

**PHASE II SITE INVESTIGATION REPORT
UNION PACIFIC TRAIL PHASE 2
WEST OF HIGHLAND AVENUE TO INDEPENDENCE PARK
FULLERTON, CALIFORNIA**

Prepared for:

City of Fullerton
Engineering Department
303 West Commonwealth Avenue
Fullerton, California 92832
(714) 738-6859

Prepared by:

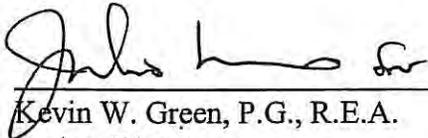
SCS ENGINEERS
3900 Kilroy Airport Way, Suite 100
Long Beach, California 90806-6816
(562) 426-9544

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This Phase II Site Investigation Report dated March 2009, for the Union Pacific Trail Phase 2, west of Highland Avenue to Independence Park, Fullerton, California, was prepared and reviewed by the following:



Paola Gómez
Project Geologist



Kevin W. Green, P.G., R.E.A.
Project Director

SCS ENGINEERS

1 INTRODUCTION

SCS Engineers (SCS) was retained by the City of Fullerton, Engineering Department to conduct a Phase II Site Investigation (Phase II) of the Union Pacific Trail Phase 2, West of Highland Avenue to Independence Park, Fullerton, California (the "Property"). A map showing the general location of the Property and surrounding area is provided as **Figure 1**. Investigation activities were conducted in accordance with SCS's proposal dated February 5, 2009.

BACKGROUND

A Phase I Environmental Assessment report by SCS, dated January 2009, indicated that the Property is approximately 2,610 linear feet long, 50 feet wide, and is proposed for development as a recreational trail. The Property is a former railroad right-of-way from which the rails have been removed, and the Property consists largely of a dirt and gravel former rail bed. Some historic railroad operations involved the use of chemicals. The most commonly reported contamination along rail lines includes metals, pesticides (such as lead arsenate), and constituents of oil or fuel. These chemicals have been associated with normal railroad operations and may be found anywhere along the line. For example, it is not uncommon to find arsenic present in the soil along a right-of-way from old railroad ties dipped in an arsenic solution, arsenic weed-control sprays, and arsenic-laced slag used as railroad bed fill. Lubricating oil and diesel fuel can drip from trains. Other sources of contaminants associated with historic railroad operations may include creosote from ties and polynuclear aromatic hydrocarbons (PAHs) from diesel exhaust. Finally, rail cars carrying chemicals to and from industrial facilities along rail spurs may leak.

Evidence of possible chemical runoff (asphalt, oil) was noted along the western portion of the Property adjacent to the Bob Heist Construction equipment yard. Erosion along other portions of the Property indicated that runoff has occurred from Scientific Spray Finishes, Inc., and Ventec Global Laminates (former site of Fullerton Manufacturing). In addition, there is evidence of a former dry cleaning facility where the Valencia Center is currently located. In light of the historic use of the Property and surrounding sites, there is a potential for soil contamination with metals, pesticides, petroleum hydrocarbons, volatile organic compounds (VOCs), and polynuclear aromatic hydrocarbons (PAHs).

2 GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

PHYSIOGRAPHIC SETTING

According to the U.S. Geological Survey (USGS), Anaheim (1965, photorevised 1981), California 7.5-minute topographic map, the Property is located in the coastal plain of Orange County at an elevation of approximately 135 to 150 feet above mean sea level. Site topography is generally flat with a slight regional slope to the west-southwest.

GEOLOGY AND SOILS

Surficial sediments in the area consist of Quaternary Alluvium, which includes material comprised of interbedded sand, silt, gravel, and clay. These sediments overlie the Pleistocene age Lakewood Formation, which is comprised of continental and marine sediments.

Based on borings advanced on-site, the upper 1 foot of the subsurface is generally characterized by either medium brown, fine grained sandy silt that is moist and medium stiff; medium brown, medium to coarse grained sand with trace amounts of silt that is moist and medium dense; or medium brown, silty clay, that is moist and medium stiff.

