IN THE SUPERIOR COURT OF THE STATE OF WASHINGTON
IN AND FOR THE COUNTY OF CLARK

STATE OF WASHINGTON,
DEPARTMENT OF ECOLOGY,

Plaintiff,

v.

ALUMINUM COMPANY OF AMERICA,
a Pennsylvania corporation,

Defendant,

NO. 92-2-00783-9

CONSENT DECREE

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INTRODUCTION

A. In entering into this Consent Decree (Decree), the mutual objective of the Washington State Department of Ecology (Ecology) and the Aluminum Company of America (hereafter Alcoa) is to provide for remedial action at a Site where hazardous substances have been released. The Site was listed by the U.S. Environmental Protection Agency on the "National Priorities List" at 40 CFR Part 300 Appendix B.

This Decree requires Alcoa to undertake the following remedial action:

1. Remove approximately 47,500 cubic yards of spent potlining and reclaimed alumina insulation materials, most of which are stored in three piles located in the southeast corner of Vancouver operations at the old Alcoa complex at 5509 N.W. Lower River Road, Vancouver, Washington;
2. Transport removed spent potlining and reclaimed alumina insulation material to a RCRA-permitted hazardous waste landfill for permanent disposal;
3. Perform soil sampling and analyses after the spent potlining and reclaimed alumina insulation materials are removed;
4. Cap the area of the surface of the Site where three piles are located;
5. Grade the Site and surrounding area;

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6. Vegetate graded area and fence the Site;

7. Perform ongoing groundwater and surface water monitoring.

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

C. In signing this Decree, Alcoa agrees to its entry and agrees to be bound by its terms.

D. By entering into this Decree, the parties do not intend to discharge nonsettling parties from any liability they may have with respect to matters alleged in the Complaint.

E. The Court is fully advised of the reasons for entry of this Decree, and good cause having been shown, it is hereby

ORDERED, ADJUDGED AND DECREED AS FOLLOWS:

I. JURISDICTION

A. This Court has jurisdiction over the subject matter and over the parties pursuant to Chapter 90.48 RCW and the Model Toxics Control Act (MTCA) which was passed by initiative

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(Initiative 97) and which took effect on March 1, 1989. The MTCA has been codified as Chapter 70.105D RCW.

B. Authority is conferred upon the Washington State Attorney General by RCW 70.105D.040(4)(a) to agree to a settlement with any potentially liable person if, after public notice and hearing, Ecology finds the proposed settlement would lead to a more expeditious cleanup of hazardous substances in compliance with cleanup standards under RCW 70.105D.030(2)(d). RCW 70.105D.040(4)(b) requires that such a settlement be entered as a consent decree issued by a court of competent jurisdiction.

C. Ecology has given notice to Alcoa, as set forth in RCW 70.105D.020(8), of Ecology's determination that it is a potentially liable person for the Site. Alcoa has been given notice of the release of hazardous substances at the Site.

D. Ecology has determined that past practices at the Site have given rise to a release of hazardous substances, causing contamination of ground waters, surface waters and soils, and will continue to cause contamination unless the release is abated or mitigated.

E. The actions to be taken pursuant to this Decree will protect the public health, welfare and the environment.

F. The U.S. Environmental Protection Agency (hereafter EPA) listed the Site on the "National Priorities List" at 40 CFR Part 300 Appendix B. EPA and Ecology, through a written

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Memorandum of Agreement, have agreed that Ecology shall be the lead agency to work with Alcoa in conducting and evaluating Alcoa's Remedial Investigation/Feasibility Study (or RI/FS), selecting a remedial alternative, preparing a Cleanup Action Plan (or CAP), implementing the selected remedial action and conducting post-action compliance monitoring. In carrying out this work, Ecology has informed EPA, and obtained EPA's comments on a draft version of this Decree. This Decree will expedite remedial action which in Ecology's view is not inconsistent with the National Contingency Plan and is consistent with applicable laws.

G. By entering into this Decree, Alcoa agrees and shall not challenge the jurisdiction of Ecology in any proceeding to enforce this Decree.

II. PARTIES BOUND

This entire Decree shall apply to and be binding upon Alcoa and Ecology, their successors and assigns. The undersigned representative of each party hereby certifies that he or she is fully authorized to enter into this Decree and to execute and legally bind such party to comply with the Decree. Alcoa agrees to undertake all actions required of it by the terms and conditions of this Decree and agrees not to contest state jurisdiction regarding this Decree. No change in ownership or corporate status shall alter the responsibility of Alcoa under this Decree. Alcoa shall provide a copy of

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this Decree to all contractors and subcontractors retained to perform work required by this Decree and shall institute its best efforts to assure that all work undertaken by such contractors and subcontractors will be in compliance with this Decree.

III. DEFINITIONS

A. Site: Refers to the three piles of spent potlining and reclaimed alumina insulation materials in the southeast corner of the old Alcoa complex at 5509 N.W. Lower River Road, Vancouver, Washington. Also refers to subsurface areas impacted by cyanide and fluoride, as documented through ground water, subsurface sediment, and soil sampling performed by Alcoa, within the shallow zone, intermediate zone, deep zone and aquifer zone. The Site is more particularly described in Exhibit A to this Decree which is a two-page, detailed Site diagram. Alcoa shall supplement Exhibit A with a legal description of the Site to be prepared during remedial action.

The Site shall not include the wastewater treatment facility located at the old Alcoa complex, nor shall the Site include any subsurface conveyances or utilities connected to or relating to the use of the wastewater treatment facility. Ownership, operation and maintenance of the wastewater treatment facility and the related subsurface conveyances and utilities shall not be affected by the terms of this Consent

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Decree or any of the exhibits and attachments to this Consent Decree.

B. Remedial Action: See definition of same at RCW 70.105D.020(11).

C. Model Toxics Control Act: Refers to Chapter 70.105D RCW which took effect on March 1, 1989.

D. Days: Refers to calendar days unless specified otherwise.

E. Parties: Refers to the State of Washington through its Department of Ecology and Alcoa.

F. Consent Decree: Refers to this Consent Decree and each of the exhibits to the Decree. All exhibits are integral and enforceable parts of this Consent Decree.

IV. LIABILITY AND RESERVATION OF RIGHTS

Subject to Section XXVI of this Consent Decree, nothing in this Consent Decree shall constitute a release or waiver of any claim, cause of action or demand in law or equity which Alcoa may have against any person or entity for any liability arising out of or relating in any way to any hazardous substance found at, taken to or taken from the Site. Alcoa expressly reserves any and all rights of contribution and indemnity it has or may accrue against any person or entity.

Alcoa does not admit liability under any and all applicable law for any costs or damages caused by or arising out of conditions at or arising from the Site. However, Alcoa

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agrees to comply with this Consent Decree. Further, by agreeing to comply with this Decree, Alcoa does not admit any allegations contained herein, nor does it admit liability for any purpose or admit any issues of law or fact or any responsibility for the alleged release or threat of release of any hazardous substance into the environment.

V. STATEMENT OF FACTS

Ecology makes the following finding of facts without any express or implied admissions by Alcoa.

A. The spent potliner and reclaimed alumina insulation material is stored in three waste piles at Vancouver operations in the southeast corner in the old Alcoa complex. In addition, some spent potliner and reclaimed alumina insulation materials have been spilled on the south side of the largest waste pile, and along the south side of the railroad track. The Vancouver operations are located on the Columbia River in unincorporated Clark County, northwest of the city of Vancouver, Washington.

B. The Site is situated on flood plains and terraces laid down by the nearby Columbia River during recent and Pleistocene times. The hydrogeology of the area has been characterized by numerous borings in the vicinity of the three waste piles. The groundwater system in the area can be divided into four general hydrologic units: the shallow zone, the intermediate zone, the deep zone, and the aquifer zone.

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The predominant groundwater flow direction beneath the waste piles is toward the Columbia River. The shallow zone consists of 10 feet of dredged sand placed on the Site during the late 1940s and early 1950s. A perched water table is located in the shallow zone during the wetter months of the year. The movement of ground water in the saturated portions of the shallow zone is to the northwest. The materials directly below the dredged sand are the intermediate zone silty clays and clayey silts that were deposited in relatively low energy flood plain environments. This zone is of relatively low permeability materials and is saturated. The movement of ground water in the intermediate zone is predominantly downward due to high vertical hydraulic gradient. The intermediate zone silts and clays, which are approximately 30 to 40 feet thick, are underlain by a deposit of medium to fine sand that is 40 to 50 feet thick. This sand deposit is the deep zone. The groundwater flow in the deep zone is predominantly toward the Columbia River. The zone is recharged from the overlying intermediate zone. Beneath the deep zone sand deposit is the aquifer zone, which is tapped by Alcoa production wells. The aquifer zone is known in the region as the Troutdale Formation and is composed of coarse sands and gravel. The relative response of the aquifer and the deep zones to well pumping indicates that the zones are hydraulically separated. Three domestic wells are present

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within one mile of the Site but only one of these wells is in use currently. The wells are located either upgradient or crossgradient from the three waste piles, and the potential for these piles to contaminate the aquifer is extremely low. The nearest municipal supply wells are located approximately three miles to the northeast and upgradient of the waste piles.

C. The Aluminum Company of America is a Pennsylvania corporation which started aluminum smelting operations in Vancouver during the late 1940s. Byproducts of the smelting process included spent potlining materials and reclaimed alumina insulation materials. These materials were stored on-Site during the early years of operations. During the early 1950s through 1973, waste materials were shipped off-Site for disposal. Between 1973 and 1981, these waste materials were stored on-Site in three waste piles. Some waste materials also were spilled near the waste piles.

D. The largest waste pile contains primarily spent potlining. The second largest waste pile contains primarily reclaimed alumina insulation. The smallest pile contains a mixture of the two materials. No detailed chemical analysis of the spent potlining or reclaimed alumina insulation has been completed, but the approximate composition of the waste piles can be estimated based on knowledge of the composition of fresh potlining and reclaimed alumina insulation. Fresh

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potlining consists primarily of carbon, fluoride, oxides and nitrides, aluminum, and sodium, with minor amounts of calcium, silica, iron, and cyanide. Reclaimed alumina insulation consists primarily of aluminum oxide. Bioassay and EP TOX tests have been conducted on the waste.

E. The two large piles were covered with a synthetic membrane and clean sand in 1978. The smaller pile was covered in 1981.

F. Since 1982, Alcoa has been conducting an ongoing groundwater monitoring program to assess the impact of the piles on ground water at Vancouver. This study, and a remedial investigation/feasibility study prepared by Alcoa indicates groundwater and soil contamination exist at the Site and have been caused by the leaching of chemicals from the waste piles.

G. The spent potlining is a listed hazardous waste (K088) under RCRA and bioassay results indicate that all three piles contain Dangerous Waste under Ecology regulations.

H. A remedial investigation/feasibility study prepared by Alcoa was submitted to Ecology on July 31, 1987. In the feasibility study, Alcoa reviewed seven alternatives for remedying any threat to human health and the environment caused by Alcoa's spent potlining and alumina insulation waste materials at the Site. The alternatives reviewed included:

1. Continued groundwater monitoring;

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2. Earth cover with Site grading;

3. Earth cover with Site grading and paving;

4. Earth cover with Site grading and pumping and treating ground water;

5. Waste disposal in landfill and grade Site;

6. Waste disposal in landfill with Site grading and paving;

7. Waste disposal in landfill with Site grading, and pumping and treating ground water.

See Hart Crowser, "Feasibility Study, Potlining Waste Piles, Aluminum Company of America, Vancouver Operation, Vancouver, Washington", July 27, 1987, pp. 35-42. Alcoa estimated the cost for this range of alternatives to be from approximately $300,000 to $14,700,000. In September 1990, Ecology informed Alcoa that another alternative was available. This alternative was to remove the three waste piles to an approved storage building, and to begin treating or recycling the material when an approved method was developed.

I. On February 7, 1992, Ecology published a draft Cleanup Action Plan (CAP) for the Alcoa Vancouver Site. In this document, Ecology selected the cleanup remedy to be implemented at the Site. The CAP is attached as Exhibit B to this Consent Decree. The selected remedy consists of:

1. Removal of approximately 47,500 cubic yards of spent potlining and reclaimed alumina insulation

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materials, most of which are stored in three waste piles at Vancouver and removal of spent potlining and reclaimed alumina insulation materials spilled on the south side of the largest waste pile and along the south side of the railroad track;

2. Transport of these materials to a RCRA-permitted hazardous waste disposal site for permanent disposal;

3. Determine levels of fluoride and total cyanide in soils beneath the waste piles;

4. Cap only the area of the surface of the Site where the three waste piles were located with either a 40 mil PVC liner or a 50 mil HDPE liner and cover liner with two feet of clean fill including 4 to 6 inches of top soil. (No other area of the Site need be capped to comply with this Consent Decree.);

5. Grade the Site and surrounding area insuring that 4 to 6 inches of top soil remain on-Site;

6. Vegetate graded area and fence the area of the surface of the Site where the three waste piles were located; and

7. Continued monitoring of ground water and surface water quality.

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VI. WORK TO BE PERFORMED

The program of work to be performed by Alcoa at the Site is provided below. This program implements Ecology's CAP and, with the remainder of this Consent Decree and appendices, implements the Model Toxics Control Act.

A. Cleanup Action Plan. Ecology's CAP constitutes an integral part of this Decree and is attached as Exhibit B.

B. Scope of Work. The scope of work for the Site consists of the following. Alcoa, through its contractor and subcontractors as necessary, shall accomplish the following work:

1. Obtain any and all state, federal or local permits required by applicable law before work on-Site can begin;

2. Prepare Site health and safety plan in accord with most recent OSHA, WISHA, Department of Ecology and EPA guidance as well as applicable regulations. Specific elements to be included in the Site safety plan are decontamination areas for personnel and equipment, measures to limit generation of dust and airborne transport of contaminated soil or waste, and measures to ensure that trucks transporting removed waste from the Site are lined and covered before leaving the contaminated area. Alcoa's health and safety plan shall be submitted to Ecology

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for review and comment within 30 days of the effective date of this Decree.

3. Prepare a compliance monitoring plan that meets the requirements of WAC 173-340-410 and 173-340-720 through -750. The compliance monitoring plan shall contain a sampling and analysis plan that meets the requirements of WAC 173-340-820, and shall provide that all analyses of soil and water performed pursuant to this Decree be conducted by a laboratory accredited under chapter 173-50 WAC. The compliance monitoring plan shall be submitted to Ecology for approval within 60 days of the effective date of this Decree. Upon approval, the compliance monitoring plan shall become an integral and enforceable part of this Decree;

4. Provide security at the Site to discourage entry by unauthorized persons. Site security shall include installation of barrier tape and signing.

5. Remove three waste piles and spillage containing spent potlining and alumina insulation materials and synthetic membrane covers over those piles. The amount of waste to be removed is about 47,500 cubic yards. The removed waste shall be transported to a RCRA-permitted hazardous waste landfill and placed there for final disposal. Sand placed as cover over

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the waste pile's PVC liners shall be stockpiled on-Site for use as final cover. Sand placed under the PVC liners shall be stockpiled separately on-Site for use under the synthetic liner or clay cap.

6. After the waste piles have been removed, soil located under the piles will be characterized as follows. The area beneath each pile will be divided into equal quarters. One random sample location will be chosen in each quarter. A systematic grid of nine equal areas in each quarter will be used to select the sample point. At each sample location, the soil will be sampled down to a depth of ten feet or one foot into the intermediate zone, whichever is deeper. Two composite samples, one from the zero to five-foot depth and one from the five-foot to ten-foot or lowest point drilled will be collected from each sample location. A total of 24 composite samples will be collected at the Site. Samples shall be analyzed for fluoride using EPA 340.1, 340.2 or 340.3 with a preliminary distillation step (Standard Methods of the Examination of Water and Wastewater, 17th edition, 4500-F B) distilling up to 10 grams of soil in place of liquid sample (4.b). Two duplicate analyses must be conducted and reported. Samples shall be analyzed for total

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cyanide using EPA Method 335.2 or 335.3 with a preliminary distillation step (Standard Methods for the Examination of Water and Wastewater, 17th edition, 4500-CN C) modified to use a 250 mL flask. Distill 2 gm of soil in 50 Ml distilled water with 2 mL 1+1 H_2SO_4 and 2 mL of $MgCl_2$, reagent. Two duplicate analyses must be conducted and reported.

7. Alcoa shall cap the entire area where the waste piles were located. Alcoa may cap this area with either a synthetic liner (50 mil HDPE or 40 mil PVC) covered with two feet of clean sand and topsoil including vegetation, or with two feet of recompacted clay or other material with a permeability of no more than 1 x 10^{-6} cm/sec. that is covered by six inches of topsoil and is revegetated. The area shall then be graded for proper surface water drainage. Install fencing that completely surrounds the liner, and post signs warning persons not to enter the fenced area.

8. Waste removal shall be accomplished in compliance with all state, federal and local requirements, including the provision of manifests for waste shipment, permits and reports and other record-keeping as appropriate.

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9. Prepare project completion report documenting all phases of the waste removal program, soil replacement and revegetation, cap installation, and grading and sampling elements of this scope of work. This report shall be certified by a professional engineer and submitted to Ecology with appendices made up of original documentation for the work.

10. After the three waste piles and the spillage has been removed and/or the cap has been installed Alcoa shall perform groundwater monitoring for five years. At the end of the five-year period, Ecology and Alcoa shall exchange proposals to amend this Consent Decree (pursuant to Section XV. AMENDMENT OF CONSENT DECREE) with regard to whether continued groundwater monitoring is necessary to protect public health or the environment and, if so, what would constitute an appropriate monitoring regime. Ecology and Alcoa shall exchange proposals to amend, in the manner just described, at five-year intervals thereafter until the levels of free cyanide (Standard Method 4500-CN G, or Standard Method 4500-CN I, if promulgated by EPA as the method for determining the drinking water MCL) and total fluoride (EPA 340.2) in the intermediate, deep and aquifer zones drop to or below 0.2 parts per million

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and 4 parts per million, respectively. Groundwater monitoring of the following wells shall be performed quarterly during years one through five:

Shallow zone:	MW6S, MW8S, MW30S, MW38S.
Intermediate zone:	MW8I, MW11I, MW19I, MW16I, MW20I, MW28I, MW36I, MW38I.
Deep zone:	MW8D, MW10D, MW19D, MW20D, MW21D.
Aquifer zone:	MW8A, MW18A, MW21A, MW22A, MW23A.

MW20D shall be monitored in accordance with this schedule after it is repaired or replaced. Alcoa shall construct a new deep zone monitoring well, MW41D, between MW11 and MW20, and after constructing it shall monitor MW41D in accordance with this schedule. In the first year of monitoring and in the fifth year of monitoring all monitoring wells shown on Exhibit C at the Vancouver Operations of the old Alcoa complex shall be sampled. Water wells 14, 15, 18, 19, and 22 will not be sampled unless they are in production. Parameters to be analyzed include Ph, conductivity, temperature, fluoride (through EPA method 340.2), and total cyanide (through EPA method 9012), and free cyanide by Standard Method 4500-CN G, or Standard Method 4500-

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CN I, if promulgated by EPA as the method for determining the drinking water MCL.

Monitoring well sampling shall conform to QA/QC standards established in the compliance monitoring plan. Monitoring wells shall be flushed at least one pore volume for low-yield formations and at least three pore volumes for high-yield formations prior to sampling. The monitoring well shall be allowed to recover for up to 24 hours prior to sampling. If the well contains less than one-half a pore volume after the 24-hour recovery period then it need not be sampled.

11. Perform surface water sampling of the Columbia River. Samples shall be collected from two locations: the first, no more than fifteen feet from the shoreline at a point approximately one thousand feet southeast of Alcoa's property boundary; and the second, no more than fifteen feet from the shoreline at a point due south of MW19. At each location Alcoa shall collect a grab sample as close as possible to the river bed. Samples shall be collected during the first hour of flood tide and, if possible, during low river stages. Samples shall be analyzed for fluoride using EPA method 340.2 and weak acid dissociable cyanide using

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Standard Method 4500-CN I. Alcoa shall collect and analyze such samples once each quarter for two years and then annually if cyanide and fluoride are below 0.01 mg/L and 4 mg/L for a total period of five years. At the end of the five-year period, Ecology shall reevaluate the surface water monitoring program. If required by Ecology, Alcoa shall perform additional surface water monitoring.

12. Perform maintenance on final cap quarterly during regularly scheduled groundwater monitoring activities. The frequency of final cap inspections shall be modified, as required by Ecology, to reflect changes in post-remediation Site conditions and uses. Alcoa shall notify Ecology prior to changing cap inspection schedules. Maintenance requirements for the final cap shall include grading to maintain proper Site drainage, repair of any erosion or areas of distressed vegetation, and repair of Site perimeter fencing and warning signs.

C. Schedule. The schedule for performance of the work identified above is as follows:

1. Permits: Apply within 30 days of effective date of Decree.

2. Health and safety plan: Submit within 30 days of effective date of Decree.

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3. Waste removal/soil sampling: Complete within 180 days of effective date of Decree.

4. Cap installation: Complete within 270 days of effective date of Decree.

5. Project completion report: Submit within 366 days of effective date of Decree.

6. Groundwater monitoring: Quarterly for years one through five starting with the installation of the cap, and thereafter as determined pursuant to this Decree.

7. Surface water monitoring: Quarterly for the first two years and then annually if weak acid dissociable cyanide and total fluoride are below 0.01 mg/L and 4.0 mg/L, and thereafter as deemed necessary by Ecology.

VII. DESIGNATED PROJECT COORDINATORS

On or before the entry of this Decree, Ecology and Alcoa shall each designate a project coordinator. Each project coordinator shall be responsible for overseeing the implementation of this Decree. The Ecology project coordinator will be Ecology's designated representative at the Site. To the maximum extent possible, communications between Ecology and Alcoa, and all documents, including reports, approvals and other correspondence concerning the activities performed pursuant to the terms and conditions of this Decree,

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shall be directed through the project coordinators. The project coordinators may designate, in writing, working level staff contacts for all or portions of the implementation of the remedial work required by this Decree.

Any party may change its respective project coordinator. Written notification shall be given to the other party at least ten (10) calendar days prior to the change.

The initial project coordinator for Ecology is:

Mr. Paul Skyllingstad
Industrial Section
Department of Ecology
P.O. Box 47706
Olympia, Washington 98504-7706

Ph: (206) 586-0583
Fax: (206) 586-1469

The initial project coordinator for Alcoa is:

Mr. S.H. Myers
Aluminum Company of America
P.O. Box 970
Vancouver, Washington 98666

Ph: (206) 699-5842
Fax: (206) 696-4798

VIII. PERFORMANCE

All work performed pursuant to this Decree shall be under the direction and supervision, as necessary, of a professional engineer registered in the State of Washington or hydrogeologist, or equivalent. Alcoa shall notify Ecology in writing as to the identity of such engineer(s) or hydrogeologist(s) or others and of any contractors and

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subcontractors to be used in carrying out the terms of this Decree in advance of their involvement at the Site.

IX. ACCESS

Alcoa agrees that Ecology or any Ecology authorized representatives shall have the authority to enter and freely move about all property at the Site at all reasonable times for the purposes of, inter alia: inspecting records, operation logs and contracts related to the work being performed pursuant to this Decree; reviewing the progress in carrying out the terms of this Decree; conducting such tests or collecting samples as Ecology may deem necessary; using a camera, sound recording, or other recording equipment to record work done pursuant to this Decree; and verifying the data submitted to Ecology by Alcoa. Upon request, Ecology shall split any samples taken during an inspection unless Alcoa fails to make available a representative for the purpose of splitting samples. All parties with access to the Site pursuant to this paragraph shall comply with approved health and safety plans. Except in emergency situations, Ecology personnel and authorized representatives shall give Alcoa reasonable notice prior to entering the Site.

X. SAMPLING, DATA REPORTING AND AVAILABILITY

With respect to the implementation of this Decree, Alcoa shall make the results of all sampling, laboratory reports and/or test results generated by it or on its behalf available

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to Ecology. Alcoa shall submit these results in quarterly progress reports submitted in accordance with Section XI of this Decree.

If requested by Ecology, Alcoa shall allow split or duplicate samples to be taken by Ecology and/or its authorized representatives of any samples collected by it pursuant to the implementation of this Decree. Alcoa shall notify Ecology five (5) working days in advance of any sample collection or work activity at the Site.

Ecology shall, upon request, allow split or duplicate samples to be taken by Alcoa or their authorized representatives of any samples collected by Ecology pursuant to the implementation of this Decree. Without limitation on Ecology's authority to enter the Site without notice, as set forth in Section IX of this Consent Decree, Ecology shall endeavor to give five (5) days' notice prior to taking samples at the Site.

The requirements of this Section do not include reports, test results and data which must be submitted to Ecology under Alcoa's NPDES permit.

XI. PROGRESS REPORTS

Alcoa shall submit to Ecology written progress reports every three months, beginning on the date three months after the effective date of this Decree. The reports shall describe the actions taken during the previous three months to

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implement the requirements of this Decree. The progress reports shall include the following:

A. A list of on-Site activities that have taken place during the prior three months;

B. Detailed description of any deviations from required tasks not otherwise documented in project plans or amendment requests;

C. Description of all deviations from the schedule (Section VI.C.) during the previous three months and any planned deviations in the upcoming three months;

D. For any deviations in schedule, a plan for recovering lost time and maintaining compliance with the schedule;

E. All raw data (including laboratory analysis) received by Alcoa during the past three months and an identification of the source of the sample; and

F. A list of deliverables for the upcoming three months if different from the schedule.

All progress reports shall be submitted by the tenth day of the month in which they are due after the effective date of this Decree. Unless otherwise specified, progress reports and any other documents submitted pursuant to this Decree shall be sent to Ecology's project coordinator. Progress reports shall be submitted every three months until all construction

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activity required by this Decree is completed. Thereafter, Alcoa shall agree to a modified progress report interval.

XII. RETENTION OF RECORDS

Alcoa shall preserve, during the pendency of this Decree and for ten (10) years from the date of completion of compliance monitoring, all records, reports, documents and underlying data in its possession relevant to the implementation of this Decree, and shall insert in contracts with project contractors a similar record retention requirement. Upon request of Ecology, Alcoa shall make all non-archived records available to Ecology and allow access for review. All archived records shall be made available to Ecology within a reasonable period of time.

XIII. TRANSFER OF INTEREST IN PROPERTY

Alcoa shall not convey or relinquish title, any easement, any leasehold or any other interest in any portion of the Site unless, prior to said transfer, it has provided for continued performance of all of Alcoa's obligations under this Decree. This requirement shall not apply to the conveyance or relinquishment of any interest in any portion of the Site which is "involuntary". "Involuntary", for the purposes of this section, includes, but is not limited to, taking of property by condemnation or inverse condemnation, appointment of a receiver or an involuntary petition under the bankruptcy code.

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While this Decree remains in effect (see XXV. DURATION OF DECREE), Alcoa shall serve a copy of this Decree on any prospective purchaser, lessee, transferee, assignee or other successor in interest to the Site or portion of the Site. Alcoa shall serve a copy of this Decree as provided herein at least ten (10) days prior to any transfer and it shall notify Ecology of any contemplated transfer at least ten (10) days prior to any transfer.

XIV. RESOLUTION OF DISPUTES

A. In the event Alcoa disputes an approval, disapproval, proposed modification or other decision or action by Ecology's project coordinator, Alcoa shall utilize the dispute resolution procedure set forth below.

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

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

3. Alcoa may then request Ecology management review of the decision. This request shall be submitted in writing to Ecology's Toxics Cleanup Program Manager

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or her or his designee within seven (7) days of receipt of Ecology's project coordinator's decision.

4. Ecology's Toxics Cleanup Program Manager or her or his designee shall conduct a review of the dispute and shall issue a written decision regarding the dispute within thirty (30) days of Alcoa's request for review.

B. If Ecology's final written decision is unacceptable to Alcoa, Alcoa has the right to submit the dispute to the Court for resolution. Alcoa and Ecology agree that one judge should retain jurisdiction over this case and shall, as necessary, resolve any dispute arising under this Decree. In the event Alcoa presents an issue to the Court for review, the Court shall review the action or decision of Ecology on the basis of whether such action or decision was arbitrary and capricious or contrary to law and render a decision based on such standard of review.

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

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Implementation of these dispute resolution procedures may provide a basis for delay of any activities required in this Decree.

XV. AMENDMENT OF CONSENT DECREE

This Decree may be amended by a written stipulation among the parties to this Decree that is entered by the Court. Such amendment shall become effective upon entry by the Court. Agreement to amend shall not be unreasonably withheld by any party to the Decree.

Alcoa shall submit any request for an amendment to Ecology for approval. Ecology shall indicate its approval or disapproval in a timely manner after the request for amendment is received. If Ecology disapproves, reasons for disapproval shall be stated in writing. If Ecology disapproves, then the parties' project managers shall confer in an effort to resolve the dispute. If the project managers cannot resolve the dispute within 14 working days of Alcoa's receipt of Ecology's disapproval, then Alcoa may petition the Court for relief.

Ecology shall submit any request for an amendment to Alcoa for approval. Alcoa shall indicate its approval or disapproval in a timely manner after the request for amendment is received. If Alcoa disapproves, reasons for disapproval shall be stated in writing. If Alcoa disapproves, then the parties' project managers shall confer in an effort to resolve the dispute. If the project managers cannot resolve the

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dispute within 14 working days of Ecology's receipt of Alcoa's disapproval, then Ecology may petition the Court for relief.

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

XVI. EXTENSION OF SCHEDULE

A. An extension of schedule shall be granted only when a request for an extension is submitted in a timely fashion and good cause exists for granting the extension. All extensions shall be requested in writing. The request shall specify the reason(s) the extension is needed.

An extension shall only be granted for such period of time as Ecology determines is reasonable under the circumstances. A requested extension shall not be effective until approved by Ecology. Ecology shall act upon any written request for extension in a timely fashion not to exceed ten (10) working days after receipt of Alcoa's written request for an extension. It shall not be necessary to formally amend this Decree pursuant to Section XV when a schedule extension is granted.

B. The burden shall be on Alcoa to demonstrate to the satisfaction of Ecology that the request for such extension has been submitted in a timely fashion and that good cause

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exists for granting the extension. Good cause includes, but is not limited to, the following:

1. Circumstances beyond the reasonable control and despite the due diligence of Alcoa, including but not limited to delays caused by unrelated third parties or Ecology, such as delays by Ecology in reviewing, approving or modifying documents submitted by Alcoa or the unavailability of the Chemical Waste Management of the Northwest Site in Arlington, Oregon; or

2. Delays directly attributable to any agency permit application review period or public comment period or other cause related to any permit(s) or to any changes in or need to comply with permit terms or conditions or to appeals on or lack of a permit, concurrence, or approval needed to implement this Decree, if Alcoa filed a timely application for such permit, concurrence, or approval.

3. Acts of God, including fire, flood, blizzard, extreme temperatures, storm, wave or water conditions, or other unavoidable casualty; or

4. Endangerment as described in Section XVII.

However, neither increased costs of performance of the terms of the Decree nor changed economic circumstances shall

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be considered circumstances beyond the reasonable control of Alcoa.

C. Ecology may extend the schedule for a period not to exceed ninety (90) days, except where an extension is needed as a result of:

1. Delays in the issuance of a necessary permit which was timely applied for; or

2. Other circumstances deemed exceptional or extraordinary by Ecology; or

3. Endangerment as described in Section XVII.

In any of the three situations described above, Ecology may extend the schedule for a period Ecology determines is reasonable under the circumstances. Extensions of more than 90 days may not be granted unless the public is given an opportunity to comment on the proposed extension. Ecology shall give Alcoa written notice in a timely fashion of any extensions granted pursuant to the Decree.

XVII. ENDANGERMENT

In the event Ecology determines that activities implementing or in compliance with this Decree, or any other circumstances or activities, are creating or have the potential to create a danger to the health or welfare of the people on the Site or in the surrounding area or to the environment, Ecology may order Alcoa to stop further implementation of this Decree for such period of time as

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needed to abate the danger or may petition the Court for an order as appropriate. During any stoppage of work under this section, the obligations of Alcoa with respect to the work under this Decree which is ordered to be stopped shall be suspended and the time periods for performance of that work, as well as the time period for any other work dependent upon the work which is stopped, shall be extended, pursuant to Section XVI of this Decree, for such period of time as Ecology determines is reasonable under the circumstances.

In the event Alcoa determines that activities undertaken in furtherance of this Decree or any other circumstances or activities are creating an endangerment to the people on the Site or in the surrounding area or to the environment, Alcoa may stop implementation of this Decree for such periods of time necessary for Ecology to evaluate the situation and determine whether Alcoa should proceed with implementation of the Decree or whether the work stoppage should be continued until the danger is abated. Alcoa shall notify Ecology's project coordinator as soon as is possible, but no later than twenty-four (24) hours after such stoppage of work, and thereafter provide Ecology with documentation of the basis for the work stoppage. If Ecology disagrees with Alcoa's determination, it may order Alcoa to resume implementation of this Decree. If Ecology concurs in the work stoppage, Alcoa's obligations shall be suspended and the time period for

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performance of that work, as well as the time period for any other work dependent upon the work which was stopped, shall be extended, pursuant to Section XVI of this Decree, for such period of time as Ecology determines is reasonable under the circumstances. Any disagreements pursuant to this clause shall be resolved through the dispute resolution procedures in Section XIV.

XVIII. INDEMNIFICATION

A. Alcoa agrees to indemnify and save and hold the State of Washington, its employees and agents harmless from any and all claims or causes of action for death or injuries to persons or for loss or damage to property arising solely from or on account of the negligent acts or omissions of Alcoa, its officers, employees, agents or contractors in entering into and implementing this Decree. However, Alcoa shall not indemnify the State of Washington nor save nor hold its employees and agents harmless from any claims or causes of action arising solely out of the negligent acts or omissions of the State of Washington, or the employees or agents of the State, in implementing the activities pursuant to this Decree.

B. As Washington has a comparative fault statute (Ch. 4.22 RCW) which provides a right of contribution between tortfeasors (RCW 4.22.040), Alcoa and Ecology agree to the following provision concerning Alcoa's obligation to indemnify the State of Washington with regard to a loss which is not

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caused solely by the negligence of Alcoa, its officers, employees, agents or contractors, or by the sole negligence of the State or any agent or employee of the State. In the event that a claim or cause of action for death or injuries to persons or for loss or damage to property is asserted against the State of Washington, or any of its employees or agents, and the basis of the claim or cause of action includes an allegation that the negligence of Alcoa, its officers, employees, agents, or contractors and the negligence of any other party caused the death or injury to persons or loss or damage to property, then Alcoa shall not be obliged to indemnify and save and hold the State of Washington harmless, but in the event that costs or fees are incurred by the State of Washington in defending against the claim or cause of action, or in the event that a judgment is entered against the State of Washington and satisfied by the State of Washington, Alcoa agrees to reimburse the State for the share of the State's costs, fees and the judgment as satisfied by the State in an amount representing that percentage of the loss adjudged to have been caused by the negligence of Alcoa, its officers, employees, agents or contractors.

XIX. COMPLIANCE WITH APPLICABLE LAWS

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

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All facilities used by Alcoa for the off-Site treatment, storage or disposal of hazardous waste removed from the Site must be in compliance with the applicable requirements of the Resource Conservation and Recovery Act, as amended, 42 U.S.C. §9601, et seq. and Chapter 70.105 RCW. Alcoa proposes to use Chemical Waste Management of the Northwest's RCRA-permitted landfill at Arlington, Oregon for disposal of hazardous waste.

XX. LIABILITY INSURANCE

Within thirty (30) days of the entry of this Decree and for the duration of the remedial action required by this Decree, Alcoa shall provide Ecology with Alcoa's contractor's current certificates of insurance certifying coverage for general liability which may arise in carrying out this Decree with minimum limits of One Million Dollars ($1,000,000.00) per occurrence and an annual aggregate of at least Five Million Dollars ($5,000,000.00), exclusive of legal defense costs, for bodily injury and property damage liability combined. Alcoa shall provide thirty (30) days written notice prior to canceling such insurance.

