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November 7, 2014

Ms. Karel Detterman, P.G.
Hazardous Materials Specialist
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

**Subject: *Work Plan for Soil Gas Sampling Addendum*, 3093 Broadway, Oakland, California
Site Cleanup Program Case No. RO0000199**

Dear Ms. Detterman,

Please find attached, for your review and comment, a *Work Plan for Soil Gas Sampling Addendum* at the Former Connell Oldsmobile site, located at 3093 Broadway in Oakland, California. The work plan addendum has been prepared by Langan Treadwell Rollo.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

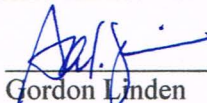
OWNER:

**GEORGE HILL AND KAY HILL, TRUSTEES OF THE HILL FAMILY TRUST UNDER TRUST
INSTRUMENT DATED APRIL 28, 1993**

By: _____
Name: George Hill

By: _____
Name: Kay Hill

HAWTHORNE-BROADWAY, LLC
A California limited liability company

By:  _____
Name: Gordon Linden
Title: Managing Member

November 7, 2014

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By: _____
Name: Gordon Linden
Title: Manager

14 November 2014

Ms. Karel Detterman, P.G.
Hazardous Materials Specialist
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

**Re: Addendum to Work Plan for Soil Gas Sampling
3093 Broadway
Oakland, California
ACEH Case No.: RO0000199
Langan Project No.: 730637001**

Dear Ms. Detterman,

On behalf of 3093 Broadway Holdings, L.L.C. ("Broadway Holdings"), Langan Treadwell Rollo (Langan) has prepared this *Addendum to Work Plan for Soil Gas Sampling* ("Addendum") at the Former Connell Oldsmobile Site ("Site"), located at 3093 Broadway in Oakland, California (Figure 1). This addendum was prepared in response to verbal comments from the Alameda County Department of Environmental Health (ACEH) to Langan's *Work Plan for Soil Gas Sampling*, dated 4 September 2014. In addition, this addendum describes soil and groundwater sampling that will be performed concurrent with the soil gas investigation.

Additional Soil Gas Sample Locations

As requested by the ACEH, we will collect and analyze soil vapor samples from four additional locations. The additional locations are identified as sampling locations SV-9, SV-10, SV-11, and SV-12 and shown on Figure 2. Locations SV-9 and SV-12 were requested by the ACEH for the purposes of collecting additional soil vapor data from the areas overlying benzene-impacted groundwater. Location SV-10 will be installed near monitoring well MW-16A, as requested by the ACEH. Location SV-11 will be collected to evaluate soil vapor beneath the showroom. As described in the Conceptual Site Model (CSM), prepared by Langan and dated 24 October 2014, additional investigation is needed beneath the showroom.

Presentation of Soil Gas Sample Depths

Figure 3 provides cross-section A-A', that depicts the planned sampling depths for soil gas probes SV-1, SV-2, SV-4, and SV-9 and the groundwater monitoring wells nearest these locations. Figure 3 also depicts the depth of the future building excavation, the approximate depth of the water table as of May 2014, the conceptual smear zone, and the potential bioattenuation zone. A smear zone consisting of petroleum-impacted soil is anticipated in the areas of residual benzene in groundwater, based on the historical presence of free product in monitoring wells in these areas. Based on review of historical groundwater elevation fluctuations, Figure 3 conservatively assumes the smear zone extends as much as five feet

above the May 2014 groundwater table. Conceptually, and dependent on the results of future soil sampling, a bioattenuation zone may extend from the top of the smear zone up to the bottom of the future building excavation bottom. The State Water Resources Control Board (SWRCB) generally defines a bioattenuation zone as a volume of soil with conditions that support biodegradation of petroleum hydrocarbon vapors. The SWRCB further defines a bioattenuation zone based on lateral and vertical separation between light nonaqueous-phase liquid (LNAPL) in soil and the foundation of existing or potential buildings, contaminant concentrations in the bioattenuation zone, and oxygen concentrations in the bioattenuation zone. Based on the assumption of a 5-foot thick smear zone, and the planned depth of construction, there is the potential for an approximately 6 to 20 feet thick bioattenuation zone, post-construction. If a bioattenuation zone is included in future vapor migration evaluations, additional evaluation of conditions in the vadose zone will be performed.

