatively identified) had moderate railroad activity on the premises. An abundance of scattered, light colored powder-to-granular material was strewn across the property and had sloughed into Blair Waterway.

The rectangular, graded parcel near the corner of East 11th Street and Alexander Avenue appeared to have been mechanically revegetated with a row configuration of shrubbery and grasses

over its eastern half, as divided by a north-south diagonal boundary. On the western portion of the site there was barren earth or buildings. The seven buildings on the corner appeared to be on a maintenance yard with wrecked automobiles, 4-door pickup trucks, and heavy machinery. The surface soil in this area showed heavy black staining. The building northwest and adjacent to this area appeared to be an office complex with approximately 20 parking spaces. The office grounds appeared free of surficial staining.

The facility in the northern corner of the review area, believed to be an auto fluff salvage yard, contained abundant clutter. The Philadelphia Quartz Company property (tentatively identified) contained four 100,000-gallon and five 25,000- to 50,000-gallon (approximate volumes) upright, above-ground tanks. The large, irregular-shaped surface impoundment behind the tentatively identified Philadelphia Quartz Company site contains a gray liquid that is noticeably less turbid than it was earlier in the month as observed on the single vertical photo. Three smaller impoundments were also located in the immediate area.

Stereo Photographs (DOT 1979)

Grading and paving appeared to be the only physical changes in the northeast portion of the review area. The Reichhold Chemical Company property contained 37 to 40 above-ground tanks with estimated volumes of 5,000 to 25,000 gallons each. One triangular surface impoundment (dimensions indiscernible) was visible on the property. A commercial building (approximately 0.7 acres) was located on the north corner of the intersection of Lincoln Avenue and Alexander Avenue.

In these photographs, three sheds and six small-diameter upright tanks could be clearly identified on Parcel 2053 although they were only tentatively noted on the 1977 oblique photographs. The western 3 tanks appeared to be about 15 feet high, while the eastern tanks were more than 20 feet high. On Parcel 2052, another small tank had been added on the graded pad, which held two large tanks and three small tanks in the 1977 photographs. Four small tanks (approximately 5,000- to 10,000-gallon) had been added southwest of the pad, near the southern boundary of the parcel.

The dimensions of the small rectangular cleared area west of Parcel 2002 on Alexander Avenue were approximately 150x250 feet. Several structures, including possible fuel pumps, small-diameter tanks, and a shed, were located in the center of this facility. The remainder of the central portion was graded and was 90 percent vegetated (approximately 30 percent conifer, 30 percent grasses, and 30 percent shrubs).

Soil staining remained evident throughout the southwest property on the corner of Alexander Avenue and East 11th Street. The accumulation of light colored materials behind the Philadelphia Quartz Company (tentatively identified) appeared to be spreading laterally. All other facilities along East 11th Street and around the northern corner of the review area appeared relatively the same as in the 1977 photographs.

Infrared Photograph (Ecology 1983)

The sparse vegetation on the properties in the eastern corner of the review area appeared stressed. The majority of this area was paved or graveled.

The paved area increased in the southern corner of the review area between 1979 and 1983. The northeastern two-thirds of the parcel(s), between the corner of Lincoln and Alexander Avenues and Parcel 2002, were paved and now had sheds and vehicles on them. Liquid or chemical storage tanks were visible on Parcels 2052 and 2053, and the southeast corner of Parcel 2044. The estimated inventory included sixteen 10,000- to 25,000-gallon upright, above-ground tanks, four 25,000 to 50,000-gallon upright, above-ground tanks, and two 50,000- to 100,000-gallon upright, above-ground tanks (estimated volumes). The four small tanks noted in the 1979 photographs were no longer visible in their previous location. No vegetation was evident in this area.

The remainder of Parcels 2044 and 2002 was 40 percent revegetated with grass (much of it appeared stressed) and a few shrubs. Pale granular debris (probably lime) was still visible, tracked through the middle third of the parcels, with some vegetation present. The northern 25 percent of the parcels was still completely unvegetated, dark-colored fill, which extended nearly to Taylor Avenue. Northwest of Parcel 2002 the vegetation remained generally healthy, although grass was beginning to die. This may have been a seasonal effect.

A small pond remained south of the Philadelphia Quartz operation. The commercial facility in the extreme southwest corner of the area showed excessive surface soil staining across the entire lot.

Stereo Photographs (University of Washington 1985)

In these photographs, the most prominent activity was present in the south-central and mid-central portions of the review area, where it appeared that bulk chemical storage and transfer activities were taking place. The estimated number and volume of the visible tanks included twenty-two 5,000-gallon, three 25,000-gallon, and four 50,000-gallon upright, above-ground tanks (estimated volumes). It is assumed that these facilities were part of ChemPro and Poligen.

The southwest portion of the review area was graded and a 3- to 4-story building was erected on the property. A surface impoundment was present immediately across Alexander Avenue on what is believed to be Pacific Lime Company property. The previously heavily stained soil surrounding the facilities in the northwest portion of this area was covered with clean gravel. Heavy soil staining was still visible in isolated patches in the southwest corner.

The northwest portion of the review area was resurfaced with clean gravel. The surface impoundments located behind the Philadelphia Quartz Company (tentatively identified) were filled.

Infrared Photograph (Ecology 1987)

Soil staining was still visible at the intersection of Taylor Way and Lincoln Avenue. Heavy truck traffic was evident on the Lindal Cedar Homes and Buffelen Woodworking properties (both tentatively identified). The building in the central portion of the Lincoln Avenue boundary (where Tacoma Pacific, Inc., was once located) appeared to have had alterations to the roof. Another building had been added on the parcel at the intersection of Lincoln Avenue and Alexander Avenue, and most of the parcel had been graded.

The Reichhold Chemical Company was observable in this photograph. This facility maintained three surface impoundments and numerous miscellaneous containers in what appeared to be a chemical storage yard. Approximately sixty 5,000- to 10,000-gallon upright, above-ground storage tanks were visible on the property (approximate volumes). Also, four 25,000-gallon upright, above-ground storage tanks were visible in the chemical storage yard (approximate volumes). Other containers randomly located throughout the grounds appeared to be large shipping containers. Surface staining was visible on the property, which was mostly paved.

The development in the central portion of the area (Parcels 2002, 2044, and adjoining parcels to the north) increased substantially since 1974. What appeared to be a chemical storage yard extended across the entire central section from Alexander Avenue to Taylor Way. The developed area was increased by over 16 acres. Using a photocopy of a 1:5000 scale photograph (U.S. EPA 1987), a minimum tank inventory was as follows: 1) eighteen 5,000-gallon, three 25,000-gallon, and one 50,000-gallon upright tanks on Parcel 2052, 2) forty-two 5,000-gallon tanks (or larger) on Parcel 2044, and 3) three 5,000-gallon tanks on Parcel 2002. The very small-diameter tanks on Parcel 2053 had been removed. All of the parcels of interest were cluttered with stacks of rectangular containers.

The commercial facility near the Alexander Avenue and East 11th Street intersection showed little vehicular activity. Moderate surface soil staining was evident in this area. The surface impoundment behind the tentatively identified Philadelphia Quartz Company facility appeared to have an estimated surface area of 0.5 acre.

Stereo Photographs (University of Washington 1988)

Healthy vegetation was present in the northeast portion of the review area where the crescent-shaped pond was last visible behind the Mutual Fir Column Lumber Company (tentatively identified) in the 1969 photo. The central portion of the review area, identified as a liquid chemical processing facility in the 1983-1987 photograph interpretations, showed substantial activity. The presumed chemical storage area in the central portion was extremely congested with miscellaneous containers. The west side of the central portion, which extends from Alexander Avenue to Taylor Way, was undeveloped and showed healthy vegetation (as it had since the late 1970s).

A large commercial facility was constructed in the southwest portion of the review area along Alexander Avenue, where a 3- to 4-story building was identified in the 1985 photograph. The surface impoundment located behind the Philadelphia Quartz Company facility (tentatively identified) was completely filled with soil.

3. ONSITE OPERATIONS, REGULATORY ACTIONS, AND ENVIRONMENTAL SAMPLING

ONSITE OPERATIONS AND REGULATORY ACTIONS

This section presents information regarding the businesses that operated on the five parcels of concern during the 1970s and 1980s. To the extent that information was available, the following topics are discussed for each business:

- Type of business (e.g., waste oil recycler, chemical processors)
- Location (i.e., the parcel the business was or is located on)
- Approximate dates of operation
- Onsite equipment
- Improvements and expansions made during period of operation
- Processing capacity (e.g., storage and treatment)
- Regulatory actions (e.g., orders and notices of violations).

Businesses that have operated on the five parcels include Acology/Aero Oil, Puget Sound Industrial Petroleum, ChemPro of Oregon, ChemPro, and Poligen/Northwest Processing. Donald Oline owned the parcels during the 1960s and 1970s but never operated a facility on any of the parcels. However, Oline used lime wastes, auto fluff, dredged material, and sludge from Occidental/Hooker Chemical as fill on the parcels. Oline's filling practices are discussed in greater detail in Section 4.

Acology/Aero Oil

Bruce Smith leased Parcel 2053 from Donald Oline in 1970. Shortly thereafter, Smith began living onsite in a small trailer and started a waste oil recycling facility called Aero Oil. In 1972 the name of the company was changed to Acology Oil. A small, unlined pond (approximately 60×100 feet) was constructed onsite to store oil. Smith sold the waste oil recycling facility to Stewart Springer in early 1973. Operating assets at that time included three main processing tanks with a total capacity of 70,000 gallons, a 20,000-gallon storage tank, a sodium silicate storage tank of about 10,000 gallons, and an old rail car (capacity not specified) used to store emulsified asphalt (Springer, S., 8 January 1988, personal communication). Other information regarding processing, improvements and expansions, and regulatory actions at the facility was not available in the documents reviewed.

Puget Sound Industrial Petroleum/ChemPro of Oregon

Puget Sound Industrial Petroleum (PSIP) purchased Acology Oil's equipment in 1973 and took over the waste oil recycling operation located on Parcel 2053. When PSIP began operations the facility consisted of a 60×100-foot oil holding pond (containing approximately 500 gallons of oil), three processing tanks with a total capacity of 70,000 gallons (containing approximately 30,000 gallons of heavy bunker oil), a 20,000-gallon storage tank, a 10,000-gallon sodium silicate storage tank, and an old rail car filled with emulsified asphalt (Springer, S., 8 January 1988, personal communication). The asphalt was blended into burner fuel and sold to a Japanese fishing fleet through a company called Northwestern Petroleum (Springer, S., 8 January 1988, personal communication). The oil in the pond was reclaimed and also sold to the Japanese fishing fleet.

Springer (8 January 1988, personal communication) reported that in 1973 two 10,000-gallon tanks were added to the facility. One tank was used to store incoming slop oil and the other was used for storing processed oil. A truck pad and loading/unloading facility was constructed in 1973 for unloading slop oil and loading processed oil into trucks. During this time, dirty oil was pumped from the slop tanks to a processing tank where it was dehydrated and treated to precipitate water and dirt to the bottom of the processing tank. Sodium silicate was the most commonly used catalyst.

In 1974, a three-section API-type oil/water separator was constructed on the property to receive slop oil. During this time PSIP was receiving about 1,500 gallons of slop oil per week. Springer sold PSIP's stock and assets to ChemPro of Oregon in 1974. ChemPro of Oregon continued to operate the waste oil facility as PSIP until late 1975.

In 1975, Ecology issued Notice of Violation No. DE 75-2 requiring that the pond, which had previously been used to store oil, be cleaned up and closed. After receiving the order, PSIP allowed the water remaining in the pond to evaporate. The area was then filled with auto fluff and gravel (Springer, S., 8 January 1988, personal communication) and later paved with asphalt. Large rectangular tanks (number of tanks or capacity not specified) were placed on the paved area and used to store various materials including waste pickling solutions and oily wastes from machine shops (Springer, S., 8 January 1988, personal communication). Springer (8 January 1988, personal communication) reported that very little waste oil (amounts not specified) was received at the facility because after the purchase by ChemPro of Oregon, most of the oil was being shipped to the ChemPro's facility at Pier 91. Other information regarding onsite operations and regulatory actions was not available for review.

ChemPro

ChemPro purchased the waste oil recycling equipment (owned by ChemPro of Oregon) located on Parcel 2053 on 1 October 1975 and began waste oil recycling on the western half of the parcel shortly after the purchase (Fisher 1988). Keller (7 May 1981, personal communication) stated that ChemPro's waste oil facility consisted of three oil processing tanks (capacities were not given) and a boiler located on Parcel 2053. Monahan (28 February 1979, personal communication) conducted a site inspection in 1979 and discovered that the facility was inundated with oily water and that no containment or storage area for spills was present. These conditions violated Provisions S3 and G5 of ChemPro's waste discharge Permit 5095.

In approximately 1977, ChemPro began operating a chemical waste facility on the east side of Parcel 2053. Stefani (22 January 1987, personal communication) reported that by 1980, the chemical waste facility was operating on Parcel 2053 and a portion of Parcel 2044. Robb (29 June 1987, personal communication) stated that in approximately 1980, the chemical waste facility consisted of 11 open-top tanks of various sizes used to store acids and sludge, six 23,717-gallon tanks used to store supernatant, and a 228,000-gallon settling tank (referred to as the Big Boy tank). Total storage capacity was 703,925 gallons. The facility also included five treatment tanks with a total treatment capacity of 24,000 gallons per day.

As a result of a 3,700-gallon spill of a mixture of nitric acid and chromium, Ecology issued Order No. DE 86-134 to ChemPro (Ecology, No date). This order required ChemPro to submit an "approvable plan for secondary containment of dangerous waste." ChemPro complied with the conditions of Order No. DE 86-134 (Powers, S. 18 September 1989, personal communication).

Keller (30 July 1981, personal communication) stated that ChemPro received a variety of acids, primarily from electroplating operations, in various combinations and mixtures that were stored in the diked acid treatment area (i.e., the 11 open-top tanks). Acids received that were not compatible with acids currently being treated or that contained phenols or chelating agents were isolated and pretreated in designated stainless steel tanks located inside the diked acid treatment area.

In 1980 ChemPro submitted an engineering report to Ecology regarding a proposed cyanide treatment facility to be constructed onsite. However, Monahan (18 September 1980, personal communication) stated that ChemPro's engineering report for the proposed facility was inadequate and Ecology was unable to approve the project. It is unclear from the records if the treatment plant was constructed.

Chemical waste treatment and waste oil recycling were discontinued on Parcel 2053 in 1986 and moved to a new containment pad and storage tanks on Parcel 2044. The new waste oil facility contained eight tanks with a total capacity of 119,500 gallons, and the chemical waste storage capacity was increased from 703,925 gallons to approximately 746,160 (ChemPro 1988; Stefani, D., 22 January 1987, personal communication). The Big Boy tank, located on the western perimeter of Parcel 2053, was still used to store hazardous wastes in 1986. A container storage area was also located on Parcel 2044 and consisted of 2,250 drums of solid waste or 72 drums of liquid waste (capacities not indicated; ChemPro 1988).

Order No. DE 88-S304 was issued by Ecology in 1988 and focused on improving housekeeping practices. Powers (18 September 1989, personal communication) documented that ChemPro complied with the purpose and intent of Order No. DE 88-S304.

Ecology submitted a Proposed Consent Decree in December 1987 to both ChemPro and Solidus, the current owner of Parcel 2053, for further remedial investigation of Parcel 2053 but no agreement had been reached at the time of this writing. Civil legal action is pending between ChemPro and Solidus regarding responsibility for the remaining contamination on the parcel. Also, EPA issued a RCRA 3013 Order to ChemPro for Parcels 2044 and 2052 requiring further remedial action.

ChemPro has been conducting RCRA site stabilization and closure activities on Parcel 2053 since it ceased operations on the parcel in late 1986 and removed all dangerous waste tanks. Parcel 2053 is therefore currently vacant. ChemPro also owns Parcel 2043, which is currently being used as a parking lot, and Parcel 2002, which is leased to the Freeway Container Corporation.

Poligen/Northwest Processing

Poligen, which is a division of Lilyblad, leased Parcel 2052 from Donald Oline in 1974. In 1975 a small tank farm consisting of two tanks was constructed on the northwest portion of Parcel 2052. Three tanks were added to the tank farm by 1978. A chemical and petroleum recycling facility was also constructed on Parcels 2052 and 2054. The records reviewed do not specify when the facility was constructed, but aerial photographs reveal that significant activity began in this area in the late 1970s. In July 1987 the name of the company was changed to Northwest Processing. Lilyblad and Northwest Processing are owned by the Solidus Corporation.

Lilyblad (24 May 1982, personal communication) reported that virgin mineral spirits, diesel fuel, gasoline, and used oil were stored onsite in bulk storage tanks (no quantities listed). Ecology files indicate that Poligen managed used mineral spirits (primarily from the Safety Kleen Company), bilge oils, and paint thinners from old oil-based paints.

Lilyblad (1985) reported that onsite tank storage capacity was 138,800 gallons (in three tanks) for slop oil emulsion solids; 5,000 gallons (in 1 tank) for slop oil emulsion solids, sludge, or oil separator sludge; and 20,000 gallons (in 1 tank) for used mineral spirits. The treatment process involved the dehydration and separation of fuel oil fractions. Slop oil emulsion solids were purchased from petroleum refineries and treated in waste oil dehydration and gasoline/fuel oil splitter units. Design capacity of the treatment system is 2,000 gallons/day.

Lilyblad (1985) also reported that waste generated onsite from the screening of slop oil emulsions prior to tank storage was placed in containers and stored in the container storage area. The capacity of the storage area was twenty-four 55-gallon drums.

According to Ecology files, in 1986 the Poligen facility covered approximately 5 acres and included three tank farms consisting of 5, 8, and 10 tanks each and an oil dehydration unit and gas/diesel splitter with a heat exchanger. Poligen was making plans at that time to expand to six tank farms totaling 53 tanks. The main warehouse, two drum storage areas, a maintenance workshop, and a truck maintenance building were also located onsite. The information reviewed did not indicate whether Northwest Processing operations have expanded or changed since 1986.

Ecology records provided an extensive citing of dangerous waste regulation violations (34 violations were identified) for the facility including:

- Failure to designate dangerous waste
- Illegal discharge and spills of dangerous waste to the environment
- Failure to comply with generator and treatment, storage and disposal facility requirements
- Failure to properly package dangerous waste for transport and disposal.

The City of Tacoma also issued a notice of violation of sewage disposal regulations on 10 June 1988 because Poligen was discharging untreated wastewater from an oil/water separator to the sanitary sewer. City of Tacoma regulations require that waste water be treated to reduce the level of oil to ≤50 mg/L.

Ecology Order No. DE 88-S334 was presented to Northwest Processing on 10 January 1989 (Ecology 1989). The order required "surveillance and monitoring of dangerous wastes until they are detoxified, reclaimed, neutralized, or disposed of safely". Northwest Processing was trying to appeal this order at the time of this writing.

ENVIRONMENTAL SAMPLING

This section presents information regarding past and planned sampling by (or for) PLP associated with Parcels 2053 and 2052. To the extent information was available, the following topics are discussed for each sampling effort:

- Sampling frequency
- Matrices and analytes
- Analytical results.

Studies are discussed in chronological order by PLP for ChemPro, Occidental/Hooker Chemical, Poligen/Northwest, and Reichhold Chemical Company. Documentation of sampling by other PLP was not encountered during the file reviews.

ChemPro

Although many files discussed miscellaneous sampling efforts, five documents were of particular interest:

- An Evaluation of Ground Water Contamination at the Chemical Processors, Inc. Tacoma Facility (Harper-Owes 1982)
- Phase 1 Hydrogeological Investigations of Parcel A Appendix G Laboratory Testing Results (Sweet-Edwards/EMCON 1988b)
- Parcel A Final Closure Activities Report (Sweet-Edwards/EMCON 1988a)
- Parcel A Closure Auto Fluff Testing And Analysis (Sweet-Edwards/EMCON 1989a)
- Statistical Evaluation of Parcel A Closure (Sweet-Edwards/EMCON 1989b).

Harper-Owes (1982)—Because of their interest in purchasing the ChemPro facility, Chem Security Systems, Inc. hired Harper-Owes to evaluate the nature and impact of existing and potential groundwater contamination associated with the facility and surrounding property. Sampling sites were selected to determine predominant directions of groundwater flow across the

site and to characterize soil and groundwater contaminant levels upgradient and downgradient of ChemPro's principal chemical processing unit that was located on the southern portion of Parcel 2053.

A total of 12 groundwater observation wells were established on Parcels 2053, 2044, and 2002. Six of the 12 wells were placed on the perimeter of Parcel 2053, surrounding the principal chemical processing unit. The remaining six wells were placed throughout Parcels 2044 and 2002. Sixty-five soil samples were collected from these stations during well drilling. In addition, 12 soil observation pits were placed in a grid pattern across the entire area encompassing Parcels 2002 and 2044. Soil samples were collected on 26 July 1982 and groundwater samples were collected on 3 August 1982. Analytical determinations were performed for cadmium, mercury, chromium, nickel, cyanide, phenol, tetrachloroethene, and trichloroethene. Soil samples were analyzed according to EP Toxicity procedures.

Harper-Owes (1982) concluded that groundwater from Parcel 2053 and the southern portion of Parcels 2002 and 2044 generally flows to the southwest toward Blair Waterway. Groundwater from the northern portion of Parcels 2044 and 2002 generally flows to the north towards Hylebos Waterway.

Harper-Owes (1982) reported the following ranges of metals concentrations in groundwater and soil elutriate:

- \blacksquare Chromium $-<1-32 \mu g/L$
- Nickel $<100-860 \mu g/L$
- \blacksquare Cyanide <5-1,440 μ g/L
- Phenol $75-1,100 \mu g/L$.

The highest trichloroethene concentration (150,000 μ g/kg) in soil was found just northwest of the principal chemical processing area. "Unconfirmed" and "considerable and roughly equivalent" concentrations of solvents including toluene and benzene were found in the soil in the same area (more specific information was not presented).

Lime waste was present in the area surrounding the Big Boy tank located northwest of Chempro's principal chemical processing unit, in the middle section of Parcels 2002 and 2044, and in the southwest corner of Parcel 2044. Groundwater pH in the areas where lime wastes were found ranged from 9.0 to 12.5. The pH of other groundwater samples ranged from 6.5 to 8.0. Contaminant enrichment in groundwater reportedly increased from the east/northeast to the west/northwest, or downgradient of the processing unit. Cyanide was also detected in groundwater at the site, however, Harper-Owes (1982) recommended that the detection of cyanide in the groundwater be "interpreted with caution, since it may represent the presence of an interfering compound." Cyanide inputs to the groundwater were documented as originating from the principal chemical processing unit.

Harper-Owes (1982) reported that volatile halogenated aliphatics, and possibly nickel and cyanide, are probably migrating from the site to Blair Waterway via groundwater. Harper-Owes also reported that the source of halogenated aliphatic compounds does not appear to be the

ChemPro facility but onsite waste material that was historically used as fill and possibly disposed of by Occidental/Hooker Chemical Company. Harper-Owes concluded that halogenated organic compounds appear to be the principal identified toxicants presently onsite.

Jim Oberlander (14 March 1984, personal communication) provided comments regarding the deficiencies of the Harper-Owes monitoring well installation and sampling program. Oberlander's comments included:

- Effects of seasonal conditions and tidal influences on groundwater were not considered
- Monitoring wells should have either been slotted the full length of the saturated zone or installed at different depths or both
- Groundwater movement related to the impact of two nearby stormwater pump stations was not assessed
- The possibility of pollutants following utility lines as routes of migration was not investigated or discussed
- The sampling equipment should have been rinsed with deionized laboratory water rather than with tap water.

Oberlander suggested that resampling be conducted for nickel, total and free cyanides, and trichloroethylene. Documentation regarding resampling efforts by Harper-Owes was not found in Ecology files.

Sweet-Edwards/EMCON (1988b)—This study was conducted to evaluate the environmental quality of the soil at Parcel 2053. The investigation included drilling 31 hollow stem auger borings to a maximum depth of 8.2 feet below ground surface at 15 locations. Forty-five samples were analyzed, including four duplicates, collected at various depths from 14 May 1987 to 22 July 1987.

Soil, EP Toxicity extract, and groundwater were investigated. The constituents of interest include volatile and semivolatile organic compounds, PCB, oil and grease, and heavy metals. The volatile organic compounds most often detected in soils were 1,1,1-trichloroethene (up to 87,400 μ g/kg), tetrachloroethene (up to 79,500 μ g/kg), toluene (up to 77,600 μ g/kg), and ethylbenzene (up to 23,300 μ g/kg). Dichloroethene (up to 48 μ g/L), benzene (up to 210 μ g/L), and toluene (up to 56 μ g/L), were the most often detected volatile organic compounds in groundwater.

Base/neutral extractable compounds were reported at low to moderate concentrations in soils and at or below detection limits in groundwater. Some of the highest reported concentrations were: naphthalene (56,600 μ g/kg), 2-methylnaphthalene (214,000 μ g/kg), acenaphthene (4,800 μ g/kg), fluorene (19,600 μ g/kg), phenanthrene (94,600 μ g/kg), anthracene (17,900 μ g/kg), and bis(2-ethylhexyl)phthalate (130,000 μ g/kg).

With the exception of lead (up to 11,000 mg/kg) and zinc (up to 11,000 mg/kg), metals concentrations were relatively low in soils. Metals were reported near or below detection limits in groundwater samples. PCB mixtures were generally undetected (at 100-500 μ g/kg detection limits) in soil samples, however, one sample contained 21,000 μ g/kg PCB. The highest concentration of oil and grease noted in the report was 51,700 parts per million (ppm).

Sweet-Edwards/EMCON (1988a)—This study was conducted for ChemPro as part of RCRA closure activities on Parcel 2053. The report describes soil sampling related to the excavation and removal of soils and the remediation of the hazardous waste treatment facility at ChemPro. The facility was divided into three areas for the purposes of evaluating soils contamination:

- The acid treatment tank area
- The neutralized and alkaline material storage tank area
- The off-loading and solidifying area.

Each of these areas was divided into 8-foot square plots and a sample was collected from a 2- to 3-inch depth within each plot.

The report discusses a single soil sampling program and analysis of the soil matrix for arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, zinc, total metals, and EP Toxicity test.

Sweet Edwards/EMCON reported that EP Toxicity testing results indicated elevated concentrations of cadmium, copper, zinc, barium, lead, and nickel in the area where auto fluff had been used as fill (i.e., at a depth of 12-30 inches). Testing results also indicated that surficial soils (i.e., 0-3 inches) were contaminated with chromium (up to 4,088 mg/kg), lead (up to 5,061 mg/kg), and zinc (2,860 mg/kg). Barium, lead, and nickel were also found at low to trace concentrations in the surficial soils. Zinc concentrations were relatively uniform to a depth of about 12 inches. The report also stated that arsenic, mercury, and nickel were found at low, relatively uniform concentrations at all depths.

Sweet-Edwards/EMCON (1989a)—This study was also conducted for ChemPro RCRA closure activities on Parcel 2053. The objectives of this study were to collect and analyze background samples of auto fluff debris (i.e., auto fluff debris on adjacent parcels), and assess whether the metal and cyanide concentrations in the debris were different from those beneath the hazardous waste treatment area that was located on Parcel 2053 and closed in 1986. Four test pits were excavated at varying depths in the northeast corner of Parcel 2002 and two samples were collected from each pit. This area is approximately several hundred feet northwest of Parcel 2053.

The auto fluff samples were analyzed for total and extractable metals and total and leachable cyanide. Analytical results of the four test pit samples were compared to analytical results of samples collected on Parcel 2053 during earlier Sweet-Edwards/EMCON studies (i.e., 1988a, 1988b). The comparison revealed that levels of chrome +6 and silver were higher on Parcel 2053 than in the test areas on Parcel 2002. Total cyanide was slightly higher (but not statistically significant) on Parcel 2053 than on Parcel 2002. Levels of arsenic, barium, cadmium, lead, mercury, and selenium were lower on Parcel 2053 than in the test pits on Parcel 2002. The report concluded that most of the observed elevated metal concentrations could be attributed to auto fluff and that cyanide is a common contamination of auto fluff.

Sweet-Edwards/EMCON (1989b)—Sweet-Edwards/EMCON conducted a detailed statistical evaluation of soils data from Parcel 2053 and the test pits on Parcel 2002. In contrast to results presented by Sweet-Edwards/EMCON (1989a), this investigation concluded that concentrations of at least four analytes were statistically greater than background. In addition, concentrations of chromium +6 at two sample sites and cyanide at one site may be a result of residual contamination from ChemPro operations. Sweet-Edwards/EMCON again concluded that most of the observed elevated metal concentrations were due to auto fluff.

Occidental/Hooker Chemical

Occidental/Hooker Chemical disposed of wastes on Parcel 2053 and surrounding parcels during the early- to mid-1970s. Conestoga-Rovers (1984) developed a work plan for groundwater investigations at four locations in the Tacoma area, including the "Alexander Avenue site" (i.e., Parcel 2053 and surrounding parcels) that had been used by Occidental as waste disposal sites. The objective of the study was to determine the concentrations of chlorinated hydrocarbons and heavy metals in the groundwater. However, because a hydrogeological investigation being overseen by Ecology was already underway at Alexander Avenue, Occidental did not pursue the investigation.

Poligen/Northwest Processing

The Poligen facility encompasses Parcels 2052 and 2054. Parcel 2054 is not among the parcels commonly referred to as Parcels A-E. However, Parcel 2054 and a pond located on the western half of the parcel, have been the subject of sampling efforts since the early 1980s. Several sampling efforts by Poligen and Ecology were performed from 1982 to 1987. These investigations focused on a variety of media, locations, and tests. The most commonly sampled area was the onsite waste disposal pond.

Lilyblad (1981) documented the installment of 5 test pits and 25 test holes in a modified grid pattern north, south, and east of the onsite pond. Materials excavated from the pits included wood waste, wood waste leachate, white clay-like material, concrete, wood waste with lime, and dredge spoils. Groundwater was noted from 6 inches to 3 feet below soil surface. Analytical results from this sampling effort were not available for review.

U.S. EPA and Ecology (1982) and Huntamer (4 March 1982, personal communication) sampled pond sludge and water and onsite soils. U.S. EPA and Ecology (1982) sampled liquid and sludge from the pit behind ChemPro and soil adjacent to the pit. These samples were analyzed for mercury, arsenic, organic chloride, and conventional parameters (e.g., pH, hardness, and chloride). These investigators reported organic chloride at a concentration of 50 mg/L in liquid fraction and 320 mg/kg solid fraction of sludge. Huntamer (4 March 1982, personal communication) reported the results of a single water sample taken from the Lilyblad tank farm behind ChemPro. The sample was analyzed for organic acid/base/neutral and volatile compounds. This sample contained 1,2-trans-dichloroethylene (250 μ g/L), methylene chloride (300 μ g/L), tetrachloroethylene (980 μ g/L), trichloroethylene (450 μ g/L), and naphthalene (10 μ g/L).

Kjosness (5 March 1982, personal communication) discusses results of a 96-hour bioassay conducted on grey, clay-like material taken from the pond. At 100 ppm (mg/L) by weight in water, fish mortality was 0 percent. At 1,000 ppm, fish mortality was 100 percent. No intermediate concentrations were tested.

Comstock (30 July 1987, personal communication) reported sampling results for oil and grease from 3 March 1987 and 8 June 1987. The first sample was collected from the nearest in-line catch basin to the property and contained 1,400 mg/L oil and grease. The second sample was collected from the final tank before discharging into the storm drain system and contained 500 mg/L oil and grease.

Reichhold Chemical

Although Reichhold Chemical is not located on any of the parcels of interest, contamination may have reached Parcel 2052 or 2053 via interconnecting aquifers. The majority of sampling done onsite has been conducted by CH2M Hill. CH2M Hill established 49 monitoring wells throughout the Reichhold property and used them for all studies and reports they prepared. CH2M Hill prepared two studies and four technical memorandums on Reichhold's behalf for EPA. A brief discussion of each follows.

CH2M Hill (1987a)—This study was conducted for Reichhold in response to Consent Agreement and Order No. 1086-04-33-3008 and focuses on groundwater and soil matrices. Sampling occurred over a period of 15 months from 1985 to 1987 using 49 monitoring wells placed throughout the property.

CH2M Hill reported that three aquifers (shallow, intermediate, and deep) are present underneath the Reichhold property. This study indicates that the groundwater flow from the intermediate aquifer is in the direction of Parcel 2053.

This report also states that organic compounds classified as moderately mobile to immobile (i.e., phenols, phthalates, and PCB) were found in the shallow and intermediate aquifers. Highly mobile organic compounds were evenly distributed among the aquifers, with formaldehyde and acetone being the most common. Sixteen inorganic constituents including the potentially mobile metals antimony, arsenic, manganese, and molybdenum were found in the groundwater. The report stated that copper smelter slag, atmospheric deposition, and dredge spoils are potential sources of the inorganic chemicals. EPA marine acute, marine chronic, and fish consumption criteria were used to evaluate the groundwater samples. One or more criteria were exceeded for benzene, trans-1,2-dichloroethene, trichloroethene, halomethane, phthalate ester, 2,4,6-trichlorophenol, penta-chlorophenol, heptachlor, DDT, and PCB.

CH2M Hill (1987b)—This sampling effort was conducted to evaluate the interconnection among the three aquifers. The parameters of interest were apparent transmissivity, apparent storativity, and hydraulic interconnection. Pumping tests were performed in August and September 1987 at the facility. Testing occurred over one 48-hour (draw down) and one 24-hour (recharge) period during each of the two months. CH2M Hill (1987b) indicated that leakage or recharge is occurring to some extent from either the underlying or overlying aquifer into the intermediate aquifer.

CH2M Hill (1988)—This document addresses results from a March 1988 sampling effort and discusses groundwater flow in the aquifers. Data from Well 26S in the shallow aquifer and Well 14I in the intermediate aquifer indicate that groundwater flow is in the direction of Parcel 2053 (CH2M Hill 1988). The report further indicates that groundwater flow direction from Well 13D in the deep aquifer is in the direction of Parcel 2052. Analytical chemistry data were available only for the intermediate aquifer. These data indicated that semivolatile organic compounds, volatile organic compounds, and pesticides were present in groundwater samples at concentrations equal to or greater than detection limits.

CH2M Hill (1989a)—This document provides a summary of September 1988 groundwater monitoring results. Samples were analyzed for EPA priority pollutant volatile and semivolatile organic chemicals, molybdenum, and field measurements (pH, specific conductance, and temperature). With the exception of formaldehyde (up to $16,000~\mu g/L$) and molybdenum (up to $47,200~\mu g/L$), contaminant concentrations were equal to or slightly greater than detection limits. CH2M Hill (1989c) also discusses precorrective action groundwater monitoring stating that subsequent 1989 quarterly results will be evaluated. This implies that sampling was projected through 1989.

CH2M Hill (1989c)—This document discusses results of January 1989 groundwater monitoring. Samples were analyzed for volatile and semivolatile organic compounds, inorganic chemicals, pesticides, PCB, and field measurements (pH, specific conductance, and temperature). Data were available only for the intermediate aquifer. With the exception of formaldehyde (10,100 μ g/L in one sample), most analytes were detected at concentrations equal to or slightly greater than detection limits. The document also stated that drainage ditches bordering the site are hydraulically connected to the shallow aquifer.

In addition to the above studies, CH2M Hill (1989b) characterized sediments and surface runoff in drainage ditches to assess offsite migration of contaminants. This study is not directly relevant to the five parcels of concern.

4. ONSITE WASTE DISPOSAL ACTIVITIES

This section focuses on waste allocation regarding Parcels 2052 and 2053 (Figure 2). This section also discusses in less detail waste allocation relating to Parcels 2002, 2043, and 2044. The PLP that are believed to be associated with disposal activities on the five parcels are Poligen/Northwest Processing, ChemPro, Reichhold Chemicals, Continental/DOMTAR/Tacoma Lime, Occidental/Hooker Chemical, Lilyblad, General Metals, Buffalo Don Murphy, Acology/Aero Oil, Puget Sound Industrial Petroleum, and Donald Oline. The discussion is organized by PLP in approximate decreasing order of importance relative to the estimated quantities of wastes generated, stored, or disposed of. However, most documents reviewed provide only snapshots of conditions onsite at the time of inspections. In most cases, it was not possible to provide meaningful quantitative data for PLP activities.

Eleven general categories of materials were identified as being present onsite at one time or another:

- Acutely dangerous chemicals (U and P Series)
- Asbestos
- Brine sludge
- Dredge spoils
- Generator and stripper lime wastes
- Metals
- Miscellaneous chemicals
- Halogenated solvents (F Series)
- Slop oil (D Series)
- Mineral Spirits (K Series)
- Heavy metals
- PCB (W and WP Series).

CHEMPRO

ChemPro began chemical waste and waste oil recycling operations on Parcel 2053 in 1975. The chemical waste facility was expanded and by 1980 it occupied a portion of Parcel 2044. ChemPro also used Parcel 2052 to store materials. On 31 December 1986 ChemPro's lease for Parcel 2053, expired and operations were relocated to Parcel 2044 in January 1987.

Ecology files list the following wastes as being generated at the facility:

- Electroplating wastewater treatment sludge
- Spent stripping and cleansing bath solutions
- Oil bath quenching sludge
- Wastewater quenching sludge
- Slop oil emulsion solids
- Petroleum heat exchanger cleaning sludge
- American Petroleum Institute (API) separator sludge
- Tank bottoms (leaded)
- Steel finishing liquor.

Waste acid solutions, phenol-contaminated solutions, and chelating agents (Keller Rohrback 1987) have also been noted as waste streams at the ChemPro facility.

Based on the review of available files, ChemPro generated acutely dangerous chemicals (U and P Series), metals solutions, halogenated solvents (F Series) (with an undocumented percentage being acutely dangerous solvents), slop oil (D Series), and mineral spirits.

ChemPro stored liquid generator and stripper lime wastes, metals plating solutions, and miscellaneous chemical liquids onsite. In addition, ChemPro stored solid generator and stripper lime wastes onsite.

Records indicate that ChemPro disposed of acutely dangerous chemicals (U and P Series), mineral spirits (K Series), and miscellaneous chemical solid materials. Ecology files indicate that metal sludge wastes were disposed of at a city of Tacoma landfill until 1983 and at the Arlington, Oregon landfill after 1983. Wastewater of an unspecified nature was discharged to the sewer system with the approval of the Tacoma Sewer Utility (Hinman, J., 8 May 1979, personal communication). Ecology files indicate that surface drainage was piped to Hylebos Waterway and pumped south to the Lincoln Street Ditch, which flows to Blair Waterway.

Documents reviewed indicate that several spills have occurred at the ChemPro facility. Springer (8 January 1988, personal communication) reported that during the winter of 1976 approximately 15,000 gallons of waste oil spilled from a vertical tank that had either ruptured or had a broken line. The spill occurred during a weekend and was not discovered until the following Monday morning. Heavy rains had dispersed the oil to the northeast of the boiler to a distance of approximately 100 yards. Vacuum trucks were brought in to clean up the oil. On 2 February 1978, a 50-gallon chromic acid spill occurred that was contained and cleaned up (documents reviewed did not provide more detailed information). Keller (13 July 1981, personal communication) stated that a 3,500-gallon chromic acid spill occurred on 28 June 1981 because waste acid was pumped into an unlined tank. A leak developed in the tank and the waste acid flowed to the southeast beyond ChemPro's containment system and across a gravel road to the Unico facility. Approximately 3,300 gallons were recovered in free liquid state. Wells were dug to collect the residual liquid which was then subjected to chemical treatment, neutralization, and dilution. Post-

spill analysis indicated that all spilled material was recovered. Stefani (15 October 1985, personal communication) reported that 3,688 gallons of nitric acid solution (10-11 percent) containing 0.8 percent chromium (8,000 mg/L) spilled on 3 October 1985. Pooled liquids were retrieved and placed in a processing tank. Initially, soil was removed to below the level where any dampness was apparent. Soil samples were taken throughout the spill area and tested for pH and chromium. When chromium or low pH was detected, additional soil was removed. This process was continued until all soil tested had a neutral pH and no trace of chromium (i.e., approximately 1 week). Stefani (13 October 1986, personal communication) reported that a 50-gallon spill of metal hydroxide sludge occurred on 11 October 1986. The sludge and the top few inches of soil were removed during the cleanup process (more accurate details were not available).

Nessel (1987) reported that at least nine tanks were left on Parcel 2053 when ChemPro moved their operations to Parcel 2044 in January 1987. These tanks contained at least 50,000 gallons of hazardous liquid and sludge. The tanks were opened and uncovered and some had holes in them. Crystalized material was present on the exterior of the tanks where the holes were located indicating that liquid was seeping out. An oily sheen was visible on the soil and water.

DONALD OLINE

Donald Oline owned Parcels 2002, 2044, 2043, 2052, and 2053 from the late 1960s to the early 1980s. During the late 1960s and early 1970s, Oline began filling the parcels with lime wastes and auto fluff. Lime wastes were hauled from Continental Lime and disposed of on Parcel 2053 and the surrounding area (Riley, R., 4 July 1989, personal communication). Springer (8 January 1988, personal communication) reported that from 1974 to 1976, 250 to 500 truck loads of Continental Lime wastes were trucked in by Oline and disposed of just north and northeast of Parcel 2053 (i.e., Parcels 2052 and 2054). Auto fluff was hauled from General Metals by Oline's son, Brad Oline, and dumped primarily on Parcels 2052 and 2044 (Riley, R., 4 July 1989, personal communication). Oline also hauled gravel from other property he owned to fill the east side of Parcel 2053 (Riley, R., 4 July 1989, personal communication). Documents reviewed did not provide quantitative information on volumes of disposed materials.

ACOLOGY/AERO OIL

Bruce Smith, the owner and operator of Acology Oil, leased Parcel 2053 from Donald Oline in 1970. Smith began living onsite in a small trailer and started a waste oil recycling facility. An open, unlined pond of approximately 60×100 feet was constructed onsite to store oil. The site was messy and records indicate that oil was allowed to spill onto the ground (Hart Crowser 1986a). According to Oline (Riley, R., 4 July 1989, personal communication), bales of hay were used onsite to soak up oil. In addition, Acology Oil dumped lime used in their oil treatment system on Parcel 2053 (Hart Crowser 1986a). Available documents reviewed did not contain information regarding volumes of materials stored, recycled, generated, or disposed of by Acology Oil.

PUGET SOUND INDUSTRIAL PETROLEUM

Puget Sound Industrial Petroleum (PSIP) purchased Acology Oil's equipment in 1973 and took over the waste oil operation. When PSIP began operations, a 60×100-foot pond that contained approximately 500 gallons of oil was located onsite (Springer, S., 8 January 1988, personal

communication). The oil in the pond was reclaimed and the remaining water was allowed to evaporate. The area was then filled with auto fluff from General Metals and gravel from the operation of Sol Crystel (Springer, S., 8 January 1988, personal communication).

According to Springer (8 January 1988, personal communication), the pond had been used by chemical tank cleaners to dump their water and oil prior to his taking over operations at the site. He closed the pond as a receptacle for the chemical tank cleaners' water and waste oil when he installed additional storage and treatment tanks. The chemical tank cleaners responded by not bringing their oil to PSIP for recycling. As a result, the only supplier of note in 1973-1974 was United Drain Oil. After the oil embargo began in 1974, PSIP received approximately 1,500 gallons of oil per week (Springer, S., 8 January 1988, personal communication).

ChemPro of Oregon purchased PSIP's stocks and assets in 1974 and eventually liquidated the company. There was no information available for review indicating quantities of waste disposed of onsite.

CONTINENTAL/DOMTAR/TACOMA LIME

The Continental Lime, Inc. facility was originally operated by Pacific Lime Inc. from 1965 to 1972. By 1972, Domtar Industries, Inc.'s Lime Division had assumed operations at the facility. Continental Lime, Inc. purchased the Lime Division of Domtar Industries in February 1981 and continues to manufacture lime at the facility. The lime is produced by hydrating raw limestone. Continental Lime generates various solid materials and stores stripper and lime wastes. Continental Lime generated solid materials and stored generator and stripper lime solid materials.

Donald Oline reported that after he purchased Parcel 2053 in February 1969, he began hauling lime wastes from Continental Lime to use as fill (Riley, R., 4 July 1989, personal communication). Oline received the lime wastes from Continental Lime free of charge and used his own equipment to haul it (Riley, R., 4 July 1989, personal communication). Oline did not specify the amount of lime wastes he received from Continental. This information is corroborated by aerial photographs taken in the mid- to late-1970s, from which a light-colored material (probably lime wastes) was observed to be tracked across Alexander Avenue and along an unimproved road leading to the 3.7-acre pond referred to in Section 2. The material was apparently being used as fill for the pond.

GENERAL METALS

General Metals is an automobile scrap metal operation located at 1402 Marine View Drive in Tacoma. The primary waste generated by General Metals is shredded automobile interiors known as auto fluff. Auto fluff wastes have been disposed of on the General Metals site and various offsite locations.

Donald Oline related (Riley, R., 4 July 1989, personal communication) that his son, Brad Oline, hauled auto fluff in the late-1960s and early-1970s from General Metals to use as fill on the property northwest of Parcel 2053 (i.e., Parcels 2002 and 2044). Specific dates and quantities were not available in the documents reviewed. Springer (8 January 1988, personal communication) and Hart Crowser (1986a) reported that auto fluff was also used to partially fill the small pond located

on Parcel 2053 that was used to store waste oil while Acology Oil operated onsite. None of the information sources accessed described the apparent auto fluff facility located along East 11th Street.

Information about production and disposal practices at General Metals that is not directly related to Parcel 2053 and the surrounding area is included in Appendix C.

OCCIDENTAL/HOOKER CHEMICAL

Occidental (formerly Hooker) Chemical Company has operated at 605 Alexander Avenue since approximately 1930 (Dames & Moore 1982). Occidental primarily produces chlorine. Other plant operations include the production of trichloroethylene, perchloroethylene, hydrogenated fish oils, aluminum chloride, ammonia, calcium chloride, muriatic acid, and sodium hypochlorite.

Conestoga-Rovers (1984) reported that Occidental used contractors (not specified) from 1972 to 1975 to dispose of approximately 13,000-15,000 tons (dry-weight basis) of wastes at Alexander Avenue. Hart Crowser (1986a) reported that lime wastes (slurry from a lime pond) and 2,000 tons of dredged material from Hylebos Waterway were used as fill on Parcels 2052, 2053, and 2044. The slurry contained small amounts of chlorinated hydrocarbons, heavy metals, and asbestos. The wastes were deposited on the parcel at a depth of 1 to 2 feet and then covered with soil (Conestoga-Rovers 1984).

Occidental (undated) lists examples of typical concentrations in wastes generated from 1973 to 1978: copper, 31 ppm; lead, 4,600 ppm; nickel, 76 ppm; chromium, 10 ppm; zinc, 150 ppm; asbestos, 3 percent; oil and grease, 600 ppm; chlorinated organic chemicals, 0.1 percent.

No other information regarding disposal by Occidental Chemical on or near Parcel 2053 was available for review. Other information about management and production practices at Occidental that is not directly related to Parcel 2053 and the surrounding parcels is included in Appendix C.

POLIGEN/NORTHWEST PROCESSING

Poligen began operating a recycling and recovery facility on Parcels 2052 and 2054 in the late 1970s. Ecology records show that wastes generated by Poligen included used mineral spirits, bilge oils, paint thinners from old oil-based paints, and cleaning solvents. Haberman (May 1987, personal communication) states that the materials approved for fuel recovery included gasoline/diesel blends, mixed jet fuels, gasoline/diesel mixtures containing halogens, waste lubricating oils and associated solids and water, and lubricating oils containing halogens.

According to available documents, Poligen generated halogenated solvents (F Series), slop oil (D Series), mineral spirits (K Series), and PCB (W and WP Series) solid materials. Acutely dangerous chemicals (U and P Series), halogenated solvents (F Series), and mineral spirits (K Series) solid materials were stored onsite.

Poligen's 1986 and 1987 annual waste report indicates that dangerous wastes were received onsite. These wastes were composed primarily of chlorinated solvents and oil mixtures. Powers (24 October 1988, personal communication) indicated that storing and accepting these dangerous wastes was illegal because this site does not have interim status as a TSD facility.

Ecology files reviewed indicate that Poligen disposed of hazardous materials via 1) discharge to the city of Tacoma's sewer system, 2) discharge to Blair Waterway via the Lincoln Street Ditch, and 3) disposal at the Coski Landfill in Tacoma via B&L Trucking. Additional methods of disposal included the hauling of wastes by the company of Crosby and Overton to an undocumented destination (King, G., 13 October 1988, personal communication) and discharge or land farming of waste petroleum to an onsite pond (Hart Crowser 1986a). The data reviewed did not indicate how long the disposal of waste petroleum to the onsite pond was practiced or volumes of wastes disposed of.

Ecology records indicate that in 1984 an unspecified black material seeped from the Poligen facility (Parcel 2054) onto the AOL Express property (former Buffelen Woodworking Company site). Powers (24 October 1988, personal communication) reported that drums located next to an open sump that drained to the sewer and ditch outfall were uncovered or rusted and leaking. Contents of the drums were not specified. In addition, a tank used to store waste solvent was leaking from a bottom valve. No quantitative information was presented about this leak.

LILYBLAD

Hart Crowser (1986a) reported that Lilyblad began using a small tank farm (i.e., two tanks) in approximately 1975 located in the northwest corner of Parcel 2052. Three tanks were added sometime between 1975 and 1978. Drain pipes and a dike breach were used to divert stormwater from the tank to a pond located in the center of the current Poligen facility (i.e., on Parcel 2054). Ecology records indicate that two spills occurred on 1 July 1981. Leaks developed in two different tanks, one of which contained dirty solvent. It was not specified what the other tank contained. An area of approximately four square feet around the tank was affected by the dirty solvent spill. It was estimated that approximately 1 gallon every 20 minutes leaked from the dirty solvent tank and occurred over at least a 24-hour period (i.e., a minimum total of 72 gallons).

Selected information about management and production practices at Lilyblad that is not directly related to Parcel 2053 and the surrounding parcels is included in Appendix C.

REICHHOLD CHEMICAL (THROUGH GROUNDWATER CONTAMINATION)

The Reichhold facility has been located on Taylor Way southeast of Parcel 2053 since approximately 1950 (Dames & Moore 1982). Reichhold has manufactured resins, formaldehyde, pentachlorophenol (PCP), and phenols (Dames & Moore 1982). Hydrochloric acid and calcium chloride are byproducts of the manufacturing process. Effluent from calcium chloride production was passed through a 100- to 150-foot long ditch containing limestone (for neutralization) before being discharged into Blair Waterway (Jones, K.R., 13 March 1957, personal communication).

There was limited documentation available regarding disposal practices potentially influencing Parcel 2053 and the general vicinity. Reichhold (1970) states that wastes (undefined) were stored in a surface impoundment on the Reichhold property and transported by three underground

concrete pipes across Lincoln Avenue to a second impoundment near Parcel 2053. From the second impoundment, wastes were discharged by culvert to the Blair Waterway. When the waste ponds were filled with sediment, they were dredged and the materials were stored in a spoils area located onsite. No quantitative information was available regarding waste disposal in the impoundment near Parcel 2053.

Several sampling efforts have been conducted on the Reichhold property in an attempt to discover if contamination of the groundwater has occurred and, if so, whether contamination has migrated to surrounding properties. However, available information is inadequate to quantify contaminant migration from Reichhold to the parcels of concern. CH2M Hill (1987a) reported that a shallow aquifer, an intermediate aquifer, and a deep aquifer are located underneath Reichhold property. Leakage or recharge occurring from either the shallow or deep aquifer into the intermediate aquifer may be traced to adjoining aquitards on the Reichhold property and Parcel 2053 (CH2M Hill 1987b). The intermediate aquifer is contaminated with immobile to moderately mobile organic compounds (i.e. PCB, phenols and phthalates) and highly mobile compounds including formaldehyde, acetone, tetrachloroethene, and trichloroethene (CH2M Hill 1987a). Sixteen inorganic constituents were found in the groundwater including antimony, arsenic, manganese, and molybdenum (CH2M Hill 1987a).

AIRO SERVICES

Springer (8 January 1988, personal communication) reported that Airo Services, a company that cleaned Occidental Chemical's tanks, disposed of their wastes on Parcel 2053. After Springer assumed operations on Parcel 2053 in 1973, Airo Services began disposing of their wastes on the parcel east of Parcel 2053. No quantitative information was available regarding these disposal practices.

BUFFALO DON MURPHY

Ron West (2 August 1982, personal communication) reported that Buffalo Don Murphy was responsible for filling the current Poligen property (i.e., Parcel 2052). No additional information was available regarding this PLP's role in waste disposal on the parcels of concern. Information about the Buffalo Don Murphy/Magnuson site that is not directly related to Parcel 2053 and the surrounding area is included in Appendix C.

5. SUMMARY AND RECOMMENDATIONS

This PLP search focuses on property located on Alexander Avenue in Tacoma, Washington. The property consists of five parcels designated by the Pierce County auditor as Parcel 0321352002 (2002), Parcel 0321352043 (2043), Parcel 0321352044 (2044), Parcel 0321352052 (2052), and Parcel 0321352053 (2053). The soil, groundwater, and surface water at the parcels have been contaminated with a variety of hazardous materials because of operational, disposal, and filling activities conducted. Because Parcel 2053 has been the site of the greatest activity and therefore the greatest amount of contamination, it was of special interest.

The objectives of the PLP search were to identify PLP and determine how their activities may be related to contamination of the parcels. Relevant information was compiled from existing documents located at various government agencies, from interviews with PLP and other interested parties, from a title search that was conducted on all five parcels, and from historical aerial photographs taken of the general area. Information regarding the following areas was considered relevant:

- Ownership and lessee records
- Land use (i.e., filling and disposal activities)
- Facility operations
- Inadequate or malfunctioning processing and storage equipment
- Documented spills of hazardous materials
- Environmental regulatory violations.

SUMMARY

Several companies and individuals were initially identified as PLP (see Section 1). As a result of the PLP search, connections were established for most PLP identified to one or more of the parcels. This section presents a brief chronological summary of the PLP, well-documented activities and incidents, and major features and activities observed from aerial photographs.

Parcel 2002

Documents reviewed regarding this parcel only revealed information about the history of ownership and one tenant.

- 1963-1965—Owned by B.R. and Inez Magnuson, and Elwin and Marjorie Deyo
- 1965-1980—Owned by Donald and Alba Oline
- 1976-1980—Leased to D. Gordon and Virginia Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter

- 1980-1982—Owned by D. Gordon and Virginia Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter
- 1982-Present—Owned by ChemPro
- Present—Occupied by Freeway Container, Inc.

Parcel 2043

The documents reviewed regarding this parcel only revealed information about ownership and lessee history.

- 1961-1969—Owned by Educators Manufacturing Company
- 1969-1980—Owned by Donald and Alba Oline
- 1976-1980—Leased to D. Gordon and Virginia Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter
- 1980-1982—Owned by D. Gordon and Virginia Potter, Wallace and Edna Clark, and— Emmerson and Lillian Potter
- 1982-Present—Owned by ChemPro and used as a parking lot for ChemPro employees.

Parcel 2044

Documents reviewed regarding Parcel 2044 included information about ownership and lessee history, operations conducted onsite, filling and disposal activities, and spills.

- 1963-1965—Owned by B.R. and Inez Magnuson, and Elwin and Marjorie Deyo
- 1965-1980—Owned by Donald and Alba Oline
- 1965-1975—Lime wastes and auto fluff were used as fill; disposal of dredge spoils and sludges was practiced
- 1976-1980—Leased by D. Gordon and Virginia Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter
- 1980-1982—Owned by D. Gordon and Virginia Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter
- 1980-1986—ChemPro operated a portion of their chemical waste recycling facility on this parcel during this time; nitric acid and chromic acid spills occurred during this time
- 1982-Present—Owned by ChemPro
- 1986-Present—A new, expanded chemical waste and waste oil recycling facility was constructed and is operated by ChemPro; additional acid spills have occurred since 1986.

Parcel 2052

Documents reviewed regarding this parcel contained information about ownership and lessee history, onsite operations, filling and disposal activities, and spills.

- 1961-1969—Owned by Educators Manufacturing Company
- 1969-1981—Owned by Donald and Alba Oline
- 1969-1975—Dredge spoils and sludges were disposed of on the parcel; lime wastes and auto fluff were used as fill
- 1975-1978—A small tank farm was maintained by Lilyblad/Poligen to store used solvents and petroleum
- 1977-Present—Poligen, Inc./Northwest Processing operate a chemical waste and petroleum recycling facility; this facility also occupies Parcel 2054 (the parcel east of Parcel 2052); records indicate that two spills occurred here in 1981
- 1981—Owned by Poligen, Inc. (April to October)
- 1981-Present—Owned by Solidus Corporation.

Parcel 2053

Documents reviewed regarding this parcel contained information about ownership and lessee history, onsite operations, filling and disposal activities, and spills.

