DRAFT
QUARTERLY GROUNDWATER SAMPLING REPORT FOR NOVEMBER 2004

at

2737 West Commodore Way and
2750 West Commodore Way
Seattle, Washington

Prepared for

Time Oil Company

March 2005

Prepared by

TETRA TECH EC, INC.

12100 NE 195th, Suite 200
Bothell, WA 98011

DRAFT
QUARTERLY GROUNDWATER SAMPLING REPORT FOR NOVEMBER 2004

at

2737 West Commodore Way and
2750 West Commodore Way
Seattle, Washington

Prepared for

Time Oil Company
2737 West Commodore Way
Seattle, WA 98199
(206) 285-2400

March 2005

Prepared by

TETRA TECH EC, INC.

12100 NE 195th, Suite 200
Bothell, WA 98011
(425) 482-7600

CONTENTS

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
°C	degrees Celsius
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
HDPE	high-density polyethylene
mg/L	milligrams per liter
mL/min	milliliters per minute
mS/cm	millisiemens per centimeter
msl	mean sea level
µg/L	micrograms per liter
MTCA	Model Toxics Control Act
NOAA	National Oceanic and Atmospheric Administration
NTU	nephelometric turbidity unit
NWTPH-Dx	Northwest total petroleum hydrocarbon-diesel range hydrocarbons
NWTPH-Gx	Northwest total petroleum hydrocarbon-gasoline range hydrocarbons
ORP	oxidation reduction potential
PCP	pentachlorophenol
sim	selective ion monitoring
SQuiRT™	Screening Quick Reference Tables
TOC	Time Oil Company
VOC	volatile organic compound

1. INTRODUCTION

Investigations to assess groundwater levels and specific chemical concentrations were conducted at two Time Oil Company (TOC) properties located at 2737 West Commodore Way and 2750 West Commodore Way, Seattle, Washington (Figure 1-1). TOC retained Tetra Tech EW, Inc. (TtEW) to conduct quarterly groundwater monitoring at these properties as part of an independent cleanup action.

Monitoring wells at the properties are sampled on a quarterly basis, which began in July 2001. This quarterly report presents the results of the November 2004 groundwater sampling activities at 2737 and 2750 West Commodore Way. Figure 1-2 provides a plan view of the properties relative to one another. The report is organized as follows:

- **Section 1** briefly describes the purpose and organization of the report.
- **Section 2** describes the field methods used to measure water levels and to collect samples.
- **Section 3** presents the groundwater level data.
- **Section 4** presents the analytical results.
- **Section 5** describes the conclusions and provides recommendations for future actions.
- **Appendix A** provides the data packages from the analytical laboratory for November 2004.

2. METHODS AND PROCEDURES

Field activities for November 2004 at the two TOC properties included water level measurement and quarterly groundwater sampling. This section presents a brief description of the specific methods and procedures used for quarterly monitoring.

2.1 GROUNDWATER ELEVATION SURVEY

Groundwater elevations are determined each quarter by measuring the depth to water in 28 wells at 2737 West Commodore Way and 7 wells at 2750 West Commodore Way. The depth to water measurements are collected on a single day and subtracted from the survey level at the top of the well casing to calculate the potentiometric surface (water table elevation).

Before measuring the depth to groundwater in the first well, the water level indicator is calibrated by visually comparing the markings on the tape to the markings on a measurement tape. After removing the well cap and allowing the well to stabilize, the probe is lowered into the well until the sound alarm is activated, indicating that the probe has touched the water surface. The static depth to water is read directly from the tape by holding the tape to the permanent mark on the well casing or cap. The probe is then raised and lowered to confirm the reading. An oil/water interface probe is then used in a similar manner in wells where floating product is suspected to be present.

2.2 GROUNDWATER SAMPLING

Groundwater samples are collected each quarter using a low-flow micro-purging technique in accordance with U.S. Environmental Protection Agency (EPA) guidelines (EPA 1996, EPA/540/S-95/504). Each monitoring well is micro-purged (300 to 500 milliliters per minute [mL/min]) using a peristaltic pump with disposable high-density polyethylene (HDPE) tubing. A small section of thick-walled silicon is used around the head of the peristaltic pump to achieve the pressures necessary to draw the groundwater up the well. Groundwater samples are collected in laboratory-supplied glassware and hand delivered to the laboratory each evening after sampling.

Groundwater sampling was conducted in November 2004 in accordance with the following sampling procedures:

1. Calibrate field instruments in accordance with the manufacturer's directions. Record all calibration data in the field log book.
2. Confirm well identification using site map.
3. Measure the depth to water at each well. Record the depth to water. Decontaminate the water level meter before each measurement.
4. Carefully lower the HDPE tubing into the well with as little disturbance to the groundwater as possible. Place the intake at the middle of the screen interval. Set pump rate to ensure the water column in the well does not drop more than 0.2 feet below the initial water level reading.
5. Purge the well at a flow rate of 300 to 500 mL/min. Monitor water level to ensure minimal drawdown. Monitor water quality parameters every 3 to 5 minutes during purging (turbidity, pH, temperature, conductivity, oxidation reduction potential [ORP], and dissolved oxygen) using in-line monitoring equipment. Stabilization is achieved if three successive readings are within ±0.1 pH units, ±1 degree Celsius (°C) for temperature, ±10 percent for conductivity, ±10 percent for dissolved oxygen, and ± 10 millivolts for ORP.
6. When water quality parameters are stable for three consecutive readings, turn off the pump and remove the tubing from the well or leave the tubing in place securing it at the surface within the well head. Place the tubing in a sealed, labeled plastic bag. Replace the well cap and seal the monument.
7. Return within 24 hours and insert the appropriate HDPE tubing into the well. Connect the pump and adjust the pump flow to a rate of approximately 200 mL/min. Collect samples for volatile organic compounds (VOC) and gasoline analyses first. Fill the containers so that no headspace exists.
8. Increase the flow rate to approximately 300 to 500 mL/min while maintaining minimal to no drawdown and collect the remaining samples.