GROUNDWATER

The Property lies within the Forebay area of the Orange County Groundwater Basin. According to an Orange County Water District (OCWD) June 2007 groundwater elevation contour map, depth to the principal, or Upper, aquifer in the area of the Property is approximately 100 feet below ground surface (bgs). The saturated thickness of the shallow zone of the Upper aquifer system is generally about 80 to 100 feet. The materials of the Upper aquifer are composed of unconsolidated, medium- to coarse-grained sands and gravels with interbedded thin layers of fine-grained, low permeability silts and clays. Based on the OCWD contour map, groundwater flow in the immediate vicinity of the Property is west-southwest.

The Property is located within an area known as the North Basin Groundwater Protection Project. Various investigations conducted by OCWD and others have revealed that groundwater in the area of the Property has been impacted with volatile organic compounds (VOCs) that are constituents of industrial degreasing solvents. Groundwater contamination in this area is primarily found in the shallow-most aquifer, which is not directly used for drinking water supply. Based on an August 2005 plume map, the Property overlies a zone where VOC concentrations exceed ten times their respective maximum contaminant levels (MCLs) for drinking water, as established by the state of California. In 2005, an extraction well for recovering contaminated groundwater for treatment was proposed for Independence Park.

3 SITE INVESTIGATION

Investigation activities were conducted on March 2, 2009, and consisted of the collection and analysis of soil and soil vapor samples at representative locations along the Property to assess the potential for contamination from the historical use of the Property and the surrounding areas.

Materials and methods employed in the collection of soil vapor and soil samples are described in **Appendix A**.

As required by law, SCS contacted Underground Service Alert prior to conducting the investigation (Dig Alert No. A090561548). In addition, Goldak Inc., of Glendale, California, conducted a geophysical survey to clear boring locations of underground utilities. **Figures 2 and 3** show soil vapor and soil sampling locations.

SOIL SAMPLE COLLECTION

Under the direction of SCS, Kehoe Testing and Engineering (KTE) of Huntington Beach, California, conducted soil sampling using a truck-mounted direct-push drill rig.

Borings B2, B4, B7, B9, B11, B15, B18, and B20 were advanced in low-lying areas of the Property to a depth of approximately 0.5 feet below ground surface (bgs). Borings B5, B13, B17, and B22 were advanced to a depth of 1-foot bgs in the vicinity of adjoining sites of concern including the Ventec Global Laminates, Valencia Center, Bob Heist Construction, and BNSF Railroad sites.. Soil samples were collected at the terminal depths of these borings. Boring B16, in the vicinity of Scientific Spray Finishes, was advanced to a depth of 5 feet bgs with soil samples collected from 2 and 4 feet bgs.

Immediately following recovery, all sample sleeves were covered, labeled, and placed in a chilled ice chest for transportation to Chemtek Environmental Laboratories Inc. (Chemtek) of Santa Fe Springs, California, a California Department of Health Services certified laboratory. Samples were tracked from the point of collection through the laboratory using proper chain-of-custody protocol.

A portion of each sample was placed in a zip-lock bag for lithologic determination and to screen samples for signs of contamination such as discoloration, odor, debris, and organic vapors (using a photo ionization detector). There were no indications of contamination in any of the samples. Soil encountered during drilling activities consisted mainly of silt and silt-sand mixtures with some gravel. Borings were backfilled with hydrated bentonite and the surface was finished to match the surroundings. Copies of boring logs are included in **Appendix B**.

Soil samples were selectively analyzed for total petroleum hydrocarbons (TPH, carbon chain analysis) using EPA Method 8015M, volatile organic compounds (VOCs) including fuel oxygenates using EPA Method 8260B, CCR Title 22 heavy metals using EPA Method series 6000/7000, organochlorine pesticides using EPA Method 8081A, and polynuclear aromatic hydrocarbons (PAHs) via EPA Method 8270.

