

## Jurek, Anne, Env. Health

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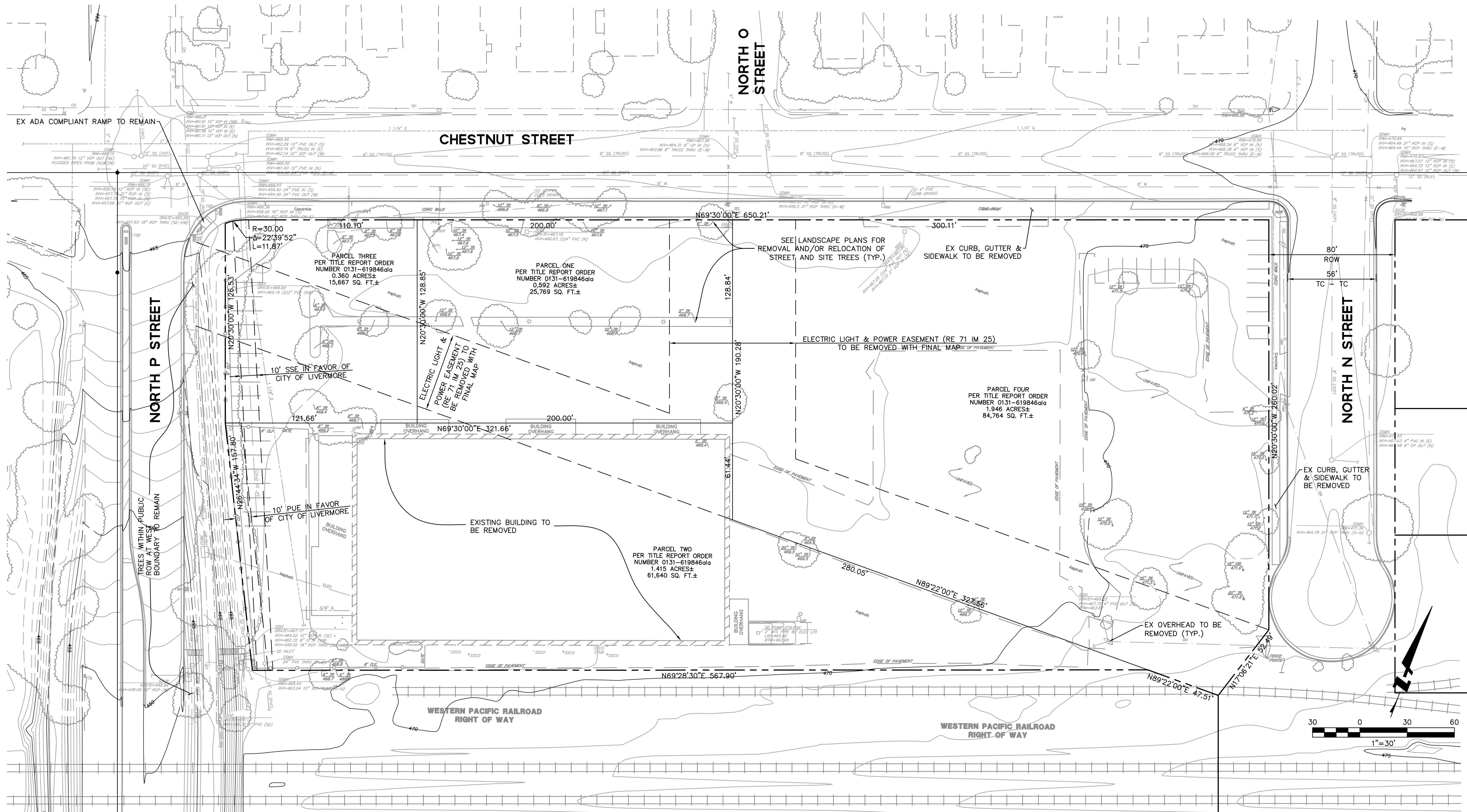
**From:** Ian Sutherland <isutherland@accenv.com>  
**Sent:** Friday, September 30, 2016 1:47 PM  
**To:** Jurek, Anne, Env. Health  
**Cc:** Roe, Dilan, Env. Health; Apolonio Munoz; Allyson Ujimori  
**Subject:** (#1) Fuel Leak Case No. RO0003179 and GeoTracker Global ID T10000007202, Chestnut Square, 1625 Chestnut Street, Livermore, CA 94551  
**Attachments:** Parcel Configurations\_CURRENT.pdf; Parcel Configurations\_PROPOSED (includes proposed site figuration).pdf; Figure 1\_Historic Soil Boring Locations.pdf; Figure 2\_Ground Floor Site Plan, RECs and Historic Soil Borings.pdf; Figure 3\_Subsurface Parking, Elevators, Bioretention Areas & Historic Soil Boring Locations.pdf; Figure 4\_Landscaping & Historical Soil Boring Locations.pdf; Figure 5\_Sensitive Receptor Survey and Potential Upgradient Sources.pdf

Good afternoon Anne,

Attached please find the information you requested on September 14. The cross-sections will follow shortly. We look forward to meeting with you on Monday to discuss the status of this site.

Ian Sutherland, PG  
Project Manager  
ACC Environmental Consultants  
7977 Capwell Drive, Suite 100  
Oakland, California 94621

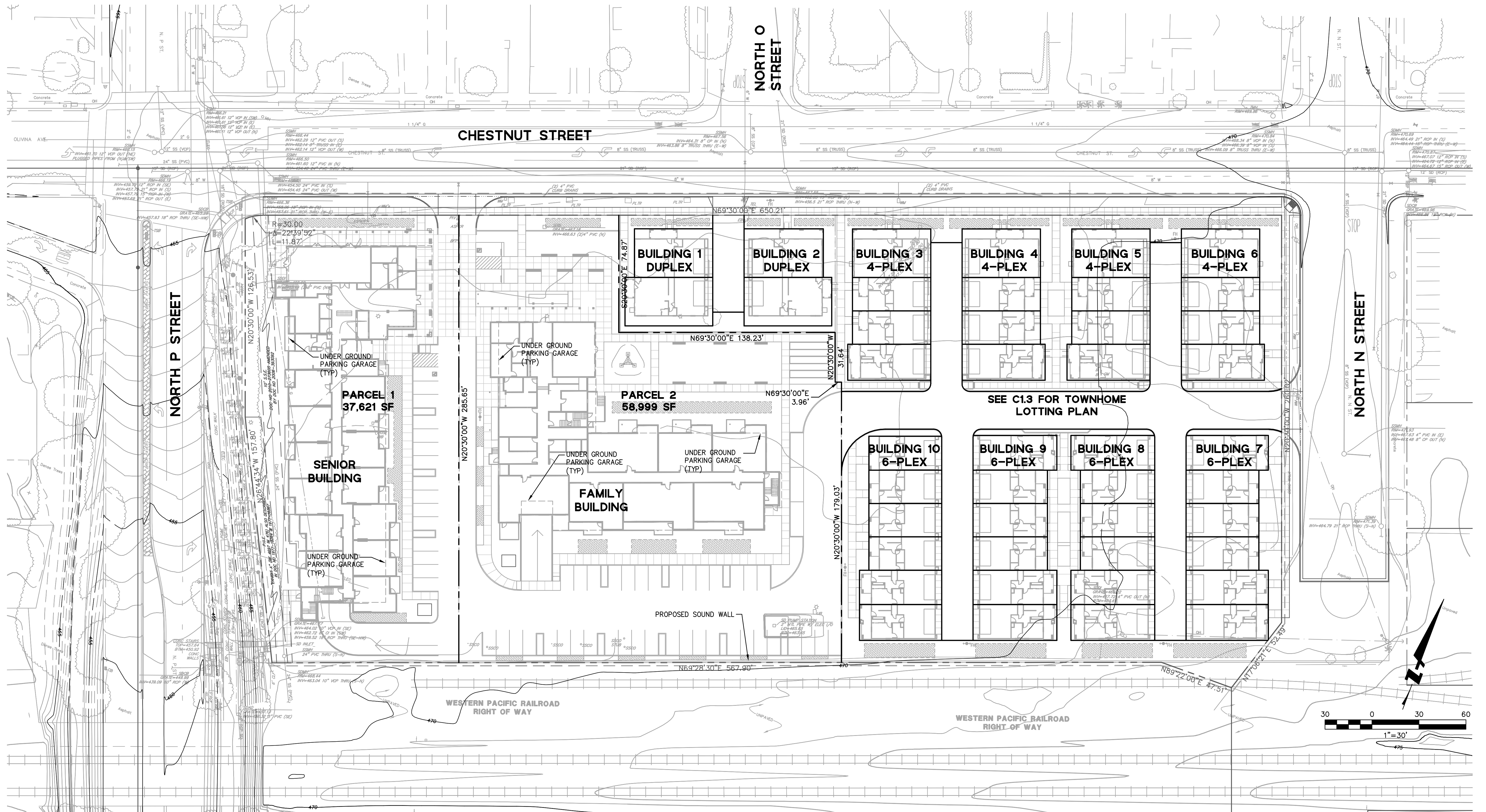
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# CHESTNUT SQUARE | LIVERMORE, CA

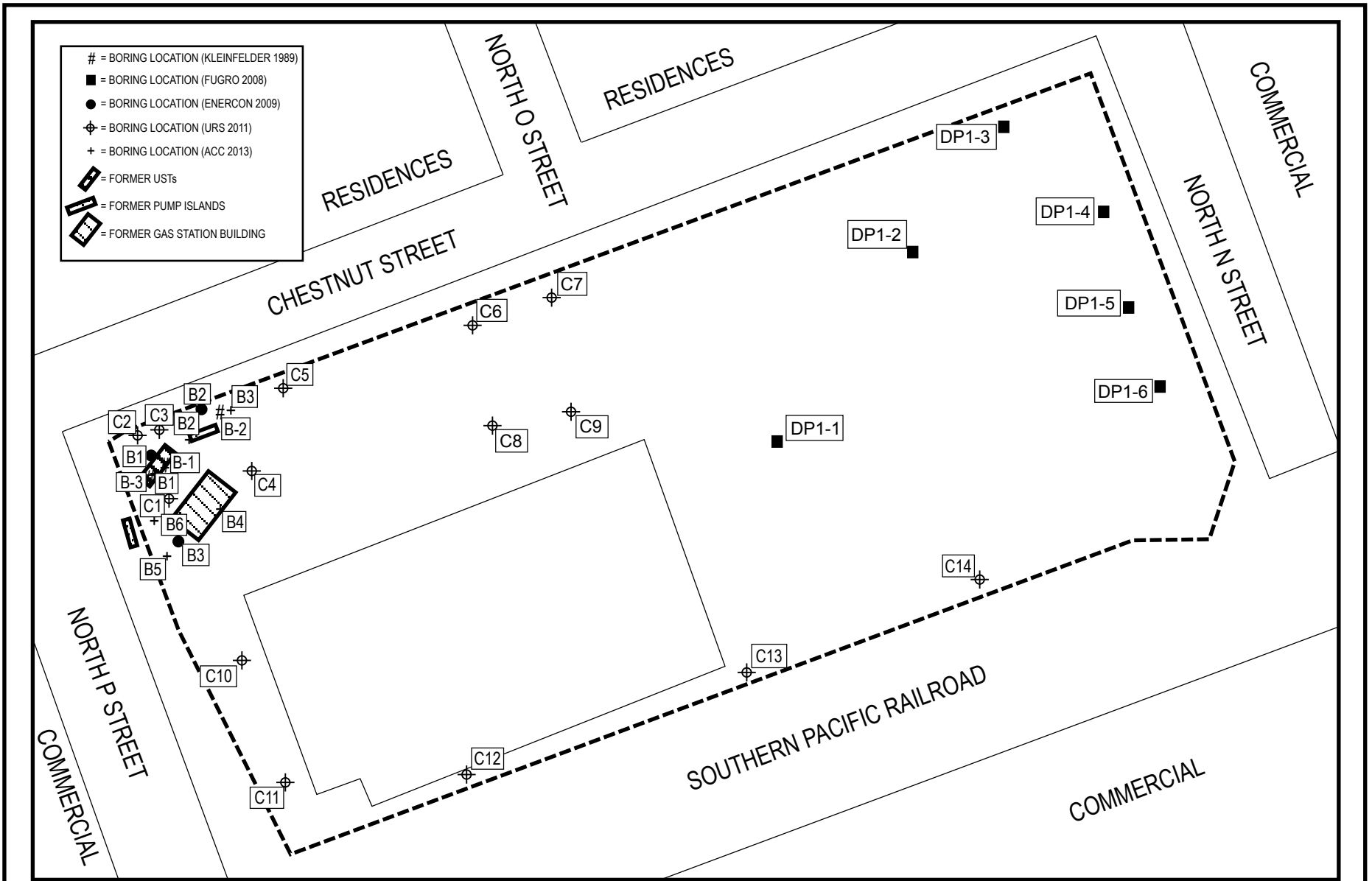
# EXISTING CONDITIONS





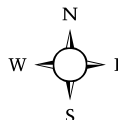
# CHESTNUT SQUARE | LIVERMORE, CA

# OVERALL SITE PLAN

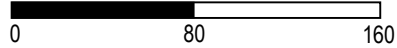


An Employee Owned Company

**HISTORIC SOIL BORING LOCATIONS  
1625 CHESTNUT STREET  
LIVERMORE, CALIFORNIA**



APPROXIMATE SCALE (FEET)