- 1961-1969—Owned by Educators Manufacturing Company
- 1969-1981—Owned by Donald and Alba Oline
- 1969-1975—Dredge spoils and sludges were disposed of on this parcel; lime wastes, auto fluff, and gravel were used as fill
- 1970-1973—Acology/Aero Oil operated a waste oil recycling facility; an unlined oil holding pond was constructed; oil was allowed to spill to the ground and then was soaked up with bales of hay
- 1973-1974—Puget Sound Industrial Petroleum (PSIP) purchased Acology Oil's equipment and continued waste oil recycling operations on the parcel; during this time, the oil holding pond was drained and filled with auto fluff
- 1974-1975—ChemPro of Oregon purchased PSIP's equipment and continued waste oil recycling operations on the parcel
- 1975-1986—ChemPro purchased ChemPro of Oregon's equipment and continued waste oil recycling operations; ChemPro also constructed a chemical waste recycling facility that encompassed a portion of Parcel 2044; several acid and waste oil spills occurred on this parcel during this time

- 1981-Present—Owned by Solidus Corporation
- 1986-Present—Vacant.

Major Features and Activities

Several prominent features and activities were apparent from aerial photographs that spanned the period from 1936 to 1988. Most activity on Parcels 2002, 2044, 2053, and 2052 occurred from the mid- to late-1960s through the mid-1980s. Major features of interest include surface impoundments and waste piles, and oil and chemical recycling activities. Other features and activities of potential future interest to Ecology include impoundments and tanks on the parcel historically occupied by Philadelphia Quartz and on Reichhold Chemical Company property. The historical evolution of these features and activities is described below.

Surface Impoundments and Waste Piles—A 6-acre impoundment (approximate size) appeared west of the parcel historically occupied by the Mutual Fir Column Lumber Company in the 1961 photographs, but may have been constructed several years prior to this date. The location and size of the impoundment suggests it may have been near or on the eastern potion of Parcels 2052 and 2053. By 1965 the pond appeared to be divided into two sections by an unidentifiable barrier. By 1967 the westernmost section appeared to have been filled, and by 1968 the remaining pond was approximately half filled. By 1974 both impoundments were completely filled. It was not possible to discern from the photographs what material(s) were used for fill.

A 3.7-acre pond (approximate size) also appeared in the 1961 photographs in the center of the review area, predominantly located on Parcels 2002 and 2053, but possibly extending to the western side of Parcel 2052. These parcels were owned by the Bank of California at this time. There were no signs of excavation or development in the immediate vicinity of the pond, suggesting it had been in existence for some time (possibly several years). A clearly discernible access road extending eastward from the pond to Alexander Avenue had been constructed by 1965 (the parcels were purchased from the Magnusons and Deyos by Donald Oline in 1965). Two small impoundments containing a light-colored, opaque liquid, and waste piles of a light-colored, granular substance appeared in the 1965 photos on or near the northern portion of Parcel 2052 (apparently owned by Educators Manufacturing at the time). These impoundments appeared to have been filled in 1967 when there was extensive grading observed in this area. At the same time, the 3.7-acre pond was being filled with a light-colored, granular material [possibly lime waste from the Pacific (Domtar/Continental) Lime Company]. Also at this time, the southern portion of Parcel 2002 and parts of Parcels 2044 and 2043 were graded and were being used for storage of unidentifiable containers. Donald Oline owned Parcels 2002 and 2044 during this period. By 1969, the pond had been completely filled and appeared dry. In 1973 and 1974 a large pile of dark granular material appeared east of the 3.7-acre pond and two small, primitive impoundments were present north of the 3.7-acre pond. Active filling appeared to have taken place during the early 1970s [including lime sludge and dredged material disposed of by Occidental (Hooker) Chemical Company]. Also in 1974, the pond contained some standing liquid and was still being filled. By 1976, the pond again appeared to be completely filled and there was a smaller impoundment immediately north of the filled area. Also in this year, the large pile of dark granular material had been replaced by a much smaller pile of rubble or slag. Other documentation reviewed suggests that waste from Occidental Chemical Company was used as fill over the entire area of Parcel 2052, over approximately 50 percent of Parcel 2053, and over approximately 30 percent of Parcel 2044 (Educators Manufacturing owned Parcels 2052 and 2053 from 1961 to 1969). Photographs after 1976 did not show any additional evidence of impoundments or waste piles in the vicinity of the parcels of concern.

Other impoundments of interest appeared in the vicinity of the parcels historically occupied by the Philadelphia Quartz Company and Reichhold Chemical Company. Piles of white, granular material first appeared behind the Philadelphia Quartz operation in 1946, and impoundments first appeared in this area in the 1961 photographs. Beginning with the 1944 photographs, large capacity storage tanks were evident on the Philadelphia Quartz property. At the Reichhold property holding ponds or impoundments and storage tanks were first evident in the 1961 photographs. These features were present to some extent in all photographs in which the facility was visible.

Industrial Developments and Activities-The earliest evidence of industrial activity on or near the parcels of concern was seen in the 1961 photographs, by which time extensive fill of the parcels of interest had occurred. In 1967 an unidentified facility was present immediately south of Parcel 2053 on Parcel 2041 (possibly Educators Manufacturing). With the exception of some grading and clearing, there did not appear to be any activity on Parcels 2052 and 2053 until 1973 when four refracting towers appeared onsite. In 1974, several buildings and two large tanks (approximately 25,000 gallons) appeared in an area that is most likely Parcel 2053 (then owned by Donald Oline and leased to Aero/Acology Oil and Puget Sound Industrial Petroleum). These tanks had apparently been replaced with six 10,000-gallon tanks (approximate volume) or distillation towers by 1976 (probably by ChemPro). By 1977, two 25,000-gallon tanks appeared on Parcel 2052 (then leased by Poligen and Lilyblad). In 1979 Parcel 2052 contained two 50,000-gallon tanks and four 25,000-gallon tanks (approximate volumes), and Parcel 2053 appeared relatively unchanged. By 1983 Parcel 2053 apparently contained sixteen 10,000-gallon tanks, four 25,000-gallon tanks, and two 50,000-gallon tanks (approximate volumes). This inventory had increased by two 50,000gallon tanks and six 10,000-gallon tanks, and decreased by one 25,000-gallon tank by 1985. In 1987, the area of Parcels 2052 and 2053 appeared to be devoted to chemical storage and recycling and appeared to be cluttered with a variety of containers, including at least 64 identifiable tanks.

RECOMMENDATIONS

After reviewing and analyzing the documents and aerial photographs available, the following data gaps were identified:

- Information relating to facilities that have operated or are operating on Parcels 2002, 2043, and 2044
- Information relating to facilities that operated on Parcel 2053 during 1970-1975
- Information relating to activities conducted on all parcels during the 1960s
- Information connecting initially identified PLP Brazier Lumber Company, Buffalo Don Murphy, and Unico to the parcels.

It is recommended that attempts be made to collect the additional information to develop a more complete history of the activities and facilities related to the five parcels. Additional file reviews and in-depth interviews with PLP that are suggested include:

- Determine whether there are significant files in Ecology's archives pertaining to PSIP, Acology Oil, and Mutual Fir Column Lumber Company, and review files to gather more information about activities on Parcel 2053 including operators, haulers, disposers, and generators
- Obtain and review a copy of a report (title and date unknown) prepared by ReTech for ChemPro for potentially relevant information regarding Parcel 2053
- Request that Springer (former owner of PSIP) provide information about operations and activities being conducted on the parcels and in the general vicinity during 1970-1975 (he has provided extensive information about Parcel 2053)
- If possible, request information about activities conducted on Parcels 2002, 2043, and 2044 from 1976 to 1982 from Wallace Clark, Emmerson Clark, or D. Gordon Potter (these individuals are not listed in the current Tacoma phone directory)
- If possible, interview Brad Oline (of Brad Oline Trucking Company, Puyallup, WA that operated in the 1970s) about filling activities on Parcels 2044, 2052, and 2053 from 1969 to 1975
- Request information from Airo Services about disposal of tank cleaning wastes on or near Parcel 2053
- Request information from Fletcher Oil Company about activities they may have conducted on or near Parcel 2052
- Contact ChemPro's current owners (David Sabey owned controlling interest as of 1986) and former owners (Mike Mattingly, Gary Bersmensolo, and Michael Keller) to obtain more details about operations during the 1970s and early 1980s
- Send a follow-up letter to Glenn Tegen regarding questions submitted to him in July 1989 by PTI regarding activities on Parcel 2053 (as of this writing, his responses had not been received)
- Request information regarding activities conducted on Parcels 2043, 2052, and 2053 from 1961 to 1969 from Educators Manufacturing Company
- Contact Newton Clark and Stewart Springer (the former owners of ChemPro of Oregon) regarding activities conducted on Parcel 2053 from 1974 to 1975
- Perform a title search for Parcel 2054 to collect ownership and additional tenant information; Poligen/Northwest Processing has occupied this parcel since the midto late-1970s and evidence of contamination has been discovered on the parcel
- Analyze additional aerial photographs that may be in the possession of EPA's Superfund branch or ChemPro and its contractors [as identified by Polivka (20 November 1989, personal communication).

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APPENDIX A

Title Search Report

NO. 314869

he assurances referred to on the face page are:

That, according to the Company's title plant records and those records maintained by the County Recorder known as the Grantee/Grantor indices subsequent to Pierce County, relative to the following described real property (but without examination of those Company title plant records maintained and indexed by name), there are no documents (hereinafter Documents) describing said real property or any portion thereof, other than those shown below under Exceptions, which Documents (copies) are attached hereto and made a part hereof.

he following matters are excluded from the coverage of this guarantee:

- . Unpatented mining claims, reservations or exceptions in patents or in acts authorizing the issuance thereof.
 - Water rights, claims or title to water.
- 3. Tax Deeds to the State of Washington, County of Pierce and Port of Tacoma.
- 1. Instruments, proceedings or other matters which do not specifically describe said land.
- 5. Documents pertaining to mineral estates.

Recorded Document Guarantee Face Page Form No. 1365-2

PARCEL "A":

TAX PARCEL NO.: 0321352002

LEGAL DESCRIPTION:

That portion of the West half of the West half of the West half of the Northeast quarter of the Northwest quarter of Section 35; Township 21 North, Range 3 East of the Willamette Meridian, lying Northerly of the Northerly line of Alexander Avenue. in Pierce County, Washington.

The following documents have appeared of record since January 1, 1920.

1. Lis Pendens:

Dated: May 12, 1942 Auditor's No.: 1299592

Petitioner: City of Tacoma, a municipal corporation

Defendants: various owners

Warranty Deed:

Dated: May 27, 1921

Recorded: June 4, 1942 Auditor's No.: June 4, 1942

Grantor: Puget State Bank and the Puget Sound Bank & Trust Company

Grantee: Albert Wekell and Thomas O. Johnsen

3. Lis Pendens:

June 2, 1943 Recorded: Auditor's No.: 1322349 Petitioner: City of Tacoma Defendants: various owners

4. Notice of Lis Pendens:

Recorded: January 10, 1952 Auditor's No.: 1614614

Petitioner: Port of Tacoma, a municipal corporation

Defendants: various owners

5. Statutory Warranty Deed:

Dated: October 16, 1959 October 26, 1959 Recorded:

Auditor's No.: 1870752

Grantor: Ellen J. Johnsen, a widow; Betty M. Race, formerly Betty M. Wekell;

Albert Wekell and Rosella Wekell, his wife

Grantee: Bank of California, N.A.

6. Quit Claim Deed:

Dated: October 9, 1963

Recorded: October 11, 1963 Auditor's No.: 2028794

Grantor: Bank of California, N.A.

Grantee: B. R. Magnuson and Inez L. Magnuson, husband and wife; and Elwin A.

Deyo and Marjorie Deyo, husband and wife

7. Real Estate Contract:

Dated: April 30, 1965 Recorded: May 10, 1965 Auditor's No.: 2100269

Grantor: B. R. and Inez L. Magnuson, husband and wife; and Elwin A. and

Marjorie Deyo, husband and wife

Grantee: Donald E. and Alba M. Oline

8. Statutory Warranty Deed:

Dated: May 10, 1965

Recorded: September 13, 1965

Auditor's No.: 2116345

Grantor: B. R. and Inez L. Magnuson, husband and wife; and Elwin A. and

Marjorie Deyo, husband and wife

Grantee: Donald E. and Alba M. Oline

9. Lease with Option to Purchase:

Dated: January 1, 1976

Recorded: January 5, 1976
Auditor's No.: 2642429

Grantor: Donald E. Oline and Alba M. Oline, husband and wife

Grantee: D. Gordon Potter and Virginia K. Potter, husband and wife; Wallace M.

Clark and Edna W. Clark, husband and wife; and Emmerson H. Potter and

Lillian R. Potter, husband and wife

10. Lis Pendens:

Dated:

Recorded: August 14, 1979 Auditor's No.: 2934424

Plaintiff: Gordon Potter and Virginia Potter, et al

Defendants: Donald E. Oline and Alba M. Oline

11. Lis Pendens:

Recorded: September 27, 1979

Auditor's No. 2945722

Plaintiff: Tacoma Brokers, Inc., a Washington corporation Defendants: Donald E. Oline and Alba M. Oline, husband and wife

12. Withdrawal of Lis Pendens:

Recorded: November 12, 1980 Auditor's No.: 8011120227

Plaintiff: Tacoma Brokers, Inc.

Defendants: Donald E. Oline and Alba M. Oline, huband and wife

13. Real Estate Contract:

Dated: October 27, 1980

Recorded: December 1, 1980

Auditor's No. 8012010012

Grantor: Donald E. Oline and Alba M. Oline, husband and wife

Grantee: Wallace M. Clark and Edna W. Clark, husband and wife; Emmerson H.

Potter and Lillian R. Potter, husband and wife; and D. Gordon Potter

and Virginia K. Potter, husband and wife

14. Statutory Warranty Deed:

Dated: March 12, 1982 Recorded: March 16, 1982 Auditor's No.: 8203160230

Grantor: Wallace M. Clark and Edna W. Clark, husband and wife; Emmerson H.

Potter and Lillian R. Potter, husband and wife; and D. Gordon Potter

and Virginia K. Potter, husband and wife

Grantee: Chemical Processors, Inc., a Washington corporation

15. Statutory Warranty Deed:

Dated: March 12, 1982 Recorded: March 16, 1982 Auditor's No. 8203160231

Grantor: Wallace M. Clark and Edna W. Clark, husband and wife; Emmerson H.

Potter and Lillian R. Potter, husband and wife; and D. Gordon Potter

and Virginia K. Potter, husband and wife

Grantee: Chemical Processors, Inc., a Washington corporation

16. Deed of Trust:

Dated: March 12, 1982

Recorded: March 16, 1982 Auditor's No.: 8203160232

Grantor: Chemical Processors, Inc., a Washington corporation

Grantor: Wallace M. Clark and Edna W. Clark, husband and wife; Emmerson H.

Potter and Lillian R. Potter, husband and wife; and D. Gordon Potter

and Virginia K. Potter, husband and wife

17. Power of Attorney:

Dated: February 10, 1982
Recorded: March 16, 1982
Auditor's No.: 8203160233
Grantor: Emmerson H. Potter
Grantee: D. Gordon Potter

18. Quit Claim Deed:

Dated: March 22, 1982 Recorded: March 22, 1982 Auditor's No. 8203220138 Grantor: Donald E. Oline Grantee: Alba M. Oline

19. Survey:

Recorded: December 20, 1983 Auditor's No.: 8312200142

20. Assumption and Release Agreement:

Dated: July 16, 1984

Recorded: November 20, 1984 Auditor's No.: 8411200289

Grantor: Alba M. Oline

Grantee: Chemical Processors, Inc., a Washington corporation

21. Assignment of Rents and Leases:

Dated: October 8, 1984

Recorded: December 10, 1984 Auditor's No.: 841210004

Grantor: Chemical Processor's, Inc. Grantee: Seattle Trust & Savings Bank

22. Deed of Trust:

Dated: July 10, 1987 Recorded: July 10, 1987 Auditor's No. 8707100762 Grantor: Solidus Corporation

Grantee: Seattle First National Bank

23. Assignment of Leases and Rents:

Dated: July 2, 1987 Recorded: July 2, 1987 Auditor's No.: 8707100763

Grantor: Solidus Corporation
Grantee: Seattle First National Bank

24. Quit Claim Deed:

Dated: October 29, 1987

Recorded: December 4, 1987

Auditor's No. 8712040083

Grantor: D. Gordon Potter and Virginia K. Potter Grantee: D. Gordon Potter and Virginia K. Potter

25. Deed of Trust:

Dated: October 29, 1987
Recorded: December 4, 1987
Auditor's No.: 8712040084
Grantor: D. Gordon Potter
Grantee: Virginia K. Potter

26. Claim of Lien:

Dated:

Recorded: December 30, 1988
Auditor's No.: 8812300753
Claimant: North End Plumbing
Defendant: Western Builders

PARCEL "B":

TAX PARCEL NO.: 0321352043

LEGAL DESCRIPTION:

That portion of the East half of the West half of the West half of the Southwest quarter of the Northeast quarter of the Northwest quarter and the West half of the East half of the West half of the Southwest quarter of the Northeast quarter of the Northwest quarter of Section 35, Township 21 North, Range 3 East of the Willamette Meridian, lying Northerly of a line parallel to and 210 feet Northeasterly of the center line of Alexander Avenue, measured at right angles thereto and Northwesterly of the Northwesterly line of the following described parcel: That part of the Northeast quarter of the Northwest quarter of Section 35, Township 21 North. Range 3 East of the Willamette Meridian, described as commencing at the intersection of the East line of said Northeast quarter of the Northwest quarter with the Northwesterly line of Lincoln Avenue as conveyed to the City of Tacoma by Deed recorded September 7, 1950 under Auditor's No. 1567268; thence at right angles to said line of Lincoln Avenue Northwesterly 336.60 feet; thence Northwesterly on a line parallel to the center line of Alexander Avenue 480 feet; thence at an angle to the left of 90°03' run on a line herein called "Line A" a distance of 388.30 feet to a point on a line parallel to and 210 feet Northeasterly of the center line of Alexander Avenue measured at right angles and the true point of beginning; thence Northwesterly parallel to said center line of Alexander Avenue 180 feet; thence Northeasterly parallel to said "Line A" to intersect a line which runs parallel to the center line of Alexander Avenue and passes through the Southeast corner of the North half of the West half of the East half of the West half of the Northeast quarter of the Northwest quarter of said Section; thence Southeasterly parallel to said center line of Alexander Avenue 180 feet to said "Line A"; thence Southwesterly on said "Line A" to the true point of beginning, in Pierce County, Washington.

The following documents have appeared of record since January 1, 1920:

1. Tax Deed:

Dated: December 7, 1926

Recorded: December 7, 1926

Auditor's No.: 831038

Grantor: George M. Heath, as Treasurer of Pierce County, State of Washington

Grantee: Pierce County

2. Tax Deed:

Dated: July 1, 1937

Recorded: July 2, 1937 Auditor's No.: 1218423

Grantor: Paul Newman, Treasurer of Pierce County

Grantee: Pierce County

County Treasurer's Deed:

Dated: February 3, 1942

Recorded: February 18, 1942

Auditor's No.: 1294950

Grantor: Paul Newman, as Treasurer of Pierce County

Grantee: Port of Tacoma

4. Lis Pendens:

Recorded: May 12, 1942 Auditor's No.: 1299592

Petitioner: City of Tacoma, a municipal corporation

Defendants: various owners

5. Statutory Warranty Deed:

Dated: December 7, 1961
Recorded: January 4, 1962
Auditor's No.: 1949397
Grantor: Port of Tacoma

Grantee: Educators Manufacturing Company

6. Statutory Warranty Deed:

Dated: August 17, 1962

Recorded: August 24, 1962 Auditor's No.: 1978016

Grantor: Educators Manufacturing Company

Grantee: Educators Furniture and Supply Company, Inc.

7. Mortgage:

Dated: January 7, 1963

Recorded: January 9, 1963 Auditor's No.: 1993969

Mortgagor: Educators Furniture and Supply Company, Inc.

Mortgagee: National Bank of Washington

Quit Claim Deed and Assignment of Easement:

Dated: March 31, 1964 Recorded: March 31, 1964 Auditor's No.: 2049394

Grantor: Educators Manufacturing Company, a Washington corporation Grantee: Educators Manufacturing Company, a California corporation

Quit Claim Deed:

Dated: February 13, 1969

Recorded: February 28, 1969

Auditor's No.: 2282383

Grantor: The E. F. Hauserman Company, an Ohio corporation Grantee: Educators Manufacturing Company, an Ohio Corp.

9. Quit Claim Deed:

Dated: March 17, 1969 Recorded: March 26, 1969

Auditor's No.: 2286281

Grantor: The E. F. Hauserman Company, an Ohio corporation Grantee: Educators Manufacturing Company, an Ohio corp.

10. Real Estate Contract:

Dated: February 28, 1969 Recorded: April 10, 1969 Auditor's No.: 2288456

Grantor: Educators Manufacturing Company, an Ohio corporation

Grantee: Donald E. Oline and Alba M. Oline, his wife

Recorded Document Guarantee Face Page Form No. 1365-8

12. Statutory Warranty Deed:

Dated: December 10, 1970

Recorded: December 18, 1970

Auditor's No.: 2372720

Grantor: Hauserman, Inc., a corporation, successor to Educators Manufacturing

Company, an Ohio corporation

Grantee: Donald E. Oline and Alba M. Oline, his wife

13. Lease with Option to Purchase:

Dated: January 1, 1976

Recorded: January 5, 1976
Auditor's No.: 2642429

Grantor: Donald E. Oline and Alba M. Oline, husband and wife

Grantee: D. Gordon Potter and Virginia K. Potter, husband and wife; Wallace M.

Clark and Edna W. Clark, husband and wife; and Emmerson H. Potter and

Lillian R. Potter, husband and wife

14. Easement:

Dated:

Recorded: May 10, 1977 Auditor's No.: 2735056

Grantor: Donald Oline Grantee: Poligen, Inc.

15. Lis Pendens:

Dated:

Recorded: August 14, 1979 Auditor's No.: 2934424

Plaintiff: Gordon Potter and Virginia Potter, et al

Defendants: Donald E. Oline and Alba M. Oline

16. Lis Pendens:

Recorded: September 27, 1979

Auditor's No. 2945722

Plaintiff: Tacoma Brokers, Inc., a Washington corporation

Defendants: Donald E. Oline and Alba M. Oline, husband and wife

17. Withdrawal of Lis Pendens:

Recorded: November 12, 1980

Auditor's No.: 8011120227

Plaintiff: Tacoma Brokers, Inc.

Defendants: Donald E. Oline and Alba M. Oline, huband and wife

18. Real Estate Contract:

Dated: October 27, 1980

Recorded: December 1, 1980

Auditor's No. 8012010012

Grantor: Donald E. Oline and Alba M. Oline, husband and wife

Grantee: Wallace M. Clark and Edna W. Clark, husband and wife; Emmerson H.

Potter and Lillian R. Potter, husband and wife; and D. Gordon Potter

and Virginia K. Potter, husband and wife

19. Statutory Warranty Deed: Dated: March 12, 1982

Recorded: March 16, 1982

Grantor: Wallace M. Clark and Edna W. Clark, husband and wife; Emmerson H.

Potter and Lillian R. Potter, husband and wife; and D. Gordon Potter

and Virginia K. Potter, husband and wife

Grantee: Chemical Processors, Inc., a Washington corporation

20. Statutory Warranty Deed: Dated: March 12, 1982

Recorded: March 16, 1982

Auditor's No. 8203160231

Grantor: Wallace M. Clark and Edna W. Clark, husband and wife; Emmerson H.

Potter and Lillian R. Potter, husband and wife; and D. Gordon Potter

and Virginia K. Potter, husband and wife

Grantee: Chemical Processors, Inc., a Washington corporation

21. Deed of Trust:

Dated: March 12, 1982

Recorded: March 16, 1982 Auditor's No.: 8203160232

Grantor: Chemical Processors, Inc., a Washington corporation

Grantor: Wallace M. Clark and Edna W. Clark, husband and wife; Emmerson H.

Potter and Lillian R. Potter, husband and wife; and D. Gordon Potter

and Virginia K. Potter, husband and wife

22. Power of Attorney:

Dated: February 10, 1982 Recorded: March 16, 1982 Auditor's No.: 8203160233 Grantor: Emmerson H. Potter Grantee: D. Gordon Potter

23. Quit Claim Deed:

Dated: March 22, 1982

Recorded: March 22, 1982 Auditor's No. 8203220138 Grantor: Donald E. Oline Grantee: Alba M. Oline

24. Survey:

Recorded: December 20, 1983 Auditor's No.: 8312200142

25. Assumption and Release Agreement:

Dated: July 16, 1984

Recorded: November 20, 1984 Auditor's No.: 8411200289

Grantor: Alba M. Oline

Grantee: Chemical Processors, Inc., a Washington corporation

26. Assignment of Rents and Leases:

Dated: October 8, 1984

Recorded: December 10, 1984 Auditor's No.: 841210004

Grantor: Chemical Processor's, Inc. Grantee: Seattle Trust & Savings Bank

27. County Treasurers Deed in Fulfillment of Contract:

Dated: August 13, 1984
Recorded: August 14, 1985
Auditor's No. 8508140150
Grantor: Pierce County
Grantee: Port of Tacoma

28. Deed of Trust:

Dated: July 10, 1987 Recorded: July 10, 1987 Auditor's No. 8707100762 Grantor: Solidus Corporation

Grantee: Seattle First National Bank

29. Assignment of Leases and Rents:

Dated: July 2, 1987

Recorded: July 10, 1987 Auditor's No.: 8707100763 Grantor: Solidus Corporation

Grantee: Seattle First National Bank

30. Quit Claim Deed:

Dated: October 29, 1987

Recorded: December 4, 1987

Auditor's No. 8712040083

Grantor: D. Gordon Potter and Virginia K. Potter Grantee: D. Gordon Potter and Virginia K. Potter

31. Deed of Trust:

Dated: October 29, 1987

Recorded: December 4, 1987 ·
Auditor's No.: 8712040084
Grantor: D. Gordon Potter
Grantee: Virginia K. Potter

PARCEL "C":

TAX PARCEL NO.: 0321352044

LEGAL DESCRIPTION:

The North half of the East half of the West half of the West half of the Northeast quarter of the Northwest quarter and the North half of the West half of the East half of the West half of the Northeast quarter of the Northwest quarter of Section 35, Township 21 North, Range 3 East of the Willamette Meridian, in Pierce County, Washington.

The following documents have appeared of record since January 1, 1920.

1. Lis Pendens:

Recorded: January 10, 1952 Auditor's No.: 1614614

Port of Tacoma, a municipal corporation

Defendants: various owners

2. Statutory Warranty Deed:

Dated: October 16, 1959

Recorded: October 26, 1959

Auditor's No.: 1870752

Grantor: Ellen J. Johnsen, a widow; Betty M. Race, formerly Betty M. Wekell;

Albert Wekell and Rosella Wekell, his wife

Grantee: Bank of California, N.A.

Quit Claim Deed:

Dated: October 9, 1963

Recorded: October 11, 1963

Auditor's No.: 2028794

Grantor: Bank of California, N.A.

Grantee: B. R. Magnuson and Inez L. Magnuson, husband and wife; and Elwin A.

Deyo and Marjorie Deyo, husband and wife

4. Real Estate Contract:

Dated: April 30, 1965

Recorded: May 10, 1965

Auditor's No.: 2100269

Grantor: B. R. and Inez L. Magnuson, husband and wife; and Elwin A. and

Marjorie Deyo, husband and wife

Grantee: Donald E. and Alba M. Oline

5. Statutory Warranty Deed:

Dated: May 10, 1965

Recorded: September 13, 1965

Auditor's No.: 2116345

Grantor: B. R. and Inez L. Magnuson, husband and wife; and Elwin A. and

Marjorie Deyo, husband and wife

Grantee: Donald E. and Alba M. Oline

6. Lease with Option to Purchase:

Dated: January 1, 1976

Recorded: January 5, 1976

Auditor's No.: 2642429

Grantor: Donald E. Oline and Alba M. Oline, husband and wife

Grantee: D. Gordon Potter and Virginia K. Potter, husband and wife; Wallace M.

Clark and Edna W. Clark, husband and wife; and Emmerson H. Potter and

Lillian R. Potter, husband and wife

7. Easement:

Dated:

Recorded: May 10, 1977 Auditor's No.: 2735056 Grantor: Donald Oline

Grantor: Donald Oline Grantee: Poligen, Inc.

8. Lis Pendens:

Dated:

Recorded: August 14, 1979 Auditor's No.: 2934424

Plaintiff: Gordon Potter and Virginia Potter, et al

Defendants: Donald E. Oline and Alba M. Oline

9. Lis Pendens:

Recorded: September 27, 1979

Auditor's No. 2945722

Plaintiff: Tacoma Brokers, Inc., a Washington corporation

Defendants: Donald E. Oline and Alba M. Oline, husband and wife

10. Withdrawal of Lis Pendens:

Recorded: November 12, 1980

Auditor's No.: 8011120227

Plaintiff: Tacoma Brokers, Inc.

Defendants: Donald E. Oline and Alba M. Oline, husband and wife

11. Real Estate Contract:

Dated: October 27, 1980

Recorded: December 1, 1980

Auditor's No. 8012010012

Grantor: Donald E. Oline and Alba M. Oline, husband and wife

Grantee: Wallace M. Clark and Edna W. Clark, husband and wife; Emmerson H.

Potter and Lillian R. Potter, husband and wife; and D. Gordon Potter

and Virginia K. Potter, husband and wife

12. Statutory Warranty Deed:

Dated: March 12, 1982

Recorded: March 16, 1982

Grantor: Wallace M. Clark and Edna W. Clark, husband and wife; Emmerson H.

Potter and Lillian R. Potter, husband and wife; and D. Gordon Potter

and Virginia K. Potter, husband and wife

Grantee: Chemical Processors, Inc., a Washington corporation

13. Statutory Warranty Deed:

Dated: March 12, 1982

Recorded: March 16, 1982

Auditor's No. 8203160231

Grantor: Wallace M. Clark and Edna W. Clark, husband and wife; Emmerson H.

Potter and Lillian R. Potter, husband and wife; and D. Gordon Potter

and Virginia K. Potter, husband and wife

Grantee: Chemical Processors, Inc., a Washington corporation

14. Deed of Trust:

Dated: March 12, 1982

Recorded: March 16, 1982 Auditor's No.: 8203160232

Grantor: Chemical Processors, Inc., a Washington corporation

Grantor: Wallace M. Clark and Edna W. Clark, husband and wife; Emmerson H. Potter and Lillian R. Potter, husband and wife; and D. Gordon Potter

and Virginia K. Potter, husband and wife

15. Power of Attorney:

Dated: February 10, 1982
Recorded: March 16, 1982
Auditor's No.: 8203160233
Grantor: Emmerson H. Potter
Grantee: D. Gordon Potter

16. Quit Claim Deed:

Dated: March 22, 1982
Recorded: March 22, 1982
Auditor's No. 8203220138
Grantor: Donald E. Oline
Grantee: Alba M. Oline

17. Survey:

Recorded: December 20, 1983 Auditor's No.: 8312200142

18. Assumption and Release Agreement:

Dated: July 16, 1984

Recorded: November 20, 1984 Auditor's No.: 8411200289

Grantor: Alba M. Oline

Grantee: Chemical Processors, Inc., a Washington corporation

19. Assignment of Rents and Leases:

Dated: October 8, 1984

Recorded: December 10, 1984 Auditor's No.: 841210004

Grantor: Chemical Processor's, Inc. Grantee: Seattle Trust & Savings Bank

20. Easement:

Dated: December 21, 1984
Recorded: January 14, 1985
Auditor's No.: 8501140278
Grantor: Chemical Processors, Inc.

Grantee: City of Tacoma

21. Deed of Trust:

Dated: July 10, 1987 Recorded: July 10, 1987 Auditor's No. 8707100762 Grantor: Solidus Corporation

Grantee: Seattle First National Bank

22. Assignment of Leases and Rents:

Dated: July 2, 1987

Recorded: July 2, 1987 Auditor's No.: 8707100763 Grantor: Solidus Corporation

Grantee: Seattle First National Bank

23. Survey:

Recorded: December 23, 1987 Auditor's No.: 8712230321

24. Quit Claim Deed:

Dated: October 29, 1987 Recorded: December 4, 1987

Auditor's No. 8712040083

Grantor: D. Gordon Potter and Virginia K. Potter Grantee: D. Gordon Potter and Virginia K. Potter

25. Deed of Trust:

Dated: October 29, 1987
Recorded: December 4, 1987
Auditor's No.: 8712040084
Grantor: D. Gordon Potter
Grantee: Virginia K. Potter

PARCEL "D":

TAX PARCEL NO.: 0321352052

LEGAL DESCRIPTION:

The North 400 feet of the East half of the East half of the West half of the Northeast quarter of the Northwest quarter of Section 35, Township 21 North, Range 3 East of the Willamette Meridian, in Pierce County, Washington.

The following documents have appeared of record since January 1, 1920:

1. Quit Claim Deed:

Dated: February 3, 1926 Recorded: February 11, 1926 Auditor's No.: 790185

Grantor: Arthur G. Prichard Trustee, Arthur G. Prichard and Mattie B.

Prichard, his wife

Grantee: Kate Harrison

Quit Claim Deed:

Dated: October 6, 1941
Recorded: August 14, 1942
Auditor's No.: 1304555
Grantor: Kate Harrison

Grantee: Aline Harrison Taylor

3. Lis Pendens:

Recorded: January 10, 1952 Auditor's No.: 1614614

Petitioner: Port of Tacoma, a municipal corporation

Defendants: various owners

4. Statutory Warranty Deed:

Dated: December 7, 1961 Recorded: January 1, 1962 Auditor's No.: 1949397 Grantor: Port of Tacoma

Grantee: Educators Manufacturing Company

5. Easement:

Dated: March 28, 1962 Recorded: April 3, 1962 Auditor's No.: 1960148

Grantor: Educators Manufacturing Company

Grantee: City of Tacoma

6. Quit Claim Deed:

Dated: March 31, 1964 Recorded: March 31, 1964 Auditor's No.: 2049394

Grantor: Educators Manufacturing Company, a Washington corporation Grantee: Educators Manufacturing Company, a California corporation

7. Quit Claim Deed:

Dated: February 13, 1969 Recorded: February 28, 1969 Auditor's No.: 2282383

Grantor: The E. F. Hauserman Company, an Ohio Corporation Grantee: Educators Manufacturing Company, an Ohio Corporation

8. Quit Claim Deed:

Dated: March 17, 1969 Recorded: March 26, 1969 Auditor's No.: 2286281

Grantor: The E. F. Hauserman Company. an Ohio Corporation Grantee: Educators Manufacturing Company, an Ohio Corporation

9. Real Estate Contract:

Dated: February 28, 1969 Recorded: April 10, 1969 Auditor's No. 2288456

Grantor: Educators Manufacturing Company, an Ohio Corporation

Grantee: Donald E. Oline and Alba M. Oline, his wife

10. Statutory Warranty Deed:

Dated: December 10, 1970 Recorded: December 18, 1970 Auditor's No.: 2372720

Grantor: Hauserman, Inc., a corporation, successor to Educators

Manufacturing Company, an Ohio Corporation

Grantee: Donald E. Oline and Alba M. Oline, his wife

ll. Lease:

Dated: June 20, 1974
Recorded: August 14, 1974
Auditor's No.: 2566781
Grantor: Donald E. Oline
Grantee: Poligen, Inc.

12. Statutory Warranty Deed:

Dated: April 24, 1981 Recorded: April 27, 1981 Auditor's No.: 8104270171

Grantor: Donald E. Oline and Alba M. Oline, husband and wife

Grantee: Poligen, Inc., a Washington corporation

13. Quit Claim Deed:

Dated: October 2, 1981
Recorded: October 9, 1981
Auditor's No.: 8110090273
Grantor: Poligen, Inc.
Grantee: Solidus Corporation

14. Deed of Trust:

Dated: April 23, 1984
Recorded: October 15, 1984
Auditor's No.: 8410150059
Grantor: Solidus Corporation
Grantee: Peoples National Bank

Said Deed of Trust was reconveyed by instrument recorded August 5, 1987 under Auditor's No. 8708050198.

15. Deed of Trust:

Dated: July 10, 1987 Recorded: July 10, 1987

Auditor's No.: 8707100762 Grantor: Solidus Corporation

Grantee: Seattle First National Bank

16. Assignment of Leases and Rents:

Dated: July 2, 1987 Recorded: July 2, 1987

Auditor's No.: 8707100763
Grantor: Solidus Corporation

Grantee: Seattle First National Bank

17. Survey:

Recorded: December 23, 1987 Auditor's No.: 8712230321

PARCEL "E":

TAX PARCEL NO.: 0321352053

DESCRIPTION:

That portion of the Northeast quarter of the Northwest quarter of Section 35. Township 21 North, Range 3 East of the Willamette Meridian, described as follows: Commencing at the intersection of the East line of the Northeast quarter of the Northwest quarter of Section 35, Township 21 North, Range 3 East of the Willamette Meridian, and the Northwesterly line of Lincoln Avenue, as conveyed to the City of Tacoma by Deed recorded under Auditor's No. 1567268; thence at right angles to said line of Lincoln Avenue, Northwesterly 816.60 feet to the most Northerly corner of that certain tract of land described in Contract of Sale to Frederic G. Duncan and Patricia A. Duncan, husband and wife, recorded January 25, 1979 under Auditor's No. 2884432, and the true point of beginning; thence continuing along said line at right angles to Lincoln Avenue to a line parallel with and 650.0 feet West of the East line of said subdivision; thence along said parallel line Northerly, a distance of 203.88 feet, to intersect a line parallel with and 400.00 feet South of the North line of said subdivision; thence Westerly along said line a distance of 6.50 feet to the Southwest corner of the North 400 feet to the East half of the Northeast quarter of the Northwest quarter of said Section 35; thence on an angle to the right of 91044'24", a distance of 400 feet, more or less, to the Northeast corner of the Northwest quarter of the Northeast quarter of the Northwest quarter of said Section 35; thence West along the North line of said Section to the Northeast corner of the West half of the East half of the Northwest quarter to the Northeast quarter of the Northwest quarter of said Section: thence South along the East line of said West half of the East half of the Northwest quarter of the Northeast quarter of the Northwest quarter to the Southeast corner thereof, said point being on the Northeasterly line of that certain tract of land described in Contract of Sale to D. Gordon Potter, and others, recorded January 5, 1976 under Auditor's No. 2642430; thence Southeasterly along said Northeasterly line to a point on the Northwesterly line of that certain tract of land described in Contract of Sale to Frederic G. Duncan and Patricia A. Duncan, husband and wife, recorded January 25, 1979 under Auditor's No. 2884432; thence Northeasterly along said

Northwesterly line to the true point of beginning, in Pierce County, Washington. EXCEPT that portion thereof within the North 500 feet of the East half of the East half of the Northwest quarter of the Northwest quarter of

said Section 35.

The following documents have appeared of record since January 1, 1920:

Quit Claim Deed:

Dated: February 3, 1926 Recorded: February 11, 1926 Auditor's No.: 790185

Grantor: Arthur G. Prichard, Trustee, Arthur G. Prichard and Mattie B.

Prichard, his wife

Grantor: Kate Harrison

Quit Claim Deed:

Dated: October 6, 1941
Recorded: August 14, 1942
Auditor's No.: 1304555
Grantor: Kate Harrison

Grantee: Aline Harrison Taylor

3. Lis Pendens:

Recorded: January 10, 1952 Auditor's No.: 1614614

Petitioner: Port of Tacoma, a municipal corporation

Defendants: various owners

4. Statutory Warranty Deed:

Dated: December 7, 1961
Recorded: January 4, 1962
Auditor's No.: 1949397
Grantor: Port of Tacoma

Grantee: Educators Manufacturing Company

5. Easement:

Dated: March 28, 1962 Recorded: April 3, 1962 Auditor's No.: 1960148

Grantor: Educators Manufacturing Company

Grantee: City of Tacoma

6. Quit Claim Deed:

Dated: March 31, 1964 Recorded: March 31, 1964 Auditor's No.: 2049394

Grantor: Educators Manufacturing Company, a Washington corporation Grantee: Educators Manufacturing Company, a California corporation

7. Quit Claim Deed:

Dated: February 13, 1969 Recorded: February 28, 1969 Auditor's No.: 2282383

Grantor: The E. F. Hauserman Company, an Ohio Corporation

Grantee: Educators Manufacturing Company

8. Quit Claim Deed:

Dated: March 17, 1969 Recorded: March 26, 1969 Auditor's No.: 2286281

Grantor: The E. F. Hauserman Company, an Ohio Corporation

Grantee: Educators Manufacturing Company

9. Real Estate Contract:

Dated: February 28, 1969 Recorded: April 10, 1969

Grantor: Educators Manufacturing Company

Grantee: Donald E. Oline and Alba M. Oline, his wife

10. Statutory Warranty Deed:

Dated: December 10, 1970 Recorded: December 18, 1970

Auditor's No. 2372720

Grantor: Hauserman, Inc., a corporation, successor to Educators

Manufacturing Company, an Ohio corporation

Grantee: Donald E. Oline and Alba M. Oline, his wife

11. Easement:

Dated:

Recorded: May 10, 1977
Auditor's No.: 2735056
Grantor: Donald Oline
Grantee: Poligen, Inc.

12. Statutory Warranty Deed:

Dated: May 13, 1981 Recorded: May 14, 1981

Auditor's No.: 8105140201

Grantor: Donald E. Oline and Alba M. Oline, husband and wife

Grantee: Solidus Corporation, a Wasington corporation

13. Deed of Trust:

Dated:

Recorded: November 19, 1981 Auditor's No.: 8111190040 Grantor: Solidus Corporation

Grantee: Peoples National Bank of Washington

14. Deed of Trust:

Dated: April 23, 1984
Recorded: October 15, 1984
Auditor's No.: 8410150059
Grantor: Solidus Corporation
Grantee: Peoples National Bank

Said Deed of Trust was reconveyed by instrument recorded August 5, 1987 under Auditor's No. 8708050198.

15. Survey:

Recorded: December 23, 1987 Auditor's No.: 8712230321

APPLICATION AND AGREEMENT FOR THE ISSUANCE OF A RECORDED DOCUMENT GUARANTEE

THIS AGREEMENT entered into this	day of kine
19 SA between FIRST AMERICAN TITLE INSU and PT = Environmental Services	JRANCE COMPANY (hereinafter the Company)
Applicant for the purpose of purchase, sale or loan is in the property described below (hereinafter Subject Property) had desires information regarding documents found in the Com	ocess of investigating the prior uses to which the real is been put. As a part of that investigation Applicant
County title plant and the Pierco.	(Name of County)
	(Name of County)
County Recorder's Office which have been indexed in the property set forth below or any portion thereof.	e Grantee/Grantor indices which describe the real
The Company nereby agrees to provide to Applicant a "Guarantee) in the form attached hereto and made a part agreement.	Recorded Document Guarantee" (hereinaster the hereof in accordance with the provisions of this
In consideration of the mutual promises set forth herein, th	ne Company and Applicant agree as follows:
 Provided the Company has an open order on the the charge for the Guarantee shall required to research and prepare t 	e Subject Property for the purpose of insuring title, be the sum of the numbers of hours the Guarantee, times an hourly rate

2. The liability assumed by the Company for the correctness and completeness of the information contained in the Guarantee shall be the amount of liability shown in the Guarantee. It is also understood and agreed that the Company shall not be liable for any loss or damage arising from incorrectness of incompleteness of the Guarantee unless such incorrectness or incompleteness is the result of gross negligence (as opposed to ordinary negligence) on the part of the Company.

of \$50. There shall be a minimum charge of \$100. (In the event the Company does not have an open order placed by Applicant on the Subject

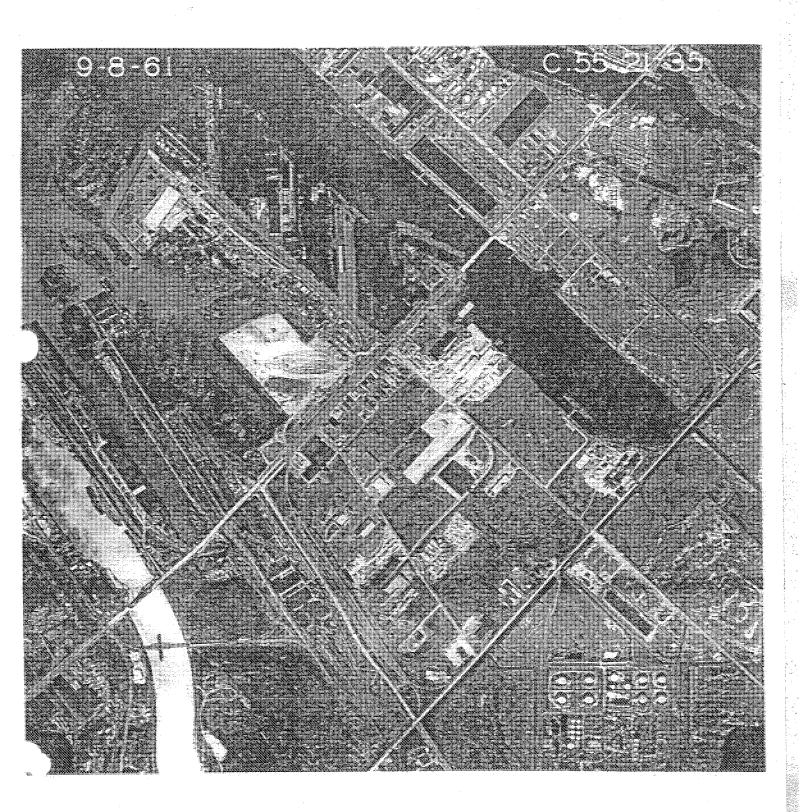
Property, then the minimum charge shall be \$300.)

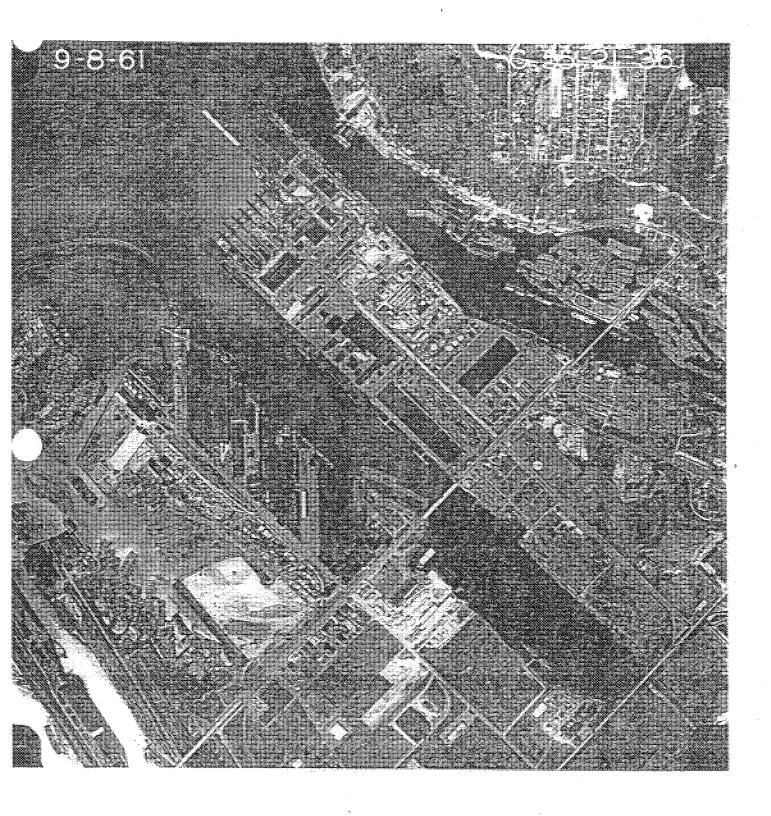
- The intentional omission by the Company, with the formed intent of harming Applicant, of the reference in the Guarantee to a recorded document or documents of the type indicated below by Applicant to be included in the Guarantee, actually known to the Company, because it was found while doing the search either in the Company's title plant or the County Recorder's Grantee/Grantor indices, which document or documents describe the Subject Property or any portion thereof.
- In no event shall the Company be liable under the Guarantee for loss or damage of any type in excess of the amount of liability shown in the Guarantee including but not limited to consequential damages, loss of anticipated profits, costs of toxic waste cleanup or any other loss whether or not of the type specifically mentioned above.

5.	Applicant hereby requests the Company to issue the Guarantee reflecting as exceptions only the	
	following indicated recorded documents which describe all or a portion of the Subject Property found in the Company's title plant (but without examination of those Company title plant records	
	maintained and indexed by name) and the Grantee/Grantor indices maintained by the County	•
	Recorder for the County of Pierce, which Documents were	
	recorded subsequent to 31967 1920	
	(Date)	
	All Recorded Documents	
	Deeds, Deeds of Trust, Leases and Subleases	
	Deeds, Leases and Subleases	
	Deeds, Deeds of Trust and Leases	
	Deeds and Leases	
	Applicant specifically instructs the Company to disclose in the Guarantee only those documents	
	indicated above. Applicant understands that during the course of searching the records covered by	
	this Agreement and the Guarantee the Company may find recorded documents of a type other than those indicated above by Applicant to be included in the Guarantee. Even if the Company knows or	
	would have reason to know Applicant may have extreme interest in these other documents. Appli-	
	cant imposes no duty or responsibility on the Company to disclose those documents or their con-	
	tent to Applicant either through the Guarantee or otherwise.	
6.	In the event that any provision or any part of any provision of this agreement is held to be illegal,	
	invalid or unenforceable, said illegality, invalidity or unenforceability shall not affect the legality.	,•
	validity or enforceability of any other provisions or part hereof.	
7.	Nothing contained in this agreement, expressed or implied, is intended to confer upon any person	
	or entity, other than the parties hereto, any rights or remedies arising under or by reason of this agreement.	•
8.	This agreement shall be governed by and construed in accordance with the laws of the State	al Wadinet
9.	The Subject Property is described as follows:	of consumation
	177. A. I. A.	
	R. 3.	
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	νω	
ATED:	Qua & 1989	
***************************************	1 101	
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المخصصات.	Assistant Secretary 9:05AL	,
	for PTI Envimnental	Sources
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APPENDIX B

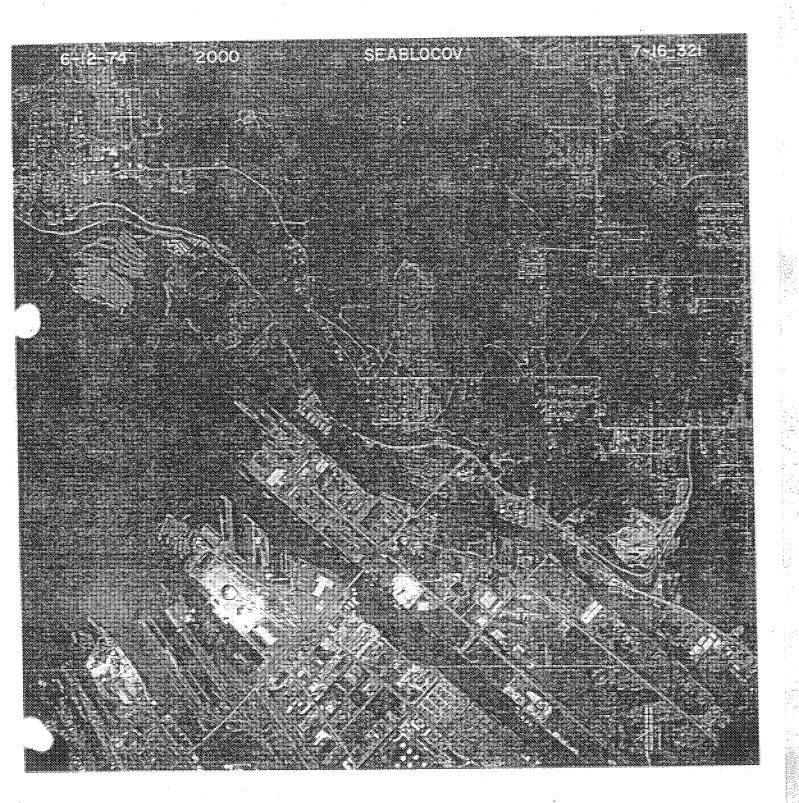
Photocopies of Aerial Photographs in Project Files

