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E N V I R O N M E N T A L C O N S U L T I N G S E R V I C E S

August 19, 1994

Mr. Dan Schoenholz
Associate Port Environmental Scientist
Port of Oakland
530 Water Street
Oakland, CA 94607

Subject: Product Recovery from Wells at Building C-401
 2277 Seventh Street, Oakland, California
 U&A Project No. 96-209

Dear Mr. Schoenholz:

In May 1994, Uribe and Associates (U&A) installed three groundwater monitoring wells (MW-1 through MW-3) near Building C-401 located at 2277 Seventh Street (see attached figure). Subsequent monitoring of these wells detected the presence of approximately 6 feet of free product in well MW-3 and approximately 1/2 to 1 foot of product in well MW-1. Analysis of a product sample collected from well MW-3 indicated that the free product is diesel.

On June 30, 1994 U&A initiated bailing to (1) remove product from the subsurface and (2) assess the persistence of the product in each well. To date, eight weekly product monitoring/bailing events have been conducted. During these events, an estimated total volume of 321 gallons of product has been removed from the two wells (see attached table). During this eight-week period, only a limited decrease in product thickness was observed in well MW-3. During this same period, the product thickness in well MW-1 increased. The data collected during monitoring/bailing suggest that:

1. A significant volume of product may be present in the subsurface.
2. Weekly product bailing may not be the most efficient means of product recovery at this site.
3. Groundwater gradients cannot currently be assessed accurately with data from the three wells.



In light of these considerations, U&A conducted a preliminary evaluation of alternate product recovery strategies. The ideal strategy for this site would incorporate the following characteristics:

- Cost-effective, temporary installation of automated recovery equipment. (This is particularly important considering that the Port believes they are not responsible for long-term site remediation.)
- Above-ground equipment/storage tanks located away from the wells to minimize disruption to traffic flow and building access.
- Compliance with applicable Fire Department regulations governing the storage of recovered diesel.

U&A was not able to identify an automated product recovery alternative that met all these requirements. Most recovery alternatives require running lines for pressurized air and recovered product to and from each well. To (1) minimize the disruption at the site that would result from above ground equipment near MW-3 (interference with traffic flow and building access) and (2) to assure that the equipment is protected, the air and product lines would need to be installed in subsurface trenches and connected to the wells at reconstructed wellheads. At a *minimum*, purchase/rental and installation of automated equipment with subsurface lines would be expected to exceed \$20,000.

In light of this, U&A recommends the following action plan:

First, obtain data from the wells installed by Dongary Investments so that a groundwater gradient assessment can be performed. This may allow a clearer identification of who should bear the burden for performing the product recovery operations.

Second, until the party responsible for the presence of the product has been identified, the Port, as the property owner, should continue to conduct interim product recovery (California Code of Regulations, Title 23, Article 11, Sections 2720 and 2722). We suggest the following approach to this:

1. Create a temporary, Fire Department-approved drum complex to store recovered product.
2. Use a rented air-powered product recovery pump in well MW-3 to recover product. The pump would be operated manually by U&A staff and would be removed from the well at the end of each recovery effort. Initially, the pump would be operated continuously for up to 8 hours, or until (1) the product thickness was significantly diminished or (2) the maximum storable quantity of liquid had been recovered. During this initial effort, the product withdrawal rate and product thickness would



be monitored frequently. Data from this effort would be used to select a frequency and duration for subsequent product recovery pumping.

3. Implement periodic supervised product recovery pumping in accordance with the schedule developed using data collected in item 2.
4. Continue periodic product recovery from MW-1 by bailing. Bailing MW-1 can be done concurrently with product pumping events performed on MW-3.
5. Temporarily store recovered product in the drum complex. U&A staff would coordinate with the Port and the Port's waste disposal contractor to periodically empty the drums.

The estimated cost to implement this product recovery alternative is \$11,000 to \$12,000 based on the following assumptions:

1. After the initial eight-hour pumping period is completed, sixteen additional days of product pumping would be performed. At a frequency of once per week, this would be approximately four months of product recovery.
2. The cost for disposal of the recovered product is not included in the estimate.

Finally, the Port should track costs for this product recovery operation separately to facilitate cost recovery if Dongary Investments is ultimately found to be responsible for site cleanup.

Please contact me to discuss the issues presented herein.