These insurance limits are not to be construed as maximum limits. Alcoa is solely responsible for determining the appropriate amount of insurance it should carry for injuries or damages that may result from the implementation of this Decree.

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XXI. IMPLEMENTATION OF REMEDIAL ACTION

If Ecology determines that Alcoa has failed, without good cause, to implement the remedial action, Ecology may, after notice to Alcoa and, except in emergency situations, an opportunity to adequately implement the remedial action required by this Decree, perform any or all portions of the remedial action that remain incomplete. If Ecology performs all or portions of the remedial action because of Alcoa's failure to comply with its obligations under this Decree, Alcoa shall reimburse Ecology for the costs of doing such work within thirty (30) days of receipt of demand for payment of such costs, provided that Alcoa is not obligated under this section to reimburse Ecology for costs incurred for work inconsistent with or beyond the scope of the Cleanup Action Plan (Exhibit B).

XXII. OVERSIGHT COSTS

A. Alcoa agrees to reimburse the State Toxics Control Account for the following oversight costs associated with Ecology activities at the Site. Ecology agrees to submit its time keeping records and accounting and bookkeeping procedures to Alcoa for review.

1. The sum of $36,013.14 for costs incurred by Ecology from 1989 up through September 30, 1991.

2. For costs incurred by Ecology after September 30, 1991, Alcoa shall reimburse the State Toxics Control

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Account for Ecology's cost of direct activities, including but not limited to employee salaries, laboratory costs, travel costs, contractor fees, and employee benefits; indirect costs of direct activities; and interest charges at 12 percent per annum for delayed payments.

B. Alcoa shall pay the amount set forth in Paragraph A(1), above, within 90 days of the effective date of this Decree. With regard to future oversight costs, Ecology shall, within 90 days of the end of each fiscal quarter, submit to Alcoa an itemized statement documenting Ecology's expenses for the quarter. Within 90 days of receiving this statement, Alcoa shall pay into the State Toxics Control Account the required sum.

XXIII. PUBLIC PARTICIPATION

Ecology has developed a Public Participation Plan that is attached to this Decree as Exhibit D. Ecology shall maintain the responsibility for public participation at the Site. Ecology shall notify Alcoa's project coordinator prior to the issuance of all press releases and fact sheets, and before major meetings with the interested public and local governments. However, Alcoa shall:

A. Provide assistance as requested when Ecology prepares drafts of public notices and fact sheets at important stages of the remedial action, such as the issuance of the CAP

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and the start of remedial action. Ecology will finalize (including editing if necessary) and distribute such fact sheets and prepare and distribute public notices of Ecology's presentations and meetings;

B. Notify Ecology's project coordinator prior to the issuance of all press releases and fact sheets, and before major meetings with the interested public and local governments.

C. Participate in public presentations on the progress of remedial action at the Site. Participation may be through attendance at public meetings to assist in answering questions; and

D. In cooperation with Ecology, arrange and/or continue information repositories to be located at the main branch of the Vancouver Library, 1007 East Mill Plain Boulevard, Vancouver, Washington 98663 and Ecology's Industrial Section in Olympia. At a minimum, copies of all public notices, fact sheets and press releases, all quality assured ground water, surface water, soil sediment and air monitoring data, remedial action plans, supplemental remedial planning documents and all other similar documents relating to performance of the remedial action required by this Decree shall be promptly placed in these repositories.

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XXIV. COVENANT NOT TO SUE

In consideration of Alcoa's compliance with the terms and conditions of this Decree, the State of Washington covenants not to institute legal, equitable or administrative actions against Alcoa regarding matters within the scope of this Decree.

This covenant is strictly limited in its application to the Site specifically defined in Exhibit A and to those hazardous substances which Ecology knows to be located at the Site as of the entry of this Decree. This covenant is not applicable to any other hazardous substance or area and the state retains all of its authority relative to such substances and areas.

A. Reopeners: In the following circumstances, the State of Washington may exercise its full legal authority to address releases and/or threatened releases of hazardous substances at the Site notwithstanding the Covenant Not to Sue set forth above:

1. In the event Alcoa fails to comply with the terms and conditions of this Consent Decree, including all exhibits, and Alcoa, after written notice of noncompliance, fails to come into compliance;

2. In the event new information becomes available regarding factors previously unknown to Ecology, including the nature or quantity of hazardous

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substances at the Site, and Ecology determines that these factors present a previously unknown threat to human health or the environment. For purposes of this paragraph, and this is not necessarily an exhaustive list, information which is contained in the documents listed below is known to Ecology and cannot constitute new information: Remedial Investigation and Feasibility Study, with appendices, for Alcoa's waste potlining piles at Vancouver operations; Hart Crowser, Inc., "Interim Report, Remedial Investigation/Feasibility Study, Vancouver Operation, Vancouver, WA," February 1987; Robinson and Noble, Inc., Investigation for Contamination at Vancouver Plant, Phase I, September 1984; Robinson and Noble, Inc., Cyanide Contamination Study of Aluminum Company of America at Vancouver, Washington, December 1982; Robinson and Noble, Inc., Investigation of Possible Groundwater Contamination for Alcoa, Vancouver, September 1979; Robinson, Noble & Carr, Inc., Interim Report on Potential Contamination of Shallow Groundwater at Aluminum Company of America, April 1981; documents reporting results of groundwater sampling and analyses that have been received by Ecology prior to the effective date of this Decree;

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Ecology's Order DE 86-419 and all documents submitted to and actually received by Ecology under the terms of that Order, or created by Ecology in the course of working on that Order; all files and records that have been received by the Department of Ecology's Industrial Section prior to the effective date of this Decree and that pertain to Alcoa's Vancouver operations; and Waste Pile Characterization, Vancouver, Washington Site, Alcoa Report 70-90-11, 1990 May 15;

3. In the event the results of groundwater monitoring (see Section VI.B.9.) at monitoring wells 18D, 19D, 20D or 21D indicate that concentrations of free cyanide or total fluoride in ground water as measured under this Decree have increased one order of magnitude over average levels found in those wells from 1986 through 1990;

4. In the event conditions at the Site cause an endangerment to human health or the environment.

B. Applicability: The Covenant Not to Sue set forth above shall have no applicability whatsoever to:

1. Criminal liability;

2. Any Ecology action against potentially liable persons not a party to this Decree.

3. Liability for damages to natural resources.

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XXV. DURATION OF DECREE

The remedial action required by this Decree can be divided into two phases -- the construction phase and the operation and maintenance (O&M) phase. The construction phase includes removal of waste piles, installation of a cap, and soil sampling. The O&M phase includes groundwater monitoring and maintenance of the final cap.

When the construction phase of the remedial action has been completed to Ecology's satisfaction, Ecology shall issue a written notification that the construction requirements of this Decree have been met. Upon issuance of this notification, Ecology shall not require further construction activity at the Site except consistent with the Covenant Not to Sue in this Decree, Section XXIV. Issuance of the notification of completion of construction shall represent Ecology's concurrence in any EPA-issued notice proposing that the Site be deleted from the NPL. The Site shall be considered cleaned up for the purposes of EPA review of documents which precedes a decision by EPA to delist the Site from the NPL and the State shall certify that Alcoa has completed all appropriate response action at the Site. However, this Decree shall remain in effect and Alcoa's obligations to comply with the O&M requirements of this Decree shall continue until Ecology issues a written notification

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stating that all requirements of this Consent Decree have been completed.

XXVI. CLAIMS AGAINST THE STATE

Alcoa hereby agrees that it will not seek to recover any costs accrued in implementing the remedial action required by this Decree from the State of Washington or any of its agencies; and, further, that Alcoa will make no claim against the State Toxics Control Account or any local toxics control account for any costs incurred in implementing this Decree. Except as provided above, however, Alcoa expressly reserves its rights to seek to recover any costs incurred in implementing this Decree from any other potentially liable person.

XXVII. LAND USE RESTRICTIONS

Alcoa shall, within 180 days of the effective date of this Decree, record with the Office of the Clark County Auditor the restrictive covenant attached to this Decree as Exhibit E. (The Site legal description shall be appended to Exhibit E as soon as the description is available.) This covenant is executed in compliance with WAC 173-340-440, and restricts future uses of the Site. With Ecology's approval, after completion of the remedial actions required under this Decree, and consistent with WAC 173-340-720 and applicable cleanup standards for soils, Alcoa may record an instrument providing that the restrictive covenant attached to this

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Decree as Exhibit E shall no longer limit uses of the Site or be of any further force or effect. Ecology shall not grant approval until all ground water samples taken from monitoring wells in the intermediate, deep and aquifer zones during one sampling period are found to contain levels of total fluoride (EPA 340.2) lower than 4 parts per million, and of free cyanide (Standard Method 4500-CN G or Standard Method 4500-CN I, if promulgated by EPA as the method for determining the drinking water MCL) lower than 0.2 parts per million.

Monitoring well sampling shall conform to QA/QC standards established in the compliance monitoring plan. Monitoring wells shall be flushed at least one pore volume for low-yield formations and at least three pore volumes for high-yield formations prior to sampling. The monitoring well shall be allowed to recover for up to 24 hours prior to sampling. If the well contains less than one-half a pore volume after the 24-hour recovery period then it need not be sampled.

XXVIII. OTHER REMEDIAL ACTIONS

Alcoa shall not perform any remedial actions at the Site, other than those required under this Decree, without providing prior notice to, and receiving the concurrence of, Ecology.

XXIX. HAZARDOUS WASTE REDUCTION PLAN

Alcoa shall be excused from any requirement to prepare and submit a hazardous waste reduction plan for Alcoa's Vancouver Operations under Ch. 70.105E RCW and Ch. 173-307 WAC

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due to Alcoa's performing work under this Consent Decree because performance of the work at the Site is due to unique circumstances not likely to be repeated and as Alcoa is unlikely to generate sufficient waste at the old Vancouver complex to require a plan within the next five (5) years. The parties stipulate that Alcoa shall be deemed to have petitioned to be excused from the waste reduction plan requirement under WAC 173-307-120.

XXX. PRIOR AGREEMENTS OR UNDERSTANDINGS

The terms of this Consent Decree, unless modified by the Court, shall control and shall supersede any prior agreement or understanding between the parties if any prior agreement or understanding has any effect at variance with this Consent Decree.

XXXI. EFFECTIVE DATE

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

XXXII. PUBLIC NOTICE AND WITHDRAWAL OF CONSENT

This Decree has been the subject of public notice and comment under RCW 70.105D.040(4)(a). As a result of this process, Ecology has found that this Decree will lead to a more expeditious cleanup of hazardous substances at the Site in compliance with applicable cleanup standards.

If the Court withholds or withdraws its consent to this Decree, it shall be null and void at the option of any party

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and the accompanying Complaint shall be dismissed without costs and without prejudice. In such an event, no party shall be bound by the requirements of this Decree.

STATE OF WASHINGTON,
DEPARTMENT OF ECOLOGY

By: Carol L. Fleskes
CAROL FLESKES
Program Manager
Hazardous Waste
Investigation and Cleanup

Date: March 25, 1992

STATE OF WASHINGTON,
ATTORNEY GENERAL'S OFFICE

By: Tanya Barnett
TANYA BARNETT
Assistant Attorney General

Date: March 25, 1992

ALUMINUM COMPANY OF AMERICA

By: Richard C Rowe

Date: Mar 23, 1992

DATED this 27 day of March, 1992.

JUDGE
Clark County Superior Court

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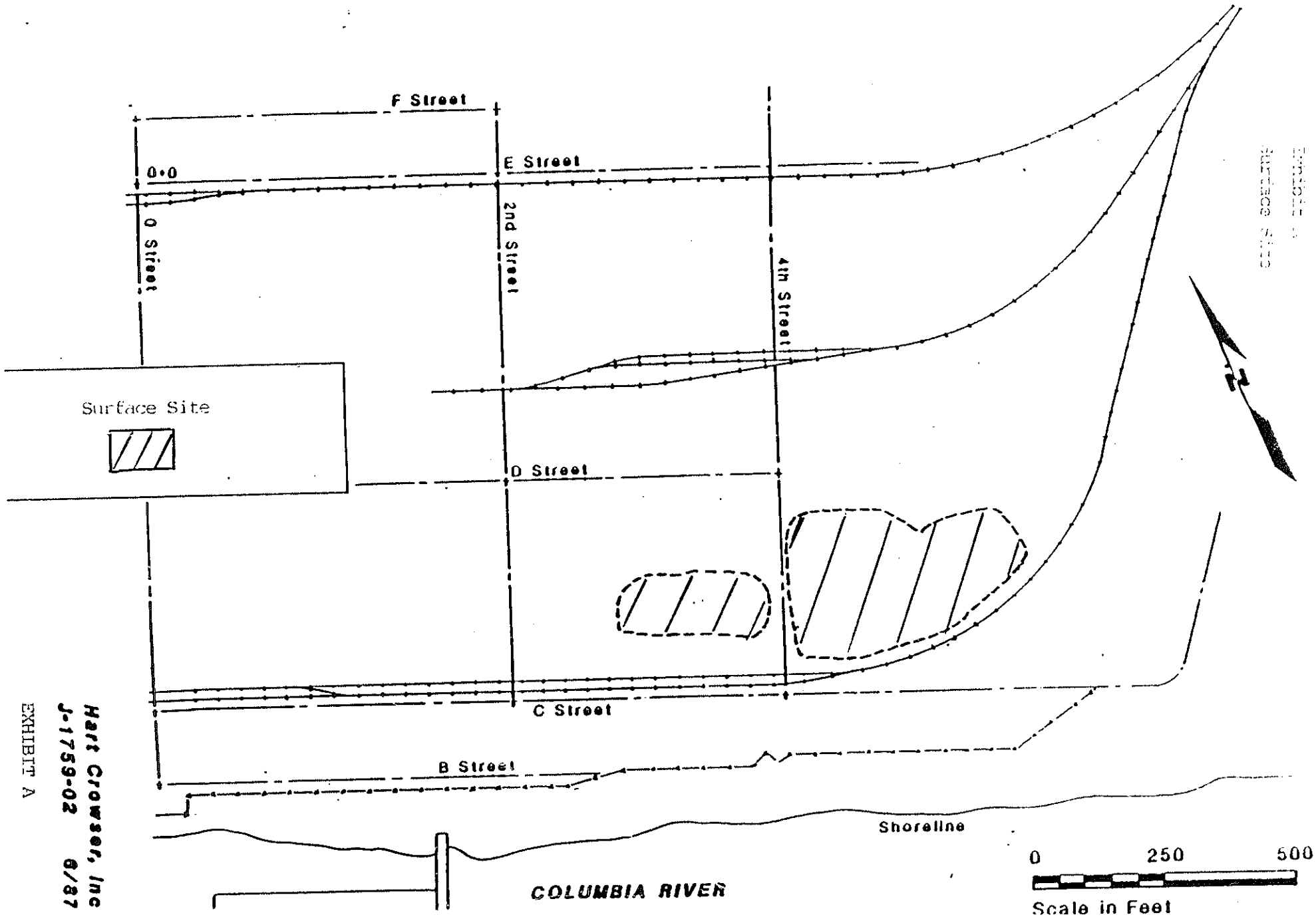
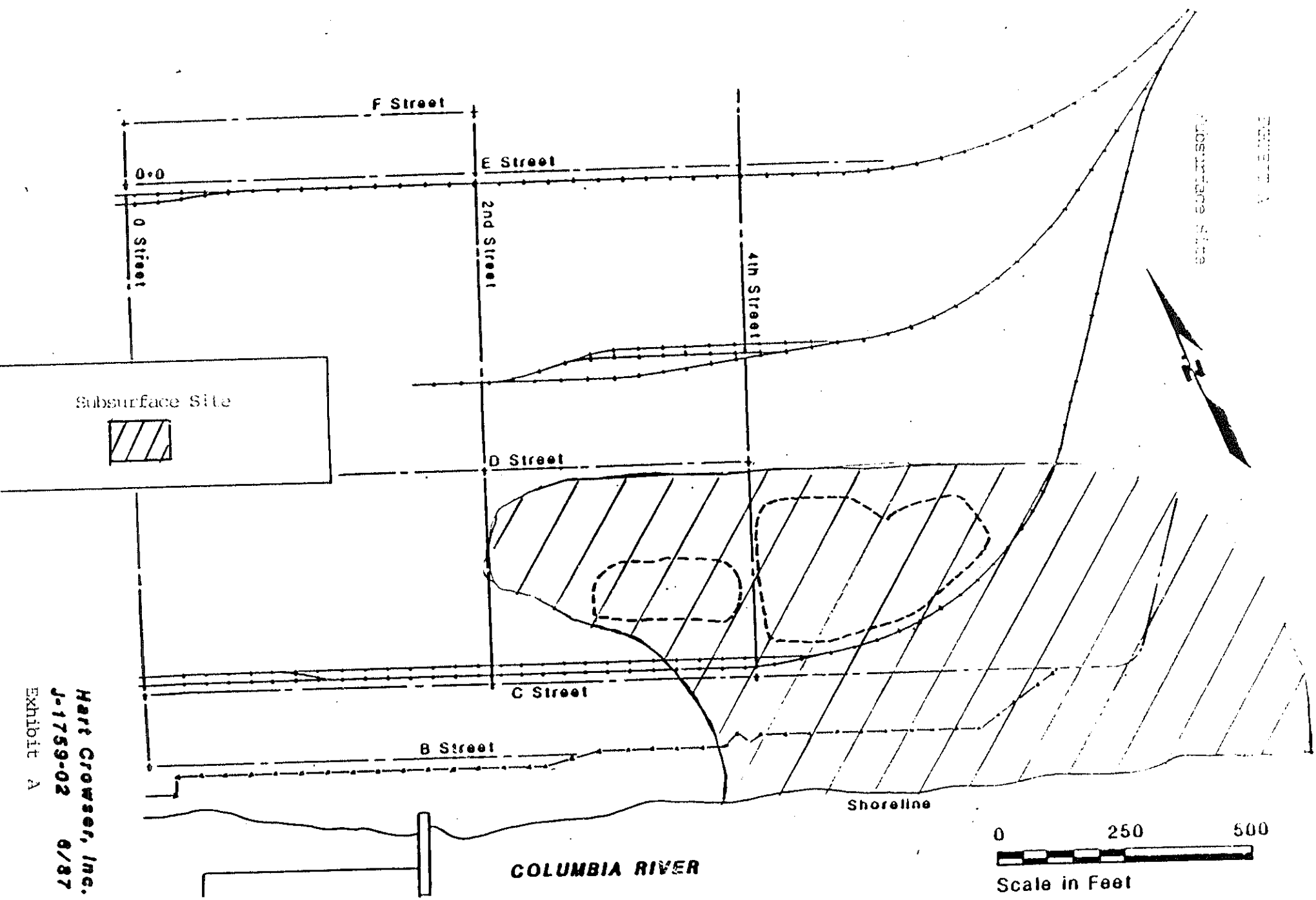


EXHIBIT A

Hart Crowser, Inc
J-1759-02 9/87



Hart Crowser, Inc.
J-1759-02 6/87
Exhibit A

EXHIBIT B

Cleanup Action Plan

CLEANUP ACTION PLAN

Alcoa Vancouver Potliner NPL Site
Vancouver, Washington

by
Washington Department of Ecology

February 7, 1992

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DRAFT CLEANUP ACTION PLAN
ALCOA VANCOUVER POTLINER NPL SITE, VANCOUVER, WASHINGTON
February 7, 1992

INTRODUCTION

1.1 PURPOSE

This decision document presents the Cleanup Action Plan for the Aluminum Company of America (Alcoa) - Vancouver Potliner NPL site located approximately 3 miles northwest of downtown Vancouver near the VANALCO aluminum smelter. The site is located near the southeast corner of the smelter property, approximately 300 to 500 feet north of the Columbia River. The site consists of three waste piles, contaminated soil under the waste piles and subsurface contaminated strata and groundwater. The area is both industrial and agricultural. The cleanup decisions in this Cleanup Action Plan are based on data presented in remedial investigation and feasibility studies conducted by Hart Crowser for Alcoa, data from Ecology files and information presented independently by Alcoa. The Cleanup Action Plan (CAP) documents the site - specific factors and analysis that led to the selection of the cleanup remedy for the site.

The purpose of the Draft Cleanup Action Plan is to:

--- Summarize the alternative cleanup actions that were investigated in Alcoa's Remedial Investigation and Feasibility Study.

--- Describe the proposed cleanup action and rationale used to select the plan.

--- Provide an opportunity for the public to comment on the proposed cleanup action.

1.2 APPLICABILITY

This Cleanup Action Plan is applicable only to the Alcoa - Vancouver Potliner National Priorities List (NPL) Site. The cleanup levels and cleanup actions presented in this document have been developed as a result of a remediation process conducted with Department of Ecology oversight. The cleanup levels and cleanup actions are site specific. The cleanup actions should not be considered as setting precedents for other similiar sites.

Potentiality Liable Persons (PLP's) cleaning up sites independently, without Ecology oversight, may not cite numerical values of cleanup levels specified in this draft document as justification for cleanup levels in other unrelated sites. PLP's that are cleaning up sites under Ecology oversight must base cleanup levels on site specific regulatory considerations and not on the numerical values contained in this CAP.

1.3 DECLARATION

The selected remedy will be protective of human health and the environment. Ecology gives preference to permanent solutions to the maximum extent where practical. In this cleanup, treatment and recycle alternatives were examined but not used due to the nature of the material present on the site. Source control measures consist of removal of potliner to an approved hazardous waste landfill and construction of a geomembrane cover. Permanent treatment of the contaminated soils and strata was judged not practicable at this site because no practicable treatment technologies exist for treating the large volumes of cyanide and fluoride contaminated materials. Ground water pump and treat technologies were not considered appropriate for the site because contaminant loading of the Columbia River from the cyanide/fluoride treatment system would be greater than the present groundwater loading from the site. Also, the effectiveness of a pump and treat system in the most contaminated ground water zone, the semi-permeable intermediate zone, is very low. Institutional controls along with containment of contaminated soils and strata are the remedial technologies chosen for the remediation. A summary of all cleanup alternatives which were examined during the investigative phase of the feasibility study is given in the cleanup alternative section of this document.

1.4 ADMINISTRATIVE RECORD

The documents used to make the cleanup decisions discussed in this cleanup action plan constitute the administrative record for the Alcoa site. These documents are listed in Appendix A of the this document. Additional documents located in Department of Ecology Industrial Section Files in Olympia, Washington are also considered a part of the administrative record for the site.

SITE DESCRIPTION AND HISTORY

2.1 SITE LOCATION

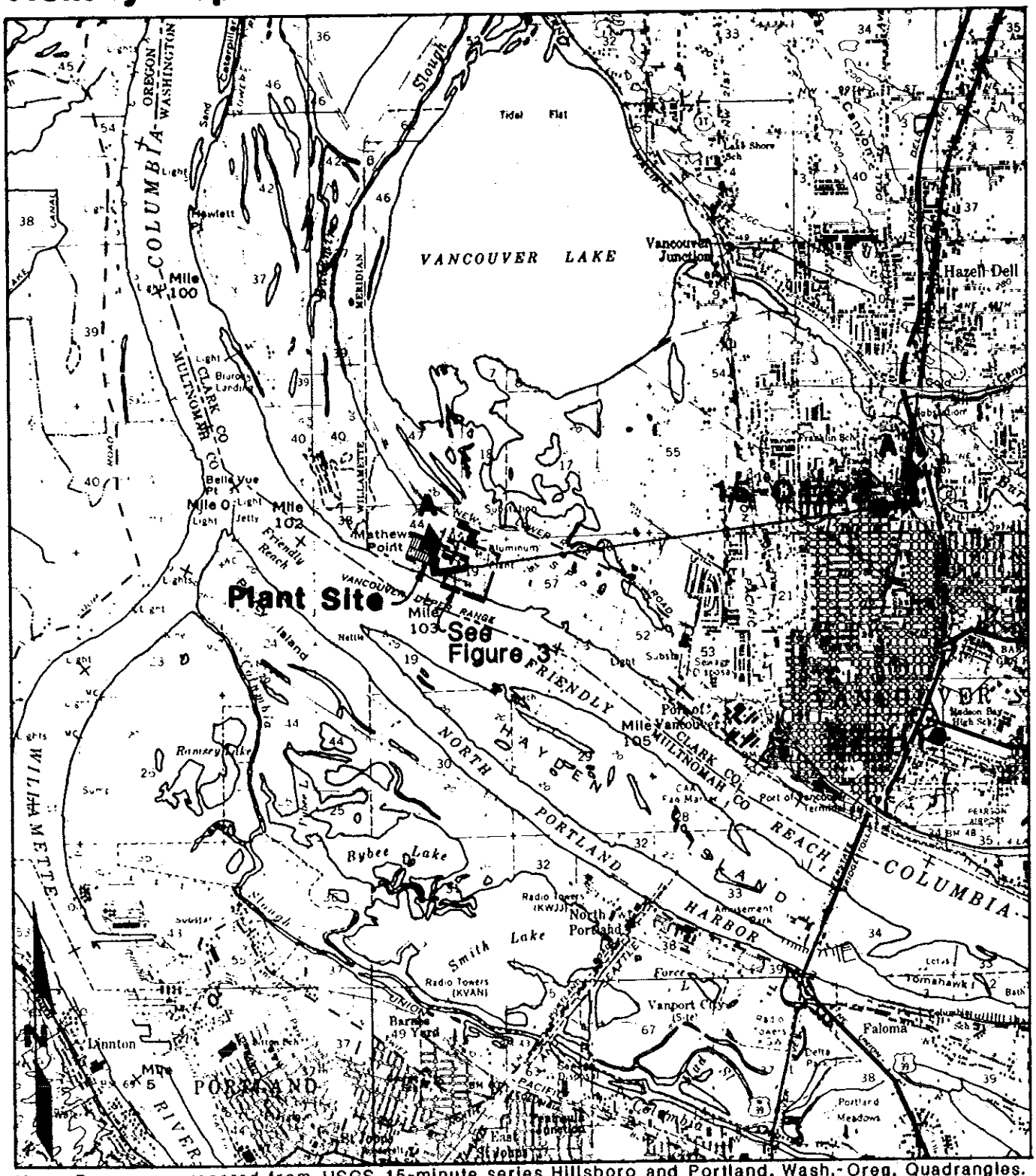
The Alcoa Vancouver NPL Site is located approximately three miles northwest of downtown Vancouver, Washington and approximately 300 to 500 feet north of the Columbia River. The Site is found at the southeastern corner of the VANALCO smelter complex located at 5701 NW Lower River Road, Vancouver. The area is both industrial and agricultural. Figure 1 shows the site location.

2.2 SITE HISTORY

The Alcoa Vancouver facility was initially constructed in 1939 and 1940. It started production of aluminum in 1940. The smelter produces approximately 325 tons of aluminum per day. It is presently owned by Vanalco, Inc.

The facility produces aluminum using the Hall-Heroult electrolytic cell process. The aluminum production process is an electrochemical reduction reaction. Aluminum oxide (alumina ore) is dissolved in a bath of molten salts (cryolite) at an operating temperature of approximately 1760 degrees F. Electric current is passed through the cell causing the reduction of the alumina to aluminum.

Vicinity Map



Note: Base map prepared from USGS 15-minute series Hillsboro and Portland, Wash.-Oreg. Quadrangles.

A — A' Cross Section Location and Designation (See Figure 8)

● 27-H1 City of Vancouver Municipal Well Location

0 1 2

Scale in Miles

J-1759-02 June 1987

HART-CROWSER & associates inc.

Figure 2

The entire process occurs in a rectangular steel shell or pot that is lined with insulation materials and carbon, known as potlining. Uncontaminated alumina ore is used for a portion of the insulation. The cathode of the aluminum reduction cell is the carbon on which the pool of molten cryolite/aluminum mixture rests. The anode, in the case of the Vancouver plant, is a block of carbon suspended in the molten cryolite/aluminum bath. Alumina is periodically added to the mixture to maintain the concentration of dissolved alumina within the desired range. The aluminum is intermittently drawn off from the bottom of the molten cryolite/aluminum bath. The molten aluminum is collected in large ladles and then cast as the final products at a casthouse facility.

In order to retain purity of the aluminum product and structural integrity of the cell, molten aluminum must be kept isolated from the iron shell of the pot. Over the life of the cathode, the carbon lining materials become impregnated with the cryolite electrolytic solution. As the cryolite solution is absorbed into the cathode, the integrity of the lining can be reduced and cracks or heaving of the carbon lining can occur. A pot is used until the integrity of the lining is deteriorated by the corrosive bath and aluminum mixture. At this time the pot is drained, the carbon lining and insulation is removed and then replaced. The carbon potlining that is removed from failed pots is known as spent potlining (SPL). The SPL is a listed (K088) dangerous waste. At Vancouver smelter, the pots are not removed from the aluminum smelting building during the carbon removal and relining process. The carbon and insulation are removed in place and the steel shell is then removed for repair by an overhead crane.

The spent potlining (SPL) and reclaimed alumina insulation (RAI) materials from failed pots were temporarily stored on-site during the early years of the Vancouver smelting operation. The spent potlining was stored in the same general area now occupied by the existing waste piles. Starting in the early 1950's, the potlining was hauled off site to the Reynolds recycling facility at Longview, Washington. The potlining was loaded onto railway cars using tracks that are located next to the existing piles. The shipping of potlining for recycling purposes continued until 1973.

Recycling of potliner stopped in 1973 and between 1973 and 1981, the current waste piles were formed on the site. There are three waste piles on the site. The largest pile contains spent potlining materials that were produced between 1973 and 1978. The next largest pile contains RAI material and minor amounts of potliner that were generated between 1977 and 1978. The two piles were covered in 1978 with a 12 mil plastic liner and up to two feet of clean sand. RAI and SPL materials that were generated between 1978 and 1981 were combined into a third pile that was covered in 1981. In 1977 Alcoa installed nine shallow monitoring wells in the vicinity of the three waste piles. Sampling of these wells subsequently identified the presence of cyanide in the ground water. From 1981 until 1983 that spent potliner was shipped to the Wenatchee smelter and disposed of in a storage pile Starting in 1983 the wastes were shipped to the hazardous waste landfill at Arlington, Oregon. The Wenatchee storage pile was clean closed in 1989 and the potlining from the Vancouver smelter was disposed of in the dangerous waste landfill in Arlington, Oregon.

The Department of Ecology became aware of the site in 1981. With Ecology involvement, Alcoa installed additional monitoring wells bringing the total

number of wells at the site to 30. A public meeting was held during the winter of 1982 to inform the public of the cyanide contamination at the site. In 1982, the Department felt that no further action was warranted at the site because of the mitigating actions undertaken by Alcoa. It was felt that the cover was sufficient to prevent further leaching of cyanide into the groundwater. Work and analysis of the groundwater problem completed in 1982 indicated that cyanide levels should diminish due to the covering of the waste piles.

Statistical analysis of ground water data in 1986 using chemical analyses from the period of 1981 through 1985 indicated that cyanide levels in several monitoring wells were not decreasing but instead increasing. As a result of the groundwater contamination, Ecology, through a water quality order (DE86-419), directed Alcoa to conduct a Final Assessment Report and Remedial Action Plan for the site. In August of 1986 Alcoa finished preliminary assessment of groundwater conditions at the Vancouver site. The report documented the cyanide and fluoride contamination of soils and ground water at the site. Alcoa submitted to Ecology the final Remedial Investigation and Feasibility Study (RI/FS) concerning the site in July of 1987. In 1988, Ecology reviewed the proposed remedial actions presented in the feasibility study and indicated to Alcoa that the three potliner piles could not remain in place on site, since under Washington Dangerous Waste regulations, the material was presumed to be extremely hazardous waste. As of 1988, the potliner waste in the piles had not been characterized but the approximate composition of the piles could be estimated from fresh potliner that originated from the Vancouver smelter. This potliner was classified as extremely hazardous waste due to fish bioassay failure. In 1989, Alcoa sampled and analyzed potliner from the three waste piles. The potliner was characterized as dangerous waste due to failure of the rat bioassay test. The material passed the EP Tox leach test for metals and one sample out of 24 samples failed the fish bioassay test. In 1990, Alcoa agreed to move the three waste piles to a secure hazardous waste facility and remediate the site. In January of 1991 Alcoa delivered to Ecology a proposed consent decree for the cleanup of the site.

In 1985 EPA completed a Preliminary Assessment and ranked the site. The site scored (57.87) high enough to be nominated to the NPL. EPA began the process to place the site on the NPL in 1985. The site was listed on the NPL in February of 1990.

Staff from the Agency for Toxic Substances and Disease Registry (ATSDR) conducted a site visit in March of 1989. The Agency reviewed data from Ecology files and the site RI/FS submitted by Alcoa. Based on the reviewed information, ATSDR concluded the site is of <u>potential</u> public health concern because humans may be exposed to hazardous substances at concentrations that may result in adverse health effects. The Agency recommended that the following items be included in any cleanup actions at the site to lower the exposure potential to the public. The remedial action should be designed to prevent infiltrations of water into the piles and if the piles were moved ambient air sampling should be done to protect on site workers from a potential release of ammonia. Ground water monitoring should be continued and the Columbia River should be sampled to determine contaminant concentrations entering the river. The Agency in its evaluation did not find any extant documentation or indication in the information and data reviewed for the health assessment that human exposure to contaminants at levels of public health concern has occurred or is occurring. The ATSDR does

not plan to conduct follow up health studies because no significant public health concerns have been documented on the site. If data become available suggesting that human exposure to significant levels of hazardous substances is currently or has occurred in the past, ATSDR will reevaluate the site. The cleanup alternative selected for the site addresses all of the concerns of the ATSDR.

2.3 CURRENT STATUS

The site is currently surrounded on the northern and western boundaries by an active aluminum smelter. The smelter domestic waste water treatment plant is located on the southeastern side of the site. The site is located within the flood control dike system that surrounds the smelter. Storm water is drained from the site by a series of storm drains and catch basins. The storm water system is connected to the plant waste water treatment system and is regularly monitored under the NPDES Permit issued to Alcoa for the smelter operation.

2.4 FUTURE USE

The Alcoa site has been used for industrial purposes since World War Two, and is currently zoned for heavy industry. Future use of the site is unknown at this time. The existing aluminum smelter located west of the site continues to operate. The property east of the site is being purchased by the Port of Vancouver. Development plans for this property are unknown. The area is changing from a mixture of agriculture and heavy industry to commercial and heavy industry.

