

Land Management Administration • Oil Control Program

Gibson's Texaco #320
101 Marlboro Road
(Route 2 and Route 408)
Lothian, Anne Arundel County, Maryland
MDE Case No. 1991-0001-AA2

The Maryland Department of the Environment (MDE), Oil Control Program (OCP), continues to evaluate petroleum impact at the former Gibson's Texaco station located in Anne Arundel County. This commercial property is privately owned and has been leased for petroleum retail activities since the mid-1970s. The property is located in an area served by private drinking water wells.

In 1975, two (2) underground storage tanks (USTs) were installed: an 8,000-gallon gasoline tank and a 6,000-gallon gasoline tank. Three (3) additional UST systems were installed in 1983: a 10,000-gallon diesel tank, an 8,000-gallon gasoline tank, and a 2,000-gallon kerosene tank. These tanks were registered by Southern Maryland Oil, Inc. (SMO) in August 1991.

The Department became aware of environmental issues on site in October 1994, when petroleum impacted soils were discovered during the removal of the underground storage tanks. Groundwater sampling from the monitoring well network detected benzene at 2,600 parts per billion (ppb); toluene at 2,200 ppb; naphthalene at 200 ppb; and, methyl tertiary butyl ether (MTBE) at 35,000 ppb. The most recent groundwater sampling event of the monitoring well network in June 2008, detected benzene at 1,100 ppb, toluene at 570 ppb, ethylbenzene at 150 ppb, and MTBE at 1,700 ppb.

Benzene is generally found in petroleum products in combination with three other compounds (toluene, ethylbenzene, and xylene), all components of gasoline. Together these compounds are referred to a BTEX. The Maximum Contaminant Level (MCL) for benzene is 5 ppb; toluene is 1000 ppb; ethylbenzene is 700 ppb; xylene is 10,000 ppb. MTBE is a fuel additive commonly used to reduce carbon monoxide and ozone levels caused by auto emissions. There is no national regulatory standard for MTBE in drinking water. In 1997, the U.S. Environmental Protection Agency (EPA) issued an advisory for MTBE of 20 to 40 ppb, based on taste and odor. The State of Maryland has adopted an action level of 20 ppb for MTBE.

In October 1994, five (5) UST systems were installed: three (3) 10,000-gallon gasoline tanks, a 12,000-gallon diesel tank, and a 2,000-gallon kerosene tank. These replacement tanks comprised composite steel with fiberglass and the piping material comprising fiberglass reinforced plastic. The gasoline UST systems are equipped with Stage I and Stage II vapor recovery systems. The facility is operated by SMO.

Currently, there are thirteen (13) monitoring wells and four (4) monitoring pipes on-site. A drinking water supply well is located on-site, and the property is located in a mixed-use commercial/residential area served by private wells. Groundwater flow is easterly and depth to the first groundwater ranges between 9 and 21 feet. Sampling of the on-site supply well and select off-site drinking water supply wells at adjacent properties have been non-detect for petroleum constituents, all these wells draw from a deep groundwater resource. At this time the Department does not anticipate expanding the off-site sampling effort beyond sampling needed to ensure community safety.

Chronology:

- July 2, 1990. MDE-OCP on-site to observe removal of a 550-gallon steel waste oil tank.
 - Tank contained perforations.
 - No loss of product detected—tank pumped out monthly.

- Broken conduit with exposed wires and abandoned piping in contact with a bent active product line in the excavation.
 - The Department required the following items:
 - Repair broken conduit.
 - Remove and cap abandoned pipe away from active product line.
 - Replace active product line to achieve 1/8-inch per foot slope back to the tank.
 - Replace pea gravel that fell away from 10,000-gallon diesel UST.
 - Perform volumetric line testing after work is complete.
- May 27, 1991. MDE-OCP site visit. All work as required on 07/02/90 has been completed.
- July 26, 1993. MDE-OCP conducted a routine site inspection.
 - Multiple violations cited :
 - Lack of caps on monitoring pipes
 - No spill catch basins installed; No overflow protection
 - No drop tubes in the gasoline or diesel tanks
 - No leak detection from submersible pumps
 - Diesel pump and two unleaded pumps are weeping above the shear valves
 - Operator indicated that the facility would be completely renovated the end of 1993.
 - The Department required the following items:
 - Install pressure drop line leak detectors on both gasoline and submersible pumps.
 - Install and properly identify caps on monitoring pipes in diesel tank field.
 - Repair all leaks under the dispensers.
 - Install drop tube in diesel fill pipe.
 - Install permanent barrier around kerosene fill pipe to protect from traffic.
- August 5, 1993. MDE-OCP conducted an inspection based on compliance requirements from 07/26/93.
 - Pressure drop leak detectors installed.
 - Fill pipes to each UST identified to indicate product and size of tanks.
 - Caps installed and identified on the monitoring pipes in the diesel tank field.
 - Barrier replaced around the kerosene fill pipe.
 - Leaks repaired on the dispensers.
 - Drop tube in the diesel tank fill not installed.
- October 26-31, 1994. MDE-OCP on-site to observe tank removals.
 - A 2,000-gallon kerosene tank, two (2) 8,000-gallon gasoline tanks, a 6,000-gallon gasoline tank, and a 10,000-gallon diesel tank were removed.
 - No perforations observed in tanks or piping.
 - Impacted soil six feet below the gasoline tanks.
 - Soils impacted below the diesel tank.
 - The Department required the following items:
 - Install and properly construct three (3) monitoring wells.
 - Sample groundwater for BTEX, MTBE, and naphthalene from the three monitoring wells.
 - Submit soil disposal receipts.
- November 14, 1994. MDE-OCP on-site to observe the concrete pads above the two new tank field.
- November 21, 1994. MDE-OCP on-site to mark locations of monitoring wells 1, 2, and 3.
 - Liquid staining at the base of dispensers.
 - Severe leaking of the pump motor and assembly.
 - The Department required immediate shutdown of dispensers #1 and #2 until repaired. Cleanup gasoline.
- November 28, 1994. MDE-OCP on-site to inspect dispensers #1 and #2.

- No change in on-site conditions
 - The Department required immediate shutdown of dispenser until a repair is performed.
- January 20, 1995. MDE-OCP received *Report of Underground Storage Tank Removal and Preliminary Site Assessment—January 19, 1995*.
 - Five USTs removed to proper off-site disposal facility.
 - Approximately 1,355 tons of impacted soil removed.
 - Two soil samples collected below each tank below regulatory levels for petroleum constituents:
 - Additional investigation recommended to define potential impacts to groundwater.
 - Three (3) monitoring wells installed 12/1994.
 - MW-1: depth – 30 feet;
 - MW-2: depth – 25 feet;
 - MW-3: depth – 25 feet;
 - Groundwater well sampling event on 12/06/94.
Groundwater Benzene - 2,600 ppb; toluene - 2,200 ppb; MTBE - 35,000 ppb; naphthalene - 200 ppb
 - February 2, 1995. MDE-OCP issued a *Notice of Violation (NV-95-071)* to SMO, Inc. due to the detection of petroleum hydrocarbon contamination.
 - Complete hydrogeological study to define the extent of subsurface contamination.
 - Submit site map with directional flow of groundwater.
 - Sample the on-site drinking water supply well BTEX, MTBE, and naphthalene.
 - Sample monitoring wells on a quarterly basis for BTEX and MTBE.
 - June 14, 1995. MDE-OCP received *Hydrogeological Study and Subsurface Contamination Investigation Report—June 13, 1995*.
 - Ten borings advanced on-site to groundwater in 03/09/95.
 - MW4 and MW5 installed on 03/27/95
 - Supply well sampled 03/09/95– non-detect for petroleum constituents.
 - On-site water supply well (AA-88-0251): total depth – 330 feet;
 - July 21, 1995. MDE-OCP issued a *Notice of Violation (NV-96-007)* to SMO, Inc. the hydrogeological study conducted 03/09/95 indicated subsurface groundwater contamination migrated offsite.
 - Complete a hydrogeological study to define the *total* extent of subsurface contamination.
 - Submit corrective action plan (CAP) for the long term remediation including:
 - Pump test data
 - Monitoring well sampling plan
 - Sampling schedule for recovery system discharge to maintain a level of contamination below 100 ppb BTEX and 5ppb benzene.
 - August 31, 1995. MDE-OCP received *Monitoring Well Sampling Report—August 28, 1995*.
 - September 7, 1995. MDE-OCP observed off-site direct push event.
 - September 7, 1995. MDE-OCP met on-site with consultant to discuss off-site groundwater investigation and proposed location of groundwater monitoring wells.
 - Direct push investigation indicated LPH across Route 2 in two locations.
 - Consultant proposed installation of a monitoring well for recovery.
 - Discussed soil vapor extraction (SVE) for future remediation.
 - Due to road construction in the area, consultant requested 45 day extension to install the off-site well and submit a CAP.
 - October 2, 1995. MDE-OCP letter to SMO approving a 45-day extension to install off-site monitoring well and CAP submittal.

