FINAL
Quarterly System Evaluation Report, Part B
(October through December 2002)
Long-Term Monitoring/Operation and Maintenance Program
Brandywine DRMO, Site SS-01 and SWMU #35 (Building 3639)
Andrews Air Force Base, Maryland

The Air Force Institute for Operational Health (AFIOH)
and
Andrews Air Force Base, Maryland

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LIST OF ACRONYMS

µg/L	micrograms per liter
1,4-DCB	1,4-dichlorobenzene
AFB	Air Force Base
AFIOH	The Air Force Institute for Operational Health
ATC	anticipated typical concentration
BTEX	benzene, toluene, ethyl benzene, xylenes
CERCLA	Comprehensive Environmental Restoration and Compensation Liability Act
cis-1,2-DCE	cis-1,2-dichloroethene
DRMO	Defense Reutilization and Marketing Office
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
GRO	gasoline range organics
IT	IT Corporation
lb/day	pounds per day
lbs/yr	pounds per year
LTM	Long-Term Monitoring
LTO	Long-Term Operation
MDE	Maryland Department of Environment
mg/kg	milligrams per kilogram
NPL	National Priority List
O&M	operation and maintenance
PCB	polychlorinated biphenyl
PES	Pacific Environmental Services, Inc.
PID	photoionization detector
QSER	Quarterly System Evaluation Report
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TAL	Target Analyte List
TCE	trichloroethene
TPH	total petroleum hydrocarbons

LIST OF ACRONYMS (CONT'D)

URS	URS Corporation
VC	vinyl chloride
VOC	volatile organic compound

2.0 MONITORING, MAINTENANCE, AND SAMPLING ACTIVITIES

This Quarterly System Evaluation Report (QSER), Part B for the Brandywine Defense Reutilization and Marketing Office (DRMO) Site SS-01 at Andrews Air Force Base (AFB), Maryland is being submitted in fulfillment of the ongoing Long-Term Operation/Long-Term Monitoring (LTO/LTM) program, in accordance with the Sampling and Analysis Plan (IT Corporation [IT], 2001). This QSER is a continuation of the 1998 LTO/LTM work and should be treated as an attachment to the previously issued QSER, dated June 1998 (IT, 1998). Refer to Chapter 1.0 of the June 1998 report (IT, 1998), which serves as the introduction for all subsequent attachments, and for information on site descriptions, history, and hydrogeology. The QSER is issued in two parts. Part A covers LTM and system operation and maintenance (O&M) activities performed at the following sites: SS-11, SS-13, SS-22, ST-08, ST-15, ST-17, ST-18, ST-19, AOC-25, Building 1845, and Building 3471. Sites SS-01, ST-10, FT-03, LF-06, and LF-07 are covered in Part B. This division of sites is to facilitate the distribution of information, as the U.S. Environmental Protection Agency (EPA) and Maryland Department of Environment (MDE) – Comprehensive Environmental Restoration and Compensation Liability Act (CERCLA) Division provide regulatory oversight for activities at Sites SS-01, ST-10, FT-03, LF-06, and LF-07 and do not require the data from the LTM and O&M sites under the oversight of the MDE-Oil Control Division. Part A of the QSER was submitted under separate cover as it documents results from petroleum-contaminated sites.

Also included in this QSER Part B are the results of an adhoc soil sampling event conducted at solid waste management unit (SWMU) #35. SWMU #35 is located near Building 3639.

2.1 Long-Term Monitoring Activities

Long-term monitoring activities consisted of water level monitoring at SS-01 this quarter. From the beginning of the period (October 1, 2002) until November 1, 2002, water level monitoring was performed at 22 wells at Site SS-01. The distribution and locations of monitoring wells are shown on Figure 1. Monitoring point HT1N, which is the 120-foot

horizontal pumping trench, was gauged on a daily basis. The remaining 21 wells were gauged on a weekly basis. Gauging ended when the system at Site SS-01 was shutdown for a Remedial Investigation (RI) being performed by URS Corporation (URS). No LTM was performed at LF-06 and LF-07 this quarter.

As stated above, URS was implementing RI field activities at Site SS-01 during the current reporting period. The groundwater sampling data collected by URS will fulfill the annual groundwater sampling requirements for 2003 for Site SS-01. TetraTech Corporation will also be performing a RI at LF-06 and LF-07. The RI will include groundwater sampling in 2003, which will fulfill the annual groundwater sampling requirements for these two sites. Likewise, ST-10 will not be included in the spring 2003 annual groundwater sampling event because the RI being conducted by CH2M Hill will fulfill the annual groundwater sampling requirement for that site. FT-03 is the only CERCLA site that will be included in the annual groundwater sampling event.

2.2 SWMU #35 Soil Sampling

The MDE Waste Management Division identified 74 SWMUs that were potential sources of contamination at Andrews AFB while conducting a Resource Conservation and Recovery Act (RCRA) Phase II Facility Assessment in September 1988. This work was done under the RCRA regulatory framework, prior to Andrews AFB being added to the National Priority List (NPL) in 1999, regulated under CERCLA. The CERCLA Partnering Team also identified three more SWMUs, bringing the total number of SWMUs at Andrews AFB to 77. These SWMUs will be evaluated by the team and addressed according to risk, funding, and investigation schedule priorities.

SWMU #35 was a waste accumulation point located near Building 3639. It is no longer in use, although the date it was retired as a waste accumulation point is unknown. When active it consisted of four 55-gallon drums containing PD680, waste fuel, waste oil, and hydraulic fluid on wooden pallets. The pallets were in the open on an asphalted surface without any containment. There were no reported releases at the SWMU site during the period of its use.

There is a well (3639-MW01) located approximately 50 yards northeast of the former SWMU location. The well was installed, at the request of MDE, to monitor the effects of a fuel-like sheen observed floating on water in an excavation pit after two tanks were removed from a site located adjacent to the northeast corner of Building 3639 in May 1993. Analysis of soil samples taken from the excavation pit in May 1993 were below detection limits for benzene, toluene, ethyl benzene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH). A groundwater sample collected from the monitoring well in July 1993 was below detection limits for BTEX and far below the MDE action level for TPH.

On December 17-18, 2002, a new concrete pad with four concrete bollards was constructed in the vicinity of the former SWMU site to house a fuel tank for storing JP8. In order to evaluate the possible contamination caused by operating the former SWMU, and as a cost-saving effort, the former SWMU site was investigated as part of activities related to the construction of the concrete pad and bollards. The asphalt was removed to a depth of 12 inches below ground surface. The following day, four postholes were dug to 24 inches, where the concrete posts are now located. There was no visible evidence of soil contamination during the asphalt removal and digging of the postholes. Photoionization detector (PID) readings were collected on site by placing undisturbed soil into bags for soil vapor analysis, as well as by holding the PID meter at ground level. Five locations within the excavation site were screened using the PID, as depicted in Figure 2. A soil sample was collected from a depth of 24 inches within the posthole interpreted to have the highest potential to have been impacted by the four former waste drums. This soil sample location corresponds with PID Reading #1, in the southeastern corner of the excavation. The soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), TPH diesel range organics/gasoline range organics (DRO/GRO), polychlorinated biphenyls (PCBs), and metals.

2.3 Operation and Maintenance Activities

The groundwater remediation system in place at Site SS-01 (Brandywine DRMO) continued to operate during the initial month of this quarter, after being restarted on March 25, 2002,

following a RI. Daily system O&M checks, including data recording, were conducted while the system was in operation, and biweekly influent/effluent sampling was performed to evaluate contaminant removal efficiencies and monitor effluent discharge permit compliance. There were three system sampling events conducted this quarter, occurring on October 1, 16, and 31, 2002. On November 1, 2002 the system was shutdown for a RI being conducted by URS. The system remained offline through the end of this reporting period, December 31, 2002.

3.0 DATA EVALUATION

3.1 Precipitation Data

Precipitation data from January 1999 to December 2002, as recorded by the 89th Operations Support Squadron Weather Flight at Andrews AFB, is shown on Figure 3. Actual precipitation amounts for October through December 2002 were reported as 6.64, 4.35, and 4.71 inches, respectively. The average monthly precipitation (averaged from 1943 through December 2002) is also shown on Figure 3. As illustrated on Figure 3, precipitation was above average during each month this quarter.

3.2 LTM Results at Site SS-01

Groundwater monitoring (gauging) data collected during October 2002 has been tabulated and displayed in charts and maps to facilitate interpretation of the impact of the groundwater extraction system on local groundwater. The charts and maps are presented as Figures 4 through 8.

While the system was running, monitoring point HT1N (the groundwater extraction trench) was gauged daily. As shown in Table 1, the water level in HT1N during pumping was typically 16 to 18 feet below the top of the casing. When the system was not running, the water table typically recovered to within a few feet of ground surface. The resultant drawdown within the extraction trench was 10 to 17 feet during groundwater extraction, depending on the static water level. Drawdown was also observed in monitoring wells within an approximate 150-feet radius of the extraction trench (Figure 6). Drawdown is evident in the upper and lower shallow zones and is approximately radial to the extraction trench. Drawdown and the resulting radial flow pattern is particularly evident within proximity of the trench (compare Figures 6, 7, and 8). Monitoring wells PW-01, DP-03, DP-20, OW-2A, and OW-2B experienced the most drawdown, as anticipated due to their proximity to the extraction trench (Figure 4). Figure 4 shows groundwater elevations during operation of the system on October 11, 2002 and after the system had temporarily shut down

on October 22, 2002. A portion of the higher groundwater elevations observed when the system was not in operation on October 22, 2002 is attributed to rainfall and localized aquifer recharge caused by a significant rainfall event on October 16, 2002.

Significant differences were observed in groundwater elevations between October 11, 2002 and October 16, 2002 when the remediation system was in operation (Figure 5). The significantly higher groundwater elevations (significantly reduced drawdown) on October 16, 2002 is attributed to rainfall and rapid aquifer recharge. Rainfall and infiltration were rapid and outpaced the groundwater extraction system. As observed in water level data collected from the site, the treatment system may require several days of operation to return water levels within the extraction trench to typical 16- to 18-foot below top of casing (btoc) depths. This scenario was observed again at the end of the month when rain fell steadily for three consecutive days (October 28, 29, and 30, 2002), the water table in the pumping trench rose above the top of the casing and remained at this level until after the rain stopped. The water table at distant downgradient wells DP-17, DP-01, and DP-26 rose less than one-foot; however, the water table in the pumping trench (HT1N) rose above the top of the casing. Significantly reduced drawdown on October 16, 2002, despite system operation, is also coupled with substantially reduced (diluted) influent concentrations of VOC contaminants (see Section 3.4).

3.3 SWMU #35 Soil Sampling Results

Soil samples collected from SWMU #35 at Building 3639 on December 18, 2002 were analyzed for VOCs, SVOCs, PCBs, TPH-DRO/GRO, and metals. The lab results are summarized in Table 2. The analytical data dump of all SWMU #35 soil data, including nondetects, is provided in Table A-1 of Appendix A. PID readings collected from ambient air above the excavation and within bagged soil samples are shown in Table 3. The concentrations of all constituents, except mercury, analyzed in the soil sample were below Maryland's residential clean-up standard, as cited in the MDE's *State of Maryland Department of the Environmental Cleanup Standards for Soil and Groundwater* (August 2001). The residential clean-up standard for Mercury is 0.10 milligram per kilogram (mg/kg)

and the sample collected from SWMU #35 contained 0.208 mg/kg mercury. However, the anticipated typical concentration (ATC) of mercury in Eastern Maryland is 0.51 mg/kg (Andrews AFB is considered part of Eastern Maryland by the MDE guidance document). The ATC represents a value that either matches or exceeds the majority of background concentration samples from Eastern Maryland and represents the mean concentration plus one standard deviation. Since the MDE guidance permits the use of the ATC as an alternative cleanup standard and it would not be appropriate to cleanup soils to a concentration that is typically associated with background levels, the ATC is a more appropriate standard for comparing to the SWMU #35 mercury detection. As such the detected concentration of 0.208 mg/kg is less than one-half of the ATC and soil remediation is not warranted.

3.4 Operation and Maintenance Activity Results

The recovery system operated for approximately a third of the quarter and problems were minimal. The system shut down two times during this reporting period due to malfunctions. Both times were due to a blown fuse associated with the motor on the air stripper. On both occasions when the system failed, it was restarted the same day as the problem was discovered. Table 1 provides a summary of system data and O&M activities performed during this reporting period.

Approximately 3,638,576 gallons of contaminated groundwater have been treated by the system during its episodic operation since it was installed in September 1996. An estimated 150,362 gallons were processed during the period October 1, 2002 to November 1, 2002.

Influent water samples were collected on October 1, October 16, and October 31, 2002. Influent samples were analyzed for VOCs by EPA Method SW8260B, SVOCs by EPA Method SW8270C, and Target Analyte List (TAL) dissolved Metals by EPA Methods SW6010B and SW7470A. Influent analytical results are summarized in Table 4. The levels of VOCs and SVOCs in the influent samples were much lower in October 2002 as compared to the results of past sampling events. These influent concentrations are unusually low and

most likely attributed to the significant precipitation (i.e. groundwater dilution) that was influencing the site on the days that sampling was conducted. It is known from the preceding reports that the major contaminants found at this site are 1,4-dichlorobenzene (1,4-DCB), cis-1,2-dichloroethene (cis-1,2-DCE), naphthalene, trichloroethene (TCE), and vinyl chloride (VC). TCE is the main contaminant, with concentrations often exceeding 6,500 micrograms per liter (µg/L) in the influent. The laboratory analytical results, including nondetects, for this period are provided in Table A-2 of Appendix A.

Effluent water samples were also collected October 1, October 16, and October 31, 2002. Effluent analytical results are also summarized in Table 4. Site-related contaminants known to be present include TCE and naphthalene. Effluent concentrations are below the regulatory standards.

Air stripper effluent air samples were also collected on October 1, October 16, and October 31, 2002 for VOC analysis using EPA Method TO-14. Air sample analytical results are summarized in Table 5. The air effluent this quarter contained negligible concentrations of the major contaminants, which are known from past quarters to include cis-1,2-DCE, TCE, methylene chloride, and 1,4-DCB. The laboratory analytical dump is provided in Table A-3 in Appendix A.

The system is effectively removing the VOC and SVOC contaminants from site groundwater before discharging the effluent water to the land surface. The mass of total VOCs removed from groundwater by the remediation system this period is approximately 1.26 kilograms. This value is based on the analytical results from the influent and effluent samples collected this reporting period, multiplied by the number of liters of groundwater processed by the system. A cumulative mass of 64.64 kilograms of VOCs have been removed from groundwater since the system began operation in 1996. Contaminant mass removal calculations are presented in Table 6. All of the effluent discharge criteria specified by the MDE (Appendix B) are being achieved.

Air emissions are estimated by calculating the mass of the contaminants removed per day based on the influent and effluent concentrations and the pumping rate of the system. Based on the samples collected October 1, 2002, the total estimated air emissions are 0.025 pound per day (lb/day) for Maryland Class I Toxic Air Pollutants and 247 pounds per year (lbs/yr) for Class II pollutants (Table 7). Based on the samples collected October 16, 2002, the total estimated air emissions are 0 lb/day for Class I pollutants and one lb/yr for Class II pollutants (Table 6). Based on the samples collected October 31, 2002, the total estimated air emissions are 0.001 lb/day for Class I pollutants and five lbs/yr for Class II pollutants (Table 7). None of the Class I pollutants exceed the one lb/day emission limit (per constituent) and none of the Class II pollutants exceed the one ton per year emission limit (per constituent) (COMAR 26.11.02.10X [MDE, 1988]).

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

Normal operation and maintenance of the Brandywine DRMO recovery system was performed from October 1 through November 1, 2002. Influent and effluent water samples, and effluent air samples from the air stripper were collected biweekly (twice monthly) during this time.

The following conclusions are drawn from the LTM and O&M data collected this period for Site SS-01:

- The remediation system at Site SS-01 processed 150,362 gallons of influent groundwater this period. The cumulative total for influent groundwater processed since system operations began in 1996 is 3,638,576.
- An estimated 1.26 kilograms of total VOCs was removed from groundwater, and all effluent discharge was less than the specified MDE standards. The cumulative total of VOCs removed from groundwater since system operations began in 1996 is 64.64 kilograms.
- None of the Class I or Class II Toxic Air Pollutants detected in the air stripper discharge exceeded permissible discharge limits.
- In the 32 days of operation prior to be shut down for the RI, the system malfunctioned only twice.
- Significant precipitation and rapid aquifer recharge significantly decreased the groundwater extraction and capture efficiency of the system. Water levels rose in the extraction well nearby groundwater monitoring wells even during system operation.
- VOC contaminant mass removal from the shallow aquifer was reduced during or directly following heavy rainfall/recharge events in October 2002. Influent groundwater sample results collected during or after heavy rainfall events demonstrate significantly lower concentrations of VOC contaminants entering the treatment system.

The following conclusion is drawn from analytical data collected from SWMU #35:

- SWMU #35 soils contain mercury at a concentration exceeding the MDE's residential soil cleanup standards, but below the more appropriate ATC cleanup guidance standard.

4.2 Recommendations

The Site SS-01 system should continue to be operated in accordance with MDE discharge criteria and any exceedences to these criteria will be evaluated and communicated to the regulatory agencies by Andrews AFB environmental personnel. The following recommendations shall be incorporated into the O&M program for 2003:

- New sampling requirements for the treatment system at Site SS-01 (Brandywine DRMO) should be adopted as soon as the system is restarted after completion of the RI that is currently underway. These changes are outlined in the *Site-specific Sampling and Analysis Plan Long-term Monitoring/Operation and Maintenance, Andrews Air Force Base, Maryland* (PES, a MACTEC Company, 2003) and have been approved by the MDE and EPA for implementation.

- Equipment specifications should be consulted and an appropriate temporary increase in the pumping rate made during heavy rainfall events, if possible. The air stripper flow rate should also be increased to accommodate the additional groundwater being pumped. The increased flow rate is an attempt to maintain drawdown and mass removal rates within the shallow aquifer by compensating for the increased volume of clean water being recharged to the aquifer. An increase in the pumping rate and air stripper flow rate should only be made if equipment specifications allow for such an increase and if discharge concentrations will not exceed MDE limits.

- Obtain closure at SWMU #35. Recent soil analytical and field screening results do not indicate the presence of site related contaminates. In addition groundwater analyses collected in 1993 from down gradient well 3639-MW01 showed the absence of BTEX petroleum constituents and TPH at a concentration significantly below the applicable MDE action level.

5.0 REFERENCES

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TABLES

Table 1

System Information and Groundwater Gauging Data
Brandywine DRMO, Site SS-01
October - December 2002
Andrews Air Force Base, Maryland

System Information														
Date		10/1/2002	10/2/2002	10/3/2002	10/4/2002	10/7/2002	10/8/2002	10/9/2002	10/10/2002	10/11/2002	10/14/2002	10/15/2002	10/16/2002	10/17/2002
Time		11:00	11:45	11:15	12:45	12:00	11:00	15:45	16:00	12:30	15:00	10:30	11:30	12:00
System Status		On	On	On	On	On	On	Off	On	On	On	On	On	On
Inf. Flow (gpm)		8.92	8.92	8.77	8.67	8.77	8.77	8.72	8.62	8.67	8.82	8.82	9.39	8.92
Inf. Air Stripper flow (gpm)		10.0	9.7	9.8	10.0	9.8	10.0	12.0	11.0	11.0	11.0	11.0	10.5	9.5
Magnehelic reading		17.3	17.3	17.0	17.0	17.3	17.7	17.0	17.3	17.5	17.8	17.5	17.3	17.5
Total Groundwater Removed (gal)		3,491,528	3,494,716	3,498,012	3,501,075	3,510,502	3,513,301	3,517,159	3,519,997	3,522,987	3,534,621	3,537,348	3,542,048	3,550,631
Incremental Groundwater Removed (gal)		3,314	3,188	3,296	3,063	9,427	2,799	3,858	2,838	2,990	11,634	2,727	4,700	8,583
Air Flow (CFM)		1,500	1,800	1,700	1,700	1,500	1,500	1,600	1,600	1,600	1,600	1,600	1,550	1,600
Well	**TOC Elevations**	**Depth to Water Measurements (below TOC)**												
HT1N	225.75	16.58	16.57	17.53	16.88	17.71	17.93	16.41	16.06	17.90	17.86	17.61	AC	5.59
PW-01	229.50	NG	14.78	NG	NG	NG	NG	NG	NG	14.79	NG	NG	4.75	NG
DP-03	230.21	NG	12.68	NG	NG	NG	NG	NG	NG	12.50	NG	NG	7.04	NG
DP-20	228.92	NG	11.91	NG	NG	NG	NG	NG	NG	11.81	NG	NG	6.95	NG
DP-18	231.93	NG	13.02	NG	NG	NG	NG	NG	NG	13.16	NG	NG	12.09	NG
DP-2	231.83	NG	13.07	NG	NG	NG	NG	NG	NG	13.21	NG	NG	12.21	NG
DP-4	232.79	NG	14.07	NG	NG	NG	NG	NG	NG	14.23	NG	NG	13.14	NG
DP-19	236.41	NG	13.81	NG	NG	NG	NG	NG	NG	13.95	NG	NG	12.89	NG
DP-21	229.60	NG	10.37	NG	NG	NG	NG	NG	NG	10.38	NG	NG	7.61	NG
DP-22	NA	NG	5.80	NG	NG	NG	NG	NG	NG	5.21	NG	NG	3.63	NG
DP-23	NA	NG	8.15	NG	NG	NG	NG	NG	NG	8.35	NG	NG	8.22	NG
OW-1A	227.99	NG	7.29	NG	NG	NG	NG	NG	NG	7.04	NG	NG	5.06	NG
OW-1B	227.52	NG	7.32	NG	NG	NG	NG	NG	NG	7.31	NG	NG	4.99	NG
DP-24	226.86	NG	6.83	NG	NG	NG	NG	NG	NG	6.82	NG	NG	4.86	NG
DP-27	228.08	NG	9.40	NG	NG	NG	NG	NG	NG	9.50	NG	NG	8.03	NG
OW-2A	227.40	NG	8.08	NG	NG	NG	NG	NG	NG	7.73	NG	NG	3.87	NG
OW-2B	227.85	NG	8.73	NG	NG	NG	NG	NG	NG	8.97	NG	NG	2.53	NG
OW-3A	229.04	NG	11.58	NG	NG	NG	NG	NG	NG	11.67	NG	NG	10.16	NG
OW-3B	229.19	NG	11.25	NG	NG	NG	NG	NG	NG	11.35	NG	NG	9.92	NG
DP-17	234.50	NG	15.50	NG	NG	NG	NG	NG	NG	15.63	NG	NG	14.88	NG
DP-01	237.03	NG	17.86	NG	NG	NG	NG	NG	NG	17.96	NG	NG	17.88	NG
DP-26	238.03	NG	19.54	NG	NG	NG	NG	NG	NG	19.64	NG	NG	19.53	NG

Table 1

System Information and Groundwater Gauging Data
Brandywine DRMO, Site SS-01
October - December 2002
Andrews Air Force Base, Maryland

System Information											
Date		10/18/2002	10/22/2002	10/23/2002	10/24/2002	10/25/2002	10/28/2002	10/29/2002	10/30/2002	10/31/2002	11/1/2002
Time		13:00	14:30	11:30	15:15	9:45	15:00	15:30	15:00	10:30	17:00
System Status		On	Off	On	On	On	On	On	On	On	On
Inf. Flow (gpm)		7.80	8.26	7.80	7.80	7.85	8.15	8.00	8.21	8.10	10.61
Inf. Air Stripper flow (gpm)		11.1	12.0	12.0	11.0	11.8	12.1	12.0	11.8	12.0	11.0
Magnehelic reading		17.5	17.5	17.7	17.0	18.0	17.8	18.0	18.0	18.0	18.1
Total Groundwater Removed (gal)		3,558,711	3,567,991	3,574,444	3,579,741	3,582,616	3,603,332	3,609,647	3,617,429	3,624,260	3,638,576
Incremental Groundwater Removed (gal)		8,080	9,280	6,453	5,297	2,875	20,716	6,315	7,782	6,831	14,316
Air Flow (CFM)		1,500	1,500	1,500	1,600	1,500	1,500	1,500	1,600	1,700	1,600
Well	**TOC Elevations**	**Depth to Water Measurements (below TOC)**									
HT1N	225.75	13.11	7.08	17.07	17.77	16.15	16.69	17.61	AC	1.36	14.14
PW-01	229.50	NG	8.75	NG	NG	NG	NG	NG	NG	3.95	NG
DP-03	230.21	NG	8.97	NG	NG	NG	NG	NG	NG	5.21	NG
DP-20	228.92	NG	7.94	NG	NG	NG	NG	NG	NG	4.21	NG
DP-18	231.93	NG	11.81	NG	NG	NG	NG	NG	NG	9.99	NG
DP-2	231.83	NG	11.91	NG	NG	NG	NG	NG	NG	10.14	NG
DP-4	232.79	NG	13.06	NG	NG	NG	NG	NG	NG	10.86	NG
DP-19	236.41	NG	12.79	NG	NG	NG	NG	NG	NG	10.62	NG
DP-21	229.60	NG	8.19	NG	NG	NG	NG	NG	NG	5.46	NG
DP-22	NA	NG	4.42	NG	NG	NG	NG	NG	NG	2.48	NG
DP-23	NA	NG	7.96	NG	NG	NG	NG	NG	NG	7.85	NG
OW-1A	227.99	NG	5.43	NG	NG	NG	NG	NG	NG	3.10	NG
OW-1B	227.52	NG	5.49	NG	NG	NG	NG	NG	NG	3.12	NG
DP-24	226.86	NG	4.76	NG	NG	NG	NG	NG	NG	2.79	NG
DP-27	228.08	NG	7.59	NG	NG	NG	NG	NG	NG	5.34	NG
OW-2A	227.40	NG	4.89	NG	NG	NG	NG	NG	NG	2.34	NG
OW-2B	227.85	NG	4.64	NG	NG	NG	NG	NG	NG	2.25	NG
OW-3A	229.04	NG	9.85	NG	NG	NG	NG	NG	NG	7.61	NG
OW-3B	229.19	NG	9.57	NG	NG	NG	NG	NG	NG	7.35	NG
DP-17	234.50	NG	14.71	NG	NG	NG	NG	NG	NG	13.39	NG
DP-01	237.03	NG	17.77	NG	NG	NG	NG	NG	NG	17.55	NG
DP-26	238.03	NG	19.59	NG	NG	NG	NG	NG	NG	19.42	NG

Table 1

System Information and Groundwater Gauging Data
Brandywine DRMO, Site SS-01
October - December 2002
Andrews Air Force Base, Maryland

NOTES:

AC - Water level above top of casing and could not be gauged.

NG - Not gauged

Depth to water (DTW) measurements from top of casing

-- Indicates the water level is above the top of the casing, because of heavy rain.

10/9/02 - Transfer Tank High Level and Stripper Low Air Pressure alarms. Air stripper blower fuse has blown.
Fuse replaced, and system restarted.
Transfer pump needed to be reprimed

10/22/02 - Transfer Tank High Level and Stripper Low Air Pressure alarms. Air stripper blower fuse has blown.
Fuse replaced, and system restarted.

10/31/02 - Influent pump rate increased to slightly less than effluent rate to treat excess water in ground after rain, before system shut down.

11/1/02 - System shut down for URS remedial investigation.