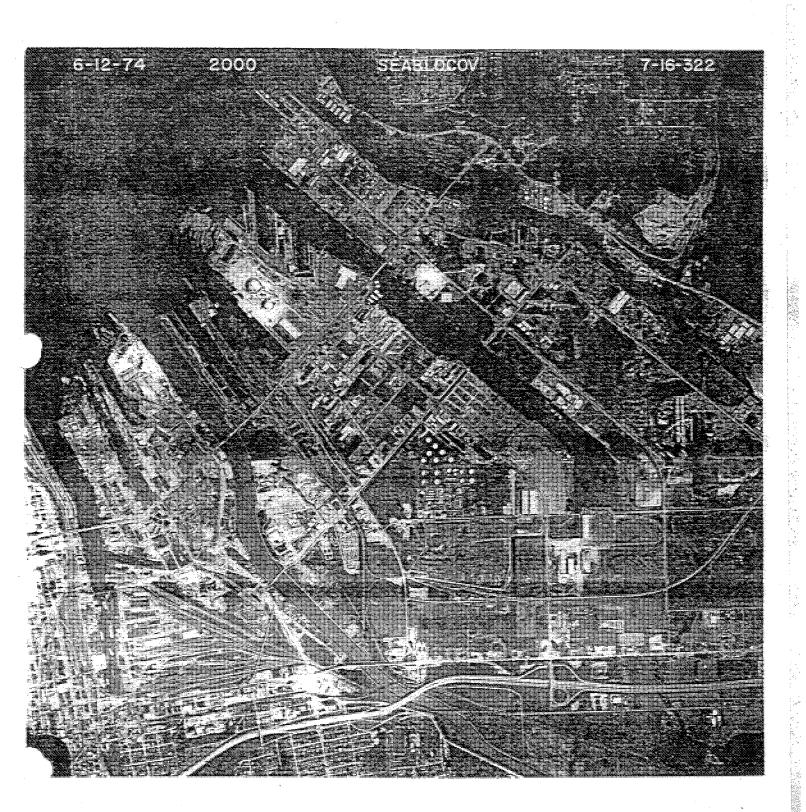


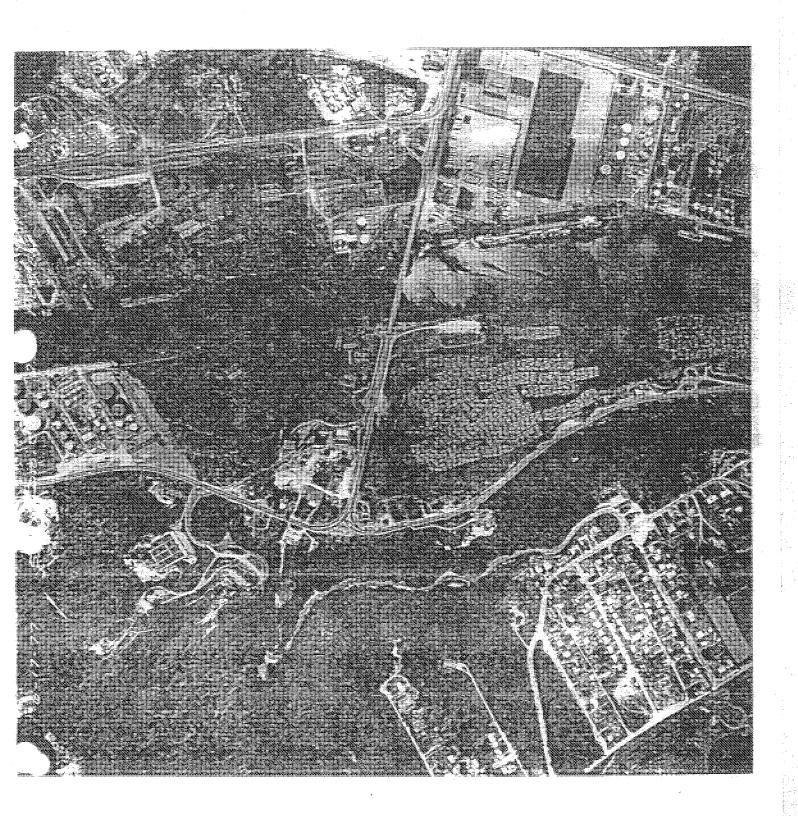


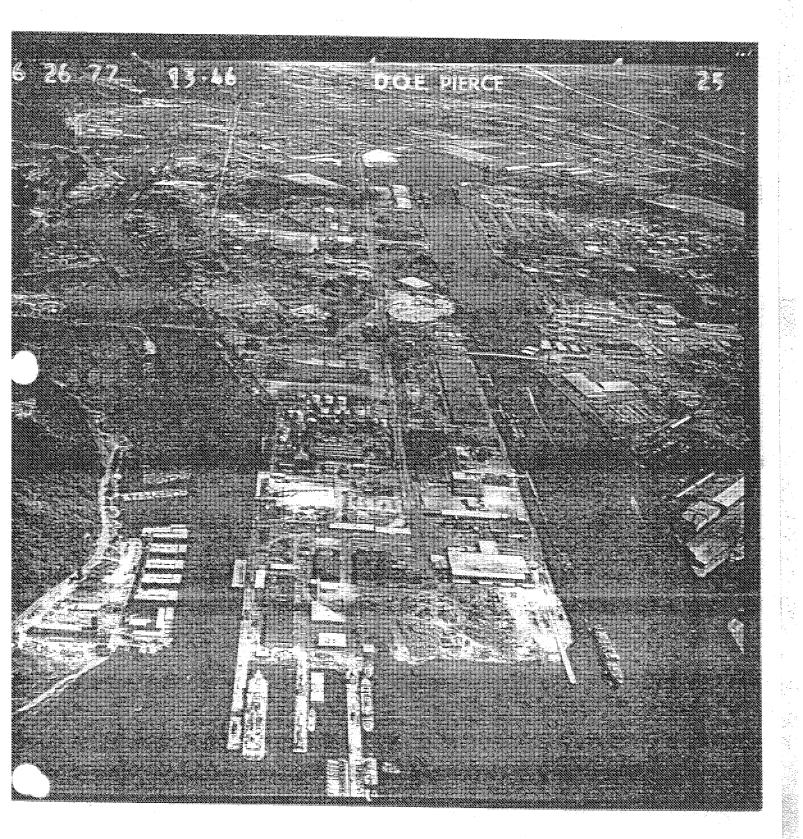


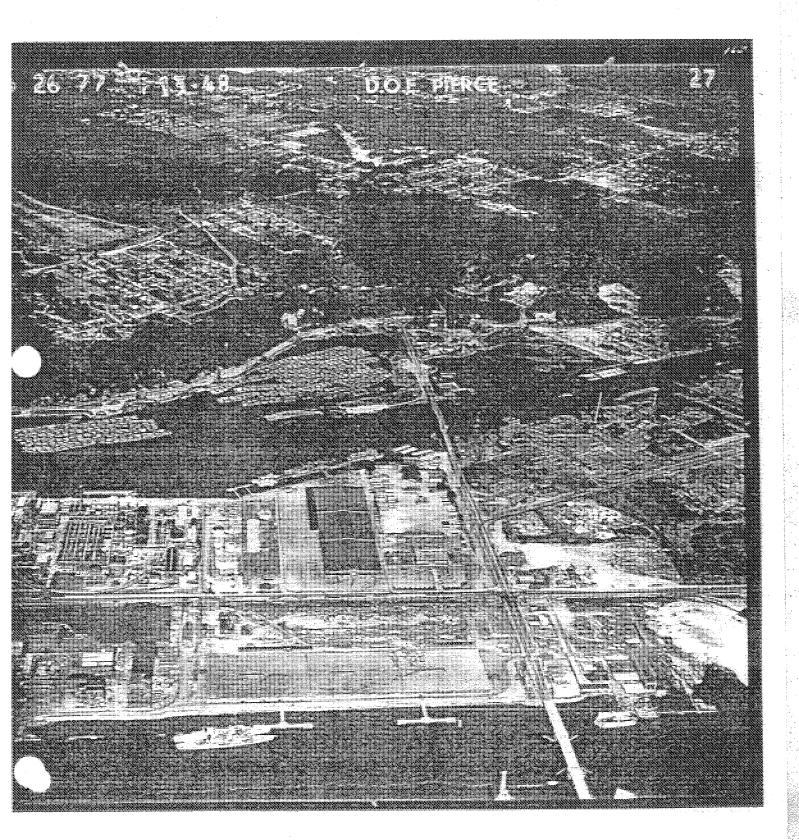
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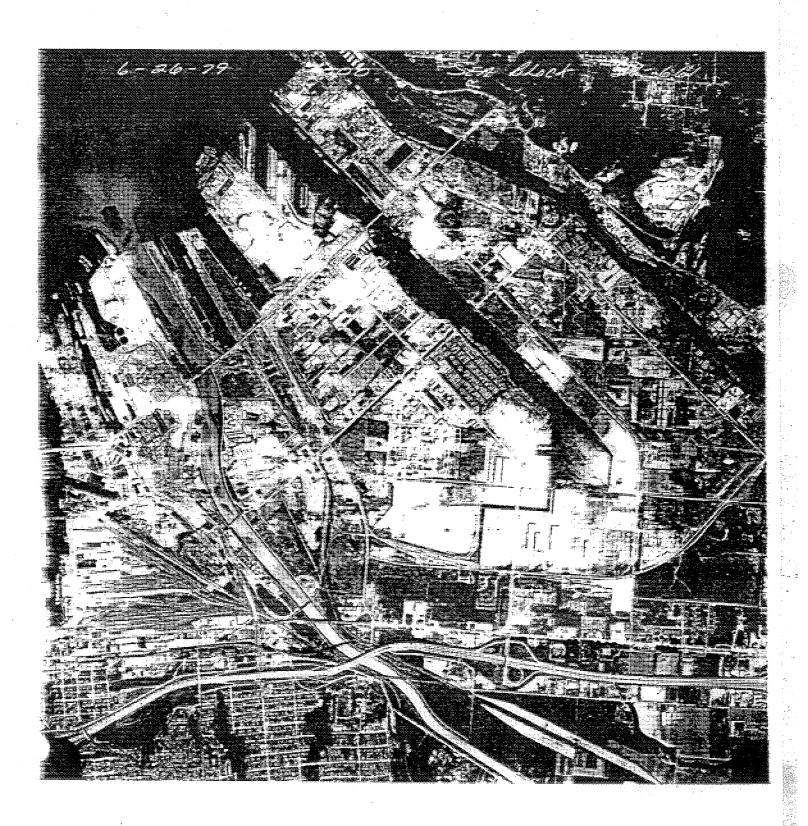


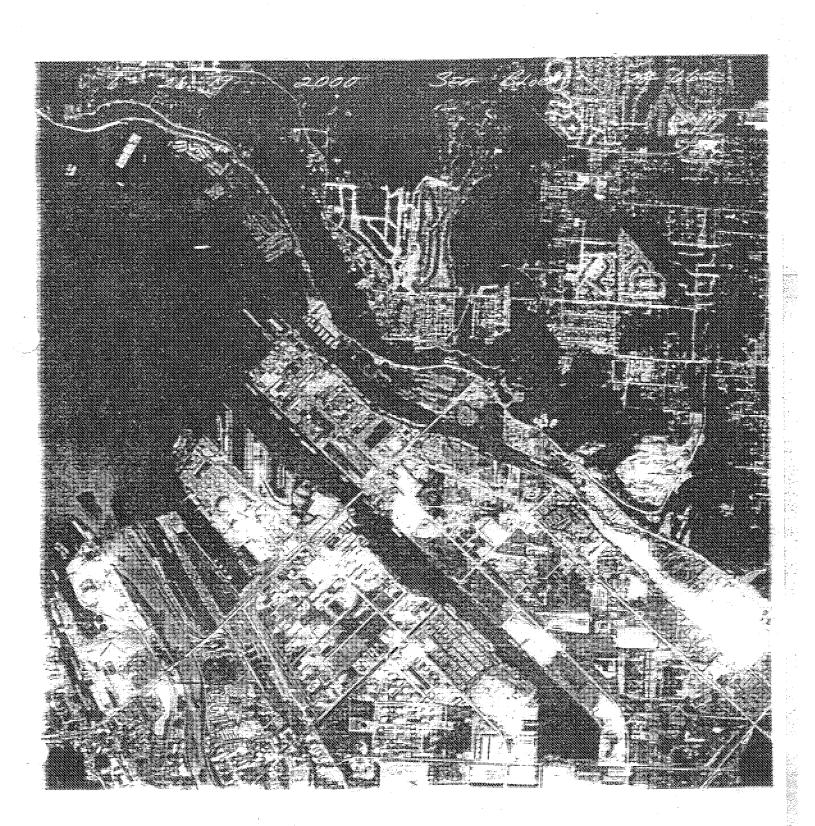


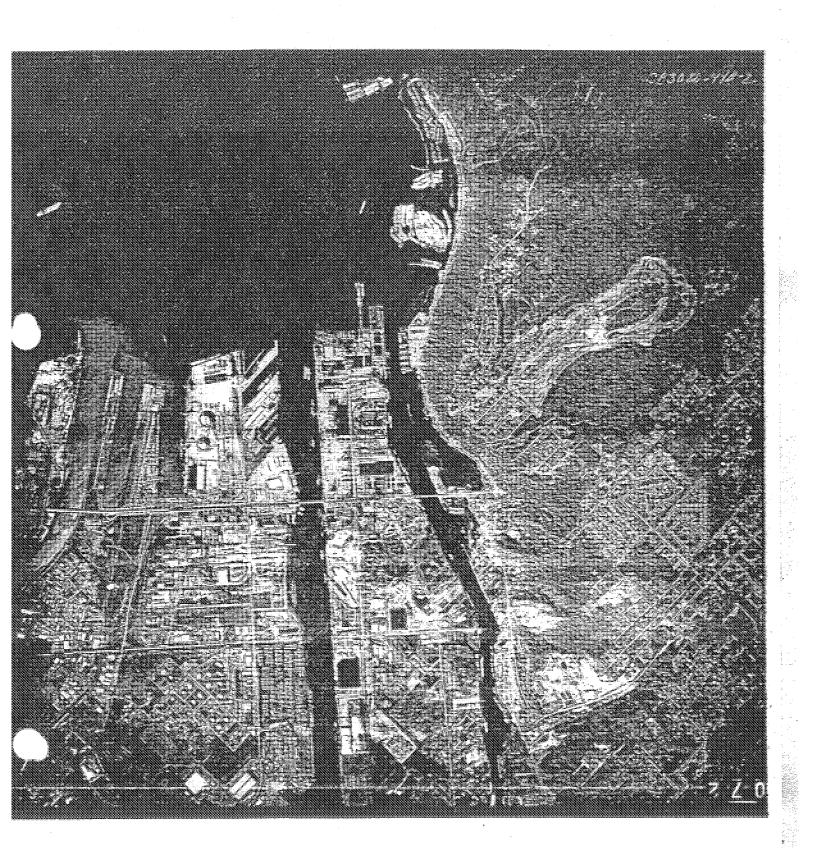


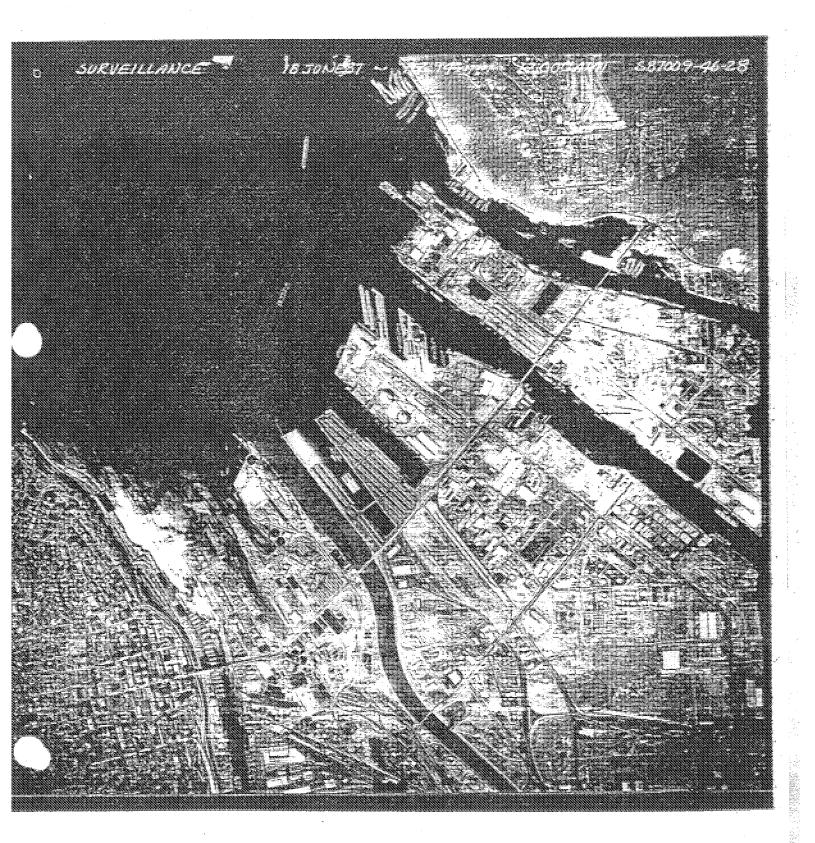












APPENDIX C

PLP Search Information Regarding Business/Properties Outside the Study Area

APPENDIX C PLP SEARCH INFORMATION REGARDING BUSINESS/PROPERTIES OUTSIDE THE STUDY AREA

OCCIDENTAL CHEMICAL COMPANY

According to an Ecology Inspection Report (Manning, J., 15 March 1989, personal communication). Occidental used the following six offsite locations to dispose of generated wastes:

- Site I: City of Tacoma Landfill and Pierce County Landfill (Hidden Valley Sanitary Landfill).
- Site II: Petarick Site, used for disposal of stripper lime and brine sludges in 1972, reportedly located along Old Highway 99.
- Site III: General Metals facility. Prior to ownership and operation by General Metals, the property was originally owned by Donald Oline. At that time, the site was available to the Burrows Construction Company for the disposal of Hooker sludge pond waste.
- Site IV: Property located on Alexander Avenue adjacent to the ChemPro facility. This property was also owned by Donald Oline at that time, and made available to the Burrows Construction Company for disposal of Hooker lime pond sludge and brine sludge.
- Site V: Barge(s) were used for dumping at a deep water disposal site in Commencement Bay.
- Site VI: Dauphin Site (located east of the Petarick Site). The site was used for the disposal of dredge spoils from dredging completed adjacent to the Hooker facility dock in 1974.

Occidental also maintained onsite holding ponds and waste piles as part of their standard waste management practices. Information from Occidental (no date) regarding potential releases from solid waste management units indicated that the solid waste management practices discussed below were practiced at the Occidental facility.

Landfill

From 1929 through mid-1971, wastes were used for landfill along the Hylebos Waterway bank for the expansion of the waterfront property. These wastes included concrete cell bodies, filtering media from the sodium chloride brine purification and oil hydrogenation operations, asbestos, graphite pieces, non-burnable wastes, lime, and dirt. According to the document detailing the types of waste disposal activities employed at the Occidental site, the above-mentioned wastes used for landfill are considered hazardous wastes under RCRA regulations.

Surface Impoundments

Six holding ponds stored waste slurries produced by the chlorinated organic solvent plant from September 1949 to May 1973. Although the operations at the solvent plant ceased in 1973, lime and brine sludge continued to be deposited into the ponds. Liquids were decanted from the ponds and discharged into the Hylebos Waterway. The resulting solids were removed and transported by barge to a disposal site in Commencement Bay. Analyses of the materials disposed into the holding ponds from the solvent plant were conducted in 1960 and 1972 (see Section 2).

From 1948 through 1973, two small pits were used to collect iron catalyst accumulated at the bottom of the tetrachloroethane storage tank used during solvent plant operations. The waste was drained of tetrachloroethane and disposed at a municipal city landfill.

Off-grade material from the production of sodium aluminate (in 1959 and 1960) was disposed of in a small pit adjacent to the manufacturing site. After the onsite production of the compound ceased, the use of the pit was discontinued and the pit was filled with sand.

Container Storage Area

Approximately eighty 55-gallon containers stored chlorinated solvents onsite from April 1978 to August 1979. These drums were stored on pallets in uncontained and/or sealed areas.

Other Waste Handling Areas

From approximately 1950 to 1978, waste graphite pieces were stored on an impervious surface (the specific type of surface was not noted in the information provided) in a pile located near the muriatic acid plant. The unused particles were from the graphite anode blades of unused electrolytic cells.

Subsequently, from mid-1978 to October 1980, an area in the southwest corner of the Occidental property was designated for the disposal of waste graphite pieces.

From May 1950 through January 1973, the Occidental operation utilized a barge to receive wastes from the solvent plant. From March 1972 to January 1973, the barge was used solely as a backup system for the solvent facility ponds. Additionally, in 1968, the barge received brine sludge slurries resulting from the brine purification processing unit. The liquid wastes were decanted into the Hylebos Waterway, while the solid wastes were disposed of at a site in Commencement Bay.

Occidental (no date) was engaged in active dumping along the Hylebos Waterway waterfront as early as 1929 and as late as 1980.

GENERAL METALS

General Metals generated an estimated 2 gallons and 50 cubic yards of miscellaneous chemical liquid materials (the specific constituents were not noted in the available information).

General Metals disposed of an estimated 56,250 cubic yards of asbestos; an unknown quantity of brine sludge; an unspecified quantity of generator, stripper, and lime wastes; approximately 56,250 cubic yards of metal-contaminated solid materials; and approximately 56,250 cubic yards of PCB solid materials.

The onsite disposal and storage of solid materials was observed in 1985 during onsite investigations by Ecology personnel for the *Potential Hazardous Waste Site Preliminary Assessment* (SAIC 1985). The type of onsite waste containment observed during the investigation was not noted in the assessment.

According to available documents, General Metals contracted waste transporters to dispose of shredded solid materials at the Coski landfill. However, General Metals was notified in November 1986 by the Tacoma-Pierce County Health Department that the disposal of auto fluff at the Coski landfill was not permitted, so disposal at the site was discontinued. Other offsite disposal sites were not indicated in the available information.

BUFFALO DON MUPRPHY/MAGNUSON

According to available documents reviewed for the Buffalo Don Murphy/Magnuson site (IT Corporation 1987), phenolic solutions resulting from the solvent processing at the Hooker Chemical Corporation were the primary wastes disposed of at the Buffalo Don Murphy salvage yard. The document indicated the disposal of PCB liquid and PCP solid wastes by Buffalo Don Murphy.

The IT Corporation document did not note the generation of hazardous wastes by onsite operations; however, it was indicated that Buffalo Don Murphy repackaged and resold select wastes stored at his salvage yard as wood preservative (IT Corporation 1987).

Buffalo Don Murphy disposed of an estimated 17,005 gallons of PCB liquids, and 28 tons and 1,343 cubic yards of PCP solid materials during Buffalo Don Murphy salvage yard operations.

Based on the available documents reviewed, it appears that Buffalo Don Murphy received wastes from offsite and stored the wastes in above-ground containers (usually 55-gallon drums) onsite. No description of offsite waste disposal practices employed by Buffalo Don Murphy or manifests for offsite transport were noted in the IT Corporation site verification (IT Corporation 1987).

In October 1968, the Buffalo Don Murphy salvage yard began receiving and storing hazardous wastes from the Reichhold Chemical Corporation. Although Buffalo Don Murphy died in 1975, subsequent site inspections conducted by Ecology inspectors in 1975 and in 1977 noted the continued onsite storage of Reichhold Chemical Corporation wastes. Reichhold Chemical was required by Ecology to remove the wastes from the Buffalo Don Murphy salvage yard.

SOL PRO/LILYBLAD

Sol Pro/Lilyblad maintains two spent solvent processing areas and a reactor used to dehydrate and clean used oil. From these processes, diesel, mineral spirits, waste petroleum naphtha, lubricants, motor oil wastes, sludges, and creosote-contaminated dirt and rocks are generated.

Concise documentation regarding onsite and offsite disposal practices implemented by Sol Pro/Lilyblad is minimal. However, disposal practices implemented by the Lilyblad facility have been noted (Stasch, P., and T. Michelena, 5 May 1989, personal communication). Diesel and mineral spirits were offloaded in a designated truckloading area into the Lilyblad tankfarm. A sump in the unloading area drained directly to an oil/water separator which had no emergency shut-off valve in the drainline. A chemical blending area was observed where raw chemicals were mixed and stored onsite in 55-gallon drums. This area also contained a filled sump. An oil shed was inspected and revealed that waste-like material had accumulated in 5-gallon buckets in the area. Miscellaneous drums and containers were reported along the western boundary of the Lilyblad site. Various labels reportedly included "waste petroleum naphtha, combustible liquid", "lubricants", "MEK", "thinner 410-B", "motor oil", "sludge", and "dirt (and) rocks contaminated with creosote" (Stasch, P., and T. Michelena, 5 May 1989, personal communication).

Additionally, the washex unit distillation area was inspected in May 1989, and was found to include unloaded waste solvents from Safety-Kleen. The inspection report (Stasch, P., and T. Michelena, 5 May 1989, personal communication) stated that "the waste solvent phase separates in the tank and the tank bottoms and water are manually drained off into drums. Clean solvent is then returned to Safety-Kleen. The resulting tank bottoms are reportedly shipped, unmanifested, to Pacific Northern Oil Company."

Wastewater resulting from the solvent recycling operation was unpermittedly discharged through an activated charcoal filter to the plant drain system.

Sol Pro/Lilyblad commenced operations as a merged corporation in 1980; however, the operations at the Alexander Avenue plant did not begin until 1987. No further documentation regarding specific dates of onsite disposal was noted in the available information.

REICHHOLD CHEMICAL

Yake (25 September 1981, personal communication) documents that the processes conducted at the site include the following:

- Formaldehyde production
- Formaldehyde catalyst production
- Pentachlorophenol production
- Butylphenol production
- Resin production
- Manufacture of treated (wood) fiber products.

Wastes are byproducts directly related to these processes. Jones (13 March 1957, personal communication) states that "the most significant waste from this plant is from the cooling water used in the production of pentachlorophenol" which is treated using activated carbon sodas and lyes prior to discharging to a lagoon. Hydrochloric acid and calcium chloride are byproducts of the reaction.

Reichhold also generated and disposed of acutely dangerous chemicals, generator and stripper lime liquids, dredge spoils, and miscellaneous chemicals.

Although the Reichhold Chemical facility was not located on the subject site, documentation suggests that the facility may have contributed to onsite contamination via the immigration of contaminants to Parcel 2053 and the surrounding parcels via groundwater.

Based on the available documentation, in April 1979 Ecology issued Notice of Violation No. DE 79-227 (Cameron, B.A., 3 April 1979, personal communication). The notice states that Ecology "has determined that Reichhold is discharging stormwater containing phenols into Blair Waterway."

In August 1985 (Horton, M.A., 12 August 1985, personal communication), a Notice of Penalty Incurred and Due (No. DE 85-572) was issued to Reichhold for "discharging excessive levels of phenols and COD to the Tacoma Central Sewer Plant No. 1."

In June 1986 (U.S. EPA and Ecology 1986), Consent Agreement and Order No. 1086-04-33-3008 was issued to Reichhold. The complaints issued by Ecology and EPA, required Reichhold to conduct numerous investigatory and mitigative actions to address the onsite contamination.

COSKI LANDFILL

An undated document entitled Coski Landfill Chronology states that the facility was ordered to "cease and desist" operations in March 1976, January 1981, May 1984, and July 1984. The document also states that the facility was to be closed on 1 June 1981 and again on 4 September 1981. A search warrant was served by "P.C. Sheriff" who was accompanied by "Betts/Burdorff (WDOE)" and "Hedges, Snyder, Post (TPCHD)."

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Technical Enforcement Support at Hazardous Waste Sites TES 11 – Zone 4

RCRA FACILITY ASSESSMENT PR/VSI REPORT

CHEMICAL PROCESSORS, INC. EPA I.D. NO. WADD20257945

NORTHWEST PROCESSING, INC. EPA I.D. NO. WAD980738512

SOL-PRO, INC. EPA I.D. NO. WAD981769110

CHEMICAL PROCESSORS, PARCEL A EPA I.D. NO. UNASSIGNED

Science Applications International Corporation

An Employee-Owned Company

American Management Systems, Inc.
A.T. Kearney, Inc.
Camp, Dresser & McKee, Inc.
Environmental Law Institute
Environmental Toxicology International, Inc.

Geosciences Consultants, Ltd.
National Investigative Services Corporation
TechLaw, Inc.
URS Consultants

DCN: TZ4-R10011-RN-01881

RCRA FACILITY ASSESSMENT PR/VSI REPORT

CHEMICAL PROCESSORS, INC. EPA I.D. NO. WAD020257945

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SOL-PRO, INC. EPA I.D. NO. WAD981769110

CHEMICAL PROCESSORS, PARCEL A EPA I.D. NO. UNASSIGNED

Tacoma, Washington

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EPA Contract No. 68-W9-0008, WA R10011 SAIC Project No. 6-788-03-821

February 1990

EXECUTIVE SUMMARY

The 1984 Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA) provide authority to the U.S. Environmental Protection Agency (EPA) to require comprehensive corrective actions for solid waste management units (SWMUs) and other areas of concern at hazardous waste management facilities, particularly those applying for RCRA permits. These corrective actions are intended to address unregulated releases of hazardous constituents to air, soil, surface water, and ground water, as well as the generation of subsurface gas.

The three basic steps of an RFA consist of a preliminary review (PR) of existing files and other generally available or requested information; a visual site inspection (VSI) to confirm and/or obtain additional information on past or potential releases from SWMUs; and a sampling visit, when warranted, to fill information gaps by obtaining field and analytical data.

This report presents the results of a PR and VSI performed at Chemical Processors, Inc. (Chempro), Chempro Parcel A, Northwest Processing, Inc. (Northwest Processing), and Sol-Pro, Inc. (Sol-Pro) in Tacoma, Washington. The principal sources of information used include correspondence between the facilities and regulatory agencies, studies commissioned by the facilities, site maps and diagrams, the site visits, and the facilities' RCRA Part B permit applications. Files maintained by EPA Region 10 in Seattle, Washington Department of Ecology, Puget Sound Air Pollution Control Agency, and other local regulatory agencies were reviewed. A VSI was conducted on December 18, 1989 at Chempro and Chempro Parcel A, and on December 19, 1989 at Northwest Processing and Sol-Pro.

Section 1 provides an overview of the purpose of the RFA process. Section 2.0 of this report describes the four facilities, including their historical and current operations. Lists of individual SWMUs and a description of wastes managed are also included in this section. Section 3.0 provides an overview of the environmental setting at the facility including information on the meteorology, geology, and hydrology of the area. A discussion of soil and

ground water contamination at the four facilities is presented in Section 4.0. Section 5.0 describes in detail each of the SWMUs identified during the PR and VSI. Conclusions and recommendations for further action are included in Section 6.0; references are listed in the final section of the report. The VSI photograph log and field notes, and summaries of analytical data are presented as appendices.

Chempro Proper

The land currently comprising Chempro Proper was historically wetlands; fill activities began between approximately 1936 and 1956. In the 1940s and early 1950s dredging occurred in the adjacent waterways and dredge spoils were used as the initial fill material. Additional fill activities occurred between 1970 and 1976, when lime sludges related to waste oil operations, lime sludges from Domtar Industries, waste sludges from Hooker Chemical, and ground-up automobile interiors (known as auto fluff) were dumped on the property.

In 1976, Chempro leased the southern portion of Chempro Proper from Don Oline, and began operating what is known as the letter tank system on Parcel B in 1979. The letter tank system is currently undergoing interim status closure. In 1982, Chempro purchased another portion of the property. In 1985, Chempro purchased the northern portion of Chempro Proper; this portion consisted of approximately eight acres. Chempro leased the northern portion and part of the southern portion of Chempro Proper to Freeway Container, Inc. beginning in 1986. In January 1987, Chempro began operation of their present tank system. The current Chempro Tacoma facility is a storage and treatment facility for hazardous wastes, and a storage facility for waste solvents and dangerous waste fuels. Treatment occurs in tanks using chemical and physical treatment methods, consisting primarily of acid/alkali neutralization and metals precipitation.

Seventy-one SWMUs were identified on the Chempro Proper parcel in the course of this RFA.

Parcel A

Parcel A was purchased in 1961 by Don Oline; the property was sold to Solidus Corporation in May 1981. The following companies leased the property and used it as the site of industrial operations between 1970 and 1986:

- 1970 to 1973 Aero/Acology Oil operated a waste oil recycling operation on the west side of Parcel A.
- 1973 to 1974 Puget Sound Industrial Petroleum (PSIP), purchased from Aero/Acology, operated the waste oil recycling facility.
- 1974 to 1975 Chempro of Oregon purchased the facility from PSIP and continued the oil recycling operation.
- 1975 to 1986 Chempro purchased the Chempro of Oregon equipment and continued the recycling operation until October 1984. Chempro continued to accept waste oil at the facility for storage in the existing equipment until August 1986. Chempro also built and operated a chemical treatment unit on the west side of the Parcel A from 1977 until December 1986 when their lease expired.

When Chempro's lease expired in December 1986, equipment containing hazardous wastes was left on the property. Subsequently, Chempro has removed the equipment and their contents. In addition, Chempro has removed some contaminated soil from the site, covered the excavated area with a membrane liner and clean soil, and reseeded the area.

A variety of fill materials have been deposited at Parcel A in a manner similar to Chempro Proper, as discussed above. Between 1969 and 1975, dredge spoils, lime wastes, spent lime catalyst from TCE and perchloroethylene production, auto fluff, and gravel were deposited on the property. An oil holding pond constructed in 1970 was reportedly filled with auto fluff around 1975.

Twenty-five SWMUs were identified on Parcel A in the course of this review.

Northwest Processing

The Northwest Processing (also known as Lilyblad Petroleum - Poligen Site) facility is located within a former tidal marsh of Commencement Bay. Historical photos indicate that prior to the 1960s, much of the property was a swampy area. As portions of the wetlands were filled, ponds were formed in various locations.

These were later filled in. The fill materials are estimated to be about 8 to 10 feet thick and composed of various materials including sand and gravel, dredge sand, lime sludge waste, wood chips, and auto fluff.

Filling of the area occurred during the 1960s and 1970s. By 1975, a small tank farm consisting of two tanks was being operated by Lilyblad in the northwest corner of the property. In 1978, three smaller tanks were also present. Poligen/Northwest Processing began leasing the Northwest portion of the property in 1974 and purchased it in 1981 along with Parcel A. Shortly thereafter, Poligen/Northwest Processing purchased the two adjacent parcels to the east and southeast. Currently, Northwest Processing operates on all parcels except Parcel A.

Poligen/Northwest Processing has been processing mixtures of gasoline, diesel fuel, and water since 1983. Sources of materials to be processed include barges, pipelines, petroleum service stations, wholesale outlets for mixed gas/diesel combinations, and large facilities. The gasoline (for naphtha) and water fractions are separated from the residual diesel fraction. The recovered naphtha is sold to a local refinery as a blending stock for regular gasoline or reformer feedstock. The residual diesel or cutter stock is sold to fuel blenders as a blending stock for marine and industrial fuels. Waste oils containing less than 1,000 ppm halogenated hydrocarbons and less than 1 ppm PCB were processed at this facility between 1983 and 1987. The light fraction separated from waste oils contaminated with water, gasoline, and solvents was used as a fuel source for the facility's boiler.

In 1987, Northwest Processing installed a centrifuge system to reduce the solids content of residual fuels to less than 0.2% by weight. This process generates an oily sludge waste, which is disposed of through incineration or land disposal.

Materials are stored in bulk in tanks in bermed areas. Lubricants (bulk, drummed, and packaged) are stored on-site in enclosed buildings. Small packaging of solvents also occurs on the Northwest Processing site in an enclosed building. Other activities include laboratory analyses, process

wastewater collection and treatment, and stormwater runoff management. According to facility personnel, Northwest Processing does not currently accept dangerous wastes regulated under WAC 173-303 for treatment, storage, or disposal (51). Gasoline and diesel reprocessing throughput is about 50,000 to 100,000 gallons per month (39).

Northwest Processing generates about 5,000 to 15,000 gallons per month of process wastewater from the centrifuge and fractionation processes. It is stored in tanks prior to transport to a licensed off-site disposal facility. Process wastewater is treated through an oily water treatment system or drummed for subsequent disposal off-site.

The facility currently has four tank farms which contain four, ten, eight, and two tanks, respectively. The site has five buildings: a main warehouse, two drum storage buildings, and two shops. There are two primary loading docks for bulk loading/unloading of trucks and trailers.

Forty-eight SWMUs were identified at Northwest Processing in the course of this RFA.

Sol-Pro

The location of the Sol-Pro property was formerly a portion of the Puyallup River delta drainage and tideflats. According to historical records, the property was undeveloped and generally unfilled prior to 1950. Some incidental filling associated with construction of the waterway and development of the adjacent Buffelen Lumber Company may have occurred at this time. The Buffelen Lumber Company may have used the property for storage of finished lumber or disposal of mill sawdust waste. Aerial photos from 1967 to 1974 also indicate no development of the property, although there may have been some incidental use of the northern corner. This corner was adjacent to Acology Oil and a slate milling operation.

The Sol-Pro Alexander Avenue facility was constructed in 1987; operations began in 1988. The facility currently reclaims solvent from blended or dirty waste

solvent. The reclaimed solvent is returned to the generator or sold; any treatment residual is shipped off-site for use as a hazardous waste fuel. Evaporation/condensation units are used to recover purified solvents. Chlorinated waste solvents and non-chlorinated waste solvents are processed at the facility. Currently, chlorinated solvents are processed infrequently. The two types of solvents are handled separately. The facility is operated for two shifts per day, five days per week.

Waste solvents are received on-site in drums or tank trucks. Materials in tank trucks are pumped directly to feed tanks. Drummed wastes are stored for less than 24 hours prior to being emptied into the feed tanks. Waste solvents are distilled using the Luwa Thin Film Evaporator, the Brighton Solvent Reclaiming System, and/or a horizontal evaporator. Liquid solvents are recycled in the Luwa or Brighton stills; waste solvent sludges are reclaimed in the horizontal evaporator.

Reclaimed solvent is returned to the generator or resold. Processed non-chlorinated solvent blends are shipped to a licensed off-site facility (a cement kiln) for use as a hazardous waste fuel. Processed chlorinated solvent blends are shipped to a licensed off-site disposal facility for incineration.

Waste materials are shipped off-site from the Sol-Pro facility in trucks and railcars. Other wastes are generated during routine plant operation and maintenance activities. Machine parts are cleaned and repaired using solvents. These solvents are recycled in the Luwa still and in the horizontal evaporator. Routine maintenance of the structures and buildings may also require paints and thinners.

Twenty-two SWMUs were identified on Sol-Pro in the course of this RFA.

Soil and Groundwater Contamination

Investigations of surface and subsurface contamination have been evaluated at all four facilities. The largest number of investigations have been conducted to evaluate subsurface contamination at the Chempro facilities. These include

the installation of monitoring wells at Parcels A and Chempro Proper, collection of closely spaced sampling data for soils at Parcel A and less extensive soil sampling at Chempro Proper. Information available on soil and ground water investigations from Northwest Processing and Sol-Pro is limited to ground water quality data from a small number of monitoring wells at these facilities. The discussion of soil and ground water contamination at the facilities relies primarily on investigations conducted at the Chempro properties. This information is supplemented by data from Sol-Pro and Northwest Processing, where possible.

Results of the ground water laboratory data were reviewed and each analytical result verified with the laboratory analysis document provided in the investigation reports, except for the Chempro ground water sampling results that did not include laboratory analyses reports.

Significant levels of soil contamination have been encountered at the Chempro Parcel A and Chempro Proper in all of the investigations conducted to date. A variety of organic compounds and metals have been detected in soil at levels that may contribute to ground water contamination in exceedance of health-based standards and criteria. Available information indicates a continuous area of soil contamination at Parcel A that may be attributed to the former waste treatment unit and the oil pond. Additional sources of contamination at Parcel A may include auto fluff and spent lime catalyst fill materials. Contamination detected along the northern edge of Parcel A and in the northeast corner of Chempro Proper may be due to releases from Northwest Processing or unidentified sources at the Chempro facilities.

The distribution of contamination at Chempro Proper has not been adequately determined. Due to the number and distribution of sample locations, the lateral extent and relationship of contaminants can not be determined from the available information. Additional sampling is required to determine the lateral extent and distribution of contamination at Chempro Proper. The absence of soil sampling data at the Northwest Processing and Sol-Pro facilities does not allow the identification or characterization of any releases to soil that may have occurred at these facilities, or due to releases from adjacent facilities that may have migrated onto these properties.

In ground water, the major contaminants of concern exceeding MCLs include the following metals and organic compounds:

- Arsenic, cadmium, chromium, copper, and lead
- Benzene, vinyl chloride, 1,1-dichloroethene, and trichloroethene.

The shallow aquifer gradient is generally toward the south. Exceedances of MCLs and other health-based limits occurred in the shallow aquifer wells throughout the site. The lower alluvial aquifer wells have not exhibited elevated concentrations of metals or organic compounds except for slightly elevated concentrations of bis(2-ethylhexyl)phthalate in wells CTMW-7 and CTMW-9. Benzene concentrations exceeded the MCL in five out of six wells within Parcel A.

Total concentrations of arsenic, cadmium, chromium, copper, and lead exceeding MCLs reflect releases at the Chempro facilities, and possibly from Northwest Processing. While dissolved metals concentrations are significantly lower, elevated concentrations of dissolved metals also indicate contamination that may be present from a variety of sources, including plating wastes managed at Chempro, auto fluff used as fill material in the area, oily wastes disposed at Parcel A, and possibly from releases from Northwest Processing operations. The extent of metals contamination cannot be adequately evaluated from existing data, because of the paucity of data from Chempro Proper, limited sampling of downgradient wells at Parcel A, and the absence of useable data from Northwest Processing and Sol-Pro monitoring wells.

The small amount of data available from the southern portion of Parcels A and from Chempro Proper prevents a reliable evaluation of site conditions at this time. Other organic compounds, such as acetone and 4-methylphenol have been detected at high concentrations (>100 ug/L) in individual wells. It cannot be determined from the available information if these wells have encountered localized areas of contamination or a portion of a more widespread plume of contamination.

Facility-Specific Conclusions and Recommendations

Chempro Proper - Of primary concern in active operations at Chempro Proper are potential air releases from tanks which are vented directly to the atmosphere and which may contain acid fumes or volatile organic compounds. The letter tanks are being closed under interim status. Recommendations have been made to ensure that the closure investigation activities for these tanks meet the needs of the comprehensive soil and ground water investigations to be conducted elsewhere. The parking lot used by Resource Recovery Trucks is a potential source of spills to soil, and possibly ground water. The Freeway container SWMUs appear to be a housekeeping problem; recommendations have been made to upgrade the management of these areas.

<u>Parcel A</u> - No specific recommendations have been made with regard to individual SWMUs at Parcel A. Recommendations made for the comprehensive soil and ground water investigations apply to this area.

As at Chempro, potential air releases from tanks vented directly to the atmosphere are of concern at this facility. Air sampling and/or provisions for release controls has been recommended. In Tank Farm 1, soil sampling has been recommended due to known past releases from units within the tank farm. Soil sampling has also been recommended in a variety of areas where wastes have been inappropriately managed over the years. These recommendations apply to those areas identified in the 1988 Ecology inspection, and the loading/unloading areas, as well as to the areas where horizontal tanks were located in the 1970s.

<u>Sol-Pro</u> - Of the four facilities, operations at Sol-Pro are of the least concern. This facility is newer than the others, and was originally constructed with secondary containment for tankage, and containers. Recommendations include air sampling for the Brighton Solvent Reclaiming System and the Railcar Loading Rack. Stormwater sampling has also been recommended for this facility.

Comprehensive Soil and Ground Water Recommendations

At Chempro Parcel A, Chempro Proper, Northwest Processing, and at Sol-Pro, additional activities have been identified to fully characterize the releases that have been detected in soils. Several types of investigative actions need to be carried out in order to determine the nature and extent of these releases, including:

- Performance of a soil gas survey to identify subsurface contamination patterns for the placement of soil borings and monitoring wells
- Collection of soil samples at specified intervals from ground surface to the bottom of the uppermost aquifer to determine the vertical distribution of contamination, identify preferential migration pathways and delimit the volume of soil that may require corrective measures
- Installation of additional soil borings to determine the lateral extent and interrelationship of contaminated areas at the facilities, including installation of soil borings at the Chempro, Northwest Processing, and Sol-Pro facilities at locations that may have been impacted by any releases that have occurred at these facilities
- Identification of Appendix VIII hazardous constituents in the releases in addition to those compounds previously identified at the facilities
- Determination of the mobility of hazardous constituents in contaminated soil that may contribute to ground water contamination (e.g. determination of leachate compositions and adsorption coefficients of contaminated soils and fill materials).

In order to determine the nature and extent of ground water contamination at the Chempro Proper, Chempro Parcel A, Northwest Processing, and Sol-Pro facilities, the following recommendations have been made:

- Continue quarterly ground water sampling of wells CTMW-6, CTMW-7, CTMW-8, CTMW-9, CTMW-10, CTMW-11, and CTMW-12. Start quarterly sampling of wells CTMW-1, CTMW-2, CTMW-3, CTMW-4, CTMW-5, wells A-1, A-2, A-3, L-1, L-2, L-3, L-4, L-5, and wells 1, 2, and 3 on the Sol-Pro property for VOCs, BNAs, metals, and petroleum hydrocarbons listed in Appendix B. All analytical procedures should be implemented with appropriate detection limits and QA/QC measures as per EPA SW-846.
- Water level measurements for all existing wells should be performed to assist in confirming ground water flow direction.

- Evaluate sample quality (turbidity) from wells and ensure proper development to assure representative samples are obtained from each monitoring well. Replace any wells that can not yield representative samples.
- Based on results of the soil gas survey, sample existing wells, and install and sample additional wells as needed to fully characterize ground water contamination at the facilities and affected areas.
- Characterize the relationship between ground water and surface discharges. Hydraulic connection between ground water and surface water must occur either at Blair Waterway or at other surface locations. If discharge areas are identified, sediment and surface water sampling should be conducted to delineate the surface contamination due to discharges of contaminated ground water
- Install monitoring wells in the fill and alluvial aquifers and conduct pumping tests to determine hydraulic interconnections in areas of possible intercommunication based on site stratigraphy.
- Use experienced field geologists and/or hydrologists to conduct ground water sampling. This will help to ensure proper sampling techniques by trained personnel.

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE OF THE RFA PROGRAM

The 1984 Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA) provide authority to the U.S. Environmental Protection Agency (EPA) to require comprehensive corrective actions for solid waste management units (SWMUs) and other areas of concern at hazardous waste management facilities, particularly those applying for RCRA permits. These corrective actions are intended to address unregulated releases of hazardous constituents to air, soil, surface water, and ground water, as well as the generation of subsurface gas.

A major activity in EPA's corrective action program consists of a RCRA Facility Assessment (RFA). According to the EPA's RFA guidance document (October 1986), the purposes of an RFA are to:

- 1. Identify and gather information on releases at RCRA-regulated facilities.
- Evaluate solid waste management units and other areas of concern for releases to all environmental media and regulated units for releases other than to ground water.
- 3. Make preliminary determinations regarding releases of concern and the need for further actions and interim measures at the facility.
- 4. Screen from further investigation those SWMUs which do not pose a threat to human health and the environment.

The three basic steps of an RFA consist of a preliminary review (PR) of existing files and other generally available or requested information; a visual site inspection (VSI) to confirm and/or obtain additional information on past or potential releases from SWMUs; and a sampling visit, when warranted, to fill information gaps by obtaining field and analytical data.

1.2 REPORT CONTENTS

This report presents the results of a PR and VSI performed at Chemical Processors, Inc. (Chempro), Chempro Parcel A, Northwest Processing, Inc. (Northwest Processing), and Sol-Pro, Inc. (Sol-Pro) in Tacoma, Washington. The principal sources of information used include correspondence between the facilities and regulatory agencies, studies commissioned by the facilities, site maps and diagrams, the site visits, and the facilities' RCRA Part B permit applications. Files maintained by EPA Region 10 in Seattle, Washington Department of Ecology, Puget Sound Air Pollution Control Agency, and other local regulatory agencies were reviewed.

A VSI was conducted on December 18, 1989 at Chempro and Chempro Parcel A, and on December 19, 1989 at Northwest Processing and Sol-Pro by Barbara Morson and Kathryn Gladden, both of Science Applications International Corporation (SAIC). Dave Polivka, Rick Renaud, Kirk Cook, and Paul Stasch of the Washington Department of Ecology participated in the inspections.

Section 2.0 of this report describes the four facilities, including their historical and current operations. Lists of individual SWMUs and a description of wastes managed are also included in this section. Section 3.0 provides an overview of the environmental setting at the facility including information on the meteorology, geology, and hydrology of the area. A discussion of soil and ground water contamination at the four facilities is presented in Section 4.0. Section 5.0 describes in detail each of the SWMUs identified during the PR and VSI. Conclusions and recommendations for further action are included in Section 6.0; references are listed in the final section of the report. The VSI photograph log and field notes, and summaries of analytical data are presented as appendices.

2.0 FACILITY DESCRIPTIONS

The four facilities are located in the tideflats of Commencement Bay in the City of Tacoma, Washington (Figure 1). These facilities are located in a tidal marsh where extensive dredge and fill activities have occurred since the early 1900s. The four facilities are contiguous (Figure 2). Owners and operators of each facility are not extensively dealt with in this report; brief histories are given only to assist in tracing industrial activities at each facility. An extensive search of potentially responsible parties has been conducted for the parcels which are owned by Chempro (24). Historical and current operations, and regulatory history identified in the course of this RFA are described below, along with a list of SWMUs identified for each facility.

2.1 CHEMPRO PROPER

"Chempro Proper" refers to those portions of the Chempro property which are described in some references as Chempro Parcels B (the former Letter Tank Farm), C, D, and E. Chempro Proper also includes those portions of Chempro property being leased by other entities (i.e., Freeway Container, Resource Recovery parking lot) (Figure 2).

2.1.1 Identification of Solid Waste Management Units

Seventy-one Solid Waste Managements Units (SWMUs) have been identified at Chempro Proper as a result of the PR and VSI. SWMUs identified at the facility are listed in Table 1, and are designated throughout this report by the letter "C". Locations of these SWMUs are shown on Figures 3 and 4. Detailed descriptions of these SWMUs may be found in Section 5.1.

2.1.2 <u>Historical Operations</u>

The land currently comprising Chempro Proper was historically wetlands; fill activities began between approximately 1936 and 1956. In the 1940s and early 1950s dredging occurred in the adjacent waterways and dredge spoils were used as the initial fill material. Additional fill activities occurred between 1970 and 1976, when lime sludges related to waste oil operations, lime sludges from Domtar Industries, waste sludges from Hooker Reserve for Chemical, and ground-up automobile interiors (known as auto fluff) were dumped on the property.

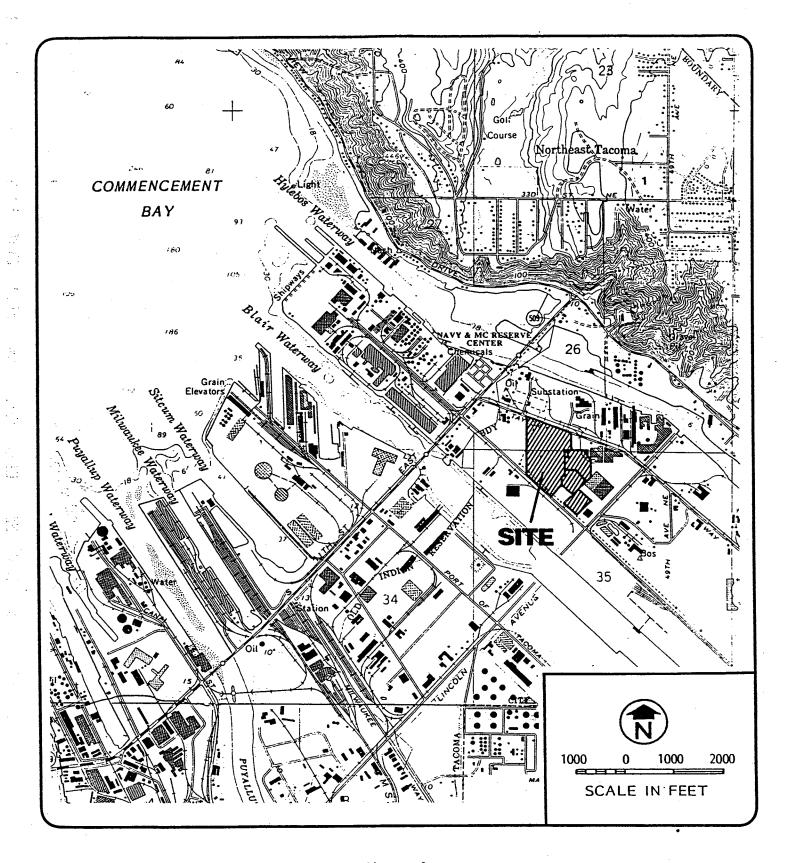


Figure 1

AREA MAP
Source: USGS 7.5' Topo. Map,
Tacoma North, WA Quad, 1981

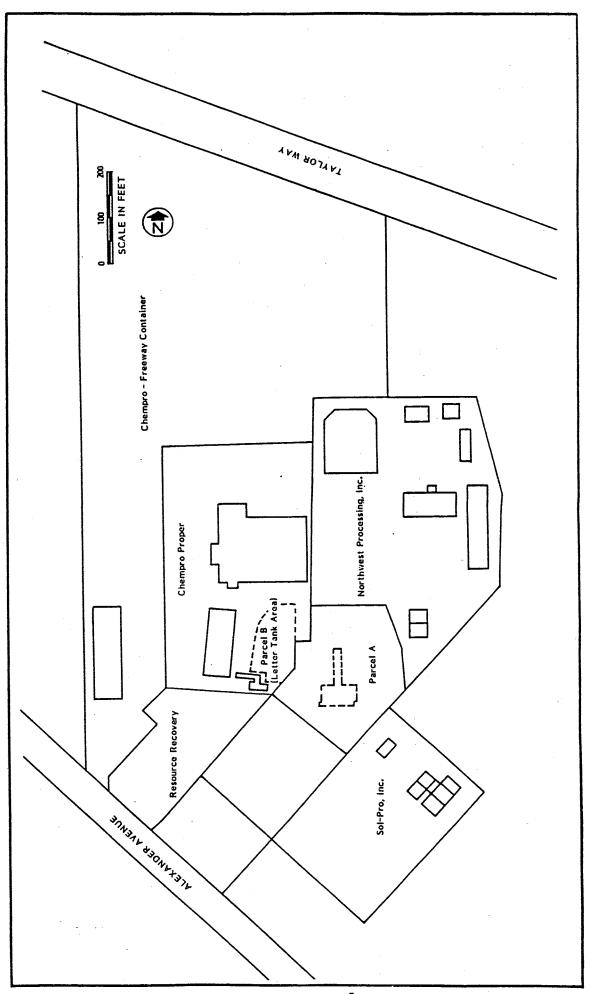
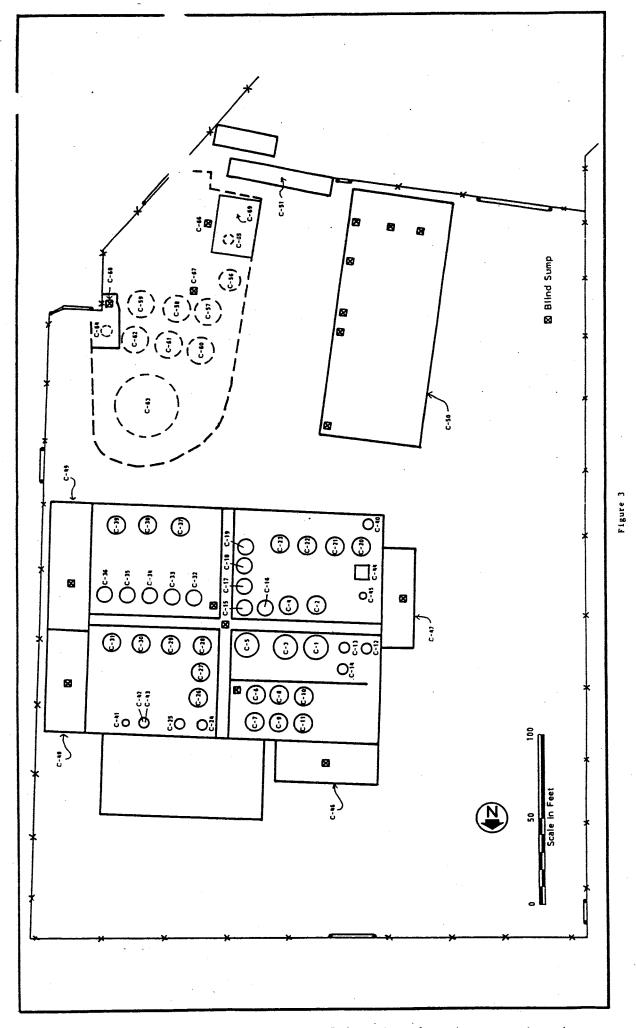


Figure 2

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SITE MAP



SOLID WASTE MANAGEMENT UNIT LOCATIONS CHEMPRO MAIN PROCESSING AREA

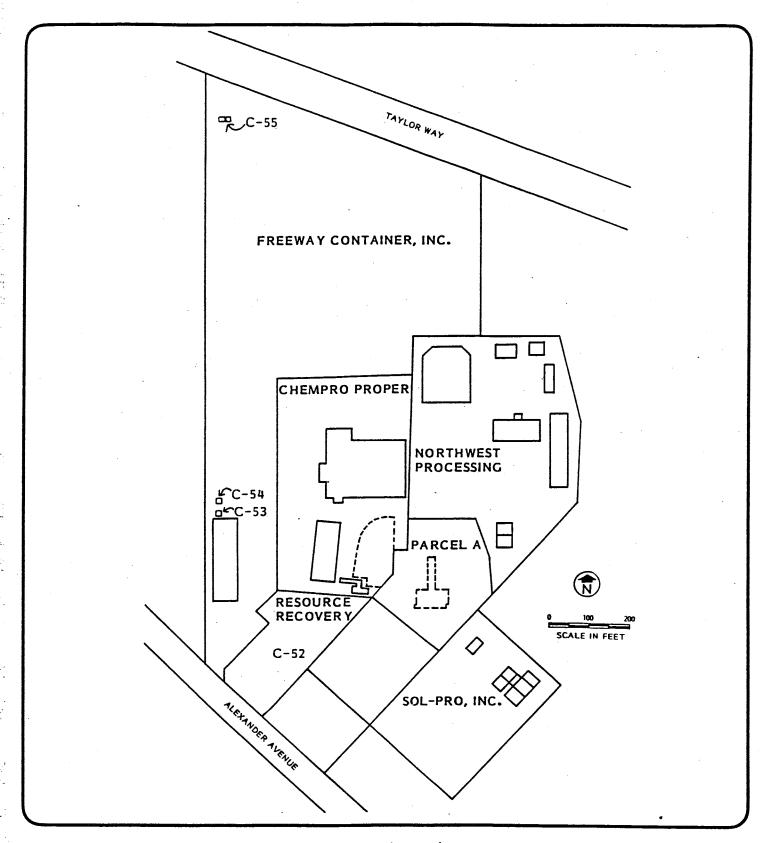


Figure 4

SOLID WASTE MANAGEMENT UNIT LOCATIONS FREEWAY CONTAINER AND RESOURCE RECOVERY

Table 1

SOLID WASTE MANAGEMENT UNITS CHEMPRO PROPER

SWMU NO.	DESCRIPTION
C-1	Treatment Tank 51
C-2	Treatment Tank 52
C-3	Treatment Tank 53
C-4	Treatment Tank 54
C-5	Treatment Tank 55
C-6	Acid Waste Storage Tank 101
C-7	Acid Waste Storage Tank 102
C-8	Acid Waste Storage Tank 103
C-9	Acid Waste Storage Tank 104
C-10	Acid Waste Storage Tank 105
C-11	Acid Waste Storage Tank 106
C-12	Chemical Milling Waste Storage Tank 201
C-12	Chemical Milling Waste Storage Tank 202
C-13 (Chemical Milling Waste Storage Tank 203
	Sludge Settling Tank 301
C-15	Studge Secciffing Talk 301
C-16	Sludge Settling Tank 302
C-17	Sludge Settling Tank 303
C-18	Sludge Settling Tank 304
C-19	Sludge Settling Tank 305
C-20	Sewer Discharge Tank 401
C-21	Sewer Discharge Tank 402
C-22	Sewer Discharge Tank 403
C-23	Sewer Discharge Tank 404
C-24	Isolation Tank 501
C-25	Isolation Tank 502
0.26	Alkalina Wasta Storaga Tank 601
C-26	Alkaline Waste Storage Tank 601 Alkaline Waste Storage Tank 602
C-27	Alkaline Waste Storage Tank 603
C-28	
C-29	Alkaline Waste Storage Tank 604
C-30	Non-Process Sludge Storage Tank 701
C-31	Non-Process Sludge Storage Tank 702
C-32	Dangerous Waste Fuel Storage Tank 801
C-33	Dangerous Waste Fuel Storage Tank 802
C-34	Dangerous Waste Fuel Storage Tank 803
C-35	Dangerous Waste Fuel Storage Tank 804

Table 1 (Continued)

SWMU NO.	DESCRIPTION
C-36 C-37 C-38 C-39 C-40	Dangerous Waste Fuel Storage Tank 805 Dangerous Waste Fuel Storage Tank 901 Dangerous Waste Fuel Storage Tank 902 Dangerous Waste Fuel Storage Tank 903 Air Stripper
C-41 C-42 C-43 C-44 C-45 C-46 C-47 C-48 C-49	Cement Mixer Stabilization Feed Tank Cement Mixer Stabilization Unit Stabilization Unit Receiving Tank Oberlin Filter Press Filtrate Collection Tank North Acid Area Loading/Unloading Pad West Process Area Loading/Unloading Pad NE Alkaline Area Loading/Unloading Pad SE Dangerous Waste Fuel Area Loading/Unloading Pad Container Storage Pad
C-51 C-52 C-53 C-54 C-55	Laboratory Drain Collection Tank Resource Recovery Parking Lot Freeway Container, Inc. Solvent Storage Shed Freeway Container, Inc. Waste Paint Shed Piles of Excavated Soil in NW Corner of Freeway Container, Inc.
C-56 C-57 C-58 C-59 C-60	Stormwater Storage Tank S Treatment Storage Tank A Treatment Storage Tank B Treatment, Storage, and Isolation Tank C Treatment, Storage, and Isolation Tank D
C-61 C-62 C-63 C-64 C-65	Treatment, Storage, and Isolation Tank E Treatment, Storage, and Isolation Tank F Treatment and Storage Tank BB Filtrate Collection Tank Soil Solidification/Stabilization Tank
C-66 C-67 C-68 C-69 C-70	Solidification/Stabilization Unit Sump Sump Between A and B Filter Press Sump Parcel B Solidification/Stabilization Area Areas of Auto Fluff and Lime Fill Storm Drainage System

In 1976, Chempro leased the southern portion of Chempro Proper from Don Oline, who owned the land at that time and began operating what is known as the letter tank system (SWMUs C-56 through C-63) in 1979. The letter tank system area is currently undergoing interim status closure. In 1982, Chempro purchased a portion of the property from D. Gorden, Virginia Potter, Wallace and Edna Clark, and Emmerson and Lillian Potter (17). In 1985, Chempro purchased the northern portion of Chempro Proper from John Brazier. This portion consisted of approximately eight acres. Chempro leased the northern portion and part of the southern portion of Chempro Proper to Freeway Container, Inc. beginning in 1986. In January 1987, Chempro began operation of its present tank system (SWMUs C-1 to C-51) (17).