2.3 GROUNDWATER ANALYSES

Groundwater samples were collected on November 17 through November 19, 2004, using laboratory-supplied glassware. Table 2-1 shows the wells sampled in November 2004. The groundwater samples were delivered to the laboratory each evening after sampling and,

depending on the specific data needs, were analyzed for all or some of the following contaminants:

- Gasoline range hydrocarbons, using Washington State Department of Ecology's (Ecology's) Northwest total petroleum hydrocarbon-gasoline (NWTPH-Gx) method;
- Benzene, toluene, ethylbenzene, xylene (BTEX) using EPA Method 8021B;
- Diesel and Lube oil range hydrocarbons, using Ecology's Northwest total petroleum hydrocarbon-diesel extended (NWTPH-Dx) method; and
- Pentachlorophenol (PCP), using EPA Method 8270-sim (selective ion monitoring).

The groundwater samples analyzed for diesel and oil underwent a silica gel cleanup before analysis. This cleanup was done to remove naturally occurring organic material that may interfere with the analysis. Groundwater samples were analyzed by North Creek Analytical Laboratories, Inc., in Bothell, Washington.

3. GROUNDWATER LEVEL DATA

Field activities conducted at the TOC properties included the quarterly collection of water level measurements. This section describes the collection of November 2004 water level measurements and summarizes groundwater flow directions beneath 2737 and 2750 West Commodore Way.

Measurements for depth to water were made using an electronic measuring tape with markings every 0.01 foot. All water levels were measured on a single day. Measurements were subtracted from surveyed measuring point elevations to produce the water level elevations. Where present, the thickness and specific gravity (0.8) of free phase product fuel on the water table was considered when calculating the elevation of the water table.

3.1 2737 WEST COMMODORE WAY

Water level measurements were collected from 28 wells at 2737 West Commodore Way on November 17, 2004. Table 3-1 provides the well construction information, and Table 3-2 shows the groundwater elevations in feet above mean sea level (msl). In general, the water levels have increased slightly relative to July 2004, possibly due to seasonal variation. The groundwater elevations during the four quarter period are generally consistent showing a slight seasonal decrease (average 0.10 feet) relative to July 2004. Figure 3-1 shows the locations of the wells at 2737 West Commodore Way and the water table elevation (potentiometric space). Groundwater flows to the north toward the Ship Canal. The groundwater flow direction north of the Lower Tank Yard appears to be bifurcated, possibly by the fiber-grained material in the vicinity of Wells 01MW-16 and 01MW-10. The groundwater gradient at the site differs in the tank yards relative to the rest of the site. The gradient across the tank yards (Wells 01MW-17 to 01MW-23) is approximately 0.003 feet per foot and steepens towards the north wall of the Lower Tank Yard. The unpaved surface of the tank yards allows for greater infiltration, resulting in higher groundwater elevations and mounding. The gradient outside the tank yards (Well 01MW-01 to Well MW-09) is approximately 0.029 feet per foot.

3.2 2750 WEST COMMODORE WAY

Water level measurements were collected from seven wells at 2750 West Commodore Way on November 17, 2004. In general, the water levels at 2750 West Commodore Way

have decreased (average 0.63 feet), relative to July 2004. The only exception is Well 02MW-05, which has shown an increase in groundwater elevation for the past year. Figure 3-2 shows the locations of the wells and potentiometric surface at 2750 West Commodore Way. Groundwater flows to the north toward the Ship Canal. The groundwater gradient from Wells 02MW-05 to Well 02MW-02 is approximately 0.017 feet per foot toward the north based on the potentiometric surface map.

4. ANALYTICAL RESULTS

The MTCA Method A Cleanup Levels for groundwater are intended to provide conservative cleanup levels for drinking water beneficial uses at sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. Because the groundwater beneath the TOC sites is not used as a source of drinking water or for municipal supply, comparison of groundwater concentrations to the MTCA Method A Cleanup Levels is not technically appropriate. The primary point of exposure to groundwater beneath the sites is through the discharge of groundwater to the nearby Ship Canal, a freshwater body on the north side of 2750 West Commodore Way. Based on this exposure scenario (no groundwater use but discharge to a water body), groundwater concentrations were compared to the National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRT™) values. These values provide screening levels for acute and chronic exposures to both freshwater and saltwater.

The SQuiRT™ values are non-promulgated values developed by the Coastal Protection and Restoration Division of NOAA to protect aquatic habitats that may be affected by hazardous waste sites. They are applicable for use at these TOC sites based on the site-specific groundwater use. Because the SQuiRT™ values are non-promulgated values, concentrations above the SQuiRT™ values do not indicate a regulatory exceedance. It is important to remember that between the various wells and the point of exposure, various chemical, physical, and biological processes occur that are likely to reduce the contaminant concentrations. Therefore, a concentration in a well is most likely not the same concentration at the point of exposure. If SQuiRT™ values were not available for a particular analyte, then the MTCA Method A default values were used.

Table 4-1 presents the groundwater parameters measured during sampling. Tables 4-2 and 4-3 show analytical results for the groundwater samples collected in November 2004 at 2737 and 2750 West Commodore Way, respectively. The footnotes at the bottom of each table identify the applicable action levels.

Appendix A contains the laboratory data packages for the samples collected. The data packages are presented in their entirety to allow the reader to evaluate the data relative to the quality control data associated with the environmental samples.

4.1 QUARTERLY GROUNDWATER SAMPLING AT 2737 WEST COMMODORE WAY

The following analytes were detected above the applicable action levels (Table 4-2):

- PCP was detected above the NOAA SQuiRT™ value (15 micrograms per liter [µg/L]) in Well 01MW-26 at a concentration of 20.3 µg/L (20.9 µg/L in duplicate sample).
- Diesel range hydrocarbons were detected above the MTCA Method A Cleanup Level (0.5 milligrams per liter [mg/L]) in Wells 01MW-03 and 01MW-09 at concentrations of 0.925 mg/L (01MW-03) and 0.736 mg/L (01MW-09).
- Gasoline range hydrocarbons were detected above the MTCA Method A Cleanup Level (800 µg/L with benzene present) in Wells 01MW-02, 01MW-03, 01MW-09, 01MW-12, and 01MW-26. The concentrations in these wells ranged from 1,130 µg/L (1,120 µg/L in duplicate sample) (Well 01MW-26) to 20,100 µg/L (Well 01MW-02).
- Benzene was detected above the NOAA SQuiRT™ value (5,300 µg/L) in Well 01MW-02 at a concentration of 8,600 µg/L.