- Recommended the use of SVE in conjunction with a pump-and-treat remediation.
- October 31, 1995. MDE-OCP received *Hydrogeological Study—October 27, 1995*.
 - 22 piezometers installed between 08/21/95 and 09/07/95.
 - LPH observed in two borings.
- October 31, 1995. MDE-OCP observed the installation of an off-site monitoring well.
- November 27, 1995. MDE-OCP gauged off-site MW-6.
 - No LPH observed.
- March 25, 1996. MDE-OCP received *Hydrogeological Study and Corrective Action Plan—March 22, 1996*.
 - 32 borings installed to groundwater in two separate events.
 - 8-hour pump test complete 08/1995.
 - CAP proposed total fluid recovery in conjunction with SVE on MW-5 and MW-6 with plans to add pump-and-treat at a later date.
- May 8, 1996. MDE-OCP letter to SMO, Inc. Several issues need to be addressed before the Department completed the review of the CAP.
 - MW-6 not constructed for SVE only. Recommended pumping of groundwater in conjunction with SVE.
 - Data from pump test indicated no influence on MW-4, which had elevated petroleum constituents. The CAP does not address this area.
 - The Department may require recovery system to expand to this area.
 - CAP does not include information regarding pump equipment specifications or estimated vacuum that will be applied to wells.
 - Subsurface investigation indicated off-site subsurface contamination downgradient from MW-6.
 - Installing of permanent monitoring wells need to determine the radius of influence the recovery systems
 - All issues must be addressed in writing before approval of the CAP will be granted.
- May 20, 1996. MDE-OCP received *Monitoring Well Sampling Report—May 16, 1996*.
- May 31, 1996. MDE-OCP received *Reply to Corrective Action Plan Comments—May 29, 1996*, from SMO.
 - A pump will be installed in MW-6 to draw down water for recovery system.
 - Requested additional monitoring of MW-4 before implementing recovery system expansion.
 - Data projected beyond the eight hour pump test for MW-1 and MW-5 suggested MW-4 would be within the cones of depression and sufficient for remediation.
 - Specifications were supplied for pump and vacuum equipment.
 - SVE system is similar to ones used at other sites and system effectiveness will be measured from available monitoring pumps.
 - In a previous conversation, MDE-OCP agreed to the installation of a 2-inch monitoring well down gradient from MW-6. The property owner would be contacted to negotiate permission for the work.
- June 19, 1996. MDE-OCP approved CAP with inclusion of the 05/31/96 CAP addendum.
 - The Department will review one month of weekly water level measurements to determine if sufficient drawdown and capture zone extend beyond MW-4.
 - If SMO, Inc. cannot demonstrate a sufficient capture zone, MDE-OCP will require recovery system expansion to MW-4.
 - MDE-OCP approved proposal to install a two-inch diameter monitoring well downgradient of MW-6.
- June 27, 1996. MDE-OCP on-site to inspect pump-and-treat/SVE recovery system. System not operating.
- July 16, 1996. MDE-OCP on-site to inspect pump-and-treat/SVE recovery system.

- No indication that SVE connects to MW-6. SMO notified of findings 07/17/96.
- July 18, 1996. MDE-OCP received gauging data.
 - First two weeks of gauging data after installation of recovery system shows drawdown in MW-4.
- August 12, 1996. MDE-OCP received *June 1996 Monthly Summary Report—August 7, 1996*
 - Pump-and-treat/SVE recovery system placed into service on 06/27/96.
- August 13, 1996. MDE-OCP received *July 1996 Monthly Summary Report—August 12, 1996*.
 - Sampling event 07/1996 (see table).
- September 26, 1996. MDE-OCP received *August 1996 Monthly Summary Report—September 24, 1996*
 - Recovery system effluent exceeded 5 ppb discharge limit for benzene.
 - Monitoring wells sampled.
- October 15, 1996. MDE-OCP conducted routine site inspection and required the following:
 - Properly mark all fill pipes to indicate size of tank and type of product.
 - Clean all fill catch basins.
 - Conduct precision testing.
- October 15, 1996. MDE-OCP conducted routine site inspection.
 - Stage I vapor recover catch basin has water and product.
- October 18, 1996. MDE-OCP received *September 1996 Monthly Summary Report—October 17, 1996*
 - Replaced GAC filter due to BTEX breakthrough.
- October 25, 1996. MDE-OCP letter to SMO, Inc.
 - Submit precision testing data of the tank systems and Stage II vapor recovery system and proper marking of fill pipes for cost reimbursement.
 - SVE has not been installed in MW-5 and MW-6
 - Monitoring well down gradient to MW-6 has not been installed.
 - MTBE increased in MW-4 and may not be within the remediation system capture zone.
 - MDE-OCP must be notified of any remediation system discharge exceedance.
 - MDE-OCP reserved the right to revoke reimbursement allocation if the Department determines that applicant is disregarding the approved CAP.
 - Reimbursement application will not be processed until a written response is received from SMO, Inc. addressing these issues.
- November 19, 1996. MDE-OCP received letter from SMO consultant in response to the Department's 10/25/96 directive letter
 - Consultant has not received permit to install SVE from MDE Air Management Administration which was applied for on 05/17/96. SVE will be installed prior to receiving permit and started upon receipt of permit.
 - Additional monitoring well installation delayed due to scheduling conflicts and equipment repairs.
 - Disagreed with MDE-OCP's position that MW-4 is not within the capture zone of the remediation system.
 - Suggested gauging data shows significant drawdown and inclusion within the apparent radius of influence produced by the two pumping wells.
 - Remediation system GAC filter was replaced when an effluent sample detected 63 ppb benzene.
 - Re-sampling after filter replacement showed non-detectable concentrations.
 - Delays have prevented full implementation of the CAP .
- December 3, 1996. MDE-OCP received *October 1996 Monthly Summary Report—November 29, 1996 (see table)*

- December 9, 1996. MDE-OCP received *November 1996 Monthly Summary Report—December 5, 1996 (see table)*
 - Fourth quarter groundwater samples collected 11/04/96.
- January 14, 1997. MDE-OCP received *December 1996 Monthly Summary Report—January 10, 1997 (see table)*
- February 6, 1997. MDE-OCP inspected USTs and recovery system.
 - Catch basins for Stage I vapor recovery system contains liquid product.
 - Flex connectors from submerged pumps to product supply line at 90° angle.
 - SVE pump was running but air line conduit not air tight and has no vacuum to recovery wells.
 - PVC piping in piping distribution box is open.
 - Caps to recovery wells are not air tight where air and water lines connect.
- February 10, 1997. MDE-OCP received *January 1997 Monthly Summary Report—February 6, 1997 (see table)*
- February 25, 1997. MDE-OCP reviewed gauging and sampling data.
 - Correlations between data cannot be made due to sporadic events and two recovery wells not gauged.
 - Wells should each be gauged before each sampling event otherwise purging is invalid.
 - Recovery wells should also be gauged monthly.
 - MTBE increasing in MW-1 and MW-4.
- March 2, 1997. MDE-OCP received *SVE Repair Report—March 1997*.
 - All fittings at wells and pipe joints sealed.
- March 17, 1997. MDE-OCP received *February 1997 Monthly Summary Report—March 12, 1997 (see table)*
 - Quarterly groundwater samples collected on 02/1997.
- April 15, 1997. MDE-OCP received *March 1997 Monthly Summary Report—April 11, 1997 (see table)*
- April 22, 1997. MDE-OCP received letter of completed compliance activities.
 - Repaired and replaced all plunger assemblies in spill containers—spills basins tight.
 - Cleaned all dispensers, STP sumps, and checked seals.
 - Sealed SVE piping and wells.
 - Repainted manholes and lids.
 - Submitted tank tightness tests conducted on 11/15/06—all five UST tanks tight.
- May 12, 1997. MDE-OCP received *April 1997 Monthly Summary Report—May 8, 1997 (see table)*
- May 12, 1997. MDE-OCP met on-site with SMO to inspect recovery system.
 - SVE system not working properly due to poor piping construction—pipes are not air tight despite repairs.
 - Consultant will install new piping to MW-6 and uncover piping to MW-5.
 - Marked location well to be installed on 05/13/97 down gradient from MW-6.
 - The Department required to following:
 - Monthly vacuum readings on each well.
 - Determine the radius of influence of the SVE system.
 - Gauge recovery wells monthly.
 - Foam may not be used as a sealant due to incompatibility with petroleum and petroleum vapors and deterioration over time.
 - Connecting new SVE lines directly into wells and install liquid and airtight caps—ball valves should be installed on each well to control vacuum.
- May 13, 1997. MDE-OCP met on-site with consultant to install MW-7.

