ENVIRONMENTAL RESOLUTIONS, INC.

August 31, 2000
ERI 209214.R01

Mr. Dave DeWitt
Tosco Marketing Company
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

Subject: Executive Summary, Request and Work Plan For Case Closure, Tosco 76 Service Station 7176, 7850 Amador Valley Boulevard, Dublin, California.

Mr. DeWitt:

At the request of Tosco Marketing Company (Tosco), Environmental Resolutions, Inc. (ERI) has prepared the enclosed Request and Work Plan for Case Closure for Tosco 76 Service Station 7176 in Dublin, California. The Request and Work Plan describes previous environmental work performed at the site, existing site conditions, the results of a sensitive receptor survey (SRS) and a Tier II risk-based corrective action (RBCA) analysis, and tasks proposed for case closure. Available site information and the results of the SRS and RBCA analysis are interpreted to indicate that Tosco's past operations at the site pose no significant threat to human health or the environment. ERI recommends that case closure be granted, and Tosco perform no further work other than described below.

Specific tasks associated with case closure include:

- Submitting this Request and Work Plan to the Alameda County Health Care Services Agency (the County);
- Obtaining permits from the Zone 7 Water Agency (Zone 7) for the destruction of the three on-site and two off-site groundwater monitoring wells;
- Coordinating field work and observing a licensed driller destroy the five groundwater monitoring wells in accordance with regulatory requirements;
- Coordinating the disposal of stockpiled soil and rinsate water generated during well destruction activities; and,
- Preparing a letter documenting the well destruction and requesting that the County issue a letter stating that no further action will be required of Tosco.

ERI recommends that copies of this Request and Work Plan be forwarded to:

Mr. Amir K. Gholami
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Mr. Chuck Headlee
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, California 94612

Please call me at (415) 382-5988 with any questions regarding this Request and Work Plan.

Sincerely,
Environmental Resolutions, Inc.

Paul D. Blank
Senior Staff Geologist

Enclosure: Request and Work Plan for Case Closure

REQUEST AND WORK PLAN FOR CASE CLOSURE

at

TOSCO 76 SERVICE STATION 7176
7850 Amador Valley Boulevard
Dublin, California

ERI Job 209214.R01
August 31, 2000

Prepared for

Tosco Marketing Company
2000 Crow Canyon Place, Suite 400
San Ramon, California

ERI
ENVIRONMENTAL RESOLUTIONS, INC.

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REQUEST AND WORK PLAN FOR CASE CLOSURE

at

Tosco 76 Service Station 7176
7850 Amador Valley Boulevard
Dublin, California

ERI Job 209214.R01

Prepared for

Tosco Marketing Company
2000 Crow Canyon Place, Suite 400
San Ramon, California

by

Environmental Resolutions, Inc.

Paul D. Blank
Senior Staff Geologist

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August 31, 2000

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REQUEST AND WORK PLAN
FOR CASE CLOSURE

at

Tosco 76 Service Station 7176
7850 Amador Valley Boulevard
Dublin, California

for

Tosco Marketing Company

1.0 INTRODUCTION

At the request of Tosco Marketing Company (Tosco), Environmental Resolutions, Inc. (ERI) has prepared this Request and Work Plan for Case Closure at the subject site. The Request and Work Plan describes previous environmental work performed at the site, existing site conditions, the results of a sensitive receptor survey (SRS), the results of a Tier II risk-based corrective action (RBCA) analysis, tasks proposed for case closure, and requests removal of Tosco as a responsible party for the site. A completed California Regional Water Quality Control Board, Site Information Summary Form for the site is included in Appendix A. The Alameda County Health Care Services Agency, Environmental Health Services (the County) approved consideration for closure of this case upon successful completion of the Tier II RBCA analysis. The County's letter is provided as Appendix B.

Based on the results of the SRS and RBCA analysis, and a review of site conditions, it is interpreted that Tosco's past operations at the site pose no significant threat to human health or the environment. Therefore, Tosco should be removed as a responsible party, case closure should be granted, and no further environmental work should be performed, other than that described below.

- Submitting this Request and Work Plan to the County:
- Obtaining permits from Zone 7 Water Agency (Zone 7) for the destruction of five groundwater monitoring wells;

- Coordinating field work and observing a licensed well driller destroy the five groundwater monitoring wells in accordance with regulatory requirements;
- Coordinating disposal of stockpiled soil and rinsate water generated during well destruction activities; and,
- Preparing a letter documenting well destruction and requesting that the County issue a letter stating no further action will be required by Tosco.

2.0 BACKGROUND

2.1 Site Description

The site is located on the southwestern corner of Amador Valley Boulevard and Regional Street in Dublin, California, as shown on the Site Vicinity Map (Plate 1). The locations of existing underground storage tanks (USTs), dispenser islands, other site features, and nearby properties are shown on the Generalized Site Plan (Plate 2). The site has previously been operated as a Gulf Service Station and as a Fill-Em-Fast Service Station. The service configurations of the former stations are unknown. Union Oil Company of California (Unocal) purchased the station in 1985, and Unocal's November 1994 UST system replacement is the only recorded service station upgrade (Enviros 1995). Tosco purchased the station in 1997, and assumed responsibility for environmental work. Properties in the vicinity of the site are occupied by commercial developments.

2.2 Previous Site Investigations

Unocal initiated environmental work at the site in 1994. The following is a summary of environmental work performed at the site to date.

2.2.1 Replacement of Underground Storage Tanks

In November 1994, Unocal removed three 10,000-gallon gasoline USTs, one 10,000-gallon diesel UST, one 280-gallon used-oil tank, and associated product piping from the subject site. A sand/water separator was also decommissioned during UST replacement. Eight holes ranging in diameter from pin size to approximately 0.5 inches were observed in the used-oil tank during removal. No holes or other

evidence of leakage were observed in the remaining tanks or piping. The tanks were transported to the Erickson, Inc. facility in Richmond, California for disposal. Fourteen soil samples were collected from beneath USTs, dispensers, and product lines subsequent to UST removal.

Approximately 1,863 tons of hydrocarbon-impacted soil were removed from beneath the former USTs, dispensers, and product lines during UST replacement activities at the site. Thirteen confirmation soil samples were collected from the limits of the remedial excavation cavities. The results of laboratory analyses of soil samples are provided in Appendix C. Groundwater was encountered during remedial excavation in the UST cavity at approximately 20 feet below ground surface (bgs). Approximately 5,000 gallons of hydrocarbon-impacted groundwater were removed from the UST cavity during UST replacement activities (Enviros, March 23, 1995).

2.2.2 Preliminary Soil and Groundwater Investigation

In October 1995, Unocal drilled six on-site soil borings (B1 through B6) and constructed three on-site groundwater monitoring wells (U1 through U3) at the subject site. The results of laboratory analyses of soil samples collected from the borings are provided in Appendix C. The locations of the borings and wells are shown on Plate 2. Descriptions of the materials encountered and details of monitoring well construction are presented on the boring logs (Appendix D). Oxygen release compound socks were installed in wells U1 through U3 and in a UST cavity backfill well (Enviros, October 10, 1995).

2.2.3 Supplemental Soil and Groundwater Investigation

In April 1998, Tosco installed two off-site groundwater monitoring wells (MW4 and MW5). Groundwater was encountered during well installation at approximately 20 feet bgs, however, static water level was measured in the well casings at 11 to 12.5 feet bgs. Descriptions of the materials encountered and details of well construction are presented on the boring logs (Appendix D). The results of laboratory analyses of soil samples are included in Appendix C. The locations of wells MW4 and MW5 are shown on Plate 2.

2.2.4 Groundwater Monitoring and Sampling

Quarterly groundwater monitoring and sampling were initiated in August 1995 to evaluate dissolved-phase hydrocarbons in groundwater and the direction and gradient of groundwater flow. Cumulative groundwater monitoring and sampling data from the Gettler-Ryan, Inc (GRI) *First Quarter 2000 Groundwater Monitoring and Sampling Report*, dated February 8, 2000, are provided in Appendix E.

2.3 Regional Geology

The site is located at the foot of the Dublin Hills within the Dublin subbasin, which is the western part of the Livermore Valley Basin. The sediments underlying the Livermore Valley Basin are alluvium of Pleistocene to Pliocene age, consisting of thick gravel deposits interbedded with sand and clay. The Calaveras Fault Zone is located approximately one-half mile west of the site (Enviros 1995).

2.4 Groundwater Use

According to the *Zone 7 Water Agency 1998 Annual Report*, Zone 7 receives its water supply from imported and local sources. In 1998, approximately 43 percent of the Zone 7 water supply was provided by the State Water Project, approximately 5 percent was provided by the Byron-Bethany Irrigation District, approximately 48 percent was local surface water from the Del Valle Reservoir Water Shed, and approximately 4 percent was groundwater from local well fields.

3.0 SITE CONDITIONS

3.1 Site Geology and Hydrogeology

Sediments encountered in on- and off-site soil borings generally consist of heterogeneous mixtures of clay and silt, with gravel/sand/clay mixtures below 19 to 24 feet bgs. Groundwater was encountered between 17.5 to 20 feet bgs during drilling. Static groundwater as measured in wells U1 through U3, MW4, and MW5 ranges between 11 and 19 feet bgs, and appears to be confined or semiconfined. Groundwater flow is generally toward the southeast as shown on the Groundwater Flow Direction Rose Diagram (Plate 3).

3.2 Soil Conditions

Based on ERI's review of previous investigations, the extent of residual petroleum hydrocarbons in soil appears to be defined by borings B1 through B4, U3, MW4, and MW5, as shown on Plate 2. In addition, remedial excavation of approximately 1,863 tons of hydrocarbon-impacted soil was performed during UST replacement activities. Residual hydrocarbons may remain in place in the vicinity of the southern product dispensers and UST cavity up to 1,300 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPHg) (described by the laboratory as non-gas mix and/or weathered gas), and 75 ppm total petroleum hydrocarbons as diesel (TPHd) (described by the laboratory as non-diesel mix). The approximate extent of detectable residual petroleum hydrocarbons in soil, based on samples collected during 1994-1995 soil investigations, is shown on Plate 2. Soil sample locations and analytical results are included in Appendix C.

3.3 Groundwater Conditions

Based on a review of cumulative groundwater monitoring and sampling data (GRI, February 8, 2000) (Appendix E), dissolved gasoline and diesel hydrocarbons, benzene, and methyl tertiary butyl ether (MTBE) appear to be generally delineated in the dominant downgradient direction of groundwater flow from the site by well MW5. In January 2000, benzene and MTBE were detected in samples from wells U1, U2, and MW4 up to 28 parts per billion (ppb) and 120 ppb, respectively.

3.4 Source Removal

Remedial excavation of approximately 1,863 tons of hydrocarbon-impacted soil was performed beneath gasoline, diesel, and used-oil USTs, and product dispensers during UST replacement activities in November 1994. The stockpiled soil was disposed at the Browning-Ferris Industries (BFI) Vasco Road Landfill.

Approximately 5,000 gallons of hydrocarbon-impacted groundwater was removed from the site during UST replacement activities. The water was transported to the Tosco Refinery in Rodeo, California, for recycling.

4.0 GROUNDWATER RECEPTOR SURVEY

4.1 Agency Database Search

In March 2000, ERI contacted Zone 7 and requested information regarding wells located within a 2,000-foot radius of the site. Zone 7 provided ERI with a map (Zone 7 map) showing the locations of all active, inactive, and destroyed groundwater production and monitoring wells in the vicinity of the site. In addition, ERI contacted the California Department of Water Resources (DWR) and requested information regarding registered wells within the survey radius.

4.2 Field Survey

On April 6, 2000, ERI's representative visited the site and conducted a survey of all properties within 2,000 feet of the site in the downgradient and crossgradient directions of groundwater flow and 500 feet in the upgradient groundwater flow direction. The survey area was located in an entirely commercial section of the City of Dublin. ERI's representative searched for municipal wells, surface water bodies, buildings with sub-grade basements and sump systems, or any potential receptor to groundwater.

4.3 Survey Results

According to information provided by Zone 7, the well locations on the Zone 7 map within the survey radius were former or existing monitoring wells, except one production well, located approximately 950 feet southwest (crossgradient) of the site. This well could not be located during the field receptor survey, and is presumed to be inactive or destroyed. The DWR well search revealed that two production wells, installed in the 1950s, were located within the survey radius. Neither well was identified by Zone 7. DWR records indicate that the wells were located approximately 750 feet south (crossgradient) and 1,250 feet northwest (upgradient) of the site. The wells could not be located in the field, and the wells are presumed to be inactive or destroyed. No active groundwater production wells were positively identified within the survey radius during the agency or field groundwater receptor surveys. A creek/drainage ditch located approximately 800 feet north (upgradient) of the site was identified during the field visit.

5.0 RISK-BASED CORRECTIVE ACTION ANALYSIS

5.1 Tier II Evaluation

ERI performed a RBCA Tier II analysis to evaluate the potential risk to human health and the environment posed by existing site conditions. ERI evaluated the following exposure pathways in the Tier II assessment:

- Groundwater ingestion (off-site residential receptor);
- Soil: direct ingestion or dermal contact (on-site commercial and construction receptors);
- Subsurface soil volatilization to outdoor air (inhalation: on-site commercial and construction receptors and off-site residential receptor);
- Groundwater volatilization to outdoor air (inhalation: on-site commercial and construction receptors);
- Subsurface soil volatilization to indoor air (inhalation: commercial receptor);
- Groundwater volatilization to indoor air (inhalation: commercial receptor); and,
- Soil leaching to groundwater (ingestion: residential receptor).

Site-specific parameters used to calculate the Tier II site-specific target levels (SSTLs) are included in Attachment F. The site-specific parameters were selected based on field and analytical data collected from the site and include:

Vadose Zone Thickness:	18 feet
Capillary Fringe Thickness:	1 feet
Impacted Soil Thickness:	19 feet
Impacted Soil Area:	5,640 sq. feet
Width of Plume Parallel to Wind:	150 feet
Width of Plume Parallel to Groundwater Flow:	80 feet
Soil Porosity in Vadose Zone:	33.4%
Hydraulic Conductivity	7.71×10^{-7} cm/sec

Analytical data for samples collected from the site were used to calculate representative concentrations of benzene, toluene, ethylbenzene, total xylenes (BTEX), and MTBE in subsurface soil and groundwater. Soil samples collected from within the approximate extent of detectable residual petroleum hydrocarbons in soil as shown on Plate 2, that were collected subsequent to remedial excavation, were selected for use in the RBCA calculations. Analytical data for groundwater samples collected from wells U1, U2, and MW4 during the past four quarters were used to calculate representative groundwater concentrations.

ERI used a slope factor value of 0.1 in the RBCA analysis, as requested by most Bay Area counties. This value is more conservative than the default value of 0.029 included in the RBCA model.

5.2 Tier II Results

The RBCA analysis indicates that BTEX and MTBE concentrations in soil and groundwater samples collected at the site do not exceed regulatory site-specific target levels (SSTLs) for volatilization to air (inclusive of indoor and outdoor air), or groundwater ingestion. Therefore, site conditions pose no significant risk to human health or the environment. ERI recommends that no further environmental work be completed, other than the scope of work outlined in this report. The RBCA Tier II analysis output files are provided in Attachment F.

