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Alameda County  
Environmental Health



November 3, 1987

18106,002.04

Blue Print Service Company  
149 Second Street  
San Francisco, California 94105

Attention: Mr. Paul J. Koze

Gentlemen:

Final Report  
Soil Aeration and Tank Excavation Backfilling  
City Blue Production Facility  
17th and Jefferson Streets  
Oakland, California

This letter presents our final report for professional services during soil aeration and tank excavation backfilling at the City Blue production facility site, 1700 Jefferson Street, Oakland, California. We previously performed a soil investigation and preliminary hazardous waste assessment for the project and presented the results in reports dated May 4 and June 3, 1987, respectively. We also provided professional services during underground tank removal and presented the results of our services in a report dated August 25, 1987. We are currently performing additional site investigations and providing geotechnical services during construction of the proposed production facility.

#### BACKGROUND

The results of our preliminary hazardous waste assessment indicated that soil and ground water beneath three underground tanks at the site were contaminated. Because of this, the underground gasoline tanks were removed on June 16, 1987. Structures and pavements on the site were also demolished at that time and the site was completely unoccupied.

The underground tanks were removed by the site demolition contractor, Eychner Demolition, Inc., which also performed all site demolition operations and handled all excavated soil. Our services were performed in accordance with the "Guidelines for Addressing Fuel Leaks" by the California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region, September 1985. All soil that could be reached by the backhoe following tank removal was excavated and stockpiled adjacent to the excavation. On the basis of our preliminary hazardous waste

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assessment and field screening during tank removal, we judged that the stockpiled soil contained hydrocarbons that would require cleanup by aeration or disposal at an off-site facility.

#### STOCKPILE ANALYSIS

To facilitate subsequent soil aeration, we sampled the stockpiled soil at three locations on June 16, 1987. The samples were obtained by scraping 6 to 12 inches off the stockpile and inserting a sample liner into the fresh soil so that the liner was completely filled. The samples were retained in brass liners with aluminum foil placed over the ends, enclosed with rubber caps, and sealed with tape to eliminate air leakage. Samples were labeled appropriately and kept in an ice chest until they were delivered, using proper chain-of-custody procedures and documents, to Trace Analysis Laboratories (TAL) in Hayward, California, on the day of sampling.

Appropriate decontamination procedures were used during sampling. To prevent volatilization of potential contaminants, the samples were composited at TAL. The composited samples were analyzed for volatile hydrocarbons by modified EPA method 8015. The laboratory-measured concentration, which is included in the attached laboratory report, was 410 parts per million (ppm).

#### SOIL AERATION

A program of soil aeration was undertaken so that the soil on site could be reused to backfill the tank excavation. On July 22, 1987, we contacted the Bay Area Air Quality Management District (BAAQMD) to obtain verbal authorization before proceeding with soil aeration. Because the quantity of soil was approximately 5 to 10 cubic yards, the BAAQMD regulations did not restrict the rate of aeration.

On approximately July 27, 1987, Eychner Demolition, Inc. spread out the excavated soil along the area to the south and west of the tank excavation. The soil was spread in an approximately 6- to 10-inch-thick layer and was mixed and turned over on approximately July 29, 1987 to increase the rate of volatilization. On July 31, 1987, seven discrete soil samples were obtained and screened in the field using an HNu photoionization detector. Four "worst case" samples were obtained in a manner similar to that used to obtain the stockpiled soil samples. They were delivered to TAL for compositing and analysis on July 31, 1987. The composite sample of aerated soil was tested for volatile hydrocarbons with a detection limit of 1 ppm (modified EPA method 8015). No hydrocarbons were detected. In accordance with regulatory guidelines, the soil was approved to be used as backfill for the tank excavation.

### TANK EXCAVATION BACKFILLING

The tank excavation was backfilled by Eychner Demolition, Inc. on August 5 and 6, 1987 using all the aerated soil, which was mixed with the clean native surface soils. A ramp was cut downward along the eastern edge of the tank excavation so that the construction equipment and compactor could work in the entire tank excavation area. The backfilling was performed under the observation of our field engineer, who performed a field compaction curve for the backfilled soil and a total of six field density tests using a nuclear gauge. The field density tests were located within the tank excavation and ramp footprint at elevations ranging from the bottom of the excavation to within 18 inches of the ground surface. The field density test data are summarized in Table 1.

