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NCBC GULFPORT
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THIRD QUARTERLY STATUS REPORT FOR BIOSLURPING IMPLEMENTATION AT SITE 6
NCBC GULFPORT MS
8/16/2002
BATTELLE

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August 16, 2002

Naval Facilities Engineering Command
Southern Division
2155 Eagle Drive
P.O. Box 190010
North Charleston, SC 29419-9010

Attention: Mr. Art Conrad

Dear Mr. Conrad:

**CONTRACT NO. N47408-01-D-8207, TASK ORDER 003
3rd QUARTERLY STATUS REPORT FOR BIOSLURPER IMPLEMENTATION AT
NAVAL CONSTRUCTION BATTALION CENTER (NCBC) GULFPORT, MS**

3rd Quarterly Status Report

1.0 INTRODUCTION

Battelle was contracted to install and operate a full-scale bioslurper system to remediate Site 6, a former fire-fighting training area, located at Naval Construction Battalion Center (NCBC) Gulfport, MS. Startup of the system was performed November 1, 2001. A description of the bioslurper system and the first six months of operation are summarized in the two previous quarterly reports dated February 18, 2002, and May 17, 2002.

This 3rd Quarterly Status Report describes the activities performed and operational results during the third quarter of operation (May 1 through July 31). An analysis of the data and appropriate conclusions and recommendations are provided.

2.0 ACTIVITIES PERFORMED

The system has been operated continuously with minimal oversight. The operation, monitoring, and maintenance (OM&M) contractor typically visited the site two to three times a week to ensure that it was operating properly, perform routine OM&M, and collect performance data. A discussion of activities is presented below.



2.1 Operation and Monitoring

- Measured system operating parameters. These include various temperatures, pressures, and flowrates. Data sheets are included in Attachment 1. System parameters typically were measured two times per week.
- Collected an off-gas sample from the stack of the liquid ring pump (LRP) on May 9, June 3, and July 1. The samples were collected in a Summa™ canister and sent to Air Toxics, Inc., for total petroleum hydrocarbon (TPH) analysis using method TO-3. Analytical results are included in Attachment 2.
- Collected water samples from the effluent of the oil/water separator (OWS) on May 9, June 3, and July 1. Samples were analyzed for diesel range organics (DRO). The sample collected on July 1 also was analyzed for BTEX (EPA Method 602). Analytical results are included in Attachment 3.
- Collected water samples twice each month from the effluent of the air stripper for analysis of pH (EPA Method 150.1) and BTEX (EPA Method 602). Samples were collected on May 9, May 16, June 3, June 12, July 1, and July 15. Analytical results are included in Attachment 3.
- Measured soil gas concentrations (oxygen, carbon dioxide, and TPH) on a monthly basis.
- Rotated extraction wells and measured oil thickness and groundwater elevations inside the 23 extraction wells and 8 monitoring wells. Up to 8 wells were extracted from simultaneously. The volume of LNAPL that accumulated in the tank was quantified during each site visit.
- Arranged with the Base for the disposal of the recovered LNAPL. A total of 268 gallons inside the LNAPL storage tank was disposed of on June 7.
- About 1/3 foot of LNAPL was discovered in well GPT-6-6 during the site visit conducted June 27. This well is located outside of the fenced area just east of the drainage ditch. It is believed that the unusually depressed water table allowed pockets of previously trapped LNAPL to enter the extraction well. Similarly, over ½ foot of LNAPL was detected inside well GPT-6-8 during the site visit. A decision was made to connect both of these wells to the bioslurper system. Extraction was initiated on July 23.

2.2 Maintenance

- Cleaned float switches in ALS on May 6. Sand and sewage were causing the switches to stick preventing operation of the PCP.
- Changed oil in progressive cavity pump (PCP) on June 7.
- Replaced broken valve at extraction well EW-6 on June 9.
- Cleaned PCP strainer on July 1. Upgraded piping to reduce cracking caused by vibrations.
- The autodialer is malfunctioning. Arrangements are being made to repair or replace this unit.

2.3 Reporting

- Prepared the 2nd *Quarterly Status Report for Bioslurper Implementation at Naval Construction Battalion Center (NCBC) Gulfport, MS* (Battelle, 2002). This letter report, which was submitted to the Navy on May 17, documents the second quarter of full-scale operation.

3.0 RESULTS

The primary objective of the bioslurper system is to remove LNAPL to the maximum extent practicable in accordance with Mississippi guidelines. The progress toward meeting this objective was tracked by monitoring the mass of contaminants removed from the subsurface, the LNAPL remaining in site wells, and operating and maintenance costs. In addition, system operation was closely monitored to ensure that the system was operating according to design and in compliance with the permit requirements. Results are discussed in this section.

3.1 Contaminant Removal

Hydrocarbon contamination is removed in the form of LNAPL, emulsified/dissolved oil in the aqueous discharge stream, and in the vapor phase in the off-gas. The mass removed in each stream is summarized in Table 1. The cumulative total is presented graphically in Figure 1.

Table 1. Hydrocarbon Removal

Process Stream	Hydrocarbons Removed (lb)		
	Present (May 1 – July 30)	Previous Quarter	Cumulative
LNAPL ^(a)	2,611 (360 gallons)	1,126 (155 gallons)	10,514 (1,448 gallons)
Dissolved/Emulsified Hydrocarbons	1,286 ^(b)	444	2,545 ^(b)
Off-Gas	206 ^(b)	27	426 ^(b)
Total:	4,102	1,597	13,485

- a) A specific gravity of 0.87 was used to estimate the mass of LNAPL recovered.
- b) Estimated value based on analytical results received at the time the quarterly status report was prepared.

The volume of LNAPL recovered was determined by periodically measuring the change in thickness inside the 500-gallon storage tank. Measurements were made using a graduated stick coated with water paste (Kolor Kut or equivalent). The stick was slowly lowered into the tank until it touched the bottom. The portion of the stick exposed to water changes color. The length of the colored portion is measured to determine the thickness of the water layer that has formed at the bottom of the tank. A calibration factor of 1 inch:14.1 gallons liquid was used to convert the thickness to a volume. A specific gravity of 0.87 was used to convert the volume of LNAPL into a mass.

The mass of TPH dissolved and emulsified in the aqueous stream was calculated using the TPH concentration data (based on the DRO concentration measured in the aqueous effluent from the OWS) and process water volume measured using the water totalizer. TPH concentrations measured in the aqueous effluent from the OWS are shown in Figure 2. Water totalizer readings are provided in Attachment 1. The mass recovered in a given time interval (i.e., month) was calculated by averaging the OWS effluent concentrations at the beginning and end of the time interval and multiplying this average concentration by the volume of fluid processed during the data collection period.

The mass of TPH recovered in the vapor phase was calculated using the TPH concentration measured in the off-gas and the average flowrate for the period in which the sample was collected. TPH concentrations measured in the off-gas from the LRP stack are shown in Figure 3. The off-gas flowrates are provided in Attachment 1. The mass recovered in a given time interval (i.e., month) was calculated by averaging the effluent concentrations at the beginning and end of the time interval and multiplying this average concentration by the volume of off-gas discharged during the data collection period.

The cumulative mass removal as shown in Figure 1 continues to exhibit a significant decline in recovery rate. LNAPL constitutes the great majority (approximately 78 percent) of the cumulative hydrocarbon mass removal. The dissolved/emulsified phase represents approximately 19 percent of the total mass removed, with the vapor phase making up the remainder. With the exception of the samples collected in July, the TPH concentrations in the process water and the off-gas stream have exhibited a general downward trend during the operating period (Figures 2 and 3, respectively).

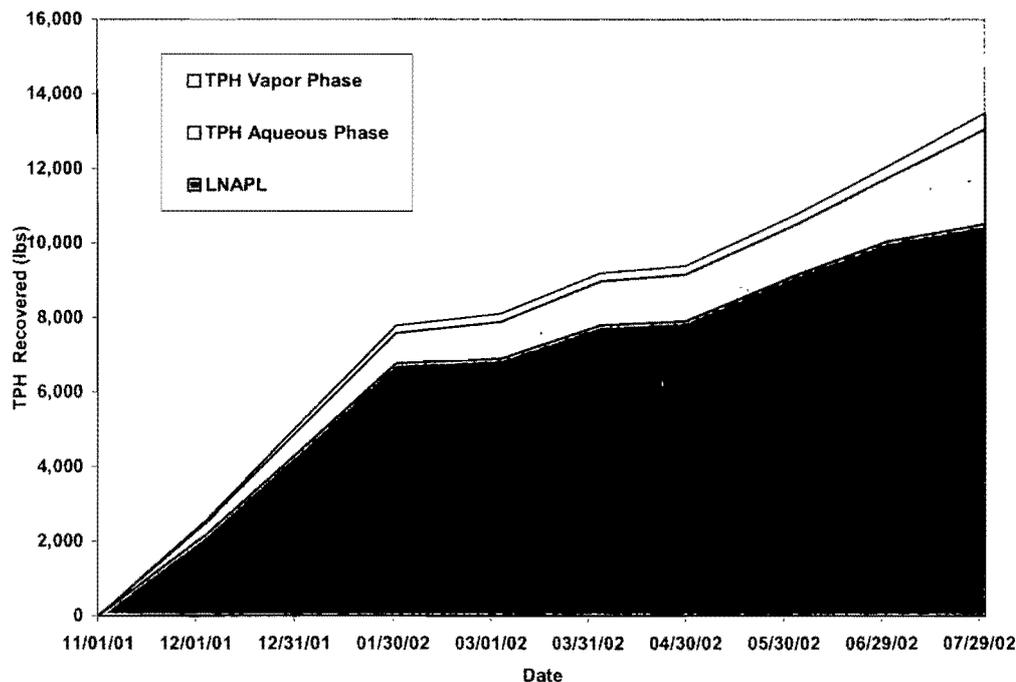


Figure 1. Cumulative Mass of Hydrocarbons Removed

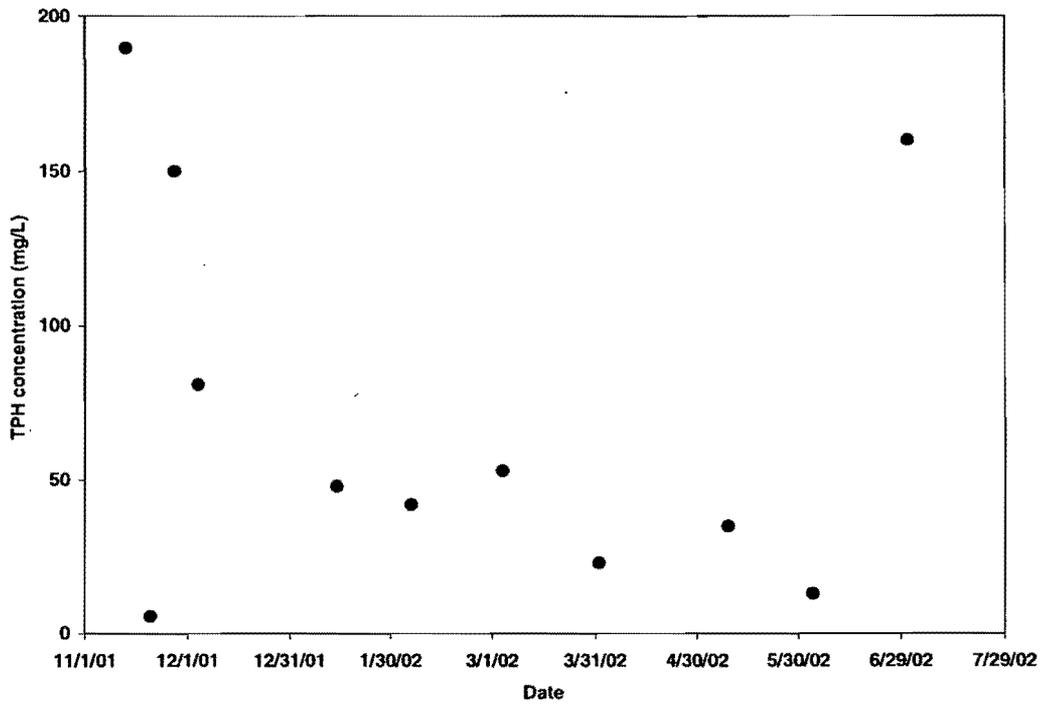


Figure 2. TPH Concentrations in Process Water (OWS Effluent)

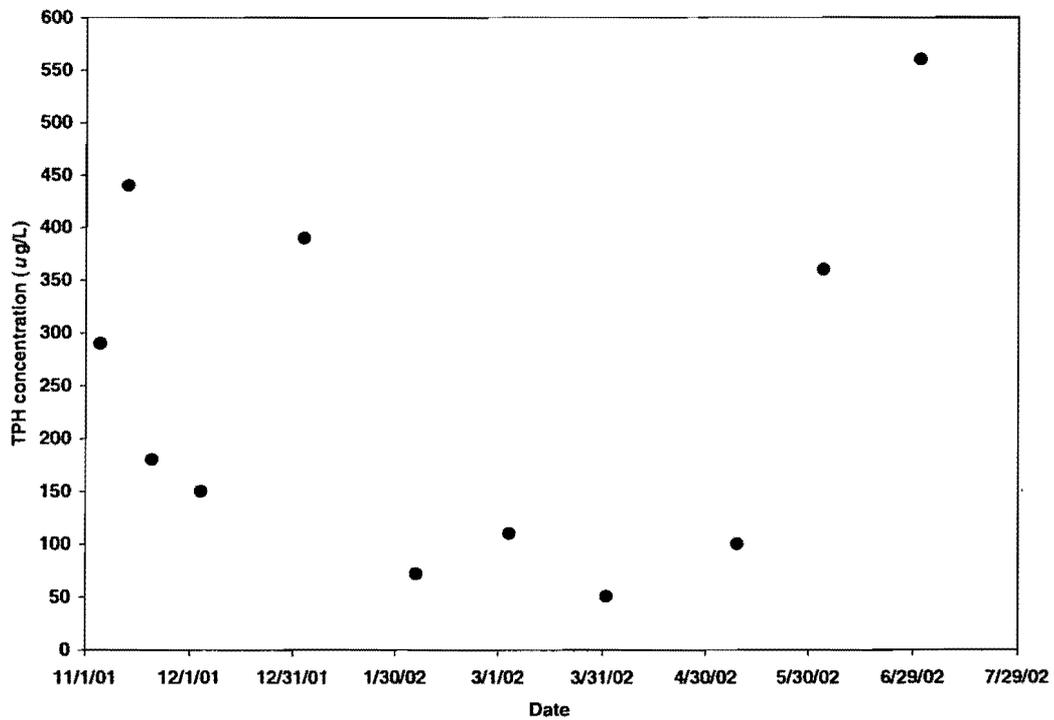


Figure 3. TPH Concentrations in Off-Gas

3.2 Product Thickness

The product thickness and groundwater table elevation was measured in each well prior to rotating a group of extraction wells. In addition, the bioslurper system is shut down every three months for up to ten days to allow the LNAPL thickness in wells to equilibrate prior to taking measurements. Three shutdown/monitoring events have been performed (January 24, April 23, and August 6), during which the LNAPL thickness and groundwater elevation in all the site wells were measured at various times. Figure 4 shows the average depth to water and average depth to LNAPL measured in the extraction wells. As can be observed from the graph, LNAPL thickness tends to be greater when the water table elevation is relatively low. The resulting plots for individual wells are included as Attachment 4.

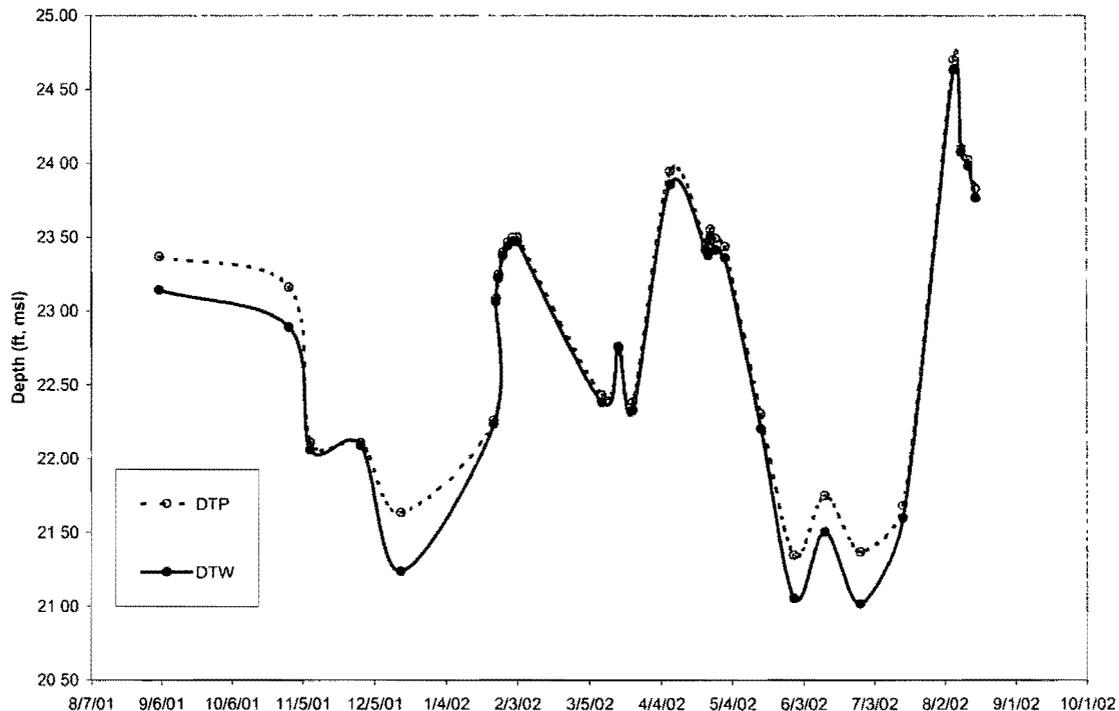
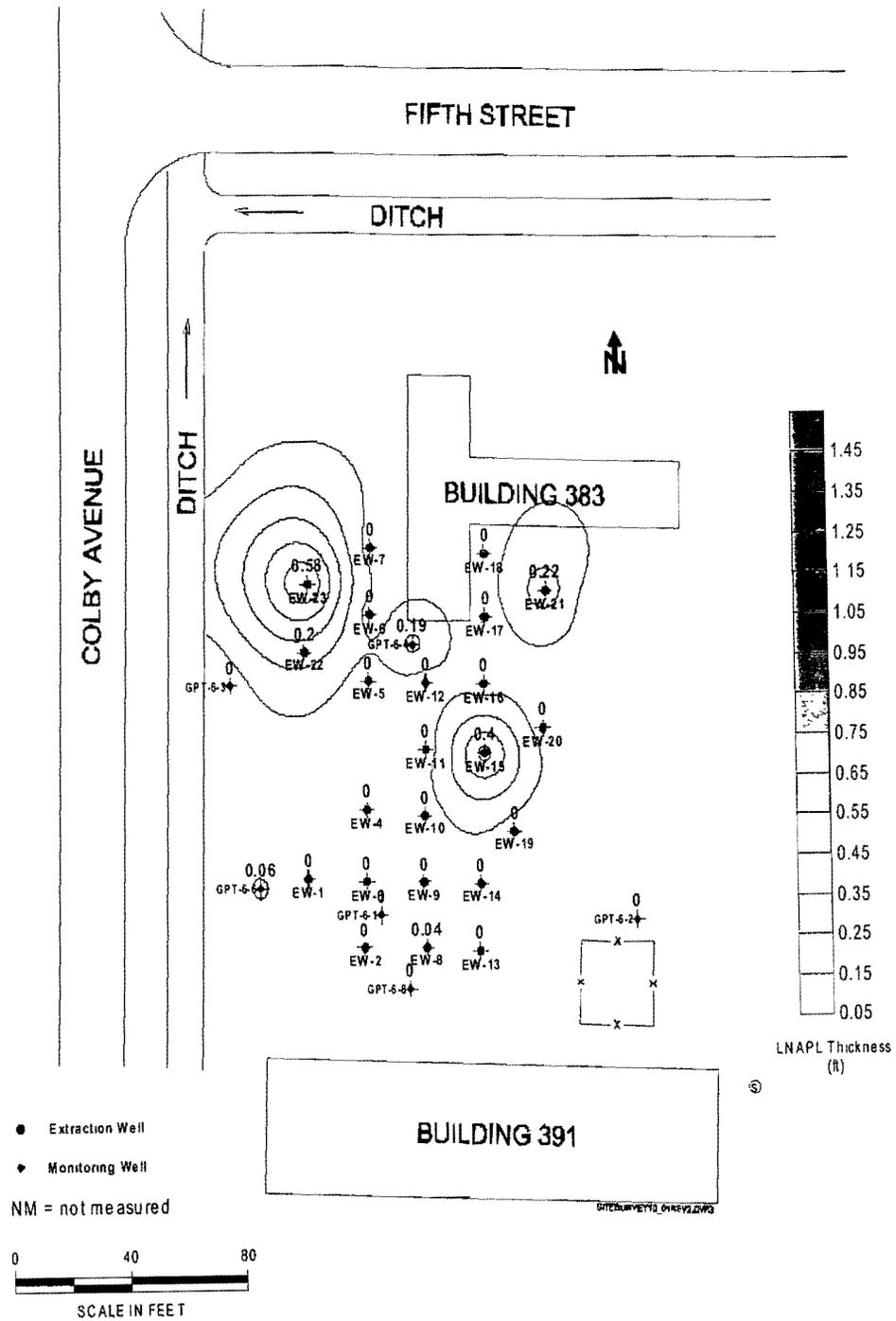


Figure 4. Average Product/Water Measurements in Site Wells

During the most recent monitoring event, which was performed August 6 to August 15, 2002, LNAPL was observed on at least one occasion in 11 of the 31 measured wells. After the LNAPL level had stabilized in the majority of wells, a final measurement was taken on August 15. The resulting data were plotted using Surfer™ and are presented in Figure 5. Figure 6 shows the product thickness measured in site wells before bioslurper operation, after the first quarter of operation, and after the second quarter of operation. There appears to be substantial LNAPL in the vicinity of the recently installed wells EV-21, EV-22, and EV-23. If the product in these wells is exchanged then the product levels measured following the third quarter of operation are less than the previous monitoring events. However, it should be noted that the decreasing levels may be partly caused by the increase in water table elevation (see Figure 4).



LNAPL Thickness (ft)
 8/15/02
 NCBC Gulfport, Site 6

Figure 5. LNAPL Plume (August 15, 2002)

3.3 Operating Cost

The cost to operate the bioslurper system is an important consideration in determining the point at which it is no longer practical to use the system for free-product recovery. The average monthly operating and maintenance cost to recover LNAPL is shown in Figure 7. These costs include on-site O&M labor, off-site technical support, analytical costs, document preparation, management, travel and per diem. The capital cost to design and install the system is not included. In addition, electrical and waste disposal costs are not included. The cost per gallon of LNAPL recovered decreased significantly during this quarter. This was due to a significant increase in the LNAPL recovery rate. Monthly O&M costs averaged about \$9,400; however, the average LNAPL recovery increased to 120 gallon/month from an average of 50 gallons/month during the second quarter of operation.