4.2 QUARTERLY GROUNDWATER SAMPLING AT 2750 WEST COMMODORE WAY

The following analyte was detected above the applicable action level (Table 4-3):

- Gasoline was detected above the MTCA Method A Cleanup Level (800 µg/L with benzene present) in Well 01MW-04 at a concentration of 3,340 µg/L (3,250 µg/L in the duplicate sample).

5. CONCLUSIONS AND RECOMMENDATIONS

The following subsections describe the extent of impacted groundwater beneath the two properties. Figures 5-1 through 5-3 show concentration contour maps for diesel, gasoline, and benzene, respectively.

5.1 2737 WEST COMMODORE WAY

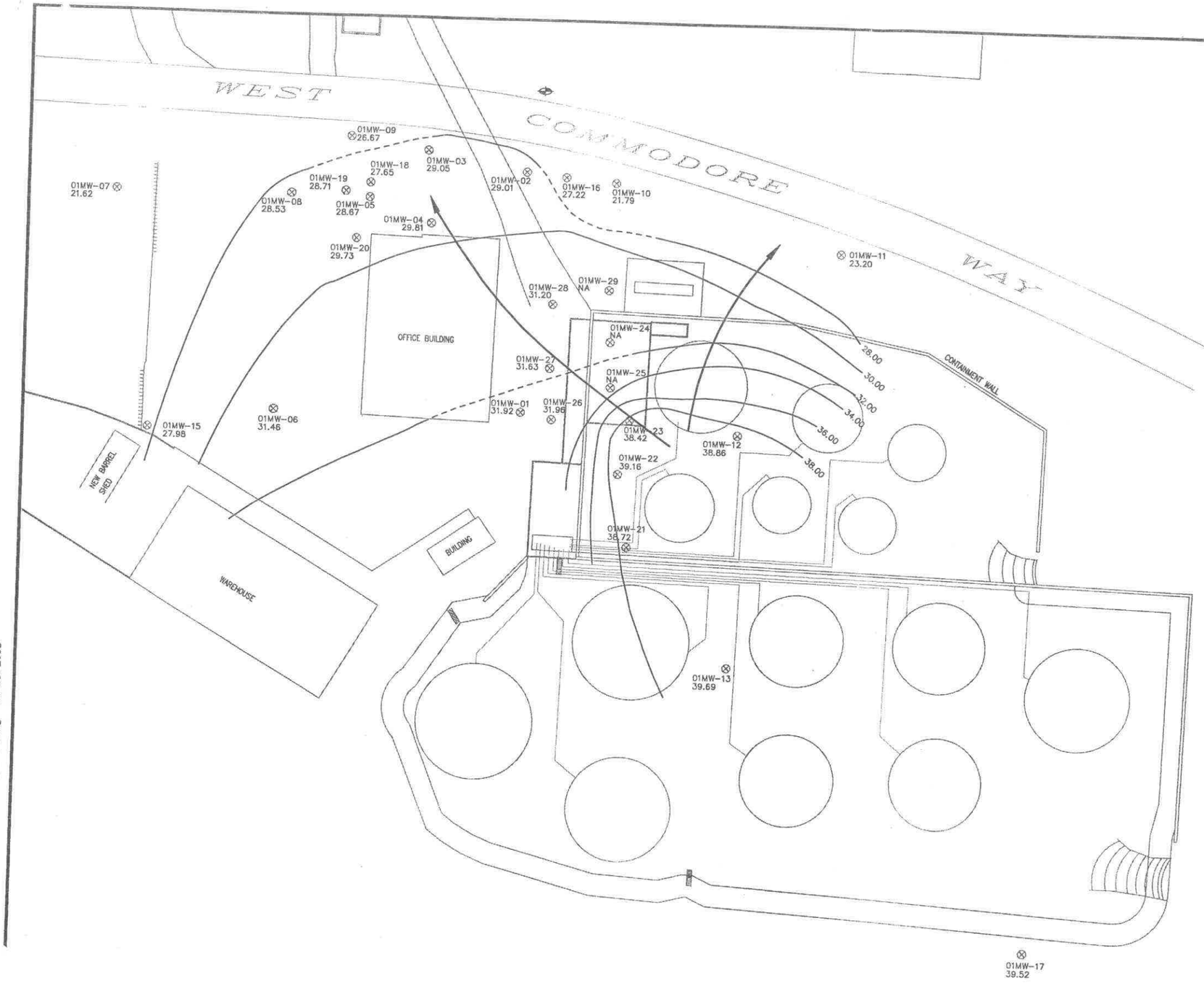
The concentrations of diesel in groundwater are similar to those detected in July 2004. The diesel plume appears to be centralized beneath the former manifold area (01MW-24 and 01MW-25) and the former PCP/Diesel Mixing Area (01MW-21 and 01MW-22) in the Lower Tank Yard. The diesel plume is interpreted to extend towards the north due to the presence of product in Wells 01MW-16, 01MW-10, and 01MW-28.

In general the concentrations of gasoline have increased slightly in Wells 01MW-03 and 01MW-02 relative to those measured in July 2004. The concentrations in Well 01MW-09 are variable and may be influenced by the free-phase product present. The northern extent of the gasoline-impacted groundwater on the property is indicated above the MTCA Method A Cleanup Level by Well 01MW-02 north of the Former Loading Dock and Well 01MW-09 northwest of the office building.

5.2 2750 WEST COMMODORE WAY

Gasoline was the only analyte detected above the MTCA Method A Cleanup Level in groundwater at the property. The exceedance of gasoline concentrations was limited to Well 02MW-04 at a concentration of 3,340 μg/L (3,250 μg/L in the duplicate sample). The gasoline-impacted groundwater does not appear to be migrating toward the Ship Canal based on the lack of detection in the well (01MW-02) near the shoreline.

FIGURES



LEGEND

- 01MW-13 31.29 — MONITORING WELL WITH GROUNDWATER ELEVATION (FEET MSL)
- EQUIPOTENTIAL CONTOUR (DASHED WHERE INFERRED)
- SURVEY MONUMENT
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES

1. CONTOUR INTERVAL IS 2.00 FEET.
2. GROUNDWATER ELEVATIONS IN WELLS 01MW-10 AND 01MW-16 ARE INTERPRETED TO BE UNREPRESENTATIVE OF SHALLOW AQUIFER CONDITIONS DUE TO THICK LAYER OF FINE GRAINED MATERIAL.