6.0 DISCUSSION

It is ERI's opinion that Tosco has performed adequate site characterization and investigation. Furthermore, the soil and groundwater conditions existing beneath the site indicate that no further work related to Tosco's operation is necessary. Environmental work performed to date indicates the following:

- All feasible soil source removal at the site has occurred. Benzene was not detected in confirmation soil samples collected subsequent to remedial excavation. Hydrocarbon-impacted soil beneath the site only remains in the vicinity of the UST cavity and southern product dispenser, and is delineated by borings B1 through B4, U3, MW4, and MW5.

- Concentrations of petroleum hydrocarbons in groundwater appear to be stable and do not appear to be migrating. Over the past four quarters, laboratory analyses of groundwater samples have not detected concentrations of benzene above 45 ppb or MTBE above 195 ppb (using EPA Method 8260).

- The groundwater receptor survey revealed three groundwater production wells and one surface water body within a 2,000-foot radius of the site. However, the wells could not be located in the field or confirmed active, and are presumed to be inactive or destroyed. The surface water body, a drainage ditch located approximately 800 feet north of the site, is in the upgradient groundwater flow direction. ERI did not positively identify any potential receptors to groundwater within the survey radius.

- The RBCA Tier II analysis revealed that analytical results of soil and groundwater samples collected at the site do not exceed regulatory SSTLs for soil and groundwater volatilization to indoor or outdoor air or groundwater ingestion for BTEX or MTBE.

It is ERI's opinion that Tosco's past operations at the site poses no risk to human health or the environment. ERI recommends that Tosco perform no further environmental work at the site, except for the work proposed in the following section.

7.0 PROPOSED WORK

The specific tasks proposed in this scope of work are summarized below and discussed in the sections that follow. ERI will perform the following tasks:

- Prepare a site-specific Health and Safety Plan for the work and obtain the appropriate well destruction permits from Zone 7;
- Coordinate field work and observe a licensed well driller destroy the five existing groundwater monitoring wells at the site in accordance with regulatory requirements;
- Coordinate disposal of stockpiled soil and rinsate water generated during well destruction activities; and,

- Prepare a letter documenting the well destruction and requesting that the County issue a letter stating no further action will be required of Tosco.

7.1 Site Safety Plan and Permits

Field work will be performed by ERI personnel in accordance with a site-specific Health and Safety Plan prepared for the site. This plan will describe the basic safety requirements for well destruction activities at the site. The site safety plan is applicable to personnel and subcontractors of ERI. Personnel at the site will be informed of the contents of the site safety plan before work begins. A copy of the site safety plan will be kept at the work site and will be available for reference by appropriate parties during work. An ERI representative will act as the Site Safety Officer.

ERI will complete and submit permit applications for the destruction of the three on-site and two off-site groundwater monitoring wells (U1 through U3, MW4, and MW5) to Zone 7.

7.2 Field Mobilization and Well Destruction

After the well destruction permits are approved, a licensed California well driller will be contracted to destroy wells U1 through U3, MW4, and MW5 in accordance with regulatory requirements. The County and Zone 7 will be contacted at least 48 hours prior to the date of the scheduled work. The total depths of the monitoring wells are either 25 or 30 feet bgs. The 2-inch diameter well casings were installed in 8-inch bore holes. The 12-inch diameter monitoring well vaults will be removed and disposed. Each well location will be resurfaced to match the surrounding pavement. An ERI geologist will be on site to observe the well destruction.

7.3 Stockpiled Soil and Rinsate Disposal

After the monitoring wells are destroyed, the well cuttings will be placed on plastic sheeting, covered, and left at the site. ERI will coordinate the appropriate disposal of the soil with Tosco. The asphalt and/or concrete will be washed down after the work is completed, and the site cleaned of any debris related to the well destruction. Auger rinse water will be stored in appropriately labeled drums on site. ERI will apprise Tosco of appropriate disposal options for the water.

7.4 Case Closure Letter

After the field work is completed, ERI will prepare a final letter documenting the destruction of the groundwater monitoring wells and requesting that a letter stating no further action will be required of Tosco.

8.0 SCHEDULE OF OPERATIONS

ERI is prepared to implement the scope of work outlined above upon receipt of written approval of this Request and Work Plan from the County and upon receipt of approved drilling permits. Any unreasonable delays of the project will be communicated to Tosco and the County.

9.0 LIMITATIONS

This request and work plan for case closure was prepared in accordance with generally accepted standards of environmental practice in California at the time this work was performed. This work was conducted solely for the purpose of evaluating environmental conditions of soil and groundwater with respect to hydrocarbons. Evaluation of the geologic conditions at the site for the purpose of this investigation is made from a limited number of observation points. Subsurface conditions may vary away from the data points available.

10.0 REFERENCES

Environmental Resolutions, Inc. (ERI). August 4, 1998. Supplemental Evaluation and Investigation Report at Tosco (Union) 76 Service Station 7176, 7850 Amador Valley Boulevard, Dublin, California. ERI 209203.R01

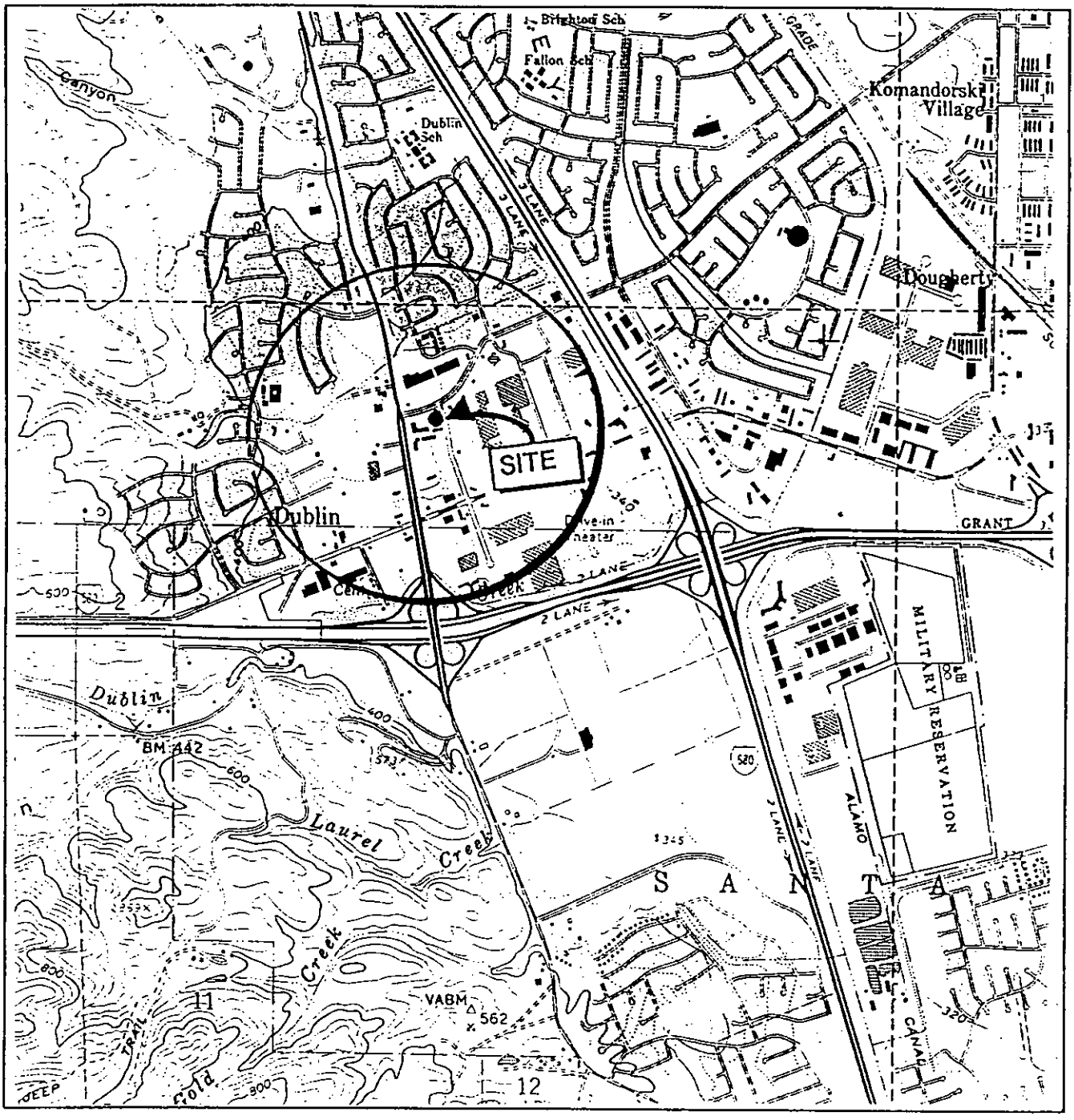
Enviros, Inc. March 23, 1995. Storage Tank Replacement Observation Report, Unocal Service Station No. 7176, 7850 Amador Valley Road, Dublin, California. 95132.01

Enviros, Inc. (Enviros). October 10, 1995. Preliminary Soil and Groundwater Investigation, Unocal Service Station No. 7176, 7850 Amador Valley Road, Dublin, California. 95132.02

Gettler-Ryan, Inc. (GRI). February 8, 2000. First Quarter 2000 Groundwater Monitoring and Sampling Report, Tosco (Unocal) Service Station #7176, 7850 Amador Valley Road, Dublin, California. G-R Job #180022

United States Geological Survey (USGS). 1980. 7.5-Minute Topographic Quadrangle Map, Dublin, California.

Zone 7 Water Agency. 1998. Zone 7 Water Agency 1998 Annual Report.



20920001

EXPLANATION

N

Source: U.S.G.S. 7.5 minute topographic quadrangle map Dublin, California (Photorevised 1980)

APPROXIMATE SCALE

0 1/2 1

MILE

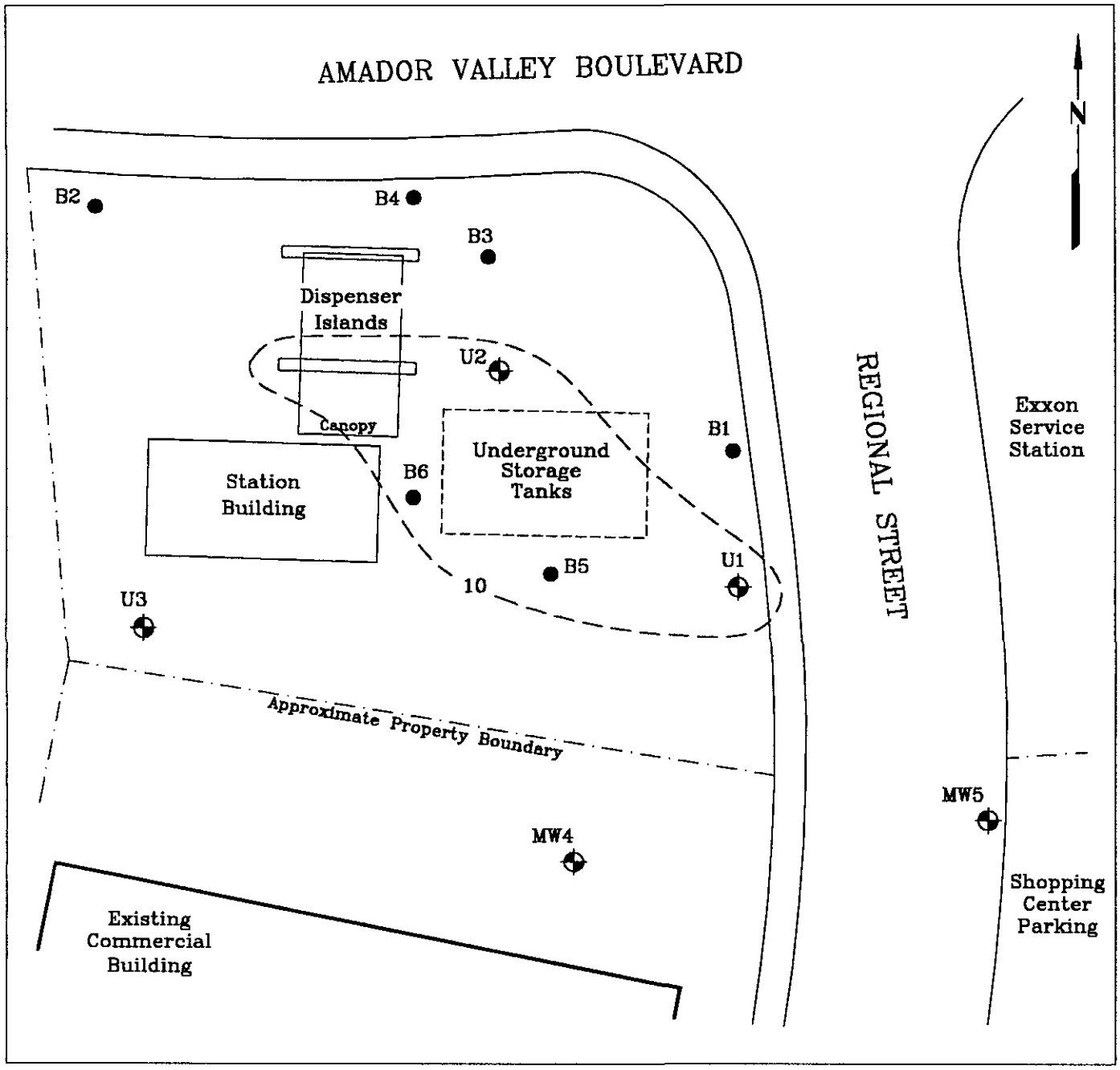
ERI ENVIRONMENTAL RESOLUTIONS, INC.

PROJECT ERI 2092

SITE VICINITY MAP

TOSCO (UNION) 76 SERVICE STATION 7176
7850 Amador Valley Boulevard
Dublin, California

PLATE 1



FN 2092002B

EXPLANATION

MW5 — Groundwater Monitoring Well

B5 — Soil Boring Location

Isoconcentration contour of residual petroleum hydrocarbons in soil in parts per million (ppm). Developed using soil analytical data from UST removal and drilling activities (Appendix C) and utilized as extent of impacted soil in RBCA calculations.

APPROXIMATE SCALE

0 40 80 FEET

SOURCE: Modified from a map provided by Ron Archer Civil Engineer, Inc.

ENVIRONMENTAL RESOLUTIONS, INC.