Table 1  
Summary of Field Density Test Data  
City Blue Production Facility  
Tank Excavation Backfilling

Test	Moisture Content (%)	Dry Density (psf)	Maximum Dry Density (psf) <sup>1</sup>	Relative Compaction (%) <sup>2</sup>
1	9.8	119	127	93
2	7.5	114	127	90
3	10	119	127	93
4	8.8	114	127	90
5	7.2	115	127	91
6	10	121	127	95

<sup>1</sup> Maximum dry density was established using a field compaction curve in accordance with ASTM procedures (see Plate 1).

<sup>2</sup> Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material as determined by ASTM compaction procedures.

### CONCLUSIONS

On the basis of our observations, laboratory analysis results, and the results of our field density testing, we conclude that the soil aeration and tank excavation backfilling operations were performed in accordance

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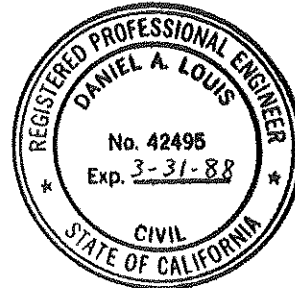
Harding Lawson Associates

with applicable regulatory guidelines and within the intent of the recommendations presented in our soil investigation report. We trust that this letter provides the information you require at this time.

Yours very truly,

HARDING LAWSON ASSOCIATES

*Daniel A. Louis*  
Daniel A. Louis  
Civil Engineer



*Norman T. Shopay*  
Norman T. Shopay  
Senior Environmental Specialist

DAL/NTS/sjp

Attachments: TAL Laboratory Report  
Plate 1 - Site Plan  
Plate 2 - Compaction Test Data

5 copies submitted

cc: Garcia/Wagner and Associates  
555 Sutter Street  
San Francisco, California 94102  
Attention: Mr. Felix A. Rodriguez



DATE: 7/6/87  
 LOG NO.: 4872  
 DATE SAMPLED: 6/16/87  
 DATE RECEIVED: 6/16/87

CUSTOMER: Harding Lawson Associates  
 REQUESTER: Dan Louis  
 PROJECT: No. 18106, 001.04, City Blue/Oakland

Sample Type: Soil

<u>Method and Constituent</u>	<u>Units</u>	<u>Detection Limit</u>	<u>No. 1-N.W.@9'</u>	<u>No. 2-S.W.@9'</u>
			<u>Concentration</u>	<u>Concentration</u>
Modified EPA Method 8015:				
Volatile Hydrocarbons	mg/kg	0.4	17	170
			<u>No. 3-N. Center@6.5'</u>	<u>No. 4-S. Center@6.5'</u>
Modified EPA Method 8015:				
Volatile Hydrocarbons	mg/kg	1	8800	2900
			<u>No. 5-N.E.@8'</u>	<u>No. 6-S.E.@8'</u>
Modified EPA Method 8015:				
Volatile Hydrocarbons	mg/kg	0.4	920	690
			<u>Composite of Nos. 7,8,9-Stockpiles A,B,C</u>	
Modified EPA Method 8015:				
Volatile Hydrocarbons	mg/kg	0.4	410	

*Ronald H. Ming Chew*  
 Ronald H. Ming Chew  
 Supervisory Chemist



DATE: 8/4/87  
LOG NO.: 5032  
DATE SAMPLED: 7/31/87  
DATE RECEIVED: 7/31/87

CUSTOMER: Harding Lawson Associates  
REQUESTER: Dan Louis  
PROJECT: No. 87-1330.04, City Blue/Oakland

Sample Type: Soil

<u>Method and Constituent</u>	<u>Units</u>	<u>Detection Limit</u>	<u>Composite of Nos. 02, 03, 04, &amp; 05 Concentration</u>
Modified EPA Method 8015:			
Volatile Hydrocarbons	mg/kg	1	< 1

*Hugh R. McLean*  
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Supervisory Chemist