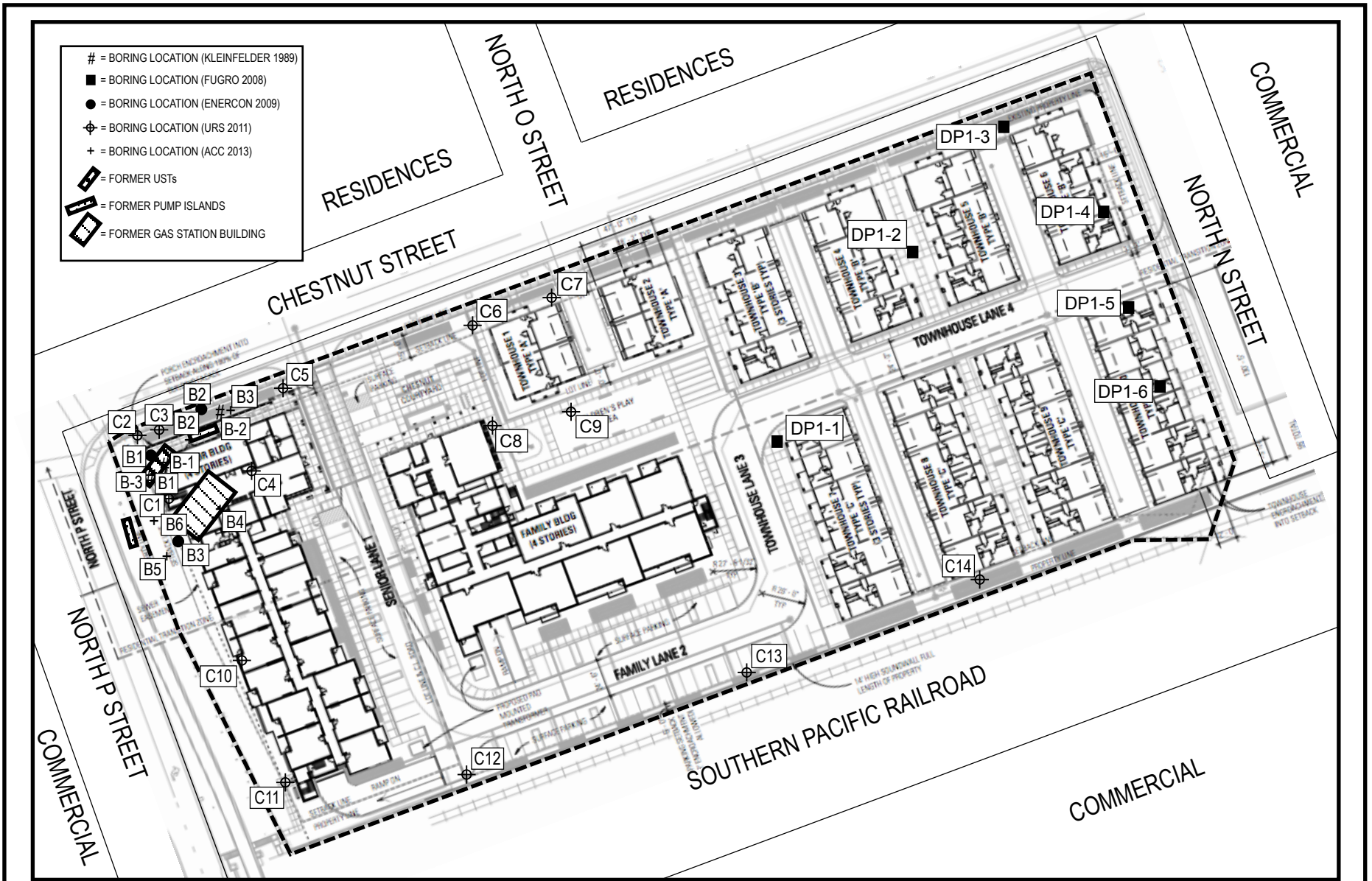
PROJECT: 6988-003.02

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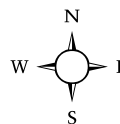
**FIGURE 1**

ALL DIMENSIONS & LOCATIONS APPROXIMATED

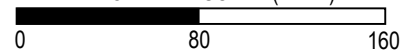




**GROUND FLOOR SITE PLAN, RECs  
HISTORIC SOIL BORING LOCATIONS  
1625 CHESTNUT STREET  
LIVERMORE, CALIFORNIA**



APPROXIMATE SCALE (FEET)

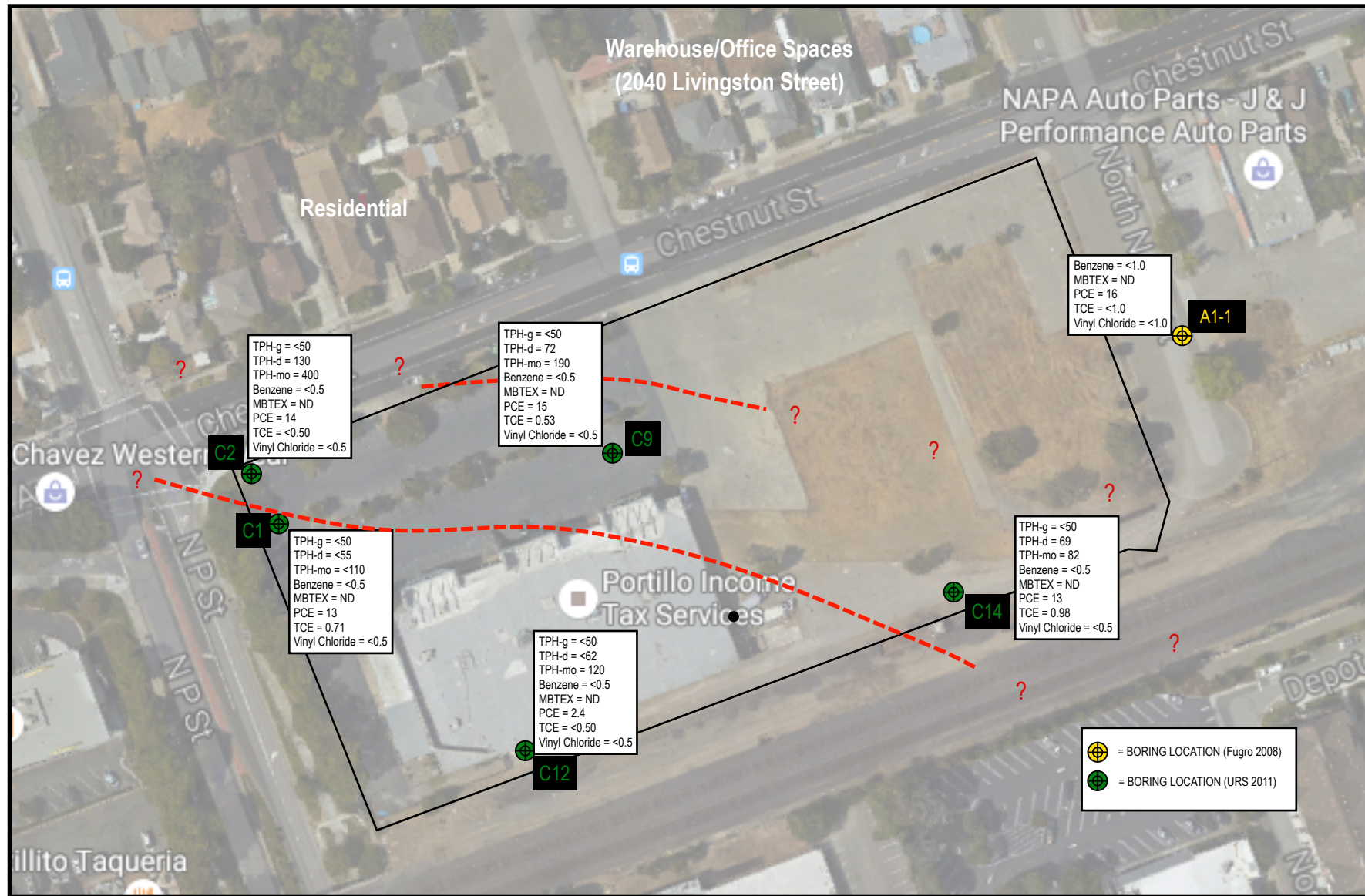


PROJECT: 6988-003.02

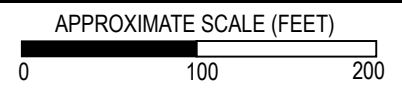
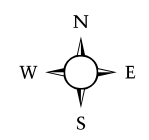
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**FIGURE 2**

ALL DIMENSIONS & LOCATIONS APPROXIMATED



**GROUNDWATER RESULTS (ug/L)  
 WITH TPH-d BOUNDARIES  
 1625 CHESTNUT STREET  
 LIVERMORE, CALIFORNIA**



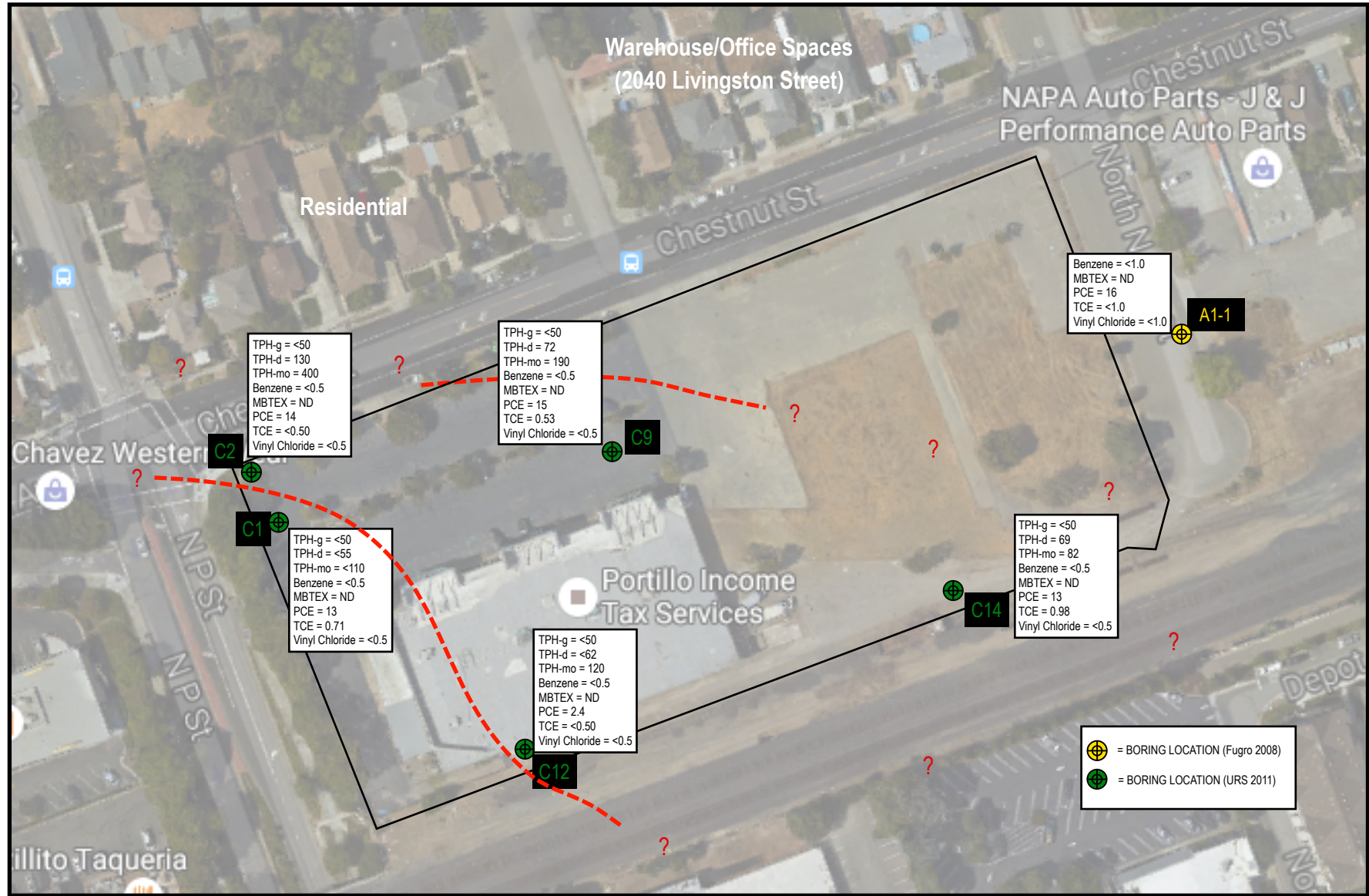
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**FIGURE 6**

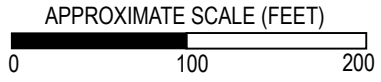
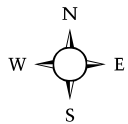
ALL DIMENSIONS & LOCATIONS APPROXIMATED





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**GROUNDWATER RESULTS (ug/L)  
WITH TPH-mo BOUNDARIES  
1625 CHESTNUT STREET  
LIVERMORE, CALIFORNIA**



PROJECT: 6988-003.02

9.30.16

**FIGURE 7**

ALL DIMENSIONS & LOCATIONS APPROXIMATED

**TABLE 1**  
**Summary By Soil Boring**  
**1625 Chestnut Street, Livermore, CA**  
**ACC Project Number: 6988-003.02**

Company	Sample Date	Boring Number	Sample Depth (Feet Below Ground Surface)	Matrix	Rationale	Chemical Compounds	Concentrations (mg/Kg) and (ug/L)
Kleinfelder	08.03.89	B-1	10.5	Soil	Former Gasoline Station	TPH, Benzene, Ethylbenzene, Toulene, & Total Xylenes by EPA Analytical Method 8015	ND
			14.5	Soil		TPH, Benzene, Ethylbenzene, Toulene, & Total Xylenes	ND
		B-2	2.5	Soil		TPH, Benzene, Ethylbenzene, Toulene, & Total Xylenes	ND
			5	Soil		TPH, Benzene, Ethylbenzene, Toulene, & Total Xylenes	ND
			15	Soil		TPH, Benzene, Ethylbenzene, Toulene, & Total Xylenes	ND
		B-3	10	Soil		TPH, Benzene, Ethylbenzene, Toulene, & Total Xylenes	TPH-mo = 20; TPH-g, TPH-d, BTEX= ND
			15	Soil		TPH, Benzene, Ethylbenzene, Toulene, & Total Xylenes	ND
		Fugro West, Inc.	12.4.07	DP1-1		0	Soil
2	Soil				VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 3.6; Lead = 4.2; VOCs = 'ND	
7.5	Soil				VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 2.6; Lead = 2.9; VOCs = 'ND	
DP1-2	0			Soil	VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 3.8; Lead = 5.3; VOCs = 'ND	
	2			Soil	VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 4.0; Lead = 5.3; VOCs = 'ND	
	7.5			Soil	VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 3.5; Lead = 4.5; VOCs = 'ND	
DP1-3	0			Soil	VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 3.9; Lead = 5.2; VOCs = 'ND	
	2			Soil	VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 4.6; Lead = 5.4; VOCs = 'ND	
	7.5			Soil	VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 3.4; Lead = 2.9; VOCs = 'ND	
DP1-4	0			Soil	VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Acetone = 84; Arsenic = 2.7; Lead = 8.9; Other VOCs = ND	
	2			Soil	VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 3.6; Lead = 4.9; VOCs = 'ND	
	7.5			Soil	VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 5.0; Lead = 4.1; VOCs = 'ND	
DP1-5	0			Soil	VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 5.4; Lead = 44; VOCs = 'ND	
	2			Soil	VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 3.5; Lead = 4.8; VOCs = 'ND	
	7.5			Soil	VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 3.2; Lead = 3.3; VOCs = 'ND	