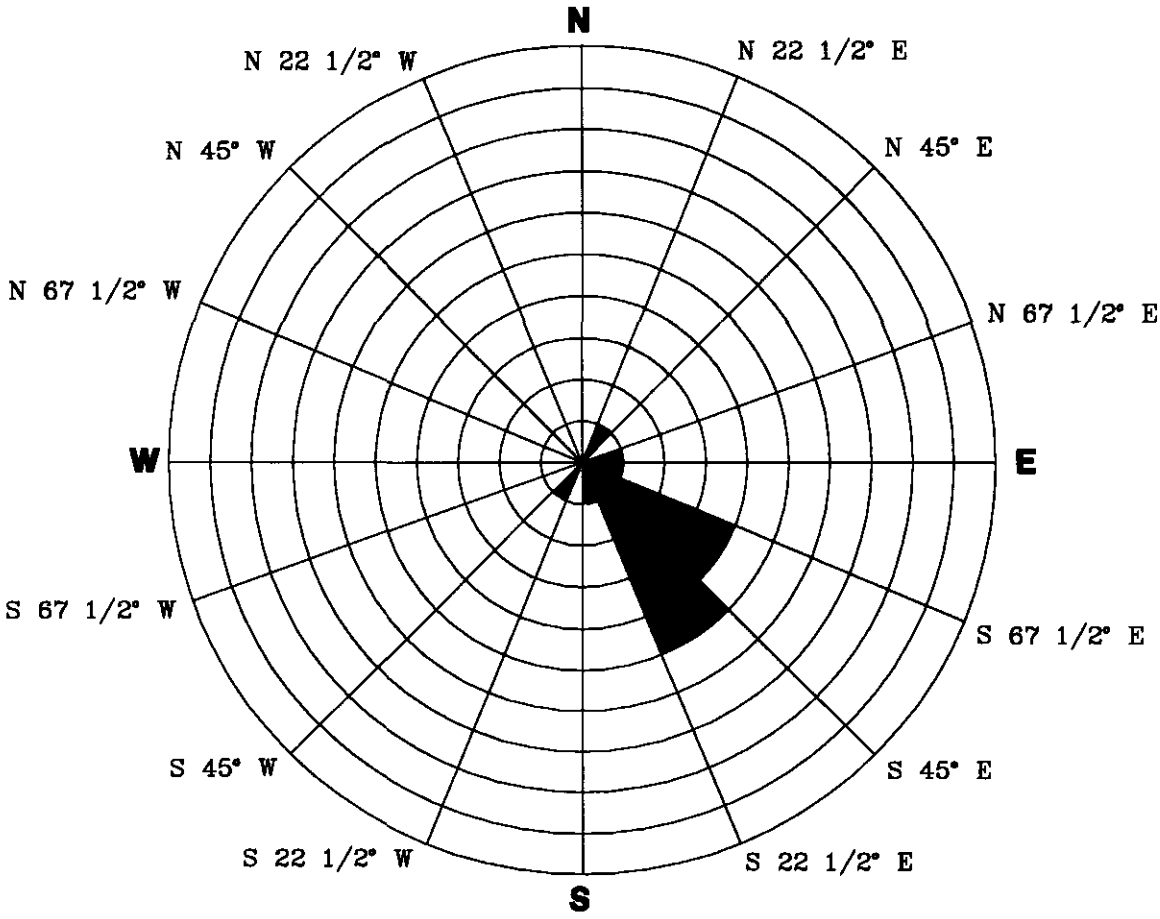
GENERALIZED SITE PLAN

TOSCO 76 SERVICE STATION 7176
7850 Amador Valley Boulevard
Dublin, California

PROJECT NO. 2092

PLATE 2

May 9, 2000



FN 2092ROSE

EXPLANATION

N Compass Direction

14 Data Points Shown

Rose diagram developed by evaluating the groundwater gradient direction from the quarterly monitoring data. Each circle on the rose diagram represents the number of monitoring events that the gradient plotted in that 22 1/2 degree sector. For example, two quarterly groundwater gradient directions are plotted between south (S) 45 degrees east (E) and S 22 1/2 degrees E. Therefore, the dominant groundwater gradient direction as depicted by the rose diagram is between S 45 degrees E and S 22 1/2 degrees E.

ERI ENVIRONMENTAL RESOLUTIONS, INC.

GROUNDWATER FLOW DIRECTION ROSE DIAGRAM

TOSCO 76 SERVICE STATION 7176
7850 Amador Valley Boulevard
Dublin, California

PROJECT NO. 2092

PLATE 3

APPENDIX A

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SITE INFORMATION SUMMARY FORM

SITE INFORMATION SUMMARY

I. SITE INFORMATION

Site Facility Name: **Tosco 76 Service Station 7176**				
Site Facility Address: **7850 Amador Valley Boulevard, Dublin, California**				
RWQCB LUST Case No:	URF Filing Date:			
Responsible Parties (include addresses and phone numbers)				
Tosco Marketing Company, Attn: Mr. Dave DeWitt				
2000 Crow Canyon Place, Suite 400				
San Ramon, California 94583				
(925) 277-2384				
Tank No.	Size in Gallons	Contents	Closed In-Place/Removed?	Date
1	**10,000**	**Gasoline**	**Removed**	**November 1994**
2	**10,000**	**Gasoline**	**Removed**	**November 1994**
3	**10,000**	**Gasoline**	**Removed**	**November 1994**
4	**10,000**	**Diesel**	**Removed**	**November 1994**
5	**280**	**Used-Oil**	**Removed**	**November 1994**

II. INITIAL SITE ASSESSMENT (Information from previous investigations at nearby sites and other available sources may be used for applicable items if necessary)

Cause and Estimated Quantity of Release: **Unknown**		
Nearest Surface Water Bodies (including any unnamed creeks, tributaries, canals, etc.): **Drainage ditch**	Their Geographical Distances From the Site: **800 feet north (upgradient) of site**	
Nearest domestic Water Wells (both public and private) within 2000 ft.: **None confirmed active**	Their Geographical Distances From the Site:	
Minimum Groundwater Depth: **11 feet**	Max Depth: **19 feet**	Flow Direction: **SE**
Site Ground Surface Elevation and Geology: **Ground surface elevation approximately 355 feet above mean sea level (MSL). Clay and silt mixtures above approximately 20 feet below ground surface (bgs), gravel/sand/clay mixtures below approximately 20 feet bgs.**		
Current Site and Surrounding Land Use: **Fuel service station in commercial area.**		
Preferential Pathways Such as Subsurface Utilities? If Yes, Describe: **No, groundwater level appears to be deeper than utilities in the area.**		
Number of Soil Borings: **6**	Number of Monitoring Wells: **5**	

III. REMEDIATION

Material	Amount (Include Units)	Action (Treatment or Disposal w/ Destination)	Date
Free Product	**Not Applicable (NA)**	**NA**	**NA**
Soil	**1,863 tons**	**Removal and disposal at BFI Vasco Landfill**	**Nov. 1994**
Groundwater	**5,000 gallons**	**Removal and disposal at Tosco Refinery**	**Nov. 1994**
Vapor	**0**	**NA**	**NA**

COMMENTS

MAXIMUM DOCUMENTED SOIL POLLUTANT CONCENTRATIONS

POLLUTANT	Location	Soil (ppm)		POLLUTANT	Location	Soil (ppm)	
	Date(s)	Initial	Resid-ual		Date(s)	Initial	Resid-ual
TPH (Gas)	11/94	2,200	1,300	Xylene	11/94	300	150
TPH (Diesel)	11/94	9,100	75	Ethylbenzene	11/94	36	26
Benzene	11/94	1.6	ND	Oil & Grease	11/94	ND	NA
Toluene	11/94	54	31	Heavy Metals	11/94	7.1	NA
MTBE	NA	NA	NA	Motor Oil	NA	NA	NA
Chlorinated Solvents	NA	NA	NA	Other			

GROUNDWATER CONCENTRATION (ppb) TRENDS AT SOURCE AREAS & PLUME/SITE BOUNDARIES

Date	Well #	Benzene	MTBE	TPHg	TPHd	Toluene	Ethyl benzene	Xylene	Chlor. VOCs	Other	DTW
7/95	U1	1,500	NA	39,000	9,400	19	1,600	5,200	NA		12.59
1/00	U1	28	120	5,400	1,700	8.4	180	33	NA		16.51
7/95	U2	430	NA	17,000	4,700	ND	2,200	590	NA		12.68
1/00	U2	23	14	3,400	1,900	13	ND	44	NA		17.20
7/95	U3	0.57	NA	1,100	710	2.1	1.7	2.4	NA		14.58
1/00	U3	ND	ND	ND	ND	ND	ND	ND	NA		18.86
4/98	MW4	5.9	ND	2,500	1,400	6.4	16	31	NA		12.11
1/00	MW4	4.2	17	800	260	4.6	3.3	11	NA		17.50
4/98	MW5	0.53	13	120	100	0.90	1.0	3.8	NA		11.15
1/00	MW5	ND	ND	ND	ND	ND	ND	ND	NA		16.34

IV. LIST TECHNICAL REPORTS, CORRESPONDENCE, ETC. IN CHRONOLOGICAL ORDER

TITLE / SUBJECT	DATE
Storage Tank Replacement Observation Report	**3/23/95**
Preliminary Soil and Groundwater Investigation	**10/10/95**
Supplemental Evaluation and Investigation Report	**8/4/98**
Groundwater Monitoring and Sampling Reports	**1995-2000**

V. ENCLOSE FOLLOWING FIGURES AND TABLES

1. Site maps showing locations of existing buildings, former/current UST areas, subsurface utilities and other pathways, groundwater flow direction etc.

2. Summary tables of all soil sampling results available, including any tank/excavation pit samples and confirmation samples, with sampling dates, location-identifications and depths (if applicable).

3. Summary tables of all groundwater sampling results available, including depth to water/product measurements, with sampling dates and location-identifications.

4. Figures showing all soil and groundwater sampling locations and monitoring well locations.

Additional Comments:

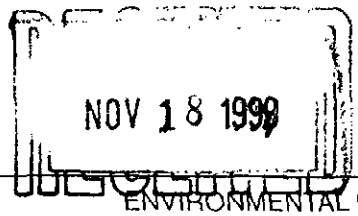
All information requested in Section V (1-4) is included in the Case Closure Plan accompanying this Site Information Summary.

APPENDIX B

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY LETTER DATED NOVEMBER 15, 1999

2092417

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9432

STID 4104

November 15, 1999

Mr. David B. De Witt
Tosco (UNOCAL) Environmental Project Manager
Tosco Marketing Company
2000 Crow Canyon Place, Suite 400
San Ramon, CA 94583

RE: Tosco (UNOCAL) Service Station # 7176 located at 7850 Amador Valley Blvd., Dublin, CA

Dear Mr. De Witt:

I am in receipt of the faxed copies of the soil sample results submitted by Mr. Dylan Crouse of Environmental Resolutions, Inc. dated 11/11/1999. Thank you for the submittal of the report. However, some of the faxed copies of the laboratory analytical results are not legible. I called Mr. Crouse and requested him to resubmit the above report by mail.

Per my discussion with Mr. Glenn Matteucci of Environmental Resolution Inc., this site can only be considered for closure when the contaminants at the site are at or below "Tier I RBCA", Risk-Based Corrective Action levels for both soil and groundwater.

However, in case the constituents within the plume are above the Tier I levels, a site specific Tier II risk assessment, on all constituents in soil and groundwater, can be performed to prove lack of threat and or potential threat to human health and or environment.

If the concentrations of the constituents in the plume is less than the risk levels established by the Tier II risk assessment, The site can then be considered for closure.

I will be looking forward for the 4th quarterly groundwater report.

Please call me at (510)- 567-6876, if you have any questions.

Sincerely,

Amir K. Gholami, REHS
Hazardous Materials Specialist

C: Deanna L. Harding, Gettler-Ryan Inc., 6747 Sierra Court, Suite J, Dublin, CA 94568
Glenn Matteucci of Environmental Resolution Inc., 73 Digital Drive, Suite 100, Novato, CA 94949
Files

APPENDIX C

SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS

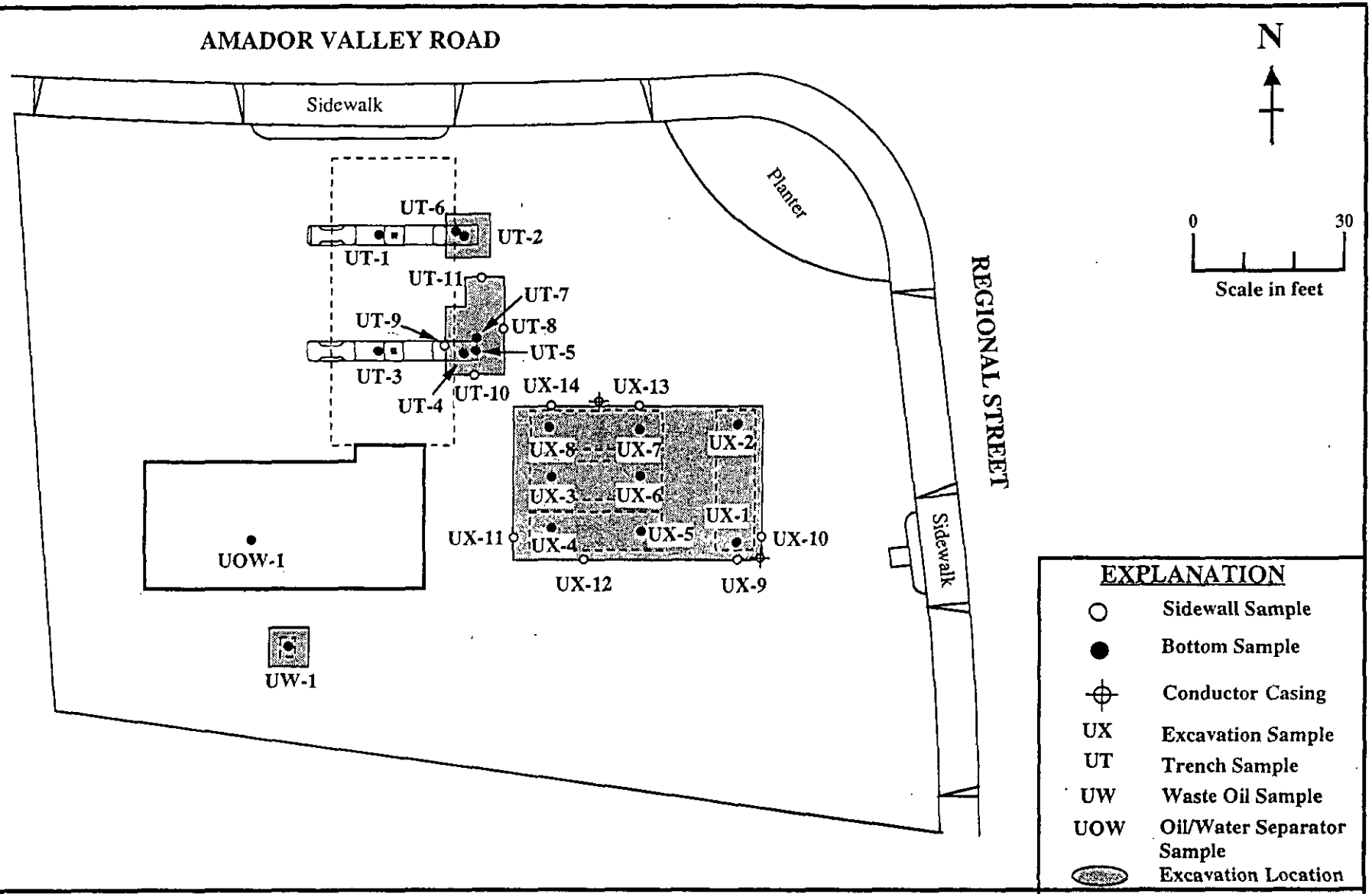


PLATE
3

SOIL SAMPLE LOCATION MAP
Unocal SS No. 7176
7850 Amador Valley Boulevard
Dublin, California

