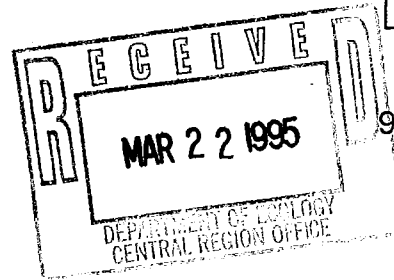


# Pacific Northern Geoscience

Comprehensive Environmental Services



January 27, 1995



94-33130-01

Mr. William Droessler  
Zurich-American Insurance  
1400 American Lane  
Schamberg, IL 60916

Subject: Status Report Number 5 and Cost Estimate for Completing the RI/FS  
De Vere and Sons Distributing Site, Cle Elum, Washington

Dear Bill:

This letter presents a summary of work conducted by Pacific Northern Geoscience (PNG) at the De Vere and Sons Distributing Site since the last progress report dated November 30, 1994. Also included in this letter is a cost estimate for completing the RI/FS and the interim product recovery at the site.

### Interim Product Recovery

Passive product recovery efforts have been suspended since late November due to cold weather at the site. Recovery units in wells MW-1 and MW-2 froze to the inside of the well casing and could not be removed. Both units were eventually freed, but one unit was damaged during the process. Regardless, product thickness measurements conducted over the last two months indicate that very little free product recoverable by passive methods remains in the on-site wells (Table 1). It appears that fluctuating water levels may have caused free product remaining on-site to become trapped in interstitial pore space within the saturated zone. Free product fate and recoverability are discussed in more detail in the section regarding product recoverability.

If fluctuating water levels in the spring allow some trapped free product to remobilize, passive product recovery will resume. In addition, passive product recovery will resume in monitoring well MW-2 when temperatures moderate in late winter. Product thickness measurements in MW-2 have indicated between 0 and 0.04 feet of product over the last three months.

#### SEATTLE OFFICE

100 West Harrison, Suite 500, North Tower  
Seattle, WA 98119  
(206) 298-4310 FAX (206) 298-4314

#### PORTLAND OFFICE

7900 NW St. Helens Rd.  
Portland, OR 97210  
(503) 240-3476 FAX (503) 286-9794

### **Active Product Recovery System Design**

Design of an active product recovery system proceeded to near-implementation stage during December and early January. The conceptual system involved pumping three wells (MW-1 and two new wells) and routing the discharge to an oil/water separator. Product from the oil/water separator would be collected and drummed, while impacted water would be run through an air stripping unit and discharged to the ground via an infiltration trench.

Bids for the system were obtained from vendors, and permitting and notification requirements were established with state and local officials. Since the system would be operated for less than six months, the only permit required would be for the air stripping unit. A temporary air permit would require a SEPA conditional permit that would be administered through the Washington State Department of Ecology (Ecology). Ecology also requires a notification of intent, a notification of construction, and a implementation plan. If the system was intended to operate longer than six months, a state waste discharge permit would be required. Review and approval time for state waste discharge permits is currently 3-6 months.

Although a firm cost estimate to install and operate the system has not been completed, estimated costs are in the \$30-50,000.00 range for purchase and installation of the system. Leasing the equipment would probably decrease the cost by about 25 percent. Since product thickness measurements indicated that product remaining on-site may not be in a recoverable form, we thought it would be prudent to re-assess the recoverability of the product prior to committing \$50,000.00 to install a system that may not recover a significant quantity of product.

### **Product Recoverability**

There are basically three possible scenarios for the fate of the product initially observed in the monitoring wells at the De Vere site.

- The product is trapped in residual pore space within the saturated zone (and is essentially unrecoverable).
- The product has been pinched-off from the monitoring wells by rebounding water levels (recoverable).
- The product pool has migrated downgradient of the existing monitoring wells, or has become diluted or dissipated from high groundwater flows (not recoverable).

To assess the fate of the floating product, PNG conducted a product recovery test on January 20, 1995. The product recoverability test consisted of pumping MW-1, which



historically exhibited the greatest product thickness, and monitoring product thickness in MW-1 and four other wells. MW-1 was pumped at approximately 18 gallons per minute (gpm) for two hours. Drawdown of the water level within the well was maintained at approximately 4 feet for two hours. If a pool of free product was trapped or pinched-off from the well by rebounding water levels, maintaining a four-foot depression of the water table for two hours should have allowed product to flow into the well. However, no product was measured in the well during or after pumping. In addition, although water levels in other monitoring wells dropped by 0.02 to 0.04 feet during pumping, no product thickening was observed in any of the four wells monitored.

