EXXON COMPANY, U.S.A.
P.O. BOX 4032 . CONCORD, CA 94524-2032

ENVIRONMENTAL ENGINEERING
MARLA D. GUENSLER
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July 26, 1994

Mr. Rick Mueller
Pleasanton Fire Department
4444 Railroad Street
Pleasanton, CA 94566

RE: Exxon RAS #7-3399; 2991 Hopyard Road, Pleasanton, CA

Dear Mr. Mueller:

Attached for your review and comment is a report entitled **Subsurface Investigation and Interim Remediation System Evaluation** for the above referenced site. This report, prepared by RESNA Industries, Inc., of Fremont, California, details the results of the environmental investigative work completed at the site in 1994.

Please note that the project file for this site has been transferred during the third quarter to Delta Environmental Consultants, Inc., (Delta) of Rancho Cordova, California.

If you have any questions or comments, please contact me at the above listed phone number.

Sincerely,

Marla D. Guensler
Senior Environmental Engineer

MDG/mdg

attachment: RESNA Report Dated May 16, 1994

cc: w/attachment:
Mr. Sum Arigalia - San Francisco Bay Region CRWQCB
Mr. Jerry Killingstad - Alameda Co. Flood Control (Zone-7)
Mr. Steve Cusenza - City of Pleasanton Public Works Dept.

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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PROGRESS REPORT
DELINEATION AND REMEDIATION
OF HYDROCARBONS IN
SOIL AND GROUND WATER

at

Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California 12-1-89

AGS Job No. 18034-7

Report prepared for

Exxon Company, U.S.A.
P.O. Box 4415
Houston, Texas

by
Applied GeoSystems

Rodger C. Witham
Senior Project Geologist

Walter H. Howe
R.G. 730

December 1, 1989

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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PROGRESS REPORT
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at
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

For Exxon Company, U.S.A.

INTRODUCTION

This progress report summarizes the work that Applied GeoSystems performed at Exxon Station No. 7-3399, at 2991 Hopyard Road in Pleasanton, California, to delineate and remediate hydrocarbon compounds in soil and ground water. Exxon Company, U.S.A. (Exxon) requested that we perform this work to satisfy the provisions of Cleanup and Abatement Order No. 89-132, issued by the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) on August 11, 1989. Applied GeoSystems' first progress report (Applied GeoSystems, September 30, 1989) submitted under Order No. 89-132 provided a summary, the results, and our interpretations of work we conducted between August 1988 and August 1989. In this progress report we provide a summary and results of work we conducted between September 1 and November 30, 1989.

Exxon Station No. 7-3399 is at the eastern corner of Hopyard Road and Valley Avenue in Pleasanton, as shown on the Site Vicinity Map (Plate P-1). The Generalized Site Plan, Plate P-2, shows the general layout of station facilities, and former and existing borings and wells at and near the site.

In this report, we discuss ground-water monitoring, drilling borings and installing ground-water monitoring wells to delineate the extent of hydrocarbon compounds, and operating the ground-water and soil-vapor-extraction and hydrocarbon treatment systems. We also discuss installation of additional soil-vapor- extraction wells and work we plan to conduct in the near future.

GROUND-WATER MONITORING

Applied GeoSystems representatives visited the site on September 13 and November 28, 1989, to monitor the ground water. We measured water levels, subjectively evaluated the water for evidence of gasoline hydrocarbons, and purged and sampled water from wells MW-1, MW-4, MW-5d, MW-5s, and MW-7 (recovery well) during the September visit. We measured water levels and subjectively evaluated the water in the wells mentioned above and wells MW-8 through MW-11 during the November visit. Cumulative results of the water-level measurements and subjective evaluations of ground water that we have made at the site since 1988 are presented in Table 1. The table shows that water levels in the

uppermost and second aquifers have dropped from approximately 6 to 7 feet below the levels measured at the same time in 1988. Table 1 also shows that in November we found approximately 1 inch of floating gasoline product on the ground water in well MW-9.

We submitted the water samples collected in September 1989 to Applied GeoSystems' laboratory for testing for total petroleum hydrocarbons as gasoline (TPHg) and for the purgeable hydrocarbon constituents benzene, toluene, ethylbenzene, and total xylene isomers (BTEX). The cumulative results of these analyses and the results of previous analyses are presented in Table 2. Detectable concentrations of TPHg, benzene, toluene, and total xylene isomers were found in water from well MW-1, and detectable TPHg, toluene, and total xylene isomers were found in the effluent from recovery well MW-7.

DELINEATION OF GASOLINE HYDROCARBONS IN SOIL AND GROUND WATER

During September and October 1989 Applied GeoSystems observed the drilling of five borings and the installation of ground-water monitoring wells in four of the borings. The approximate locations of wells MW-8 through MW-11 and boring B-12 are shown on the Generalized Site Plan, Plate P-2.

