

REPORT OF
SUPPLEMENTAL SOIL INVESTIGATION
800 ORANGEFAIR LANE
FORMER MONITOR PLATING SITE
ANAHEIM, CALIFORNIA 92801

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1. Introduction

Deltech Engineering has conducted the soil sampling investigation as outlined in the Work Plan, dated April 12, 2005. The purpose of this investigation was to conduct a Supplemental Soil Investigation of solvent and nickel contamination at 800 Orangefair Lane in Anaheim, California on behalf of Mrs. Pam Morris-Candelera. The supplemental soil investigation is intended to provide additional data to determine the vertical and lateral extent of solvent contamination along Cold Seam “G”, and at the location outside the west wall, known as the Wastewater Treatment Area “W”, including the exposed soil at the damaged platform to the southeast, identified as “P”. The investigation will also provide additional data to determine the vertical and lateral extent of nickel and chromium contamination in the southwest corner of Cold Seams “D” and “E”.

2. Background

The subject SITE used to be occupied by Monitor Plating after its development until about 1999. In 1999 a fire destroyed the plant. An earlier soil investigation conducted from January 19th through February 2nd, 2005 at the site by Deltech Engineering provided valuable data to delineate the lateral and vertical extent of soil contamination at the site. The investigation consisted of 9 soil borings placed along the 4 Cold Seams in the concrete floor and advanced to maximum depths of 20 –30 feet below ground surface (bgs), 6 soil borings were placed in the Wastewater Treatment Area outside the west wall and advanced to a maximum depth of 10 feet bgs, 2 soil borings were placed in the exposed soil at the damaged platform to the southeast and advanced to a maximum depth of 10 feet bgs. A total of 51 soil samples including 3 Quality Control samples were obtained and analyzed for Volatile Organic Compounds (VOCs) by EPA Method 8260B, and 74 soil samples including 4 Quality Control samples were obtained and analyzed for metals by EPA 6010B.

The previous laboratory test results of the soil samples along the “G” Cold Seam indicated a Tetrachloroethylene (PCE) concentration of 140 µg/kg (parts per billion, ppb) at 30 feet bgs (G2), 270 µg/kg at 30 feet bgs (G3) and 390 µg/kg at 30 feet bgs (G1). In the Wastewater Treatment area, the test result indicated a Tetrachloroethylene (PCE) concentration of 5.4 – 440 µg/kg at 5 feet bgs (W1- W6). In the exposed soil at the damaged platform to the southeast, the test result indicated a Tetrachloroethylene (PCE) concentration of 94 – 240 µg/kg at 5 feet bgs (P1 and P2 Respectively). In the area along the southwest corner of the “D” and “E” Cold Seams, the laboratory test result of the soil samples from the location indicated a nickel concentration of 170 mg/kg (parts per million, ppm) at 20 feet bgs (D1), and 3,500 mg/kg at 20 feet bgs (E1).

The data obtained from the investigation was substantial and conclusive in favor of no-presence of soil contamination at depth for many areas of the site. However, in the areas of the “G” Cold Seam, the Wastewater Treatment area outside the west wall, the exposed soil at the damaged platform to the southeast, and the area of “D” and “E” Cold Seams, additional boring and laboratory soil test data are required to conclusively delineate the vertical and lateral extent of the Tetrachloroethylene (PCE) and Nickel concentrations.

3. Current Soil Investigation

General Summary

This supplemental soil investigation is intended to provide the additional boring and laboratory soil test data, to conclusively delineate the vertical and lateral extent of the solvent contamination along Cold Seam “G”, at the location of the Wastewater Treatment Area “W”, the exposed soil, identified as “P”, and nickel and chromium contamination in the southwest corner of Cold Seams “D” and “E”.