Procedures for collecting Soil Gas Samples from Groundwater Monitoring Wells

As described by Paul et al., (2013)¹ soil gas samples collected from groundwater wells screened across the water table can provide conservative estimates of deeper soil gas concentrations. Procedures for collecting soil gas samples from the groundwater wells are described by Jewell and Wilson (2011)². Soil gas samples will not be collected from the monitoring wells during the investigation. Soil gas samples will be collected from the depths specified in Table 1.

Confirmation Soil Gas Sample Collection for Naphthalene Using EPA Method TO-17

As requested by the ACEH, two confirmation samples will be collected for analysis of naphthalene using EPA Method TO-17. EPA Method TO-17 is the preferred method for analysis of naphthalene concentrations in soil vapor, and once the approximate naphthalene concentrations at a site are determined using EPA Method TO-17, EPA Method TO-15 can be used instead (DTSC, 2012). The confirmation sample naphthalene results will be compared to the naphthalene results produced using EPA Method TO-15.

Soil Gas Sample Analysis for Methane

As requested by the ACEH, soil vapor samples will be analyzed for methane using ASTM D-1946, as described in Table 1. Soil gas results for methane will be compared to the California State Regulations (Title 27) limit for protection of indoor air quality in overlying structures (1.25%), and the Lower Explosive Limit (LEL) (5%).

Semi-Permanent Soil Vapor Monitoring Wells

Soil gas sampling was proposed during the dry season (April through October); however, the current schedule is for soil vapor sampling in November 2014, which is the beginning of the wet season. The installation of semi-permanent soil gas wells provides additional flexibility in

¹ Paul, et al., 2013, Comparison of Petroleum Hydrocarbon Soil Gas Samples from Conventional Ground Water Monitoring Wells to Soil Gas Samples from Vapor Probes. National Tanks Conference and Exposition.

² Jewell, Kenneth P and Wilson, John T, 2011, A New Screening Method for Methane in Soil Gas Using Existing Groundwater Monitoring Wells.

the date of sample collection, in the case of a rainfall event. Semi-permanent soil vapor monitoring probes will be installed in locations SV-1 through SV-12, in accordance with the procedures described in the DTSC's Advisory Active Soil Gas Investigations (April 2012).

Risk Screening Levels

The ACEH requested that detected soil vapor concentrations not be compared to the updated soil gas screening numbers from the California Office of Environmental Health Hazard Assessment (CHHSLs)³. This comment is noted and will be considered in evaluation of the soil vapor sampling results. If compounds unrelated to petroleum fuels are detected in soil vapor, Langan will evaluate the results following accepted risk assessment protocols.

Soil Sampling

We will collect 12 soil samples concurrent with installation of soil vapor monitoring probes SV-1 through SV-12. Samples will be collected at each of the drilling locations using dual-tube direct push technology. Soil samples will be collected at depths corresponding to bottom depth of the proposed soil vapor monitoring probes, as indicated in Table 1. Soil samples will be collected into new acetate liners, sealed with Teflon™ tape and capped, and stored on ice pending submittal to a State of California-certified laboratory for analysis.

Soil samples will be analyzed as follows:

- Benzene, toluene, ethylbenzene, xylenes, and methyl tertiary butyl ether (BTEX/MTBE) using EPA Method 8020.
- Total petroleum hydrocarbons (TPH) as gasoline and diesel using EPA Method 8015.
- Fraction organic carbon (FOC).

The sample analysis plan is included in Table 1. Soil results for TPH, benzene, and ethylbenzene will be compared to the State Water Resources Control Board Low Threat Closure Policy (LTCP) criteria.

Groundwater Sampling

To further assess the extent of petroleum hydrocarbons in groundwater, we will collect and analyze up to two grab groundwater samples: GW-1 and GW-2 (Figure 2). Collection of sample GW-1 is dependent on drill rig access to this location. Drilling will be performed using a dual-tube direct push system and soil cores will be logged using the Unified Soils Classification System (USCS). If there is sufficient groundwater yield to the borings, U.S. EPA low-flow well sampling procedures will be followed, and water quality parameters (temperature, pH, specific conductance, and turbidity, oxidation reduction potential [ORP], and dissolved oxygen [DO]) will be monitored and recorded on groundwater sampling forms. Groundwater samples will be logged under chain-of-custody procedures, packed securely in an ice-cooled chest, and chilled

³ California Office of Environmental Health Hazard Assessment, 2010. Table 3 - Soil-Gas-Screening Numbers for Volatile Chemicals below Buildings Constructed Without Engineered Fill below Sub-slab Gravel, September 23.

to approximately 4 degrees centigrade pending submittal to a State of California-certified laboratory for analysis. Groundwater samples will be analyzed as follows:

- BTEX/MTBE using EPA Method 8020.
- TPH-gasoline, and TPH-diesel using EPA Method 8015.