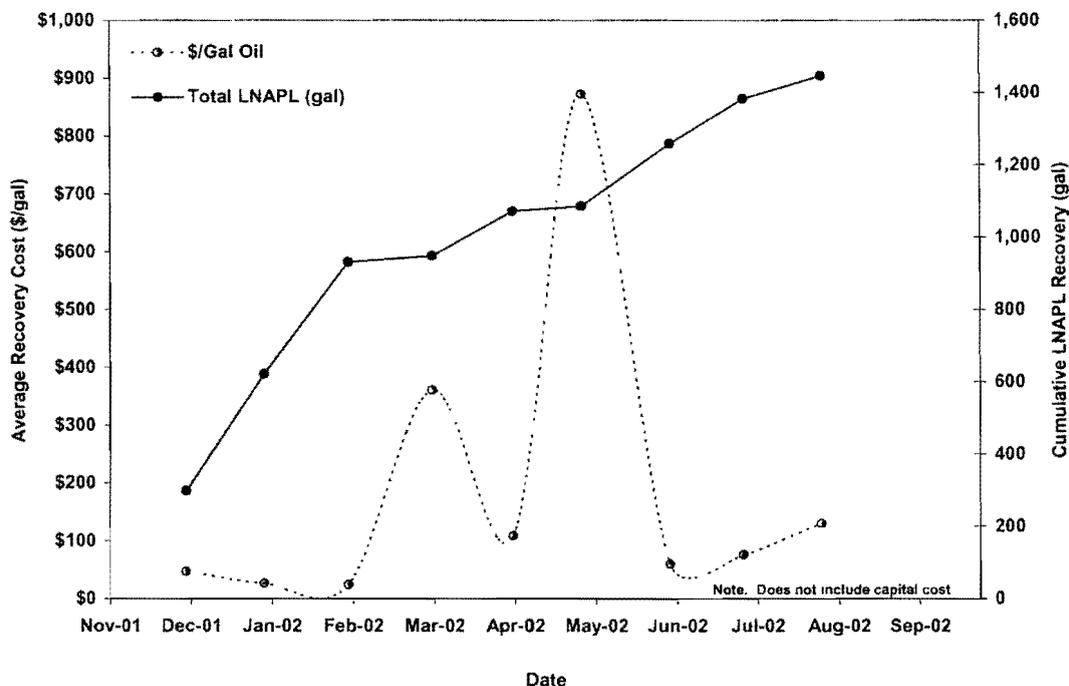


Figure 7. Average Recovery Cost (\$/gal) and Cumulative LNAPL Recovery (gal)

3.4 Percent Operating Time

An hour meter on the LRP was used to track operating time. The percent operating time was calculated on a monthly basis by dividing the number of hours recorded on the LRP timer by the number of possible hours during the same period. The time the system was shut down each quarter to monitor LNAPL thickness and groundwater elevations was subtracted from the total number of possible hours in order to more accurately reflect downtime stemming from routine operation and maintenance activities. Results are plotted in Figure 8. During May, the system was 87 percent operational (excluding shutdown at the beginning of the month to collect oil/water measurements). In June, the operating time was 94 percent and in July, the system was operational 85 percent of the time. The reasons for shutdown and applicable corrective actions are presented in Table 2. The primary cause of shutdown has been a result of power interruption to the system. The CBC has indicated that Mississippi Power had been upgrading an electric substation that supplied power to the site. The upgrade was completed at the end of June.

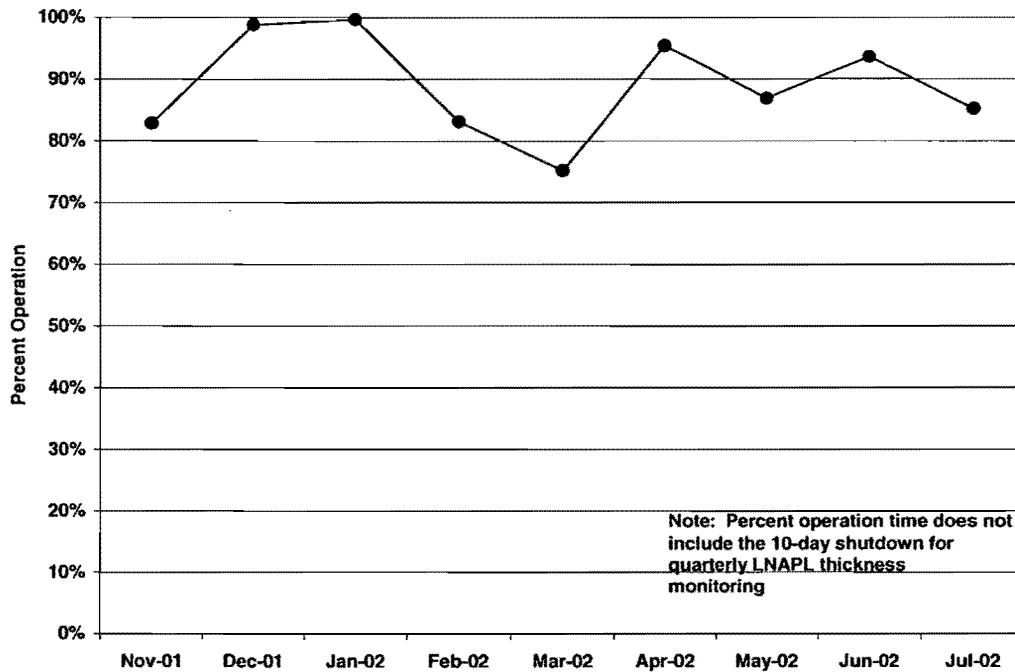


Figure 8. Percent Operation Time

3.5 Water Discharge Permit Compliance

NCBC Gulfport received approval to discharge the treated bioslurper effluent water to the Gulfport POTW on October 22, 2001. Issued by the Mississippi Department of Environmental Quality (MDEQ), Permit No. MSP091208 grants permission to discharge wastewater provided that certain requirements are met. These limitations include:

- A discharge limit of 0.036 million gallons per day (mgd) (equivalent to a continuous 25 gpm flowrate over 24 hours, or 36,000 gpd)
- A pH range between 5.0 and 9.0 standard units
- Benzene concentration limit of 0.05 mg/L
- Total BTEX concentration limit of 1.0 mg/L.

The volumetric flow of aqueous effluent from the bioslurper process was measured using a flow totalizing meter (Niagara Model No. N150-IRN-BR-1E, nutating disc-type meter). The time interval was determined using readings from the LRP timer. Resulting flowrates were calculated and are plotted in Figure 9. Flowrates vary significantly depending on the number and combination of extraction wells as well as changes in the groundwater table elevation resulting from seasonal and/or weather changes. However, in all instances, the process water flowrate remained below 36,000 gallons/day.

In order to ensure compliance for contaminants of concern, grab samples were collected twice monthly from the treated effluent and sent to a State of Mississippi certified laboratory (Severn-Trent Laboratories). Samples were analyzed for pH by EPA Method 150.1 and BTEX by EPA Method 602. Results are presented in Figure 10. The dashed lines indicate the maximum allowable discharge concentrations for BTEX components. As can be seen, the concentrations of contaminants of concern consistently remain below these values.

Table 2. System Shutdown Log

Date	Reason for Shutdown	Corrective Action	Approximate Downtime (hrs)
4/23/2002	Shut down system to allow oil/water levels in extraction wells to stabilize for quarterly monitoring event.	NA	142 (May 1 through May 6)
5/6/2002	Float switches in the Air Liquid Separator (ALS) were sandy	Cleaned float switches in the ALS	72
5/10/2002	Power failure	NA	22
5/30/2002	Power failure	NA	<1
5/31/2002	Power failure	NA	14
6/7/2002	To perform maintenance on the PCP pump	Changed oil	3
6/9/2002	Broken valve at EW-6	Replaced valve and the 2-inch T	<1
6/11/2002	Power failure	NA	16
6/12/2002	Power failure	NA	19
6/26/2002	Power failure	NA	4
7/1/2002	To perform maintenance on the PCP pump	Cleaned the PCP strainer and upgraded associated piping	<1
7/6/2002	Power failure	NA	31
7/21/2002	Power failure	NA	1
7/25/2002	Power failure	NA	49
7/30/2002	High level in the ALS	Turned off two wells and adjusted the drop tubes in the active extraction wells	27

NA-not applicable

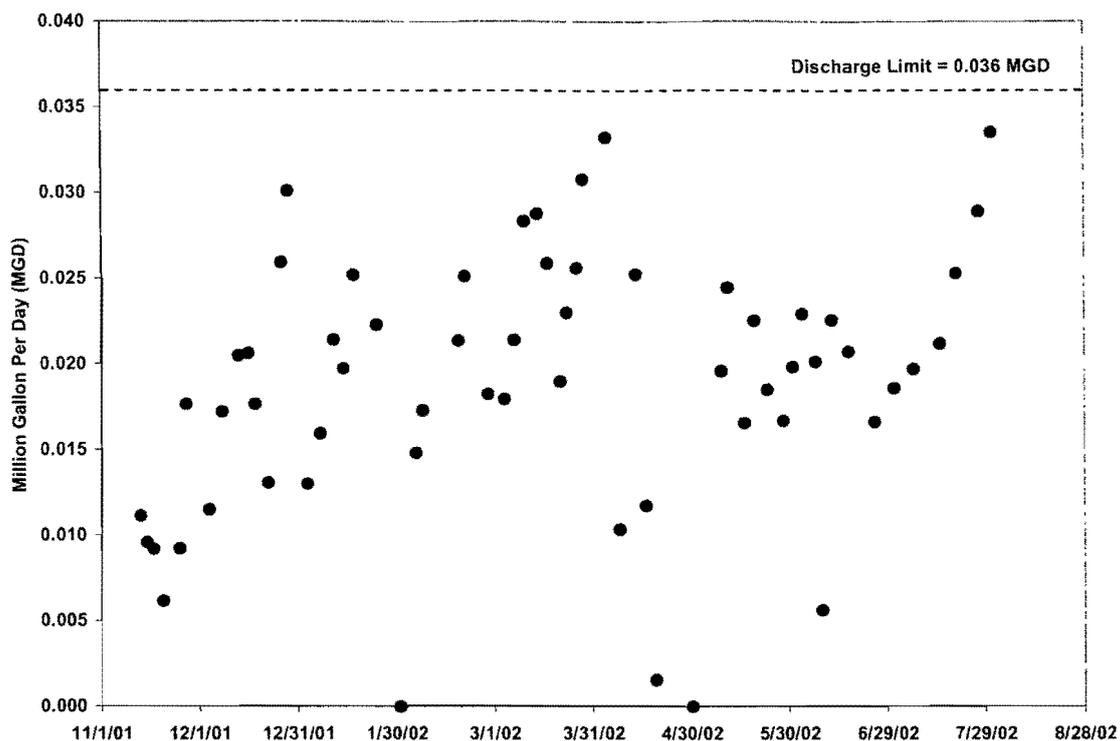


Figure 9. Average Daily Flowrates Discharged to the POTW

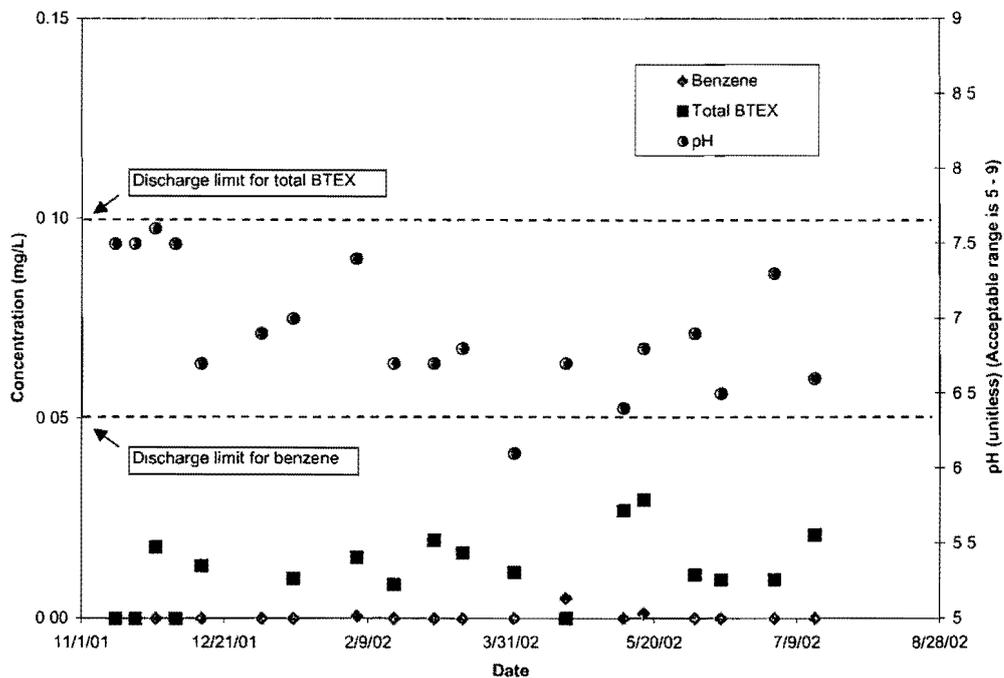


Figure 10. Benzene, Total BTEX, and pH for Samples Collected Prior to Discharge to the POTW

4.0 CONCLUSIONS AND RECOMMENDATIONS

The bioslurper system has been successful at recovering free product. A total of 1,448 gallons of LNAPL have been recovered to date. There is a strong correlation between water table elevation and LNAPL recovery. As discussed in Section 3.2, during periods of high water table elevation, LNAPL thickness has been observed to decrease significantly. Currently, the water table is rising and LNAPL recovery appears to be decreasing. Therefore, it is recommended that the bioslurper system be used to dewater small portions of the site while simultaneously extracting LNAPL. Calculations will be performed to determine the required water flowrate. If the necessary flowrate will exceed the discharge permit requirements, then an alternative solution would be to shut down the bioslurper system until the water table level begins to recede.

5.0 EXIT STRATEGY DEVELOPMENT

The previous remediation system at Site 6 was considered a Non-Time Critical Removal Action (NTC) under the guidance of CERCLA and NCP, with the goal of removing LNAPL that is considered the primary source for groundwater contamination (TTNUS, 2000a). The goals and requirements for the NTC are listed in the *Closure Plan for Site 6, NCBC Gulfport* (TTNUS, 2000b). The *Closure Plan* lists the following goals to be achieved to consider the NTC as complete:

- Demonstrate that the average product thickness at the site has been reduced to 0.25 ft.
- Demonstrate that the remaining LNAPL plume no longer threatens local surface water bodies.
- Confirm that the elevated levels of chlorinated VOCs have been removed (the *Closure Plan* indicates that vinyl chloride has not been detected in influent samples to the previous system in two years).
- Demonstrate that the remaining dissolved phase constituents are unlikely to migrate from the current position (TTNUS, 2000a).

Groundwater monitoring is recommended to determine the impact of source removal on the dissolved phase plume. Historically, contaminants of concern in the groundwater have included: vinyl chloride, methylene chloride, dichlorethene, trichloroethane, benzene, cadmium, chromium, copper, and lead. These parameters should be monitored to determine if they remain above the MCLs for drinking water. Negotiations with the MDEQ should commence to determine site-specific goals as well as an appropriate monitoring program.

6.0 FUTURE ACTIVITIES

The following activities will be performed during the next quarter:

- Continue OM&M of the bioslurper system.
- Operate system in drawdown mode and evaluate the change in LNAPL recovery.
- Evaluate historical groundwater monitoring data. At the request of the Navy, develop and implement a groundwater sampling and monitoring plan for the site.

7.0 REFERENCES

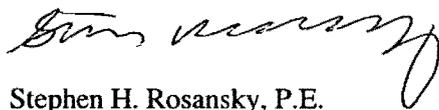
Battelle. 2002. 2nd Quarterly Status Report for Bioslurper Implementation at Naval Construction Battalion Center (NCBC) Gulfport, MS. Letter report. Prepared for Naval Facilities Engineering Command. Contract No: N47408-01-D-8207. May 17.

TetraTech NUS, Inc. 2000a. Draft Letter Report of Findings NCBC Gulfport – Site 6. Prepared for Southern Division Naval Facilities Engineering Command under CLEAN contract No. N62467-94-D0888, Contract Task Order No. 0125.

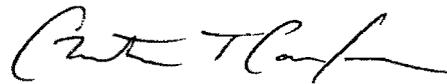
TetraTech NUS, Inc. 2000b. Closure Plan for Site 6, NCBC Gulfport, Gulfport, MS. Prepared for Southern Division Naval Facilities Engineering Command. Contract No: N62467-94-D-0888. November.

Please contact me at (614) 424-7289 or rosansky@battelle.org, or Chris Coonfare at (614) 424-3646 or coonfare@battelle.org, with any questions.

Sincerely,



Stephen H. Rosansky, P.E.
Principal Environmental Engineer
Environmental Restoration Dept.



Christopher T. Coonfare
Geologist
Environmental Restoration Dept.

CC:kl

cc: Mr. Mike Maughon, NAVFAC Southern Division (1 copy)
Mr. Gordon Crane, NCBC Gulfport (3 copies)
Mr. Palmer Anderson, NFESC (1 copy)

ATTACHMENT 1

Process Parameters, Gulfport, Site 6, MS

Date	5/9/2002	5/11/2002	5/16/2002	5/19/2002	5/23/2002	5/28/2002	5/31/2002	6/3/2002	6/7/2002	6/9/2002	6/12/2002	6/17/2002
Time	13:00	10:30	10:30	9:30	9:00	9:30	9:10	9:50	8:00	10:25	10:00	10:15
LRP Timer	3367.8	3391.2	3511.1	3582.8	3678.8	3798.9	3856.5	3930.1	4023.6	4070.6	4125.7	4227.3
LRP Vacuum (in Hg)	22	25	20	20	19	24	25	24	21	21	20	19
Seal Water Temperature (°F)	108.1	108.3	100.6	98.8	NR	110.8	107.2	113.6	102.3	103.4	110.2	104.6
Seal Stack Temperature (°F)	112	114.1	109.6	105	100.6	115.6	111.1	122.4	112.7	111	119.6	114.6
Seal Water Level (ok, +, -)	ok											
LRP Oriface Plate ("H2O)	1	0.9	0.8	0.7	0.8	0.7	0.25	0.25	0.45	0.4	0.6	0.5
Off-Gas Flowrate (SCFM)	115	109	103	96	103	96	58	58	77	73	89	81
ALS Vacuum (in Hg)	20	21	16	16	14	19	22	20	19	21	20	16
PCP Pressure (psi)	1.1	1.2	1.1	1.7	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
PCP Cycles (cycles/hour)	6	6	6.1	6.2	6.3	6.2	6.1	7.3	6.2	5.5	6.7	6.5
PCP Flow Control Setting	1.1	1	1	0.9	0.5	1	1	1.6	1	1	1	0.8
Stack Gas TPH (ppm)	125	135	180	180	150	420	280	140	160	135	130	120
Stack Gas O2 (%)	20	20.5	21	21	21.5	19.5	20	19	20.5	18.5	19	20.1
Stack Gas CO2 (%)	0.5	0.1	0.09	0.8	0.4	4.1	2	1.8	1.05	1.75	1.95	1.4
Water Totalizer (gallons)	2,660,270	2,684,138	2,766,930	2,834,320	2,908,500	2,992,100	3,039,760	3,110,170	3,188,670	3,199,750	3,251,620	3,339,670
Average Water Flowrate (gpm)	13.6	17	11.5	15.73	12.82	11.60	13.79	15.94	14	3.92	15.68	14.4
Discharge pump flowrate (gpm)	37.16	17	11.5	15.73	12.82	NR	13.79	15.94	14	3.92	15.68	14.4
Cooling water feed rate (ok, +, -)	ok											
No. of active extraction wells	6	6	6	3	6	6	6	6	6	6	6	6
(Oil tank) DTP (in):	29	28	20	24	16.75	NR	18.75	16.75	14	34	33	31.5
DTW (in):	32	32	26	32	30.25	NR	33	33	33	36	36	36
Volume (gallons):	42	56	85	113	190	NR	201	229	268	28	42	63

Process Parameters, Gulfport, Site 6, MS (Continued)

Date	6/20/2002	6/25/2002	7/1/2002	7/7/2002	7/15/2002	7/20/2002	7/27/2002	7/31/2002
Time	11:00	12:20	9:35	9:30	10:15	9:40	8:30	15:00
LRP Timer	4300.2	4421.5	4558.7	4671.4	4863.1	4984.1	5101.7	5176.8
LRP Vacuum (in Hg)	18	20	18	22	19	16	19	20
Seal Water Temperature (°F)	108.4	NR	106.8	110.4	107.6	NR	NR	96.3
Seal Stack Temperature (°F)	120.8	NR	115.4	119.4	116.4	NR	NR	110.7
Seal Water Level (ok, +, -)	ok							
LRP Oriface Plate ("H2O)	0.5	0.2	0.75	0.5	0.75	1.2	0.65	0.4
Off-Gas Flowrate (SCFM)	81	51	100	81	100	126	93	73
ALS Vacuum (in Hg)	15	18	15	20	17	13	15	17
PCP Pressure (psi)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3
PCP Cycles (cycles/hour)	6.8	6.1	7	6	5.5	7	5.5	5
PCP Flow Control Setting	0.7	1	0.8	1	1.1	1	1.2	1.2
Stack Gas TPH (ppm)	120	500	80	110	95	100	100	85
Stack Gas O2 (%)	21	16	21	16.5	19.5	20	19.5	19.5
Stack Gas CO2 (%)	1	6.1	0.75	3.25	0.95	1.5	1.5	0.75
Water Totalizer (gallons)	3,394,360	3,478,520	3,589,750	3,682,880	3,852,430	3,980,200	4,122,130	4,227,120
Average Water Flowrate (gpm)	12.5	11.56	12.93	13.7	14.74	17.59	20.1	23.3
Discharge pump flowrate (gpm)	12.5	11.56	12.93	13.7	14.74	17.59	20.1	23.3
Cooling water feed rate (ok, +, -)	ok							
No. of active extraction wells	6	5	7	7	6	8	7	5
(Oil tank) DTP (in):	31.5	30.5	29	28	28	28	25.75	23.25
DTW (in):	36	36	35	35	35	35	33.75	33.75
Volume (gallons):	63	78	85	99	99	99	113	148

Notes:

NR = Not recorded

NA = Not applicable

Calculate volume of fuel in tank = [{Height of tank (36.0 in) - DTP (in)} - {Height of tank (36.0 in)-DTW(in)}] X 14.1(gal/in)

ATTACHMENT 2



AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

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Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020

Hours 8:00 A.M to 6:00 P.M. Pacific

E-mail to: samplereceiving@airtoxics.com

WORK ORDER #: 0205238

Work Order Summary

CLIENT: Mr. Mike Valder
Severn-Trent
6712 Benjamin Rd., Suite #100
Tampa, FL 33634

BILL TO: Mr. Mike Valder
Severn-Trent
6712 Benjamin Rd., Suite #100
Tampa, FL 33634

PHONE: 813-885-7427

FAX: 813-885-7049

DATE RECEIVED: 5/11/02

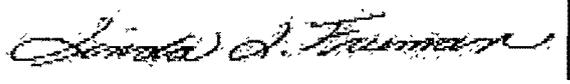
DATE COMPLETED: 5/23/02

P.O. # 167842

PROJECT # 0486003 Site 6 Gulfport

CONTACT: DeDe Dodge

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>
01A	LRP STACK	TO-3	2.0 "Hg
01AA	LRP STACK Duplicate	TO-3	2.0 "Hg
02A	Lab Blank	TO-3	NA
03A	LCS	TO-3	NA

CERTIFIED BY: 
Laboratory Director

DATE: 05/24/02

Certification numbers: CA ELAP - 1149, NY NELAP - 11291, UT ELAP - E-217, LA - AI 30763
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 01/01/02, Expiration date: 06/30/02

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE

TO-3

Severn-Trent

Workorder# 0205238

One 1 Liter Summa Canister sample was received on May 11, 2002. The laboratory performed analysis via modified EPA Method TO-3 for Benzene, Toluene, Ethylbenzene, Xylenes and Total Petroleum Hydrocarbons (TPH). BTEX was analyzed via GC/PID and TPH via GC/FID. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/L. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system. See the data sheets for the reporting limits for each compound.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: LRP STACK

ID#: 0205238-01A

EPA METHOD TO-3 GC/PID/FID

File Name:	d052019	Date of Collection:	5/9/02
Dil. Factor:	2.47	Date of Analysis:	5/20/02

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.0025	0.0080	0.28 M	0.91 M
Toluene	0.0025	0.0095	0.36	1.4
Ethyl Benzene	0.0025	0.011	0.15	0.66
Total Xylenes	0.0025	0.011	0.74	3.2
TPH (C5+ Hydrocarbons) ref. to Gasoline	0.062	0.26	24	100
C2-C4 Hydrocarbons ref. to Gasoline	0.062	0.26	0.15	0.64

M = Reported value may be biased due to apparent matrix interferences.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	117	75-125
Fluorobenzene (PID)	110	75-125

AIR TOXICS LTD.