2.1.3 <u>Current Operations</u>

The Chempro Tacoma facility is a storage and treatment facility for hazardous wastes. Treatment occurs in tanks using chemical and physical methods, consisting primarily of acid/alkali neutralization and metals precipitation.

<u>Wastes Managed at the Facility</u> - Wastes processed at the facility consist of acids, caustics, and metal-contaminated wastes. The majority of these wastes are spent plating baths and other industrial wastewater streams. Waste solvents and oil are accepted for storage and testing for their suitability for blending into dangerous waste fuels.

Wastes accepted for treatment at the facility, volumes and regulatory classifications are listed in Table 2. Wastes generated by facility operations are listed in Table 3. Units and processes used for management of these wastes are presented in Table 4. Twenty-three of these wastes are acid or alkaline industrial wastes that exhibit the characteristics of corrosivity and/or EP toxicity. The characteristic of corrosivity is eliminated by neutralization of the wastes. EP toxic wastes in these groups are regulated due to the concentrations of cadmium, chromium, and lead. Because these wastes are corrosive industrial wastes used in metal treating operations, significant amounts of other hazardous metals may be present in these wastes, including arsenic, barium, mercury, selenium, silver, copper, and nickel. In addition,

Table 2

REGULATED WASTES RECEIVED AT CHEMPRO PROPER FROM OFF-SITE SOURCES

	Estimated	Possible	
Waste	Volume	Dangerous Waste	
ID Numbers	(gal/month)	Number	Designation
Waste Alkalis/Ch			
1	50,000	D007, WT01, WT02	DW/EHW
2	5,000	WTO1, WTO2	DW/EHW
3	1,300	D006, D007, WT01, WT02	DW/EHW
4	2,000	D002, D007, WT01, WT02	DW/EHW
5	400	D002, WT01, WT02	DW/EHW
6	4,000	WT01, WT02	DW/EHW
7	1,500	WT01, WT02, D007	DW/EHW
8	4,000	D002, D007, D006, D008	DW/EHW
9	3,000	D002, D008	DW/EHW ·
Waste Acids/Chel	lated Acids		
10	15,000	D002, D007, WT01, WT02	DW/EHW
11	5,000	D007, D008, D006, WT01, WT02	DW/EHW
12	5,000	D007, D004, D010, D011, WT01,	
	·	WTO2	DW/EHW
13	15,000	D002, D007, D008, D006	DW/EHW
14	6,000	D002	DW
15	15,000	D002, D007, WT01, WT02	DW/EHW
16	2,200	D002, D007	DW/EHW
17	12,000	D002, D007, WT01, WT02	DW/EHW
18	3,000	D002, D007, WT01, WT02	DW/EHW
19	2,000	D006, D007, D008, WT01, WT02	DW/EHW
20	1,200	D002, D006, D007, D008, WT01, WT02	• •
21	21,000	D002, D007	DW/EHW
22	6,000	D002, D007	•
	-		DW/EHW
23	6,000	D002, D007	DW/EHW
Wastewater Trea	tment Sludges		
24	30,000	F006	DW
Chemical Milling Wastes			
25	9,000	D002	DW
Waste Solvents or Oils to be Used as Dangerous Waste Fuels			
26	3,000	F001	DW/EHW
27	3,000	F002, F003, F005, WP01, WT01 WT02	DW/EHW
28	1,300	D001, F002, F003	DW/EHW

Reference: Chempro Part B Permit Application, (17)

Table 3

REGULATED WASTES GENERATED ON-SITE AT CHEMPRO PROPER

		Estimated Volume	Possible	
Waste		Generated	Dangerous	
ID Number	<u>Description</u>	Per Year	Waste Numbers	<u>Designation</u>
Acid/Alkali	ine and Wastewat	er Sludge Process W	astes	
29	Wastewater	1,500,000 gal	F001, WT01, WT02,	DW/EHW
	Treatment		D004-D011	•
	Sludge			,
	5.1.1.5			
30	Wastewater	4,000 tons	F006, WT01, WT02,	DW/EHW
	Treatment	v,000 bone	D004-D011	<i>D</i> / <i>D.</i>
•	Solid		Doo't Boll	
	20110			,
Chaland V	iterials Process	Wash.		
Chelated Ma			D002 D004 D011	DU /EUU
. 31	Waste Mixed	250,000 gal	D002, D004-D011	DW/EHW
	Acid			
		_		
	Illing Solution			
32	Aluminum	200,000 gal	D002, WT01, WT02,	DW/EHW
	Chemical		F019, D004-D011	
	Milling		•	
	Solution			•
Phenolic Ma	aterials		•	
33	Neutralized	200,000 gal	WTO1, WTO2,	DW/EHW
•	Acid	. —	D004-D011	
Miscellane	ous Cleanup Debr	is		
34	Cleanup Debris		WTO1, WTO2,	DW/EHW
		, ,	D004-D011	•
Dangerous 1	Waste Fuel Tank	Cleaning Waste		
35	Dangerous	200 tons	WTO1, WTO2,	DW/EHW
33	Waste Fuel	200 001111	D004-D011	,
	Cleaning Waste		2304 2022	
	Greating waste	•		

Reference: Chempro Part B Permit Application, (17)

Table 4

TYPICAL WASTES MANAGED IN TANK SYSTEMS
AT CHEMPRO PROPER

Tanks	Process	Possible Wastes Managed (Waste <u>Identification Number) ^(a)</u>
50 Series	Treatment	1-25
100 Series	Storage	10-23
200 Series	Storage	25
300 Series	Sludge Settling	1-25
400 Series	Sewer Discharge	Treated Wastewater
500 Series	Isolation Storage	1-9, 25
600 Series	Storage	1-9
700 Series	Storage	24
800 and 900 Series	Storage	26-28
Filter Press	Filtration	1-25
Chelated Material Treatment Unit	Treatment	1-25
Solidification/ Stabilization	Treatment	Not provided; variable sources
Sludge Dryer	Treatment	1-25

⁽a) Refer to Table 1 for waste identification number description

Adapted from: Chempro Part B Permit Application, (17)

if these wastes are generated in metal working operations where solvents are used in parts cleaning or degreasing, the wastes may contain solvent constituents such as tetrachloroethene, trichloroethene, phenolic compounds, and 1,1,1-trichloroethane.

Chelated wastes managed at the facility may also exhibit corrosivity and EP toxicity due to properties and compositions similar to those waste streams described above. If the chelated wastes are paint-related waste materials, they may contain volatile organic compounds including toluene, xylenes, and methylene chloride.

Wastewater treatment sludges from electroplating operations may contain a variety of hazardous constituents, including the hazardous metals present in the acid and alkaline waste streams. Solvent contamination of the wastes due to degreasing and parts cleaning operations associated with electroplating may also be present. Cyanides may also be present if used in the plating process.

Waste solvents and oils stored at the facility prior to transfer off-site for fuel blending may also contain a wide variety of hazardous constituents. Halogenated and non-halogenated solvents may contain the solvent constituents present in the waste definitions (F001-F005) including halogenated hydrocarbons, aromatic hydrocarbons, ketones, alcohols, cresylic acids, and nitrobenzene. In addition, 1,4-dioxane is often added to solvents as a stabilizer. Waste oils may also contain a variety of hazardous constituents. Aromatic hydrocarbons may be a component of waste oils. Chlorinated solvent compounds are commonly present as contaminants in used oils. Heavy metals may also be present in used oils in Polynuclear aromatic hydrocarbons (PAHs) are significant concentrations. typically important components of used oils. PAHs present in oils include naphthalene, 2-methylnaphthalene, pyrene, chrysene, and benzo(a)anthracene. A wide variety of PAHs with physical and chemical properties similar to these compounds may also be significant components of used oils.

Operations at the facility occur on approximately 3.5 acres. The facility currently consists of a 60-foot by 150-foot concrete container storage pad and a 170-foot by 140-foot concrete tank containment system constructed over a high

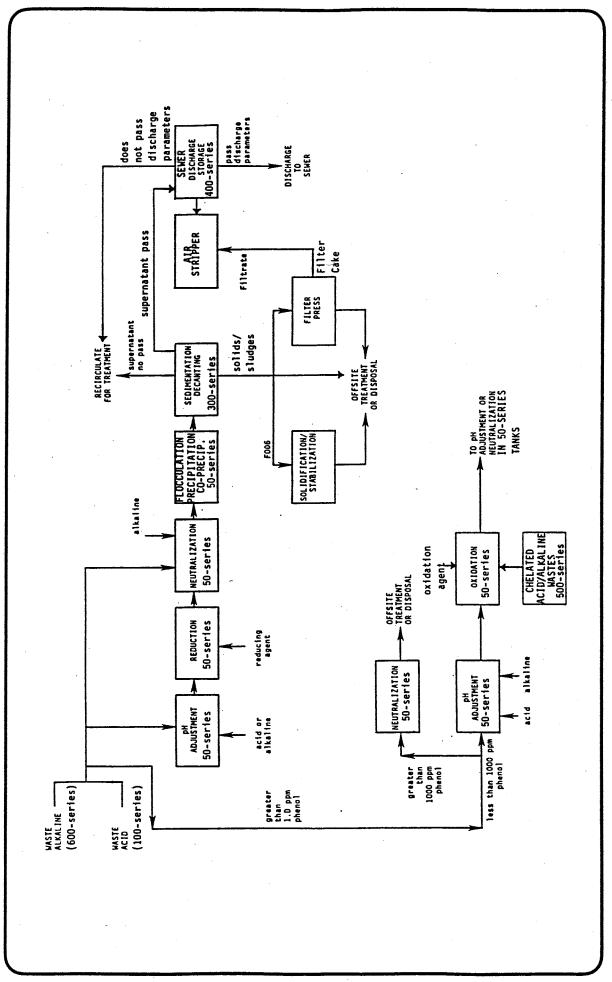
density polyethylene (HDPE) liner. Fill materials excavated to construct the containment pad have been placed in the northwest portion of the property (SWMU C-55). The containment system consists of four operational areas: the process area, the acid area, the alkaline area, and the dangerous waste fuel area. Wastes intended for storage in the tank containment system enter the facility in tankers. After an initial analytical screening, the tanks are unloaded within one of the four truck loading/unloading pads (SWMUS C-46 to C-49) located adjacent to the containment pad.

Processes currently conducted in the Chempro tank system include:

- Chemical Oxidation
- Chemical Precipitation
- Chemical Reduction
- Neutralization
- Decanting
- Filtration
- Flocculation
- Sedimentation
- Solidification/Stabilization

A description of how these processes apply to the five waste streams most typically treated at the facility is presented below.

Acid/Alkaline Waste Process Flow - Figure 5 depicts the general process flow for acid and alkaline wastes at Chempro. Incoming acids are stored in the 100-series tanks (SWMUs C-6 to C-11) and alkaline wastes are stored in the 600-series tanks (SWMUs C-26 to C-29). They are tested for pH, chromium, phenolics, sulfide (alkaline wastes only), and cyanide. Following testing they are pumped to the appropriate 50-series tank (SWMUs C-1 to C-5) for treatment. If phenolics are detected, treatment by pH adjustment and oxidation is performed. Waste streams containing chromium are treated by use of a reducing agent in an alkaline medium. For waste streams containing cyanide, additional treatment through alkaline chlorination is necessary. The waste stream then undergoes neutralization and metals precipitation followed by flocculation in the 50-series tanks.



11.5 11.5 11.5

777 742 11

CHEMPRO PROCESS FLOW DIAGRAM FOR ACID AND ALKALINE WASTES

Figure 5

Wastes are then pumped to the 300-series settling tanks (SWMUS C-15 to C-19) for sedimentation and decanting. Supernatant from the decanting step is pumped to the 400-series sewer discharge tanks (SWMUS C-20 to C-23). From there, it is pumped to the air stripper (SWMU C-40) for removal of organic contaminants. Wastewater is then returned to the 400-series tanks for storage and testing to determine if it meets the discharge-parameters. Wastewater meeting the discharge parameters is discharged to the sewer. Sludge from the sedimentation/decanting step conducted in the 300-series tanks not classifiable as a F006 listed waste is pumped to the Oberlin filter press (SWMU C-44) for dewatering, or is sent offsite for disposal without further treatment. Sludge meeting the F006 classification is pumped to the cement mixer stabilization unit (SWMU C-4) for further treatment. Filtered solids from the Oberlin filter press and stabilized solids from the cement mixer stabilization unit are sent off-site to a RCRA permitted facility for disposal (17).

Chelated Acid/Alkaline Waste - Waste streams entering the facility that are known to be chelated are isolated in a 500-series acid storage tank (SWMUs C-24 or C-25) prior to transfer to a 50-series treatment tank. Treatment for removal of chelating agents is performed by oxidation at an acidic pH or co-precipitation at a pH of 7.5 or 8.5. The waste stream then undergoes metals precipitation in the 50-series tanks followed by sedimentation and decanting in the 300-series tanks as described above for non-chelated wastes (17).

Wastewater Treatment Sludge - Wastewater treatment sludges received at the Chempro facility that are F006 listed wastes are generally from the aerospace industry. They are initially stored in the 700-series non-process sludge tanks (SWMUs C-30 and C-31). The sludges are then pumped to the 300-series sludge settling tanks and are handled as described above for F006 sludges generated on-site in the treatment of waste acids and waste alkalis (17, 29).

<u>Chemical Milling Waste</u> - Chemical milling waste received at the facility is stored in one of the 200-series tanks (SWMUs C-12 to C-14). Chemical milling waste is then treated by sulfide oxidation in one of the 50-series tanks. The waste stream is then neutralized and sent off-site for further treatment or disposal (17).

Solvent and Oil Dangerous Waste Fuels - Incoming solvent and oils to be used for dangerous waste fuels are tested to determine their acceptability for use as a dangerous waste fuel. These materials are pumped to the 800 or 900-series dangerous waste fuel storage tanks (SWMUs C-32 to C-39). Currently, the Chempro Tacoma facility is not blending fuels for the dangerous waste fuels burner program. They are acting only as a receiving and storage facility for waste petroleum products that are blended to customer specifications at other Chempro facilities (17, 29).

2.1.4 Chempro Proper Regulatory History

Chempro submitted its Part A RCRA permit application in November 1980 and qualified for interim status as an owner/operator of a TSD facility. The Part A application identified its operations on Parcels A and B. When the company began operating on Parcel C in 1987, it extended this interim status to the new facility. Chempro submitted its Part B Application to Ecology in March 1988 for operation of the Chempro Proper. The letter tank system area is undergoing closure under interim status.

In June 1988, EPA issued a RCRA 3013 Order to Chempro requiring the company to conduct an assessment of soil and ground water contamination caused by the facility's releases of hazardous wastes and hazardous constituents (30).

2.1.5 Freeway Container, Inc. Operations

: :

Freeway Container, Inc. has leased the western and northern portions of Chempro Proper since 1986. This company repairs containers used on tractor-trailer trucks. Operations generally include cleaning, cutting, sheet metal work, some fiberglass replacement, spot welding, and spot or hand-painting. A large portion of the property is used to store containers; repair operations occur in a single building at the facility. Three SWMUs were identified at this facility: a solvent storage shed (SWMU C-53); a shed holding new, used and waste paints (SWMU C-54); and piles of excavated soil on the northwestern corner of the Freeway Container, Inc. property. These are shown on Figure 4.

2.1.6 Resource Recovery Parking Lot

Resource Recovery, a Chempro subsidiary which operates as the transportation provider for Chempro operations, uses an area to the south of the Chempro tank farm to park trucks (Figure 4). Because this area may be used to park trucks which contain waste materials, it has been identified as a SWMU (C-52).

2.2 CHEMPRO PARCEL A

"Chempro Parcel A" refers to the property owned by Northwest Processing, Inc. and formerly leased by Chempro. It is located to the southeast of Chempro Proper (Figure 2).

2.2.1 Identification of Solid Waste Management Units

Twenty-five Solid Waste Management Units (SWMUs) have been identified on Chempro Parcel A as a result of the PR and VSI. SWMUs identified at the facility are listed in Table 5 and are designated throughout this report by the letter "A." In addition to the SWMUs listed in Table 5, SWMUs C-9 (Tank 104) to C-10 (Tank 105) and SWMUs C-15 to C-19 (300-series tanks) were active on Parcel A until late 1986. These SWMUs are listed in Table 1. Locations of most SWMUs are shown on Figures 6 and 7; the location of SWMU A-25, the Auto Fluff and Lime Fill Area, is discussed in more detail in Section 3.4 and depicted in Figures 15 and 16. Detailed descriptions of these SWMUs may be found in Section 5.2.

2.2.2 <u>Historical Operations</u>

Parcel A was purchased in 1961 by Don Oline; the property was sold to Solidus Corporation in May 1981. The following companies leased the property and used it as the site of industrial operations between 1970 and 1986 (24, 29):

- 1970 to 1973 Aero/Acology Oil operated a waste oil recycling operation on the west side of Parcel A.
- 1973 to 1974 Puget Sound Industrial Petroleum (PSIP), purchased the property from Aero/Acology, operated the waste oil recycling facility.
- 1974 to 1975 Chempro of Oregon purchased the facility from PSIP and continued the oil recycling operation.

Table 5 .

SOLID WASTE MANAGEMENT UNITS AT CHEMPRO PARCEL A

SWMU NO.	DESCRIPTION
A-1	Alkaline Storage and Treatment Tank 6
A-2	Alkaline Storage and Treatment Tank 7
A-3	Paint Waste Storage Tank 8S
A-4	Acid Storage Tank 9N
A-5	Acid Storage Tank 9E
A-6	Acid Storage Tank 9W
A-7	Sludge Treatment and Storage Tank 10
A-8	Sludge Treatment and Storage Tank 11
A-9	Alkaline Storage and Treatment Tank 12
A-10	Acid/Alkaline Storage and Treatment Tank SS1
A-11	Acid/Alkaline Storage and Treatment Tank SS2
A-12	Acid/Alkaline Storage and Treatment Tank SS3
A-13	Former Waste Oil Pond
A-14	Tank NT1
A-15	Tank NT2
A-16	Tank NT3
A-17	Tank NT4
A-18	Tank NT5
A-19	Poly 1
A-20	Poly 2
A-21	Poly 3
A-22	Sumps
A-23	Rinse Pit
A-24	Acology/Aero/PSIP/Chempro Waste Oil Recycling Facility
A-25	Area of Auto Fluff and Lime Fill

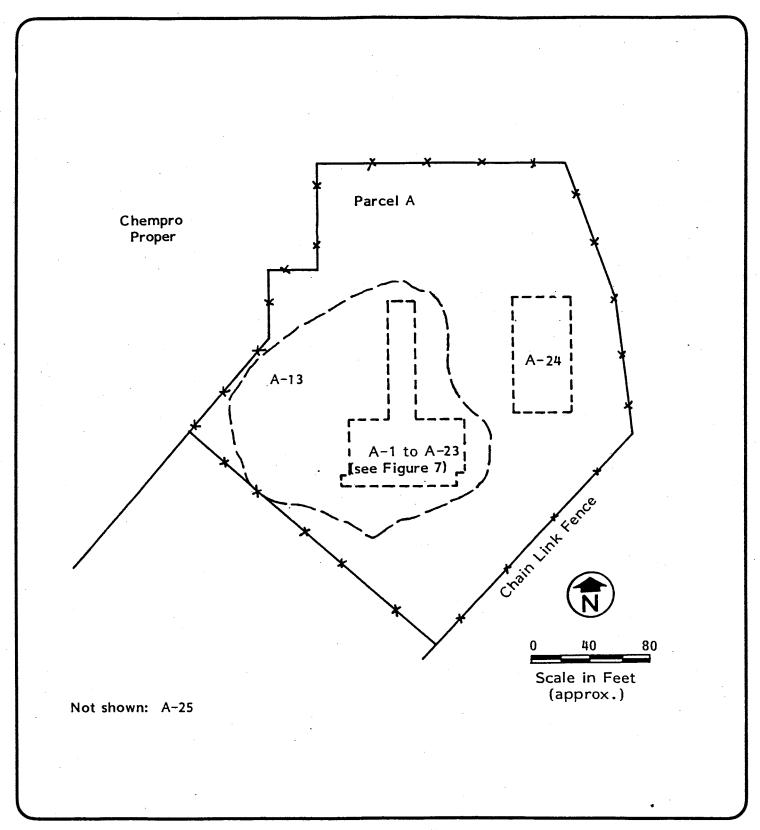
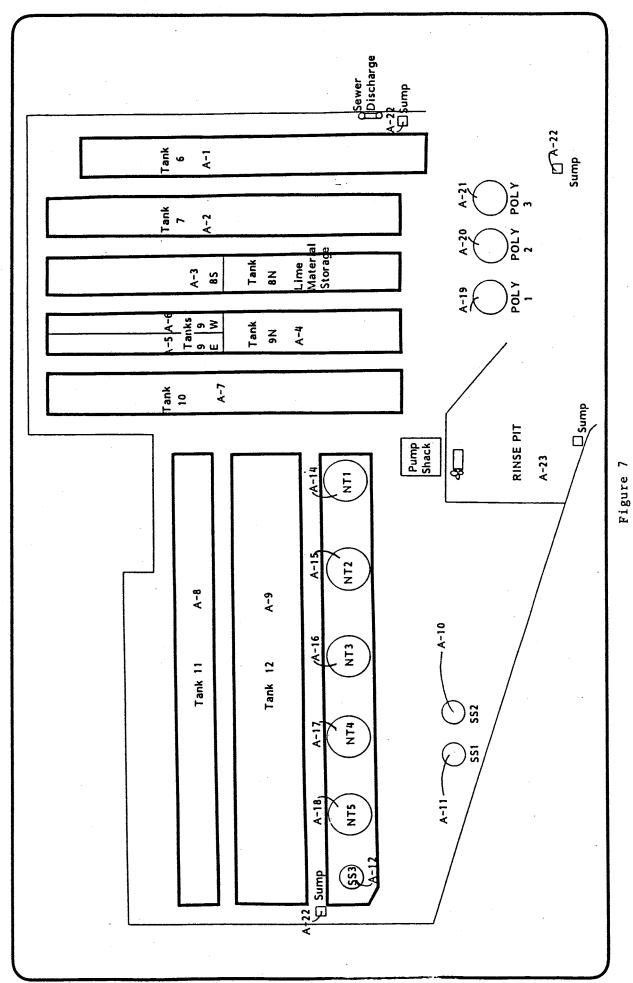


Figure 6

SOLID WASTE MANAGEMENT UNIT LOCATIONS PARCEL A



SOLID WASTE MANAGEMENT UNITS A-1 TO A-23 AT PARCEL A

■ 1975 to 1986 - Chempro purchased the Chempro of Oregon equipment and continued the recycling operation until October 1984. Chempro continued to accept waste oil at the facility for storage in the existing equipment until August 1986. Chempro also built and operated a chemical treatment unit on the west side of the Parcel A from 1977, until December 1986 when their lease expired.

When Chempro's lease expired in December 1986, equipment containing hazardous wastes was left on the property. Subsequently, Chempro removed the equipment. In addition, Chempro has removed some contaminated soil from the site, covered the excavated area with a 6-mil PVC cover and clean soil, and reseeded the area (27).

A variety of fill materials have been deposited at Parcel A in a manner similar to Chempro Proper, as discussed in Section 2.1 and described in more detail in Section 3.4. Between 1969 and 1975, dredge spoils, lime wastes, spent lime catalyst from TCE and perchloroethylene production, auto fluff, and gravel were deposited on the property. An oil holding pond constructed in 1970 (SWMU A-26) was reportedly filled with auto fluff around 1975 (24).

2.2.3 Parcel A Regulatory History

As discussed in Section 2.1.3, Chempro obtained interim status for the activities on Parcel A in 1980. After a spill of nitric acid in 1985, Ecology issued an order requiring Chempro to submit a plan for upgraded secondary containment at the Parcel A facility (24).

Chempro submitted a closure plan for Parcel A in September 1987 (20) and has conducted closure activities on the property. The Department of Ecology submitted a Proposed Consent Decree in December 1987 to both Chempro and Solidus, the owner of Parcel A, for further remedial action on the property (24). Ecology has not yet accepted final closure on the site. Civil legal action is also pending between Chempro and Solidus regarding determination of responsibility for the remaining contamination on the property (24).

2.3 NORTHWEST PROCESSING, INC.

For the purposes of this report, "Northwest Processing" refers to the property east of Chempro Proper owned by Northwest Processing, Inc., except for Parcel A (Figure 2).

2.3.1 Identification of Solid Waste Management Units

Forty-eight solid waste management units were identified at Northwest Processing as a result of the PR and VSI. These units are listed in Table 6 and are designated throughout this report by the letter "N." Locations of these SWMUs are depicted in Figure 8. Detailed descriptions of the SWMUs are presented in Section 5.3.

2.3.2 <u>Historical Operations</u>

The Northwest Processing (also known as the Lilyblad Petroleum - Poligen Site) facility is located within a former tidal marsh of Commencement Bay. Historical photos indicate that prior to the 1960s, much of the property was a swampy area. As portions of the wetlands were filled, ponds were formed in various locations. These were later filled in. The fill materials are estimated to be about 8 to 10 feet thick and composed of various materials including sand and gravel, dredge sand, lime sludge waste, wood chips, and auto fluff. Chemically contaminated and potentially hazardous materials were reportedly used as fill (19); this is described in more detail in Section 3.4.

Filling of the area occurred during the 1960s and 1970s. By 1975, a small tank farm consisting of two tanks was being operated by Lilyblad in the northwest corner of the property. Between 1977 and 1980, three smaller tanks located in front (west) of the two larger tanks were established. Records indicate that these tanks contained a variety of materials including mineral spirits, used oil, and solvents.

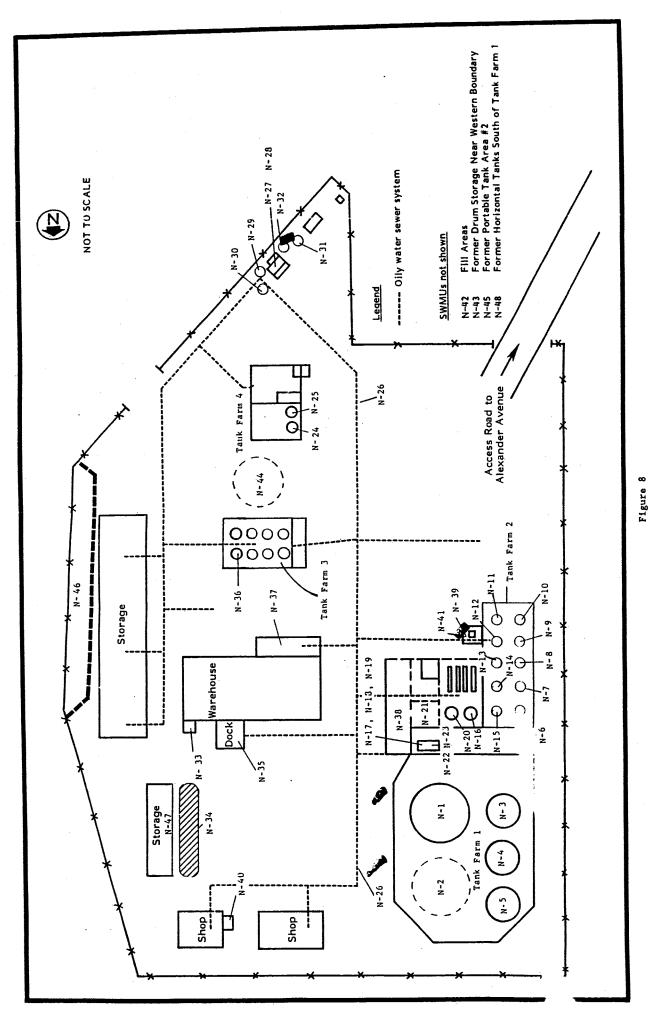
Table 6

SOLID WASTE MANAGEMENT UNITS AT NORTHWEST PROCESSING INC.

SWMU NO.	DESCRIPTION
N-1	Tank Farm 1, Tank 1
N-2	Tank Farm 1, Former Tank
N-3	Tank Farm 1, Tank 3
N-4	Tank Farm 1, Tank 4
N-5	Tank Farm 1, Tank 5
N-6	Tank Farm 2, Tank 6
N-7	Tank Farm 2, Tank 7
N-8	Tank Farm 2, Tank 8
N-9	Tank Farm 2, Tank 9
N-10	Tank Farm 2, Tank 10
N-11	Tank Farm 2, Tank 11
N-12	Tank Farm 2, Tank 12
N-13	Tank Farm 2, Tank 13
N-14	Tank Farm 2, Tank 14
N-15	Tank Farm 2, Tank 15
N-16	Tank 16, Centrifuge Feed Tank
N-17	Decanter Centrifuge
N-18	Disk Centrifuge
N-19	Waste Accumulation Area in
	Centrifuge Room
N-20	Tank 17, Holding Tank
N-21	Fractionation System
N-22	Anti-Freeze Recycling System
N-23	Solvent Recovery Unit
N-24	Tank 26, Stormwater Accumulation Tank
N-25	Tank 27, Process Wastewater Holding Tank
N-26	Oily Water Sewer System
N-27	API Preseparator
N-28 ,	Coalescing Separator
N-29	Skim Tank
N-30	Biotower
N-31	Treated Wastewater Holding Tank
N-32	Sewer Discharge Tank
N-33	Generated Waste Storage Area
N-34	Auxiliary Waste Storage Area
N-35	Drum Rinsing Area

Table 6 (Continued)

SWMU NO.	DESCRIPTION
N-36	Tank 21, Boiler Feed Tank
N-37	Hot Oil Heater (Boiler)
N-38	Loading/Unloading Area #1
N-39	Loading/Unloading Area #2
N-40	Tire Pyrolysis Unit
N-41	Portable 500-gallon Tanks
N-42	Fill Areas
N-43	Former Drum Storage Area Near Western Boundary
N-44	Former Portable Tank Area #1
N-45	Former Portable Tank Area #2
N-46	Former Drum Storage Area East of Main Warehouse
N-47	Former Drum Storage Building
N-48	Former Horizontal Tanks South of
	Tank Farm 1



SOLID WASTE MANAGEMENT UNIT LOCATIONS NORTHWEST PROCESSING, INC.

Solidus Corporation/Poligen/Northwest Processing began leasing the northwest portion of the property in 1974 and purchased it in 1981 along with Parcel A. Shortly thereafter, Poligen/Northwest Processing purchased the two adjacent parcels to the east and southeast (32). Currently, Northwest Processing operates in all areas of the property except Parcel A.

2.3.3 Current Operations

Numerous facility documents were reviewed during preparation of this report. In many cases, discrepancies were identified in the information presented. Information supplied in the most recent submittal was used whenever possible; discrepancies are noted where appropriate.

Poligen/Northwest Processing has been processing mixtures of gasoline, diesel fuel, and water since 1983. Sources of materials to be processed include barges, pipelines, petroleum service stations, wholesale outlets for mixed gas/diesel combinations, and large facilities (39). The gasoline (or naphtha) and water fractions are separated from the residual diesel fraction (37). The recovered naphtha is sold to a local refinery as a blending stock for regular gasoline or reformer feedstock. The residual diesel or cutter stock is sold to fuel blenders as a blending stock for marine and industrial fuels (37). According to facility personnel, Northwest Processing does not currently accept dangerous wastes regulated under WAC 173-303 for treatment, storage, or disposal (51). Gasoline and diesel reprocessing throughput is about 50,000 to 100,000 gallons per month (39).

Waste oils containing less than 1,000 ppm halogenated hydrocarbons and less than 1 ppm PCB were processed at this facility between 1983 and 1987. The light fraction separated from waste oils contaminated with water, gasoline, and solvents was used as a fuel source for the facility's boiler.

In 1987, Northwest Processing installed a centrifuge system to reduce the solids content of residual fuels to less than 0.2% by weight. This process generates an oily sludge waste, which is disposed of through incineration or land disposal.

Other materials which are purchased and sold by Northwest Processing are stored in bulk in tanks in bermed areas. Lubricants (bulk, drummed, and packaged) are stored on-site in enclosed buildings. Repackaging of solvents also occurs on the Northwest Processing site in an enclosed building. Other activities occurring on-site include laboratory analyses, process wastewater collection and treatment, and stormwater runoff management (39).

Northwest Processing generates about 5,000 to 15,000 gallons per month of process wastewater from the centrifuge and fractionation processes. This wastewater contains phenols (156 ppm), small concentrations of metals (As, Cr, Cu, Pb, Ni, Zn), and oil and grease (31). It is stored in tanks prior to transport to a licensed off-site disposal facility (39, 51). Process wastewater is treated through an oily water treatment system or drummed for subsequent disposal off-site.

The centrifuge system generates about 50 gallons per month of sludges when it is operating; this waste contains halogenated organics (164 ppm) and small concentrations of metals (As, Ba, Cd, Cr, Pb, Ag) (31). The sludges are designated as a waste flammable liquid (EPA hazardous waste number D001); they are stored on-site prior to shipment to a licensed off-site disposal facility (51).

The facility currently has four tank farms which contain four, ten, eight, and two tanks, respectively (51). The site has five buildings: a main warehouse, two drum storage buildings, and two shops. There are two primary loading docks for bulk loading/unloading of trucks and trailers.

Surface drainage on the site collects in storm drains and catch basins. Roof drainage is directed to the Lincoln Avenue ditch (between Taylor Way and Alexander Avenue) or is discharged to the City of Tacoma's sanitary sewer. Other surface water drainage (including water from process area sumps) is treated through the oily water treatment system. Effluent from this treatment system can be directed to a storm sewer or the city sanitary sewer (77). Prior to 1988, this water was discharged to the storm sewer (and therefore the Lincoln

Avenue Ditch) (77). Samples of stormwater were collected by the Tacoma-Pierce County Health Department in June 1987 from the final discharge tank (SWMU N-26) and from the first off property in-line catch basin. Results indicated 500 mg/l and 1400 mg/l oil and grease, respectively, which is significantly higher than the NPDES limit of 15 mg/l (75). Also detected in the discharge tank sample were chloroform, 1,2-dichloroethane, methylene chloride, 1,1,1-trichloroethane, trichloroethene, and xylene (75). Northwest Processing has received temporary discharge permits from the City of Tacoma to discharge stormwater to the sanitary sewer on several occasions (31, 46). Violations of the discharge permits have been noted (45). At the time of the VSI, Northwest Processing was not collecting the treated effluent in tanks for subsequent off-site disposal at a licensed facility. Northwest Processing currently does not have a stormwater discharge permit.

2.3.4 Northwest Processing Regulatory History

Extensive filling activities have occurred on this site over the years, including potentially contaminated lime sludge wastes. These filling activities are discussed in detail in Section 3.4. In a June 11, 1982 letter to Mr. Glen Tegen, owner of Northwest Processing (then Lilyblad Petroleum, Inc.), Ecology suggested that construction of the main process area proceed, and encouraged development which would provide a tight, impervious cap with an impervious side seal, installation of shallow monitoring wells with french drain laterals, and a tightly lined stormwater system away from the area to provide entombment of lime sludge and other fill materials with monitoring access and potential limited pumping accessibility (51).

A July 1981 site visit by Ecology personnel indicated that a large tank containing dirty solvent had expanded due to warm temperatures causing solvent to spill out of a vent at the top of the tank. Ecology personnel provided a drip pan which was placed under the leak, and drained approximately 100 gallons out of the tank, which stopped the leak (51). Subsequent to this event, Ecology recommended several actions, including numbering of tanks, pressure testing of tanks, additional inspections, and better gauging.

During a January 1982 Ecology inspection, an oil sheen was observed in a pond located in the center of the facility (19). This oil appeared to be due to drainage from the tank farm.

Part A applications were submitted on February 15, 1985, September 30, 1987, January 6, 1988, and November 8, 1988. The most recent Part A lists storage of K049, K051, D001, and D008 wastes and treatment of K049 wastes. In June 1988, EPA determined that Northwest Processing did not qualify for interim status. A Part B permit application for hazardous waste storage was submitted by Northwest Processing on November 8, 1988, although correspondence in EPA's files indicates that a draft Part B application may also have been submitted in December 1984.

A September 1988 Ecology inspection noted numerous dangerous waste violations. At the time of the inspection, 432 55-gallon drums of waste were being stored on-site, of which drums, 236 contained dangerous waste. One hundred seventy drums contained Safety-Kleen process sludges and still bottoms; 54 drums were labeled as dangerous wastes generated in 1987 by Lilyblad on Port of Tacoma Road; 12 drums contained centrifuge sludge generated at Northwest Processing; and 196 drums contained unknown wastes. Most of the drums were unlabeled and 150 of the Safety-Kleen drums were without lids. Many drums were in poor condition; several dangerous waste drums were leaking to the environment. In addition, a tank containing 72,000 gallons of spent Safety-Kleen solvents was noted to be leaking to the ground during the inspection (80).

As a result of this inspection, Ecology issued Order No. DE 88-8334 on January 10, 1989. Due to a procedural defect, this order was rescinded on August 15, 1989 and was reissued as Order No. DE 89-8193 on September 22, 1989 (79, 80). This order stated that Northwest Processing is acting as an unpermitted dangerous waste storage facility and handling dangerous waste and other unknown materials in a manner which constitutes a threat to public health and/or the environment (80).

The order required Northwest Processing to cease discharge of hazardous substances, including contact stormwater runoff or process water discharges to

an unpermitted ditch outfall. In addition, the order required that all leaking drums and tanks be repaired, overpacked, or emptied; that all sumps in the dangerous waste and product storage areas be sealed; that Northwest Processing cease accepting dangerous wastes; that unknown wastes be sampled and designated; and that all Safety-Kleen and other dangerous wastes be removed from the property.

2.4 SOL-PRO, INC.

"Sol-Pro" refers to the property located southeast of Chempro Proper and south of Northwest Processing (Figure 2). It is owned and operated by Sol-Pro, Inc.

2.4.1 <u>Identification of Solid Waste Management Units</u>

Twenty-two solid waste management units (SWMUs) were identified during this RCRA Facility Assessment. These units are listed in Table 7 and are designated throughout this report by the letter "S." Locations of these SWMUs are depicted in Figure 9. Detailed descriptions of the SWMUs may be found in Section 5.4.

2.4.2 Historical Operations

The location of the Sol-Pro property was formerly a portion of the Puyallup River delta drainage and tideflats. According to historical records, the property was undeveloped and generally unfilled prior to 1950. Some incidental filling associated with construction of the waterway and development of the adjacent Buffelen Lumber Company may have occurred at this time, but a 1948 aerial photograph indicates that the property was still a low land area with The Buffelen Lumber Company may have used the property for storage of finished lumber or disposal of mill sawdust waste. Aerial photos from 1967 to 1974 also indicate no development of the property, although there may have been some incidental use of the northern corner. This corner was adjacent to Acology Oil and a slate milling operation. These facilities are no The 1967 photo shows a maintained drainage ditch longer in existence. originating near a warehousing and manufacturing facility to the northeast. The ditch crossed the Sol-Pro property and terminated immediately to the southwest (55).

Table 7
SOLID WASTE MANAGEMENT UNITS AT SOL-PRO, INC.

SWMU_NO.	DESCRIPTION
S-1	Tank 704, Luwa Feed Tank
S-2	Tank 535, Dirty Wash Solvent Tank
S-3	Tank 536, Dirty Wash Solvent Tank
S-4	Luwa Thin Film Evaporator System
S-5	Tank 705, Recycled Solvent Tank
S-6	Tank 706, Recycled Solvent Tank
S-7	Tank D-1, Brighton Feed Tank
S-8	Tank D-2, Brighton Feed Tank
S-9	Brighton Solvent Reclaiming System
S-10	Tank C-1, Recycled Solvent Tank
S-11	Tank C-2, Recycled Solvent Tank
S-12	Pump Hopper
S-13	Horizontal Evaporator
S-14	Vacuum System
S-15	Tank 901, Wastewater Holding Tank
S-16	Generated Waste Storage Area
S-17	Drum Rinsing Area
S-18	Drum Crusher
S-19	Rail Car Loading Rack
S-20	Incoming Waste Area
S-21	Stormwater Holding Tank
S-22	Storm Drainage System
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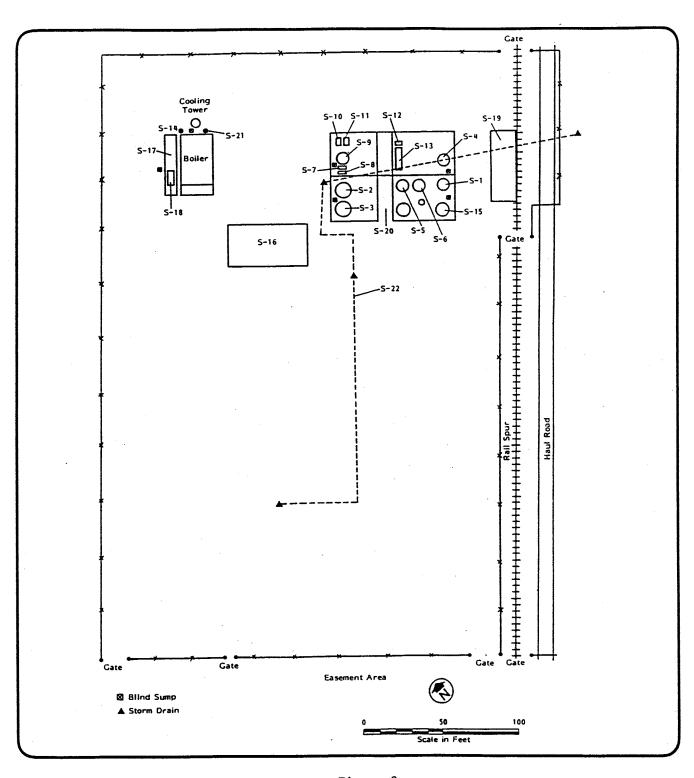


Figure 9

SOLID WASTE MANAGEMENT UNIT LOCATIONS SOL-PRO

A March 1987 site visit prior to construction of the Sol-Pro facility identified new and used empty barrels and several full salvage and recovery drums on pallets along the back fence of the property. Labels on the drums indicated that they contained hazardous waste. One of the drums was open and contained rainwater; however, no soil staining was observed (55). These drums were subsequently removed.

2.4.3 <u>Current Operations</u>

The Sol-Pro Alexander Avenue facility was constructed in 1987; operations began in 1988. The facility currently reclaims solvent from blended or dirty waste solvent. The reclaimed solvent is returned to the generator or sold; any treatment residual is shipped off-site for use as a hazardous waste fuel (55). Evaporation/condensation units are used to recover purified solvents. Chlorinated waste solvents and non-chlorinated waste solvents are processed at the facility. Currently, chlorinated solvents are processed infrequently. The two types of solvents are handled separately. The facility is operated for two shifts per day, five days per week (71).

Waste solvents are received on-site in drums or tank trucks. Materials in tank trucks are pumped directly to feed tanks (SWMUs S-1, S-2, S-3, S-7, S-8). Drummed wastes are stored for less than 24 hours prior to being emptied into the feed tanks. Waste solvents are distilled using the Luwa Thin Film Evaporator (Luwa) (SWMU S-4), the Brighton Solvent Reclaiming System (Brighton) (SWMU S-9), and/or a horizontal evaporator (SWMU S-13). Liquid solvents are recycled in the Luwa or Brighton stills; waste solvent sludges are reclaimed in the horizontal evaporator (55). A process flow diagram representing general operations at Sol-Pro is presented in Figure 10.

Wastes produced during the treatment processes include:

 Spent filters from the Luwa unit: Spent filters are removed from the Luwa unit and are treated in the horizontal evaporator to remove residual solvents (55, 71).

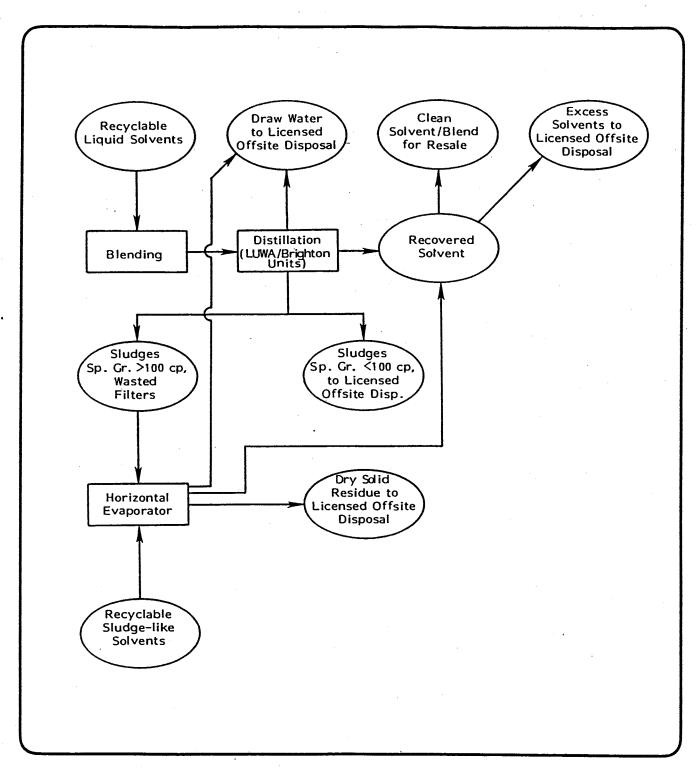


Figure 10

PROCESS FLOW DIAGRAM SOL-PRO, INC.
Adapated from: Reference 55

- Sludges from the Luwa and Brighton units: Chlorinated sludges are treated in the horizontal evaporator. Non-chlorinated sludges may vary in viscosity depending on the waste's composition and operating efficiency of the distillation unit. If the viscosity of non-chlorinated sludge is 100 centipoise or less, then the sludge is shipped to an off-site licensed facility for use as a hazardous waste fuel. If the viscosity of the sludge is greater than 100 centipoise, then the sludge is treated in the horizontal evaporator (55).
- Draw water from the distillation units: Draw waters from the distillation of chlorinated and non-chlorinated solvents are stored in Tank 901 (SWMU S-15); these waters are shipped to a licensed off-site treatment facility (55, 71).
- Bottoms from the horizontal evaporator: These are stored for less than 90 days in "super bags" in the generated waste storage area (SWMU S-16); they are shipped off-site to a licensed facility for disposal. If the non-chlorinated solvent content is less than the Toxic Characteristic Leaching Procedure (TCLP) standard and the solids pass the paint filter liquid test, they are sent to a licensed landfill. If these criteria are not met, the evaporator bottoms are sent to an incineration facility (55).

Reclaimed solvent is returned to the generator or resold. Processed nonchlorinated solvent blends are shipped to a licensed off-site facility (a cement kiln) for use as a hazardous waste fuel. Processed chlorinated solvent blends are shipped to a licensed off-site disposal facility for incineration (55, 72).

Waste materials are shipped off-site from the Sol-Pro facility in trucks and railcars. The railcars are serviced by Burlington Northern and move from Sol-Pro to the railroad's main yard by the Belt Line, usually at night.

Other wastes are generated during routine plant operation and maintenance activities. Machine parts are cleaned and repaired using solvents. These solvents are recycled in the Luwa still and in the horizontal evaporator. Routine maintenance of the structures and buildings may also require paints and thinners (55).

According to facility personnel, no major spills from process units or piping have occurred at Sol-Pro (71).

Currently, stormwater is collected in holding tanks. If the water is contaminated with solvents, it is shipped off-site for use as a hazardous waste fuel. If contaminated, it is used as makeup to the boiler (72). Sol-Pro has submitted an NPDES permit application for a storm drain which discharges to the Lincoln Avenue Ditch. No permit has been granted to date. According to Ecology correspondence, illegal discharges to this storm drain from the Sol-Pro facility have occured as recently as 1989 (74).

2.4.4 Regulatory History

Sol-Pro, Inc. submitted a generator, transporter, and recycler notification on August 20, 1987 for mixtures of F003 and F005 solvent wastes and D001 ignitable wastes, and for mixtures of F001 and F002 solvent wastes. Additional Dangerous Waste Notifications were submitted on December 31, 1987 and May 24, 1989 (65, 56). The May 1989 notification lists used halogenated solvents and organic compounds with water and grease (F001, F002, WP01, WP02, WC01, WC02) and non-halogenated solvents and paint waste containing metals and water (D004 through D010, F003, F004, F005, WT01, WT02).

RCRA Part A applications were submitted on December 31, 1987 and July 29, 1989. The current Part A lists capacities of 143,000 gallons of container storage and 126,500 gallons of tank storage (55). On May 6, 1988, EPA notified Sol-Pro that the requirements for interim status had not been met (66). On July 29, 1989, Sol-Pro submitted a RCRA Part B application for container and tank storage.

A RCRA inspection was conducted at Sol-Pro by Ecology personnel on November 4, 1988. Accumulated precipitation and "spilled substance" were observed inside the process containment areas; in addition, a number of unlabeled and uncovered drums of contaminated water were observed (59).

3.0 ENVIRONMENTAL SETTING

3.1 LOCATION, TOPOGRAPHY, AND SURROUNDING LAND USE

The Chempro, Northwest Processing, and Sol-Pro facilities are located in the "Tacoma Tideflats" area about 3 miles northeast of downtown Tacoma (see Figure 1). The site is situated on a man-made peninsula, with Blair Waterway to the southwest, Hylebos Waterway to the northeast, and Commencement Bay to the northwest. The Puyallup River and Waterway drain into Commencement Bay about 2 miles to the west. The Tideflat area is quite low and flat, typically ranging up to 20 feet above mean sea level (MSL).

The facilities are located northeast of Alexander Avenue on nearly flat ground that generally ranges from 10 to 17 feet above MSL. A few mounds of material on the west-central portion of the Freeway Container area reach up to 35 feet above MSL. A very subdued topographic divide trends NW-SE through the properties. Drainage is to the northeast in the northern third of Chempro Proper, the large northern area of the Freeway Container parcel, and the northern half of Northwest Processing. All other areas on-site generally drain to the southwest or south (17).

The surrounding land use is zoned as heavy industrial. Several heavy industries surround the facilities. South of Parcel A and west of Sol-Pro is Unico, a boat manufacturer. East of the properties is Gateway Consolidators. The Reichhold Chemical plant is east of the facilities, across Lincoln Avenue. The Port of Tacoma owns land to the south of the facilities, along Alexander Avenue; the City of Tacoma owns the open brushy area to the west of the Chempro facility. Pacific (Domtar/Continental) Lime Company occupies land to the south, between Alexander Avenue and Blair Waterway.

3.2 METEOROLOGY

The climate of the Tacoma area is classified as a mid-latitude, west-coast, marine type, with a dry summer having mild temperatures, and a mild but rainy

winter. The Olympic and Coastal Mountains afford a partial rain shadow effect from severe winter storms that approach from the ocean (25).

Average annual precipitation is 35.2 inches, with 76 percent falling from October through March. The potential evapotranspiration is 27.3 inches per year; the actual evapotranspiration is 19.9 inches per year. The average annual temperature is about 51.0°F, with January being the coldest month (average = 39°F) and July being the warmest (average = 64°F). The area in general receives about 45 percent of the maximum possible sunshine each year. The average humidity in the area ranges from 86 percent (4 a.m.) to 81 percent (4 p.m.) in January, and from 85 percent (4 a.m.) to 48 percent (4 p.m.) in July. The prevailing winds are out of the northwest and southeast (Figure 11) (55). The strongest winds are generally from the southwest direction and occur during winter. Winds are light during most of summer (25).

3.3 SURFACE WATER

No waterways, ponds, or marshy areas currently exist on the site. This area is located in flood zone C (areas of minimal flooding). The 100-year flood level for the adjacent waterways is +9 feet MSL (55). The area has been filled and graded at various intervals during the past 60 years. The site is generally covered by gravel road base, concrete pads, or asphalt. The generalized surface water flow pattern is radial from the center of the Chempro facility. Surface drainage flow direction from Northwest Processing and Sol-Pro is not documented. Stormwater and sewer water lines are located within the site boundaries at the Chempro, Northwest Processing, and Sol-Pro facilities. Six storm sewer catch basins were identified in the Part B permit application for the Chempro facility, but the direction of flow was not documented. Another catch basin leading to an underground storm drain is located in the northwest portion of Chempro The storm drain flows north to Taylor Way, turns west, and flows parallel to Taylor Way as an open drainage ditch leading to 11th Street and draining into the Hylebos Waterway. Two catch basins are located to the east of the Northwest Processing facility. These basins discharge to the storm drain that flows east to Lincoln Avenue, turns south, and flows parallel to Lincoln

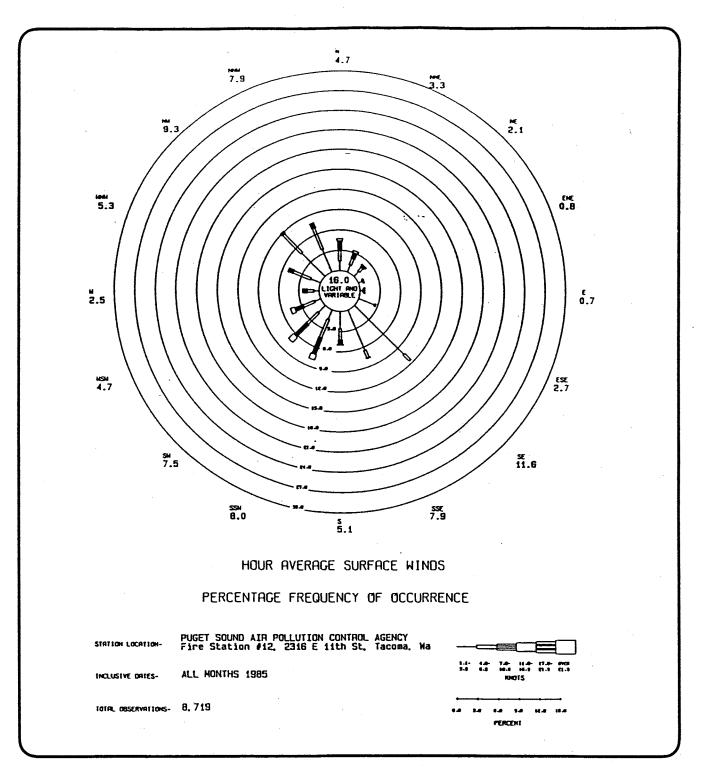


Figure 11

WIND ROSE Source: Reference 55 Avenue partly as an open drainage ditch and underground storm drain, eventually draining into the Blair Waterway. A manhole located in the southeastern section of the Northwest Processing site provides access to this storm drain.

3.4 SOILS, GEOLOGY AND HYDROLOGY

3.4.1 Regional Geology

The facilities are located in a topographic depression within the Puget Lowland. Most of the surface deposits and topographic morphology of the Lowland resulted from repeated periods of continental glaciation during the past 3 million years. The last glacial episode in this area climaxed about 15,000 years ago and essentially ended by 12,000 years ago. The low area now occupied by the Puyallup River valley and Commencement Bay may have been the site of a glacial meltwater channel during the last glaciation. During glacial retreat, the waters of Puget Sound reoccupied the area, and rivers flowing into the Sound formed large deltas. The resulting deltaic deposits consist of interbedded alluvial and marine sediments (8).

In the area of the former channeled marshlands of the Puyallup River Delta (the "Tacoma Tideflats"), thick deposits of marine and alluvial sediments mainly consist of sand, silt, clay, and lesser amounts of gravel and peat layers. Underlying these strata are glacial and interglacial deposits that are unconsolidated or semiconsolidated and range to over 2,000 feet in depth (8).

3.4.2 Site Stratigraphy and Fill History

The stratigraphy of natural and man-made units at the facilities has been determined from numerous borings that have been drilled on-site. These borings, wells, and test pits were drilled or excavated by several different firms beginning in 1982 (1, 2, 4, 8, 16, 51, 52, 54, 57). Monitoring wells installed on-site are listed in Table 8.

