USPCI
A Subsidiary of
Union Pacific Corporation

Consulting Services

March 3, 1994

Ms. Jennifer Eberle
Alameda County
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

RE: February 1994 Report, UPRR Oakland Motor Freight Facility

Dear Ms. Eberle:

Pursuant to your letter dated January 4, 1994, enclosed is a copy of the records from the hand bailing activities for two groundwater monitoring wells and one recovery well at the Union Pacific Railroad (UPRR) Motor Freight Facility in Oakland, California. As indicated in the records, non-aqueous phase liquid petroleum hydrocarbon (oil) has not been measured in groundwater monitoring wells OKUS-W4 and -W5 and approximately one gallon per week of oil has been bailed from recovery well RW. Based on the above, USPCI requests a change in the monitoring frequency of groundwater monitoring wells OKUS-W4 and -W5 from weekly to monthly. In the event that oil is measured in these wells, the monitoring frequency would return to weekly. USPCI will contact you by telephone to obtain concurrence with this proposed change.

To remove oil from recovery well RW, it is proposed that a solar-powered oil skimming system be installed. Vendor information about the proposed skimming system has been enclosed.

During our telephone conversation on February 15, 1994, you requested the groundwater assessment data that was not included in the most recent quarterly monitoring report. This information will be sent to you under separate cover by Chris Byerman in our USPCI Spring, Texas office.

↑ rec'd it

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24125 Aldine Westfield • Spring, Texas 77373 • 713/350-7240 • Fax 713/350-7246

If you have any questions, please call me at (303) 938-5539.

Sincerely,

Denton Mauldin
Engineer III

cc: Mr. Harry Patterson, UPRR
Mr. Ken Fossey, USPCI

Enclosures

DM/tjh

USPCI JOB # 96199 **UPRR UPMF MAINTENANCE FACILITY** RES JOB # 4117

WASTE OIL RECOVERY LOG

WELL I.D.	D.T.P.	D.T.W.	THICKNESS	DATE	TIME	VOLUME BAILED
			ft.			
OKUS-W5	NA	9.50	0.00	23-FEB-94	10:00	NA
OKUS-W5	NA	9.60	0.00	17-FEB-94	09:29	NA
OKUS-W5	NA	9.61	0.00	07-FEB-4	08:50	NA
OKUS-W5	NA	9.75	0.00	31-JAN-94	14:49	NA
OKUS-W4	NA	6.57	0.00	23-FEB-94	09:50	NA
OKUS-W4	NA	6.61	0.00	17-FEB-94	09:45	NA
OKUS-W4	NA	6.65	0.00	07-FEB-94	08:55	NA
OKUS-W4	*	*	*	31-JAN-94	*	*
RW	10.01	10.10	0.09	23-FEB-94	10:12	1 GALLON
RW	10.11	10.18	0.07	17-FEB-94	09:54	1 GALLON
RW	10.26	10.36	0.10	07-FEB-94	07:54	1 GALLON
RW	10.31	10.41	0.10	31-JAN-94	14:30	1 GALLON

NOTES: RW measured to top of grade.
OKUS-W4 and OKUS-W5 measured to top of casing.
Volumes bailed are visual appproximations.
NA = Not Applicable (product not measurable).
* = Not measured-access blocked by bulktainer.

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SOLAR SIPPERS

Product Recovery System

Often, monitor wells will show a significant thickness of oil or gasoline, floating on the water. There are different theories of why this oil flows into wells and the relationship of the oil thickness in the well to the thickness of oil in the surrounding soil. Sometimes these wells can be bailed free of oil and monitored to get a rough idea of their oil recharge rate. Changing water levels can also affect the oil recharge rate. The *Solar Sipper®* is designed for recovering free product from these types of wells.

The *Solar Sipper®* uses a small DC surface pump to remove floating oil from small wells. These systems are intended for wells up to 80 feet deep. The pump cycle is controlled by a timing device that turns the pump on at regular intervals and pumps the free product from the scavenger reservoir for a set period of time. This oil is pumped through small diameter tubing to a product storage tank.

The pump is capable of a flowrate in the range of 100-300 ml/min at 80 ft of lift. These low pumping rates will effectively remove all the free product from a well and allow more oil to flow into the well for the next pump cycle. The actual recovery rate will need to be determined for each well individually. In practice, average oil production has been in the range of 5 to 10 GPD.

Since the water level is not being affected by the oil removal, the well will continue to act as a natural oil collector and the integrity of the oil layer will help draw in oil from the surrounding oil saturated vadose zone. Keeping the oil zone intact and saturated is the secret of long term oil production from a well. Since the oil pool is ususally trapped in the vadose zone, a slow removal from the pool will cause surrounding oil to flow

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towards the recovery well.

The floating oil scavenger is open to the atmosphere and when the oil has been removed from the reservoir air will flow into the pump. This will prevent hydrostatic forces to draw water through the hydrophobic skimmer filter media. The media's oil filtering capabilities will be maintained.