Table 2

Soil Sample Analytical Summary
SWMU #35 (Building 3639)
Andrews Air Force Base, Maryland

Parameter	Location Code:	SWMY-35-3639		
	Site:	SWMU #35 (Building 3639)		
	Sample No:	037		
	Sample Date:	18-Dec-02		
	Sample Depth:	24 inches		
Volatiles	**Units**	**Result**	**Qual**	**VQ**
Acetone	mg/kg	0.15	-	nv
Petroleum Hydrocarbons				
TPH-DRO	mg/kg	18	-	nv
Metals				
Arsenic	mg/kg	1.96	J	nv
Barium	mg/kg	64.2	-	nv
Cadmium	mg/kg	0.292	J	nv
Chromium	mg/kg	14.9	-	nv
Lead	mg/kg	24.1	-	nv
Mercury	mg/kg	0.208	-	nv
Silver	mg/kg	2.01	-	nv

mg/kg = milligrams per kilogram
Qual = laboratory qualifier
J = estimated concentration
VQ = validation qualifier
nv = not validated
TPH = total petroleum hydrocarbons
DRO = diesel-range organics

Table 3
PID Readings
SWMU #35 (Building 3639)
Andrews Air Force Base, Maryland

Location Code:	SWMU #35
Associated Site:	Building 3639
Sample Date:	17-Dec-02
Sample Depth:	12 inches

PID Sample Location	Ambient Air	Units	Bagged Sample	Units
3639 - #1	**3.8**	ppm	**3.5**	ppm
3639 - #2	**4.1**	ppm	**3.8**	ppm
3639 - #3	**7.4**	ppm	**27.2**	ppm
3639 - #4	**14.2**	ppm	**74.8**	ppm
3639 - #5	**29.1**	ppm	**58.6**	ppm

Notes:
1. Sample locations #1 through #5 are depicted in Figure 2.
2. Laboratory analytical soil samples were taken from Sample Location #1 because it is the closest boring to the documented location of SWMU #35.

Table 4

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - December 2002
Andrews Air Force Base, Maryland

			Location Code:	SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF	
			Associated Site:	SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
			Sample No:	033		034		035		026		027		028		021		022		023	
			Sample Date:	31-Oct-02		31-Oct-02		31-Oct-02		16-Oct-02		16-Oct-02		16-Oct-02		1-Oct-02		1-Oct-02		1-Oct-02	
			Sample Location within System	Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																					
Acetone		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	F	18	F
Benzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Butanone, 2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.7	F	-	-
Carbon tetrachloride		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-		µg/L		9.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	9.9		-	-	-	-	1.2		-	-	-	-	220		-	-	-	-
Dichloroethene, 1,1-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethene, cis-1,2-		µg/L	70	12	F	-	-	-	-	1.9		-	-	-	-	520		-	-	-	-
Dichloroethene, trans-1,2-		µg/L		0.23	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	200		-	-	-	-
Propylbenzene, N-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene		µg/L		0.44	F	2		2.7		-	-	-	-	0.56	F	-	-	-	-	0.24	F
Trichlorobenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene		µg/L	5	140		-	-	-	-	12		-	-	-	-	5600		0.81	F	0.43	F
Trimethylbenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	9.1	F	-	-	-	-
Xylene, m,p-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene, o-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Volatile Organics[a]		µg/L	100											0.56				0.81		0.43	
SEMIVOLATILES																					
Benzoic Acid		µg/L		-	-			-	-	-	-			-	-	-	-			-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6	-	-			-	-	-	-			-	-	-	-			-	-
Dichlorobenzene, 1,4-		µg/L		8.9	F			-	-	-	-			-	-	120				-	-
Dichlorophenol, 2,4-		µg/L	*	-	-			-	-	-	-			-	-	-	-			-	-
Methylnaphthalene, 2-		µg/L	*	-	-			-	-	-	-			-	-	130				-	-
Naphthalene		µg/L	*	-	-			-	-	-	-			-	-	100				-	-
Phenol		µg/L	*	-	-			-	-	-	-			-	-	-	-			-	-
Trichlorophenol, 2,4,5-		µg/L		-	-			-	-	-	-			-	-	-	-			-	-
Total Semivolatile Organics[a]		µg/L	100																		
METALS																					
Aluminum		µg/L		290		283		397		81.6	F	116	F	109	F	62.7	F	47.6	F	31.6	F
Antimony		µg/L		10.5	F	13.5	F	9.3	F	-	-	-	-	-	-	13.8	F	-	-	-	-
Arsenic		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium		µg/L		22.7		19.6		21.7		19.8		51.4		65.3		29.1		28.1		30.1	
Beryllium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	0.3	F	0.3	F	-	-
Cadmium		µg/L		-	-	-	-	0.7	F	-	-	-	-	-	-	-	-	-	-	-	-
Calcium		µg/L		12400		13400		14900		10100		6060		4140		2840		2790		2990	
Chromium		µg/L		-	-	-	-	2	F	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	7.1	F	7.8	F	5.8	F
Copper		µg/L	9	4.3	F	4.5	F	4.7	F	2.8	F	2.8	F	2.1	F	16.3		5.7	F	3.4	F
Iron		µg/L		152	F	149	F	203	F	64.3	F	140	F	184	F	1720		1650		2000	
Lead		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		µg/L		4950		5230		5790		4060		2930		2350		1890		1840		1970	
Manganese		µg/L		27.7	F	16.8	F	18.4	F	14	F	70.6	F	91.1	F	160		161		175	
Mercury		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	4.7	F	4	F	3.8	F
Potassium		µg/L		2720	F	2860	F	2950	F	2490	F	1380	F	941	F	489	F	523	F	455	F
Selenium		µg/L		-	-	-	-	-	-	7.6	F	-	-	-	-	-	-	-	-	-	-
Silver		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	2.7	F	-	-	-	-
Sodium		µg/L		1900		1520		1700		1440		3550		4010		6140		6040		6400	
Thallium		µg/L	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc		µg/L	120	47.3		30.9		34.3		103		32.5		28.2		72.9		12.6	F	30.4	

Table 4

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - December 2002
Andrews Air Force Base, Maryland

Location Code:				SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF	
Associated Site:				SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
Sample No:				016		017		018		011		012		013		006		007		008	
Sample Date:				17-Sep-02		17-Sep-02		17-Sep-02		3-Sep-02		3-Sep-02		3-Sep-02		22-Aug-02		22-Aug-02		22-Aug-02	
Sample Location within System				Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge	
Parameter	FI	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																					
Acetone		µg/L		32		12	F	12	F	-	-	19	F	14	F	42		28	-	23	-
Benzene		µg/L		1.5		-	-	-	-	-	-	-	-	-	-	1.6		-	-	-	-
Butanone, 2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride		µg/L		1	F	-	-	-	-	-	-	-	-	-	-	0.65	F	-	-	-	-
Chlorobenzene		µg/L		1.7		-	-	-	-	-	-	-	-	-	-	1.6		-	-	-	-
Chloroform		µg/L		0.9	F	-	-	-	-	-	-	-	-	-	-	0.93	F	-	-	-	-
Dichlorobenzene, 1,2-		µg/L		0.81		-	-	-	-	-	-	-	-	-	-	0.8		-	-	-	-
Dichlorobenzene, 1,3-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	370		-	-	-	-	270		0.21	F	-	-	270		-	-	-	-
Dichloroethene, 1,1-		µg/L		1.3		-	-	-	-	-	-	-	-	-	-	1.1	F	-	-	-	-
Dichloroethene, cis-1,2-		µg/L	70	540		-	-	-	-	590	F	0.26	F	-	-	640	F	-	-	-	-
Dichloroethene, trans-1,2-		µg/L		2.5		-	-	-	-	-	-	-	-	-	-	3.2		-	-	-	-
Ethylbenzene		µg/L		0.4	F	-	-	-	-	-	-	-	-	-	-	0.38	F	-	-	-	-
Isopropylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride		µg/L		1.2		-	-	-	-	-	-	-	-	-	-	1.3		-	-	-	-
Naphthalene		µg/L		680		-	-	-	-	130		-	-	-	-	210		3.7		1.9	
Propylbenzene, N-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene		µg/L		0.45	F	0.21	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorobenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	1.1		-	-	-	-
Trichloroethene		µg/L	5	6900		0.72	F	0.3	F	7400		1.3		0.42	F	7800		0.26	F	0.57	F
Trimethylbenzene, 1,2,4-		µg/L		1.1	F	-	-	-	-	-	-	-	-	-	-	1.1	F	-	-	-	-
Trimethylbenzene, 1,3,5-		µg/L		0.41	F	-	-	-	-	-	-	-	-	-	-	0.32	F	-	-	-	-
Vinyl chloride		µg/L		10		-	-	-	-	14	F	-	-	-	-	11		-	-	-	-
Xylene, m,p-		µg/L		0.85	F	-	-	-	-	-	-	-	-	-	-	0.81	F	-	-	-	-
Xylene, o-		µg/L		0.5	F	-	-	-	-	-	-	-	-	-	-	0.59	F	-	-	-	-
Total Volatile Organics[a]		µg/L	100			0.72		0.3				1.77		0.42				0.26		0.57	
SEMIVOLATILES																					
Benzoic Acid		µg/L		-	-			-	-	-	-			-	-	-				-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6	-	-			-	-	-	-			-	-	-				-	-
Dichlorobenzene, 1,4-		µg/L		140				-	-	150				-	-	160				-	-
Dichlorophenol, 2,4-		µg/L	*	-	-			-	-	-	-			-	-	-				-	-
Methylnaphthalene, 2-		µg/L	*	140				-	-	120				-	-	150				-	-
Naphthalene		µg/L	*	110				-	-	22				-	-	100				-	-
Phenol		µg/L	*	-	-			-	-	-	-			-	-	-				-	-
Trichlorophenol, 2,4,5-		µg/L		-	-			-	-	-	-			-	-	-				-	-
Total Semivolatile Organics[a]		µg/L	100					-						-						-	
METALS																					
Aluminum		µg/L		72.9	F	-	-	-	-	-	-	-	-	-	-	99.6		85.8	F	76.8	F
Antimony		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium		µg/L		28.4		28.9		28.4		29.3		31.2		29.6		25.1		24.5		24.7	
Beryllium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium		µg/L		2740		2700		2780		2930		2860		2650		2970		2770		2740	
Chromium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper		µg/L	9	22.3		13.7		6.14	F	6.41	F	18.6		-	-	7.85	F	12.8		-	-
Iron		µg/L		2260		1160		1580		4280		1720		1360		3790		1940		1610	
Lead		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		µg/L		1850		1780		1840		2180		2210		2070		1800		1740		1720	
Manganese		µg/L		169		162		168		220		214		197		173		155		149	
Mercury		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	867	F	-	-
Selenium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium		µg/L		5530		5370		5550		6060		6120		5690		5990		6340		6380	
Thallium		µg/L	2	-	-	-	-	-	-	-	-	-	-	-	-	6.62	F	-	-	-	-
Vanadium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc		µg/L	120	73.6		20.3		20.1		39.4		29.4		17.7	F	61.9		24		63.1	

Table 4

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - December 2002
Andrews Air Force Base, Maryland

Location Code:				SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF	
Associated Site:				SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
Sample No:				002		003		004		4014		4013		4012		4009		4008		4007	
Sample Date:				9-Aug-02		9-Aug-02		9-Aug-02		23-Jul-02		23-Jul-02		23-Jul-02		12-Jul-02		12-Jul-02		12-Jul-02	
Sample Location within System				Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																					
Acetone		µg/L		-	-	27		23		37		23		21		55	F	19	F	18	F
Benzene		µg/L		-	-	-	-	-	-	1.3		-	-	-	-	-	-	-	-	-	-
Butanone, 2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride		µg/L		-	-	-	-	-	-	1.2	F	-	-	-	-	-	-	-	-	-	-
Chlorobenzene		µg/L		-	-	-	-	-	-	2.9		-	-	-	-	-	-	-	-	-	-
Chloroform		µg/L		-	-	-	-	-	-	1.3		-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-		µg/L		-	-	-	-	-	-	1.1		-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	230	F	-	-	-	-	630		0.21	F	-	-	520		-	-	-	-
Dichloroethene, 1,1-		µg/L		-	-	-	-	-	-	1.5		-	-	-	-	-	-	-	-	-	-
Dichloroethene, cis-1,2-		µg/L	70	600	F	-	-	-	-	810		0.3	F	-	-	970		0.28	F	-	-
Dichloroethene, trans-1,2-		µg/L		-	-	-	-	-	-	4.6		-	-	-	-	4.3	F	-	-	-	-
Ethylbenzene		µg/L		-	-	-	-	-	-	0.57	F	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene		µg/L		-	-	-	-	-	-	0.24	F	-	-	-	-	-	-	-	-	-	-
Methylene chloride		µg/L		-	-	-	-	-	-	1.6		-	-	-	-	-	-	1.1		-	-
Naphthalene		µg/L		130		4.3		2.5		570		4.3		1.9		1000		-	-	-	-
Propylbenzene, N-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene		µg/L		-	-	-	-	-	-	0.29	F	-	-	-	-	-	-	-	-	-	-
Trichlorobenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene		µg/L	5	6900		-	-	0.22	F	8200		1.3		0.42	F	9000		0.99	F	0.29	F
Trimethylbenzene, 1,2,4-		µg/L		-	-	-	-	-	-	1.1	F	-	-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-		µg/L		-	-	-	-	-	-	0.39	F	-	-	-	-	-	-	-	-	-	-
Vinyl chloride		µg/L		8	F	-	-	-	-	20		-	-	-	-	16		-	-	-	-
Xylene, m,p-		µg/L		-	-	-	-	-	-	1.1		-	-	-	-	-	-	-	-	-	-
Xylene, o-		µg/L		-	-	-	-	-	-	0.7	F	-	-	-	-	-	-	-	-	-	-
Total Volatile Organics[a]		µg/L	100			-		0.22				1.81		0.42				1.27		0.29	
SEMIVOLATILES																					
Benzoic Acid		µg/L		-	-					-	-			-	-	-	-			-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6	-	-					-	-			-	-	-	-			-	-
Dichlorobenzene, 1,4-		µg/L		130						220				-	-	110				-	-
Dichlorophenol, 2,4-		µg/L	*	-	-					-	-			-	-	-	-			-	-
Methylnaphthalene, 2-		µg/L	*	49						190				-	-	-	-			-	-
Naphthalene		µg/L	*	-	-					60				-	-	-	-			-	-
Phenol		µg/L	*	-	-					6.8	F			-	-	-	-			-	-
Trichlorophenol, 2,4,5-		µg/L		-	-					-	-			-	-	-	-			-	-
Total Semivolatile Organics[a]		µg/L	100											-						-	
METALS																					
Aluminum		µg/L		74.2		-	-	68.8	F	67.9	F	-	-	-	-	75.6	F	-	-	-	-
Antimony		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium		µg/L		26.6	-	24.1		23.9		27.4		26.5		27.5		33.5		29.9		28.2	
Beryllium		µg/L		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium		µg/L		2920		2520		2450		2800		2580		2720		3290		2960		2790	
Chromium		µg/L		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper		µg/L	9	7.82		-	-	***39.1***		7.44	F	10.4		-	-	10.6		-	-	-	-
Iron		µg/L		3670		1600		1670		3450		1900		1920		2700		2090		1890	
Lead		µg/L		-	-	3.83		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		µg/L		1870		1660		1640		1800		1720		1830		2230		1990		1890	
Manganese		µg/L		176		145		143		170		157		163		196		177		166	
Mercury		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium		µg/L		-	-	-	-	-	-	-	-	765	F	-	-	-	-	-	-	-	-
Selenium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium		µg/L		6700		6070		6030		6320		6320		6520		7630		6990		6790	
Thallium		µg/L	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc		µg/L	120	55.1		21.7		30.1		27.6		20	F	19.8	F	54.9		14	F	17.4	F

Table 4

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - December 2002
Andrews Air Force Base, Maryland

			Location Code:	SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF	
			Associated Site:	SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
			Sample No:	4004		4003		4002		3099		3098		3095		3094		3093		3089		3088		3087	
			Sample Date:	27-Jun-02		27-Jun-02		27-Jun-02		12-Jun-02		12-Jun-02		30-May-02		30-May-02		30-May-02		14-May-02		14-May-02		14-May-02	
			Sample Location within System	Influent Port		Post Air Stripper		Discharge		Influent Port		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																									
Acetone		µg/L		31		23		20		44		36		-	-	34		21		-	-	45		37	
Benzene		µg/L		1.4		-	-	-	-	1.5		-	-	-	-	0.23	F	-	-	-	-	-	-	-	-
Butanone, 2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride		µg/L		2.4		2.1	F	0.8	F	0.85	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene		µg/L		1.6		-	-	-	-	1.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform		µg/L		1.1		0.3	F	-	-	0.71	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-		µg/L		0.79		-	-	-	-	0.56		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	340		-	-	-	-	230		-	-	180		-	-	-	-	200		-	-	-	-
Dichloroethene, 1,1-		µg/L		1.2		-	-	-	-	0.99	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethene, cis-1,2-		µg/L	70	720		-	-	-	-	600		-	-	480	F	-	-	-	-	580		-	-	-	-
Dichloroethene, trans-1,2-		µg/L		2.7		-	-	-	-	3.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene		µg/L		0.38	F	-	-	-	-	0.33	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride		µg/L		3.5		-	-	-	-	3.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene		µg/L		69		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylbenzene, N-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene		µg/L		-	-	-	-	0.38	F	-	-	-	-	-	-	0.59	F	-	-	-	-	-	-	-	-
Trichlorobenzene, 1,2,4-		µg/L		-	-	-	-	-	-	0.37	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene		µg/L	5	7500		0.39	F	-	-	5100		-	-	5600		0.61	F	0.27	F	6400	J	-	-	-	-
Trimethylbenzene, 1,2,4-		µg/L		0.83	F	-	-	-	-	0.9	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-		µg/L		0.27	F	-	-	-	-	0.28	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride		µg/L		8.2		-	-	-	-	13		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene, m,p-		µg/L		0.79	F	-	-	-	-	0.63	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene, o-		µg/L		0.54	F	-	-	-	-	0.46	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Volatile Organics[a]		µg/L	100			0.39		-				-				0.61		0.27				-		-	
SEMIVOLATILES																									
Benzoic Acid		µg/L		-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L		93				-	-	110		-	-	100		-	-	-	-	110		-	-	-	-
Dichlorophenol, 2,4-		µg/L	*	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylnaphthalene, 2-		µg/L	*	14				-	-	15		-	-	19		-	-	-	-	33		-	-	-	-
Naphthalene		µg/L	*	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol		µg/L	*	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorophenol, 2,4,5-		µg/L		-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Semivolatile Organics[a]		µg/L	100					-				-				-		-				-		-	
METALS																									
Aluminum		µg/L		-	-	-	-	-	-	73.2	F	-	-												
Antimony		µg/L		-	-	-	-	-	-	-	-	-	-												
Arsenic		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium		µg/L		23.8		26.2		25.9		27.8		27.6		24.8		30		24.6		29.8		27.6		26.1	
Beryllium		µg/L		-	-	-	-	-	-	-	-	-	-												
Cadmium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium		µg/L		2260		2480		2410		2530		2550													
Chromium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt		µg/L		-	-	-	-	-	-	-	-	-	-												
Copper		µg/L	9	10.4		5.58	F	-	-	25.6		-	-												
Iron		µg/L		1790		1780		1620		1990		1800													
Lead		µg/L		-	-	-	-	-	-	4.56	J	-	-	6.75	F	-	-	-	-	11.5	F	2.64	F	-	-
Magnesium		µg/L		1620		1790		1790		1910		1900													
Manganese		µg/L		140		158		156		198		191													
Mercury		µg/L		-	-	-	-	-	-	-	-	-	-	0.173	F	-	-	-	-	0.153	F	-	-	-	-
Molybdenum		µg/L		-	-	-	-	-	-	-	-	-	-												
Nickel		µg/L		-	-	-	-	-	-	-	-	-	-												
Potassium		µg/L		-	-	-	-	-	-	953	F	947	F												
Selenium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	11.4	F	-	-	-	-	-	-	-	-
Sodium		µg/L		5680		5820		5730		6230		6300													
Thallium		µg/L	2	-	-	-	-	-	-	-	-	-	-												
Vanadium		µg/L		-	-	-	-	-	-	-	-	-	-												
Zinc		µg/L	120	20.9		14.1	F	9.83	F	40		24.5													

Table 4

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - December 2002
Andrews Air Force Base, Maryland

Location Code:				SS01-INF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF	
Associated Site:				SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
Sample No:				3085		3084		3079		3078		3077		2007		2006		2005		2002		2001		2000	
Sample Date:				1-May-02		1-May-02		10-Apr-02		10-Apr-02		10-Apr-02		13-Nov-01		13-Nov-01		13-Nov-01		26-Oct-01		26-Oct-01		26-Oct-01	
Sample Location within System				Influent Port		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																									
Acetone		µg/L		-	-	210	J	-	-	20	F	20		35	F	27		23		-	-	35		31	
Benzene		µg/L		-	-	-	-	-	-	-	-	-	-	2.1	F	-	-	-	-	-	-	-	-	-	-
Butanone, 2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform		µg/L		-	-	-	-	0.67	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	150	J	-	-	220	F	-	-	-	-	230	J	0.6		-	-	300		-	-	-	-
Dichloroethene, 1,1-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethene, cis-1,2-		µg/L	70	370	F	-	-	620	F	-	-	-	-	660		0.99	F	-	-	760		-	-	-	-
Dichloroethene, trans-1,2-		µg/L		-	-	-	-	2.6		-	-	-	-	2.6	F	-	-	-	-	-	-	-	-	-	-
Ethylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride		µg/L		-	-	-	-	-	-	-	-	-	-	5.7	F	-	-	-	-	6.9	F	-	-	-	-
Naphthalene		µg/L		91		-	-	-	-	6		5.2		140		5.4		2.5		290		5.9		4.5	
Propylbenzene, N-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorobenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene		µg/L	5	5200		0.25	F	6700		0.3	F	-	-	8800		6		0.81	F	8200		0.55	F	0.32	F
Trimethylbenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride		µg/L		-	-	-	-	-	-	-	-	-	-	10	F	-	-	-	-	-	-	-	-	-	-
Xylene, m,p-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene, o-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Volatile Organics[a]		µg/L	100			0.25				0.3		-						0.81						0.32	
SEMIVOLATILES																									
Benzoic Acid		µg/L		-	-	-	-	-	-			-	-	-	-			-	-	2.3	F			-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6	-	-	-	-	-	-			-	-	-	-			-	-	-	-			-	-
Dichlorobenzene, 1,4-		µg/L		120		-	-	110				-	-	160				-	-	250				-	-
Dichlorophenol, 2,4-		µg/L	*	-	-	-	-	-				-	-	3	F			-	-	5	F			-	-
Methylnaphthalene, 2-		µg/L	*	87		-	-	67				-	-	160				-	-	250				-	-
Naphthalene		µg/L	*	58		-	-	58				-	-	60				-	-	160				-	-
Phenol		µg/L	*	-	-	-	-	-	-			-	-	-	-			-	-	11				1.9	F
Trichlorophenol, 2,4,5-		µg/L		-	-	-	-	-	-			-	-	-	-			-	-	-	-			-	-
Total Semivolatile Organics[a]		µg/L	100			-						-						-						1.9	
METALS																									
Aluminum		µg/L												-	-	-	-	-	-	-	-	-	-	-	-
Antimony		µg/L												-	-	-	-	-	-	-	-	-	-	-	-
Arsenic		µg/L		-	-	-	-	4.01	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium		µg/L		33		31.2		37.3		39.2		38.1		29.5		28.2		27.9		26		26.8		25.7	
Beryllium		µg/L												0.27	F	0.31	F	0.54	F	-	-	-	-	1.08	F
Cadmium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium		µg/L												2550		2510		2450		2220		2340		2660	
Chromium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	5.73	F	3.22	F	-	-	-	-	-	-
Cobalt		µg/L												6.57	F	8.43	F	9.86	F	11.1	F	-	-	8.15	F
Copper		µg/L	9											6.09	F	6.08	F	4.75	F	2.2	F	1.61	F	2.53	F
Iron		µg/L												2070		2010		1850		6030		1590		1730	
Lead		µg/L		-	-	-	-	2.25	F	2.91	F	-	-	2.27	F	-	-	-	-	1.36	F	-	-	-	-
Magnesium		µg/L												2010		1910		1880		1780		1730		1670	
Manganese		µg/L												199		194		187		219		182		170	
Mercury		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum		µg/L												4.1	F	-	-	4.45	F	-	-	4.54	F	4.93	F
Nickel		µg/L												-	-	-	-	5.01	F	-	-	-	-	-	-
Potassium		µg/L												-	-	1240	F	-	-	-	-	-	-	-	-
Selenium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	5.05	F	5.67	F	-	-	-	-	-	-
Silver		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	3.9	F	5.59	F	4.01	F	-	-	-	-
Sodium		µg/L												5970		5770		5370		5550		6210		5840	
Thallium		µg/L	2											-	-	4.85	F	-	-	-	-	-	-	-	-
Vanadium		µg/L												-	-	2.51	F	-	-	2.34	F	-	-	-	-
Zinc		µg/L	120											33.3		12.4	F	16.1	F	33.9		22.8		16.6	F

Table 4

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - December 2002
Andrews Air Force Base, Maryland