The following discussion emphasizes disposal of industrial wastes that may contain hazardous constituents, although there has been considerable dumping of natural materials (silt, sand, gravel). The facilities were built on fill

Table 8
LISTING OF MONITORING WELLS AT TSD ALLEY

MW-1 2-18-86 9.0 3.0-8.0 SW of Parcel A 21 MW-2 2-18-86 10.0 2.5-7.5 SW of Parcel A 21 MW-3 2-18-86 11.5 4.5-9.5 Parcel A 21 MW-4 2-18-86 11.5 4.5-9.5 Parcel A 6.0 NW Proc. 21 A-1 1-6-87 19.5 17.0-19.5 Parcel A 6.0 NW Proc. 31 A-2 1-8-87 10.5 6.5-9.0 NW Processing 31 A-3 1-8-87 10.5 6.0-8.5 Parcel A 31 C-1(AGI-1) 1-9-87 10.5 7.4-9.9 Parcel A 31 C-2(AGI-2) 1-9-87 10.5 6.4-8.9 Parcel A 31 C-3(AGI-3) 1-9-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52 L-3 1-6-87 12.0 6.6-8.6 NW Processing 52
MW-2 2-18-86 10.0 2.5-7.5 SW of Parcel A 21 MW-3 2-18-86 11.5 4.5-9.5 Parcel A 21 MW-4 2-18-86 11.5 4.5-9.5 Parcel A & NW Proc. 21 A-1 1-6-87 19.5 17.0-19.5 Parcel A & NW Proc. 31 A-2 1-8-87 10.5 6.5-9.0 NW Processing 31 A-3 1-8-87 10.5 6.0-8.5 Parcel A 31 C-1(AGI-1) 1-9-87 10.5 7.4-9.9 Parcel A 31 C-2(AGI-2) 1-9-87 10.5 6.4-8.9 Parcel A 31 C-3(AGI-3) 1-9-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
MW-3 2-18-86 11.5 4.5-9.5 Parcel A 21 MW-4 2-18-86 11.5 4.5-9.5 Parcel A & NW Proc. 21 A-1 1-6-87 19.5 17.0-19.5 Parcel A & NW Proc. 31 A-2 1-8-87 10.5 6.5-9.0 NW Processing 31 A-3 1-8-87 10.5 6.0-8.5 Parcel A 31 C-1(AGI-1) 1-9-87 10.5 7.4-9.9 Parcel A 31 C-2(AGI-2) 1-9-87 10.5 6.4-8.9 Parcel A 31 C-3(AGI-3) 1-9-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
MW-4 2-18-86 11.5 4.5-9.5 Parcel A & NW Proc. 21 A-1 1-6-87 19.5 17.0-19.5 Parcel A & NW Proc. 31 A-2 1-8-87 10.5 6.5-9.0 NW Processing 31 A-3 1-8-87 10.5 6.0-8.5 Parcel A 31 C-1(AGI-1)** 1-9-87 10.5 7.4-9.9 Parcel A 31 C-2(AGI-2)** 1-9-87 10.5 6.4-8.9 Parcel A 31 C-3(AGI-3)** 1-9-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
A-1 1-6-87 19.5 17.0-19.5 ^b Parcel A & NW Proc. 31 A-2 1-8-87 10.5 6.5-9.0 NW Processing 31 A-3 1-8-87 10.5 6.0-8.5 Parcel A 31 C-1(AGI-1) ^a 1-9-87 10.5 7.4-9.9 Parcel A 31 C-2(AGI-2) ^a 1-9-87 10.5 6.4-8.9 Parcel A 31 C-3(AGI-3) ^a 1-9-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
A-2 1-8-87 10.5 6.5-9.0 NW Processing 31 A-3 1-8-87 10.5 6.0-8.5 Parcel A 31 C-1(AGI-1)* 1-9-87 10.5 7.4-9.9 Parcel A 31 C-2(AGI-2)* 1-9-87 10.5 6.4-8.9 Parcel A 31 C-3(AGI-3)* 1-9-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
A-2 1-8-87 10.5 6.5-9.0 NW Processing 31 A-3 1-8-87 10.5 6.0-8.5 Parcel A 31 C-1(AGI-1)* 1-9-87 10.5 7.4-9.9 Parcel A 31 C-2(AGI-2)* 1-9-87 10.5 6.4-8.9 Parcel A 31 C-3(AGI-3)* 1-9-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
A-3 1-8-87 10.5 6.0-8.5 Parcel A 31 C-1(AGI-1)* 1-9-87 10.5 7.4-9.9 Parcel A 31 C-2(AGI-2)* 1-9-87 10.5 6.4-8.9 Parcel A 31 C-3(AGI-3)* 1-9-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
C-1(AGI-1) ^a 1-9-87 10.5 7.4-9.9 Parcel A 31 C-2(AGI-2) ^a 1-9-87 10.5 6.4-8.9 Parcel A 31 C-3(AGI-3) ^a 1-9-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
C-2(AGI-2)* 1-9-87 10.5 6.4-8.9 Parcel A 31 C-3(AGI-3)* 1-9-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
C-2(AGI-2)* 1-9-87 10.5 6.4-8.9 Parcel A 31 C-3(AGI-3)* 1-9-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
C-3(AGI-3)* 1-9-87 10.5 6.5-9.0 Parcel A 31 L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
L-1 1-7-87 10.5 7.0-9.5 NW Processing 52 L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
L-2 1-7-87 12.0 7.5-10.0 NW Processing 52
T-0 T-0-01 TY.O U.U-O.O MW IIUCCSSINK DZ
L-4 1-6-87 13.4 3.5-8.5 NW Processing 52
L-5 1-8-87 10.5 6.0-8.5 NW Processing 52
CTMW-1 ^a 6-3-87 11.2 3.0-10.0 Parcel A 1
CTMW-2 5-28-87 10.3 2.8-10.1 Parcel A 1
CTMW-3 5-29-87 11.2 2.9-10.0 Parcel A 1
CTMW-4 5-28-87 12.0 3.5-11.5 Parcel A 1
CTMW-5 5-29-87 13.0 3.0-9.4 Parcel A 1
CTMW-6 6-1-87 13.0 3.6-10.4 Parcels A & B 1
CTMW-7 11-25-87 32.5 18.5-28.5 Parcels A & B 2
CTMW-8 11-27-87 10.0 3.0-10.0 Chempro Proper 2
CTMW-9 11-28-87 31.5 18.5-28.5 Chempro Proper 2
CTMW-10 11-27-87 10.0 3.0-10.0 Chempro Proper 2
CTMW-11 11-27-87 14.3 3.0-13.0 Chempro Proper 2
CTMW-12 1-27-87 35.5 21.5-31.5b Chempro Proper 2
CTMW-13 5-9-89 12.2 4.0-11.6 Chempro Proper 8
CTMW-14 5-12-89 10.0 4.5-9.0 Chempro Proper 8
CTMW-15 5-16-89 7.7 5.1-7.5 SW of Sol-Pro 8
T-1 to 7-26-82 6.7 upper 3 ft of Chempro Proper 16
T-12 ^a to 12.0 water table & Parcel A
Well #1 1989 N/A N/A Sol-Pro 70
Well #2 1989 N/A N/A Sol-Pro 70
Well #3 1989 N/A N/A Sol-Pro 70

^{*} Wells have been abandoned

b Wells intercept the deep (alluvial) aquifer BLS - Below Land Surface

material that was placed on the former Puyallup River Delta. Prior to 1924, this area was a tidal marsh/tideflat environment before dredging of the adjacent waterways (Blair and Hylebos) and filling of the intervening land. Filling continued into the 1960s and 1970s at and near the facility (4). By the late 1960s, the facilities had been partially filled with dredge spoils from the nearby waterways, leaving some low, swampy land with local ponded water. Filling with various wastes continued in the low areas (1).

Some time during the early phase of filling in the area, a sawmill existed in the area of Northwest Processing, and wood waste with silty sand was used for fill (52). The sand may have originated as dredge spoils from the waterways. It is unknown if the wood was treated with preservative before it was disposed of as fill.

Lime waste, waste sludges, and dredge spoils (described below) were dumped in marsh, pond, or other areas at Northwest Processing, Parcel A, and Chempro facilities by Hooker (now Occidental) Chemical Company and Domtar Industries beginning in 1969 and continuing until 1975 or 1976 (1, 6, 24). Petroleum tankcleaning scales and sludges also were reportedly dumped at this time to the north and west of Parcel A (1). Some lime waste or waste sludge reportedly contained chlorinated hydrocarbons, heavy metals, and asbestos (24, 33).

From 1970 to 1975, oil-reclaiming wastewater and petroleum sludges and emulsions were placed in a pond in the center of Parcel A (SWMU A-15) (1). This oil pond was filled with fragmented automobile interiors (auto fluff) from General Metals scrap metal operation, as well as small amounts of lime, silty sand, and other materials (24, 33).

The fill material throughout the properties is from 7 to 15 feet thick, with its base at 1 to 5 feet above MSL. Table 9 summarizes features of the geologic and man-made deposits (units) that have been recognized. These units also are depicted on two cross sections (see map, Figure 12) in Figures 13 and 14, which are meant to complement the cross sections in previous reports (1, 4, 8).

Table 9

GEOLOGIC AND FILL UNITS IDENTIFIED AT THE FOUR FACILITIES (Listed most recent at top to oldest at bottom)

GEOLOGIC OR FILL UNIT	TYPICAL THICKNESS	TYPICAL DEPTH TO TOP	LOCATION/COMMENTS
■ Artificial Fill (Significant units only)			
 Sand and Gravel (with some silty or clayey gravel) 	0.5 to 4 ft	o ft	 Widespread for use as road and foundation base With various waste debris at Northwest Processing With some auto debris at Parcel A and Chempro
 Silty Sand, Sandy Silt, Clean Sand (with some auto & waste debris) 	1 to 4.5 ft	1 to 4 ft	 Widespread but scattered below Sand & Gravel With auto debris and oily waste at Parcel A With waste debris at borings L-1, L-3, L-4
• Lime Waste and Sludge (with some silt)	2 to 10 ft	0.5 to 5 ft	 Two main periods of infilling, first is widespread Silt- or clay-like material Includes soft sludge with solvent odor and some oil at Northwest Processing and adjacent sites
 Auto Fluff (with sand, gravel, silt) 	1.5 to 7 ft	1.5 to 10 ft	 At least two periods of infilling, both widespread Fragmented autobody parts
• Sand and Sandy Gravel	-3 to 9 ft	0.5 to 6 ft	• In borings F, CB-1, CB-3, CB-4
· silt	0.5 to 2.5 ft	3 to 8 ft	 In borings CTMW-10, CTMW-14, CB-7, CB-8, and test pit TR-7
 Silty Sand with Woodchips (and local debris) 	2.5 to 6 ft	1.5 to 4 ft	• In borings L-2 and L-5
• Sand with trace Silt	1 to 8.5 ft	1 to 9 ft	 Fine to medium sand, with trace shell fragments Widespread unit on top of tideflat deposits Hydraulic dredge fill from waterways
■ Organic-rich Silt and Clay (with some silty sand)	1 to 7 ft	6.5 to 14.5 ft	 Widespread, possibly continuous unit Tideflat deposits
■ Sand with some/trace Silt	11 to 14 ft	12 to 21 ft	 Widespread, continuous unit Alluvial deposits
Interbedded Silt and Sand	>4.5 to >6.5 ft	26 to 31 ft	 Widespread, continuous unit Alluvial deposits

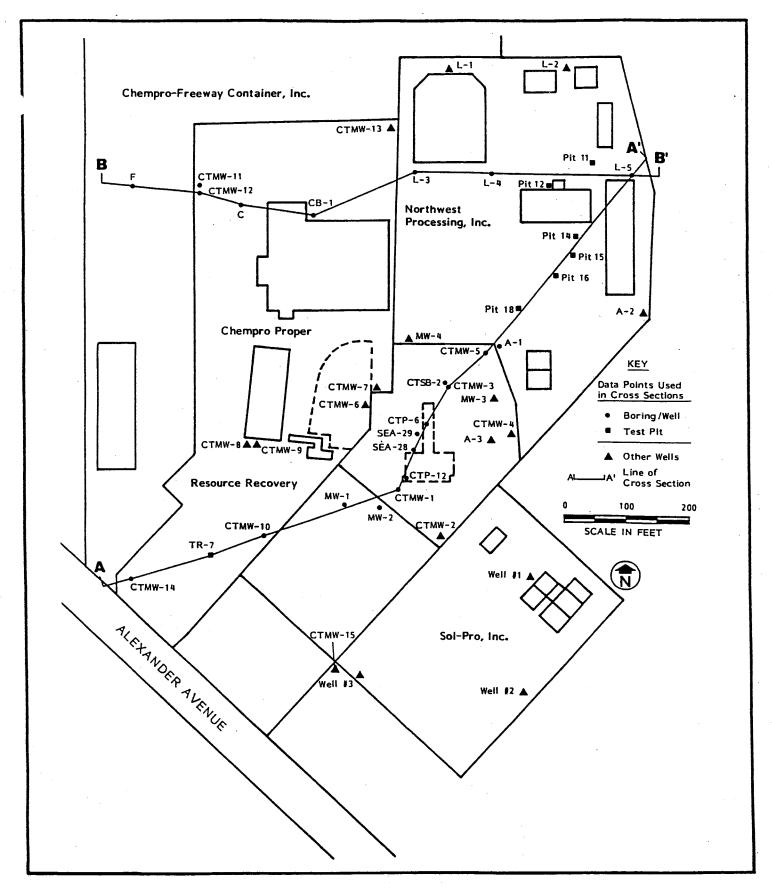
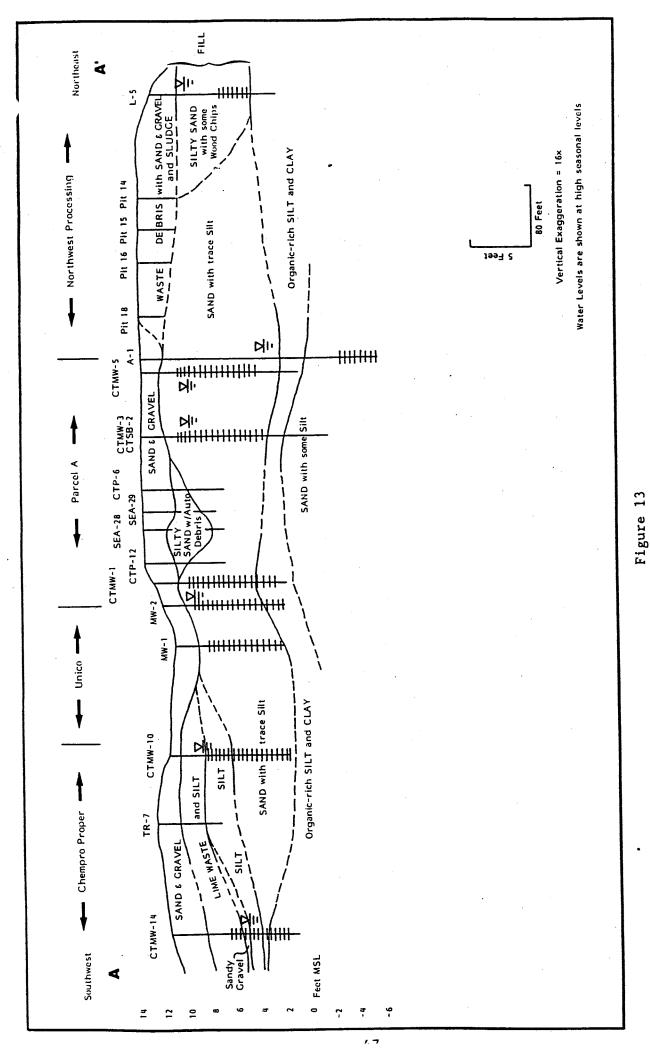
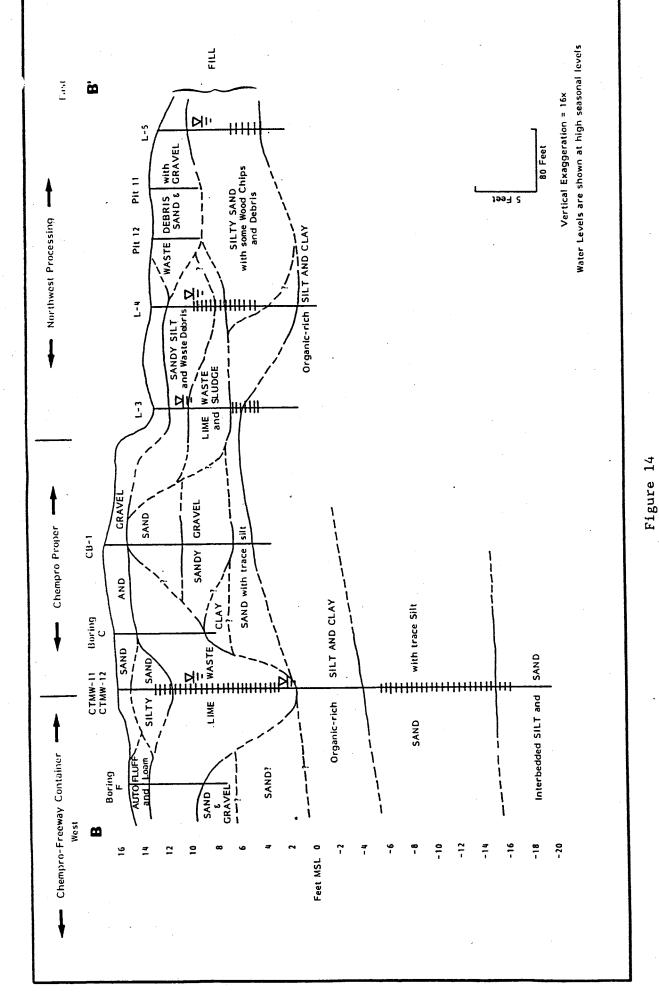


Figure 12

LOCATION OF LINES OF CROSS SECTIONS
AND BORINGS/WELLS AND TEST PITS



GEOLOGIC CROSS SECTION



GEOLOGIC CROSS SECTION

Three units resulting from industrial activities are included in the fill material and will be described here: lime waste, auto body fluff (auto debris), and silty sand with woodchips. An outline of the known areal distribution of these wastes is depicted in Figures 15, 16, and 17. Data in these figures were compiled from a variety of sources, which include information from boring logs and historical photographs and drawings in previous reports. The greatest weight was given to boring logs, and secondarily to historic information.

There appear to be two periods of filling with lime waste, with the first episode being the most volumetrically significant, occurring primarily during the period 1972 to 1976 (22). Lime waste fill is typically a white to gray, firm, clayor silt-like, chalky material. It may occur in sand to cobble size fragments and is commonly admixed with silt. Apparently, all or most of the lime waste dumped by Domtar Industries consists of powdered hydrated limestone that is free of solvent contamination. Most of the lime waste from Hooker Chemical is spent catalyst from the production of chlorinated solvents, and it is referred to as "lime solvent sludge." In boring logs, this lime waste is described as being soft, clay-like, sludge-like, and with a solvent odor. It apparently contains chlorinated hydrocarbons, heavy metals, and asbestos (22). This solvent sludge material is known from at least the following areas: throughout much of the Northwest Processing property and extending into Parcel A, plus an area in the center of Parcel B, and possibly some areas within Chempro Proper (Figure 15) (22, 52, 16). All of this material apparently originated as solvent sludge waste at Hooker Chemical (33, 24, 6, 22). A less significant period of lime waste infilling took place later, as evidenced by near-surface sand, gravel, and lime in the southern part of Parcel A and at scattered areas of the Chempro facility (locations of borings are shown in Section 4.0).

Auto fluff is pulverized or fragmented auto debris, including wire, glass shards, upholstery, tire shreds, paint chips, metal, string, plastic, and rubber, intermixed with sand, gravel, or silt. There were at least two periods of auto debris filling. The first period of disposal occurred prior to the main lime waste fill and included a sandy gravel or silty matrix in the eastern part of Chempro Proper. A second generation of auto fluff disposal occurs in near-surface silty sand, sandy silt, or clean sand on the Chempro property and in

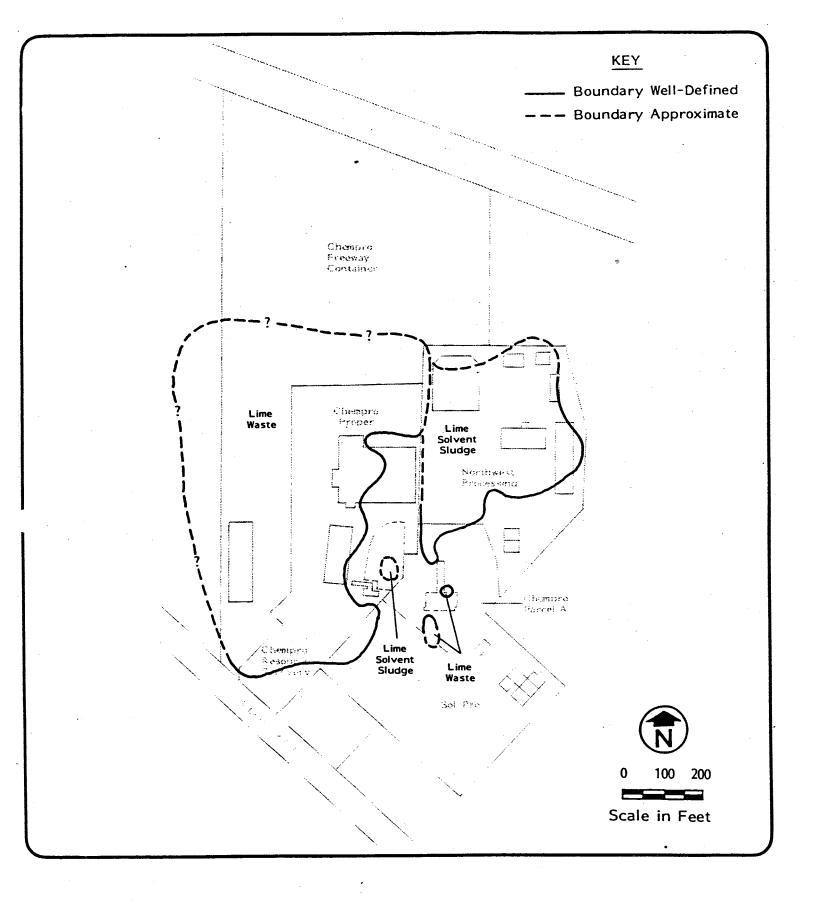


Figure 15

AREAL EXTENT OF LIME WASTE FILL

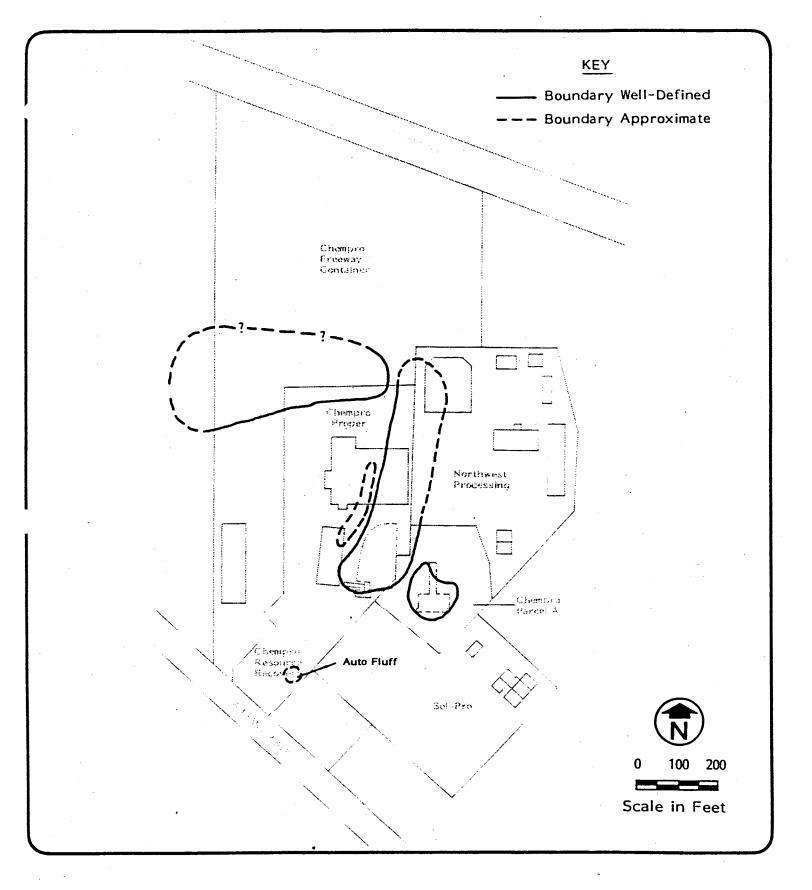


Figure 16

AREAL EXTENT OF AUTO FLUFF FILL

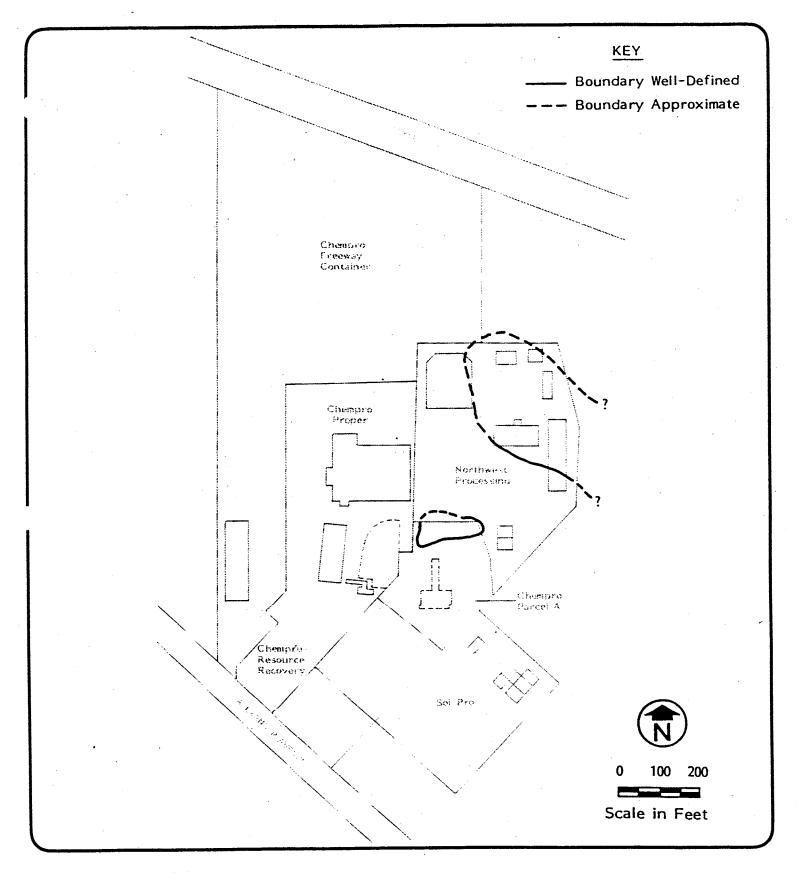


Figure 17

AREAL EXTENT OF WOOD WASTE FILL

the center of Parcel A. The silty to clean sand with auto debris and oily material in the central portion of Parcel A is the filled waste oil pond (Figures 13, 16).

The unit labeled silty sand with woodchips is located on the Northwest Processing site and adjacent property. Some woodwaste is also found in near-surface sand and gravel with rubble at Northwest Processing and Parcel A (Figure 17) (1, 52, 54).

Overall, most fill units are not very continuous laterally, although similar materials apparently were used as fill in various areas at roughly synchronous times. The oldest fill unit (fine to medium sand with trace silt) is the most continuous, forming a layer on top of the tide flat deposits across most of the properties. This sand is composed of the hydraulic dredge spoils from the nearby waterways used for fill on the intervening land.

Three natural geologic units have been recognized at the facilities underlying fill material. The uppermost unit is organic-rich silt and clay with some silty sand and some peat. This unit may be continuous throughout the area, ranging from 1 to 7 feet thick; however, the presence of this unit in former channels of the tideflat area has not been determined. This deposit formed in a tideflat environment before infilling occurred (8).

Below this is a unit of sand with some silt, underlain by interbedded silt and sand. These two geologic units are fairly thick and continuous under the site. They formed in an alluvial environment prior to development of the tideflats (8).

Although the cross sections do not trend through the Sol-Pro property, the stratigraphy in that area appears to be fairly simple (57). It typically consists of (top to bottom): 1 foot of dense, silty, sandy gravel (road and foundation base); 4 to 8 feet of loose sand and silty sand (hydraulic dredge fill); 5 to 7 feet of soft, organic-rich, clayey silt (tideflat deposits); and dense sand to over 12 feet thick (alluvial deposits) (57).

3.4.3 <u>Hydrogeology</u>

Two distinct aquifers have been identified on-site: an upper saturated zone (shallow aquifer) within the various fill units, and a lower alluvial aquifer (deep aquifer) within natural sand and some silt (8). These two water-bearing zones are separated by an organic-rich silt/clay unit that may be continuous across the site. Some local areas of perched water on clay or silt layers within the fill also have been identified.

The upper saturated zone is an unconfined (water table) aquifer, and the alluvial aquifer is confined. Water levels for the shallow aquifer are typically 1.5 to 7 feet below land surface (BLS) and 5 to 10.5 feet above MSL. Off-site well CTMW-15 appears to be either perched or laterally separated from the regional water table, although data are not conclusive. This well is screened in clayey silt, sandy silt, and silty sand, with the water level at 1.5 feet BLS (9 feet above MSL). All other shallow wells, with the possible exception of CTMW-14, appear to be in hydraulic connection with each other (Figures 13, 14). The deep aquifer potentiometric water levels are 10 to 14 feet BLS (2 to 3 feet above MSL), which constitutes a head rise of 1 to 7 feet above the top of the sand aquifer (above the base of the silt confining layer) (8).

Determination of ground water flow directions has been somewhat problematic since the first water levels were measured in 1982. Problems may have resulted from floating oil on the ground water, possible critical local recharge or discharge, and typographical errors for water levels. Efforts to measure water levels and determine flow directions for the shallow aquifer include the following:

- Twelve wells were installed by Harper-Owes throughout parts of the Chempro facility and Parcel A. Water levels suggested ground water flow was generally toward the southwest (August 1982), although one well had an anomalously depressed water level (16).
- Four wells surrounding Parcel A (installed by Hart-Crowser) showed ground water flow generally southward (21).
- Five wells were installed by Applied Geotechnology Inc. in the shallow aquifer at the north end of Northwest Processing, and water levels were measured on January 19, 1987 (52). Although these wells were not surveyed, their location on the detailed topographic map, together with the water depths, suggest that ground water flows generally eastward

- (17). This direction is in agreement with the data collected at Chempro and Parcel A, as discussed below (8, 43).
- Water levels taken by Sweet-Edwards/EMCON (SE/E) on three existing and six new wells at Parcel A in early June 1987 suggest flow to the southeast and southwest, with a hydraulic ridge trending about north-south through the parcel (1). Measurements taken on June 30, 1987, suggest flow to the southeast (1). Measurements taken on August 6, 1987, at low tide (for Commencement Bay) suggest flow generally to the south (1). Measurements taken at high tide on the same day are not significantly different but reveal a very irregular contour pattern.
- Measurements taken on six wells by SE/E at the Chempro facility and Parcel A in late November and early December of 1987 suggest flow generally to the southeast (2).
- Measurements taken on ten wells by SE/E at the Chempro Proper facility and Parcel A on April 28, May 23, and June 2, 1989, all indicate flow to the south, southwest, and southeast, with a hydraulic ridge trending north-south through the center of the area. These water levels are considered the most accurate measurements taken to date. Tidal measurements taken over 26 hours in well CTMW-8 in the shallow aquifer revealed no significant tidal or other short-term fluctuations (8).

The water elevation in well CTMW-14 appears to be anomalously low, although it is partly screened in the same sand aquifer as adjacent wells (Figure 13) (8). However, this well screen also intercepts a perched zone above a thin silt layer, thereby connecting the water table and this perched zone. The position of the screen and the low water level in CTMW-14 suggest that this perched zone does not significantly affect the water table elevation in this well. However, the anomalous water level leaves doubt as to the hydrogeologic relationship between CTMW-14 and other wells.

SE/E did not utilize the water level data from well CTMW-10 because water elevations appeared to be too high (8). SE/E suggested that this well screen potentially intercepts perched water, or that a nearby source of artificial recharge may be elevating the water level (8). However, the cross section in Figure 13 reveals that the screen mostly intercepts the same sand aquifer as adjacent wells, although it also partly lies within silt. The problem appears to originate in a typographical error recorded for the well survey elevation, which was inadvertently listed as being 2.00 feet too high (2, 8).

During evaluation of the gradient of the water table, well CTMW-15 has been excluded because it does not appear to be in close hydraulic connection with other shallow wells. The water elevation in CTMW-15 appears to be 2 to 3 feet higher than the projected water table for that area. Until more borings or wells are installed in the vicinity of CTMW-l and CTMW-l4, the usefulness of water levels in these wells is unclear. The water table contours depicted in Figure 18 utilize data from all usable wells in the shallow aquifer, with water elevations corrected and on a single survey datum. The water level in CTMW-14 was included in Figure 18 and the resultant gradient increases in that area. As stated above, ground water does appear to generally flow southward, with a hydraulic ridge that approximately follows the eastern boundary of Chempro Proper. Ground water at Northwest Processing generally flows east to southeast. Using extrapolation and depths to water in borings on the Sol-Pro property, it appears that ground water flows to the south or southeast (57). Therefore, it appears that the shallow aquifer discharges to Blair Waterway or possibly to If the water table other surface features such as local drainage ditches. follows the topographic trend in the Freeway Container property, it is possible that the shallow aquifer would flow to the northeast toward Hylebos Waterway.

The hydraulic conductivity of the shallow aquifer as determined from slug tests in shallow wells (excluding CTMW-15) ranges from 1×10^4 to 3×10^3 cm/sec (8). Using a geometrically averaged hydraulic conductivity of $K = 2 \times 10^4$ cm/sec, a gradient of 0.0040 (for Parcel A and Chempro Proper north of CTMW-10), and an effective porosity of 0.25, produces a calculated flow rate of 0.009 feet/day (3 feet/year).

In contrast to the shallow aquifer, the alluvial aquifer is confined and is reported to show a strong response to tidal cycles (8). Over a 25-hour period (May 8-9, 1989), the water level in deep well CTMW-9 (% mile from Blair Waterway) deviated up to 1.0 feet (8). However, only one high and one low peak were recorded during this period, unlike the pronounced twice-daily schedule of the tidal cycles for those two days. Furthermore, the frequency of the measured fluctuations in the well do not correspond to the tidal frequencies for Commencement Bay for those days. It is possible that other factors in addition to tides may be responsible for the observed fluctuations: barometric changes

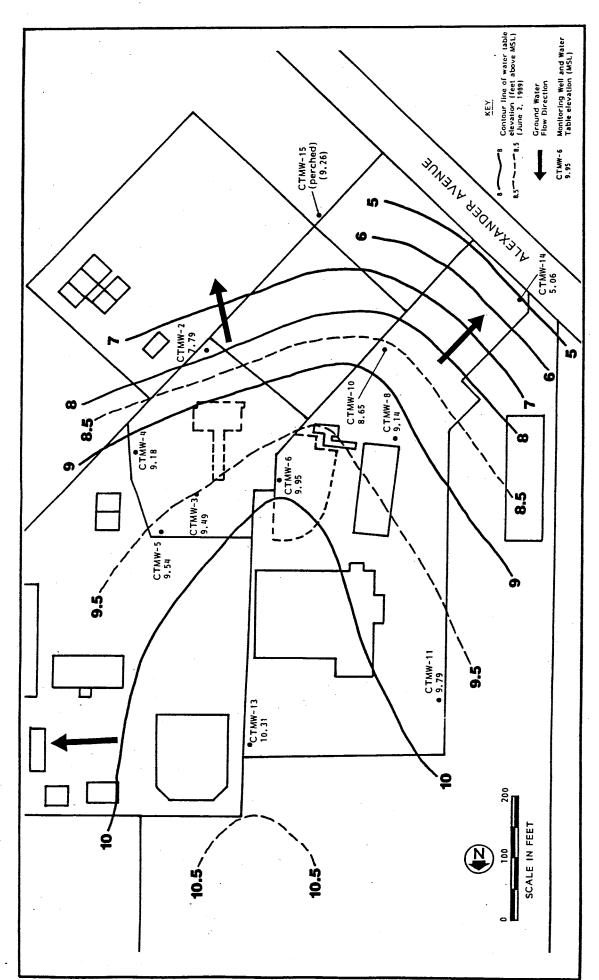


Figure 18

CONTOURS OF WATER TABLE ELEVATION Source: Modified from Sweet-Edwards/EMCON, 1989

and/or artificial discharge (pumping) or recharge. A longer hydrographic analysis is necessary to answer these questions.

Flow direction determination in the alluvial aquifer is highly sensitive to this observed fluctuation of 1.0 foot; maximum head differences at one time for reported water levels between the three measured deep wells is only 0.40 feet. Water levels in the deep wells were measured once in 1987 (12/4) and five times in 1989 (4/28, 5/4, 5/12, 5/23, and 6/2) (8). Of these six measurements, four produced northeastward flow vectors. The remaining two measurements (6/2 and 5/12) produced southwest and westward vectors; however, one elevation within each set of measurements is suspect due to tidal fluctuations, artificial recharge/discharge, and/or transcription errors. Therefore, ground water within the alluvial aquifer appears to flow northeastward most or all of the time, probably discharging to Hylebos Waterway. The installation of additional deep wells is necessary to confirm the flow direction in this aquifer.

The hydraulic conductivity of the alluvial aquifer as determined from slug tests in the three deep wells yields values of greater than or equal to 1×10^{-2} cm/sec (8). This uncertainty is due to the high permeability of the sand, resulting in overly rapid recovery of water levels during slug tests (8). A value of K - 1×10^{-2} cm/sec is an expected average conductivity for fine to medium sand. Using this value, a northeastward gradient of 0.00072, and an effective porosity of 0.3, results in an approximate flow rate of 0.07 feet/day (25 feet/year).

Three water supply wells have been identified within a 0.5 mile radius of the site (8). Two of these wells were in use as of May 1988: 1) the City of Tacoma Tideflats well located about 1/4 mile north of the site, and 2) the Buffelen Woodworking Company well about 1/3 mile northeast of the site. A third well located about 1/3 mile east of the site has been inactive for 20 years. The Tacoma Tideflats well has a depth of 788 feet and the Buffelen Woodworking well is about 300 feet deep. Neither of these wells would be affected by the generally southward flowing ground water of the shallow aquifer. The Buffelen well may be downgradient from the alluvial aquifer on-site, but this well taps water at a much greater depth than the alluvial aquifer, which reaches to about 20 feet below MSL (8).

4.0 SOIL AND GROUND WATER CONTAMINATION

Investigations to identify and evaluate investigations of surface and subsurface contamination have been conducted at all four facilities. The largest number of investigations have been conducted to evaluate subsurface contamination at the Chempro facilities. These include the installation of monitoring wells at Parcels A and Chempro Proper, collection of closely spaced sampling data for soils at Parcel A, and less extensive soil sampling at Chempro Proper. Information available on soil and ground water investigations from Northwest Processing and Sol-Pro is limited to ground water quality data from a small number of monitoring wells at these facilities. This discussion of soil and ground water contamination relies primarily on investigations conducted at the Chempro properties. This information is supplemented by data from Sol-Pro and Northwest Processing, where possible.

A comprehensive list of soil contaminant sampling data may be found in Appendix C; ground water sampling data may be found in Appendix D.

4.1 SOIL CONTAMINATION

4.1.1 Previous Investigations

At least seven investigations of soil and ground water contamination have been performed at the Chempro facilities. Soil sampling and analysis have been conducted to meet a variety of requirements, including reconnaissance evaluations, equipment closure reports and a RCRA 3013 enforcement order to assess releases from facility operations. Each of these investigations has utilized different methods for determining the number and locations of samples, sample depth intervals, use of discrete and composite sampling, and analytical methods for identifying soil contamination. The different objectives and methods used in these studies determined the type and quantity of data generated. The following discussion reviews the adequacy of existing data for determining the distribution of soil and ground water contamination from all SWMUs at the four facilities. The locations of soil samples from the investigations are shown on Figure 19.

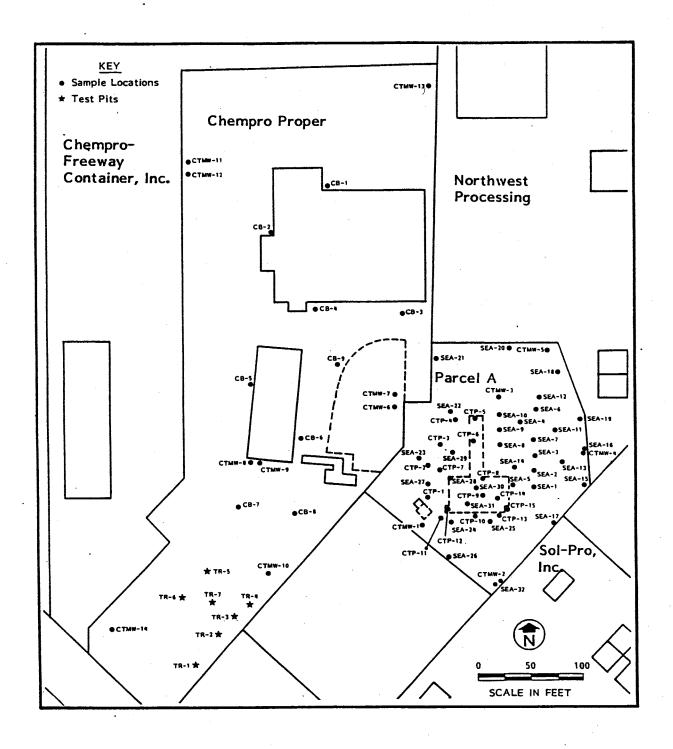


Figure 19

LOCATIONS OF BORINGS AND TEST PITS
USED FOR SOIL ANALYSES

At parcels A and B of Chempro, investigations have included Phase I and II Hydrogeologic Investigations (1, 2, 4, 8), and Equipment Closure Soil Sampling and Analysis reports (5, 53). Additional reports on analysis of auto fluff fill materials and statistical evaluation of Parcel A soil data for closure activities were also prepared (7, 14). During the Parcel A Phase I investigation, 32 soil borings and six monitoring wells were installed at the property (numbered SEA-1 through SEA-32 and CTMW-1 through CTMW-6, respectively). Twenty-two soil borings were placed to the east and northeast of the former treatment units. Three soil borings were placed along the southern edge of the former treatment facility and seven borings were placed in the west and northwest portions of the parcel. Five of the monitoring wells were placed around the border of Parcel A, with one well located west of the units near the center of Parcel A. different depth intervals were used to sample at each location. Samples were collected from the deeper interval at six borings, both intervals at two borings and the shallow interval at 24 borings. All of the studies conducted at the Chempro parcels have shown increasing concentrations of contaminants with depth (excluding selected metals concentrations in soils above contaminated fill layers). Therefore, the majority of samples from the Phase I investigation at Parcel A may under-represent concentrations of contaminants in soil for those Samples were analyzed for total metals, EP toxicity, volatile organics, base neutral/acid extractables, oil and grease, cyanides and total PAHs. The analytical results for selected compounds from these investigations are tabulated in Appendix C.

For the Phase II investigation at Parcel A, a total of 15 soil borings (numbered CTP-1 through CTP-15) were installed. Three depth intervals were considered for sampling at each boring. Between two and four samples were collected at each location from the depth intervals of 0.5 to 2.5 feet below land surface (BLS), 2.5 to 3.5 feet BLS and 3.5 feet BLS to the total depth of the boring (maximum of 8.2 feet). It was unclear if samples from the deepest interval were collected from a discrete depth within this interval or if the entire interval was sampled and composited. Auto fluff was encountered in all but five of the boring locations and oily fill and/or sediments were encountered in all but two boring locations (See Figure 16). Six borings were placed at the location of the former treatment units; three borings were located adjacent to the former units to the

south and three were located to the west of the units. Samples were analyzed for total metals, EP toxicity, volatile organics, base neutral/acid extractables, oil and grease, cyanides and total PAHs.

The Parcel A closure report was based on 41 soil sample locations at the location of the former treatment facility and adjacent areas on the parcel (5). (Note: these were closely spaced sampling locations not shown on Figure 19.) The sample locations were reportedly selected based on a random grid selection method specified in EPA SW-846 for waste characterization. Surface soil samples were collected at each location and at successive depths during excavation. Soil excavation was carried out to depths of up to 36 inches below the pre-existing grade at the site. Samples were collected at selected locations below the depth of excavation for evaluation of remaining levels of regulated waste constituents.

The Parcel A closure report was supplemented by the report on Parcel A Closure Auto Fluff Testing and Analysis (7), and on Statistical Evaluation of Parcel A Closure (14). Eight samples from four test pits were used to evaluate the composition of auto fluff fill in the northwest corner of the Chempro property occupied by Freeway Container. These reports attempted to demonstrate the contribution of auto fluff to metals and cyanide in soils at the site as a separate source from the waste treatment activities conducted by Chempro at Parcel A.

Chempro Proper Phase I and Phase II Investigations included soil sampling at nine monitoring well and nine soil boring locations (numbered CTMW-7 through CTMW-15 and CB-1 through CB-9, respectively). Of 50 soil samples collected from these locations, 24 were composited over large depth intervals (3 to 8 feet BLS). The composited samples may not properly reflect contaminant concentrations due to dilution of more highly contaminated intervals in the soil column. If volatiles were sampled from a discrete location, this may not reflect average or maximum concentrations for the reported sample interval; if these were composited, significant losses of constituents may have occurred during sampling. The locations of these sampling points are dispersed across this area.

During the Phase I investigation, seven test pits (TR-1 through TR-7) were excavated and soils visibly contaminated with oily wastes were removed for off-site disposal. No documentation or description of any analytical results for these locations were presented in the Phase I report.

The letter tank area Equipment Closure Soil Sampling and Analysis report (53) contains the results for soil sampling and analysis at seven locations in the area of the former "Letter Tank Farm" (SWMUs C-56 to C-63) operated by Chempro. Samples were collected from the ground surface to a depth of up to 1.5 feet. Four sample locations were selected to assess potential release sources from the closed tank farm, two each from former sump and tank valve locations. Three additional locations were based on randomly selected coordinates from a grid pattern. All samples collected were analyzed for total metals, EP toxicity, total cyanide and cyanide amenable to chlorination, oil and grease, volatile organic compounds, and total PAHs. A total of 15 soil samples were analyzed during the closure investigation.

4.1.2 <u>Contaminant Distributions</u>

A variety of potential sources exist for the hazardous constituents detected at the Chempro facilities. Oily wastes managed at Parcel A prior to Chempro operations have resulted in significant soil and ground water contamination, primarily due to storage and disposal of oily wastes in an unlined surface impoundment and spills from oily waste storage, treatment and transfer operations. Oily wastes have provided the primary contributions of PAHs detected in soil and ground water. These wastes may also have contributed to the soil contamination by aromatic compounds (benzene, ethyl benzene, toluene and xylenes) and by purgeable halocarbons (trichloroethene, methylene chloride and others). The lime sludges disposed of at the Chempro facilities by Hooker Chemical are a documented source of trichloroethene, tetrachloroethene, ethylene dichloride, 1,1,1-trichloroethane and methylene chloride, and a potential source of dichloroethenes and vinyl chloride. Paint booth wastes are a potential source of aromatic compounds (especially toluene and xylenes) and metals. Metals and cyanides present at the facilities are present primarily due to releases of plating wastes from the treatment facility and constituents present in the auto

fluff used as fill material at the site. The following section reviews the distribution of the major types of contaminants found in soils at the facilities.

Base Neutral Compounds - Oily Waste Constituents

A variety of base neutral organic compounds were detected in subsurface soils at the Chempro facilities. The predominant species in this group are polynuclear aromatic hydrocarbons (PAHs) that are usually associated with oily wastes or coal High concentrations of PAHs (>100,000 μ g/kg) were detected at a number tar. of locations at Parcel A (SEA-14; CTP-3,7,9,11,12,14) (Figure 20). Currently available information indicates soils most highly contaminated by PAHs occur in an elongate pattern located in the area of the former oily waste pond and in the southern portion of the former plating waste treatment area. Two "hot spots" of significant contamination were also detected to the west of the former treatment facility and are probably related to releases from the oily waste pond. In most of the area contaminated by oily wastes at Parcel A, naphthalene and 2methylnaphthalene predominate over other PAHs, usually comprising 50 to 80 percent of the total PAHs detected in the base neutral scan. Lower levels of PAH contamination extend to the east and west from the former oil pond at Parcel Significant concentrations of PAHs (>1000 μ g/kg) were detected in the Α. vicinity of the former letter tank farm (CB-6,8,9; CTMW-6). Based on the density of sampling data, it can not be determined if these results indicate discrete areas of contamination or more widespread contamination in the letter tank area. One sample from the northeast corner of Chempro Proper contained >2000 μ g/kg PAHs (CTMW-13); this may reflect the influence of Northwest Processing operations on soil composition, as the sample was not taken from an area associated with units or processes of Chempro. Higher molecular weight PAHs that have been found to contribute to contamination at the Chempro facilities include fluorene, phenanthrene, pyrene, chrysene, benzo(a)anthracene and related compounds.

Base Neutral Compounds - Phthalate Esters

The other class of base neutral organic compounds detected at a large number of locations are the phthalate esters (Figure 21). These compounds are used as plasticizers and are commonly detected in the environment due to anthropogenic

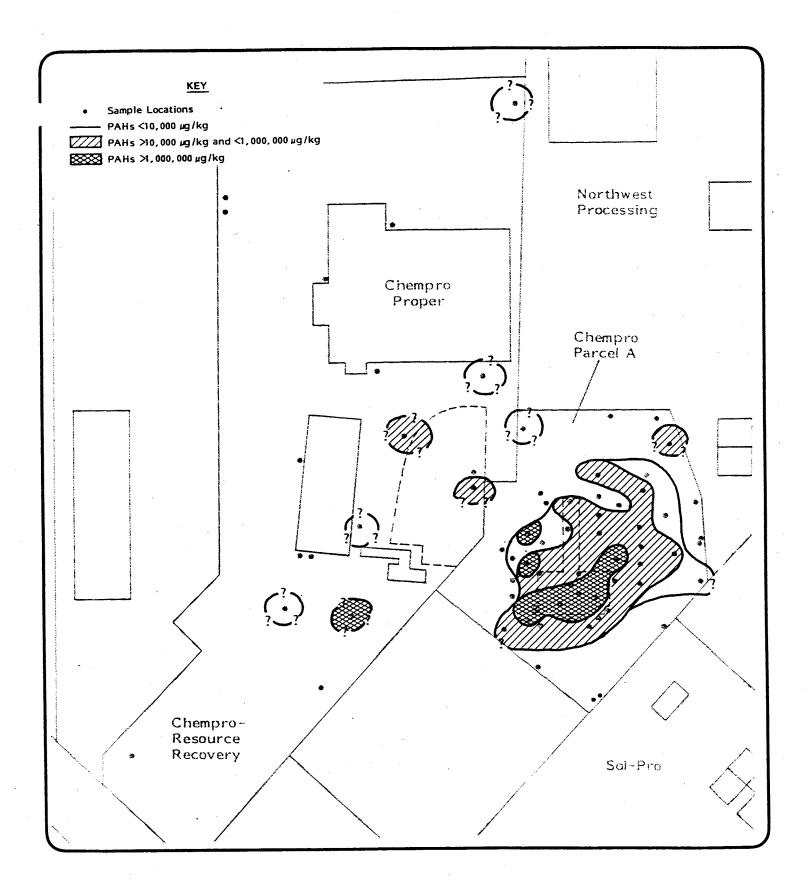


Figure 20

CONCENTRATIONS OF PAHs IN SOIL

65

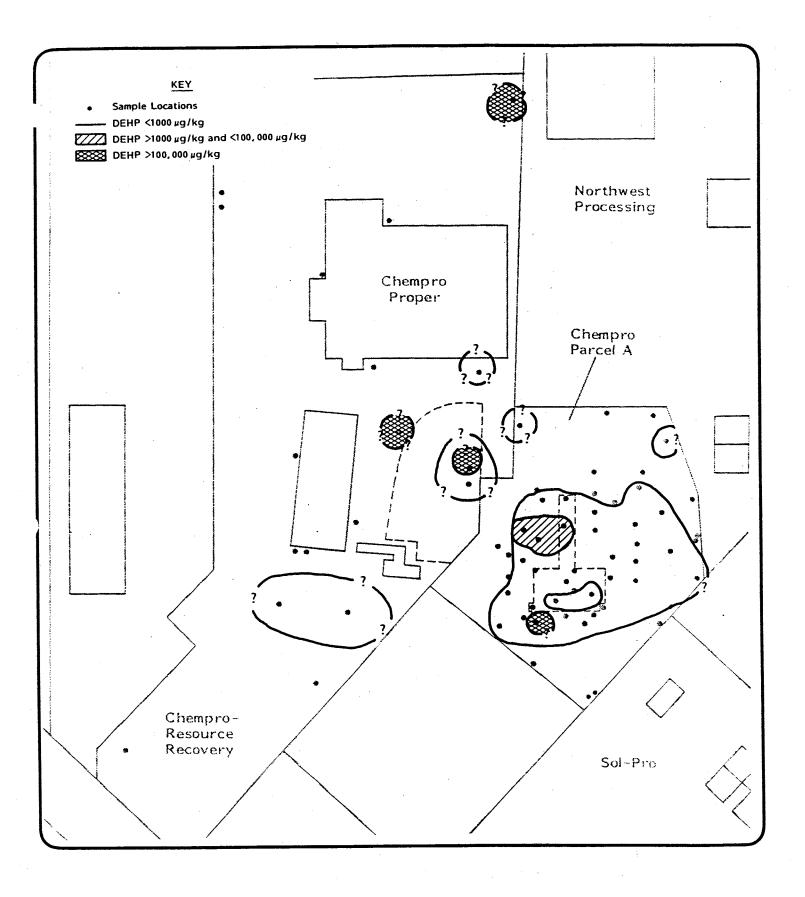


Figure 21
CONCENTRATIONS OF DEHP IN SOIL

sources. Four species of phthalate esters have been detected in soils at the Chempro facilities, with bis(2-ethylhexyl)phthalate being the predominant component. Di-n-octyl phthalate, butylbenzyl phthalate and di-n-butyl phthalate are also present in areas south and east of the former waste treatment units at These compounds also contribute to the Parcel A (SEA-24,29; CTP-3,4,6). contamination observed at borings placed in the area around the former letter tank farm on Chempro Proper (CTMW-6,7; CB-6,9). High levels of phthalate ester contamination are also found in the northeast corner of Chempro Proper (CTMW-This distribution is generally similar to the observed distribution of PAHs. While the area of contamination at Parcel A generally occurs in the area of the former oil pond, contamination at Chempro Proper may represent isolated or more widespread contamination in that area. As with PAHs, the contamination detected in the northeast corner of Chempro Proper may reflect the influence of Northwest Processing on conditions at the Chempro site. The phthalate esters present in soils may be present as oily waste constituents and as components of the plastic materials present in the auto fluff. Phthalate esters present in oily waste will be more mobile in the environment due to their occurrence as constituents in a complex organic liquid, while phthalate esters in auto fluff are present in a solid matrix that are not as available to migrate in the The contribution of each of these sources to the subsurface flow system. observed concentrations of phthalate esters in soil cannot be determined from available information.

Volatile Organic Compounds

Significant concentrations of aromatic hydrocarbons and purgeable halocarbons were detected in soils at several areas of the Chempro facilities. Figures 22 and 23 show the distribution of these two groups of contaminants detected at the site. Aromatic hydrocarbons found in soils include benzene, ethyl benzene, toluene and xylenes. Xylenes are the predominant aromatic compounds in the samples, occurring at concentrations up to 240,000 μ g/kg. Toluene and ethylbenzene are significant components of the aromatic compounds present in soils. Benzene occurs less frequently and is usually present in lower concentrations (up to 16,000 μ g/kg) in subsurface soils.