SAMPLE NAME: LRP STACK Duplicate

ID#: 0205238-01AA

EPA METHOD TO-3 GC/PID/FID

File Name:	d052014	Date of Collection:	5/9/02
Dil. Factor:	8:64	Date of Analysis:	5/20/02

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.0086	0.028	0.32 M	1.0 M
Toluene	0.0086	0.033	0.40	1.5
Ethyl Benzene	0.0086	0.038	0.17	0.74
Total Xylenes	0.0086	0.038	0.72	3.2
TPH (C5+ Hydrocarbons) ref. to Gasoline	0.22	0.90	21	88
C2-C4 Hydrocarbons ref. to Gasoline	0.22	0.90	Not Detected	Not Detected

M = Reported value may be biased due to apparent matrix interferences.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Fluorobenzene (FID)	96	75-125
Fluorobenzene (PID)	98	75-125

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0205238-02A

EPA METHOD TO-3 GC/PID/FID

File Name:	d052003	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	5/20/02

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.0010	0.0032	Not Detected	Not Detected
Toluene	0.0010	0.0038	Not Detected	Not Detected
Ethyl Benzene	0.0010	0.0044	Not Detected	Not Detected
Total Xylenes	0.0010	0.0044	Not Detected	Not Detected
TPH (C5+ Hydrocarbons) ref. to Gasoline	0.025	0.10	Not Detected	Not Detected
C2-C4 Hydrocarbons ref. to Gasoline	0.025	0.10	Not Detected	Not Detected

Container Type: NA - Not Applicable

Surrogates	% Recovery	Method Limits
Fluorobenzene (FID)	88	75-125
Fluorobenzene (PID)	90	75-125

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0205238-03A

EPA METHOD TO-3 GC/PID/FID

File Name:	d052027b	Date of Collection:	NA
Dil. Factor:	1:00	Date of Analysis:	5/20/02

Compound	Rot. Limit (ppmv)	Rpt. Limit (uG/L)	%Recovery
Benzene	0.0010	0.0032	88
Toluene	0.0010	0.0038	89
Ethyl Benzene	0.0010	0.0044	93
Total Xylenes	0.0010	0.0044	90
TPH (C5+ Hydrocarbons) ref. to Gasoline	0.025	0.10	100
C2-C4 Hydrocarbons ref. to Gasoline	0.025	0.10	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	109	75-125
Fluorobenzene (PID)	92	75-125



CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice:
 Subsequent departure or any other delay in the shipment of this sample is the responsibility of the client. All samples must be properly sealed, labeled, and packaged to meet the requirements of the Department of Transportation (DOT) for hazardous materials. The client is responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to meet the requirements of the DOT. The client is also responsible for ensuring that the sample is properly sealed, labeled, and packaged to me

1600 DE RAVINE BOYS SUITE 9
 FOLSOM, CA 95630-1719
 (916) 935-1000 FAX (916) 935-1000

Client Name: <u>Linda Cummings</u> Company: <u>DAVEY'S MESS REST</u> Address: <u>605 King Ave. City Colton, CA 95210</u> Phone: <u>916-424-2416</u> FAX: <u>916-424-2416</u> Collected By: <u>[Signature]</u>	Project Info: P.O. # <u>100-242</u> Project: <u>QUELCO</u> Project Name: <u>SMALL GOLD PORT MS</u>	Turn Around Time: <input type="checkbox"/> Normal <input type="checkbox"/> Rush <u>Specs</u> <u>1/2 5/1/00</u>
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Date	Field Sample ID	Date/Time	Analyses Requested	Container Pressure / Vacuum		
				Initial	Final	Residual
	<u>12P STAGE</u>	<u>5/2/00</u>	<u>TOP (DISEMPTED)</u>	<u>315</u>	<u>0</u>	<u>0/0</u>

Received By: <u>[Signature]</u> Date: <u>5/2/00</u> Received By: <u>[Signature]</u> Date: <u>5/2/00</u> Received By: <u>[Signature]</u> Date: <u>5/2/00</u>	Notes: <u>[Faint handwritten notes]</u>
---	--

Shipper: <u>DAVEY'S MESS REST</u> Receiver: <u>[Signature]</u> Date: <u>5/2/00</u> Time: <u>10:00 AM</u> Location: <u>Colton, CA</u> Signature: <u>[Signature]</u> Date: <u>5/2/00</u> Time: <u>10:00 AM</u> Location: <u>Colton, CA</u>	Lab No: <u>0205000</u>
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- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

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E-mail to: samplereceiving@airtoxics.com



AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0206045

Work Order Summary

CLIENT: Mr. Mike Valder
Severn-Trent
6712 Benjamin Rd., Suite #100
Tampa, FL 33634

BILL TO: Mr. Mike Valder
Severn-Trent
6712 Benjamin Rd., Suite #100
Tampa, FL 33634

PHONE: 813-885-7427

FAX: 813-885-7049

DATE RECEIVED: 6/4/2002

DATE COMPLETED: 6/17/2002

P.O. # 167842

PROJECT # 0486003 Site 6 Gulfport, MS

CONTACT: DeDe Dodge

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>
01A	LRP Stack	TO-3	1.5 "Hg
02A	Lab Blank	TO-3	NA
03A	LCS	TO-3	NA

CERTIFIED BY:

Laboratory Director

DATE: 06/18/02

Certification numbers: CA NELAP - 02110CA, NY NELAP - 11291, UT ELAP - E-217, LA - AI 30763
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 01/01/02, Expiration date: 06/30/02

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
TO-3
Severn-Trent
Workorder# 0206045

One 1 Liter Summa Canister sample was received on June 04, 2002. The laboratory performed analysis via modified EPA Method TO-3 for Benzene, Toluene, Ethylbenzene, Xylenes and Total Petroleum Hydrocarbons (TPH). BTEX was analyzed via GC/PID and TPH via GC/FID. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/L. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system. See the data sheets for the reporting limits for each compound.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: LRP Stack

ID#: 0206045-01A

MODIFIED EPA METHOD TO-3 GC/PID/FID

File Name:	60613005	Date of Collection:	6/3/02
Dil. Factor:	10.6	Date of Analysis:	6/13/02

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.011	0.034	0.30	0.98
Toluene	0.011	0.040	0.71	2.7
Ethyl Benzene	0.011	0.047	0.36	1.6
Total Xylenes	0.011	0.047	2.4	11
TPH (C5+ Hydrocarbons) ref. to Gasoline	0.26	1.1	87	360
C2-C4 Hydrocarbons ref. to Gasoline	0.26	1.1	Not Detected	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	117	75-125
Fluorobenzene (PID)	114	75-125

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0206045-02A

MODIFIED EPA METHOD TO-3 GC/PID/FID

File Name:	60613004	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	6/13/02

Compound	Rot. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.0010	0.0032	Not Detected	Not Detected
Toluene	0.0010	0.0038	Not Detected	Not Detected
Ethyl Benzene	0.0010	0.0044	Not Detected	Not Detected
Total Xylenes	0.0010	0.0044	Not Detected	Not Detected
TPH (C5+ Hydrocarbons) ref. to Gasoline	0.025	0.10	Not Detected	Not Detected
C2-C4 Hydrocarbons ref. to Gasoline	0.025	0.10	Not Detected	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	78	75-125
Fluorobenzene (PID)	76	75-125

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0206045-03A

MODIFIED EPA METHOD TO-3 GC/PID/FID

File Name:	60613010b	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	6/13/02

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	%Recovery
Benzene	0.0010	0.0032	94
Toluene	0.0010	0.0038	84
Ethyl Benzene	0.0010	0.0044	87
Total Xylenes	0.0010	0.0044	86

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (PID)	87	75-125



CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice

Requiring signature on this document indicates that sample is being shipped in compliance with all applicable (local, State, Federal, national, and international) laws, regulations, and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Requiring signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action of any kind related to the collection, handling, or shipping of samples. P.O. # 10186 (800) 467-4922

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FOLSOM, CA 95630-4719
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Contact Person: <u>Chris Conner</u> Company: <u>Battelle Memorial Institute</u> Address: <u>505 King Av</u> City: <u>Columbus</u> State: <u>OH</u> Zip: <u>43241</u> Phone: <u>614-924-3616</u> FAX: <u>614-924-3167</u> Collected By: Signature <u>[Signature]</u>	Project info: P.O. #: <u>10186</u> Project #: <u>0486003</u> Project Name: <u>SOE6</u> <u>Goldport, MS</u>	Turn Around Time: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush _____ Specify _____ <u>8/6-5-12</u>
---	--	---

LAB ID	Field Sample ID	Date & Time	Analyses Requested	Canister Pressure / Vacuum		
				Initial	Final	Receipt
	<u>LRP Stack</u>	<u>JUNE 3 2002</u> <u>10:30a</u>	<u>To 3 (BTEX, TPA)</u>			<u>1571g</u>

Relinquished By: (Signature) (Date/Time) <u>[Signature]</u> <u>6-4-02 10:09</u>	Received By: (Signature) (Date/Time) <u>[Signature]</u> <u>6-4-02 9:15</u>	Notes:
Relinquished By: (Signature) (Date/Time)	Received By: (Signature) (Date/Time)	
Relinquished By: (Signature) (Date/Time)	Received By: (Signature) (Date/Time)	

Lab Use Only	Shipper Name: <u>AT&T</u>	Opened By: <u>[Signature]</u>	Temp. (°C): <u>9.5</u>	Condition: <u>Good</u>	Custody Seal Intact? Yes No <u>(None)</u>	Work Order #: <u>0206045</u>
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This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

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E-mail to: samplereceiving@airtoxics.com

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WORK ORDER #: 0207056

Work Order Summary

CLIENT: Mr. Mike Valder
Severn-Trent
6712 Benjamin Rd., Suite #100
Tampa, FL 33634

BILL TO: Mr. Mike Valder
Severn-Trent
6712 Benjamin Rd., Suite #100
Tampa, FL 33634

PHONE: 813-885-7427

FAX: 813-885-7049

DATE RECEIVED: 7/2/02

DATE COMPLETED: 7/15/02

P.O. #

PROJECT # 0486003 Site 6

CONTACT: DeDe Dodge

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>
01A	LRP STACK	Modified TO-3	2.0 "Hg
02A	Lab Blank	Modified TO-3	NA
03A	LCS	Modified TO-3	NA

CERTIFIED BY:

Linda A. Freeman

Laboratory Director

DATE: 07/15/02

Certification numbers: CA NELAP - 02110CA, NY NELAP - 11291, UT NELAP - 9166389892, LA NELAP/LELAP- AI 30763
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/02, Expiration date: 06/30/03

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-3
Severn-Trent
Workorder# 0207056

One 1 Liter Summa Canister sample was received on July 02, 2002. The laboratory performed analysis via modified EPA Method TO-3 for Benzene, Toluene, Ethylbenzene, Xylenes and Total Petroleum Hydrocarbons (TPH). BTEX was analyzed via GC/PID and TPH via GC/FID. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/L. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system. See the data sheets for the reporting limits for each compound.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: LRP STACK

ID#: 0207056-01A

MODIFIED EPA METHOD TO-3 GC/PID/FID

File Name:	d071212	Date of Collection:	7/1/02
Dil. Factor:	17.3	Date of Analysis:	7/12/02

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.017	0.056	0.39 M	1.3 M
Toluene	0.017	0.066	0.55	2.1
Ethyl Benzene	0.017	0.076	0.42	1.8
Total Xylenes	0.017	0.076	3.1	14
TPH (C5+ Hydrocarbons) ref. to Gasoline	0.43	1.8	130	560
C2-C4 Hydrocarbons ref. to Gasoline	0.43	1.8	Not Detected	Not Detected

M = Reported value may be biased due to apparent matrix interferences.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	91	75-125
Fluorobenzene (PID)	107	75-125

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0207056-02A

MODIFIED EPA METHOD TO-3 GC/PID/FID

File Name:	d071204	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	7/12/02

Compound	Rot. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.0010	0.0032	Not Detected	Not Detected
Toluene	0.0010	0.0038	Not Detected	Not Detected
Ethyl Benzene	0.0010	0.0044	Not Detected	Not Detected
Total Xylenes	0.0010	0.0044	Not Detected	Not Detected
TPH (C5+ Hydrocarbons) ref. to Gasoline	0.025	0.10	Not Detected	Not Detected
C2-C4 Hydrocarbons ref. to Gasoline	0.025	0.10	Not Detected	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	96	75-125
Fluorobenzene (PID)	116	75-125

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0207056-03A

MODIFIED EPA METHOD TO-3 GC/PID/FID

File Name:	d071203b	Date of Collection:	NA
Dil. Factor:	100	Date of Analysis:	7/12/02

Compound	Rot. Limit (ppmv)	Rpt. Limit (uG/L)	%Recovery
Benzene	0.0010	0.0032	101
Toluene	0.0010	0.0038	99
Ethyl Benzene	0.0010	0.0044	94
Total Xylenes	0.0010	0.0044	84

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (PID)	109	75-125

ATTACHMENT 3

LOG NO: B2-11913
 Received: 13 MAY 02
 Reported: 24 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 134420524

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
11913-1	OWS DRO	05-09-02/16:00
PARAMETER	11913-1	
Diesel Range Organics (8100M) (8100)		
Hydrocarbons as DRO, ug/l	35000	
Surrogate - o-Terphenyl	*F33	
Dilution Factor	100	
Prep Date	05.14.02	
Prep Time	17:00	
Analysis Date	05.23.02	
Analysis Time	16:40	
Batch ID	0514C	



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LOG NO: B2-11913
Received: 13 MAY 02
Reported: 24 MAY 02

Ms. Lydia Cumming
Battelle
505 King Avenue
Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
Sampled By: Client
Code: 134420524

Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
11913-2	PH-STRIP	05-09-02/16:00
PARAMETER	11913-2	
pH (150.1), units	6.4	
Dilution Factor	1	
Analysis Date	05.11.02	
Analysis Time	12:00	
Batch ID	0511A	

LOG NO: B2-11913
Received: 13 MAY 02
Reported: 24 MAY 02

Ms. Lydia Cumming
Battelle
505 King Avenue
Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
Sampled By: Client
Code: 134420524

REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
11913-3	STRIP BTEX	05-09-02/16:00
PARAMETER		11913-3
Purgeable Aromatics (602)		
Benzene, ug/l		<5.0
Ethylbenzene, ug/l		<5.0
Toluene, ug/l		8.0
Xylenes, ug/l		19
Total Volatile Organic Aromatics, ug/l		27
Methyl Tert Butyl Ether (MTBE), ug/l		<50
Surrogate - a,a,a-Trifluorotoluene		16
Surrogate - Expected Value		20
Surrogate - % Recovery		80 %
Surrogate - Control Limit		70-130 %
Dilution Factor		5
Analysis Date		05.21.02
Analysis Time		19:39
Batch ID		0521CD

LOG NO: B2-11913
 Received: 13 MAY 02
 Reported: 24 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 134420524

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
11913-4	Method Blank					
11913-5	Lab Control Standard Result					
11913-6	Lab Control Standard Duplicate Result					
11913-7	Spike Amount Added, LCS/LCSD					
11913-8	Lab Control Standard % Recovery					
PARAMETER		11913-4	11913-5	11913-6	11913-7	11913-8
Purgeable Aromatics (602)						
Benzene, ug/l		<1.0	8.80	9.20	10	88 %
Ethylbenzene, ug/l		<1.0	---	---	---	---
Toluene, ug/l		<1.0	9.60	10.0	10	96 %
Xylenes, ug/l		<1.0	---	---	---	---
Total Volatile Organic Aromatics, ug/l		<1.0	---	---	---	---
Methyl Tert Butyl Ether (MTBE), ug/l		<10	---	---	---	---
Surrogate - a,a,a-Trifluorotoluene	16	16	16	16	---	---
Surrogate - Expected Value	20	20	20	20	---	---
Surrogate - % Recovery	80 %	80 %	80 %	80 %	---	---
Surrogate - Control Limit	70-130 %	70-130 %	70-130 %	70-130 %	---	---
Dilution Factor	1	1	1	1	---	---
Analysis Date	05.21.02	05.21.02	05.21.02	05.21.02	---	05.21.02
Analysis Time	12:05	12:46	13:27	---	---	---
Batch ID	0521C	0521C	0521C	---	---	0521C
pH (150.1), units						
Dilution Factor	1	1	1	1	---	---
Analysis Date	05.11.02	05.11.02	05.11.02	05.11.02	---	---
Analysis Time	12:00	12:00	12:00	---	---	---
Batch ID	0511A	0511A	0511A	---	---	---

LOG NO: B2-11913
 Received: 13 MAY 02
 Reported: 24 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 134420524

REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
11913-4	Method Blank					
11913-5	Lab Control Standard Result					
11913-6	Lab Control Standard Duplicate Result					
11913-7	Spike Amount Added, LCS/LCSD					
11913-8	Lab Control Standard % Recovery					
PARAMETER		11913-4	11913-5	11913-6	11913-7	11913-8
Diesel Range Organics (8100M) (8100)						
Hydrocarbons as DRO, ug/l		<100	1100	1000	1000	110 %
Surrogate - o-Terphenyl		130 %	140 %	140 %	---	---
Dilution Factor		1	1	1	---	---
Prep Date		05.14.02	05.01.02	05.14.02	---	---
Prep Time		17:00	17:00	17:00	---	---
Analysis Date		05.23.04	05.23.02	05.23.02	---	---
Analysis Time		16:01	16:08	16:14	---	---
Batch ID		0514C	0514C	0514C	0514C	0514C

LOG NO: B2-11913
 Received: 13 MAY 02
 Reported: 24 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 134420524

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
11913-9	Lab Control Standard Duplicate % Recovery					
11913-10	LCS Accuracy Control Limit (%R)					
11913-11	Precision (%RPD) of LCS/LCSD					
11913-12	LCS Precision Control Limit (Advisory) %RPD					
11913-13	Spike Sample ID					
<hr/>						
PARAMETER		11913-9	11913-10	11913-11	11913-12	11913-13
<hr/>						
Purgeable Aromatics (602)						
Benzene, %		92 %	39-150 %	4.4 %	<31 %	11928-4
Toluene, %		100 %	46-148 %	4.1 %	<25 %	11928-4
Surrogate - a,a,a-Trifluorotoluene		---	70-130 %	---	---	---
Analysis Date		05.21.02	---	05.21.02	---	---
Batch ID		0521C	---	0521C	---	---
<hr/>						
pH (150.1), %		100 %	63-158 %	0.17 %	<40 %	---
<hr/>						
Diesel Range Organics (8100M) (8100)						
Hydrocarbons as DRO, %		100 %	40-140 %	9.5 %	<40 %	*F82
Surrogate - o-Terphenyl		---	38-156 %	---	---	---
Prep Date		---	---	05.14.02	---	---
Prep Time		---	---	17:00	---	---
Analysis Date		---	---	05.23.02	---	---
Analysis Time		---	---	16:14	---	---
Batch ID		0514C	---	0514C	---	0514C

LOG NO: B2-11913
 Received: 13 MAY 02
 Reported: 24 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 134420524

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
11913-14	Sample Result					
11913-15	Matrix Spike Result					
11913-16	Matrix Spike Duplicate Result					
11913-17	Spike Amount Added, MS					
11913-18	Matrix Spike % Recovery					
PARAMETER		11913-14	11913-15	11913-16	11913-17	11913-18
Purgeable Aromatics (602)						
Benzene, ug/l		<1.0	9.00	9.20	10	90 %
Ethylbenzene, ug/l		<1.0	---	---	---	---
Toluene, ug/l		<1.0	11.0	9.80	10	110 %
Xylenes, ug/l		<1.0	---	---	---	---
Total Volatile Organic Aromatics, ug/l		<1.0	---	---	---	---
Methyl Tert Butyl Ether (MTBE), ug/l		<10	---	---	---	---
Surrogate - a,a,a-Trifluorotoluene		16	16	16	---	---
Surrogate - Expected Value		20	20	20	---	---
Surrogate - % Recovery		80 %	80 %	80 %	---	---
Surrogate - Control Limit		70-130 %	70-130 %	70-130 %	---	---
Dilution Factor		1	1	1	---	---
Analysis Date		05.21.02	05.22.02	05.22.02	---	05.22.02
Analysis Time		21:01	15:24	16:05	---	---
Batch ID		0521C	0521C	0521C	---	0521C
pH (150.1)		---	---	---	---	---
Diesel Range Organics (8100M) (8100)						
Hydrocarbons as DRO, ug/l		*F82	*F82	*F82	1000	*F82
Batch ID		0514C	0514C	0514C	0514C	0514C



STL Tampa

LOG NO: B2-11913
 Received: 13 MAY 02
 Reported: 24 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 134420524

REPORT OF RESULTS

Page 8

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
11913-19	Matrix Spike Duplicate % Recovery					
11913-20	MS Accuracy Advisory Limit (%R)					
11913-21	Precision (%RPD) MS/MSD					
11913-22	MS Precision Advisory Limit (%RPD)					
11913-23	Reporting Limit (RL)					
PARAMETER		11913-19	11913-20	11913-21	11913-22	11913-23
Purgeable Aromatics (602)						
Benzene, %		92 %	39-150 5	2.2 %	<31 %	1.0
Toluene, %		98 %	46-148 %	12 %	<25 %	1.0
Surrogate - a,a,a-Trifluorotoluene		---	70-130 %	---	---	---
Ethylbenzene, ug/l		---	---	---	---	1.0
Xylenes, ug/l		---	---	---	---	1.0
Total Volatile Organic Aromatics, ug/l		---	---	---	---	1.0
Methyl Tert Butyl Ether (MTBE), ug/l		---	---	---	---	10
Analysis Date		05.22.02	---	05.22.02	---	---
Batch ID		0521C	---	0521C	---	---
pH (150.1), units		---	---	---	---	NA
Diesel Range Organics (8100M) (8100)						
Hydrocarbons as DRO, %		*F82	40-140 %	*F82	<40 %	100
Surrogate - o-Terphenyl		---	38-156 %	---	---	---
Batch ID		0514C	---	0514C	---	---

LOG NO: B2-11913
 Received: 13 MAY 02
 Reported: 24 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 134420524

REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
11913-19	Matrix Spike Duplicate % Recovery	
11913-20	MS Accuracy Advisory Limit (%R)	
11913-21	Precision (%RPD) MS/MSD	
11913-22	MS Precision Advisory Limit (%RPD)	
11913-23	Reporting Limit (RL)	

PARAMETER	11913-19	11913-20	11913-21	11913-22	11913-23

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

Method : EPA SW-846

DOH Certification: E84282.

*F33 = Control limits are established only for surrogate concentration levels specified by EPA methods. Because the sample was diluted prior to analysis, surrogate recoveries are not reported.