- June 23, 1997. MDE-OCP received *May 1997 Monthly Summary Report—June 18, 1997 (see table)*
 - Repairs made to SVE system including pipe replacement, resetting of junction manhole, and pulled, cleaned, and flushed pump discharge lines.
 - Sampling event 05/23/97.
- June 27, 1997. MDE-OCP inspected recovery system.
 - Air and water lines have been routed into the well cap and sealed with silicone.
 - MW-5 filled with expandable foam that has obstructed pipe.
 - No sampling ports present to check vacuum.
 - Low pressure on the effluent side of the pump.
- July 14, 1997. MDE-OCP received *June 1997 Monthly Summary Report—July 11, 1997 (see table)*
- July 18, 1997. MDE-OCP letter to SMO regarding outstanding issues discussed during the 07/14/97 on-site meeting. Reimbursement is being held at the enforcement review level until remedial activity is in substantial compliance with COMAR and the approved CAP. The Department required the following:
 - Review and adequately size vacuum extraction plumbing and pump to achieve maximum performance.
 - Install valves to each recovery well to control vacuum.
 - Install vacuum monitoring points at well head, in trunk line at the junction box, and the line near the vacuum pump.
 - Perform a SVE test to determine the actual radius of influence. Test must include all monitoring wells and soil vapor monitoring points.
 - Submit an updated site map to include MW-7 and numbering or identifying the SVE monitoring points.
 - Submit a site map indicating actual radius of influence of the groundwater pumping and SVE systems.
 - Sample the recovery system influent monthly for one quarter, then quarterly thereafter.
 - Sample all monitoring and recovery wells quarterly. Submit gauging data at the time of the sampling event.
 - Gauge the recovery wells for LPH and water level measurements on a monthly basis.
 - Indicate on gauging report depth of the recovery pump and intake from the top of the recovery well casing.
 - Submit on a quarterly basis a recovery system progress report.
- August 12, 1997. MDE-OCP inspected recovery system.
 - Vacuum lines to recovery system replaced.
 - Vacuum gauges installed on each recovery well and at pump.
 - Liquid and vapor tight well heads installed on recovery wells.
- August 21, 1997. MDE-OCP received *July 1997 Monthly Summary Report—August 19, 1997 (see table)*
 - SVE system modified with new well collars/ seals, gauges at wells and blower; added valves for air and water control.
 - Replaced pump in MW-6 with a 3-foot pump identical to the one in MW-5.
- September 18, 1997. MDE-OCP issued General Discharge Permit No. 98-OGR-6149 (MDG916194).
- September 25, 1997. MDE-OCP received *Notice of Intent for the Discharge of Treated Groundwater from Oil Contaminated Ground Water Sources to Surface or Ground Waters of the State.*
- September 23, 1997. MDE-OCP inspected recovery system and notified SMO of findings.
 - Pump and treat system not operating and SVE system operating.
 - Log indicated only 3,422 gallons of water were pumped through the system between June 1997 and September 1997.
- October 16, 1997. MDE-OCP received *September 1997 Monthly Summary Report—October 13, 1997*

- Quarterly groundwater samples collected on 09/09/97.
- October 27, 1997. MDE-OCP telephone call to SMO, Inc.
 - Have not received SVE test.
 - SVE vacuum levels decreased in September compared to August.
 - No SVE monitoring point readings received.
- November 24, 1997. MDE-OCP received *October 1997 Monthly Summary Report—November 17, 1997 (see table)*
 - Benzene discharge exceedance greater than 5 ppb detected--GAC filter changed.
 - SVE maintained approximately 3 inches (Hg) vacuum at blower and both wells.
- December 10, 1997. MDE-OCP received *November 1997 Monthly Summary Report—December 8, 1997 (see table)*
- January 12, 1998. MDE-OCP received *December 1998 Monthly Summary Report—January 8, 1998 (see table)*
 - Groundwater sampling event 12/1997.
- February 9, 1998. MDE-OCP received *SVE Pilot Test*.
 - Recommended collecting vapor samples from the SVE extraction wells and test points on a quarterly basis.
- February 10, 1998. MDE-OCP received *January 1998 Monthly Summary Report—February 6, 1998*
 - GAC filter changed due to breakthrough on 01/08/98.
- March 6, 1998. MDE-OCP received *February 1998 Monthly Summary Report—March 4, 1998 (see table)*
 - Benzene discharge exceedance greater than 5 ppb detected on 02/02/98.
 - Confirmatory sample showed discharge within exceedance limits.
- March 20, 1998. MDE-OCP internal e-mail.
 - No formal/written notification received for discharge exceedance reported verbally on 01/08/98.
- March 25, 1998. MDE-OCP received *Notice of Discharge Exceedance and Corrective Action* from SMO, Inc.
 - Contractor followed verbal notification with written notice of a benzene discharge exceedance from 01/08/98.
 - Changed GAC filter and collected effluent sample to verify system discharge was within permit limits.
- April 14, 1998. MDE-OCP received *March 1998 Monthly Summary Report—April 9, 1998 (see table)*.
- April 29, 1998. MDE-OCP *Notice of Violation (NV-98-106)* to SMO, Inc.
 - Violations of the recovery system's discharge permit.
 - MDE must be notified within 24 hrs and the system shut down until the reason for exceedance is determined.
- May 1, 1998. MDE-OCP *Notices of Violation (NV-98-106 and NV-98-103)* for Permit Nos. 98-OGR-6149 and 98-OGR-6148 respectively.
 - Requiring SMO future written documentation of any exceedance of the discharge permit.
 - Submit a written statement of how compliance will be met in the future.
- May 11, 1998. MDE-OCP received *April 1998 Monthly Summary Report—May 8, 1998 (see table)*.
 - System shut down due to leaking GAC drum. Drum replaced on 04/15/98.
 - Groundwater sampling event 04/1998.

- May 13, 1998. MDE-OCP received *Response to Notices of Violation* from SMO, Inc. consultant.
 - Contractor contacts permit administrator when discharge is detected.
 - Recovery system technicians instructed to perform necessary corrective actions (system shut down, GAC filter replacement, confirmatory sampling) within 24 hours of exceedance detection.
- June 11, 1998. MDE-OCP received *Response to Notices of Violation* from SMO, Inc. contractor.
 - MDE-OCP will receive discharge form within five days of exceedance detection.
- June 30, 1998. MDE-OCP received *May 1998 Monthly Summary Report—June 26, 1998 (see table)*.
- July 13, 1998. MDE-OCP received faxed *Notice of Discharge Exceedance and Corrective Action* .
 - Verbal notice for BTEX and benzene discharge exceedance.
 - Recovery system shutdown, contractor will install two GAC filters in a series. Effluent will be re-sampled for compliance.
- July 22, 1998. MDE-OCP received *June 1998 Monthly Summary Report—July 20, 1998*
- August 24, 1998. MDE-OCP conducted a site visit. Totalizer not operating.
- August 25, 1998. MDE-OCP received *July 1998 Monthly Summary Report—August 24, 1998*
 - Confirmatory effluent sample after two new GAC installations—samples below regulatory levels.
- September 11, 1998. MDE-OCP received *August 1998 Monthly Summary Report—September 11, 1998*
 - Pump-and-treat system shut down for repairs.
- October 2, 1998. MDE-OCP received *Well Gauging Report and Sample Results—September 29, 1998(see table)*
- October 15, 1998. MDE-OCP received *September 1998 Monthly Summary Report—October 13, 1998*
- November 12, 1998. MDE-OCP received faxed *Notice of Discharge Exceedance and Corrective Action—November 16, 1998*
 - Verbal notice for BTEX and benzene discharge exceedance from 11/11/98.
 - Recovery system shutdown, consultant will replace second polishing filter, and effluent will be re-sampled for compliance.
- November 25, 1998. MDE-OCP received *October 1998 Monthly Summary Report—November 20, 1998*
- December 16, 1998. MDE-OCP received *November 1998 Monthly Summary Report—December 14, 1998*
 - Groundwater sampling event 11/1998.
- January 12, 1999. MDE-OCP received *December 1998 Monthly Summary Report—January 8, 1998*
- January 15, 1999. MDE-OCP inspected recovery system.
 - Pump-and-treat system is down and GAC drums froze and expanded.
 - Inspector contacted consultant and drums will be replaced.
- February 8, 1999. MDE-OCP received faxed *Notice of Discharge Exceedance and Corrective Action—February 8, 1999*
 - Verbal notice for BTEX and benzene discharge exceedance from 02/08/99.
 - Confirmatory sample collected 02/08/99—result below regulatory levels 02/11/99.
 - Recovery system not shutdown citing result within analytical method margin of error.