Soil Borings and Sampling

Area near cold seam “G” –

- This Work plan called for 3 soil borings to be placed along the “G” Cold Seam adjacent to former borings G1, G2, and G3, and advanced to 80 feet bgs. These bores were identified as Bores 13, 23, and 31. Samples were collected in each soil boring at 40’, 50’, 60’, 70’ and 80’ bgs. Additional 4 borings were placed approximately north and south of former borings G1 and G2, and advanced to 60 feet bgs. The bores around G1 are Bores 11, and 12. The bores around G2 are Bores 21, and 22. Samples were collected in each soil boring at 10’, 20’, 30’, 40’, 50’ and 60’ (Figure 2). The samples from this and all of the bores were labeled as bore-depth. For example 11-20 represents a soil from Bore 11 at 20 feet bgs.
- Thirty-nine (39) soil samples were tested in the laboratory for volatile organic compounds (VOCs) by EPA Method 8260B.

Area “W”, Wastewater Treatment area–

- In the location outside the west wall known as the Wastewater Treatment Area “W”, the Work plan calls for the placement of a soil boring, Bore 73, adjacent to the former W6 boring and advanced to a maximum depth of 80 feet bgs. Samples were collected in the soil boring at 10’, 20’, 30’, 40’, 50’, 60’, 70’ and 80’. And 2 borings were placed adjacent to former W5 and W3 borings, Bores 72 and 71, respectively. These two were advanced to a maximum depth of 60 feet bgs. Samples were collected in each soil boring at 10’, 20’, 30’, 40’, 50’, and 60’.
- Twenty (20) soil samples were tested in the laboratory for volatile organic compounds (VOCs) by EPA Method 8260B.

Area “P”, Platform area –

- In the location of the exposed soil at the damaged platform to the southeast, identified as “P”, the Work plan called for the placement of 1 soil boring adjacent to the former P1 and advanced to a maximum depth of 80 feet bgs. Samples were collected in this soil boring (Bore 62) at 10’, 20’, 30’, 40’, 50’, 60’, 70’ and 80’. Additional 1 boring was placed adjacent to former P2 and advanced to a maximum depth of 60 feet bgs. Samples were collected in this soil boring (Bore 61) at 10’, 20’, 30’, 40’, 50’ and 60’.

- Fourteen (14) soil samples were tested in the laboratory for volatile organic compounds (VOCs) by EPA Method 8260B.

Area near cold seams “D” and “E” –

- In the location of the Cold Seams “D” and “E”, the Work plan calls for the placement of 2 soil borings advanced to 80 feet bgs (Bores 43 and 51) and 2 borings advanced to 60 feet bgs, adjacent to former borings D1 and E1 by the west wall (Bores 41 and 41). Samples were collected in each soil boring at 10’, 20’, 30’, 40’, 50’ and 60’ for all four bores, and for Bores 43 and 51, two additional samples were collected at 70’ and 80’.
- Twenty-Eight (28) soil samples were tested in the laboratory for nickel and chromium by EPA Method 6010B.

Data Compilation

The location of the bore holes is shown in the Site Boring Plan Map, Figure 2. All the results and discussions are hereby submitted. This final report consists of all sampling logs, chains-of-custody forms, site map indicating boring locations and laboratory test results.

4. Field Quality Control/Quality Assurance/Decontamination

Soil samples were collected from each boring, undisturbed and collected in sample tubes. Samplers were decontaminated before re-use. Personnel handling samples shall have on disposable gloves or wash hands before continuing sampling activities. Soil samples were placed in an ice chest and kept cool at all times. The field geologist logged all soil samples onto an appropriate chain-of-custody form before transport and delivery to the laboratory for analysis.

5. Laboratory Quality Assurance/Control Procedure

Laboratory quality assurance and control procedure consist of performing “Sample Preparation/Control Blanks, and Matrix Spike/Matrix Spike Duplicate Analysis”, in this final report.

6. Waste Containment, Handling /Disposal

Soil cuttings and equipment were shoveled into a stockpile, covered with 6-mil polyethylene sheet and temporarily stored on-site in drums, until the time when the laboratory test results characterizes the waste material. The decontamination water was contained in 55-gallon drums and stored temporarily on SITE. Owners or representative shall arrange for the disposal of waste drums through a licensed waste contractor.