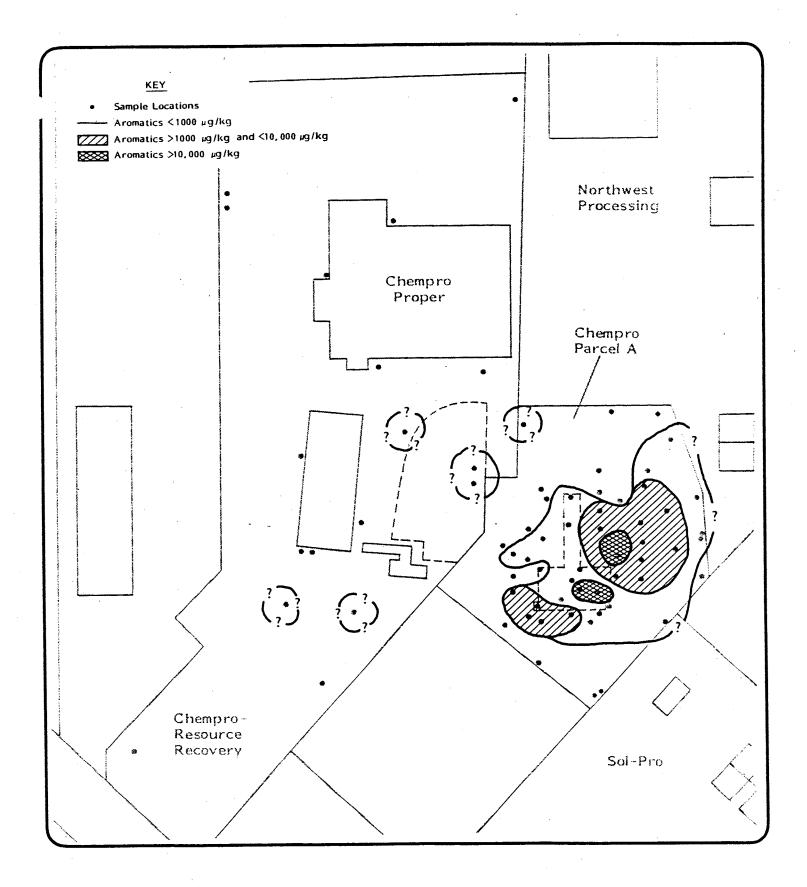


Figure 22
CONCENTRATIONS OF AROMATICS IN SOIL

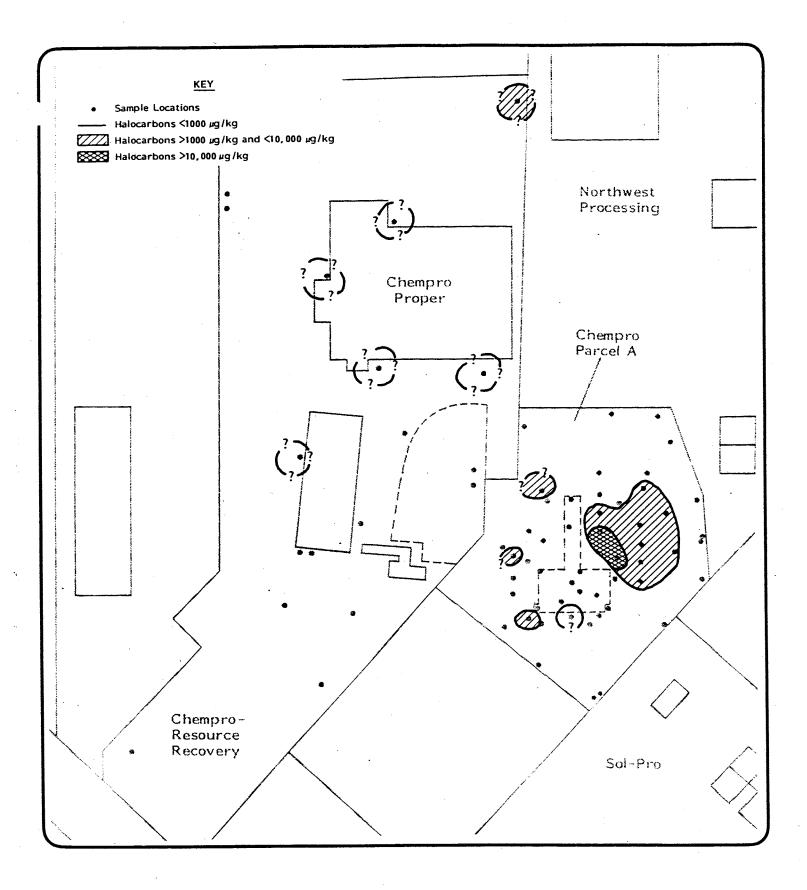


Figure 23

CONCENTRATIONS OF HALOCARBONS IN SOIL

The distribution of aromatic hydrocarbons generally occurs in the same pattern as that observed for PAHs at the site. A widespread area of contamination is present in the former location of the oily waste pond at Parcel A (Figure 22). In the central and eastern portions of this contaminated area, xylenes are the only aromatic compounds present in soil. Within the broader area of contamination, higher concentrations of aromatics occur in localized areas in the immediate area of the former waste treatment units on Parcel A (SEA-14; CTP-1,2,7,9,10,11,12,14). High concentrations (>200,000 μ g/kg) of aromatics occur at Chempro Proper in the area of the former letter tank farm. Contamination detected in one boring (CB-9) at the former tank farm may be due to isolated contamination or may reflect a contiguous area of contamination in the vicinity of the former letter tank farm. An apparently isolated area of contamination at the northwest corner of Parcel A (SEA-21) may also be due to the influence of Northwest Processing.

Purgeable halocarbons detected in soils at the Chempro facilities include trichloroethene, tetrachloroethene, 1,1,1-trichloroethane, vinyl chloride and methylene chloride. These chlorinated compounds may be present due to several potential sources, including spent lime catalyst used as fill, solvent constituents present in used oil managed in the former oil pond and other units at Parcel A, solvents present in plating wastes treated at the former waste treatment area in Parcel A, and waste solvents stored and treated at Chempro Proper. The occurrence of halogenated compounds in the two areas east and south of the former treatment facility at Parcel A may reflect the impact of spent lime catalyst fill, waste oils and plating waste containing solvents managed in these areas (SEA-1,2,3,6,8,9,11,13,14; CTP-11). Because virtually all of the Northwest Processing property is underlain by lime fill, the concentrations observed in borings adjacent to that facility (CTMW-13) may be due to the lime fill.

Other volatile organic compounds were detected at significant levels (up to $100,000~\mu g/kg$) in soils at the Chempro facilities, including acetone and 2-butanone. Volatile organic compounds other than those discussed above occurred in spatially isolated samples that could not be used to infer any distribution of contamination at the site. Where these compounds have been detected, sampling

at a closer spacing interval will be required to determine the extent of contamination due to these compounds.

Metals and Inorganic Compounds

A number of metals and inorganic compounds have been detected in soil samples at levels that may reflect contamination due to releases from solid waste management units. These compounds include chromium, lead, copper, zinc, arsenic, mercury, and silver. Metals may occur in soils at the site in several different states. Metals occur as trace elements in soil minerals, and are often found in soils at levels of up to several mg/kg. Because of the low concentrations of metals and their presence in the crystal structure of mineral grains in this mode of occurrence, metals from this source are usually not available for subsurface transport.

Metals present in this form are naturally occurring and are referred to as background concentrations. Metals may also be present as major constituents of solids in auto fluff. Because of the higher concentrations of metals in these materials and the occurrence of the waste as finely ground particulates, significant concentrations of metals may be present in EP toxicity extracts from auto fluff (e.g. up to 1.5 mg/l in EP extracts) (7).

Metals may also be present in soils as constituents in pore fluids (ground water, soil moisture and waste present in soils). Metals present in this form are part of the subsurface flow system and provide the sources for ground water contamination by metals. Sources for metals in this method of occurrence are plating wastes managed at Parcel A, metals present as constituents in used oil, and metals leached from auto fluff. Other soil and waste properties may affect the mobility of metals and their potential contribution to ground water contamination. These include decreased metal solubilities due to the elevated pH in areas of lime waste fill, enhanced solubility of metals due to the presence of cyanide that may act as a complexing agent, and possible increased solubility of metals due to ligand formation with oily waste components.

The distribution of lead and chromium in soils was evaluated to provide an overall assessment of the distribution of contamination at the site due to metalbearing wastes and the potential for environmental impacts due to lead contamination. Figure 24 and 25 illustrate the distribution of lead and chromium contamination detected at the facilities. While chromium and lead contamination are somewhat distributed across Parcel A, there are apparently three separate areas of contamination in the vicinity of the former treatment area on Parcel A. The occurrence of these areas immediately east, west and south of the former treatment area generally coincides with the locations of sumps present at the former treatment facility.

The values shown on Figures 24 and 25 represent the maximum value for these metals at each location from the Phase I and II studies for Parcels A and Chempro Additional sampling conducted for the closure of Parcel A provided additional information on the distribution of metals with depth in the upper 3 feet of soils in the former waste treatment area of Parcel A. Chromium was found to decrease with depth in soil until auto fluff was encountered. Cadmium and copper were present in very low levels in soil until auto fluff was encountered, where concentrations increased significantly. The trend of decreasing chromium concentration with depth was attributed to limited depth of impact due to releases from the facility, while elevated concentrations at depth were These depth distributions may reflect the attributed to auto fluff. contributions of different sources to the metals concentrations in soils; however, an attempt to determine the contributions of metals in different forms to the total concentrations was not attempted. The Parcel A closure excavation did result in the removal of shallow contaminated soils, but elevated metals concentrations remain that Chempro attributes to auto fluff beneath the site.

Significant chromium and lead contamination (up to 284 and 6720 mg/kg, respectively) was encountered at Chempro Proper. Shallow soil samples were collected in the location of the former letter tank farm during Parcel B closure activities. These results may indicate two separate areas of contamination at either side of the tank farm (SEA-24; CTMW-7; CB-9). This distribution may reflect releases that ran off the pad or escaped containment at the letter tank

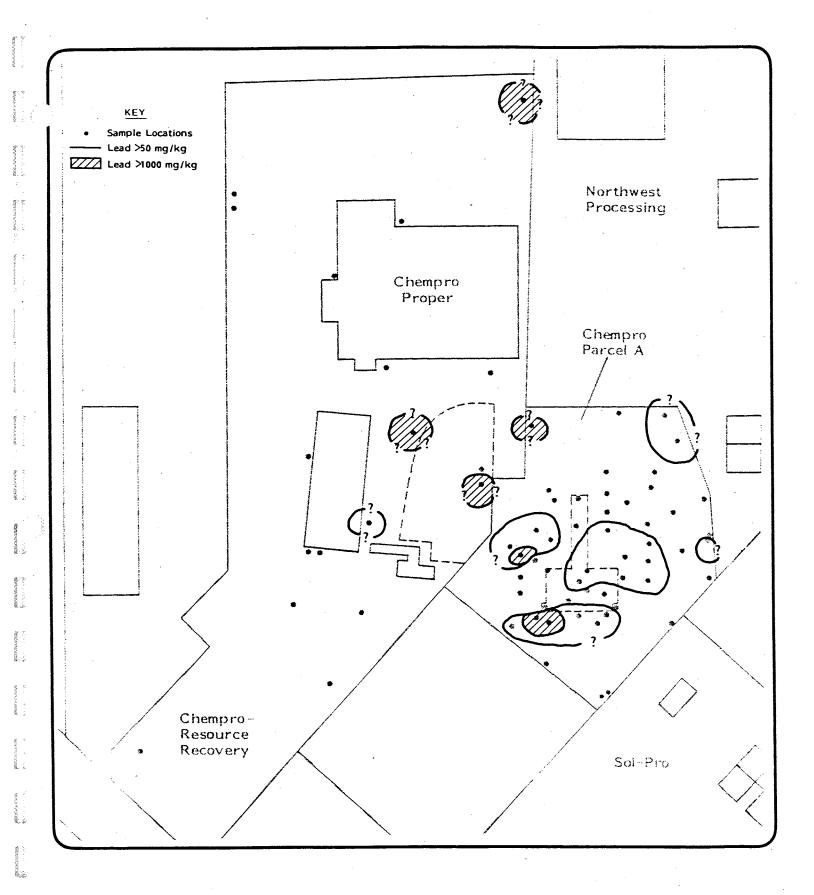


Figure 24
CONCENTRATIONS OF LEAD IN SOIL

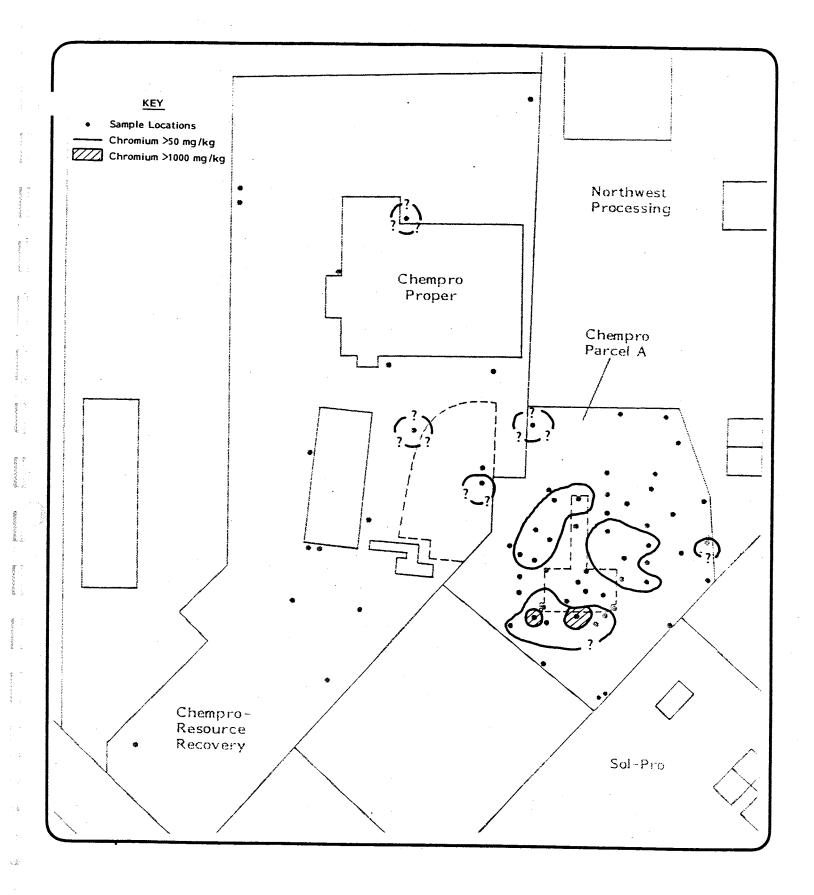


Figure 25
CONCENTRATIONS OF CHROMIUM IN SOIL

farm; but additional sampling is required to obtain a representative distribution of metal contamination in this area. Similar to the occurrence of other contaminants, elevated levels of metals in soil at the northern edge of Parcel A and in the northeastern corner of Chempro Proper (SEA-24, CTMW-13) may be due to unidentified releases from Northwest Processing.

4.1.3 Summary

Significant levels of soil contamination have been encountered at Chempro Parcel A and Chempro Proper in all of the investigations conducted to date. A variety of organic compounds and metals have been detected in soil at levels that may contribute to ground water contamination in exceedance of health-based standards and criteria. Available information indicates a continuous area of soil contamination at Parcel A that may be attributed to the former waste treatment unit and the oil pond. Additional sources of contamination at Parcel A may include auto fluff and spent lime catalyst fill materials. Contamination detected along the northern edge of Parcel A and in the northeast corner of Chempro Proper may be due to releases from Northwest Processing or unidentified sources at the Chempro facilities.

The distribution of contamination at Chempro Proper has not been adequately determined. Due to the number and distribution of sample locations, the lateral extent and relationship of contaminants can not be determined from the available information. Additional sampling is required to determine the lateral extent and distribution of contamination at Chempro Proper. The absence of soil sampling data at the Northwest Processing and Sol-Pro facilities does not allow the identification or characterization of any releases to soil that may have occurred at these facilities, or due to releases from adjacent facilities that may have migrated onto these properties.

Recommendations for additional investigation of soil contamination are discussed in Section 6.0 to determine the nature and extent of soil and ground water contamination at the Chempro, Northwest Processing, and Sol-Pro facilities.

4.2 GROUND WATER CONTAMINATION

4.2.1 <u>Previous Investigations</u>

Seven separate hydrogeologic investigations have been conducted between 1982 and 1989 at the Chempro site. In addition to those reports discussed in the soil contamination section of this report, the following hydrogeologic investigations have been conducted at the Chempro, Northwest Processing, and Sol-Pro facilities:

- Harper Owes, Inc. installed 12 ground water monitoring wells in 1982.
 All twelve wells have been abandoned (16).
- Hart-Crowser installed four monitoring wells on the Poligen (Northwest Processing) site in March 1986 for a preliminary nitric acid spill residual impact evaluation (21).
- Applied Geotechnology, Inc. installed eight monitoring wells on the Northwest Processing site in February, 1987 (52).
- Three wells were installed on the Sol-Pro site by Hart-Crowser between 1987 and 1989 (57).

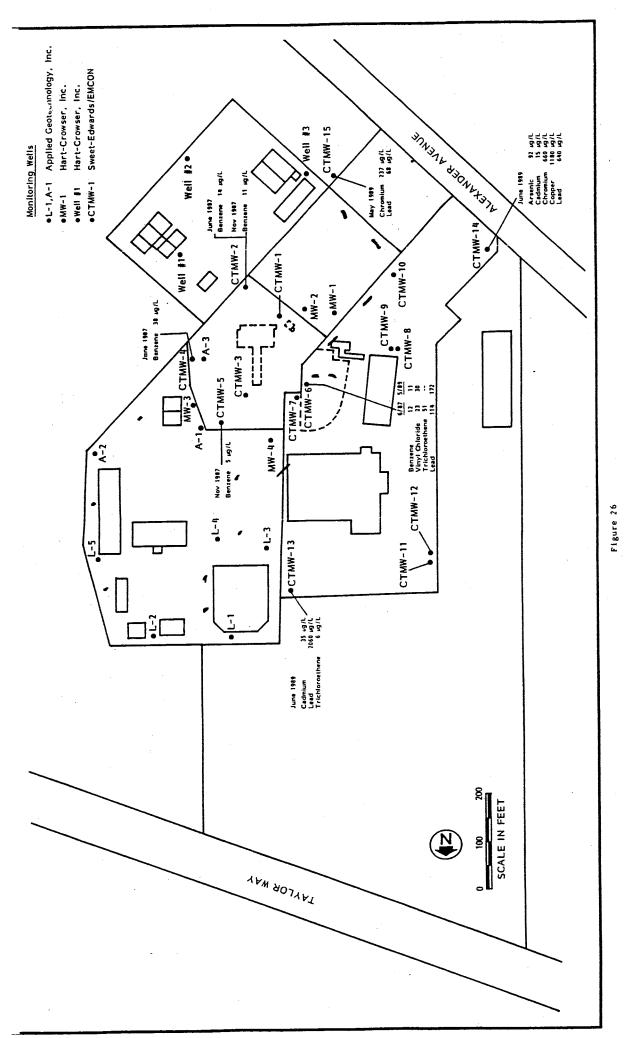
Results of the ground water laboratory data were reviewed and each analytical result verified with the laboratory analysis document provided in the investigation reports, except for the Chempro quarterly ground water monitoring results that did not include laboratory analysis reports. Data omitted in the reports have been noted in the tables in Appendix D.

Ground water monitoring activities have detected a variety of hazardous constituents in ground water at the facilities. The existing health and environmental water quality criteria and standards for compounds detected in ground water are listed in Table 10.

4.2.2 Contaminant Distributions

Metals

Figure 26 shows total metals concentrations exceeding Maximum Contaminant Levels (MCLs) at wells CTMW-6 (June 1987, May 1989), CTMW-13 (May 1989), CTMW-14 (May 1989), and CTMW-15 (May 1989). MCLs for these compounds are listed in Table 10. Total lead concentrations at CTMW-6 exceeded the MCL of 50 ug/L in 1987 and 1989. Total arsenic concentrations also exceeded the MCL at well CTMW-6 in



MONITORING WELL LOCATIONS AND METALS AND ORGANIC COMPOUNDS EXCEEDING MAXIMUM CONTAMINANT LEVELS 11

Table 10

HEALTH AND ENVIRONMENTAL BASED WATER QUALITY STANDARDS AND CRITERIA FOR COMPOUNDS DETECTED IN GROUND WATER AT CHEMPRO PROPER, CHEMPRO PARCEL A, NORTHWEST PROCESSING, AND SOL-PRO

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Compound	Concentration Limit (ug/l)	Basis for Concen- tration Limit
Acecone	2,000	Verified Reference Dose (RfD)
Benzene	5	MCL
Styrene	5	proposed MCL
Toluene	2,000	proposed HCL
Xylenes, total	10,000	proposed MCL
Methyl isobutyl ketone	2,000	R£D
Methyl ethyl ketone	2,000	RED
Methylene chloride	v 5	Risk Specific Dose
Chloroform	0.2	(RSD) RSD
Tetrachloroethene	5	proposed MCL
Trichloroethene	5	HCL
cis 1,2-dichloroethene	70	proposed MCL
trans 1,2-dichloroethene	100	proposed MCL
Vinyl Chloride	5	HCL
Carbon disulfide	4,000	RfD
4-methyl phenol	2,000	RfD
Phenol	1,000	RfD
Naphthalene	10,000	Health Affects Assessment for Naphthalene
Acenapthene	520	Fresh water LOEL
Hexachlorbutadiene	0.5	RSD
Benzo(a)anthracene	0.01	RSD
Fluoranthene	200	Ambient Water Quality Criteria
Pyrene	4,000	White, 1939
Bis (2-ethylhexyl) phthalate	3	RSD
Butylbenzyl phthalate	950	Health Affects Assessment for Phthalic Acid Esters
Di-n-butyl phthalate	4,000	RfD
Nickel	0.7	RfD
Copper	2.9	Water Quality Criteria for Chronic Effects on Marine Life
Lead	50	NCL
Cadmium	10	HCL .
Chromium	50	HCL.
Arsenic	50	NCL

1989. An elevated concentration of total barium was found in well CTMW-6 in 1987. Total metals concentrations exceeded MCLs for cadmium and lead at well CTMW-13; arsenic, cadmium, chromium, copper, and lead at well CTMW-14; and chromium and lead at well CTMW-15.

Wells CTMW-1, CTMW-5, CTMW-6, CTMW-10, CTMW-13, CTMW-14, and CTMW-15 also exhibited elevated concentrations of total metals in ground water samples not exceeding MCLs. The metals of concern include arsenic, barium, copper, lead, nickel, and zinc. These values are provided in Appendix D.

Elevated concentrations of dissolved metals in well CTMW-6 have included chromium (14 ug/L, 1989), lead (13 ug/L, 1989), arsenic (32 ug/L, 1989), nickel (180 ug/L, 1989), and zinc (15 ug/L, 1989). (Concentrations are reported as the maximum values if duplicate samples were analyzed).

The large differences observed between total and dissolved metals concentrations in samples may reflect excessive solids present in samples. Monitoring wells may need to be redeveloped or replaced to provide representative samples.

Organic Compounds

A variety of organic compounds were detected in ground water at the Chempro facilities. Floating petroleum has been observed in wells CTMW-1, CTMW-2, CTMW-3, CTMW-4, CTMW-5, and CTMW-6 during sampling in 1987. The MCLs were exceeded for benzene, vinyl chloride, 1,1-dichloroethane, and trichloroethene. The ground water wells and sampling results where these exceedances have been observed are shown in Figure 26.

Benzene exceeded the MCL $(5\mu g/1)$ at wells CTMW-1, CTMW-2, CTMW-4, and CTMW-6. Vinyl chloride concentrations exceeded the MCL in well CTMW-1, and CTMW-6. The MCL for 1,1-dichloroethene was exceeded only at well CTMW-1; trichloroethene exceeded the MCL at wells CTMW-1, CTMW-6, and CTMW-13. Quarterly ground water monitoring by Chempro personnel resulted in exceedance of MCLs for benzene and vinyl chloride in well CTMW-6 in June and September 1988 and May 1989. Elevated concentrations of other volatiles and phenols are also listed in Appendix D.

Benzene and vinyl chloride concentrations show a similar distribution in wells CTMW-1, CTMW-2 and CTMW-6. CTMW-6 shows the highest contaminant levels with lower but significant contamination present in CTMW-1, and concentrations in CTMW-2 lower than the other two wells. Water level measurements indicate ground water flows in a south-southwesterly direction. This may explain the observed distribution of these contaminants, but additional information is needed to determine the extent of ground water contamination at the site. At least two explanations could be applied to the observed distribution of contaminants:

- CTMW-2 may not be fully hydraulically connected with CTMW-1 and CTMW-6 because of discontinuities in the fill material
- Preferential flow pathways may be diverting contamination in a more southerly direction toward CTMW-1

Other Contaminants of Concern

Other volatile and semi-volatile organic compounds have been found in wells CTMW-4, CTMW-6, CTMW-10, CTMW-11, and CTMW-13. Well CTMW-4 had an elevated concentration of acetone (210 ug/L, 1987). Well CTMW-6 included elevated concentrations of acetone (390 ug/L, 1987; 160 ug/L, 1987), 4-methyl-2-pentanone (300 ug/L; 270,000 ug/L, 1987), bis(2-ethylhexyl)phthalate (110 ug/L, 1987), and 4-methylphenol (540 ug/L). Well CTMW-10 had elevated concentrations of 2-methylnaphthalene (15 ug/L, 1987; 29 ug/L, 1989) and acenaphthene (23 ug/L, 1987). Well CTMW-11 had elevated concentrations of acetone (140 ug/L, 1987; 190 ug/L, 1989) and phenol (220 ug/L, 1987). Well CTMW-13 had elevated concentrations of bis(2-ethylhexyl)phthalate (11 ug/L and 19 ug/L, 1989) and toluene (10 ug/L and 9.2 ug/L, 1989).

Exceedance of Health and Environmental Water Quality Criteria and Standards

A number of the compounds present in ground water at the facilities have been detected at levels that exceed the health or environmental water quality limits listed in Table 10. Because of inconsistencies and the ground water sampling conducted at the facilities to date, an overall evaluation of ground water quality at the facilities can not be presented. The sampling frequency and analytical parameters for the wells have varied considerably in the past investigations. Table 11 summarizes the frequency of exceedance of water

Table 11

FREQUENCY DISTRIBUTION OF CONTAMINANTS
EXCEEDING HEALTH BASED LIMITS IN GROUND WATER AT
CHEMPRO AND NORTHWEST PROCESSING

	Well No.	Well No.	Mell No. Mell No. Mell No. Well No. Well No.	Well No.	Vell No.	Well No.	Vell No.	Well No.	Vell No.	Well No.	Well No.	Well No.	Well No.	Vell No.	Well No.	Well No.
COMPOUND	CTMU-1	CTMN-2	CTMM-3	CTMU-4	CTMM-5		CTMU-7	CTMV-8	CTMI-9		CTMU-11	CTMU-12	CTM1-13	CTMW-14	CTMN-15	L-5
	H = 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						油用锰的铅环核动物碱碱碱加加酸钠物对剂剂剂碱酯聚核钠酶酚酚酚酶		医线链 计计算机 计算机			10 A M 16) 12 13 14 15 15 15 15 15 15 15		
Acetone	:	:	:	:	:	į :	:		:	:	1/5	:	:	:	:	•
Benzene	2/2	2/2	:	7	1/2	9/9	:	;	:	:	:	:	:	:	:	:
Methylene chloride	<u> </u>	:	:	:	:	9/7	:	.:	:	5/2	:	:	:	:	2/3	:
Styrene	:	:	:	:	:	1/6	:	:	:	:	:	;	:	:	:	:
Vinyl chloride	1/2	;	:	:	:	9/9	:	:	:	:	:	:	:	:	:	:
Methyl isobutyl ketone	:	:	:	:	:	1/6	: , :	:	:	:	:	:	:	:	:	:
Chloroform	:	:	:	:	:	:	:	:	:	:	\$:	:	:	:	:
Trichtoroethene	1/2	:	:	:	:	5/6	:	:	:	:	:	:	: 4	:	:	:
Tetrachloroethene	:	:	:	:	:	1/6	:	:	:	:	:	:	1/2	:	:	:
2-methylphenol	1/5	:	:	:	:	:	:	:	:	:	•	:	:	:	:	:
Hexachlorobutadiene	:	:	:	:	:	:	: .	:	:	:	:	:	1/2	;	:	:
Benzo(a)anthracene	:	:	:	:	:	1/6	:	:	:	2/3	•	:		:	:	:
Ris (2-ethylhexyl) ohthalate	1/2	1	Ξ	1/1	1/2	2/3	2/2	2/2	2/2	2/2	2/2	1/2	1/3	5/3	:	:
Arsenje		:	:	. :	:	:	:	:	•	:	:	:	:	5/2	:	?
C into	:	:	:	:	:	:	:	:	:	;	:	:	9/2	:	:	:
	•	:	:	:	:	:	:	:	:	:	:	:	:	5/4	2/2	;
	:	:	:	:	:	2/3	:	:	:	:	:	:	2/7	5/6	9/1	:
9 00 00	:	;	:	:	:	5/4	1/3	:	1/2	1/2	Ξ	1/2	2/3	9/4	3/6	:
Nickel	2/2	:	:	:	:	7/7	1/2	:	:	:	:	:	3/3	5/3	2/3	:

(Note: the first number in each entry is the frequency of exceedances, the second number is the total number of sampling events.)

quality limits and sampling events at the facilities. This table shows certain compounds exceed water quality limits at a number of wells, including bis(2-ethylhexyl) phthalate, benzene, copper, and nickel. In addition, certain wells are highly contaminated due to a wide variety of hazardous constituents, including CTMW-1, CTMW-6, and CTMW-13 through 15.

4.2.3 Additional Ground Water Investigations at Sol-Pro and Northwest Processing

Data for the Sol-Pro and Northwest Processing sites are tabulated in Appendix D. Three monitoring wells were installed and sampled in the upper aquifer on the Sol-Pro property (57). VOCs and total or dissolved metals were not detected in samples from the wells. However, oil and grease were detected at well No. 1 (8 mg/L) and well No. 2 (6 mg/L).

Eight ground water monitoring wells were installed in the shallow aquifer by Applied Geotechnology, Inc. at the Northwest Processing site in February, 1987 (52). Ground water samples were analyzed for some organics and total metals, and resulted with concentrations below MCLs. However, detection limits established by the testing laboratory were above the MCL for some metals (chromium: detection limit = 100 ug/L, MCL = 50 ug/L; lead: detection limit = 100 ug/L, MCL = 50 ug/L). These data are insufficient to evaluate potential ground water contamination or identification of contaminant source(s) at the Northwest Processing site.

4.2.4 Summary

The major contaminants of concern exceeding MCLs include the following total metals and organic compounds:

- Arsenic, cadmium, chromium, copper, and lead
- Benzene, vinyl chloride, 1,1-dichloroethene, and trichloroethene.

The shallow aquifer gradient is generally toward the south. Exceedances of MCLs occurred in the shallow aquifer wells throughout the site. Benzene concentrations exceeded the MCL in five out of six wells within Parcel A. The lower alluvial aquifer wells have not exhibited elevated concentrations of total

or dissolved metals or organic compounds except for slightly elevated concentrations of bis(2-ethylhexyl)phthalate in wells CTMW-7 (7.9 ug/L, 1989) and CTMW-9 (25 ug/L, 1989).

Total concentrations of arsenic, cadmium, chromium, copper, and lead exceeding MCLs reflect releases from the Chempro facilities, and possibly from Northwest Processing. While dissolved metals concentrations are significantly lower, elevated concentrations of dissolved metals also indicate contamination that may be present from a variety of sources, including plating wastes managed at Chempro, auto fluff used as fill material in the area, oily wastes disposed at Parcel A, and possibly releases from Northwest Processing operations. The extent of metals contamination cannot be adequately evaluated from existing data, because of the lack of data from Chempro Proper, limited sampling of downgradient wells at Parcel A, and the absence of useable data from Northwest Processing and Sol-Pro monitoring wells.

The small amount of data available from the southern portion of Parcels A and from Chempro Proper prevents a reliable evaluation of site conditions at this time. Other organic compounds, such as acetone and 4-methylphenol have been detected at high concentrations (>100 ug/L) in individual wells. It cannot be determined from the available information if these wells have encountered localized areas of contamination or a portion of a more widespread plume of contamination.

Recommendations for further ground water sampling to determine the nature and extent of ground water contamination at the Chempro, Northwest Processing, and Sol-Pro facilities are discussed in Section 6.0.

5.0 DESCRIPTIONS OF SOLID WASTE MANAGEMENT UNITS

5.1 CHEMPRO PROPER

Fifty-eight active and 13 inactive SWMUs were identified during the VSI. The following sections provide descriptive and historical information on each SWMU.

5.1.1 <u>SWMUs C-1 through C-5: Treatment Tanks 51 through 55</u> (Photos 11, 12) <u>Information Summary</u>

The 50-series treatment tanks are located on the west side of the process area within the main containment pad (see Figure 3). They are used for treatment of materials pumped from the 100-series tanks (SWMUS C-6 to C-11), 200-series tanks (SWMUS C-12 to C-14), and 600-series tanks (SWMUSC-26 to C-29). The 100, 200, and 600-series tanks manage acid and alkaline wastes which contain heavy metals and potentially contain cyanides and phenol compounds. Treatment processes occurring within these tanks include acid/base neutralization, precipitation, oxidation, reduction, flocculation, sedimentation, and decanting. After treatment in the 50-series tanks, wastes are pumped to the 300-series tanks (SWMUS C-15 to C-19). The secondary containment structure where these tanks are located is sloped to facilitate drainage of any spilled materials to the process area main sump. For dates of operation of these SWMUs, capacity, structural information, and release controls, see Table 12.

The only known release to the environment from the 50-series tanks was a release of nitrogen dioxide gas to the atmosphere on June 23, 1987 from Tank 51, SWMU C-1. The release occurred after a mixture of air-nitric hydrofluoric acid was added to alkaline paint wastes. Water spray was applied to the gas plume to dissipate it within the containment area. After this incident Chempro reported that they revised operating procedures at the facility to insure better mixing of treatment materials with wastes (17). No evidence of releases was noted at the time of the VSI.

Table 12

SOLID WASTE MANAGEMENT UNITS INFORMATION SUMMARY CHEMPRO PROPER

Release	Main sump within secondary containment ⁽¹⁾	Acid sump within secondary containment ⁽¹⁾	Main sump within secondary containment ⁽¹⁾
Structure Type	Steel cone bottom tanks	Polyethylene above- ground tanks	Steel above- ground tanks
Capacity (gal)	22,000 (each)	11,000 (each)	9,500 (each)
Dates of Operation	1/87 to Present	1/87 to Present	1/87 to Present
Wastes Managed	 Waste alkalis/chelated alkalis Waste acids/chelated acids/chelated acids treatment sludges treatment sludges wastes Wastes 	Waste acids/chelated acids	Chemical milling wastes
Description	Treatment Tanks 51 through 55	Acid Waste Storage Tanks 101 through 106	Chemical Milling Waste Storage Tanks 201 through 203
SWMU No.	G-1 G-5	C-6 to C-11	C-12 to C-14

Table 12 (Continued)

Release Controls	Main sump within secondary containment ⁽¹⁾	Main sump within secondary containment ⁽¹⁾	Main sump within secondary containment ⁽¹⁾	Main sump within secondary containment ⁽¹⁾
Structure Type	Steel above- ground tanks	Steel above- ground tanks	Steel above- ground tanks	Steel above- ground tanks
Gapacity (gal)	11,000 (each)	25,000 (each)	9,500 (each)	25,000 (each)
Dates of Operation	1/87 to Present	1/87 to Present	1/87 to Present	1/87 to Present
Wastes Managed	 Waste acids/chelated alkalis Waste acids/chelated acids Wastewater treatment sludges treatment sludges wastes 	Wastewater from decanting	Waste alkalis/chelated alkalisChemical milling wastes	Waste acids/chelated alkalis
Description	Sludge Settling Tanks 301 through 305	Sewer Discharge Tanks 401 through 404	Isolation Tanks 501 and 502	Alkaline Waste Storage Tanks 601 through 604
SWMU	C-15 to C-19	C-20 to C-23	G-25 & C-25	C-26 to C-29

Table 12 (Continued)

Release Controls	Main sump within secondary containment ⁽¹⁾	Dangerous waste fuel storage area sump within secondary containment(1)	Dangerous waste fuel storage area sump within secondary containment(")
Structure Type	Steel above- ground cone bottom tanks	Steel above- ground tanks	Steel above- ground cone bottom tanks
Capacity (gal)	22,000 (each)	9,500 (each)	22,000 (each)
Dates of Operation	1/87 to Present	1/87 to Present	1/87 to Present
Wastes Managed	 Wastewater treatment sludges 	Waste solvents and oils	Waste solvents and oils
Description	Non-Process Sludge Storade Tanks 701 and 702	Dangerous Waste Fuel Storage Tanks 801 through 805	Dangerous Waste Fuel Storage Tanks 901 through 903
SWMU No.	C-30 and C-31	C-32 to C-36	C-37 to C-39

All sumps are blind. The secondary containment system consists of a bermed concrete base constructed over a flexible HDPE membrane. All liquids collected in the sump are analyzed for contamination prior If contaminated, the contents are pumped to the appropriate storage vessel. to discharges.

Conclusions

These units appear to be in good condition and have adequate secondary containment. Therefore, the potential for releases to soil, surface water, and ground water is low. Since they are above-ground and are within secondary containment, the potential for subsurface gas generation is low. These tanks vent directly to the atmosphere. Therefore, the potential for release of acid vapors and nitrogen oxides generated by chemical reduction is high. The potential for release of volatile organics through tank vents is moderate.

5.1.2 <u>SWMUs C-6 through C-11: Acid Waste Storage Tanks 101 through 106</u> (Photos 13, 14, 15)

Information Summary

The 100-series acid tanks are located within a bermed area on the northwest corner of the containment pad. Acid wastes which contain heavy metals, and possibly cyanides, phenolic compounds, and volatile organics, are stored in these tanks after they are unloaded from tankers at the north acid area loading/unloading pad (SWMU C-46). Wastes are pumped from the 100-series tanks to the 50-series tanks (SWMUS C-1 to C-5) where treatment takes place. The secondary containment where these tanks are located is sloped to facilitate drainage of any spilled materials to the acid area sump. For dates of operation of these SWMUs, capacity, structural information, and release controls, see Table 12.

Tanks 104 (SWMU C-9) and Tank 105 (SWMU C-10) were located and operated on Parcel A prior to being moved to Chempro Proper (20), and were used for acid storage at that location.

An inspection conducted by Ecology on June 19, 1988 noted excessive corrosion and wear on the sump in the acid storage area secondary containment. Chempro was required to repair the corrosion protection coating on the containment pad. There is no evidence that releases occurred through the sump or the secondary containment pad at the time this problem was noted. No evidence of releases was observed during the VSI (90, 91).

Conclusions

These units appear to be in good condition and have adequate secondary containment. Therefore, the potential for releases to surface water, ground water, and soil is low. The units are above-ground and within secondary containment, therefore the potential for subsurface gas generation is low. These tanks are vented directly to the atmosphere, therefore the potential for release of acid vapors is high.

5.1.3 <u>SWMUs C-12 through C-14: Chemical Milling Waste Storage Tanks 201</u> <u>Through 203</u> (Photos 7, 43)

Information Summary

The 200-series chemical milling waste storage tank are located within the bermed process area on the northwest corner of the containment pad (Figure 3). They receive incoming waste, containing heavy metals, and are unloaded at the west process area loading/unloading pad (SWMU C-47). Wastes are transferred from these tanks to the 50-series tanks (SWMUs C-1 to C-5) for treatment. Secondary containment where these tanks are located is sloped to facilitate drainage of any spilled material to the main process area sump. For dates of operation of these SWMUs, capacity, structural information, and release controls, see Table 12.

There is no information indicating that releases from these units have occurred. No evidence of releases was observed during the VSI.

Conclusions

Since these units appear to be in good condition and have adequate secondary containment, the potential for releases to soil, ground water, and surface water is low. Since they are above-ground and within adequate secondary containment, the potential for subsurface gas generation is low. These units are vented to the atmosphere, therefore the potential for release of reaction products or volatile compounds is moderate.

5.1.4 <u>SWMUs C-15 through C-19: Sludge Settling Tanks 301 through 305</u> (Photo 26)

Information Summary

The 300-series sludge settling tanks are located within the bermed main process area on the south side of the containment pad (Figure 3). These tanks were formerly located and operated on Parcel A prior to its closure, and were known as Tanks NT1 through NT5 (SWMUs A-14 to A-18) (20). Sedimentation and liquid/solid phase separation are performed in these tanks on wastes pumped from the 50-series tanks (SWMUs C-1 to C-5). Solids from these tanks that are classifiable as F006 listed wastes are pumped to the cement stabilization unit Solids not listed as F006 wastes are pumped to the feed tank (SWMUC-42). Oberlin Filter Press (SWMU C-44) for dewatering or are sent off-site for disposal without further treatment. Supernatant from non-chelated wastes from the 300-series tanks is pumped to the 400-series tanks (SWMUs C-20-23) prior to treatment in the air stripper (SWMU C-40) for removal of volatile organic contaminants. Supernatant from chelated wastes treated in these tanks is pumped to the 500-series tanks (SWMUs C-24 and C-25).

Secondary containment where the 50-series tanks are located is sloped to facilitate drainage of any spilled material to the main process area sump. For dates of operation of these SWMUs, capacity, structural information, and release controls, see Table 12.

There is no information indicating that releases from these units have occurred. No evidence of releases was observed during the VSI.

Conclusions

Since these units appear to be in good condition and have adequate secondary containment, the potential for releases to soil, surface water, or ground water is low. These units are above-ground and within secondary containment, therefore the potential for subsurface gas generation is low. These tanks are vented to the atmosphere, therefore the potential for releases of any volatile compounds remaining after treatment is moderate.

5.1.5 SWMUS No.s C-20 through C-23: Sewer Discharge Tanks 401 Through 404: (Photos 44, 45, 46)

Information Summary

The 400-series discharge tanks are located within the main process area of the secondary containment pad. Wastewater from the decanting process performed in the 300-series tanks (SWMUs C-15 to C-19) is pumped to the 400-series tanks prior to treatment in the air stripper (SWMU C-40). After treatment in the air stripper for removal of volatile organics, wastewater is pumped back to the 400series tanks. These tanks also receive filtrate from the Oberlin Filter Press (SWMU C-44). The wastewater is tested for compliance with discharge parameters (heavy metals, Total Toxic Organics (TTO), cyanide, and phenolics). Wastewater meeting discharge parameters is discharged to the sewer using portable hoses; if the wastewater does not meet discharge parameters it is retreated in the appropriate tank prior to discharge. Wastewater discharge from this SWMU to the City of Tacoma sewer system for November 1989 shows that the discharge contains the following level of organic contaminants; methylene chloride (0.08 to 0.32 ppm), toluene (0.11 to 0.64 ppm), 1,1-trichloroethane (0.01 to 0.06 ppm), and trichloroethylene (0.04 ppm) (93). For dates of operation of these SWMUs, capacity, structural information, and release controls, see Table 12.

There is no information indicating that releases from these units have occurred. No evidence of releases was observed during the VSI.

Conclusions

Since these units appear to be in good condition and have adequate secondary containment, the potential for releases to ground water, surface water, and soil is low. The potential for subsurface gas generation is low since they are above-ground and within secondary containment. These tanks are vented to the atmosphere, therefore the potential for releases to the air of volatile compounds, such as methylene chloride is moderate.

5.1.6 SWMUs C-24 and C-25: Isolation Tanks 501 and 502 (No Photo)

Information Summary

The 500-series isolation tanks are located on the northeast corner of the containment area (Figure 3). They are used to store wastes (primarily chelated waste streams) subjected to additional treatment prior to being pumped to the 50-series treatment tanks (SWMUS C-1 to C-5). Waste streams are pumped to the isolation tanks directly from incoming tankers if wastes are known to be chelated, or from the 100-series acid storage tanks (SWMUS C-6 to C-11) and the alkaline storage tanks (SWMUS C-26 to C-29) if they are determined to be chelated by analytical testing. In addition, the 500-series tanks are used to store wastewater that has been separated from chelated waste streams in the sedimentation/decanting step conducted in the 300-series sludge settling tanks (SWMUS C-15 to C-19). The secondary containment where these tanks are located is sloped to facilitate drainage of any spilled materials to the main process area sump. For dates of operation of these SWMUS, capacity, structural information, and release controls, see Table 12.

There is no information indicating that releases from these units have occurred. No evidence of releases was observed during the VSI.

Conclusions

Since these units are in good condition and have adequate secondary containment, the potential for releases to surface water, ground water, and soil is low. The potential for subsurface gas generation is also low because they are aboveground and within secondary containment. The potential for release of volatile compounds is moderate because these units are vented directly to the atmosphere.

5.1.7 <u>SWMUS Nos. C-26 through C-29: Alkaline Waste Storage Tanks 601 through 604</u> (Photos 18, 48)

Information Summary

The 600-series alkaline storage tanks are located within the bermed main process area on the southwest side of the main containment area (Figure 3). Alkaline wastes containing heavy metals received at the facility are stored in these

tanks after they are unloaded from tankers at the alkaline area loading/unloading pad (SWMU C-48). Wastes are pumped from the 600-series tanks to the 50-series tanks (SWMUs C-1 to C-5) for treatment. The secondary containment for these tanks is sloped so drainage of any spilled materials or rainwater will be diverted to the process area main sump. For dates of operation of these units, capacity, structural information, and release controls, see Table 12.

There is no information indicating that releases from these units have occurred. No evidence of releases was observed during the VSI.

Conclusions

These units appear to be in good condition and have adequate secondary containment. Therefore, the potential for releases to soil, surface water, and ground water is low. The potential for subsurface gas generation is low because the tanks are above-ground and within secondary containment. The potential for air release of volatile compounds is moderate, because the tanks are vented directly to the atmosphere.

5.1.8 SWMUS Nos. C-30 and C-31: Non-Process Sludge Storage Tanks 701 and 702 (No Photo)

Information Summary

The non-process sludge storage tanks receive wastewater treatment sludges generated off-site, primarily by the aerospace industry. The majority of these wastes are F006 listed wastes, which are treated by settling and decantation for volume reduction. Wastes are pumped from the 700-series tanks to the 300 series sludge settling tanks (SWMUs C-15 to C-19). For dates of operation of these SWMUs, capacity, structural information, and release controls, see Table 12.

There is no information indicating that releases from these units have occurred. No evidence of releases was observed during the VSI.

Since these units are in good condition and have adequate secondary containment, the potential for releases to surface water, ground water, and soil is low. The potential for subsurface gas generation is also low because the units are aboveground and within secondary containment. Although these units are vented directly to the atmosphere, the potential for release of hazardous constituents is low. Few, if any, volatile organic constituents are expected to occur in this wastestream.

5.1.9 SWMUS Nos. C-32 through C-36: Dangerous Waste Fuel Storage Tanks 801 through 805 (Photo 22)

Information Summary

The 800-series dangerous waste fuel tanks store waste solvents and oils that are brought into the Chempro facility by tankers. These wastes are tested for suitability for use in blending of dangerous fuels. Currently, Chempro is not conducting blending at this facility. After the wastes have been tested for suitability, they are transferred to another Chempro facility to be blended to customer specifications. For dates of operation of these SWMUs, capacity, structural information, and release controls, see Table 12.

There is no information indicating that releases from these units have occurred. No evidence of releases was observed during the VSI.

Conclusions

These units appear to be in good condition and have adequate secondary containment. Therefore, the potential for releases to soil, surface water, and ground water is low. The potential for air releases is high because these tanks are vented directly to the atmosphere and the wastes managed in these tanks may be highly volatile. These tanks are above-ground and within adequate secondary containment, therefore the potential for subsurface gas generation is low.

5.1.10 SWMUS Nos. C-37 through C-39: Dangerous Waste Fuel Storage Tanks 901 through 903 (Photos 21, 26, 27, 28)

Information Summary

The 900-series dangerous waste fuel storage tanks are used for storage in the same manner described above for the 800-series tanks (SWMUs C-32 to C-36). For dates of operation of these SWMUs, capacity, structural information, and release controls, see Table 12.

There is no information indicating that releases from these units have occurred. No evidence of releases was observed during the VSI.

Conclusions

These units appear to be in good condition and have adequate secondary containment. Therefore the potential for releases to soil, ground water, and surface water are judged to be low. The potential for release of volatile organics is high because the units are vented directly to the atmosphere and the wastes in them may be highly volatile. The tanks are above-ground and within adequate secondary containment, therefore the potential for subsurface gas generation is low.

5.1.11 SWMU C-40: Air Stripper (Photo 45)

Information Summary

The air stripper (located in the southwest corner of the containment pad is used for removal of volatile organic contaminants from the decanting/sedimentation supernatant and filter press filtrate stored in the 400-series sewer discharge tanks (SWMUs C-26 to C-29). The unit went on-line in February 1988. The stripper is a 200 gpm packed bed unit. Discharge water is introduced to the top of the unit while air is passed through it countercurrently. Treated liquid is returned to the 400-series tanks for storage and testing prior to discharge to the sewer. The unit has a permit from the Puget Sound Air Pollution Control Agency (PSAPCA); PSAPCA inspects the unit annually, but does not sample. Any aqueous releases from the unit would be collected in the main process area sump.

There is no information indicating that releases from this unit have occurred. No evidence of releases was observed during the VSI.

Conclusions

This unit appears to be in good condition and has adequate secondary containment, therefore the potential for releases to soil ground water, and surface water is low. Under normal operating conditions, the potential for air emissions is high because of the unit's designed performance.

5.1.12 SWMU C-41: Cement Unit Stabilization Feed Tank (Photos 18, 48)

Information Summary

The cement unit stabilization unit feed tank is a 800-gallon polyethylene storage tank used to hold sludge from the 300-series sludge settling tanks (SWMUs C-15 to C-19) and the 700-series non-process sludge storage tanks (SWMUs C-30 and C-31) prior to stabilization. Sludge is pumped from the bottom of the feed tank to the cement mixer stabilization unit (SWMU C-42) where it is mixed with cement in the stabilization process. The feed tank is located on the east side of the stabilization unit. The tank is mounted on stilts. It has been active since August 1988. Any spills from the feed tank would be collected in the main process area sump.

There is no information indicating that releases from this unit have occurred. No evidence of releases was observed during the VSI.

Conclusions

This unit appears to be in good condition and has adequate secondary containment, therefore the potential for releases to soil, ground water and surface water is low. The unit is above-ground and within adequate secondary containment, therefore the potential for subsurface gas generation is low. The potential for release of hazardous constituents is low based on the expected composition of wastes entering this unit.

5.1.13 SWMUs C-42 and C-43: Cement Mixer Stabilization Unit and Stabilization Unit Receiving Tank (Photos 18, 48)

Information Summary

The cement mixer stabilization unit is used to stabilize F006 listed sludges generated as a result of on-site treatment processes and F006 listed sludges received at the facility from industrial customers. The cement stabilization process is used for wastewater treatment solids with low solids content that are not suitable for filtration in the Oberlin Filter press (SWMU C-44). Sludge is batched to the cement mixer unit from the stabilization unit feed tank (SWMU C-41). Cement is weighed in a hopper and fed to the unit. Stabilized sludge is pumped into the stabilization unit receiving tank (SWMU C-43) and then pumped into metal containers (tipplers) which are stored in the NE Alkaline Area Loading/Unloading Pad (SWMU C-48). Once the material is solidified, the tipplers are taken to the Parcel B solidification/stabilization area (SWMU C-69), where the solids are removed from the tipplers and broken up prior to transfer off-site.

The receiving tank is a cylindrical open top steel shell fifteen feet in height and five feet in diameter. It is top loaded from the cement mixer. The capacity of the cement mixer is 4.5 cubic yards. These units have been active since August 1988. Any liquid releases from these units would be collected by the main process area sump.

There is no information indicating that releases from these units have occurred. No evidence of releases was observed during the VSI.

Conclusions

These units appear to be in good condition and have adequate secondary containment. Therefore the potential for releases to soil, ground water, and surface water is low. The potential for subsurface gas generation is low because the unit is above ground and adequately contained. Air release potential from the these units is also expected to be low, because of the stabilization process.

5.1.14 SWMU C-44: Oberlin Filter Press (Photos 9, 10)

Information Summary

Sludges from the 300-series sludge settling tanks (SWMUs C-15 to C-19) with high solids content are pumped to the Oberlin filter press for treatment. The filtration and drying procedures conducted in this unit produce a dried cake that is automatically discharged into tub skids, which are taken to the Container storage pad (SWMU C-50) prior to off-site disposal. This unit has been active at the current location since 1987 (see Figure 3) when it was moved from the letter tank area. It was an active unit in the letter tank area from 1985 to 1987. Any releases from this unit would be collected in the main process sump.

There is no information indicating that releases from this unit have occurred either from its location in the letter tank area or its current location. No evidence of releases was observed during the VSI.

Conclusions

This unit appears to be in good condition and has adequate secondary containment. Therefore, the potential for releases to soil, surface water, and ground water is low. The potential for subsurface gas generation is low because the tank is above-ground and within secondary containment. The potential for release of hazardous constituents from dried filter cake is low. The potential for past releases to all media from this unit appears to be low, based on the unit's design and the presence of paving under its former location in the letter tank area.

5.1.15 SWMU C-45: Filtrate Collection Tank (Photos 9, 10)

Information Summary

The filtrate collection tank is a 1500 gallon polyethylene tank that receives filtrate from the Oberlin Filter Press (SWMU C-44). Filtrate collected from this unit is pumped to the 400-series sewer discharges tanks (SWMUs C-20 to C-23) where it is held for further treatment prior to discharge. It is located adjacent to the filter press within the main process area of the containment pad

(See Figure 3). This unit has been active since January 1987. Any spills or discharges from this tank would be collected in the main process sump.

There is no information indicating that releases from this unit have occurred. No evidence of releases was observed during the VSI.

Conclusions

This unit appears to be in good condition and has adequate secondary containment. Therefore, the potential for release to the soil, ground water, and surface water is low. Since the unit is above-ground and is within secondary containment, the potential for subsurface gas generation is minimal. The potential for air releases is low even though this tank is vented to the atmosphere, because the wastes are expected to contain few, if any, volatile organic constituents.

5.1.16 SWMU C-46: North Acid Area Loading/Unloading Pad (No Photo)

Information Summary

The north acid area loading/unloading pad is used for transfer of wastes from trucks to the acid waste storage tanks (SWMUs C-6 to C-11); full Resource Recovery tankers which must remain overnight at the facility are also reportedly parked here (rather than being parked overnight in the Resource Recovery parking lot). The pad is constructed of concrete and measures 25 feet by 60 feet. Wastes are piped from tankers to the storage tanks using hoses. Any spills or discharges occurring on the pad would be collected to the blind sump located on the pad.

There is no information indicating that releases from this unit have occurred. No evidence of releases was observed during the VSI. The concrete appeared to be in good condition, and the sump is lined with hardstone, a material which resists acid corrosion.

Since this unit appears to be in good condition and has adequate secondary containment, the potential for releases to soil, ground water, and surface water is low. The unit is above-ground and primarily handles inorganic wastes; therefore, the potential for subsurface gas generation is low. Under normal operating conditions, the potential for air release of hazardous constituents is low. Should an accident occur, such as a hose break, there could potentially be releases to the atmosphere.

5.1.17 SWMU C-47; West Process Area Loading/Unloading Pad (Photo 7)

Information Summary

The west area process loading/unloading pad is used for transfer of wastes from trucks to the chemical milling waste storage tanks (SWMUs C-12 to C-14); full Resource Recovery tankers which must remain overnight at the facility are also reportedly parked here (rather than being parked overnight in the Resource Recovery parking lot). The pad is constructed of concrete and measures 18 feet by 60 feet. Wastes are pumped from trucks to the storage tanks using hoses. Any spills or discharges occurring on the pad would be collected to the blind sump located on the pad.

There is no information indicating that releases from this unit have occurred. No evidence of releases was observed during the VSI. The concrete appeared to be in good condition, and the sump did not appear to be corroded.

Conclusions

Since this unit appears to be in good condition and has adequate secondary containment, the potential for releases to soil, ground water, and surface water is low. The unit is above-ground and primarily handles inorganic wastes; therefore, the potential for subsurface gas generation is low. Under normal operating conditions, the potential for release of volatile organics is low. Should an accident occur, such as a hose break, there could potentially be releases to the atmosphere.

5.1.18 SWMU C-48: NE Alkaline Area Loading/Unloading Pad (Photo 20)

Information Summary

The northeast alkaline area loading/unloading pad is used for transfer of wastes from trucks to the alkaline waste storage tanks (SWMUs C-6 to C-11), and for storage of the tipplers which hold solidified waste from the cement mixer stabilization unit (SWMU C-41); full Resource Recovery tankers which must remain overnight at the facility are also reportedly parked here (rather than being parked overnight in the Resource Recovery parking lot). The pad is constructed of concrete and measures 25 feet by 60 feet. Wastes are pumped from trucks to the storage tanks using hoses. Any spills or discharges occurring on the pad would be collected to the blind sump located on the pad. At the time of the VSI, approximately 20 tipplers were located in this area.

There is no information that discharges from this unit have occurred. No evidence of releases was observed during the VSI.

Conclusions

Since this unit appears to be in good condition and has adequate secondary containment, the potential for releases to soil, ground water, and surface water is low. The unit is above-ground and primarily handles inorganic wastes; therefore, the potential for subsurface gas generation is low. Under normal operating condition, the potential for release of volatile organics is low. Should an accident occur, such as a hose break, there could potentially be air releases.

5.1.19 <u>SWMU C-49: SE Dangerous Waste Fuel Area Loading/Unloading Pad</u> (Photo 28)

Information Summary

The southeast area dangerous waste fuel loading/unloading pad is used for transfer of wastes from trucks to the 800 and 900-series dangerous waste storage tanks (SWMUs C-32 to C-39); full Resource Recovery tankers which must remain overnight at the facility are also reportedly parked here (rather than being parked overnight in the Resource Recovery parking lot). Wastes are pumped from

trucks to the storage tanks using hoses. The pad is constructed of concrete and measures 25 feet by 75 feet. Any spills or discharges occurring on the pad would be collected to the blind sump located on the pad. During the VSI, approximately five tipplers were located in this area.