RESULTS OF ENVIRONMENTAL STUDIES

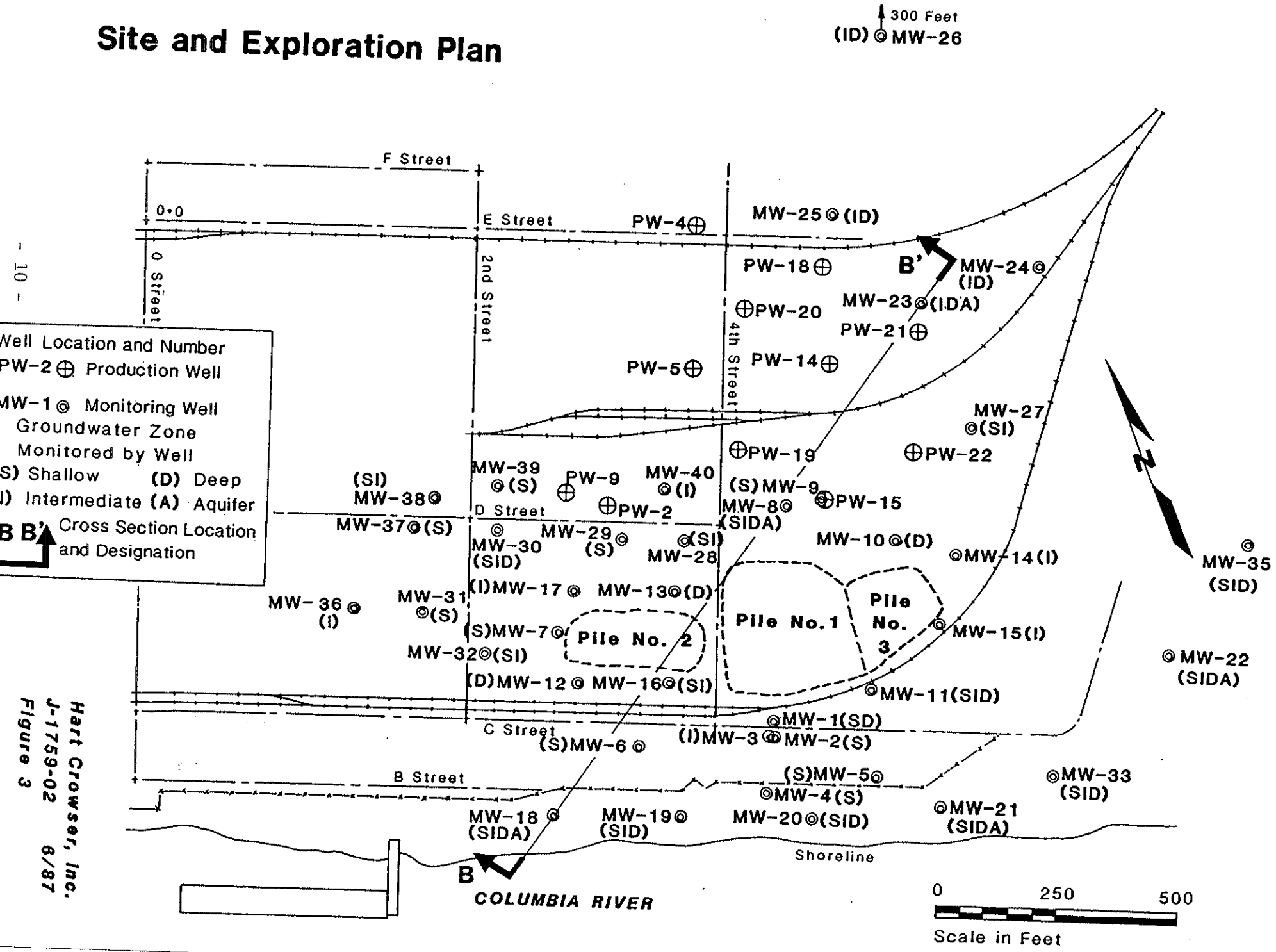
3.1 SITE CHARACTERIZATION

3.1.1 Surface Soil and Water Characterization.

The waste piles are located on the Columbia River lowland (Figure 2). The ground surface in the vicinity of the site is relatively flat with elevations increasing from approximately 20 feet in the south along the river to 30 to 40 feet in the northern and eastern portions of the plant. The major topographic features of the plant site are the covered waste piles and flood control dikes. Surface water occurs on site as a result of precipitation. Surface drainage in the immediate vicinity of the waste piles is generally to the south toward a low area that contains a perforated pipe drainage system. The water flow from the perforated pipes discharges into a sump which is connected to the aluminum plant water treatment system. The flood control dikes that surround the plant generally keep all surface water drainage on the plant site and directed to the plant water treatment system.

Analysis of standing surface water around the piles range from < .005 mg/l to .031 mg/l. cyanide. All surface water drainage around the site is directed into

Site and Exploration Plan



Hart Crowser, Inc.
J-1759-02 6/87
Figure 3

the plant water treatment system. Analysis of the Columbia River in the vicinity of the piles is <.005 mg/l cyanide both down and up stream of the site. Fluoride measurements in the Columbia River up stream of the site are higher (.16 mg/l) than those measurements down steam of the site (.15 mg/l). U.S.G.S. data of the Columbia River at The Dalles, Oregon ranges from .10 to .70 mg/l fluoride. U.S.G.S. water quality data from the Columbia River at Bradwood, Oregon below both the Reynolds smelter at Longview, WA and the Vanalco smelter at Vancouver ranges from 0.1 to 0.7 mg/l fluoride.

Data collected during the preliminary assessment indicates that small amounts of potlining may be present in the soils east and west of the waste piles. Detailed sampling for cyanide and fluoride was conducted southeast of the waste piles. In this area total cyanide values in soil range from < 0.10 mg/kg to 0.44 mg/kg and fluoride values range from < 2.0 mg/kg to 43.0 mg/kg. There has been no surface soil sampling under the waste piles. Soil sampling under the three piles will be completed during the remediation.

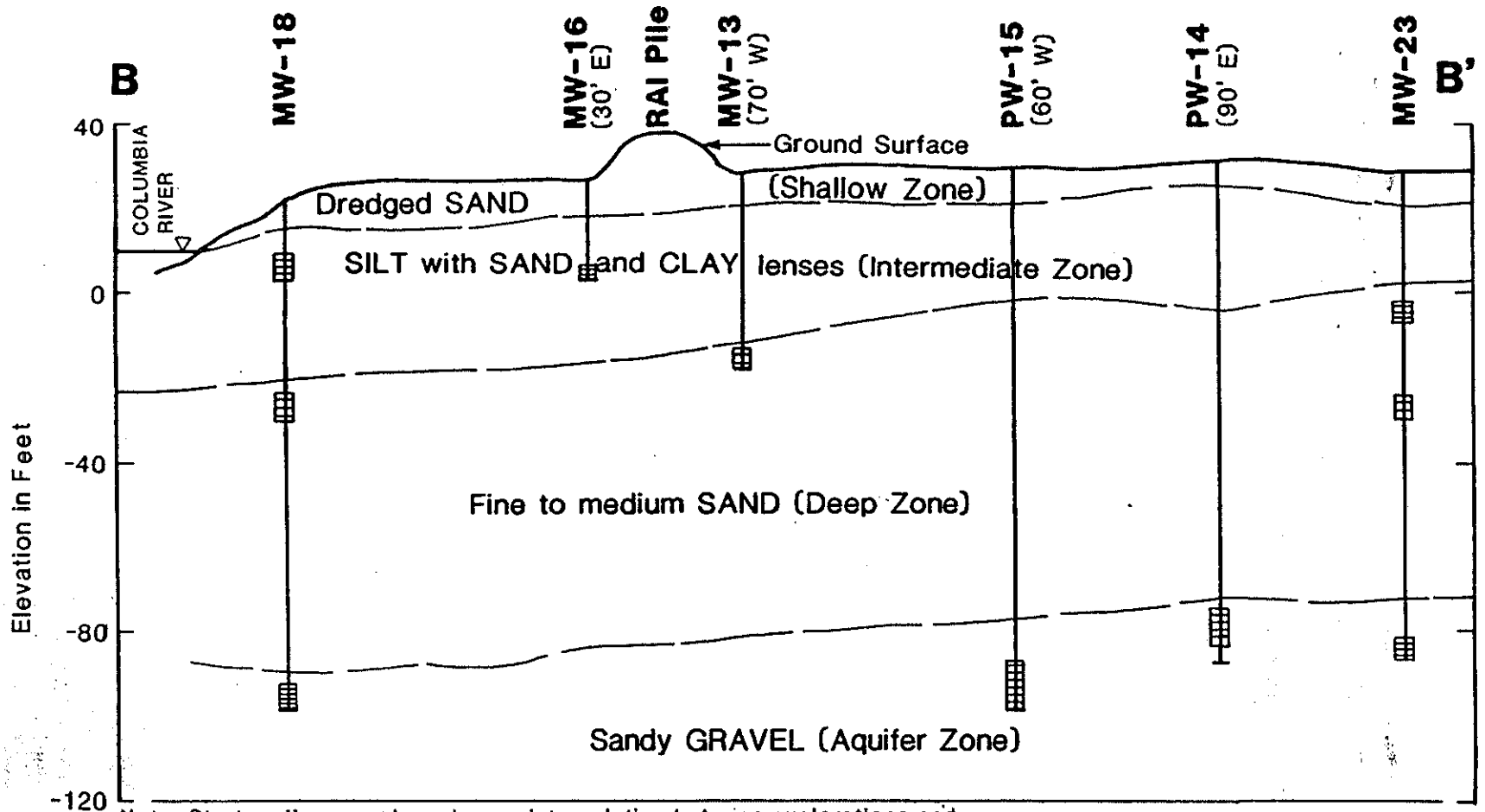
Sampling of soils from the shallow zone borings shows contamination in the vicinity of the piles generally southward to the Columbia River. The shallow zone consists of material from the surface to a depth of 10 feet. Average soil sample values in the shallow zone range from non detection to 3.17 mg/kg cyanide and from 5.00 mg/kg to 1300 mg/kg fluoride. Spot high values are near 1500 mg/kg fluoride and 55.9 mg/kg cyanide. One outlier sample contains 6900 mg/kg fluoride. The area of shallow zone fluoride contamination spreads from the piles southward to the Columbia River and northwestward toward the plant. The outlier sample (6900 mg/kg fluoride) is thought to be a result of surface contamination of the sample with potliner material. The shallow zone cyanide contamination spreads southeastward to the Columbia River but does not appear to follow the fluoride soil contamination northward to the plant.

3.1.2 Hydrogeologic and Subsurface Sediment Characterization.

The groundwater system at the site can be divided into four general zones: the shallow zone, the intermediate zone, the deep zone and the aquifer zone (Figure 3). The shallow zone consists of approximately 10 feet of dredged sand. The intermediate zone consists of 30 to 40 feet of silt with lenses of clay and fine sand. The top of the intermediate zone was the original ground surface before the dredged sands were placed over the site. The deep zone consists of fine to medium sand approximately 40 feet thick. The aquifer zone is comprised of coarse sand and gravel between 100 and 140 feet below the surface. Figure Two shows monitoring well locations on the site. Detailed sampling information for soil and water is given in Appendix B.

During the wetter months of the year ground water becomes perched in the dredged sands of the shallow zone. This perched ground water initially drains to low spots in the original site topography. After the low spots become filled with water, the ground water flows are toward the Columbia River. The flow directions in the material change due to amount of water in the unit. The horizontal hydraulic conductivity of the dredged sands is in the range of 10^{-3} to 10^{-4} cm/sec. Good aquifers generally have hydraulic conductivities of 10^{-3} to 1. Sediments in the shallow zone are contaminated by fluoride and cyanide. Levels

Generalized Hydrogeologic Units



Note: Stratum lines are based upon interpolation between explorations and represent our interpretation of subsurface conditions based on currently available data.

MW-18 Monitoring Well Number

PW-15 (60' W) Production Well Number Offset Distance and Direction

Well Location

Screen Section

Vertical Exaggeration x 5

Horizontal Scale in Feet

0 200 400

0 40 80

Vertical Scale in Feet

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Figure 3

of contamination in sediment of the zone range from average concentrations of 14.5 to 3450 mg/kg fluoride and .005 to 282 mg/kg total cyanide. Total cyanide and fluoride concentrations from one soil and two water sampling events (1986 and 1907) are given in Appendix B.

The flow through the intermediate zone silts is primarily vertical. The presence of contamination in this unit is due to downward flow from the shallow zone sands and the potliner piles rather than horizontal flow. The horizontal hydraulic conductivity of the intermediate zone silt is 10^{-4} to 10^{-6} cm/sec. Poor aquifers generally have hydraulic conductivities of 10^{-3} to 10^{-6}. Laboratory tests of the intermediate zone indicate that vertical conductivities of 10^{-7} to 10^{-8}. The ability of the small individual sand and silt units in the zone to produce water is highly variable. The two pump tests well were completed in the zone show this variability. The pump test wells were placed approximately 220 feet apart. The first test well did not produce water after bailing (< 0.07 gpm) while the second test recovered quickly after bailing and produced greater than five gallons per minute during the test. Hydraulic conductivity was calculated to range from 1.11×10^{-2} to 1.8×10^{-2} in the second well. Hydraulic conductivities of good aquifers range from 10^{-3} to 1 cm/sec. Sediments in the zone are contaminated by cyanide and fluoride. Levels of cyanide in sediments average from non detection to 91.9 mg/kg and levels of fluoride in sediments average from 3.9 to 1270 mg/kg. Detailed sampling data for two sampling events is given in Appendix B.

Ground water flow directions in the deep sand zone are south toward the Columbia River. Chemical dispersion data also indicates a flow direction to the south. Continuous water level measurements taken in the deep zone indicate that Columbia River tidal influence is present in the hydrologic unit. The hydraulic conductivity of the deep zone sand unit is 10^{-2} to 10^{-4} cm/sec. This represents values commonly found in good aquifers. The deep zone shows low concentrations of cyanide and fluoride in sediments. Cyanide averages in sediments range from non detection to 1.48 mg/kg and fluoride averages in sediments range from 2.3 to 22.6 mg/kg. Detailed sampling data for cyanide and fluoride in the deep zone is given in Appendix B.

Ground water flow directions in the aquifer zone are to the southwest, similiar to flow directions in the deep zone. There are two external influences on flow directions in the aquifer zone, the Columbia River and the Alcoa water supply wells. The production wells are located 100 to 140 feet north of the potliner piles. Data from pumping tests in 1954 indicate that the transmissivity of the aquifer zone ranges from two to four million gallons per day per foot. This is a very high value. Calculations of drawdown in the aquifer below the waste piles using the pumping data predict a 1.5 foot change due to pumping. The flat cone of depression predicted with the Theis analysis of drawdown indicates that the pumping activity will not significantly effect the flow directions of water deposits overlying the site. The pumping analysis also shows that the aquifer and deep zones behave independently as separate hydrologic units. The Columbia River has more influence on the hydrologic unit than the production wells. Continuous water level measurements of the aquifer zone show diurnal tidal fluctuations. The hydraulic conductivity of the aquifer zone in 10^{-2} to 10^{-3} cm/sec. Sediments from the aquifer zone have very low concentrations of cyanide and fluoride. The average concentrations of cyanide in sediments from the aquifer zone range from non detection to .075 mg/kg. The average concentrations

of fluoride in sediments in the zone range from 1.7 to 4.65 mg/kg. Detailed sampling data from water and soils in the aquifer zone is given in Appendix B.

3.1.3 Waste Pile Characterization.

Approximately 66,000 tons of waste materials are reported by Alcoa to remain on site in three waste piles. Of the 66,000 tons of material, approximately 10,000 tons of the material is present in a reclaimed alumina pile, approximately 48,000 tons of the material is found in the large potlining pile and approximately 8,000 tons is found in the second potlining pile. No detailed chemical analysis of spent potlining or reclaimed alumina insulation from the waste piles has been completed to date. Only selected chemicals of concern have been analyzed. The approximate composition of the material can be estimated based on the knowledge of the composition of fresh potlining from the Vancouver smelter. Fresh potlining consists primarily of carbon, fluoride, oxides and nitrides, aluminum and sodium with minor amounts of calcium, silica, iron and cyanide. Reclaimed alumina insulation consists primarily of aluminum oxide. Selected analysis for cyanide of SPL from the three piles indicated that the potliner contains between 60 and 3500 mg/kg total cyanide. RAI material contains between 170 to 3400 mg/kg total cyanide.

At the time of the remedial investigation and feasibility study, no detailed sampling or dangerous waste testing of the materials in the piles had been completed. The piles were thought to contain material that was designated extremely hazardous waste based on tests conducted on freshly generated material in 1982 and 1983. Several years after the completion of the remedial investigation, Alcoa set up a sampling program to drill each pile and an analytical program to collect samples for dangerous waste characterization. Alcoa tested the material using EP Tox leach procedure, fish bioassay, and acute oral rat toxicity testing. Table One shows the results of this testing program. Alcoa collected 24 large composite rotary drill samples for testing. All but one sample out of twenty four passed both levels of the fish bioassay procedure. One sample failed the 1000 mg/L fish bioassay but passed the 100 mg/L bioassay. All samples passed the EP Tox test and passed the 500 mg/ kg oral rat toxicity test. All seven of seven samples failed the 5 gm/kg oral rat toxicity test. The data is summarized in Table Two. Due to the failure of the oral rat toxicity test, the material is classified DW by Washington State Dangerous Waste Regulations.

3.2 CHEMICALS OF CONCERN AND RISKS TO HUMAN HEALTH AND THE ENVIRONMENT

During the RI/FS, Alcoa performed chemical analysis on the waste pile material, soil near the piles, surface water, and ground water. Analysis of the spent potliner and site soils for selected chemicals and the site ground water for priority pollutant chemicals revealed three major chemicals of concern, trichlorethene, fluoride and cyanide. Cyanide and fluoride were found in potliner, soils and ground water while trichlorethene was only found in ground water. Priority pollutant analyses of ground water indicated low concentrations of several other organic chemicals and metals. The ground water analyses were divided into five groups by test method: volatile organics, semi-volatile organics, pesticides and PCB's, cyanide, and metals analysis.

TABLE 1

Vancouver Spent Potlining Analytical Results

SAMPLE IDENTIFICATION	Total CN solid phase (mg/Kg)	D.I. LEACH TOTAL CYANIDE (mg/L)	D.I. LEACH @ FREE CYANIDE (mg/L)	150 L FISH BIOASSAY 100mg/L DEATHS	150 L FISH BIOASSAY 1000mg/L DEATHS	15 L FISH BIOASSAY 100mg/L DEATHS	15 L FISH BIOASSAY 1000mg/L DEATHS	RAT ORAL TOXICITY 500mg/kg DEATHS	RAT ORAL TOXICITY 5g/kg DEATHS	REACTIVE CYANIDE (mg/Kg)	REACTIVE SULFIDE (mg/Kg)	EP TOX LEACHATE CONCENTRATIONS As (mg/L)	Ba (mg/L)	Cd (mg/L)	Cr (mg/L)	Pb (mg/L)	Hg (mg/L)	Se (mg/L)	Ag (mg/L)
SPL-1-SW Upper	960	38	1.2	** 0	0	NP	NP	NP	NP	4	< 10	< .008	< .008	< .004	0.024	< .07	< .0002	0.004	< .008
SPL-1-NW Lower	990	43	1.6	0	1	NP	NP	0	9	< .5	< 10	0.026	0.111	< .004	0.028	< .07	< .0002	< .003	< .008
SPL-1-NE Upper	690	13	0.95	0	0	0	0	NP	NP	14	< 10	< .003	0.022	< .004	0.037	< .07	0.0003	< .003	< .008
SPL-1-SE Lower	960	44	2.2	0	1	NP	NP	0	9	3.6	140	0.024	< .008	< .004	0.014	< .07	0.0007	0.013	< .008
SPL-3-SW Upper	80	0.44	0.39	0	0	1	0	NP	NP	4.3	14	< .003	0.403	0.019	0.011	< .07	< .0002	< .003	< .008
SPL-3-NW Lower	250	2	1.5	1	1	NP	NP	0	10	12	19	< .003	0.418	0.011	0.027	< .07	< .0002	< .003	< .008
SPL-3-NW Lower(dup)	250	4.9	1.5	--	--	--	--	--	--	12	40	< .003	0.577	0.014	0.02	< .07	< .0002	< .003	< .008
SPL-3-NE Upper	800	35	4.9	0	0	NP	NP	0	9	9.4	15	0.054	0.028	< .004	0.014	< .07	< .0002	< .003	< .008
SPL-3-SE Upper	140	1.8	1.8	0	0	NP	NP	NP	NP	14	< 10	< .003	0.898	< .004	< .007	< .07	< .0002	< .003	< .008
RAI-2-SW Upper	380	5.5	4.2	* 1	2	NP	NP	0	10	20	20	0.004	0.042	< .004	< .007	< .07	0.0003	< .003	< .008
RAI-2-NW Lower	2700	71	16	0	13	0	10	0	10	19	< 10	0.015	0.098	< .004	0.009	< .07	0.0004	0.03	< .04
RAI-2-NW Lower(dup)	2300	71	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RAI-2-NE Lower	230	4.6	1.9	0	1	NP	NP	NP	NP	6.1	< 10	0.004	0.387	0.008	0.012	< .07	0.0004	0.003	0.011
RAI-2-SE Upper	170	8.6	2.7	1	0	NP	NP	NP	NP	7.6	< 10	0.03	0.05	< .004	0.012	< .07	< .0002	< .003	< .008
Background Upper	18	< .01	< .01	* 1	0	NP	NP	0	0	< .5	15	< .003	0.437	0.004	< .007	< .07	< .0002	< .003	< .008
RCRA THRESHOLD										250	500	5	100	1	5	5	0.2	1	5
SPL-1-SW Lower	1800	72	0.04	NP	0	NP	NP	NP	NP										
SPL-1-NW Upper	620	13	<.01	NP	1	NP	NP	NP	NP										
SPL-1-NE Lower	2400	74	1.6	NP	2	NP	NP	NP	NP										
SPL-1-SE Upper	3500	26	4.7	NP	5	NP	NP	NP	NP										
SPL-3-SW Lower	100	1.8	0.7	NP	1	NP	NP	NP	NP										
SPL-3-NW Upper	60	0.19	0.39	NP	0	NP	NP	NP	NP										
SPL-3-NE Lower	2600	65	2.5	NP	0	NP	NP	NP	NP										
SPL-3-SE Lower	130	0.77	0.22	NP	1	NP	NP	NP	NP										
RAI-2-SW Lower	770	16	5.5	NP	4	NP	NP	NP	NP										
RAI-2-NW Upper	2900	67	12	NP	0	NP	NP	NP	NP										
RAI-2-NW Upper(dup)	3400	83	11	NP	--	--	--	--	--										
RAI-2-NE Upper	340	22	2.2	NP	1	NP	NP	NP	NP										
RAI-2-SE Lower	1800	38	6	NP	0	NP	NP	NP	NP										
Background Lower	2	<.01	<.01	NP	0	NP	NP	NP	NP										
STATE THRESHOLD				21	11	11	11	3	3										

Analytical notes:
@ cyanide by microdiffusion
* 1 additional by jumping out of tank
** 5 additional by jumping out of tank
NP; Not Performed

Keith D. Schmidt revised 90-05-11

There are six media of concern which may pose risks to human health or the environment at the Alcoa site. These are contaminant wastes (potliner), soil, ground water, sediment (soils found beneath the surface of water bodies), surface water, and air. The interim action of covering the potliner piles with a 12 mil plastic cover and two feet of sand has reduced the immediate environmental risk of the cyanide and fluoride from the potliner wastes and the generation of hydrogen cyanide from the breakdown of cyanide complexes in the potliner. The soil, ground water, sediment and surface water media have not been addressed to date.

3.2.1 Potliner Analysis.

Fresh potliner from the Vancouver smelter has been characterized using the EP Toxicity technique, chemical testing, rat bioassay, and fish bioassay. The chemical testing of potliner indicates that there are two chemicals of concern: fluoride and cyanide. Results from the potliner chemical testing are given in Table One. Rat bioassays indicate that the potliner is dangerous waste.

3.2.2 Soil Analysis.

Subsurface soil samples were collected during the installation of ground water monitoring wells on the site. Laboratory analyses were preformed on 99 soil samples. The soils were analyzed for cyanide and fluoride. Additional near surface soil samples and catch basin samples were also collected from the site and analyzed for cyanide and fluoride. Soil samples from the shallow and intermediate zones show significant cyanide and fluoride contamination. Samples from surface soil samples show some cyanide and fluoride contamination. The surface soil sampling program is incomplete. Soil samples from under the waste piles will be collected after the waste piles are removed during the remediation.

3.2.3 Surface Water Analysis.

Standing surface water in the vicinity of the waste piles was analyzed for total cyanide. Values range from less than 5 ppb to 37 ppb total cyanide. Samples of the Columbia River at the site and up steam from the site were also collected. The Columbia River analysis was less than 5 ppb total cyanide.

3.2.4 Ground Water Analysis.

Ground water is collected from 19 monitoring wells and four production wells quarterly and analyzed for total cyanide, free cyanide, and fluoride. Eleven monitoring wells were analyzed for priority pollutants during the RI/FS. Samples were analyzed for priority pollutants in accordance with Test Methods of Evaluating Solid Waste (SW-846). A complete list of the analytes that were tested is given in the RI/FS. The specific chemicals detected in the priority pollutant chemical scan above trace amounts are given below in Table Two.

TABLE TWO
Ground Water Priority Pollutant Analysis

Hydrologic Zone	Contamination Range Low ug/L	Contamination Range High ug/L	Number of Wells Detected	Number of Wells Sampled
Shallow Zone				
Organics				
Acetone	L/1	17	1	2
Bis (2-ethylhexl) Phthalate	L/1	2	1	2
Endrin acetone	L/0.04	0.04	1	2
Metals				
Arsenic	L20.0	40.0	1	2
Cadmium	L 1.	1.	1	2
Chromium	L 1.	4.	1	2
Copper	25.	43.	2	2
Nickel	L 2.	23.	1	2
Zinc	13.	32.	2	2
Total Phenol	L 5.	--	0	2
Intermediate Zone				
Organics				
Methylene Chloride	Trace	140.	4	4
Acetone	6.	28.	4	4
Naphthalene	L 1.	3.	1	4
2-methylphenol	L 1.	19.	1	4
Metals				
Arsenic	L20.	350.	3	4
Cadmium	L 1.	L10.	0	4
Chromium	L 1.	48.	3	4
Copper	10.	240.	4	4
Nickel	L 2.	52.	2	4
Zinc	26.	65.	4	4
Total phenol	L 5.	100.	3	4

Deep Zone

Organics

Methylene chloride	53.	73.	2	2
Acetone	8.	9.	2	2
Bis (2 methylhexyl) phthalate	6.	13.	2	2

Metals

Arsenic	L20.	L20.	0	2
Cadmium	L 1.	L 1.	0	2
Chromium	L 1.	L 1.	0	2
Copper	2.	3.	2	2
Nickel	L 2.	L 2.	0	2
Zinc	15.	36.	2	2
Total phenol	L 5.	L 5.	0	2

Aquifer Zone

Organics

Trichloroethylene	L 1.	20.	1	2
Endrin Ketone	L 0.04	0.13	1	2

Metals

Arsenic	L20.	L20.	0	2
Cadmium	L 1.	L 1.	0	2
Chromium	L 1.	L 1.	0	2
Copper	3.	3.	2	2
Nickel	L 2.	L 2.	0	2
Zinc	17.	54.	2	2
Total phenol	L 5.	L 5.	0	2

Alcoa is examining the ground water contamination of trichloroethylene (TCE) as a separate Model Toxics Control Act clean up. An RI/FS is currently being conducted on the site. The source of the TCE contamination appears to be a separate site adjacent to the NPL site.

3.2.5 Cyanide and Fluoride Contaminant Sources.

There are three possible fluoride and cyanide contaminant sources at the site. These include 1) the waste piles 2) waste materials mixed with soil in the vicinity of the waste piles and 3) contaminants previously absorbed onto soil that are now being released.

One contamination source is the potliner pile itself. Significant amounts of precipitation may infiltrate into potlining and RAI materials under the present conditions. Run off collects along the base of the piles and likely infiltrates

into the waste piles. The top liner is torn and separated in several places on the piles. Water can infiltrate along these leaks in the liner.

A second source of contamination is a small amount of potliner that is mixed with soil near the piles. Data indicates that small amounts of potliner and RAI materials are located in the soils east and west of the waste piles.

A third source of the contamination are soils beneath and down gradient of the piles that many have absorbed contaminants from the ground water before the piles were covered.

It is likely that all three sources of contamination contribute to the ground water degradation at the site. The largest source, by several orders of magnitude, is the result of rain water infiltration into the waste piles.

3.3 MEDIA CLEANUP LEVELS

3.3.1 Selection of Method for Establishing Cleanup Levels

The Model Toxics Control Act Cleanup Regulation provides three methods for determining cleanup levels at a contaminated site. The methods are known as Method A, Method B, and Method C. Method A applies to relatively straight forward sites that involve only a few hazardous substances. The method defines cleanup levels for 25 of the most common hazardous substances. The method also requires that the cleanup meet promulgated federal and state regulations such as maximum contaminant levels established by the clean water act. Method B is a standard method that can be used at all sites. The clean up levels are set using a site risk assessment which focuses on site characteristics or concentrations of individual hazardous substances established under applicable state and federal laws. Method C is similiar to Method B. The main difference is that the life time cancer risk is set at a lower number. The method can be only used when either Method A or Method B are technically impossible, the site is defined as an industrial site, or where the attainment of Method A or B cleanup levels has the potential for creating a significantly greater overall threat to human health and the environment. In addition, Method C also requires that the person undertaking the action comply with all applicable state and federal laws.

The Alcoa site is not considered a routine site where Method A can be used. The two contaminants of concern, fluoride and cyanide are not found in the Method A table. Method C can not be used on the site because the site is not defined as a MTCA industrial site, Method B levels are not technically impossible to achieve at the site, and achieving Method B levels will not cause greater environmental harm than not achieving them. Only Method B can be used at the site. The contaminants of concern at the site are cyanide and fluoride. Method B levels for the cleanup are discussed below.

3.3.2 Ground-Water Cleanup Levels

The groundwater cleanup levels at the Alcoa site were set according to WAC 173-

340-720, "Ground Water Cleanup Standards". The ground water at the site is regulated as a source of drinking water. Method B, WAC 173-340-720 (3) (a) (i) establishes levels using concentrations established under applicable state and federal laws, including the requirements in subsection 2 (a) (ii). Subsections 2 (a) (ii) requires cleanup standards as stringent as concentrations established in applicable state and federal laws including the Safe Drinking Water Act maximum contaminant levels (MCL), the Safe Drinking Water Act maximum contaminant level goals for noncarcinogens, and the maximum contaminant levels established by the state board of health. There is no promulgated federal maximum contaminate level (MCL) for cyanide. The Safe Drinking Water Act maximum contaminant level for cyanide is proposed as 0.20 mg/l (55 Fed. Reg. 30370 (1990)). The analytical method used in the July proposed rule was total cyanide. In November of 1991 the method of measuring cyanide in the proposed rule was changed from total cyanide to cyanide amenable to chlorination. The analytical method to be used for the determination of cyanide is SM 4500-CN-G or cyanide amenable to chlorination. The Method B level of 0.2 mg/l cyanide amenable to chlorination as established by the proposed MCL for cyanide is the regulatory limit that shall be used as the cleanup standard in the Alcoa cleanup. The Safe Drinking Water Act maximum contaminant level for fluoride has been established at 4.0 mg/l. The level of 4.0 mg/l fluoride shall be used as the cleanup standard at the Alcoa site for fluoride. The ground water point of compliance for the Alcoa Vancouver site is the entire site.

3.3.3 Surface Water

All surface water from the Alcoa site is collected within the site and discharged via pipes and ditches into the nearby aluminum smelter storm water drainage system. The smelter site, including the waste piles, is surrounded by a dikes. The storm water drainage system moves water that originates in the smelter out of the dike system and into the Columbia River. The drainage system is regulated through the aluminum smelter NPDES permit. The current permit limit for cyanide is .15 lbs/day monthly average with a daily maximum of 0.4 lbs./day. The flow rate entering the Columbia River from the smelter is 2.2 to 4.5 million gallons per day (mgd). This will result in monthly average cyanide concentrations in the waste water outfall of 0.0081 mg/l at 2.2 mgd and 0.004 mg/l at 4.5 mgd; and daily maximum cyanide concentrations of 0.0218 mg/l at 2.2 mgd and 0.0107 mg/l at 4.5 mgd. The current permit limit for fluoride is 100 lbs/day monthly average with a daily maximum limit of 200 lbs/day. This will result in monthly average fluoride concentrations in the waste water outfall of 5.45 mg/l at 2.2 mgd and 2.66 mg/l at 4.5 mgd; and daily maximum fluoride concentrations of 10.9 mg/l at 2.2 mgd and 5.33 mg/l at 4.5 mgd.

The smelter November 1987 to March 1989 fluoride average was 35.7 lbs./day with a monthly range of 21.1 to 85.3 lbs/day. The flow rate during this period averaged 3.3 mgd with a monthly range of 2.2 mgd to 4.0 mgd. This will result in a monthly average fluoride concentration of 1.297 mg/l with range of 1.150 mg/l to 2.557 mg/l. These numbers do not consider any individual daily maximum loadings, only monthly averages.

It is not expected that storm water originating from the remediated site will cause permit violations. For the purposes of the cleanup, the surface water from the site will be regulated via the NPDES Permit.

3.3.4 Soil Cleanup Levels.

There are no soil cleanup standards established for the site. Contaminated soils presently exist under the potliner piles. These contaminated soils will be contained using a 40 mil PVC liner covered by clean soil and vegetation. There will be no direct contact exposure routes to contaminated soils on the site when the remediation is complete. The ground water exposure route for vadose soils under the piles will be limited by the cover system. The MTCA Regulation requires that where containment is selected, a compliance monitoring plan must be designed to ensure the long-term integrity of the containment system. Long-term monitoring and institutional controls (deed restrictions) will be implemented to assure the integrity of the cover system. Deed restrictions will not be removed from the site until applicable cleanup standards for soils are met.

SUMMARY OF ALTERNATIVE CLEANUP ACTIONS

4.1 INTRODUCTION

This section of the CAP summarizes the cleanup actions considered by Alcoa in the Feasibility Study. The Feasibility Study was completed in 1987 prior to the enactment of the Model Toxics Control Act. The Feasibility Study follows guidelines established by the Environmental Protection Agency (EPA) for Superfund Cleanup activities. The method used in the Feasibility Study is compatible and consistent with the Model Toxics Control Act. Hence, actions selected in the Feasibility Study will comply with both Chapter 173-340 WAC, Model Toxics Control Act Cleanup Regulation and the Federal cleanup regulations.

The approach used to develop and evaluate remedial action alternatives included:

- Identifying and evaluating general response actions and possible remedial action technologies;
- Selecting the applicable technologies;
- Developing and evaluating remedial action alternatives from the different technologies.

Each individual component of a remedial action alternative was evaluated as to its individual components:

- Technical feasibility;
- Public and Environmental Health Impacts;
- Institutional Feasibility;

- Cost; and

- Effectiveness

The primary objective of the remedial actions is to minimize the generation of leachate, control the migration of contamination to the water table and reduce contamination migration to the Columbia River.

4.2 GENERAL RESPONSE ACTIONS

General Response Actions can be grouped into those actions which address either source control or manage contaminant migration via groundwater flow. Source control actions include:

- Preventing contact and infiltration of incident precipitation through waste materials and contaminated soil; and

- Controlling surface water run-on.

Management of contamination migration actions include:

- Groundwater diversion; and

- Pumping and treating.

4.3 REMEDIAL ACTION TECHNOLOGIES

Alcoa's detailed analysis of possible remedial action technologies is given in Chapter 3 and Chapter 4 of the site Feasibility Study. The rationale for inclusion or exclusion was based on implementation difficulty, contaminant characteristics, reliability of technology, health/safety factors and economics. Removal of contaminated soils below the waste piles was not considered a practicable remedial action technology because the cost removing the contaminated soils below the piles and within the water table was substantially disproportionate to the degree of protection that would be achieved by the action. Based on the screening of possible technologies, the following were considered to be applicable to the site conditions.

- o Capping (synthetic membrane, clay/soil admixtures, and asphalt) This would minimize the generation of leachate and subsequent contaminant migration to the water table by preventing incident precipitation from contacting the waste.

- o Waste Removal (landfilling, incineration, or treating in a fluid bed) This would eliminate the primary source of cyanide and fluoride from the site.

- o Grading, Vegetation, and Site Paving This would divert run-off and minimize infiltration into contaminated soils.

- o Ditching and Culverting This would minimize water infiltration into contaminated soil by diverting run-off out of the area.

- o Groundwater Diversion (slurry wall) This would slow down but not eliminate contaminant migration to the Columbia River.

- o Groundwater Pumping and Treatment This would reduce contaminant migration but would not reduce contaminant loading to the Columbia River because the treatment effluent has a higher concentration of contaminants than the groundwater that is presently flowing into the river from the site.

The following remedial action technologies were examined and excluded from further investigation.