			Location Code:	SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF	
			Associated Site:	SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
			Sample No:	1997		1996		1995		1993		1992		1990		1989		1988	
			Sample Date:	11-Oct-01		11-Oct-01		11-Oct-01		4-Oct-01		4-Oct-01		27-Sep-01		27-Sep-01		27-Sep-01	
			Sample Location within System	Influent Port		Post Air Stripper		Discharge		Influent Port		Discharge		Influent Port		Post Air Stripper		Discharge	
Parameter	FI	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																			
Acetone		µg/L		35		28		25		pg		pg		47		24		20	F
Benzene		µg/L		1.7		-	-	-	-	pg		pg		2.2		-	-	-	-
Butanone, 2-		µg/L		-	-	-	-	-	-	pg		pg		-	-	-	-	-	-
Carbon tetrachloride		µg/L		1.2	F	-	-	-	-	pg		pg		2.3		-	-	-	-
Chlorobenzene		µg/L		1.8		-	-	-	-	pg		pg		2.3		-	-	-	-
Chloroform		µg/L		0.78	F	-	-	-	-	pg		pg		1.1		-	-	-	-
Dichlorobenzene, 1,2-		µg/L		-	-	-	-	-	-	pg		pg		-	-	-	-	-	-
Dichlorobenzene, 1,3-		µg/L		-	-	-	-	-	-	pg		pg		-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	230		-	-	-	-	pg		pg		290		-		-	-
Dichloroethene, 1,1-		µg/L		1.3		-	-	-	-	pg		pg		1.8		-	-	-	-
Dichloroethene, cis-1,2-		µg/L	70	540		0.3	F	0.25	F	pg		pg		670		-		-	-
Dichloroethene, trans-1,2-		µg/L		2.6		-	-	-	-	pg		pg		3.6		-	-	-	-
Ethylbenzene		µg/L		0.43	F	-	-	-	-	pg		pg		0.68		-	-	-	-
Isopropylbenzene		µg/L		-	-	-	-	-	-	pg		pg		0.26	F	-	-	-	-
Methylene chloride		µg/L		5.5		-	-	-	-	pg		pg		7.3		0.35	F	0.39	F
Naphthalene		µg/L		210	F	4.6		2		pg		pg		280		4.7		2.6	
Propylbenzene, N-		µg/L		-	-	-	-	-	-	pg		pg		-	-	-	-	-	-
Toluene		µg/L		0.37	F	-	-	-	-	pg		pg		0.36	F	-	-	-	-
Trichlorobenzene, 1,2,4-		µg/L		0.25	F	-	-	-	-	pg		pg		-	-	-	-	-	-
Trichloroethene		µg/L	5	6000		1.7		1.6		pg		pg		12000		0.95	F	0.74	F
Trimethylbenzene, 1,2,4-		µg/L		1.1	F	-	-	-	-	pg		pg		1.7		-	-	-	-
Trimethylbenzene, 1,3,5-		µg/L		0.29	F	-	-	-	-	pg		pg		0.49	F	-	-	-	-
Vinyl chloride		µg/L		12		-	-	-	-	pg		pg		18		-	-	-	-
Xylene, m,p-		µg/L		0.98	F	-	-	-	-	pg		pg		1.4		-	-	-	-
Xylene, o-		µg/L		0.71	F	-	-	-	-	pg		pg		1.1	F	-	-	-	-
Total Volatile Organics[a]		µg/L	100			2		1.85								0.95		0.74	
SEMIVOLATILES																			
Benzoic Acid		µg/L		-	-			-	-	pg		pg		-	-			-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6	-	-			-	-	pg		pg		120	B			-	-
Dichlorobenzene, 1,4-		µg/L		310				-	-	pg		pg		190				-	-
Dichlorophenol, 2,4-		µg/L	*	-	-			-	-	pg		pg		2.8	F			-	-
Methylnaphthalene, 2-		µg/L	*	300				-	-	pg		pg		140				-	-
Naphthalene		µg/L	*	160				-	-	pg		pg		100				-	-
Phenol		µg/L	*	4.5	F			2.4	F	pg		pg		8.5	F			4	F
Trichlorophenol, 2,4,5-		µg/L		-	-			-	-	pg		pg		-	-			-	-
Total Semivolatile Organics[a]		µg/L	100	-	-			2.4										4	
METALS																			
Aluminum		µg/L		41.8	F	-	-	-	-	31.1	F	-	-	30.1	F			-	-
Antimony		µg/L		-	-	-	-	-	-	-	-	-	-	-	-			-	-
Arsenic		µg/L		-	-	-	-	-	-	-	-	-	-	-	-			-	-
Barium		µg/L		25.6		27.6		29.3		26.3		28.8		25.6				25	
Beryllium		µg/L		-	-	0.24	F	0.88	F	-	-	1.11	F	-	-			-	-
Cadmium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-			-	-
Calcium		µg/L		2260		2250		2360		2010		2290		2470				2050	
Chromium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-			-	-
Cobalt		µg/L		-	-	-	-	7.2	F	-	-	-	-	-	-			6.1	F
Copper		µg/L	9	3.93	F	1.51	F	4.83	F	7.38	F	6.5	F	-	-			-	-
Iron		µg/L		1730		1740		1430		1700		1600		3500				1340	
Lead		µg/L		-	-	-	-	-	-	-	-	-	-	-	-			-	-
Magnesium		µg/L		1540		1820		1920		1700		1930		1800				1720	
Manganese		µg/L		174		188		193		174		200		208				190	
Mercury		µg/L		-	-	-	-	-	-	-	-	-	-	-	-			-	-
Molybdenum		µg/L		-	-	-	-	-	-	-	-	-	-	-	-			-	-
Nickel		µg/L		-	-	-	-	-	-	-	-	-	-	-	-			-	-
Potassium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-			-	-
Selenium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-			-	-
Silver		µg/L		3.91	F	-	-	-	-	-	-	6.06	F	-	-			-	-
Sodium		µg/L		8800		5750		5780		6160		5800		5690				5630	
Thallium		µg/L	2	-	-	-	-	-	-	-	-	-	-	-	-			-	-
Vanadium		µg/L		-	-	-	-	-	-	-	-	4.35	F	-	-			-	-
Zinc		µg/L	120	26.6		11.7	F	25.5		46.2		19.2	F	29.2				13.9	F

Table 4

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - December 2002
Andrews Air Force Base, Maryland

			Location Code:	SS01-INF		SS01-EFF		SS01-INF		SS01-EFF-PS		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-INF		SS01-EFF	
			Associated Site:	SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
			Sample No:	1986		1985		1983		1982		1981		1950A		1825		1826		1627		1626	
			Sample Date:	21-Sep-01		21-Sep-01		6-Sep-01		6-Sep-01		6-Sep-01		28-Feb-01		31-Jan-01		31-Jan-01		7-Jul-00		7-Jul-00	
			Sample Location within System	Influent Port		Discharge		Influent Port		Post Air Stripper		Discharge		Discharge		Influent Port		Discharge		Influent Port		Discharge	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																							
Acetone		µg/L		pg		pg		-	-	24		19	F	30		-	-	18	F	-	-	86	F
Benzene		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	7.3		-	-
Butanone, 2-		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	5.7		-	-
Chlorobenzene		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	5.8		-	-
Chloroform		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	pg		pg		280		-	-	-	-	-	-	220		-	-	780		-	-
Dichloroethene, 1,1-		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	4.3		-	-
Dichloroethene, cis-1,2-		µg/L	70	pg		pg		770		0.25	F	0.22	F	-	-	500		-	-	2400		-	-
Dichloroethene, trans-1,2-		µg/L		pg		pg		-	-	-	-	-	-	-	-	2.9	F	-	-	9.7		-	-
Ethylbenzene		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	1.4		-	-
Isopropylbenzene		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	0.34	F	-	-
Methylene chloride		µg/L		pg		pg		28	FB	-	-	-	-	0.25	F	11	B	0.42	FB	66		0.38	F
Naphthalene		µg/L		pg		pg		200		4.1		2.7		6.9		76		3.9		1100		16	
Propylbenzene, N-		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	0.32	N	-	-
Toluene		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorobenzene, 1,2,4-		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene		µg/L	5	pg		pg		8200		0.98	F	0.76	F	0.45	F	5800		-	-	18000		0.26	F
Trimethylbenzene, 1,2,4-		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	2.3		-	-
Trimethylbenzene, 1,3,5-		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride		µg/L		pg		pg		33	F	-	-	-	-	-	-	17		-	-	52		-	-
Xylene, m,p-		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	2.5		-	-
Xylene, o-		µg/L		pg		pg		-	-	-	-	-	-	-	-	-	-	-	-	2		-	-
Total Volatile Organics[a]		µg/L	100							1.23		0.98		0.45				-				0.26	
SEMIVOLATILES																							
Benzoic Acid		µg/L		pg		pg		-	-			-	-							-	-	-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6	pg		pg		-	-			-	-							-	-	-	-
Dichlorobenzene, 1,4-		µg/L		pg		pg		170				-	-							240		-	-
Dichlorophenol, 2,4-		µg/L	*	pg		pg		-	-			-	-							5.4	F	5.5	F
Methylnaphthalene, 2-		µg/L	*	pg		pg		130				-	-							250		5.2	F
Naphthalene		µg/L	*	pg		pg		61				-	-							250		4.5	F
Phenol		µg/L	*	pg		pg		4.3	F			4.4	F							28		29	
Trichlorophenol, 2,4,5-		µg/L		pg		pg		-	-			-	-							2.1	F	-	-
Total Semivolatile Organics[a]		µg/L	100									4.4										44.2	
METALS																							
Aluminum		µg/L		91.6	F	-	-	-	-			-	-							54.6	F	54.5	F
Antimony		µg/L		-	-	-	-	-	-			-	-							-	-	-	-
Arsenic		µg/L		-	-	-	-	-	-			-	-							-	-	-	-
Barium		µg/L		29.5		27.5		26.8				31.5								36.7		36.1	
Beryllium		µg/L		-	-	-	-	-	-			-	-							0.29	F	-	-
Cadmium		µg/L		-	-	-	-	-	-			-	-							-	-	-	-
Calcium		µg/L		2240		2170		2670				2640								3070		2990	
Chromium		µg/L		-	-	-	-	-	-			22.5								-	-	-	-
Cobalt		µg/L		6.03	F	5.86	F	-	-			-	-							7.85	F	-	-
Copper		µg/L	9	6.17	F	5.68	F	-	-			-	-							14.5		3.66	F
Iron		µg/L		1840		1520		6460				1430								5020		4160	
Lead		µg/L		-	-	-	-	-	-			-	-							-	-	-	-
Magnesium		µg/L		1900		1840		2020				2190								2860		2700	
Manganese		µg/L		202		210		332				397								424		416	
Mercury		µg/L		-	-	-	-	-	-			-	-							-	-	-	-
Molybdenum		µg/L		4.51	F	8.93	F	-	-			-	-							4.6	F	-	-
Nickel		µg/L		8.9	F	-	-	-	-			15.5	F							-	-	-	-
Potassium		µg/L		-	-	-	-	1320	F			-	-							-	-	-	-
Selenium		µg/L		-	-	-	-	-	-			-	-							-	-	-	-
Silver		µg/L		-	-	5.39	F	-	-			-	-							-	-	-	-
Sodium		µg/L		5900		5470		4860				5320								7020		6860	
Thallium		µg/L	2	-	-	-	-	-	-			-	-							-	-	-	-
Vanadium		µg/L		-	-	-	-	-	-			-	-							2.3		-	-
Zinc		µg/L	120	62.3		18.3	F	49.5				***164***								62.4		25.9	

Table 4

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - December 2002
Andrews Air Force Base, Maryland

			Location Code:	SS01-INF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-INF		SS01-EFF		SS01-INF		SS01-EFF	
			Associated Site:	SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
			Sample No:	1615		1616		1600		1601		1410		1407		1408		1404		1405		1401		1402	
			Sample Date:	13-Mar-00		13-Mar-00		14-Feb-00		14-Feb-00		3-Feb-00		24-Jan-00		24-Jan-00		17-Jan-00		17-Jan-00		10-Jan-00		10-Jan-00	
			Sample Location within System	Influent Port		Discharge		Influent Port		Discharge		Discharge		Influent Port		Discharge		Influent Port		Discharge		Influent Port		Discharge	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																									
Acetone		µg/L		-	-	190	F	-	-	87		86		-	-	230		2300		280		11		21	
Benzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Butanone, 2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	F	-	-	-	
Carbon tetrachloride		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2		-	-
Chloroform		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	-	-	-	-	190				-	-	540		-	-	610		-	-	40		-	-
Dichloroethene, 1,1-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.62	F	-	-
Dichloroethene, cis-1,2-		µg/L	70	2100		-	-	1100		-	-	-	-	3900		-	-	4400				380		-	-
Dichloroethene, trans-1,2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.1		-	-
Ethylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride		µg/L		-	-	-	-	44	B	1.4	B	1.7	B	-	-	-	-	350		-	-	1.4		-	-
Naphthalene		µg/L		1100		19		120		8.6		8.7		450		14		750		16		20		4.9	
Propylbenzene, N-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorobenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene		µg/L	5	18000		-	-	7000		-	-	0.39	F	29000		-	-	31000		-	-	1100		-	-
Trimethylbenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride		µg/L		-	-	-	-	30	F	-	-	-	-	130		-	-	78	F	-	-	17		-	-
Xylene, m,p-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene, o-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Volatile Organics[a]		µg/L	100			-				-		0.39				-				-				-	
SEMIVOLATILES																									
Benzoic Acid		µg/L		-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6	-	-	***15***		-	-	-	-			-	-	-	-	34		***13.3***		-	-	-	-
Dichlorobenzene, 1,4-		µg/L		250		-	-	120		-	-			389		-	-	226		-	-	31		-	-
Dichlorophenol, 2,4-		µg/L	*	4.8	F	4.5	F	-	-	-	-			13		10		6.74	F	7.95	F	-	-	-	-
Methylnaphthalene, 2-		µg/L	*	190		7.3	F	59		-	-			284		-	-	149		3.67	F	10		-	-
Naphthalene		µg/L	*	210		11		47		-	-			283		-	-	179		5.56	F	9.3	F	-	-
Phenol		µg/L	*	22		17		8.5	F	7.5	F			56.9		41.5		41.1		49.1		-	-	5.4	F
Trichlorophenol, 2,4,5-		µg/L		-	-	-	-	-	-	-	-			7.14	F	6.03	F	4.21	F	4.32	F	-	-	-	-
Total Semivolatile Organics[a]		µg/L	100			54.8				7.5						51.5				79.58				5.4	
METALS																									
Aluminum		µg/L						108	F	154	F			157	F	186	F	-	-	-	-	565		319	
Antimony		µg/L						-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Arsenic		µg/L						-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Barium		µg/L						32		28.9				45.3		46.1		48.9		48.7		20.6		23.3	
Beryllium		µg/L						-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		µg/L						-	-	-	-			-	-	-	-	-	-	2.21	F	-	-	-	
Calcium		µg/L						4130		6880				4000		3970		3430		3350		13800		13200	
Chromium		µg/L								5.08	F			-	-	-	-	-	-	-	-	-	-	-	-
Cobalt		µg/L								10	F			13.8	F	10.2	F	11.4	F	19	F	-	-	-	-
Copper		µg/L	9					-	-	-	-			9.09	F	***9.23***	F	9.45	F	6.46	F	7.35	F	7.47	F
Iron		µg/L						2690		2600				5250		6690		6240		5880		1370		2560	
Lead		µg/L						-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		µg/L						2970		3810				3310		3360		3530		3490		5520		5440	
Manganese		µg/L						476		328				474		475		716		716		96.7		193	
Mercury		µg/L						-	-	-	-			-	-	-	-	285	F	281	F	-	-	-	-
Molybdenum		µg/L						-	-	-	-			-	-	-	-	-	-	13.9	F	-	-	-	-
Nickel		µg/L						10.5	F	-	-			14	F	-	-	19	F	17.2	F	-	-	-	-
Potassium		µg/L								2030	F			-	-	-	-	-	-	-	-	3870	F	4010	F
Selenium		µg/L						-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Silver		µg/L						-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Sodium		µg/L						4360		4900				7160		7200		6720		6510		2260		2810	
Thallium		µg/L	2					-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Vanadium		µg/L						-	-	-	-			-	-	-	-	-	-	4	F	-	-	-	-
Zinc		µg/L	120					48.3		45.3				161		102		82.3		55.3		104		116	

* No Specific Limit, total organics must not exceed 100 µg/L.
a - total volatile organics value only includes those analytes with established effluent limits (TCE, PCE, CIS-1,2- DCE, 1,4- DCB).
Eff. Lim. - Effluent Limit
LQ - laboratory qualifier
F - estimated value between reporting limit and detection limit
J - estimated value
B - detected in method blank
pg - Analyses performed by Prince Georges County; results not available for this spreadsheet.
Analyses are non-validated.
Shaded concentrations shown in bold italics denote exceedances of effluent limits.

Table 5

Air Sample Analytical Summary
Brandywine DRMO, Site SS-01
Andrews Air Force Base, Maryland

	Location Code:	EFF-SS01			EFF-SS01			EFF-SS01		
	Associated Site:	SS01			SS01			SS01		
	Sample No:	036			031			024		
	Sample Date:	31-Oct-02			16-Oct-02			1-Oct-02		
Parameter	Sample Depth:	0 to 0			0 to 0			0 to 0		
Method TO14	**Units**	**Result**	**Qual**	**VQ**	**Result**	**Qual**	**VQ**	**Result**	**Qual**	**VQ**
1,4-Dichlorobenzene	ppbv	3	-	nv	-	-	nv	150	-	nv
Acetone	ppbv	7	-	nv	-	-	nv	-	-	nv
cis-1,2-Dichloroethene	ppbv	6	-	nv	77	-	nv	630	-	nv
Methylene chloride	ppbv	4	-	nv	-	-	nv	-	-	nv
Trichloroethene	ppbv	37	-	nv	480	-	nv	4400	-	nv

ppbv = parts per billion volume
Qual = laboratory qualifier
J = estimated concentration
B = Analyte is detected in blank as well as sample
VQ = validation qualifier
nv = not validated

Table 6

Mass of Contaminants Removed
October - December 2002
SS-01 Groundwater Treatment System
Brandywine DRMO, Site SS-01
Andrews Air Force Base, Maryland

Analyte	Influent - Effluent Conc. (µg/L) 10/1/2002	Flow Volume (liters) From 10/1/02 to 10/16/02	Mass Removed[a] (kg) From 10/1/02 to 10/16/02
Dichlorobenzene, 1,4-	220	191218	0.042
Dichloroethene, cis-1,2-	520		0.099
Naphthalene	200		0.038
Trichloroethene	5599.57		1.071
Vinyl chloride	9.1		0.002
Total Mass Removed (kilograms)			**1.25**
Analyte	**Influent - Effluent Conc. (µg/L) 10/16/2002**	**Flow Volume (liters) From 10/16/02 thru 11/1/02**	**Mass Removed[a] (kg) From 10/16/02 thru 11/1/02**
Dichlorobenzene, 1,4-	1.2	365358	0.000
Dichloroethene, cis-1,2-	1.9		0.001
Trichloroethene	12		0.004
Total Mass Removed (kilograms)			**0.01**
Total Mass Removed This Period (kilograms)			**1.26**
Cumulative Mass Removed Since July 2000 (kilograms)			**64.64**

Notes:
µg/L = micrograms per liter.
kg = kilogram.
[a]Total mass removed **=** (inf-eff conc.[µg/L]) **x** total flow volume[L]) **x** 1 x 10^{-9} kg/µg)

Table 7

Estimated Air Emissions, October 1, 2002
SS-01 Groundwater Treatment System
Brandywine DRMO
Andrews Air Force Base, Maryland

Toxic Air Pollutant Class	PARAMETER	SS-01 Influent Sample #1997 (µg/L)	SS-01 Effluent Sample #1995 (µg/L)	Air Emissions[1] (lb/day)	Air Emissions[2] (lb/year)
I	Dichlorobenzene, 1,4-	220	0	0.02358	
I	Vinyl chloride	9.1	0	0.00098	
II	Dichloroethene, cis-1,2-	520	0		20.34
II	Naphthalene	200	0		7.82
II	Trichloroethene	5600	0.43		219
			Total	**0.025**	**247**

[1] For Maryland Class I Toxic Air Pollutants.
[2] For Maryland Class II Toxic Air Pollutants.

Influent flow rate = 8.92 gal/min for 10/1/02
gal/min = Gallons per minute.
µg/L = Micrograms per liter.
lb/day = Pounds per day.
Only Maryland Class I and Class II listed Toxic Air Pollutants are included in the calculations.

Table 7

Estimated Air Emissions, October 16, 2002
SS-01 Groundwater Treatment System
Brandywine DRMO
Andrews Air Force Base, Maryland

Toxic Air Pollutant Class	PARAMETER	SS-01 Influent Sample #1997 (µg/L)	SS-01 Effluent Sample #1995 (µg/L)	Air Emissions[1] (lb/day)	Air Emissions[2] (lb/year)
I	Dichlorobenzene, 1,4-	1.2	0	0.00014	
II	Dichloroethene, cis-1,2-	1.9	0		0.08
II	Trichloroethene	12	0		0
			Total	**0.000**	**1**

[1] For Maryland Class I Toxic Air Pollutants.
[2] For Maryland Class II Toxic Air Pollutants.

Influent flow rate = 9.39 gal/min for 10/16/02
gal/min = Gallons per minute.
µg/L = Micrograms per liter.
lb/day = Pounds per day.
Only Maryland Class I and Class II listed Toxic Air Pollutants are included in the calculations.

Table 7

Estimated Air Emissions, October 31, 2002
SS-01 Groundwater Treatment System
Brandywine DRMO
Andrews Air Force Base, Maryland

Toxic Air Pollutant Class	PARAMETER	SS-01 Influent Sample #1997 (µg/L)	SS-01 Effluent Sample #1995 (µg/L)	Air Emissions[1] (lb/day)	Air Emissions[2] (lb/year)
I	Dichlorobenzene, 1,4-	9.9	0	0.00096	
II	Dichloroethene, cis-1,2-	12	0		0.43
II	Dichloroethene, trans-1,2-	0.23	0		0.008
II	Toluene	0.44	0		0.016
II	Trichloroethene	140	0		5
			Total	**0.001**	**5**

[1] For Maryland Class I Toxic Air Pollutants.
[2] For Maryland Class II Toxic Air Pollutants.

Influent flow rate = 8.10 gal/min for 10/31/02
gal/min = Gallons per minute.
µg/L = Micrograms per liter.
lb/day = Pounds per day.
Only Maryland Class I and Class II listed Toxic Air Pollutants are included in the calculations.

FIGURES

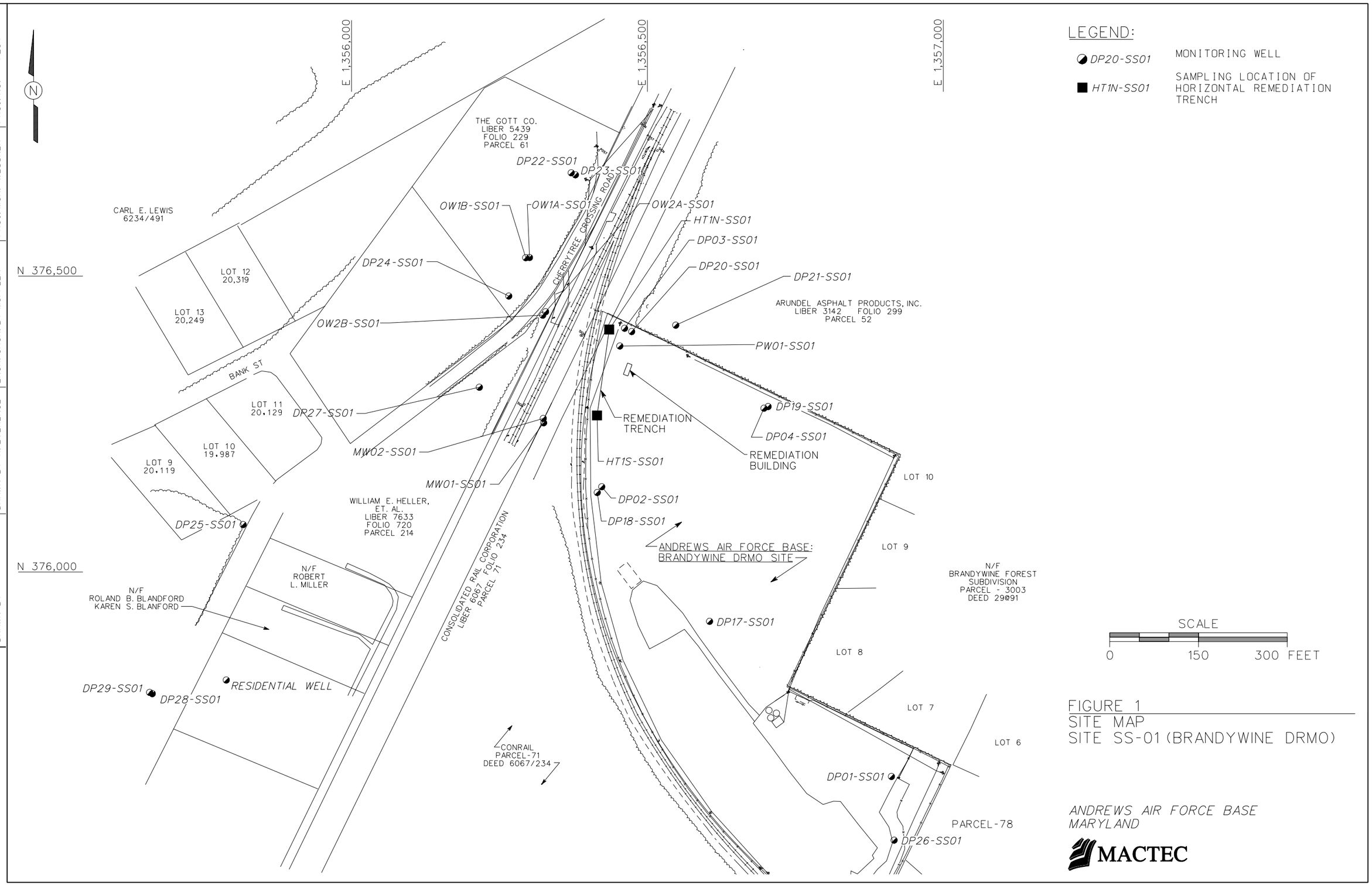


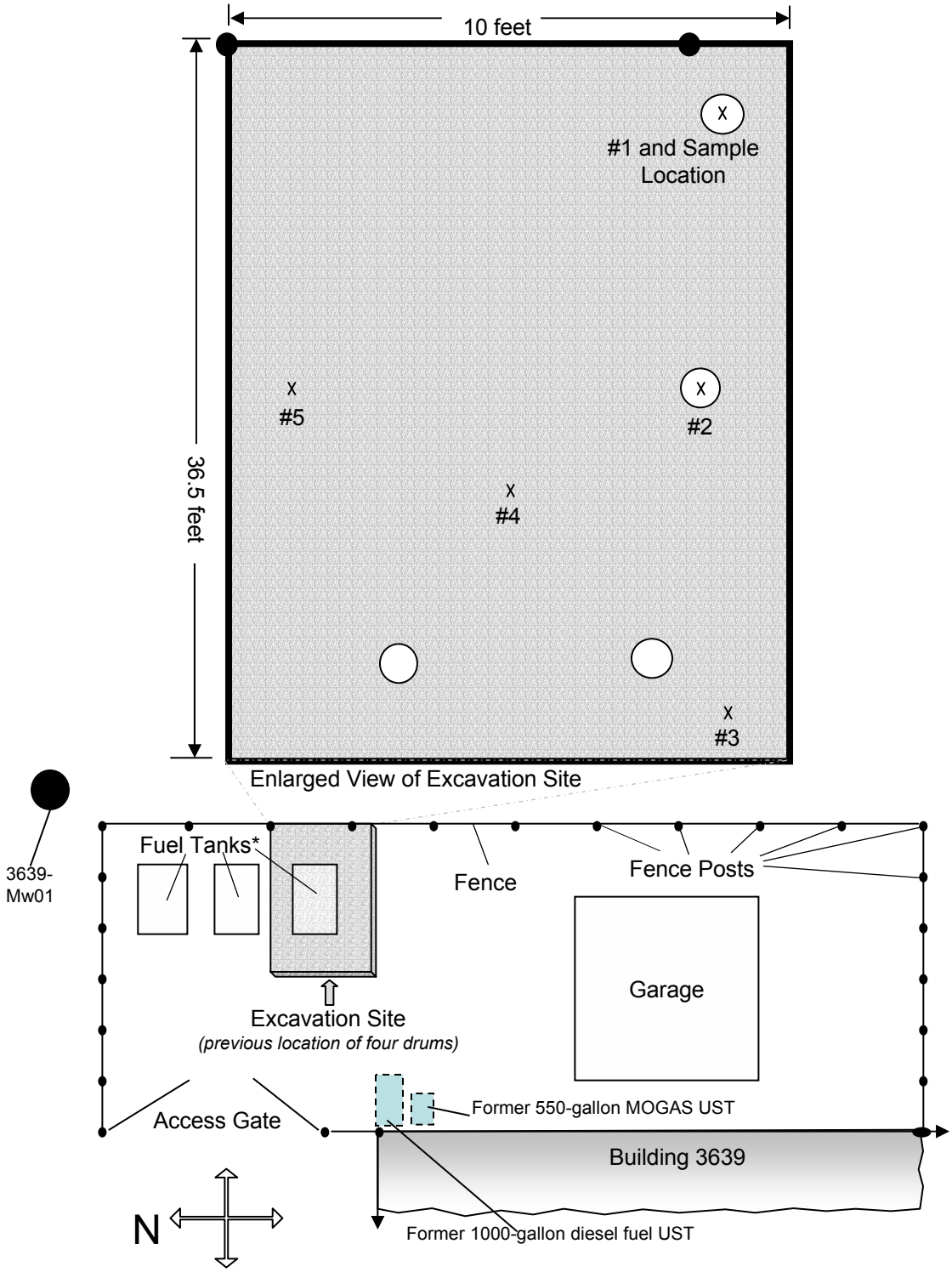
FIGURE 1
SITE MAP
SITE SS-01 (BRANDYWINE DRMO)

