HARTCROWSER

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
206.324.9530

Earth and Environmental Technologies

89-45-1031

December 1, 1988

Federal Highways Administration
610 E. Fifth Street
Vancouver, Washington 98661

Attn: Mr. Allen Stockman

Re: Avery Landing Site

Dear Mr. Stockman:

As we discussed in our recent phone call, I am enclosing a copy of our recommended approach for the Avery Landing project. I think some of the site history and site conditions sections will be helpful to your understanding of the problems. I have also enclosed a copy of the old Milwaukee Road site plan.

If you have any questions, or if we can be of any assistance, please call.

Sincerely,

HART CROWSER, INC.

ALEX TULA
Associate

AT:sek
L451031A/PROP

Enclosures: Avery Landing Proposal
Milwaukee Road Site Plan

HARTCROWSER

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
206.324.9530

Earth and Environmental Technologies

November 10, 1988

Potlatch Corporation
Post Office Box 1016
Lewiston, Idaho 93501-1016

Attn: Mr. William O. Dameworth

Re: Proposal for Environmental and Remediation Services
Avery Landing, Avery, Idaho

Dear Mr. Dameworth:

At your request, Hart Crowser is pleased to submit the attached proposed work scope and cost estimate for environmental consulting and remediation services for the Avery Landing in Avery, Idaho. In our opinion, the most practical course for this site will be the installation of a petroleum recovery/interception trench system. This will serve to remediate the site while preventing oil seepage into the St. Joe River. Other details of our proposed work are also described, including regulation strategy and supplemental site characterization actions.

Details of our scope of work are contained in the sections that follow. For your convenience, our proposal is divided into the following sections:

- Project Understanding
- Scope of Work
  - Project Strategy
  - Site Characterization
  - Remediation
- Cost Estimate

Our services for the outlined scope of work will be provided in accordance with the basis of charges in Attachment B. The cost estimate in this proposal is based on representative hourly rates for various categories of personnel together with expected project expenses. In the event that project requirements change or

unforeseen conditions are encountered which require additional work, we will notify you and seek approval for added expenditures. The attached Terms and Conditions, Attachment A, and any other exhibits or attachments referenced herein are incorporated into our agreement with you and by your authorization to proceed, you are agreeing to those terms and conditions.

Our services will be performed in accordance with generally accepted professional practices, related to the nature of the work accomplished, in the same or similar localities, at the time the services are performed. No other conditions, express or implied, should be understood.

If you agree to authorize this work according to the above outlined scope of work, cost, and terms and conditions, please have this letter signed by the appropriate authority and return a signed copy to Hart Crowser, Inc. If you desire to discuss the scope of work, cost, or terms and conditions, or if you have any questions, please call. Any changes to our agreement with you must be in writing and mutually agreed to.

We appreciate the opportunity to assist you on this project. If you have any questions, please call.

Sincerely,

HART CROWSER, INC.

ALEX TULA
Associate

APPROVED:

(Signature)

(Name and Title - Please Print)

AT:kcp

Attached: Attachment A: Work Scope and Cost Estimate
Attachment B: Basis of Charges
Terms and Conditions (HAZ) 7/88

(Company)

(Date)

PROJECT UNDERSTANDING

Our knowledge of the project is based on the following:

- Telephone discussions with Mr. W. Dameworth of Potlatch Corporation.
- Telephone discussions with Steve Breithaupt and Joe Baldwin of the Idaho Department of Health and Welfare (IH&W). These calls were approved by Mr. Dameworth.
- A site visit by Hart Crowser's proposed project manager on October 11, 1988.
- Review of documents provided by Potlatch including drawings of the old railroad facility and records from the previous site characterization efforts made in the summer of 1988.

Site History

The site is located on the north side of the St. Joe River, just downstream from the St. Joe River Bridge at Avery. The site was developed as a major maintenance facility by the Chicago, Milwaukee, and St. Paul Railroad ("The Milwaukee Road") during the early part of this century. Most of the facility development occurring between approximately 1910 and the end of World War II. The Milwaukee Road discontinued the northwestern segments of their route in the 1970's, and removed the trackage and other facilities, leaving a nearly vacant, level site.

During the use by the Milwaukee Road, the site contained a 500,000-gallon riveted steel above ground fuel tank (likely used for both fuel oil and diesel), roundhouse,

turntable, locomotive fueling dock, and extensive maintenance and repair facilities.

Since acquisition by Potlatch, the site has been used exclusively as a log landing and staging area, with no permanent facilities.

The Federal Highways Administration has begun major renovation of the St. Joe River Highway. This has included, in the Avery area, relocation of the roadway to the north side of the river with right-of-way crossing the northern portion of the site.