Results of the test indicate that free product present at the site in the fall of 1994 either went into residual saturation after water levels dropped dramatically during October, or that the free product pool has dissipated or migrated downgradient of the current monitoring well network. Available data indicates that residual saturation is the most likely explanation. Table 1 presents depth to water and product thickness measurements collected at the site since June 1994. Although there has been some variability, monitoring wells MW-1 and MW-2 exhibited recoverable thicknesses of product until the measurements collected in November. After October, no product has been measured in MW-1, and between 0 and 0.04 feet of product has been measured in MW-2. The absence of product in these two wells coincides with a rise in water levels of over 1.5 feet in November that followed a drop in water levels of about 1.2 feet in October. The rapid lowering of the water table in October probably smeared the product in the unsaturated soil above the water table. When water levels recovered in November, the rising water failed to displace the product that filled the pore spaces in the soil above the water table, leaving product trapped in the pore spaces below the water table. Product trapped in saturated pore spaces below the water table is essentially unrecoverable by cost-effective, conventional methods. For your reference, I have enclosed a copy of an article discussing entrapment of product in the saturated zone.

As a result of the product recoverability test, we do not recommend proceeding with installation of the active product recovery system. However, if water levels drop in late spring, draining of the trapped product from the pore space may occur, and active product recovery may be feasible and desirable.

### **Anticipated Future Work**

Since recovery of the product now appears to be unfeasible, we recommend focusing on completing the RI/FS at the site. Field work required to complete the RI includes installing three downgradient monitoring wells, sampling all monitoring wells on and offsite, and additional soil sampling and analysis to complete the data gaps identified in previous progress reports. Once the field work has been completed, we will complete the RI portion of the RI/FS report, and will complete an abbreviated, focused FS that



will recommend a practical, cost-effective remedial alternative for diesel-impacted media at the site.

Three downgradient wells will be installed at the approximate locations shown on Figure 1. Following installation, the wells will be developed by pumping and surging. After development, the three new wells, as well as the existing six wells will be sampled for TPH-D, TPH-G, BTEX, and total lead. Samples will be submitted to Pacific Northern Analytical (PNA) for analysis.

Several soil borings are also necessary to complete the characterization of the diesel-impacted soil. Significant concentrations of TPH-D were detected in boring B-10, located in the northwest portion of the site. Additional borings north and west of B-10 are required to characterize diesel-impacted soil in these two directions. These borings will probably require offsite access agreements with the city for drilling in the street, and potentially, with property owners north and west of the site.

After installing the monitoring wells, the site will be surveyed by a registered land surveyor. This survey will tie all monitoring wells to state plane coordinates, and will also tie monitoring well location to major site improvements. We also recommend continuing to collect depth to groundwater and product thickness measurements monthly until we have one year of data.

After completing the field work, we will prepare a draft RI/FS report for submission to you, and will then incorporate your comments prior to submitting it to Ecology. The RI portion of the report will include and summarize all information collected, including analytical data, aquifer testing data, analytical data, and the beneficial use survey. The feasibility study (FS) section of the report will present and evaluate potential remedial options for the site, and will recommend one option for implementation. The remedial option selected should focus on the most practical and cost effective remedy for diesel impacted media and should not include potential impacts to soil and groundwater from gasoline releases not related to the March 1994 diesel release. Regardless of the remedial alternative selected, periodic groundwater monitoring will probably be required.

After all wells and soil borings have been completed, we will arrange for disposal of the water and soil generated during the investigation. Although a cost estimate for waste disposal is included in the next section, actual costs may differ significantly depending on the quantity of waste and the disposal costs for each media.