ANDREWS AIR FORCE BASE
MARYLAND

MACTEC

STARTING DATE: 10/30/02	DATE LAST REV.:	DRAFT. CHCK. BY: 1/30/03	INITIATOR:MUFFLER
DRAWN BY:	DRAWN BY: R. EVERENCE	ENGR. CHCK. BY:MUFFLER	PROJ. MGR.: WESSNER
DWG. NO.:POF204-0006_FIG6		PROJ. NO.: F204	

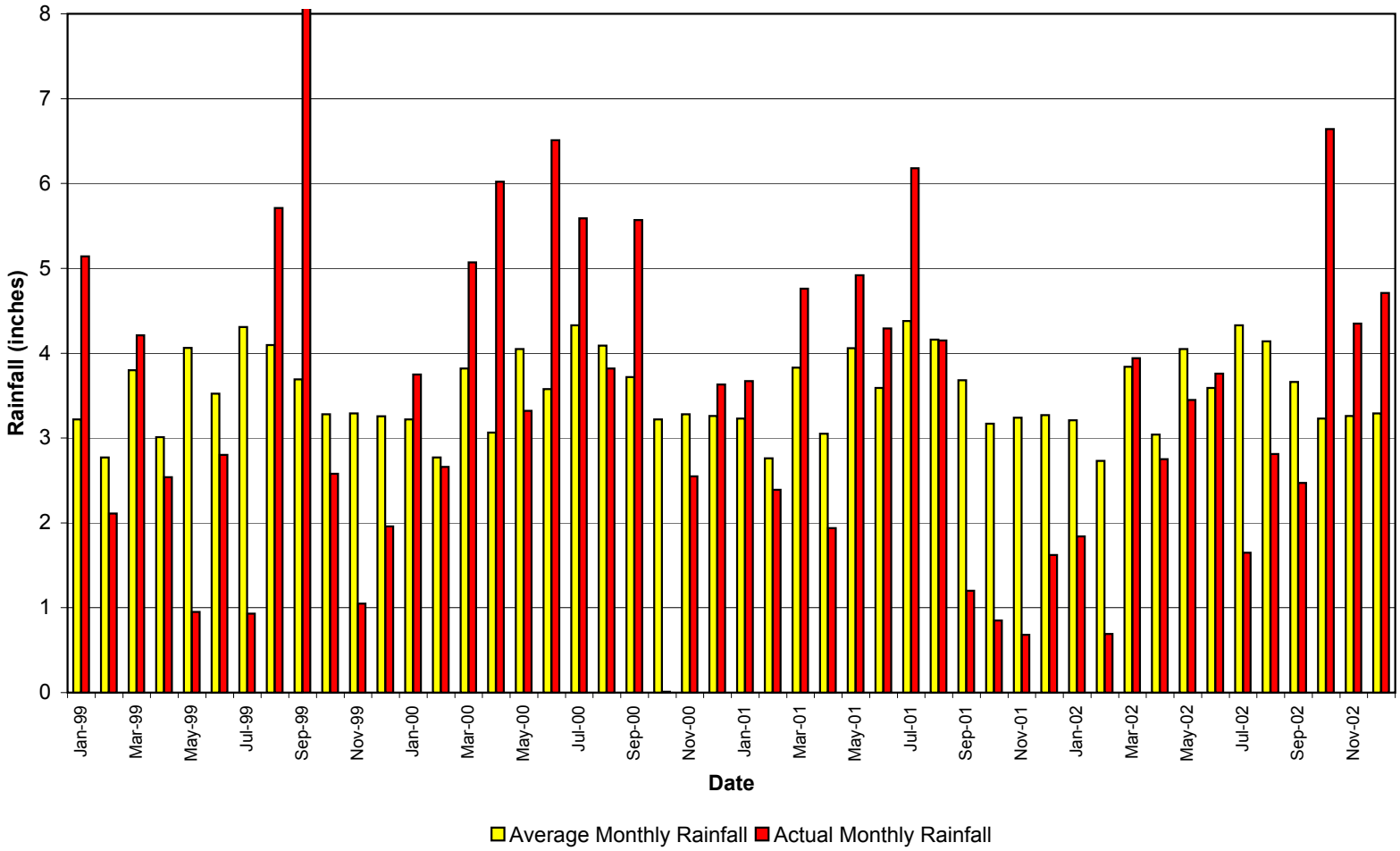
Figure 2
Site Map and Sampling Locations
SWMU #35 – Building 3639
Andrews AFB, MD



Note: See Table 7 for PID readings and Table 2 for soil sample analytical results.

* Fuel tank on excavation site was not in place at time of soil sampling.
x = PID reading location
◯ = Concrete post holes

Project number	F204
Drawn by	JW
Checked by	MM
	1/15/2003
	1/30/2003



Source: 89th Operations Support Squadron
Weather Flight,
Andrews AFB

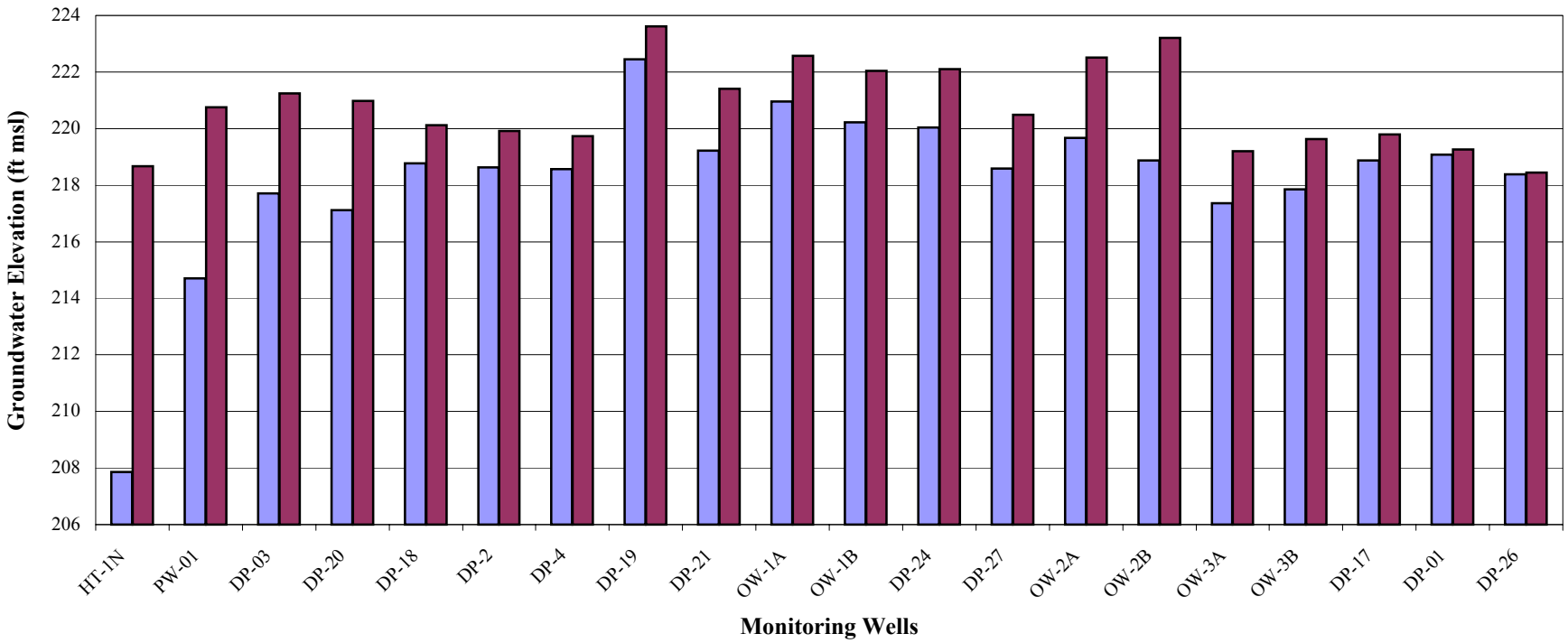
PES
A MACTEC COMPANY

Andrews Air Force Base
Maryland

FIGURE 3

Precipitation Hydrograph

Quarterly System Evaluation Report
Long-Term Monitoring/Operation and Maintenance Program



Notes: Groundwater elevations shown were obtained by subtracting the depth to water (ft btoc) from the surveyed top of casing elevation (ft msl).

A portion of the higher groundwater elevations observed when the system was not operational on 10/22/02 is due to rapid rainfall and aquifer recharge.

10/11/02 - Remediation System in Operation
10/22/02 - Remedation System not in Operation

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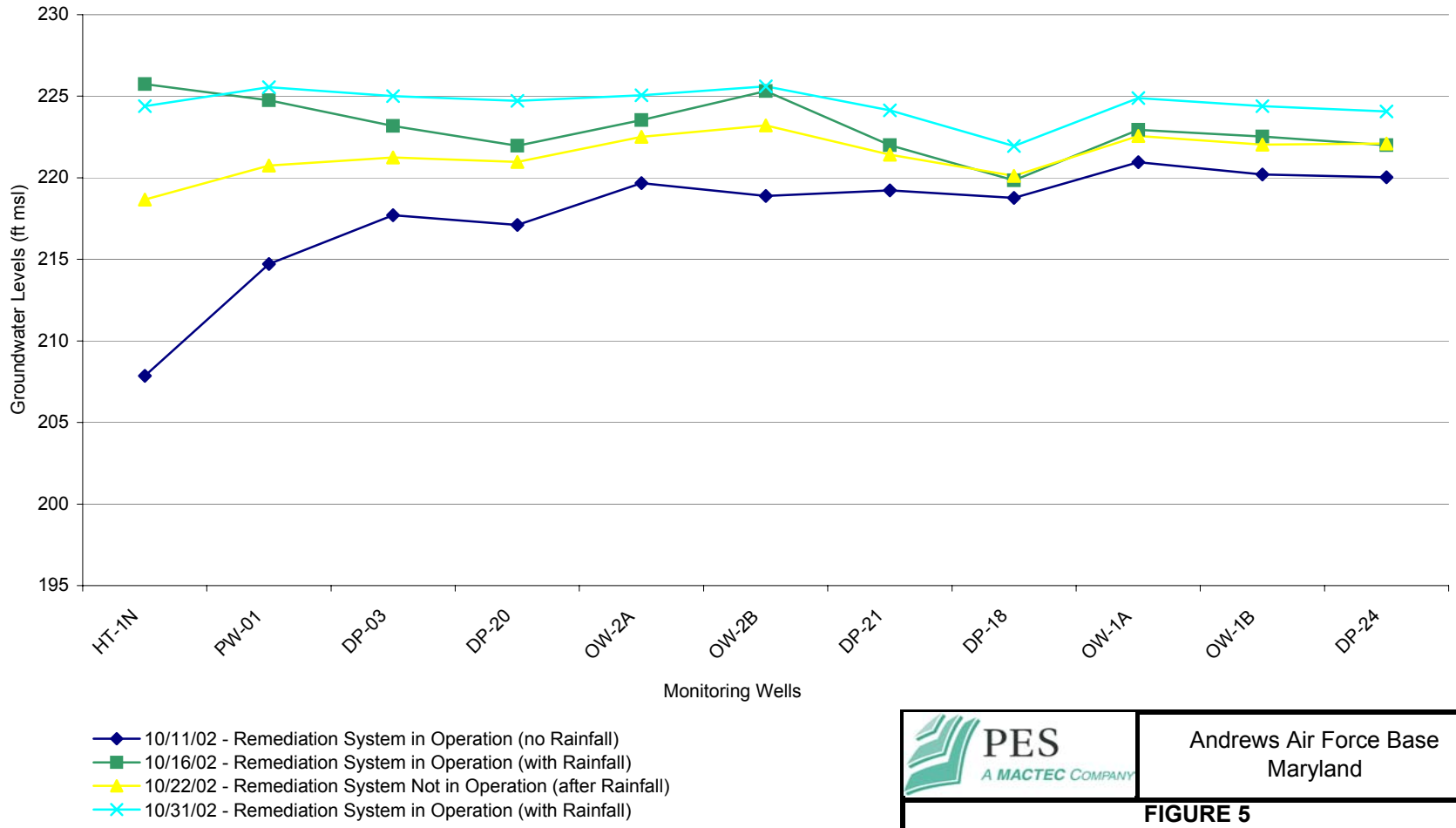
Andrews Air Force Base
Maryland

FIGURE 4
Comparison of Groundwater Elevations During and After System Operation at Site SS-01
Brandywine DRMO
Quarterly System Evaluation Report
Long-Term Monitoring/Operation and Maintenance Program



Groundwater elevations were obtained by subtracting the depth to water (ft btoc) from the surveyed top of casing elevation (ft msl).

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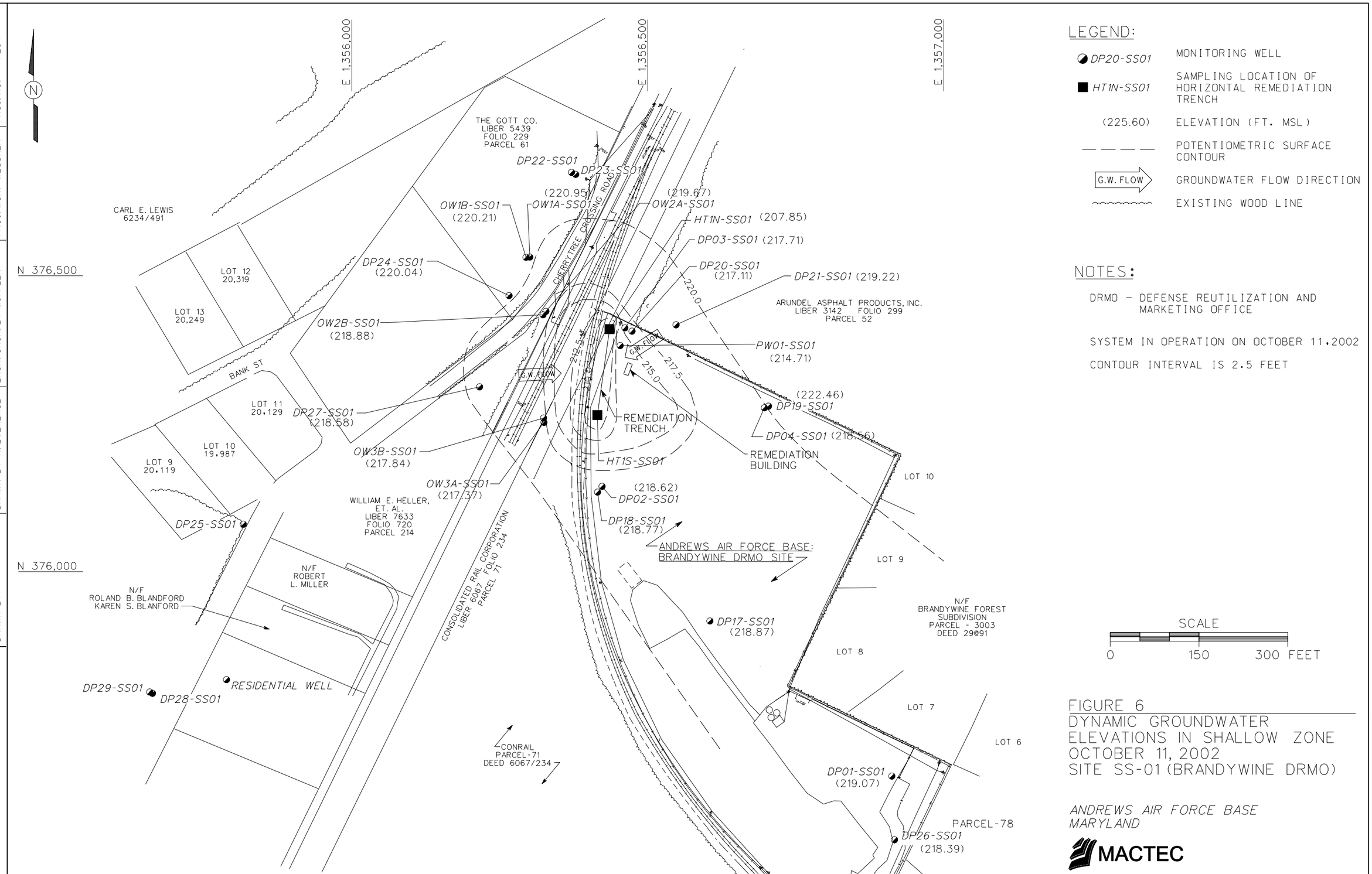
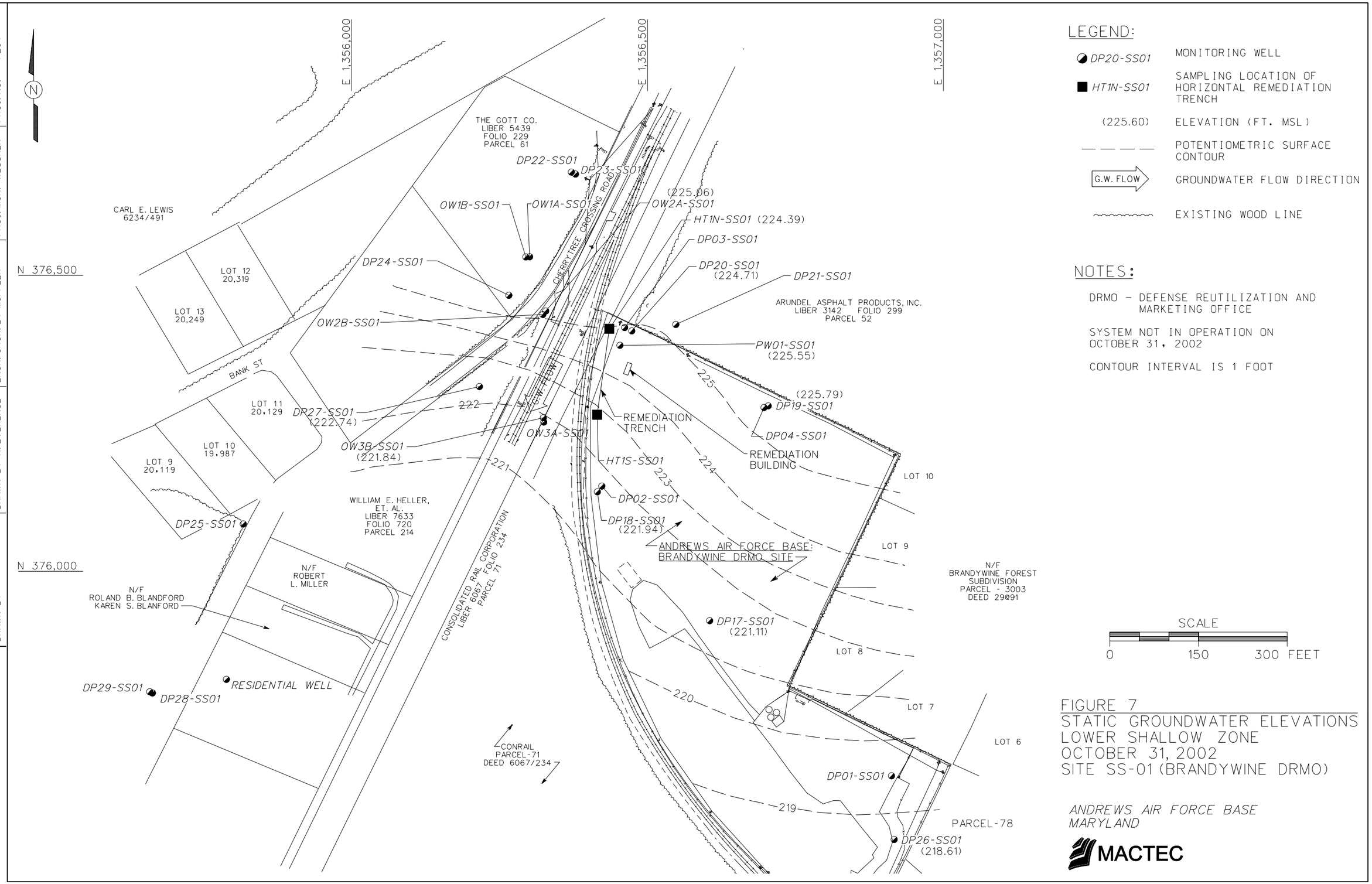
Andrews Air Force Base
Maryland

FIGURE 5
Comparison of Groundwater Elevations During Various System Operation and Rainfall Conditions at Site SS-01, Brandywine DRMO
Quarterly System Evaluation Report
Long-Term Monitoring/Operation and Maintenance


E 1,356,000
E 1,356,500
E 1,357,000
N 376,500
N 376,000
THE GOTT CO.
LIBER 5439
FOLIO 229
PARCEL 61
CARL E. LEWIS
6234/491
LOT 12
20,319
LOT 13
20,249
LOT 11
20,129
LOT 10
19,987
LOT 9
20,119
BANK ST
CHERRYTREE CROSSING ROAD
DP22-SS01
DP23-SS01
(220.95)
(219.67)
OW1B-SS01
(220.21)
OW1A-SS01
OW2A-SS01
HT1N-SS01 (207.85)
DP03-SS01 (217.71)
DP24-SS01
(220.04)
DP20-SS01
(217.11)
DP21-SS01 (219.22)
220.0
ARUNDEL ASPHALT PRODUCTS, INC.
LIBER 3142 FOLIO 299
PARCEL 52
OW2B-SS01
(218.88)
PW01-SS01
(214.71)
G.W. FLOW
212.5
215.0
217.5
(222.46)
DP19-SS01
DP27-SS01
(218.58)
REMEDIATION
TRENCH
DP04-SS01 (218.56)
REMEDIATION
BUILDING
OW3B-SS01
(217.84)
HT1S-SS01
OW3A-SS01
(217.37)
(218.62)
DP02-SS01
WILLIAM E. HELLER,
ET. AL.
LIBER 7633
FOLIO 720
PARCEL 214
DP18-SS01
(218.77)
DP25-SS01
ANDREWS AIR FORCE BASE:
BRANDYWINE DRMO SITE
N/F
ROBERT
L. MILLER
N/F
ROLAND B. BLANDFORD
KAREN S. BLANFORD
CONSOLIDATED RAIL CORPORATION
LIBER 6067 FOLIO 234
PARCEL 71
DP17-SS01
(218.87)
N/F
BRANDYWINE FOREST
SUBDIVISION
PARCEL - 3003
DEED 29091
LOT 10
LOT 9
LOT 8
LOT 7
LOT 6
DP29-SS01
DP28-SS01
RESIDENTIAL WELL
CONRAIL
PARCEL-71
DEED 6067/234
DP01-SS01
(219.07)
PARCEL-78
DP26-SS01
(218.39)
LEGEND:
DP20-SS01 MONITORING WELL
HT1N-SS01 SAMPLING LOCATION OF HORIZONTAL REMEDIATION TRENCH
(225.60) ELEVATION (FT. MSL)
POTENTIOMETRIC SURFACE CONTOUR
G.W. FLOW GROUNDWATER FLOW DIRECTION
EXISTING WOOD LINE
NOTES:
DRMO - DEFENSE REUTILIZATION AND MARKETING OFFICE
SYSTEM IN OPERATION ON OCTOBER 11,2002
CONTOUR INTERVAL IS 2.5 FEET
SCALE
0 150 300 FEET
FIGURE 6
DYNAMIC GROUNDWATER ELEVATIONS IN SHALLOW ZONE
OCTOBER 11, 2002
SITE SS-01 (BRANDYWINE DRMO)
ANDREWS AIR FORCE BASE
MARYLAND
MACTEC
STARTING DATE: 10/30/02
DATE LAST REV.: 4/18/03
DRAFT. CHCK. BY:
INITIATOR: MUFFLER
DWG. NO.: POF204_0006_FIG6
DRAWN BY:
DRAWN BY: R. EVERENCE
ENGR. CHCK. BY: MUFFLER
PROJ. MGR.: WESSNER
PROJ. NO.: F204



LEGEND:

DP20-SS01	MONITORING WELL
HT1N-SS01	SAMPLING LOCATION OF HORIZONTAL REMEDIATION TRENCH
(225.60)	ELEVATION (FT. MSL)
— — — —	POTENTIOMETRIC SURFACE CONTOUR
G.W. FLOW	GROUNDWATER FLOW DIRECTION
~~	EXISTING WOOD LINE

NOTES:

DRMO - DEFENSE REUTILIZATION AND MARKETING OFFICE

SYSTEM NOT IN OPERATION ON OCTOBER 31, 2002

CONTOUR INTERVAL IS 1 FOOT

SCALE

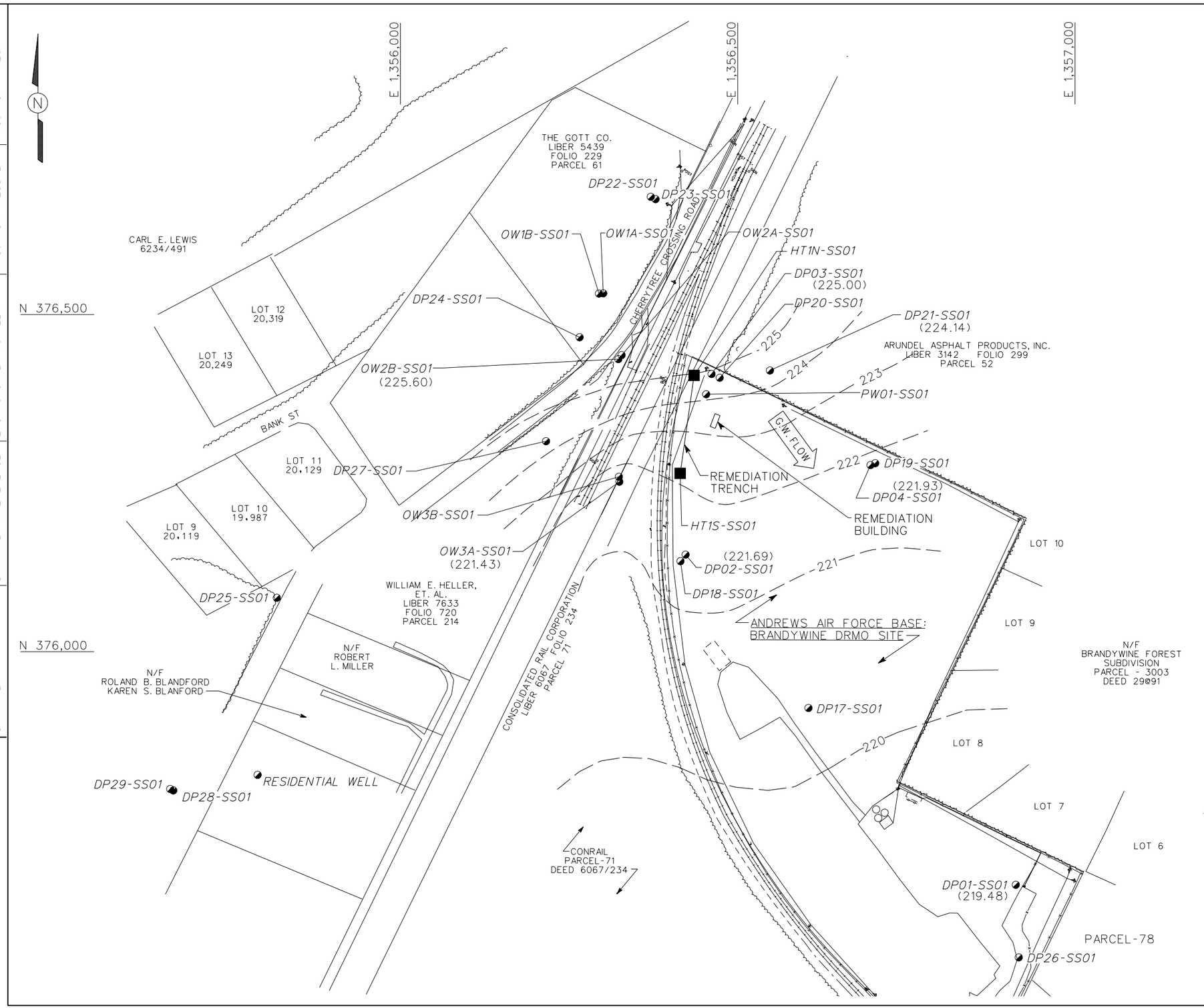
0 150 300 FEET

FIGURE 7
STATIC GROUNDWATER ELEVATIONS
LOWER SHALLOW ZONE
OCTOBER 31, 2002
SITE SS-01 (BRANDYWINE DRMO)