*F82 = Insufficient sample volume was available to perform a° batch-specific matrix spike. However, an LCS analyzed with the sample° batch met control criteria.°



Michael F. Valder, Project Manager

LOG NO: B2-11979
 Received: 17 MAY 02
 Reported: 30 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 0486003

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 144720530

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
11979-1	PH-STRIP	05-16-02/09:30
PARAMETER		11979-1
pH (150.1), units		6.7
Dilution Factor		1
Analysis Date		05.17.02
Analysis Time		10:00
Batch ID		0517A

LOG NO: B2-11979
Received: 17 MAY 02
Reported: 30 MAY 02

Ms. Lydia Cumming
Battelle
505 King Avenue
Columbus, OH 43201

Client PO. No.: 0486003

Project: Battelle Mem/0486003
Sampled By: Client
Code: 121620530

Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
11979-2	BTEX-STRIPPER	05-16-02/09:30
PARAMETER	11979-2	
Purgeable Aromatics (602)		
Benzene, ug/l		1.2
Ethylbenzene, ug/l		2.5
Toluene, ug/l		6.1
Xylenes, ug/l		20
Total Volatile Organic Aromatics, ug/l		29.8
Methyl Tert Butyl Ether (MTBE), ug/l		<10
Surrogate - a,a,a-Trifluorotoluene		85 %
Dilution Factor		1
Analysis Date		05.28.02
Analysis Time		19:16
Batch ID		0528C

LOG NO: B2-11979
 Received: 17 MAY 02
 Reported: 30 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 0486003

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 121620530

REPORT OF RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
11979-3	Trip Blank	05-16-02
PARAMETER	11979-3	
Purgeable Aromatics (602)		
Benzene, ug/l		<1.0
Ethylbenzene, ug/l		<1.0
Toluene, ug/l		<1.0
Xylenes, ug/l		<1.0
Total Volatile Organic Aromatics, ug/l		<1.0
Methyl Tert Butyl Ether (MTBE), ug/l		<10
Surrogate - a,a,a-Trifluorotoluene		85 %
Dilution Factor		1
Analysis Date		05.28.02
Analysis Time		18:35
Batch ID		0528C

LOG NO: B2-11979
 Received: 17 MAY 02
 Reported: 30 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 0486003

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 121620530

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
11979-4	Method Blank					
11979-5	Lab Control Standard Result					
11979-6	Lab Control Standard Duplicate Result					
11979-7	Spike Amount Added, LCS/LCSD					
11979-8	Lab Control Standard % Recovery					
PARAMETER		11979-4	11979-5	11979-6	11979-7	11979-8
Purgeable Aromatics (602)						
Benzene, ug/l		<1.0	9.8	9.7	10	98 %
Ethylbenzene, ug/l		<1.0	---	---	---	---
Toluene, ug/l		<1.0	11.0	10.0	10	110 %
Xylenes, ug/l		<1.0	---	---	---	---
Total Volatile Organic Aromatics, ug/l		<1.0	---	---	---	---
Methyl Tert Butyl Ether (MTBE), ug/l		<10	---	---	---	---
Surrogate - a,a,a-Trifluorotoluene		75 %	75 %	90 %	---	---
Dilution Factor		1	1	1	---	---
Analysis Date		05.28.02	05.28.02	05.28.02	---	---
Analysis Time		13:01	13:43	14:25	---	---
Batch ID		0528C	0528C	0528C	0528C	0528C
pH (150.1), units						
Dilution Factor		1	1	1	---	---
Analysis Date		05.17.02	05.17.02	05.17.02	---	---
Analysis Time		10:00	10:00	10:00	---	---
Batch ID		0517A	0517A	0517A	---	---

LOG NO: B2-11979
 Received: 17 MAY 02
 Reported: 30 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 0486003

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 121620530

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
11979-9	Lab Control Standard Duplicate % Recovery					
11979-10	LCS Accuracy Control Limit (%R)					
11979-11	Precision (%RPD) of LCS/LCSD					
11979-12	LCS Precision Control Limit (Advisory) %RPD					
11979-13	Spike Sample ID					
PARAMETER		11979-9	11979-10	11979-11	11979-12	11979-13
Surgeable Aromatics (602)						
Benzene, %		97 %	39-150 %	1.0 %	<31 %	11958-1
Toluene, %		100 %	46-148 %	9.5 %	<25 %	11958-1
Surrogate - a,a,a-Trifluorotoluene		---	70-130 %	---	---	---
Analysis Date		---	---	05.28.02	---	---
Batch ID		0528C	---	0528C	---	0528C
pH (150.1), %		98 %	63-158 %	0 %	<40 %	---

LOG NO: B2-11979
 Received: 17 MAY 02
 Reported: 30 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 0486003

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 121620530

REPORT OF RESULTS

Page 6

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
11979-14	Sample Result					
11979-15	Matrix Spike Result					
11979-16	Matrix Spike Duplicate Result					
11979-17	Spike Amount Added, MS					
11979-18	Matrix Spike % Recovery					
PARAMETER		11979-14	11979-15	11979-16	11979-17	11979-18
Purgeable Aromatics (602)						
Benzene, ug/l		<1.0	9.20	9.30	10	92 %
Ethylbenzene, ug/l		<1.0	---	---	---	---
Toluene, ug/l		<1.0	9.90	10.0	10	99 %
Xylenes, ug/l		<1.0	---	---	---	---
Total Volatile Organic Aromatics, ug/l		<1.0	---	---	---	---
Methyl Tert Butyl Ether (MTBE), ug/l		<10	---	---	---	---
Surrogate - a,a,a-Trifluorotoluene	17	17	17	---	---	---
Surrogate - Expected Value	20	20	20	---	---	---
Surrogate - % Recovery	85 %	85 %	85 %	---	---	---
Surrogate - Control Limit	70-130 %	70-130 %	70-130 %	---	---	---
Dilution Factor	1	1	1	---	---	---
Analysis Date	05.28.02	05.29.02	05.29.02	---	---	---
Analysis Time	15:08	14:49	15:30	---	---	---
Batch ID	0528C	0528C	0528C	---	0528C	---
pH (150.1)		---	---	---	---	---

LOG NO: B2-11979
 Received: 17 MAY 02
 Reported: 30 MAY 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 0486003

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 121620530

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
11979-19	Matrix Spike Duplicate % Recovery					
11979-20	MS Accuracy Advisory Limit (%R)					
11979-21	Precision (%RPD) MS/MSD					
11979-22	MS Precision Advisory Limit (%RPD)					
11979-23	Reporting Limit (RL)					
PARAMETER		11979-19	11979-20	11979-21	11979-22	11979-23
Surgeable Aromatics (602)						
Benzene, %		93 %	39-150 %	1.1 %	<31 %	1.0
Toluene, %		100 %	46-148 %	1.0 %	<25 %	1.0
Ethylbenzene, ug/l		---	---	---	---	1.0
Xylenes, ug/l		---	---	---	---	1.0
Total Volatile Organic Aromatics, ug/l		---	---	---	---	1.0
Methyl Tert Butyl Ether (MTBE), ug/l		---	---	---	---	10
Analysis Date		---	---	05.29.02	---	---
Batch ID		0528C	---	0528C	---	---
pH (150.1)		---	---	---	---	NA

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.
 Method : EPA SW-846
 DOH Certification: E84282.


 Michael F. Valder, Project Manager

LOG NO: B2-12190
 Received: 04 JUN 02
 Reported: 14 JUN 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 151320617

Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
12190-1	OWS DRO	06-03-02/10:30
PARAMETER	12190-1	
Diesel Range Organics (8100M) (8100)		
Hydrocarbons as DRO, ug/l	13000	
Surrogate - o-Terphenyl	*F33	
Dilution Factor	20	
Prep Date	06.07.02	
Prep Time	17:00	
Analysis Date	06.11.02	
Analysis Time	18:28	
Batch ID	0607C	

SEVERN

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STL Tampa

LOG NO: B2-12190
Received: 04 JUN 02
Reported: 14 JUN 02

Ms. Lydia Cumming
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505 King Avenue
Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
Sampled By: Client
Code: 151320617

Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
12190-2	PH-STRIPPER	06-03-02/10:30
PARAMETER	12190-2	
pH (150.1), units	6.9	
Dilution Factor	1	
Analysis Date	06.04.02	
Analysis Time	10:30	
Batch ID	0604A	

SEVERN

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STL Tampa

LOG NO: B2-12190
Received: 04 JUN 02
Reported: 14 JUN 02

Ms. Lydia Cumming
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505 King Avenue
Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
Sampled By: Client
Code: 151320617

Page 3

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
12190-3	BTEX STRIPPER	06-03-02/10:30
PARAMETER		12190-3
Purgeable Aromatics (602)		
Benzene, ug/l		<1.0
Ethylbenzene, ug/l		<1.0
Toluene, ug/l		2.0
Xylenes, ug/l		8.9
Total Volatile Organic Aromatics, ug/l		10.9
Methyl Tert Butyl Ether (MTBE), ug/l		<10
Surrogate - % Recovery		80 %
Dilution Factor		1
Analysis Date		06.13.02
Analysis Time		00:42
Batch ID		0612C

LOG NO: B2-12190
 Received: 04 JUN 02
 Reported: 14 JUN 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 151320617

REPORT OF RESULTS

Page 4

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12190-4	Method Blank					
12190-5	Lab Control Standard Result					
12190-6	Lab Control Standard Duplicate Result					
12190-7	Spike Amount Added, LCS/LCSD					
12190-8	Lab Control Standard % Recovery					
PARAMETER		12190-4	12190-5	12190-6	12190-7	12190-8
Purgeable Aromatics (602)						
Benzene, ug/l		<1.0	7.70	7.90	10	77 %
Ethylbenzene, ug/l		<1.0	---	---	---	---
Toluene, ug/l		<1.0	8.10	8.20	10	81 %
Xylenes, ug/l		<1.0	---	---	---	---
Total Volatile Organic Aromatics, ug/l		<1.0	---	---	---	---
Methyl Tert Butyl Ether (MTBE), ug/l		<10	---	---	---	---
Surrogate - % Recovery		85 %	85 %	85 %	---	---
Dilution Factor		1	1	1	---	---
Analysis Date		06.12.02	06.12.02	06.12.02	---	---
Analysis Time		11:20	15:49	16:34	---	---
Batch ID		0612C	0612C	0612C	---	---
pH (150.1), units		6.4	6.07	6.06	6.0	85 %
Dilution Factor		1	1	1	---	---
Analysis Date		06.04.02	06.04.02	06.04.02	---	---
Analysis Time		10:30	10:30	10:30	---	---
Batch ID		0304A	0604A	0604A	---	---

LOG NO: B2-12190
 Received: 04 JUN 02
 Reported: 14 JUN 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 151320617

REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12190-4	Method Blank					
12190-5	Lab Control Standard Result					
12190-6	Lab Control Standard Duplicate Result					
12190-7	Spike Amount Added, LCS/LCSD					
12190-8	Lab Control Standard % Recovery					
PARAMETER		12190-4	12190-5	12190-6	12190-7	12190-8
Diesel Range Organics (8100M) (8100)						
Hydrocarbons as DRO, ug/l	<100	610	660	1000	61 %	
Surrogate - o-Terphenyl	96 %	92 %	88 %	---	---	
Dilution Factor	1	1	1	---	---	
Prep Date	06.07.02	06.07.02	06.07.02	---	---	
Prep Time	17:00	17:00	17:00	---	---	
Analysis Date	06.10.02	06.10.02	06.10.02	---	---	
Analysis Time	17:10	17:37	18:05	---	---	
Batch ID	0607C	0607C	0607C	---	---	

STL Tampa

LOG NO: B2-12190
Received: 04 JUN 02
Reported: 14 JUN 02

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Client PO. No.: 167842

Project: Battelle Mem/0486003
Sampled By: Client
Code: 151320617
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12190-9	Lab Control Standard Duplicate % Recovery					
12190-10	LCS Accuracy Control Limit (%R)					
12190-11	Precision (%RPD) of LCS/LCSD					
12190-12	LCS Precision Control Limit (Advisory) %RPD					
12190-13	Spike Sample ID					
PARAMETER		12190-9	12190-10	12190-11	12190-12	12190-13
Purgeable Aromatics (602)						
Benzene, %		79 %	39-150 %	2.6 %	<31 %	12201-1
Toluene, %		82 %	46-148 %	1.2 %	<25 %	12201-1
pH (150.1), %		87 %	63-158 %	0.17 %	<40 %	---
Diesel Range Organics (8100M) (8100)						
Hydrocarbons as DRO, %		66 %	40-140 %	7.9 %	<40 %	*F82
Surrogate - o-Terphenyl		---	38-156 %	---	---	---

LOG NO: B2-12190
 Received: 04 JUN 02
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 Code: 151320617

REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12190-14	Sample Result					
12190-15	Matrix Spike Result					
12190-16	Matrix Spike Duplicate Result					
12190-17	Spike Amount Added, MS					
12190-18	Matrix Spike % Recovery					
PARAMETER		12190-14	12190-15	12190-16	12190-17	12190-18
Purgeable Aromatics (602)						
Benzene, ug/l		<1.0	8.10	8.40	10	81 %
Ethylbenzene, ug/l		<1.0	---	---	---	---
Toluene, ug/l		<1.0	8.50	8.60	10	85 %
Xylenes, ug/l		<1.0	---	---	---	---
Total Volatile Organic Aromatics, ug/l		<1.0	---	---	---	---
Methyl Tert Butyl Ether (MTBE), ug/l		<10	---	---	---	---
Surrogate - % Recovery		85 %	85 %	85 %	---	---
Dilution Factor		1	1	1	---	---
Analysis Date		06.12.02	06.13.02	06.13.02	---	---
Analysis Time		18:04	17:18	18:03	---	---
Batch ID		0612C	0612C	0612C	---	---
pH (150.1)		---	---	---	---	---
Diesel Range Organics (8100M) (8100)						
Hydrocarbons as DRO, ug/l		*F82	*F82	*F82	*F82	*F82
Batch ID		0607C	0607C	0607C	---	---

LOG NO: B2-12190
 Received: 04 JUN 02
 Reported: 14 JUN 02

Ms. Lydia Cumming
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Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 151320617

REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12190-19	Matrix Spike Duplicate % Recovery					
12190-20	MS Accuracy Advisory Limit (%R)					
12190-21	Precision (%RPD) MS/MSD					
12190-22	MS Precision Advisory Limit (%RPD)					
12190-23	Reporting Limit (RL)					
PARAMETER		12190-19	12190-20	12190-21	12190-22	12190-23
Purgeable Aromatics (602)						
Benzene, %		84 %	39-150 %	3.6 %	<31 %	1.0
Toluene, %		86 %	46-148 %	1.2 %	<25 %	1.0
Ethylbenzene, ug/l		---	---	---	---	1.0
Xylenes, ug/l		---	---	---	---	1.0
Total Volatile Organic Aromatics, ug/l		---	---	---	---	1.0
Methyl Tert Butyl Ether (MTBE), ug/l		---	---	---	---	10
pH (150.1), units		---	---	---	---	NA
Diesel Range Organics (8100M) (8100)						
Hydrocarbons as DRO, %		*F82	40-140 %	*F82	<40 %	100
Surrogate - o-Terphenyl		---	38-156 %	---	---	---

LOG NO: B2-12190
Received: 04 JUN 02
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Project: Battelle Mem/0486003
Sampled By: Client
Code: 151320617

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
12190-19	Matrix Spike Duplicate % Recovery	
12190-20	MS Accuracy Advisory Limit (%R)	
12190-21	Precision (%RPD) MS/MSD	
12190-22	MS Precision Advisory Limit (%RPD)	
12190-23	Reporting Limit (RL)	

PARAMETER	12190-19	12190-20	12190-21	12190-22	12190-23

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

Method : EPA SW-846

DOH Certification: E84282.

J = The flag "J" indicates the presence of a compound that meets the identification criteria, but the result is less than the sample RL and greater than the MDL.

*F33 = Control limits are established only for surrogate concentration levels specified by EPA methods. Because the sample was diluted prior to analysis, surrogate recoveries are not reported.

*F82 = Insufficient sample volume was available to perform a° batch-specific matrix spike. However, an LCS analyzed with the sample° batch met control criteria.°



Michael F. Valder, Project Manager

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

STL Tampa

212190 -

STL Tampa
6712 Benjamin Road, Suite 100
Tampa, FL 33634

Website: www.stl-inc.com
Phone: (813) 885-7427
Fax: (813) 885-7049

○ Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE		PROJECT NO. 0486003	PROJECT LOCATION (STATE) MS.	MATRIX TYPE	REQUIRED ANALYSIS										PAGE	OF					
SAMPLER'S SIGNATURE <i>Larry Holt</i>		P.O. NUMBER 167842	CONTRACT NO.	COMPOSITE (C) OR GRAB (G) INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	PH	BLEEX	DRD	- HCL	PRESERVATIVE											STANDARD REPORT DELIVERY	<input type="radio"/>
CLIENT (SITE) FM Lydia Cumming		CLIENT PHONE 614-424-7778	CLIENT FAX 614-424-3667																	DATE DUE	_____
CLIENT NAME Battelle Tenn		CLIENT E-MAIL																		EXPEDITED REPORT DELIVERY (SURCHARGE)	<input type="radio"/>
CLIENT ADDRESS 505 King Ave, Columbus Ohio 43201		COMPANY CONTRACTING THIS WORK (if applicable) SPS																		DATE DUE	_____
SAMPLE		SAMPLE IDENTIFICATION			NUMBER OF CONTAINERS SUBMITTED										REMARKS						
DATE	TIME																				
6-3-02	10:30	Ph - SCRIPPER			1																
6-3-02	10:30	BLEEX - SCRIPPER			3																
6-3-02	10:30	DRD - OLDS			2																

NOTE - AIR SAMPLE SENT TO AIR TOXIS, LTD THIS DATE

RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i>	DATE 6/29/02	TIME 1114	RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i>	DATE 6/3/02	TIME 1:50p	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE) EMPTY CONTAINERS	DATE	TIME	RECEIVED BY: (SIGNATURE) <i>[Signature]</i>	DATE 6-4-02	TIME 0840	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY (SIGNATURE) <i>[Signature]</i>	DATE 6-4-02	TIME 1000	CUSTODY INTACT YES: <input checked="" type="checkbox"/> NO: <input type="checkbox"/>	CUSTODY SEAL NO. N/5	STL TAMPA LOG NO. 212190	LABORATORY REMARKS
--	----------------	--------------	--	-------------------------	-----------------------------	--------------------

LOG NO: B2-12585
 Received: 02 JUL 02
 Reported: 16 JUL 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 134420716

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
12585-1	OWS DRO	07-01-02/12:00
PARAMETER		12585-1
Diesel Range Organics (8100M) (8100)		
Hydrocarbons as DRO, ug/l		160000
Surrogate - o-Terphenyl		*F33
Dilution Factor		100
Prep Date		07.05.02
Prep Time		14:00
Analysis Date		07.14.02
Analysis Time		22:10
Batch ID		0705C

STL Tampa

LOG NO: B2-12585
Received: 02 JUL 02
Reported: 16 JUL 02

Ms. Lydia Cumming
Battelle
505 King Avenue
Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
Sampled By: Client
Code: 134420716
Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
12585-2	PH-STRIPPER	07-01-02/12:05
PARAMETER	12585-2	
pH (150.1), units	7.3	
Dilution Factor	1	
Analysis Date	07.02.02	
Analysis Time	10:30	
Batch ID	0702A	

LOG NO: B2-12585
 Received: 02 JUL 02
 Reported: 16 JUL 02

Ms. Lydia Cumming
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Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 134420716

REPORT OF RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
12585-3	BTEX STRIPPER	07-01-02/12:10
PARAMETER		12585-3
Purgeable Aromatics (602)		
Benzene, ug/l		<1.0
Ethylbenzene, ug/l		0.86J
Toluene, ug/l		1.3
Xylenes, ug/l		8.4
Total Volatile Organic Aromatics, ug/l		9.7
Methyl Tert Butyl Ether (MTBE), ug/l		<10
Surrogate - a,a,a-Trifluorotoluene		15
Surrogate - Expected Value		20
Surrogate - % Recovery		75 %
Surrogate - Control Limit		70-130 %
Dilution Factor		1
Analysis Date		07.10.02
Analysis Time		23:33
Batch ID		0710C

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LOG NO: B2-12585
Received: 02 JUL 02
Reported: 16 JUL 02

Ms. Lydia Cumming
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505 King Avenue
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Client PO. No.: 167842

Project: Battelle Mem/0486003
Sampled By: Client
Code: 134420716

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
12585-4	BTEX-OWS	07-01-02/12:10
PARAMETER	12585-4	
Purgeable Aromatics (602)		
Benzene, ug/l		<1.0
Ethylbenzene, ug/l		1.1
Toluene, ug/l		1.5
Xylenes, ug/l		11
Total Volatile Organic Aromatics, ug/l		13.6
Methyl Tert Butyl Ether (MTBE), ug/l		<10
Surrogate - a,a,a-Trifluorotoluene		15
Surrogate - Expected Value		20
Surrogate - % Recovery		75 %
Surrogate - Control Limit		70-130 %
Dilution Factor		1
Analysis Date		07.11.02
Analysis Time		00:16
Batch ID		0710C

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STL Tampa

LOG NO: B2-12585
Received: 02 JUL 02
Reported: 16 JUL 02

Ms. Lydia Cumming
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505 King Avenue
Columbus, OH 43201

Client PO. No.: 167842

Project: Battelle Mem/0486003
Sampled By: Client
Code: 134420716

REPORT OF RESULTS

Page 5

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
12585-5	Trip Blank	07-01-02
PARAMETER		12585-5
Purgeable Aromatics (602)		
Benzene, ug/l		<1.0
Ethylbenzene, ug/l		<1.0
Toluene, ug/l		<1.0
Xylenes, ug/l		<1.0
Total Volatile Organic Aromatics, ug/l		<1.0
Methyl Tert Butyl Ether (MTBE), ug/l		<10
Surrogate - a,a,a-Trifluorotoluene		14
Surrogate - Expected Value		20
Surrogate - % Recovery		70 %
Surrogate - Control Limit		70-130 %
Dilution Factor		1
Analysis Date		07.12.02
Analysis Time		16:04
Batch ID		0712C

LOG NO: B2-12585
 Received: 02 JUL 02
 Reported: 16 JUL 02

Ms. Lydia Cumming
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 505 King Avenue
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Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 124520717
 Page 6

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12585-6	Method Blank					
12585-7	Lab Control Standard Result					
12585-8	Lab Control Standard Duplicate Result					
12585-9	Spike Amount Added, LCS/LCSD					
12585-10	Lab Control Standard % Recovery					
PARAMETER		12585-6	12585-7	12585-8	12585-9	12585-10
Purgeable Aromatics (602)						
Benzene, ug/l		<1.0	9.20	9.10	10	92 %
Ethylbenzene, ug/l		<1.0	---	---	---	---
Toluene, ug/l		<1.0	10.0	9.70	10	100 %
Xylenes, ug/l		<1.0	---	---	---	---
Total Volatile Organic Aromatics, ug/l		<1.0	---	---	---	---
Methyl Tert Butyl Ether (MTBE), ug/l		<10	---	---	---	---
Surrogate - a,a,a-Trifluorotoluene	16	15	15	---	---	---
Surrogate - Expected Value	20	20	20	---	---	---
Surrogate - % Recovery	80 %	75 %	75 %	---	---	---
Surrogate - Control Limit	70-130 %	70-130 %	70-130 %	---	---	---
Dilution Factor	1	1	1	---	---	---
Analysis Date	07.10.02	07.10.02	07.10.02	---	---	---
Analysis Time	13:21	14:05	14:49	---	---	---
Batch ID	0710C	0710C	0710C	0710C	0710C	0710C
pH (150.1), units		7.2	6.02	6.0	6.0	95 %
Dilution Factor		1	1	1	---	---
Analysis Date		07.02.02	07.02.02	07.02.02	---	---
Analysis Time		10:30	10:30	10:30	---	---
Batch ID		0702A	0702A	0702A	0702A	0702A

LOG NO: B2-12585
 Received: 02 JUL 02
 Reported: 16 JUL 02

Ms. Lydia Cumming
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Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
 Code: 134420716

REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12585-6	Method Blank					
12585-7	Lab Control Standard Result					
12585-8	Lab Control Standard Duplicate Result					
12585-9	Spike Amount Added, LCS/LCSD					
12585-10	Lab Control Standard % Recovery					
PARAMETER		12585-6	12585-7	12585-8	12585-9	12585-10
Diesel Range Organics (8100M) (8100)						
Hydrocarbons as DRO, ug/l	<100	870	1000	1000	87 %	
Surrogate - o-Terphenyl	82 %	92 %	100 %	---	---	
Dilution Factor	1	1	1	---	---	
Prep Date	07.05.02	07.05.02	07.05.02	---	---	
Prep Time	14:00	14:00	14:00	---	---	
Analysis Date	07.14.02	07.14.02	07.14.02	---	---	
Analysis Time	22:17	22:14	22:30	---	---	
Batch ID	0705C	0705C	0705C	0705C	0705C	

