

## MEMORANDUM

To: Eva Chu, Alameda County Environmental Health      Date: September 26, 1997  
Wyman Hong, Zone 7 Water Agency  
B.S. Angle, B&C Gas Mini Mart

From: Kris H. Johnson, Einarson, Fowler & Watson

Re: Update on site investigation at B&C Gas Mini Mart, Livermore, CA

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Einarson, Fowler & Watson (EFW) has completed the field work portion of the groundwater investigation pertaining to the B&C Gas Mini Mart site, located at 2008 First Street, Livermore, California. Because of the extent of MTBE and the potential to impact drinking water wells, we have prepared this memo to keep you up to date with the progress of the investigation. Following are preliminary analytical results from the investigation.

Table 1 presents preliminary groundwater analytical results from this investigation. The table includes data from five new downgradient boring locations (B97-1 through B97-5), one downgradient off-site monitoring well at Vintner's Square (MW-24), and three monitoring wells located on the B&C Gas Mini Mart site. Groundwater sample analyses included total petroleum hydrocarbons as gasoline (TPH-G); methyl-tertiary-butyl-ether (MTBE); and benzene, toluene, ethylbenzene, and xylenes (BTEX). In addition, some locations were sampled for parameters indicative of biodegradation, and the gasoline additives 1,2-dibromoethane (EDB) and 1,2-dichloroethane (1,2-DCA).

Figure 1 presents an aerial photograph of the site vicinity including groundwater monitoring wells and relevant boring locations. Figure 2 shows an overview of recent and historical MTBE and benzene groundwater data that has been collected in the vicinity of B&C Gas Mini Mart. For all locations, the most recent data available is presented.

Preliminary review of the data indicates that biodegradation of the hydrocarbons in groundwater is occurring at the site, and it is likely that the plume does not extend downgradient to the California Water Service municipal supply wells.

The data currently is being interpreted, and a full report of this groundwater investigation is expected to be distributed by October 15, 1997.

bring to 55' bgs, then GW  
water encountered.  
Some bumps w/ water so  
waited for next day to sample

97 SEP 30 PM  
PROTECT



Table 1  
Preliminary Groundwater Analytical Results  
B&C Gas Mini Mart  
Livermore, California

Location	Units	1997 Downgradient Investigation Borings					Site Wells			Vintner's Sq.
		B97-1	B97-2	B97-3	B97-4	B97-5	MW-1	MW-2	MW-4	MW-24
Sample Identification		9/8/97	9/9/97	9/9/97	9/10/97	9/10/97	9/17/97	9/17/97	9/17/97	9/17/97
<b>General Chemistry</b>										
Alkalinity, total	mg/l	350	-	370	-	-	400	410	320	330
Carbon Dioxide	mg/l	35	-	12	-	-	26	34	27	17
Dissolved Oxygen	mg/l	3.0	2.0	2.9	2.0	-	0.9	0.6	3.3	1.6
Electrical Conductivity	umhos/cm	970	950	940	950	-	920	930	755	793
Iron (soluble)	mg/l	0.14	-	0.77	-	-	<0.01	1.4	<0.10	<0.10
Manganese (soluble)	mg/l	0.68	-	1.4	-	-	0.084	1.7	0.41	<0.0050
Nitrate	mg/l	8.6	-	8.8	-	-	1.3	0.50	1.9	12
O-R Potential	mv	71	75	139	162	-	152	-147	174	140
pH	std. units	7.3	7.3	7.3	7.3	-	7.3	7.1	7.2	7.2
Sulfate	mg/l	66	-	60	-	-	22	15	55	61
Temperature	deg. C	22.9	20.0	21.0	19.8	-	21.5	20.8	20.2	20.3
Turbidity	NTU	451	>999	>999	>999	-	273	88	44	606
<b>Petroleum Hydrocarbons, U.S. EPA Method 8015M/8020</b>										
TPH-G <sup>(1)</sup>	ug/l	<50	<50 (51)	<50 (58)	<50 (340)	<50	-	-	-	<50
MTBE	ug/l	60	<5.0	46	470	<5.0	-	-	-	<5.0
Benzene	ug/l	1.2	<0.50	<0.50	<0.50	<0.50	-	-	-	<0.50
Toluene	ug/l	<0.50	<0.50	<0.50	0.68	<0.50	-	-	-	<0.50
Ethylbenzene	ug/l	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	-	<0.50
Xylenes	ug/l	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	-	<0.50
<b>Volatile Organic Compounds, U.S. EPA Methods 8010 and 504</b>										
1,2-Dibromoethane	ug/l	<0.01	-	<0.01	-	-	-	<0.01	-	<0.01
1,2-Dichloroethane	ug/l	<0.50	-	<0.50	-	-	-	<0.50	-	<0.50

umhos/cm - microohms per centimeter at 25°C

mg/l - milligrams per liter (ppm)

O-R - oxidation-reduction

mv - millivolts

NTU - nephelometric turbidity units

ug/l - micrograms per liter (ppb)