The sample analysis plan is included in Table 2. Soil results for TPH, benzene, and ethylbenzene will be compared to the State Water Resources Control Board Low Threat Closure Policy (LTCP) criteria.

Groundwater Sampling For Remedial Alternatives Evaluation

We will collect groundwater samples at existing monitoring wells MW-1, MW-3, MW-6 and MW-9. Monitoring wells MW-1 and MW-6 are within the areas of residual benzene impacts. Monitoring well MW-9 is within the interpreted historical area of LNAPL extent. Monitoring well MW-3 is south of the area of benzene impacts to groundwater. Petroleum compounds dissolved in groundwater or volatilized into the vadose zone can be biodegraded by microbial and/or enzymatic activity.

Depth to groundwater will be recorded prior to sample collection. U.S. EPA low-flow well sampling procedures will be followed. Water quality parameters (temperature, pH, specific conductance, and turbidity, oxidation reduction potential [ORP], and dissolved oxygen [DO]) will be monitored during sampling and recorded on a groundwater sampling forms. Groundwater samples will be logged under chain-of-custody procedures, packed securely in an ice-cooled chest, and chilled to approximately 4 degrees centigrade pending submittal to a State of California-certified laboratory for analysis. Groundwater samples collected from wells MW-1, MW-3, MW-6 and MW-9 will be analyzed for parameters used for preliminary screening for biodegradation and to evaluate insitu chemical- and bio-remediation technologies, including:

- Nitrate, sulfate, total iron (as ferric iron), and manganese
- Dissolved methane
- Alkalinity
- Total organic carbon (TOC)
- Total dissolved solids (TDS)

The proposed sample analysis plan is provided as Table 2.

SCHEDULE

Sampling is scheduled to begin 17 November 2014.

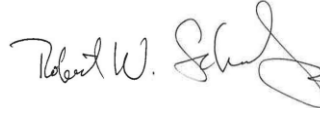
If you have any questions, please do not hesitate to call us at 415-955-5200.

Sincerely yours,

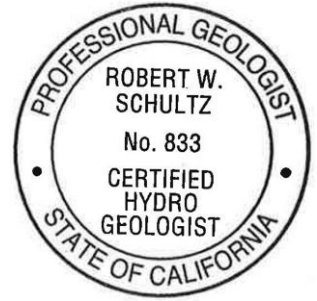
Langan Treadwell Rollo



Christina L. Rain
Senior Staff Engineer



Robert W. Schultz, CHG
Senior Project Manager



cc: Mr. Tony Cardoza and Mr. Stephen Siri, 3093 Broadway Holdings, L.L.C.
555 California Street, 10th Floor
San Francisco, CA 94104

Enclosures: Table 1 – Sample Analysis Plan: Soil Vapor and Soil
Table 2 - Sample Analysis Plan: Groundwater
Figure 1 – Site Location Map
Figure 2 – Site Plan and Proposed Sampling Locations
Figure 3 – Typical Soil Gas Cross Section (Conceptual)

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TABLE

Table 1
Sample Analysis Plan: Soil Gas and Soil
3093 Broadway
Oakland, California