N

GRAPHIC SCALE

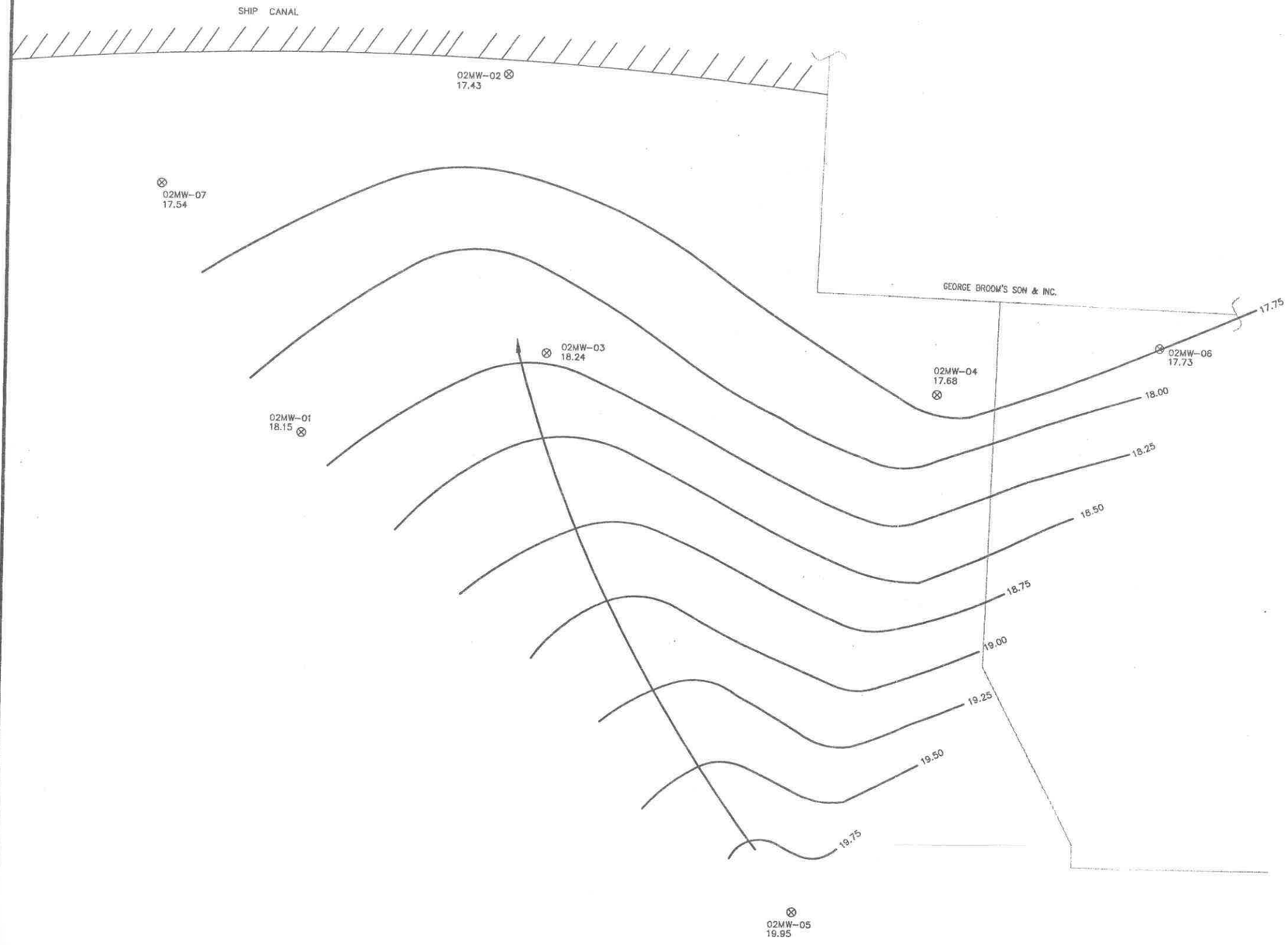
0 30 60

SCALE IN FEET

TETRA TECH FW, INC.

Figure 3-1
Location of Wells and Potentiometric Surface
at 2737 West Commodore Way,
November 17, 2004

November 2004\ETIDFG 3-1_11-04.dwg 01/26/2005



LEGEND

02MW-05 ⊗ 19.43 — MONITORING WELL WITH GROUNDWATER ELEVATION (FEET MSL)

19.00 — EQUIPOTENTIAL CONTOUR (FEET MSL) (DASHED WHERE INFERRED)

APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES

1. CONTOUR INTERVAL IS 0.25 FEET.

N

GRAPHIC SCALE

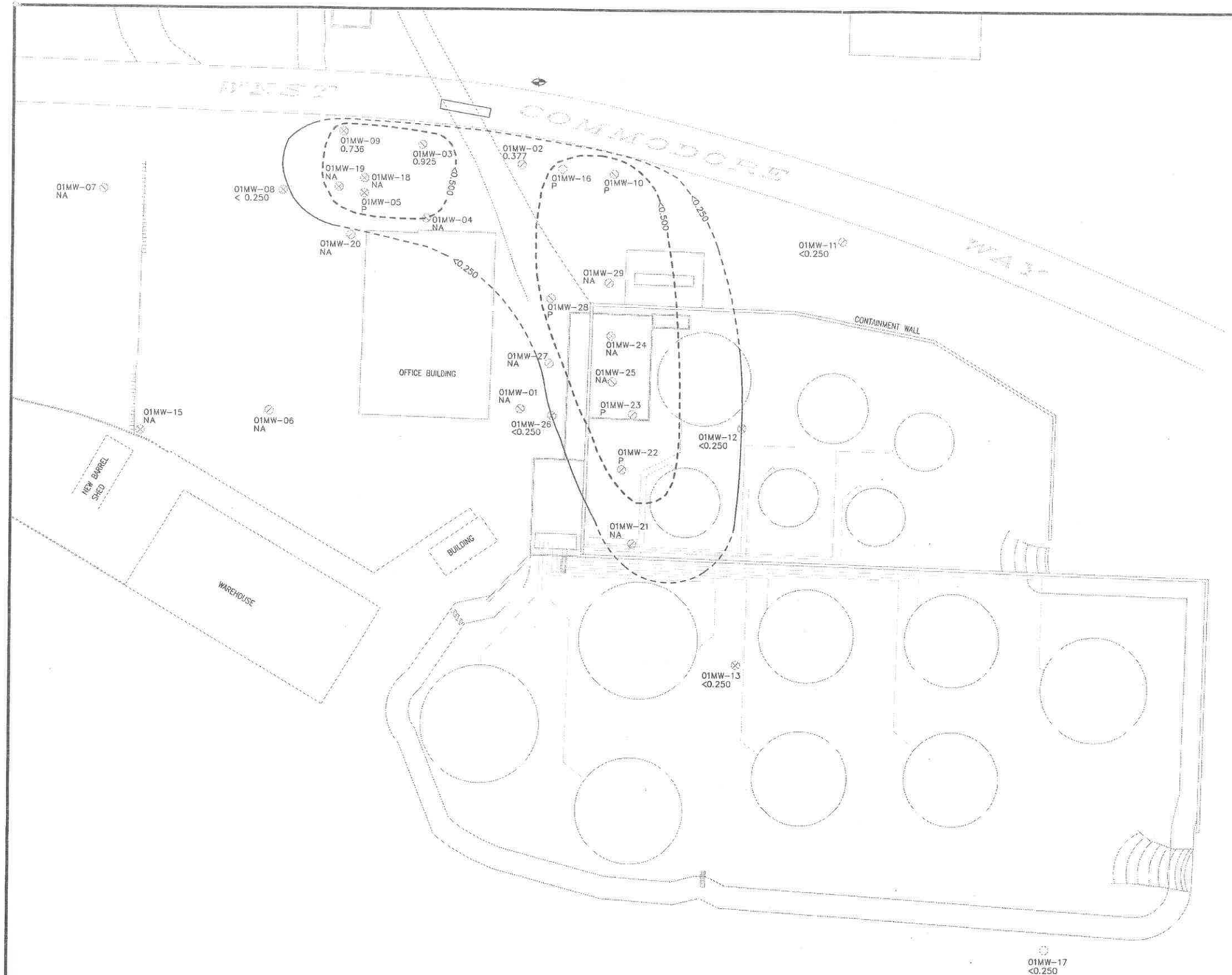
0 10 20

SCALE IN FEET
HORIZONTAL SCALE

TETRA TECH FW, INC.

Figure 3-2
Location of Wells
and Potentiometric Surface at
2750 West Commodore Way,
November 17, 2004

I:\Projects\2306331?\dwg\November 2004\ETIDFG 3-2_11-04.dwg 01/26/2005



LEGEND

- 01MW-13 <0.250 — MONITORING WELL WITH CONCENTRATION (mg/L)
- MTCA METHOD A CLEANUP LEVEL (0.500 mg/L) (DASHED WHERE INFERRED)
- CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- SURVEY MONUMENT
- P — PRODUCT

NOTES

1. CONCENTRATION CONTOURS ARE BASED ON ANALYTICAL RESULTS. PLEASE SEE TEXT FOR EXPLANATION OF RESULTS.

N

GRAPHIC SCALE

0 30 60

SCALE IN FEET

TETRA TECH FW, INC.

Figure 5-1
Diesel-Impacted Groundwater at
2737 West Commodore Way,
November 2004

I:\Projects\2306312\dwg\November 2004\ETIDFG 5-1_11-04.dwg 01/26/05

TABLES

Table 2-1. November 2004 Sampling Matrix

Well	NWTPH-Gx/BTEX	NWTPH-Dx	PCP	Sample Type
2737 West Commodore Way				
01MW-02	1	1	na	Environmental
01MW-03	1	1	na	Environmental
01MW-08	1	1	na	Environmental
01MW-09	1	1	1	Environmental
01MW-11	1	1	na	Environmental
01MW-12	1	1	na	Environmental
01MW-13	1	1	na	Environmental
01MW-17	1	1	na	Environmental
01MW-26	1	1	1	Environmental
01MW-26	1	1	1	Field Duplicate
2750 West Commodore Way				
02MW-01	1	1	na	Environmental
02MW-02	1	1	na	Environmental
02MW-04	1	1	na	Environmental
02MW-04	1	1	na	Field Duplicate
02MW-05	1	1	na	Environmental
02MW-07	1	1	na	Environmental

Abbreviations and Acronyms:
BTEX – benzene, toluene, ethylbenzene, xylene
Dx – diesel range hydrocarbons
Gx – gasoline range hydrocarbons
na – not included in analytical suite
NWTPH – northwest total petroleum hydrocarbon
PCP – pentachlorophenol