There is no information indicating that releases from this unit have occurred. No evidence of releases was observed during the VSI.

<u>Conclusions</u>

Since this unit appears to be in good condition and has adequate secondary containment, the potential for releases to soil, ground water, and surface water is low. The unit is above-ground and within secondary containment, therefore the potential for subsurface gas generation is low. Under normal operating conditions, the potential for release of volatile organics is low. Should an accident occur, such as hose break, there could potentially be air releases.

5.1.20 <u>SWMU C-50: Container Storage Pad</u> (Photos 4, 5, 6, 39, 40)

Information Summary

The container storage pad is a 60 foot x 150 foot unroofed concrete pad located west of Parcel B at the south end of Chempro Proper (Figure 3). The pad has been used since 1986. The container storage pad is used to store filter cake from the Oberlin Filter Press (SWMU C-44), stabilized solids from sludge treatment, and 55-gallon drums containing solid and semi-solid wastes. Raw materials, such as treatment chemicals, are also stored on this pad in separate bermed area at the south end of the pad. Until approximately September, 1989, tank cleaning of excavated petroleum storage tanks also occurred on the container storage pad. Ecology noted in their report on the February 14, 1989 inspection that such activities were not indicated in Chempro's Part B Permit Application, and that Ecology was not aware they were occurring. This activity has ceased, and is not expected to re-occur until a separate unit has been built for that activity.

The container pad is sloped to the east with concrete curbs on the north, south, and east sides. Seven blind concrete sumps located on the eastern and southern

edges of the pad collect any rainwater or spilled materials on the pad. The sumps are inspected daily, and pumped as needed. Some of the sumps in this area are pumped to Tank S (SWMU C-56); others are hard-piped to the 400-series tanks and can be pumped as needed.

There is no information indicating that releases from this unit have occurred. No evidence of releases was observed during the VSI. The concrete coating was chipped and stained in some places, but generally appeared to be in good condition, with no evidence of corrosion.

Conclusions

This unit appears to be in good condition. The west side of the pad does not have any curbing, thus there is a moderate potential for releases to soil from any spills which might occur on this side of the pad. Potential for releases to ground water and surface water is low. Because the wastes primarily handled in the unit are solids and semi-solids with little if any organic constituents present, the potential for subsurface gas generation is low. Containers with waste in them are closed during storage, therefore the potential for air releases is low.

5.1.21 SWMU C-51: Laboratory Drain Collection Tank (Photo 49)

Information Summary

SWMU C-51 is a 30-gallon polyethylene carboy that collects acidic and basic waste samples discharged through the sink drains in the facility laboratory. Wastes are neutralized prior to discharge through the drains. The carboy is located in a small shed adjacent to the laboratory (Figure 3). Secondary containment is provided by a metal drip pan. Liquids accumulated in the carboy are disposed of by transfer to one of the 100-series acid storage tanks (SWMUs C-6 to SWMU C-11) or 600-series alkaline storage tanks (SWMUs C-26 to C-29). This unit has been active since at least 1986.

There is no information indicating that releases from the carboys have occurred. No evidence of releases was observed during the VSI.

This unit appears to be in good condition, handles small amounts of waste and appears to have adequate containment. Therefore, the potential for release to the soil, ground water, and surface water is low. Since the unit is aboveground and is within secondary containment, the potential for subsurface gas generation is minimal. The potential for air releases is low because this unit in an enclosed shed and primarily handles inorganic wastes.

5.1.22 SWMU C-52: Resource Recovery Parking Lot (No Photo)

Information Summary

Resource Recovery is a wholly-owned subsidiary of Chempro that transports waste materials to and from this and other Chempro facilities. The parking lot occupies the southwestern corner of the Chempro property (see Figure 4). It is a graveled parking lot where typically empty tanker trucks park while waiting to be loaded with treated wastes or fuels. Occasionally, loaded or partially loaded tankers are also reportedly parked on the lot for less than twenty-four hours. Chempro personnel estimate that this occurs approximately once or twice per week. The size of the parking lot is approximately 150 feet by 100 feet. There is no secondary containment for this SWMU. Any releases from this unit would enter the storm sewer system or soil.

Sampling data from CTMW-14 located near the southwest corner of the parking lot exceeds MCLs for arsenic, cadmium, chromium, copper, and lead. It is not known if this contamination is due to releases from this SWMU. In addition, test pits excavated in the southern end of the parking area showed visible contamination by oily material (2). Again, it is not known if this contamination is due to releases from trucks in this parking lot. No evidence of releases was observed during the VSI.

Conclusions

The potential for release of hazardous constituents to soil is moderate because of lack of paving. However, the potential for ground water contamination is low because of the small quantities of contaminants that are expected to be

released. The potential for surface water releases is low due to the distance from the Lincoln Avenue Ditch. The potential for subsurface gas generation is low because the unit is above-ground.

5.1.23 <u>SWMU C-53: Freeway Container, Inc. Solvent Storage Shed</u> (Photo 31) Information Summary

SWMU C-53 is a trailer (approximately 30 feet by 10 feet) used for the storage of 55-gallon drums of virgin and spent solvent. Three drums of spent solvent and one drum of used one solvent were in the shed at the time of the VSI. The trailer door was open. No spillage from the drums was observed. There is no information on how long this unit has been active. The location of this SWMU is shown in Figure 4.

There is no information indicating that releases from this unit have occurred. No evidence of releases was observed during the VSI.

<u>Conclusions</u>

Due to the possibility of spillage from open drums, the potential for soil contamination is moderate. Since the quantities of materials which could be spilled is small and the unit is semi-enclosed, the potential for ground water releases is low. The potential for surface water contamination is low due to distance from nearest surface water body. The potential for subsurface gas generation is low, because the unit is above-ground. The potential for air releases is moderate because some of the containers are open to the atmosphere.

5.1.24 <u>SWMU C-54: Freeway Container, Inc. Waste Paint Shed</u> (Photos 32, 33, 34)

Information Summary

SWMU C-54 is a trailer approximately 12 feet by 20 feet used by Freeway Container for the storage of waste paints and thinners (Figure 4). Approximately 50 containers, in sizes ranging from 5 to 55-gallon, were in the shed at the time of the VSI. The drums were in poor condition, some without lids. The door of the trailer was open. Waste paints are collected from the

trailer by Lilyblad on an irregular basis. There is no information on how long this unit has been active.

There is no information indicating that releases from this unit have occurred.

Although evidence of spillage was present inside the trailer at the time of the

VSI, there was no evidence of releases to the soil around the trailer.

Conclusions

Due to the possibility of spillage from open drums, the potential for soil contamination is moderate. Due to the small quantities of free liquids in the containers, the potential for ground water releases is low. The potential for surface water contamination is low due to distance to the nearest surface water body. The potential for subsurface gas generation is low, because the unit is above-ground and semi-enclosed. The potential for air emissions is moderate, due the presence of open drums in the trailer.

5.1.25 <u>SWMU C-55: Piles of Excavated Soil in NW Corner of Freeway Container, Inc.</u> (Photo 35)

Information Summary

During the VSI performed on December 18, 1989, two mounds of excavated soil were observed on the northwest corner of the property currently leased to Freeway Container, Inc. The mounds were approximately 50 yards from Taylor Way (see Figure 4). The mounds of soil were removed from Parcel C during construction of the containment pad in 1985. The volume of soil is estimated to be less than 150 cubic yards. The soil contained a whitish discoloration which may be due to the presence of lime. Ecology personnel present on the VSI measured a pH of 6.5 in a small puddle between the two mounds (see Photo 35). There is no containment for this SWMU (27).

Conclusions

The potential for releases of hazardous constituents from this unit cannot be determined, due to the unknown composition of the material. Based on the location from which the soil was excavated, it is likely to contain either lime

sludges or auto fluff. Further investigation is needed to determine the potential environmental hazard associated with this material.

5.1.26. SWMU C-56: Stormwater Storage Tank S (Photos 25, 26, 41)

Information Summary

Stormwater Tank S is the only unit from the former letter tank system that was not removed during the letter tank closure process. Its location is shown on Figure 3. Information regarding wastes managed in this unit, dates of operation active, structural details, and release controls is summarized in Table 13 (17). Tank S was used for the storage of surface water run-on; at one time it was used for storage of runon in the letter tank area, and now stores stormwater from the blind sumps in the container storage pad (SWMU C-50). This wastewater is expected to contain very low levels of hazardous constituents, such as heavy metals and potentially some organic constituents. Water from Tank S is transferred to the 400-series tanks (SWMUs C-20 to C-23) for eventual discharge to the sewer, or sent to Chempro's Pier 91 facility (90).

Tank S is constructed on an asphalt pad; presently, there is no curb or berm surrounding this unit. When the rest of the letter tank area was active, the asphalt pad on which this unit is located was sealed with hot tar, and surrounded by an asphalt berm.

There is no information indicating that releases from this unit have occurred. No evidence of releases was observed during the VSI.

Conclusions

This unit appears to be in good condition. The past and ongoing potential for releases to soil, ground water and surface water is low. The unit is aboveground and handles wastes with little if any organic constituents, therefore the potential for subsurface gas generation is low. The potential for air releases is low due to the expected low concentration of any volatile compounds in the tank contents.

5.1.27 <u>SWMUs C-57 through C-68: Inactive Units in the Letter Tank Area of Chempro Proper</u> (Photos 24, 25, 42)

Information Summary

These inactive units on Chempro Proper included a series of treatment and storage tanks, filter press and associated equipment and sumps. All tanks, equipment and sumps (other than Tank S) have been removed as part of the closure process. Information regarding wastes managed in these units, dates they were active, structural details, and release controls is presented in Table 13 (17). Tanks A through F were installed on a bermed asphalt pad (17). Tank BB was already installed when the asphalt was laid, so asphalt was sealed around its base. Figure 3 shows the location of these SWMUs.

Department of Ecology files indicate that there were releases from these SWMUs due to spills and poor operating practices. A February 1981 inspection conducted by Ecology found that air bubbles were escaping around the base of tank BB. Samples taken from the area by Ecology contained high concentrations of chromium (18). Chempro states that small quantities of sludge were released around the base of this tank between approximately 1979 and February 1981, when the Ecology inspection took place, due to poor in-plant transfer operations. Corrective measures consisted of removal of the sludge down to the preexisting fill earth at the base of the tank (17). At the time the spills occurred, the tank was not on a pad and did not have secondary containment (28).

At the time of the VSI, the area where tanks and equipment had been removed was covered with plastic. Rainwater was ponded on top of the plastic cover.

Conclusions

Sampling performed as part of the closure process has confirmed soil contamination (see Section 4). Therefore, the potential for releases to soil and ground water is high. The potential for releases to air from the closure site in its current condition is low to moderate, due to the excavation being conducted on the site and possible exposure of contaminants. There is little if any potential for past or ongoing releases to surface water, but confirmed ground water contamination could be releasing to surface water. Because the

Table 13

SOLID WASTE MANAGEMENT UNITS INFORMATION SUMMARY LETTER TANK AREA - CHEMPRO PROPER

Release Controls	None	Discharged to SWMU No. C-66 ⁽²⁾	Discharged to SWMU No. C-66²	Discharged to SWMU No. C-66 ⁽²⁾
Structure Type	Steel above- ground tank	Steel above- ground tank	Steel above- ground tank	Steel above- ground tank
Capacity (gal)	20,000	23,700	23,700	23,700
Dates of Operation	1986 - Present	1980 - 1988	1980 - 1988	1980 - 1988
Wastes Managed	Surface water runoff	 Surface water runoff Chemical milling wastes Wastewater from chemical treating decanting 	 Paint booth waste Wastewater from chemical treatment decanting Ghemical milling wastes 	 Paint booth wastes Wastewater from chemical treatment decanting Chemical milling wastes
Description	Stormwater Storage Tank S	Treatment and Storage Tank A	Treatment and Storage Tank B	Treatment and Storage Tank C
SWMU No.	C-56	C-57	C-58	C-59

Table 13 (Continued)

Release Controls	Discharged to SWMU No. C-66 ^{t2}	Discharges to SWMU No. C-66 ⁽²⁾	Discharged to SWMU No. C-66 ⁽²⁾	Discharged to SWMU No. C-66 ^{R)}	Discharged to SWMU No. C-65
Structure Type	Steel above- ground tank	Steel above- ground tank	Steel above- ground tank	Steel above- ground tank	Above- ground tank (open top and side)
Capacity (gal)	23,700	23,700	23,700	220,000	142 (cubic yards)
Dates of Operation	1980 - 1988	1980 - 1988	1980 - 1988	1979 - 1988	1985 - 1988
Wastes Managed	 Paint booth waste Surface water runoff Wastewater from chemical treatment decanting 	Surface water runoffWastewater from chemical treatment decanting	 Surface water runoff Wastewater from chemical treatment decanting Filter press sludge 	Wastewater from chemical treatment decanting	Contaminated soil, sludge, & debris
Description	Treatment and Storage Tank D	Treatment, Storage, and Isolation Tank E	Treatment, Storage, and Isolation Tank F	Treatment and Storage Tank BB	Soil Solidification/ Stabilization Tank
SWMU No.	09-0	C-61	C-62	C-63	C-64

Table 13 (Continued)

Release Controls	None	None	None
Structure Type	Below- ground concrete tank	Below- ground concrete tank	Below- ground concrete tank
Capacity (gal)	7.5	7.5	7.5
Dates of Operation	1987 - 1988	1987 - 1988	1987 - 1988
Wastes Managed	 Rain water and spills from letter tank system 	Rain water and spills from letter tank system	Rain water and spills from letter tank system
Description	Soil Solidification/ Stabilization Unit Sump	Sump between Tanks A and B	Filter Press Sump
SWMU No.	C-65	99-0	29-5

Source: Chemical Processors, Inc., Part B Permit Application, November 1988 (17)

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All sumps were blind. Tanks were on asphalt pad with secondary containment.

wastes handled in this area were primarily inorganic, there is little potential for generation of subsurface gas.

5.1.28 SWMU C-69: Solidification/Stabilization Area (Photo 29)

Information Summary

This area consists of three three-sided metal containers with a concrete floor which is used for breaking up and recontainerizing stabilized solids from the stabilization unit (SWMU C-40) in preparation for off-site disposal. The dimensions of the unit are 40 feet (length), by 24 feet (width), by 8 feet (height). The unit is covered with a plastic sheet, which was weighted at the corners at the time of the VSI. Tipplers containing stabilized solids are brought to this area from the northeast loading/unloading area (SWMU C-48). They are emptied and the contents are broken up with a backhoe.

At the time of the VSI, conditions were rainy and wet. Particulates from this unit were present on the concrete within and around the unit. No other evidence of release was noted at the time of the VSI.

<u>Conclusions</u>

The potential for ground water, surface water, and soil releases from the stabilized solids area is low. During dry and dusty conditions, the potential for air emissions is moderate because of the dust generated by the action of the backhoe. Since the unit is above-ground and handles stabilized solids, the potential for subsurface gas generation is low.

5.1.29 SWMU C-70: Areas of Auto Fluff and Lime Fill (No Photo)

Information Summary

The history of deposit of lime wastes and auto fluff on Chempro Proper and the sampling data confirming these deposits is discussed elsewhere in the report (Sections 2 and 3). Figures 15 and 16 shows the areas of fill deposits on the Chempro Proper parcel.

The potential for releases to soil and ground water from these fill materials is high. The fill deposits can generate caustic and heavy metal containing leachates. Spent catalyst lime wastes from Hooker Chemical contain chlorinated volatile organic compounds. The placement of lime wastes and auto fluff in the ground without containment and the hazardous constituents present in these wastes has probably caused these units to contribute to the soil and ground water contamination observed at Chempro Proper (see discussion in Sections 2.0 There is some potential for air releases from the spent lime catalysts; however, the release potential to air is probably low due to the subsurface location of the wastes and the placement of a synthetic liner at least in the area of the active portion of the facility. There is a moderate potential for generation of subsurface gases due to the volatile organic compound content and subsurface location of spent lime catalysts. low potential for direct releases to surface water from the unit, due to its subsurface location; however, contaminated ground water from the unit may discharge to the surface, resulting in surface water and sediment contamination.

5.1.30 SWMU C-71: Storm Drainage System (No Photo)

Information Summary

The storm drainage system at Chempro Proper (the active facility, the letter tank area and Resource Recovery) consists of drains, catch basins and underground piping which discharges to a ditch paralleling Alexander Avenue. Drainage from the northwestern section of the property drain into a ditch adjacent to Taylor Avenue. Storm water in this system is expected to potentially contain low concentrations of heavy metals, and potentially organic contaminants from contaminated fill material or minor releases of wastes containing organic constituents. Runon which is collected in the containment pad at the active facility is not included in this SWMU as it is collected and treated in the 400-series tanks (SWMUS C-20 to C-23). Rainwater at the container storage pad (SWMU C-48) is collected in Tank S (SWMU C-56) or the 400-series tanks (SWMUS C-20 to C-23).

There is a moderate potential for releases to surface water from the northwestern section of the property draining to the Taylor Avenue ditch because this run-off has come in contact with surficial deposits of fill materials containing hazardous constituents. The potential for releases to the Alexander Street Ditch is also moderate because this run-off from the Resource Recovery Parking Lot (SWMU C-52) could be contaminated if spills are occurring from vehicles parked in this area (see Section 5.1.22). The potential for releases to air or subsurface gas formation is expected to be low because of the low concentration of volatile organics constituents in the surface water. There is a low potential for ongoing releases to soil and ground water from this unit, due to the expected low concentrations of contaminants present in the storm water and depth to the upper aquifer. The potential for generation of subsurface gas is also very low, due to the expected low concentrations (if any) of volatile organics present in the stormwater at these facilities.

5.2 CHEMPRO PARCEL A (Photos 1, 2, 3, 37, 38)

5.2.1 <u>SWMUs A-1 through A-12, A-14 to A-23; Inactive Chemical Treatment Unit Equipment</u>

Information Summary

Chemical treatment equipment on Parcel A associated with the Chempro operation at the facility, consisted of a series of wing tanks (from Boeing) and 10 cylindrical tanks of various sizes. Seven of the cylindrical tanks (SWMUs A-14 through A-18, A-19, and A-20) were moved to Chempro's current operation following Parcel A closure, and are also described as SWMUs C-9, C-10, and C-15 to C-19 in this report. All other tanks were removed from the west side of Parcel A during Chempro's closure activities. Wastes managed in these units at the time of the Parcel A Closure, capacity, and structural details are summarized in Table 14 (20). Although first located directly on the ground, these tanks were eventually sealed in an asphalt pad with concrete curbing.

Table 14

SOLID WASTE MANAGEMENT UNITS INFORMATION SUMMARY (1) (2) PARCEL A

SWMU No.	Description/Usage	Capacity (gal)	Structure Type
A-1	Alkaline Storage and Treatment Tank 6	38,700	Steel open-top wing tank
A-2	Alkaline Storage and Treatment Tank 7	38,700	Steel open-top wing tank
A-3	Paint Waste Storage Tank 8 S	17,700	Steel open-top wing tank
A-4	Acid Storage Tank 9 N	17,700	Steel open-top wing tank
A- 5	Acid Storage Tank 9 E	5,600	Steel open-top wing tank
A-6	Acid Storage Tank 9 W	5,600	Steel open-top wing tank
A- 7	Sludge Treatment and Storage Tank 10	38,700	Steel open-top wing tank
A-8	Sludge Treatment and Storage Tank 11	33,500	Steel open-top wing tank
A- 9	Alkaline Treatment and Storage Tank 12	55,100	Steel open-top wing top
A-10	Acid/Alkaline Storage and Treatment Tank SS1	7,800	Above-ground steel
A-11	Acid/Alkaline Storage and Treatment Tank SS2	3,000	Above-ground steel
A-12	Acid/Alkaline Storage and Treatment Tank SS3	3,000	Above-ground steel
A-13	Former Waste Oil Pond	Unknown	Natural depression
A-14	Wastewater Treatment Sludge Tank NT1	11,000	Above-ground steel
A-15	Wastewater Treatment Sludge Tanks NT2	11,000	Above-ground steel

Table 14 (Continued)

SWMU No.	Description/Usage	Capacity (gal)	Structure Type
A-16	Wastewater Treatment Sludge Tank NT3	11,000	Above-ground steel
A-17	Wastewater Treatment Sludge Tank NT4	11,000	Above-ground steel
A-18	Wastewater Treatment Sludge Tank NT5	11,000	Above-ground steel
A-19	Acid Storage Tank Poly 1	11,000	Above-ground poly
A-20	Acid Storage Tank Poly 2	11,000	Above-ground poly
A-21	Acid Storage Tank Poly 3	11,000	Above-ground poly
A-22	Sumps	Unknown	Concrete
A-23	Rinse Pit	Unknown	Unknown

Source: Chemical Processors, Inc., Closure Plan For Parcel A Acid/Base Storage and Treatment Unit, September 4, 1987 (20).

In addition to the SWMUs listed in this table, SWMUs C-9 and C-10 and SWMUs C-15 to C-19 were also active on Parcel A until late 1986. See Table 8 for further information on these units.

Documents reviewed indicate that several releases occurred from this facility:

- June 1981 A 3,500 gallon chromic acid spilled occurred when acid was pumped into an unlined tank that subsequently developed a leak. The acid flowed southeast beyond Chempro's containment system. Approximately 3,300 gallons of liquid was recovered in the subsequent cleanup effort (24).
- October 1985 Approximately 3,700 gallons from a 10,100 gallon nitric acid tank (with chromic acid and heavy metals) went outside of the secondary containment system. The spill was neutralized with lime and approximately 560 cubic yards of contaminated soil were removed (17, 24).

Most activities ceased on this Parcel in 1986. When Chempro's lease expired on Parcel A in December 1986, operations were moved to the adjacent property. An inspection performed in January 1987 of the Parcel A facility noted that nine tanks were still on the property containing approximately 50,000 gallons of hazardous sludges and liquids. These tanks were open and uncovered. The tanks were in poor condition and there were indications that liquids were seeping from them. There were also signs of oil contaminated soil and contamination on concrete slabs and berm walls (23, 24).

Sludge samples taken by Chempro from SWMU A-3 and A-8 in 1979, show maximum copper concentrations of 17 ppm and 20 ppm, respectively (83). Samples from SWMU A-9 taken in 1979 show the following maximum metals concentrations; copper (9.3 ppm), nickel (2.0 ppm), zinc (2.3 ppm), lead (0.4 ppm), iron (10.6 ppm), and cadmium (0.4 ppm) (82). Samples taken by Ecology in 1979 from the rinse pit (SWMU A-23) were analyzed for metals showing the following maximum concentrations; copper (14.7 ppm), chromium (80 ppm), lead (0.2 ppm), zinc (3.6 ppm), cadmium (1.7 ppm), and nickel (3.3 ppm) (77).

Conclusions

There is documented soil and ground water contamination at this site (19, 24). The potential for air releases from the site in its inactive state is low, because of the installation of the membrane and soil cover. There is a moderate potential for surface water releases from the site due to the proximity of a surface water body (Lincoln Avenue Ditch) and possible discharges of contaminated ground water from the facility. The potential for subsurface gas

formation is low because these SWMUs had at least partial secondary containment and the wastes treated in the units did not have high concentrations of volatile organic constituents.

5.2.2 <u>SWMU No A-13: Former Waste Oil Pond</u>

Information Summary

A waste oil pond was present on Parcel A from approximately 1972 to 1975. Figure 6 shows the location of this SWMU as identified by historical records and sampling data. The pond was built in 1972 by Acology Oil, the original operator of the Parcel A oil recycling facility. The pond was reportedly used for storage of wastewaters generated during the reclamation process, petroleum sludges, and oil to be reclaimed at the facility (17, 19, 24). It was reported to be approximately 60 feet by 100 feet, unlined, and held about 500 gallons of oil (24). Oil from the pond may have migrated west onto the adjacent property, Chempro Parcels B and C (17, 18). In 1975, Ecology issued an order requiring that Puget Sound Industrial Petroleum, then the operator of the oil recycling facility, close the pond. By this time it was one-half of its original size (24). The pond was reportedly filled with auto fluff and gravel and became the site of Chempro's Parcel A chemical treatment facility (SWMUs A-1 to A-23) (18).

Conclusions

There is documented soil and ground water contamination at this site (19, 24). The potential for air releases from the site in its inactive state is low, because of the installation of the liner and soil cover. There is a moderate potential for surface water releases from the site due to the proximity of a surface water body (Lincoln Avenue Ditch) and possible discharges of contaminated ground water from the facility. Residual contamination from this unit may result in the generation of subsurface gas due to the volatile organic constituents present in the oily waste materials; therefore, the potential for subsurface gas formation is moderate.

5.2.3 SWMU A-24: Acology/Aero/PSIP/Chempro Waste Oil Recycling Equipment

Information Summary

As discussed in Section 2.2.2, four companies operated in succession a waste oil recycling and storage facility on the east side of Parcel A from 1970 to 1986. SWMU A-13 includes the inactive equipment associated with this facility and the property in the immediate vicinity; this equipment is discussed as a single SWMU because of the lack of specific information available regarding each piece of equipment, and the documented releases present throughout this area. Figure 6 shows the location of this SWMU. Available information indicates that at least the following process units were present at the facility over the life of its operation (24, 29):

- Three carbon steel processing tanks with a total combined capacity of 70,000 gallons
- One 10,000 gallon carbon steel sodium silicate storage tank
- Two 10,000 gallon carbon steel storage tanks
- One rail car used for the storage of emulsified asphalt
- A truck loading/unloading facility
- One API oil/water separator

There is no information indicating the specific configuration of these units on the property.

The oil recycling process at the facility consisted of pumping waste oil from the storage tanks to the processing tanks, where it was dehydrated and treated with sodium silicate for precipitation of water and dirt to the bottom of the processing tanks (24). Aerial photos do not indicate the presence of paved secondary containment around these units at any time.

Review of available documents indicates that there were at least the following observed releases of oil to the ground from the facility equipment:

■ 1970 - A Department of Ecology inspection report states that the site was messy and oil was allowed to spill to the ground (19).

- 1972 An Ecology inspection report indicates that Bruce Smith (Acology Oil) believed that considerable dumping of oil on the property was occurring when no one was around (19).
- 1976 A 15,000 gallon spill of waste oil occurred from a vertical waste tank oil due to a ruptured line. The spill occurred on the weekend and it was several days before it was detected and response measures was undertaken. Oil migrated approximately 100 yards from the tank in the direction of the boiler. Chempro conducted cleanup operations using a vacuum truck. The amount of oil recovered by this operation is unknown (24).
- 1979 Ecology conducted two site inspections in February 1979 and found that the facility was inundated with oily water and that no containment or storage areas for spills was present (24). Ecology stated that these conditions were in violation of Chempro's waste discharge permit and that enforcement action might by taken if the situation was not corrected (88).

<u>Conclusions</u>

There is documented soil and ground water contamination at this site (19, 24). Soil and ground water contamination has been confirmed by sampling. The potential for air releases from the site in its inactive state is low, because of soil excavation and installation of a liner and soil cover by Chempro. There is a moderate potential for surface water releases from the site due to the proximity of a surface water body (Lincoln Avenue Ditch) and possible discharges of contaminated ground water from the facility. The potential for subsurface gas formation is moderate due to the volatile organic constituents present in oily waste materials.

5.2.4 SWMU A-25: Areas of Auto Fluff and Lime Fill

Information Summary

The placement of lime wastes and auto fluff fill materials on Parcel A and the data on fill materials encountered during subsurface explorations activities are discussed elsewhere in the report (Sections 2.0 and 3.0). Figures 15 and 16 shows the extent of these identified fill deposits.

The potential for releases to soil and ground water from these fill materials is high. The fill deposits can generate caustic and heavy metal containing leachates. Spent catalyst lime wastes from Hooker Chemical contain chlorinated volatile organic compounds. The placement of lime wastes and auto fluff in the ground without containment and the hazardous constituents present in these wastes has probably caused these units to contribute to the soil and ground water contamination observed at Parcel A (See discussion in Sections 2.0 and 4.0). While the observed contamination cannot be solely attributed to fill and lime wastes due to the placement of wastes at the site and commingled contamination, the fill wastes may be significant sources of soil and ground water contamination by chlorinated volatile organic compounds, heavy metals and phthalate esters (1, 4, 5, 7, 22, 24). There is some potential for air releases from the spent lime catalysts; the release potential to air is probably low due to the subsurface location of the wastes and the placement of a synthetic liner and clean soil fill at Parcel A during closure activities (5). moderate potential for generation of subsurface gases due to the volatile organic compound content and subsurface location of spent lime catalysts. There is a low potential for direct releases to surface water from the unit, due to its subsurface location and clean fill placement at the site; however, contaminated ground water from the unit may discharge to the surface, resulting in surface water and sediment contamination.

5.3 NORTHWEST PROCESSING, INC.

Forty-eight SWMUs have been identified at Northwest Processing. These units are described below:

5.3.1 SWMUs N-1 through N-5: Tank Farm 1, Feed Tanks 1, 3, 4, and 5 and Former Feed Tank 2 (Photo 61)

Information Summary

Four feed tanks are currently located in Tank Farm 1. A fifth tank was present in Tank Farm 1, but has been removed. Tank 1 (SWMU N-1) is a vertical steel tank with a capacity of 378,600 gallons. Tank 2 (SWMU N-2) was also a vertical steel tank with a capacity of 378,600 gallons. This tank has been removed. Tanks 3 and 4 (SWMUS N-3 and N-4) are 106,600-gallon vertical steel tanks; Tank 5 (SWMU N-5) is a 93,300-gallon capacity vertical steel tank. All five tanks are believed to have been used for storage of materials to be reclaimed (e.g., used oil, solvents, cutter stock); Tanks 1, 3, 4, and 5 are currently used to store mixtures of gasoline, oil, and water. Tanks 3 and 5 reportedly stored waste solvents in the past (51). All except Tank 2 are currently active. The date they began operation is unknown, although Tank 1 (and a second large tank which has been removed) has been in place for at least 15 years. Tank 2 was removed within the past 3 years.

The tanks are vented directly to the atmosphere. They are gauged, but do not have automatic overfilling controls. The floor of Tank Farm 1 is unpaved; the tank farm is surrounded by a concrete berm which is of fairly recent construction (within one to two years). Prior to that time, these tanks were surrounded by an earthen berm (51).

A July 2, 1981 Ecology Inspection report notes that a "dirty solvent" tank was releasing solvent through a gas vent at the top; this event occurred for at least two days. Facility operators indicated to Ecology that they intended to remove approximately 100 gallons of solvent from the tank to alleviate the problem (51). Based on photographs taken at the time, it appears that the leaking tank was Tank 3. Tank 3 was tested in February 1989; three pinhole leaks were detected in the tank (51). The pinholes were repaired and the tank,

which was storing solvent at the time, is currently operating as a "feed tank" (51).

On January 27, 1982, Ecology noted stormwater and "a little oil discharge" coming from the tank farm dike (51).

During a September 1988 Ecology inspection, Tank 5 was observed to be leaking from a bottom valve. This tank contained spent Safety Kleen solvents at the time; these solvents had been in the tank for at least one and one-half years, according to facility personnel (40).

Conclusions

Releases to soil have been confirmed from Tanks 3 and 5. Since Tank Farm 1 is unpaved and all tanks are of similar age and construction, the potential for The potential for release to releases to soil from all five tanks is high. ground water from Tanks 3 and 5 is high, based on documented soil releases of unknown volume. The potential for release to ground water from Tanks 1, 2, and The tanks are vented directly to the atmosphere; tank overflow 4 is moderate. has been documented through the vent in Tank 3. Based on these considerations, the potential for air release from these units is high. The potential for direct releases to surface water is low because site topography tends to enhance entrainment in the soil column rather than runoff. Since ground water is shallow (within 5 to 10 feet of the surface), there is moderate potential for surface water releases due to ground water transfer. Because these tanks handle wastes containing volatile constituents, and secondary containment within the tank farm is unlined, there is a moderate potential for subsurface gas release.

5.3.2 SWMUs N-6 through N-14: Tank Farm 2, Feed Tanks 6 through 14 (Photos 53, 54, 62)

Information Summary

Nine feed tanks are located in Tank Farm 2. Tank 6 (SWMU N-6) is a vertical steel tank with a capacity of 18,700 gallons. Tank 7 (SWMU N-7) is an 18,300-gallon steel tank. Tank 8 (SWMU N-8) is an 18,900-gallon vertical steel tank. Tanks 9 (SWMU N-9) and 10 (SWMU N-10) are 19,700-gallon vertical steel tanks.

Tanks 11, 12, 13, and 14 (SWMUs N-11, N-12, N-13, and N-14) are 18,700-gallon steel tanks. These tanks have been used to store a variety of materials prior to recycling, including used oil; waste oil; mixtures of gas, oil, and water; cutter stock; naphtha; and other solid wastes. These tanks rest on a sealed concrete base surrounded by a 2-foot high concrete dike. Drainage from the diked area is discharged to the oily water treatment system (SWMUs N-27 through N-32) (51). A September 1988 Ecology inspection indicated that the containment wall around the tank farm is less than a foot in height and did not appear to be adequately designed to contain spills (40). There is no evidence of releases from these tanks; no evidence of release was observed during the VSI.

Conclusions

Because these tanks were constructed and are operated within secondary containment which appears to be of good integrity, the potential for releases to soil, ground water, and surface water are low. These tanks are vented to the atmosphere and contain volatile constituents; thus, the potential for release to air is high. The potential for generation of subsurface gas is low, because the units are above ground and within secondary containment.

5.3.3 <u>SWMU N-15: Tank 15. Process Wastewater Holding Tank</u> (Photo 57)

Information Summary

This unit is a 20,000 gallon steel tank located in Tank Farm 2 (Figure 8). It is used to store process wastewater from the centrifuge and fractionation processes. According to the facility, wastes stored in this tank are shipped off-site to a licensed disposal facility (51). This unit is currently active; the date it began operation is unknown. This unit manages oily wastewaters; laboratory analyses have shown the presence of chromium, copper, lead, nickel, and phenols (44):

Tank Farm 2 is paved with concrete, and has a 2-foot high concrete dike surrounding it. A sump within Tank Farm 2 drains to the oily water treatment system (SWMU N-27 through N-32). There is no historical evidence of release from this unit; no evidence of release was observed during the VSI.

Based on the location, operation and wastes managed in this tank, the potential for release to soil, ground water, and surface water is low. The potential for air releases is low, because the concentrations of volatile constituents is expected to be relatively low. The potential for subsurface gas generation is low, due to the presence of the concrete pad underlying the tank.

5.3.4 SWMU N-16: Tank 16, Centrifuge Feed Tank (Photos 53, 58, 59)

Information Summary

This unit is a 7,000-gallon vertical heated tank located in the process area (Figure 8). The tank serves as a feed tank for the decanter centrifuge (SWMU N-17). This tank has been used since processing started at the facility in 1985. This feed material consists of gasoline/water/solids, diesel/water/solids, or waste oil/water/solids. The feed materials are introduced into this unit from one of the feed tanks in tank farms 1 or 2. In this tank, the material is mixed and heated (using steam from the boiler) to reduce viscosity and enhance the centrifugation process (37). From Tank 16, the material is pumped to the centrifuge units (SWMU N-17 and N-18). This unit may generate some sludges; sludges are removed and drummed for off-site disposal. This unit is located within the secondary containment pad of the process area; it is externally gauged.

There is no historical evidence of releases from this tank. The lower portion of this tank and the containment area around it were very oily at the time of the VSI; the immediate reason for this oily material was not apparent.

Conclusions

Based on the location and operation of this tank, the potential for release to soil, ground water, and surface water is low. The potential for air releases is high, as the tank is heated and is vented directly to the atmosphere. The potential for subsurface gas release is low, due to the presence of the concrete pad underlying the tank.

5.3.5 SWMUs N-17 and N-18: Centrifuges (No Photo)

Confidential Information

Not For Release

Conclusions

These units are located in a building with a concrete floor and curbing. They are small units with little potential for release other than minor spillage to the floor of the building.

5.3.6 SWMU N-19: Waste Accumulation Area in Centrifuge Room (Photo 60)

Confidential Information

Not For Release

<u>Conclusions</u>

These units are located in a building with a concrete floor and curbing. They are small units with little potential for release other than minor spillage to the floor of the building.

5.3.7 SWMU N-20: Tank 17, Holding Tank (Photo 51)

Confidential Information

Not For Release

Conclusions

Based on the location and operation of this tank, the potential for release to soil, ground water, and surface water is low. The potential for air releases is high, as the tank is vented directly to the atmosphere. The potential for subsurface gas release is low, due to the presence of the concrete pad underlying the tank.

5.3.8 SWMU N-21: Fractionation System (Photos 51, 56)

Confidential Information

Not For Release

Based on the location and operation of this unit, the potential for release to soil, ground water, and surface water is low. The potential for air releases is low, because the overhead vapors generated from the system are returned and recondensed. The potential for subsurface gas release is low, due to the presence of the concrete pad underlying the tank.

5.3.9 SWMU N-22: Anti-Freeze Recycling System (No Photo)

Confidential Information

Not For Release

This unit is located in a building with a concrete floor and curbing. It is fully enclosed, with little potential for release other than minor spillage to the floor of the building. The pretreatment tank is located above an asphalt pad; any spills would flow to the concrete paved area around the centrifuge room and into a sump. Therefore, the potential for releases to all media is low.

5.3.10 SWMU N-23: Solvent Recovery Unit (No Photo)

Confidential Information

Not For Release

Conclusions

This unit is not currently active. It is located within a concrete diked area; the potential for releases to all media is considered low.

5.3.11 SWMU N-24: Tank 26. Stormwater Accumulation Tank (Photo 63)

Information Summary

This tank is a 25,000-gallon carbon steel tank, used as an accumulation tank for contact stormwater. It is located in Tank Farm 4 (Figure 8). The tank has a discharge permit from the City of Tacoma (Permit No. 0770-5260-011), but is not connected to the sewer. This unit is located on a reinforced concrete pad within

a 2-foot high containment dike (51). The tanks is expected to contain low concentrations of organic constituents from minor spillage in the process area. There is no evidence of releases from this tank.

Conclusions

The potential for releases to soil, ground water, and surface water from this tank and for the generation of subsurface gas are low due to its location within a diked concrete area. The potential for air release is low due to the expected low concentration of organic contaminants in the stormwater.

5.3.12 SWMU N-25: Tank 27, Process Wastewater Holding Tank (Photos 63, 64)

Information Summary

This 20,000 gallon tank is located in Tank Farm 4 (Figure 8). It is used to store process wastewater from the centrifuge and fractionation processes (SWMUs N-17, N-18, N-21). Wastes stored in this tank are shipped off-site to a licensed disposal facility, or are processed in the oily water treatment system (SWMUs N-27 through N-32) (50, 51). This unit is located on a reinforced concrete pad within a 2-foot high containment dike (51).

Conclusions

The potential for releases to soil, ground water, and surface water from this tank and for the generation of subsurface gas are low due to its location within a diked concrete area. The potential for air release is moderate due to the expected concentrations of volatile organic contaminants in the process wastewater.

5.3.13 SWMU N-26: Oily Water Sewer System (No Photo)

Information Summary

The oily water sewer system consists of a series of pipes connecting sumps in tank farms and process areas with the oily water treatment system (SWMUs N-27 to N-32). The piping is underground; its construction details are not known. Conflicting evidence of the use of this system was obtained during the VSI; it could not be determined specifically what wastewater was entering this system.

Conclusions

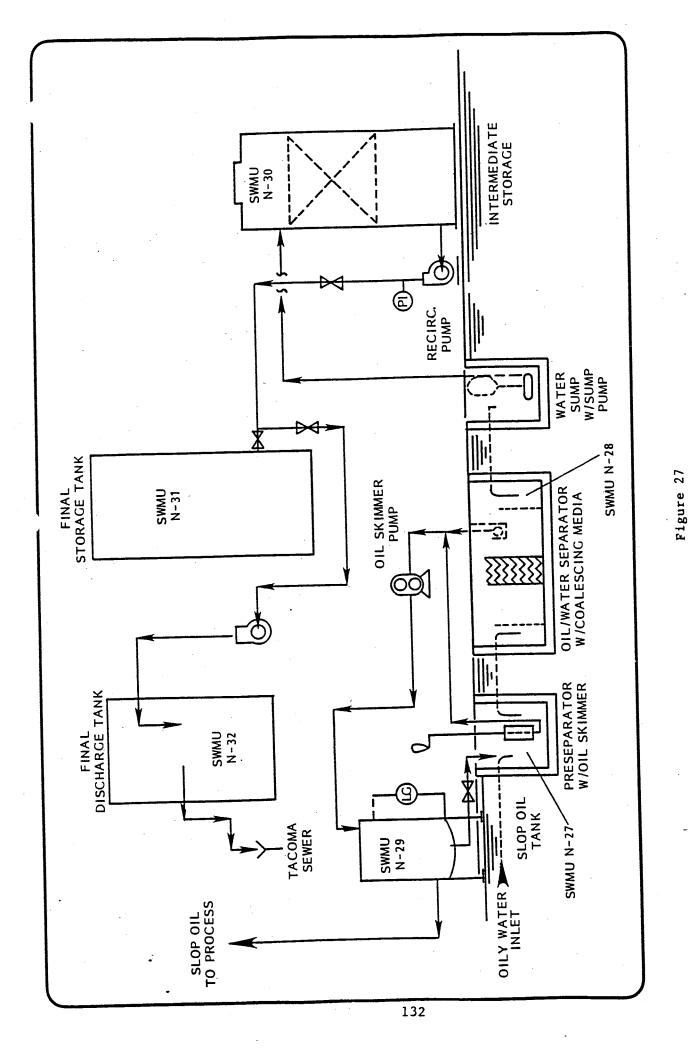
The potential for releases to soil and ground water from this unit and the potential for generation of subsurface gas cannot be determined without more information regarding the construction details and wastes managed. The potential for surface water and air releases from this unit is low because it is located underground.

5.3.14 SWMUs N-27 through N-32: Oily Water Treatment System (Photos 65, 66, 67, 68)

Information Summary

The oily water treatment system is used for oil/water/solids separation for wastewaters collected in the oily water sewer system (SWMU N-26) (51). The system consists of an API preseparator (SWMU N-27), a coalescing separator (SWMU N-28), a skim tank for slop oil skimmed off the separator units (SWMU N-29), a biotower (SWMU N-30), a storage tank known as the "pink tank" (SWMU N-31), and a sewer discharge tank (SWMU N-32). The biotower is constructed of carbon steel with dimensions of 25 feet tall by 13 feet diameter, and a capacity of approximately 25,000 gallons (51). Process flow for these SWMUs is shown in Figure 27.

Oily wastewaters enter the preseparator where an oil skimmer removes free oil; this is pumped to the skim tank. The water then passes through the coalescing separator which is designed to reduce the oil content to less than 50 ppm (37). The oil collected in this unit is pumped to the skim tank. Water leaving the separators is pumped to the biotower, which is not currently operating as a biological treatment unit. The effluent is stored in a holding tank (the "pink tank") for final analysis before being discharged on a batch basis to the sanitary sewer system or shipped off-site for disposal. An earlier Tacoma City Sewer discharge permit for contact stormwater has limitations in the permit for metals, total oil and grease, pH, phenols, cyanide, PCBs, BETX and purgeable halocarbons (46).



OILY WASTE TREATMENT SYSTEM NORTHWEST PROCESSING

As discussed in Section 2.3, prior to 1988, treated stormwater was discharged to the City of Tacoma's storm drain system (Lincoln Avenue Ditch). Sampling conducted in 1987 indicated an oil and grease concentration of 500 mg/l (75); this is 30 times greater than the NPDES unit. A sample collected from the first off property in-line catch basin contained 1,400 mg/l oil and grease. Reportedly, no other facilities are upstream of this catch basin (75).

Conclusions

The potential for releases from these units to air, soil, or ground water is low. Because the pink tank (SWMU N-31) is resting directly on the ground, its release potential to soil may be moderate. Given the documented past releases to the Lincoln Avenue ditch, the potential for past releases to surface water is high.

5.3.15 SWMU N-33: Generated Waste Storage Area (Photo 73)

Information Summary

A small drum storage area for wastes generated on-site is located outside the northeast corner of the main warehouse (Figure 8). This unit is used to store oily sludges generated in the centrifuge building (51). It is also used to store any laboratory samples which contain regulated wastes. At the time of the VSI, one drum marked "Hazardous Waste" and eight drums marked "Unregulated Waste" were located in this unit. There is no secondary containment for this area, although it is located in a concrete paved area north of the main warehouse. No evidence of release was observed at the time of the VSI.

Conclusions

The potential for release of waste constituents to soil is low under normal operating conditions. Thus, the potential for release to ground water and surface water is also low. The potential for releases to air is low, as the drums are normally closed. Because the unit is located in a paved area, the potential for generation of subsurface gas is also low.

5.3.16 SWMU N-34: Auxiliary Waste Storage Area (Photos 75, 77)

Information Summary

A variety of drummed waste materials are stored around the solvent repackaging building (Former Drum Storage Building, SWMU N-47) (Figure 8). At the time of the VSI, about 30 empty drums awaiting cleaning were located outside the west wall of this building. These drums were being stored prior to rinsing. During a September 1988 inspection by Ecology, 438 drums were observed in this area, stacked three and four high on wooden pallets. None had labels and many were marked as Safety Kleen sludge. Many of the drums had no lids. According to facility personnel, the sludges had been on-site for up to two years. Some of the drums were marked as creosote (40). The area is a graveled surface with no secondary containment. At the time of the VSI, there was no evidence of release in this area.

Conclusions

Based on the large number of drums previously stored in an inadequate condition, there is a high potential that past releases to soil may have occurred, and a moderate potential for past release to ground water, depending on the volume of waste that may have been spilled. The ongoing potential for release to these media appear to be low. The potential for release to air and surface water appear to be low. There is a low to moderate potential for generation of subsurface gas if waste spilled from the drums previously stored in this unit.

5.3.17 SWMU N-35: Drum Rinsing Area (No Photo)

Information Summary

This unit is a concrete pad located on the north side of the main warehouse (Figure 8). It has been used for rinsing of empty drums prior to shipment offsite for recycling. The dates of operation of this unit are uncertain. A variety of petroleum and solvent-containing wastes may have been handled in this unit. The pad slopes to a sump in the center; this sump drains to the oily water sewer system (SWMU N-26).

Conclusions

The location of this unit within a paved area sloped to a sump makes the potential for release to soil, ground water, and surface water low. The potential for air release cannot be evaluated without more information regarding the wastes which were handled here. The potential for subsurface gas generation is low due to the presence of the pavement.

5.3.18 SWMU N-36: Tank 21, Boiler Feed Tank (Photo 71)

Information Summary

This tank is a 19,500-gallon vertical steel tank located in Tank Farm 3. It is used to store fuel for the boiler (SWMU N-37). This unit is currently active; the date it began operation is unknown. Reportedly, waste fuels and recycled solvents have been stored in this tank for use as boiler fuel. Tank Farm 3 is paved with concrete and is surrounded by concrete berms. Analytical data for the fuel stored in this tank shows that up to 341 ppm lead may be present (44).

Conclusions

The potential for release to soil, ground water, and surface water from this unit and the potential for generation of subsurface gas is low because the tank is located within a concrete diked area with adequate secondary containment. The potential for air release is moderate, because the tank is vented to the atmosphere.

5.3.19 SWMU N-37: Hot Oil Heater (Boiler) (No Photo)

Information Summary

The hot oil boiler is located on the south side of the main building. According to facility personnel, this unit has not been fired using regulated waste fuel. Documents reviewed during the RFA, however, indicate that waste fuels and recycled solvents may have been used to fire the boiler. Analyses of the fuel stored in Tank 21 (SWMU N-36) for use in this unit indicate the presence of lead (44).

Conclusions

This unit is fully enclosed in a building; the potential for releases to any environmental medium is low. Air releases from this unit are regulated by PSAPCA.

5.3.20 <u>SWMUs N-38 and N-39: Loading/Unloading Areas</u> (Photos 50, 52, 53, 55, 62)

Information Summary

Two loading/unloading areas where wastes are handled were identified at Northwest Processing: one east of the process area, and one east of Tank Farm 2. Bulk materials are loaded and unloaded at these units (39). The loading/unloading pad near the process area is also used for vacuuming sludges from tanks into tank trucks. The sludges are then transported to a licensed disposal facility.

Run-on in these units is collected in the oily water sewer system and pumped to the oily water treatment system (SWMUs N-27 through N-32) (51). A 1982 Ecology inspection report indicated that oil from the loading/unloading area (unknown which one) had discharged to a pond located on the east side of the Northwest Processing property (51). No evidence of releases other than minor spillage to the collection system was noted during the VSI.

Conclusions

Past releases to soil have occurred from one of the loading/unloading areas. There is a low to moderate potential that residual soil contamination may be present from this spillage. The ongoing potential for releases to ground water, surface water, and the potential for generation of subsurface gas is low, because these units are underlain by pavement and have adequate containment. The potential for releases to air is low under normal operating conditions.

5.3.21 SWMU N-40: Tire Pyrolysis Unit (Photo 76)

Information Summary

The tire pyrolysis unit was a pilot process for recycling tires. It is located to the west of the maintenance building (Figure 8). The unit is constructed of

steel, is fully enclosed and built on metal legs on a concrete pad. It was active in 1986; it is no longer operational. When active, it managed wastes containing petroleum constituents and heavy metals.

Conclusions

The potential for past and ongoing releases from this unit to all environmental media is low.

5.3.22 <u>SWMU N-41: Portable 500-gallon Tanks in Loading/Unloading Area #2</u> (Photo 52)

Information Summary

At the time of the VSI, two portable 500-gallon tanks were located in the loading area. These tanks are reportedly used to move process wastewater to Tank 27 (SWMU N-25). These tanks may be the same tanks that were reported in Ecology inspections which were stored in Portable Tank Area #1 (SWMU N-44) and Portable Tank Area #2 (SWMU N-45). The area in which these tanks were stored was paved with a drainage channel leading to the oily water sewer system.

There is no information indicating that releases have occurred from these units. No releases were noted during the VSI.

Conclusions

Based on the location and conditions of these units at the time of the VSI, the potential for releases to soil, ground water, surface water is minimal, as is the potential for the generation of subsurface gas. There is a moderate potential for releases to the air from these tanks if they are not kept closed at all times.

5.3.23 SWMU N-42: Fill Areas (No Photo)

Information Summary

The northern three-fourths of the Northwest Processing site has been filled with a variety of fill materials. Fill materials which have reportedly been used include:

- Lime sludge from Hooker Chemical and Pacific Lime
- Auto fluff
- Wood waste and construction debris
- Dredge spoils from the Hylebos Waterway

The history of fill materials in this area are discussed in more detail in Section 3.4.

<u>Conclusions</u>

The potential for releases to soil and ground water from these fill materials The fill deposits can generate caustic and heavy metal containing is high. leachates. Spent catalyst lime wastes from Hooker Chemical contain chlorinated volatile organic compounds. The placement of lime wastes and auto fluff in the ground without containment and the hazardous constituents present in these wastes has probably caused these units to contribute to the soil and ground water contamination observed at Northwest Processing (see discussion in Sections There is some potential for air releases from the spent lime catalysts; the release potential to air is probably low due to the subsurface location of the wastes and the placement of a synthetic liner at least in the area of the active portion of the facility. There is a moderate potential for generation of subsurface gases due to the volatile organic compound content and subsurface location of spent lime catalysts. Although there is a low potential for direct releases to surface water from the unit, due to its subsurface location, there is a moderate potential for release of contaminated ground water from the unit to the surface, resulting in surface water and sediment contamination.

5.3.24 SWMU N-43: Former Drum Storage Area Near Western Boundary (No Photo)

Information Summary

In a 1973 aerial photo of the site, approximately 250 to 500 drums were observed near the western boundary of the site (east of a former 4-acre drainage pond). The contents of the drums are unknown. The owner of the property at the time was Donald Oline. The only commercial facility in the area was Aero/Acology Oil to the south (24).

Conclusions

The potential for releases from this unit cannot be determined without additional information regarding the contents of the drums.

5.3.25 SWMU N-44: Former Portable Tank Area #1 (No Photo)

Information Summary

During a September 1988 Ecology inspection, nine portable tanks were observed south of Tank Farm 3 (Figure 8). These tanks were used to collect material from Northwest Processing's oily water collection system during cleaning of sewer pipes and sumps (34, 51). According to the facility, they were pumped out and cleaned later that month (34). There was no evidence of spillage at that time; these tanks were not present at the time of the VSI.

<u>Conclusions</u>

The potential for past releases from these tanks cannot be evaluated. There is no ongoing potential for release as the tanks are no longer present at this location.

5.3.26 <u>SWMU N-45: Former Portable Tank Area #2</u> (No Photo)

Information Summary

During a September 1988 Ecology inspection, a number of portable tanks were observed along the east fence of Northwest Processing. Eleven of these tanks contained liquids. The tanks varied in size from 500 to 2,000 gallons; at least

one was observed leaking from the bottom port (40). These tanks were not present at the time of the VSI.

Conclusions

Past releases to soil occurred from this unit; the ongoing potential for releases to ground water is unknown, as it is not known how the spillage was remediated. The potential for past and ongoing releases to surface water and air is considered low. The potential for generation of subsurface gas is not known as the composition of the waste materials spilled could not be determined.

5.3.27 SWMU N-46: Former Drum Storage Area East Of Main Warehouse (No Photo)

Information Summary

About 54 drums with hazardous waste labels were observed at this location during a September 1988 Ecology inspection. Many of the labels were not filled out, although most had 1987 dates. Several drums were rusty and had holes in them and had unsecured or missing lids. An open sump is located near this area; the sump drains to the storm sewer. No other information is known about this unit; these drums were not present at the time of the VSI.

Conclusions

The potential for past releases to soil from this unit is high, due to the condition of drums at the time of the 1988 inspection. The potential for release to ground water is low, depending on the volume of waste which may have spilled from the drums. The potential for surface water release is low, while air release potential may be moderate due to the missing lids on the drums. The potential for generation of subsurface gas cannot be determined without additional information regarding the specific waste constituents.

5.3.28 <u>SWMU N-47: Former Drum Storage Building (Solvent Repackaging Building)</u> (Photo 74)

Information Summary

The solvent repackaging building in the northeast corner of the site was at one time used to store drummed material awaiting recycling at the facility (51).

Information regarding the waste types managed in this building has not been supplied by Northwest Processing. Product materials, including hexane and isopropyl alcohol were also stored in this building. According to documents submitted by Northwest Processing, the building was enclosed and curbed in the spring of 1988. It has a blind sump in the center of the concrete floor (51). Prior to 1988, this sump discharged to the oily water sewer system (SWMU N-26) and therefore to the Lincoln Avenue ditch.

Conclusions

Because information regarding the condition of the building floor prior to 1988 was not supplied, the potential for past releases to soil and ground water and generation of subsurface gas cannot be evaluated. The present potential for releases to these media from this building is very low, based on the presence of a blind sump. The past potential for air releases cannot be determined due to lack of information regarding the waste types managed in this unit; the present potential from the solvent packaging operations appears to be very low. The potential for release to surface water is low, based on the building's lack of proximity to local drainage channels.

5.3.29 SWMU N-48: Former Horizontal Tanks South of Tank Farm 1 (No Photo)

Information Summary

An aerial photo of the property from 1981 indicates the presence of three small horizontal tanks located south of Tank Farm 1. According to Glenn Tegen, these tanks were used for storage of waste oils. Other tanks in this area may have been used for the storage of waste and product mineral spirits, and lube oils. These tanks were located on soil, with no secondary containment evident from the photo. The actual dates of operation of these tanks could not be determined, however, Mr. Tegen recalled that the horizontal tanks were cleaned out and sent to General Metals to be recycled, possibly in 1982.

Conclusions

The potential for past releases to soil and ground water from this unit is moderate, due to its location and probable operational standards. The potential for past releases to air is unknown. The potential for release to surface water was low, due to the location of the tanks. There is a low potential for the generation of subsurface gas due to the presence of volatile constituents in the waste managed.

5.4 SOL-PRO, INC.

Twenty-two SWMUs have been identified at Sol-Pro. These units are described in detail in the following sections.

5.4.1 SWMU S-1: Tank 704, Luwa Feed Tank (Photo 100)

Information Summary

Tank 704 is a 4,000-gallon stainless steel tank used for blending of solvents to homogenize the feed stream prior to introduction to the Luwa Thin Film Evaporator (SWMU S-4). Waste solvents in batches of 1,000 gallons or more enter the Sol-Pro facility in tank trucks and/or drums which are pumped into Tank 704. Wastes may also be transferred to Tank 704 from Tanks 535 and 536, the dirty wash solvent tanks (SWMUs S-2 and S-3). From Tank 704, the blended waste solvents are pumped to the Luwa Thin Film Evaporator (SWMU S-4).

This unit is currently active; it began operation in 1988 when facility construction was completed. It manages primarily non-chlorinated liquid solvents (EPA waste numbers F003 and F005), although chlorinated liquid solvents (EPA waste numbers F001 and F002) may be handled occasionally.