Company	Sample Date	Boring Number	Sample Depth (Feet Below Ground Surface)	Matrix	Rationale	Chemical Compounds	Concentrations (mg/Kg) and (ug/L)
		DP1-6	0	Soil		VOCs by EPA Analytical Method 8260, CAM-17 Metals by EPA Analytical Method 6020	Arsenic = 4.5; Barium = 210; Beryllium = 0.54; Chromium = 63; Cobalt = 16; Copper = 33; Lead = 6.2; Nickel = 120; Vanadium = 29; Zinc = 42; Molybdenum, Mercury, Other Metals, VOCs = 'ND
			2	Soil		VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 4.2; Lead = 5.6; VOCs = 'ND
			7.5	Soil		VOCs by EPA Analytical Method 8260, Arsenic & Lead by EPA Analytical Method 6020	Arsenic = 4.4; Lead = 5.5; VOCs = 'ND
		AI-1	--	Groundwater		VOCs by EPA Analytical Method 8260	Tetrachloroethene = 16; Other VOCs = ND
Enercon Services, Inc.	8.18.09	B-1	15'	Soil	Former Gasoline Station	TPH by EPA Analytical Method 8015, BTEX by Analytical Method 8021	ND
			49'	Soil		TPH by EPA Analytical Method 8015, BTEX by Analytical Method 8021	ND
		B-2	15'	Soil		TPH by EPA Analytical Method 8015, BTEX by Analytical Method 8021	ND
			35'	Soil		TPH by EPA Analytical Method 8015, BTEX by Analytical Method 8021	ND
		B-3	15'	Soil		TPH by EPA Analytical Method 8015, BTEX by Analytical Method 8021	ND
			49.25'	Soil		TPH by EPA Analytical Method 8015, BTEX by Analytical Method 8021	ND
		C1	2	Soil	Former Gasoline Station	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015	Arsenic = 4.1; Barium = 160; Chromium = 52; Cobalt = 14; Copper = 28; Lead = 8.5; Nickel = 100; Vanadium = 24; Zinc = 45; Mercury = 0.032; TPH-d = 7.9; PAHs, Other Metals, TPH-g, TPH-mo, BTEX = ND
			5	Soil		PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015	Arsenic = 4.5; Barium = 140; Chromium = 60; Cobalt = 15; Copper = 30; Lead = 7.2; Nickel = 130; Vanadium = 26; Zinc = 44; Mercury = 0.051; TPH-d = 100; TPH-mo = 570; PAHs, Other Metals, TPH-g & BTEX = ND
			--	Groundwater		TPH-g by EPA Analytical Method 8260, TPH-d & TPH-mo by EPA Analytical Method 8015, VOCs by EPA Analytical Method 8260, & CAM-17 Metals by EPA Analytical Method 6010	Tetrachloroethene = 13; Trichloroethene = 0.71; Barium = 0.43; Chromium = 0.015; Cobalt = 0.011; Lead = 0.0051; Molybdenum = 0.01; Nickel = 0.081; Vanadium = 0.011; TPH, Other VOCs, Other Metals = ND
			--	Soil Vapor		VOCs by EPA Analytical Method TO-15	Benzene = 2.8; Ethylbenzene = 1.5; Toulene = 4.8; Total Xylenes = 5.6; Propylene = 33; 1,3-Butadiene = 4.4; Acetone = 11; 2-Butanone = 1.1; Cyclohexane = 5.0; n-Heptane = 1.0; Bromoform = 0.96; Other VOCs = ND
		C2	2	Soil	Former Gasoline Station ACC Environ	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015	Benzo[a]anthracene = 0.087; Benzo[a]pyrene = 0.011; Benzo[b]fluoranthene = 0.014; Benzo[g,h,i]perylene = 0.009; Benzo[k]fluoranthene = 0.0095; Chrysene = 0.011; Fluoranthene = 0.011; Indeno[1,2,3-cd]pyrene = 0.0061; Pyrene = 0.016; Arsenic = 14; Barium = 5.6; Chromium = 41; Cobalt = 11; Copper = 32; Lead = 18; Nickel = 88; Vanadium = 20; Zinc = 52; Mercury = 0.072; TPH-d = 27; TPH-mo = 150; Other PAHs, Other Metals, TPH-g & BTEX = ND
			5	Soil		PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015	Arsenic = 5.6; Barium = 130; Chromium = 45; Cobalt = 12; Copper = 24; Lead = 6.7; Nickel = 96; Vanadium = 20; Zinc = 39; Mercury = 0.049; TPH-d = 100; TPH-mo = 570; PAHs, Other Metals, TPH & BTEX = ND
			5 - DUP	Soil		PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015	Barium = 110; Chromium = 21; Cobalt = 9.6; Copper = 20; Lead = 10; Nickel = 38; Vanadium = 18; Zinc = 30; Mercury = 0.27; TPH-d = 100; TPH-mo = 570; TPH-d = 32; TPH-mo = 210; PAHs, Other Metals, TPH-g & BTEX = ND
			20	Soil		TPH, Benzene, Ethylbenzene, Toulene, & Total Xylenes	ND

Company	Sample Date	Boring Number	Sample Depth (Feet Below Ground Surface)	Matrix	Rationale	Chemical Compounds	Concentrations (mg/Kg) and (ug/L)		
		C3	30	Soil		TPH, Benzene, Ethylbenzene, Toulene, & Total Xylenes	ND		
			--	Groundwater		TPH-g by EPA Analytical Method 8260, TPH-d & TPH-mo by EPA Analytical Method 8015, VOCs by EPA Analytical Method 8260, & CAM-17 Metals by EPA Analytical Method 6010	TPH-d = 130; TPH-mo = 400; Tetrachloroethene = 14; Barium = 0.47; Chromium = 0.086; Cobalt = 0.024; Copper = 0.044; Lead = 0.0059; Molybdenum = 0.015; Nickel = 0.27; Vanadium = 0.035; Zinc = 0.042; TPH-g, Other VOCs, Other Metals = ND		
			--	Soil Vapor		VOCs by EPA Analytical Method TO-15	Benzene = 1.7; Toulene = 1.6; Tetrachloroethene = 0.94; Propylene = 48; Acetone = 5.6; n-Hexane = 31; Cyclohexane = 6.1; n-Heptane = 7.8; Bromoform = 0.95; Other VOCs = ND		
		C3	Former Gasoline Station	2	Soil	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015	Naphthalene = 0.036; Barium = 110; Chromium = 39; Cobalt = 9.1; Copper = 23; Lead = 7.7; Nickel = 67; Vanadium = 24; Zinc = 38; Mercury = 0.031; TPH-d = 39; TPH-mo = 140; Other PAHs, Other Metals, TPH-g & BTEX = ND		
				5	Soil	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015	Barium = 86; Chromium = 34; Cobalt = 8.3; Copper = 20; Lead = 6.0; Nickel = 65; Vanadium = 21; Zinc = 35; Mercury = 0.027; PAHs, Other Metals, TPH, & BTEX = ND		
				5 - DUP	Soil	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015	Barium = 92; Chromium = 46; Cobalt = 8.3; Copper = 23; Lead = 5.1; Nickel = 68; Vanadium = 24; Zinc = 34; Mercury = 0.027; PAHs, Other Metals, TPH & BTEX = ND		
				20	Soil	TPH, Benzene, Ethylbenzene, Toulene, & Total Xylenes	ND		
				30	Soil	TPH, Benzene, Ethylbenzene, Toulene, & Total Xylenes	ND		
				--	Soil Vapor	VOCs by EPA Analytical Method TO-15	Tetracholorethene = 6.8; Propylene = 3.3; Other VOCs = ND		
				--	Soil Vapor Duplicate	VOCs by EPA Analytical Method TO-15	Tetracholorethene = 6.8; Other VOCs = ND		
		C4	Former Gasoline Station	2	Soil	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015	Arsenic = 4.5; Barium = 200; Chromium = 64; Cobalt = 16; Copper = 35; Lead = 7.9; Nickel = 120; Vanadium = 27; Zinc = 50; Mercury = 0.029; PAHs, Other Metals, TPH & BTEX = ND		
				2 - DUP	Soil	TPH, Benzene, Ethylbenzene, Toulene, & Total Xylenes	ND		
				5	Soil	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015	Barium = 85; Chromium = 33; Cobalt = 6.6; Copper = 15; Lead = 4.1; Nickel = 57; Vanadium = 17; Zinc = 25; Mercury = 0.031; TPH-d = 140; TPH-mo = 670; PAHs, Other Metals, TPH-g & BTEX = ND		
				--	Soil Vapor	VOCs by EPA Analytical Method TO-15	Benzene = 4.4; Ethylbenzene = 1.3; Toulene = 4.2; Total Xylenes = 3.3; Tetrachloroethene = 7.3; Propylene = 96; 1,3-Butadiene = 6.5; Acetone = 8.3; n-Hexane = 2.0; 2-Butanone = 1.2; Cyclohexane = 8.2; n-Heptane = 1.5; Bromoform = 2.6; Pther VOCs = ND		
					2	Soil	ACC Environ	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015	Arsenic = 5.7; Barium = 230; Chromium = 120; Cobalt = 19; Copper = 37; Lead = 8.3; Nickel = 170; Vanadium = 30; Zinc = 49; Mercury = 0.067; TPH-d = 2.1; PAHs, Other Metals, TPH-g, TPH-mo & BTEX = ND