- February 11, 1999. MDE-OCP received *January 1999 Monthly Summary Report—February 9, 1999*
 - Recovery system heater problem corrected.
- March 12, 1999. MDE-OCP received *February 1999 Monthly Summary Report—March 9, 1999*.
 - Benzene discharge exceedance greater than 5 ppb detected.
 - Groundwater sampling event 11/1998.
 - LPH detected in MW-2.
- April 9, 1999. MDE-OCP received *March 1999 Monthly Summary Report—April 7, 1999*.
- May 18, 1999. MDE-OCP received *April 1999 Monthly Summary Report—May 14, 1999*.
- June 3, 1999. MDE-OCP received monitoring well *Sampling Data Report—June 2, 1999*
 - Groundwater sampling event 05/1998.
- June 9, 1999. MDE-OCP received *May 1999 Monthly Summary Report—June 8, 1999*.
- July 8, 1999. MDE-OCP received *June 1999 Monthly Summary Report—July 8, 1999*
- August 8, 1998. MDE-OCP inspected recovery system. Pump-and-treat system not operational.
- August 12, 1999. MDE-OCP received *July 1999 Monthly Summary Report—August 10, 1999* from SMO, Inc.
 - Recovery system down due to overheating air compressor.
- September 3, 1999. MDE-OCP received monitoring well *Sampling Data Report—August 31, 1999 (see table)*
 - Groundwater sampling event 08/1999.
- September 15, 1999. MDE-OCP received *August 1999 Monthly Summary Report—September 13, 1999*
- October 12, 1999. MDE-OCP site visit to inspect recovery system.
 - Little air flow discharging from the VES carbon unit.
 - Signs of system overflow observed inside trailer.
 - MW-5 was gauged and bailed—product observed coating interface probe and bailer.
 - Water and gasoline in vapor recovery catch basins.
 - Several inches of gasoline in the fill pipe catch basins.
 - Detected strong gasoline odors in the sump of the center UST.
- October 13, 1999. MDE-OCP received *September 1999 Monthly Summary Report—October 8, 1999* .
- October 19, 1999. MDE-OCP follow-up inspection to 10/12/99 inspection.
 - Vacuum continued to run and low air flows observed.
 - Pump-and-treat system did not discharge during site visit.
 - Totalizer showed only 46 gallons discharged since 10/12/99.
 - Well cap on MW-5 improperly sealed
 - Vacuum gauge on MW-5 deteriorated and not working.
 - Vacuum gauge on MW-6 working but reads zero.
- November 13, 1999. MDE-OCP meeting with SMO, Inc and consultant.
 - Current pump-and-treat/SVE recovery system may not be sufficient to provide a cleanup of the dissolved hydrocarbon contamination.
 - The Department concerned about MTBE levels.
 - Submit new *CAP* to upgrade and improve recovery of dissolved contamination.

- Sample off-site drinking water supply wells at 5155 and 5087 Solomons Island Road.
 - Improve monthly reports to include additional information.
- November 8, 1999. MDE-OCP received *October 1999 Monthly Summary Report—November 8, 1999*
 - January 13, 2000. MDE-OCP received *November and December 1999 Monthly Summary Report—January 10, 1999*
 - Benzene discharge exceedance greater than 5 ppb detected 11/99.
 - Recovery system maintenance and repair.
 - February 2, 2000. MDE-OCP received *January 2000 Monthly Summary and Recovery System Report—January 31, 2000*
 - Consultant replaced flow meter, malfunctioning pump, air compressor belt, broken piping, added a second GAC carbon drum, cleared SVE vapor trap, and resealed well heads.
 - Consultant believes no further modifications are required to the recovery system.
 - Quarterly groundwater samples collected 11/1999.
 - On-site drinking water supply well sampled 11/1999 – non-detect for petroleum constituents.
 - Drinking water supply wells at 5155 and 5087 Solomon’s Island Road sampled 11/30/99 and 12/03/99 respectively – both non-detect for petroleum constituents.
 - February 29, 2000. MDE-OCP inspected Stage I and Stage II recovery systems.
 - Request line leak, pressure, and blockage test results from SMO, Inc.
 - March 8, 2000. MDE-OCP received *February 2000 Monthly Summary Report—March 7, 2000*.
 - Recovery system down due to frozen effluent pipe.
 - Groundwater sampling event 02/2000.
 - April 19, 2000. MDE-OCP received *1st Quarter Recovery System Report—April 17, 2000*
 - Recovery system down due to frozen pipes.
 - Cleaned pumps in MW-5 and MW-6.
 - April 19, 2000. MDE-OCP letter to SMO, Inc outlining the following concerns;
 - Discharge is contributing to high and increasing levels of MTBE despite remediation measures.
 - No containment sumps at the submersible pump or under the dispensers. Petroleum discharges that may occur during routine maintenance and repairs would go directly into the shallow groundwater.
 - A disconnected copper air eliminator tube was observed during February 2000 compliance inspection. These tubes were known to leak gasoline and discharge vapors.
 - MDE-OCP required the following:
 - Perform an in-depth investigation and testing of UST systems.
 - Submit report of findings including system testing, sampling, field notes, investigative reports, letters, memorandums, and any pertinent data or findings concerning the UST systems.
 - Install containment sumps under pump dispensers and on top of tanks at submersible pumps.
 - May 9, 2000. MDE-OCP letter to SMO.
 - Redevelop the monitoring well network.
 - Ensure that well’ are properly capped to prevent surface water runoff from entering the wells.
 - June 5, 2000. MDE-OCP received *Monitoring Well Gauging and Sampling Report—May 31, 2000*.
 - Groundwater sampling 05/2000 (*see table*).
 - June 28, 2000. MDE-OCP received *2nd Quarter Recovery System Report—June 23, 2000* .
 - System shutdown part of February due to influent line clogged with iron deposits.
 - Persistent problem with recovery system and iron deposits.