Drilling and Well Construction - Onsite Wells

We observed the drilling and installation of onsite well MW-8 from September 28 through September 30, 1989. That well was installed to monitor the aquifer that occurs at the top of the perforated casing (approximately 120 feet below the ground surface) of City of Pleasanton Municipal Well No. 7. The boring for this double-cased well was drilled to a depth of approximately 140 feet with a mud rotary drilling rig. The well consists of 8-inch-diameter steel conductor casing set from 93 to 2 feet below grade, and 4-inch-diameter polyvinyl chloride (PVC) casing, which is slotted from the total depth of the well at 133 feet to 118 feet deep and is unperforated from 118 feet to approximately 1 foot below grade.

We observed the drilling and installation of onsite wells MW-9 and MW-10, and the drilling out and reinstallation of ground-water recovery well MW-7 between October 4 and October 11, 1989. Wells MW-9 and MW-10 were installed to depths of 54 1/2 and 60 feet, respectively, to evaluate the extent of hydrocarbons in unsaturated soil and ground water of the uppermost aquifer beneath the station property. The wells are made of 4-inch-diameter PVC casing, with slotted casing from the wells' total depths to 35 and 40 feet, respectively, and unperforated casing from those depths to 1/2 foot below grade. Recovery well MW-7 was drilled out to its total depth of 55 feet, the 4-inch-diameter casing was removed, and 5-inch-diameter casing was installed to a depth of 60 feet. We installed the

larger diameter well to allow us to measure the water level during pumping and for increased clearance for downhole equipment. Slotted casing in this well was set from 60 to 35 feet deep, and unperforated casing was set from 35 feet to 1/2 foot below grade.

Drilling and Well Construction - Offsite Wells

Exxon requested that Applied GeoSystems pursue permission to drill and install ground-water monitoring wells at offsite locations. After discussions with Exxon and the RWQCB, we planned to install four wells; two on property (Straw Hat pizza parlor) owned by Mr. Ralph Henderlong of Alamo, California, and two on property (parking lot of an Alpha Beta store) owned by Lucky Stores, Inc. of Dublin, California. On October 31, 1989, we obtained permission from Mr. Henderlong to install the wells on the Straw Hat property; we have not yet obtained permission from Lucky Stores, Inc. to install wells on their property. We understand that a final agreement that would allow us to drill on Lucky Stores, Inc. property is nearly completed and we anticipate approval by the concerned parties in December 1989.

We planned to install two adjacent wells on the Straw Hat pizza parlor property; one to approximately 60 feet deep to monitor ground water in the uppermost aquifer, and one to approximately 80 feet deep to monitor ground water in the second aquifer. Applied GeoSystems personnel observed the drilling of the two boreholes on November 2 and 3,

1989. The shallower borehole was drilled 55 1/2 feet deep and 4-inch-diameter well MW-11 was installed 55 feet deep. Slotted casing was set from 55 to 35 feet deep and unperforated casing was set from 35 feet to 1/2 foot below grade. The deeper boring, B-12, was drilled to a depth of 84 feet; however, we encountered only 1 foot of damp but unsaturated sand from 70 to 71 feet deep. That finding suggests that the lateral extent of the second aquifer is restricted south of the Exxon station and may not exist south of that borehole. We destroyed the borehole because no ground water aquifer was encountered.

Subsurface Geologic Units

During drilling of the boring for well MW-8 in September 1989 we collected cores of the sediments in the intervals from 30 to 41 feet and 50 to 140 feet. Sediments generally included silty clay to 37 feet deep; sand and gravel from 37 to 57 feet deep (uppermost aquifer); silty clay from 57 to 63 feet deep (aquitard); sand and gravel from 63 to 74 feet deep (second aquifer); silty clay from 74 to 121 feet deep (aquitard); and sand and gravel from 121 to 140 feet deep (third aquifer). We collected samples at 5-foot intervals and at 2 1/2-foot intervals in the borings drilled for wells MW-9 through MW-11 and in boring B-12. In the borings for wells MW-9 through MW-11 we encountered sand and gravel of the uppermost aquifer at approximately 37, 40, and 36 1/2 feet deep, respectively; and silty clay of the underlying aquitard at approximately 54 1/2, 58 1/2, and 52 feet, respectively.

The information we collected during our previous and most recent drilling indicates that the uppermost aquifer sediments are underlain by 5 or more feet of silty clay. We infer the silty clay to be an aquitard that occurs everywhere beneath the station property. The aquitard is underlain by a second aquifer that extends at least from the area of offsite well MW-5d and beneath the station property, but does not appear to extend to the south much beyond the location of boring B-12. Except for 1 foot of sand at 70 to 71 feet deep, we encountered silty clay sediments continuously between the depths of 52 and 84 feet in boring B-12. The thickness of the second aquifer appears to decrease substantially toward the south. The second aquifer is underlain by 47 feet of silty clay in the area of well MW-8, and that layer of silty clay acts as an aquitard that separates the second and third aquifers. We infer the silty clay extending to 84 feet in the area of boring B-12 to be the same unit as occurs in the area of MW-8. That inference suggests that the aquitard between the second and third aquifers is extensive beneath the station property. Geologic cross sections illustrating the concepts outlined above will be included with our site characterization report.