Sampling Location	Ground Elevation feet a-msl	Future Grade Elevation feet a-msl	Sample Depth feet bgs	Soil Vapor Sampling						Soil Sampling		
				VOCs using TO-15 µg/m ³	Naphthalene by TO-17 (confirmation) µg/m ³	Helium %v	Oxygen %v	Carbon Dioxide %v	Methane %v	FOC	BTEX/MTBE mg/kg	TPH-gasoline, diesel, motor oil mg/kg
SV-1	67	51	21	X		X	X	X	X		X	X
SV-2	62	51	16	X	X	X	X	X	X	X	X	X
SV-3	57	51	11	X		X	X	X	X	X	X	X
SV-4	54	51	8	X	X	X	X	X	X		X	X
SV-5	64	51	18	X		X	X	X			X	X
SV-6	61	51	15	X		X	X	X	X		X	X
SV-7	54	51	8	X		X	X	X			X	X
SV-8	56	51	10	X		X	X	X			X	X
SV-9	61	51	15	X		X	X	X	X	X	X	X
SV-10	53	51	7	X		X	X	X	X	X	X	X
SV-11	53	51	7	X		X	X	X	X	X	X	X
SV-12	56	51	10	X		X	X	X	X		X	X
MW-1	62	51	16	X		X	X	X	X			
MW-6	53	51	7	X		X	X	X	X			
GW-1	53 ^a	51	10								X	X
GW-1	53 ^a	51	15								X	X
GW-1	53 ^a	51	20								X	X
GW-1	53 ^a	51	25								X	X
GW-2	53 ^a	51	10								X	X
GW-2	53 ^a	51	15								X	X
GW-2	53 ^a	51	20								X	X
GW-2	53 ^a	51	25								X	X
Duplicate (1 per day)	--	--	--	X		X	X	X	X			
Ambient Air (1 per day)	--	--	--	X					X			

Notes:

- a-msl = above mean sea level
- bgs = below ground surface
- FOC = Fraction organic carbon in soil
- BTEX/MTBE = benzene, toluene, ethylbenzene, xylenes, methyl tertiary butyl ether
- TPH = total petroleum hydrocarbons
- VOCs = volatile organic compounds, including naphthalene and fuel oxygenates
- mg/kg = milligrams/kilogram
- %v = percent volume
- µg/m³ = micrograms per cubic meter
- not applicable

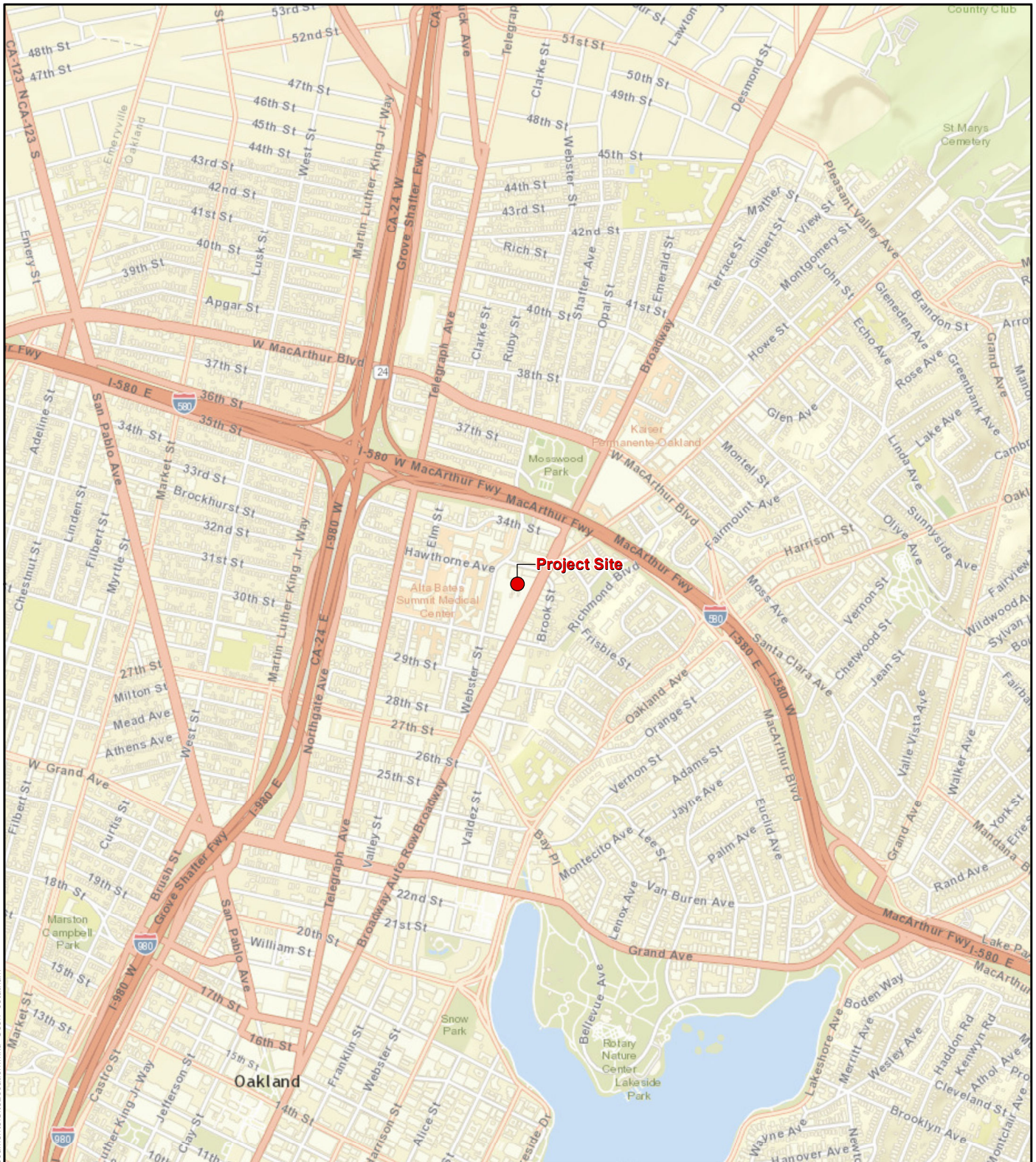
Table 2
Sample Analysis Plan: Groundwater
3093 Broadway
Oakland, California