Tank 704 is located in the eastern corner of the site in a concrete containment structure with approximately 3-foot concrete sides (Figure 9). The containment structure also contains several additional tanks and is approximately 30 feet by 40 feet in size. A blind sump is located within the containment; liquids in this sump are pumped out every day or as needed. Material from the sumps is pumped manually to Tank 901 (SWMU S-15) if contaminated, or to the stormwater

holding tank (SWMU S-21) if strictly rainwater. The tank is not vented. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since this unit appears to be in good condition and has adequate secondary containment, the potential for releases to soil, surface water, or ground water is low. The unit is fully enclosed and is not vented, therefore the potential for releases to air is low. Since Tank 704 is above-ground and within secondary containment, the potential for subsurface gas generation is minimal.

5.4.2 <u>SWMUs S-2 and S-3: Tanks 535 and 536, Dirty Wash Solvent Tanks</u> (Photos 83, 92)

Information Summary

Liquid solvents which are transported to the Sol-Pro facility in small batches (e.g., less than 1,000 gallons) are placed in Tanks 535 and 536 for settling. These tanks have a capacity of 10,000 gallons each and are constructed of steel. They are located northwest of Tank 704 (SWMU S-1) in the eastern corner of the site (Figure 9). Wastes in these tanks are generally a heterogeneous mixture of different solvents generated by a variety of Sol-Pro customers (72). Settled solids are processed through the horizontal evaporator (SWMU S-13) or are shipped off-site as a hazardous waste fuel. Liquids are transferred to Tank 704 (SWMU S-1) for processing through the Luwa Thin Film Evaporator (SWMU S-4), or may be shipped off-site as a hazardous waste fuel (72). An Ecology inspection on January 27, 1990 noted that Tank 536 was reportedly being used to store material processed through the LUWA and awaiting shipment to systech (96).

These tanks are currently active; they began operation in 1988 when facility construction was completed. Wastes managed include non-chlorinated solvents (EPA waste numbers F003 and F005). Tanks 535 and 536 are located within a concrete containment structure with approximately 3-foot concrete sides. A blind sump within the containment area captures any spills; this sump is pumped out daily or as necessary. Material from the sump is pumped to Tank 901 (SWMU S-15) if contaminated, or to the stormwater holding tank (SWMU S-21) if strictly

rainwater. The tanks are not vented. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since these units appear to be in good condition and have adequate secondary containment, the potential for releases to soil, surface water, or ground water is low. The units are fully enclosed and are not vented, therefore the potential for releases to air is low. Since Tank 535 and 536 are above-ground and within secondary containment, the potential for subsurface gas generation is minimal.

5.4.3 SWMU S-4: Luwa Thin Film Evaporator Unit (Photo 79)

Information Summary

Blended waste solvents from Tank 704, the Luwa Feed Tank (SWMU S-1), are passed through an in-line basket filter to remove solids from the waste solvent stream prior to treatment in the Luwa thin film evaporator. Blended solvents are passed through the basket filter until enough solids accumulate in the filter to cause excessive back pressure. The dirty basket is then replaced by a clean basket; the wasted basket filters are placed in drum storage and held for further processing in the horizontal evaporator (SWMU S-13). The basket filter also serves to further homogenize the feed materials before they are treated in the evaporator.

The blended and filtered waste solvents from the basket filter are drawn by vacuum or pump and metered to the feed inlet of the Luwa thin film evaporator. After being introduced, the solvents are immediately distributed over the internal circumference of the evaporator and kept turbulent by blades on a rotor. The waste solvents are heated to a temperature near the boiling point of the solvent being recovered by a heating jacket that surrounds the unit. The heat is provided by steam from an on-site boiler or hot oil produced by a heater. The solvents are vaporized; the distilled solvent vapors leave the evaporator and are transferred to a condenser. Vaporized water is separated from the distillate and pumped to storage. The draw water is transferred to Tank 901 (SWMU S-15); recovered solvent is transferred to stainless steel

storage tanks. Solvent vapors are processed through a vacuum system (SWMU S-14).

Sludge residue from the evaporation process leaves the bottom of the unit and is placed in drums for further processing in the horizontal evaporator (SWMU S-13) or for off-site disposal as a hazardous waste fuel. The Luwa Thin Film Evaporator can process 300 to 900 gallons per hour of waste solvent for recycling (55).

The Luwa Thin Film Evaporator unit is currently active; it began operation in 1988. It processes primarily non-chlorinated liquid waste solvents (EPA waste numbers F003 and F005), although chlorinated liquid waste solvents may be processed occasionally (72).

The unit is located in the eastern corner of the site (Figure 9), just northeast of Tank 704 (SWMU S-1). It sits on a concrete platform which is surrounded by a 6-inch concrete curb. A blind sump within the curbed area captures any spills; this sump is pumped out daily or as necessary. Material from the sumps is pumped to Tank 901 (SWMU S-15) if contaminated or to the stormwater holding tank (SWMU S-21) if strictly rainwater. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since this unit appears to be in good condition and has adequate secondary containment, the potential for releases to soil, surface water, or ground water is low. The unit is fully enclosed and vapors are treated (SWMU S-14), therefore the potential for releases to air is low. Since the Luwa Thin Film Evaporator is above-ground and within secondary containment, the potential for subsurface gas generation is minimal.

5.4.4 <u>SWMUs S-5 and S-6: Tanks 705 and 706, Recycled Solvent Tanks</u> (Photo 100)

Information Summary

Tanks 705 and 706 are 5,200-gallon steel tanks located northwest of Tank 704 (SWMU S-1) (Figure 9). Recycled solvents from the Luwa evaporator (SWMU S-4) and from the horizontal evaporator (SWMU S-13) are placed in these tanks prior to transport off-site. In addition, water present in reclaimed solvent in these tanks is separated by settling. Prior to loading of reclaimed solvent into tank cars, water is pumped from the bottom of these tanks and placed in Tank 901 (SWMU S-15). Processed solvent is then shipped back to the generator or to a cement kiln for disposal as a hazardous waste fuel (72).

These units are currently active; they began operation in 1988 when facility construction was completed. Tanks 705 and 706 manage primarily non-chlorinated liquid solvents (EPA waste numbers F003 and F005) and water, although chlorinated liquid solvents (EPA waste numbers F001 and F002) may be handled occasionally.

The tanks are located in a concrete containment structure with approximately 3-foot concrete sides. The containment structure also contains several additional tanks and is approximately 30 feet by 40 feet in size. A blind sump is located within the containment; liquids in this sump are pumped out every day or as needed. Material from the sump is pumped to Tank 901 (SWMU S-15) if contaminated, or to the stormwater holding tank (SWMU S-21) if strictly rainwater. The tanks are not vented. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since these units appear to be in good condition and have adequate secondary containment, the potential for releases to soil, surface water, or ground water is low. The units are fully enclosed and are not vented, therefore the potential for releases to air is low. Since Tanks 705 and 706 are above-ground and within secondary containment, the potential for subsurface gas generation is minimal.

5.4.5 <u>SWMUs S-7 and S-8: Tanks D-1 and D-2. Brighton Feed Tanks</u> (Photos 86, 91, 92)

Information Summary

Tanks D-1 and D-2 are 500-gallon steel rectangular tanks used for blending of solvents to homogenize the feed stream prior to introduction to the Brighton Solvent Reclaiming System (SWMU S-9). Chlorinated waste solvents entering the Sol-Pro facility in tank trucks and/or drums are pumped into Tanks D-1 and D-2. From Tanks D-1 and D-2, the blended waste solvents are pumped to the Brighton system (SWMU S-9) (55).

These tanks are currently active but used only occasionally; they began operation in 1988. They manage primarily chlorinated liquid waste solvents (EPA waste numbers F001 and F002). The tanks are located within a 6-inch concrete curbed area that also contains the Brighton unit. Overflow pipes on each tank drain to 55-gallon drums (59). During a 1988 Ecology inspection, the overflow pipe for Tank D-2 was not directed into the drum (59). A blind sump within the curbed area captures any spills; this sump is pumped out daily or as necessary. Material from the sumps is pumped to Tank 901 (SWMU S-15) if contaminated, or to the stormwater holding tank (SWMU S-21) is strictly rainwater. The tanks are not vented. An Ecology inspection on January 27, 1990 noted that liquid from the containment structure around these tanks was being discharged to the storm drain immediately north of the containment area (96).

Conclusions

Since these units appear to be in good condition and have adequate secondary containment, the potential for releases to soil, surface water, or ground water is low. The potential for release to surface water is high due to the observed discharge of stormwater to the storm drain. The units are fully enclosed and not vented, therefore the potential for releases to air is low. Since the Tanks D-1 and D-2 are above-ground and within secondary containment, the potential for subsurface gas generation is minimal.

5.4.6 <u>SWMU S-9: Brighton Solvent Reclaiming System</u> (Photos 86, 88, 90, 91, 92)

Information Summary

From Tanks D-1 and D-2 (SWMUs S-7 and S-8), the liquid waste solvent is drawn by vacuum to the Brighton Solvent Reclaiming System. Vacuum is maintained at 3 to 9 inches Hg within the unit. Waste solvents are drawn into the evaporator until a level control valve closes. The unit is heated (120°F to 300°F) by means of a heating jacket surrounding the unit. The hot interior surface causes solvents to vaporize and suspended solids to adhere to the hot surface.

Solids are removed by a rotating scraper assembly; solids drop to the bottom of the evaporator and are removed through a cleanout door and placed in drums for later processing in the horizontal evaporator (SWMU S-13) or for disposal as a hazardous waste fuel. A float level control maintains a constant level in the evaporator by admitting as much solvent as is vaporized. Clean solvent vapors pass through a series of condenser tubes and solvent is then pumped to Tanks C-1 or C-2 (SWMUs S-10 and S-11) for storage/settling or to railcars for transport off-site. The Brighton unit can process approximately 40 to 100 gallons per hour of solvents (55).

The Brighton unit is currently active although used infrequently; it began operation in 1988. Wastes managed include primarily chlorinated liquid waste solvents, although non-chlorinated solvents may be processed through this unit as well. The unit is located on the same concrete pad as Tanks D-1 and D-2 (SWMUS S-7 and S-8). The pad has 6-inch concrete curbs. A blind sump within the curbed area captures any spills; this sump is pumped out daily or as necessary. Material from the sump is pumped to Tank 901 (SWMU S-15) if contaminated, or to the stormwater holding tank (SWMU S-21) if strictly rainwater. Although a 1988 Ecology inspection identified an accumulation of precipitation and "spilled substance" within the containment (59), there is no evidence that hazardous constituents have been released to the environment. No evidence of releases was observed during the VSI. A January 27, 1990 Ecology inspection noted that stormwater from the containment area around this unit was

being discharged through a metal pipe to the storm drain directly north of the containment area (96).

Conclusions

Since this unit appears to be in good condition and has adequate secondary containment, the potential for releases to soil or ground water is low. The potential for releases to surface water is high based on the observed discharge of stormwater to the storm drain. Vapors are not treated through the vacuum system and are most likely vented to the atmosphere, therefore the potential for releases to air is high when the unit is in operation. Since the Brighton Solvent Reclaiming System is above-ground and within secondary containment, the potential for subsurface gas generation is minimal.

5.4.7 <u>SWMUs S-10 and S-11: Tanks C-1 and C-2</u> (Photo 90)

Information Summary

Tanks C-1 and C-2 are 600-gallon steel tanks located near the Brighton still (SWMU S-9). Recycled solvents from the Brighton Solvent Reclaiming System are placed in these tanks prior to transport off-site. In addition, water is separated from the reclaimed solvent in these tanks by settling. Prior to loading of reclaimed solvent into tank cars, water is pumped from the bottom of these tanks and placed in Tank 901 (SWMU S-15). Clean solvent is then shipped back to the generator or to a licensed disposal facility for incineration.

These units are currently active although used infrequently; they began operation in 1988 when facility construction was completed. Tanks D-1 and D-2 manage primarily chlorinated liquid solvents (EPA waste numbers F001 and F002) and water, although non-chlorinated liquid solvents (EPA waste numbers F003 and F005) may be handled occasionally.

The tanks are located on a concrete pad with 6-inch concrete curbs. A blind sump is located within the containment; liquids in this sump are pumped out every day or as needed. Material from the sump is pumped to Tank 901 (SWMU S-15) if contaminated, or to the stormwater holding tank (SWMU S-21) if strictly

rainwater. The tanks are not vented. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since these units appear to be in good condition and have adequate secondary containment, the potential for releases to soil, surface water, or ground water is low. The units are fully enclosed and are not vented, therefore the potential for releases to air is low. Since Tanks D-1 and D-2 are above-ground and within secondary containment, the potential for subsurface gas generation is minimal.

5.4.8 SWMU S-12: Pump Hopper (Photo 89)

Information Summary

The pump hopper is a stainless steel box, about 4 feet by 4 feet by 3 feet in size, which was used as a feed hopper for sludges to be processed through the horizontal evaporator (SWMU S-13). It is located northeast of the horizontal evaporator and north of the Luwa unit (SWMU S-4) (Figure 9). During the VSI, this unit was out of service for modifications. Beginning in January 1990, this unit will be used to grind and emulsify sludges to cement kiln specifications, thus allowing a larger proportion of solvent-contaminated sludges to be shipped off-site as a hazardous waste fuel rather than being processed on-site.

The pump hopper is currently inactive; it will be back in service as an emulsifier soon. The unit began operation in 1988. Wastes managed include chlorinated and non-chlorinated waste solvent sludges. The unit is located on the same concrete pad as the horizontal evaporator and Luwa units (SWMUS S-13 and S-4). The pad has 6-inch concrete curbs. A blind sump within the curbed area captures any spills; this sump is pumped out daily or as necessary. Material from the sump is pumped to Tank 901 (SWMU S-15) if contaminated, or to the stormwater holding tank (SWMU S-21) if strictly rainwater. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since this unit appears to be in good condition and has adequate secondary containment, the potential for releases to soil, surface water, or ground water is low. Since this unit is fully enclosed, the potential for releases to air is low. Since the pump hopper is above-ground and within secondary containment, the potential for subsurface gas generation is minimal.

5.4.9 <u>SWMU S-13: Horizontal Evaporator</u> (Photo 85)

Information Summary

The horizontal evaporator unit (also known as the "drier" unit) is used to treat sludges from off-site generators, wasted filter materials from the recycling of waste solvents in the Luwa or Brighton distillation units (SWMUs S-4 and S-9), and other waste solvents that cannot be processed through those units. Drums of sludges and other materials are emptied into the receiving bin of the horizontal evaporator. (Until recently, sludges were placed in the pump hopper prior to loading into the horizontal evaporator.) They fall by gravity into a screw-feeding mechanism which carries the materials into the body of the unit. Heat (in the form of steam from the boiler) is applied to the exterior of the evaporator. The temperature ranges from 300°F to 600°F according to the material type.

A vacuum is applied to the interior of the unit. The waste sludges are kept turbulent as they move through the body of the evaporator and vaporization of the solvents occurs. The solvent vapors then pass to a condenser. Draw water is separated from the distillate and both are pumped to storage. The draw water is pumped to Tank 901 (SWMU S-15). Solvent vapors are processed through a vacuum system (SWMU S-14). Dry granular solids are produced as a waste product during the operation of the horizontal evaporator (55). These solids are placed in plastic bags and stored at the generated waste storage area (SWMU S-16) prior to disposal in a Class I landfill. The horizontal evaporator can process about 400 to 1,400 gallons per day of waste solvent; it operates in batch mode (55).

The horizontal evaporator is currently active; it began operation in 1988. Waste managed are sludge-like solvent wastes, including still bottom sludges

from the Luwa and Brighton distillation units (EPA Waste Nos. F001 through F005). This unit is located within the same containment area as the Luwa Thin Film Evaporator (SWMU S-4). A blind sump within the curbed area captures any spills; this sump is pumped out daily or as necessary. Material from the sump is pumped to Tank 901 (SWMU S-15) if contaminated, or to the stormwater holding tank (SWMU S-21) if strictly rainwater. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since this unit appears to be in good condition and has adequate secondary containment, the potential for releases to soil, surface water, or ground water is low. The unit is fully enclosed and vapors are treated (SWMU S-14), therefore the potential for releases to air is low. Since the horizontal evaporator is above-ground and within secondary containment, the potential for subsurface gas generation is minimal.

5.4.10 SWMU S-14: Vacuum System (No Photo)

Information Summary

A vacuum system is used to extract solvent from the Luwa Thin Film Evaporator (SWMU S-4) and horizontal evaporator (SWMU S-13) vapor streams. This unit is located outside behind the boiler room (Figure 9). The vacuum system consists of a vacuum pump, a fluid receiver, a carbon filter, and associated piping. The treated air stream is vented to the atmosphere. The effluent air is tested periodically; when breakthrough of solvent occurs, the carbon filter is replaced. This has occurred only once since the unit has been in operation; spent carbon was shipped off-site to a carbon recovery facility (71). Solvent-containing liquids condensed in the vacuum system are pumped to Tank 901 (SWMU S-15).

The vacuum system is currently active; it began operation in 1988. A Puget Sound Air Pollution Control Agency PSAPCA permit has been issued for this unit. Wastes managed are both chlorinated and non-chlorinated solvent-containing vapors (EPA Waste Nos. F001 through F005). A blind sump near the vacuum system captures any spills; this sump is pumped out daily or as necessary. Material

from the sump is pumped to Tank 901 (SWMU S-15) if contaminated, or to the stormwater holding tank (SWMU S-21) if strictly rainwater. No other information on release controls was available. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since this unit appears to be in good condition and handles primarily vapors, the potential for releases to soil, surface water, or ground water is low. The vacuum system has an active PSAPCA permit; assuming it is operated properly, the potential for releases to air should be low. Since the unit is above-ground, the potential for subsurface gas generation is minimal.

5.4.11 <u>SWMU S-15</u>: <u>Tank 901</u>, <u>Wastewater Holding Tank</u> (Photos 81, 98, 99, 100)

Information Summary

Tank 901 is a 20,000-gallon steel tank used to store solvent-contaminated wastewaters, including draw water from the Luwa Thin Film Evaporator (SWMU S-4), Brighton Solvent Reclaiming System (SWMU S-9), and horizontal evaporator (SWMU S-13); solvent-contaminated sump water; water condensed in the vacuum system (SWMU S-14); tank truck, rail car, and processing tank rinseouts; and clean solvent which drips into catch buckets (71). Wastewaters in this tank are shipped off-site for use as a hazardous waste fuel (71). The tank is located southwest of Tank 704 (SWMU S-1) (Figure 9).

This tank is currently active; it began operation in 1988. Wastes managed include solvent-contaminated waters which are classified as EPA waste numbers F001 through F005.

Tank 901 is located in the eastern corner of the site in a concrete containment structure with approximately 3-foot concrete sides. The containment structure also contains several additional tanks, including Tank 704 (SWMU S-1) and is approximately 30 feet by 40 feet in size. A blind sump is located within the containment; liquids in this sump are pumped out every day or as needed. Material from the sumps is pumped back into Tank 901 if contaminated, or to the stormwater holding tank (SWMU S-21) if strictly rainwater. The tank is not

vented. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since this unit appears to be in good condition and has adequate secondary containment, the potential for releases to soil, surface water, or ground water is low. The unit is fully enclosed and is not vented, therefore the potential for releases to air is low. Since Tank 901 is above-ground and within secondary containment, the potential for subsurface gas generation is minimal.

5.4.12 SWMU S-16: Generated Waste Storage Area (Photos 94, 95)

Information Summary

This unit consists of an area about 60 feet by 30 feet in size. Drums of hazardous waste generated on-site are situated on wooden pallets on a large plastic sheet; 2-inch berms separate incompatible wastes. Hazardous wastes are stored in this unit for less than 90 days. Dry granular wastes generated in the horizontal evaporator are placed in 1-cubic-yard nylon bags and stored in this unit prior to disposal in a Class I landfill. All drums and bags observed during the VSI appeared to be in good condition (71).

The unit is currently active; the date it began operation is unknown but appears to be quite recent as the plastic sheet was in very good condition. Wastes managed include dry granular solid waste material from the evaporative treatment of sludges, still bottoms, filter debris, used and soiled safety gear (e.g., Tyvek suits, gloves, etc.), and sludges from triple rinsing of drums prior to crushing. The plastic sheet serves as a release control for this unit. Small spills would be contained on the sheet; larger spills would likely flow onto the surrounding gravel and soil. The unit is uncovered.

There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

The containers of waste observed in this unit during the VSI appeared to be in good condition, and many of the wastes contained in this unit are sludges or solids. No evidence of releases has been documented, and the unit has secondary containment (although minimal), therefore the potential for releases to soil, ground water, and surface water from this unit is low. Since the containers are normally kept closed at all times, the potential for releases to air is also low. Since this unit is above-ground and has minimal secondary containment, the potential for subsurface gas generation is low.

5.4.13 <u>SWMU S-17: Drum Rinsing Area</u> (no photo)

Information Summary

Empty drums are triple-rinsed in this unit prior to being crushed (SWMU S-18). The unit consists of a concrete pad northwest of the boiler building (Figure 9); there is no berm around this unit. The unit is currently active; it has been in operation since 1988. Wastes managed include solvent-contaminated water. A blind sump is located within the concrete pad; liquids in this sump are pumped out every day or as needed. Material from the sumps is pumped into Tank 901 (SWMU S-15) if contaminated, or to the stormwater holding tank (SWMU S-21) if strictly rainwater. No additional information on release controls was available. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Most spills would probably be contained within the concrete pad and would drain to the sump, therefore the potential for releases to soil, surface water, and ground water is low. Minor releases of solvents to the air could occur during rinsing of drums, however the volume released would be quite low. For this reason, the potential for air releases is low. Since this unit is located above the ground surface and on a containment pad, the potential for subsurface gas generation is minimal.

5.4.14 SWMU S-18: Drum Crusher (Photo 93)

Information Summary

This unit is located northwest of the boiler building (Figure 9), and is used to crush empty drums after rinsing in the drum rinsing area (SWMU S-17). The drum crusher is constructed of steel and is about 3 feet by 3 feet by 5 feet in size. Crushed drums are placed in a dumpster next to this unit for disposal.

The unit is currently active; it has been in operation since 1988. Wastes managed include empty, rinsed drums. Although traces of solvents may remain inside the drums, it is unlikely that significant volumes of hazardous constituents are managed in this unit. The drum crusher is situated on a raised concrete pad. A blind sump is located near this unit. Liquids in the sump are pumped out every day or as needed. Material from the sumps is pumped into Tank 901 (SWMU S-15) if contaminated, or to the stormwater holding tank (SWMU S-21) if strictly rainwater. No additional information on release controls was available. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since this unit handles primarily solids (e.g., rinsed drums) and sits on a concrete pad, the potential for releases to soil, surface water, and ground water is low. Although solvent residues may be present in the drums, the volume of any air releases would be minimal. Therefore the potential for releases to air is low. Since this unit is located above the ground surface and on a containment pad, the potential for subsurface gas generation is minimal.

5.4.15 SWMU S-19: Rail Car Loading Rack (Photo 78)

Information Summary

This unit is located in the northeast corner of the facility (Figure 9). Wastes are shipped off-site from the facility in rail tank cars. The railcars are located over a containment area when they are loaded. The cars can be loaded through the loading rack or directly from a tanker truck; they are outfitted with fill pipes for top loading. A chemical hose is used to connect the plant

piping on a steel platform 2 feet higher than the rail car platform to the railcar fill pipe. Each car is loaded to within 6 inches of the lid and then sealed with a bolt-down hatch and asbestos wirewoven gasket. A seal is placed on both top hatch and bottom valve.

This unit is currently active; it has been in operation since 1988. Wastes managed include solvent-contaminated sludges and liquids (EPA waste numbers F001 through F005).

The concrete containment area under the loading rack is 30 by 60 feet and 5 inches deep at its shallowest point of containment; it appears to be large enough to hold routine spillage during loading. Its volume is approximately 4,155 gallons. The containment area contains a blind sump; before beginning loading/unloading operations, facility personnel check for rainwater or other liquids and empty the sump. If contamination is present in the sump, the liquid is pumped to Tank 901 (SWMU S-15) for further processing and disposal (55).

There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since this unit appears to be in good condition and has adequate secondary containment, the potential for releases to soil, surface water, or ground water is low. If spills into the sump occur during loading (which is likely), there is a moderate potential for releases to air. Since this unit is above-ground and has adequate secondary containment, the potential for subsurface gas generation is minimal.

5.4.16 <u>SWMU S-20: Incoming Waste Area</u> (Photos 82, 83, 84)

Information Summary

Solvent wastes may enter the facility by truck. Drums of waste solvent are placed in this unit prior to being pumped to the distillation units. The incoming waste area is located in the main process area (Figure 9). It is

paved, with a concrete curb on three sides; the paved area slopes toward the curbed end. During the VSI, approximately 30 drums were observed in this unit.

This unit is currently active; it has been in operation since 1988. Wastes managed include solvent-contaminated sludges and liquids (EPA waste numbers F001 through F005).

The paved area on which this unit sits has no sump. Spilled materials are probably pumped out as necessary; no other information on release controls was available. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since this unit appears to be in good condition and has adequate secondary containment, the potential for releases to soil, surface water, or ground water is low. Major spills could result in some air releases; however during normal operation the potential for releases to air is low. Since this unit is aboveground and has adequate secondary containment, the potential for subsurface gas generation is minimal.

5.4.17 SWMU S-21: Stormwater Holding Tank (No Photo)

Information Summary

This unit is a 20,000-gallon steel tank located near the boiler (Figure 9). It sits on a plywood platform on soil next to the cooling tower. Stormwater placed in this tank is generally uncontaminated. If contaminated with solvents, the tank contents are pumped to Tank 901 (SWMU S-15); if clean, the water is used as makeup to the boiler (72).

This unit is currently active; it has been in operation since 1988. Wastes managed include water contaminated with trace concentrations of chlorinated and non-chlorinated solvents (EPA waste numbers F001 through F005).

The ground surface under this tank is unpaved; a blind sump is located near it. Any spills would soak into the ground surface; larger spills would probably be

captured in the sump. There is no documentation of releases from this unit, and no evidence of release was observed during the VSI (71).

Conclusions

Since this unit has no secondary containment, there is a moderate potential for releases to soil and ground water. Due to the distance to the nearest surface water, direct releases to surface water are considered unlikely. The tank is not vented and contains only very low concentrations of volatile hydrocarbons; the potential for releases of hazardous constituents to air is low. Since this unit is located above-ground, there is little potential for subsurface gas generation.

5.4.18 <u>SWMU S-22: Storm Drainage System</u> (No Photo)

Information Summary

The storm drainage system consists of a series of drains connected by underground piping (Figure 9). Yard runoff, steam overflow condensate, and other materials drain to this unit (71). An Ecology inspection on January 27, 1990 indicated that liquid from inside the containment area of the Brighton Still (SWMU S-9) (96). Stormwater flows from this unit to the Lincoln Avenue ditch (71) on the southeast side of the facility.

This unit is currently active; it has been in operation since 1988. Wastes managed include water contaminated with chlorinated and non-chlorinated solvents (EPA waste numbers F001 through F005).

The storm drainage system operates without secondary containment. There is no documentation of releases from this unit, and no evidence of releases was observed during the VSI (71).

Conclusions

The storm drainage system has no secondary containment, therefore any leakage from the underground piping would result in releases to soil and potentially to ground water. Since the facility is quite new, however, and since there is no evidence of leakage from the storm drainage system, the potential for releases to soil and ground water is low. Hazardous constituents in the stormwater are released directly to surface water via the Lincoln Avenue ditch. Therefore, the potential for releases to surface water is high. Since the unit is underground, there is low potential for air releases. Organic material is not a major component of the stormwater, and therefore the potential for subsurface gas generation is low.

6.0 CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER ACTION

A RCRA Facility Assessment, consisting of a file review and Visual Site Inspection, was conducted at four facilities in Tacoma, Washington. These four facilities included Chemical Processors, Inc., Chemical Processors, Inc. Parcel A, Northwest Processing, Inc., and Sol-Pro, Inc. A total of 166 solid waste management units (SWMUs) were identified and evaluated, including 71 SWMUs at Chempro, 25 SWMUs at Chempro Parcel A, 48 SWMUs at Northwest Processing, and 22 SWMUs at Sol-Pro. In addition, a comprehensive evaluation of soil and ground water contamination in the vicinity of the four facilities was conducted. This evaluation was designed to assist in the determination of the need for corrective actions associated with past and ongoing releases from Solid Waste Management Units at each facility.

A summary of conclusions regarding the release potentials from each of the SWMUs at each facility is shown in Tables 15, 16, 17, and 18 located in each of the following sections. SWMU-specific recommendations are listed in Section 6.1; overall recommendations based on available soil and ground water contamination information are listed in Section 6.2.

6.1 SWMU-SPECIFIC RECOMMENDATIONS

6.1.1 Chempro Proper

Based on the results of the evaluation performed at Chempro Proper (see Table 15), no further action is recommended for the following units at this time:

- SWMU C-30: Non-Process Sludge Storage Tank 701
- SWMU C-31: Non-Process Sludge Storage Tank 702
- SWMU C-40: Air Stripper
- SWMU C-41: Cement Mixer Stabilization Feed Tank
- SWMU C-42: Cement Mixer Stabilization Unit
- SWMU C-43: Stabilization Unit Receiving Tank
- SWMU C-44: Oberlin Filter Press
- SWMU C-45: Filtrate Collection Tank
- SWMU C-46: North Acid Area Loading/Unloading Pad
- SWMU C-47: West Process Area Loading/Unloading Pad
- SWMU C-48: NE Alkaline Area Loading/Unloading Pad
- SWMU C-49: SE Dangerous Waste Fuel Area Loading/Unloading Pad
- SWMU C-51: Laboratory Drain Collection Tank
- SWMU C-56: Stormwater Storage Tank S

Table 15

SUMMARY OF ONGOING RELEASE POTENTIALS FOR SWMUS AT CHEMPRO PROPER

	-		parios	Curface		Subsurface
SWMU	Description	Soil	Water	Water	Air	Gas
	_					
		-	•			•
C-1	Treatment Tank 51		، د	J.	5 . :	J .
G-2	Treatment Tank 52	1	.	_1	= :	، د
C-3	Tank	J.	IJ	u	= :	J.
7-0	Treatment Tank 54	J	1	J	=	J
ن ر		Ц	1	T	I	·
9-0	Acid Waste Storage Tank 101	7	IJ	∟	= :	പ .
C-7	Waste	ų	J.	u	= :	.
G-8	Waste	IJ	u	J	I :	. د
0-0 0-0	Waste	ų	J	ъ,	Ξ;	⊣,
G-10	Waste	J	L	J	x :	J.,
0-11	Waste	J	IJ	J	H	.
G-12	lling Wa	J	ᆸ	ᆸ	Σ	u
<u> </u>	Tank 201				;	•
C-13	Chemical Milling Waste Storage	J	J	J	Σ	_1
	Tank 202		,	•	•	•
C-14	Chemical Milling Waste Storage	J	ū	J	Σ	J
	Tank 203			•		•
C-15	Sludge Settling Tank 301	ı	Г	L	Σ	7.
C-16	Settling Tank	-	<u>ភ</u> .	.ı	Σ:	٠.
C-17	Settling	u,			ε:	
C-18	Settling Tank	J	.	J.	ε	٠.
C-19	Settling Tank	ı	,		Ξ:	٠.
C-20	ischarge Tank	רו	r	7	Ε :	-1-
C-21		J	. .	٠.	E	- -
C-22	Sewer Discharge Tank 403	ı		، د	ε:	٠. د
C-23	Sewer Discharge Tank 404	ı	,	.	ε:	
C-24	Isolation Tank 501	IJ	-	J.	E. 1	۔ د
C-25	502	,	,	٦.	ε:	۔ د
C-26	Alkaline Waste Storage Tank 601	J	า	1	ε	د

Table 15 (Continued)

SWMU No.	Description	Soil	Ground	Surface Water	Air	Subsurface Gas
		-				
C-27	Alkaline Waste Storage Tank 602	ı	ı	 • .	Z :	, L
C-28			'n	L)	Z :	. د
G-29		J		.	Σ.	┙,
C-30	Non-Process Sludge Storage Tank 701	L)	ı	니 .	. ,	. د
C-31		1	r	ָר ור	ا : د	
C-32		ı	,	⊣ ,	= :	.
C-33	Storage Tank	J	ப்,	J,	= =	- د
C-34	Storage Tank	ப ்	J,	.	= =	ـ د
C-35	Waste Fuel Storage Tank	,	J,	٦,	= =	ı .
C-36	Waste Fuel Storage Tank	L	J	J.	S :	- ا د
C-37	Storage Tank	1	, ,	┙,	= :	ـ د
C-38	Dangerous Waste Fuel Storage Tank 902	1	- 3	<u> </u>	: :	۔ د
C-39		ı	,	J,	===	۔ د
C-40	Air Stripper	ı		」 ,	= •	ـ د
C-41	Cement Mixer Stablization Feed Tank	1.	J	اد.	J.	- C
C-42	Cement Mixer Stabilization Unit	,ı	. .	٠, د	٠, د	- د
C-43	Stabilization Unit Receiving Tank	Ä	، د	. د	٠, ١	ـ, د
74-D	Oberlin Filter Press	H	. .	. د	.	ـ د
C-45	Filtrate Collection Tank	H	.,	J,	J ,	.
94-D	Acid Area Loading/Unl	J	J	.) -	J .	- ا د
C-47	West Process Area Loading/Unloading	ı	J	J	.	٠.
	Pad		,	•	•	•
C-48	NE Alkaline Area Loading/Unloading		٦		ם	1
				•	-	-
6 - 49	SE Dangerous Waste Fuel Area Loading/	J	1	1	נ	1
1	Unloading Pad	. 2	-	-	-1	H
C-50	Container Storage Pad	E -	1 –	י ו	ו ו	ı
C-51	Laboratory Drain Collection Lamk	3	1	l		-

Table 15 (Continued)

SWMU No.	Description	Soil	Ground	Surface	Air	Subsurface Gas
C-52 C-53	Resource Recovery Parking Lot Freeway Container, Inc. Solvent	ΣΣ	د د	חח	ᆈᄫ	고그
C-54	· Storage Shed Freeway Container, Inc. Waste Paint	Σ	 	1	Σ	IJ
c-55		n	D	Ω	D	D
C-56	of Freeway Container, inc. Stormwater Storage Tank S	1	נו	-1	7	-1-
C-57	Treatment Storage Tank A	= =	= =	ם נ	E/I	וח
65-2 C-59	Treatment, Storage, and Isolation	×	=	ப	W/T	ᆸ
09-0	Tank C Treatment, Storage, and Isolation	ж	x	u	L/M	J
C-61	Tank D Treatment, Storage, and Isolation	x	æ	<u>ب</u>	L/M	L)
C-62	Treatment, Storage, and Isolation	H	H	IJ	H/J	ы
C-63	Tank F Treatment and Storage Tank BB	エ :	= :	н.	L/M	
C-64 C-65	Filtrate Collection Tank Soil Solidification/Stabilization	= =	I II	ברנ	E W	ם נ
99-0	Tank Solidification/Stabilization Unit	×	н	Ч	L/M	I L
C-67	Sump Between Tanks A and B	ж	= 3	1 -	L/M	ם ם
69-0 0-69	Filter Press Sump Solidification/Stabilization	5 4	= 14	1 1	E	1 1
. C-70 . C-71	Area Areas of Auto Fluff and Lime Fill Storm Drainage System	н	エ니	L/M	בים	Σμ

H = High U = Unknown

L = Low M = Medium Suggested actions for the remaining SWMUs at Chempro are listed below:

SWMUs C-1 THROUGH C-29, SWMU C-32 THROUGH C-39

Suggested Action: These SWMUs are tanks that vent directly to the atmosphere. Emission sampling for VOCs should be performed on all tanks. In addition, the 50-series tanks and 100-series tanks should be sampled for emissions of acid vapors, and the 100-series tanks should be sampled for emission of nitrogen dioxide, or the facility should be required to place release controls on these units.

SWMU C-50: CONTAINER STORAGE PAD

Suggested Action: In order to provide containment for loading and unloading operations occurring on the west side of the container storage pad, a berm or loading/unloading pad should be installed.

SWMU C-52: RESOURCE RECOVERY PARKING LOT

Suggested Action: A containment system (such as a bermed pad) should be installed at this facility, or the facility should consider modifying operating procedures so that all loaded or partially loaded trucks are required to park on the loading/unloading pads adjacent to the containment pad at Chempro Proper.

SWMUs C-53 AND C-54: FREEWAY CONTAINER, INC. SOLVENT AND WASTE PAINT STORAGE SHEDS

Suggested Action: Storage and management practices should be upgraded, such as providing lids for all containers, scheduling regular collection of waste materials, and providing ground cover beneath solvent dispensing area.

SWMU C-55: PILES OF EXCAVATED SOIL IN NW CORNER OF FREEWAY CONTAINER, INC.

Suggested Action: Sampling should be conducted to determine contents of the piles. Should sampling detect the presence of hazardous constituents, the material should be removed and appropriately disposed. Potential soil and ground water contamination should be determined as a part of the overall soil/ground water characterization recommended in Section 6.2.

SWMUs C-57 TO C-68: INACTIVE UNITS IN THE LETTER TANK AREA OF CHEMPRO PROPER

Suggested Action: These tanks are being closed under interim status. Soil and ground water contamination which may be present at these units should be tied into the recommendations for addressing existing

soil and ground water contamination, presented in Sections 6.2.1 and 6.2.2.

SWMU C-69: PARCEL B SOLIDIFICATION/STABILIZATION UNIT

Suggested Action: A cover for this unit should be provided to contain airborne particulate emissions.

SWMU C-70: AREAS OF AUTO FLUFF AND LIME FILL

Suggested Action: On a property-wide basis, additional site characterization efforts should be conducted, as necessary, to determine the nature and extent of contamination present. See recommendations in Section 6.2.1 and 6.2.2.

SWMU C-71: STORM DRAINAGE SYSTEM

Suggested Action: Conduct sampling of stormwater in ditches paralleling Alexander Avenue and Taylor Avenue to determine if hazardous constituents are being released to surface water (the Lincoln Avenue ditch). Samples should be analyzed, at a minimum, for volatile organics and metals (As, Ba, Cd, Cr, Pb, Hg, and Se). If significant concentrations of hazardous constituents are detected, additional release controls should be required, along with any corrective measures needed to address surface water and sediment contamination.

6.1.2 Chempro Parcel A

SWMUS NOS. A-1 TO A-15

Suggested Action: Table 16 provides a summary of SWMU release potentials from this facility. Due to the overlapping of SWMUs and their potential release impact on receptors, SWMU specific recommendations for Parcel A will not be made. On a property-wide basis additional site characterization efforts should be conducted, as necessary, to determine the nature and extent of contamination present. See recommendations in Section 6.2.1 and 6.2.2.

6.1.3 Northwest Processing

Based on the results of the evaluation performed at Northwest Processing (see Table 17), no further action under corrective action authorities is recommended for the following units at this time:

- SWMU N-15: Tank 15, Process Wastewater Holding Tank
- SWMU N-17: Decanter Centrifuge

Table 16

SUMMARY OF ONGOING RELEASE POTENTIALS FOR SUMUS AT CHEMPRO PARCEL A

SWMU			Ground	Surface	Air	Subs	Subsurface Gas
No.	Description	2011	T D D D D D D D D D D D D D D D D D D D				
	Alkaline Storage and Treatment	I	×	×			٠
	İ		=	×	.		۔
	Alkaline Storage and Treatment	=	=	1	l		
	Tank 7	=	.	Σ	ب		- 1
	torag	: :	: =	×	-1		<u>.</u>
	Storage Tank	= =	: =	: ≥	ب		۔۔
	Acid Storage Tank 9E	= :	= =	: =			۱.
	Tank 9W	=:	= =	: 3	ن م آ		
	ent	= :	E 3	= 3	a		ب ،
	Treatment and	Ξ:	= =	: ≥	ı <u>.</u> -		.
	Alkaline Storage and Treatment	I I	=	=	1		٠.,
	~	;	•	3	-		
A-10	Acid/Alkaline Storage and Treatment	Ξ.	=	E	3		l
				2			רן
A-11	Acid/Alkaline Storage and Treatment	I,	E	2	3	•	l
		•	3	*	_1		٦
A-12	Acid/Alkaline Storage and Treatment	E	5	:	I		
		=	=	Σ.	ני		Œ
A-13	Former Waste Oil Pond	= =	: =	Ξ	, , 1		۔,
A-14	Tank NT1	= :		: >	- ۱		
A-15	Tank NT2	=	E 3	3	1		1
91	Tank NT3	Ξ:	5 5	: 2	۱		ب
_	Tank NT4	= :	= =	: >	ن م ا		
~	Tank NT5	= :	5 5	: 3	: 1 -		
A-19	Poly 1	= :	= :	= 3	ـ د		
A-20	Poly 2	z	= =	2	3 -		1
A-21	Poly 3	= :		: 3	۰,		ר
A-22	Sumps	= :	= =	= 3	ı <u>-</u> -		.
A-23	Rinse Pit	= :	= :	= 3	۰ ـ		
A-24	ero/PS]	I	Ξ	E .	1		1
	Recycling Facility	=	Ξ	X	-1		Σ
A-25	Area of Auto Fluit and Line						

Table 17

SUMMARY OF ONGOING RELEASE POTENTIALS FOR SWMUS AT NORTHWEST PROCESSING

Subsurface Gas	YXXXX	ם ם ם ם ם		י דירידי י	J D J J
Air	****	****	* * * * + + + + + + + + + + + + + + + +	1 H 1 1 1 1 1	× 1 1 1
Surface Water	EEEE	:	2222222		
Ground	EEHE				1011
Soil	***		7777777	, , , ,	בים
Description	Farm 1, Tank Farm 1, Tank Farm 1, Tank Farm 1, Tank	Tank Farm 1, Tank 5 Tank Farm 2, Tank 6 Tank Farm 2, Tank 8 Tank Farm 2, Tank 9 Tank Farm 2, Tank 9	Farm 2, Farm 2, Farm 2, Farm 2, 16, Cent	Waste Accumulation Area in the Centrifuge Room Tank 17, Holding Tank Fractionation System Anti-Freeze Recycling System Solvent Recovery Unit Tank 26, Stormwater Accumulation Tank Tank 27, Process Wastewater Holding	er Sewer System eparator ng Separator
SWMU No.	N-1 N-2 N-3	N-5 N-7 N-8 N-9	N-12 N-13 N-14 N-15 N-16 N-17	N-19 N-20 N-21 N-22 N-24 N-24	N-26 N-27 N-28

Table 17 (Continued)

Subsurface Gas	THEC COURTHLAND DO DOL
Air	
Surface Water	
Ground Water	TALA CO HETTITION TO HOM
Soil	TURLULE RULE DOR HOR
Description	Skim Tank Biotower Treated Wastewater Holding Tank Sewer Discharge Tank Generated Waste Storage Area Auxiliary Waste Storage Area Drum Rinsing Area Tank 21, Boiler Feed Tank Hot Oil Heater (Boiler) Loading/Unloading Area #1 Loading/Unloading Area #2 Tire Pyrolysis Unit Portable 500-gallon Tanks Fill Areas Former Drum Storage Area Mear Western Boundary Former Portable Tank Area #1 Former Portable Tank Area #2 Former Drum Storage Area Northeast of Main Warehouse Former Drum Storage Building Horizontal Tanks 5 of Tank Farm 2
SWMU No.	N-29 N-30 N-31 N-32 N-33 N-34 N-35 N-35 N-40 N-41 N-42 N-42 N-42 N-42 N-45 N-45 N-45 N-45 N-45

SWMU N-18: Disk Centrifuge

■ SWMU N-19: Waste Accumulation Area in the Centrifuge Room

SWMU N-21: Fractionation System

SWMU N-22: Anti-Freeze Recycling System

SWMU N-23: Solvent Recovery Unit

SWMU N-24: Tank 26, Stormwater Accumulation Tank

SWMU N-27: API Preseparator

SWMU N-28: Coalescing Separator

SWMU N-29: Skim TankSWMU N-30: Biotower

■ SWMU N-33: Generated Waste Storage Area

■ SWMU N-37: Hot Oil Heater (Boiler)

SWMU N-40: Tire Pyrolysis Unit

Suggested actions for the remaining SWMUs at Northwest Processing are as follows:

SWMUS N-1 TO N-5: TANK FARM 1, TANKS 1, 3, 4, AND 5, AND FORMER TANK 2

Suggested Action: Soil contamination has been documented as a result of releases from at least tanks 3 and 5. In addition, oil releases have been noted from the area of the dike in this tank farm. Soil and soil gas sampling should be conducted in the vicinity of all tanks in this tank farm, as part of the overall characterization of contamination in the area. In addition, sampling of the air emissions from these tanks should be conducted to determine the concentrations of hazardous constituents being release during tank venting. Air samples should be analyzed, at a minimum, for volatile organics. If the releases of hazardous constituents to the air are found to be significant, installation of release controls or modification of processes to eliminate releases should be required.

SWMUs N-6 TO N-14, N-16, N-20: TANK FARM 2, TANKS 6, THROUGH 14: TANKS 16 AND 17

Suggested Action: Sampling of the air emissions from these tanks should be conducted to determine the concentrations of hazardous constituents which may be released from these units. Air samples should be analyzed, at a minimum, for volatile organics. If the releases of hazardous constituents to the air are found to be significant, installation of release controls or modification of processes to eliminate releases should be required.

SWMU N-25: TANK 27, PROCESS WASTEWATER HOLDING TANK

Suggested Action: Sampling of air emissions from this tank should be conducted to determine the concentrations of hazardous constituents which may be released from this unit. Air samples should be analyzed, at a minimum, for volatile organics. If the releases of hazardous constituents to the air are found to be significant, installation of release controls or modification of processes to eliminate releases should be required.

SWMU N-26: OILY WATER SEWER SYSTEM

Suggested Action: The materials of construction of this unit should be determined. The current and historical operational status should be clarified, particularly with respect to how wastes are transferred through this sewer to SWMUs N-27 to N-32, the Oily Water Treatment System, and back to one or more of the holding tanks (15 and 27). Soil sampling should be conducted in the vicinity of the hose connections of the sewer system with the oily water treatment system, and depending on the materials and dates of construction, soil sampling should be conducted in the vicinity of the sewer lines to determine whether any releases have occurred.

SWMU N-31: TREATED WASTEWATER HOLDING TANK

Suggested Action: SOil sampling should be conducted around this unit as part of overall soil and ground water characterization, to determine whether past releases from this tank have occurred, and to determine the nature and extent of contamination (if any) around this unit. In addition, secondary containment should be provided.

SWMU N-32: SEWER DISCHARGE TANK

Suggested Action: Sampling of sediments should be conducted at the discharge point to the City of Tacoma storm drainage ditches to determine if hazardous constituents have been released to surface water (the Lincoln Avenue ditch). Samples should be analyzed, at a minimum, for volatile organics and metals (As, Ba, Cd, Cr, Pb, Hg, and Se). If significant concentrations of hazardous constituents are detected, additional release controls should be required, along with any corrective measures needed to address surface water and sediment contamination.

SWMU N-34: AUXILIARY WASTE STORAGE AREA

Suggested Action: Soil sampling should be conducted in the vicinity of this unit, as part of the overall soil and ground water characterization, to determine whether past releases from

drums and other containers have occurred, and to determine the nature and extent of contamination resulting from spillage at this unit.

SWMU N-35: DRUM RINSING AREA

Suggested Action: Additional information should be supplied to indicate whether drum rinsing has occurred at any locations other than north of the Main Warehouse, in a paved area with a blind sump. In addition, a list of the types of materials which have been rinsed out of drums should be submitted to determine the potential for air releases from this unit.

SWMU N-36: TANK 21, BOILER FEED TANK

Suggested Action: Sampling of air emissions from this tank should be conducted to determine the concentrations of hazardous constituents which may be released from this unit. Air samples should be analyzed, at a minimum, for volatile organics. If the releases of hazardous constituents to the air are found to be significant, installation of release controls or modification of processes to eliminate releases should be required.

SWMUs N-38 AND N-39: LOADING/UNLOADING AREAS # 1 AND 2

Suggested Action: Oily material has been noted running off of one or more of the unloading areas at the facility. Soil sampling should be conducted in the vicinity of each of these areas to determine the nature and extent of contamination by petroleum hydrocarbons, other volatile organics and metals.

SWMU N-41: PORTABLE 500-GALLON TANKS

Suggested Action: Institutional controls should be put in place to ensure that these tanks are kept closed at all times except during filling.

SWMU N-42: FILL AREAS

Suggested Action: On a property-wide basis additional site characterization efforts should be conducted, as necessary, to determine the nature and extent of contamination present. See recommendations in Section 6.2.1 and 6.2.2.

SWMU N-43: FORMER DRUM STORAGE AREA NEAR WESTERN BOUNDARY

Suggested Action: On a property-wide basis additional site characterization efforts should be conducted, as necessary, to determine the nature and extent of contamination present. See recommendations in Section 6.2.1 and 6.2.2.

SWMUs N-44 AND N-45: FORMER PORTABLE TANK AREAS #1 AND #2

Suggested Action: Soil sampling should be conducted in the vicinity of these units, as part of the overall soil and ground water characterization, to determine whether past releases from drums and other containers have occurred, and to determine the nature and extent of contamination resulting from spillage at these units.

SWMU N-46: FORMER DRUM STORAGE AREA NORTHEAST OF MAIN WAREHOUSE

Suggested Action: Soil sampling should be conducted in the vicinity of this unit, as part of the overall soil and ground water characterization, to determine whether past releases from drums and other containers have occurred, and to determine the nature and extent of contamination resulting from spillage at this unit.

SWMU N-47: FORMER DRUM STORAGE BUILDING

Suggested Action: The facility should submit information regarding the dates the building was used as a waste storage area, the type of flooring present at the time it was used for waste storage, and whether any spills or leaks occurred during that time. Based on this information, soil sampling may be required to determine whether any contamination may have occurred.

SWMU N-48: HORIZONTAL TANKS SOUTH OF TANK FARM 2

Suggested Action: Soil sampling should be conducted in the vicinity of this unit, as part of the overall soil and ground water characterization, to determine whether past releases from drums and other containers have occurred, and to determine the nature and extent of contamination resulting from spillage at this unit.

6.1.4 <u>Sol-Pro</u>

Based on the results of the evaluation performed at Sol-Pro (see Table 18), no further action under corrective action authorities is recommended for the following units at this time:

- SWMU S-1: Tank 704, Luwa Feed Tank
- SWMU S-2: Tank 535, Dirty Wash Solvent Tank
- SWMU S-3: Tank 536, Dirty Wash Solvent Tank
- SWMU S-4: Luwa Thin Film Evaporator System
- SWMU S-5: Tank 705, Recycled Solvent Tank
- SWMU S-6: Tank 706, Recycled Solvent Tank
- SWMU S-7: Tank D-1, Brighton Feed Tank
- SWMU S-8: Tank D-2, Brighton Feed Tank
- SWMU S-10: Tank C-1, Recycled Solvent Tank
- SWMU S-11: Tank C-2, Recycled Solvent Tank
- SWMU S-12: Pump Hopper
- SWMU S-13: Horizontal Evaporator
- SWMU S-14: Vacuum System
- SWMU S-15: Tank 901, Wastewater Holding Tank
- SWMU S-16: Generated Waste Storage Area
- SWMU S-17: Drum Rinsing Area
- SWMU S-18: Drum Crusher
- SWMU S-20: Incoming Waste Area

Recommended actions for all other units are described below.

SWMU S-9: BRIGHTON SOLVENT RECLAIMING SYSTEM

Suggested Action: Sampling of air emissions from this unit should be conducted to determine the concentrations of hazardous constituents. Air samples should be analyzed, at a minimum, for volatile organics. If the releases of hazardous constituents to air are found to be significant, installation of release controls or modification of processes to eliminate releases should be required.

SWMU S-19: RAILCAR LOADING RACK

Suggested Action: Air sampling should be conducted at this unit during railcar loading operations to determine the concentrations of hazardous constituents. Air samples should be analyzed, at a minimum, for volatile organics. If the release of hazardous constituents to the air is found to be significant, installation of release controls or modification of processes to eliminate releases should be required.

Table 18

SUMMARY OF ONGOING RELEASE POTENTIALS FOR SWMUS AT SOL-PRO

Subsurface Gas	교고	<u>1</u> 1	1	ı,	ب نے د	1 1	 	ำ	1		י ו	.	_1	, , 1	1	ָם	
Air	י י	ם ב	- 1 <u>-</u>	ı i	1 2	יר :	, ,	ם נ	1	7	.	ו, ו	نہ ا	1 ≿		۱ 🗀	l
Surface Water	ם ב	 -	1 , 1 ,	1 ==	æ Þ	د ب	- L	י, נ	I 🗗	٦ .	J _	. ←	ı	.	1 -	1 =	
Ground	נו	-1	, ב, נ	- -	⊢ ,	- 1		.	ם נ	ı	- 1 -	1 ⊢	.	- د	- د	1 3	5
Soil	പ പ	, , , ,		ם ם	,	,	1.	-1 -	1 <u>1</u>	ום	, ∟,	٠, د	٠, د	٠, د	1	ε.	J
Description	Tank 704, Luwa Feed Tank	Tank 536, Dirty Wash Solvent Tank	Luwa Thin Film Evaporator System Tank 705, Recycled Solvent Tank	Tank 706, Recycled Solvent Tank	Tank D-2, Brighton Feed Tank	Brighton Solvent Reclaiming System	Tank C-2, Recycled Solvent Tank	Pump Hopper	Horizontal Evaporator	Vacuum System Tank 901, Wastewater Holding Tank	Generated Waste Storage Area	Drum Rinsing Area	Drum Crusher	Rail Car Loading Rack	Incoming Waste Area	Stormwater Holding Tank	Storm Drainage System
SWMU No.	S-1	s-2 s-3	S-4 S-5	S-6	 8-8	S-9	S-10 S-11	S-12	S-13	S-14 S-15	S-16	S-17	S-18	S-19	S-20	S-21	S-22

SWMU S-21: STORMWATER HOLDING TANK

Suggested Action: Secondary containment and an appropriately engineered base should be provided for this tank.

SWMU S-22: STORM DRAINAGE SYSTEM

Suggested Action: Stormwater sampling should be conducted in the storm drainage system at the property boundary to determine if hazardous constituents are being released to surface water (the Lincoln Avenue ditch). Samples should be analyzed, at a minimum, for volatile organics and metals (As, Ba, Cd, Cr, Pb, Hg, and Se). If significant concentrations of hazardous constituents are detected, additional release controls should be required, along with any corrective measures needed to address surface water and sediment contamination.

6.2 GENERAL RECOMMENDATIONS

Soil Investigation Recommendations 6.2.1

At Chempro Parcel A, Chempro Proper, Northwest Processing, and at Sol-Pro, additional activities are needed to fully characterize the releases that have Several types of investigative actions need to be been detected in soils. carried out in order to determine the nature and extent of these releases, including:

- Performance of a soil gas survey to identify subsurface contamination patterns. Results of the soil gas survey should be used in conjunction with additional site data to determine the placement of soil borings and monitoring wells.
- Collection of soil samples at specified intervals from ground surface to the bottom of the uppermost aquifer to determine the vertical distribution of contamination, identify preferential migration pathways and delimit the volume of soil that may require corrective measures.
- Installation of additional soil borings to determine the lateral extent and interrelationship of contaminated areas at the facilities, including installation of soil borings at the Chempro, Northwest Processing, and Sol-Pro facilities at locations that may have been impacted by any releases that have occurred at these facilities.
- Identification of Appendix VIII hazardous constituents in the releases in addition to those compounds previously identified at the facilities
- Determination of the mobility of hazardous constituents in contaminated soil that may contribute to ground water contamination (e.g.

determination of leachate compositions and adsorption coefficients of contaminated soils and fill materials).

6.2.2 Recommendations for Ground Water Investigations

The following recommendations are proposed to determine the nature and extent of ground water contamination at the Chempro Proper, Chempro Parcel A, Northwest Processing, and Sol-Pro facilities:

- Continue quarterly ground water sampling of wells CTMW-6, CTMW-7, CTMW-8, CTMW-9, CTMW-10, CTMW-11, and CTMW-12. Start quarterly sampling of wells CTMW-2, CTMW-3, CTMW-4, CTMW-5, wells A-1, A-2, A-3, L-1, L-2, L-3, L-4, L-5, and wells 1, 2, and 3 for VOCs, BNAs, metals, and petroleum hydrocarbons listed in Appendix C. All analytical procedures should be implemented with appropriate detection limits and QA/QC measures as per EPA SW-846.
- Quarterly water level measurements for all existing wells should be performed on the same day within one tidal cycle to assist in confirming ground water flow direction.
- Evaluate sample quality (turbidity) from wells and ensure proper development to assure representative samples are obtained from each monitoring well. Replace any wells that can not yield representative samples.
- Sample existing wells, and install and sample additional wells as needed to fully characterize ground water contamination at the facilities and affected areas.
- Characterize the relationship between ground water and surface discharges. Hydraulic connection between ground water and surface water must occur either at Blair Waterway or at other surface locations. If discharge areas are identified, sediment and surface water sampling should be conducted to delineate the surface contamination due to discharges of contaminated ground water.
- Install monitoring wells in the fill and alluvial aquifers and conduct pumping tests to determine hydraulic interconnections in areas of possible intercommunication based on site stratigraphy.
- Evaluate the construction integrity (materials, surface seals, screen length, etc.) of all wells to assure that representative samples can be obtained.

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