LOG NO: B2-12585
Received: 02 JUL 02
Reported: 16 JUL 02

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Sampled By: Client
Code: 134420716

REPORT OF RESULTS

Page 8

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12585-11	Lab Control Standard Duplicate % Recovery					
12585-12	LCS Accuracy Control Limit (%R)					
12585-13	Precision (%RPD) of LCS/LCSD					
12585-14	LCS Precision Control Limit (Advisory) %RPD					
12585-15	Spike Sample ID					
PARAMETER		12585-11	12585-12	12585-13	12585-14	12585-15
Purgeable Aromatics (602)						
Benzene, %		91 %	39-150 %	1.1 %	<31 %	12685-1
Toluene, %		97 %	46-148 %	3.1 %	<25 %	12685-1
Batch ID		0710C	---	0710C	---	---
pH (150.1), %		100 %	63-158 %	0.33 %	<40 %	NA
Diesel Range Organics (8100M) (8100)						
Hydrocarbons as DRO, %		100 %	40-140 %	14 %	<40 %	*F82
Surrogate - o-Terphenyl		---	38-156 %	---	---	---
Prep Date		---	---	07.05.02	---	---
Analysis Date		---	---	07.14.02	---	---
Batch ID		0705C	---	0705C	---	0705C

LOG NO: B2-12585
 Received: 02 JUL 02
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Client PO. No.: 167842

Project: Battelle Mem/0486003
 Sampled By: Client
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REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12585-16	Sample Result					
12585-17	Matrix Spike Result					
12585-18	Matrix Spike Duplicate Result					
12585-19	Spike Amount Added, MS					
12585-20	Matrix Spike % Recovery					
PARAMETER	12585-16	12585-17	12585-18	12585-19	12585-20	
Surgeable Aromatics (602)						
Benzene, ug/l	<1.0	9.10	9.20	10	91 %	
Ethylbenzene, ug/l	<1.0	---	---	---	---	
Toluene, ug/l	<1.0	9.80	9.80	10	98 %	
Xylenes, ug/l	<1.0	---	---	---	---	
Total Volatile Organic Aromatics, ug/l	<1.0	---	---	---	---	
Methyl Tert Butyl Ether (MTBE), ug/l	<10	---	---	---	---	
Surrogate - a,a,a-Trifluorotoluene	15	16	16	---	---	
Surrogate - Expected Value	20	20	20	---	---	
Surrogate - % Recovery	75 %	80 %	80 %	---	---	
Surrogate - Control Limit	70-130 %	70-130 %	70-130 %	---	---	
Dilution Factor	1	1	1	---	---	
Analysis Date	07.10.02	07.11.02	07.11.02	---	---	
Analysis Time	15:34	12:32	13:16	---	---	
Batch ID	0710C	0710C	0710C	---	0710C	
pH (150.1)	---	---	---	---	---	NA
Diesel Range Organics (8100M) (8100)						
Hydrocarbons as DRO, mg/l	*F82	*F82	*F82	*F82	*F82	
Batch ID	0705C	0705C	0705C	0705C	0705C	

LOG NO: B2-12585
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Ms. Lydia Cumming
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Sampled By: Client
Code: 134420716

REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12585-21	Matrix Spike Duplicate % Recovery					
12585-22	MS Accuracy Advisory Limit (%R)					
12585-23	Precision (%RPD) MS/MSD					
12585-24	MS Precision Advisory Limit (%RPD)					
12585-25	Reporting Limit (RL)					
PARAMETER		12585-21	12585-22	12585-23	12585-24	12585-25
Purgeable Aromatics (602)						
Benzene, %		92 %	39-150 %	1.1 %	39-150 %	1.0
Toluene, %		98 %	46-148 %	0 %	46-148 %	1.0
Ethylbenzene, ug/l		---	---	---	---	1.0
Xylenes, ug/l		---	---	---	---	1.0
Total Volatile Organic Aromatics, ug/l		---	---	---	---	1.0
Methyl Tert Butyl Ether (MTBE), ug/l		---	---	---	---	10
Batch ID		0710C	---	0710C	---	---
pH (150.1)		---	NA	NA	NA	NA
Diesel Range Organics (8100M) (8100)						
Hydrocarbons as DRO, %		*F82	40-140 %	*F82	<40 %	100
Surrogate - o-Terphenyl		---	38-156 %	---	---	---
Batch ID		0705C	---	---	---	---

LOG NO: B2-12585
Received: 02 JUL 02
Reported: 16 JUL 02

Ms. Lydia Cumming
Battelle
505 King Avenue
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Client PO. No.: 167842

Project: Battelle Mem/0486003
Sampled By: Client
Code: 134420716

REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
12585-21	Matrix Spike Duplicate % Recovery	
12585-22	MS Accuracy Advisory Limit (%R)	
12585-23	Precision (%RPD) MS/MSD	
12585-24	MS Precision Advisory Limit (%RPD)	
12585-25	Reporting Limit (RL)	

PARAMETER	12585-21	12585-22	12585-23	12585-24	12585-25
<p>These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.</p> <p>Method : EPA SW-846 DOH Certification: E84282. J = The flag "J" indicates the presence of a compound that meets the identification criteria, but the result is less than the sample RL and greater than the MDL.</p> <p>*F33 = Control limits are established only for surrogate concentration levels specified by EPA methods. Because the sample was diluted prior to analysis, surrogate recoveries are not reported.</p> <p>*F82 = Insufficient sample volume was available to perform a° batch-specific matrix spike. However, an LCS analyzed with the sample° batch met control criteria.°</p>					



Michael F. Valder, Project Manager

**SEVERN
TRENT
SERVICES**

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

STL Tampa

212585

STL Tampa
6712 Benjamin Rd, Suite 100
Tampa, FL 336

Website: www.stl-inc.com
Phone: (813) 885-7427
Fax: (813) 885-7049

Alternate Labory Name/Location

Phone:
Fax:

PROJECT REFERENCE <i>Battelle Mem.</i>	PROJECT NO. <i>0486003</i>	PROJECT LOCATION (STATE) <i>MS</i>	MATRIX TYPE	REQUIRED ANALYSIS										PAGE	OF				
SAMPLER'S SIGNATURE <i>[Signature]</i>	P.O. NUMBER <i>167042</i>	CONTRACT NO.	COMPOSITE (C) OR GRAB (G) / INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	DRO	PH	BTEX	BTEX	PRESERVATIVE	STANDARD REPORT DELIVERY <input type="radio"/>	DATE DUE _____									
CLIENT (SITE) PM <i>Lydia Cumming</i>	CLIENT PHONE <i>614-424-7718</i>	CLIENT FAX <i>64-424-3667</i>																EXPEDITED REPORT DELIVERY (SURCHARGE) <input type="radio"/>	DATE DUE _____
CLIENT NAME <i>Battelle</i>	CLIENT E-MAIL																	NUMBER OF COOLERS SUBMITTED PER SHIPMENT:	
CLIENT ADDRESS <i>505 King Ave, Columbus, OH 43201</i>	COMPANY CONTRACTING THIS WORK (if applicable) <i>Southern Petroleum Sus</i>																	REMARKS	

SAMPLE		SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) / INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	NUMBER OF CONTAINERS SUBMITTED										REMARKS	
DATE	TIME							1	2	3	4	5	6	7	8	9	10		11
7-1-02	12:00	DRO - DWS	G	✓			2												
7-1-02	12:05P	Ph - SCRIPPER	G	✓															
7-1-02	12:10P	BTEX - SCRIPPER	G	✓						3									
7-1-02	12:10P	BTEX - DWS	G	✓							3								

(NOTE: AIR SAMPLE FORWARDED TO AIR TOXICS LAB THIS DATE)

RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i>	DATE <i>06-20-02</i>	TIME <i>0940</i>	RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i>	DATE <i>7-1-02</i>	TIME <i>1:15P</i>	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE) <i>[Signature]</i>	DATE <i>7-2-02</i>	TIME <i>0900</i>	RECEIVED BY: (SIGNATURE) <i>[Signature]</i>	DATE <i>7-2-02</i>	TIME <i>0900</i>	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>[Signature]</i>	DATE <i>7-2-02</i>	TIME <i>0930</i>	CUSTODY INTACT: YES: <input checked="" type="radio"/> NO: <input type="radio"/>	CUSTODY SEAL NO. <i>NIS</i>	STL TAMPA TAG NO. <i>212585</i>	LABORATORY REMARKS
---	-----------------------	---------------------	---	--------------------------------	------------------------------------	--------------------

LOG NO: B2-12777
Received: 16 JUL 02
Reported: 26 JUL 02

Ms. Lydia Cumming
Battelle
505 King Avenue
Columbus, OH 43201

Client PO. No.: 167842
Cl Project No: 0486003

Project: Gulfport
Sampled By: Client
Code: 150520726
Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
12777-1	PH-STRIPPER	07-15-02/10:00
PARAMETER		12777-1
pH (150.1), units		6.6
Dilution Factor		1
Analysis Date		07.16.02
Analysis Time		07:40
Batch ID		0716A

STL Tampa

LOG NO: B2-12777
Received: 16 JUL 02
Reported: 26 JUL 02

Ms. Lydia Cumming
Battelle
505 King Avenue
Columbus, OH 43201

Client PO. No.: 167842
Cl Project No: 0486003

Project: Gulfport
Sampled By: Client
Code: 150520726
Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
12777-2	BTEX STRIPPER	07-15-02/10:00
PARAMETER	12777-2	
Purgeable Aromatics (602)		
Benzene, ug/l		<1.0
Ethylbenzene, ug/l		1.7
Toluene, ug/l		2.2
Xylenes, ug/l		17
Total Volatile Organic Aromatics, ug/l		20.9
Methyl Tert Butyl Ether (MTBE), ug/l		<10
Surrogate - a,a,a-Trifluorotoluene		14
Surrogate - Expected Value		20
Surrogate - % Recovery		70 %
Surrogate - Control Limit		70-130 %
Dilution Factor		1
Analysis Date		07.24.02
Analysis Time		12:18
Batch ID		0723C

LOG NO: B2-12777
Received: 16 JUL 02
Reported: 26 JUL 02

Ms. Lydia Cumming
Battelle
505 King Avenue
Columbus, OH 43201

Client PO. No.: 167842
Cl Project No: 0486003

Project: Gulfport
Sampled By: Client
Code: 150520726

REPORT OF RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12777-3	Method Blank					
12777-4	Lab Control Standard Result					
12777-5	Lab Control Standard Duplicate Result					
12777-6	Spike Amount Added, LCS/LCSD					
12777-7	Lab Control Standard % Recovery					
PARAMETER		12777-3	12777-4	12777-5	12777-6	12777-7
Purgeable Aromatics (602)						
Benzene, ug/l		<1.0	8.40	8.30	10	84 %
Ethylbenzene, ug/l		<1.0	---	---	---	---
Toluene, ug/l		<1.0	9.60	9.20	10	96 %
Xylenes, ug/l		<1.0	---	---	---	---
Total Volatile Organic Aromatics, ug/l		<1.0	---	---	---	---
Methyl Tert Butyl Ether (MTBE), ug/l		<10	---	---	---	---
Surrogate - a,a,a-Trifluorotoluene	14	14	14	---	---	---
Surrogate - Expected Value	20	20	20	---	---	---
Surrogate - % Recovery	70 %	70 %	70 %	---	---	---
Surrogate - Control Limit	70-130 %	70-130 %	70-130 %	---	---	---
Dilution Factor	1	1	1	---	---	---
Analysis Date	07.24.02	07.23.02	07.23.02	---	---	---
Analysis Time	11:31	10:39	14:20	---	---	---
Batch ID	0723C	0723C	0723C	---	---	0723C
pH (150.1), units		7.2	6.03	6.02	6.0	93 %
Dilution Factor		1	1	1	---	---
Analysis Date	07.16.02	07.16.02	07.16.02	---	---	---
Analysis Time	07:40	07:40	07:40	---	---	---
Batch ID	0716A	0716A	0716A	---	---	0716A

STL Tampa

LOG NO: B2-12777
Received: 16 JUL 02
Reported: 26 JUL 02

Ms. Lydia Cumming
Battelle
505 King Avenue
Columbus, OH 43201

Client PO. No.: 167842
Cl Project No: 0486003

Project: Gulfport
Sampled By: Client
Code: 150520726

Page 4

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12777-8	Lab Control Standard Duplicate % Recovery					
12777-9	LCS Accuracy Control Limit (%R)					
12777-10	Precision (%RPD) of LCS/LCSD					
12777-11	LCS Precision Control Limit (Advisory) %RPD					
12777-12	Spike Sample ID					
PARAMETER		12777-8	12777-9	12777-10	12777-11	12777-12
Purgeable Aromatics (602)						
Benzene, %		83 %	39-150 %	1.2 %	<31 %	12859-1
Toluene, %		92 %	46-148 %	4.2 %	<25 %	12859-1
Surrogate - a,a,a-Trifluorotoluene	---	---	70-130 %	---	---	---
Analysis Date		07.23.02	---	07.23.02	---	---
Batch ID		---	---	0723C	---	---
pH (150.1), %		95 %	63-158 %	0.17 %	<40 %	NA
Analysis Date		07.16.02	---	07.16.02	---	---

LOG NO: B2-12777
 Received: 16 JUL 02
 Reported: 26 JUL 02

Ms. Lydia Cumming
 Battelle
 505 King Avenue
 Columbus, OH 43201

Client PO. No.: 167842
 Cl Project No: 0486003

Project: Gulfport
 Sampled By: Client
 Code: 150520726
 Page 5

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12777-13	Sample Result					
12777-14	Matrix Spike Result					
12777-15	Matrix Spike Duplicate Result					
12777-16	Spike Amount Added, MS					
12777-17	Matrix Spike % Recovery					
PARAMETER		12777-13	12777-14	12777-15	12777-16	12777-17
Purgeable Aromatics (602)						
Benzene, ug/l		<1.0	8.60	8.60	10	86 %
Ethylbenzene, ug/l		<1.0	---	---	---	---
Toluene, ug/l		<1.0	9.40	9.40	10	94 %
Xylenes, ug/l		<1.0	---	---	---	---
Total Volatile Organic Aromatics, ug/l		<1.0	---	---	---	---
Methyl Tert Butyl Ether (MTBE), ug/l		<10	---	---	---	---
Surrogate - a,a,a-Trifluorotoluene		14	14	13	---	---
Surrogate - Expected Value		20	20	20	---	---
Surrogate - % Recovery		70 %	70 %	65 %*F36	---	---
Surrogate - Control Limit		70-130 %	70-130 %	70-130 %	---	---
Dilution Factor		1	1	1	---	---
Analysis Date		07.23.02	07.23.02	07.23.02	---	---
Analysis Time		12:51	17:59	18:43	---	---
Batch ID		0723C	0723C	0723C	---	0723C
pH (150.1), %		---	---	---	---	---

STL Tampa

LOG NO: B2-12777
Received: 16 JUL 02
Reported: 26 JUL 02

Ms. Lydia Cumming
Battelle
505 King Avenue
Columbus, OH 43201

Client PO. No.: 167842
Cl Project No: 0486003

Project: Gulfport
Sampled By: Client
Code: 150520726
Page 6

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
12777-18	Matrix Spike Duplicate % Recovery					
12777-19	MS Accuracy Advisory Limit (%R)					
12777-20	Precision (%RPD) MS/MSD					
12777-21	MS Precision Advisory Limit (%RPD)					
12777-22	Reporting Limit (RL)					
PARAMETER		12777-18	12777-19	12777-20	12777-21	12777-22
Purgeable Aromatics (602)						
Benzene, %		86 %	39-150 %	0 %	<31 %	1.0
Toluene, %		94 %	46-148 %	0 %	<25 %	1.0
Surrogate - a,a,a-Trifluorotoluene		---	70-130 %	---	---	---
Ethylbenzene, ug/l		---	---	---	---	1.0
Xylenes, ug/l		---	---	---	---	1.0
Total Volatile Organic Aromatics, ug/l		---	---	---	---	1.0
Methyl Tert Butyl Ether (MTBE), ug/l		---	---	---	---	10
Analysis Date		07.23.02	---	---	---	---
Batch ID		0723C	---	0723C	---	---
pH (150.1)		---	NA	---	NA	NA

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

Method : EPA SW-846

DOH Certification: E84282.

*F36 = Surrogate recovery was outside established limits due to a coeluting matrix interference in the sample.°



Michael F. Valder, Project Manager

**SEVERN
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SERVICES**

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

STL Tampa

212777

STL Tampa
6712 Benjamin Road, Suite 100
Tampa, FL 33634

Website: www.stl-inc.com
Phone: (813) 885-7427
Fax: (813) 885-7049

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE Gulfport	PROJECT NO. 0486003	PROJECT LOCATION (STATE) MS	MATRIX TYPE	REQUIRED ANALYSIS										PAGE	OF				
SAMPLER'S SIGNATURE <i>[Signature]</i>	P.O. NUMBER 167842	CONTRACT NO.	COMPOSITE (C) OR GRAB (G) INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	BTEX	PH	HAL	PRESERVATIVE											STANDARD REPORT DELIVERY <input type="radio"/>	
CLIENT (SITE) PM Lydia Cumming	CLIENT PHONE 614-424-7778	CLIENT FAX 614-424-3667																DATE DUE _____	
CLIENT NAME Battelle	CLIENT E-MAIL																	EXPEDITED REPORT DELIVERY (SURCHARGE) <input type="radio"/>	
CLIENT ADDRESS 505 King Avenue, Columbus, OH 43201																		DATE DUE _____	
COMPANY CONTRACTING THIS WORK (if applicable)															NUMBER OF COOLERS SUBMITTED PER SHIPMENT:				

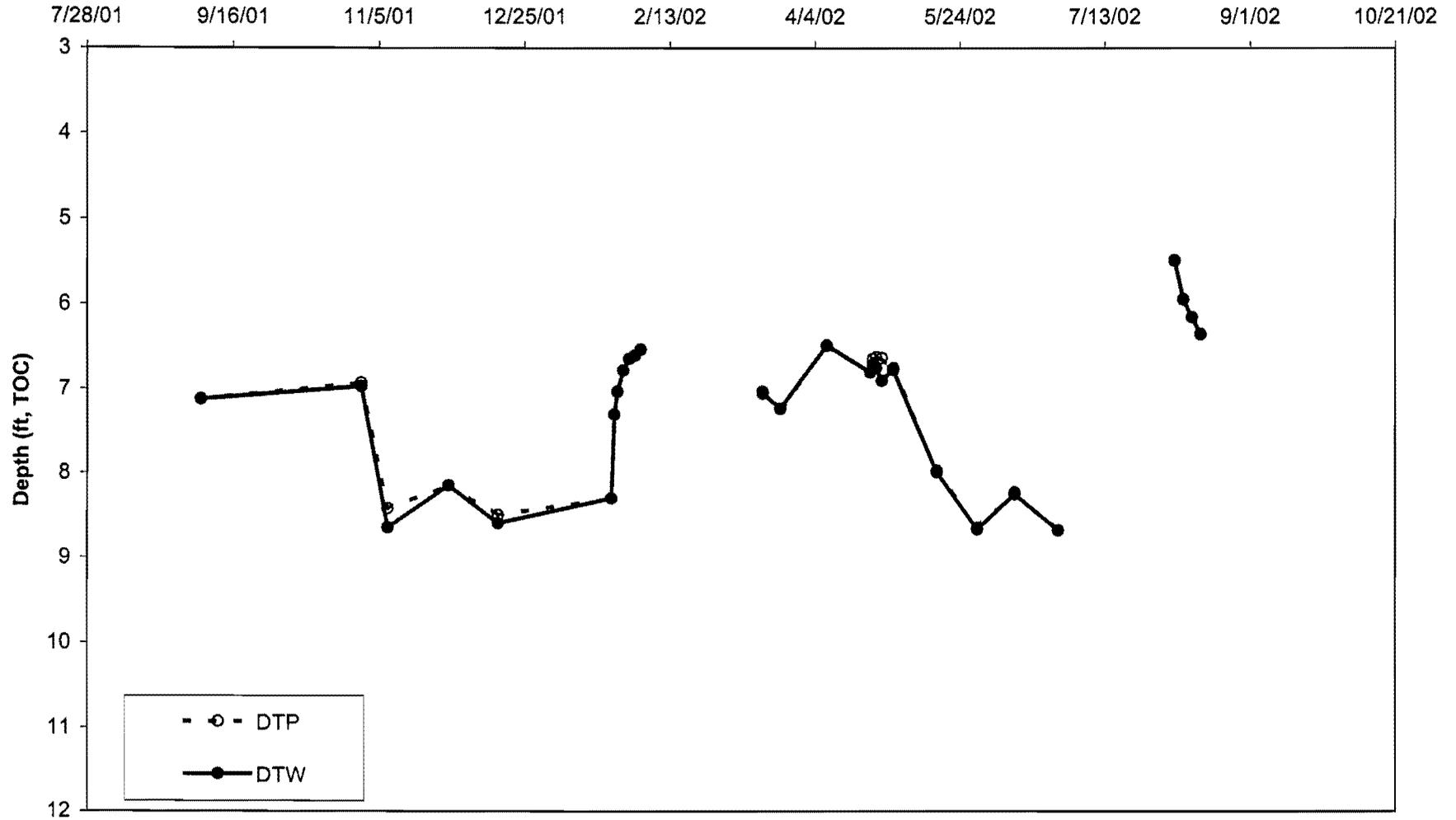
SAMPLE		SAMPLE IDENTIFICATION	G	L	3	1	NUMBER OF CONTAINERS SUBMITTED										REMARKS	
DATE	TIME																	
7-15-02	10:00	BTEX-Stripper	✓		3													
7-15-02	10:00	Ph-Stripper	✓			1												
<i>LP</i>																		

RELINQUISHED BY: (SIGNATURE) EMPTY CONTAINERS <i>[Signature]</i>	DATE 062002	TIME 0940	RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i>	DATE 7-15-02	TIME 11:30	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE) EMPTY CONTAINERS <i>[Signature]</i>	DATE 7-16-02	TIME 1000	RECEIVED BY: (SIGNATURE) <i>[Signature]</i>	DATE 7-16-02	TIME 1040	RECEIVED BY: (SIGNATURE)	DATE	TIME