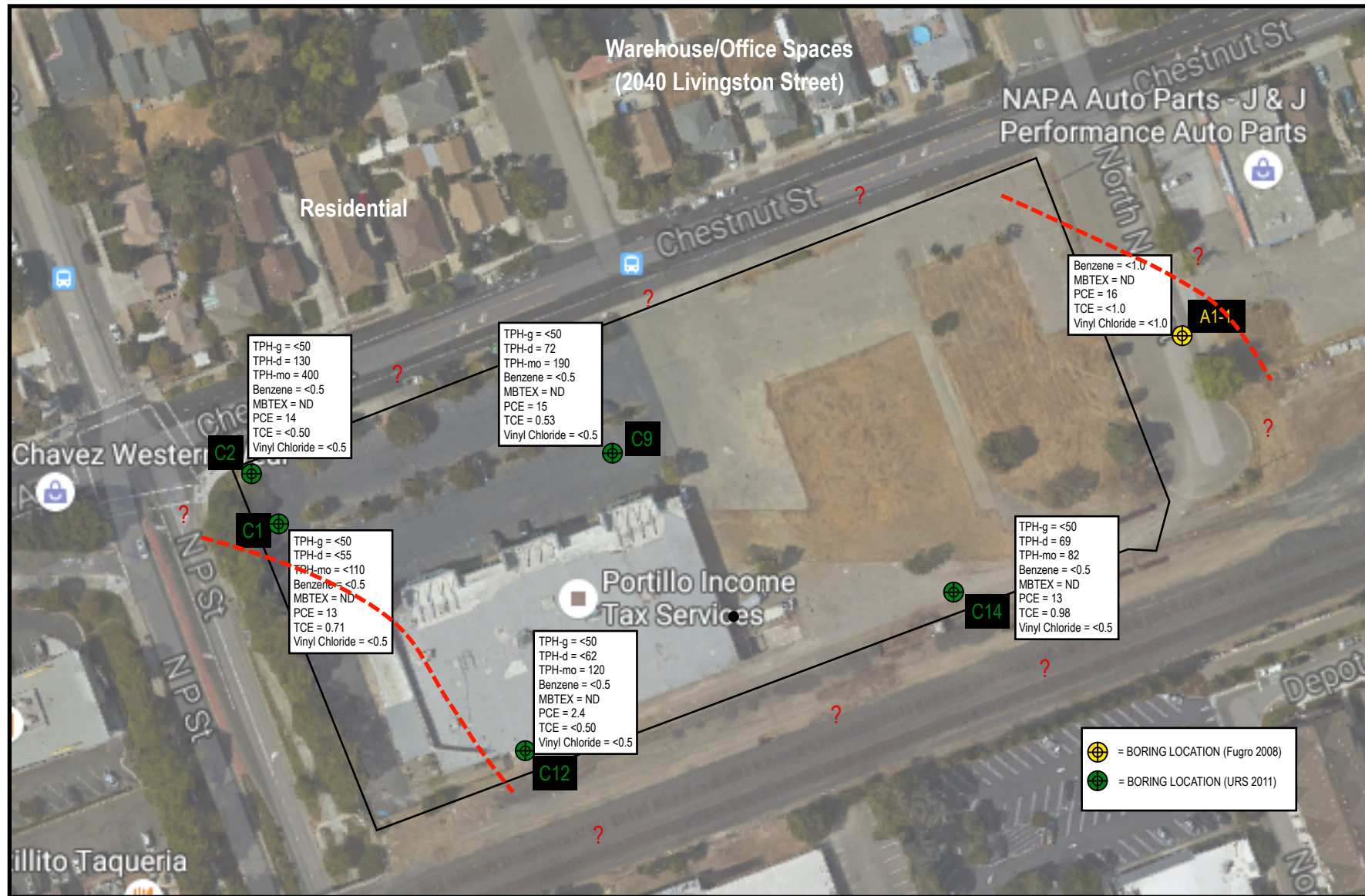


Company	Sample Date	Boring Number	Sample Depth (Feet Below Ground Surface)	Matrix	Rationale	Chemical Compounds	Concentrations (mg/Kg) and (ug/L)
URS Corporation	2-17-11	C5	5	Soil	Former Gasoline Station	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015	Arsenic = 5.0; Barium = 180; Chromium = 63; Cobalt = 18; Copper = 33; Lead = 8.9; Nickel = 150; Vanadium = 26; Zinc = 50; Mercury = 0.075; TPH-d = 10; TPH-mo = 130; PAHs, Other Metals, TPH-g & BTEX = ND
			--	Soil Vapor		VOCs by EPA Analytical Method TO-15	Benzene = 12; Ethylbenzene = 14; Toluene = 21; Total Xylenes = 43; Tetrachloroethene = 5.1; Propylene = 320; 1,3-Butadiene = 35; Acetone = 16; Carbon Disulfide = 1.8; n-Hexane = 6.7; 2-Butanone = 3.3; Cyclohexane = 7.4; n-Heptane = 3.7; Bromoform = 2.1; Other VOCs = ND
		C6	2	Soil	Assess Site Conditions for Redevelopment	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015, Organochlorine Pesticides by EPA Analytical Method 8081	Barium = 120; Chromium = 43; Cobalt = 11; Copper = 22; Lead = 6.9; Nickel = 110; Vanadium = 21; Zinc = 37; Mercury = 0.034; TPH-d = 38; TPH-mo = 210; PAHs, Other Metals, TPH-g, BTEX, Pesticides = ND
			5	Soil		CAM-17 Metals by EPA Analytical Method 6020	Barium = 140; Chromium = 66; Cobalt = 15; Copper = 25; Lead = 6.2; Nickel = 160; Vanadium = 26; Zinc = 44; Mercury = 0.061
			5 - DUP	Soil		CAM-17 Metals by EPA Analytical Method 6020	Arsenic = 5.4; Barium = 180; Chromium = 69; Cobalt = 11; Copper = 30; Lead = 6.1; Nickel = 130; Vanadium = 23; Zinc = 39; Mercury = 0.048; Other Metals = ND
		C7	2	Soil	Assess Site Conditions for Redevelopment, Potential Former Agriculture?	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015, Organochlorine Pesticides by EPA Analytical Method 8081s	Arsenic = 4.5; Barium = 200; Chromium = 61; Cobalt = 15; Copper = 30; Lead = 12; Nickel = 130; Vanadium = 27; Zinc = 48; Mercury = 0.32; PAHs, Other Metals, TPH, BTEX, & Pesticides = ND
			5	Soil		CAM-17 Metals by EPA Analytical Method 6020	Arsenic = 5.1; Barium = 190; Chromium = 83; Cobalt = 22; Copper = 33; Lead = 8.3; Nickel = 250; Vanadium = 30; Zinc = 48; Mercury = 0.056; Other Metals = ND
			60	Soil		Organochlorine Pesticides	ND
		C8	2	Soil	Assess Site Conditions for Redevelopment, Potential Former Agriculture?	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015, Organochlorine Pesticides by EPA Analytical Method 8081	Arsenic = 5.8; Barium = 230; Chromium = 84; Cobalt = 19; Copper = 40; Lead = 9.5; Nickel = 160; Vanadium = 37; Zinc = 53; Mercury = 0.041; TPH-d = 12; TPH-mo = 53; PAHs, Other Metals, TPH-g, BTEX, Pesticides = ND
			5	Soil		CAM-17 Metals by EPA Analytical Method 6020	Arsenic = 5.5; Barium = 210; Chromium = 86; Cobalt = 19; Copper = 36; Lead = 8.9; Nickel = 170; Vanadium = 34; Zinc = 53; Mercury = 0.087; Other Metals = ND
		C9	2	Soil	Assess Site Conditions for Redevelopment, Potential Former Agriculture?	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015, Organochlorine Pesticides by EPA Analytical Method 8081	Arsenic = 5.5; Barium = 230; Chromium = 82; Cobalt = 20; Copper = 37; Lead = 8.4; Nickel = 160; Vanadium = 36; Zinc = 54; Mercury = 0.035; PAHs, Other Metals, TPH, BTEX, Pesticides = ND
			2 - DUP	Soil		PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015, Organochlorine Pesticides by EPA Analytical Method 8081	Arsenic = 4.9; Barium = 210; Chromium = 71; Cobalt = 17; Copper = 34; Lead = 7.5; Nickel = 140; Vanadium = 31; Zinc = 48; Mercury = 0.043; PAHs, Other Metals, TPH, BTEX, Pesticides = ND
			5	Soil		CAM-17 Metals by EPA Analytical Method 6020	Arsenic = 5.2; Barium = 190; Chromium = 210; Cobalt = 15; Copper = 32; Lead = 11; Molybdenum = 30; Nickel = 140; Vanadium = 31; Zinc = 44; Mercury = 0.028; Other Metals = ND

Company	Sample Date	Boring Number	Sample Depth (Feet Below Ground Surface)	Matrix	Rationale	Chemical Compounds	Concentrations (mg/Kg) and (ug/L)
			--	Groundwater		TPH-g by EPA Analytical Method 8260, TPH-d & TPH-mo by EPA Analytical Method 8015, VOCs by EPA Analytical Method 8260, & CAM-17 Metals by EPA Analytical Method 6010	TPH-d = 72; TPH-mo; 190; Tetrachloroethene = 15; Trichloroethene = 0.53; Barium = 1.2; Chromium = 0.029; Cobalt = 0.031; Copper = 0.039; Lead = 0.0094; Molybdenum = 0.016; Nickel = 0.15; Vanadium = 0.022; Zinc = 0.029; Mercury = 0.0005; TPH-g, Other VOCs, Other Metals = ND
		C10	2	Soil	Assess Site Conditions for Redevelopment, Potential Former Agriculture?	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015, Organochlorine Pesticides by EPA Analytical Method 8081	Arsenic = 5.6; Barium = 220; Chromium = 76; Cobalt = 17; Copper = 33; Lead = 12; Nickel = 140; Vanadium = 34; Zinc = 58; Mercury = 0.054; PAHs, Other Metals, TPH, BTEX, Pesticides = ND
	2 - DUP		Soil	PAHs by EPA Analytical Method 8270		Benzo[a]anthracene = 0.016; Benzo[a]pyrene = 0.021; Benzo[b]fluoranthene = 0.031; Benzo[g,h,i]perylene = 0.013; Benzo[k]fluoranthene = 0.014; Chrysene = 0.022; Fluoranthene = 0.020; Indeno[1,2,3-cd]pyrene = 0.01; Pyrene = 0.031; Other PAHs = ND	
	5		Soil	CAM-17 Metals by EPA Analytical Method 6020		Arsenic = 4.6; Barium = 160; Chromium = 71; Cobalt = 14; Copper = 28; Lead = 8.0; Nickel = 150; Vanadium = 28; Zinc = 47; Mercury = 0.066; Other Metals = ND	
		C11	2	Soil	Assess Site Conditions for Redevelopment, Potential Former Agriculture?	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015, Organochlorine Pesticides by EPA Analytical Method 8081	Arsenic = 5.9; Barium = 200; Chromium = 88; Cobalt = 19; Copper = 41; Lead = 9.7; Nickel = 170; Vanadium = 36; Zinc = 57; Mercury = 0.079; PAHs, Other Metals, TPH, BTEX, Pesticides = ND
	5		Soil	CAM-17 Metals by EPA Analytical Method 6020		Arsenic = 4.7; Barium = 120; Chromium = 160; Cobalt = 27; Copper = 20; Lead = 5.4; Nickel = 360; Vanadium = 22; Zinc = 42; Mercury = 0.034; Other Metals = ND	
		C12	2	Soil	Railroad Tracks, Assess Site Conditions for Redevelopment	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015, Organochlorine Pesticides by EPA Analytical Method 8081	Arsenic = 6.4; Barium = 260; Chromium = 94; Cobalt = 31; Copper = 40; Lead = 9.3; Nickel = 350; Vanadium = 35; Zinc = 54; Mercury = 0.047; PAHs, Other Metals, TPH, BTEX, Pesticides = ND
	5		Soil	CAM-17 Metals by EPA Analytical Method 6020		Barium = 110; Chromium = 49; Cobalt = 12; Copper = 21; Lead = 4.9; Nickel = 140; Vanadium = 20; Zinc = 35; Mercury = 0.047; Other Metals = ND	
	--		Groundwater	TPH-g by EPA Analytical Method 8260, TPH-d & TPH-mo by EPA Analytical Method 8015, VOCs by EPA Analytical Method 8260, & CAM-17 Metals by EPA Analytical Method 6010		TPH-mo = 120; Tetrachloroethene = 2.4; Barium = 0.35; Cobalt = 0.0023; Nickel = 0.016; TPH-g, TPH-d, Other VOCs, Other Metals = ND	
		C13	2	Soil	Railroad Tracks, Assess Site Conditions for Redevelopment	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015, Organochlorine Pesticides by EPA Analytical Method 8081	Arsenic = 6.3; Barium = 240; Chromium = 90; Cobalt = 20; Copper = 38; Lead = 9.5; Nickel = 200; Vanadium = 36; Zinc = 56; Mercury = 0.048; PAHs, Other Metals, TPH, BTEX, Pesticides = ND
	5		Soil	CAM-17 Metals by EPA Analytical Method 6020		Arsenic = 4.7; Barium = 170; Chromium = 83; Cobalt = 15; Copper = 28; Lead = 7.0; Nickel = 170; Vanadium = 28; Zinc = 51; Mercury = 0.058; Other Metals = ND	
	5 - DUP		Soil	CAM-17 Metals by EPA Analytical Method 6020		Arsenic = 5.9; Barium = 220; Beryllium = 0.79; Chromium = 100; Cobalt = 19; Copper = 34; Lead = 10; Nickel = 180; Vanadium = 37; Zinc = 53; Mercury = 0.052; Other Metals = ND	
			2	Soil	ACC Environment	PAHs by EPA Analytical Method 8270, CAM-17 Metals by EPA Analytical Method 6010, TPH & BTEX by EPA Analytical Method 8015, Organochlorine Pesticides by EPA Analytical Method 8081	Arsenic = 6.4; Barium = 240; Beryllium = 1.0; Chromium = 100; Cobalt = 18; Copper = 35; Lead = 10; Nickel = 190; Vanadium = 33; Zinc = 53; Mercury = 0.056; TPH-d = 1.7; PAHs, Other Metals; TPH-g, TPH-mo, BTEX, Pesticides = ND

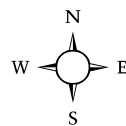
Company	Sample Date	Boring Number	Sample Depth (Feet Below Ground Surface)	Matrix	Rationale	Chemical Compounds	Concentrations (mg/Kg) and (ug/L)
		C14	5	Soil	Railroad Tracks, Assess Site Conditions for Redevelopment	CAM-17 Metals by EPA Analytical Method 6020	Barium = 110; Chromium = 52; Cobalt = 17; Copper = 17; Lead = 5.0; Nickel = 160; Vanadium = 19; Zinc = 34; Mercury = 0.098; Other Metals = ND
			5 - DUP	Soil		CAM-17 Metals by EPA Analytical Method 6020	Arsenic = 4.4; Barium = 170; Chromium = 64; Cobalt = 14; Copper = 30; Lead = 10; Nickel = 120; Vanadium = 27; Zinc = 47; Mercury = 0.037; Other Metals = ND
			--	Groundwater		TPH-g by EPA Analytical Method 8260, TPH-d & TPH-mo by EPA Analytical Method 8015, VOCs by EPA Analytical Method 8260, & CAM-17 Metals by EPA Analytical Method 6010	TPH-d = 69; TPH-mo = 82; Tetrachloroethene = 13; Trichloroethene = 0.98; Barium = 0.030; Cobalt = 0.0087; Molybdenum = 0.034; Nickel = 0.055; TPH-g, Other VOCs, Other Metals = ND
ACC Environmental Consultants, Inc.	10/24/13	B1	4	Soil	Former Gasoline Station	Total Petroleum Hydrocarbons (Gas, Diesel, Motor Oil) by EPA Analytical Method 8015, VOCs by EPA Analytical Method 8260, & Total Lead by EPA Analytical Method 6020	TPH-d = 4.8; Lead = 7.2; TPH-g, TPH-mo; VOCs = ND
			16	Soil	Former Gasoline Station	Total Petroleum Hydrocarbons (Gas, Diesel, Motor Oil) by EPA Analytical Method 8015, VOCs by EPA Analytical Method 8260, & Total Lead by EPA Analytical Method 6020	Lead = 8.1; TPH & VOCs = ND
		B2	4	Soil	Former Gasoline Station	Total Petroleum Hydrocarbons (Gas, Diesel, Motor Oil) by EPA Analytical Method 8015, VOCs by EPA Analytical Method 8260, & Total Lead by EPA Analytical Method 6020	Lead = 7.9; TPH & VOCs = ND
		B3	4	Soil	Former Gasoline Station	Total Petroleum Hydrocarbons (Gas, Diesel, Motor Oil) by EPA Analytical Method 8015, VOCs by EPA Analytical Method 8260, & Total Lead by EPA Analytical Method 6020	Lead = 8.0; TPH & VOCs = ND
		B4	4	Soil	Former Gasoline Station	Total Petroleum Hydrocarbons (Gas, Diesel, Motor Oil) by EPA Analytical Method 8015, VOCs by EPA Analytical Method 8260, & Total Lead by EPA Analytical Method 6020	TPH-d = 4.2; Lead = 8.5; TPH-g, TPH-mo, VOCs = ND
		B5	4	Soil	Former Gasoline Station	Total Petroleum Hydrocarbons (Gas, Diesel, Motor Oil) by EPA Analytical Method 8015, VOCs by EPA Analytical Method 8260, & Total Lead by EPA Analytical Method 6020	Lead = 6.0; TPH & VOCs = ND
		B6	4	Soil	Former Gasoline Station	Total Petroleum Hydrocarbons (Gas, Diesel, Motor Oil) by EPA Analytical Method 8015, VOCs by EPA Analytical Method 8260, & Total Lead by EPA Analytical Method 6020	Lead = 6.8; TPH & VOCs = ND
<p>TPH=Total Petroleum Hydrocarbons specified as gasoline-range (TPH-g), diesel-range (TPH-d) and motor oil-range (TPH-mo); PAHs = Polyaromatic Hydrocarbons; VOCs = Volatile Organic Compounds; OCPs = Organochlorine Pesticides; mg/kg = milligrams per kilogram; HHR SLs = Human Health Risk Screening Levels published by the San Francisco Bay Regional Water Quality Control Board (February 2016); C2-5 DUP identified as C2-60 in lab report; C3-5 DUP identified as C3-60 in lab report; C4-2 DUP identified as C4-60 in lab report; C9-2 DUP identified as C9-60 in lab report.</p>							