ANDREWS AIR FORCE BASE
MARYLAND

MACTEC

STARTING DATE: 10/30/02	DATE LAST REV.: 4/18/03	DRAFT. CHCK. BY:	INITIATOR: MUFFLER	DWG. NO.: POF204_0006_FIG7
DRAWN BY:	DRAWN BY: R. EVERENCE	ENGR. CHCK. BY: MUFFLER	PROJ. MGR.: WESSNER	PROJ. NO.: F204



LEGEND:

DP20-SS01	MONITORING WELL
HT1N-SS01	SAMPLING LOCATION OF HORIZONTAL REMEDIATION TRENCH
(225.60)	ELEVATION (FT. MSL)
— — — —	POTENTIOMETRIC SURFACE CONTOUR
G.W. FLOW	GROUNDWATER FLOW DIRECTION
~~	EXISTING WOOD LINE

NOTES:

DRMO – DEFENSE REUTILIZATION AND MARKETING OFFICE

SYSTEM NOT IN OPERATION ON OCTOBER 31, 2002

CONTOUR INTERVAL IS 1 FOOT

SCALE

0 150 300 FEET

FIGURE 8
STATIC GROUNDWATER ELEVATIONS
UPPER SHALLOW ZONE
OCTOBER 31, 2002
SITE SS-01 (BRANDYWINE DRMO)

ANDREWS AIR FORCE BASE
MARYLAND

MACTEC

STARTING DATE: 10/30/02	DATE LAST REV.: 4/18/03	DRAFT. CHCK. BY:	INITIATOR: MUFFLER
DRAWN BY:	DRAWN BY: R. EVERENCE	ENGR. CHCK. BY: MUFFLER	PROJ. MGR.: WESSNER
			DWG. NO.: POF204_0006_FIG8
			PROJ. NO.: F204

APPENDIX A

ANALYTICAL DATA DUMP

SITES SS-01 AND SWMU #35

TABLE A-1

SOIL SAMPLE ANALYTICAL DATA DUMP

SWMU #35

Appendix A-1
Soil Sample Analytical Dump
SWMU #35
December 18, 2002
Andrews Air Force Base, Maryland

		GROUP NAME	SWMU35-3639	
		LOCATION CODE	SWMU35-3639	
		SAMPLE_NO	037	
		SAMPLE DATE	12/18/2002	
		SAMPLE PURPOSE	REG	
TEST GROUP	PARAMETER	UNITS	RESULT	QUAL
VOLATILES	1,1,1,2-Tetrachloroethane	MG/KG	0.0034	U
VOLATILES	1,1,1-Trichloroethane	MG/KG	0.0046	U
VOLATILES	1,1,2,2-Tetrachloroethane	MG/KG	0.0023	U
VOLATILES	1,1,2-Trichloroethane	MG/KG	0.0057	U
VOLATILES	1,1-Dichloroethane	MG/KG	0.0023	U
VOLATILES	1,1-Dichloroethene	MG/KG	0.0069	U
VOLATILES	1,1-Dichloropropene	MG/KG	0.0057	U
VOLATILES	1,2,3-Trichlorobenzene	MG/KG	0.0046	U
VOLATILES	1,2,3-Trichloropropane	MG/KG	0.023	U
VOLATILES	1,2,4-Trichlorobenzene	MG/KG	0.0046	U
VOLATILES	1,2,4-Trimethylbenzene	MG/KG	0.008	U
VOLATILES	1,2-Dibromo-3-chloropropane	MG/KG	0.011	U
VOLATILES	1,2-Dibromoethane	MG/KG	0.0034	U
VOLATILES	1,2-Dichlorobenzene	MG/KG	0.0023	U
VOLATILES	1,2-Dichloroethane	MG/KG	0.0034	U
VOLATILES	1,2-Dichloropropane	MG/KG	0.0023	U
VOLATILES	1,3,5-Trimethylbenzene	MG/KG	0.0034	U
VOLATILES	1,3-Dichlorobenzene	MG/KG	0.0069	U
VOLATILES	1,4-Dichlorobenzene	MG/KG	0.0023	U
VOLATILES	1-Chlorohexane	MG/KG	0.0034	U
VOLATILES	2,2-Dichloropropane	MG/KG	0.023	U
VOLATILES	2-Butanone	MG/KG	0.023	U
VOLATILES	2-Chlorotoluene	MG/KG	0.0023	U
VOLATILES	4-Chlorotoluene	MG/KG	0.0034	U
VOLATILES	Acetone	MG/KG	0.15	
VOLATILES	Benzene	MG/KG	0.0023	U
VOLATILES	Bromobenzene	MG/KG	0.0023	U
VOLATILES	Bromochloromethane	MG/KG	0.0023	U
VOLATILES	Bromodichloromethane	MG/KG	0.0046	U
VOLATILES	Bromoform	MG/KG	0.0069	U
VOLATILES	Bromomethane	MG/KG	0.011	U
VOLATILES	Carbon tetrachloride	MG/KG	0.011	U
VOLATILES	Chlorobenzene	MG/KG	0.0023	U
VOLATILES	Chloroethane	MG/KG	0.0057	U
VOLATILES	Chloroform	MG/KG	0.0023	U
VOLATILES	Chloromethane	MG/KG	0.008	U
VOLATILES	cis-1,2-Dichloroethene	MG/KG	0.0069	U
VOLATILES	cis-1,3-Dichloropropene	MG/KG	0.0057	U
VOLATILES	Dibromochloromethane	MG/KG	0.0034	U
VOLATILES	Dibromomethane	MG/KG	0.011	U
VOLATILES	Dichlorodifluoromethane	MG/KG	0.0057	U
VOLATILES	Ethylbenzene	MG/KG	0.0034	U
VOLATILES	Hexachlorobutadiene	MG/KG	0.0057	U
VOLATILES	Isopropylbenzene	MG/KG	0.0092	U
VOLATILES	m+p-Xylene	MG/KG	0.011	U
VOLATILES	Methylene chloride	MG/KG	0.0069	U
VOLATILES	n-Butylbenzene	MG/KG	0.0057	U
VOLATILES	n-Propylbenzene	MG/KG	0.0023	U
VOLATILES	Naphthalene	MG/KG	0.0057	U
VOLATILES	o-Xylene	MG/KG	0.0057	U
VOLATILES	p-Isopropyltoluene	MG/KG	0.0069	U
VOLATILES	sec-Butylbenzene	MG/KG	0.008	U
VOLATILES	Styrene	MG/KG	0.0023	U
VOLATILES	tert-butyl alcohol	MG/KG	0.057	U
VOLATILES	tert-butyl methyl ether	MG/KG	0.0057	U
VOLATILES	tert-Butylbenzene	MG/KG	0.008	U
VOLATILES	Tetrachloroethene	MG/KG	0.008	U
VOLATILES	Toluene	MG/KG	0.0057	U
VOLATILES	trans-1,2-Dichloroethene	MG/KG	0.0034	U
VOLATILES	trans-1,3-Dichloropropene	MG/KG	0.0057	U

Appendix A-1
Soil Sample Analytical Dump
SWMU #35
December 18, 2002
Andrews Air Force Base, Maryland

		GROUP NAME	SWMU35-3639	
		LOCATION CODE	SWMU35-3639	
		SAMPLE_NO	037	
		SAMPLE DATE	12/18/2002	
		SAMPLE PURPOSE	REG	
TEST GROUP	PARAMETER	UNITS	RESULT	QUAL
VOLATILES	Trichloroethene	MG/KG	0.011	U
VOLATILES	Trichlorofluoromethane	MG/KG	0.0046	U
VOLATILES	Vinyl chloride	MG/KG	0.01	U
SEMI-VOLATILES	1,2,4-Trichlorobenzene	MG/KG	0.8	U
SEMI-VOLATILES	1,2-Dichlorobenzene	MG/KG	0.8	U
SEMI-VOLATILES	1,3-Dichlorobenzene	MG/KG	0.8	U
SEMI-VOLATILES	1,4-Dichlorobenzene	MG/KG	0.8	U
SEMI-VOLATILES	2,4,5-Trichlorophenol	MG/KG	3.8	U
SEMI-VOLATILES	2,4,6-Trichlorophenol	MG/KG	0.34	U
SEMI-VOLATILES	2,4-Dichlorophenol	MG/KG	0.34	U
SEMI-VOLATILES	2,4-Dimethylphenol	MG/KG	0.34	U
SEMI-VOLATILES	2,4-Dinitrophenol	MG/KG	3.8	U
SEMI-VOLATILES	2,4-Dinitrotoluene	MG/KG	0.8	U
SEMI-VOLATILES	2,6-Dinitrotoluene	MG/KG	0.8	U
SEMI-VOLATILES	2-Chloronaphthalene	MG/KG	0.8	U
SEMI-VOLATILES	2-Chlorophenol	MG/KG	0.34	U
SEMI-VOLATILES	2-Methylnaphthalene	MG/KG	0.8	U
SEMI-VOLATILES	2-Methylphenol	MG/KG	0.34	U
SEMI-VOLATILES	2-Nitroaniline	MG/KG	3.8	U
SEMI-VOLATILES	2-Nitrophenol	MG/KG	0.34	U
SEMI-VOLATILES	3,3-Dichlorobenzidine	MG/KG	1.5	U
SEMI-VOLATILES	3-Nitroaniline	MG/KG	3.8	U
SEMI-VOLATILES	4,6-Dinitro-2-methylphenol	MG/KG	3.8	U
SEMI-VOLATILES	4-Bromophenyl phenyl ether	MG/KG	0.8	U
SEMI-VOLATILES	4-Chloro-3-methylphenol	MG/KG	1.5	U
SEMI-VOLATILES	4-Chloroaniline	MG/KG	1.5	U
SEMI-VOLATILES	4-Chlorophenyl phenyl ether	MG/KG	0.8	U
SEMI-VOLATILES	4-Methylphenol	MG/KG	0.34	U
SEMI-VOLATILES	4-Nitroaniline	MG/KG	3.8	U
SEMI-VOLATILES	4-Nitrophenol	MG/KG	1.8	U
SEMI-VOLATILES	Acenaphthene	MG/KG	0.8	U
SEMI-VOLATILES	Acenaphthylene	MG/KG	0.8	U
SEMI-VOLATILES	Anthracene	MG/KG	0.8	U
SEMI-VOLATILES	Benzo(a)anthracene	MG/KG	0.8	U
SEMI-VOLATILES	Benzo(a)pyrene	MG/KG	0.8	U
SEMI-VOLATILES	Benzo(b)fluoranthene	MG/KG	0.8	U
SEMI-VOLATILES	Benzo(g,h,I)perylene	MG/KG	0.8	U
SEMI-VOLATILES	Benzo(k)fluoranthene	MG/KG	0.8	U
SEMI-VOLATILES	Benzoic acid	MG/KG	1.8	U
SEMI-VOLATILES	Benzyl alcohol	MG/KG	1.5	U
SEMI-VOLATILES	Benzyl butyl phthalate	MG/KG	0.8	U
SEMI-VOLATILES	bis(2-Chloroethoxy)methane	MG/KG	0.8	U
SEMI-VOLATILES	bis(2-Chloroethyl)ether	MG/KG	0.8	U
SEMI-VOLATILES	bis(2-Chloroisopropyl)ether	MG/KG	0.8	U
SEMI-VOLATILES	bis(2-Ethylhexyl)phthalate	MG/KG	0.8	U
SEMI-VOLATILES	Carbazole	MG/KG	0.8	U
SEMI-VOLATILES	Chrysene	MG/KG	0.8	U
SEMI-VOLATILES	Di-n-butyl phthalate	MG/KG	0.8	U
SEMI-VOLATILES	Di-n-octyl phthalate	MG/KG	0.8	U
SEMI-VOLATILES	Dibenzo(a,h)anthracene	MG/KG	0.8	U
SEMI-VOLATILES	Dibenzofuran	MG/KG	0.8	U
SEMI-VOLATILES	Diethyl phthalate	MG/KG	0.8	U
SEMI-VOLATILES	Dimehtyl phthalate	MG/KG	0.8	U
SEMI-VOLATILES	Fluoranthene	MG/KG	0.8	U
SEMI-VOLATILES	Fluorene	MG/KG	0.8	U
SEMI-VOLATILES	Hexachlorobenzene	MG/KG	0.8	U
SEMI-VOLATILES	Hexachlorobutadiene	MG/KG	0.8	U
SEMI-VOLATILES	Hexachlorocyclopentadiene	MG/KG	0.8	U
SEMI-VOLATILES	Hexachloroethane	MG/KG	0.8	U
SEMI-VOLATILES	Indeno(1,2,3-cd)pyrene	MG/KG	0.8	U

Appendix A-1
Soil Sample Analytical Dump
SWMU #35
December 18, 2002
Andrews Air Force Base, Maryland

		GROUP NAME	SWMU35-3639	
		LOCATION CODE	SWMU35-3639	
		SAMPLE_NO	037	
		SAMPLE DATE	12/18/2002	
		SAMPLE PURPOSE	REG	
TEST GROUP	PARAMETER	UNITS	RESULT	QUAL
SEMI-VOLATILES	Isophorone	MG/KG	0.8	U
SEMI-VOLATILES	N-nitrosodi-n-propylamine	MG/KG	0.8	U
SEMI-VOLATILES	N-nitrosodiphenylamine	MG/KG	0.8	U
SEMI-VOLATILES	Naphthalene	MG/KG	0.8	U
SEMI-VOLATILES	Nitrobenzene	MG/KG	0.8	U
SEMI-VOLATILES	Pentachlorophenol	MG/KG	3.8	U
SEMI-VOLATILES	Phenanthrene	MG/KG	0.8	U
SEMI-VOLATILES	Phenol	MG/KG	0.34	U
SEMI-VOLATILES	Pyrene	MG/KG	0.8	U
PCB'S	PCB-1016	MG/KG	0.057	U
PCB'S	PCB-1221	MG/KG	0.057	U
PCB'S	PCB-1232	MG/KG	0.057	U
PCB'S	PCB-1242	MG/KG	0.057	U
PCB'S	PCB-1248	MG/KG	0.057	U
PCB'S	PCB-1254	MG/KG	0.057	U
PCB'S	PCB-1260	MG/KG	0.057	U
PETROLEUM HYDROCARBONS	TPH-DRO	MG/KG	18	
PETROLEUM HYDROCARBONS	TPH-GRO	MG/KG	1.1	U
METALS	Arsenic	MG/KG	1.96	
METALS	Barium	MG/KG	64.2	
METALS	Cadmium	MG/KG	0.292	
METALS	Chromium	MG/KG	14.9	
METALS	Lead	MG/KG	24.1	
METALS	Mercury	MG/KG	0.208	
METALS	Selenium	MG/KG	3.43	U
METALS	Silver	MG/KG	2.01	

Qualifers
J = estimated concentration
U = analyte not detected; result shown is the reporting limit.

TABLE A-2
AQUEOUS SAMPLE ANALYTICAL DATA DUMP
SITE SS-01

Appendix A-2
Aqueous Sample Analytical Dump
Brandywine DRMO (SS-01)
October - December 2002
Andrews Air Force Base, Maryland

		GROUP NAME		SS01		SS01		SS01		SS01	
		LOCATION CODE		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF	
		SAMPLE_NO		033		034		035		026	
		SAMPLE DATE		31-Oct-02		31-Oct-02		31-Oct-02		16-Oct-02	
		SAMPLE PURPOSE		REG		REG		REG		REG	
TEST GROUP	PARAMETER	UNITMEAS	FILTERED	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
VOLATILES	1,1,1,2-Tetrachloroethane	UG/L	N	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	1,1,1-Trichloroethane	UG/L	N	0.8	U	0.8	U	0.8	U	0.8	U
VOLATILES	1,1,2,2-Tetrachloroethane	UG/L	N	0.4	U	0.4	U	0.4	U	0.4	U
VOLATILES	1,1,2-Trichloroethane	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	1,1-Dichloroethane	UG/L	N	0.4	U	0.4	U	0.4	U	0.4	U
VOLATILES	1,1-Dichloroethene	UG/L	N	1.2	U	1.2	U	1.2	U	1.2	U
VOLATILES	1,1-Dichloropropene	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	1,2,3-Trichlorobenzene	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	1,2,3-Trichloropropane	UG/L	N	3.2	U	3.2	U	3.2	U	3.2	U
VOLATILES	1,2,4-Trichlorobenzene	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	1,2,4-Trimethylbenzene	UG/L	N	1.3	U	1.3	U	1.3	U	1.3	U
VOLATILES	1,2-Dibromo-3-chloropropane	UG/L	N	2.6	U	2.6	U	2.6	U	2.6	U
VOLATILES	1,2-Dibromoethane	UG/L	N	0.6	U	0.6	U	0.6	U	0.6	U
VOLATILES	1,2-Dichlorobenzene	UG/L	N	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	1,2-Dichloroethane	UG/L	N	0.6	U	0.6	U	0.6	U	0.6	U
VOLATILES	1,2-Dichloropropane	UG/L	N	0.4	U	0.4	U	0.4	U	0.4	U
VOLATILES	1,3,5-Trimethylbenzene	UG/L	N	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	1,3-Dichlorobenzene	UG/L	N	9.2		1.2	U	1.2	U	1.2	U
VOLATILES	1,3-Dichloropropane	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	1,4-Dichlorobenzene	UG/L	N	9.9		0.5	U	0.5	U	1.2	
VOLATILES	1-Chlorohexane	UG/L	N	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	2,2-Dichloropropane	UG/L	N	3.5	U	3.5	U	3.5	U	3.5	U
VOLATILES	2-Butanone	UG/L	N	20	U	20	U	20	U	20	U
VOLATILES	2-Chlorotoluene	UG/L	N	0.4	U	0.4	U	0.4	U	0.4	U
VOLATILES	4-Chlorotoluene	UG/L	N	0.6	U	0.6	U	0.6	U	0.6	U
VOLATILES	Acetone	UG/L	N	20	U	20	U	20	U	20	U
VOLATILES	Benzene	UG/L	N	0.4	U	0.4	U	0.4	U	0.4	U
VOLATILES	Bromobenzene	UG/L	N	0.3	U	0.3	U	0.3	U	0.3	U
VOLATILES	Bromochloromethane	UG/L	N	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	Bromodichloromethane	UG/L	N	0.8	U	0.8	U	0.8	U	0.8	U
VOLATILES	Bromoform	UG/L	N	1.2	U	1.2	U	1.2	U	1.2	U
VOLATILES	Bromomethane	UG/L	N	1.1	U	1.1	U	1.1	U	1.1	U
VOLATILES	Carbon tetrachloride	UG/L	N	2.1	U	2.1	U	2.1	U	2.1	U
VOLATILES	Chlorobenzene	UG/L	N	0.4	U	0.4	U	0.4	U	0.4	U
VOLATILES	Chloroethane	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	Chloroform	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	Chloromethane	UG/L	N	1.3	U	1.3	U	1.3	U	1.3	U
VOLATILES	cis-1,2-Dichloroethene	UG/L	N	12	F	1.2	U	1.2	U	1.9	
VOLATILES	cis-1,3-Dichloropropene	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	Dibromochloromethane	UG/L	N	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	Dibromomethane	UG/L	N	2.4	U	2.4	U	2.4	U	2.4	U
VOLATILES	Dichlorodifluoromethane	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	Ethylbenzene	UG/L	N	0.6	U	0.6	U	0.6	U	0.6	U
VOLATILES	Hexachlorobutadiene	UG/L	N	1.1	U	1.1	U	1.1	U	1.1	U
VOLATILES	Isopropylbenzene	UG/L	N	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	m+p-Xylene	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	Methylene chloride	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	n-Butylbenzene	UG/L	N	1.1	U	1.1	U	1.1	U	1.1	U
VOLATILES	n-Propylbenzene	UG/L	N	0.4	U	0.4	U	0.4	U	0.4	U
VOLATILES	Naphthalene	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	o-Xylene	UG/L	N	1.1	U	1.1	U	1.1	U	1.1	U
VOLATILES	p-Isopropyltoluene	UG/L	N	1.2	U	1.2	U	1.2	U	1.2	U
VOLATILES	sec-Butylbenzene	UG/L	N	1.3	U	1.3	U	1.3	U	1.3	U
VOLATILES	Styrene	UG/L	N	0.4	U	0.4	U	0.4	U	0.4	U
VOLATILES	tert-butyl alcohol	UG/L	N	25	U	25	U	25	U	25	U
VOLATILES	tert-butyl methyl ether	UG/L	N	5	U	5	U	5	U	5	U
VOLATILES	tert-Butylbenzene	UG/L	N	1.4	U	1.4	U	1.4	U	1.4	U
VOLATILES	Tetrachloroethene	UG/L	N	1.4	U	1.4	U	1.4	U	1.4	U
VOLATILES	Toluene	UG/L	N	0.44	F	2		2.7		1.1	U
VOLATILES	trans-1,2-Dichloroethene	UG/L	N	0.23	F	0.6	U	0.6	U	0.6	U

Appendix A-2
Aqueous Sample Analytical Dump
Brandywine DRMO (SS-01)
October - December 2002
Andrews Air Force Base, Maryland

		GROUP NAME		SS01		SS01		SS01		SS01	
		LOCATION CODE		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF	
		SAMPLE_NO		033		034		035		026	
		SAMPLE DATE		31-Oct-02		31-Oct-02		31-Oct-02		16-Oct-02	
		SAMPLE PURPOSE		REG		REG		REG		REG	
TEST GROUP	PARAMETER	UNITMEAS	FILTERED	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
VOLATILES	trans-1,3-Dichloropropene	UG/L	N	1	U	1	U	1	U	1	U
VOLATILES	Trichloroethene	UG/L	N	140		1	U	1	U	12	
VOLATILES	Trichlorofluoromethane	UG/L	N	0.8	U	0.8	U	0.8	U	0.8	U
VOLATILES	Vinyl chloride	UG/L	N	1.1	U	1.1	U	1.1	U	1.1	U
SEMI-VOLATILES	1,2,4-Trichlorobenzene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	1,2-Dichlorobenzene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	1,3-Dichlorobenzene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	1,4-Dichlorobenzene	UG/L	N	8.9	F			9.6	U	9.8	U
SEMI-VOLATILES	2,4,5-Trichlorophenol	UG/L	N	48	U			48	U	49	U
SEMI-VOLATILES	2,4,6-Trichlorophenol	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	2,4-Dichlorophenol	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	2,4-Dimethylphenol	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	2,4-Dinitrophenol	UG/L	N	48	U			48	U	49	U
SEMI-VOLATILES	2,4-Dinitrotoluene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	2,6-Dinitrotoluene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	2-Chloronaphthalene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	2-Chlorophenol	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	2-Methylnaphthalene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	2-Methylphenol	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	2-Nitroaniline	UG/L	N	48	U			48	U	49	U
SEMI-VOLATILES	2-Nitrophenol	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	3,3-Dichlorobenzidine	UG/L	N	19	U			19	U	20	U
SEMI-VOLATILES	3-Nitroaniline	UG/L	N	48	U			48	U	49	U
SEMI-VOLATILES	4,6-Dinitro-2-methylphenol	UG/L	N	48	U			48	U	49	U
SEMI-VOLATILES	4-Bromophenyl phenyl ether	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	4-Chloro-3-methylphenol	UG/L	N	19	U			19	U	20	U
SEMI-VOLATILES	4-Chloroaniline	UG/L	N	19	U			19	U	20	U
SEMI-VOLATILES	4-Chlorophenyl phenyl ether	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	4-Methylphenol	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	4-Nitroaniline	UG/L	N	48	U			48	U	49	U
SEMI-VOLATILES	4-Nitrophenol	UG/L	N	48	U			48	U	49	U
SEMI-VOLATILES	Acenaphthene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Acenaphthylene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Anthracene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Benzo(a)anthracene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Benzo(a)pyrene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Benzo(b)fluoranthene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Benzo(g,h,I)perylene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Benzo(k)fluoranthene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Benzoic acid	UG/L	N	48	U			48	U	49	U
SEMI-VOLATILES	Benzyl alcohol	UG/L	N	19	U			19	U	20	U
SEMI-VOLATILES	Benzyl butyl phthalate	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	bis(2-Chloroethoxy)methane	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	bis(2-Chloroethyl)ether	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	bis(2-Chloroisopropyl)ether	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	bis(2-Ethylhexyl)phthalate	UG/L	N	19	U			19	U	20	U
SEMI-VOLATILES	Carbazole	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Chrysene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Di-n-butyl phthalate	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Di-n-octyl phthalate	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Dibenzo(a,h)anthracene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Dibenzofuran	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Diethyl phthalate	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Dimehtyl phthalate	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Fluoranthene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Fluorene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Hexachlorobenzene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Hexachlorobutadiene	UG/L	N	19	U			19	U	20	U
SEMI-VOLATILES	Hexachlorocyclopentadiene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Hexachloroethane	UG/L	N	9.6	U			9.6	U	9.8	U

Appendix A-2
Aqueous Sample Analytical Dump
Brandywine DRMO (SS-01)
October - December 2002
Andrews Air Force Base, Maryland

		GROUP NAME		SS01		SS01		SS01		SS01	
		LOCATION CODE		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF	
		SAMPLE_NO		033		034		035		026	
		SAMPLE DATE		31-Oct-02		31-Oct-02		31-Oct-02		16-Oct-02	
		SAMPLE PURPOSE		REG		REG		REG		REG	
TEST GROUP	PARAMETER	UNITMEAS	FILTERED	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
SEMI-VOLATILES	Indeno(1,2,3-cd)pyrene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Isophorone	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	N-nitrosodi-n-propylamine	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	N-nitrosodiphenylamine	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Naphthalene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Nitrobenzene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Pentachlorophenol	UG/L	N	48	U			48	U	49	U
SEMI-VOLATILES	Phenanthrene	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Phenol	UG/L	N	9.6	U			9.6	U	9.8	U
SEMI-VOLATILES	Pyrene	UG/L	N	9.6	U			9.6	U	9.8	U
METALS	Aluminum	UG/L	Y	290		283		397		81.6	F
METALS	Antimony	UG/L	Y	10.5	F	13.5	F	9.3	F	100	U
METALS	Arsenic	UG/L	Y	10	U	10	U	10	U	10	U
METALS	Baruim	UG/L	Y	22.7		19.6		21.7		19.8	
METALS	Beryllium	UG/L	Y	10	U	10	U	10	U	10	U
METALS	Cadmium	UG/L	Y	10	U	10	U	0.7	F	10	U
METALS	Calcium	UG/L	Y	12400		13400		14900		10100	
METALS	Chromium	UG/L	Y	20	U	20	U	2	F	20	U
METALS	Cobalt	UG/L	Y	20	U	20	U	20	U	20	U
METALS	Copper	UG/L	Y	4.3	F	4.5	F	4.7	F	2.8	F
METALS	Iron	UG/L	Y	152	F	149	F	203	F	64.3	F
METALS	Lead	UG/L	Y	10	U	10	U	10	U	10	U
METALS	Magnesium	UG/L	Y	4950		5230		5790		4060	
METALS	Manganese	UG/L	Y	27.7	F	16.8	F	18.4	F	14	F
METALS	Mercury	UG/L	Y	0.5	U	0.5	U	0.5	U	0.5	U
METALS	Molybdenum	UG/L	Y	100	U	100	U	100	U	100	U
METALS	Nickel	UG/L	Y	20	U	20	U	20	U	20	U
METALS	Potassium	UG/L	Y	2720	F	2860	F	2950	F	2490	F
METALS	Selenium	UG/L	Y	10	U	10	U	10	U	7.6	F
METALS	Silver	UG/L	Y	20	U	20	U	20	U	20	U
METALS	Sodium	UG/L	Y	1900		1520		1700		1440	
METALS	Thallium	UG/L	Y	10	U	10	U	10	U	10	U
METALS	Vanadium	UG/L	Y	10	U	10	U	10	U	10	U
METALS	Zinc	UG/L	Y	47.3		30.9		34.3		103	