Sampling and Testing of Soil and Water

Chemical Testing

Applied GeoSystems field personnel collected soil samples during drilling of the boreholes and collected water samples after developing and purging the wells. Those samples were submitted for laboratory testing and were analyzed for TPHg and BTEX. The tests were performed at the laboratory of Applied GeoSystems in Fremont, California, which is certified by the State of California to perform the requested analyses (Hazardous Waste Testing Laboratory Certificate No. 153). We present the results of soil testing in Table 3 and the results of water testing in Table 4. Anomalously elevated concentrations of hydrocarbons were detected in soil and ground-water samples collected from well MW-9.

Physical Testing

We also collected one sample of silty clay at the 106-foot depth in the boring drilled for well MW-8 and submitted the sample to the laboratory of Woodward-Clyde Consultants in Pleasant Hill, California, for analysis for vertical head permeability. The procedure used to test the sample is EM-1110-2-1906 (USCE Manual, Appendix VII and X, 30 November

1970). The results of the test show that the average vertical permeability of the silty clay is low at 1.15 X 10^{-8} centimeter per second.

OPERATION OF HYDROCARBON REMEDIATION SYSTEMS

Ground Water

In progress report 18034-4 (Applied GeoSystems, September 30, 1989), we discussed the operation of the ground-water recovery system from June 1988 through August 1989. We continued to recover ground water from well MW-7 until sometime between September 15 and 19, 1989, when the recovery pump broke down. As stated earlier in this report, we drilled out the 4-inch-diameter well casing and installed a 5-inch-diameter well on October 11, 1989. We installed a 1/2-horsepower, 3 1/2-inch-diameter submersible pump on October 26, 1989, to replace the previous pump, and we resumed ground-water recovery on October 30, 1989. The initial pumping rate on October 30 was 9 gallons per minute (gpm); the pumping rate on November 2, 1989, was approximately 4 1/2 gallons per hour, representing a substantial drop in rate of recovery. Between October 30 and December 1, 1989, approximately 3,115 gallons of water were recovered from well MW-7.

A reason for the decrease in recovery from well MW-7 may be the drop in static water level in the uppermost aquifer, as indicated in Table 1 and described on pages 2 and 3 of this

report. On October 12, 1989, we measured the depth to water at 49.93 feet below the top of the casing of well MW-7, which is approximately 1/2 foot below the ground surface. While installing this well in July 1988 we encountered silty clay at approximately 53 1/2 feet below the ground surface (Applied GeoSystems, August 17, 1988). On October 12, 1989, therefore, the thickness of the uppermost aquifer was approximately 3 feet.

Soil Hydrocarbon Vapor

In our first progress report (Applied GeoSystems, September 30, 1989), we discussed the operation of the soil-vapor-extraction system through September 15, 1989. We stated that we shut down the extraction system on that date pending modifications to reduce water vapor entering the carbon canisters and because breakthrough occurred in the carbon filtration system. The extraction system includes a liquid-ring vacuum pump that uses water for cooling and sealing purposes. That water was being supplied by our ground-water recovery system via the oil-water separator tank. Some of the cooling water used for the liquid-ring vacuum pump, located upstream of the carbon canisters, was thought to have been vaporized and passed into the carbon units. We modified the vapor-extraction system on September 25, 1989, so that the vacuum pump is downstream of the carbon canisters.

We could not operate the vapor-extraction system, however, because we were unable to recover sufficient cooling water (4 gpm) from well MW-7. We found an alternate water

supply at the site and installed the necessary piping to extend that supply to the extraction system on October 25, 1989. We also needed a low level switch to be installed in the oil-water separator tank; that switch would monitor the water level in the tank and automatically shut the vapor-extraction system down if the water supply was not sufficient to cool and seal the vacuum pump. We recently received the low level switch and plan to install it and start up the vapor-extraction system in December.

We presented in the first progress report the laboratory tests results of our August 1989 sampling and testing of influent and effluent hydrocarbon vapors for TPHg and BTEX. We also stated that we sampled hydrocarbon vapors on September 11 and 15, 1989, but that laboratory results were not yet available. We present the cumulative results of the August and September sampling events in Table 5.

DRILLING AND CONSTRUCTION OF VAPOR-EXTRACTION WELLS

Exxon requested that we drill boreholes and install wells in the vadose zone to delineate the extent and concentrations of hydrocarbons we found when installing ground-water monitoring well MW-9. We installed wells because we also may use the wells for possible soil-vapor extraction. Applied GeoSystems field personnel observed the drilling and installation of vapor-recovery wells VR-2 through VR-4 on November 20 and 21, 1989. Well VR-2 was installed to a depth of 45 feet. In that well, 2-inch-diameter slotted casing

was set from 45 to 35 feet deep and unperforated casing from 35 feet to 1/2 foot below grade. Wells VR-3 and VR-4 were installed to 32 1/2 and 35 feet, respectively, with slotted casing from the total depths to approximately 5 feet deep and unperforated casing from 5 feet to 1/2 foot below grade. We collected soil samples for laboratory testing but test results are not yet available. Plate P-3 shows the locations of wells VR-2 through VR-4.