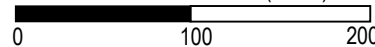


An Employee Owned Company

**HISTORIC GROUNDWATER RESULTS (ug/L)  
WITH PCE BOUNDARIES  
1625 CHESTNUT STREET  
LIVERMORE, CALIFORNIA**



APPROXIMATE SCALE (FEET)



PROJECT: 6988-003.02

9.30.16

**FIGURE 8**

ALL DIMENSIONS & LOCATIONS APPROXIMATED

ESLs - Direct Exposure Soil (Residential) (mg/kg)	TPH-g	TPH-d	TPH-mo	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Chrysene	Fluoranthene	Indeno[1,2,3-cd]pyrene	Naphthalene	Pyrene	Acetone	Benzene	Ethylbenzene	Toluene	Total Xylenes	
	Residential	740	230	11000	0.16	0.016	0.16	1.6	15	2400	0.16	3.3	1.8	59000	0.23	5.1	970	560
	Commercial	3900	1100	140000	2.9	0.29	2.9	29	260	30000	2.9	14	23000	630000	1	22	4600	2400
	Construction Workers	2800	880	32000	16	1.6	16	150	1500	16	-	350	5000	260000	24	480	4100	2400
ESLs- Vapor Intrusion (ug/L)	Residential	300000	68000	--	--	--	4.6	4.6	46	--	--	41	--	16000000	48	560	160000	52000
	Commercial	250000	570000	--	--	--	1.1	1.1	1100	--	--	360	--	140000000	420	4900	1300000	440000
ESLs - Drinking Water (ug/l)	Residential	220	150	--	0.0	0.0034	0.012	0.017	0.17	290	0.034	0.17	120	14000	0.15	1.5	150	190

ESLs - Direct Exposure Soil (Residential) (mg/kg)	Bromoform	PCE	TCE	Arsenic	Barium	Beryllium	Chromium	Cobalt	Copper	Lead	Molybdenum	Mercury	Nickel	Vanadium	Zinc			
	Residential	63	0.6	1.2	0.067	15000	150	120000	23	3100	80	390	13	820	390	23000		
	Commercial	300	2.7	8	0.31	220000	2200	1800000	350	47000	320	5800	190	11000	5800	350000		
	Construction Workers	2200	33	23	0.98	3000	42	530000	28	14000	160	1800	44	86	470	110000		
ESLs- Vapor Intrusion (ug/L)	Residential	1300	240	240	--	--	--	--	--	--	--	--	--	--	--			
	Commercial	11000	2100	3000	--	--	--	--	--	--	--	--	--	--	--			
ESLs - Drinking Water (ug/l)	Residential	2.9	0.06	0.49	0.002	2000	1.0	0.02	6	300	0.2	100	1.2	12	50	6000		

TPH= Total Petroleum Hydrocarbons specified as gasoline-range (TPH-g), diesel-range (TPH-d) and motor oil-range (TPH-mo); PAHs = Polyaromatic Hydrocarbons; VOCs = Volatile Organic Compounds; OCPs = Organochlorine Pesticides; mg/kg = milligrams per kilogram; HHR SLs = Human Health Risk Screening Levels published by the San Francisco Bay Regional Water Quality Control Board (February 2016); C2-5 DUP identified as C2-60 in lab report; C3-5 DUP identified as C3-60 in lab report; C4-2 DUP identified as C4-60 in lab report; C9-2 DUP identified as C9-60 in lab report.





1000 FT. RADIUS

CHESTNUT ST.

N. P. ST.

3S/2E 8P 1

RAILROAD AVE.



SCALE: 1"= 400 ft

DATE: 9/20/16

1625 Chestnut St

WELL LOCATION MAP

ZONE 7 WATER AGENCY  
 100 NORTH CANYONS PARKWAY  
 LIVERMORE, CA 94536



ORIGINAL  
File with DWR

STATE OF CALIFORNIA  
THE RESOURCES AGENCY  
DEPARTMENT OF WATER RESOURCES  
WATER WELL DRILLERS REPORT  
Report prepared using Zone 7

Do not fill in

No.

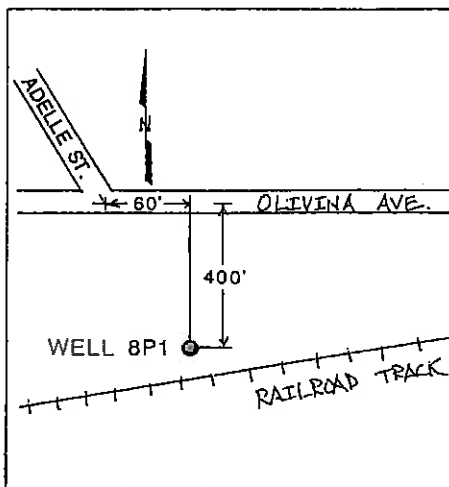
Notice of Intent No. \_\_\_\_\_  
Local Permit No. or Date \_\_\_\_\_

file information for this well.  
TNW 26 Nov 90

State Well No. 3S/2E 8P1  
Other Well No. CWS #8

(1) OWNER: Name California Water Service Co.  
Address 195 South N Street  
City Livermore ZIP 94550

(2) LOCATION OF WELL (See instructions):  
County Alameda Owner's Well Number \_\_\_\_\_  
Well address if different from above 1493 Olivina Avenue, Liv.  
Township 3S Range 2E Section 8  
Distance from cities, roads, railroads, fences, etc. South and east of Olivina Avenue and Adelle Street intersection in Livermore.



WELL LOCATION SKETCH

(3) TYPE OF WORK:  
New Well  Deepening   
Reconstruction   
Reconditioning   
Horizontal Well   
Destruction  (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:  
Domestic   
Irrigation   
Industrial   
Test Well   
Municipal   
Other  (Describe)

(12) WELL LOG: Total depth <u>273</u> ft. Completed depth _____ ft.	
from ft.	to ft. Formation (Describe by color, character, size or material)
0	11 Gravel.
11	26 Gravel and clay.
26	41 Yellow clay.
41	45 Gravel.
45	57 Yellow clay.
57	61 Gravel and clay (first water).
61	63 Gravel.
63	77 Cement gravel.
77	87 Tough yellow clay.
87	103 Gravelly clay.
103	105 Sandy yellow clay.
105	106 Gravel.
106	122 Yellow clay.
122	141 Gravel (water).
141	150 Yellow clay.
150	158 Gravel (water).
158	163 Gravel and yellow clay.
163	167 Gravel and yellow clay (poor bearing).
167	177 Sandy yellow clay.
177	194 Gravel and clay (water bearing).
194	195 Yellow clay.
195	203 Gravel (water bearing).
203	218 Tough yellow clay.
218	231 Gravel (water bearing).
231	238 Tough yellow clay.
238	240 Gravelly clay.
240	262 Tough yellow clay.
262	263 Cement gravel.
263	273 Tough yellow clay.

(5) EQUIPMENT:  
Rotary  Reverse   
Cable  Air   
Other  Bucket

(6) GRAVEL PACK:  
Yes  No  Size \_\_\_\_\_  
Diameter of bore \_\_\_\_\_  
Packed from \_\_\_\_\_ to \_\_\_\_\_ ft.

(7) CASING INSTALLED:  
Steel  Plastic  Concrete

From ft.	To ft.	Dia. in.	Gage or Wall
		10	

(8) PERFORATIONS:  
Type of perforation or size of screen

From ft.	To ft.	Slot size
122	141	
150	158	
See log		

-Perforations continued:  
- from (ft.) to (ft.)

-	163	167
-	177	194
-	195	203
-	218	231
-	262	263

(9) WELL SEAL:  
Was surface sanitary seal provided? Yes  No  If yes, to depth \_\_\_\_\_ ft.  
Were strata sealed against pollution? Yes  No  Interval \_\_\_\_\_ ft.  
Method of sealing \_\_\_\_\_

Work started \_\_\_\_\_ 19\_\_\_\_ Completed Fall 1948

(10) WATER LEVELS:  
Depth of first water, if known See log ft.  
Standing level after well completion \_\_\_\_\_ ft.

WELL DRILLER'S STATEMENT:  
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

(11) WELL TESTS:  
Was well test made? Yes  No  If yes, by whom? \_\_\_\_\_  
Type of test Pump  Bailer  Air lift   
Depth to water at start of test \_\_\_\_\_ ft. At end of test \_\_\_\_\_ ft.  
Discharge \_\_\_\_\_ gal/min after \_\_\_\_\_ hours Water temperature \_\_\_\_\_  
Chemical analysis made? Yes  No  If yes, by whom? \_\_\_\_\_  
Was electric log made Yes  No  If yes, attach copy to this report

Signed \_\_\_\_\_ (Well Driller)  
NAME \_\_\_\_\_ (Person, firm, or corporation) (Typed or printed)  
Address \_\_\_\_\_  
City \_\_\_\_\_ ZIP \_\_\_\_\_  
License No. \_\_\_\_\_ Date of this report \_\_\_\_\_

## DEPARTMENT OF WATER RESOURCES

**NORTHERN REGION**

2440 Main Street  
Red Bluff, CA 96080  
(530)-529-7300  
(530) 529-7322 (Fax)  
April.Scholzen@water.ca.gov

**NORTH CENTRAL REGION**

3500 Industrial Blvd.  
West Sacramento, CA 95691  
(916) 376-9612  
(916) 376-9676 (Fax)  
NCRO\_WCR@water.ca.gov

**SOUTH CENTRAL REGION**

3374 E. Shields Ave Ste A7  
Fresno, CA 93726  
(559) 230-3300  
(559) 230-3301 (Fax)  
Chris.Guevara@water.ca.gov

**SOUTHERN REGION**

770 Fairmont Avenue  
Glendale, CA 91203  
(818) 549-2307  
(818) 543-4604 (Fax)  
waterdata@water.ca.gov

**WELL COMPLETION REPORT REQUEST FORM**

California Water Code Section 13752 allows for the release of copies of well completion reports to governmental agencies and to the public. The department may charge a fee for the provision of a report to cover the cost of researching and preparing the well completion reports for distribution. Please contact the appropriate DWR regional office for more details.

Type of Request:  Government Agency     Public Request (Owner of well:  Yes  No)  
(Note: Consultant requests are Public Requests.)

Project Name: \_\_\_\_\_ County: \_\_\_\_\_

Well/ Project Location: \_\_\_\_\_

**For A Single Well:**

Owner at time of drilling: \_\_\_\_\_ Driller: \_\_\_\_\_

APN: \_\_\_\_\_ Year Drilled: \_\_\_\_\_ Depth of Well: \_\_\_\_\_ Casing Diameter: \_\_\_\_\_

**For a Radius Search:**

Search Radius: \_\_\_\_\_ ft mi    List of Township, Range, and Sections: \_\_\_\_\_

Additional Information related to your search request (Maps, Coordinates, etc.):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Requestor's Contact Information:**

Name (Please print): \_\_\_\_\_ Company: \_\_\_\_\_

Address: \_\_\_\_\_ Phone: \_\_\_\_\_

City, State, and Zip Code: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_ Date: \_\_\_\_\_

**FOR DWR USE ONLY**

TRS: \_\_\_\_\_ Cost of Search: \_\_\_\_\_

PQ Check: \_\_\_\_\_ Initials: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ PMT Received: \_\_\_\_\_

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**REPORT  
GROUNDWATER INVESTIGATION  
LASC/MOSC  
Livermore, California**

**LASC/MOSC 2008 TRUST**

**29 October 2009  
Project No. 1642.03**



The PCE appears to be localized along relatively thin lithologic units. PCE detected in CPT-2 of 39 µg/L compared to that in Well DMW-06 of 0.6 µg/L shows that the PCE may be present along <10-foot-thick sections of the aquifers.

The currently estimated width and direction of PCE migration as inferred from the LASC/MOSC sources are generally consistent with the most recent and historic groundwater flow gradients.