7. Results of Investigation

The results of the chemical analyses were compiled. Original laboratory data are included in Enclosure 2. Soil bore logs are included in Enclosure 3.

The generalized geological observations are summarized as follows

1. At the total depths of up to 80 feet below ground surface, no ground water was encountered in the bore holes.
2. No soil samples had any organic vapor odors.
3. Multiple layers of nearly pure clay were encountered at approximately the same elevation, i.e., about 61 feet bgs, or below. One of them is about 2 to 4 feet thick. This clay layer is very consistently present throughout all of the deeper (80 ft) bores. There is a second deeper layer of clay at about 68 to 70 feet bgs, this layer is less prevalent than the shallower one.

The laboratory chemical analyses were also reviewed and summarized in Table 1 attached below.

Of the nickel and chromium analyses, only one sample (Bore 41-10) had chromium (total) values of 1,100 ppm, that were greater than 450 ppm, the preliminary remediation goal for industrial soil (PRG). The chromium values of this bore, Bore. 41, diminished drastically to below 50 ppm in the next (lower) samples. No nickel values were greater than 41,000 ppm, the PRG (See Table in Section 8.0). In fact, the highest level of nickel was 44 ppm.

Of the volatile organic carbon analyses, some tetrachloroethene (PCE), trichloroethylene (TCE) and cis-dichloroethene were detected.

Table 1 Summary of analytical results

Bore bgs unit	feet bgs	Cr PPM	Ni PPM	VOC-8260B all voc PPB	PCE PPB	TCE PPB	NOTES
11	10				5.2	ND	
11	20				67.0	ND	
11	30				140.0	4.9	
11	40				120.0	6.1	
11	50				12.0	ND	
11	60				43.0	ND	
12	10			ND	ND	ND	
12	20				71.0	ND	
12	30				330.0	16.0	
12	40				54.0	ND	
12	50				5.6	ND	
12	60				150.0	11.0	
13	40				360.0	24.0	
13	50				7.2	ND	
13	60				23.0	ND	
13	70				ND	47.0	
13	80			ND	ND	ND	
21	10			ND	ND	ND	
21	20				11.0	ND	
21	30				25.0	ND	
21	40				96.0	6.4	
21	50			ND	ND	ND	
21	60				6.9	ND	
22	10			ND	ND	ND	
22	20				8.2	ND	
22	30				200.0	11.0	
22	40				100.0	6.2	
22	50			ND	ND	ND	
22	60				92.0	ND	
23	40				44.0	ND	
23	50				22.0	ND	
23	60				11.0	ND	
23	70				18.0	41.0	
23	80			ND	ND	ND	
31	40			ND	ND	ND	
31	50			ND	ND	ND	
31	60				39.0	ND	
31	70			ND	ND	ND	
31	80			ND	ND	ND	
41	10	ND	1100.0				
41	20	13.0	22.0				
41	30	16.0	18.0				
41	40	20.0	21.0				
41	50	4.3	7.4				
41	60	ND	5.2				
42	10	ND	220.0				
42	20	9.6	12.0				
42	30	18.0	16.0				
42	40	24.0	21.0				
42	50	17.0	15.0				
42	60	ND	4.9				