- o Temporary Storage.

- o Ground water diversion using steel sheet piling and chemical or grout injections.

- o Physical treatment of waste and contaminated soils below the piles using solidification, gravity thickening, vitrification, bulk encapsulation or isolation, organic polymerization, dewatering, or thermoplastics.

4.4 REMEDIAL ACTION ALTERNATIVES

In Chapter 4 of the Feasibility Study, each of the technologies components are examined with respect to technical feasibility, public and environmental health, institutional issues, cost and effectiveness. One component alone would not be sufficient to provide the level of performance required to clean up the site. The preferred components were combined in various ways such that a range of levels of environmental protection as well as a range of associated costs are presented. Seven remedial action alternatives were developed based on the evaluation of the remedial action technological components. The alternatives are no action, on site containment, and waste removal. The alternatives with the estimated 1987 costs are summarized below:

Description	Estimated Cost
No Action	
o Continued groundwater monitoring	$ 308,000
On Site Containment	
o Earth cover with site grading	$ 1,360,000

o	Earth cover with site grading and paving	$ 1,680,000
o	Earth cover with site grading, paving, and groundwater pumping and treatment.	$ 3,610,000
o	RCRA designed composite earth cover consisting of composite clay/geomembrane system and groundwater pumping and treatment.	Not estimated

Waste Removal

o	Waste disposal in landfill and site grading	$ 12,500,000
o	Waste disposal in landfill and site grading/paving	$ 13,000,000
o	Waste disposal in landfill and site grading /paving, and groundwater pumping and treating.	$ 14,700,000

4.5 COMPARATIVE ANALYSIS OF CLEANUP ALTERNATIVES

The cleanup alternatives presented for the Alcoa site fall into three broad categories: 1) continued monitoring - no action, 2) on-site containment, and 3) source removal. Alcoa did not include waste reduction, minimization, or recycling criterion in the feasibility study because the criterion were not required until after the study was complete. The Department of Ecology requested that Alcoa consider storage and recycle of the potliner as a component of the cleanup alternative and construction of a RCRA cover as a component of the cleanup alternative in 1990 after the Feasibility Study was complete. Alcoa rejected the recycle component because of the current lack of a proven recycle cleanup technology and the potential of a land ban on the landfilling of potliner dangerous waste. The RCRA cover component was considered in one cleanup alternative scenario.

In addition to the criteria listed below, Alcoa examined the following cleanup alternative components: off-site incineration, fluid bed incineration, shallow slurry wall containment and deep slurry wall containment. Alcoa did not consider the two incineration treatment technologies because the processes are still in the experimental stages and require operational permits that are not in place. The costs of both technologies are significantly higher than the alternatives considered below. The deep and shallow slurry wall containment options were not considered as cleanup components because both technologies are marginal in cleanup effectiveness due to site specific characteristics and very costly. Each of the different cleanup alternatives considered for the site is discussed below with respect to its advantages and disadvantages. The Alcoa preferred alternative is source containment with earth cover, site grading and continued ground water monitoring. The Ecology preferred alternatives are (1) removal of

potliner to a storage building and recycle, containment or removal to a dangerous waste landfill of contaminated soils, continued ground water monitoring and institutional controls on land and water usage or (2) waste disposal in a dangerous waste landfill, site grading, cover with geomembrane/soil containment system, institutional controls on land and ground water usage, and monitoring. During negotiations Ecology added a third source containment alternative consisting of construction of a RCRA composite clay/geomembrane cover over the waste piles, site grading, shallow slurry wall barrier, and a pump and treat ground water removal system.

4.5.1 No Action

Continued groundwater monitoring. This alternative involves no action other than continued monitoring and testing of existing monitoring wells. This alternative does not meet the goal of overall protection of human health and the environment or compliance with federal and state laws. No action - continued groundwater monitoring is not an acceptable cleanup alternative.

4.5.2 Source Containment on Site

Earth Cover with Site Grading. This alternative consists of covering the piles with an earth cap of clay and sand, grading and diverting surface water via lined ditches, culverts, and below-ground drains that flow to the aluminum plant water treatment system and Columbia River outfall. A portion of the existing rail road track will be moved south 30 feet and ground water monitoring would continue. This alternative prevents some infiltration through the waste piles and reduces infiltration around the waste piles. Water ponding around the site would be eliminated. The alternative is equivalent in risk to removal but at lower cost. The major disadvantage to the alternative is that the source of the contamination will always remain in place next to the Columbia River. The waste pile cover is not a composite cover and will have some leakage into the groundwater. No treatment of groundwater contamination is considered. The contaminated soils above the water table are not contained. This is the Alcoa preferred alternative.

Earth Cover with Site Grading and Paving. This remedial action alternative consists of constructing all of the items of the Earth Cover and Site Grading alternative with the addition of asphalt paving the area around the site. This alternative would greatly lower infiltration into the soils surrounding the piles. This would further reduce the loading into the Columbia River. The area could be used for storage of moderately heavy loads. Once again the source of the contamination would remain in place next to the Columbia River and ground water would not be treated.

Earth Cover with Site Grading, and Pumping and Treating Groundwater. In this alternative the waste piles would be covered with a clay/soil earth cover and the surrounding site would be graded to drain off-site via lined ditches, culverts, and below-ground pipes that flow into the aluminum plant water treatment system. Contaminated ground water would be withdrawn from the deep zone and treated. Sludges generated by treatment would be disposed of in a landfill. Treated water would be disposed of into the Columbia River.

Groundwater monitoring would continue. The major advantage of this alternative is that the loading of cyanide and fluoride from surface sources would decline due to reduced infiltration into the contaminated soils beneath the waste piles. The loading of fluoride and cyanide to the Columbia River from the treatment system would be greater than the current loading from the site because the treatment effluent has a greater concentration of cyanide and fluoride than the current groundwater flow from the site. The effectiveness of the pump and treat system is very limited since it does not pull contaminants from the highly contaminated intermediate zone. Residuals from the pump and treat system would have to be disposed of in a dangerous waste landfill. The costs for the operation of the pump and treat system are relatively high. The source of the contamination remains on site.

RCRA Composite Clay/Geomembrane Cover, Site Grading, Shallow Slurry Wall Barrier, and Pump and Treat. This remedial action alternative was considered by Alcoa after the Feasibility Study was complete. The alternative consists of a composite clay/geomembrane cover with site grading and surface water diversion via lined ditches, culverts, and below-ground pipes. The contaminated shallow zone beneath the waste piles would be contained using a slurry wall. Contaminated ground water would be pumped from the deep zone and treated. Treated water would be disposed in the Columbia River. Groundwater monitoring would continue. The advantages of this alternative are similiar to the earth cover alternative advantages. The RCRA cover technology assures that precipitation will not enter the waste piles. The addition of a shallow slurry wall will prevent groundwater accumulation in the contaminated dredged sands beneath the piles and reduce the amount of leachate generated by infiltration through the silt layer. The major disadvantage of this alternative is that the source of the contamination remains on site and dangerous wastes are generated by the pump and treat facility. The loading of cyanide and fluoride in the Columbia River would increase over the short term. Costs to implement this remedial action are high.

4.5.3 Source Removal

Waste Disposal in Landfill and Grade Site. Waste piles would be excavated and taken to a dangerous waste landfill. The site would be graded and surface water would be removed from the site via lined ditches, culverts, and below ground drains. Surface water would be diverted to the plant treatment system and the Columbia River outfall. The removal of the source material lowers the risk of additional leachate being generated. Ground water monitoring would continue. There is still potential of leachate generation from the vadose zone soils found beneath the piles. The cost of removal is significantly higher than the cover options.

Waste Disposal in Landfill with Site Grading and Paving. Waste piles would be excavated and taken to a dangerous waste landfill. The site and adjacent roads would be graded and paved with asphalt. Drainage on site would be diverted to

the plant Columbia River outfall. Ground water monitoring would continue. The source of the contamination would be removed. The threat of further contamination of the ground water would be limited by reducing infiltration of precipitation through the site. The major disadvantage is high costs.

Waste Disposal in Landfill with Site Grading and Pumping and Treating Groundwater. The waste material would be excavated and removed to a dangerous waste landfill. The site would be graded and surface water would be diverted off-site via lined ditches, culverts, and below ground drains into the aluminum plant waste water treatment system. Contaminated groundwater would be pumped from wells installed to 80 feet, the top of the deep zone, and treated to remove cyanide and fluoride. Sludge from the treatment system would be disposed in a regulated landfill. Treated water would be disposed into the Columbia River. Groundwater monitoring would continue. The major advantage of the cleanup scenario is that the source material would be removed from the site and the movement of contaminants into the Columbia River would decrease from the site but increase from the treatment plant. The major disadvantages are cost and effectiveness. The treatment plant effluent loading of the Columbia River would be greater than the current groundwater loadings from the site. The site would be cleaned up faster, but the river would have higher contaminant loadings unless the treated water was diluted prior to entering the river.

SELECTION OF CLEANUP ALTERNATIVE

5.1 INTRODUCTION

The cleanup strategy proposed by Ecology is to combine source removal, institutional controls, and containment of contamination to provide for the protection of human health and the environment. This strategy assumes that the area around the site will be used for industrial or commercial purposes for the foreseeable future. Ecology combined portions of several of the cleanup alternatives to propose three preferred cleanup alternatives for the site. These alternatives are: 1) removal of the potliner to a storage building and recycle, containment or removal of contaminated soils below the waste piles, and institutional controls on site land and groundwater usage, 2) potliner waste disposal in a dangerous waste landfill, site grading, construction of a geomembrane/soil containment system, institutional controls on land and groundwater usage, and monitoring, and 3) covering of potliner piles with a RCRA composite clay/geomembrane cover, site grading, shallow slurry wall barrier, and a pump and treat groundwater removal system. The proposed cleanup alternative that was selected is described in more detail below.

5.2 SELECTED CLEANUP ACTION

The proposed cleanup action consists of waste disposal in a landfill, site grading and covering with an HDPE or PVC liner, and continued groundwater monitoring. Specifically:

-- Removal of approximately 66,000 tons (47,500 cubic yards) of spent

potlining and reclaimed alumina insulation.

-- Characterization of soils below existing potlining piles.

-- Capping with a 50 mil HDPE or 40 mil PVC liner and covering with two feet of clean sand with top soil. Revegetating area.

-- Fence and grade site to drain.

-- Institutional controls to prevent the disruption of the liner or withdrawal of groundwater from the contaminated plume.

-- Continued groundwater and Columbia River surface water monitoring.

In addition to the major cleanup action tasks the following actions will be taken at the site during and after cleanup:

-- Air monitoring for dust, cyanide and ammonia will occur during the remediation.

-- Site access will be limited. Worker health and safety programs will protect cleanup workers from potliner and ammonia.

-- Ground water remediation will be required if fluoride and cyanide concentrations increase near the Columbia River. The concentration of cyanide and fluoride will have to increase to levels that are treatable.

A detailed description of each of the components of the cleanup action is given below.

5.3 SOURCE CONTROL

Source control would consist of removal of the potliner material to a permitted hazardous waste facility. At the present time the hazardous waste facility at Arlington, Oregon is being considered for the project. The removal of the 66,000 tons of material is to be accomplished using conventional excavation equipment.

Front end loader and backhoe will be used to remove and stockpile the existing clean sand cover. The clean sand will be stockpiled and used as the sand cover above the geomembrane cover. The existing 12 mil plastic cover will be removed and disposed of at the dangerous waste facility. Due to the large quantity of waste, approximately 20 to 30 trucks a day will be required to move the waste to the Arlington, Oregon facility. This phase of the project will take approximately three to five months to complete.

The contaminated soils beneath the piles will be characterized for cyanide and fluoride once the potliner is removed. No chemical data is currently available from directly beneath the potliner piles. Each pile will be divided into

quarters and one drill hole will be randomly selected in each quarter. The drill hole will be completed through the shallow zone into the intermediate zone. Two composited samples will be taken from each drill hole. The top five feet and bottom 5 to 8 feet. The samples will be analyzed for cyanide and fluoride.

Alcoa will present to Ecology for approval, prior to the start of the source removal, a site health and safety plan in accordance with most recent OSHA, WISHA, Department of Ecology, and EPA guidance and applicable regulations.

5.4 CONTAINMENT

After the potliner is removed from the site, the pile areas will be covered with either HDPE or PVC liner and clean fill; or a recompacted two foot clay liner and clean fill. Alcoa has indicated it would prefer a geomembrane liner. The geomembrane will prevent the possibility of uncontrolled contact with the contaminated soil and water infiltration into the contaminated soil column. Conventional equipment will be used to place the liner and soil cover. A portion of the sand for the cover will come from the stockpiled cover material. After placement of the geomembrane, soils and top soil; the area will be hydroseeded.

Alcoa will inspect and perform maintenance on the final cap quarterly during the regularly scheduled ground water monitoring activities. Maintenance requirements for the final cap shall include grading to maintain proper site drainage, repair of any erosion or areas of distressed vegetation, and repair of site perimeter fencing and warning signs.

5.5 GROUNDWATER AND SURFACE WATER MONITORING

Since contaminated soils will remain on site, a conformational monitoring program for cyanide and fluoride will be implemented as part of the cleanup. The proposed groundwater monitoring plan consists quarterly monitoring for five years with analysis of cyanide and fluoride. Twenty three monitoring wells will be analyzed. At the end of the five year period Ecology and Alcoa will exchange proposals to amend the consent decree with regard to whether continue groundwater monitoring is necessary and, if so, what constitutes an appropriate schedule. The proposed monitoring program will be evaluated and the end of each five year period until the site is no longer a danger to human health and the environment.

Alcoa will also preform surface water analysis of the Columbia River at the site and up stream of the site. This analysis will collect samples quarterly for two years and then annually if cyanide and fluoride are below the cleanup standards. The surface water program is proposed to run for five years.

5.6 INSTITUTIONAL CONTROLS

Alcoa will record a restrictive land use covenant in the property deed of the site to ensure that no ground water is removed for domestic purposes from the contained plume and that there is no interference with the cleanup action. This

covenant will be specified in the Consent Decree. Alcoa, may use the site for industrial purposes consistent with the cleanup action and the covenant. When levels of fluoride in ground water reach 4 mg/l and free cyanide in ground water reach 0.2 mg/l Alcoa or an owner of th esite after Alcoa, may request that the restrictive covenant be removed. Ecology, or a successor agency, may consent to the request only after public notice and comment and only insofar as the request is consistent with applicable law, including cleanup standards for soils.

5.7 SCHEDULE

The proposed cleanup is scheduled to occur in 1992. If approved, the initial potliner removal and installation of the soil/geomembrane cap will occur in the spring and summer of 1992. It is anticipated that the construction portion of the project will be complete by the fall of 1992. Final as built construction diagrams, project completion report, and monitoring plans will be delivered to Ecology after the 1992 construction season. Surface water, groundwater and maintenance monitoring will begin in 1993 and continue for five years. At the end of the five year period Ecology and Alcoa will exchange proposals for continued monitoring.

APPENDIX A

Administrative Record

The contamination at the site was brought to the attention of Ecology in 1981. Prior to this Alcoa began ground water and soil investigations to determine the extent of contamination. The following studies document activities that were conducted from 1977 to the present to determine the extent and magnitude of contamination at the present potliner NPL site. This list of documents represents the Administrative Record for the Alcoa Vancouver NPL Site.

1. Department of Ecology, Industrial Section, Aluminum Company of America Vancouver Operations Files 1978 through 1992.

2. Robinson and Noble, Inc., 1979, Investigation of Possible Groundwater Contamination for Alcoa, Vancouver.

3. Robinson Noble and Carr, Inc., 1981, Interim Report on Potential Contamination of Shallow Groundwater at Aluminum Company of America.

4. Robinson and Noble, Inc., 1982, Cyanide Contamination Study of Aluminum Company of America at Vancouver, Washington.

5. Nord, T. L. and Potter, R., 1982, The Generation of Spent Potlings by the Primary Aluminum Industry December 1982, Department of Ecology Files , Olympia, WA.

6. Nord, T. L., 1983, The Designation of Spent Potlinings, Chapter 173-303 WAC, December 1983, Department of Ecology Files, Olympia, WA.

7. Nord, T. L., 1984, The Designation of Spent Potlinings, Chapter 173-303 WAC, February 1984, Department of Ecology Files, Olympia, WA.

8. Robinson and Noble, Inc., 1984, Investigation of Contamination at Vancouver Plant, Phase 1, September 1984.

9. Environmental Protection Agency, 1985, HRS Hazard Ranking System Score Sheet and Documentation for the Aluminum Company of America Vancouver Operations, B. Morson, P. O'Flaherty, L. Stralin.

10. Hart Crowser, Inc., 1986, Preliminary Assessment of Groundwater Quality Conditions, Aluminum Company of America, Report J-1759, Vancouver Operations, Washington.

11. Department of Ecology, Industrial Section, 1986, Order DE 86-419 issued to Aluminum Company of America Vancouver Operations.

12. Hart Crowser, Inc., 1987, Remedial Investigation, Aluminum Company of America, Report J-1759-02, Vancouver Operations, Vancouver, WA.

13. Hart Crowser, Inc., 1987, Feasibility Study, Aluminum Company of America, Report J-1759-02 Vancouver Operations, Vancouver, WA.

14. Hart Crowser, Inc., 1987, Interim Report, Remedial Investigation/Feasibility Study, Report J-1759-01, Vancouver Operation, Vancouver, WA

15. National Oceanic and Atmospheric Administration, 1988, Preliminary Natural Resource Survey, Aluminum Company of America (ALCOA) Vancouver, WA

16. Hart Crowser, Inc., 1989, Waste Pile Sampling at Alcoa's Vancouver, Washington Site.

17. Ecology and Environment, Inc., 1989, Field Operations Report for Alcoa (Vancouver Smelter) Vancouver, WA.

18. E. V. S. Consultants, 1989, Acute Toxicity Tests on Spent Potlining Samples, November, December Test Results, Seattle, WA.

19. Millett, John A., 1989, Remediation Plan PCB Contaminated Yard Area Alcoa, Vancouver Works, Vancouver, WA.

20. Sweet-Edwards/EMCON, Inc. 1989, Alcoa Soil and Ground Water Investigation Status Report, Vancouver, WA.

21. Pierre Gy and Francis Pitard Sampling Consultants, 1989, Sampling Plan for the Analysis of Certain Metals, Compounds, and Other Properties of Spent Potlining and Reclaimed Alumina Insulation at the Alcoa Vancouver, Washington Site.

22. Hart Crowser, Inc., 1990, Remedial Investigation Plan, Former Alcoa Facility, Report J-2250-03, Vancouver, Washington.

23. Schmidt, K. D., 1990, Vancouver Spent Potlining Results, Report Number 70-90-05, Environmental Control Laboratory , Aluminum Company of America, Alcoa Technical Center, Alcoa Center, PA.

24. E. V. S. Consultants, 1990, Acute Toxicity Tests on Spent Potlining Samples, January Test Results, Seattle, WA.

25. Blayden, L. C., 1990, Waste Pile Characterization, Vancouver, Washington Site, Alcoa Environmental Laboratory Report No. 70-90-11, Aluminum Company of America, Alcoa Center, PA.

26. Agency for Toxics Substances and Disease Registry, U. S. Public Health Service, 1990, Health Assessment for Alcoa (Vancouver Smelter), Vancouver, Clark County, Washington.

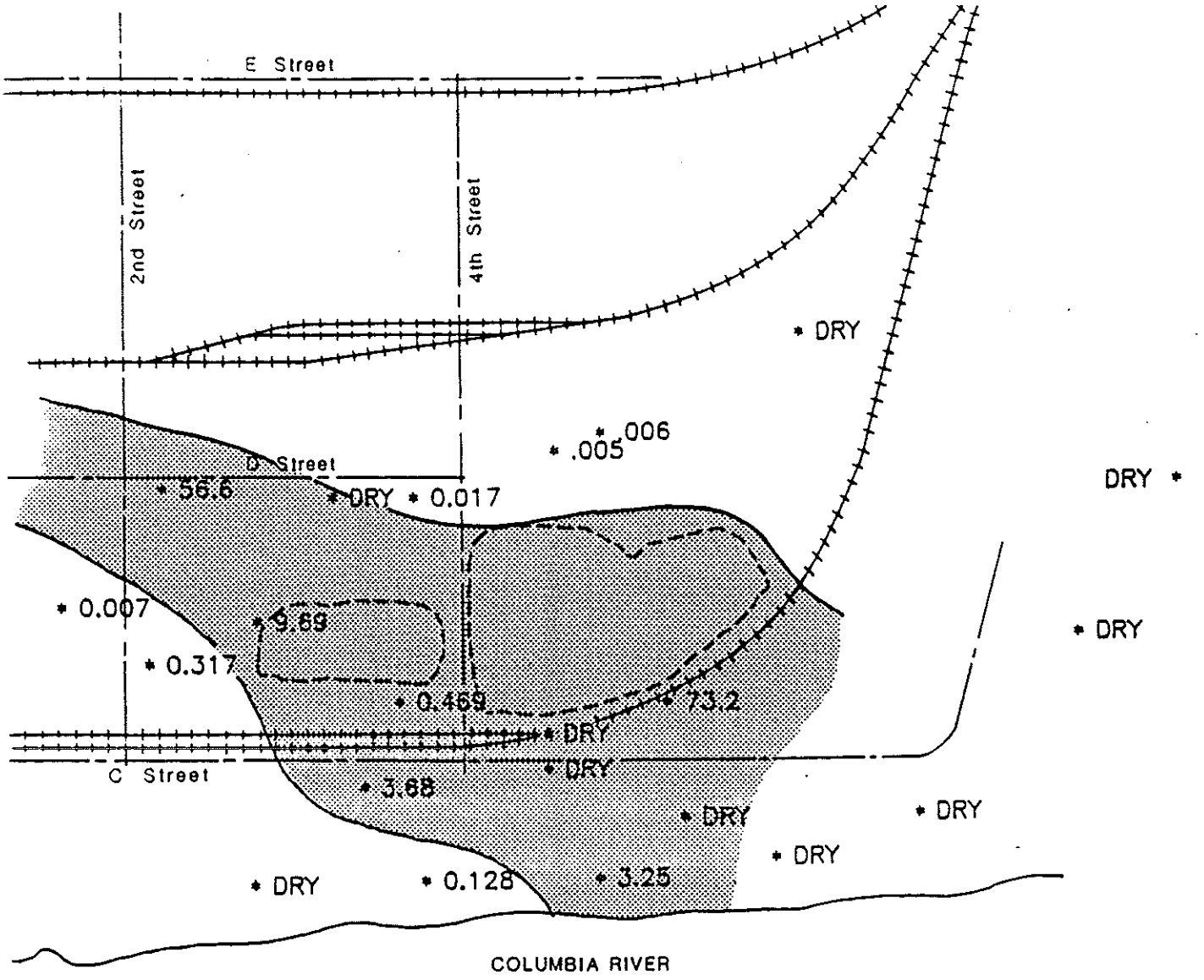
The contaminates of concern at the Alcoa-Vancouver site are cyanide and fluoride. The above investigations document the extent and concentration of the cyanide and fluoride contamination found at the site.

APPENDIX B.

Ground Water and Soil Geochemical Data

Total Cyanide Concentration Map

Concentrations in Groundwater from Shallow Zone



* 14.7 Spot Total Cyanide Location and Concentrations in mg/L

Inferred Extent of Total Cyanide Contamination greater than 2 mg/L

Samples collected in November, 1986.

N

0 250 500

Scale in Feet

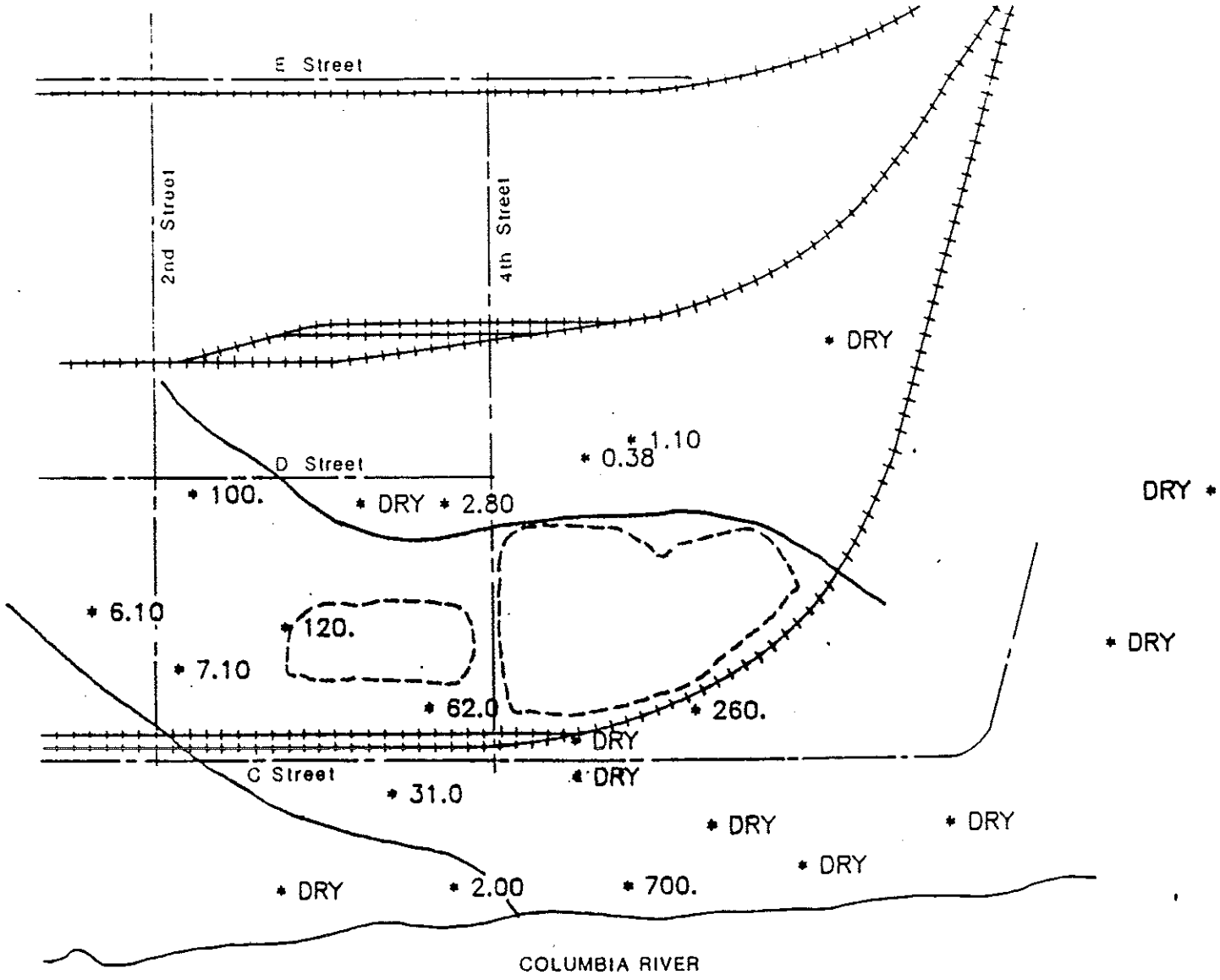
J-1759-02 June 1987

HART-CROWSER & associates inc.

Figure B-1

Fluoride Concentration Map

Concentrations in Groundwater from Shallow Zone



* 7.52 Spot Fluoride Location and Concentrations in mg/L

Inferred Extent of Fluoride Contamination greater than 5 mg/L

Samples collected in November, 1986.

N

0 250 500

Scale in Feet

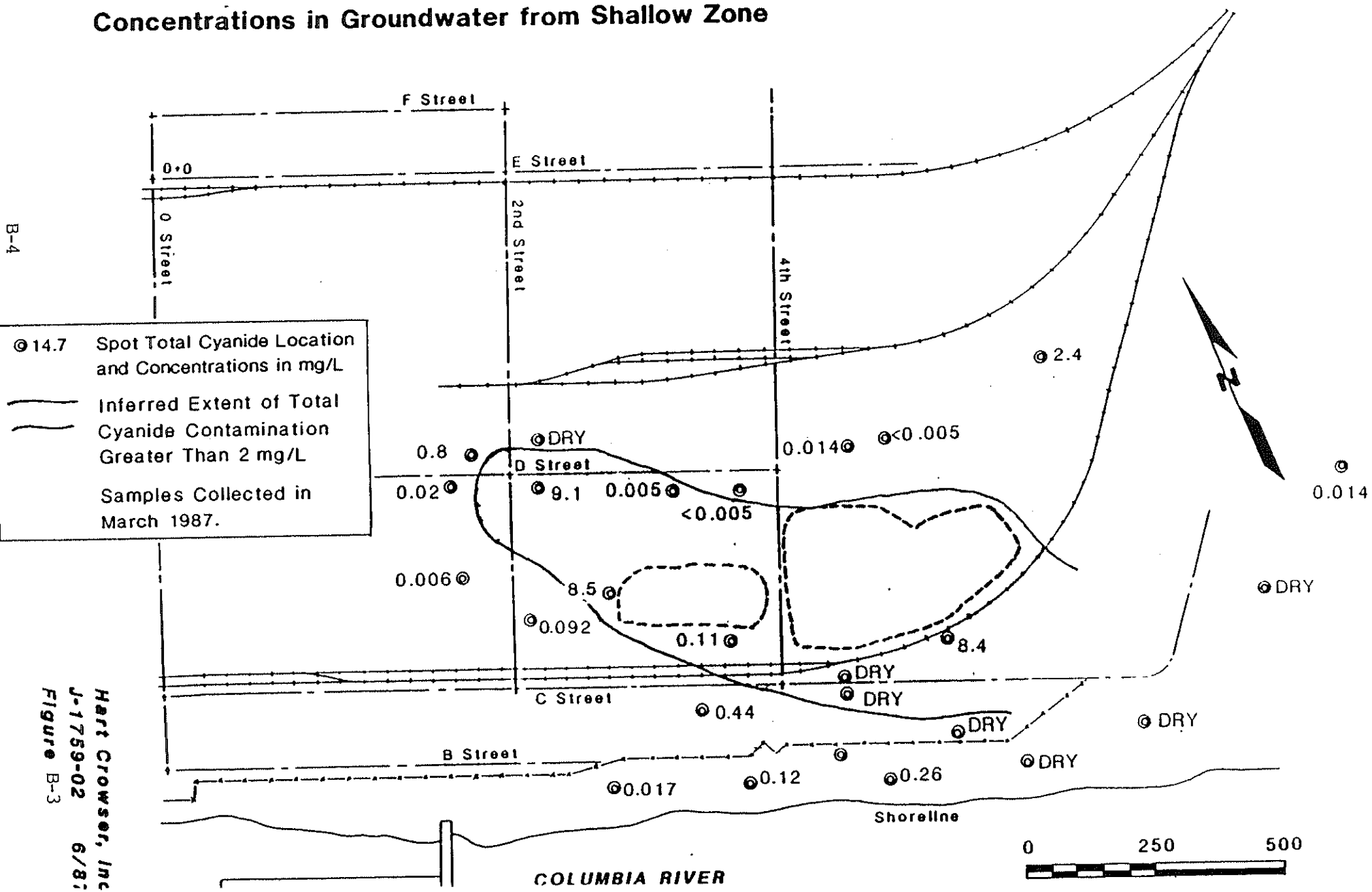
J-1759-02 June 1987

HART-CROWSER & associates inc.

Figure B-2

Total Cyanide Concentration Map

Concentrations in Groundwater from Shallow Zone

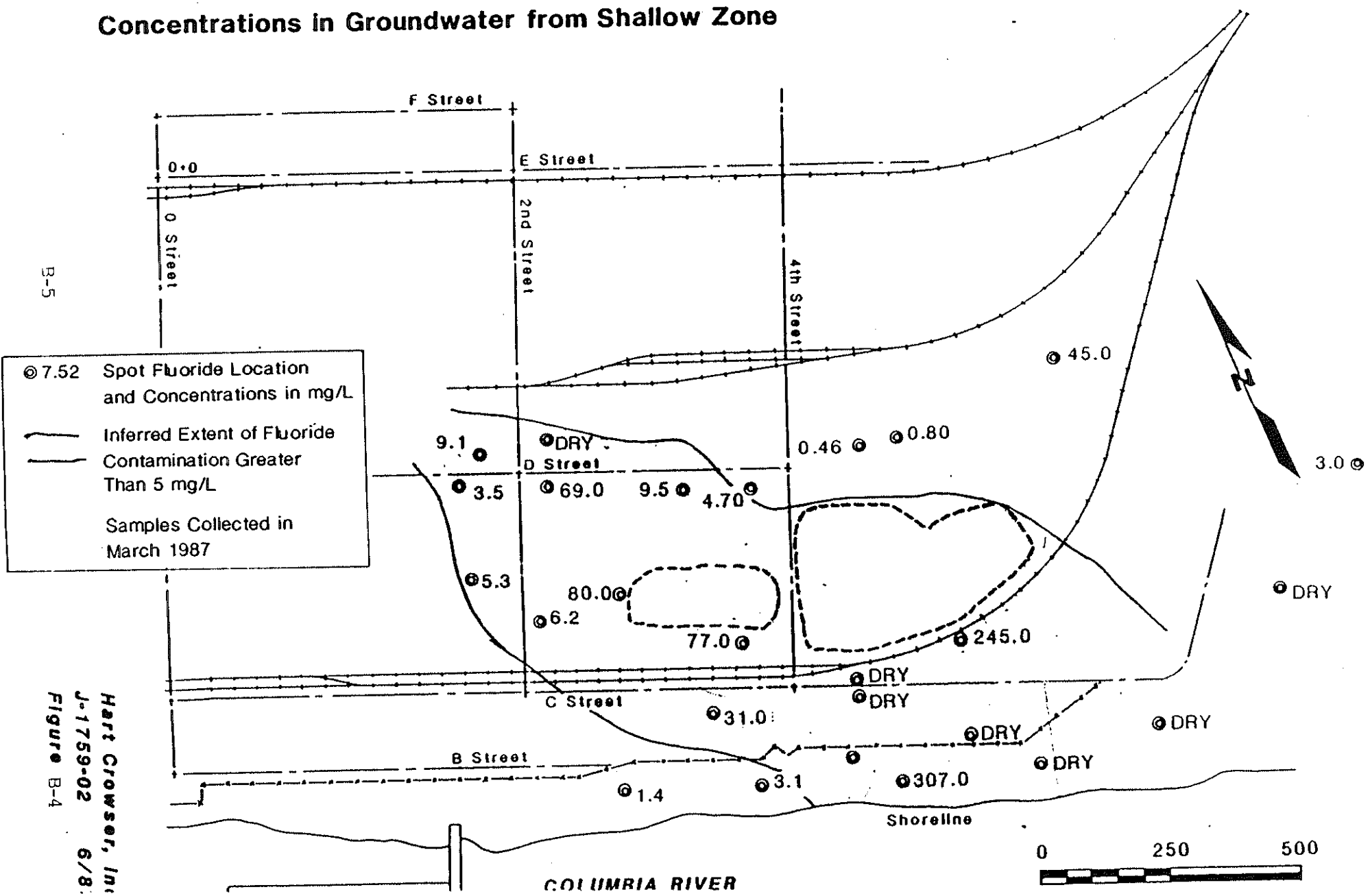


B-4

Hart Crowser, Inc
J-1759-02 6/8
Figure B-3

Fluoride Concentration Map

Concentrations in Groundwater from Shallow Zone

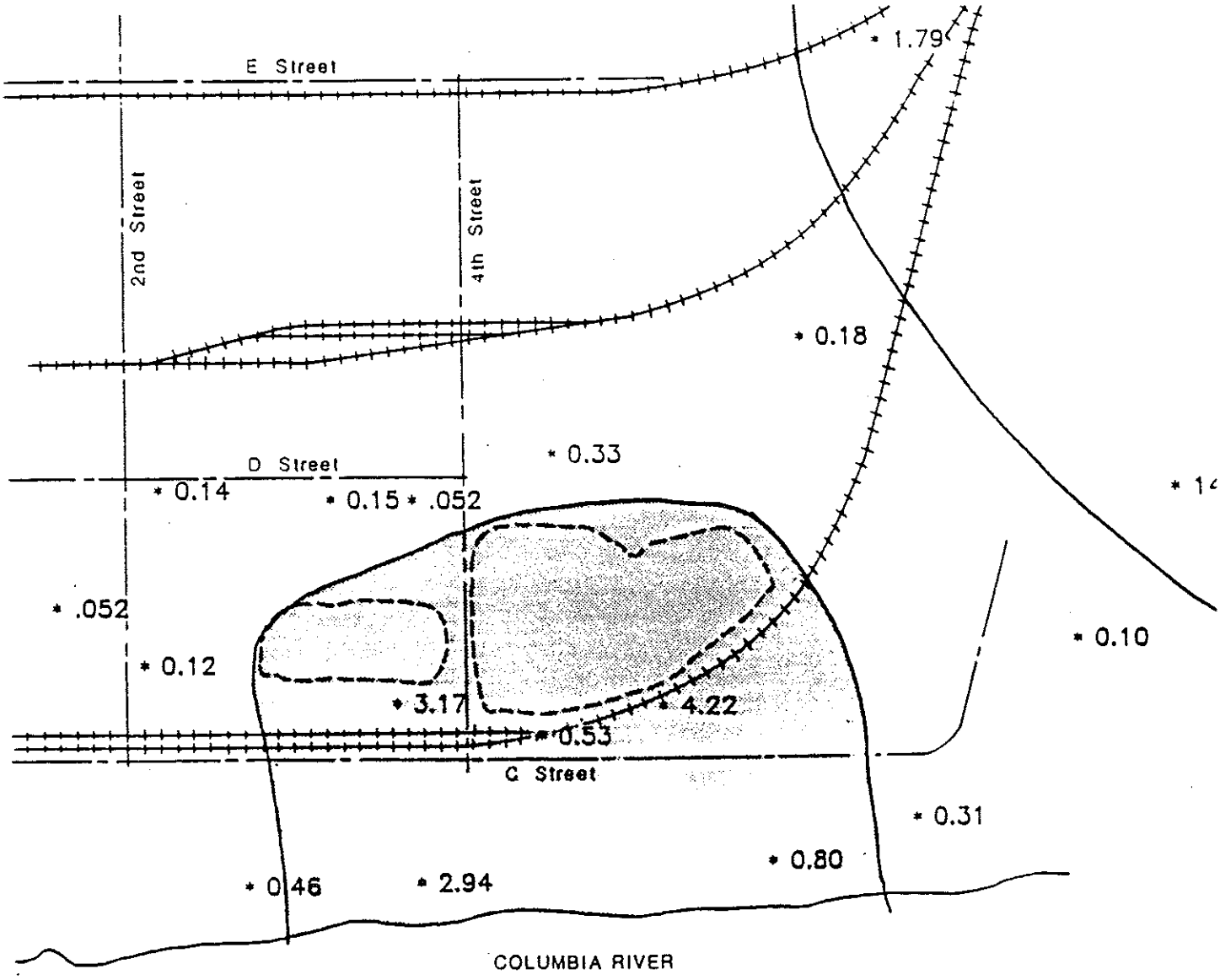


B-5

Hart Crowser, Inc.
J-1759-02 6/87
Figure B-4

Total Cyanide Concentration Map

Average Concentrations in Soil Samples from Shallow Zone



* 7.0 Spot Average Total Cyanide Location and Concentrations in mg/kg

Inferred Extent of Total Cyanide Contamination greater than .5 mg/kg

Samples collected in August and September, 1986.