Sampling Location	TOC Elevation	Casing Diameter	Screened Interval	Depth to Groundwater (May 2014)	Sample Depth	Laboratory Analyses										Field Measurements					
						BTEX/MTBE	TPH-Gasoline and Diesel	Dissolved Methane	Total Organic Carbon (TOC)	Total Dissolved Solids (TDS)	Alkalinity	Nitrate	Sulfate	Total Iron (Ferric Iron)	Total Manganese	Turbidity	pH	DO	ORP	Specific Conductivity	Temperature
	feet a-msl	inches	feet bgs	feet bgs	feet bgs	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L CaCO ₃	mg/L	mg/L	µg/L	µg/L	NTU	units	%	mV	S/cm 25C	°C
MW-1	60.57	2	19 to 35	22.13	29	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-3	56.87	2	18 to 35	19.51	27	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-6	51.65	2	15 to 35	22.93	29	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-9	57.15	2	18 to 32	19.37	26	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GW-1	53 ^a	–	–	15.5 ^b	20	X	X									X	X	X	X	X	X
GW-2	53 ^a	–	–	16.5 ^b	20	X	X									X	X	X	X	X	X

Notes:

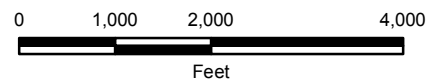
- a. ground surface elevation (approximate)
- b. anticipated depth to groundwater (approximate)
- a-msl = above mean sea level
- bgs = below ground surface
- BTEX/MTBE = benzene, toluene, ethylbenzene, xylenes, methyl tertiary butyl ether
- °C = degrees celsius
- mV = millivolts
- NTU = nephelometric turbidity units
- ORP = Oxidation Reduction Potential
- TPH = total petroleum hydrocarbons
- %v = percent volume
- µg/L = micrograms per liter
- not applicable

FIGURES



Notes:

1. World street basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online. Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN.
2. Map displayed in California State Plane Coordinate System, Zone III, North American Datum of 1983 (NAD83), US Survey Feet.