PLANNED WORK

Applied GeoSystems plans to perform two soil-vapor tests using wells VR-2 through VR-4 and a portable vapor-extraction unit. We will place a vacuum on well VR-4 during the first test and monitor vapor pressures in wells that penetrate the upper portion of the sand and gravel of the uppermost aquifer. Those sedimentary layers are now not saturated as a result of the lowering water table. Our second test will include placing a vacuum on either well VR-3 or VR-4 to evaluate pressure influence in the unsaturated silty clay. We plan to perform the tests in December 1989. We will review the results to evaluate the feasibility of longer-term vapor extraction.

We expect to install the two planned wells on the Lucky Stores, Inc. property after receipt of drilling approval from Lucky. We expect that work to proceed during December 1989.

APPLIED GEOSYSTEMS REFERENCES

Applied GeoSystems. August 17, 1988. Report, Installation of Temporary Recovery Well, Periodic Monitoring, and Remediation of Ground Water at Exxon Station No. 7-3399, 2991 Hopyard Road, Pleasanton, California. Report No. 18034-2A.

Applied GeoSystems. September 30, 1989. Progress Report on Ground-Water and Soil-Vapor Extraction and Treatment at Exxon Station No. 7-3399, 2991 Hopyard Road, Pleasanton, California. Report No. 18034-4.

TABLE 1
CUMULATIVE RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 1 of 6)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-1	4/6/88	36.34	None	None
	4/8/88	36.29	None	None
	4/19/88	36.36	None	None
	6/6/88	38.16	None	None
	6/23/88	38.71	None	None
	6/28/88	39.16	--	--
	7/6/88	39.73	None	None
	7/13/88	40.22	None	None
	8/12/88	Well buried under excavated soil		
	8/26/88	41.90	--	--
	9/7/88	42.27	None	None
	12/7/88	43.94	None	None
	12/19/88	43.70	None	None
	2/9/89	42.53	--	--
	3/8/89	41.96	None	None
	4/3/89	41.59	--	--
	4/26/89	41.67	--	--
	6/30/89	43.79	None	None
	7/17/89	44.74	None	None
	7/18/89	44.76	--	--
	7/19/89	44.82	--	--
	7/20/89	44.85	None	None
	7/21/89	44.95	--	--
	7/26/89	45.42	None	None
	8/2/89	--	--	--
	8/3/89	46.18	--	--
	8/17/89	47.12	--	--
	9/13/89	49.08	None	None
	11/28/89	50.21	None	None
MW-2	4/2/88	--	3.0	Heavy
	4/4/88	--	18.0	Heavy
	4/5/88	--	18.0	Heavy
	4/6/88	39.31	38.4	Heavy

See notes on page 6 of 6.

TABLE 1
CUMULATIVE RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 2 of 6)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-2	4/8/88	--*	--*	--*
	4/19/88	38.90	29.76**	Heavy
	6/6/88	38.78	3.12	Heavy
	6/23/88	39.23	1.50	Heavy
	6/28/88	39.72	--	--
	7/6/88	40.31	None	Slight
	7/12/88	Well destroyed due to excavation (old pit)		
MW-3	4/6/88	37.19	None	None
	4/8/88	37.14	None	None
	4/19/88	37.22	None	None
	6/6/88	39.02	None	None
	6/23/88	39.58	None	None
	6/28/88	40.04	--	--
	7/6/88	40.60	None	None
	7/13/88	41.09	None	None
	8/12/88	Well buried under excavated soil		
	8/26/88	42.77	--	--
	8/29/88	Well destroyed due to excavation (new pit)		
MW-4	4/8/88	36.41	None	None
	4/19/88	36.51	None	None
	6/6/88	38.26	None	None
	6/23/88	38.83	None	None
	6/28/88	39.28	--	--
	7/6/88	39.85	None	None
	7/13/88	40.31	None	None
	8/12/88	Well buried under excavated soil		

See notes on page 6 of 6.

TABLE 1
CUMULATIVE RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 3 of 6)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-4	8/26/88	42.01	--	--
	9/7/88	Not accessible due to construction		
	12/7/88	Not accessible due to construction		
	12/19/88	43.83	None	None
	2/9/89	42.67	--	--
	3/8/89	42.11	None	None
	4/3/89	41.73	--	--
	4/26/89	41.79	--	--
	6/30/89	43.88	None	None
	7/17/89	44.85	None	None
	7/18/89	44.88	--	--
	7/19/89	44.92	--	--
	7/20/89	44.98	None	None
	7/21/89	45.04	--	--
	7/26/89	45.50	None	None
	8/2/89	--	--	--
	8/3/89	46.28	--	--
	8/17/89	47.22	--	--
	9/13/89	49.19	None	None
	11/28/89	50.34	None	None
B-4	4/2/88	--	None	None
MW-5d	5/25/88	38.55	None	None
	6/6/88	38.90	None	None
	6/23/88	39.56	None	None
	6/28/88	40.23	--	--

See notes on page 6 of 6.