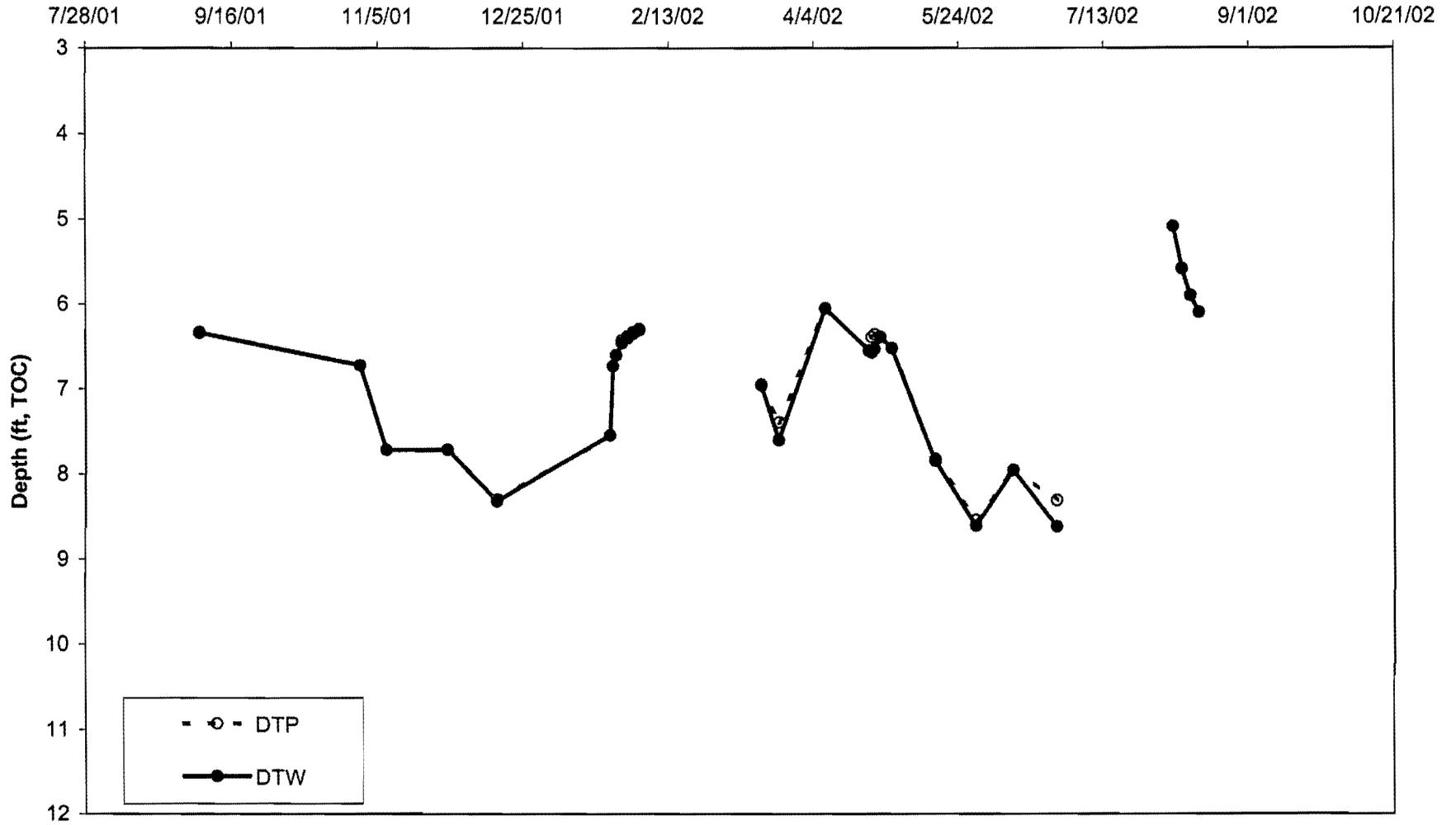
RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>[Signature]</i>	DATE 7-16-02	TIME 1000	CUSTODY INTACT YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	CUSTODY SEAL NO. N/A	STL TAMPA LOG NO. BZ12777	LABORATORY REMARKS
---	------------------------	---------------------	--	--------------------------------	-------------------------------------	--------------------

ATTACHMENT 4

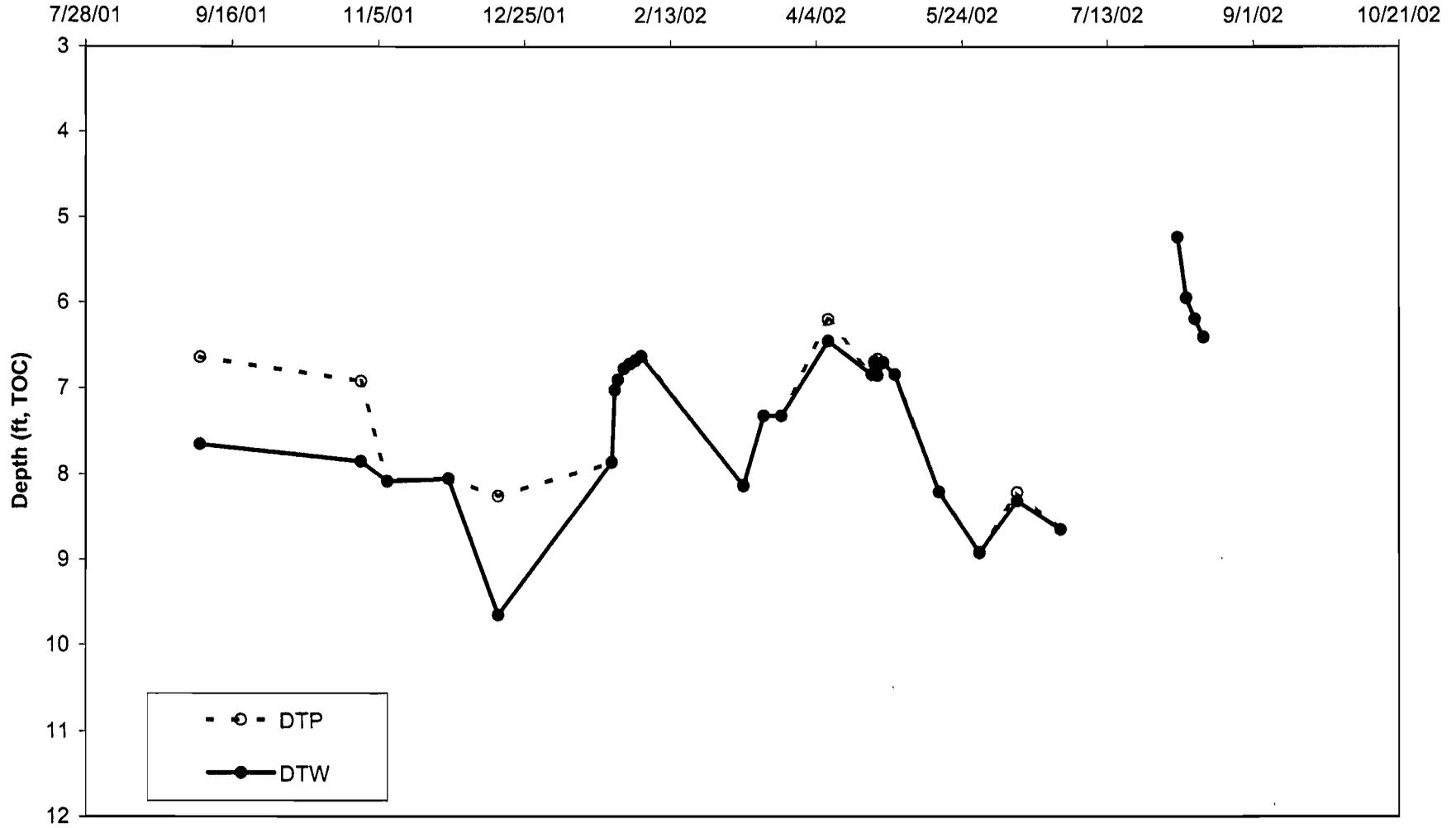
Oil/Water Data, NCBC Gulfport Site 6
EW-01



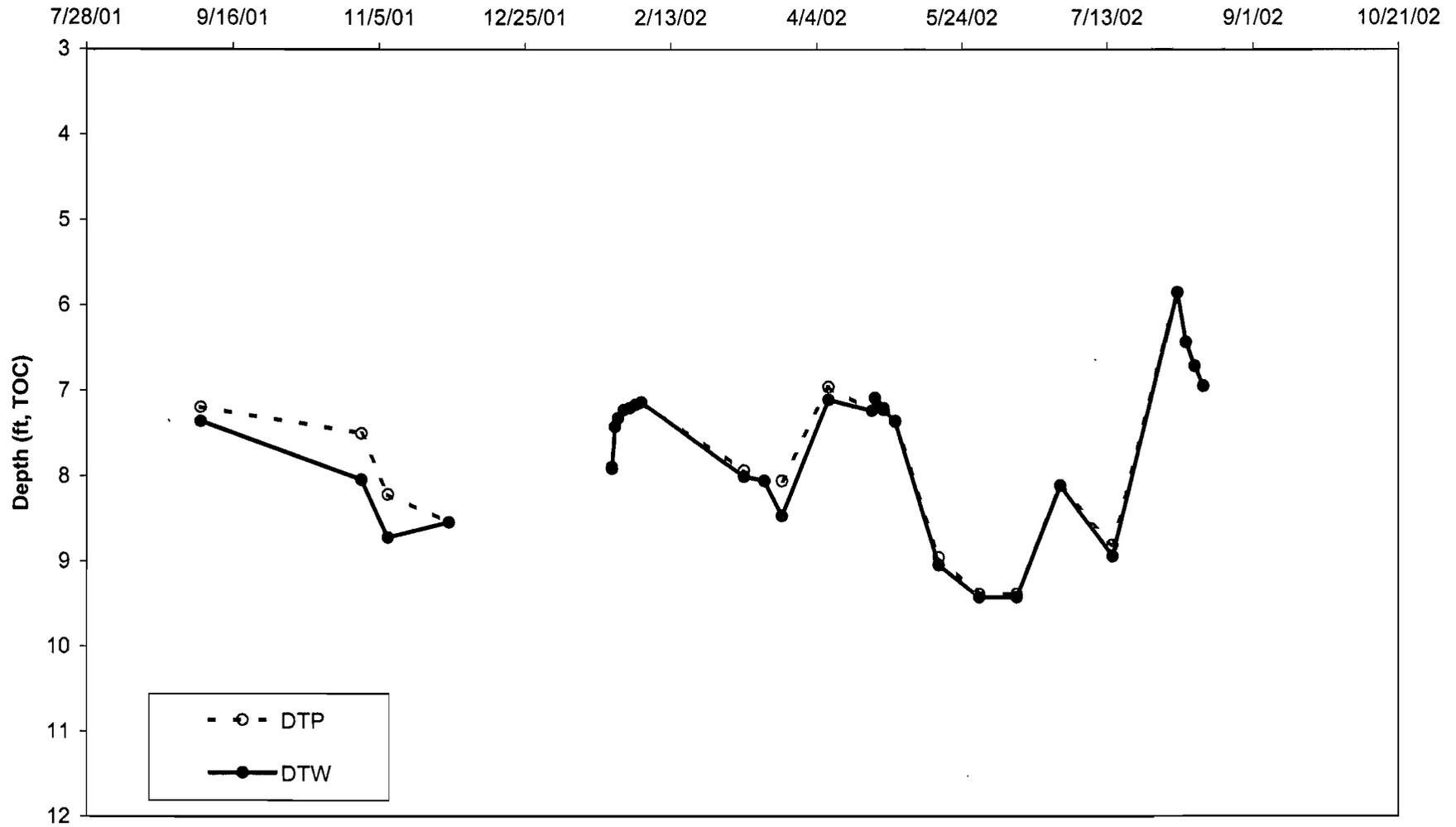
Oil/Water Data, NCBC Gulfport Site 6
EW-02



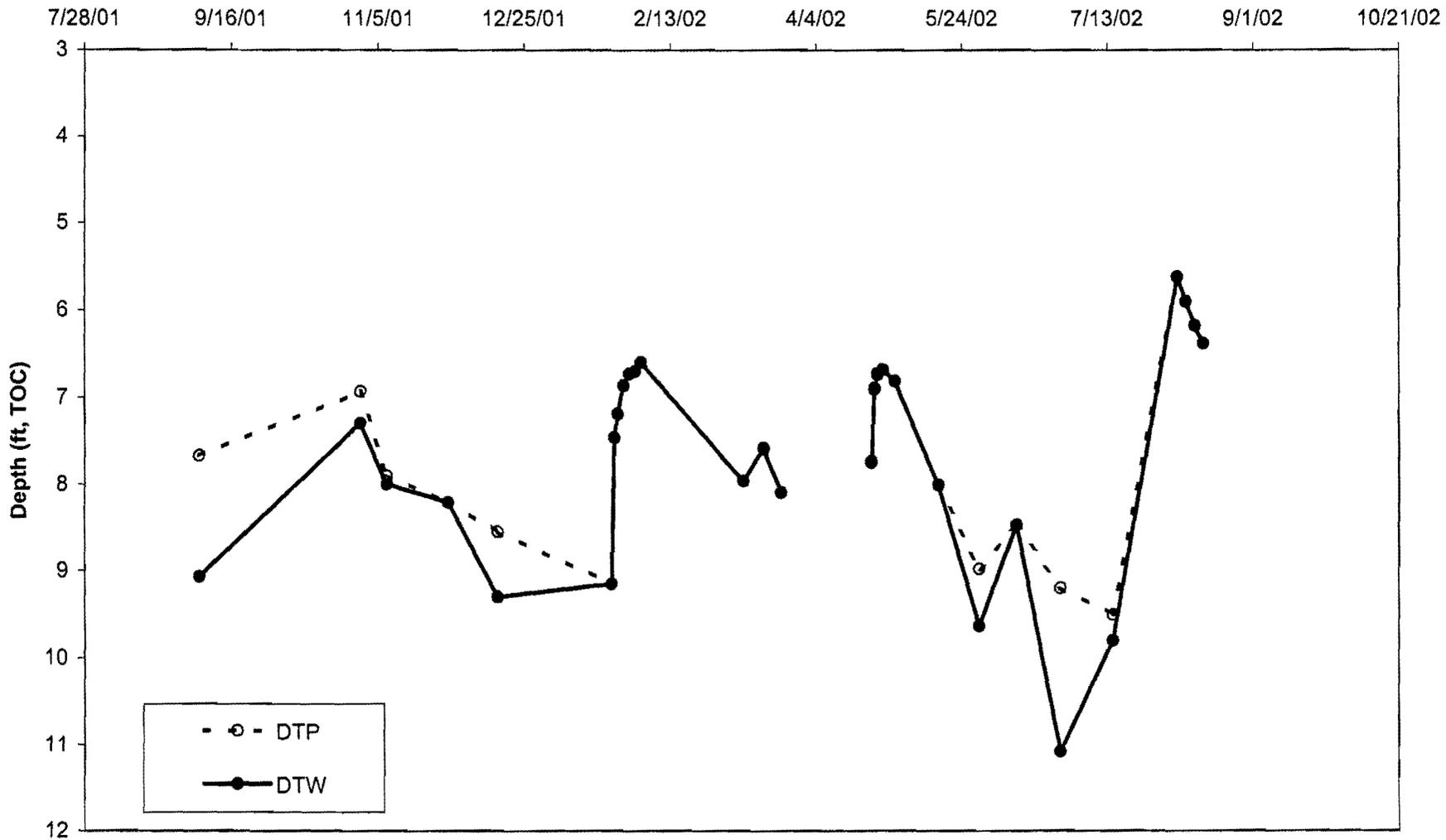
Oil/Water Data, NCBC Gulfport Site 6
EW-03



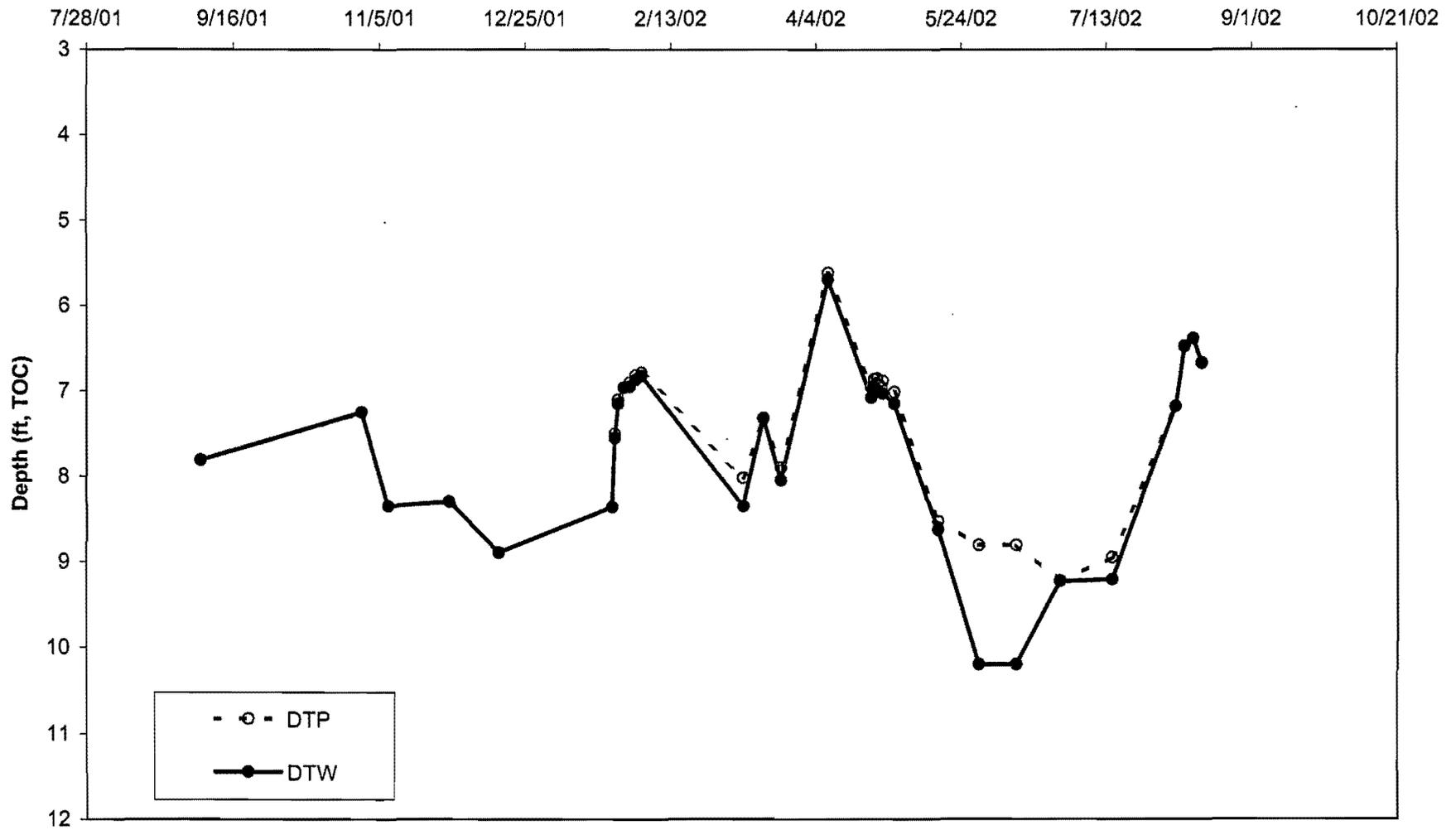
Oil/Water Data, NCBC Gulfport Site 6
EW-07



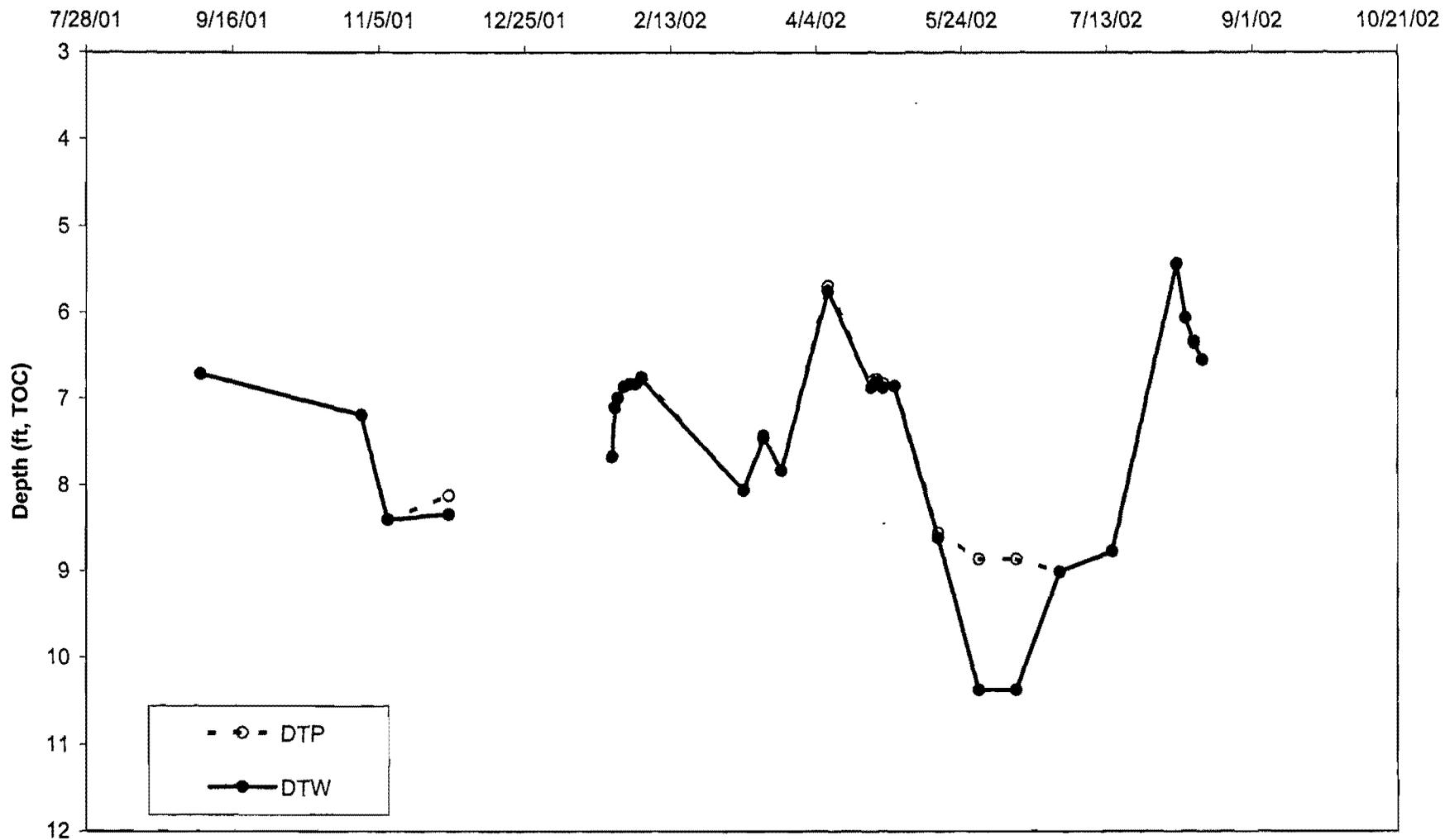
Oil/Water Data, NCBC Gulfport Site 6
EW-09



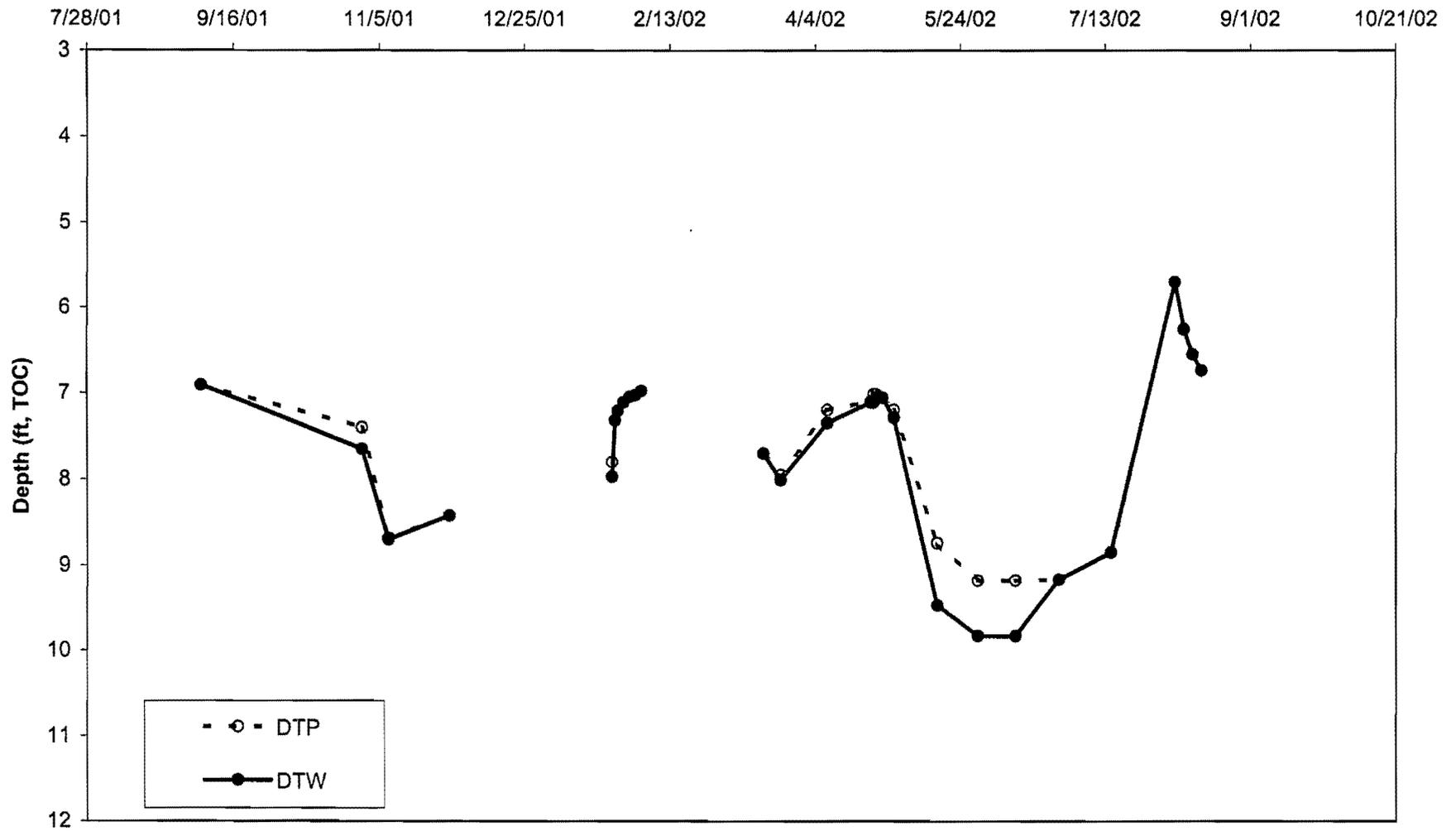
Oil/Water Data, NCBC Gulfport Site 6
EW-10