- Cleaned pumps in MW-5 and MW-6.
- July 24, 2000. MDE-OCP letter to SMO, Inc. Requested meeting to discuss remediation.
- August 4, 2000. MDE-OCP inspected remediation system and gauged monitoring wells.
 - Several wells needed new flush mount caps and top of casings need to be even with reference marks.
 - MW-5 out of service.
 - Compressor for pump-and-treat off and tank full alarm is on.
- August 18, 2000. MDE-OCP inspected remediation system.
 - Effluent air discharge from SVE system contains strong petroleum odors. SVE carbon filter has not been changed.
 - No vacuum readings collected from monitoring wells.
- August 21, 2000. MDE-OCP meeting with SMO and their consultant. The Dept. required the following.
 - Define the total extent of the dissolved petroleum plume in all directions, on- and off-site.
 - Recovery system is not addressing plume concentration levels and system efficiency cannot be assessed without influent data.
 - Vacuum levels low at vapor wells.
 - Redesign recovery system.
 - MDE working with ARMA to shut down Stage II vapor recovery and will notify SMO, Inc.
 - Wells caps need to be repaired.
 - Check hydrostatic test results and/or perform another test.
 - Submit a proposal for additional investigation to define the total extent of contamination.
 - Collect data to calculate vapor and dissolved phase petroleum hydrocarbon recovery.
- September 27, 2000. SMO, Inc. consultant faxed *Direct Push Proposal* to investigate the extent of on- and off-site petroleum contamination.
 - At least twenty (20) borings proposed.
- September 29, 2000. MDE-OCP faxed response to *Direct Push Proposal* response to SMO, Inc. consultant.
 - Five (5) additional borings approved.
- October 2 and 6, 2000. MDE-OCP on-site to observe direct push events.
- October 26, 2000. MDE-OCP received *3rd Quarter Recovery System Report—October 24, 2000*
 - Benzene discharge exceedance greater than 5 ppb detected 08/00—system shutdown, GAC replaced.
 - MTBE discharge exceedance greater than 20 ppb detected 09/00.
 - Historical gauging data table included.
- January 29, 2001. MDE-OCP inspected remediation system and gauged wells.
 - SVE system down and no flow observed for pump-and-treat.
 - Well caps broken on MW-2 and MW-3.
- January 29, 2001. MDE-OCP received *Recovery System and Hydrocarbon Assessment Report—January 26, 2001*
 - Twenty-eight (28) piezometers.
 - Groundwater sampling event 10/2000:
 - benzene 3,300 ppb
 - toluene 10,000 ppb
 - ethylbenzene 3,300 ppb
 - xylene 12,000 ppb
 - MTBE 150,000 ppb

- An additional MW to the pump-and-treat system recommended.
- January 29, 2001. MDE-OCP received letter from SMO committing to a qualified third party evaluation of remediation activities at this site.
- February 5, 2001. MDE-OCP received letter from SMO pertaining to conducting a *Third Party Evaluation* of the remediation system.
- February 26, 2001. MDE-OCP received *January 2001 Monthly Recovery System Performance Report—February 22, 2000*
 - System down at times during month due to frozen water lines.
 - Replaced frozen section of water line.
- March 7, 2001. MDE-OCP received *Third Party Review of Remediation System—March 7, 2000*
 - BTEX concentrations represent an overall decrease between 1995 and 2001.
 - Elevated MTBE concentrations detected in a larger area than elevated BTEX concentrations in 01/01 suggesting contaminant migration.
 - Equipment is operating within design specifications.
 - Iron fouling may have adversely affected the efficiency of the pump-and-treat system.
 - Remediation system beneficial in around the point of release and beneath Route 2 with less influence on the down gradient portion of the contaminant plume.
- April 6, 2001. MDE-OCP letter to SMO, Inc. regarding third party review findings.
 - The two-well recovery system is ineffectively controlling and remediating on- and off-site groundwater contamination substantiated by the third party remediation system review.
 - BTEX and MTBE still present at elevated levels.
 - Abatement of continued down gradient migration of MTBE and BTEX is critical.
 - Effective capture zone from the pumping wells not demonstrated.
 - A direct push boring within the radius of influence shows elevated levels of BTEX and MTBE although air samples show a less than 10 ppb detection limit in a nearby soil vapor gauging well. Unknown from sparse data provided whether low soil vapor concentrations are a result of actual site cleanup or if there are problems with the system.
 - No remediation system recovery tables showing days of operation, contaminant concentrations, pounds recovered per day, cumulative pounds, vacuum pressures, or flow rates at each well and system are provided as typical in quarterly reports, therefore system effectiveness cannot be evaluated.
 - Insufficient number of permanent wells off-site to adequately monitor contaminant levels.
 - The Department required:
 - Evaluate vertical and horizontal extent of contamination identified during direct push investigations to identify the zone of contamination to be targeted by remediation.
 - Submit plan to install additional monitoring wells.
 - Submit revised *CAP* that will demonstrate proposed remediation system upgrades or alternative system that will provide a capture zone which will prevent further migration of contamination and recover and reduce petroleum contamination from the subsurface.
 - If continuation of a pump-and-treat system is proposed, the discharge levels for MTBE must not exceed 20 ppb and BTEX must be within 5 ppb benzene and 100 ppb total BTEX.
 - Routine operation and monitoring data must be collected and included in quarterly reports to assess the effectiveness of the system.
 - Collect and analyze all influent and effluent discharge samples for MTBE in addition to BTEX on all future sampling.
 - Recommended a remediation specialist to evaluate and provide services to install a sufficient number of permanent wells, perform additional pilot testing, and submit a revised *CAP* to remediate the soil and groundwater on- and off-site to meet the Departments goals.

- May 18, 2001. MDE-OCP received *Proposal for Remediation System Testing and Upgrade—May 16, 2001*
 - Proposed to conduct pilot testing on MW-6 with MW-7 as drawdown measuring point.
 - Proposed six (6) new monitoring well installations: two (2) on-site and four (4) off-site.
 - Proposed a newer version of the pump-and-treat/SVE system with manifolds for each individual recover pump and SVE fitting.

- June 12, 2001. MDE-OCP meeting with SMO and their tenant.
 - Additional monitoring wells needed to conduct pump test. Pump test is premature.
 - Ten (10) additional monitoring well locations proposed by MDE.
 - Pumping test must include soil vapor pilot test.
 - Existing wells must be re-developed during installation of new wells.
 - Analyze samples for VOCs using EPA method 8260 to include TBA.
 - SMO will investigate conducting a tracer test to evaluate potential leaks of the UST system.
 - Remediation system will be upgraded in the interim of proposing a new upgraded remediation system—MDE strongly encouraged SMO, Inc. to evaluate other remediation alternatives to the pump-and-treat/SVE system.

- July 9, 2001. MDE-OCP observed monitoring wells installations.
 - Additional MWs in forested area to be installed at a later date.
 - Recovery system is down due to pressure switch failure.
 - New trailer unit will be mobilized.

- August 23, 2001. MDE-OCP received tank tightness test from SMO.
 - Diesel tank passed test 08/13/01.

- October 3, 2001. MDE-OCP observed pump test.
 - MW-12, MW-13, and MW-14 pumped dry and exhibiting slow recharge.
 - Pump test postponed.

- October 11, 2001. MDE-OCP letter to SMO, Inc.
 - Recent quarterly report, pilot testing data, and corrective action plan addendum not received.
 - Submit sampling schedule by 10/2001.
 - Requested meeting with SMO, Inc. and consultant.

- November 6, 2000. MDE-OCP received *Quarterly Report—November 2, 2000* .
 - Pilot test conducted on 10/18/01.
 - Incomplete sampling data for 10/2001

- January 30, 2002. MDE-OCP gauged monitoring wells.
 - New sumps installed.
 - New recovery trailer being built.

- April 8, 2002. MDE-OCP on-site to inspect remediation system.
 - New recovery trailer on-site; power supply pending.

- April 24, 2002. MDE-OCP received *1st Quarter 2002 Recovery System Report—April 24, 2002*
 - Groundwater sampling event 01/2002 (*see table*).

- June 19, 2002. MDE-OCP on-site to inspect remediation system.
 - Pump-and-treat is online and SVE will be operational in 4-6 weeks.