Appendix A-2
Aqueous Sample Analytical Dump
Brandywine DRMO (SS-01)
October - December 2002
Andrews Air Force Base, Maryland

		GROUP NAME		SS01		SS01		SS01		SS01	
		LOCATION CODE		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF	
		SAMPLE_NO		027		028		021		022	
		SAMPLE DATE		16-Oct-02		16-Oct-02		1-Oct-02		1-Oct-02	
		SAMPLE PURPOSE		REG		REG		REG		REG	
TEST GROUP	PARAMETER	UNITMEAS	FILTERED	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
VOLATILES	1,1,1,2-Tetrachloroethane	UG/L	N	0.5	U	0.5	U	12	U	0.5	U
VOLATILES	1,1,1-Trichloroethane	UG/L	N	0.8	U	0.8	U	20	U	0.8	U
VOLATILES	1,1,2,2-Tetrachloroethane	UG/L	N	0.4	U	0.4	U	10	U	0.4	U
VOLATILES	1,1,2-Trichloroethane	UG/L	N	1	U	1	U	25	U	1	U
VOLATILES	1,1-Dichloroethane	UG/L	N	0.4	U	0.4	U	10	U	0.4	U
VOLATILES	1,1-Dichloroethene	UG/L	N	1.2	U	1.2	U	30	U	1.2	U
VOLATILES	1,1-Dichloropropene	UG/L	N	1	U	1	U	25	U	1	U
VOLATILES	1,2,3-Trichlorobenzene	UG/L	N	1	U	1	U	25	U	1	U
VOLATILES	1,2,3-Trichloropropane	UG/L	N	3.2	U	3.2	U	80	U	3.2	U
VOLATILES	1,2,4-Trichlorobenzene	UG/L	N	1	U	1	U	25	U	1	U
VOLATILES	1,2,4-Trimethylbenzene	UG/L	N	1.3	U	1.3	U	33	U	1.3	U
VOLATILES	1,2-Dibromo-3-chloropropane	UG/L	N	2.6	U	2.6	U	65	U	2.6	U
VOLATILES	1,2-Dibromoethane	UG/L	N	0.6	U	0.6	U	15	U	0.6	U
VOLATILES	1,2-Dichlorobenzene	UG/L	N	0.5	U	0.5	U	12	U	0.5	U
VOLATILES	1,2-Dichloroethane	UG/L	N	0.6	U	0.6	U	15	U	0.6	U
VOLATILES	1,2-Dichloropropane	UG/L	N	0.4	U	0.4	U	10	U	0.4	U
VOLATILES	1,3,5-Trimethylbenzene	UG/L	N	0.5	U	0.5	U	12	U	0.5	U
VOLATILES	1,3-Dichlorobenzene	UG/L	N	1.2	U	1.2	U	30	U	1.2	U
VOLATILES	1,3-Dichloropropane	UG/L	N	1	U	1	U	25	U	1	U
VOLATILES	1,4-Dichlorobenzene	UG/L	N	0.5	U	0.5	U	220		0.5	U
VOLATILES	1-Chlorohexane	UG/L	N	0.5	U	0.5	U	12	U	0.5	U
VOLATILES	2,2-Dichloropropane	UG/L	N	3.5	U	3.5	U	88	U	3.5	U
VOLATILES	2-Butanone	UG/L	N	20	U	20	U	500	U	8.7	F
VOLATILES	2-Chlorotoluene	UG/L	N	0.4	U	0.4	U	10	U	0.4	U
VOLATILES	4-Chlorotoluene	UG/L	N	0.6	U	0.6	U	15	U	0.6	U
VOLATILES	Acetone	UG/L	N	20	U	20	U	500	U	15	F
VOLATILES	Benzene	UG/L	N	0.4	U	0.4	U	10	U	0.4	U
VOLATILES	Bromobenzene	UG/L	N	0.3	U	0.3	U	7.5	U	0.3	U
VOLATILES	Bromochloromethane	UG/L	N	0.5	U	0.5	U	12	U	0.5	U
VOLATILES	Bromodichloromethane	UG/L	N	0.8	U	0.8	U	20	U	0.8	U
VOLATILES	Bromoform	UG/L	N	1.2	U	1.2	U	30	U	1.2	U
VOLATILES	Bromomethane	UG/L	N	1.1	U	1.1	U	28	U	1.1	U
VOLATILES	Carbon tetrachloride	UG/L	N	2.1	U	2.1	U	52	U	2.1	U
VOLATILES	Chlorobenzene	UG/L	N	0.4	U	0.4	U	10	U	0.4	U
VOLATILES	Chloroethane	UG/L	N	1	U	1	U	25	U	1	U
VOLATILES	Chloroform	UG/L	N	1	U	1	U	25	U	1	U
VOLATILES	Chloromethane	UG/L	N	1.3	U	1.3	U	33	U	1.3	U
VOLATILES	cis-1,2-Dichloroethene	UG/L	N	1.2	U	1.2	U	520		1.2	U
VOLATILES	cis-1,3-Dichloropropene	UG/L	N	1	U	1	U	25	U	1	U
VOLATILES	Dibromochloromethane	UG/L	N	0.5	U	0.5	U	12	U	0.5	U
VOLATILES	Dibromomethane	UG/L	N	2.4	U	2.4	U	60	U	2.4	U
VOLATILES	Dichlorodifluoromethane	UG/L	N	1	U	1	U	25	U	1	U
VOLATILES	Ethylbenzene	UG/L	N	0.6	U	0.6	U	15	U	0.6	U
VOLATILES	Hexachlorobutadiene	UG/L	N	1.1	U	1.1	U	28	U	1.1	U
VOLATILES	Isopropylbenzene	UG/L	N	0.5	U	0.5	U	12	U	0.5	U
VOLATILES	m+p-Xylene	UG/L	N	1	U	1	U	25	U	1	U
VOLATILES	Methylene chloride	UG/L	N	1	U	1	U	25	U	1	U
VOLATILES	n-Butylbenzene	UG/L	N	1.1	U	1.1	U	28	U	1.1	U
VOLATILES	n-Propylbenzene	UG/L	N	0.4	U	0.4	U	10	U	0.4	U
VOLATILES	Naphthalene	UG/L	N	1	U	1	U	200		1	U
VOLATILES	o-Xylene	UG/L	N	1.1	U	1.1	U	28	U	1.1	U
VOLATILES	p-Isopropyltoluene	UG/L	N	1.2	U	1.2	U	30	U	1.2	U
VOLATILES	sec-Butylbenzene	UG/L	N	1.3	U	1.3	U	33	U	1.3	U
VOLATILES	Styrene	UG/L	N	0.4	U	0.4	U	10	U	0.4	U
VOLATILES	tert-butyl alcohol	UG/L	N	25	U	25	U	630	U	25	U
VOLATILES	tert-butyl methyl ether	UG/L	N	5	U	5	U	120	U	5	U
VOLATILES	tert-Butylbenzene	UG/L	N	1.4	U	1.4	U	35	U	1.4	U
VOLATILES	Tetrachloroethene	UG/L	N	1.4	U	1.4	U	35	U	1.4	U
VOLATILES	Toluene	UG/L	N	1.1	U	0.56	F	28	U	1.1	U
VOLATILES	trans-1,2-Dichloroethene	UG/L	N	0.6	U	0.6	U	15	U	0.6	U

Appendix A-2
Aqueous Sample Analytical Dump
Brandywine DRMO (SS-01)
October - December 2002
Andrews Air Force Base, Maryland

		GROUP NAME		SS01		SS01		SS01		SS01	
		LOCATION CODE		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF	
		SAMPLE_NO		027		028		021		022	
		SAMPLE DATE		16-Oct-02		16-Oct-02		1-Oct-02		1-Oct-02	
		SAMPLE PURPOSE		REG		REG		REG		REG	
TEST GROUP	PARAMETER	UNITMEAS	FILTERED	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
VOLATILES	trans-1,3-Dichloropropene	UG/L	N	1	U	1	U	25	U	1	U
VOLATILES	Trichloroethene	UG/L	N	1	U	1	U	5600		0.81	F
VOLATILES	Trichlorofluoromethane	UG/L	N	0.8	U	0.8	U	20	U	0.8	U
VOLATILES	Vinyl chloride	UG/L	N	1.1	U	1.1	U	9.1	F	1.1	U
SEMI-VOLATILES	1,2,4-Trichlorobenzene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	1,2-Dichlorobenzene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	1,3-Dichlorobenzene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	1,4-Dichlorobenzene	UG/L	N			9.8	U	120			
SEMI-VOLATILES	2,4,5-Trichlorophenol	UG/L	N			49	U	49	U		
SEMI-VOLATILES	2,4,6-Trichlorophenol	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	2,4-Dichlorophenol	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	2,4-Dimethylphenol	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	2,4-Dinitrophenol	UG/L	N			49	U	49	U		
SEMI-VOLATILES	2,4-Dinitrotoluene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	2,6-Dinitrotoluene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	2-Chloronaphthalene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	2-Chlorophenol	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	2-Methylnaphthalene	UG/L	N			9.8	U	130			
SEMI-VOLATILES	2-Methylphenol	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	2-Nitroaniline	UG/L	N			49	U	49	U		
SEMI-VOLATILES	2-Nitrophenol	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	3,3-Dichlorobenzidine	UG/L	N			20	U	20	U		
SEMI-VOLATILES	3-Nitroaniline	UG/L	N			49	U	49	U		
SEMI-VOLATILES	4,6-Dinitro-2-methylphenol	UG/L	N			49	U	49	U		
SEMI-VOLATILES	4-Bromophenyl phenyl ether	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	4-Chloro-3-methylphenol	UG/L	N			20	U	20	U		
SEMI-VOLATILES	4-Chloroaniline	UG/L	N			20	U	20	U		
SEMI-VOLATILES	4-Chlorophenyl phenyl ether	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	4-Methylphenol	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	4-Nitroaniline	UG/L	N			49	U	49	U		
SEMI-VOLATILES	4-Nitrophenol	UG/L	N			49	U	49	U		
SEMI-VOLATILES	Acenaphthene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Acenaphthylene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Anthracene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Benzo(a)anthracene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Benzo(a)pyrene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Benzo(b)fluoranthene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Benzo(g,h,I)perylene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Benzo(k)fluoranthene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Benzoic acid	UG/L	N			49	U	49	U		
SEMI-VOLATILES	Benzyl alcohol	UG/L	N			20	U	20	U		
SEMI-VOLATILES	Benzyl butyl phthalate	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	bis(2-Chloroethoxy)methane	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	bis(2-Chloroethyl)ether	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	bis(2-Chloroisopropyl)ether	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	bis(2-Ethylhexyl)phthalate	UG/L	N			20	U	20	U		
SEMI-VOLATILES	Carbazole	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Chrysene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Di-n-butyl phthalate	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Di-n-octyl phthalate	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Dibenzo(a,h)anthracene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Dibenzofuran	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Diethyl phthalate	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Dimehtyl phthalate	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Fluoranthene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Fluorene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Hexachlorobenzene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Hexachlorobutadiene	UG/L	N			20	U	20	U		
SEMI-VOLATILES	Hexachlorocyclopentadiene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Hexachloroethane	UG/L	N			9.8	U	9.8	U		

Appendix A-2
Aqueous Sample Analytical Dump
Brandywine DRMO (SS-01)
October - December 2002
Andrews Air Force Base, Maryland

		GROUP NAME		SS01		SS01		SS01		SS01	
		LOCATION CODE		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF	
		SAMPLE_NO		027		028		021		022	
		SAMPLE DATE		16-Oct-02		16-Oct-02		1-Oct-02		1-Oct-02	
		SAMPLE PURPOSE		REG		REG		REG		REG	
TEST GROUP	PARAMETER	UNITMEAS	FILTERED	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
SEMI-VOLATILES	Indeno(1,2,3-cd)pyrene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Isophorone	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	N-nitrosodi-n-propylamine	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	N-nitrosodiphenylamine	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Naphthalene	UG/L	N			9.8	U	100			
SEMI-VOLATILES	Nitrobenzene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Pentachlorophenol	UG/L	N			49	U	49	U		
SEMI-VOLATILES	Phenanthrene	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Phenol	UG/L	N			9.8	U	9.8	U		
SEMI-VOLATILES	Pyrene	UG/L	N			9.8	U	9.8	U		
METALS	Aluminum	UG/L	Y	116	F	109	F	62.7	F	47.6	F
METALS	Antimony	UG/L	Y	100	U	100	U	13.8	F	100	U
METALS	Arsenic	UG/L	Y	10	U	10	U	10	U	10	U
METALS	Baruim	UG/L	Y	51.4		65.3		29.1		28.1	
METALS	Beryllium	UG/L	Y	10	U	10	U	0.3	F	0.3	F
METALS	Cadmium	UG/L	Y	10	U	10	U	10	U	10	U
METALS	Calcium	UG/L	Y	6060		4140		2840		2790	
METALS	Chromium	UG/L	Y	20	U	20	U	20	U	20	U
METALS	Cobalt	UG/L	Y	20	U	20	U	7.1	F	7.8	F
METALS	Copper	UG/L	Y	2.8	F	2.1	F	16.3		5.7	F
METALS	Iron	UG/L	Y	140	F	184	F	1720		1650	
METALS	Lead	UG/L	Y	10	U	10	U	10	U	10	U
METALS	Magnesium	UG/L	Y	2930		2350		1890		1840	
METALS	Manganese	UG/L	Y	70.6	F	91.1	F	160		161	
METALS	Mercury	UG/L	Y	0.5	U	0.5	U	0.5	U	0.5	U
METALS	Molybdenum	UG/L	Y	100	U	100	U	100	U	100	U
METALS	Nickel	UG/L	Y	20	U	20	U	4.7	F	4	F
METALS	Potassium	UG/L	Y	1380	F	941	F	489	F	523	F
METALS	Selenium	UG/L	Y	10	U	10	U	10	U	10	U
METALS	Silver	UG/L	Y	20	U	20	U	2.7	F	20	U
METALS	Sodium	UG/L	Y	3550		4010		6140		6040	
METALS	Thallium	UG/L	Y	10	U	10	U	10	U	10	U
METALS	Vanadium	UG/L	Y	10	U	10	U	10	U	10	U
METALS	Zinc	UG/L	Y	32.5		28.2		72.9		12.6	F

Appendix A-2
Aqueous Sample Analytical Dump
Brandywine DRMO (SS-01)
October - December 2002
Andrews Air Force Base, Maryland

		GROUP NAME		SS01	
		LOCATION CODE		SS01-EFF	
		SAMPLE_NO		023	
		SAMPLE DATE		1-Oct-02	
		SAMPLE PURPOSE		REG	
TEST GROUP	PARAMETER	UNITMEAS	FILTERED	RESULT	QUAL
VOLATILES	1,1,1,2-Tetrachloroethane	UG/L	N	0.5	U
VOLATILES	1,1,1-Trichloroethane	UG/L	N	0.8	U
VOLATILES	1,1,2,2-Tetrachloroethane	UG/L	N	0.4	U
VOLATILES	1,1,2-Trichloroethane	UG/L	N	1	U
VOLATILES	1,1-Dichloroethane	UG/L	N	0.4	U
VOLATILES	1,1-Dichloroethene	UG/L	N	1.2	U
VOLATILES	1,1-Dichloropropene	UG/L	N	1	U
VOLATILES	1,2,3-Trichlorobenzene	UG/L	N	1	U
VOLATILES	1,2,3-Trichloropropane	UG/L	N	3.2	U
VOLATILES	1,2,4-Trichlorobenzene	UG/L	N	1	U
VOLATILES	1,2,4-Trimethylbenzene	UG/L	N	1.3	U
VOLATILES	1,2-Dibromo-3-chloropropane	UG/L	N	2.6	U
VOLATILES	1,2-Dibromoethane	UG/L	N	0.6	U
VOLATILES	1,2-Dichlorobenzene	UG/L	N	0.5	U
VOLATILES	1,2-Dichloroethane	UG/L	N	0.6	U
VOLATILES	1,2-Dichloropropane	UG/L	N	0.4	U
VOLATILES	1,3,5-Trimethylbenzene	UG/L	N	0.5	U
VOLATILES	1,3-Dichlorobenzene	UG/L	N	1.2	U
VOLATILES	1,3-Dichloropropane	UG/L	N	1	U
VOLATILES	1,4-Dichlorobenzene	UG/L	N	0.5	U
VOLATILES	1-Chlorohexane	UG/L	N	0.5	U
VOLATILES	2,2-Dichloropropane	UG/L	N	3.5	U
VOLATILES	2-Butanone	UG/L	N	20	U
VOLATILES	2-Chlorotoluene	UG/L	N	0.4	U
VOLATILES	4-Chlorotoluene	UG/L	N	0.6	U
VOLATILES	Acetone	UG/L	N	18	F
VOLATILES	Benzene	UG/L	N	0.4	U
VOLATILES	Bromobenzene	UG/L	N	0.3	U
VOLATILES	Bromochloromethane	UG/L	N	0.5	U
VOLATILES	Bromodichloromethane	UG/L	N	0.8	U
VOLATILES	Bromoform	UG/L	N	1.2	U
VOLATILES	Bromomethane	UG/L	N	1.1	U
VOLATILES	Carbon tetrachloride	UG/L	N	2.1	U
VOLATILES	Chlorobenzene	UG/L	N	0.4	U
VOLATILES	Chloroethane	UG/L	N	1	U
VOLATILES	Chloroform	UG/L	N	1	U
VOLATILES	Chloromethane	UG/L	N	1.3	U
VOLATILES	cis-1,2-Dichloroethene	UG/L	N	1.2	U
VOLATILES	cis-1,3-Dichloropropene	UG/L	N	1	U
VOLATILES	Dibromochloromethane	UG/L	N	0.5	U
VOLATILES	Dibromomethane	UG/L	N	2.4	U
VOLATILES	Dichlorodifluoromethane	UG/L	N	1	U
VOLATILES	Ethylbenzene	UG/L	N	0.6	U
VOLATILES	Hexachlorobutadiene	UG/L	N	1.1	U
VOLATILES	Isopropylbenzene	UG/L	N	0.5	U
VOLATILES	m+p-Xylene	UG/L	N	1	U
VOLATILES	Methylene chloride	UG/L	N	1	U
VOLATILES	n-Butylbenzene	UG/L	N	1.1	U
VOLATILES	n-Propylbenzene	UG/L	N	0.4	U
VOLATILES	Naphthalene	UG/L	N	1	U
VOLATILES	o-Xylene	UG/L	N	1.1	U
VOLATILES	p-Isopropyltoluene	UG/L	N	1.2	U
VOLATILES	sec-Butylbenzene	UG/L	N	1.3	U
VOLATILES	Styrene	UG/L	N	0.4	U
VOLATILES	tert-butyl alcohol	UG/L	N	25	U
VOLATILES	tert-butyl methyl ether	UG/L	N	5	U
VOLATILES	tert-Butylbenzene	UG/L	N	1.4	U
VOLATILES	Tetrachloroethene	UG/L	N	1.4	U
VOLATILES	Toluene	UG/L	N	0.24	F
VOLATILES	trans-1,2-Dichloroethene	UG/L	N	0.6	U

Appendix A-2
Aqueous Sample Analytical Dump
Brandywine DRMO (SS-01)
October - December 2002
Andrews Air Force Base, Maryland

		GROUP NAME		SS01	
		LOCATION CODE		SS01-EFF	
		SAMPLE_NO		023	
		SAMPLE DATE		1-Oct-02	
		SAMPLE PURPOSE		REG	
TEST GROUP	PARAMETER	UNITMEAS	FILTERED	RESULT	QUAL
VOLATILES	trans-1,3-Dichloropropene	UG/L	N	1	U
VOLATILES	Trichloroethene	UG/L	N	0.43	F
VOLATILES	Trichlorofluoromethane	UG/L	N	0.8	U
VOLATILES	Vinyl chloride	UG/L	N	1.1	U
SEMI-VOLATILES	1,2,4-Trichlorobenzene	UG/L	N	9.7	U
SEMI-VOLATILES	1,2-Dichlorobenzene	UG/L	N	9.7	U
SEMI-VOLATILES	1,3-Dichlorobenzene	UG/L	N	9.7	U
SEMI-VOLATILES	1,4-Dichlorobenzene	UG/L	N	9.7	U
SEMI-VOLATILES	2,4,5-Trichlorophenol	UG/L	N	48	U
SEMI-VOLATILES	2,4,6-Trichlorophenol	UG/L	N	9.7	U
SEMI-VOLATILES	2,4-Dichlorophenol	UG/L	N	9.7	U
SEMI-VOLATILES	2,4-Dimethylphenol	UG/L	N	9.7	U
SEMI-VOLATILES	2,4-Dinitrophenol	UG/L	N	48	U
SEMI-VOLATILES	2,4-Dinitrotoluene	UG/L	N	9.7	U
SEMI-VOLATILES	2,6-Dinitrotoluene	UG/L	N	9.7	U
SEMI-VOLATILES	2-Chloronaphthalene	UG/L	N	9.7	U
SEMI-VOLATILES	2-Chlorophenol	UG/L	N	9.7	U
SEMI-VOLATILES	2-Methylnaphthalene	UG/L	N	9.7	U
SEMI-VOLATILES	2-Methylphenol	UG/L	N	9.7	U
SEMI-VOLATILES	2-Nitroaniline	UG/L	N	48	U
SEMI-VOLATILES	2-Nitrophenol	UG/L	N	9.7	U
SEMI-VOLATILES	3,3-Dichlorobenzidine	UG/L	N	19	U
SEMI-VOLATILES	3-Nitroaniline	UG/L	N	48	U
SEMI-VOLATILES	4,6-Dinitro-2-methylphenol	UG/L	N	48	U
SEMI-VOLATILES	4-Bromophenyl phenyl ether	UG/L	N	9.7	U
SEMI-VOLATILES	4-Chloro-3-methylphenol	UG/L	N	19	U
SEMI-VOLATILES	4-Chloroaniline	UG/L	N	19	U
SEMI-VOLATILES	4-Chlorophenyl phenyl ether	UG/L	N	9.7	U
SEMI-VOLATILES	4-Methylphenol	UG/L	N	9.7	U
SEMI-VOLATILES	4-Nitroaniline	UG/L	N	48	U
SEMI-VOLATILES	4-Nitrophenol	UG/L	N	48	U
SEMI-VOLATILES	Acenaphthene	UG/L	N	9.7	U
SEMI-VOLATILES	Acenaphthylene	UG/L	N	9.7	U
SEMI-VOLATILES	Anthracene	UG/L	N	9.7	U
SEMI-VOLATILES	Benzo(a)anthracene	UG/L	N	9.7	U
SEMI-VOLATILES	Benzo(a)pyrene	UG/L	N	9.7	U
SEMI-VOLATILES	Benzo(b)fluoranthene	UG/L	N	9.7	U
SEMI-VOLATILES	Benzo(g,h,I)perylene	UG/L	N	9.7	U
SEMI-VOLATILES	Benzo(k)fluoranthene	UG/L	N	9.7	U
SEMI-VOLATILES	Benzoic acid	UG/L	N	48	U
SEMI-VOLATILES	Benzyl alcohol	UG/L	N	19	U
SEMI-VOLATILES	Benzyl butyl phthalate	UG/L	N	9.7	U
SEMI-VOLATILES	bis(2-Chloroethoxy)methane	UG/L	N	9.7	U
SEMI-VOLATILES	bis(2-Chloroethyl)ether	UG/L	N	9.7	U
SEMI-VOLATILES	bis(2-Chloroisopropyl)ether	UG/L	N	9.7	U
SEMI-VOLATILES	bis(2-Ethylhexyl)phthalate	UG/L	N	19	U
SEMI-VOLATILES	Carbazole	UG/L	N	9.7	U
SEMI-VOLATILES	Chrysene	UG/L	N	9.7	U
SEMI-VOLATILES	Di-n-butyl phthalate	UG/L	N	9.7	U
SEMI-VOLATILES	Di-n-octyl phthalate	UG/L	N	9.7	U
SEMI-VOLATILES	Dibenzo(a,h)anthracene	UG/L	N	9.7	U
SEMI-VOLATILES	Dibenzofuran	UG/L	N	9.7	U
SEMI-VOLATILES	Diethyl phthalate	UG/L	N	9.7	U
SEMI-VOLATILES	Dimehtyl phthalate	UG/L	N	9.7	U
SEMI-VOLATILES	Fluoranthene	UG/L	N	9.7	U
SEMI-VOLATILES	Fluorene	UG/L	N	9.7	U
SEMI-VOLATILES	Hexachlorobenzene	UG/L	N	9.7	U
SEMI-VOLATILES	Hexachlorobutadiene	UG/L	N	19	U
SEMI-VOLATILES	Hexachlorocyclopentadiene	UG/L	N	9.7	U
SEMI-VOLATILES	Hexachloroethane	UG/L	N	9.7	U

Appendix A-2
Aqueous Sample Analytical Dump
Brandywine DRMO (SS-01)
October - December 2002
Andrews Air Force Base, Maryland

		GROUP NAME		SS01	
		LOCATION CODE		SS01-EFF	
		SAMPLE_NO		023	
		SAMPLE DATE		1-Oct-02	
		SAMPLE PURPOSE		REG	
TEST GROUP	PARAMETER	UNITMEAS	FILTERED	RESULT	QUAL
SEMI-VOLATILES	Indeno(1,2,3-cd)pyrene	UG/L	N	9.7	U
SEMI-VOLATILES	Isophorone	UG/L	N	9.7	U
SEMI-VOLATILES	N-nitrosodi-n-propylamine	UG/L	N	9.7	U
SEMI-VOLATILES	N-nitrosodiphenylamine	UG/L	N	9.7	U
SEMI-VOLATILES	Naphthalene	UG/L	N	9.7	U
SEMI-VOLATILES	Nitrobenzene	UG/L	N	9.7	U
SEMI-VOLATILES	Pentachlorophenol	UG/L	N	48	U
SEMI-VOLATILES	Phenanthrene	UG/L	N	9.7	U
SEMI-VOLATILES	Phenol	UG/L	N	9.7	U
SEMI-VOLATILES	Pyrene	UG/L	N	9.7	U
METALS	Aluminum	UG/L	Y	31.6	F
METALS	Antimony	UG/L	Y	100	U
METALS	Arsenic	UG/L	Y	10	U
METALS	Baruim	UG/L	Y	30.1	
METALS	Beryllium	UG/L	Y	10	U
METALS	Cadmium	UG/L	Y	10	U
METALS	Calcium	UG/L	Y	2990	
METALS	Chromium	UG/L	Y	20	U
METALS	Cobalt	UG/L	Y	5.8	F
METALS	Copper	UG/L	Y	3.4	F
METALS	Iron	UG/L	Y	2000	
METALS	Lead	UG/L	Y	10	U
METALS	Magnesium	UG/L	Y	1970	
METALS	Manganese	UG/L	Y	175	
METALS	Mercury	UG/L	Y	0.5	U
METALS	Molybdenum	UG/L	Y	100	U
METALS	Nickel	UG/L	Y	3.8	F
METALS	Potassium	UG/L	Y	455	F
METALS	Selenium	UG/L	Y	10	U
METALS	Silver	UG/L	Y	20	U
METALS	Sodium	UG/L	Y	6400	
METALS	Thallium	UG/L	Y	10	U
METALS	Vanadium	UG/L	Y	10	U
METALS	Zinc	UG/L	Y	30.4	