TABLE 1
CUMULATIVE RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 4 of 6)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-5d	7/6/88	40.69	None	None
	7/13/88	41.22	None	None
	8/12/88	42.34	--	--
	8/26/88	42.60	--	--
	9/7/88	42.99	--	--
	12/7/88	44.58	None	None
	2/9/89	Casing head damaged by construction		
	3/8/89	Casing head cut to lower elevation		
		42.49	None	None
	4/3/89	42.21	--	--
	4/26/89	42.36	--	--
	6/30/89	44.79	None	None
	7/17/89	45.73	None	None
	7/18/89	45.75	--	--
	7/19/89	44.89	--	--
	7/20/89	46.02	None	None
	7/21/89	46.18	--	--
	7/26/89	46.83	None	None
	8/2/89	--	--	--
	8/3/89	47.67	--	--
	8/17/89	48.27	--	--
	9/13/89	50.60	None	None
	11/28/89	51.16	None	None
MW-5s	5/25/88	38.46	None	None
	6/6/88	38.86	None	None
	6/23/88	39.52	None	None
	6/28/88	39.84	--	--
	7/6/88	40.45	None	None
	7/13/88	40.90	None	None
	7/22/88	41.30	None	None
	8/5/88	23.84▼	None	None
	8/12/88	42.21	--	--
	8/26/88	42.55	--	--

See notes on page 6 of 6.

TABLE 1
CUMULATIVE RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 5 of 6)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-5s	9/7/88	42.94	None	None
	12/7/88	44.67	None	None
	2/9/89	43.19	--	--
	3/8/89	Casing head cut to lower elevation		
		42.11	None	None
	4/26/89	41.84	--	--
	6/30/89	43.95	None	None
	7/17/89	44.91	None	None
	7/18/89	44.93	--	--
	7/19/89	44.98	--	--
	7/20/89	45.02	None	None
	7/21/89	45.10	--	--
	7/26/89	45.57	None	None
	8/2/89	--	--	--
	8/3/89	46.31	--	--
	8/17/89	47.25	--	--
	9/13/89	49.22	None	None
	11/28/89	50.39	None	None
MW-6	5/11/88	37.71	None	None
	6/6/88	38.70	None	None
	6/23/88	39.23	None	None
	6/28/88	39.74	None	None
	7/13/88	40.78	None	None
	8/5/88	41.72	None	None
	8/12/88	42.14	--	--
	8/17/88	Well buried under excavated soil		
	8/26/88	42.51	--	--
	9/7/88	42.85	None	None
	10/24/88	Well destroyed for station construction		
MW-7	7/13/88	40.50	None	None
	7/22/88	41.85#	None##	None##
	8/5/88	41.45#	None##	None##

See notes on page 6 of 6.

TABLE 1
RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 6 of 6)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-7	8/12/88	42.69	--	--
	9/7/88	42.60	--	--
	12/7/88	Not accessible		
	1/17/89	43.20	--	--
	2/9/89	Not accessible, pump equipment in well		
	10/12/89	49.93	None	None
	11/28/89	57.61#	--	--
MW-8	10/1/89	53.88	None	None
	11/28/89	53.74	None	None
MW-9	10/12/89	50.24	None	None
	11/28/89	50.59	1.0	Heavy
MW-10	10/12/89	51.93	None	None
	11/28/89	51.88	None	None
MW-11	11/10/89	50.64	None	None
	11/28/89	50.51	None	V. Slight

Depth to water is in feet below top of casing.
Thickness of floating product is in inches.
-- = Not measured
* = Not measured because of installed product-skimmer pump
** = Thickness of floating product after the well was allowed to recharge for approximately 3 hours.
▾ = Anomalous water level possibly due to recharge from a perched water zone.
= Pumping-water level.
= Water inspected in oil-water separator tank.

TABLE 2
RESULTS OF ANALYSES OF GROUND-WATER SAMPLES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 1 of 2)

Date	Sample No.	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	EPA 502.2	EPA 524.2
MW-1								
7/17/89	W-45-MW1	<0.0005	<0.0005	<0.0005	<0.0005	0.023	--	--
7/20/89	W-45-MW1	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/26/89	W-46-MW1	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
8/2/89	W-46-MW1	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
9/13/89	W-50-MW1	0.039	0.0060	<0.0005	0.0051	0.22	--	--
MW-4								
7/17/89	W-45-MW4	<0.0005	<0.0005	<0.0005	<0.0005	0.39	--	--
7/20/89	W-45-MW4	<0.0005	<0.0005	<0.0005	<0.0005	0.20	ND*	--
7/26/89	W-46-MW4	<0.0005	<0.0005	<0.0005	<0.0005	0.066	--	--
8/2/89	W-46-MW4	--	--	--	--	--	--	ND*
9/13/89	W-50-MW4	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
MW-5d								
7/17/89	W-46-MW5d	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/20/89	W-47-MW5d	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/26/89	W-47-MW5d	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
8/2/89	W-48-MW5d	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
9/13/89	W-51-MW5d	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
MW-5s								
7/17/89	W-46-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/20/89	W-46-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/26/89	W-46-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
8/2/89	W-47-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
9/13/89	W-50-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--

See notes on page 2 of 2.