enviros®
95132.01

Drawn By: GLV | Date: 11-26-94 | Approved By: [illegible] | Date: 3/23/95

TABLE 1
SOIL ANALYTICAL DATA

7850 Amador Valley Road
Dublin, California

SAMPLE NO.	SAMPLE DEPTH (FEET)	SAMPLE DATE	ANALYSIS DATE	TPH-D (PPM)	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYL BENZENE (PPM)	XYLENES (PPM)	TTLC LEAD (PPM)	O&G (PPM)	8270 (PPB)	8240 (PPB)
UW-1	8	11/8/94	11-9-94	ND	ND	ND	ND	ND	ND	ND*	ND	ND	ND
UOW-1	6	11/8/94	11-9-94	ND	ND	ND	ND	ND	ND	7.1*	ND	ND	ND
UT-1	3.5	11/8/94	11-9-94	ND	ND	ND	ND	ND	ND	--	--	--	--
UT-2	3.5	11/8/94	11-9-94	1,300	100**	ND	ND	ND	0.13	--	--	--	--
UT-3	3.5	11/8/94	11-9-94	--	3.1	0.017	0.25	0.097	0.56	--	--	--	--
UT-4	3.5	11/8/94	11-9-94	--	2,200**	ND	26	36	300	--	--	--	--
UT-5 (CS)	11	11/10/94	11-15-94	25***	740**	ND	6.5	20	110	--	--	--	--
UT-6 (CS)	11	11/10/94	11-15-94	1.1***	ND	ND	ND	ND	0.0070	--	--	--	--
UT-7 (CS)	19.5	11/30/94	12/2/94	50***	1,300**	ND	31	26	150	--	--	--	--
UT-8 (CS)	12	11/30/94	12/2/94	24***	180**	ND	3.8	3.0	19	--	--	--	--
UT-9 (CS)	8	11/30/94	12/2/94	ND	180**	ND	ND	ND	0.59	--	--	--	--
UT-10 (CS)	8	11/30/94	12/2/94	12	140**	ND	0.62	0.84	12	--	--	--	--
UT-11 (CS)	11	11/30/94	12/2/94	1.3***	5.1**	ND	ND	0.014	0.078	--	--	--	--
UX-1	14	11/8/94	11-9-94	9,100	--	0.98	1.8	2.7	3.4	--	--	--	--
UX-2	14	11/8/94	11-9-94	ND	--	ND	ND	ND	0.011	--	--	--	--
UX-3	15.5	11/10/94	11-14-94	--	1,600	1.6	54	24	220	ND	--	--	--
UX-4	15.5	11/10/94	11-14-94	--	1,500**	ND	11	16	160	ND	--	--	--
UX-5	15.5	11/10/94	11-14-94	--	5.2**	0.021	0.022	0.030	0.14	--	--	--	--
UX-6	15	11/10/94	11-14-94	--	11**	0.011	0.067	0.046	0.40	--	--	--	--
UX-7	15	11/10/94	11-14-94	--	2.8**	0.0062	ND	0.016	0.16	--	--	--	--
UX-8	15	11/10/94	11-14-94	--	150	0.22	3.5	2.1	21	ND	--	--	--
UX-9 (CS)	16	11/10/94	11-15-94	36	41**	ND	0.074	0.43	0.37	--	--	--	--
UX-10 (CS)	16	11/10/94	11-15-94	75	27**	ND	0.062	0.29	0.049	--	--	--	--
UX-11 (CS)	17	11/11/94	11-18-94	15***	200**	ND	1.2	0.94	13	--	--	--	--
UX-12 (CS)	17	11/11/94	11-18-94	15***	230**	ND	2.6	3.0	24	--	--	--	--
UX-13 (CS)	15	11/11/94	11-18-94	1.6***	ND	ND	ND	ND	0.0060	--	--	--	--
UX-14 (CS)	17	11/11/94	11-19-94	16***	210**	ND	0.78	0.98	9.7	--	--	--	--

TABLE 1
SOIL ANALYTICAL DATA

7850 Amador Valley Road
Dublin, California

CS	= Confirmation Sample
TPH-G	= Total Petroleum Hydrocarbons calculated as Gasoline
TPH-D	= Total Petroleum Hydrocarbons calculated as Diesel
TTLC	= Total Threshold Limit Concentration
O&G	= Oil and Grease
8270	= Semi-Volatile Organics
8240	= Volatile Organics
PPM	= Parts Per Million
PPB	= Parts Per Billion
UW	= Waste Oil Excavation Sample Designation
UOW	= Sand/Water Separator Sample Designation
UT	= Trench Sample Designation
UX	= UST Excavation Sample Designation
*	= See Appendix A for remaining metals analytical data.
**	= Non Gas Mix and/or Weathered Gas
***	= Non Diesel Mix

Note: Analyses designated as ND were reported as not detected. See analytical reports for detection limits.

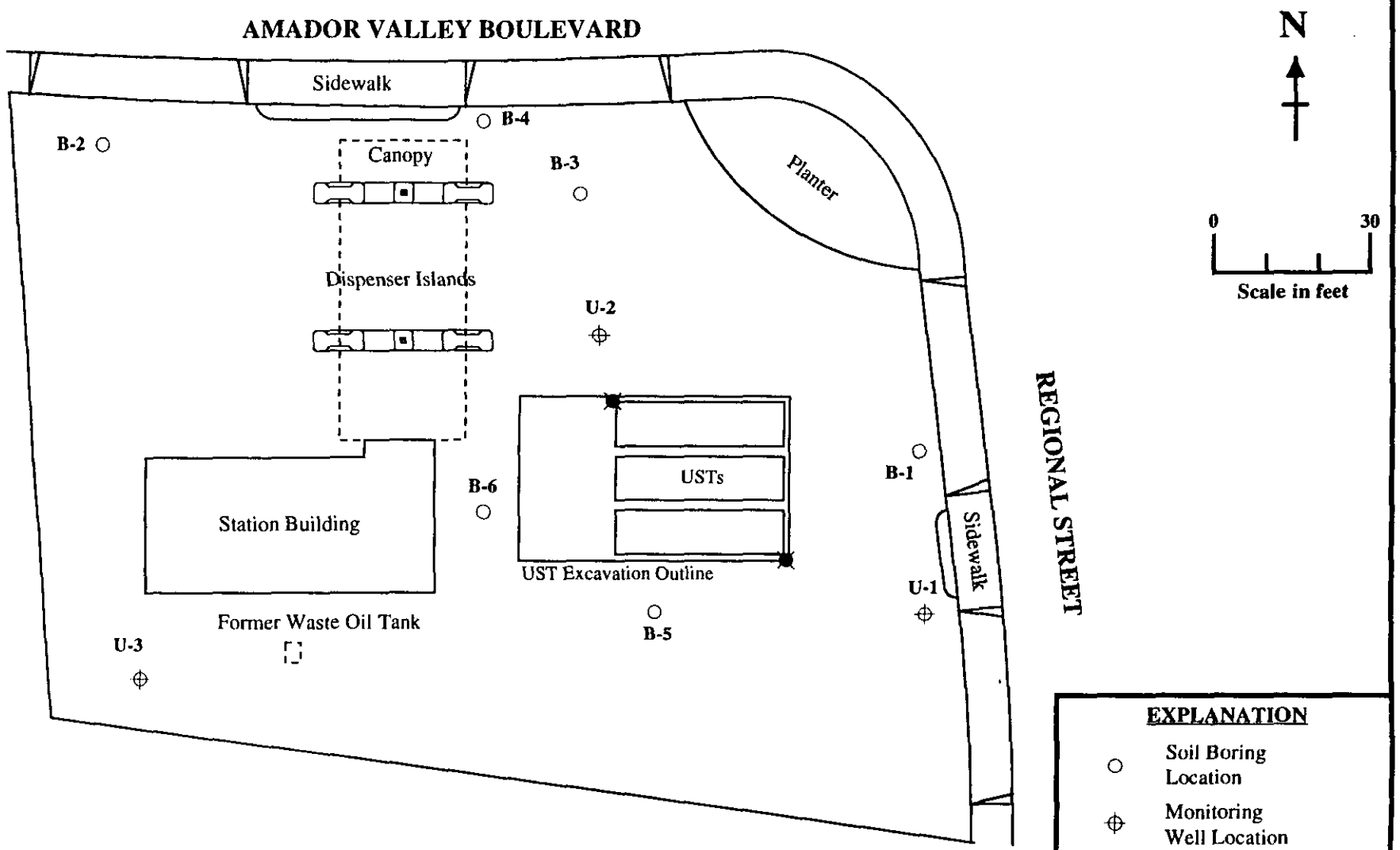


PLATE
2

SITE PLAN
Unocal SS No. 7176
7850 Amador Valley Boulevard
Dublin, California

***enviros*®**
95132.02

Drawn By: CJG | Date: 9-7-95 | Approved By: DAV | Date: 10/10/95

TABLE 2
SOIL ANALYTICAL DATA
7850 Amador Valley Boulevard
Dublin, California

SAMPLE NO.	DEPTH (FT.)	SAMPLE DATE	ANALYSIS DATE	TPH-D (PPM)	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYL BENZENE (PPM)	XYLENES (PPM)	TOTAL LEAD (PPM)
U-1-10.5	10.5	7/7/95	7/12/95	ND	ND	ND	ND	ND	ND	---
U-1-18.5	18.5	7/7/95	7/12/95	25*	26**	0.041	0.053	0.56	2.2	---
U-2-13	13	7/7/95	7/12/95	1.3*	ND	0.017	ND	0.071	ND	---
U-2-17.5	17.5	7/7/95	7/12/95	12*	97**	ND	0.21	1.7	1.5	---
U-3-17.5	17.5	7/7/95	7/12/95	ND	ND	ND	ND	ND	ND	---
B-1-13	13	7/8/95	7/12/95	1.5*	ND	ND	ND	ND	ND	---
B-1-18	18	7/8/95	7/12/95	1.0*	2.1	ND	ND	0.028	0.0088	---
B-2-16	16	7/8/95	7/12/95	ND	ND	ND	ND	ND	ND	---
B-3-11	11	7/8/95	7/12/95	ND	ND	ND	ND	ND	ND	---
B-3-17	17	7/8/95	7/12/95	ND	ND	ND	ND	ND	ND	---
B-4-11.5	11.5	7/8/95	7/12/95	ND	ND	ND	ND	ND	ND	---
B-4-16	16	7/8/95	7/12/95	1.7*	ND	ND	ND	ND	ND	---
B-5-14.5	14.5	7/8/95	7/12/95	ND	5.1**	0.13	0.020	0.29	0.12	---
B-5-18	18	7/8/95	7/12/95	4.8*	59**	0.068	ND	0.84	0.98	---
B-6-14.5	14.5	7/8/95	7/11/95	ND	4.9**	0.088	ND	0.099	0.22	---
B-6-19.5	19.5	7/8/95	7/12/95	10*	150**	0.21	3.0	3.2	19	---
US-1A-D	--	7/8/95	7/12/95	3.3*	ND	ND	ND	ND	0.0060	8.3

TPH-D = Total Petroleum Hydrocarbons calculated as Diesel.
TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.
PPM = Parts Per Million.
U, B = Soil Boring Designation
US = Soil Stockpile Designation
* = Unidentified Hydrocarbon C9-C24
** = Weathered Gas C6-C12
Notes: All data reported as <x are shown as ND (non detected). See laboratory analytical reports for detection limits.

TABLE 1
RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
Tosco (Union) 76 Service Station 7176
7850 Amador Valley Boulevard
Dublin, California

Sample #	Deph	Date Sampled	TEPHd	TPPHg	B	T	E	X	TTLC Lead
S-10-B7	10	4/15/98	ND	ND	ND	ND	ND	ND	NA
S-10-B8	10	4/15/98	ND	ND	ND	ND	ND	ND	NA
SP-1-(1-4)	NA	4/15/98	6.8	0.45	ND	ND	ND	ND	6.1

Notes:
Soil results (S) in milligrams per kilogram (mg/kg)

S-10-B7	=	Soil sample-Depth-Boring number
ND	=	Not detected above limits stated in laboratory reports.
NA	=	Not applicable.
TPPHg	=	Total purgeable petroleum hydrocarbons as gasoline analyzed using modified EPA method 8015.
TEPHd	=	Total extractable petroleum hydrocarbons as diesel analyzed using modified EPA method 8015.
BTEX	=	Benzene, Toluene, Ethylbenzene, and Total Xylenes analyzed using EPA method 8020.
TTLC Lead	=	Total threshold limit concentration of lead analyzed using EPA method 6010.

APPENDIX D

BORING LOGS

	MAJOR DIVISIONS		USCS SYMBOL		TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS LARGER THAN 200 SIEVE	GRAVELS More than half coarse fraction larger than No. 4 sieve size	Clean gravels with little or no fines	GW		Well-graded gravels, gravel-sand mixtures
			GP		Poorly graded gravels, gravel-sand mixtures
		Gravels with appreciable amounts of fines	GM		Silty gravels, poorly graded gravel-sand-clay mixtures
			GC		Clayey gravels, poorly graded gravel-sand-clay mixtures
	SANDS More than half coarse fractions smaller than No. 4 sieve size	Clean sands with little or no fines	SW		Well graded sands, gravelly sands
			SP		Poorly graded sands, gravelly sands
		Sands with appreciable amounts of fines	SM		Silty sands, poorly graded sand-silt mixtures
			SC		Clayey sands, poorly graded sand-silt mixtures
FINE-GRAINED SOILS MORE THAN HALF IS SMALLER THAN NO. 200 SIEVE	Silts and clays Liquid limit 50% or less		ML		Inorganic silts and very fine sands. Rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic clays and organic silty clays of low plasticity
	Silts and clays. Liquid limit greater than 50%		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays of medium to high plasticity, organic silts
Highly organic soils			PT		Peat and other highly organic soils
Debris created or generated by man					Building debris or rubble

KEY TO FIELD DATA

Blows/6" - 140 lb. hammer dropped 30 inches.

PPM - Parts per million

OVM - Organic Vapor Meter

Soil Color - Munsell Color Chart (1988 Edition)

First encountered groundwater

Equilibrated groundwater level

Soil sample interval

No soil sample recovery

PLATE	UNIFIED SOIL CLASSIFICATION SYSTEM ASTM D2487-85	enviros® 94000.00
	Drawn By: JLP Date: 11-28-94	

Field Exploratory Boring Log B-1

OVM (ppm)	Blows/6"	Sample Number	Depth (ft)	Soil Group (USCS)	Materials Description
					Asphalt
					Silty Clay (CL) Black (10YR 2/1); very stiff, moist, 80% clay, 15% silt, 5% very fine sand.
			5		
	6 6				
0	7				Color change to Gray (5Y 5/1); stiff, wet.
			10		
	5 10				Change to very stiff, moist.
0	13	B-1-13'			
			15		Color change to Dark Grayish Brown (10YR 4/2), very stiff, moist to wet, increase in very fine sand content.
	12 12				
0	15	B-1-18'	18	▽	Saturated at 18 ft.
					Total Depth of Boring = 18.0 feet.