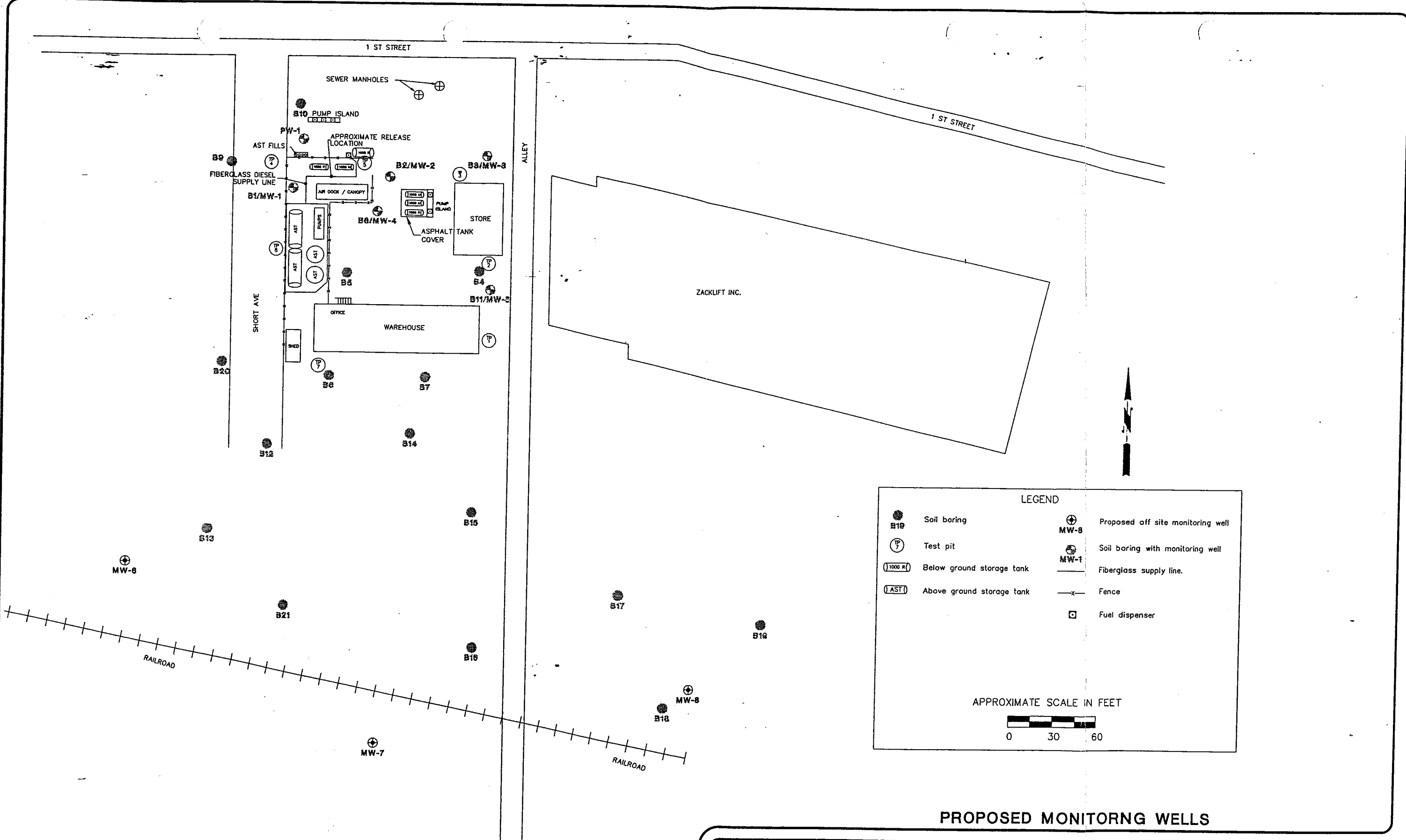
Timing to complete the RI/FS is dependent upon permission to install the downgradient wells on Washington Central Railroad property. Once permission has been granted I anticipate approximately 6-8 weeks will be required to complete the report. A cost estimate to complete the RI/FS is presented in the next section.



Table 1  
 Depth to Water and Product Thickness  
 De Vere and Sons Distributing  
 Cle Elum, Washington

Date	MW-1		MW-2		MW-3		MW-4		MW-5		PW-1	
	Depth to water	Product Thickness	Depth to water	Product Thickness	Depth to water	Product Thickness	Depth to water	Product Thickness	Depth to water	Product Thickness	Depth to water	Product Thickness
6/21/94	7.17	0.46	7.00	0.2	6.45	0	6.93	0	6.61	0	NM	NM
6/26/94	7.16	0.5	6.92	0.16	6.37	0	6.90	0	6.54	0	NM	NM
7/8/94	6.55	0.22	6.48	0.09	6.01	0	6.54	0	6.20	0.01	NM	NM
7/20/94	6.29	0.11	6.29	0.05	5.85	0	6.39	0	6.04	0	NM	NM
9/7/94	6.78	0.09	6.87	0.13	6.55	0	6.88	0	6.59	0	6.11	0
10/6/94	7.91	0.22	8.00	0.31	7.60	0	7.9	0	7.61	0	6.99	0
11/2/94	6.38	0	6.44	0.04	6.00	0	6.55	0	6.24	0.07	5.71	0
12/2/94	6.58	0	6.60	0	6.19	0	6.74	0	6.38	0.02	5.90	0
1/12/95	6.68	0	6.69	0.01	NM	NM	6.86	0	6.44	0.01	NM	NM
1/20/95	6.78	0	6.82	0.03	NM	NM	6.96	0	6.55	0	6.10	0

All Measurements in Feet  
 Depth to Water Reference is Top of Casing  
 NM - Not Measured



**PROPOSED MONITORNG WELLS**



PACIFIC NORTHERN GEOSCIENCE

SITE CHARACTERIZATION  
 Cle Elum, Washington  
 De Vere and Sons Distributing

Project No. 94-33130-01  
 Date: 11-28-94 Figure No.  
 Drawn: CAS  
 Approved: JAM **1**