- July 15, 2002. MDE-OCP on-site to inspect remediation system. Pump-and-treat and SVE online operational

- August 5, 2002. MDE-OCP notification letter to SMO regarding *Quarterly Reports* not received since October 2001.
 - Submit schedule for quarterly report submittals.
 - *CAP Addendum* not yet submitted that describes the new recovery system configuration.
- July 15, 2002. MDE-OCP on-site to inspect remediation system. SVE is not operating.
- September 18, 2002. MDE-OCP on-site to inspect remediation system. SVE system not operational.
- October 4, 2002. MDE-OCP on-site to inspect remediation system.
 - Piping under Route 2 completed to wells across from recovery trailer.
 - System and blower start-up pending.
- October 9, 2002. MDE-OCP received *Corrective Action Modifications—October 9, 2002*
 - Sheen of LPH at depth of 8 to 10 ft near MW-18, MW-19, MW-23, and MW-24.
 - Proposed to add MW-4 to pump-and-treat system (MW-5 and MW-6 will remain on system).
 - Connect one 1-hp blower to extract vapors from MW-23 and MW-24.
 - Connect an additional 1-hp blower to extract vapors from MW-1 and MW-2.
- October 9, 2002. MDE-OCP received *2nd and 3rd Quarter 2002 Recovery System Report—October 9, 2002*
 - Groundwater sampling event 05/2002.
 - Pump installed in MW-4 in 07/02.
 - Benzene and MTBE discharge exceedance detected 08/02—system shutdown, repairs made.
- October 28, 2002. MDE-OCP on-site to inspect remediation system. SVE installed but not operating.
- November 12, 2002. MDE-OCP on-site to inspect remediation system. SVE online.
- December 30, 2002. MDE-OCP on-site to inspect remediation system. Remediation system operational..
- January 30, 2003. MDE-OCP received of-site drinking water sample results collected by MDE.
 - Sampling Event 01/06/03
 - 8 Bella Place (DW): non-detect for petroleum constituents.
- January 30, 2003. MDE-OCP letter to resident at 8 Bella Place regarding drinking water supply well sampling.
- February 10, 2003. MDE-OCP on-site to inspect remediation system. Recovery system operational.
- February 24, 2003. MDE-OCP received *4th Quarter 2002 Recovery System Report—February 10, 2002*
 - Groundwater sampling events 10/2002 and 12/2002 (*see table*).
 - Replaced GAC filter 10/2002.
 - SVE started 11/2002 and MW23 and MW24 added to the system.
- March 14, 2003. MDE-OCP on-site to inspect remediation system.
 - Pump-and-treat not functioning, SVE system operational.
- July 15, 2003. MDE-OCP on-site to inspect remediation system. System operational.
- April 14, 2003. MDE-OCP received *1st Quarter 2003 Recovery System Report—April 10, 2003* SMO, Inc.
 - Groundwater sampling event 02/03 and 03/03 (*see table*).
 - Replaced GAC filter and compressor belt replaced.
 - Continued problems with iron deposits.

- August 13, 2003. MDE-OCP received *2nd Quarter 2002 Recovery System Report—August 7, 2003*
 - Groundwater sampling event 06/2003 (*see table*).
 - Continued problems with iron deposits.
- September 22, 2003. MDE-OCP on-site to inspect remediation system. System operational.
- October 15, 2003. MDE-OCP conducted a routine compliance inspection. No outstanding issues found.
- February 24, 2004. MDE-OCP on-site to inspect remediation system.
 - Pump-and-treat system down, called consultant. SVE system operational.
- May 18, 2004. MDE-OCP on-site to inspect remediation system. SVE system not functioning. Pump and treat system operational.
- June 21, 2004. MDE-OCP received *3rd and 4th Quarter 2003 and 1st Quarter 2004 Recovery System Report—June 10, 2004*
 - Groundwater sampling events 06/2003, 12/2003, and 03/2004.
 - Pump-and-treat system down due to iron deposition from 10/04 to 12/04.
- July 30, 2004. MDE-OCP on-site to inspect remediation system. System operational.
- August 6, 2004. MDE-OCP received *2nd Quarter 2004 Recovery System Report—August 3, 2004* SMO, Inc.
 - Groundwater sampling event 06/2004 (*see table*).
 - Pump-and-treat system down due to iron deposition.
- October 22, 2004. MDE-OCP on-site to inspect remediation system.
 - System down, called consultant.
- November 12, 2004. MDE-OCP received *3rd Quarter 2004 Recovery System Report—November 10, 2004*
 - Planned to abandoned eleven (11) monitoring wells with MDE approval.
 - MW-4, MW-5, and MW-6 redeveloped 08/04.
 - Groundwater sampling event 09/2004 (*see table*).
 - Pump-and-treat system down 09/04 due to iron deposition. Trial recovery system shutdown requested.
- March 14, 2005. MDE-OCP received *4th Quarter 2004 Recovery System Report—March 10, 2005*
 - Abandoned eleven (11) monitoring wells with the consent of the Department 12/04.
 - Groundwater not sampled due to scheduling conflicts and weather.
- April 27, 2005. MDE-OCP received *1st Quarter 2005 Recovery System Report—March 10, 2005*
 - Groundwater sampling event 03/2005 (*see table*).
 - System on standby. SMO, Inc. requested to dismantle recovery system.
- October 5, 2005. MDE-OCP received *2nd Quarter 2005 Recovery System Report—October 3, 2005*
 - Groundwater sampling event 05/2005 (*see table*).
 - System on standby. SMO, Inc. requested to dismantle recovery system.
- January 5, 2006. MDE-OCP received *3rd Quarter 2005 Recovery System Report—January 4, 2006*
 - On-site drinking water supply and quarterly groundwater samples collected in 09/05.
 - System on standby. SMO, Inc. requested to dismantle recovery system.
- January 16, 2006. MDE-OCP received *4th Quarter 2005 Recovery System Report—January 16, 2006*
 - Groundwater sampling event 12/2005 (*see table*).

- Consultant plans to remove system from site for maintenance and refurbishment.
- May 22, 2006. MDE-OCP received *1st Quarter 2006 Recovery System Report—May 19, 2006*
 - Groundwater sampling event 04/2006 (*see table*).
 - System dismantled and removed from site.
- October 20, 2006. MDE-OCP received *2nd Quarter 2006 Recovery System Report—October 17, 2006*
 - Groundwater sampling event 07/2006 (*see table*).
- January 11, 2007. MDE-OCP received *3rd Quarter 2006 Recovery System Report—January 9, 2007*.
 - Groundwater sampling event 11/2006 (*see table*).
- February 22, 2007. MDE-OCP received *4th Quarter 2006 Recovery System Report—February 20, 2007*
 - Groundwater sampling event 01/2007 (*see table*).
- June 5, 2007. MDE-OCP received *1st Quarter 2007 Recovery System Report—May 31, 2007*
 - Groundwater sampling event 04/2007 (*see table*).
- July 12, 2007. MDE-OCP received *2nd Quarter 2007 Recovery System Report—July 9, 2007*
 - Groundwater sampling event 06/2007 (*see table*).
- January 3, 2008. MDE-OCP received *3rd Quarter 2007 Recovery System Report—December 31, 2007*
 - Groundwater sampling event 09/2007 (*see table*).
- January 4, 2008. MDE-OCP site reconnaissance.
- February 20, 2008. MDE-OCP received *4th Quarter 2007 Recovery System Report—February 18, 2008*
 - Groundwater sampling event 12/2007 (*see table*).
- April 23, 2008. MDE-OCP received *1st Quarter 2008 Recovery System Report—February 18, 2008*.
 - No groundwater samples collected due to logistical complications.
- August 15, 2008. MDE-OCP received *2nd Quarter 2008 Recovery System Report—August 6, 2008*
 - Groundwater sampling event 06/2008 (*see table*).
 - SMO, Inc. requested to abandon MW-1, MW-5, and MW-9.

Related Case:

- Gibson’s Texaco – 101 Marlboro Road MDE Case No. 6-1495-AA (*closed*)

Contacts:

- Maryland Department of the Environment, Oil Control Program (MDE-OCP) 410-537-3443

Future Updates:

- Future updates on this case investigation will be posted at www.mde.state.md.us
- [At the MDE home page, (select) Land, (select) Program, (select) Oil Control, (select) Remediation Sites].

Disclaimer

The intent of this fact sheet is to provide the reader a summary of site events as they are contained within documents available to MDE. To fully understand the site and surrounding environmental conditions, MDE recommends that the reader review the case file that is available at MDE through the Public Information Act. The inclusion of a person or company’s name within this fact sheet is for informational purposes only and should not be considered a conclusion by MDE on guilt, involvement in a wrongful act or contribution to environmental damage.