BORING
B-1

UNOCAL CORPORATION - CERT
Unocal SS No. 7176
7850 Amador Valley Boulevard
Dublin, California

Borehole Diameter:	8 inches
Logged by:	C. Galantine
Driller:	Mitchell
Date Started:	7-7-95
Date Completed:	7-7-95

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Field Exploratory Boring Log B-2

OVM (ppm)	Blows/6"	Sample Number	Depth (ft)	Soil Group (USCS)	Materials Description
					Asphalt
					Silty Clay (CL) Black (10YR 2/1); very stiff, moist, 80% clay, 15% silt, 5% very fine sand.
					Gravel with Clay (GW-GC) Dark Grayish Brown (10YR 4/2), medium dense, moist, 75% fine gravel, 10% clay, 15% fine to coarse sand.
	7		5		
	7				
0	8				Clayey Silt (ML) Dark Grayish Brown (10YR 4/2), stiff, moist, 65% silt, 30% clay, 5% very fine sand.
			10		Silty Clay (CL) Dark Grayish Brown (10YR 4/2); very stiff, moist, 65% clay, 30% silt, 5% very fine sand.
	9				
	11				
0	13				
	9				Change to damp, increase in clay content, trace fine gravel.
	13				
0	17	B-2-16'	16		
					Total Depth of Boring = 16.0 feet.

BORING
B-2

UNOCAL CORPORATION - CERT
Unocal SS No. 7176
7850 Amador Valley Boulevard
Dublin, California

Borehole Diameter:	8 inches
Logged by:	C. Galantine
Driller:	Mitchell
Date Started:	7-7-95
Date Completed:	7-7-95

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95132.02

Field Exploratory Boring Log B-3

OVM (ppm)	Blows/6"	Sample Number	Depth (ft)	Soil Group (USCS)	Materials Description
					Asphalt
					Silty Clay (CL) Black (10YR 2/1); very stiff, moist, 85% clay, 10% silt, 5% very fine sand.
	4 7		5		
0	7				Color change to Dark Gray (5Y 4/1).
					Change to very stiff, increase in silt content.
	7 9		10		
0	12	B-3-11'			
	8				Change to 75% clay, 20% silt, 5% very fine sand.
0	10 13				
			15		Color change to Olive Gray (10YR 4/2), 70% clay, 20-25% silt, 5-10% very fine sand.
0	9	B-3-17'			
	9 15				Change to 60% clay, 20% silt, 20% fine to coarse sand.
	8				
0	11 13		19.5		Gravel with Clay (GW-GC) Olive Gray (5Y 4/2), medium dense, wet, 75% fine gravel, 10% clay, 15% fine to coarse sand.
					Total Depth of Boring = 19.5 feet.

BORING
B-3

UNOCAL CORPORATION - CERT
Unocal SS No. 7176
7850 Amador Valley Boulevard
Dublin, California

Borehole Diameter:	8 inches
Logged by:	C. Galantine
Driller:	Mitchell
Date Started:	7-7-95
Date Completed:	7-7-95

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Field Exploratory Boring Log B-4

OVM (ppm)	Blows/6"	Sample Number	Depth (ft)	Soil Group (USCS)	Materials Description
					Concrete
					Silty Clay (CL) Black (10YR 2/1); very stiff, moist, 85% clay, 10% silt, 5% very fine sand.
	4		5		Clayey Silt (ML) Dark Brown (10YR 3/3); stiff, moist, 60% silt, 35% clay, 5% very fine sand.
0	5 8				
	6		10		
	9				Change to very stiff.
0	10	B-4-11.5'			
	7				
	10				Color change to Olive Gray (10YR 4/2).
0	14	B-4-16'	16		
					Total Depth of Boring = 16 feet.

BORING
B-4

UNOCAL CORPORATION - CERT
Unocal SS No. 7176
7850 Amador Valley Boulevard
Dublin, California

Borehole Diameter:	8 inches
Logged by:	C. Galantine
Driller:	Mitchell
Date Started:	7-7-95
Date Completed:	7-7-95

enviros ®

95132.02

Field Exploratory Boring Log B-5

OVM (ppm)	Blows/6"	Sample Number	Depth (ft)	Soil Group (USCS)	Materials Description
					Asphalt
					Silty Clay (CL) Black (10YR 2/1); stiff, moist, 75% clay, 20% silt, 5% very fine sand.
	5		5		Clayey Silt (ML) Very Dark Grayish Brown (10YR 3/2); stiff, moist, 70% silt, 25% clay, 5% very fine to coarse sand, sand stringers and pockets.
0	6 9				Sandy Silt (ML) Black (5Y 2.5/2); stiff, moist, 80% silt, 20% very fine to medium sand.
	7		10		Silty Clay (CL) Dark Olive Gray (5Y 3/2); very stiff, moist, 55% clay, 40% silt, 5% very fine sand.
0	9 14				
	5				Silty Sand (SM) Dark Olive Gray (5Y 3/2); medium dense, moist, 75% fine to medium sand, 25% silt.
0	10 16	B-5-14.5'	15		Sandy Clay (CL) Dark Olive Gray (5Y 3/2); very stiff, moist, 65% clay, 20% very fine sand, 15% silt.
	12				Silty Clay (CL) Dark Gray (5Y 4/1); hard, moist to wet, 70% clay, 20% silt, 10% very fine sand.
11	15 18				
0	10	B-5-18'		▽	Saturated at 19 ft.
	13 19		19.5		Gravel with Clay (GW-GC) Olive Gray (5Y 4/2), dense, saturated, 75% fine gravel, 15% fine to coarse sand, 10% clay.
					Total Depth of Boring = 19.5 feet.

BORING
B-5

UNOCAL CORPORATION - CERT
Unocal SS No. 7176
7850 Amador Valley Boulevard
Dublin, California

Borehole Diameter:	8 inches
Logged by:	C. Galantine
Driller:	Mitchell
Date Started:	7-7-95
Date Completed:	7-7-95

enviro

95132.02

Field Exploratory Boring Log B-6

OVM (ppm)	Blows/6"	Sample Number	Depth (ft)	Soil Group (USCS)	Materials Description
					Concrete
					Silty Clay (CL) Black (10YR 2/1); stiff, moist, 80% clay, 15% silt, 5% very fine sand.
	14		5		
	20				Color change to Dark Gray (5Y 4/1); stiff, moist, 70% clay, 20% silt, 10% very fine sand.
0	23				
			10		
	20				
	21				
0	26				Change to 80% clay, 15% silt, 5% very fine sand.
	20				
	23				
0	30	B-6-14.5'			
			15		Color change to Dark Olive Gray (5Y 3/2).
	19				
	23				
0	29				Color change to Dark Gray (5Y 4/1) 60% clay, 30-35% silt, 5-10% very fine to medium sand.
6	16				
	24				
	31	B-6-19.5'	19.5		Gravel with Clay (GW-GC) Dark Gray (10YR 4/1), very dense, wet, 75% fine gravel, 10% clay, 15% fine to coarse sand.
					Total Depth of Boring = 19.5 feet.

BORING
B-6

UNOCAL CORPORATION - CERT
Unocal SS No. 7176
7850 Amador Valley Boulevard
Dublin, California

Borehole Diameter:	8 inches
Logged by:	C. Galantine
Driller:	Mitchell
Date Started:	7-7-95
Date Completed:	7-7-95

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95132.02

Field Exploratory Boring Log of Well U-1

OVM PPM	Blows/ 6"	Sample Number	Depth (ft)	Materials Description
			1	Asphalt
			2	Silt with Sand (ML) Fill Material
			3	Very Dark Grayish Brown (10YR 3/2); stiff, moist, 75% silt, 15% fine to coarse sand, 10% fine gravel.
	7		4	
	9		5	Silty Sand (SM)
0	13		6	Dark Grayish Brown (10YR 4/2); medium dense, moist, 75% very fine sand, 20% silt, 5% fine gravel.
			7	
			8	Silty Clay (CL)
			9	Dark Grayish Brown (10YR 4/2); very stiff, moist, 70% clay, 25% silt, 5% very fine sand, plastic, rootlets.
	8		10	
	8			
0	14	U-1-10.5'	11	
			12	Silt (ML)
	5		13	Dark Olive Gray (5Y 3/2); very stiff, moist, 80% silt, 10 % clay, 10% fine sand.
	10		14	
0	13		15	
			16	
			17	
			18	
	12		19	Saturated at 19 ft.
	14	U-1-18.5'		Gravel with Silt and Sand (GW-GM)
20	17		20	Olive Gray (5Y 4/2); dense, saturated, 75% fine to coarse gravel, 15% fine to coarse sand, 10% silt.
			21	Silty Clay (CL)
			22	Dark Olive Gray (5Y 3/2); stiff, wet, 70% clay, 25% silt, 5% very fine sand.
			23	
	9		24	
	13			
0	16		25	Color change to Dark Grayish Brown (10YR 4/2); very stiff, wet, increase in clay content.
			26	
			27	
			28	
	12		29	
	17			
0	26		30	Total Depth of Boring = 30 ft.

Well Construction: Cement; 2-in. Sch. 40 PVC; Bent. 1- Ft.; Lonestar #3 Sandpack; 2-in. Sch. 40 PVC - 0.02-in. Mill Slot

WELL			
U-1	**UNOCAL CORPORATION - CERT** Unocal SS No. 7176 7850 Amador Valley Road Dublin, California	Borehole Diameter: 8 inches Logged by: C. Galantine Driller: Mitchell Date Started: 7-6-95 Date Completed: 7-6-95	***enviros*** ® 95132.02

Field Exploratory Boring Log of Well U-2

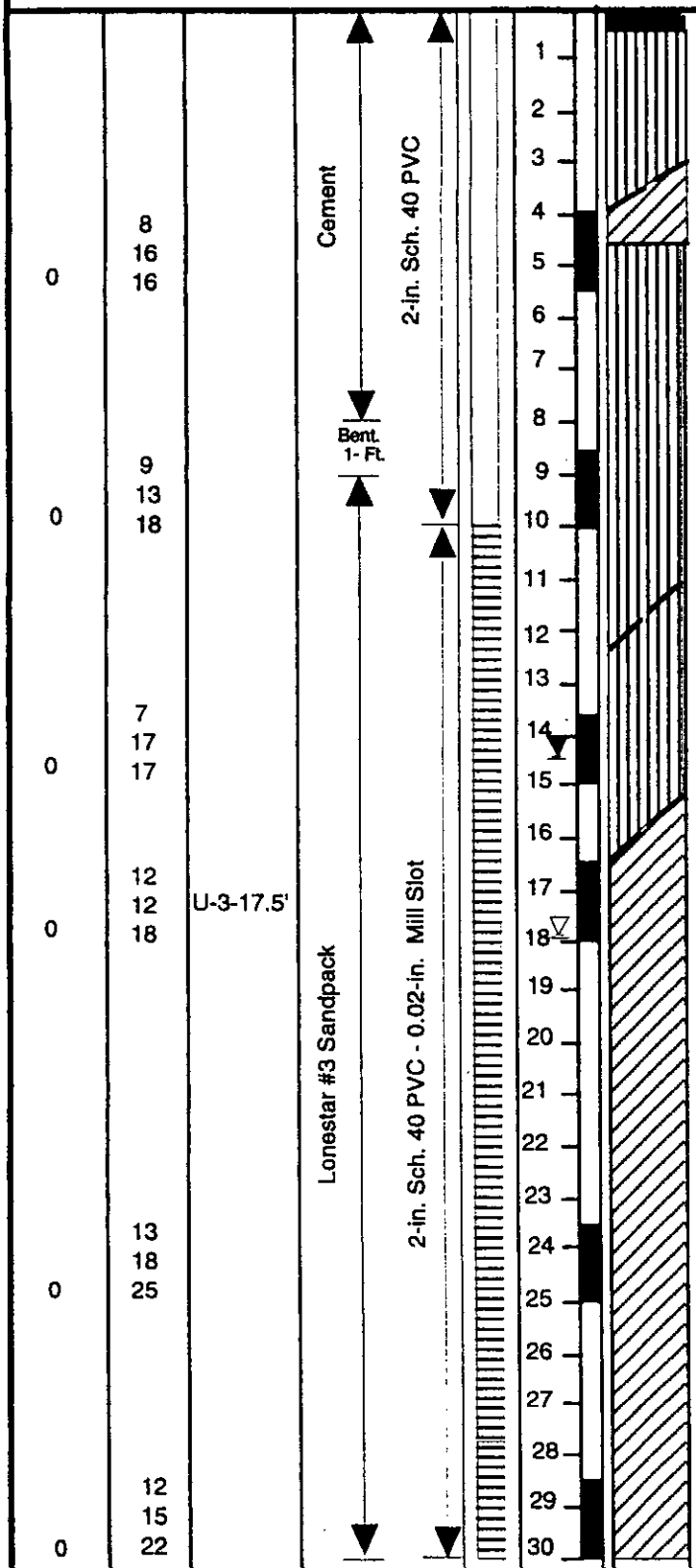
OVM PPM	Blows/ 6"	Sample Number	Well Construction	Depth (ft)	Soil Group (USCS)	Materials Description
				1		Asphalt
				2		Silt with Sand (ML) Fill Material
				3		Very Dark Grayish Brown (10YR 3/2); stiff, moist, 75% silt, 15% fine to coarse sand, 10% fine gravel.
	6		Cement	4		Silty Clay (CL)
	8			5		Black (10YR 2/1); very stiff, moist, 80% clay,
0	9		2-in. Sch. 40 PVC	6		15% silt, 5% very fine sand.
				7		Color change to Very Dark Grayish Brown (10YR 3/2); very stiff, moist, 60% clay, 30% silt, 10% very fine sand.
			Bent. 1- Ft.	8		Color change to Dark Olive Gray (5Y 3/2).
	9			9		
	11			10		
0	15			11		Color change to Very Dark Gray (10YR 3/1).
	10			12		
	15			13		
0	15	U-2-13'		14		Color change to Dark Olive Gray (5Y 3/2).
	12			15		
	12			16		
2	18			17		Saturated at 17.5 ft.
	9			18		Sandy Silt (ML)
	14	U-2-17.5'		19		Olive Gray (5Y 4/2); very hard, wet to saturated, 60% silt,
34	17			20		35% very fine sand, 5% clay.
				21		Sandy Clay (CL)
				22		Dark Gray (5Y 4/1); very stiff, wet, 60% clay,
				23		20% silt, 20% very fine sand.
	5			24		
	12			25		
0	16			26		
				27		
				28		Silty Clay (CL)
	13			29		Dark Brown (10YR 3/3); hard, wet, 85% clay,
	15			30		10% silt, 5% very fine sand.
6.3	20					Total Depth of Boring = 30 ft.