N

0 250 500

Scale in Feet

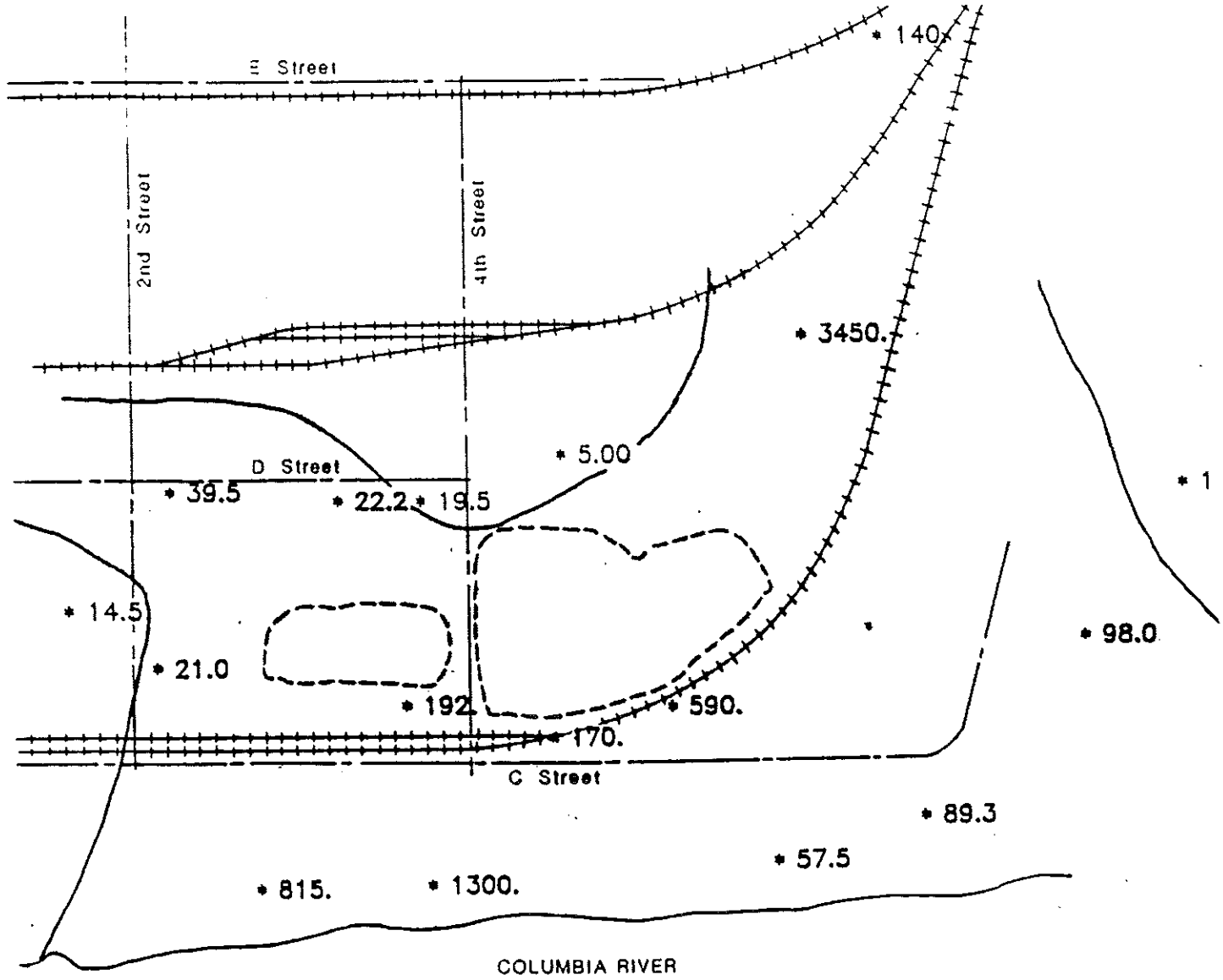
J-1759-02 June 198

HART-CROWSER & associates inc

Figure B-5

Fluoride Concentration Map

Average Concentrations in Soil Samples from Shallow Zone



* 8.43 Spot Average Fluoride Location and Concentrations in mg/kg

Inferred Extent of Fluoride Contamination greater than 20 mg/kg

Samples collected in August and September, 1986.

N

0 250 500

Scale in Feet

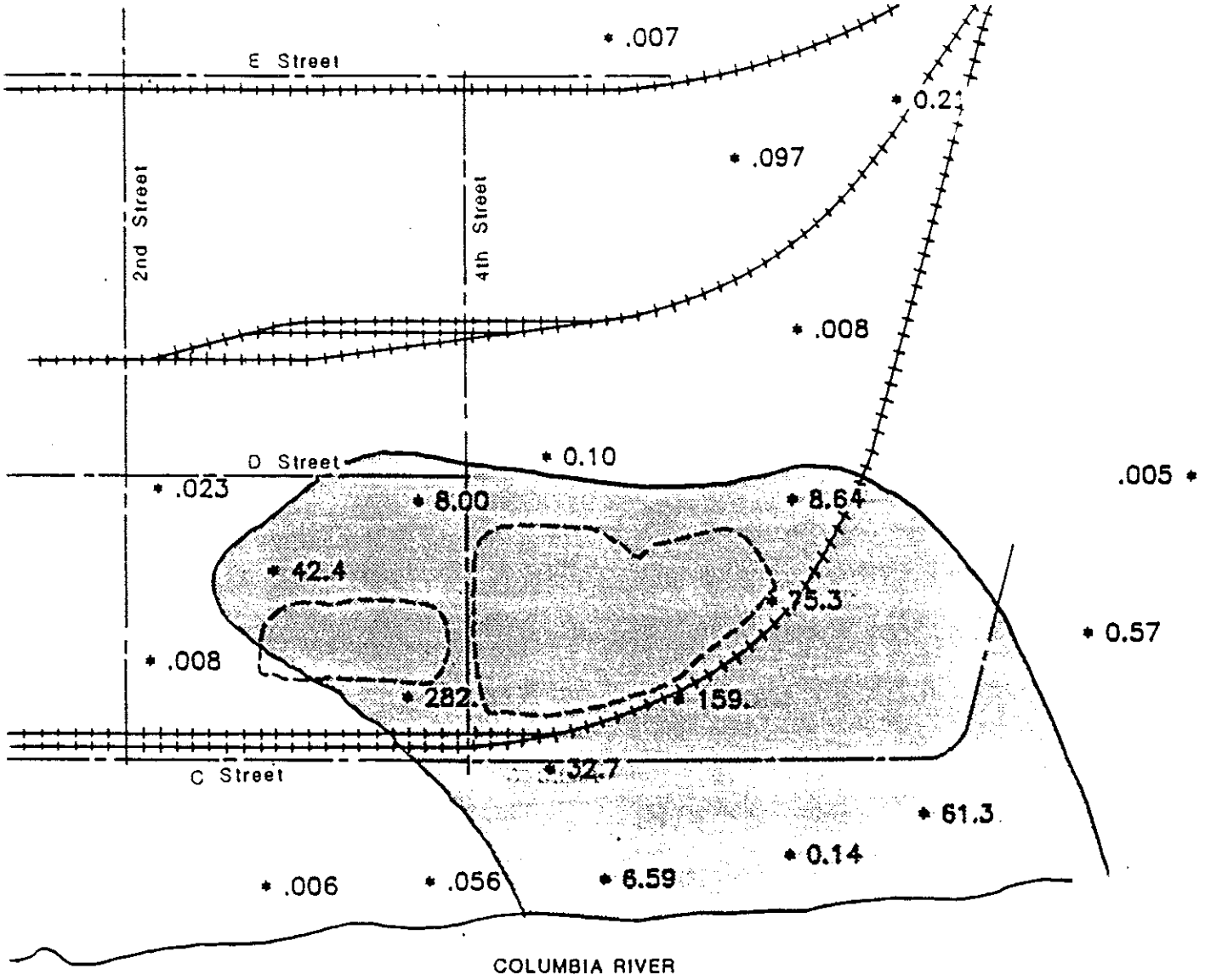
J-1759-02 June 198

HART-CROWSER & associates inc

Figure B-6

Total Cyanide Concentration Map

Concentrations in Groundwater from Intermediate Zone



* 14.7 Spot Total Cyanide Location and Concentrations in mg/L

Inferred Extent of Total Cyanide Contamination greater than 2 mg/L

Samples collected in November, 1986.

N

0 250 500

Scale in Feet

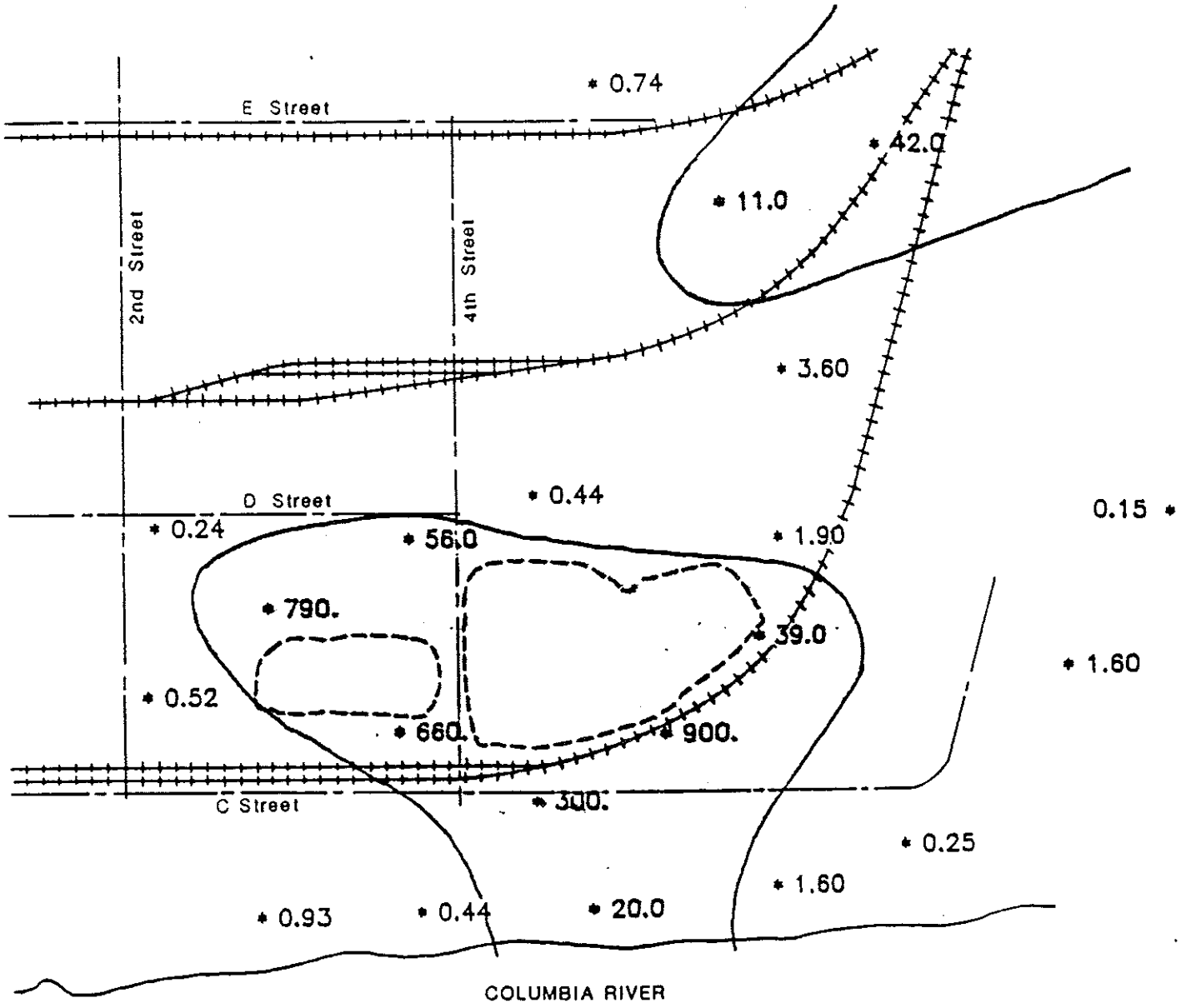
J-1759-02 June 1987

HART-CROWSER & associates inc.

Figure B-7

Fluoride Concentration Map

Concentrations in Groundwater from Intermediate Zone



* 7.52 Spot Fluoride Location and Concentrations in mg/L

Inferred Extent of Fluoride Contamination greater than 5 mg/L

Samples collected in November, 1986.

N

0 250 500

Scale in Feet

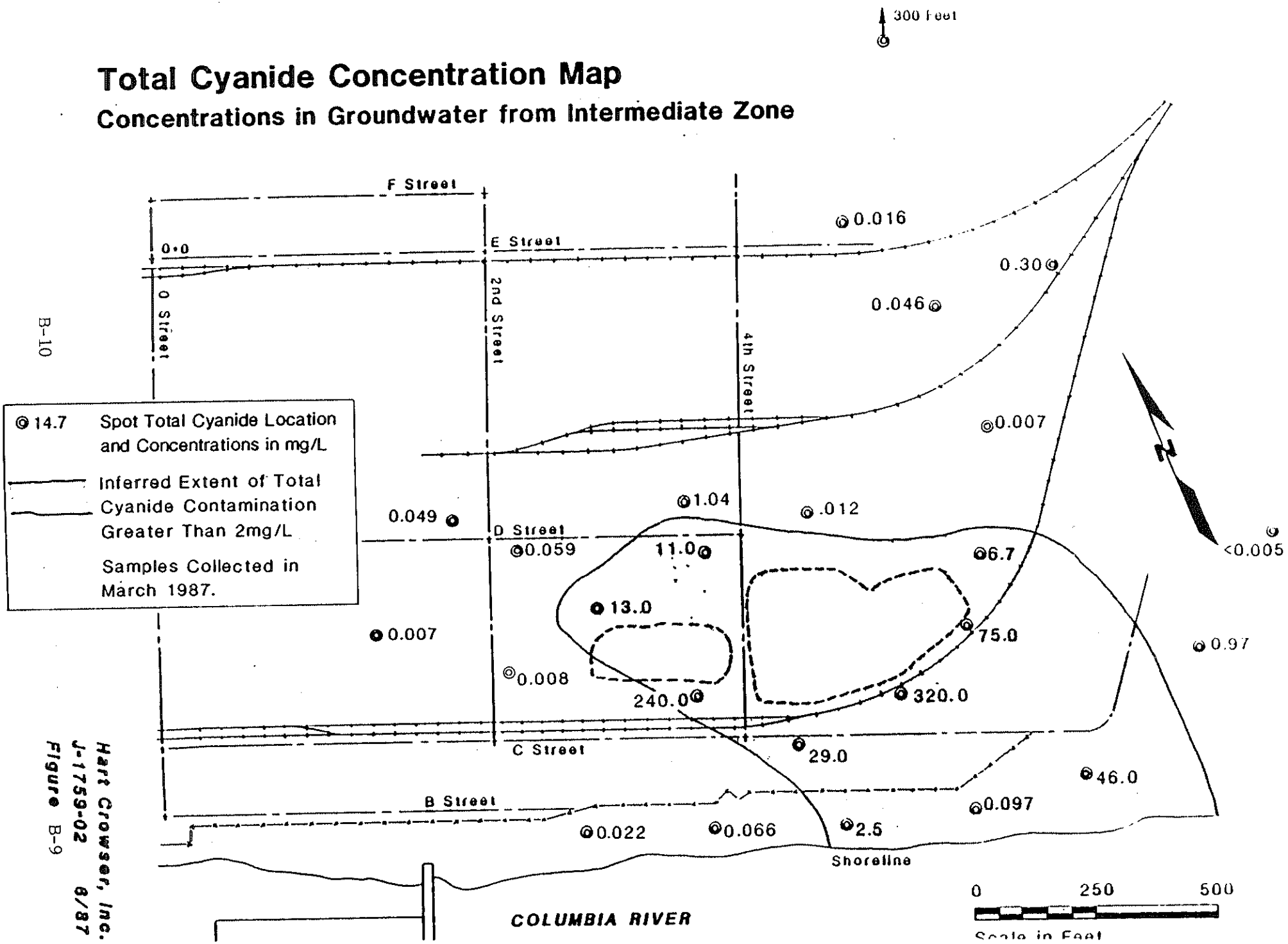
J-1759-02 June 1987

HART-CROWSER & associates inc.

Figure B-8

Total Cyanide Concentration Map

Concentrations in Groundwater from Intermediate Zone

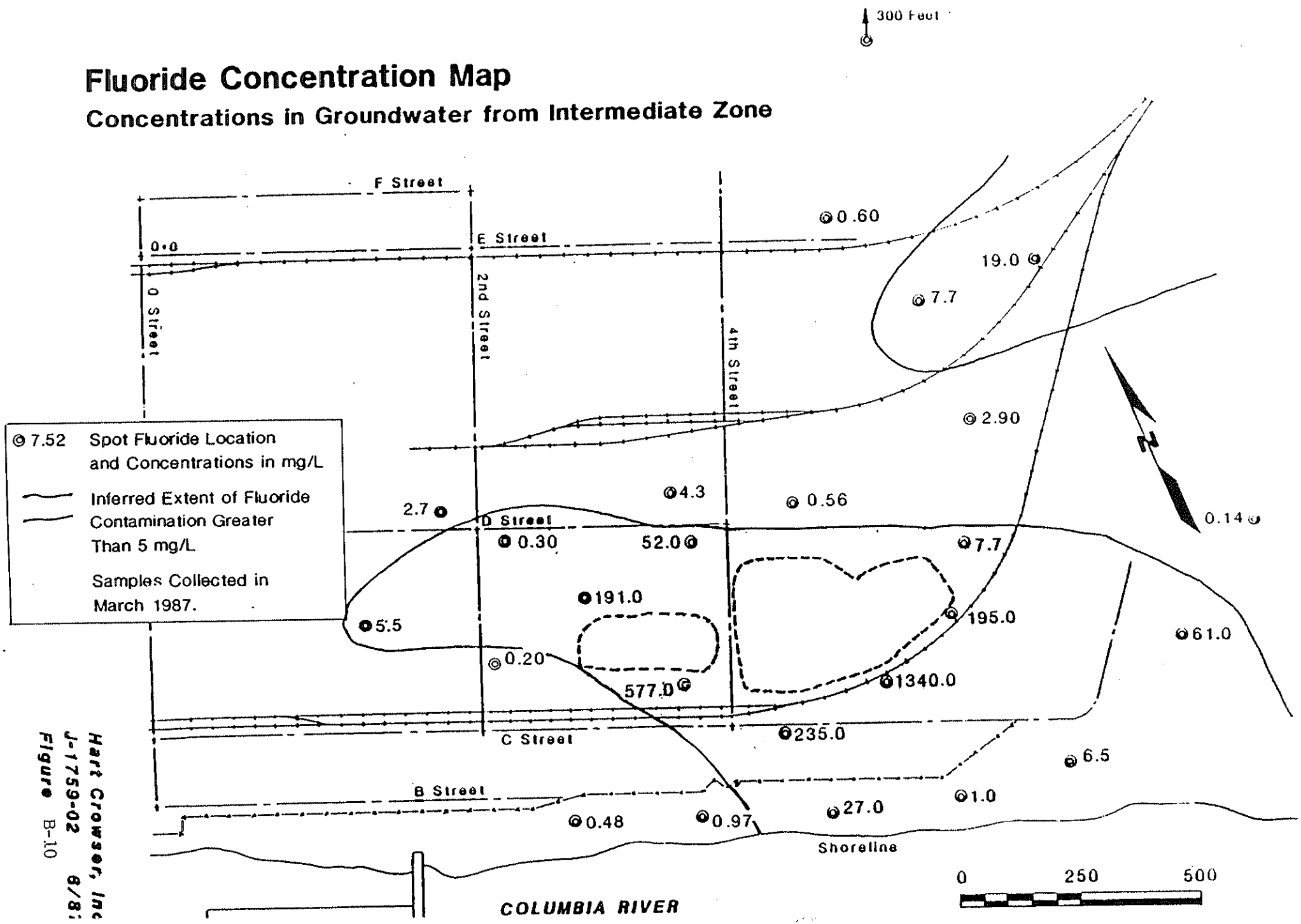


B-10

Hart Crowser, Inc.
J-1759-02 8/87
Figure B-9

Fluoride Concentration Map

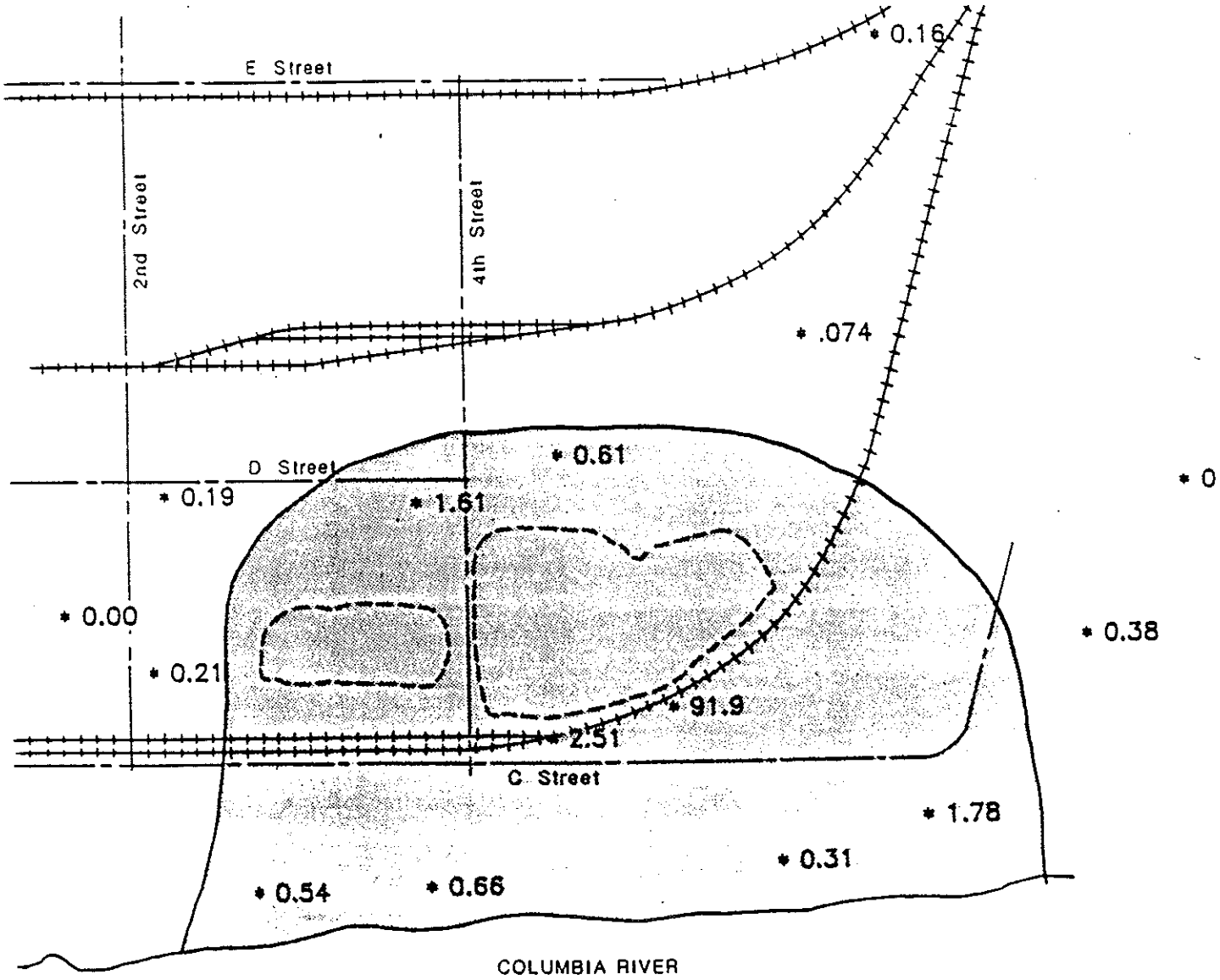
Concentrations in Groundwater from Intermediate Zone



Hart Crowser, Inc
J-1759-02 6/8
Figure B-10

Total Cyanide Concentration Map

Average Concentrations in Soil Samples from Intermediate Zone



* .07 Spot Average Total Cyanide Location and Concentrations in mg/kg

——— Inferred Extent of Total Cyanide Contamination greater than 0.5 mg/kg

Samples collected in August and September, 1986.

N

0 250 500

Scale in Feet

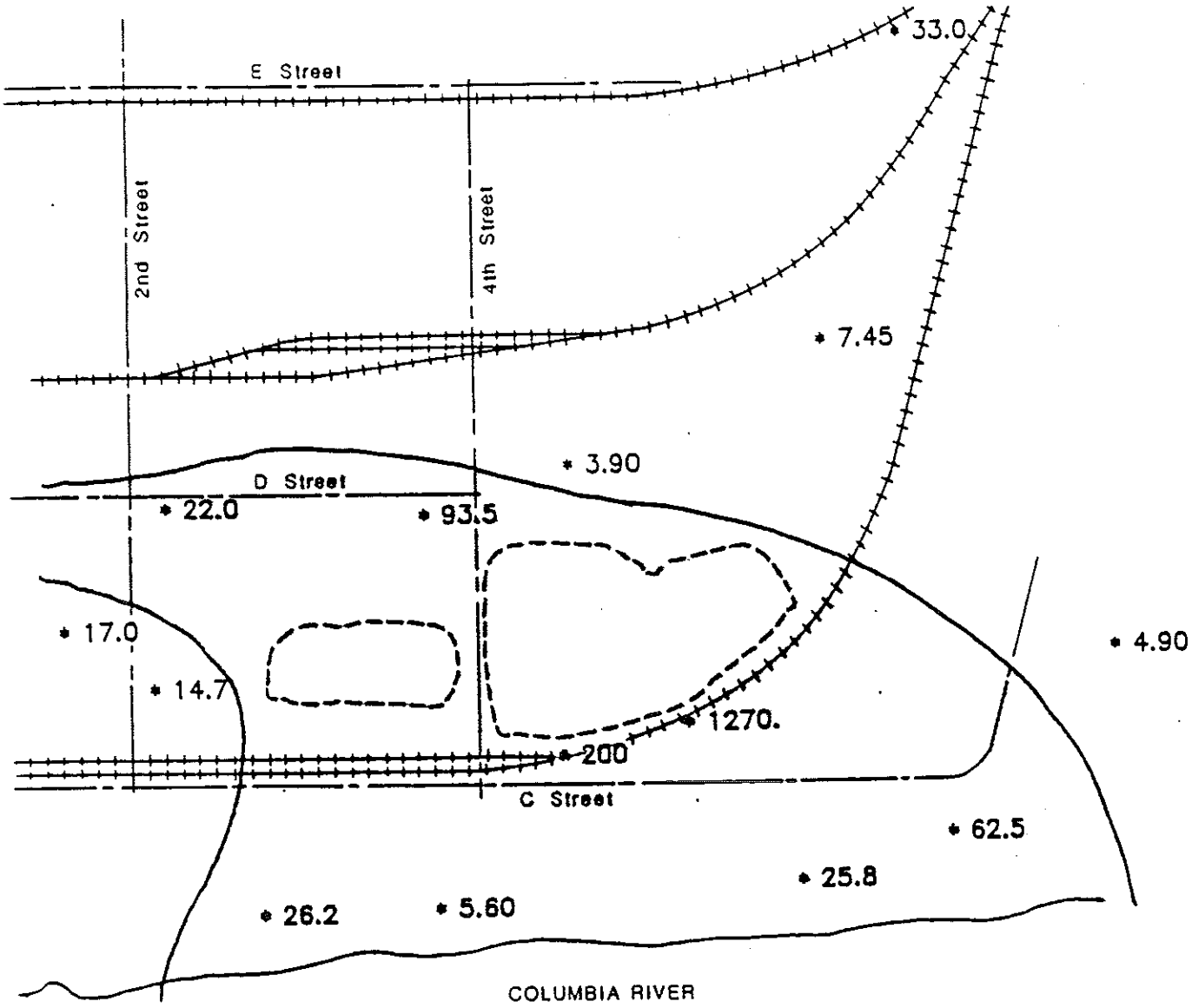
J-1759-02 June 198

HART-CROWSER & associates in

Figure B-11

Fluoride Concentration Map

Average Concentrations in Soil Samples from Intermediate Zone



* 8.43 Spot Average Fluoride Location and Concentrations in mg/kg

Inferred Extent of Fluoride Contamination greater than 20 mg/kg

Samples collected in August and September, 1986.

N

0 250 500

Scale in Feet

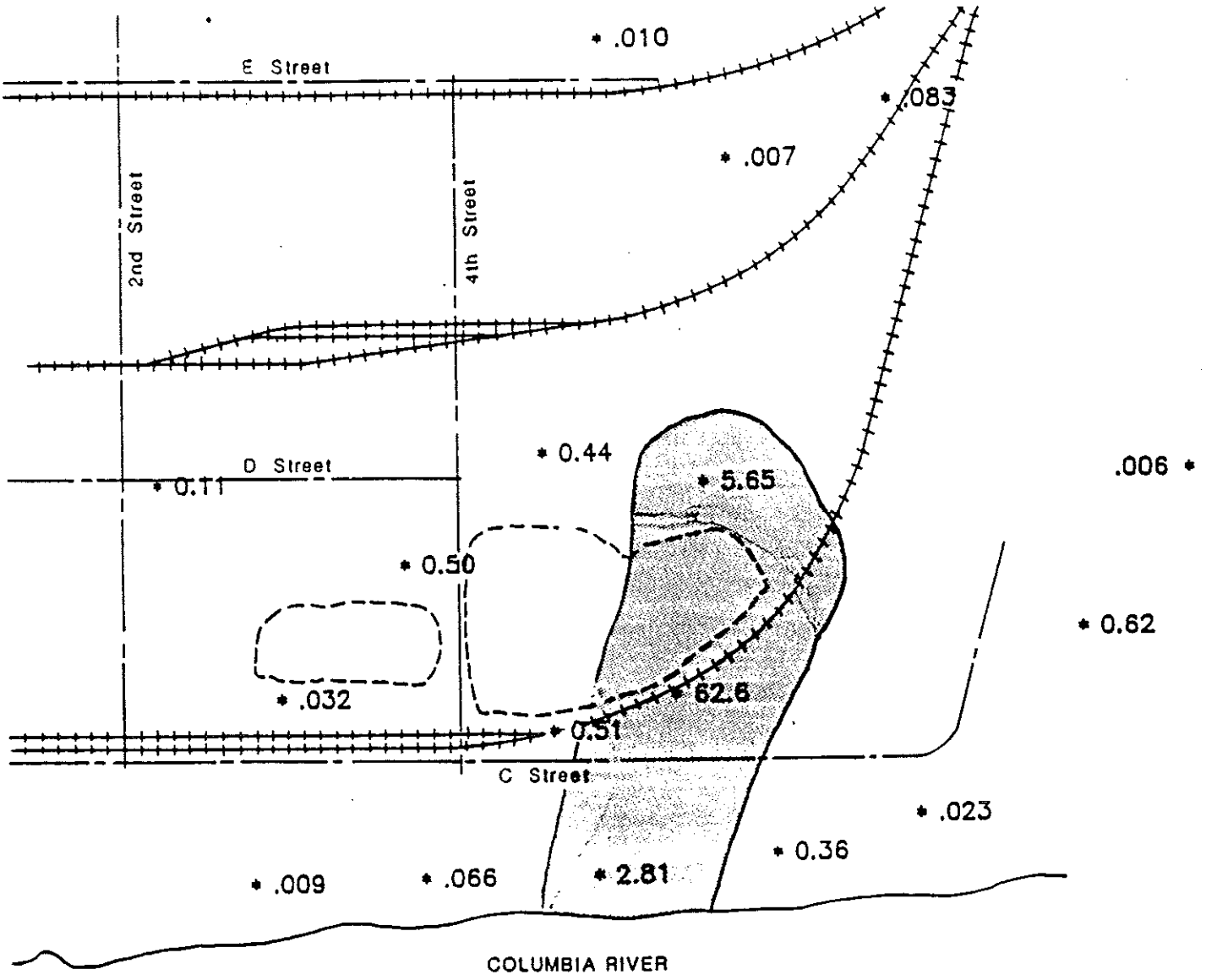
J-1759-02 June 198

HART-CROWSER & associates inc

Figure B-12

Total Cyanide Concentration Map

Concentrations in Groundwater from Deep Zone



• 4.7 Spot Total Cyanide Location and Concentrations in mg/L

Inferred Extent of Total Cyanide Contamination greater than 2 mg/L

Samples collected in November, 1986.