Property ownership is complicated in that Potlatch apparently owns only the western portion of the site, in Section 16. The eastern half of the site, in Section 15, is apparently owned by the Therriault Estate (note: spelling is uncertain), the identity, location, and financial resources of whom have not yet been established.

Site Conditions

As mentioned, the site is now essentially level with only a few small wood frame structures indicative of the previous railroad usage. According to IH&W, the site was first brought to their attention in June of 1987 through a complaint filed by a fisherman.

Following the complaint, two test pits were dug by Potlatch at the request of IH&W. These test pits were excavated in June of 1988 and were difficult to dig owing to old foundation members, buried stacked railroad ties, and other debris. The soils exposed contained visible evidence of petroleum contamination and a soil sample from each test pit was submitted for analysis for

total oil and grease (presumably using the gravimetric method). The results of these analyses were 3,710 parts per million (ppm) and 155,000 ppm. The later result almost certainly represents complete saturation of the sample pore space with petroleum products.

In August of 1988, 13 soil borings were drilled, 11 of which were fitted with monitoring wells. The borings were advanced using a solid stem auger drill rig. No soil samples were taken during drilling except for grab samples from the auger flights. Review of the boring logs shows that considerable difficulty was encountered in advancing the holes, and in maintaining an open hole for well installation. The borings were 4.5 to 20 feet in depth, but only one hole exceeded 16 feet, and most were in the 12 to 13 foot depth range. Due to difficulties in maintaining the open hole when the solid auger was withdrawn, several of the wells do not extend to the bottom of the hole. Only four wells were reported to intercept groundwater (4, 5, 6 and 11) and only three of these were screened in the groundwater (4, 5 and 11). Unfortunately, well 4 is screened entirely below the top of groundwater. Since petroleum products normally accumulate above the groundwater interface, this well provides limited data.

Soil samples from the bottom of borings were submitted for oil and grease analysis, with results ranging from 150 ppm to 58,700 ppm. Eight of the samples exceeded 2,000 ppm.

We understand from IH&W that at least one resident occupies the old railroad buildings west of the site, and that domestic water is provided by a 40 foot deep

well on that site. This is within a few hundred feet of monitoring wells installed by Potlatch that had significant petroleum contamination.

At the time of our visit, we observed the following:

- Well 11 contained about two feet of petroleum products, beginning at a depth of about 13 feet.

- Groundwater depth in well 4 was about 15 feet.

- Evidence of past petroleum seepage could be seen along the stream bank for a distance of about 200 feet, approximately 125 feet upstream and 75 feet downstream from the old pumphouse building, which is thought to lie approximately on the section 15/16 line.

- Active petroleum seepage was observed immediately below the pumphouse building over a distance of about 30 feet. This included small pools of thick black oil on the bank, short plumes of oil into the river, and several hundred square feet of oil sheen on the river.

SCOPE OF WORK

The sections that follow indicate our suggested approach to the project. Since property ownership and regulatory authority are still imprecisely defined, we recommend that Potlatch proceed in a staged manner to control both short term costs and long term liabilities.

Project Strategy

Hart Crowser recommends that Potlatch establish an overall strategy for dealing with the project. This includes developing an overall approach, establishing a strategy with respect to federal and state regulations and enforcement, and developing and implementing a site remediation plan based on the above. We recommend that the following elements be included:

Establish relations with other landowners. Other affected landowners include both the Therriault Estate and the Federal Highways Administration (FHWA). Our experience has shown that it is usually advantageous to establish a lead party who undertakes the site action with a cost sharing relationship between them and the other effected parties. Although the FHWA is not directly involved with the river frontage, the presence of substantial free petroleum product in Well 11, and the general degree of site contamination strongly indicates that the FHWA right-of-way is underlain by contaminated soils. Overall costs to Potlatch are likely to be lower if a united front can be presented to the agency, and if direct agency involvement in site remediation is avoided.

Identify and evaluate applicable regulations. IH&W officials have indicated that their principal concern at the moment is the seepage of petroleum products into the

river, and that a product recovery/interception system is desired. Their is clear regulatory authority in this area from both state and federal clean water acts. The St. Joe River is considered navigable below Avery, thus potentially involving direct federal action (through EPA or Coast Guard) is possible. The St. Joe River is classified as a "Special Resource Water" by the State, providing additional impetus for protection.

The presence of a nearby domestic well is significant, since it potentially involves safe drinking water legislation, and inevitably leads to much higher rankings of a site on state and federal priority listings. The location, use, ownership and water quality of the well should be determined.