Sincerely,

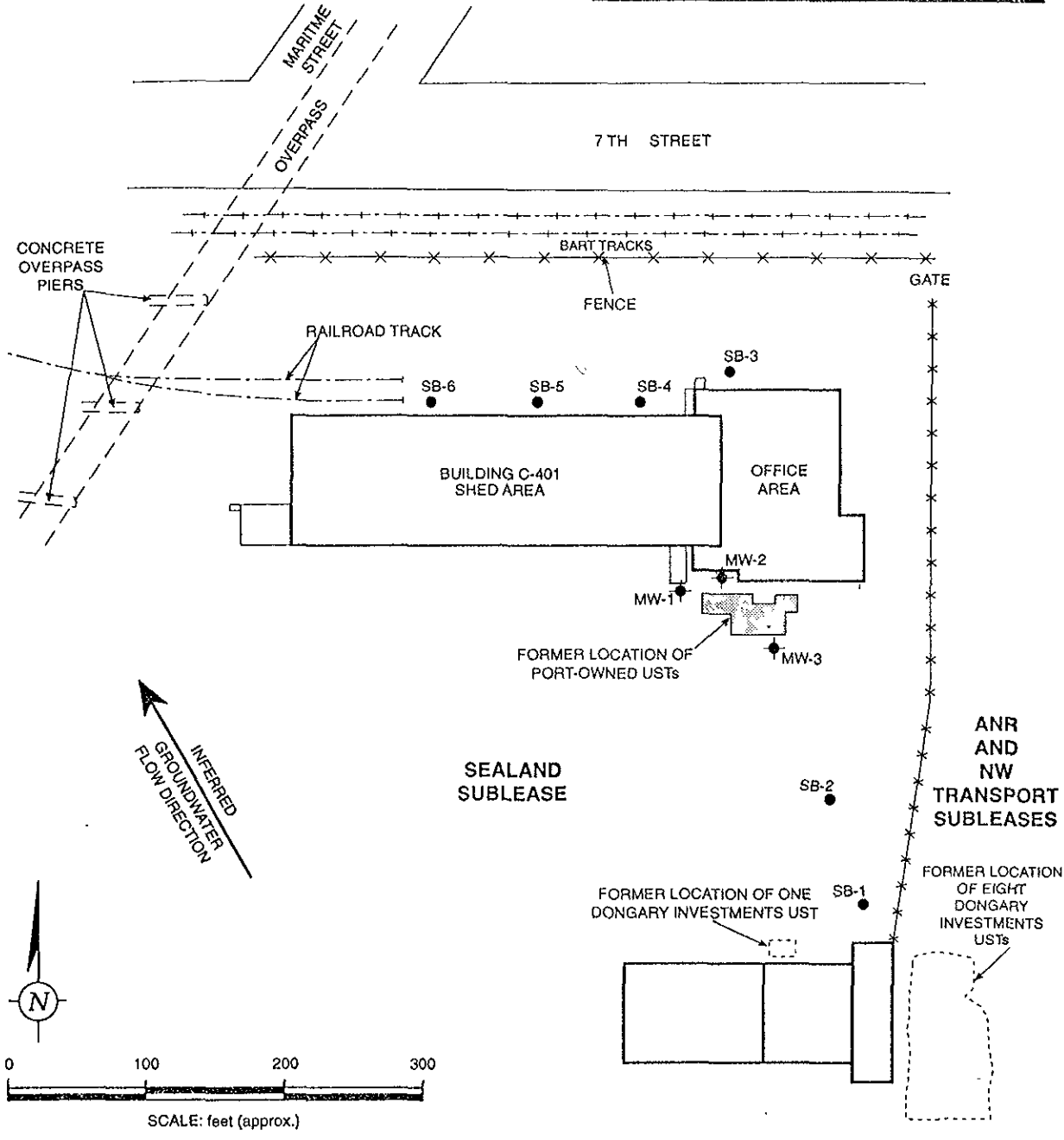
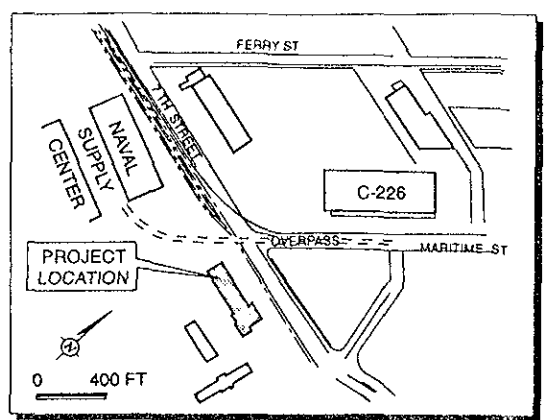
A handwritten signature in cursive script that reads "Gerard L. Slattery".

Gerard L. Slattery, R.G.
Operations Director

GLS:abm

LEGEND

- MW-1  Monitoring Well Location (Proposed)
- SB-1  Soil Boring Location (Proposed)
-  Open UST Excavation
-  Backfilled Former UST Excavation



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Figure 2: Plot Plan

**Product Column Data for
Groundwater Monitoring Wells at
Port of Oakland Building C-401, 2277 Seventh Street, Oakland**

Well Date	Reference Elevation ¹ (feet)	Well Depth ² (feet)	Depth to Product ² (feet)	Depth to Groundwater ² (feet)	Thickness of Product in Well (feet)	Estimated Amount Bailed (gallons) ³
MW-1	14.17	15.4				
6/30/94			9.20	9.75	0.55	1.5
7/08/94			9.12	9.88	0.76	1.5
7/14/94			9.12	9.90	0.78	1.5
7/21-22/94			9.16	9.78	0.62	1.5
7/29/94			9.13	10.00	0.87	3
8/03/94			9.19	10.30	1.11	3
8/11/94			9.24	10.51	1.27	3
8/18/94			9.25	10.38	1.13	3
MW-2	14.38	15.18				
7/22/94			na	9.58	na	na
7/29/94			na	9.51	na	na
8/03/94			na	9.59	na	na
8/11/94			na	9.67	na	na
8/18/94			na	9.63	na	na
MW-3	14.24	15.3				
6/30/94			8.83	14.97	6.14	45
7/08/94			8.34	14.85	6.51	45
7/14/94			8.35	14.41	6.06	45
7/21-22/94			8.45	14.32	5.87	45
7/29/94			8.90	14.45	5.55	18
8/03/94			8.45	14.45	6.00	30
8/11/94			9.52	14.45	4.93	30
8/18/94			9.48	14.38	4.90	45

Notes:

na = not applicable

¹ *Reference elevation is top of well casing and relative to Port of Oakland Datum (3.2 feet below MSL). Reference elevations surveyed on June 8, 1994 by Greiner Associates.*

² *Depths measured from top of well casing.*

³ *For MW-1 the estimated amount bailed is approximately 75% product vs. 25% water, For MW-3 the estimated amount bailed is 100% product.*