TABLE 2
RESULTS OF ANALYSES OF GROUND-WATER SAMPLES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 2 of 2)

Date	Sample No.	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	EPA 502.2	EPA 524.2
MW-7 (recovery well)								
8/2/89	W-TAP-MW7	0.0016	<0.0005	<0.0005	0.00060	0.031	--	--
9/13/89	W-Influent	<0.0005	0.0026	<0.0005	0.012	0.087	--	--
Blank								
7/17/89	W-Blank	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/20/89	Blank	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
Well 7								
7/20/89	Well 7	--	--	--	--	--	ND*	--
8/2/89	W-TAP-CW7	--	--	--	--	--	--	ND*

Results in milligrams per liter (mg/l) = parts per million (ppm)
TPH = total petroleum hydrocarbons by Environmental Protection Agency Method 8015
EPA 502.2 = Environmental Protection Agency Method 502.2 (volatile organic compounds)
EPA 524.2 = Environmental Protection Agency Method 524.2 (volatile organic compounds)
< = Less than the method detection limits of the laboratory
-- = Not analyzed or not applicable
ND = Nondetectable or below the method detection limit(s) of the laboratory
* = Nondetectable concentrations for 58 volatile organic compounds (see Analysis Reports in Appendix)
Well 7 = City of Pleasanton Municipal Well No. 7
Sample designation: W-47-MW5s
- W = water
- 47 = depth of sample to the nearest foot (for well MW-7, sample collected from a sample port at the surface)
- MW5s = monitoring well number

TABLE 3
RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 1 of 2)

Date	Sample	B	T	E	X	TPHg
MW-8						
9/29/89	S-38.5-MW8	<0.050	<0.050	<0.050	<0.050	<2.0
	S-74-MW8	<0.050	<0.050	<0.050	<0.050	<2.0
MW-9						
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	23	1,230	51	240	3,000
	[illegible]	0.89	0.37	0.16	0.40	9.3
	[illegible]	100	560	150	720	6,200
	[illegible]	3.6	42	18	50	[illegible]
MW-10						
10/6/89	S-20-MW10	<0.050	<0.050	<0.050	<0.050	<2.0
	S-35-MW10	<0.050	<0.050	<0.050	<0.050	<2.0
MW-11						
11/2/89	S-20-B11	<0.050	<0.050	<0.050	0.087	<2.0
	S-40-B11	<0.050	<0.050	<0.050	<0.050	<2.0
	S-45-B11	<0.050	0.059	<0.050	<0.050	<2.0

See notes on page 2 of 2.

TABLE 3
RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 2 of 2)

Date	Sample	B	T	E	X	TPHg
B-12						
11/3/89	S-55-B12	<0.050	<0.050	<0.050	0.060	<2.0
	S-70-B12	<0.050	<0.050	<0.050	<0.050	<2.0
	S-84-B12	<0.050	<0.050	<0.050	0.051	<2.0

Results in milligrams per kilogram (mg/kg) = parts per million (ppm)
B = benzene
T = toluene
E = ethylbenzene
X = total xylene isomers
TPHg = total petroleum hydrocarbons as gasoline
< = less than the method detection limit of the laboratory
Sample designation: S-84-B12
- S = soil
- 84 = depth of sample to the nearest foot
- B12 = monitoring well (MW)/boring (B)