3093 BROADWAY
Oakland, California

SITE LOCATION MAP

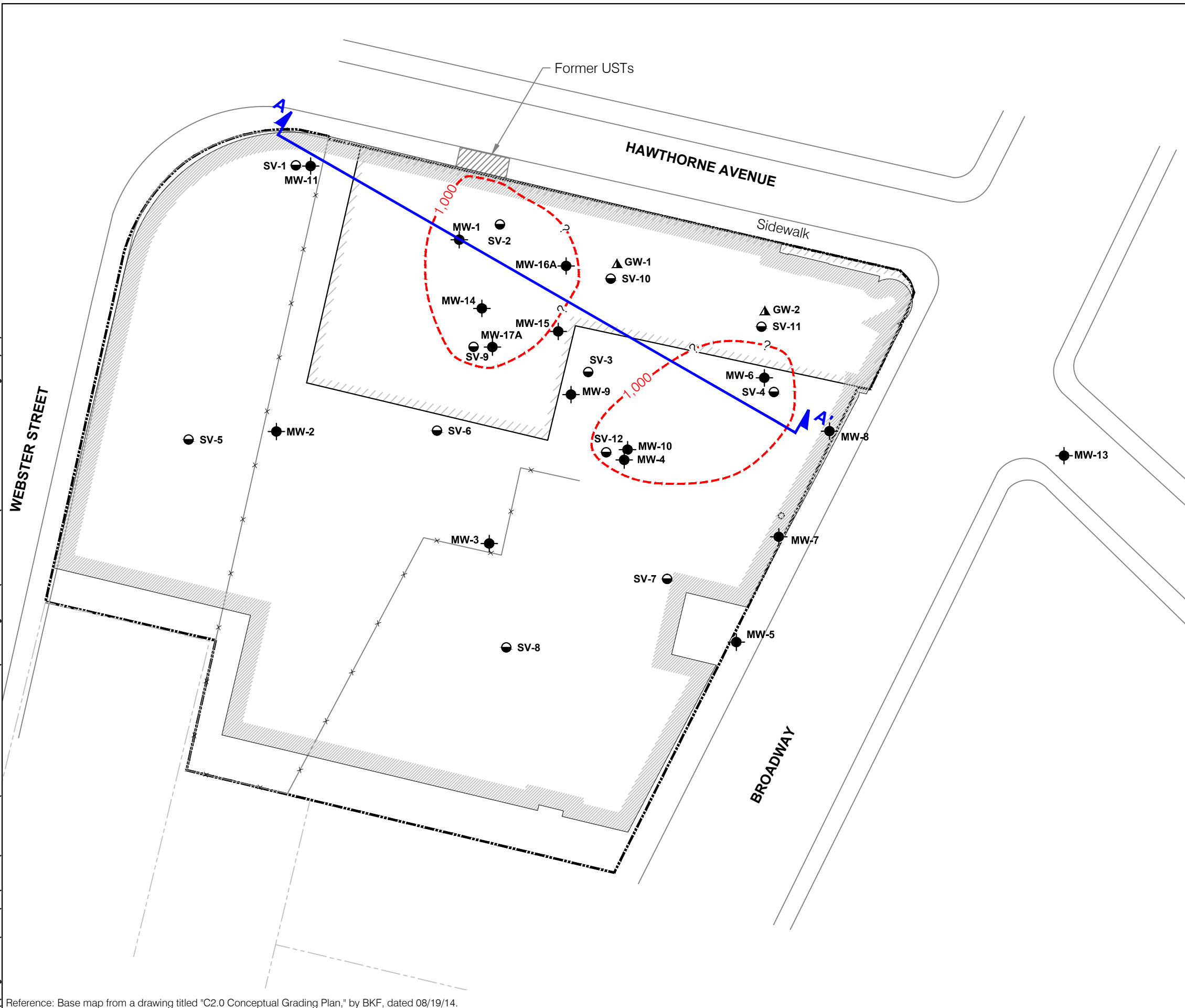
LANGAN TREADWELL ROLLO

Date 8/18/2014

Project 731637001

Figure 1

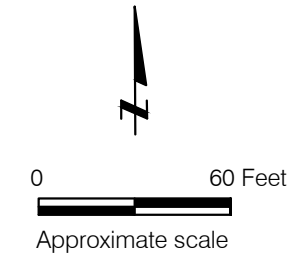
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EXPLANATION

- GW-1 ▲ Proposed groundwater grab
- SV-1 ● Proposed soil gas sampling location
- MW-1 ● Monitoring well location
- Site boundary
- x-x- Fence
- ▨ Building footprint
- - - 1,000 Benzene Isoconcentration in water, queried where uncertain (May 2014)
- A A' Cross Section

Note:
 1. GW-1 to be advanced and sampled dependent on site accessibility.



3093 BROADWAY Oakland, California		
SITE PLAN AND PROPOSED SAMPLING LOCATIONS		
Date 11/12/14	Project No. 731637001	Figure 2
LANGAN TREADWELL ROLLO		

Reference: Base map from a drawing titled "C2.0 Conceptual Grading Plan," by BKF, dated 08/19/14.

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