Lonestar #3 Sandpack

2-in. Sch. 40 PVC - 0.02-in. Mill Slot

WELL			
U-2	**UNOCAL CORPORATION - CERT** Unocal SS No. 7176 7850 Amador Valley Road Dublin, California	Borehole Diameter: 8 inches Logged by: C. Galantine Driller: Mitchell Date Started: 7-6-95 Date Completed: 7-6-95	***enviros*** ® 95132.02

Field Exploratory Boring Log of Well U-3



OVM PPM	Blows/ 6"	Sample Number	Depth (ft)	Soil Group (USCS)	Materials Description
			1		Asphalt
			2		Silt with Sand (ML) Fill Material
			3		Very Dark Gray (10YR 3/1); stiff, moist, 80% silt, 20% fine sand.
	8		4		Silty Clay (CL)
	16		5		Black (10YR 2/1); very stiff, moist, 80% clay, 15% silt, 5% very fine sand.
0	16		6		Sandy Silt (ML)
			7		Dark Grayish Brown (10YR 4/2); hard, moist, 55% silt, 40% very fine to coarse sand, 5% clay.
			8		
	9		9		
	13		10		Increase in silt and clay content.
0	18		11		
			12		Clayey Silt (ML)
			13		Dark Grayish Brown (10YR 4/2); hard, moist, 60% silt, 30% clay, 10% very fine to fine sand.
	7		14		
	17		15		
0	17		16		
			17		Silty Clay (CL)
	12		18		Dark Grayish Brown (10YR 4/2); very stiff, moist to saturated, 55% clay, 40% silt, 5% very fine sand.
	12	U-3-17.5'	19		
0	18		20		Saturated at 18 ft.
			21		
			22		
			23		Color change to Dark Grayish Brown (10YR 4/2); hard, wet, increase in clay content.
	13		24		
	18		25		
0	25		26		
			27		
			28		
			29		
	12		30		
	15				
0	22				Total Depth of Boring = 30 ft.

WELL			
U-3	**UNOCAL CORPORATION - CERT** Unocal SS No. 7176 7850 Amador Valley Road Dublin, California	Borehole Diameter: 8 inches Logged by: C. Galantine Driller: Mitchell Date Started: 7-6-95 Date Completed: 7-6-95	***enviros*** ® 95132.02

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		LTR	DESCRIPTION	MAJOR DIVISIONS		LTR	DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	Well-graded gravels or gravel sand mixtures, little or no fines	FINE GRAINED SOILS	SILTS AND CLAYS LL<50	ML	Inorganic silts and very fine-grained sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		GP	Poorly-graded gravels or gravel sand mixture, little or no fines			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		GM	Silty gravels, gravel-sand-clay mixtures			OL	Organic silts and organic silt-clays of low plasticity
		GC	Clayey gravels, gravel-sand-clay mixtures		SILTS AND CLAYS LL>50	MH	Inorganic silts, micaceous or diatomaceous fine-grained sandy or silty soils, elastic silts
	SAND AND SANDY SOILS	SW	Well-graded sands or gravelly sands, little or no fines			CH	Inorganic clays of high plasticity, fat clays
		SP	Poorly-graded sands or gravelly sands, little or no fines			OH	Organic clays of medium to high plasticity
		SM	Silty sands, sand-silt mixtures				
		SC	Clayey sands, sand-clay mixtures	HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils

DEPTH THROUGH WHICH SAMPLER IS DRIVEN

RELATIVELY UNDISTURBED SAMPLE

MISSED SAMPLE

GROUNDWATER LEVEL OBSERVED FROM FIRST WET SOIL SAMPLE IN BORING

STATIC GROUNDWATER LEVEL

OVM — ORGANIC VAPOR METER READING IN PARTS PER MILLION

PID — PHOTO-IONIZATION DETECTOR READING IN PARTS PER MILLION

WELL DESIGN

SAND PACK

BENTONITE ANNULAR SEAL

NEAT CEMENT ANNULAR SEAL

BLANK PVC

MACHINE-SLOTTED PVC

S-10 — SAMPLE LOCATION

BLOW/FT. REPRESENTS THE NUMBER OF BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES TO DRIVE THE SAMPLER THROUGH THE LAST 12 INCHES OF AN 18-INCH PENETRATION.

DASHED LINES SEPARATING UNITS ON THE LOG REPRESENT APPROXIMATE BOUNDARIES ONLY. ACTUAL BOUNDARIES MAY BE GRADUAL. LOGS REPRESENT SUBSURFACE CONDITIONS AT THE BORING LOCATION AT THE TIME OF DRILLING ONLY.

ENVIRONMENTAL RESOLUTIONS, INC.

PROJECT 2092

UNIFIED SOIL CLASSIFICATION SYSTEM AND LOG OF BORINGS SYMBOL KEY

TOSCO (UNION) 76 SERVICE STATION 7176
7850 Amador Valley Road
Dublin, California

PLATE

Appendix

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2092 Boring: B7/MW4 Plate: APPENDIX
Site: Tosco (Union) 76 Service Station 7176 Date: 4/15/98
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: ROBERT H. ENKEBOLL
Drill Rig: Mobile B-57 Bore Hole Diameter: 8" Signature:
Location: 80 Feet Southwest of Well U1 Registration: R.G. 5034
30 Feet South of Southern Site Boundary Logged by: Sue Shallenberger

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
				2" asphalt, 8" base	
			ML		
5	20	0		Clayey silt, some sand and gravel, very dark greyish brown, damp, subangular gravel to 1"	
			CL	Transitioning to silty clay, abundant discontinuous calcium veinlets, sand and gravel interfingered at 9 feet	
10	14	0			
				▽	
15	26	0			
			ML	Clayey silt, some gravel and sand, olive grey, moist, trace of sand, gravel rounded to subangular, up to 1" in size, sparse plant stems to 1 1/4", sand and gravel pocket 2" in diameter, fine-to coarse-grained sand, gravel to 1/4"	
		7		▼	
20	20				
			CL	Silty clay, dark greyish brown, wet, sparse gravel	
			GP	Sandy gravel, dark greyish brown, wet, gravel to 1"	
25	25	2		Total depth at 25 feet Groundwater encountered at 20 feet	

Casing Diameter: 2" Slot Size: 0.010 , Sand Size: 2/12 , Grout: Portland Cement

FN: 20923007

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2092 Boring: B8/MW5 Plate: APPENDIX
Site: Tosco (Union) 76 Service Station 7176 Date: 4/15/98
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: ROBERT H. ENKEBOLL
Drill Rig: Mobile B-57 Bore Hole Diameter: 8" Signature:
Location: 95 Feet East of Well MW4 Registration: R.G. 5034
85 Feet Southeast of Well U1 Logged by: Sue Shallenberger

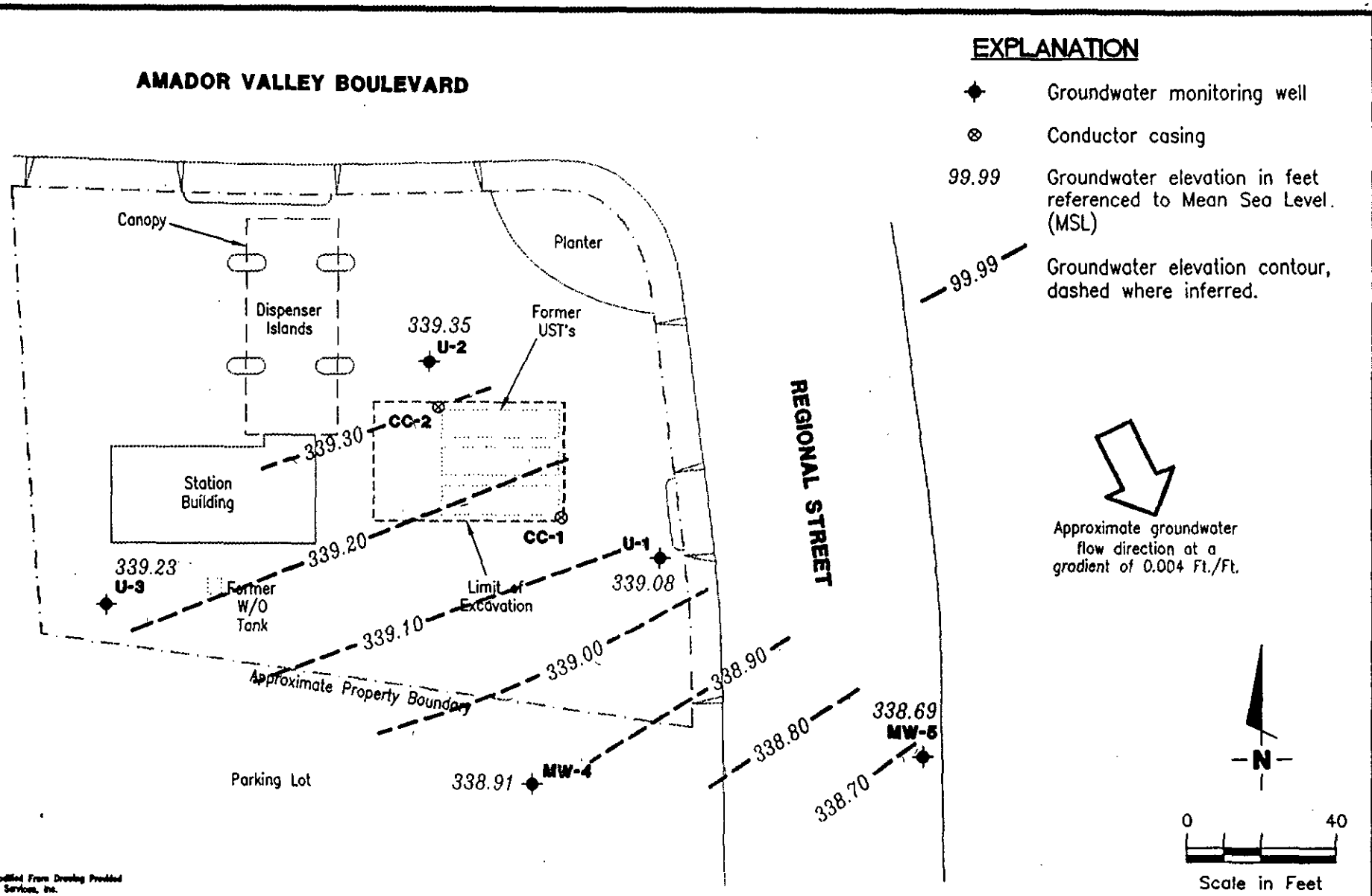
DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						3" asphalt, 14" baserock	
5	15	0			CL	Silty clay, dark greyish brown, damp with sandy gravel at 4', gravel rounded to subangular, up to 1 1/2"	
10	13	0				mottled brown and dark greyish brown, moist, with discontinuous calcium deposit veinlets, some rootlets, trace of sand, sparse gravel to 1/2"	
15	12	0					
		2			ML	Clayey silt, mottled brown and greenish grey, wet, some calcium veinlets, trace of sand	
20	9						
					CL	Clay, dark greyish brown, wet, some gravel to 1/2"	
25	22					Total depth at 25 feet Groundwater encountered at 20 feet	

Casing Diameter: 2" Slot Size: 0.010 , Sand Size: 2/12 , Grout: Portland Cement

FN: 29923008

APPENDIX E

CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA (GRI, FEBRUARY 8, 2000)

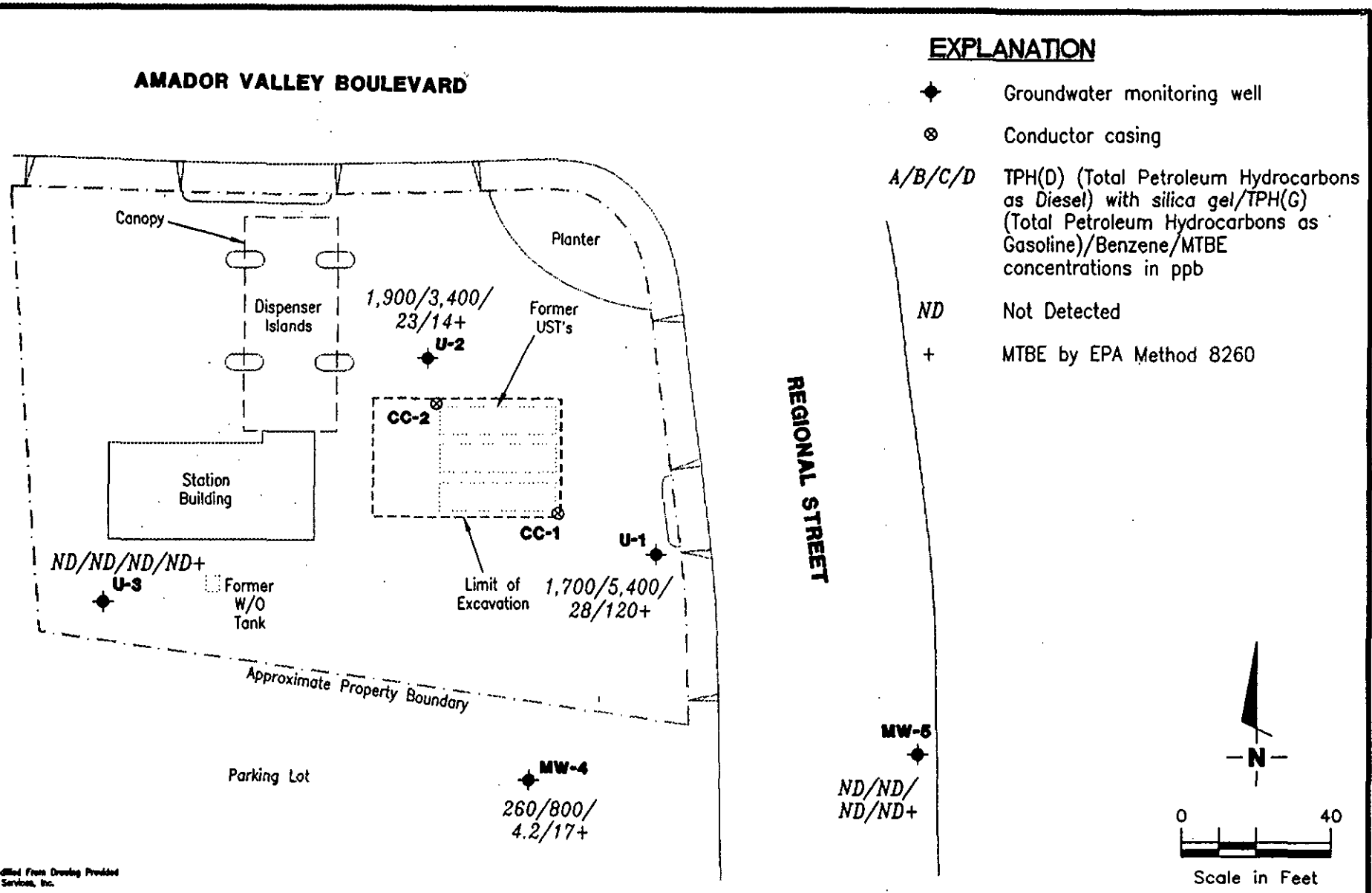


Gettler - Ryan Inc.
6747 Sierra Ct., Suite J (925) 551-7555
Dublin, CA 94568

POTENTIOMETRIC MAP
Tosco (Unocal) Service Station No. 7176
7850 Amador Valley Boulevard
Dublin, California

FIGURE
1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
180022		January 3, 2000	



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Dublin, CA 94568

CONCENTRATION MAP
Tosco (Unocal) Service Station No. 7176
7850 Amador Valley Boulevard
Dublin, California

FIGURE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
180022		January 3, 2000	