IH&W officials are aware that other contaminants besides petroleum may also be present on the site, such as PCB's, chlorinated solvents, creosote, pentachlorophenol (PCP) and metals and have expressed interest in quantifying these items. Hart Crowser has had considerable experience in similar heavy industrial sites, including Union Station in Tacoma. Our experience indicates that, in such sites, wide varieties of such industrial chemicals are almost always present to a minor degree with the petroleum. Their detection on a
site tends to significantly complicate and confuse remediation efforts and could potentially force the cleanup to be dealt with as a hazardous waste under state and federal statutes. Accordingly, we recommend that site characterization and remediation be focussed on the petroleum issue unless clear regulatory mandate or other issues can be identified.

Hart Crowser will review site conditions and federal and state regulations for application to the site and develop a strategy intended to meet environmental requirements, while providing a cost effective solution.

Site Charac-terization

The previous work on site contains considerable, information on the nature and extent of the site contamination. Several areas where there is need for additional data were identified by IH&W officials or were noted by us in our site review. These include the following:

- Most of the existing monitoring wells do not reach groundwater, are not screened across the groundwater table ("split-screened"), and did not characterize to aquifer. Due to the difficulty of drilling in debris and cobble laden soils with the chosen type of equipment, we suspect that most wells were stopped on obstructions. In our opinion, six additional wells should be installed with split-screens at the groundwater. The split-screens will allow detection of free petroleum product, six wells should allow us to establish the groundwater gradient in the locale, and the wells will then function for monitoring of site remediation measures. We will advance these holes using a top drive air rotary drill rig to assure penetration of cobble and rubble layers.

- The existing chemical tests were from the deepest and most contaminated layer. While providing information on the maximum magnitude of contamination, this does not provide any information on the vertical variation. Information concerning

the vertical as well as horizontal distribution of petroleum contamination will be critical to agency negotiation and recovery/interception system design.

We will obtain vertical soil samples from borings or test pits and analyze 20 to 30 samples for total petroleum hydrocarbons (TPH) by EPA Method 418.1. We have assumed that these will be obtained during construction activities described in the remediation section, when an excavator will be present on site.

In preparing this proposal, we also considered and rejected various indirect methods of site assessment. These methods and reasons for rejection included:

- Ground penetrating radar: Rubble in the fill may result in false signals, oil throughout the soil column may blank the signals.

- Soil gas surveys: Fuel oil and diesel are predominantly nonaromatic, nearly the entire area has some degree of petroleum contamination.

- Seismic refraction: Steel debris in the fill likely to produce erroneous and non-interpretable results.

- Resistivity: Oil contaminated soil is fairly nonconductive. Rubble (e.g.: old steel members) in fill could result in erroneous data.

We feel that our proposed explorations are minimal and would substantially improve the knowledge of the site, the positioning with respect to the regulatory agencies,

and our ability to design an interception/recovery system.

Before performing any explorations, we will prepare a formal written work plan for your review and submittal to IH&W for their concurrence. Such pre-approved plans tend to reduce the potential for continued agency requests for additional information.

Remediation

Discussions with IH&W officials have indicated that their principal concern at this time is the seepage of free petroleum into the river and that some sort of interception system is their top priority. Based on our experience at other locations and our knowledge of this site, a petroleum recovery and interception system is likely to be very effective in this role. We envision that the system will include the following:

- An interception trench, approximately 200 feet long located about 20 feet back from the top of the riverbank. The trench will be about 15 feet deep and backfilled with clean gravel in the bottom half.

- Well pumping systems will be installed in the trench. Our experience has shown that two pumping systems are needed for a trench of this length to maintain uniform drawdown, as well as to provide some system redundancy in case of component failure or maintenance shutdown. Each pumping system consists of two pumps, a lower groundwater depression pump to create a gradient into the trench, and an upper product recovery pump.

- A recovered product storage tank. Due to the remoteness of the site, we suggest a 10,000-gallon tank to reduce the frequency that it must be emptied.

- An infiltration gallery, located near the existing FHWA right-of-way, to which groundwater from the recovery trench will be pumped. This will then create a "pump-and-flush" effect, enhancing product recovery.

- All components will be weatherized to resist prolonged cold winter conditions.

Potlatch may find it advantageous to proceed with installation of this system on a unilateral basis even if participation of other owners has not yet been achieved. The advantages of this include:

- Reduced agency and public pressure while establishing a good will relationship with the regulators.

- Reduces the possibility of federal involvement.

- Minimizes the potential for a direct state or federal cleanup, which almost inevitably cost much more than voluntary measures.

We discussed the possible need to cleanup the existing contaminated riverbank soils. IH&W indicated that they didn't consider that to be a priority at this time. In our experience, federal involvement would almost certainly result in a bank soil cleanup mandate.

IH&W officials have suggested pursuing soil cleanup at the site using the California Leaking Underground Fuel Tank (LUFT) manual for guidance. Soil cleanup would likely cost several million dollars due to the volume of soil on the site and the extent of contamination and the LUFT manual has no regulatory legitimacy in Idaho.