N

0 250 500

Scale in Feet

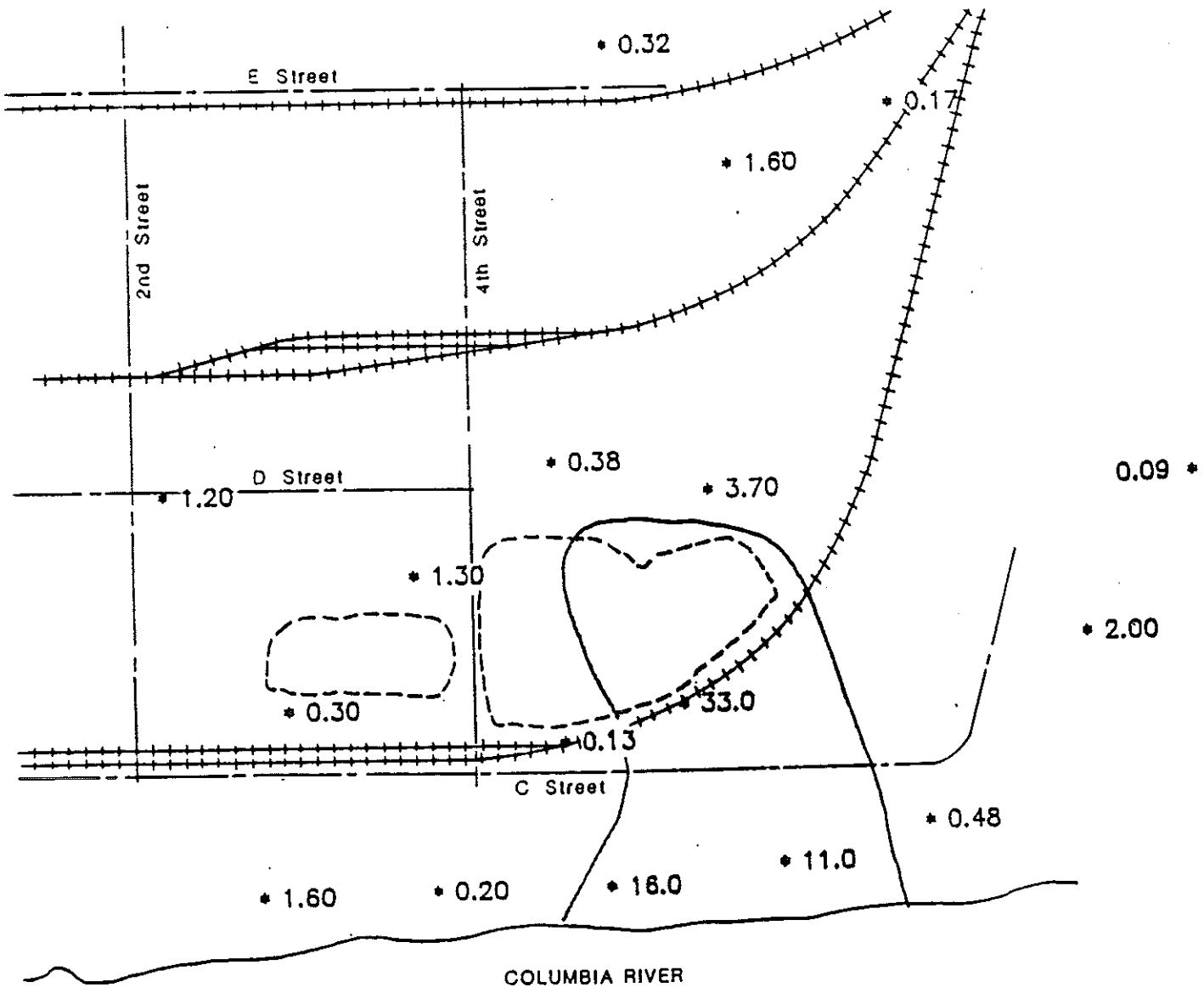
J-1759-02 June 1987

HART-CROWSER & associates inc

Figure B-13

Fluoride Concentration Map

Concentrations in Groundwater from Deep Zone



* 7.52 Spot Fluoride Location and Concentrations in mg/L

Inferred Extent of Fluoride Contamination greater than 5 mg/L

Samples collected in November, 1986.

N

0 250 500

Scale in Feet

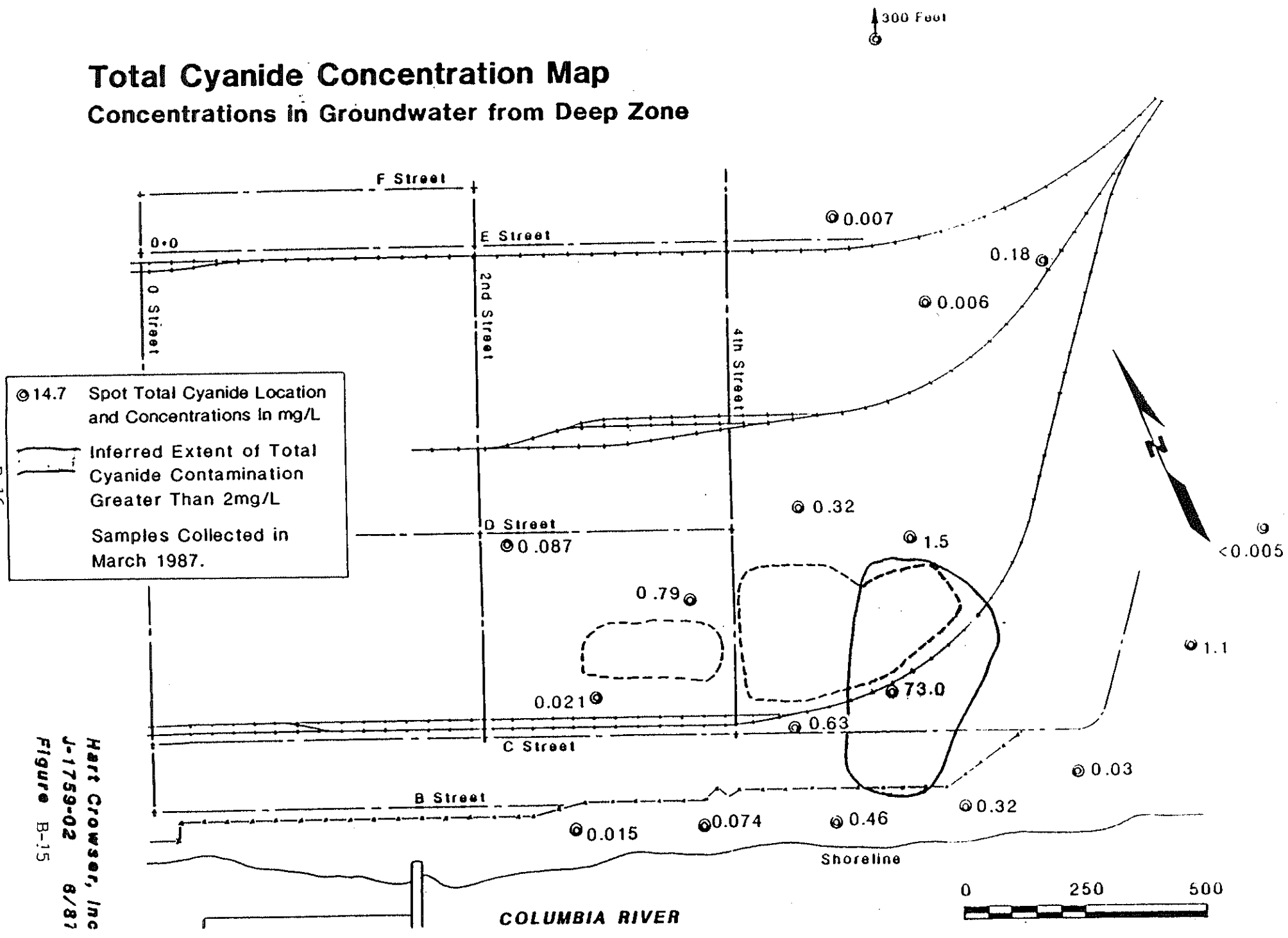
J-1759-02 June 198

HART-CROWSER & associates inc

Figure B-14

Total Cyanide Concentration Map

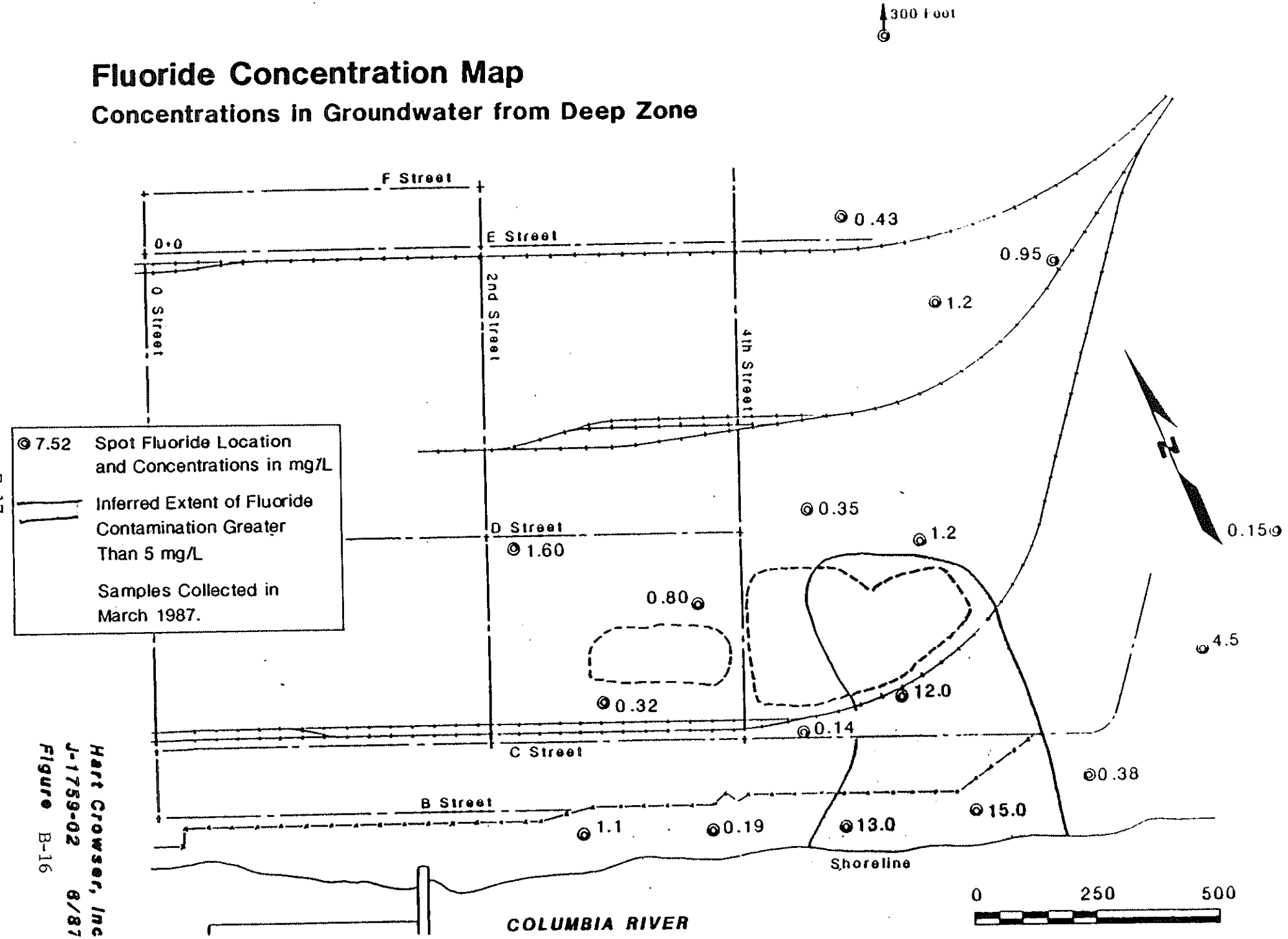
Concentrations in Groundwater from Deep Zone



Hart Crowser, Inc
J-1759-02 8/87
Figure B-15

Fluoride Concentration Map

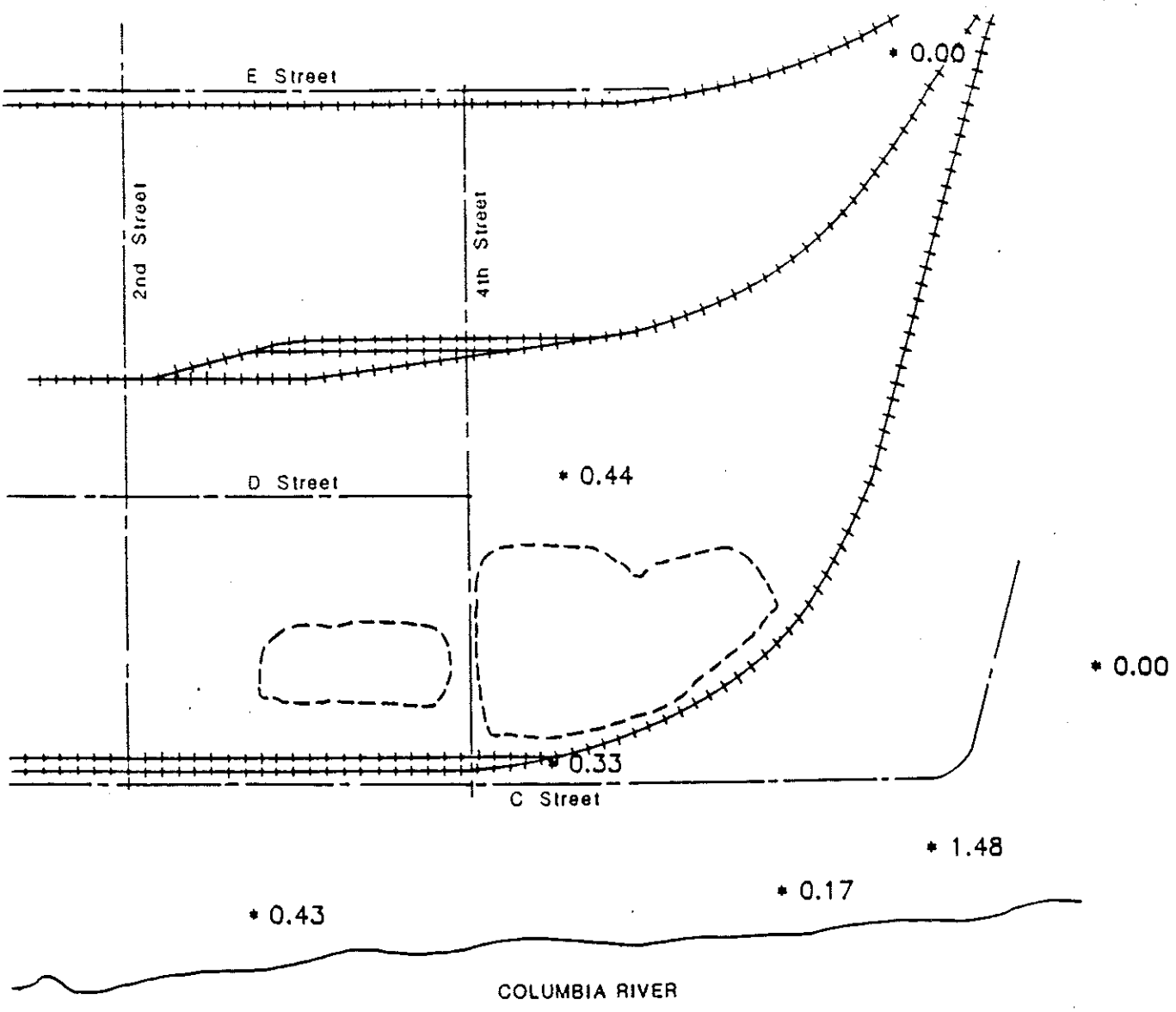
Concentrations in Groundwater from Deep Zone



Hart Crowser, Inc
J-17759-02 8/87
Figure B-16

Total Cyanide Concentration Map

Average Concentrations in Soil Samples from Deep Zone



* .07 Spot Average Total Cyanide Location and Concentrations in mg/kg

Samples collected in August and September, 1986.

N

0 250 500

Scale in Feet

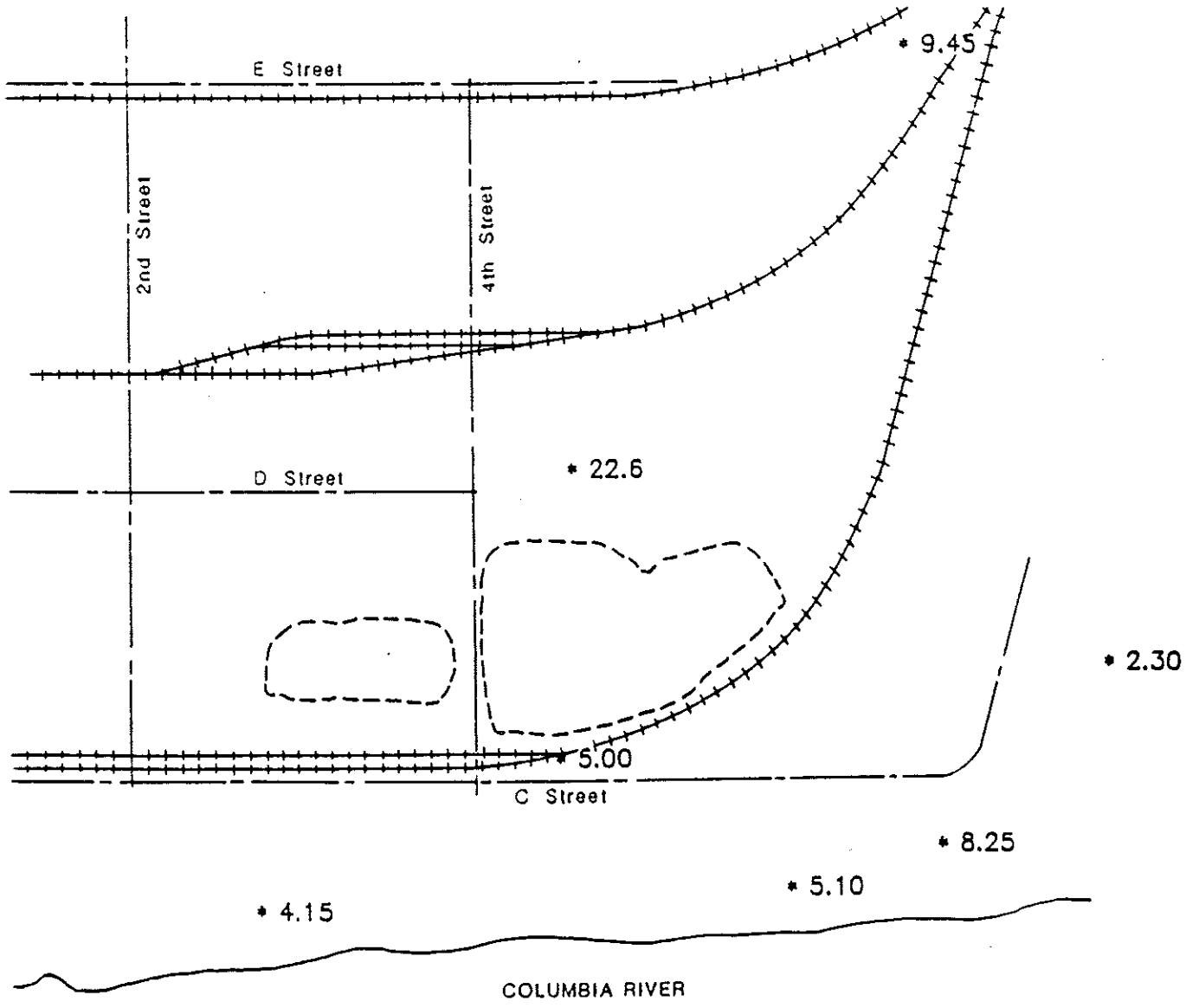
J-1759-02 June 198

HART-CROWSER & associates inc

Figure B-17

Fluoride Concentration Map

Average Concentrations in Soil Samples from Deep Zone



* 8.43 Spot Average Fluoride Location and Concentrations in mg/kg

Samples collected in August and September, 1986.

0 250 500

Scale in Feet

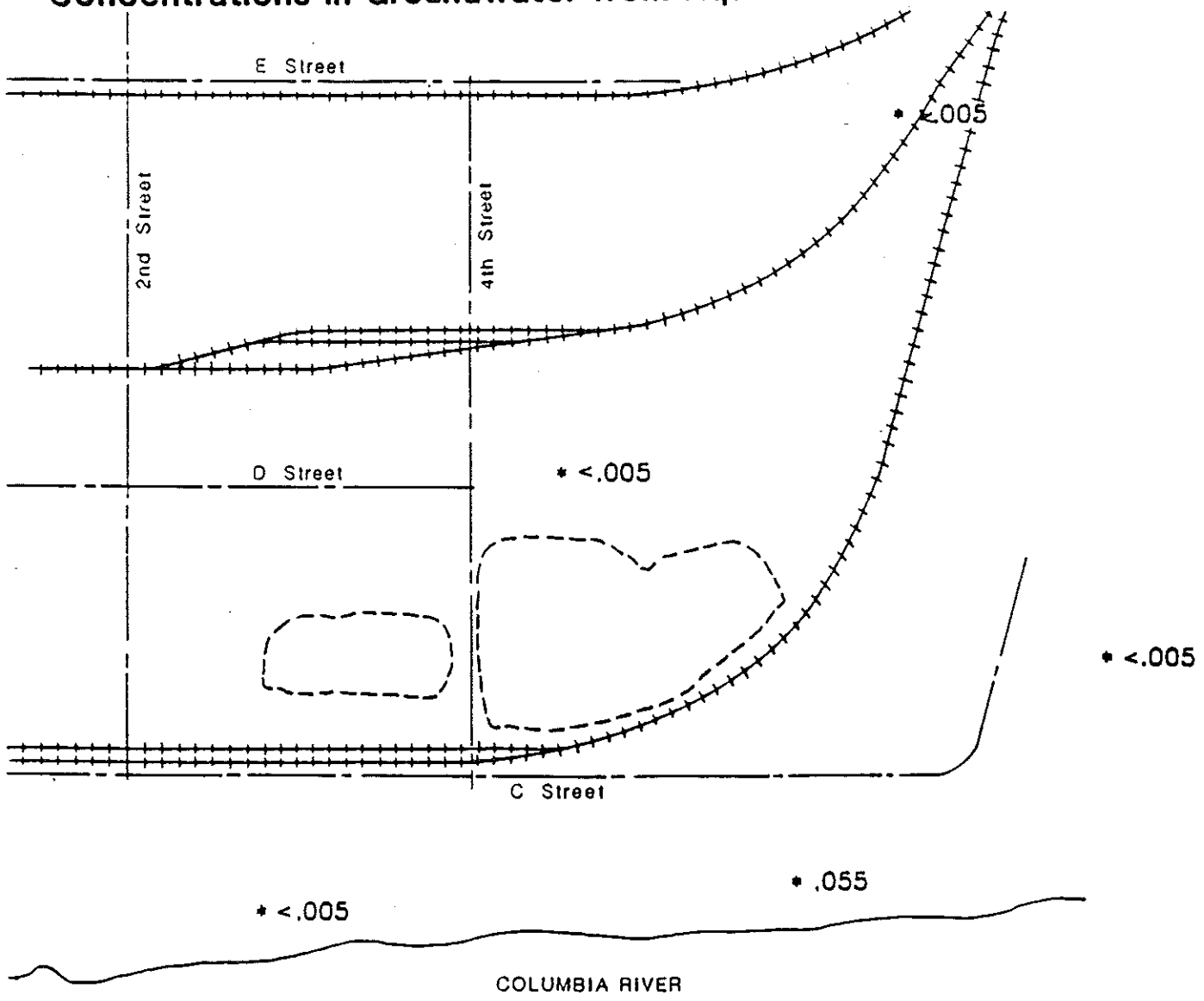
J-1759-02 June 198

HART-CROWSER & associates inc

Figure B-18

Total Cyanide Concentration Map

Concentrations in Groundwater from Aquifer Zone



* .055 Spot Total Cyanide Location and Concentrations in mg/L

Samples collected in November, 1986.

N

0 250 500

Scale in Feet

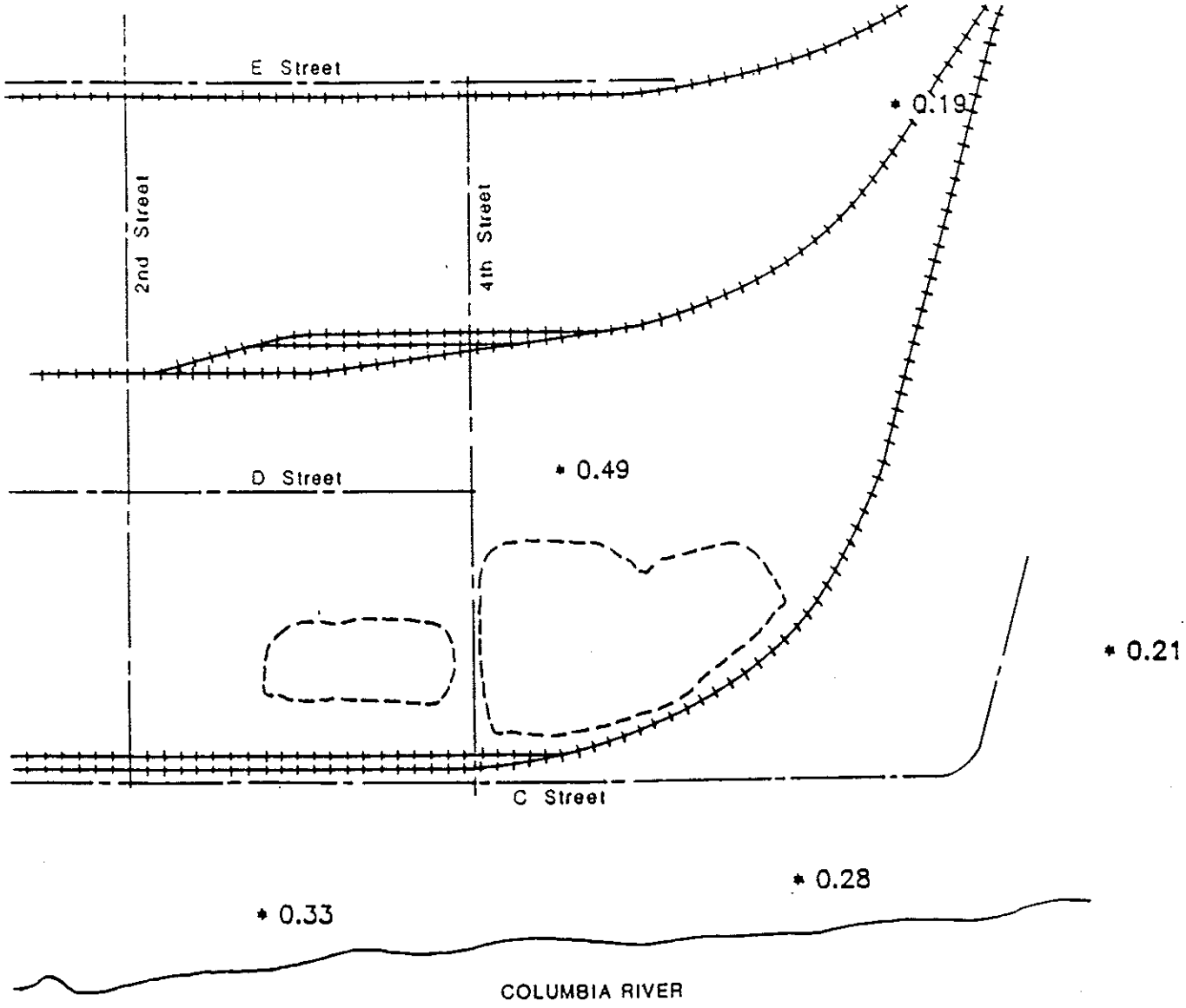
J-1759-02 June 198?

HART-CROWSER & associates inc

Figure B-19

Fluoride Concentration Map

Concentrations in Groundwater from Aquifer Zone



* .52 Spot Fluoride Location and Concentrations in mg/L

Samples collected in November, 1986.

N

0 250 500

Scale in Feet

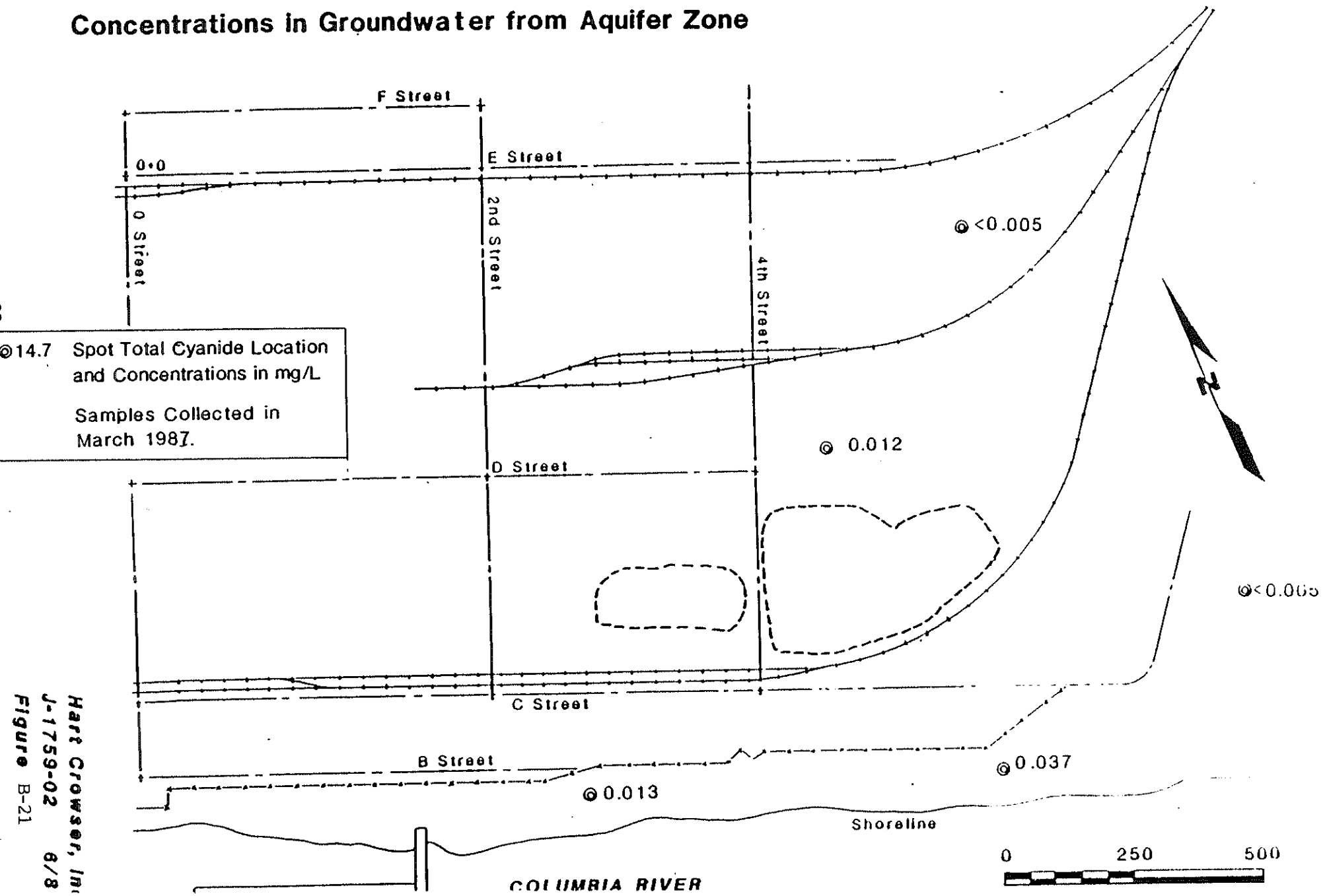
J-1759-02 June 1987

HART-CROWSER & associates inc

Figure B-20

Total Cyanide Concentration Map

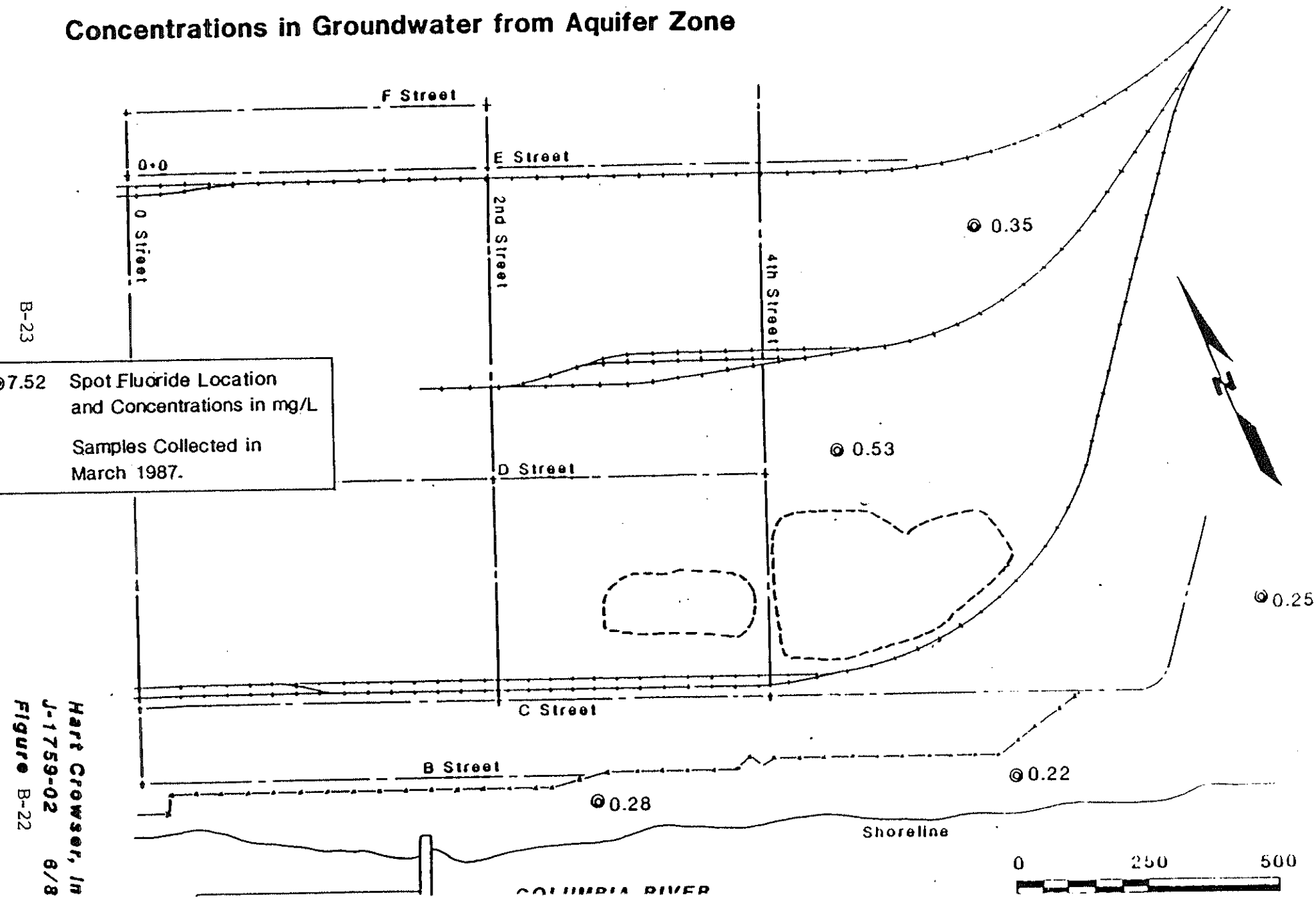
Concentrations in Groundwater from Aquifer Zone



Hart Crowser, Inc
J-1759-02 6/8
Figure B-21

Fluoride Concentration Map

Concentrations in Groundwater from Aquifer Zone

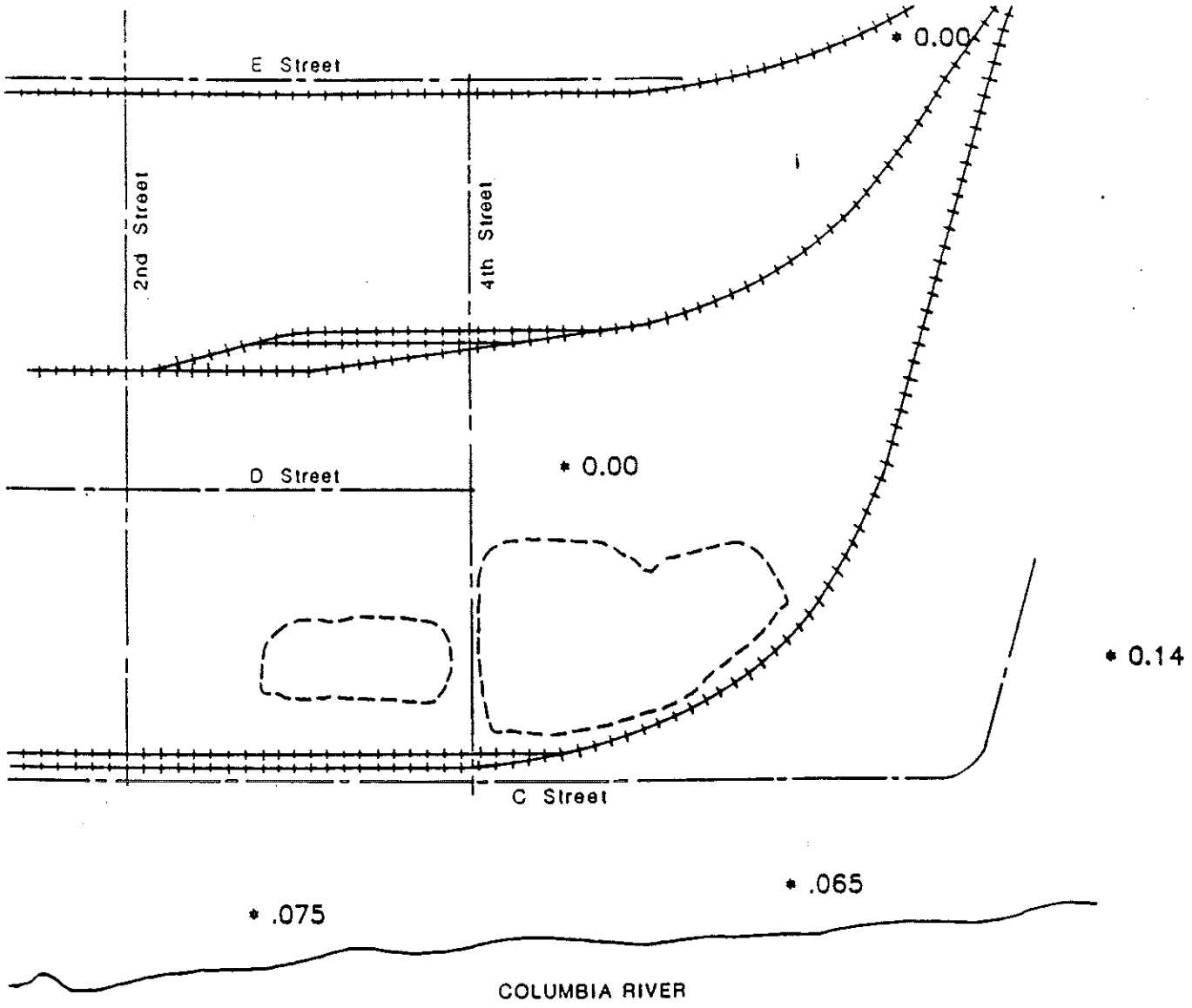


B-23

Hart Crowser, In
J-1759-02 6/8
Figure B-22

Total Cyanide Concentration Map

Concentrations in Soil Samples from Aquifer Zone



* .07 Spot Total Cyanide Location and Concentrations in mg/kg

Samples collected in August and September, 1986.