SOIL VAPOR SAMPLE COLLECTION

Under the direction of SCS, Kehoe Testing and Engineering, Inc. of Huntington Beach, California conducted soil vapor probe installation and Jones Environmental, Inc. (JEI), of Fullerton, California, conducted soil gas sampling and analysis for VOCs.

Borings B1, B3, B6, B8, B10, B12, B14, B16, B19, and B21 were advanced in the vicinity of adjoining sites of concern and in representative locations of the Property, including adjacent to OEM Press Systems, Ventec Global Laminates, US Food service, Valencia Center (formerly developed as a dry cleaning facility), Scientific Spray Finishes, and the BNSF Railroad. All of the borings were advanced to a depth of 5 feet bgs. Soil vapor probes were installed at 5 feet bgs. In boring B16, soil samples were collected, as described above, prior to the installation of the probes. Soil vapor samples collected were designated with "SV" and the boring number.

Sampling was conducted in general accordance with the soil gas advisory dated January 28, 2003, prepared by Department of Toxic Substances Control and Los Angeles Regional Water Quality Control Board. Soil vapor samples were analyzed for VOCs using EPA Method 8260B in an on-site mobile laboratory provided by JEI. JEI is certified by the California Department of Health Services to conduct the specified analysis.

After laboratory analysis, soil vapor probes were removed from the borings, and the boreholes were capped with asphalt or native soil, as appropriate.

4 ANALYTICAL RESULTS

SOIL SAMPLES

Laboratory reports, chain-of-custody documentation, and quality assurance/quality control (QA/QC) data from Chemtek are provided in **Appendix C**. A summary of the analytical results for TPH, VOCs, and PAHs is provided in **Table 1**. Summaries of the analytical results for metals, organochlorine pesticides are provided in **Tables 2** and **3**, respectively.

As shown in **Table 1**, TPH in the heavy "oil" range (TPH-o) was detected in one soil sample (B17-1', the 1-foot sample from boring B17) at a concentration of 6,152 milligrams per kilogram (mg/kg, equivalent to parts per million). TPH was not detected in any of the remaining analyzed soil samples. No PAHs were detected in the analyzed soil samples.

Tetrachloroethene (PCE) was detected in the two analyzed soil samples (B6-2' and B6-4') at 7 and 28 micrograms per kilogram (ug/kg, equivalent to parts per billion), respectively. Toluene and benzene were both detected in both of these soil samples at 2 ug/kg. Trichloroethene (TCE) and acetone were detected in sample B6-4' at concentrations of 2 and 63 ug/kg, respectively.

As shown in **Table 2**, arsenic exceeded the typical range for Southern California soils in one sample, B9-6" at 14.41 mg/kg. The remaining metal concentrations were below or within the typical ranges for Southern California soils (Bradford et al, 1996).

As shown in **Table 3**, no organochlorine pesticides were detected in the analyzed soil samples.

SOIL VAPOR SAMPLES

Laboratory reports, chain-of-custody documentation, and quality assurance/control (QA/QC) data from JEI are provided in **Appendix D**. A summary of the soil vapor results is provided in **Table 4**. As shown, trace concentrations of ethylbenzene were detected at three sample locations SV1, SV12, and SV14.

5 REGULATORY LIMITS

TPH IN SOIL SAMPLES

The Los Angeles Regional Water Quality Control Board (RWQCB) has established cleanup guidelines, also known as soil screening levels (SSLs), for hydrocarbon-impacted soils based on the potential for groundwater contamination (RWQCB, 1996). The applicable SSLs for the Property, where groundwater is anticipated between 20 and 150 feet below grade, are provided in **Table 1**. Only TPH-o was detected and in only one sample (B17-1 at 6,152 mg/kg); the SSL for TPH-o is 50,000 mg/kg.

VOCS IN SOIL SAMPLES

Human health risks from VOCs in soils in California are often evaluated using either of two methods:

- A comparison with US EPA Region 9 Regional Screening Levels (RSLs)
- Completion of a site-specific Health Risk Assessment (HRA).