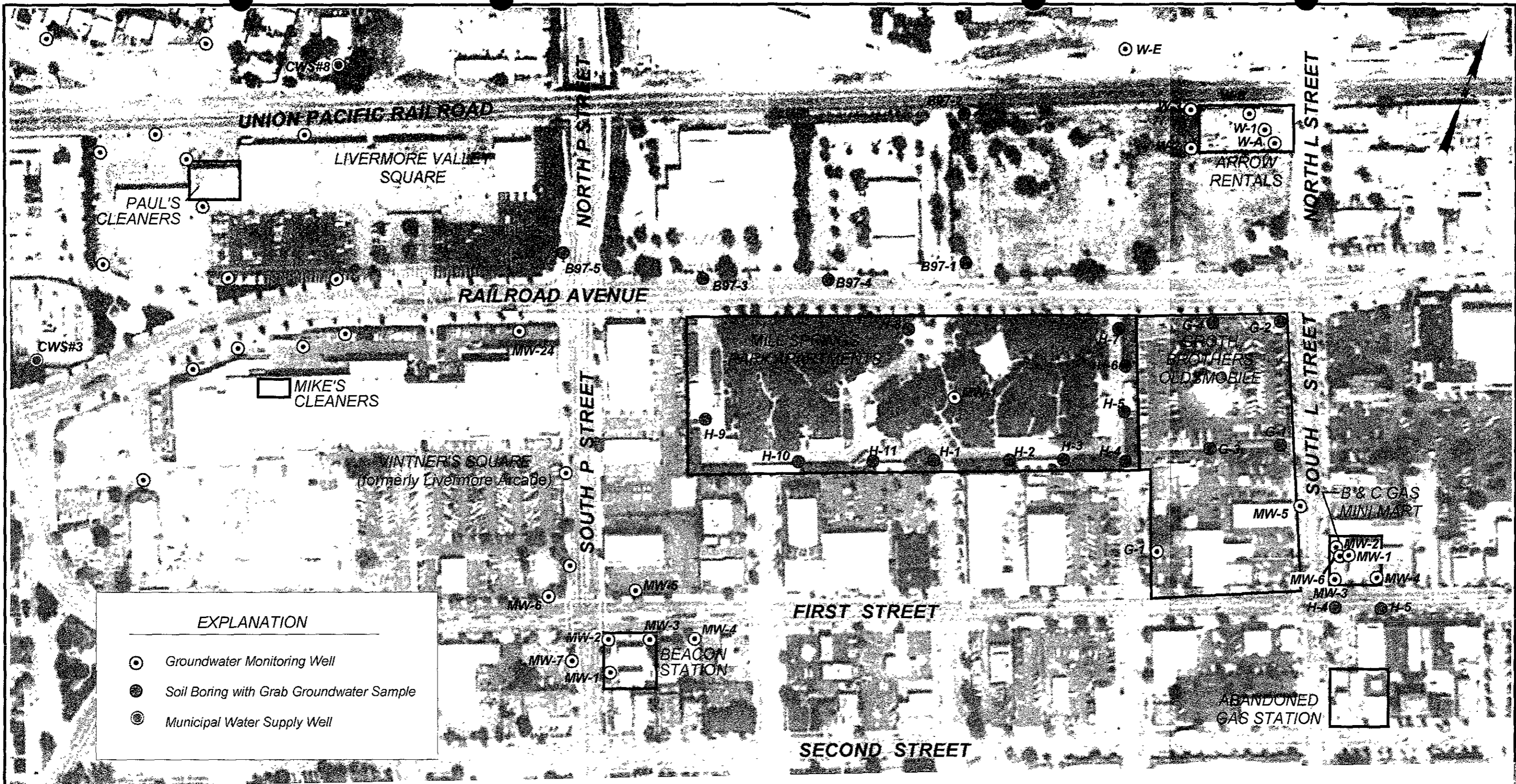
TPH-G - total petroleum hydrocarbons as gasoline, EPA Method 8015M.

MTBE - methyl-tertiary-butyl-ether

<sup>(1)</sup> Hydrocarbons found in the gasoline range are uncharacteristic of a gasoline standard.

If the hydrocarbons were quantified using gasoline's response factor, concentration would equal the value given in parentheses.

Dashes present where data was not requested.

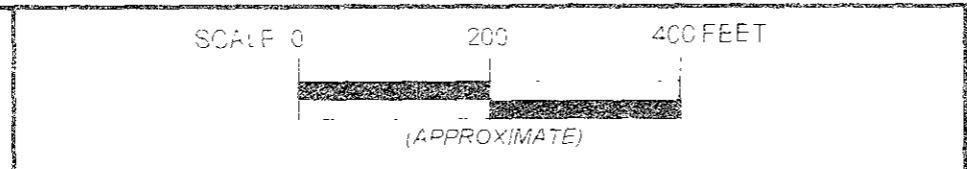


**EXPLANATION**

- Groundwater Monitoring Well
- Soil Boring with Grab Groundwater Sample
- ⊙ Municipal Water Supply Well