TABLE A-3
AIR SAMPLE ANALYTICAL DATA DUMP
SITE SS-01

Appendix A-3
Air Sample Analytical Dump
Brandywine DRMO (SS-01)
October - December 2002
Andrews Air Force Base, Maryland

	GROUP NAME	SS01		SS01		SS01	
	LOCATION CODE	EFF-SS01		EFF-SS01		EFF-SS01	
	SAMPLE_NO	036		031		024	
	SAMPLE DATE	10/31/2002		10/16/2002		10/1/2002	
	SAMPLE PURPOSE	REG		REG		REG	
PARAMETER	UNITS	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
1,1,1-TRICHLOROETHANE	PPBV	1.3	U	13	U	130	U
1,1,2,2-TETRACHLOROETHANE	PPBV	1.3	U	13	U	130	U
1,1,2-TC-1,2,2-TFA (F113)	PPBV	1.3	U	13	U	130	U
1,1,2-TRICHLOROETHANE	PPBV	1.3	U	13	U	130	U
1,1-DICHLOROETHANE	PPBV	1.3	U	13	U	130	U
1,1-DICHLOROETHENE	PPBV	1.3	U	13	U	130	U
1,2,4-TRICHLOROBENZENE	PPBV	1.3	U	13	U	130	U
1,2,4-TRIMETHYLBENZENE	PPBV	1.3	U	13	U	130	U
1,2-DC-1,1,2,2-TFA (F114)	PPBV	1.3	U	13	U	130	U
1,2-DIBROMOETHANE	PPBV	1.3	U	13	U	130	U
1,2-DICHLOROBENZENE	PPBV	1.3	U	13	U	130	U
1,2-DICHLOROETHANE	PPBV	1.3	U	13	U	130	U
1,2-DICHLOROPROPANE	PPBV	1.3	U	13	U	130	U
1,3,5-TRIMETHYLBENZENE	PPBV	1.3	U	13	U	130	U
1,3-DICHLOROBENZENE	PPBV	1.3	U	13	U	130	U
1,4-DICHLOROBENZENE	PPBV	3		13	U	150	
2-BUTANONE	PPBV	1.3	U	13	U	130	U
2-HEXANONE	PPBV	1.3	U	13	U	130	U
4-ETHYLTOLUENE	PPBV	1.3	U	13	U	130	U
4-METHYL-2-PENTANONE	PPBV	1.3	U	13	U	130	U
ACETONE	PPBV	7		13	U	130	U
BENZENE	PPBV	1.3	U	13	U	130	U
BENZYL CHLORIDE	PPBV	1.3	U	13	U	130	U
BROMOMETHANE	PPBV	1.3	U	13	U	130	U
CARBON DISULFIDE	PPBV	1.3	U	13	U	130	U
CARBON TETRACHLORIDE	PPBV	1.3	U	13	U	130	U
CHLOROBENZENE	PPBV	1.3	U	13	U	130	U
CHLOROETHANE	PPBV	1.3	U	13	U	130	U
CHLOROFORM	PPBV	1.3	U	13	U	130	U
CHLOROMETHANE	PPBV	1.3	U	13	U	130	U
CIS-1,2-DICHLOROETHENE	PPBV	6		77		630	
CIS-1,3-DICHLOROPROPENE	PPBV	1.3	U	13	U	130	U
DICHLORODIFLUOROMETHANE	PPBV	1.3	U	13	U	130	U
ETHYLBENZENE	PPBV	1.3	U	13	U	130	U
HEXACHLOROBUTADIENE	PPBV	1.3	U	13	U	130	U
M,P-XYLENE	PPBV	1.3	U	13	U	130	U
METHYLENE CHLORIDE	PPBV	4		13	U	130	U
O-XYLENE	PPBV	1.3	U	13	U	130	U
STYRENE	PPBV	1.3	U	13	U	130	U
TETRACHLOROETHENE	PPBV	1.3	U	13	U	130	U
TOLUENE	PPBV	1.3	U	13	U	130	U
TRANS-1,2-DICHLOROETHENE	PPBV	1.3	U	13	U	130	U
TRANS-1,3-DICHLOROPROPENE	PPBV	1.3	U	13	U	130	U
TRICHLOROETHENE	PPBV	37		480		4400	
TRICHLOROFLUOROMETHANE (F11)	PPBV	1.3	U	13	U	130	U
VINYL CHLORIDE	PPBV	1.3	U	13	U	130	U

APPENDIX B

INFLUENT AND EFFLUENT MONITORING AND DISCHARGE GUIDELINES

SITE SS-01

Appendix B
Influent and Effluent Monitoring and Discharge Guidelines
Brandywine DRMO, Site SS-01
Andrews Air Force Base, Maryland

The schedule, analytical parameters, and sampling locations for the Brandywine DRMO system are detailed below.

System Influent and Effluent Monitoring
Brandywine DRMO (Site SS-01)

Sampling Points	Media	Parameters	Sampling Interval	TAT
Influent	Water	VOCs (SW8260B) SVOCs (SW8270C) TAL Dissolved Metals (SW6010B/SW7470)	Twice Monthly	21 days
Post Air Stripper	Water	VOCs (SW8260B) TAL Dissolved Metals (SW6010B/SW7470)	Twice Monthly	21 days
Spray Effluent* (Point of Compliance)	Water	VOCs (SW8260B) SVOCs (SW8270C) TAL Dissovled Metals (SW6010B/SW7470)	Twice Monthly	21 days
Air Effluent Stack* (Point of Compliance)	Air	VOCs (TO-14)	Twice Monthly	21 days

Point of compliance sampling for the water effluent stream is the spray that is captured in the sampling bowl prior to bouncing off of the rip-rap at the Air Force's property boundary.

All metals sampled will be filtered prior to shipment to the off-site laboratory for analysis. If the SS-01 system shuts down inadvertently, scheduled influent and effluent samples will not be collected until both of the following criteria have been met:

- System has been restarted and allowed to pump long enough to allow the water level in the pumping well (HT1N) to be drawn down to its nominal pumping level.
- 96 hours of continuos pumping have elapsed.

The discharge limits as per MDE will be according to the following table.

Effluent Limitations for Constituents of Concern at Site SS-01
Brandywine DRMO (as per MDE)

Effluent Characteristics	Effluent Limitations (Daily Maximum)
Total Volatile Organics	100 µg/l

VOCs	Effluent Limitations (µg/L)
Trichloroethene	5
Tetrachloroethene	5
Cis-1,2-Dichloroethene	70
1,4-Dichlorobenzene	75

SVOCs	Effluent Limitations (µg/L)
Bis(2-ethyhexyl)phathalate	6.0
2,4-dichlorohenol	*
2-methylnaphthalene	*
Naphthalene	*
Phenol	*

Metals	Effluent Limitations (mg/L)
Copper	0.009
Thallium	0.002
Zinc	0.12

*No specific limit. Total discharge must not exceed 100 µg/L total organics per day. In the case of discharge exceedances, the following procedures will be invoked:

1. Andrews AFB will be notified within 24 hours of receiving analytical data indicating that an exceedance has occurred.

2. Andrews AFB will notify necessary Tier 1 team members within 24 hours of Base learning of exceedance from contractor.

3. System will be shut down by contractor within 24 hours of receiving analytical data indicating that an exceedance has occurred.

4. System will be inspected for iron build-up or other potential factors.

5. If necessary, system will be cleaned or repaired.

6. Systems will be turned back on if cleaned or repaired; otherwise, it stays shut off.

7. Team is notified if system is switched back on or not within 24 hours.

8. If the post-exceeding sample meets the agreed upon discharge criteria, the system would be turned back on.

9. If the pre-shutdown sample fails the discharge criteria, system stays off pending evaluation by team.

If the system is turned back on, a 48 hour turnaround time sample will be collected at one week after the system is restarted.

APPENDIX C

TECHNICAL MEMORANDUM, EVALUATION OF TREATMENT SYSTEM SAMPLING REQUIREMENTS (AQUEOUS), BRANDYWINE DRMO SITE (SS-01), ANDREWS AIR FORCE BASE, MARYLAND

Technical Memorandum
Evaluation of Treatment System Sampling Requirements (Aqueous)
Brandywine DRMO Site (SS-01)
Andrews Air Force Base, Maryland

October 2002

Prepared by:
Pacific Environmental Services, Inc.
(A MACTEC Company)

1.0 Introduction

This technical memorandum has been prepared to evaluate historical system monitoring at the Brandywine DRMO Site (SS-01) groundwater treatment system at Andrews Air Force Base, Maryland and to provide recommendations on future system monitoring needs. Data evaluation results and recommendations for future system monitoring, as presented herein, are limited to the aqueous media monitored in connection with system operation. Air effluent monitoring results are summarized in multiple quarterly system evaluation reports (QSER) generated by IT Corporation since 2000. The evaluation contained in this technical memorandum was prepared by Pacific Environmental Services, Inc. (A MACTEC Company) under contract F41624-01-D-9006, Delivery Order 0004.

2.0 System Operational History

The Site SS-01 groundwater extraction and treatment system was constructed in September 1996. Due to permitting issues, the groundwater extraction and treatment system at SS-01 was not put into operation, except for short periods for toxicity testing, prior to August 2000. Following the completion of toxicity testing in July 2000, the system began full-scale operation on August 19, 2000 (IT, 2001a). During system operation from August 19, 2000 to March 22, 2001, system effluent (discharge) water and effluent air samples were collected on a monthly basis. In addition, influent water was sampled on a quarterly basis and analyzed for the same suite of compounds as the effluent samples. All water and air samples were analyzed for volatile organic compounds (VOC). The system effluent (discharge) water and effluent air samples are utilized to determine compliance with the regulatory discharge criteria.

The SS-01 system was shut down on March 22, 2001 due to regulatory issues with isolated historical system effluent water exceedances by bis(2-ethylhexyl)phthalate (DEHP) in 2000 and due to regulatory concerns over a paucity of metals analyses. DEHP historically exceeded the effluent limit of 6 µg/L during test-phase sampling on January 17, 2000 (13.3 µg/L) and March 13, 2000 (15 µg/L). Copper marginally exceeded the effluent limit of 9 µg/L on January 24, 2000 (9.23 µg/L). No other chemical constituents exceeded effluent/discharge limits prior to the March 22, 2001 system shutdown. Following maintenance and further evaluation of the effluent sampling results, the system was restarted on August 28, 2001 with substantially increased monitoring requirements. The system was restarted under EPA Region 3 and Maryland Department of Environment (MDE) guidelines. These guidelines are documented in IT's December 2001 QSER (IT 2001b) and in Section 3.0 of this technical memorandum.

Following the system restart on August 28, 2001, it operated until November 13, 2001, when it was shut down to facilitate groundwater sampling in conjunction with a remedial investigation being performed at the SS-01 site. In March/April 2002, the system was put back into operation and has operated ever since. The system is scheduled for a temporary shutdown on or about November 1, 2002 to facilitate an additional phase of fieldwork for the remedial investigation being performed at the SS-01 site. The system will be restarted once Andrews AFB indicates that the investigative fieldwork is completed.

3.0 Current System Monitoring

Current system monitoring protocols are consistent with those put into practice in August 2001. This protocol was initiated because of the isolated historical discharge exceedances observed for DEHP and the paucity of metals data. The EPA and MDE required more frequent sampling of the influent and effluent water and effluent air as well as a more expanded analytical suite for the water samples. One additional effluent water sample was also required to be collected from the post air stripper port as a pre-discharge evaluation tool. The current system monitoring, as outlined in IT's December 2001 QSER, includes water sampling from the influent, post-stripper, and effluent/discharge locations within the system once per two week period (IT, 2001b). Effluent air is also sampled once every two weeks.

In the near-term future, system samples will continue to be collected on a biweekly basis and analyzed for the chemical constituents shown in the table below. The October 30th samples will constitute the last system-related samples to be collected prior to the planned November

1 shutdown mentioned in Section 2.0. The current analytical parameters and the effluent limits for constituents of concern are:

System Monitoring Program
August 28, 2001 through Current

Sampling Points	Media	Parameters
Influent	Water	VOCs (SW8260B) SVOCs (SW8270C) TAL Dissolved Metals (SW6010B/SW7470)
Post Air Stripper	Water	VOCs (SW8260B) TAL Dissolved Metals (SW6010B/SW7470)
Effluent/Discharge (Point of Compliance)	Water	VOCs (SW8260B) SVOCs (SW8270C) TAL Dissolved Metals (SW6010B/SW7470)
Air Effluent Stack (Point of Compliance)	Air	VOCs (TO-14)

Effluent Limits for Constituents of Concern
At Site SS-01
Brandywine DRMO

Parameter	Effluent Limit (mg/L)
Volatile Organic Compounds	
Total Volatile Organics	100
Trichloroethene	5
Tetrachloroethene	5
Cis-1,2-Dichloroethene	70
1,4-Dichlorobenzene	75
Semivolatile Volatile Organics	
Bis(2-ethylhexyl)phthalate	6
2,4-dichlorophenol	*
2-methylnaphthalene	*
Naphthalene	*
Phenol	*
Total Semivolatile Organics	100

Effluent Limits for Constituents of Concern (Continued)
At Site SS-01
Brandywine DRMO

Parameter	Effluent Limit (mg/L)
Metals	
Copper	9
Thallium	2
Zinc	120

* Denotes constituents without specific discharge limits. Discharge water must not exceed 100 µg/L total organics per day.

4.0 Data Review

Data are summarized in Table 1 for all influent and effluent analytical results collected from the initial system startup (test phase) in January 2000 through the last available data set September 17, 2002. In the punctuated operation of the system over the past 33 months, exceedance of regulatory criteria by DEHP detections has only occurred during two isolated events, January 17, 2000 (13.3 µg/L) and March 13, 2000 (15 µg/L). These exceedances occurred in the early test phase of the system's operation and were succeeded by numerous nondetects. Discharge limit exceedances have not been observed for VOCs or SVOCs since the system was put into full-scale production in August 2000. VOCs and SVOCs have been monitored in system influent and effluent on a biweekly basis following the shutdown of the system in March 2001. Also since that time there have been no detections of VOCs or SVOCs in the discharge/effluent samples above regulatory discharge limits.

Two metals, copper and zinc, have exceeded the effluent limit during three isolated sampling events performed at the Brandywine DRMO groundwater remediation system. Each event containing a metal exceedance consisted of either copper or zinc but never in combination. The exceedances were not consistently accompanied by any other elevated metals results, suggesting that that the exceedances are not related to systematic contamination associated with groundwater or process flow within the treatment system. For the samples with exceedances, metals results were sometimes observed at higher concentrations in influent samples than effluent/discharge samples. In some instances the metals concentrations in the influent sample were lower than the effluent sample. This random occurrence of discharge

exceedances by metals are likely the result of sporadic small-scale variability in laboratory analyses or system operation.

Historical metals exceedances occurred on January 24, 2000 and September 6, 2001. On January 24, 2000, copper was detected at 9.23 µg/L, which is slightly above the 9 µg/L discharge limit. On September 6, 2001, zinc was detected at 164 µg/L in the effluent/discharge sample, which exceeded the discharge limit of 120 µg/L. The influent sample had a zinc concentration of 49.5 µg/L; the post-stripper sample was not sampled for metals on September 6, 2001. Prior to and following the September 6, 2001 exceedance, zinc concentrations in the effluent/discharge water samples were less than the effluent limit.

One discharge limit exceedance was observed in a metal analysis in 2002. Copper exceeded the effluent/discharge limit of 9 µg/L in one sample collected on August 9, 2002 where the concentration in that sample was 39.1 µg/L. The influent and post-stripper samples collected during this sampling event exhibited copper concentrations of 7.82 µg/L and nondetect, respectively. No other effluent/discharge samples exceeded the discharge limit for copper since January 2000 or subsequent to the August 9, 2002 occurrence.

5.0 Conclusions

The SS-01 groundwater treatment system is operating within design parameters. Primary contaminants, chlorinated solvents, for which the system was designed to extract and treat were not detected in the system effluent above discharge limits over the punctuated 33 month operational period. Analytical data indicate that, with the exception of the minor isolated discharge exceedances by copper, zinc, and DEHP the groundwater extraction and treatment system is meeting its discharge limits. Isolated effluent exceedances for copper, zinc, and DEHP are not attributed to groundwater contamination at the site or introduced as a consequence of operation of the system. The exceedances were not consistently accompanied by any other elevated levels in influent or post-stripper samples, suggesting that that the exceedances are not related to systematic contamination associated with groundwater or process flow within the treatment system. For the samples with exceedances, metals results were sometimes observed at higher concentrations in influent samples than effluent/discharge samples. In some instances the metals concentrations in the influent sample were lower than the effluent sample. This random occurrence of discharge exceedances by metals and the two isolated occurrences of DEHP at concentrations above

the discharge limit are likely the result of sporadic small-scale variability in laboratory analyses or system operation.

6.0 Recommendations

The following recommendations are based on the review of all aqueous analytical data collected to date for the SS-01 groundwater treatment system.

- The post-stripper effluent sample should no longer be collected. This sample location was largely added to the monitoring program to aid in interpreting historical 2000 effluent/discharge exceedances. In the absence of further evaluation needs, the post-stripper sampling location provides no further value-added information.

- The effluent/discharge sample should be collected on a monthly basis to assess the effectiveness of the treatment system and compliance with discharge limits. This sample should be analyzed only for VOCs, since VOCs are the contaminants of concern for which the remedial system was designed and for which high concentrations are being withdrawn from the shallow surficial aquifer. Given the infrequent, isolated effluent (discharge) exceedances observed within the metals parameter suite over the past 33 months of operation, sampling the effluent/discharge more frequently than monthly and for chemical constituents other than VOCs is not warranted.

- Influent samples should be collected quarterly. Influent data is needed to determine the mass of contamination removed by the system, and more importantly, when the system operation can stop due to remediation of VOCs in groundwater within the capture zone of the system. Given the relatively high concentrations of VOCs in groundwater and the limited variability in influent concentrations over the previous 33 months of sampling/system operation, quarterly sampling is sufficient to achieve the stated objectives of this sampling location.

7.0 References

IT Corporation (IT), 2001a, Biotoxicity Investigation (April 1999 through July 2000), Groundwater Treatment System at Site SS-01, Andrews AFB, MD, prepared for the Air Force Center for Environmental Excellence, Texas, March.

IT Corporation (IT), 2001b, Quarterly System Evaluation Report, Part B, January to September 2001, Long-Term Monitoring/Operation and Maintenance Program, Brandywine DRMO Site (SS-01), Landfills 6 and 7 (LF-06 and LF-07), Andrews AFB, MD, prepared for the Air Force Center for Environmental Excellence, Texas, December.

Table 1

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - September 2002
Andrews Air Force Base, Maryland

			Location Code:	SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF	
			Associated Site:	SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
			Sample No:	016		017		018		011		012		013		006		007		008		002	
			Sample Date:	17-Sep-02		17-Sep-02		17-Sep-02		3-Sep-02		3-Sep-02		3-Sep-02		22-Aug-02		22-Aug-02		22-Aug-02		9-Aug-02	
			Sample Location within System	Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																							
Acetone		µg/L		32		12	F	12	F	-	-	19	F	14	F	42		28	-	23	-	-	-
Benzene		µg/L		1.5		-	-	-	-	-	-	-	-	-	-	1.6		-	-	-	-	-	-
Butanone, 2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride		µg/L		1	F	-	-	-	-	-	-	-	-	-	-	0.65	F	-	-	-	-	-	-
Chlorobenzene		µg/L		1.7		-	-	-	-	-	-	-	-	-	-	1.6		-	-	-	-	-	-
Chloroform		µg/L		0.9	F	-	-	-	-	-	-	-	-	-	-	0.93	F	-	-	-	-	-	-
Dichlorobenzene, 1,2-		µg/L		0.81		-	-	-	-	-	-	-	-	-	-	0.8		-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	370		-	-	-	-	270		0.21	F	-	-	270		-	-	-	-	230	F
Dichloroethene, 1,1-		µg/L		1.3		-	-	-	-	-	-	-	-	-	-	1.1	F	-	-	-	-	-	-
Dichloroethene, cis-1,2-		µg/L	70	540		-	-	-	-	590	F	0.26	F	-	-	640	F	-	-	-	-	600	F
Dichloroethene, trans-1,2-		µg/L		2.5		-	-	-	-	-	-	-	-	-	-	3.2		-	-	-	-	-	-
Ethylbenzene		µg/L		0.4	F	-	-	-	-	-	-	-	-	-	-	0.38	F	-	-	-	-	-	-
Isopropylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride		µg/L		1.2		-	-	-	-	-	-	-	-	-	-	1.3		-	-	-	-	-	-
Naphthalene		µg/L	*	680		-	-	-	-	130		-	-	-	-	210		3.7		1.9		130	
Propylbenzene, N-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene		µg/L		0.45	F	0.21	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorobenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	1.1		-	-	-	-	-	-
Trichloroethene		µg/L	5	6900		0.72	F	0.3	F	7400		1.3		0.42	F	7800		0.26	F	0.57	F	6900	
Trimethylbenzene, 1,2,4-		µg/L		1.1	F	-	-	-	-	-	-	-	-	-	-	1.1	F	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-		µg/L		0.41	F	-	-	-	-	-	-	-	-	-	-	0.32	F	-	-	-	-	-	-
Vinyl chloride		µg/L		10		-	-	-	-	14	F	-	-	-	-	11		-	-	-	-	8	F
Xylene, m,p-		µg/L		0.85	F	-	-	-	-	-	-	-	-	-	-	0.81	F	-	-	-	-	-	-
Xylene, o-		µg/L		0.5	F	-	-	-	-	-	-	-	-	-	-	0.59	F	-	-	-	-	-	-
Total Volatile Organics[a]		µg/L	100			0.72		0.3				1.77		0.42				0.26		0.57			
SEMIVOLATILES																							
Benzoic Acid		µg/L		-	-			-	-	-	-			-	-	-				-	-	-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6	-	-			-	-	-	-			-	-	-				-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	140				-	-	150				-	-	160				-	-	130	
Dichlorophenol, 2,4-		µg/L	*	-	-			-	-	-	-			-	-	-				-	-	-	-
Methylnaphthalene, 2-		µg/L	*	140				-	-	120				-	-	150				-	-	49	
Naphthalene		µg/L	*	110				-	-	22				-	-	100				-	-	-	-
Phenol		µg/L	*	-	-			-	-	-	-			-	-	-				-	-	-	-
Trichlorophenol, 2,4,5-		µg/L		-	-			-	-	-	-			-	-	-				-	-	-	-
Total Semivolatile Organics[a]		µg/L	100					-						-						-			
METALS																							
Aluminum		µg/L		72.9	F	-	-	-	-	-	-	-	-	-	-	99.6		85.8	F	76.8	F	74.2	
Arsenic		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium		µg/L		28.4		28.9		28.4		29.3		31.2		29.6		25.1		24.5		24.7		26.6	-
Beryllium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cadmium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium		µg/L		2740		2700		2780		2930		2860		2650		2970		2770		2740		2920	
Chromium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper		µg/L	9	22.3		13.7		6.14	F	6.41	F	18.6		-	-	7.85	F	12.8		-	-	7.82	
Iron		µg/L		2260		1160		1580		4280		1720		1360		3790		1940		1610		3670	
Lead		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		µg/L		1850		1780		1840		2180		2210		2070		1800		1740		1720		1870	
Manganese		µg/L		169		162		168		220		214		197		173		155		149		176	
Mercury		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	867	F	-	-	-	-
Selenium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium		µg/L		5530		5370		5550		6060		6120		5690		5990		6340		6380		6700	
Thallium		µg/L	2	-	-	-	-	-	-	-	-	-	-	-	-	6.62	F	-	-	-	-	-	-
Vanadium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc		µg/L	120	73.6		20.3		20.1		39.4		29.4		17.7	F	61.9		24		63.1		55.1	

Table 1

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - September 2002
Andrews Air Force Base, Maryland

			Location Code:	SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF	
			Associated Site:	SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
			Sample No:	003		004		4014		4013		4012		4009		4008		4007		4004		4003	
			Sample Date:	9-Aug-02		9-Aug-02		23-Jul-02		23-Jul-02		23-Jul-02		12-Jul-02		12-Jul-02		12-Jul-02		27-Jun-02		27-Jun-02	
			Sample Location within System	Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																							
Acetone		µg/L		27		23		37		23		21		55	F	19	F	18	F	31		23	
Benzene		µg/L		-	-	-	-	1.3		-	-	-	-	-	-	-	-	-	-	1.4		-	-
Butanone, 2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride		µg/L		-	-	-	-	1.2	F	-	-	-	-	-	-	-	-	-	-	2.4		2.1	F
Chlorobenzene		µg/L		-	-	-	-	2.9		-	-	-	-	-	-	-	-	-	-	1.6		-	-
Chloroform		µg/L		-	-	-	-	1.3		-	-	-	-	-	-	-	-	-	-	1.1		0.3	F
Dichlorobenzene, 1,2-		µg/L		-	-	-	-	1.1		-	-	-	-	-	-	-	-	-	-	0.79		-	-
Dichlorobenzene, 1,4-		µg/L	75	-	-	-	-	630		0.21	F	-	-	520		-	-	-	-	340		-	-
Dichloroethene, 1,1-		µg/L		-	-	-	-	1.5		-	-	-	-	-	-	-	-	-	-	1.2		-	-
Dichloroethene, cis-1,2-		µg/L	70	-	-	-	-	810		0.3	F	-	-	970		0.28	F	-	-	720		-	-
Dichloroethene, trans-1,2-		µg/L		-	-	-	-	4.6		-	-	-	-	4.3	F	-	-	-	-	2.7		-	-
Ethylbenzene		µg/L		-	-	-	-	0.57	F	-	-	-	-	-	-	-	-	-	-	0.38	F	-	-
Isopropylbenzene		µg/L		-	-	-	-	0.24	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride		µg/L		-	-	-	-	1.6		-	-	-	-	-	-	1.1		-	-	3.5		-	-
Naphthalene		µg/L	*	4.3		2.5		570		4.3		1.9		1000		-	-	-	-	69		-	-
Propylbenzene, N-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene		µg/L		-	-	-	-	0.29	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorobenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene		µg/L	5	-	-	0.22	F	8200		1.3		0.42	F	9000		0.99	F	0.29	F	7500		0.39	F
Trimethylbenzene, 1,2,4-		µg/L		-	-	-	-	1.1	F	-	-	-	-	-	-	-	-	-	-	0.83	F	-	-
Trimethylbenzene, 1,3,5-		µg/L		-	-	-	-	0.39	F	-	-	-	-	-	-	-	-	-	-	0.27	F	-	-
Vinyl chloride		µg/L		-	-	-	-	20		-	-	-	-	16		-	-	-	-	8.2		-	-
Xylene, m,p-		µg/L		-	-	-	-	1.1		-	-	-	-	-	-	-	-	-	-	0.79	F	-	-
Xylene, o-		µg/L		-	-	-	-	0.7	F	-	-	-	-	-	-	-	-	-	-	0.54	F	-	-
Total Volatile Organics[a]		µg/L	100	-		0.22				1.81		0.42				1.27		0.29				0.39	
SEMIVOLATILES																							
Benzoic Acid		µg/L						-	-			-	-	-	-			-	-	-	-		
Bis(2-Ethylhexyl)phthalate		µg/L	6					-	-			-	-	-	-			-	-	-	-		
Dichlorobenzene, 1,4-		µg/L	75					220				-	-	110				-	-	93			
Dichlorophenol, 2,4-		µg/L	*					-	-			-	-	-	-			-	-	-	-		
Methylnaphthalene, 2-		µg/L	*					190				-	-	-	-			-	-	14			
Naphthalene		µg/L	*					60				-	-	-	-			-	-	-	-		
Phenol		µg/L	*					6.8	F			-	-	-	-			-	-	-	-		
Trichlorophenol, 2,4,5-		µg/L						-	-			-	-	-	-			-	-	-	-		
Total Semivolatile Organics[a]		µg/L	100									-						-					
METALS																							
Aluminum		µg/L		-	-	68.8	F	67.9	F	-	-	-	-	75.6	F	-	-	-	-	-	-	-	-
Arsenic		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium		µg/L		24.1		23.9		27.4		26.5		27.5		33.5		29.9		28.2		23.8		26.2	
Beryllium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium		µg/L		2520		2450		2800		2580		2720		3290		2960		2790		2260		2480	
Chromium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper		µg/L	9	-	-	***39.1***		7.44	F	10.4		-	-	10.6		-	-	-	-	10.4		5.58	F
Iron		µg/L		1600		1670		3450		1900		1920		2700		2090		1890		1790		1780	
Lead		µg/L		3.83		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		µg/L		1660		1640		1800		1720		1830		2230		1990		1890		1620		1790	
Manganese		µg/L		145		143		170		157		163		196		177		166		140		158	
Mercury		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium		µg/L		-	-	-	-	-	-	765	F	-	-	-	-	-	-	-	-	-	-	-	-
Selenium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium		µg/L		6070		6030		6320		6320		6520		7630		6990		6790		5680		5820	
Thallium		µg/L	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc		µg/L	120	21.7		30.1		27.6		20	F	19.8	F	54.9		14	F	17.4	F	20.9		14.1	F