0 250 500

Scale in Feet

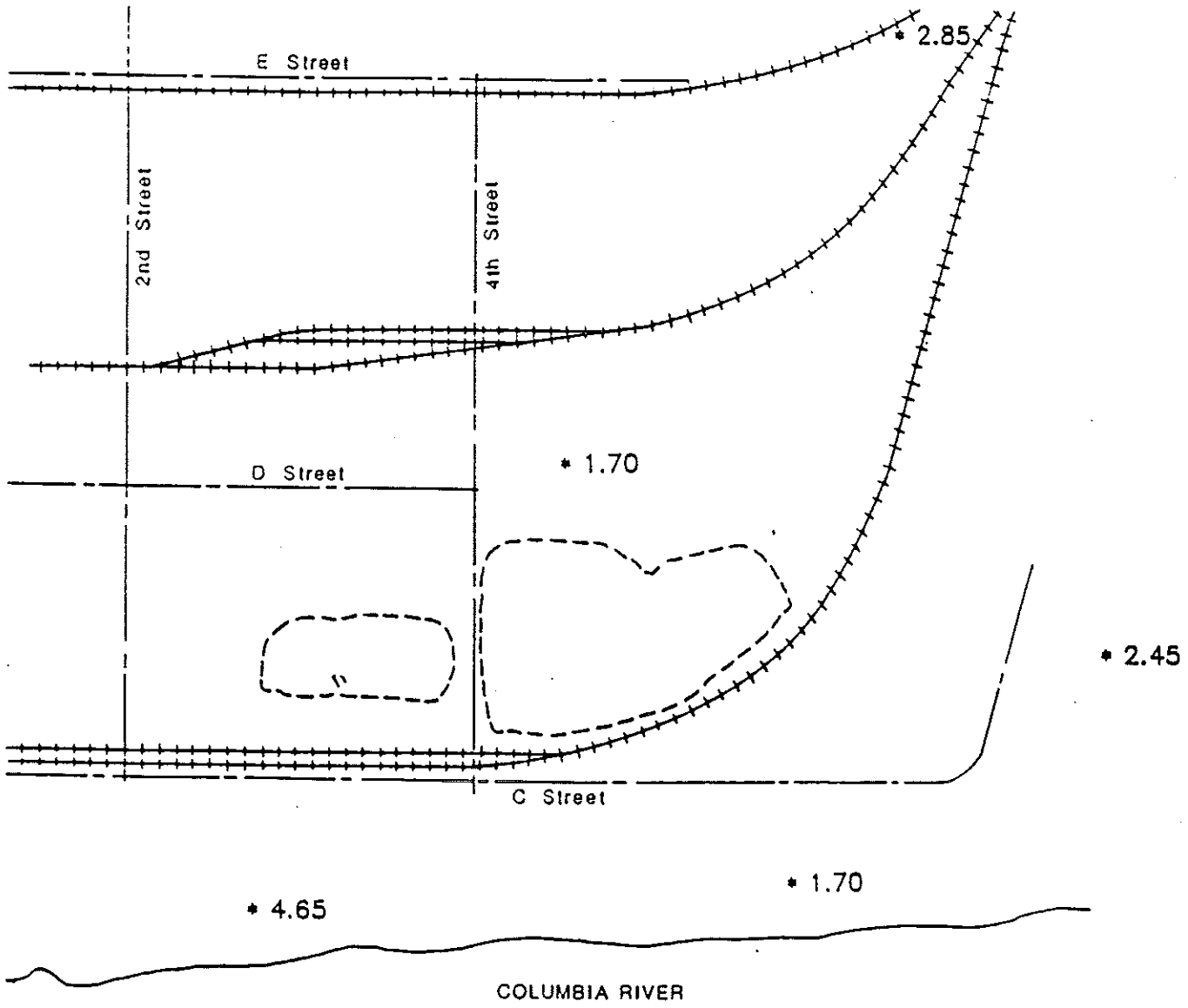
J-1759-02 June 19

HART-CROWSER & associates in

Figure B-23

Fluoride Concentration Map

Concentrations in Soil Samples from Aquifer Zone



* 8.43 Spot Fluoride Location and Concentrations in mg/kg

Samples collected in August and September, 1986.

0 250 500

Scale in Feet

J-1759-02 June 198

HART-CROWSER & associates in

Figure B-24

APPENDIX C.

SEPA Documents and Shoreline Permit

1-10-91

NPL Site
Shoreline Permit - Frm Clark Co.
PNS

FILE COPY

AIR ☐
WATER/SOLID ☐
HAZ. WASTE ☐
HWCU ☒

MEMORANDUM

Alcoa - Vancouver

DEC 17 1991

TO: Washington State Department of Ecology
Shoreline Management Section
Attorney General's Office

FROM: Clark County Department of Public Services

DATE: January 9, 1991.

SUBJECT: Shoreline Permit #CC-241-90

Applicant: Aluminum Company of America (ALCOA)
Purpose: Removal of potlinings

Please find attached the following:

X Copy of the Shoreline Management Permit

X Copy of the Application

X Site Plan & Vicinity Map

X Copy of Affidavit of Publication

X SEPA Documents

X Other relevant material, including Conditional Use and Variance evaluation (if applicable).

Enclosure(s)

cc: Department of Public Works
Parks and Recreation
✓Applicant
File

D:\word\dlw\alcoa.mem

NOTE-THIS PAGE FOR
LOCAL GOVERNMENT USE
ONLY

SHORELINE MANAGEMENT ACT OF 1971
PERMIT FOR SHORELINE MANAGEMENT SUBSTANTIAL DEVELOPMENT, CONDITIONAL USE, OR VARIANCE

_X_ Substantial Development Permit
__ Conditional Use
__ Variance

Application No: CC-241-90

Administering Agency: Clark County

Date Received: September 21, 1990

Approved: January 9, 1991

Date of Issuance: January 9, 1991

Date of Expiration: January 9, 1996

Pursuant to RCW 90.58, a permit is hereby granted to Aluminum Company of America (ALCOA) to undertake the following development: Remove spent aluminum potlinings from an industrial plant site located within the NW 1/4 of Section 19, Township 2 North, Range 1 East of the W.M., in Clark County, Washington. Said development is adjacent to the floodplain of the Columbia River. The project will be within shorelines of statewide significance (RCW 90.58.030). The project will be located within the Urban Shoreline designation. The following master program provisions are applicable to this development; Ports and Water-related Industry, page 69.

Development pursuant to this permit shall be undertaken pursuant to the following terms and conditions:

1. The applicant shall obtain and comply with all other necessary Federal, State and local permits necessary to continue with the project.

2. The applicant shall confine operations to that area within the flood control dike, therefore, beyond the 100-year flood plain.

This permit is granted pursuant to the Shoreline Management Act of 1971 and nothing in this permit shall excuse the applicant from compliance with any other federal, state, or local statues, ordinances or regulations applicable to this project, but not inconsistent with the Shoreline Management Act (Chapter 90.58 RCW).

This permit may be rescinded pursuant to RCW 90.68.140 (7) in the event the permittee fails to

comply with the terms of conditions hereof.

CONSTRUCTION PURSUANT TO THIS PERMIT WILL NOT BEGIN OR IS NOT AUTHORIZED UNTIL THIRTY DAYS FROM THE DATE OF FILING AS DEFINED IN RCW 90.58.14(6) AND WAC 173-14-090, OR UNTIL ALL REVIEW PROCEEDINGS INITIATED WITHIN THIRTY DAYS FROM THE DATE OF SUCH FILING HAVE TERMINATED; EXCEPT AS PROVIDED IN RCW 90.58.140(5)(a)(b)(c).

Sam Adams

1/9/91

(Date)

(Signature of Authorized Local Government Official)

STAFF REPORT

Shoreline Application #CC-241-90
Aluminum Company of America (ALCOA)

Aluminum Company of America (ALCOA) has submitted an application for a Shoreline Substantial Development Permit for the removal of three waste piles of spent pot linings. Removal is proposed in order to mitigate the potential environmental degradation associated with the material, listed as a "dangerous waste" by the Department of Ecology.

The site is located in the NW 1/4 of Section 19, T.3N, R.1E, Willamette Meridian, within the Heavy Industrial Zone (MH-E). The site is accessible via Lower River Road and a private entrance road used by Vanexco and ACPC, Inc., shown on the site plans. A consent decree is pending from the Department of Ecology, who are negotiating conditions of off-site transportation and disposal with ALCOA. The site lies within the plant flood control dike, thus protected from the 100 year flood plain of the Columbia River.

FINDINGS:

1. A Determination of Nonsignificance (DNS) was issued on December 13, 1990.

2. The work will not take place within the floodway and is located beyond the 100-year floodplain of the Columbia River.

3. The project is located within the "urban" shoreline environment. Industrial projects are identified as a permitted use within the urban environment.

5. The applicant proposes spraying water around the construction area, to control impacts from dust during removal of the piles.

6. Flood plain regulations will be enforced through the Shoreline Permit process, therefore, a separate flood plain permit is not required.

RECOMMENDATIONS:

Staff recommends APPROVAL of Shoreline Substantial Development Permit #CC-241-90 subject to the following conditions:

1. The applicant shall obtain all other necessary State and local permits prior to commencing the project and shall comply with the standards of those permits.

2. The applicant shall confine operations to that area within the flood control dike, therefore beyond the 100-year flood plain.

3. The applicant should actively reduce dust on the site during removal of the piles by spraying them with water.

APPROVED by the Shoreline Management Review Committee on ...

Sam Adams, Chairman
Public Works

Monica Tubberville
Parks and Recreation

Rich Hines
Planning

DW:
Attachments

AFFIDAVIT OF PUBLICATION

STATE OF WASHINGTON)
) ss:
County of Clark)

Joanne Cox being first duly sworn on oath, deposes and says: That she is th Principal Clerk of THE COLUMBIAN, a le newspaper published in Clark County, Washington and approved by the Superio Court of Clark County, Washington. Tha the annexed is a true copy of a

Notice of Application

as it was published on:

the 03 day of October, 1990

the 10 day of October, 1990

That the fee charge for the publicatio is the sum of $36.00.

Joanne Cox

Subscribed and sworn to before me Octo 15, 1990.

Deborah K. Trumble

NOTARY PUBLIC in and for the State of Washington. Residing in Vancouver.

NOTICE OF APPLICATION FOR A SHORELINE MANAGEMENT SUBSTANTIAL DEVELOPMENT/ PERMIT SMSD-091-90

Notice is hereby given that the Aluminum Company of America, owner of the below described property, has filed an application for a shoreline management substantial development permit to reserve and dispose off-site three spent potlining waste piles, located within the NW ¼ of Section 19, Township 2 North, Range 1 East of the Willamette Meridian in Clark County, Washington. Said activity is proposed to be within the shoreline management jurisdictional area of the Columbia River. Any person desiring to express his views or to be notified of the action taken on this application should notify the Planning Director, Clark County Department of Public Services in writing of his interest within thirty (30) days of the final date of publication of this notice, which is October 10, 1990.

Written comments must be received by November 9, 1990.

Oct. 3,10

DETERMINATION OF NONSIGNIFICANCE

Description of proposal: Shoreline Permit to remove 3 waste piles of spent potlinings within the former ALCOA industrial plant site.

Proponent: ALCOA (Aluminum Company of America, Inc.)

Location of proposal, including street address, if any: 550 Lower River Road.

Lead agency: Clark County, Washington

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

__ There is no comment period for this DNS.

X This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 15 days from the date below. Comments must be submitted by December 27, 1990. **Please refer to the Clark County file name and number when submitting comments.**

Responsible Official: Glenn W. Gross, Clark County Department of Public Services
Position/title: Planning and Development Review Manager **Phone:** 699-2375
Address: 1408 Franklin Street, P.O. Box 5000, Vancouver, WA 98668
Date: December 13, 1990

Signature: Glenn W. Gross

NOTE: In making a threshold determination, the SEPA Rules require the lead agency to consider mitigation measures which an agency or the applicant will implement as part of the proposal (Chapter 197-11-330(1)(c) WAC). This DNS is based on the conclusion that the requirements of Clark County building and land development codes, and applicable State and Federal regulations, will serve to mitigate adverse impacts of this proposal.

Attached to the environmental checklist are evaluation comments prepared by lead agency staff after reviewing the applicant's response to each checklist question. The staff contact person/telephone number for any questions on this review is Dave Wechner, 699-2375.

ENVIRONMENTAL CHECKLIST REVIEW BY LEAD AGENCY

CLARK COUNTY PUBLIC SERVICES DEPARTMENT - PLANNING STAFF

Name of Proposal: SHORELINE MANAGEMENT PERMIT #CC-241-90

Name of Applicant: Aluminum Company of America (ALCOA)

Section A. BACKGROUND

The Aluminum Company of America (ALCOA) has applied for a Shoreline Management permit to allow the removal of three waste piles of spent potlinings. The waste piles are located in a yard that was formerly Alcoa's Vancouver Operations. The yard adjoins property owned by Vanexco, Inc., at 550 NW Lower River Rd., Vancouver.

The area is currently being used as a dumping spot for industrial plant waste piles. A groundwater monitoring program is ongoing with several monitoring wells located around the waste piles. ALCOA is awaiting an order from the Washington Department of Ecology (DOE) for removal of these piles, as spent potlinings are listed as "dangerous wastes" by the DOE. The area is outlined on attachments accompanying the Environmental Checklist prepared by ALCOA. The site is located within the Heavy Industrial Zoning District (MH-E) of Clark County, in the NW 1/4 of Section 19, T.3N., R.1E., W.M.

The site is within the plant flood control dike, thus protected from the 100-year flood plain of the Columbia River.

Section B. ENVIRONMENTAL ELEMENTS

1. Earth

According to the SCS manual, the site is a combination of fill materials,with no clearly defined soil characteristics. Nearby soil is Pilchuck fine sand.

2. Air

There is a potential for exposure to dust by personnel removing the piles. The applicant proposes spraying water on the piles during removal to minimize this impact. The actual exposure potential is dependent upon factors such as particle size, wind speed and direction, and the number of people on site during removal.

3a. Surface Water

The applicant indicates the site is approximately 200 feet from the mean high water level of the Columbia River. The site is not within the 100-year flood plain, as it is protected by a dike surrounding the ALCOA facility. No surface water exists on the site.

3b. Groundwater

No concerns noted.

3c. Water Runoff

Site runoff is contained by the railroad embankments surrounding the site.

3d. Mitigation for Water Impacts

The handling of waste water from cleaning equipment and spraying the piles to prevent dust dispersal was not addressed by the applicant; however, the surrounding dike should contain surface runoff, and no impact to groundwater is foreseen.

4. Plants

The waste piles have a sparse cover of vegetation (grass, weeds), no landscaping OR re-vegetation of the area is proposed or needed.

5. Animals

Birds have been sighted in the area. Their exposure to windborne contaminants should be reduced by spraying the site with water to minimize dust.

6. Energy and Natural Resources

No concerns noted.

7a. Health Hazards

The proposed remediation plan will remove these contaminants from the site and transport them to a hazardous waste landfill. The immediate concern regarding health centers on those who will be actually removing the waste piles. By minimizing dust an and exposure to the waste, this hazard may be mitigated.

7b. Noise

No concerns noted as the site is an existing industrial area.

8. Land and Shoreline Use

The site is currently zoned Heavy Industrial (MH) as designated on the Comprehensive Plan, and is within the Environmental Combining District. The site is surrounded by the 100-year flood plain of the Columbia River, and within an "Urban " Shoreline Master Program designation.

9. Housing

No concerns noted.

10. Aesthetics

No concerns noted.

11. Light and Glare

No concerns noted.

12. Recreation

No concerns noted, as public recreation is not permitted on the industrial site.

13. Historic and Cultural Preservation

No concerns noted.

14. Transportation

The site is served by Lower River Road and accessed by the private entrance road used by Vanexco and ACPC, Inc. Twenty trucks per day will be using this road during removal. The trucks are to be covered and cleaned prior to leaving the site. This quantity of additional trucks for the limited duration of the project will have a negligible effect on traffic in the area. All vehicles used in the removal must comply with all federal and state standards.

15. Public Services

No concerns noted.

16. Utilities

No concerns noted.

DLW\CHKL241.SH

CLARK COUNTY

APPLIC TION FOR SHORELINE MANAGE NT

( ) Substantial Development Permit
( ) Conditional Use Permit
( ) Variance Permit

Application No. 241-90 Filing Date 9-21-90

TO THE APPLICANT: This is an application for a substantial development, conditional use, or variance permit as authority by the Shoreline Management Act of 1971. It is suggested that you check with appropriate local, state or federal officials to determine whether your project falls within any other permit systems.

1. Name of applicant Aluminum Company of America

2. Mailing address P. O. Box 970, Vancouver, WA 98666

3. Relation of applicant to property: Owner

Owner Aluminum Company of America

Purchaser

Lessee

Other

4. Name and address of owner, if other than applicant
Aluminum Company of America
1501 Alcoa Building
Pittsburgh, PA 15219

5. General location of proposed project NW 1/4 Section 19
(section, to the nearest quarter
Township 2 north range 1 east
section, township and range)

6. Name of water area and/or wetlands within which development is proposed
Approximately 200 feet from Columbia River mean high water shoreline

7. Current use of the property with existing improvements Yard area of
industrial plant waste piles within the plant flood control dike

8. Proposed use of property (describe proposal) Removal of three spent potling
waste piles

9. (To be completed by local official.) Nature of the existing shoreline. (Describe type of shoreline, such as marine, stream, lake, lagoon, marsh, bog, swamp, flood plain, floodway, delta; type of beach, such as accretion, erosion, high bank, low bank, or dike; material such as sand, gravel, mud, clay rock, riprap; and extent and type of bulkheading, if any):

10. (To be completed by local official.) In the event that any of the proposed buildings or structures will exceed a height of thirty-five feet above the average grade level, indicate the approximate location of and number of residential units, existing and potential, that will have an obstructed view.

11. (To be completed by local official) If the application involves a conditional use or variance, set forth in full that portion of the master program which provides that the proposed use may be a conditional use, or, in the case of a variance, from which the variance is being sought.

PROJECT DIAGRAMS: Draw all site plans and maps to scale, clearly indicating scale on lower right-hand corner and attach them to the application.

a. SITE PLAN. Include on plan:

1. Site boundary
2. Property dimensions in vicinity of project.
3. Ordinary high-water mark (O.H.W.M.).
4. Typical cross section or sections showing:
   (i) Existing ground elevations.
   (ii) Proposed ground elevation.
   (iii) Height of existing structures.
   (iv) Height of proposed structures.
5. Where appropriate, proposed land contours using five-foot intervals in water area and ten-foot intervals on areas landward of ordinary high-water mark, if development involves grading, cutting, filling, or other alteration of land contours.
6. Show dimensions and locations of existing structures which will be maintained, modified or removed.
7. Show dimensions and locations of proposed structures.
8. Identify source, composition, and volume of fill material.
9. Identify composition and volume of any extracted materials, and identify proposed disposal area.
10. Location of proposed utilities, such as sewer, septic tanks and drainfields, water, gas, electricity.
11. If the development proposes septic tank, does proposed development comply with local health and state regulations?_____
12. Shoreline designation according to master program._____
13. Show which areas are shorelines and which are shorelines of statewide significance.

b. VICINITY MAP.

1. Indicate site location using natural points of reference (roads, state highways, prominent land marks, etc.)
2. If the development involves the removal of any spoils by dredging or otherwise, please identify the proposed disposal site on the map. If the disposal site is beyond the confines of the vicinity map, provide another vicinity map showing the precise location of the site and its distance to the nearest city or town.
3. Give brief narrative description of the general nature of the improvements and land use within one thousand feet in all directions from development site. (i.e., residential to the north, commercial to the south, etc.)

12. Additional material or comments (include other sheets if necessary).

_____

_____

_____

I, STEVEN H. MYERS (ALCOA) am the above named applicant for a permit to construct a development pursuant to the Shoreline Management Act of 1971, and hereby state that the foregoing statements, answers and information are true and correct to the best of my knowledge and belief.

_____ _____

Date Signature

Filing fee $250.00

ENVIRONMENTAL CHECKLIST

Purpose of Checklist:

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for Applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Use of checklist for nonproject proposals:

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

TO BE COMPLETED BY APPLICANT

A BACKGROUND

1 Name of proposed project, if applicable.

Removal of spent potlining piles

2. Name of applicant. Aluminum Company of America

3 Address and phone number of applicant and contact person:

S. H. Myers
Aluminum Company of America

P. O. Box 970
Vancouver, WA 98666 (206) 699-5842

4 Date checklist prepared 1990 September 15

5. Agency requesting checklist: Clark County

6 Proposed timing or schedule (including phasing, if applicable):

1990 October 01 - 1991 April 01

7 Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

No

8 List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

A groundwater monitoring program is ongoing with several monitoring wells around the waste piles.

9 Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

An order from Washington DOE for removal of these waste piles is expected soon.

10 List any government approvals or permits that will be needed for your proposal, if known.

Approval from Washington DOE.

11 Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

Remove and dispose off-site three spent potlining waste piles.

12 Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

Waste piles are located adjacent to Vanexco, Inc., 5509 N.W. Lower River Road, Vancouver, WA

B ENVIRONMENTAL ELEMENTS

1 Earth

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____ Area around waste piles is flat to gentle rolling.

b What is the steepest slope on the site (approximate percent slope)?

N/A

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

N/A - Waste piles to be removed down to grade only.

d Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

N/A

e Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Removal only.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

No

g About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

N/A

h Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

N/A

2 Air

a What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Small amount of dust will be generated, water will be used to control dusting.

b Are there any off site sources of emissions or odor that may affect your proposal? If so, generally describe.

No

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Water to control dusting.

3 Water

a Surface

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names If appropriate, state what stream or river it flows into

. Columbia River - 200 feet to south.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans

Waste piles are approximately 200 feet from Columbia River.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material

N/A

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known

N/A

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan

No

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No

b Ground

1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

No

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals . . agricultural, etc.) Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

N/A

c. Water Runoff (including storm water):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Effort will be made to prevent run off during the removal process.

2) Could waste materials enter ground or surface waters? If so, generally describe

No

d Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

Waste material will be removed in a method so as to reduce runoff and ground migration.

4 **Plants**

a. Check or circle types of vegetation found on the site.

__ deciduous tree: alder, maple, aspen, other
__ evergreen tree: fir, cedar, pine, other
__ shrubs
X grass
__ pasture
__ crop or grain
__ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
__ water plants: water lily, eelgrass, milfoil, other
__ other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Waste piles have a sparce vegetation cover.

c. List threatened or endangered species known to be on or near the site.

None

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

N/A.

5 **Animals**

a Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds, other: birds
mammals: deer, bear, elk, beaver, other.
fish: bass, salmon, trout, herring, shellfish, other: None other than Columbia River

b. List any threatened or endangered species known to be on or near the site.

None

c Is the site part of a migration route? If so, explain

No

d Proposed measures to preserve or enhance wildlife, if any

N/A

6 **Energy and Natural Resources**

a What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc

N/A

b Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe

No

c What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any.

N/A

7 **Environmental Health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe

The spent potlining is listed as a dangerous waste in Washington. Removal will minimize present low threat to exposure.

1) Describe special emergency services that might be required.

None

2) Proposed measures to reduce or control environmental health hazards, if any

Work will be done by a trained contractor. All equipment that leaves the job site will be cleaned; generation of job site dust will be minimized.

b Noise

1) What types of noise exist in the area which may affect your project (for example traffic, equipment, operation, other)?

N/A

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Construction noise only, nearest resident is one mile away.

3) Proposed measures to reduce or control noise impacts, if any:

N/A

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

Property is part of the yard that was formerly Alcoa's Vancouver Operations. The yard is owned by Alcoa and adjoins property of Vanalco, Inc.

b Has the site been used for agriculture? If so, describe.

No

c Describe any structures on the site

None

d Will any structures be demolished? If so, what?

No

e What is the current zoning classification of the site?

Heavy industry - E - MH

f What is the current comprehensive plan designation of the site?

Heavy manufacturing

g If applicable, what is the current shoreline master program designation of the site?

Urban

h Has any part of the site been classified as an "environmentally sensitive" area? If so, specify

No

i. Approximately how many people would reside or work in the completed project?

N/A

j. Approximately how many people would the completed project displace?

N/A

k. Proposed measures to avoid or reduce displacement impacts, if any:

N/A

l Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

Project will return land to its current use.

9 Housing

a Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing

N/A

b Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing

N/A

c Proposed measures to reduce or control housing impacts, if any:

N/A

10 Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas, what is the principal exterior building material(s) proposed?

N/A

b What views in the immediate vicinity would be altered or obstructed?

N/A

c Proposed measures to reduce or control aesthetic impacts, if any:

N/A

11 Light and Glare

a What type of light or glare will the proposal produce? What time of day would it mainly occur?

N/A

b Could light or glare from the finished project be a safety hazard or interfere with views?

N/A

c What existing off-site sources of light or glare may affect your proposal?

N/A

d Proposed measures to reduce or control light and glare impacts, if any

N/A

12 Recreation

a What designated and informal recreational opportunities are in the immediate vicinity?

Fishing in the Columbia River.

b Would the proposed project displace any existing recreational uses? If so, describe.

N/A

c Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

N/A

13 Historic and Cultural Preservation

a Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe

None

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

None

c. Proposed measures to reduce or control impacts, if any:

N/A

14 Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

Site is off Lower River Road accessed by the private entrance road used by Vanexco and ACPC, Inc.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

No

c. How many parking spaces would the completed project have? How many would the project eliminate?

N/A

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

N/A

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

N/A

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

Waste material will be moved by truck with approximately 20 trucks per day leaving the site.

g. Proposed measures to reduce or control transportation impacts, if any:

Trucks will be covered and cleaned prior to leaving the site. This small quantity of additional trucks for the limited duration of the project will have a negligible effect on traffic in the area.

15 Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

No

b. Proposed measures to reduce or control direct impacts on public services, if any.

N/A

16 Utilities

a. Circle utilities currently available at the site: (electricity), natural gas, (water), refuse service, telephone, sanitary sewer, septic system, other.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

N/A

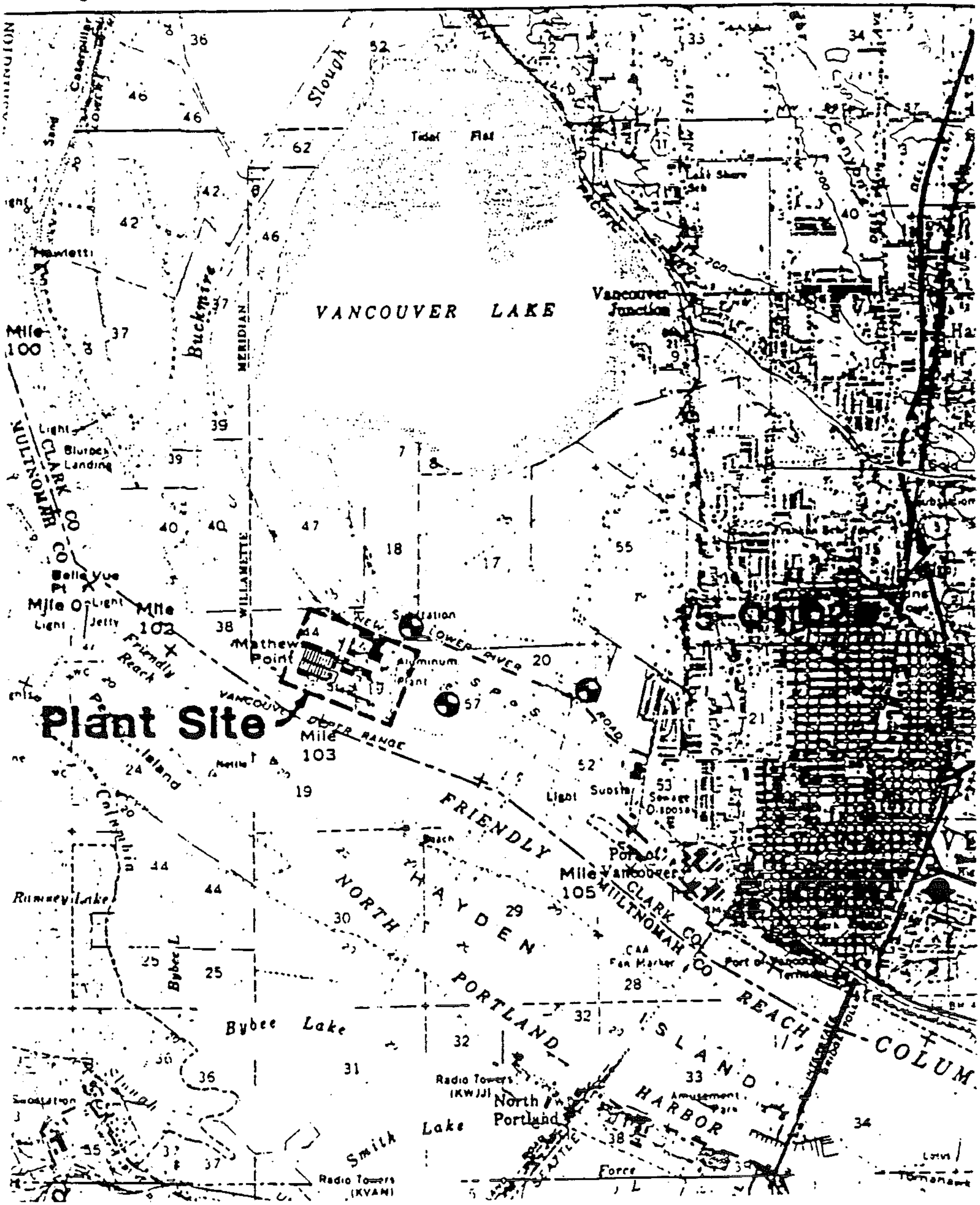
C SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

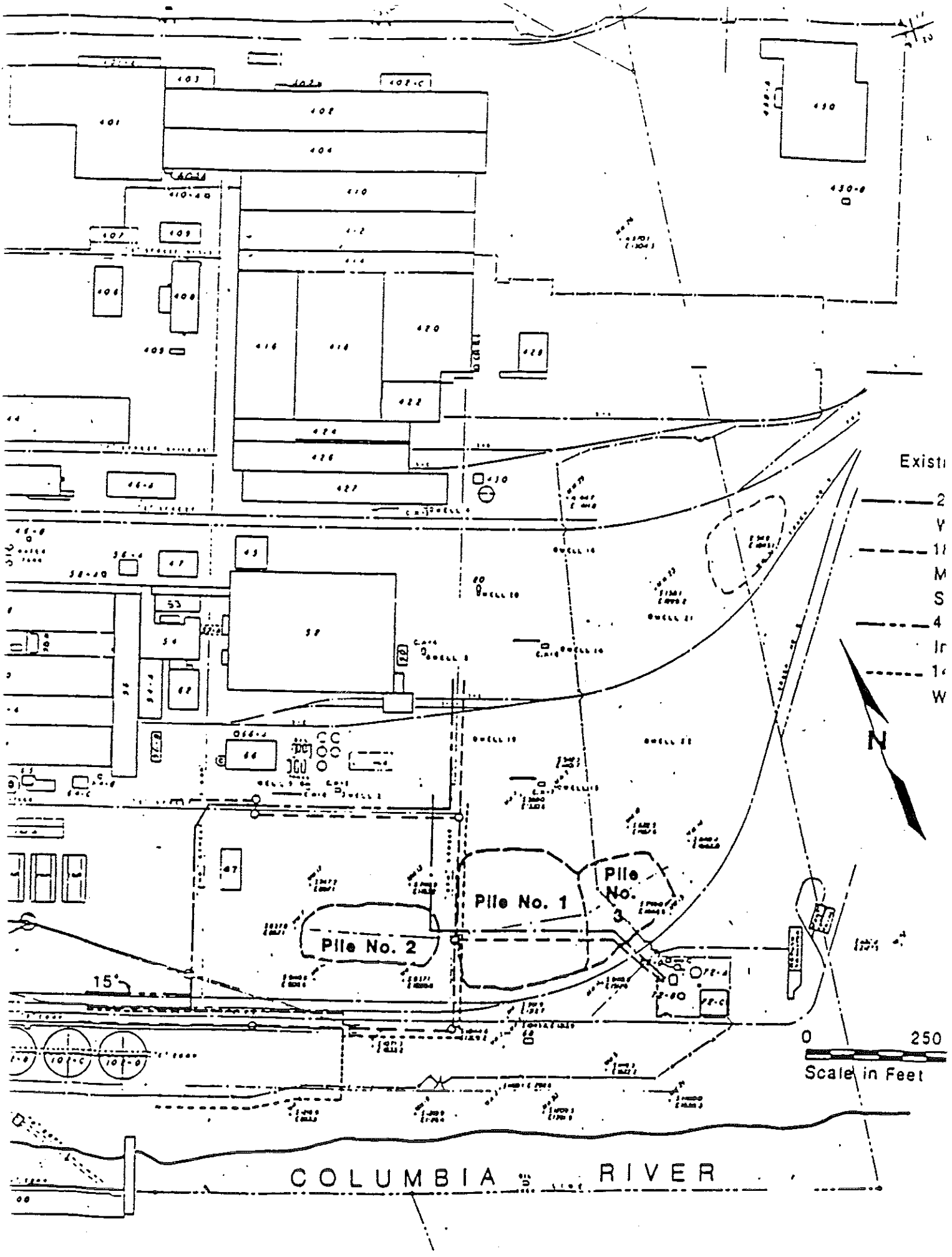
Signature .....