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb
MW-1 Total Depth: 30 feet Casing: 0-10 feet Screen: 10-30 feet (On-site)	12/06/94	1,300	1,200	340	3,600	12,000	naphthalene - 200
	07/14/95	500	170	410	660	65,000	---
	01/24/96	7,600	7,900	1,500	7,400	190,000	---
	07/30/96	900	520	ND	800	320,000	---
	11/04/96	1,500	1,100	300	1,800	250,000	---
	02/05/97	900	570	250	1,200	11,000	---
	05/23/97	140	180	ND	ND	63,000	---
	09/09/97	390	280	130	400	170,000	---
	12/16/97	500	140	270	260	14,000	---
	04/14/98	250	230	80	390	44,000	---
	08/27/98	140	30	90	89	35,000	---
	11/17/98	270	120	550	1,500	57,000	---
	02/16/99	460	220	1,200	2,600	50,000	---
	05/19/99	120	ND	350	180	220,000	---
	08/19/99	190	60	220	520	120,000	---
	11/30/99	150	140	65	340	9,100	---
	02/16/00	260	75	410	840	130,000	---
	05/10/00	160	100	ND	230	200,000	---
	10/05/00	ND	ND	ND	80	98,000	---
	01/01	ND	ND	ND	80	34,000	---
	06/30/01	500	ND	ND	ND	270,000	---
	10/11/01	130	58	100	320	110,000	---
	01/30/02	59	19	46	90	16,000	---
	05/23/02	100	16	100	170	17,000	naphthalene – 37
	10/17/02	280	130	110	480	11,000	naphthalene – 57
	12/19/02	10,000	10,000	10,000	30,000	180,000	---
	03/03/03	560	23	880	1,260	790	naphthalene – 580
	04/23/03	9	ND	6	ND	130	---
	08/06/03	ND	ND	ND	ND	110,000	---
	12/09/03	9	ND	7	13	83	---
	03/11/04	25	ND	12	28	23,000	---
	06/29/04	260	130	ND	350	27,000	---
	09/30/04	76	22	40	142	1,700	naphthalene – 110
	03/30/05	170	ND	130	170	36,000	---
05/05/05	600	100	ND	170	110,000	naphthalene – 1,100	
09/29/05	890	490	ND	900	6,600	---	
12/09/05	990	410	ND	880	40,000	---	
04/11/06	1,700	ND	ND	ND	240,000	---	
07/10/06	410	78	110	241	12,000	naphthalene – 30	
11/03/06	2,400	1,900	310	3,330	ND	naphthalene – 44	
01/12/07	1,200	430	120	371	1,900	naphthalene – 41	
04/19/07	1,000	310	100	570	900	naphthalene – 42	
06/12/07	2,500	2,500	85	1,310	ND	---	
09/18/07	5,000	5,400	300	2,740	1,700	---	
12/19/07	670	ND	ND	310	1,500	---	
06/19/08	1,100	570	ND	ND	920	---	

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb	
MW-2 Total Depth: 25 feet Casing: 0-5 feet Screen: 5-25 feet (On-site)	12/06/94	2,600	2,200	190	2,000	35,000	naphthalene – 60	
	07/14/95	7,200	5,900	430	3,800	65,000	---	
	01/24/96	14,000	10,000	1,500	9,000	78,000	---	
	07/30/96	15,000	20,000	3,100	14,000	39,000	---	
	11/04/96	25,000	25,000	3,000	15,000	30,000	---	
	02/05/97	16,000	24,000	8,000	28,000	36,000	---	
	05/23/97	8,600	12,000	2,000	9,800	19,000	---	
	09/09/97	11,000	4,800	2,400	9,300	26,000	---	
	12/16/97	10,000	12,000	2,400	11,000	23,000	---	
	04/14/98	8,500	3,500	2,000	10,000	11,000	---	
	08/27/98	7,400	2,700	2,600	9,500	26,000	---	
	11/17/98	Not sampled due to presence of LPH						
	02/16/99	Not sampled due to presence of LPH						
	05/19/99	1,900	1,200	2,700	20,000	11,000	---	
	08/19/99	3,200	280	2,400	11,000	12,000	---	
	11/30/99	1,700	690	2,400	20,000	5,500	---	
	02/16/00	1,700	490	2,000	14,000	3,300	---	
	05/10/00	1,000	450	1,600	12,000	3,100	---	
	10/05/00	910	280	1,800	12,000	2,200	---	
	01/01	1,000	110	1,400	7,500	6,400	---	
	06/30/01	710	67	820	4,900	2,000	naphthalene – 920	
	10/11/01	980	ND	1,200	6,200	5,100	---	
	01/30/02	800	31	840	2,300	4,100	naphthalene – 750	
	05/23/02	910	33	1,100	2,500	3,100	naphthalene – 770	
	10/17/02	620	28	710	2,000	710	naphthalene – 810	
	12/19/02	350	29	860	2,100	350	naphthalene – 590	
	03/03/03	570	23	890	1,270	790	naphthalene – 620	
	04/23/03	6	ND	6	ND	110	---	
	08/06/03	460	ND	720	1350	1,100	naphthalene – 670	
	12/09/03	130	ND	440	490	260	naphthalene – 470	
	03/11/04	480	14	870	600	550	naphthalene – 530	
	06/29/04	150	ND	580	338	290	naphthalene – 380	
	09/30/04	110	ND	600	542	250	naphthalene – 720	
	03/30/05	280	ND	670	173	460	naphthalene – 370	
05/05/05	250	9	670	169	670	naphthalene – 360		
09/29/05	180	ND	ND	890	430	naphthalene – 410		
12/09/05	160	ND	570	191	1,400	naphthalene – 370		
04/11/06	300	10	1,100	291	1,200	naphthalene – 480		
07/10/06	66	ND	50	42	580	naphthalene – 10		
11/03/06	210	ND	780	290	3,500	naphthalene – 390		
01/12/07	230	ND	530	150	3,400	naphthalene – 300		
04/19/07	230	ND	820	101	1,500	naphthalene – 280		
06/12/07	230	10	810	106	1,900	naphthalene – 340		
09/18/07	440	ND	1,500	250	3,700	naphthalene – 710		
12/19/07	210	ND	910	82	2,700	naphthalene – 470		
06/19/08	160	ND	150	ND	1,700	---		

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb
MW-3 Total Depth: 25 feet Casing: 0-5 feet Screen: 5-25 feet (On-site)	12/06/94	74	ND	ND	ND	1,500	---
	07/14/95	140	ND	ND	ND	1,700	---
	01/24/96	180	ND	66	200	3,000	---
	07/30/96	90	ND	ND	ND	1,100	---
	11/04/96	170	25	50	90	1,100	---
	02/05/97	160	ND	ND	92	910	---
	05/23/97	72	ND	ND	ND	1,000	---
	09/09/97	120	ND	ND	80	830	---
	12/16/97	120	ND	ND	110	1,000	---
	04/14/98	120	4	23	17	1,000	---
	08/27/98	28	3	5	8	540	---
	11/17/98	19	ND	19	30	1,100	---
	02/16/99	30	30	49	310	1,200	---
	05/19/99	16	ND	9	20	430	---
	08/19/99	6	ND	6	11	770	---
	11/30/99	13	ND	5	2	390	---
	02/16/00	5	4	41	120	510	---
	05/10/00	29	2	26	22	480	---
	10/05/00	51	9	75	260	410	---
	01/01	55	6	83	310	300	---
	06/30/01	41	43	ND	26	630	naphthalene – 44
	10/11/01	110	ND	24	19	1,900	---
	01/30/02	19	1	9	6	320	---
	05/23/02	3	ND	ND	ND	380	---
	10/17/02	4	ND	1	1	91	---
	12/19/02	ND	ND	ND	ND	430	---
	03/03/03	150	30	260	418	36,000	naphthalene –120
	04/23/03	170	ND	ND	ND	110,000	---
	08/06/03	ND	ND	ND	ND	350	---
	12/09/03	ND	ND	ND	ND	2	---
	03/11/04	310	11	610	447	490	naphthalene – 550
	06/29/04	3	ND	ND	ND	78	---
	09/30/04	4	ND	ND	ND	72	---
	03/30/05	9	1	14	32	87	naphthalene – 10
05/05/05	8	ND	3	8	56	---	
09/29/05	6	ND	ND	ND	54	---	
12/09/05	ND	ND	ND	ND	130	---	
04/11/06	ND	ND	ND	ND	75	---	
07/10/06	8	ND	ND	ND	140	---	
11/03/06	1	ND	ND	ND	90	---	
01/12/07	4	ND	ND	ND	67	---	
04/19/07	4	ND	ND	ND	44	---	
06/12/07	17	ND	ND	ND	220	---	
09/18/07	22	ND	ND	ND	99	---	
12/19/07	5	ND	ND	ND	43	---	
06/19/08	9	ND	ND	ND	33	---	