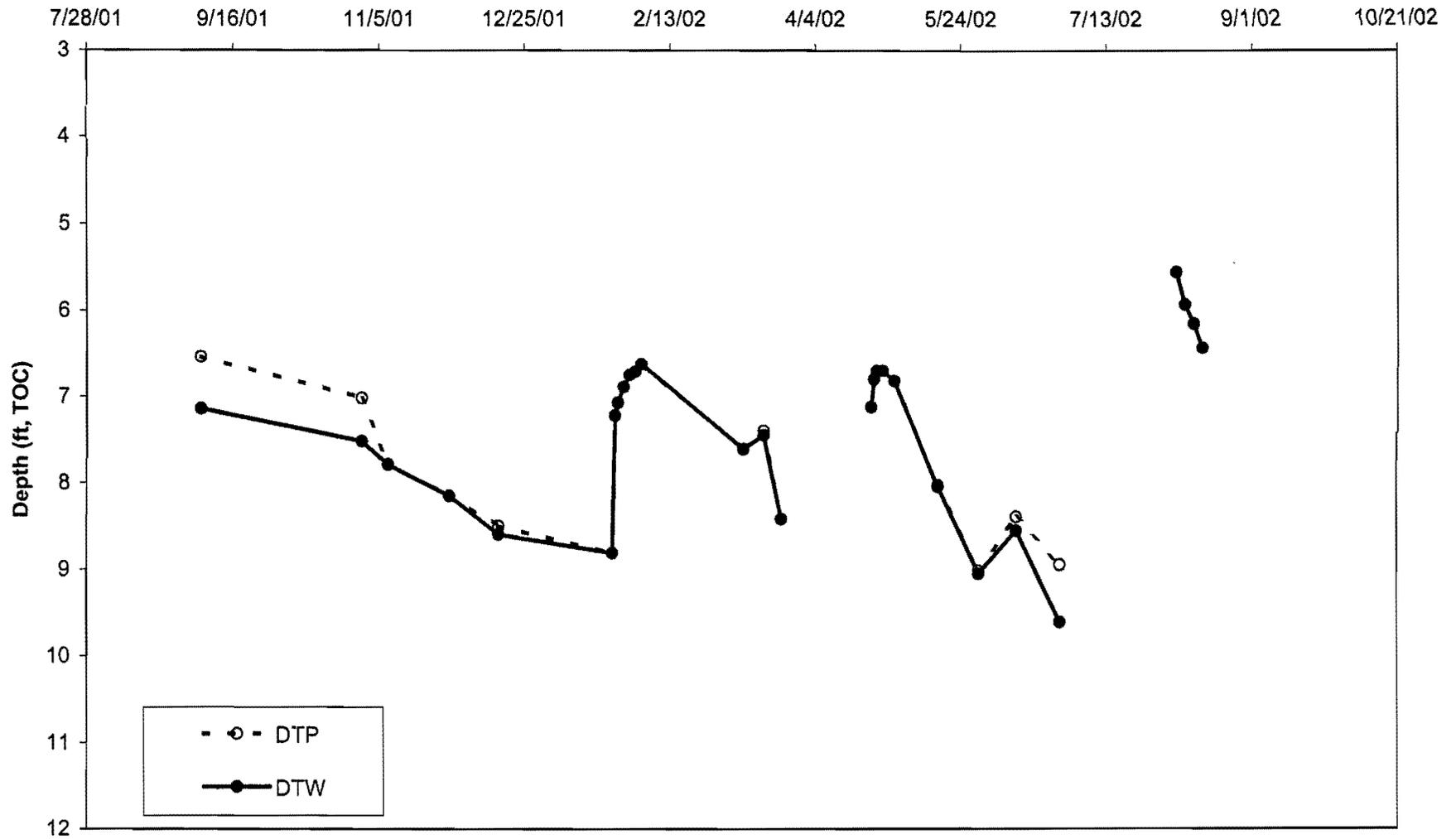
Oil/Water Data, NCBC Gulfport Site 6
EW-11



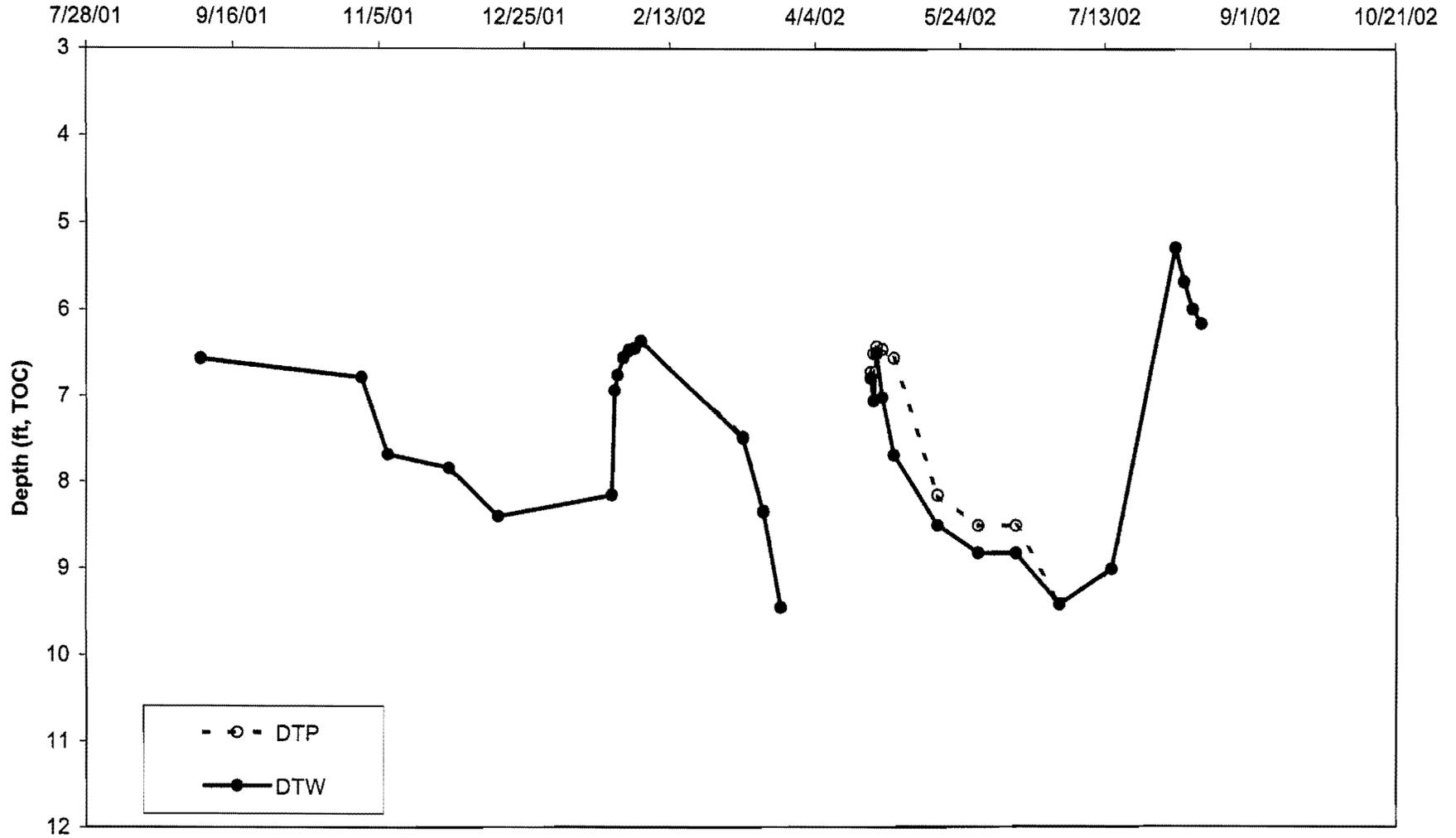
Oil/Water Data, NCBC Gulfport Site 6
EW-12



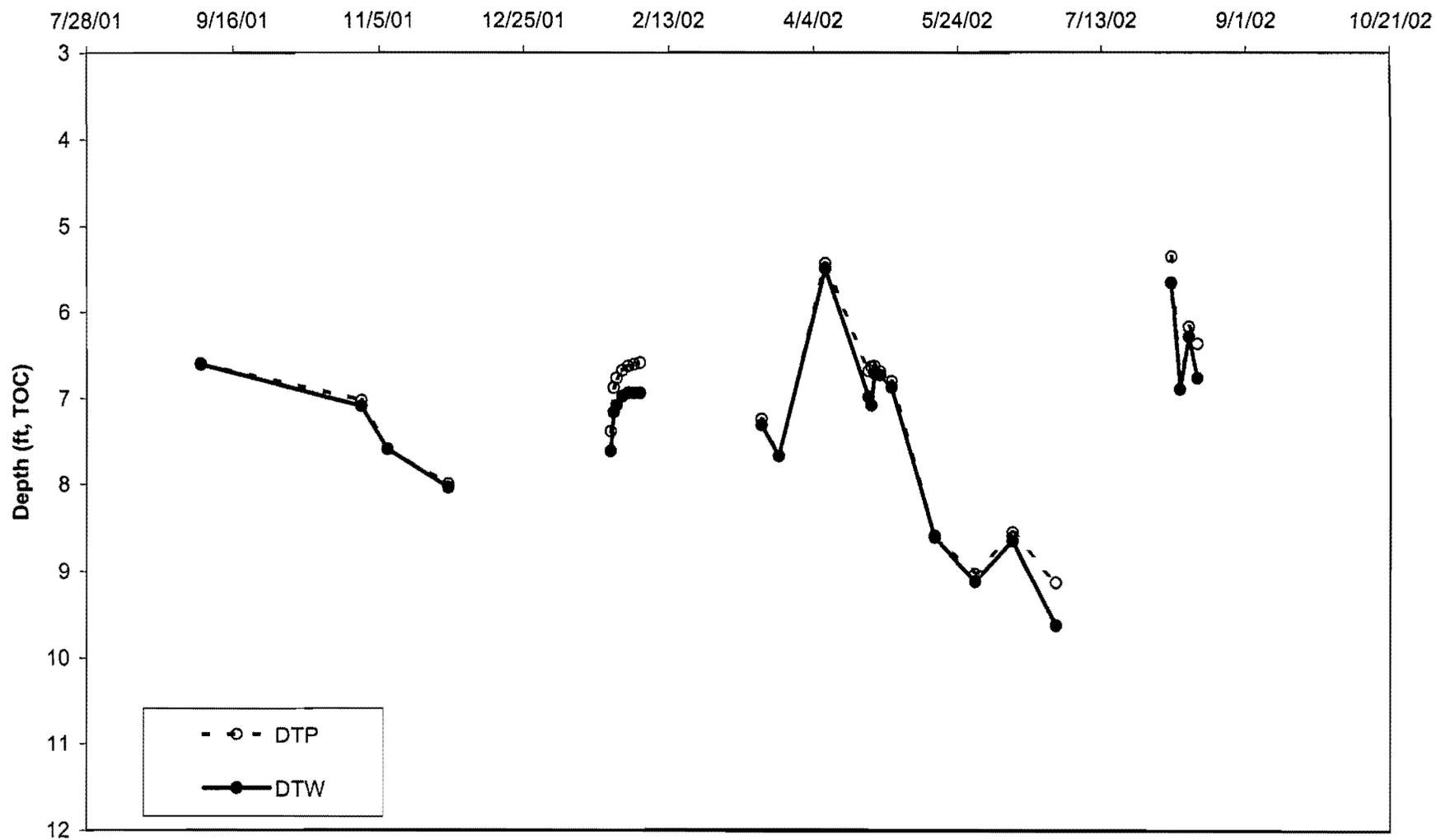
Oil/Water Data, NCBC Gulfport Site 6
EW-13



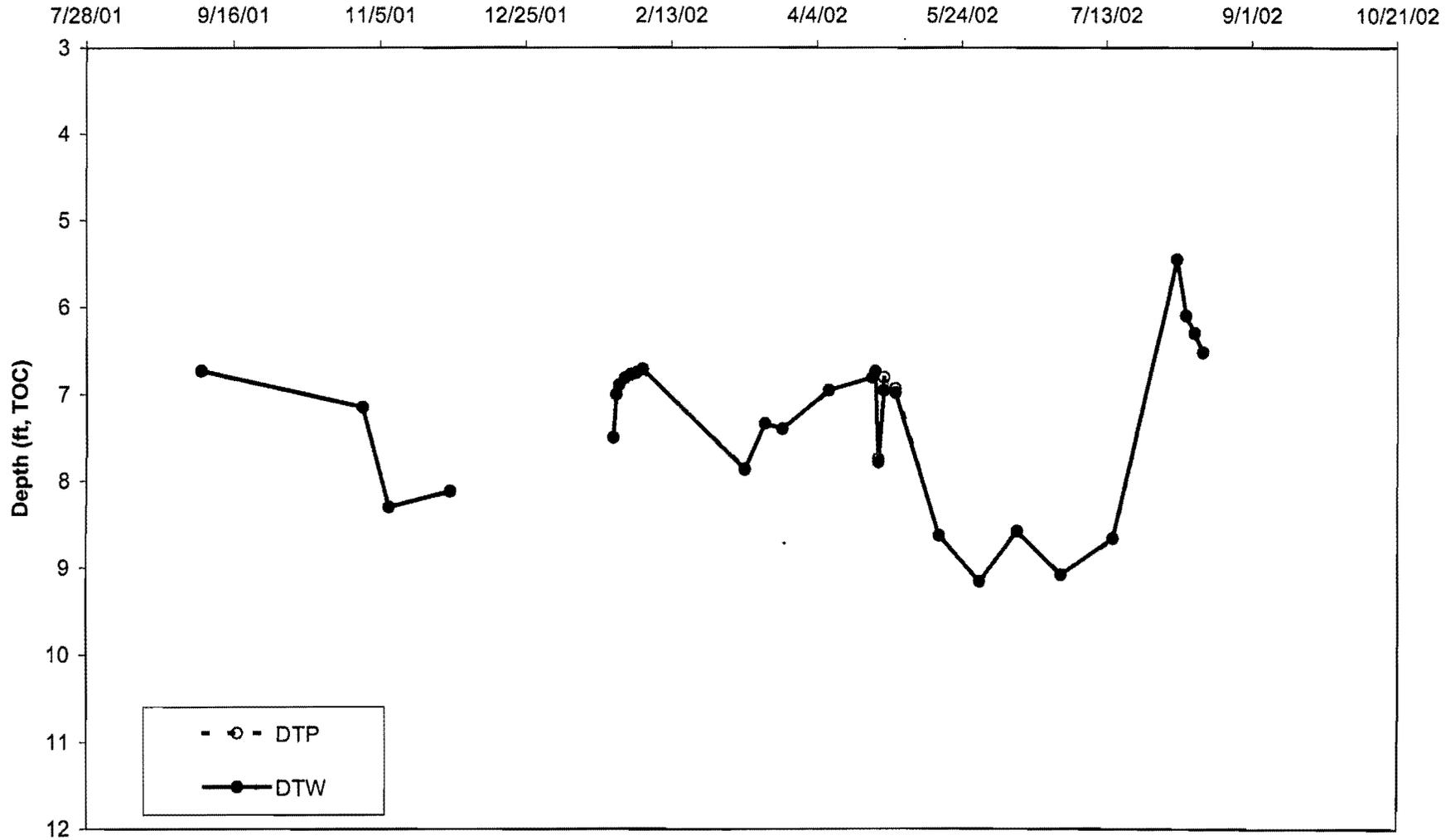
Oil/Water Data, NCBC Gulfport Site 6
EW-14



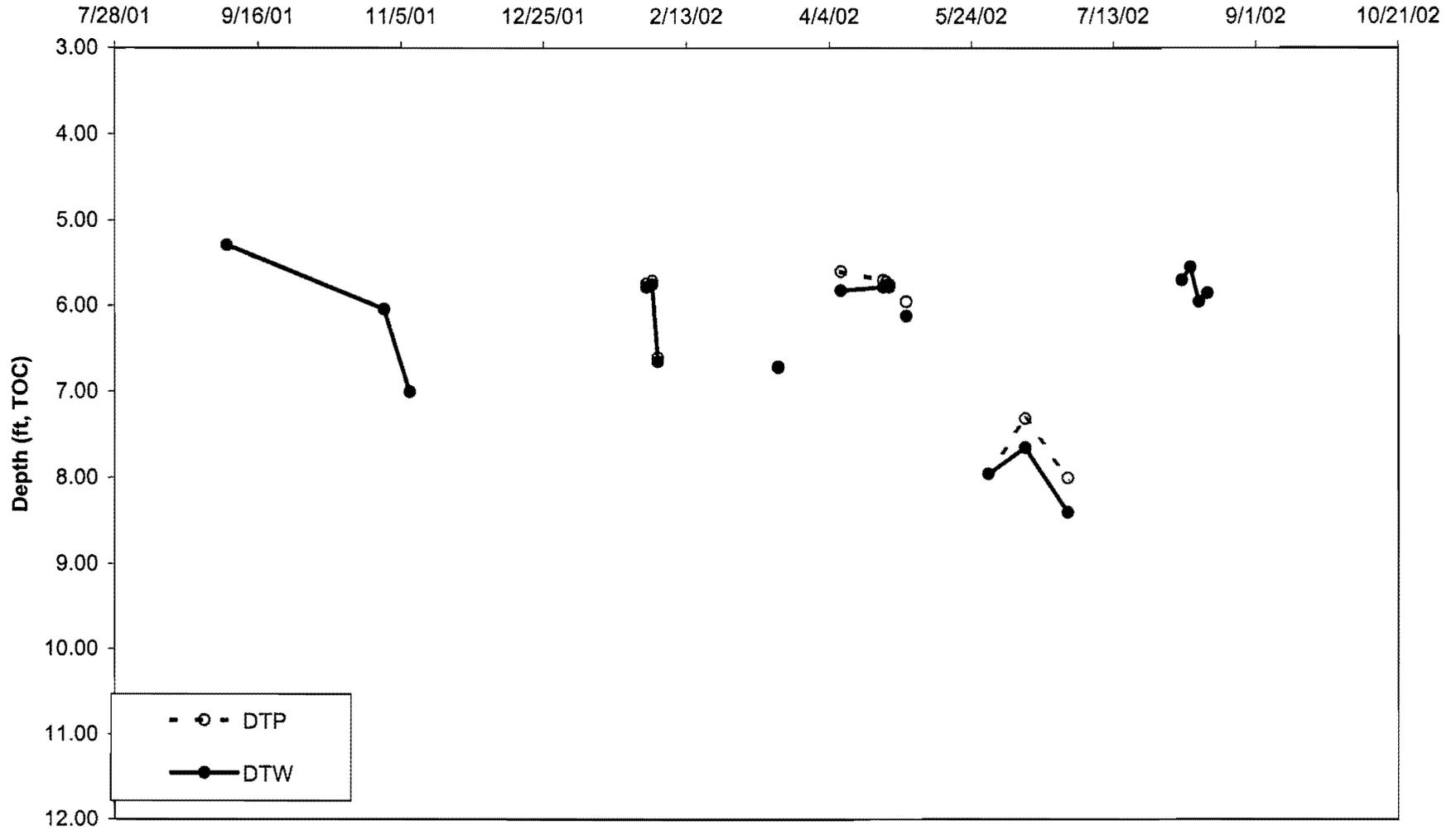
Oil/Water Data, NCBC Gulfport Site 6
EW-15



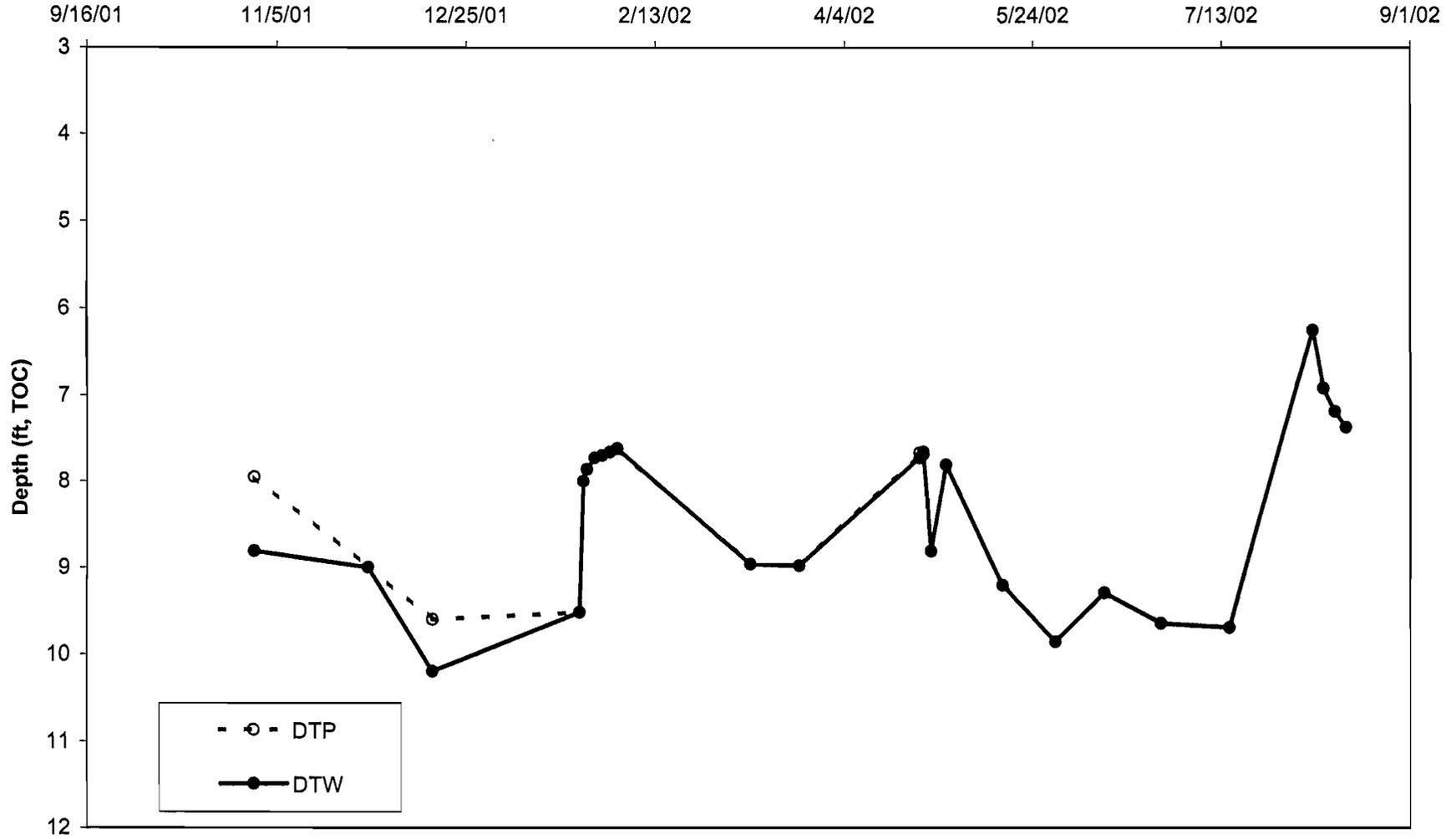
Oil/Water Data, NCBC Gulfport Site 6
EW-16