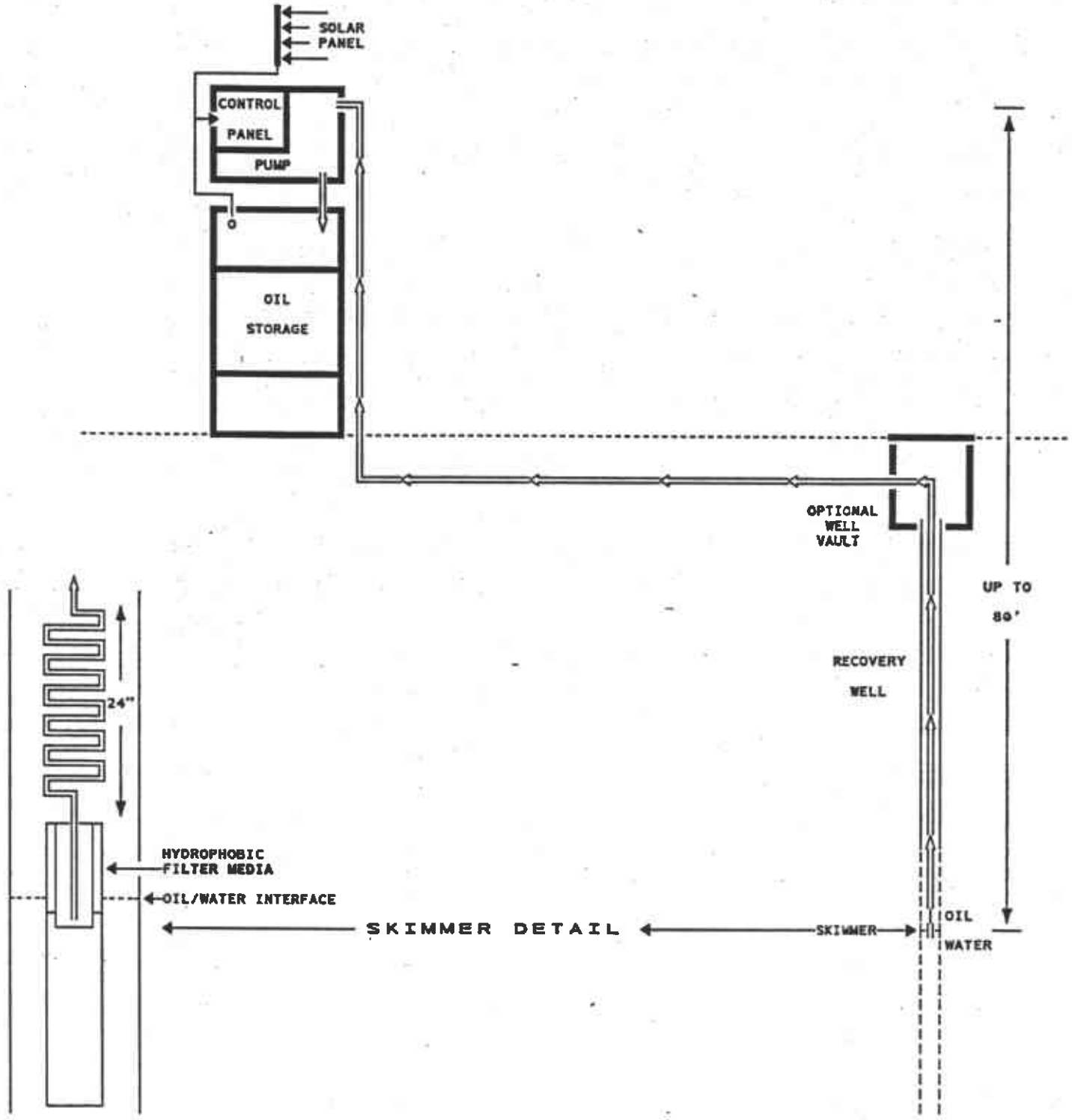
Since the recovery pump needs to operate infrequently, a solar collector system will supply more than enough power to operate the system throughout the year with very little maintenance. During the pumping cycle the pump will run off a high amperage battery, which will be recharged by the solar collector during the pump off time. Since the system is pumping oil, production should be possible in all seasons.

The control panel will have all the required equipment to adjust the cycle and pump-on times, a diesel tank high shutdown system, and an external illuminated high tank indicator. The basic system components are mounted on the top of a 55 gallon product storage drum. The system can be easily reconfigured to accomodate existing storage tanks or installation in a small portable building. This modular construction will allow easy movement of the unit to another recovery well when the need arises.

By eliminating the need for domestic power, the system lends itself to easy installation in remote locations. Compared to other product only systems, the cost of these systems are low. When you consider the ease of installation, it becomes a real bargain.

SOLAR SIPPERS

Product Recovery System



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SOLAR SIPPERS

Product Recovery System

TYPICAL SOLAR SIPPER POWER USAGE		
DUTY CYCLE	POWER USAGE WATT–HRS/DAY	DAYS OF SUNLIGHT PER MONTH
5%	14	6
10%	26	11
15%	37	16
20%	48	21
25%	60	26
30%	71	30

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