Table 3-1. Well Construction Details at West Commodore Way Properties

Well	Coordinate (WA State Plane)		Top of Casing Elevation (Feet msl)	Ground Elevation (Feet msl)	Total Depth of Boring (Feet bgs)	Total Depth of Well (Feet bgs)	Depth of Screen Interval (Feet bgs)	Elevation of Screen Interval (Feet msl)
	Northing (Feet)	Easting (Feet)						
2737 West Commodore Way								
01MW-01	245454.603	1256198.248	46.48	46.76	25.00	25.25	10 – 25	36.76 – 21.76
01MW-02	245585.027	1256198.518	44.78	45.15	25.00	24.91	10 – 25	35.15 – 20.15
01MW-03	245597.585	1256160.493	44.35	44.75	25.20	25.15	10 – 25	34.75 – 19.75
01MW-04	245563.117	1256163.148	45.08	45.56	25.00	24.90	10 – 25	35.56 – 20.56
01MW-05	245569.311	1256114.025	45.40	45.77	25.00	24.88	10 – 25	35.77 – 20.77
01MW-06	245452.677	1256064.638	47.74	48.23	25.00	25.10	10 – 25	38.23 – 23.23
01MW-07	245570.711	1255975.885	45.17	45.53	30.00	28.17	15 – 30	30.53 – 15.53
01MW-08	245570.471	1256070.985	45.21	45.63	25.00	24.93	10 – 25	35.63 – 20.63
01MW-09	245602.062	1256103.039	43.91	44.37	25.00	24.70	10 – 25	34.37 – 19.37
01MW-10	245580.377	1256246.968	45.02	45.35	25.00	24.90	10 – 25	35.35 – 20.35
01MW-11	245545.081	1256368.920	46.10	46.45	30.00	29.90	15 – 30	31.45 – 16.45
01MW-12	245444.877	1256316.069	45.84	46.29	20.00	20.00	5 – 20	40.84 – 25.84
01MW-13	245317.347	1256313.287	46.36	46.81	20.00	19.88	15 – 20	31.81 – 26.81
01MW-15	245441.314	1255996.388	50.89	50.89	30.12	30.00	10 – 30	40.89 – 20.89
01MW-16	245582.687	1256220.015	44.95	44.95	22.50	20.00	10 – 20	34.95 – 24.95
01MW-17	245166.941	1256477.520	59.42	59.42	30.00	30.00	15 – 30	44.42 – 29.42
01MW-18	245577.28	1256114.23	45.18	45.68	26.50	25.00	5 – 20	40.68 – 25.68
01MW-19	245572.45	1256100.62	45.35	45.85	31.50	25.00	5 – 20	40.85 – 25.78
01MW-20	245546.99	1256107.08	46.27	46.77	26.50	25.00	5 – 20	41.77 – 26.77
01MW-21	245382.3	1256257.4	46.21	46.52	23.50	22.92	5 – 22	41.21 – 23.79
01MW-22	245422.2	1256251.7	46.11	46.47	25.00	24.70	5 – 24	41.11 – 21.92
01MW-23	245451.9	1256257.4	45.81	46.11	20.50	19.45	5 – 19	40.81 – 26.86
01MW-24	245494.0	1256245.7	na	44.59	21.00	19.40	5 – 19	39.59 – 25.69
01MW-25	245469.4	1256246.5	na	44.61	20.50	17.32	5 – 16	39.61 – 28.29
01MW-26	245451.1	1256215.0	46.24	46.71	20.50	19.85	5 – 19	41.24 – 27.39
01MW-27	245479.0	1256213.5	46.33	46.70	21.50	19.65	5 – 19	41.33 – 27.68
01MW-28	245513.8	1256214.2	45.54	46.30	25.50	24.61	5 – 24	40.54 – 21.93
01MW-29	245522.2	1256244.6	45.57	45.92	20.50	19.75	5 – 19	40.57 – 26.82
2750 West Commodore Way								
02MW-01	245789.704	1255985.066	24.19	24.72	20.00	19.60	10 – 20	15.22 – 5.22
02MW-02	245848.029	1256019.016	20.06	20.57	10.00	9.90	5 – 10	16.07 – 11.07
02MW-03	245801.020	1256026.193	27.86	28.41	20.00	19.75	10 – 20	18.91 – 8.91
02MW-04	245795.225	1256092.088	27.17	27.59	20.00	20.05	10 – 20	18.09 – 8.09
02MW-05	245706.854	1256069.207	36.59	37.05	35.00	33.85	20 –35	17.55 – 2.55
02MW-06	245803.277	1256129.549	26.54	27.00	20.00	19.97	10 – 20	17.50 – 7.50
02MW-07	245828.584	1255960.724	20.85	21.39	12.00	12.20	2 – 12	19.89 – 9.89

Abbreviations and Acronyms:
bgs – below ground surface
msl – mean sea level
na – no data available
WA – Washington