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #7176

7850 Amador Valley Boulevard

Dublin, California

Well ID/ TOC*		Date	DTW (ft.)	GWE (msl)	TPH(D)♦ (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-1											
355.62		07/08/95	12.59	343.03	9,400[3]	39,000	1,500	19	1,600	5,200	--
		10/12/95	15.38	340.24	4,200[5]	33,000	1,400	ND	1,400	3,100	--[7]
		01/11/96[1]	16.33	339.29	8,200[5]	8,300	690	11	680	1,500	--[8]
		04/11/96[2]	12.20	343.42	630[5]	3,200	110	ND	180	290	790
		07/10/96	13.84	341.78	2,200[5]	2,600	81	4.4	210	230	510
		10/30/96	15.85	339.77	560[5]	2,200	67	19	140	150	360
		01/27/97	12.20	343.42	2,300[5]	4,600	98	ND	360	290	150
		04/08/97	13.46	342.16	1,300[5]	2,800	50	ND	220	140	ND
		07/17/97	15.30	340.32	460[6]	2,300	30	4.5	140	94	190
		10/17/97	16.33	339.29	510[6]	1,500	31	6.7	110	88	220
		01/19/98	14.34	341.28	[10]1,900/1,300[10]	3,100	46	3.4	310	200	170
355.59	NP	04/23/98	11.16	344.43	--/1,700[11]	3,400	72	3.8	470	350	280
	NP	07/08/98	12.67	342.92	2,000[14]	4,500	51	ND[12]	590	430	190
		10/05/98	14.57	341.02	--/2,500[10]	7,500[16]	53	ND[12]	680	350	190/180[17]
		01/04/99	15.35	340.24	[11]2,700/2,500[11]	10,000[19]	ND[12]	ND[12]	1,200	540	ND[12]
		04/05/99	13.64	341.95	[10]920/570[10]	4,900	34	ND[12]	350	150	150/55[17]
		07/01/99	14.39	341.20	[10]2,700/3,600[26]	10,000	45	ND[12]	850	420	260/110[17]
		09/30/99	15.32	340.27	[10]2,360/1,680[10]	7,150[27]	ND[12]	ND[12]	415	84.4	[12]ND/195[17]
		01/03/00	**16.51**	**339.08**	**[26]2,000/1,700[26]**	**5,400[27]**	**28**	**8.4**	**180**	**33**	**160/120[17]**
U-2											
356.59		07/08/95	12.68	343.91	4,700[3]	17,000	430	ND	2,200	590	--
		10/12/95	16.01	340.58	3,600[5]	24,000	310	60	1,900	190	--[7]
		01/11/96[1]	17.06	339.53	8,600[5]	10,000	210	55	1,400	240	--[8]
		04/11/96[2]	12.75	343.84	1,900[5]	7,700	130	27	1,100	110	340
		07/10/96	14.42	342.17	2,300[5]	5,600	59	15	610	42	250
		10/30/96	16.82	339.77	1,800[5]	7,700	67	35	1,000	54	260
		01/27/97	12.91	343.68	660[5]	1,600	14	ND	130	7.0	100
		04/08/97	14.07	342.52	2,000[5]	4,300	35	ND	400	16	ND
		07/17/97	15.96	340.63	1,300[6]	6,200	17	22	410	ND	130
		10/17/97	17.03	339.56	1,400[6]	7,100	71	26	520	50	ND
		01/19/98	15.10	341.49	[10]2,100/1,500[10]	5,300	46	11	350	16	110
356.55	NP	04/23/98	11.74	344.81	--/1,200[11]	3,200	23	11	210	38	160
	NP	07/08/98	13.27	343.28	1,100[14]	1,600	34	8.5	100	7.4	190

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #7176

7850 Amador Valley Boulevard

Dublin, California

Well ID/ TOC*		Date	DTW (ft.)	GWE (msl)	TPH(D)♦ (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-2		10/05/98	14.90	341.65	--/1,300[10]	2,900[18]	37	8.4	110	7.3	78
(cont)		01/04/99	15.94	340.61	[11]670/250[20]	2,200[21]	35	ND[12]	17	ND[12]	86
		04/05/99	14.19	342.36	[10]660/490[10]	4,900	21	77	130	310	100/6.9[17]
		07/01/99	14.98	341.57	[24]210/440[26]	1,500[25]	7.6	ND[12]	ND[12]	ND[12]	[12]ND/35[17]
		09/30/99	16.00	340.55	[10]483/340[10]	256[27]	1.85	ND[12]	2.42	ND[12]	26.3/29.8[17]
		01/03/00	**17.20**	**339.35**	**[26]2,400/1,900[26]**	**3,400[27]**	**23**	**13**	**ND[12]**	**44**	**46/14[17]**
U-3											
358.13		07/08/95	14.58	343.55	710[3]	1,100[4]	0.57	2.1	1.7	2.4	--
		10/12/95	17.60	340.53	470[6]	560	ND	0.87	0.7	1.1	--
		01/11/96[1]	18.65	339.48	260[6]	230	0.62	0.91	0.97	1.9	--
		04/11/96	13.20	344.93	ND	68[9]	ND	ND	ND	ND	ND
		07/10/96	15.98	342.15	ND	ND	ND	ND	ND	ND	ND
		10/30/96	18.24	339.89	ND	70	ND	ND	ND	ND	ND
		01/27/97	14.41	343.72	ND	ND	ND	ND	ND	ND	ND
		04/08/97	15.73	342.40	ND	ND	ND	ND	ND	ND	ND
		07/17/97	17.54	340.59	ND	ND	ND	ND	ND	ND	ND
		10/17/97	18.64	339.49	63[6]	ND	ND	ND	ND	ND	ND
		01/19/98	16.67	341.46	[10]68/ND	ND	ND	ND	ND	ND	ND
358.09	NP	04/23/98	13.28	344.81	--/ND	ND	ND	ND	ND	ND	ND
	NP	07/08/98	14.90	343.19	80[15]	ND	ND	ND	ND	ND	ND
		10/05/98	16.50	341.59	--/ND	ND	ND	ND	ND	ND	ND
		01/04/99	17.70	340.39	ND	ND	ND	ND	ND	ND	ND
		04/05/99	15.67	342.42	ND	ND	ND	ND	ND	ND	ND/ND[17]
		07/01/99	16.79	341.30	ND	ND	ND	ND	ND	ND	ND/ND[17]
		09/30/99	17.60	340.49	ND	ND	ND	ND	ND	ND	ND/ND[17]
		01/03/00	**18.86**	**339.23**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND/ND[17]**
MW-4											
356.41		04/23/98	12.11	344.30	--/1,400[11]	2,500	5.9	6.4	16	31	ND[12]
		07/08/98	13.70	342.71	1,400[11]	1,000[13]	ND[12]	ND[12]	ND[12]	ND[12]	ND[12]
		10/05/98	15.18	341.23	--/230[10]	890[16]	ND[12]	ND[12]	ND[12]	14	ND[12]
		01/04/99	16.39	340.02	[10]71/71[10]	230[22]	0.56	1.3	1.4	1.8	10
		04/05/99	14.61	341.80	[10]340/210[10]	620[23]	ND[12]	1.8	2.1	ND[12]	6.0/9.3[17]

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #7176

7850 Amador Valley Boulevard

Dublin, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D)♦ (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-4	07/01/99	15.43	340.98	[24]260/310[26]	700[19]	2.1	ND[12]	1.9	2.4	[12]ND/21[17]
(cont)	09/30/99	16.27	340.14	[10]420/220[10]	582[27]	2.60	1.30	1.98	ND[12]	23.1/22.5[17]
	01/03/00	**17.50**	**338.91**	**[26]250/260[26]**	**800[27]**	**4.2**	**4.6**	**3.3**	**11**	**31/17[17]**
MW-5										
355.03	04/23/98	11.15	343.88	--/100[11]	120	0.53	0.90	1.0	3.8	13
	07/08/98	12.63	342.40	170[10]	ND	ND	ND	ND	ND	12
	10/05/98	14.00	341.03	--/100[10]	ND	ND	ND	ND	ND	12
	01/04/99	15.21	339.82	ND	ND	ND	ND	ND	ND	ND
	04/05/99	13.76	341.27	ND	ND	ND	ND	ND	ND	ND/ND[17]
	07/01/99	14.48	340.55	ND	ND	ND	ND	ND	ND	[12]ND/2.3[17]
	09/30/99	15.15	339.88	[10]60.4/ND	50.8[27]	ND	ND	ND	ND	ND/ND[17]
	01/03/00	**16.34**	**338.69**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND/ND[17]**
Trip Blank										
TB-LB	01/19/98	--	--	--	ND	ND	ND	ND	ND	ND
	04/23/98	--	--	--	ND	ND	ND	ND	ND	ND
	07/08/98	--	--	--	ND	ND	ND	ND	ND	ND
	10/05/98	--	--	--	ND	ND	0.70	ND	0.71	ND
	01/04/99	--	--	--	ND	ND	0.74	ND	0.92	ND
	04/05/99	--	--	--	ND	ND	ND	ND	ND	ND
	07/01/99	--	--	--	ND	ND	ND	ND	ND	ND
	09/30/99	--	--	--	ND	ND	ND	ND	ND	ND
	01/03/00	**--**	**--**	**--**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #7176

7850 Amador Valley Boulevard

Dublin, California

EXPLANATIONS:

Groundwater monitoring data and laboratory analytical results prior to January 19, 1998, were compiled from reports prepared by MPDS Services, Inc.

TOC = Top of Casing elevation
DTW = Depth to Water
(ft.) = Feet
GWE = Groundwater Elevation
msl = Relative to mean sea level
TPH(D) = Total Petroleum Hydrocarbons as Diesel
TPH(G) = Total Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
MTBE = Methyl tertiary butyl ether
ppb = Parts per billion
ND = Not Detected
-- = Not Measured/Not Analyzed
NP = No purge
PNA = Polynuclear Aromatic Hydrocarbons

* *TOC elevations were surveyed relative to msl, per the Benchmark AM-STW1977 located at the easterly return at the most easterly corner of intersection at Amador Valley Boulevard and Starward Street (Elevation = 344.17 feet msl).*

♦ Analytical results reported as follows: TPH(D)/TPH(D) with silica gel cleanup.

1 PNA compound naphthalene was detected in well U-1 at a concentration of 320 ppb, and at a concentration of 310 ppb in well U-2. All other PNA compounds were ND in both wells.

2 PNA compounds were ND.

3 Laboratory report indicates unidentified hydrocarbons C9-C26.

4 Laboratory report indicates gasoline and unidentified hydrocarbons >C12.

5 Laboratory report indicates the hydrocarbons detected appeared to be a diesel and non-diesel mixture.

6 Laboratory report indicates the hydrocarbons detected did not appear to be diesel.

7 Laboratory has potentially identified the presence of MTBE at reportable levels in the groundwater sample collected from this well.

8 *Laboratory has identified the presence of MTBE at a level above or equal to the taste and odor threshold of 40 ppb in the sample collected from this well.*

9 Laboratory report indicates the hydrocarbons detected did not appear to be gasoline.

10 Laboratory report indicates unidentified hydrocarbons C9-C24.

11 Laboratory report indicates diesel and unidentified hydrocarbons <C14.

12 Detection limit raised. Refer to analytical reports.

13 Laboratory report indicates unidentified hydrocarbons >C8.

14 Laboratory report indicates unidentified hydrocarbons <C14.

15 *Laboratory report indicates discrete peaks.*

16 Laboratory report indicates weathered gas C6-C12.

17 MTBE by EPA Method 8260.

18 Laboratory report indicates unidentified hydrocarbons <C8.

19 Laboratory report indicates gasoline and unidentified hydrocarbons C6-C12.

20 Laboratory report indicates diesel and unidentified hydrocarbons <C16.

21 Laboratory report indicates unidentified hydrocarbons C6-C12.

22 Laboratory report indicates gasoline and unidentified hydrocarbons >C10.

23 Laboratory report indicates gasoline and unidentified hydrocarbons <C7.

24 Laboratory report indicates unidentified hydrocarbons C10-C24.

25 Laboratory report indicates gasoline and unidentified hydrocarbons <C6.

26 Laboratory report indicates unidentified hydrocarbons <C16.

27 Laboratory report indicates gasoline C6-C12.

Table 2

Groundwater Analytical Results - Oxygenate Compounds

Tosco (Unocal) Service Station #7176

7850 Amador Valley Boulevard

Dublin, California

Well ID	Date	Ethanol (ppb)	TBA (ppb)	MTBE (ppb)	DIPE (ppb)	ETBE (ppb)	TAME (ppb)	EDB (ppb)	1,2-DCA (ppb)
U-1	04/05/99	ND[1]	ND[1]	55	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]
	07/01/99	ND	ND	110	ND	ND	ND	ND	ND
	09/30/99	ND[1]	ND[1]	195	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]
	01/03/00	**ND**	**ND**	**120**	**ND**	**ND**	**ND**	**ND**	**ND**
U-2	04/05/99	ND[1]	ND[1]	6.9	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]
	07/01/99	ND	ND	35	ND	ND	ND	ND	ND
	09/30/99	ND	ND	29.8	ND	ND	ND	ND	ND
	01/03/00	**ND**	**ND**	**14**	**ND**	**ND**	**ND**	**ND**	**ND**
U-3	04/05/99	ND	ND	ND	ND	ND	ND	ND	ND
	07/01/99	ND	ND	ND	ND	ND	ND	ND	ND
	09/30/99	ND	ND	ND	ND	ND	ND	ND	ND
	01/03/00	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
MW-4	04/05/99	ND	ND	9.3	ND	ND	ND	ND	ND
	07/01/99	ND	ND	21	ND	ND	ND	ND	ND
	09/30/99	ND	ND	22.5	ND	ND	ND	ND	ND
	01/03/00	**ND**	**ND**	**17**	**ND**	**ND**	**ND**	**ND**	**ND**
MW-5	04/05/99	ND	ND	ND	ND	ND	ND	ND	ND
	07/01/99	ND	ND	2.3	ND	ND	ND	ND	ND
	09/30/99	ND	ND	ND	ND	ND	ND	ND	ND
	01/03/00	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**

Table 2

Groundwater Analytical Results - Oxygenate Compounds

Tosco (Unocal) Service Station #7176
7850 Amador Valley Boulevard
Dublin, California

EXPLANATIONS:

TBA = Tertiary Butyl Alcohol
MTBE = Methyl Tertiary Butyl Ether
DIPE = Di-isopropyl Ether
ETBE = Ethyl Tertiary Butyl Ether
TAME = Tertiary Amyl Methyl Ether
EDB = 1,2-Dibromomethane
1,2-DCA = 1,2-Dichloroethane
ppb = Parts per billion
ND = Not Detected

[1] Detection limit raised. Refer to analytical reports.

ANALYTICAL METHOD:

EPA Method 8260 for Oxygenate Compounds

Table 3

Dissolved Oxygen Concentrations
Tosco (Unocal) Service Station #7176
7850 Amador Valley Boulevard
Dublin, California

Well ID	Date	Before Purging (mg/L)	After Purging (mg/L)
U-1	01/11/96	--	3.41
	04/11/96	3.77	3.78
	07/10/96[1]	1.22	--
	10/30/96[1]	1.41	--
	01/27/97[1]	1.34	--
	04/08/97[1]	2.09	--
	07/17/97[1]	2.00	--
	10/17/97[1]	1.86	--
	01/19/98[1]	2.91	--
	04/23/98[1]	0.59	--
	07/08/98[1]	1.10	--
U-2	01/11/96	--	3.99
	04/11/96	3.32	3.41
	07/10/96[1]	1.01	--
	10/30/96[1]	1.42	--
	01/27/97[1]	1.29	--
	04/08/97[1]	1.69	--
	07/17/97[1]	2.08	--
	10/17/97[1]	1.80	--
	01/19/98[1]	2.95	--
	04/23/98[1]	0.55	--
	07/08/98[1]	1.36	--
U-3	01/11/96	--	5.05
	04/11/96	5.16	4.96
	07/10/96[1]	3.44	--
	10/30/96[1]	2.18	--
	01/27/97[1]	2.61	--
	04/08/97[1]	3.73	--
	07/17/97[1]	2.65	--
	10/17/97[1]	2.44	--
	01/19/98[1]	6.51	--
	04/23/98[1]	4.72	--
	07/08/98[1]	4.35	--
CC-1	10/02/95	2.83	--

EXPLANATIONS:

Dissolved oxygen concentrations prior to January 19, 1998, were compiled from reports prepared by MPDS Services, Inc.