### **5.1.2 Other Potential Contributors to PCE in Groundwater**

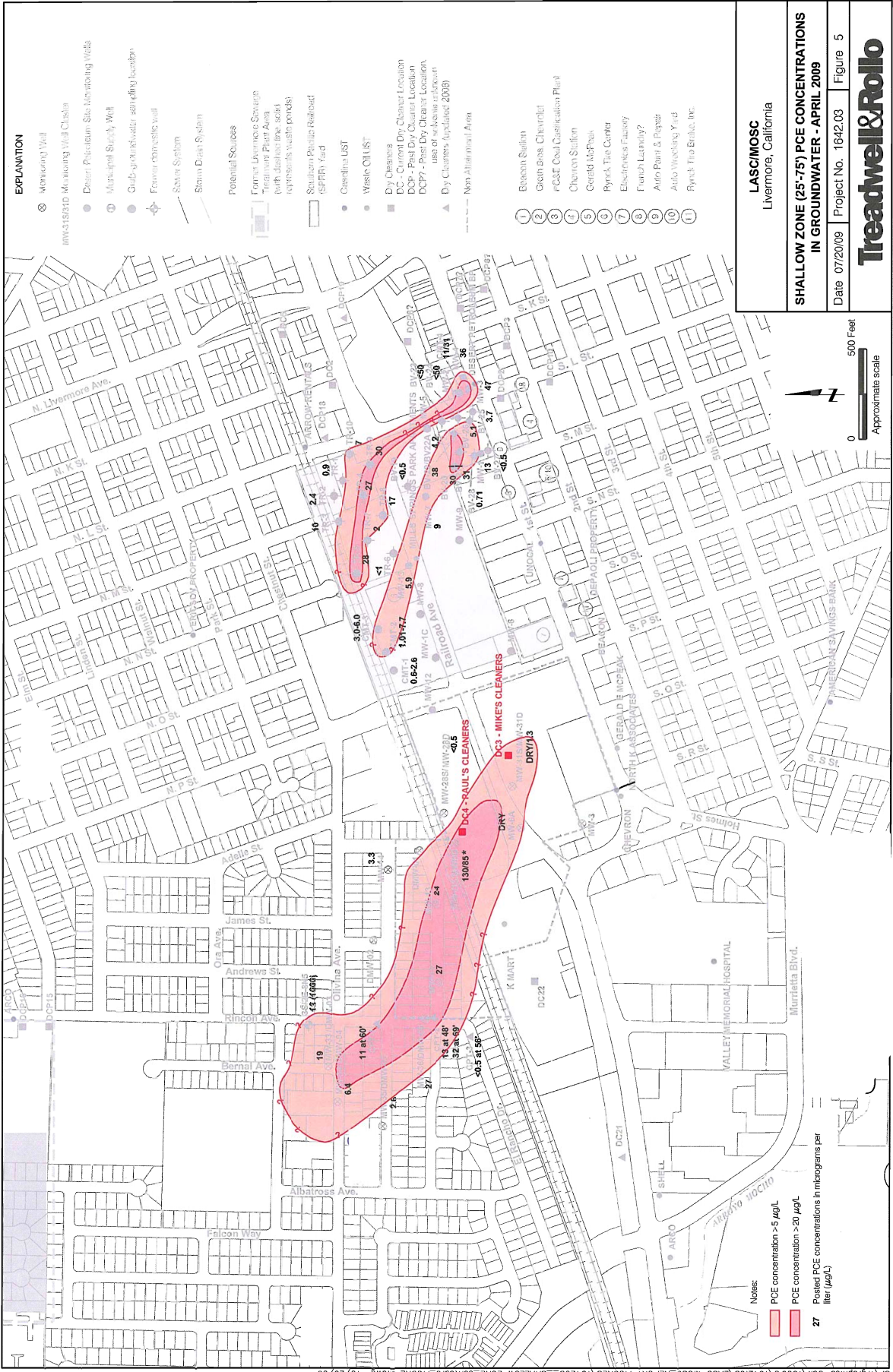
Aside from the LASC/MOSC plume, a number of other PCE sources have been identified as potentially contributing to PCE in Shallow and Deep Zones (Appendix G). The potential sources range from dry cleaners and industrial facilities to sewer lines. The impacts have been documented across the Mocho Sub-basin (LLNL, 2002), and in some Cal Water wells such as CWS-19 (PCE 5 to 35 µg/L, Appendix G) have been in excess of the MCL. For the most part, many of the likely sources for this wide-spread contamination have not been located, and relevant data have been relatively limited.

However, the available data show elevated PCE concentrations in groundwater up-gradient of the LASC/MOSC plume (Figures 5 and 6). The PCE extent is not fully defined for the Shallow and Deep Zones but shows a potentially downward migration pattern generally up-gradient of Well CWS-08 (Figure 5).

Based on ACEH files and the typical releases from dry cleaners, other potential sources in the vicinity of the LASC/MOSC plume include the following:

- DC-21 – Special Cleaners, which is located to the south of the LASC/MOSC plume and within the estimated capture areas of Well CWS-14; and
- DCP-18 and -19 – Done Rite and J Cleaners, which are located to the east/northeast and up-gradient of the PCE plumes near Railroad Avenue and L Street.

The general area of potential PCE sources upgradient of the LASC/MOSC is presented in Figure J-1.



**EXPLANATION**

- Monitoring Well
- Clean-Up Well
- Municipal Supply Well
- Former water service location
- Former cesspit
- Sewer System
- Storm Drain System

**Potential Sources**

- Former Lymonic Storage Treatment Plant Area
- Former waste ponds
- Southern Pacific Railroad
- CSRRP Yard
- Covered LUST
- Wash Oil LUST
- Dry Cleaners
- DC - Current Dry Cleaner Location
- DCP - Past Dry Cleaner Location
- DCPY - Past Dry Cleaner Location, use of solvents not allowed
- Dry Cleaners (updated, 2008)
- Non Alignment Area

**Legend**

- 1 Beacon Station
- 2 Green Bros. Chevrolet
- 3 K&E Car Wash
- 4 Chevron Station
- 5 Gerald McPeak
- 6 Pyrek & Tie Center
- 7 Electronics Facility
- 8 French Laundry?
- 9 Auto Paint & Playas
- 10 Auto Washing Yard
- 11 Pyrek Tire Brake, Inc.

Notes:

- PCE concentration > 5 µg/L
- PCE concentration > 20 µg/L
- 27 Posted PCE concentrations in micrograms per liter (µg/L)

0 500 Feet  
Approximate scale

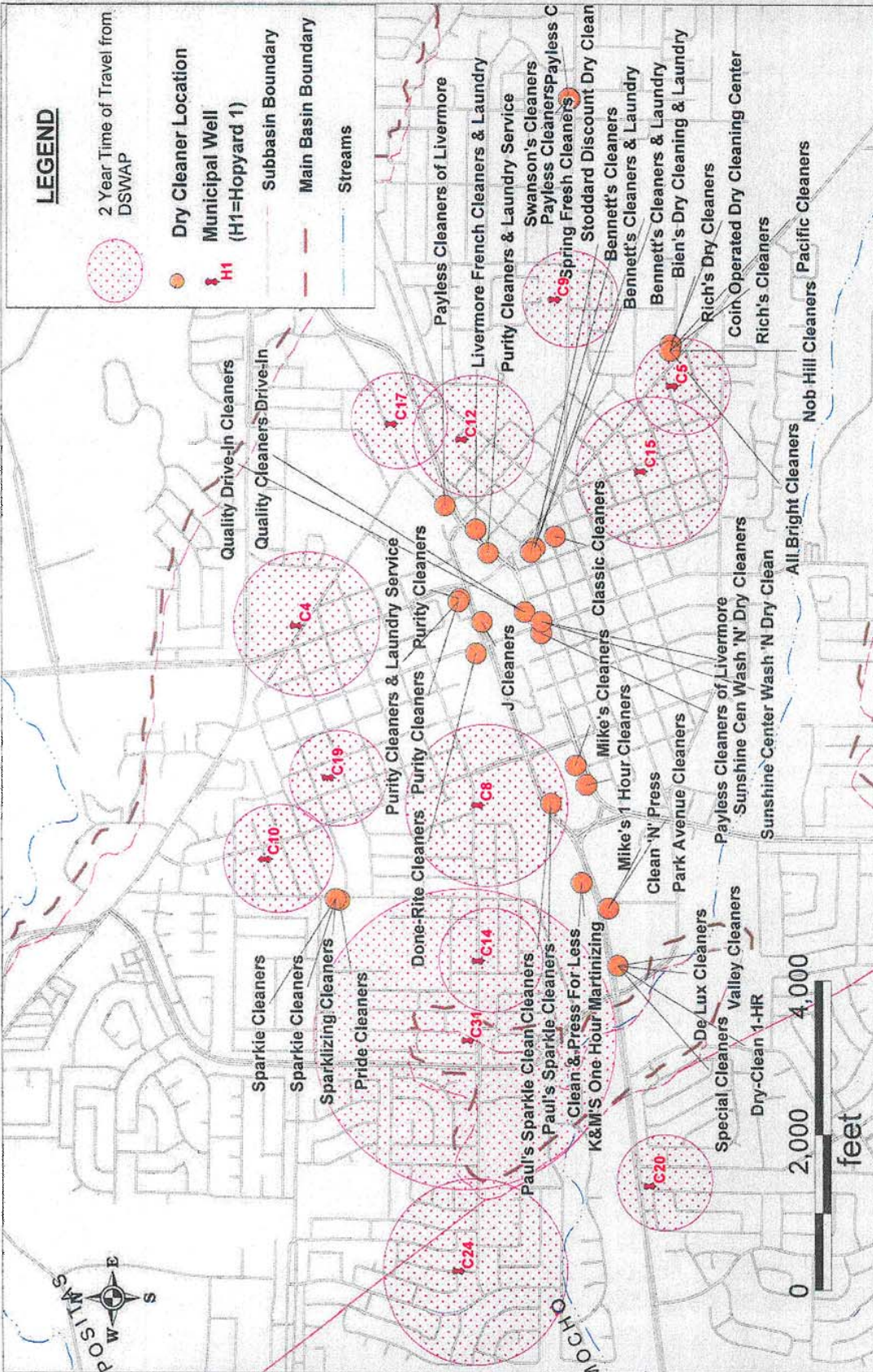
**LASCIMOSC**  
Livermore, California

**SHALLOW ZONE (25'-75') PCE CONCENTRATIONS IN GROUNDWATER - APRIL 2009**

Date 07/20/09 | Project No. 1642.03 | Figure 5

**Treadwell & Polo**





**ZONE 7 WATER AGENCY**  
**5997 PARKSIDE DRIVE**  
**PLEASANTON, CA 94588**

**FIGURE 1**  
**DRY CLEANER LOCATIONS**  
**LIVERMORE AREA**

Drawn By:	CWiney
Revised By:	CWiney
Date Updated:	12/8/04
File:	lzone7-filemapinfo\ToxicToxReport2003.wor



# ***Subsurface Investigation Report***

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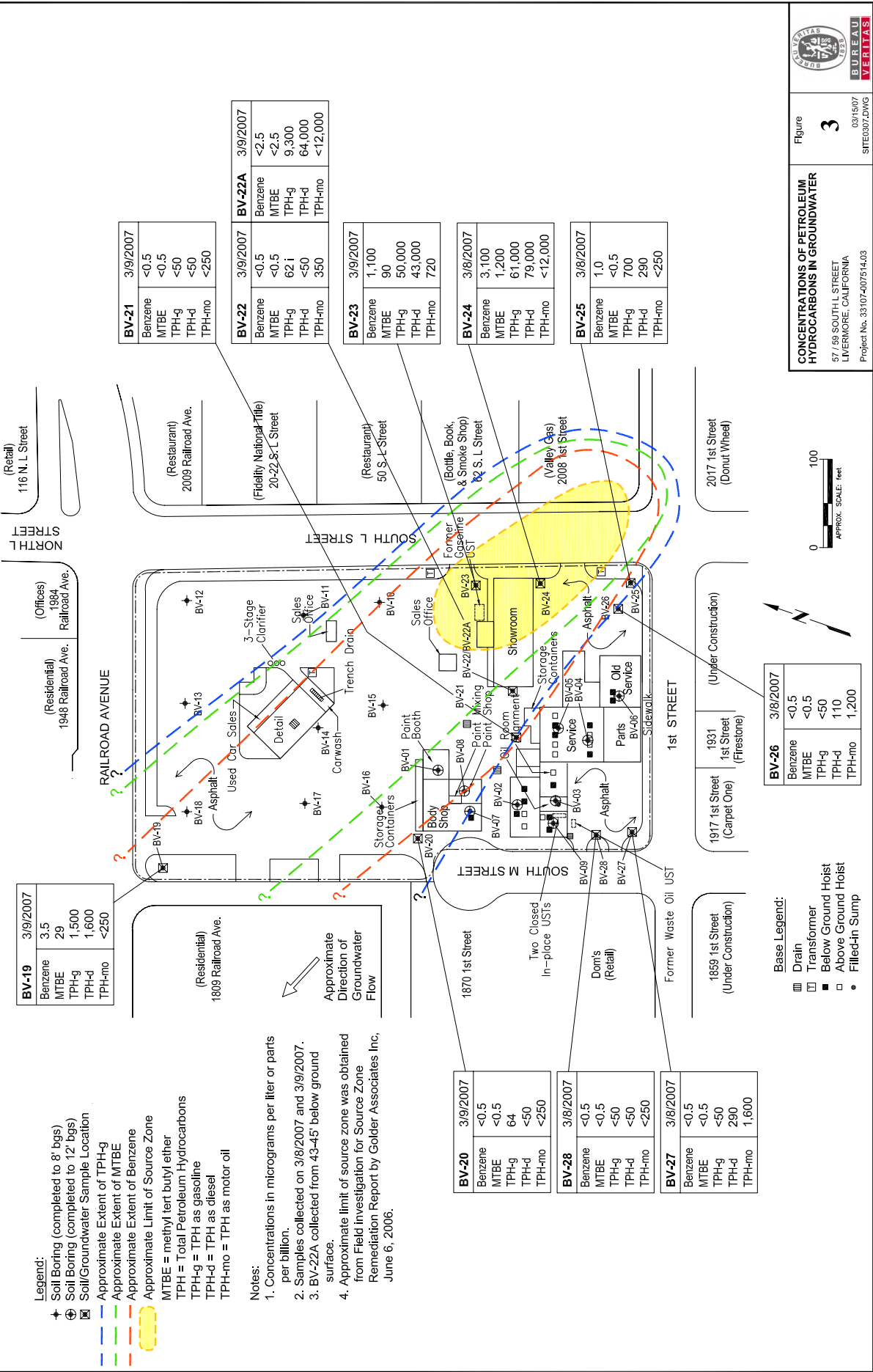
Groth Brothers Chevrolet Dealership  
57/59 South L Street  
Livermore, California

April 19, 2007  
Project No. 33107-007514.03  
Prepared for  
**BARRY SWENSON BUILDER**  
San Jose, California



For the benefit of business and people

**Bureau Veritas North America, Inc.**  
6920 Koll Center Parkway  
Pleasanton, California 94566  
925.426.2600  
[www.us.bureauveritas.com](http://www.us.bureauveritas.com)



BV-19	3/9/2007
Benzene	3.5
MTBE	29
TPH-g	1,500
TPH-d	1,600
TPH-mo	<250

(Residential)  
1809 Railroad Ave.