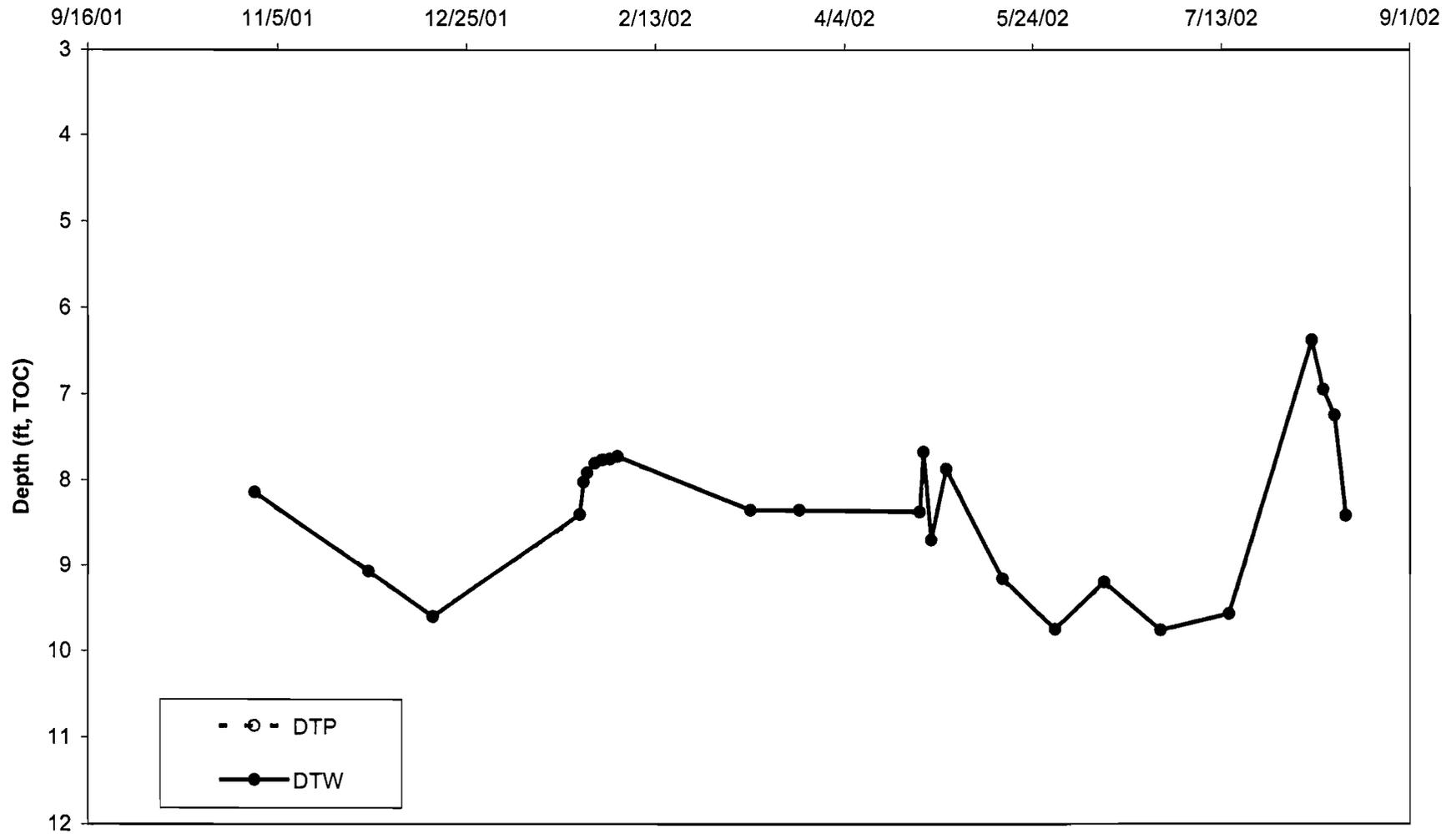
Oil/Water Data, NCBC Gulfport Site 6
EW-17



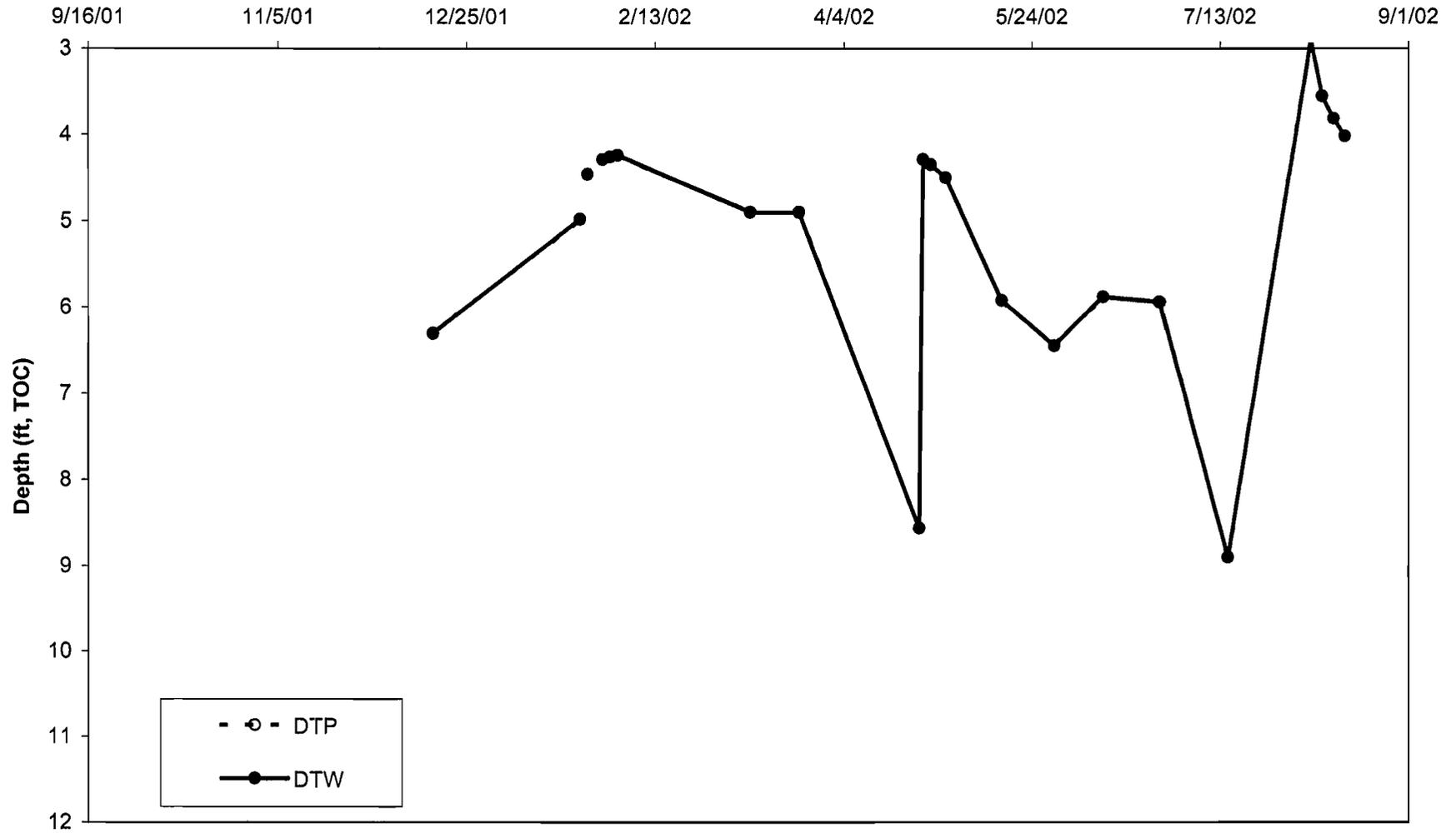
Oil/Water Data, NCBC Gulfport Site 6
GPT-6-1



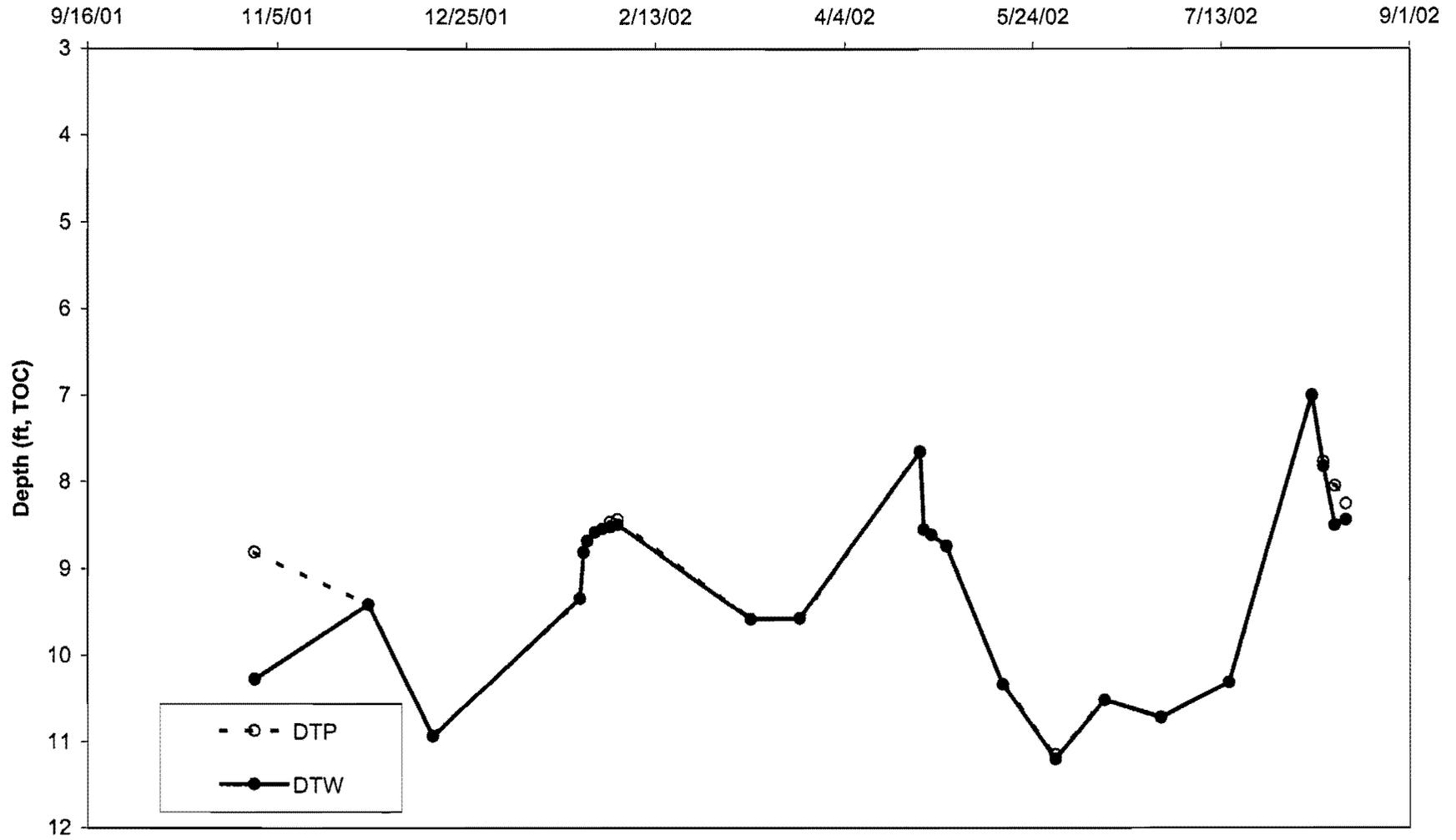
Oil/Water Data, NCBC Gulfport Site 6
GPT-6-2



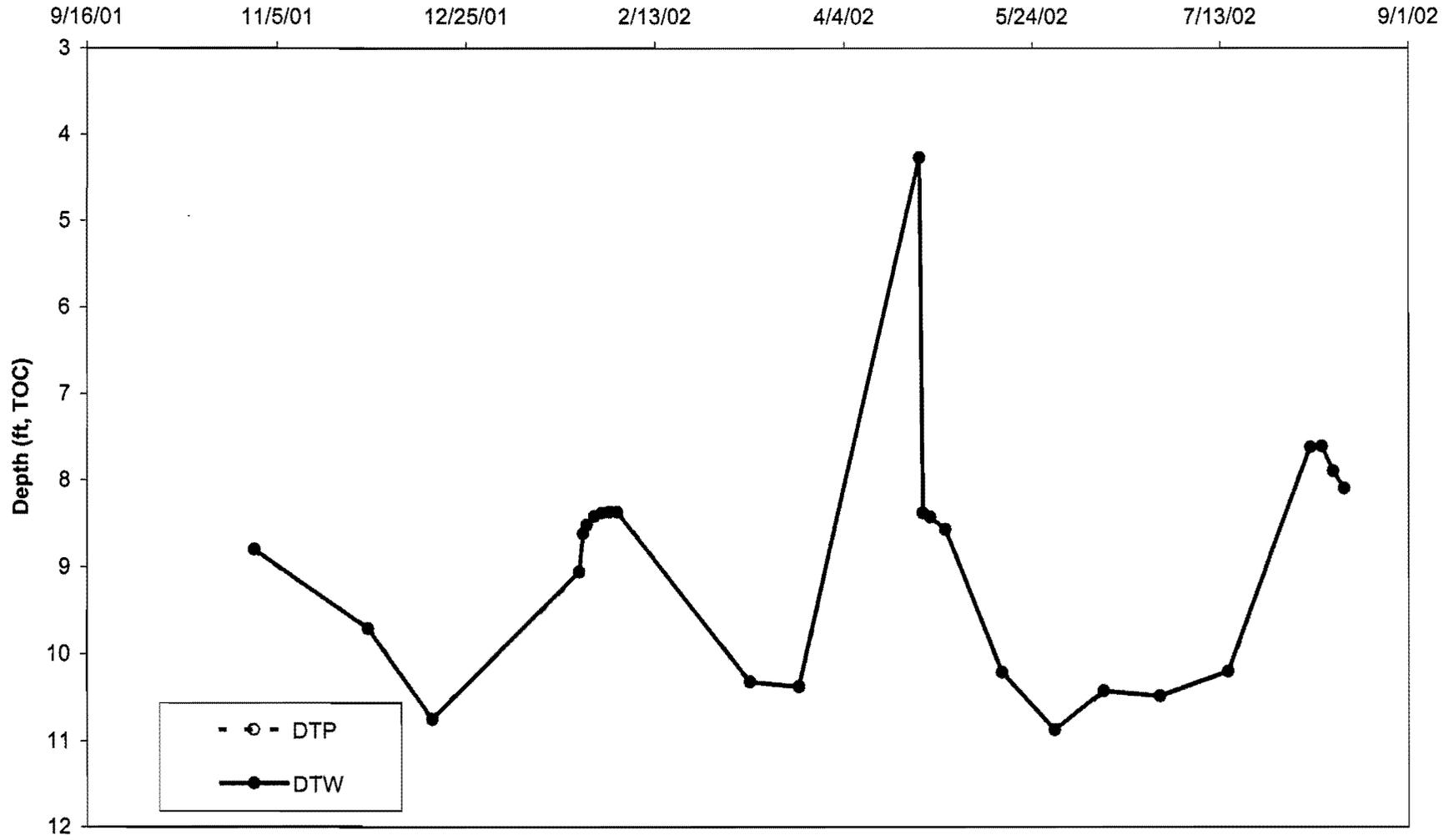
Oil/Water Data, NCBC Gulfport Site 6
GPT-6-3



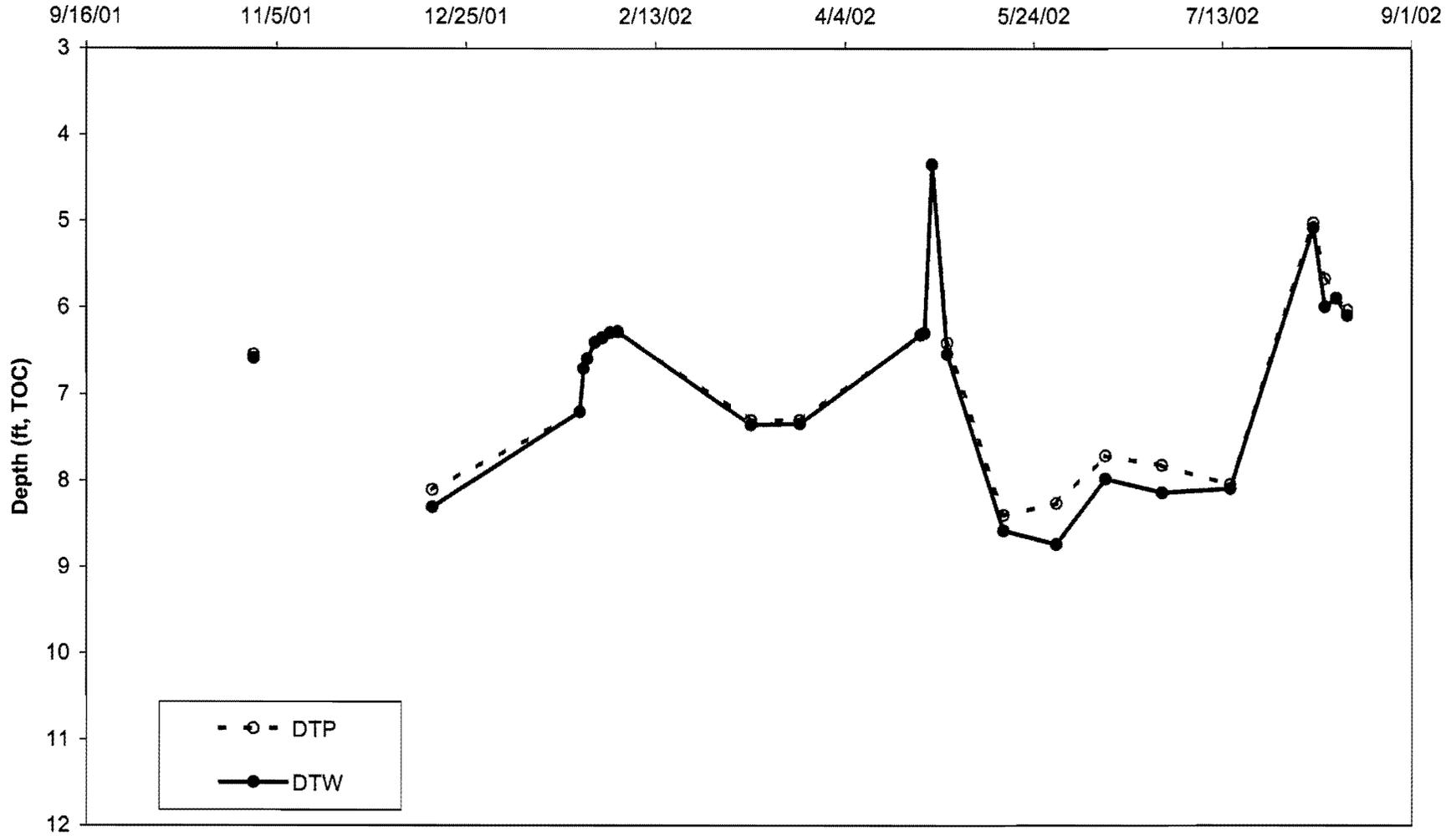
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GPT-6-4



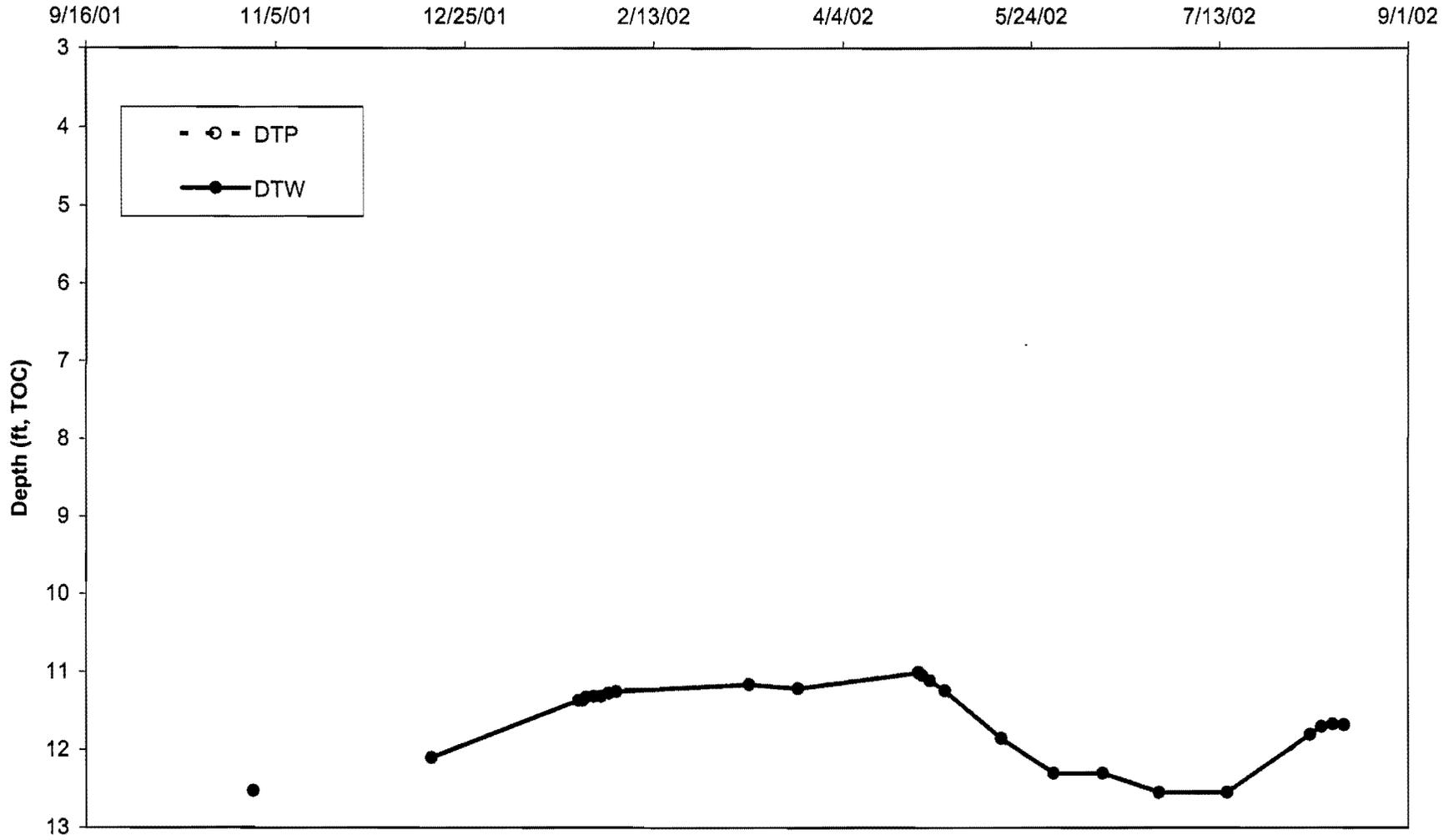
Oil/Water Data, NCBC Gulfport Site 6
GPT-6-5



Oil/Water Data, NCBC Gulfport Site 6
GPT-6-6



Oil/Water Data, NCBC Gulfport Site 6
GPT-6-7



Oil/Water Data, NCBC Gulfport Site 6
GPT-6-8