TABLE 4
RESULTS OF LABORATORY ANALYSIS OF GROUND WATER SAMPLES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

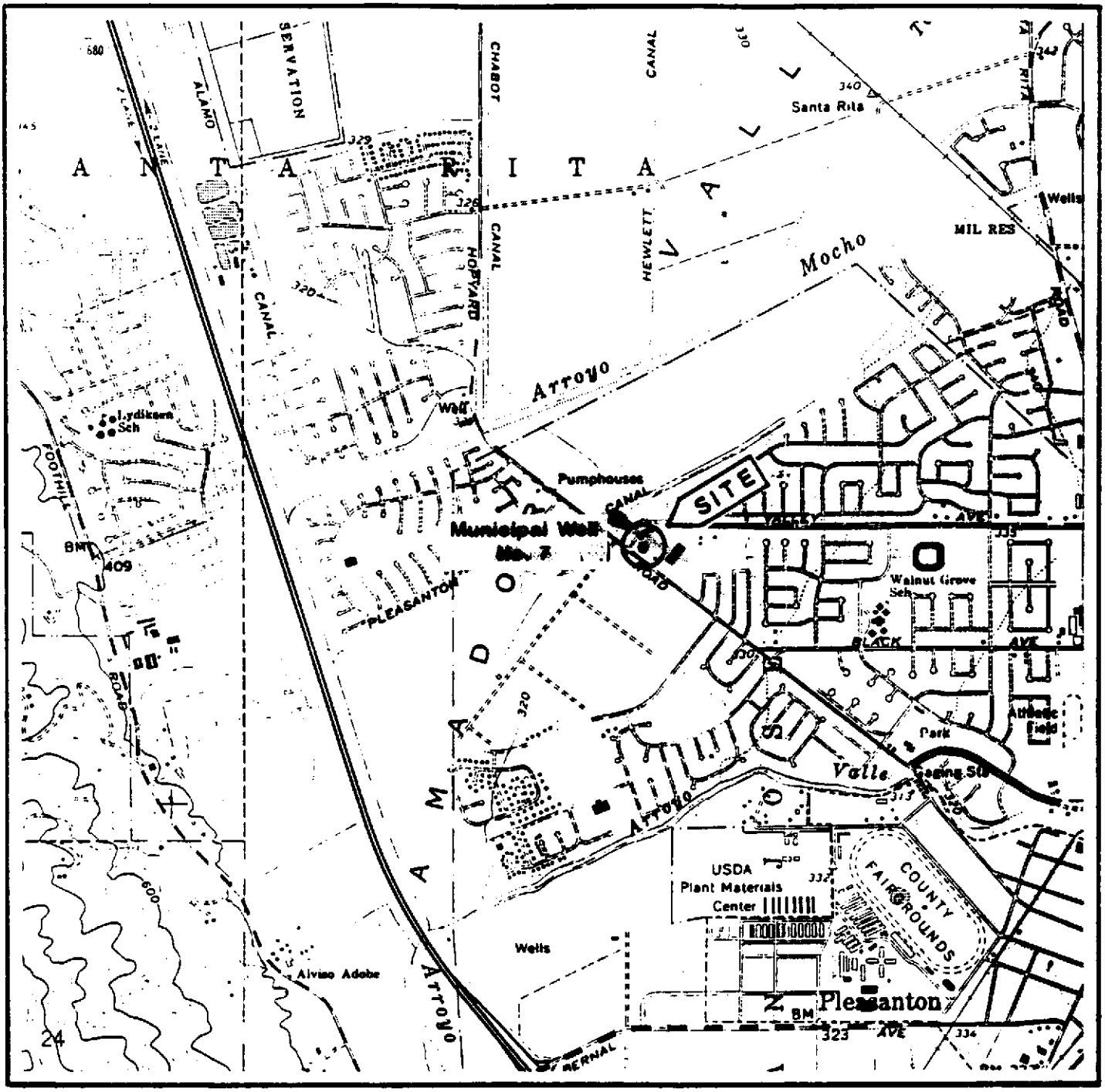
Date	Sample	B	T	E	X	TPHg
MW-8						
10/3/89	W-53-MW8	<0.00050	<0.00050	<0.00050	<0.00050	<0.020
[redacted]	W-50-MW9	1.0	9.2	3.0	13	89
MW-10						
10/12/89	W-52-MW10	<0.00050	<0.00050	<0.00050	0.0015	0.020
MW-11						
11/16/89	W-51-MW11	0.0041	0.0094	0.00074	0.020	0.15

Results in milligrams per liter (mg/l) = parts per million (ppm)
B = benzene
T = toluene
E = ethylbenzene
X = total xylene isomers
TPHg = total petroleum hydrocarbons as gasoline
< = less than the method detection limit of the laboratory
Sample designation: W-51-MW11
- W = water
- 51 = depth of sample to the nearest foot
- MW = monitoring well

TABLE 5
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF VAPOR SAMPLES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

Date	Sample No.	B	T	E	X	TPHg
Influent						
8/7/89	Inlet #1	25	7.1	<2	<7	9,300
8/7/89	Inlet #2*	18	<2	<2	<7	8,200
8/15/89	No. 5	6.3	2.1	<2	6.7	1,200
8/22/89	7 Inlet	6.0	6.5	1.8	20	1,200
9/11/89	9-Inlet	2.6	<1	<2	2.6	1,800
9/15/89	12-Inlet	3.8	2.7	<2	5.5	2,000
Effluent (from first carbon canister)						
9/11/89	10-Middle	<0.2	0.60	0.32	4.7	310
Effluent (from second carbon canister)						
8/7/89	Outlet #1	0.79	0.32	0.46	1.5	150
8/7/89	Outlet #2*	0.44	0.13	0.45	0.89	110
8/15/89	No. 6	3.5	<2	<3	<8	1,400
8/22/89	8 Outlet	4.3	<0.4	<0.5	1.7	1,300
9/11/89	11-Outlet	<0.03	<0.02	0.074	0.063	28
9/15/89	13-Outlet	0.58	<0.2	<0.3	<0.4	1,400