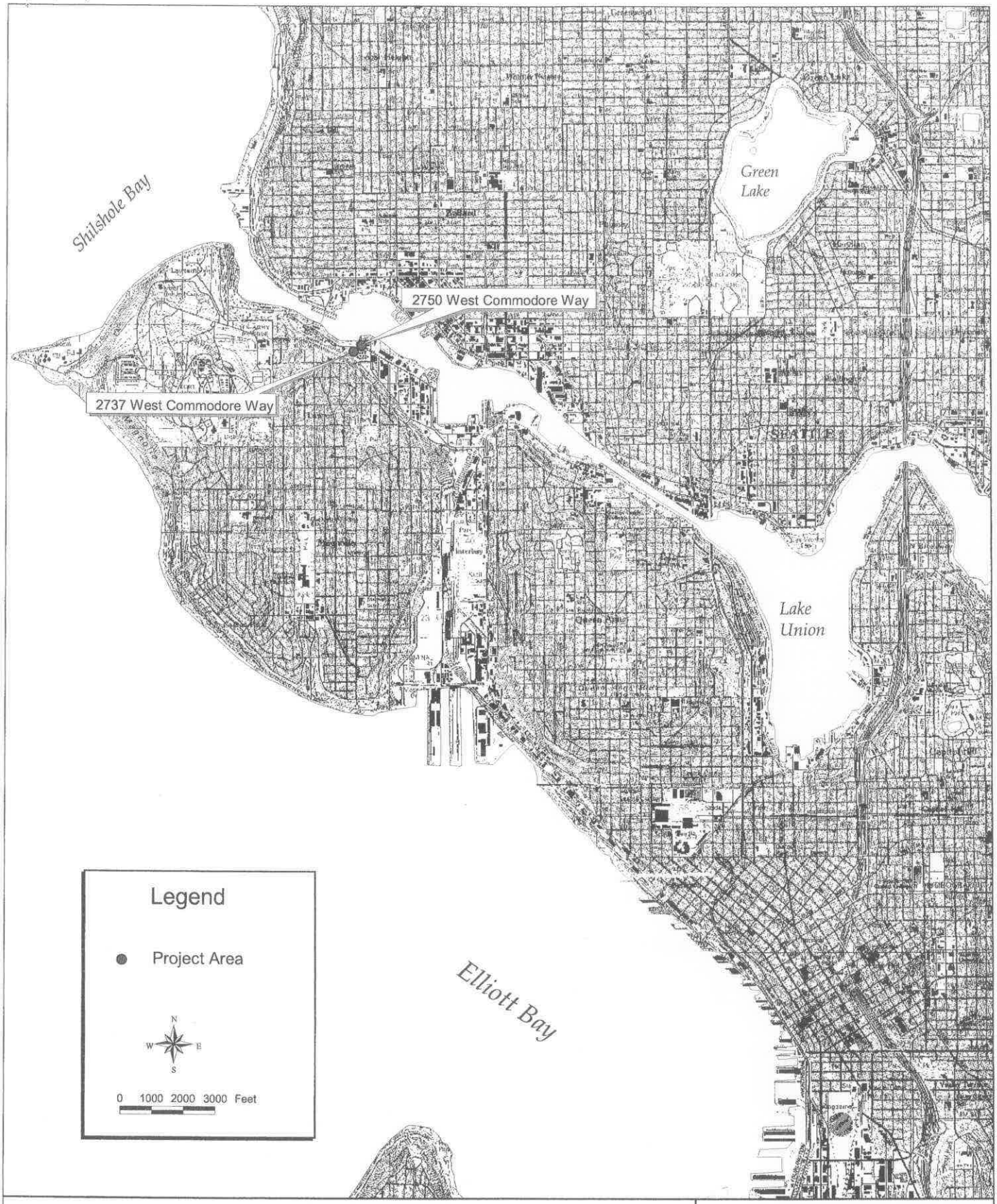
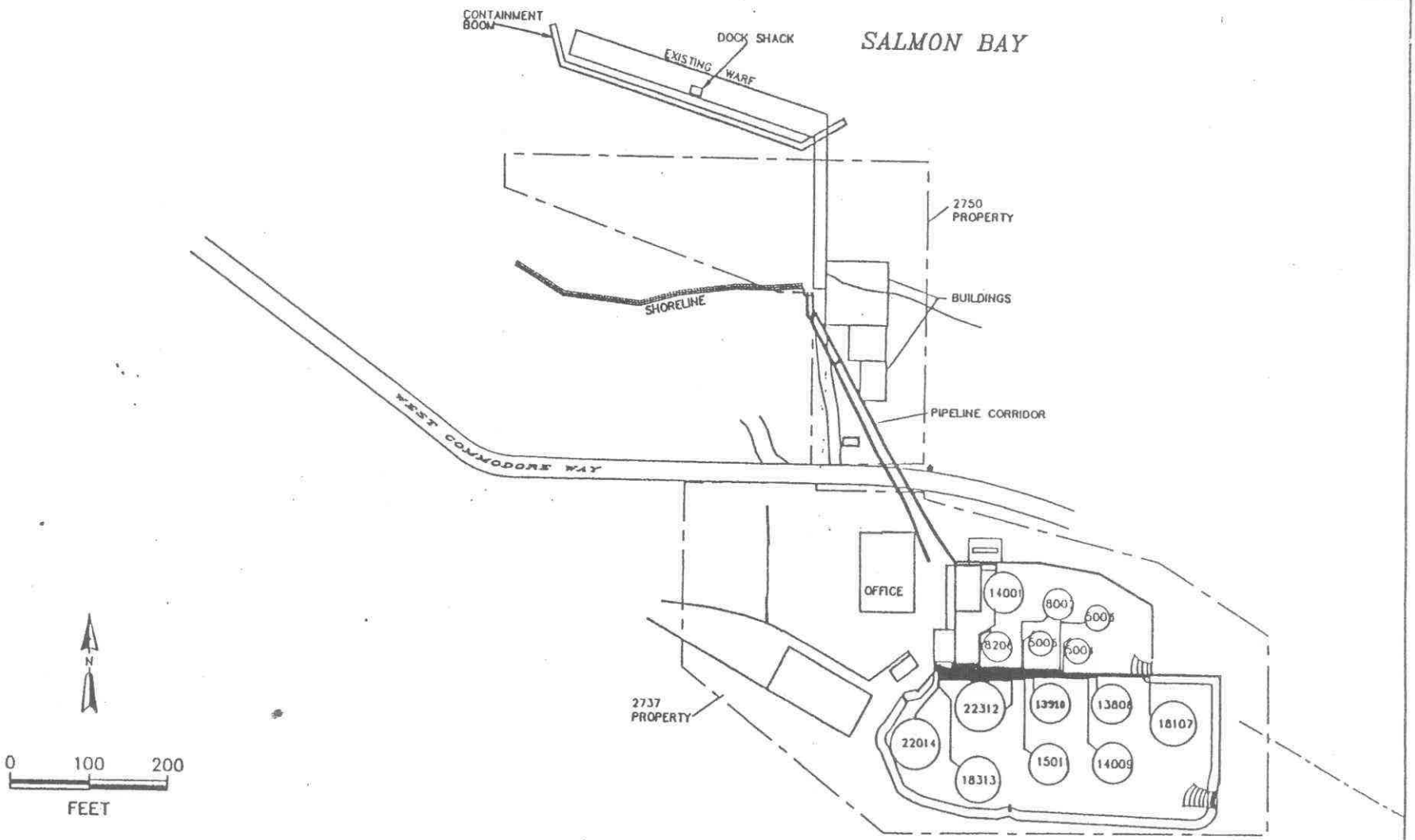


Figure 1-1

Time Oil Company
Quarterly Groundwater Sampling

Locations of 2737 and 2750
West Commodore Way

c:\projects\time_oil\vic_map_2001.apr December 2001



TETRA TECH FW, INC.

Figure 1-2
Layout of 2737 and 2750
West Commodore Way

Table 3-2. Water Levels Measured at West Commodore Way Properties on November 17, 2004