Approximate Direction of Groundwater Flow

- Legend:**
- ⊕ Soil Boring (completed to 8' bgs)
  - ⊕ Soil Boring (completed to 12' bgs)
  - ⊗ Soil/Groundwater Sample Location
  - Approximate Extent of TPH-g
  - Approximate Extent of MTBE
  - Approximate Extent of Benzene
  - Approximate Limit of Source Zone
  - MTBE = methyl tert butyl ether
  - TPH = Total Petroleum Hydrocarbons
  - TPH-g = TPH as gasoline
  - TPH-d = TPH as diesel
  - TPH-mo = TPH as motor oil

- Notes:**
1. Concentrations in micrograms per liter or parts per billion.
  2. Samples collected on 3/8/2007 and 3/9/2007.
  3. BV-22A collected from 43-45' below ground surface.
  4. Approximate limit of source zone was obtained from Field Investigation for Source Zone Remediation Report by Golder Associates Inc. June 6, 2006.

BV-21	3/9/2007	BV-22	3/9/2007	BV-22A	3/9/2007
Benzene	<0.5	Benzene	<0.5	Benzene	<2.5
MTBE	<0.5	MTBE	<0.5	MTBE	<2.5
TPH-g	<50	TPH-g	62.1	TPH-g	9,300
TPH-d	<50	TPH-d	<50	TPH-d	64,000
TPH-mo	<250	TPH-mo	350	TPH-mo	<12,000

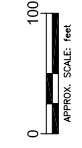
BV-23	3/9/2007
Benzene	1,100
MTBE	90
TPH-g	50,000
TPH-d	43,000
TPH-mo	720

BV-24	3/8/2007
Benzene	3,100
MTBE	1,200
TPH-g	61,000
TPH-d	79,000
TPH-mo	<12,000

BV-25	3/8/2007
Benzene	1.0
MTBE	<0.5
TPH-g	700
TPH-d	290
TPH-mo	<250

BV-26	3/8/2007
Benzene	<0.5
MTBE	<0.5
TPH-g	<50
TPH-d	110
TPH-mo	1,200

- Base Legend:**
- ⊗ Drain
  - ⊗ Transformer
  - ⊗ Below Ground Hoist
  - ⊗ Above Ground Hoist
  - Filled-in Sump



**TABLE 4**  
**Grab-Groundwater Analytical Results - VOCs**  
 57/59 South L Street  
 Livermore, California

Sample ID	Sample Date	Benzene (µg/L)	n-Butyl benzene (µg/L)	sec-Butyl benzene (µg/L)	tert-Butyl benzene (µg/L)	n-propyl benzene (µg/L)	Ethylbenzene (µg/L)	Isopropylbenzene (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Toluene (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)	Total Xylenes (µg/L)	cis-1,2-DCE (µg/L)	TCE (µg/L)	PCE (µg/L)	Vinyl Chloride (µg/L)
BV-19	3/9/2007	3.5	2.3	1.1	2.9	0.95	0.86	<0.5	29	<0.5	<0.5	0.77	<0.5	1.6	2.4	1.1	<0.5	<0.5
BV-20	3/9/2007	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.74	0.63	30	<0.5
BV-21	3/9/2007	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	31	<0.5
BV-22	3/9/2007	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.65	1.0	38	<0.5
BV-22A	3/9/2007	<2.5	56	24	<2.5	66	25	42	<2.5	<2.5	<2.5	<2.5	3.5	2.5	12	<2.5	4.2	7.8
BV-23	3/9/2007	1,100	160	<50	<50	510	3,400	180	90	490	220	1,500	540	4,200	<50	<50	<50	<50
BV-24	3/8/2007	3,100	140	72	<50	460	3,500	100	1,200	660	340	2,100	660	9,700	65	<50	<50	<50
BV-25	3/8/2007	1.0	1.3	1.8	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	22	2.7	3.7	<0.5
BV-26	3/8/2007	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.2	0.67	5.1	<0.5
BV-27	3/8/2007	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BV-28	3/8/2007	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.71	<0.5
<b>RWQCB ESL</b>		1.0	--	--	--	--	30	--	5.0	17	40	--	--	20	6.0	5.0	5.0	0.5
<b>DHS MCL</b>		1.0	--	--	--	--	300	--	13	--	150	5.0	--	1,750	6.0	5.0	5.0	0.5

**Notes:**

VOCs = Volatile organic compounds

DCE = Dichloroethene

PCE = Tetrachloroethene

TCE = Trichloroethene

TMB = Trimethylbenzene

MTBE = Methyl tert butyl ether

Analytical results are reported in micrograms per liter (µg/L) or parts per billion (ppb).

<0.005 = Not detected at specified detection limit.

ND = Not detected at the laboratory method detection limit.

VOCs analyzed by USEPA Method 8260B.

**RWQCB ESL** = Regional Water Quality Control Board - San Francisco Bay Region Environmental Screening Level.

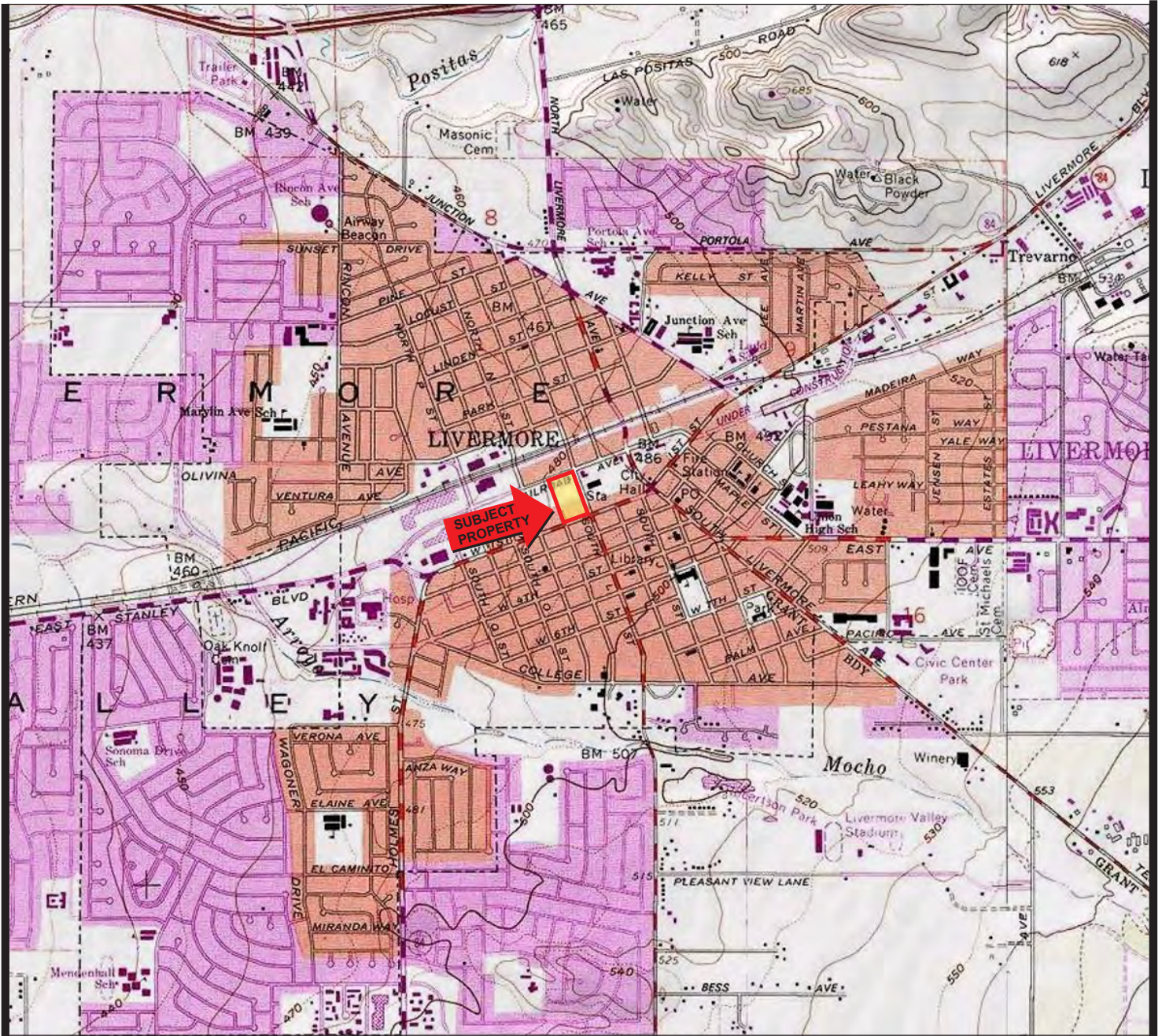
Groundwater (Table A, 2005) where groundwater is a potential source of drinking water.

**DHS MCL** = California Department of Health Services Maximum Contaminant Level - A Compilation of Water Quality Goals, August 2003.

-- = No regulatory limit established for this analyte.

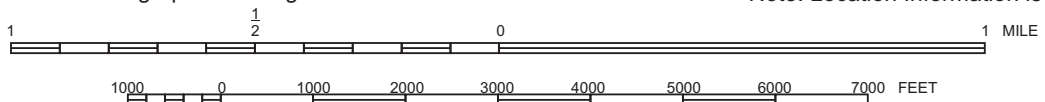
Bolded and shaded indicates where RWQCB ESL and/or DHS MCL was exceeded for this analyte.





Source: TOPO! © 2000 National Geographic Holdings


Note: Location Information is Approximate



Portion of the 7.5-Minute Series Livermore, California  
 Quadrangle Topographic Map (Datum: NAD 27)  
 United States Department of the Interior  
 Geological Survey  
 1980 Photorevised from 1978



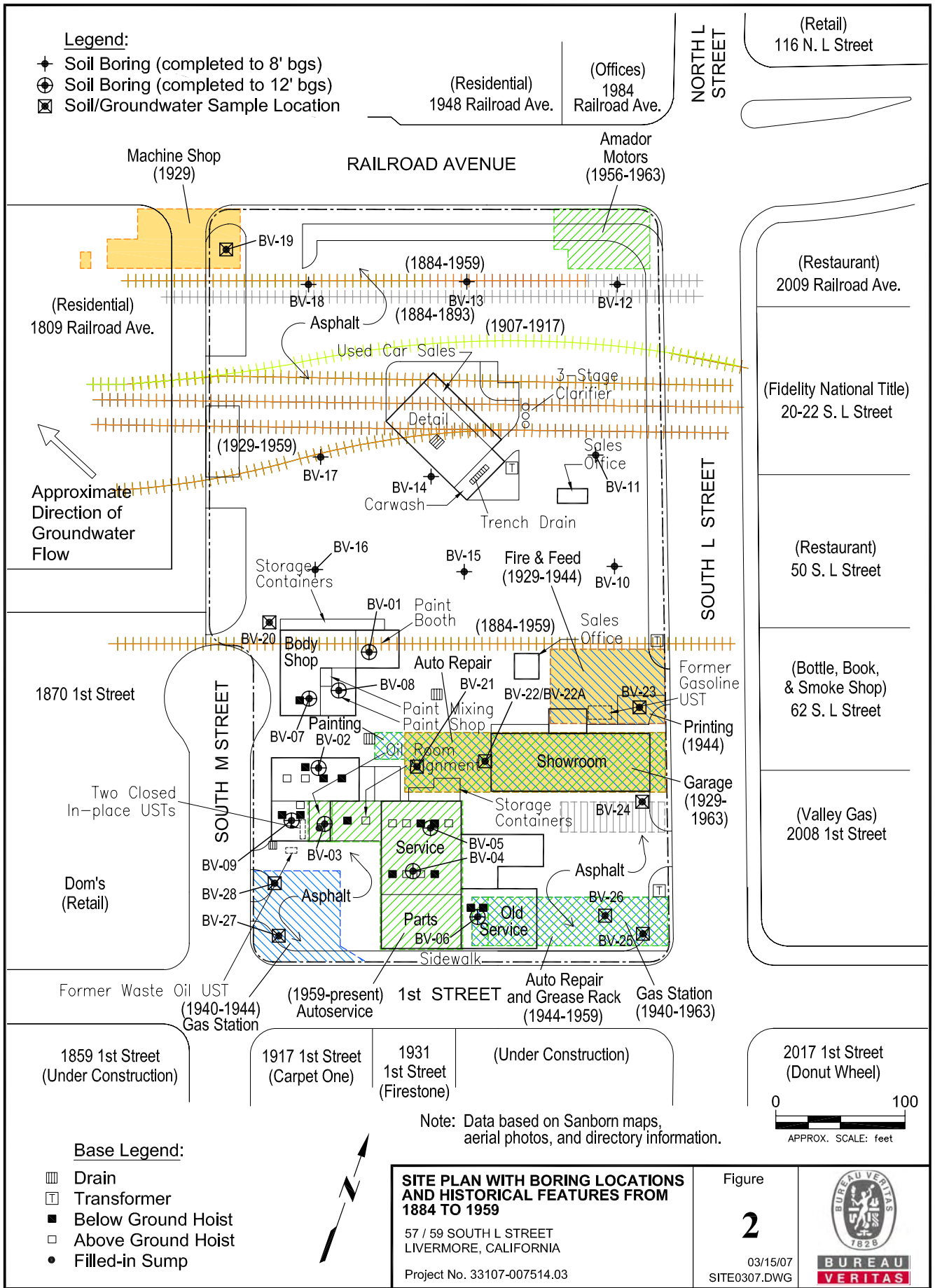
QUADRANGLE LOCATION

SUBJECT PROPERTY LOCATION	FIGURE	 <b>BUREAU</b> <b>VERITAS</b>
57/59 South L Street Livermore, California	<h1>1</h1>	
Project No. 33107-007514.03		



**Legend:**

- ✦ Soil Boring (completed to 8' bgs)
- ⊕ Soil Boring (completed to 12' bgs)
- ☒ Soil/Groundwater Sample Location



Approximate Direction of Groundwater Flow

**Base Legend:**

- ▨ Drain
- ⊞ Transformer
- Below Ground Hoist
- Above Ground Hoist
- Filled-in Sump

Note: Data based on Sanborn maps, aerial photos, and directory information.