RSLs – The RSLs are risk-based values used for evaluating contaminant concentrations under various exposure scenarios (i.e., residential and industrial). RSLs are calculated using EPA toxicity values and “standard” exposure factors to estimate contaminant concentrations in environmental media (soil, air and water) that are considered protective of humans over a lifetime. The RSLs are chemical concentrations that correspond to a fixed level of risk (i.e., either one-in-one million cancer risk, or a noncarcinogenic hazard quotient of 1). As stated in US EPA guidance, RSLs are not intended to be a stand-alone decision making tool. RSLs have been developed for a select list of common specific chemical contaminants; there are no RSLs for classes of chemicals or products (e.g., gasoline).

Given the caveats listed above, RSLs are useful in screening the relative human health risks associated with specific chemicals identified at contaminated sites. RSLs for the VOCs detected during this investigation are provided in **Table 1**. None of the detected concentrations exceed the RSLs.

HRA – Site-specific Health Risk Assessments may be warranted and are often conducted on larger more complex projects where a variety of contaminants are present or the use of the site may be particularly sensitive (e.g., residential). The site-specific HRA is a more technically rigorous examination of all potential contaminants and exposure scenarios, and can be used in the development of appropriate cleanup goals and/or mitigation strategies. At this time, a Health Risk Assessment is not warranted.

METALS IN SOIL SAMPLES

RSLs have also been determined for metals. In addition, California Human Health Screening Levels (CHHSLs) for metals in soil have been established for residential and

industrial/commercial land use scenarios. The metals results from this investigation are compared to the RSLs and CHHSLs in **Table 2**.

With the exception of arsenic, metals concentrations were well below the RSLs and CHHSLs for residential and industrial use as established by the U.S. Environmental Protection Agency Region IX and California Environmental Protection Agency.

With regard to arsenic, the US EPA has acknowledged that in some cases, the predictive risk-based models generate RSL levels that lie within or even below typical background. If natural background concentrations are higher than the risk-based RSLs, an adjustment of the RSL is probably needed. US EPA uses naturally occurring arsenic in soils as an example. Further, the California Department of Toxic Substances Control has acknowledged that the strict use of the arsenic RSL is impractical and has set acceptable levels in soil in the range of 8 to 12 mg/kg for school sites in California.

VOCS IN SOIL VAPOR SAMPLES

CHHSLs for shallow soil vapor have been established for residential and industrial/commercial land use scenarios. The soil vapor results from this investigation are compared to the CHHSLs in **Table 4**. Ethylbenzene was detected in the soil vapor at three locations, but no CHHSL has been established for this chemical.

6 CONCLUSIONS

On March 2, 2009, SCS conducted an investigation of soil and soil vapor for the Property located at Union Pacific Trail, west of Highland Avenue to Independence Park, Fullerton, California. Based on the results of this investigation, SCS has concluded the following:

- There were no obvious signs of contamination (odors, discolored soils, debris, and organic vapors) noted in soil samples collected during the investigation.
- No organochlorine pesticides and PAHs were detected in the analyzed soil samples.
- Detected concentrations of TPH and VOCs in the analyzed soil samples are below available regulatory guidelines.
- Low concentrations of ethylbenzene (0.111 to 0.204 ug/L) were detected in soil vapor sample SV1, SV12, and SV14. There are no CHHSLs for ethylbenzene. However, the detected concentrations are very low and based on our experience with similar sites SCS is of the opinion that the detected concentrations are not a cause for concern.
- All of the detected concentrations of arsenic are above the residential and/or industrial RSLs and CHHSLs for arsenic. However, as noted above, only one sample (B9 at 14.41 mg/kg) contained arsenic in excess of the generally accepted concentrations of 8 to 12 mg/kg established for California soils. Due to the intended use of the Property, this one detection slightly above the typical background range does not appear to be a concern.

The remaining analytical data for metals are within typical background levels for soils in California. Based on this information, there has been no significant impact to the Property by heavy metals.

7 RECOMMENDATIONS

In summary, the results of this investigation have not identified any significant impact to the Property from the historical use of the Property or its adjoining sites. Based on this information, further investigation of the Property is not recommended.