Results in milligrams per cubic meter (mg/m^3)
Influent = vapor sample collected before entering carbon filtration system
Effluent = vapor sample collected after passing through either one or both carbon filtration units
* = duplicate sample
< = less than the method detection limit of the laboratory

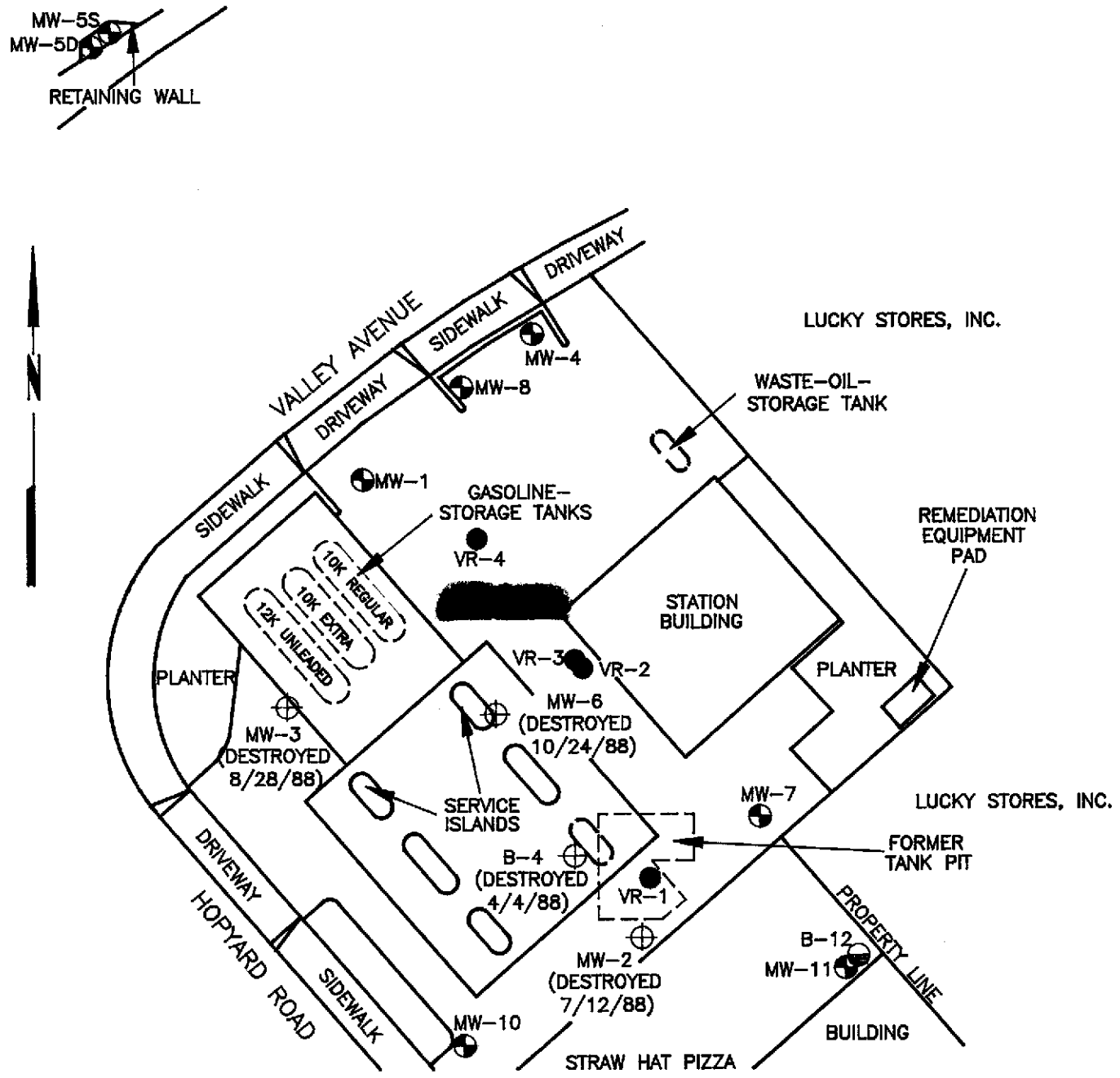


Source: U.S. Geological Survey
7.5-Minute Quadrangle
Dublin, California
Photorevised 1980

N

Approximate Scale
2000 1000 0 2000 4000
feet

Applied GeoSystems PROJECT NO. 18084-7	SITE VICINITY MAP Exxon Station No. 7-3399 2991 Hopyard Road Pleasanton, California	PLATE P - 1



MW-7 = Monitoring well
VR-1 = Vapor recovery well
B-12 = Soil boring
MW-6 = Former well or boring

Approximate Scale
40 20 0 40 80
feet

Applied GeoSystems

PROJECT NO. 18034-7

GENERALIZED SITE PLAN
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

PLATE
P - 2