In view of the remoteness of the site, based on our present knowledge of the site, the position can be taken with the agency that the pump-and-flush system proposed will provide long-term site cleanup at reasonable costs, and that other action is not warranted. Both the LUFT manual and EPA guidance acknowledge leaving petroleum contaminated soils in place under certain conditions.

Hart Crowser can provide complete remediation services on a turnkey basis. These can include design, construction, startup, operator training, and operation and maintenance. A recovery system such as that proposed requires only minimal attendance.

Before beginning actual construction, we will prepare final system design drawings and obtain detailed final cost estimates. This should be submitted for agency review and concurrence. Following construction, we will prepare a project construction summary report with record drawings.

Cost Estimate

We propose to perform this work on a time and materials basis in accordance with the attached terms and conditions. Since the scope of work is somewhat imprecise at present, we have prepared a probable range for each work task below. These costs are based on the representative hourly rates shown. Well installation

and site remediation will be performed by qualified subcontractors engaged by Hart Crowser and their costs are also included below.

Some of the variability shown is due to the unknown number of meetings which may be needed involving Hart Crowser. Potlatch, IDEQ, and other land owners. We recommend that each task be separately authorized with a detailed scope and cost estimate as the project progresses.

Task	Range	
Identify pertinent regulations	2,500	3,000
Agency negotiations	1,000	3,000
Site characterization work plan	2,000	3,000
Additional site characterization	28,000	34,000
Design recovery/interception system	4,000	5,000
Install recovery/interception system	140,000	160,000
Operations and maintenance manual and training	3,000	4,000

Our cost estimate for installation of the recovery interception system includes furnishing all labor and equipment. The key factors impacting cost will be time of year and excavation difficulty. The construction cost estimate was prepared by an experienced contractor who has performed similar work for us in the past.

The rates shown below are typical for the staff shown. The actual charges will be based on the individuals'

actual salary and a multiplier for overhead and profit as described in the terms and conditions.

Title	Position	Rate
Principal	Manager, Hazardous Waste Projects	$101.00
Associate	Project Manager	82.00
	Manager, Regulatory Affairs	93.00
Sr. Project	Geochemist	73.00
	Regulatory Specialist	78.00
Project	Engineer	52.00
Sr. Staff	Site Manager	45.00 to 50.00
Staff	Scientist/Engineer	40.00 to 45.00
Clerical		30.00 to 35.00
Drafting		30.00 to 45.00

AT

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206.324.9530

Earth and Environmental Technologies

November 11, 1988

Potlatch Corporation
Post Office Box 1016
Lewiston, Idaho 83501-1016

Attn: Mr. William Dameworth

Re: Avery Landing Site

Dear Mr. Dameworth:

As requested by you in our recent telephone conversation, I am pleased to provide this information on the staff which we would assign to the Avery Landing project. Short descriptions of key staff are presented below. Detailed resumes of the individuals are attached.

Project Manager. Alex Tula will function as project manager for the entire project, with direct responsibility for all technical and administrative aspects, including schedule, cost, and technical performance. He will function as the principal point of contact for all relations between Potlatch and Hart Crowser. Alex has 15 years of experience on environmental and engineering projects. At Hart Crowser, he currently focuses on hydrocarbon site remediation for heavy industrial sites, including site investigations, remedial design, and construction management of clean up activities.

Manager, Hazardous Waste Projects. Matt Dalton is firm-wide manager of hazardous waste project for Hart Crowser. His project role will include overall quality assurance and to assure that adequate resources are committed to the project. Matt is a hydrogeologist with over 10 years of experience and is a principal of Hart Crowser.

Manager, Regulatory Affairs. Rick Pierce is firm-wide manager of regulatory affairs for Hart Crowser and will personally direct the regulatory assessment and negotiation phase of the project. Rick holds a degree in sanitary engineering and was formerly director of the health department of Thurston County, Washington.

Project Engineer. Design of remedial measures, principally the interception trench/petroleum recovery system, will be performed by Mark Otten. Mark is a registered Professional Civil Engineer, and is a member of Hart Crowser's Remediation Engineering division.

Environmental Chemist. Mike Ehlbrecht will function as project chemist. Mike has a masters degree in environmental geochemistry which focussed on petroleum hydrocarbons. His work at Hart Crowser has involved site characterization and remediation studies for numerous petroleum sites.

Field and other technical staff for the project will be selected on a task by task basis as the project progresses depending on nature of the work being performed. This selection will be made only after Potlatch has reviewed and approved the qualifications of the individuals proposed.

We look forward to working with you in the near future. If you have any questions, please call.

Sincerely,

HART CROWSER, INC.

ALEX TULA
Associate

AT:kcp

Attachments: Resumes