Date of photography 4/30 '96

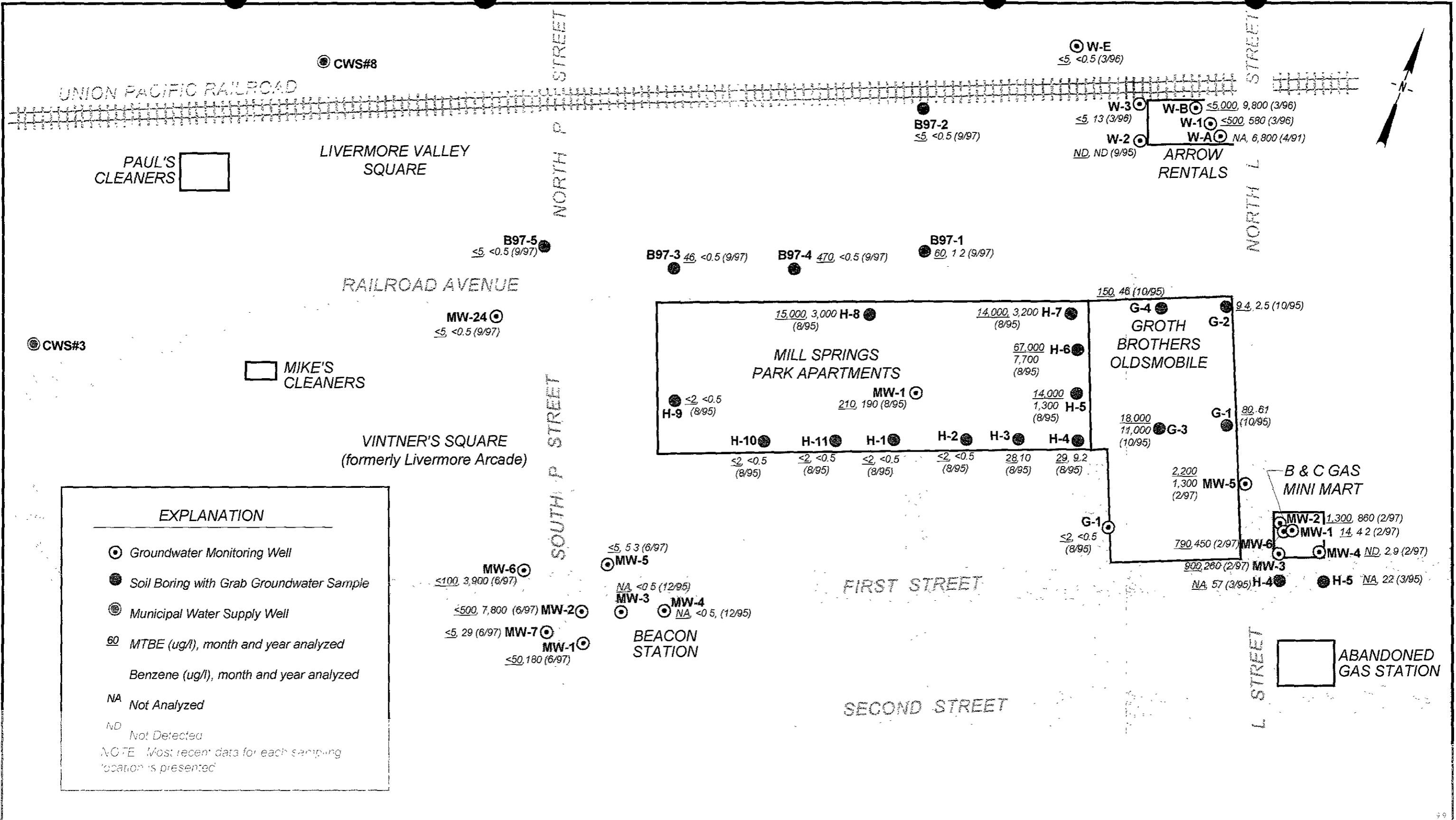
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WATER QUALITY EVALUATION  
 B & C GAS MINI MART  
 LIVERMORE CALIFORNIA

SITE VICINITY

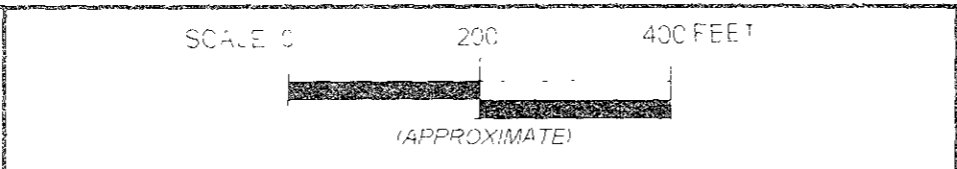
FIGURE  
 1  
 PROJECT NO  
 BNC101



**EXPLANATION**

- ⊙ Groundwater Monitoring Well
- Soil Boring with Grab Groundwater Sample
- ⊕ Municipal Water Supply Well
- 60 MTBE (ug/l), month and year analyzed
- Benzene (ug/l), month and year analyzed
- NA Not Analyzed
- ND Not Detected

NOTE: Most recent data for each sampling location is presented



WATER QUALITY EVALUATION  
 B & C GAS MINI MART  
 LIVERMORE CALIFORNIA

MIBE AND BENZENE CONCENTRATIONS IN GROUNDWATER

FIGURE  
**2**  
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