**SITE PLAN WITH BORING LOCATIONS AND HISTORICAL FEATURES FROM 1884 TO 1959**

57 / 59 SOUTH L STREET  
LIVERMORE, CALIFORNIA  
Project No. 33107-007514.03

Figure

**2**

03/15/07  
SITE0307.DWG



**BUREAU VERITAS**

- (Retail)  
116 N. L Street
- (Residential)  
1809 Railroad Ave.
- (1884-1959)
- (1884-1893)
- (1907-1917)
- (1929-1959)
- (1870-1959)
- (1884-1959)
- (1929-1944)
- (1944)
- (1929-1963)
- (1940-1944)
- (1944-1959)
- (1940-1963)
- (1959-present)
- (1917-1959)
- (1931-1959)
- (Under Construction)
- (1940-1963)
- (Restaurant)  
2009 Railroad Ave.
- (Fidelity National Title)  
20-22 S. L Street
- (Restaurant)  
50 S. L Street
- (Bottle, Book, & Smoke Shop)  
62 S. L Street
- (Valley Gas)  
2008 1st Street

1859 1st Street (Under Construction)

1917 1st Street (Carpet One)

1931 1st Street (Firestone)

(Under Construction)

2017 1st Street (Donut Wheel)



20278



Field Investigation for Source Zone Remediation  
B & C Mini Mart (Valley Gas)  
2008 1<sup>st</sup> Street  
Livermore, California  
(APN 097-24-01)

06/06/06

Prepared for:

Ms. Donna Dragos  
Alameda County Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

Prepared for:

Ms. Chris Davidson  
City of Livermore  
1052 S. Livermore Avenue  
Livermore, CA 94550-4899

Prepared by:

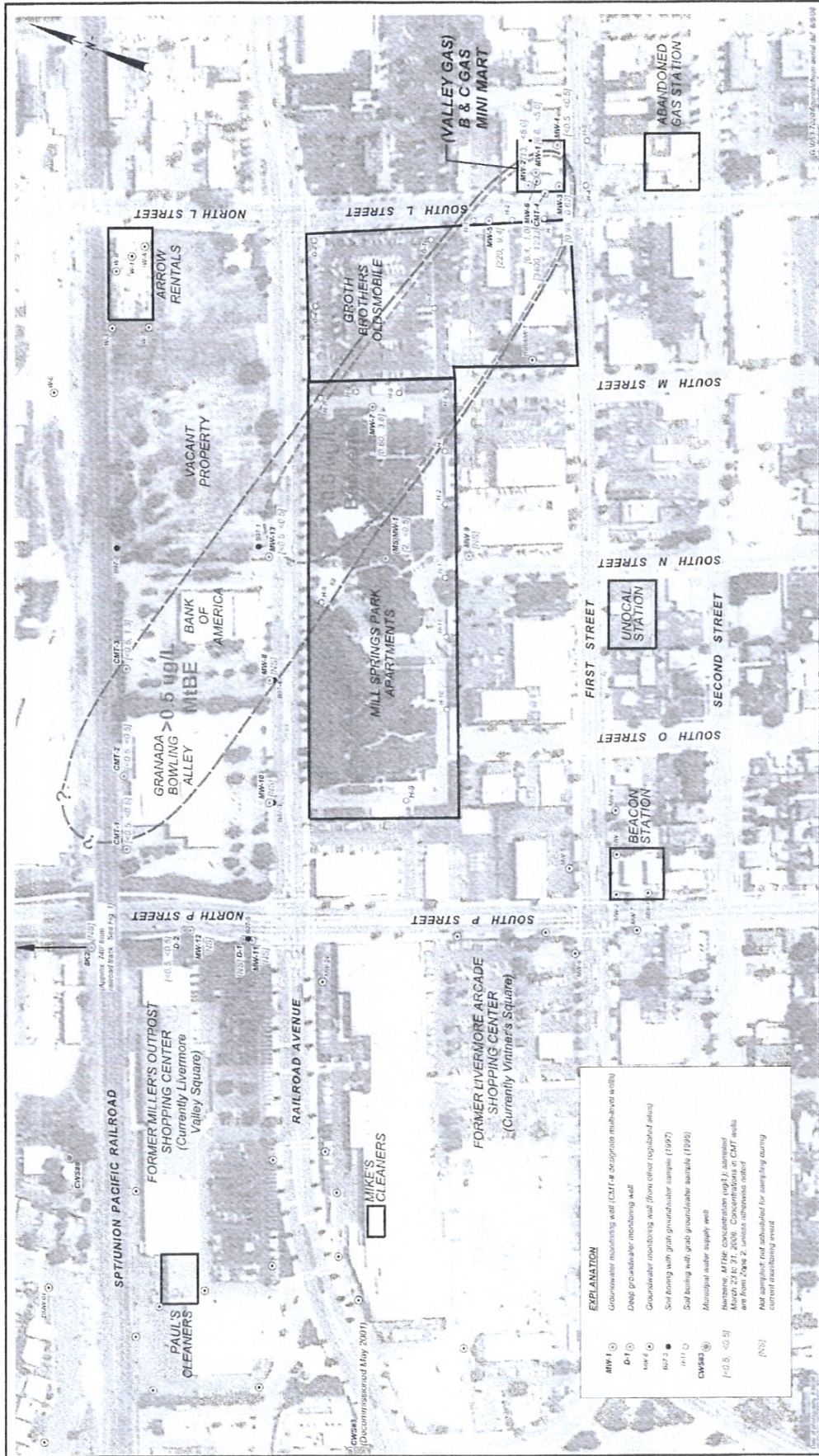
Golder Associates Inc.  
2580 Wyandotte Street, Suite G  
Mountain View, California 94043

Alameda County  
JUN 12 2006  
Environmental Health

June 6, 2006

053-7020





**EXPLANATION**

MW-1	Groundwater monitoring well (CMT or appropriate multi-level wells)
D-1	Deep groundwater monitoring well
MW-4	Groundwater monitoring well (from other regulated sites)
MW-2	Soil boring with grab groundwater samples (1997)
MW-3	Soil boring with grab groundwater samples (1998)
CWSB	Monitoring water supply well
[+0.5 -0.5]	Range of the concentration (ug/l) in samples from MW-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100
[NS]	Not sampled or not available for sampling during current monitoring event

FIGURE  
**3**

CORRECTIVE ACTION INVESTIGATION  
B & C GAS MINI MART/VALLEY GAS  
LIVERMORE, CALIFORNIA

SCALE: 0 200 400 FEET  
(APPROXIMATE)

GROUNDWATER CHEMISTRY (MARCH 2006)



PROJECT NO.  
053-7020

*LM*  
**Woodward-Clyde Consultants**

8810101-RP CON

*July 10, 1989*

PHASE III ENVIRONMENTAL EXPLORATION  
187 NORTH L STREET  
LIVERMORE, CALIFORNIA

Prepared for  
City of Livermore  
Redevelopment Agency  
1052 South Livermore Avenue  
Livermore, California 94550

July, 1989

Prepared by  
Woodward-Clyde Consultants  
500 12th Street, Suite 100  
Oakland, CA 94607-4014



Table 1. ELEVATIONS OF MEASURING POINTS AND ELEVATION OF GROUNDWATER,  
187 NORTH L STREET, LIVERMORE, CALIFORNIA

Well Number	Measuring Point Elevation (Project Datum, feet)	Depth to Groundwater (feet)	Elevation (feet) June 2, 1989
W-1	99.22	43.16	56.06
W-2	99.07	44.24	54.83
W-3	98.03	44.50	53.53

Note: Assumed temporary benchmark elevation 100 feet.

*Should be determined  
to determine new location  
new well  
depth as 3 existing wells have exact  
location*

*all new wells to be located depth monitoring  
location*

*slug test in Denning*

*to determine  
precise  
location*

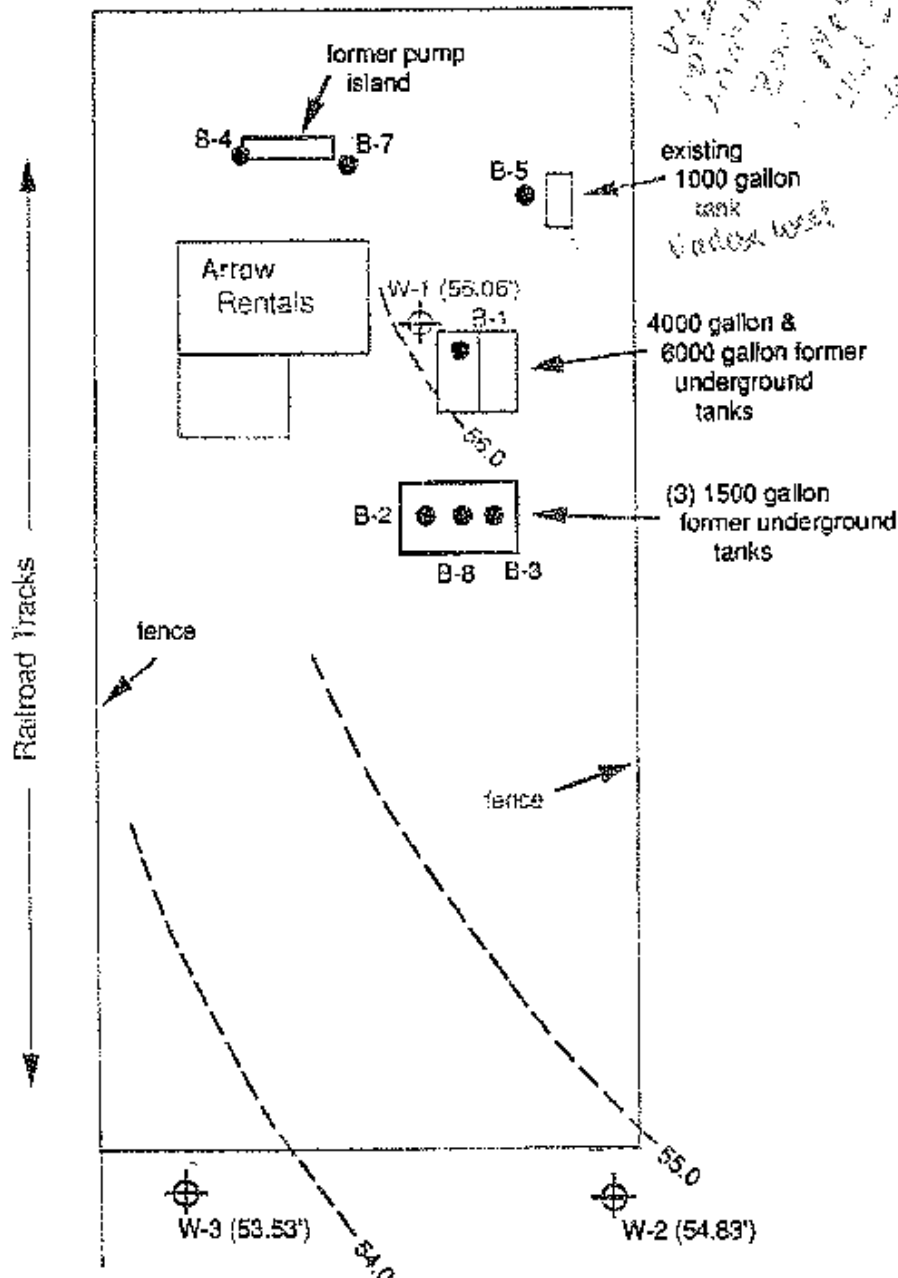


Table 3. SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS, NOVEMBER 1988,  
187 NORTH L STREET, LIVERMORE, CALIFORNIA

Well Number	Micrograms per Liter ( ug/L)					
	High Boiling Point Hydrocarbon (Diesel)	Low Boiling Point Hydrocarbon (Gasoline)	Benzene	Toluene	Ethyl Benzene	Xylenes
W-1	300,000	210,000	29,000	30,000	5,400	24,000
W-2	ND	360	6.7	2.1	0.47	1.3
W-3	2,200	11,000	290	120	150	140
Detection Limits:	50.0	30.0	0.3	0.3	0.3	0.3
State or Federal Drinking Water Limits (MCLS)	--	--	1.0	2,000	680	1750
State Drinking Water Action Levels	--	--	0.7	100	680	620

ND = Not Detected


North "L" Street



*Handwritten notes:*  
 1000 gallon tank  
 4000 gallon & 6000 gallon  
 former underground tanks  
 (3) 1500 gallon  
 former underground tanks

Scale: 1"=30'  
 0 30 feet



Explanation:  
 Elevation of groundwater relative to project datum (feet)  
 W-2 (56.83')

Project No. 8810220A	Railroad Ave. Property	Site Groundwater Gradient Map, 187 North L Street, Livermore, California	Figure 2
Woodward-Clyde Consultants			