CC-1 = Conductor casing in the underground storage tank backfill
-- = Not Measured
mg/L = milligrams per liter

[1] The wells were not purged on this date.

Note: Measurements were taken using a LaMotte DO4000 dissolved oxygen meter.

APPENDIX F

RBCA OUTPUT FILES

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 9.3**

Site Name: Tosco 76 Service Station 7176
Site Location: 7850 Amador Valley Boulevard, Dublin, CA

Completed By: Paul D. Blank
Date Completed: 4/7/2000

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-6
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2
Groundwater DAF Option: Domenico - First Order (One-directional vert. dispersion

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: 1000 feet	Commercial: (on-site)	Regulatory(MCL): 1000 feet	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
71-43-2	Benzene	1.4E-2	>Sol	NA	NA	NA	9.3E+0	NA	3.1E+0	3.1E+0	☐	<1
100-41-4	Ethylbenzene	6.3E-2	>Sol	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
108-88-3	Toluene	5.4E-3	>Sol	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
1330-20-7	Xylene (mixed isomers)	4.9E-2	>Sol	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1

>Sol indicates risk-based target concentration greater than constituent solubility

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-311-YSX-926

Site Name: Tosco 76 Service Station 7176
Site Location: 7850 Amador Valley Boulevard, Dublin, CA

Completed By: Paul D. Blank
Date Completed: 4/7/2000

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

Target Risk (Class A & B) 1.0E-6
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2
Groundwater DAF Option: Domenico - First Order (One-directional vert. dispersion

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Soil Leaching to Groundwater			X Soil Volatilization to Indoor Air		X Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: 1000 feet	Commercial: (on-site)	Regulatory(MCL): 1000 feet	Residential: (on-site)	Commercial: (on-site)	Residential: 500 feet	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-2	Benzene	1.8E-2	>Res	NA	NA	NA	1.2E+0	2.2E+1	1.3E+0	1.2E+0	☐	<1
100-41-4	Ethylbenzene	9.2E-1	>Res	NA	NA	NA	>Res	>Res	>Res	>Res	☐	<1
108-88-3	Toluene	3.6E-1	>Res	NA	NA	NA	>Res	>Res	>Res	>Res	☐	<1
1330-20-7	Xylene (mixed isomers)	3.3E+0	>Res	NA	NA	NA	>Res	>Res	>Res	>Res	☐	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Tosco 76 Service Station 7176 | Job Identification: 209214T4 | Software: GSI RBCA Spreadsheet
Site Location: 7850 Amador Valley Boulevard | Date Completed: 4/7/00 | Version: 1.0.1
Completed By: Paul D. Blank

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined.

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
t	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF.Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (L/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
IRa.in	Inhalation rate indoor (m^3/day)	15			20	
IRa.out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm^2-yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)?	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Outdoor Air Pathways:				
SS.v	Volatiles and Particulates from Surface Soils	FALSE	FALSE	TRUE
S.v	Volatilization from Subsurface Soils	TRUE	TRUE	
GW.v	Volatilization from Groundwater	FALSE	TRUE	
Indoor Air Pathways:				
S.b	Vapors from Subsurface Soils	FALSE	TRUE	
GW.b	Vapors from Groundwater	FALSE	TRUE	
Soil Pathways:				
SS.d	Direct Ingestion and Dermal Contact	FALSE	TRUE	TRUE
Groundwater Pathways:				
GW.i	Groundwater Ingestion	TRUE	FALSE	
S.l	Leaching to Groundwater from all Soils	TRUE	FALSE	

Matrix of Receptor Distance and Location On- or Off-Site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)	3.0E+04	FALSE	3.0E+04	FALSE
S	Inhalation receptor (cm)	1.5E+04	FALSE		TRUE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	1.0E-06	
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1.0E+00	
Opt	Calculation Option (1, 2, or 3)	2	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	***5.2E+06***	1.0E+06
W	Length of affect. soil parallel to wind (cm)	***4.6E+03***	1.0E+03
W.gw	Length of affect. soil parallel to groundwater (cm	***2.4E+03***	
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02	
delta	Air mixing zone height (cm)	2.0E+02	
Lss	Thickness of affected surface soils (cm)	***9.1E+01***	
Pe	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	***2.4E-01***
Ugw.tr	Groundwater seepage velocity (cm/yr)	***7.3E-01***
Ks	Saturated hydraulic conductivity(cm/s)	7.7E-07
grad	Groundwater gradient (cm/cm)	1.0E-02
Sw	Width of groundwater source zone (cm)	3.0E+03
Sd	Depth of groundwater source zone (cm)	3.0E+02
phi.eff	Effective porosity in water-bearing unit	3.3E-01
foc.sat	Fraction organic carbon in water-bearing unit	1.0E-03
BIO?	Is bioattenuation considered?	TRUE
BC	Biodegradation Capacity (mg/L)	

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	***3.0E+01***		
hv	Vadose zone thickness (cm)	***5.6E+02***		
rho	Soil density (g/cm^3)	1.7		
foc	Fraction of organic carbon in vadose zone	***0.001***		
phi	Soil porosity in vadose zone	***0.334***		
Lgw	Depth to groundwater (cm)	***5.8E+02***		
Ls	Depth to top of affected subsurface soil (cm)	***9.1E+01***		
Lsubs	Thickness of affected subsurface soils (cm)	***4.9E+02***		
pH	Soil/groundwater pH	***6.9***		
		capillary	vadose	foundation
phi.w	Volumetric water content	***0.274***	0.1	0.12
phi.a	Volumetric air content	***0.06***	***0.234***	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	***0.00001***	

Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersivity (cm)	7.5E+02	
ay	Transverse dispersivity (cm)	7.5E+01	
az	Vertical dispersivity (cm)	7.5E+00	
Vapor			
dcy	Transverse dispersion coefficient (cm)	1.6E+03	
dcz	Vertical dispersion coefficient (cm)	1.0E+03	

RBCA CHEMICAL DATABASE

Physical Property Data

CAS Number	Constituent	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(l/kg)	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3) mol	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
71-43-2	Benzene	A	78.1	5	9.30E-02	A	1.10E-05	A	1.58	A	5.29E-03	2.20E-01	A	9.52E+01	4	1.75E+03	A			
100-41-4	Ethylbenzene	A	106.2	5	7.60E-02	A	8.50E-06	A	1.98	A	7.69E-03	3.20E-01	A	1.00E+01	4	1.52E+02	5			
108-88-3	Toluene	A	92.4	5	8.50E-02	A	9.40E-06	A	2.13	A	6.25E-03	2.60E-01	A	3.00E+01	4	5.15E+02	29			
1330-20-7	Xylene (mixed isomers)	A	106.2	5	7.20E-02	A	8.50E-06	A	2.38	A	6.97E-03	2.90E-01	A	7.00E+00	4	1.98E+02	5			

Site Name: Tosco 76 Service Station 7176 Site Location: 7850 Amador Valley Bo Completed By: Paul D. Blank Date Completed: 4/7/2000

Software version: 1.0.1

CAS Number	Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Reference Dose (mg/kg/day) Inhalation RfD_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Slope Factors 1/(mg/kg/day) Inhalation SF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
71-43-2	Benzene	-		1.70E-03	R	1.00E-01	A	1.00E-01	A	A	TRUE
100-41-4	Ethylbenzene	1.00E-01	A	2.86E-01	A	-		-		D	FALSE
108-88-3	Toluene	2.00E-01	A,R	1.14E-01	A,R	-		-		D	FALSE
1330-20-7	Xylene (mixed isomers)	2.00E+00	A,R	2.00E+00	A	-		-		D	FALSE

Site Name: Tosco 76 Service Station 71 Site Location: 7850 Amador Valley Completed By: Paul D. Blank Date Completed: 4/7/2000

Software version: 1.0.1

CAS Number	Constituent	Maximum Contaminant Level MCL (mg/L)	reference	Permissible Exposure Limit PEL/TLV (mg/m3)	ref	Relative Absorption Factors Oral	Dermal	Detection Limits Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days) Saturated	Unsaturated	ref
71-43-2	Benzene	5.00E-03	52 FR 25690	3.20E+00	OSHA	1	0.5	0.002	C	0.005	S	720	720	H
100-41-4	Ethylbenzene	7.00E-01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	1	0.5	0.002	C	0.005	S	228	228	H
108-88-3	Toluene	1.00E+00	56 FR 3526 (30 Jan 91)	1.47E+02	ACGIH	1	0.5	0.002	C	0.005	S	28	28	H
1330-20-7	Xylene (mixed isomers)	1.00E+01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	1	0.5	0.005	C	0.005	S	360	360	H

Site Name: Tosco 76 Service Station 71 Site Location: 7850 Amador Valley Boulevard, Dublin, CA Completed By: Paul D. Blank Date Completed: 4/7/2000

Software version: 1.0.1

Site Name: Tosco 76 Service Station 7176
Site Location: 7850 Amador Valley Boulevard, Dublin, CA

Completed By: Paul D. Blank
Date Completed: 5/1/2000

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-6
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

■ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2
Groundwater DAF Option: Domenico - No Decay (One-directional vert. dispersion

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: 1000 feet	Commercial: (on-site)	Regulatory(MCL): 1000 feet	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only If "yes" left
1634-04-4	Methyl t-Butyl Ether	5.5E-2	4.7E-3	NA	7.1E-2	NA	1.0E+2	NA	9.1E+0	7.1E-2	☐	<1

>Sol indicates risk-based target concentration greater than constituent solubility

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-311-YSX-926

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Tosco 76 Service Station 7176 | Job Identification: 209214T4 | Software: GSI RBCA Spreadsheet
Site Location: 7850 Amador Valley Boulevard | Date Completed: 5/1/00 | Version: 1.0.1
Completed By: Paul D. Blank

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined.

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
t	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF.Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (L/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
IRa.in	Inhalation rate indoor (m^3/day)	15			20	
IRa.out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm^2-yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)?	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	TRUE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Outdoor Air Pathways:				
SS.v	Volatiles and Particulates from Surface Soils	FALSE	FALSE	TRUE
S.v	Volatilization from Subsurface Soils	TRUE	TRUE	
GW.v	Volatilization from Groundwater	FALSE	TRUE	
Indoor Air Pathways:				
S.b	Vapors from Subsurface Soils	FALSE	TRUE	
GW.b	Vapors from Groundwater	FALSE	TRUE	
Soil Pathways:				
SS.d	Direct Ingestion and Dermal Contact	FALSE	TRUE	TRUE
Groundwater Pathways:				
GW.i	Groundwater Ingestion	TRUE	FALSE	
S.l	Leaching to Groundwater from all Soils	TRUE	FALSE	

Matrix of Receptor Distance and Location On- or Off-Site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)	3.0E+04	FALSE	3.0E+04	FALSE
S	Inhalation receptor (cm)	1.5E+04	FALSE		TRUE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	1.0E-06	
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1.0E+00	
Opt	Calculation Option (1, 2, or 3)	2	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	***5.2E+06***	1.0E+06
W	Length of affect. soil parallel to wind (cm)	***4.6E+03***	1.0E+03
W.gw	Length of affect. soil parallel to groundwater (cm	***2.4E+03***	
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02	
delta	Air mixing zone height (cm)	2.0E+02	
Lss	Thickness of affected surface soils (cm)	***9.1E+01***	
Pe	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	***2.4E-01***
Ugw.tr	Groundwater seepage velocity (cm/yr)	***7.3E-01***
Ks	Saturated hydraulic conductivity(cm/s)	7.7E-07
grad	Groundwater gradient (cm/cm)	1.0E-02
Sw	Width of groundwater source zone (cm)	3.0E+03
Sd	Depth of groundwater source zone (cm)	3.0E+02
phi.eff	Effective porosity in water-bearing unit	3.3E-01
foc.sat	Fraction organic carbon in water-bearing unit	1.0E-03
BIO?	Is bioattenuation considered?	FALSE
BC	Biodegradation Capacity (mg/L)	

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	***3.0E+01***		
hv	Vadose zone thickness (cm)	***5.5E+02***		
rho	Soil density (g/cm^3)	1.7		
foc	Fraction of organic carbon in vadose zone	***0.001***		
phi	Soil porosity in vadose zone	***0.334***		
Lgw	Depth to groundwater (cm)	***5.8E+02***		
Ls	Depth to top of affected subsurface soil (cm)	***9.1E+01***		
Lsubs	Thickness of affected subsurface soils (cm)	***4.9E+02***		
pH	Soil/groundwater pH	***6.8***		
		capillary	vadose	foundation
phi.w	Volumetric water content	***0.274***	0.1	0.12
phi.a	Volumetric air content	***0.06***	***0.234***	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	***0.00001***	

Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersivity (cm)	7.5E+02	
ay	Transverse dispersivity (cm)	7.5E+01	
az	Vertical dispersivity (cm)	7.5E+00	
Vapor			
dcy	Transverse dispersion coefficient (cm)	1.6E+03	
dcz	Vertical dispersion coefficient (cm)	1.0E+03	

RBCA CHEMICAL DATABASE

Physical Property Data

CAS Number	Constituent	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(l/kg)	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3/mol)	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
1634-04-4	Methyl t-Butyl Ether	O	88.146	5	7.92E-02	6	9.41E-05	7	1.08	A	5.77E-04	2.40E-02		2.49E+02		4.80E+04	A			

Site Name: Tosco 76 Service Station 7176 Site Location: 7850 Amador Valley Bo Completed By: Paul D. Blank Date Completed: 5/1/2000

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Toxicity Data

CAS Number	Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Inhalation RfD_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Inhalation SF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
1634-04-4	Methyl t-Butyl Ether	5.00E-03	R	8.57E-01	R	1.00E-01		1.00E-01			FALSE

Site Name: Tosco 76 Service Station 71 Site Location: 7850 Amador Valley Completed By: Paul D. Blank Date Completed: 5/1/2000

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Miscellaneous Chemical Data

CAS Number	Constituent	Maximum Contaminant Level MCL (mg/L)	reference	Permissible Exposure Limit PEL/TLV (mg/m3)	ref	Relative Absorption Factors Oral	Dermal	Detection Limits Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days) Saturated	Unsaturated	ref
1634-04-4	Methyl t-Butyl Ether	1.30E-02		1.44E+02	ACGIH	1	0.5					360	180	H

Site Name: Tosco 76 Service Station 71 Site Location: 7850 Amador Valley Boulevard, Dublin, CA Completed By: Paul D. Blank Date Completed: 5/1/2000

Software version: 1.0.1