Table 1 Summary of analytical results (continued)
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bore unit	feet bgs	Cr	Ni	VOC-8260B			NOTES
		PPM	PPM	all voc PPB	PCE PPB	TCE PPB	
43	10	22.0	310.0				
43	20	22.0	15.0				
43	30	33.0	25.0				
43	40	22.0	16.0				
43	50	8.3	5.9				
43	60	44.0	32.0				
43	70	7.9	6.0				
43	80	8.3	11.0				
51	10	5.1	3.9				
51	20	10.0	11.0				
51	30	20.0	18.0				
51	40	19.0	19.0				
51	50	2.3	5.0				
51	60	ND	3.5				
51	70	25.0	23.0				
51	80	6.6	10.0				
61	10			ND	ND	ND	
61	20				14.0	ND	
61	30				18.0	ND	
61	40				39.0	ND	
61	50				5.9	ND	
61	60				30.0	ND	
62	10				17.0	ND	
62	20				5.9	ND	
62	30				30.0	2.8	
62	40				2.6	ND	
62	50				19.0	ND	
62	60			ND	ND	ND	
62	70				9.3	130.0	
62	80				4.6	3.1	
71	10				18.0	ND	
71	20				250.0	8.4	
71	30				360.0	15.0	
71	40				250.0	8.5	
71	50				13.0	ND	
71	60				360.0	14.0	CIS
72	10			ND	ND	ND	
72	20				56.0	ND	
72	30				460.0	9.6	
72	40				100.0	ND	
72	50				24.0	ND	
72	60				32.0	ND	
73	10				3.4	ND	
73	20				45.0	ND	
73	30				500.0	29.0	CIS
73	40				50.0	ND	
73	50				8.6	ND	
73	60				31.0	ND	
73	70				5.4	12.0	
73	80			ND	ND	ND	

Note: 1. CIS -also detected cis-dichloroethene
 2. ND - below detection limit
 3. bgs - below ground surface

8. Data Interpretation and Discussions

The PRG and TTLC standards or goals were listed below for reference.

Elements	TTLC mg/kg	Preliminary Remediation Goal, mg/kg Industrial soil, 2004
Total Chromium		450
Chromium VI	500	64
Nickel	2,000	41,000

Analytes	California Modified Preliminary Remediation Goal, µg/kg 2004
Tetrachloroethene (a.k.a. PCE, Tetrachloroethylene)	1,300
Trichloroethene (a.k.a. TCE, Trichloroethylene)	6,500

- Chromium and Nickel –

No sample of soil had higher than PRG goal for chromium and nickel. The highest chromium contamination is 44 ppm, at Bore 43, located at 60 feet bgs. The level of chromium in all deep (80 ft.) bores diminishes to less than 9 ppm, considered to be background value for normal (non-contaminated) soil (Rose, Hawkes and Webb.1979). The level of nickel in all deep (80 ft.) bores diminishes to less than 12 ppm, again considered to be background value for normal soil (Rose, Hawkes and Webb.1979). There is no indication of lateral spreading of chromium and nickel. The level of nickel and chromium in the soil do not constitute a significant environmental threat to the local ground water.

- Organic compounds –

Among five deep samples (80-ft.bgs), four of the bores show that the PCE and TCE contamination were below detection limits. Only one bore, Bore 62, had detected 4.6 ppb PCE and 3.1 ppb TCE at sample 62-80. Two samples, 72-10 and 73-40, also detected cis-dichloroethene, and these are isolated cases of such detection. There is no indication of lateral spreading of volatile organic compounds. The levels of contamination do not constitute a significant environmental threat to the local ground water.

The discovery of the clay layers added to the confidence of our interpretation and conclusion. The clay layers are consistently present at a predictable level below the surface. The clay layers will effectively stop the contaminant from entering drinking water sources.

9. Conclusions and recommendations

The data of this and previous investigation showed that the soil under the subject SITE had low level of contamination for toxic metals and volatile organic compounds. Because of the fact that

- The local ground water is about 110 feet below ground surface (Anaheim Resort Specific Plan EIR).

2. The ground water is protected by a consistent series of layers of clay, which are at least 2 feet thick. This clay proved to be an effective barrier to the vertical and downward migration of contaminants, including toxic metals and volatile organics.
3. There is no evidence of significant lateral migration of contaminants, based on the distribution of relatively values of soil analyses from the results of the investigations conducted so far.

We conclude that the data indicate that there is no evidence that the subject SITE has only limited extent of contamination in terms of toxic metals and volatile organic compounds, and the SITE is not likely to cause ground water contamination. We, therefore, request that the local oversight agencies grant “no further action” certificate to close the SITE.

10. References

Rose, A. Hawkes H., and Webb, J., 1979 Geochemistry in Mineral Exploration, Academic Press pub. 2nd Edition

Michael Brandmen, Consultants, 1994, Anaheim Resort Specific EIR, June 1994

Respectfully Submitted,

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