Well	Top of Casing Elevation (Feet msl)	Ground Elevation (Feet msl)	Total Depth of Well (Feet bgs)	Depth to Product (Feet bgs)	Depth to Water (Feet bgs)	Product Thickness (Feet)	Water Elevation (Feet msl)
2737 West Commodore Way							
01MW-01	46.48	46.76	25.25	np	14.56	0.00	31.92
01MW-02	44.78	45.15	24.91	np	15.77	0.00	29.01
01MW-03	44.35	44.75	25.15	np	15.30	0.00	29.05
01MW-04	45.08	45.56	24.90	np	15.27	0.00	29.81
01MW-05[1/]	45.40	45.77	24.88	16.25	18.65	2.40	28.67
01MW-06	47.74	48.23	25.10	np	16.28	0.00	31.46
01MW-07	45.17	45.53	28.17	np	23.55	0.00	21.62
01MW-08	45.21	45.63	24.93	np	16.68	0.00	28.53
01MW-09[1/]	43.91	44.37	24.70	np	17.24	0.00	26.67
01MW-10	45.02	45.35	24.90	22.95	24.35	1.40	21.79
01MW-11	46.10	46.45	29.90	np	22.90	0.00	23.20
01MW-12	45.84	46.29	20.00	np	6.98	0.00	38.86
01MW-13	46.36	46.81	19.88	np	6.67	0.00	39.69
01MW-15	50.89	50.89	30.00	np	22.91	0.00	27.98
01MW-16	44.95	44.95	20.00	17.67	17.97	0.30	27.22
01MW-17	59.42	59.42	30.00	np	19.90	0.00	39.52
01MW-18	45.18	45.68	25.00	np	17.53	0.00	27.65
01MW-19	45.35	45.85	25.00	np	16.64	0.00	28.71
01MW-20	46.27	46.77	25.00	np	16.54	0.00	29.73
01MW-21	46.21	46.52	25.00	np	7.49	0.00	38.72
01MW-22	46.11	46.47	25.00	6.95	6.97	0.02	39.16
01MW-23[1/]	45.81	46.11	25.00	7.37	7.48	0.11	38.42
01MW-24	na	44.59	25.00	na	na	na	na
01MW-25	na	44.61	25.00	na	na	na	na
01MW-26	46.24	46.71	25.00	np	14.28	0.00	31.96
01MW-27	46.33	46.7	25.00	np	14.70	0.00	31.63
01MW-28	45.54	46.3	25.00	14.03	15.58	1.55	31.20
01MW-29[1/]	45.57	45.92	25.00	na	na	na	na
2750 West Commodore Way							
02MW-01	24.19	24.72	19.60	np	6.04	0.00	18.15
02MW-02	20.06	20.57	9.90	np	2.63	0.00	17.43
02MW-03	27.86	28.41	19.75	np	9.62	0.00	18.24
02MW-04	27.17	27.59	20.05	np	9.49	0.00	17.68
02MW-05	36.59	37.05	33.85	np	16.64	0.00	19.95
02MW-06	26.54	27.00	19.97	np	8.81	0.00	17.73
02MW-07	20.85	21.39	12.20	np	3.31	0.00	17.54

Abbreviations and Acronyms:
bgs – below ground surface
msl – mean sea level
na – water level was not determined due to presence of product
np – no product detected

Notes:
[1/] Water elevation may be influenced by passive product skimmer installed in the well.

Table 4-1. Well Sampling Parameters, November 2004

Well	pH	Temperature (Celsius)	Conductivity (mS/cm)	Turbidity (NTU)
2737 West Commodore Way				
01MW-02	6.7	14.4	623	1.0
01MW-03	6.6	15.3	361	0.0
01MW-08	7.0	12.9	812	8.0
01MW-09	6.8	15.2	632	48.0
01MW-11	7.0	13.9	623	6.0
01MW-12	6.6	12.2	683	0.0
01MW-13	6.6	12.8	778	0.0
01MW-17	7.1	11.4	865	13.0
01MW-26	6.6	15.0	491	0.0
2750 West Commodore Way				
02MW-01	6.3	13.2	370	4.8
02MW-02	6.5	13.3	420	0.0
02MW-04	6.6	13.5	737	0.0
02MW-05	6.3	15.6	779	34.0
02MW-07	6.4	12.7	98	3.0

Abbreviations and Acronyms:
mS/cm – millisiemens per centimeter
NTU – nephelometreic turbidity unit

Table 4-2. Groundwater Results from 2737 West Commodore Way, November 2004

Sample	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)
Action Level	15[1/]	0.5[2/]	0.5[2/]	800[3/]	1,000[4/]	5,300[5/]	17,500[5/]	32,000[5/]	1,000[2/]
01MW-02	na	0.377	< 0.500	***20,100***		***8,600***	68.0	207	572
01MW-03	na	***0.925***	< 0.500	***9,320***		3,110	27.0	121	91.4
01MW-08	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-09	na	***0.736***	< 0.500	***5,620***		808	25.9	205	559
01MW-11	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-12	na	< 0.250	< 0.500	***1,320***		276	6.53	16.1	20.5
01MW-13	na	< 0.250	< 0.500	391		1.71	< 0.500	0.774	2.99
01MW-17	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-26A	***20.3***	< 0.250	< 0.500	***1,130***		131	6.94	55.0	38.6
01MW-26B	***20.9***	< 0.250	< 0.500	***1,210***		143	7.83	60.2	38.4
RPD	***3%***	*nc*	*nc*	***6.8%***		***9%***	*12%*	*9%*	*1%*

Abbreviations and acronyms:
mg/L – milligram per liter
µg/L – microgram per liter
MTCA – Model Toxics Control Act
NOAA – National Oceanic and Atmospheric Administration
na – no analysis requested
nc – not calculated
RPD – relative percent difference
SQuiRT™ – Screening Quick Reference Table
% - percent
< symbol indicates result is less than reporting limit

Notes:
Results above action levels in bold and italics
[1/]NOAA SQuiRT™ value for freshwater continuous concentration
[2/]MTCA Method A
[3/] MTCA Method A gasoline range with benzene present
[4/] MTCA Method A gasoline range without benzene present
[5/] NOAA SQuiRT™ value for freshwater maximum concentration

Table 4-3. Groundwater Results from 2750 West Commodore Way, November 2004

Sample	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
Action Level	0.5[2/]	0.5[2/]	800[3/]	1,000[4/]	5,300[5/]	17,500[5/]	32,000[5/]	1,000[2/]
02MW-01	< 0.250	< 0.500	188		48.4	1.24	0.682	4.46
02MW-02	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
02MW-04A	< 0.250	< 0.500	***3,340***		22.7	25.6	215	220
02MW-04B	< 0.250	< 0.500	***3,250***		21.7	24.1	188	211
RPD	*nc*	*nc*	*3%*		*5%*	*6%*	*13%*	*4%*
02MW-05	< 0.250	< 0.500	178		< 0.500	< 0.500	< 0.500	< 1.00
02MW-07	< 0.250	< 0.500	80.4		< 0.500	< 0.500	< 0.500	1.27

Abbreviations and acronyms:
mg/L – milligram per liter
µg/L – microgram per liter
MTCA – Model Toxics Control Act
NOAA – National Oceanic and Atmospheric Administration
nc – not calculated
RPD – relative percent difference
SQuiRT™ – Screening Quick Reference Table
% - percent
< symbol indicates result is less than reporting limit

Notes:
Results above action levels in bold and italics
[1/]NOAA SQuiRT™ value for freshwater continuous concentration
[2/]MTCA Method A
[3/] MTCA Method A gasoline range with benzene present
[4/] MTCA Method A gasoline range without benzene present
[5/] NOAA SQuiRT™ value for freshwater maximum concentration