Table 1

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - September 2002
Andrews Air Force Base, Maryland

			Location Code:	SS01-EFF		SS01-INF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF	
			Associated Site:	SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
			Sample No:	4002		3099		3098		3095		3094		3093		3089		3088		3087		3085		3084	
			Sample Date:	27-Jun-02		12-Jun-02		12-Jun-02		30-May-02		30-May-02		30-May-02		14-May-02		14-May-02		14-May-02		1-May-02		1-May-02	
			Sample Location within System	Discharge		Influent Port		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Discharge	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																									
Acetone		µg/L		20		44		36		-	-	34		21		-	-	45		37		-	-	210	J
Benzene		µg/L		-	-	1.5		-	-	-	-	0.23	F	-	-	-	-	-	-	-	-	-	-	-	-
Butanone, 2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride		µg/L		0.8	F	0.85	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene		µg/L		-	-	1.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform		µg/L		-	-	0.71	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-		µg/L		-	-	0.56		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	-	-	230		-	-	180		-	-	-	-	200		-	-	-	-	150	J	-	-
Dichloroethene, 1,1-		µg/L		-	-	0.99	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethene, cis-1,2-		µg/L	70	-	-	600		-	-	480	F	-	-	-	-	580		-	-	-	-	370	F	-	-
Dichloroethene, trans-1,2-		µg/L		-	-	3.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene		µg/L		-	-	0.33	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride		µg/L		-	-	3.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene		µg/L	*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	91		-	-
Propylbenzene, N-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene		µg/L		0.38	F	-	-	-	-	-	-	0.59	F	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorobenzene, 1,2,4-		µg/L		-	-	0.37	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene		µg/L	5	-	-	5100		-	-	5600		0.61	F	0.27	F	6400	J	-	-	-	-	5200		0.25	F
Trimethylbenzene, 1,2,4-		µg/L		-	-	0.9	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-		µg/L		-	-	0.28	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride		µg/L		-	-	13		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene, m,p-		µg/L		-	-	0.63	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene, o-		µg/L		-	-	0.46	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Volatile Organics[a]		µg/L	100	-				-				0.61		0.27				-		-				0.25	
SEMIVOLATILES																									
Benzoic Acid		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	-	-	110		-	-	100		-	-	-	-	110		-	-	-	-	120		-	-
Dichlorophenol, 2,4-		µg/L	*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylnaphthalene, 2-		µg/L	*	-	-	15		-	-	19		-	-	-	-	33		-	-	-	-	87		-	-
Naphthalene		µg/L	*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58		-	-
Phenol		µg/L	*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorophenol, 2,4,5-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Semivolatile Organics[a]		µg/L	100	-				-				-		-				-		-				-	
METALS																									
Aluminum		µg/L		-	-	73.2	F	-	-																
Arsenic		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium		µg/L		25.9		27.8		27.6		24.8		30		24.6		29.8		27.6		26.1		33		31.2	
Beryllium		µg/L		-	-	-	-	-	-																
Cadmium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium		µg/L		2410		2530		2550																	
Chromium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt		µg/L		-	-	-	-	-	-																
Copper		µg/L	9	-	-	25.6		-	-																
Iron		µg/L		1620		1990		1800																	
Lead		µg/L		-	-	4.56	J	-	-	6.75	F	-	-	-	-	11.5	F	2.64	F	-	-	-	-	-	-
Magnesium		µg/L		1790		1910		1900																	
Manganese		µg/L		156		198		191																	
Mercury		µg/L		-	-	-	-	-	-	0.173	F	-	-	-	-	0.153	F	-	-	-	-	-	-	-	-
Molybdenum		µg/L		-	-	-	-	-	-																
Nickel		µg/L		-	-	-	-	-	-																
Potassium		µg/L		-	-	953	F	947	F																
Selenium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver		µg/L		-	-	-	-	-	-	-	-	11.4	F	-	-	-	-	-	-	-	-	-	-	-	-
Sodium		µg/L		5730		6230		6300																	
Thallium		µg/L	2	-	-	-	-	-	-																
Vanadium		µg/L		-	-	-	-	-	-																
Zinc		µg/L	120	9.83	F	40		24.5																	

Table 1

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - September 2002
Andrews Air Force Base, Maryland

Location Code:				SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF	
Associated Site:				SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
Sample No:				3079		3078		3077		2007		2006		2005		2002		2001		2000		1997	
Sample Date:				10-Apr-02		10-Apr-02		10-Apr-02		13-Nov-01		13-Nov-01		13-Nov-01		26-Oct-01		26-Oct-01		26-Oct-01		11-Oct-01	
Sample Location within System				Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																							
Acetone		µg/L		-	-	20	F	20		35	F	27		23		-	-	35		31		35	
Benzene		µg/L		-	-	-	-	-	-	2.1	F	-	-	-	-	-	-	-	-	-	-	1.7	
Butanone, 2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	F
Chlorobenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	
Chloroform		µg/L		0.67	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	F
Dichlorobenzene, 1,2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	220	F	-	-	-	-	230	J	0.6		-	-	300		-	-	-	-	230	
Dichloroethene, 1,1-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	
Dichloroethene, cis-1,2-		µg/L	70	620	F	-	-	-	-	660		0.99	F	-	-	760		-	-	-	-	540	
Dichloroethene, trans-1,2-		µg/L		2.6		-	-	-	-	2.6	F	-	-	-	-	-	-	-	-	-	-	2.6	
Ethylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.43	F
Isopropylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride		µg/L		-	-	-	-	-	-	5.7	F	-	-	-	-	6.9	F	-	-	-	-	5.5	
Naphthalene		µg/L	*	-	-	6		5.2		140		5.4		2.5		290		5.9		4.5		210	F
Propylbenzene, N-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.37	F
Trichlorobenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.25	F
Trichloroethene		µg/L	5	6700		0.3	F	-	-	8800		6		0.81	F	8200		0.55	F	0.32	F	6000	
Trimethylbenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	F
Trimethylbenzene, 1,3,5-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.29	F
Vinyl chloride		µg/L		-	-	-	-	-	-	10	F	-	-	-	-	-	-	-	-	-	-	12	
Xylene, m,p-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.98	F
Xylene, o-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.71	F
Total Volatile Organics[a]		µg/L	100			0.3		-						0.81						0.32			
SEMIVOLATILES																							
Benzoic Acid		µg/L		-	-			-	-	-	-			-	-	2.3	F			-	-	-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6	-	-			-	-	-	-			-	-	-	-			-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	110				-	-	160				-	-	250				-	-	310	
Dichlorophenol, 2,4-		µg/L	*	-	-			-	-	3	F			-	-	5	F			-	-	-	-
Methylnaphthalene, 2-		µg/L	*	67				-	-	160				-	-	250				-	-	300	
Naphthalene		µg/L	*	58				-	-	60				-	-	160				-	-	160	
Phenol		µg/L	*	-	-			-	-	-	-			-	-	11				1.9	F	4.5	F
Trichlorophenol, 2,4,5-		µg/L		-	-			-	-	-	-			-	-	-	-			-	-	-	-
Total Semivolatile Organics[a]		µg/L	100					-						-						1.9		-	-
METALS																							
Aluminum		µg/L								-	-	-	-	-	-	-	-	-	-	-	-	41.8	F
Arsenic		µg/L		4.01	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium		µg/L		37.3		39.2		38.1		29.5		28.2		27.9		26		26.8		25.7		25.6	
Beryllium		µg/L								0.27	F	0.31	F	0.54	F	-	-	-	-	1.08	F	-	-
Cadmium		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium		µg/L								2550		2510		2450		2220		2340		2660		2260	
Chromium		µg/L		-	-	-	-	-	-	-	-	5.73	F	3.22	F	-	-	-	-	-	-	-	-
Cobalt		µg/L								6.57	F	8.43	F	9.86	F	11.1	F	-	-	8.15	F	-	-
Copper		µg/L	9							6.09	F	6.08	F	4.75	F	2.2	F	1.61	F	2.53	F	3.93	F
Iron		µg/L								2070		2010		1850		6030		1590		1730		1730	
Lead		µg/L		2.25	F	2.91	F	-	-	2.27	F	-	-	-	-	1.36	F	-	-	-	-	-	-
Magnesium		µg/L								2010		1910		1880		1780		1730		1670		1540	
Manganese		µg/L								199		194		187		219		182		170		174	
Mercury		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum		µg/L								4.1	F	-	-	4.45	F	-	-	4.54	F	4.93	F	-	-
Nickel		µg/L								-	-	-	-	5.01	F	-	-	-	-	-	-	-	-
Potassium		µg/L								-	-	1240	F	-	-	-	-	-	-	-	-	-	-
Selenium		µg/L		-	-	-	-	-	-	-	-	5.05	F	5.67	F	-	-	-	-	-	-	-	-
Silver		µg/L		-	-	-	-	-	-	-	-	3.9	F	5.59	F	4.01	F	-	-	-	-	3.91	F
Sodium		µg/L								5970		5770		5370		5550		6210		5840		8800	
Thallium		µg/L	2							-	-	4.85	F	-	-	-	-	-	-	-	-	-	-
Vanadium		µg/L								-	-	2.51	F	-	-	2.34	F	-	-	-	-	-	-
Zinc		µg/L	120							33.3		12.4	F	16.1	F	33.9		22.8		16.6	F	26.6	

Table 1

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - September 2002
Andrews Air Force Base, Maryland

			Location Code:	SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-INF	
			Associated Site:	SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
			Sample No:	1996		1995		1993		1992		1990		1989		1988		1986		1985		1983	
			Sample Date:	11-Oct-01		11-Oct-01		4-Oct-01		4-Oct-01		27-Sep-01		27-Sep-01		27-Sep-01		21-Sep-01		21-Sep-01		6-Sep-01	
			Sample Location within System	Post Air Stripper		Discharge		Influent Port		Discharge		Influent Port		Post Air Stripper		Discharge		Influent Port		Discharge		Influent Port	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																							
Acetone		µg/L		28		25		pg		pg		47		24		20	F	pg		pg		-	-
Benzene		µg/L		-	-	-	-	pg		pg		2.2		-	-	-	-	pg		pg		-	-
Butanone, 2-		µg/L		-	-	-	-	pg		pg		-	-	-	-	-	-	pg		pg		-	-
Carbon tetrachloride		µg/L		-	-	-	-	pg		pg		2.3		-	-	-	-	pg		pg		-	-
Chlorobenzene		µg/L		-	-	-	-	pg		pg		2.3		-	-	-	-	pg		pg		-	-
Chloroform		µg/L		-	-	-	-	pg		pg		1.1		-	-	-	-	pg		pg		-	-
Dichlorobenzene, 1,2-		µg/L		-	-	-	-	pg		pg		-	-	-	-	-	-	pg		pg		-	-
Dichlorobenzene, 1,4-		µg/L	75	-	-	-	-	pg		pg		290		-		-	-	pg		pg		280	
Dichloroethene, 1,1-		µg/L		-	-	-	-	pg		pg		1.8		-	-	-	-	pg		pg		-	-
Dichloroethene, cis-1,2-		µg/L	70	0.3	F	0.25	F	pg		pg		670		-		-	-	pg		pg		770	
Dichloroethene, trans-1,2-		µg/L		-	-	-	-	pg		pg		3.6		-	-	-	-	pg		pg		-	-
Ethylbenzene		µg/L		-	-	-	-	pg		pg		0.68		-	-	-	-	pg		pg		-	-
Isopropylbenzene		µg/L		-	-	-	-	pg		pg		0.26	F	-	-	-	-	pg		pg		-	-
Methylene chloride		µg/L		-	-	-	-	pg		pg		7.3		0.35	F	0.39	F	pg		pg		28	FB
Naphthalene		µg/L	*	4.6		2		pg		pg		280		4.7		2.6		pg		pg		200	
Propylbenzene, N-		µg/L		-	-	-	-	pg		pg		-	-	-	-	-	-	pg		pg		-	-
Toluene		µg/L		-	-	-	-	pg		pg		0.36	F	-	-	-	-	pg		pg		-	-
Trichlorobenzene, 1,2,4-		µg/L		-	-	-	-	pg		pg		-	-	-	-	-	-	pg		pg		-	-
Trichloroethene		µg/L	5	1.7		1.6		pg		pg		12000		0.95	F	0.74	F	pg		pg		8200	
Trimethylbenzene, 1,2,4-		µg/L		-	-	-	-	pg		pg		1.7		-	-	-	-	pg		pg		-	-
Trimethylbenzene, 1,3,5-		µg/L		-	-	-	-	pg		pg		0.49	F	-	-	-	-	pg		pg		-	-
Vinyl chloride		µg/L		-	-	-	-	pg		pg		18		-	-	-	-	pg		pg		33	F
Xylene, m,p-		µg/L		-	-	-	-	pg		pg		1.4		-	-	-	-	pg		pg		-	-
Xylene, o-		µg/L		-	-	-	-	pg		pg		1.1	F	-	-	-	-	pg		pg		-	-
Total Volatile Organics[a]		µg/L	100	2		1.85								0.95		0.74							
SEMIVOLATILES																							
Benzoic Acid		µg/L				-	-	pg		pg		-	-			-	-	pg		pg		-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6			-	-	pg		pg		120	B			-	-	pg		pg		-	-
Dichlorobenzene, 1,4-		µg/L	75			-	-	pg		pg		190				-	-	pg		pg		170	
Dichlorophenol, 2,4-		µg/L	*			-	-	pg		pg		2.8	F			-	-	pg		pg		-	-
Methylnaphthalene, 2-		µg/L	*			-	-	pg		pg		140				-	-	pg		pg		130	
Naphthalene		µg/L	*			-	-	pg		pg		100				-	-	pg		pg		61	
Phenol		µg/L	*			2.4	F	pg		pg		8.5	F			4	F	pg		pg		4.3	F
Trichlorophenol, 2,4,5-		µg/L				-	-	pg		pg		-	-			-	-	pg		pg		-	-
Total Semivolatile Organics[a]		µg/L	100			2.4										4							
METALS																							
Aluminum		µg/L		-	-	-	-	31.1	F	-	-	30.1	F			-	-	91.6	F	-	-	-	-
Arsenic		µg/L		-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-
Barium		µg/L		27.6		29.3		26.3		28.8		25.6				25		29.5		27.5		26.8	
Beryllium		µg/L		0.24	F	0.88	F	-	-	1.11	F	-	-			-	-	-	-	-	-	-	-
Cadmium		µg/L		-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-
Calcium		µg/L		2250		2360		2010		2290		2470				2050		2240		2170		2670	
Chromium		µg/L		-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-
Cobalt		µg/L		-	-	7.2	F	-	-	-	-	-	-			6.1	F	6.03	F	5.86	F	-	-
Copper		µg/L	9	1.51	F	4.83	F	7.38	F	6.5	F	-	-			-	-	6.17	F	5.68	F	-	-
Iron		µg/L		1740		1430		1700		1600		3500				1340		1840		1520		6460	
Lead		µg/L		-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-
Magnesium		µg/L		1820		1920		1700		1930		1800				1720		1900		1840		2020	
Manganese		µg/L		188		193		174		200		208				190		202		210		332	
Mercury		µg/L		-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-
Molybdenum		µg/L		-	-	-	-	-	-	-	-	-	-			-	-	4.51	F	8.93	F	-	-
Nickel		µg/L		-	-	-	-	-	-	-	-	-	-			-	-	8.9	F	-	-	-	-
Potassium		µg/L		-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	1320	F
Selenium		µg/L		-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-
Silver		µg/L		-	-	-	-	-	-	6.06	F	-	-			-	-	-	-	5.39	F	-	-
Sodium		µg/L		5750		5780		6160		5800		5690				5630		5900		5470		4860	
Thallium		µg/L	2	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-
Vanadium		µg/L		-	-	-	-	-	-	4.35	F	-	-			-	-	-	-	-	-	-	-
Zinc		µg/L	120	11.7	F	25.5		46.2		19.2	F	29.2				13.9	F	62.3		18.3	F	49.5	

Table 1

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - September 2002
Andrews Air Force Base, Maryland

			Location Code:	SS01-EFF-PS		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-INF		SS01-EFF		SS01-INF		SS01-EFF	
			Associated Site:	SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
			Sample No:	1982		1981		1950A		1825		1826		1627		1626		1615		1616	
			Sample Date:	6-Sep-01		6-Sep-01		28-Feb-01		31-Jan-01		31-Jan-01		7-Jul-00		7-Jul-00		13-Mar-00		13-Mar-00	
			Sample Location within System	Post Air Stripper		Discharge		Discharge		Influent Port		Discharge		Influent Port		Discharge		Influent Port		Discharge	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																					
Acetone		µg/L		24		19	F	30		-	-	18	F	-	-	86	F	-	-	190	F
Benzene		µg/L		-	-	-	-	-	-	-	-	-	-	7.3		-	-	-	-	-	-
Butanone, 2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride		µg/L		-	-	-	-	-	-	-	-	-	-	5.7		-	-	-	-	-	-
Chlorobenzene		µg/L		-	-	-	-	-	-	-	-	-	-	5.8		-	-	-	-	-	-
Chloroform		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	-	-	-	-	-	-	220		-	-	780		-	-	-	-	-	-
Dichloroethene, 1,1-		µg/L		-	-	-	-	-	-	-	-	-	-	4.3		-	-	-	-	-	-
Dichloroethene, cis-1,2-		µg/L	70	0.25	F	0.22	F	-	-	500		-	-	2400		-	-	2100		-	-
Dichloroethene, trans-1,2-		µg/L		-	-	-	-	-	-	2.9	F	-	-	9.7		-	-	-	-	-	-
Ethylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	1.4		-	-	-	-	-	-
Isopropylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	0.34	F	-	-	-	-	-	-
Methylene chloride		µg/L		-	-	-	-	0.25	F	11	B	0.42	FB	66		0.38	F	-	-	-	-
Naphthalene		µg/L	*	4.1		2.7		6.9		76		3.9		1100		16		1100		19	
Propylbenzene, N-		µg/L		-	-	-	-	-	-	-	-	-	-	0.32	N	-	-	-	-	-	-
Toluene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorobenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene		µg/L	5	0.98	F	0.76	F	0.45	F	5800		-	-	18000		0.26	F	18000		-	-
Trimethylbenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	2.3		-	-	-	-	-	-
Trimethylbenzene, 1,3,5-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride		µg/L		-	-	-	-	-	-	17		-	-	52		-	-	-	-	-	-
Xylene, m,p-		µg/L		-	-	-	-	-	-	-	-	-	-	2.5		-	-	-	-	-	-
Xylene, o-		µg/L		-	-	-	-	-	-	-	-	-	-	2		-	-	-	-	-	-
Total Volatile Organics[a]		µg/L	100	1.23		0.98		0.45				-				0.26				-	
SEMIVOLATILES																					
Benzoic Acid		µg/L				-	-							-	-	-	-	-	-	-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6			-	-							-	-	-	-	-	-	***15***	
Dichlorobenzene, 1,4-		µg/L	75			-	-							240		-	-	250		-	-
Dichlorophenol, 2,4-		µg/L	*			-	-							5.4	F	5.5	F	4.8	F	4.5	F
Methylnaphthalene, 2-		µg/L	*			-	-							250		5.2	F	190		7.3	F
Naphthalene		µg/L	*			-	-							250		4.5	F	210		11	
Phenol		µg/L	*			4.4	F							28		29		22		17	
Trichlorophenol, 2,4,5-		µg/L				-	-							2.1	F	-	-	-	-	-	-
Total Semivolatile Organics[a]		µg/L	100			4.4										44.2				54.8	
METALS																					
Aluminum		µg/L				-	-							54.6	F	54.5	F				
Arsenic		µg/L				-	-							-	-	-	-				
Barium		µg/L				31.5								36.7		36.1					
Beryllium		µg/L				-	-							0.29	F	-	-				
Cadmium		µg/L				-	-							-	-	-	-				
Calcium		µg/L				2640								3070		2990					
Chromium		µg/L				22.5								-	-	-	-				
Cobalt		µg/L				-	-							7.85	F	-	-				
Copper		µg/L	9			-	-							14.5		3.66	F				
Iron		µg/L				1430								5020		4160					
Lead		µg/L				-	-							-	-	-	-				
Magnesium		µg/L				2190								2860		2700					
Manganese		µg/L				397								424		416					
Mercury		µg/L				-	-							-	-	-	-				
Molybdenum		µg/L				-	-							4.6	F	-	-				
Nickel		µg/L				15.5	F							-	-	-	-				
Potassium		µg/L				-	-							-	-	-	-				
Selenium		µg/L				-	-							-	-	-	-				
Silver		µg/L				-	-							-	-	-	-				
Sodium		µg/L				5320								7020		6860					
Thallium		µg/L	2			-	-							-	-	-	-				
Vanadium		µg/L				-	-							2.3		-	-				
Zinc		µg/L	120			***164***								62.4		25.9					

Table 1

System Influent and Effluent Analytical Results (Aqueous)
Brandywine DRMO (Site SS-01)
January 2000 - September 2002
Andrews Air Force Base, Maryland

			Location Code:	SS01-INF		SS01-EFF		SS01-EFF		SS01-INF		SS01-EFF		SS01-INF		SS01-EFF		SS01-INF		SS01-EFF	
			Associated Site:	SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01		SS01	
			Sample No:	1600		1601		1410		1407		1408		1404		1405		1401		1402	
			Sample Date:	14-Feb-00		14-Feb-00		3-Feb-00		24-Jan-00		24-Jan-00		17-Jan-00		17-Jan-00		10-Jan-00		10-Jan-00	
			Sample Location within System	Influent Port		Discharge		Discharge		Influent Port		Discharge		Influent Port		Discharge		Influent Port		Discharge	
Parameter	Fl	Units	Eff. Lim.	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ	Result	LQ
VOLATILES																					
Acetone		µg/L		-	-	87		86		-	-	230		2300		280		11		21	
Benzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Butanone, 2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	4.5	F	-	-	-	
Carbon tetrachloride		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2		-	-
Chloroform		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	190				-	-	540		-	-	610		-	-	40		-	-
Dichloroethene, 1,1-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.62	F	-	-
Dichloroethene, cis-1,2-		µg/L	70	1100		-	-	-	-	3900		-	-	4400				380		-	-
Dichloroethene, trans-1,2-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.1		-	-
Ethylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride		µg/L		44	B	1.4	B	1.7	B	-	-	-	-	350		-	-	1.4		-	-
Naphthalene		µg/L	*	120		8.6		8.7		450		14		750		16		20		4.9	
Propylbenzene, N-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorobenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene		µg/L	5	7000		-	-	0.39	F	29000		-	-	31000		-	-	1100		-	-
Trimethylbenzene, 1,2,4-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride		µg/L		30	F	-	-	-	-	130		-	-	78	F	-	-	17		-	-
Xylene, m,p-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene, o-		µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Volatile Organics[a]		µg/L	100			-		0.39				-				-				-	
SEMIVOLATILES																					
Benzoic Acid		µg/L		-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-Ethylhexyl)phthalate		µg/L	6	-	-	-	-			-	-	-	-	34		***13.3***		-	-	-	-
Dichlorobenzene, 1,4-		µg/L	75	120		-	-			389		-	-	226		-	-	31		-	-
Dichlorophenol, 2,4-		µg/L	*	-	-	-	-			13		10		6.74	F	7.95	F	-	-	-	-
Methylnaphthalene, 2-		µg/L	*	59		-	-			284		-	-	149		3.67	F	10		-	-
Naphthalene		µg/L	*	47		-	-			283		-	-	179		5.56	F	9.3	F	-	-
Phenol		µg/L	*	8.5	F	7.5	F			56.9		41.5		41.1		49.1		-	-	5.4	F
Trichlorophenol, 2,4,5-		µg/L		-	-	-	-			7.14	F	6.03	F	4.21	F	4.32	F	-	-	-	-
Total Semivolatile Organics[a]		µg/L	100			7.5						51.5				79.58				5.4	
METALS																					
Aluminum		µg/L		108	F	154	F			157	F	186	F	-	-	-	-	565		319	
Arsenic		µg/L		-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Barium		µg/L		32		28.9				45.3		46.1		48.9		48.7		20.6		23.3	
Beryllium		µg/L		-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		µg/L		-	-	-	-			-	-	-	-	-	-	2.21	F	-	-	-	
Calcium		µg/L		4130		6880				4000		3970		3430		3350		13800		13200	
Chromium		µg/L				5.08	F			-	-	-	-	-	-	-	-	-	-	-	-
Cobalt		µg/L				10	F			13.8	F	10.2	F	11.4	F	19	F	-	-	-	-
Copper		µg/L	9	-	-	-	-			9.09	F	***9.23***	F	9.45	F	6.46	F	7.35	F	7.47	F
Iron		µg/L		2690		2600				5250		6690		6240		5880		1370		2560	
Lead		µg/L		-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		µg/L		2970		3810				3310		3360		3530		3490		5520		5440	
Manganese		µg/L		476		328				474		475		716		716		96.7		193	
Mercury		µg/L		-	-	-	-			-	-	-	-	285	F	281	F	-	-	-	-
Molybdenum		µg/L		-	-	-	-			-	-	-	-	-	-	13.9	F	-	-	-	-
Nickel		µg/L		10.5	F	-	-			14	F	-	-	19	F	17.2	F	-	-	-	-
Potassium		µg/L				2030	F			-	-	-	-	-	-	-	-	3870	F	4010	F
Selenium		µg/L		-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Silver		µg/L		-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Sodium		µg/L		4360		4900				7160		7200		6720		6510		2260		2810	
Thallium		µg/L	2	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-
Vanadium		µg/L		-	-	-	-			-	-	-	-	-	-	4	F	-	-	-	-
Zinc		µg/L	120	48.3		45.3				161		102		82.3		55.3		104		116	

* No Specific Limit, total organics must not exceed 100 µg/L.
a - total volatile organics value only includes those analytes with established effluent limits (TCE, PCE, CIS-1,2- DCE, 1,4- DCB).
Eff. Lim. - Effluent Limit
LQ - laboratory qualifier
F - estimated value between reporting limit and detection limit
J - estimated value
B - detected in method blank
pg - Analyses performed by Prince Georges County; results not available for this spreadsheet.
Analyses are non-validated.
Shaded concentrations shown in bold italics denote exceedances of effluent limits.