Date Submitted .....

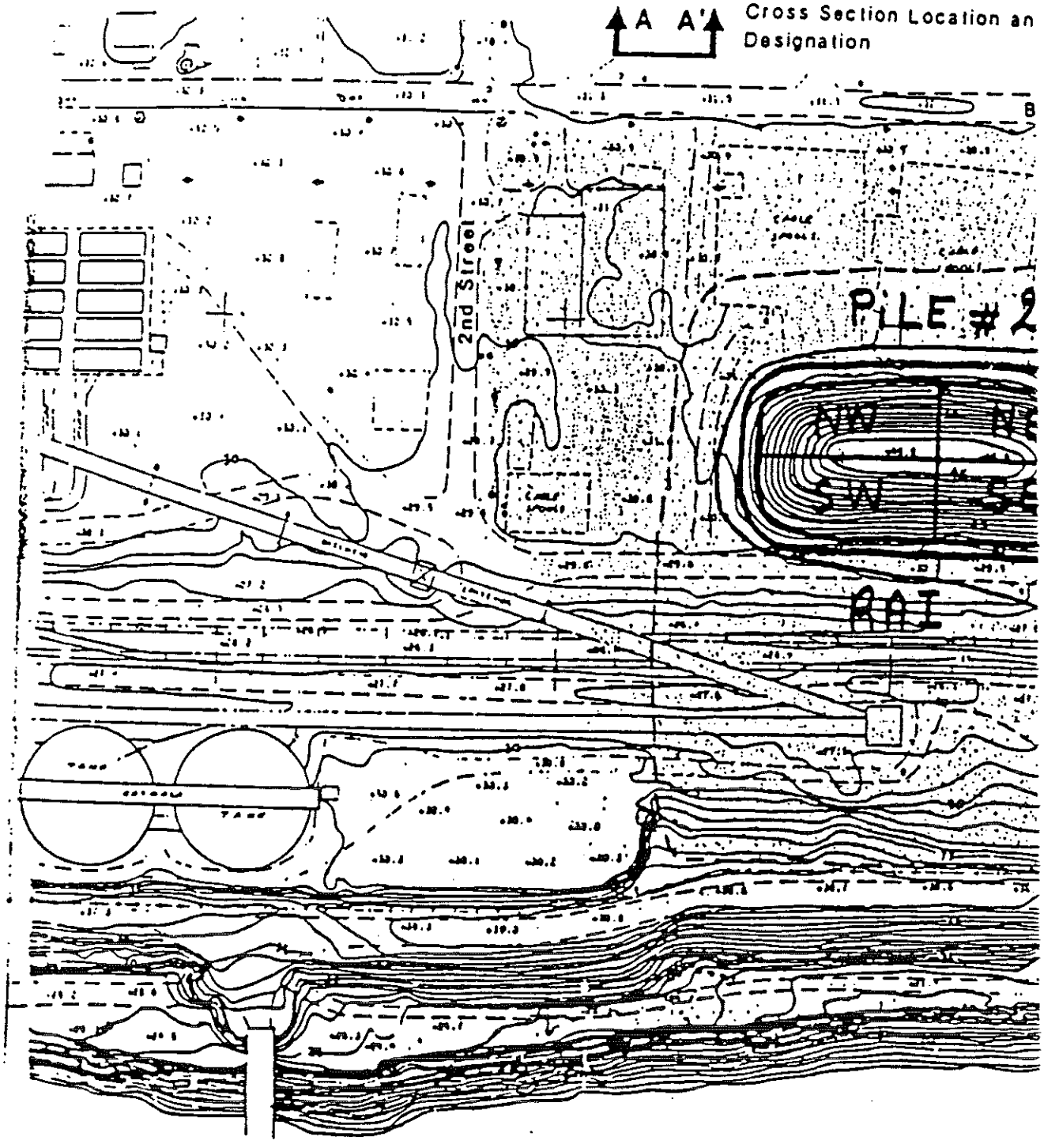
Map

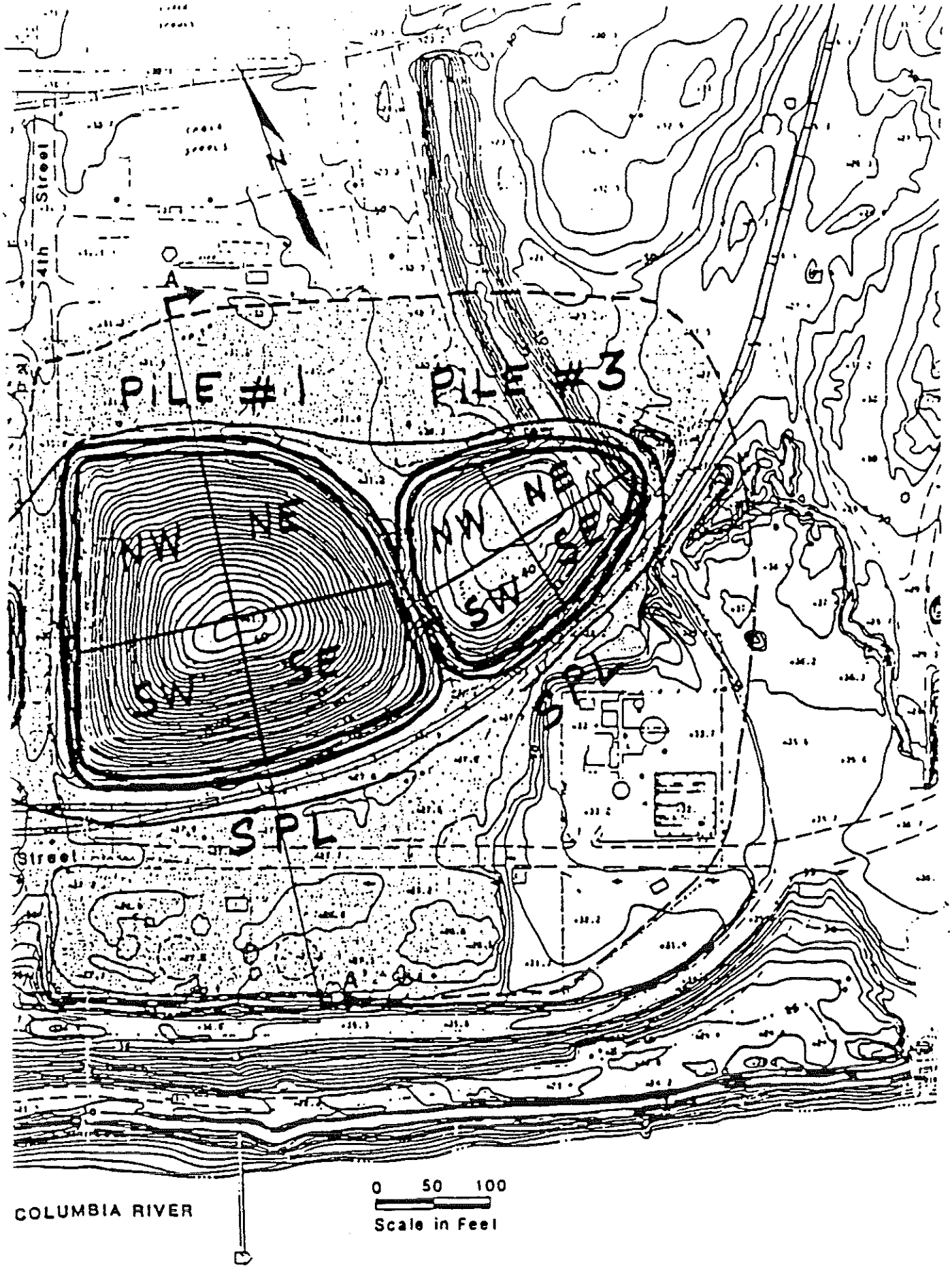


VANCOUVER LAKE
Tidal Flat
Slough
Buckmire
MERIDIAN
WILLAMETTE
Vancouver Junction
Lake Shore
Belle Vue Pt
Mile 0
Mile 100
Mile 102
Mile 103
Mile 105
Friendly Reach
Mathew Point
Aluminum Plant
Plant Site
NEW LOWER RIVER ROAD
VANCOUVER LOWER RANGE
Island
FRIENDLY
Port of Vancouver
CLARK CO
MULTNOMAH CO
NORTH HAYDEN
PORTLAND
ISLAND
HARBOR
REACH
COLUM
CAA Fan Marker
Rumsey Lake
Bybee L
Bybee Lake
Smith Lake
Radio Towers (KWJJ)
Radio Towers (KVAN)
North Portland
Amusement Park
Sewage Disposal
Light
Substa


Pile No. 1
Pile No. 2
Pile No. 3
15'
N
0
250
Scale in Feet
COLUMBIA RIVER

Site Plan and General Remedial Component Locati




34th Street
A
PILE #1
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NW
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COLUMBIA RIVER
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Scale in Feet

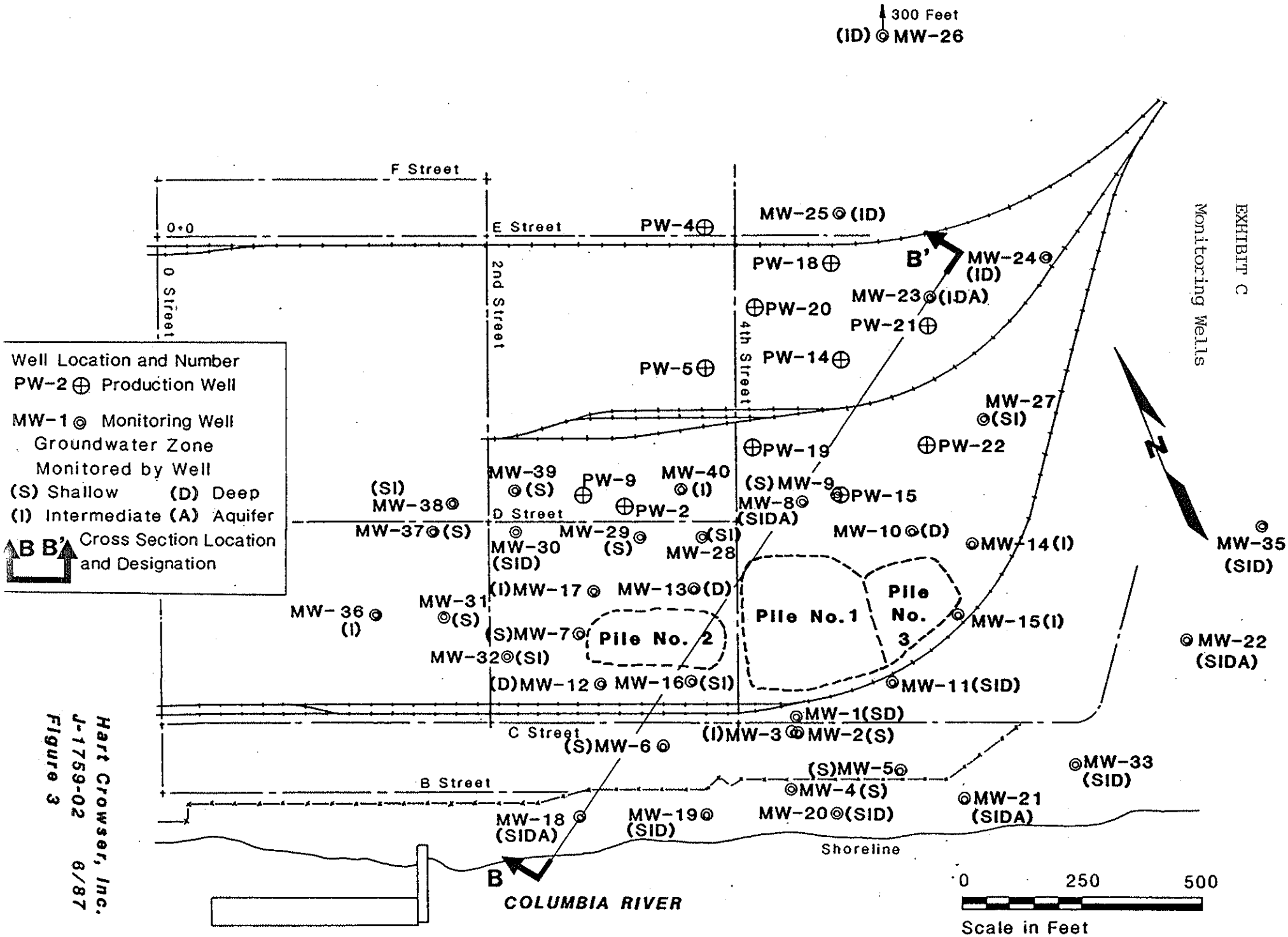

300 Feet
(ID) MW-26
F Street
0+0
E Street
PW-4
MW-25 (ID)
B'
MW-24 (ID)
PW-18
MW-23 (IDA)
PW-20
PW-21
0 Street
2nd Street
4th Street
PW-14
PW-5
MW-27 (SI)
PW-19
PW-22
Well Location and Number
PW-2 Production Well
MW-1 Monitoring Well
Groundwater Zone Monitored by Well
(S) Shallow (D) Deep
(I) Intermediate (A) Aquifer
B B' Cross Section Location and Designation
MW-39 (S)
PW-9
MW-40 (I)
(SI) MW-38
(S) MW-9
PW-15
MW-8 (SIDA)
D Street
PW-2
MW-37 (S)
MW-30 (SID)
MW-29 (S)
MW-28 (SI)
MW-10 (D)
MW-14 (I)
MW-35 (SID)
(I) MW-17
MW-13 (D)
MW-36 (I)
MW-31 (S)
Pile No. 1
Pile No. 3
MW-15 (I)
(S) MW-7
Pile No. 2
MW-32 (SI)
MW-22 (SIDA)
(D) MW-12
MW-16 (SI)
MW-11 (SID)
MW-1 (SD)
C Street
(I) MW-3
MW-2 (S)
(S) MW-6
(S) MW-5
MW-33 (SID)
B Street
MW-4 (S)
MW-18 (SIDA)
MW-19 (SID)
MW-20 (SID)
MW-21 (SIDA)
Shoreline
B
COLUMBIA RIVER
0 250 500
Scale in Feet
N
EXHIBIT C
Monitoring Wells
Hart Crowser, Inc.
J-1759-02 6/87
Figure 3

EXHIBIT D

Public Participation Plan

PUBLIC PARTICIPATION PLAN
ALUMINUM COMPANY OF AMERICA VANCOUVER NPL SITE
VANCOUVER, WASHINGTON

1. Introduction and Overview.

The Washington Department of Ecology (Ecology) is committed to providing public participation opportunities during the investigation and cleanup of hazardous waste sites. The public participation plan is intended to promote public understanding of Ecology's responsibilities, planning activities, and remedial activities at hazardous waste sites. It also provides an opportunity for Ecology to learn information, from the public that will enable the Department to develop a comprehensive cleanup plan that is protective of both human health and the environment.

A. This public participation plan at the Alcoa Vancouver NPL Site covers the final consent decree for cleanup activities. It has been tailored to the needs of the public based on the stage and nature of the cleanup, level of public concern, and the risks posed by the site.

B. Between 1973 and 1981 Alcoa disposed of potliner from it's aluminum smelter on site in large waste piles. The waste piles were not covered and were exposed to normal precipitation. Fluoride and cyanide leached out of the exposed potliner and contaminated soils and ground water below the piles. The piles were covered with a temporary cover in 1981. In 1986, as a result of increasing cyanide levels in monitoring wells, Ecology ordered Alcoa to conduct a program to assess the ground water contamination at the site and to evaluate potential cleanup actions. The site was placed on the National Priorities LIst (NPL) in February of 1990. Alcoa and Ecology began negotiations for cleanup of the site in January of 1991.

C. This plan discusses the communities concerns and outlines public participation activities to be conducted in during the cleanup of the site. This plan will be reviewed at the end of the cleanup and amended or rewritten as appropriate.

The purpose of the public participation effort and of this plan is to assure that the affected public and governmental agencies are kept informed as the cleanup proceeds and that each has an opportunity to contribute information and comment regarding the cleanup activities.

2. Site Description.

A. Land Use. The current land use in the area of the site is a mixture of heavy industry and agriculture. The site is located in the southeastern corner of the VANALCO aluminum smelter complex in the NW 1/4 of Section 19, T. 3 N, R. 1 E, Willamette Meridian. It is bounded by the smelter complex on it's northern and western boundaries; and the Columbia River on the southern boundary. Property on the eastern boundary is currently undeveloped. The site is zoned Heavy Industrial (MH-E) and is accessible via Lower River Road and a private entrance road used by Vanexco and ACPC, Inc. The nearest residents are located at least 5,000 feet to the east and west of the site. There are production cooling water wells located on the northern edge of the site.

B. Chemical Contamination. Studies conducted at the site have discovered cyanide and fluoride in the ground water and soils; and TCE in groundwater. Cyanide and fluoride contamination in ground water on the site is above water quality standards in three of the four hydrogeologic units. Cyanide and fluoride contamination are the result of the improper storage of potliner. The source of the TCE contamination currently being investigation as a separate action and is off of the potliner site. Only the cyanide and fluoride contamination is addressed in this public participation plan.

The consent decree and cleanup action plan address the cyanide and fluoride contamination. The principal elements of the proposed Alcoa remedial action are:

- Removal of approximately 47,000 cubic yards of spent potlining and reclaimed alumina insulation to a dangerous waste landfill.
- Characterization of soils below the existing waste piles.
- Capping of the pile area with PVC liner and covering the area with two feet of clean sand. Re-vegetating the cap.
- Fencing the site.
- Placement of institutional controls on the property deed to prevent disruption of the cap or withdraw of ground water from the site.
- Continued groundwater monitoring.

3. Public Participation Activities.

The public participation plan for the Alcoa Vancouver NPL Site will consist of the following items:

A. A thirty day public comment period. The comment period will run beginning February 7, 1992 ending March 7, 1992.

B. A public hearing on the Consent Decree and Proposed Cleanup Action Plan shall be held on February 27, 1992 at 7:00 PM in the Clark County PUD Building, 1200 Fort Vancouver Way, Vancouver, WA

C. Notice of the comment period and hearing will be advertized with:

1. A legal notice in the Vancouver newspaper.

2. A press release.

3. A mailing to interested parties generated from Industrial Section Files and the Intergovernmental Resource Center (IRC) in Vancouver, Washington. The IRC mailing lists consist of citizens interested in hazardous waste issues and neighborhood associations in Clark County.

4. A mailing to the local news media.

D. Public notice announcements regarding the site will be placed in the Site Register for each comment period.

E. Information repositories will be placed in the following locations:

1. Fort Vancouver Regional Library
Main Branch
1007 East Mill Plain Boulevard
Vancouver, Washington 98633

2. Intergovernmental Resource Center
1351 Officer's Row
Vancouver, Washington 98661

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

F. All comments received will be retained in the site files. Responses to comments received on documents circulated for comment will be compiled in a "responsiveness summary" that will be sent to those who submit written comments and to designated information repositories. Notice of availability will be sent to those on the site mailing list.

G. Should there be need for additional public participation activities, the public shall be notified through advertisement in the Vancouver newspaper.

EXHIBIT E

Restrictive Covenant

Paul PS Ted GM

ALUMINUM COMPANY OF AMERICA
POST OFFICE BOX 970
VANCOUVER, WASHINGTON 98660

RECEIVED
DEC 22 1992
Department of Ecology
Industrial Section

ALCOA

NPL

1992 December 17

Mr. Paul Skyllingstad
Department of Ecology
Industrial Section
P.O. Box 47706
Olympia, Washington 98504-7706

RE: ALCOA VANCOUVER SPENT POTLINING REMOVAL PROJECT - FINAL REPORT

Dear Mr. Skyllingstad:

The removal of the spent potlining piles at the Alcoa Vancouver site has been completed. All requirements of the Consent Decree have been completed including final cover, seeding, and fencing.

Enclosed please find project completion documents and a copy of the restrictive covenant as filed with the Clark County Auditor.

If you have any questions please call me at 699-5842.

Sincerely,

S.H. Myers
Environmental Specialist

FILE COPY

AIR ☐
WATER/SOLID ☐
HAZ WASTE ☐
HWCU ☒
ENFORCEMENT ☐

RONALD A. ROBERTS
S. ALAN WEAVER
RICHARD D. TURNER
RICHARD A. JESSUP
DONALD L. ANDERSON
JAMES M. HUSHAGEN
KATHRYN J. NELSON
CHARLES K. DOUTHWAITE
ROBERT G. CASEY
MARK J. ROSENBLUM
TERRENCE J. DONAHUE
REBECCA D. CRAIG
GIBBY M. STRATTON

LAW OFFICES OF
EISENHOWER & CARLSON
1200 First Interstate Plaza
1201 Pacific Avenue
Tacoma, Washington 98402
(206) 572-4500
FAX (206) 272-5732

GREGORY J. MURPHY
KERRY E. BRINK
GUY J. STERNAL
JEAN A. KINGREY
P. CRAIG BEETHAM
CHARLES D. BRODERICK
CARL R. PETERSON
TIMOTHY L. BUNCH
BARRY A. JOHNSRUD
BRADLEY D. FRESIA
BERNADETTE PRATT SADLER
OF COUNSEL
H. EUGENE QUINN
JAMES F. HENRIOT

December 9, 1992

Elizabeth Luce
Clark County Auditor
1200 Franklin
P.O. Box 5000
Vancouver, WA 98668

Re: State of Washington v. Aluminum Company of America
Clark County Superior Case No. 92-2-00783-9

Dear Ms. Luce:

Enclosed please find "Exhibit E Restrictive Covenant" with accompanying legal descriptions and an engineer's drawing. Please record these items with the record of deeds and other instruments concerning real property maintained by your office.

By way of background, this Restrictive Covenant and the legal descriptions were required to be recorded under the terms of a Consent Decree entered in the above-titled action. If you have any questions, please call me at 572-4500 or refer to the Consent Decree.

Thank you.

Very truly yours,

Charles K. Douthwaite

CKD:tah
Enclosures
cc: Steve Meyers
Sandy Harvey
6926e/3130/013

EXHIBIT E
RESTRICTIVE COVENANT

The property that is the subject of this Restrictive Covenant has been the subject of remedial action under Chapter 70.105D RCW. The work done to clean up the property (hereafter the "Cleanup Action") is described in the Consent Decree entered in State of Washington Department of Ecology v. Aluminum Company of America, Clark County Superior Court No. _____, and in attachments to the Decree and in documents referenced in the Decree. This Restrictive Covenant is required by Ecology under Ecology's rule WAC 173-340-440 (1991 ed.) because the Cleanup Action on the Site resulted in residual concentrations of free cyanide and fluoride which exceed Ecology's Method B cleanup levels for groundwater established under WAC 173-340-720(3)(a)(i).

The undersigned, Aluminum Company of America, is the fee owner of real property in the County of Clark, State of Washington (legal description attached), hereafter referred to as the "Site." The Site refers to the three piles of spent potlining and reclaimed alumina insulation materials in the northeast corner of the old Alcoa complex at 5509 N.W. Lower River Road, Vancouver, Washington. Also refers to subsurface areas impacted by cyanide and fluoride, as documented through groundwater, subsurface sediment and soil sampling performed by Alcoa, within the shallow zone, intermediate zone, deep zone and aquifer zone. Aluminum Company of America makes the following declaration as to limitations, restrictions, and uses to which the Site may be put, and specifies that such declarations shall constitute covenants to run with the land, as provided by law, and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Site.

Section 1. No groundwater may be taken for domestic purposes from any well at the old Alcoa complex that is located within the rectangular area bounded to the south by the banks of the Columbia River, to the west by O Street, to the north by D Street, and to the east by a line running in a north/south direction 2500 feet southeast of O Street.

Section 2. Any activity on the Site that may interfere with the Cleanup Action is prohibited. Any activity on the Site that may result in the release of a hazardous substance that was contained as a part of the Cleanup Action is prohibited.

Section 3. For purposes of Sections 4, 5 and 6 of this Restrictive Covenant, the Site shall not include the wastewater treatment facility located at the old Alcoa complex, nor shall

the Site include subsurface utilities and conveyances to and from the facility, nor shall the Site include surface and subsurface areas required for access to the facility and to subsurface conveyances and utilities. The owner and operator of the wastewater treatment facility and the subsurface conveyances and utilities (unless Alcoa is the owner and operator) shall not be subject or bound by the terms of this Restrictive Covenant.

Section 4. The owner of the Site must give written notice to the Department of Ecology, or to a successor agency, of the owner's intent to convey any interest in the Site. No conveyance of title, easement, lease or other interest in the Site shall be consummated by the owner without adequate and complete provision for the continued operation, maintenance and monitoring of the Cleanup Action.

Section 5. The owner must notify and obtain approval from the Department of Ecology, or from a successor agency, prior to any use of the Site that is inconsistent with the terms of this Restrictive Covenant. The Department of Ecology or its successor agency may approve such a use only after public notice and comment.

Section 6. The owner shall allow authorized representatives of the Department of Ecology, or of a successor agency, the right to enter the Site at reasonable times for the purpose of evaluating compliance with the Cleanup Action Plan and the Consent Decree, to take samples, to inspect Cleanup Actions conducted at the Site, and to inspect records that are related to the Cleanup Action.

Section 7. The owner of the Site and the owner's assigns and successors in interest reserve the right under WAC 173-340-720 and WAC 173-340-440 (1991 ed.) to record an instrument which provides that this Restrictive Covenant shall no longer limit use of the Site or be of any further force or effect. However, such an instrument may be recorded only with the consent of the Department of Ecology, or of a successor agency. The Department of Ecology or a successor agency may consent to the recording of such an instrument only after public notice and comment.

Richard C Rawe

Name RICHARD C. RAWE
Title PRESIDENT-PRIMARY METALS
for Aluminum Company of America

MAR 23, 1992
Date

103\alcoa-c.cxh

LEGAL DESCRIPTION FOR ALCOA
Pot Line Piles Parcel (Interior)

October 20, 1992

A parcel of property in the Northeast quarter of Section 19, Township 2 North, Range 1 East of the Willamette Meridian in Clark County, Washington described as follows:

COMMENCING at the Northeast corner of said Section 19;

THENCE South 29° 38' 42" West 1630.85 feet to a 1/2" iron rod set by Olson Engineering, Inc.;

THENCE North 65° 38' 00" West 305.38 feet;

THENCE South 24° 22' 00" West 40.62 feet to a 1/2" iron rod set by Olson Engineering, Inc. and the TRUE POINT OF BEGINNING;

THENCE South 15° 35' 54" East 106.82 feet to a 1/2" iron rod set by Olson Engineering, Inc.;

THENCE South 67° 00' 56" West 95.86 feet to a 1/2" iron rod set by Olson Engineering, Inc.;

THENCE South 76° 51' 30" West 99.76 feet to a 1/2" iron rod set by Olson Engineering, Inc.;

THENCE South 86° 33' 29" West 101.74 feet to a 1/2" iron rod set by Olson Engineering, Inc.;

THENCE North 83° 22' 49" West 81.47 feet to a 1/2" iron rod set by Olson Engineering, Inc.;

THENCE North 75° 42' 16" West 71.33 feet to a 1/2" iron rod set by Olson Engineering, Inc.;

THENCE North 68° 45' 41" West 71.16 feet to a 1/2" iron rod set by Olson Engineering, Inc.;

THENCE North 65° 21' 41" West 40.25 feet to a 1/2" iron rod set by Olson Engineering, Inc.;

THENCE North 24° 03' 43" East 40.13 feet to a 1/2" iron rod set by Olson Engineering, Inc.;

THENCE North 65° 30' 49" West 323.47 feet to a 1/2" iron rod set by Olson Engineering, Inc.;

THENCE North 26° 18′ 05″ East 137.92 feet to a 1/2″ iron rod set by Olson Engineering, Inc.;

THENCE South 66° 00′ 37″ East 318.05 feet to a 1/2″ iron rod set by Olson Engineering, Inc.;

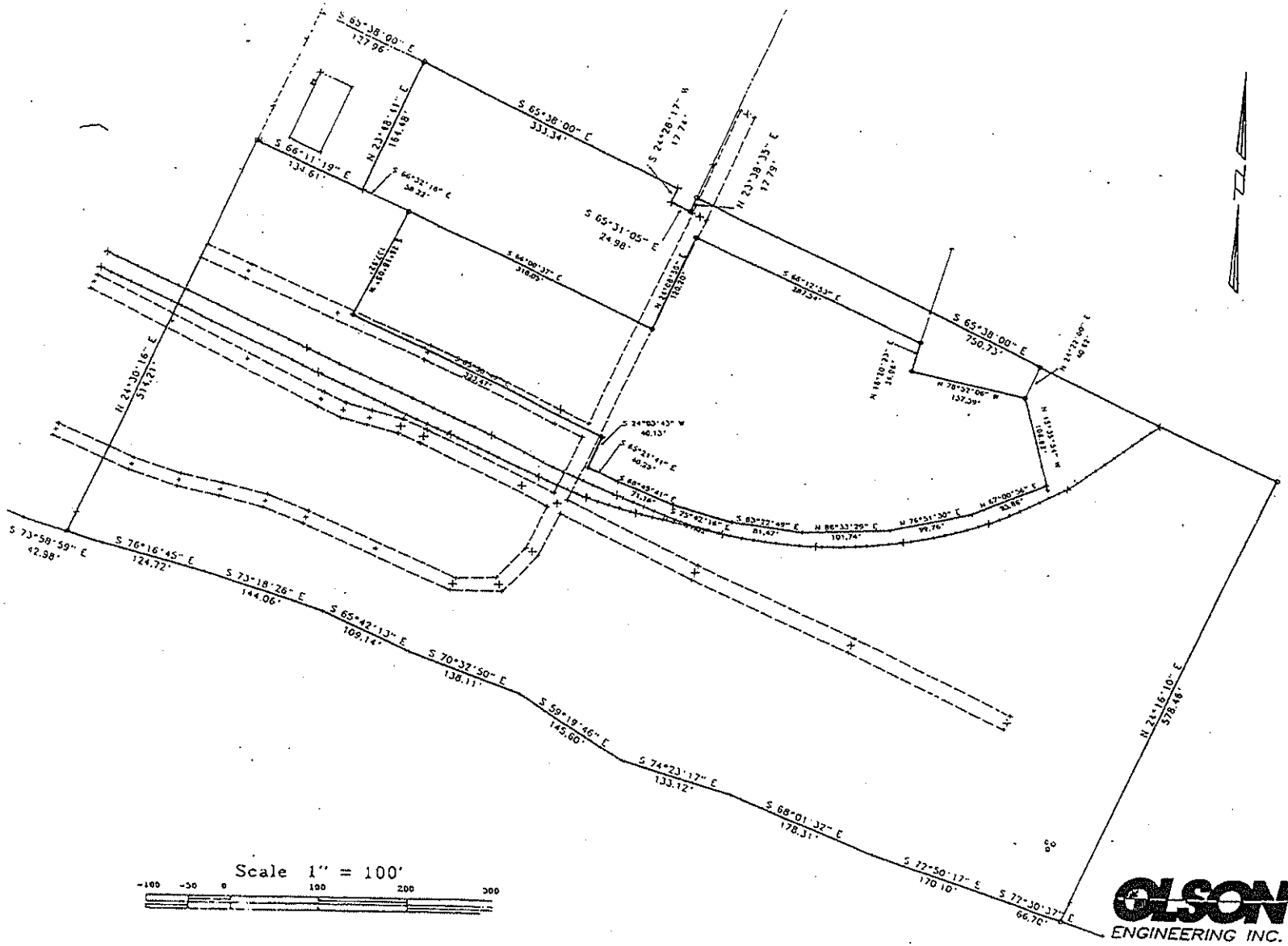
THENCE North 24° 08′ 50″ East 120.20 feet to a 1/2″ iron rod set by Olson Engineering, Inc.;

THENCE South 66° 12′ 53″ East 287.54 feet to a 1/2″ iron rod set by Olson Engineering, Inc.;

THENCE South 16° 20′ 23″ West 34.06 feet to a 1/2″ iron rod set by Olson Engineering, Inc.;

THENCE South 78° 52′ 06″ East 137.39 feet to the TRUE POINT OF BEGINNING.

10/20/92



10/20/92

OLSON ENGINEERING INC.
LAND SURVEYORS
ENGINEERS
1111 BROADWAY, VANCOUVER, WA 98660

EXHIBIT F

Data Submittal Requirements

EXHIBIT F

During the public notice period for this Decree, Alcoa objected to a document presented by Ecology as Exhibit F, "Site Description and Sample Data Submittal Requirements," draft date 6/27/91. Alcoa objected to this document because it had not been negotiated between Alcoa and Ecology (it has been shown to Alcoa only at a very late date) and because the technical requirements in the document needed improvement.

Based on Alcoa's objections, Alcoa and Ecology agreed to omit from this Consent Decree the document titled "Site Description and Sample Data Submittal Requirements," draft date 6/27/91. Alcoa and Ecology also agreed to meet and confer on a replacement or revision to the document. That replacement or revision will be needed before the first quarterly progress report in which Alcoa must report groundwater monitoring data to Ecology. The first groundwater monitoring data collected under the Consent Decree shall be due beginning with the first quarter after completion of the construction phase of the work on the Consent Decree. Completion of the construction phase likely will occur in the third quarter 1992. If so, the first progress report that must contain groundwater monitoring data will be the progress report due for the fourth quarter 1992.

If Alcoa and Ecology cannot reach agreement on a replacement or revision to the document titled "Site Description and Sample Data Submittal Requirements," draft date 6/27/91 by December 31, 1992, then Alcoa and Ecology shall use the procedure in Consent Decree Section XIV "Resolution of Disputes" to resolve their disagreement. Any replacement or revision to Exhibit F agreed to by Alcoa and Ecology, or ordered by the Superior Court, shall be attached to the Consent Decree as Exhibit F and shall be an integral and enforceable part of the Consent Decree.