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb 1,2DCA – MCL at 5 ppb
MW-4 Total Depth: 25 feet Casing: 0-5 feet Screen: 5-25 feet (On-site)	04/12/95	4,900	15,000	2,100	8,700	35,000	naphthalene – 740
	07/14/95	4,000	11,000	2,200	8,000	78,000	---
	01/24/96	3,400	11,000	2,400	7,600	150,000	---
	07/30/96	2,000	5,200	1,900	5,000	180,000	---
	11/04/96	3,000	2,600	1,700	3,300	130,000	---
	02/05/97	2,200	5,000	2,000	5,500	12,000	---
	05/23/97	1,000	2,200	1,200	880	45,000	---
	09/09/97	2,500	3,700	2,700	5,200	52,000	---
	12/16/97	1,300	1,200	1,400	1,200	86,000	---
	04/14/98	170	100	22	270	4,200	---
	08/27/98	1,300	1,000	790	1,600	28,000	---
	11/17/98	3,400	1,600	1,200	2,100	36,000	---
	02/16/99	4,000	2,100	660	1,700	24,000	---
	05/19/99	1,300	2,500	1,300	3,800	21,000	---
	08/19/99	2,000	3,100	760	2,300	10,000	---
	11/30/99	1,300	3,000	1,400	3,800	19,000	---
	02/16/00	440	580	380	1,100	26,000	---
	05/10/00	320	590	500	1,400	64,000	---
	10/05/00	680	1,200	890	2,400	100,000	---
	01/01	1,400	3,500	2,400	8,000	96,000	---
	06/30/01	990	1,800	1,900	5,400	24,000	naphthalene – 660
	10/11/01	2,500	5,900	2,100	8,100	62,000	---
	01/30/02	3,200	1,100	980	2,900	20,000	naphthalene – 440 1,2-dichloroethane – 120
	05/23/02	3,800	2,600	1,600	5,200	54,000	naphthalene – 580
	10/17/02	420	140	700	2,000	11,000	naphthalene – 460
	12/19/02	2	ND	ND	ND	1,600	---
	03/03/03	140	27	230	379	37,000	naphthalene – 110
	04/23/03	ND	ND	ND	ND	6	---
	08/06/03	ND	ND	ND	600	3,200	---
	12/09/03	8	ND	7	13	83	---
	03/11/04	ND	ND	ND	ND	4	---
	06/29/04	130	82	160	263	2,300	naphthalene – 45
	09/30/04	380	190	1,100	2,380	6,800	naphthalene – 530
	03/30/05	23	4	26	33	720	naphthalene – 11
	05/05/05	310	480	710	1,080	8,700	naphthalene – 4,300
	09/29/05	790	990	840	2,640	12,000	naphthalene – 370
	12/09/05	390	260	420	1,210	9,000	naphthalene – 240
	04/11/06	1,000	3,800	2,000	7,200	17,000	naphthalene – 360
	07/10/06	740	3,200	1,900	7,000	13,000	naphthalene – 480
	11/03/06	1,100	200	1,000	3,190	12,000	---
01/12/07	1,400	230	800	2,070	13,000	naphthalene – 250	
04/19/07	14	2	27	48	240	naphthalene – 16	
06/12/07	850	160	1,200	1,530	6,600	naphthalene – 370	
09/18/07	1,800	660	2,000	4,120	20,000	naphthalene – 560	
12/19/07	1400	ND	1,300	2,200	12,000	---	
06/19/08	ND	ND	ND	ND	380	---	

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb	
MW-5 Total Depth: 25 feet Casing: 0-5 feet Screen: 5-25 feet (On-site)	04/12/95	20,000	27,000	2,600	13,000	78,000	naphthalene – 530	
	07/14/95	20,000	25,000	2,100	11,000	74,000	---	
	01/29/96	8,700	14,000	1,300	7,100	28,000	---	
	07/30/96	8,700	14,000	1,000	7,200	67,000	---	
	11/04/96	Not Sampled						
	02/05/97	Not Sampled						
	05/23/97	Not Sampled						
	09/09/97	3,100	16,000	1,400	29,000	160,000	---	
	12/16/97	4,600	6,000	670	7,200	44,000	---	
	04/14/98	3,800	8,100	770	5,900	20,000	---	
	08/27/98	1,600	2,000	1,300	11,000	46,000	---	
	11/17/98	1,500	370	530	3,300	56,000	---	
	02/16/99	240	33	5	26	23,000	---	
	05/19/99	20	ND	ND	190	5,700	---	
	08/19/99	30	ND	6	27	1,500	---	
	11/30/99	640	110	120	540	25,000	---	
	02/16/00	220	ND	29	110	8,400	---	
	05/10/00	850	110	370	2,400	43,000	---	
	10/05/00	120	210	670	530	2,500	---	
	01/01	1,200	24	ND	54	23,000	---	
	06/30/01	89	8	280	870	570	naphthalene – 130	
	10/11/01	150	ND	67	30	540	---	
	01/30/02	16	1	2	3	62	---	
	05/23/02	3	ND	ND	ND	2	---	
	10/17/02	420	9	23	58	1,400	chloromethane – 42	
	12/19/02	ND	ND	ND	ND	15	---	
	03/03/03	14	1	23	50	93	naphthalene – 11	
	04/23/03	6	ND	5	ND	100	---	
	08/06/03	28	ND	86	ND	280	naphthalene – 35	
	12/09/03	130	ND	410	450	270	naphthalene – 450	
	03/11/04	ND	ND	ND	ND	45,000	---	
	06/29/04	4	ND	ND	ND	13	---	
	09/30/04	ND	ND	ND	ND	6	---	
03/30/05	24	ND	ND	ND	3	---		
05/05/05	12	ND	1	ND	1	---		
09/29/05	81	ND	23	12	730	naphthalene – 25		
12/09/05	1,800	10	ND	23	42	naphthalene – 24		
04/11/06	2,300	ND	ND	13	87	---		
07/10/06	3,300	ND	ND	ND	48	---		
11/03/06	2,900	76	22	136	ND	naphthalene – 32		
01/12/07	6,900	ND	ND	ND	110	---		
04/19/07	71	ND	2	ND	21	---		
06/12/07	55	1	8	2	42	---		
09/18/07	580	ND	24	43	1,500	naphthalene – 82		
12/19/07	500	ND	ND	ND	150	---		
06/19/08	2	ND	ND	ND	ND	---		

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb	
MW-6 Total Depth: 25 feet Casing: 0-5 feet Screen: 5-25 feet (On-site)	01/24/96	5,500	ND	1,300	3,600	31,000	---	
	07/30/96	1,500	190	260	1,100	16,000	---	
	11/04/96	Not Sampled						
	02/05/97	Not Sampled						
	05/23/97	Not Sampled						
	09/09/97	100	ND	ND	290	17,000	---	
	12/16/97	250	ND	ND	500	24,000	---	
	04/14/98	41	18	23	79	11,000	---	
	08/27/98	480	70	130	260	26,000	---	
	11/17/98	480	13	ND	34	24,000	---	
	02/16/99	88	13	ND	25	19,000	---	
	05/19/99	5	ND	ND	2	3,100	---	
	08/19/99	110	4	5	19	4,800	---	
	11/30/99	12	ND	2	2	960	---	
	02/16/00	400	30	35	74	2,800	---	
	05/10/00	58	ND	6	44	2,400	---	
	10/05/00	26	ND	3	5	1,700	---	
	01/01	960	25	ND	42	25,000	---	
	06/30/01	650	ND	ND	ND	16,000	naphthalene – 500	
	10/11/01	14	ND	ND	3	5,500	---	
	01/30/02	9	1	ND	2	1,800	---	
	05/23/02	3	ND	ND	ND	1,100	---	
	10/17/02	86	ND	ND	ND	1,000	---	
	12/19/02	10,000	10,000	10,000	30,000	180,000	---	
	03/03/03	14	1	21	49	93	naphthalene – 10	
	04/23/03	ND	ND	ND	ND	4	---	
	08/06/03	7	ND	ND	ND	3,300	---	
	12/09/03	ND	ND	ND	ND	18	---	
	03/11/04	540	6	500	31	3,800	---	
	06/29/04	2	ND	ND	ND	1,300	---	
	09/30/04	1	ND	ND	1	11	---	
	03/30/05	ND	ND	ND	ND	9	---	
05/05/05	1	ND	ND	ND	13	---		
09/29/05	1	ND	ND	ND	41	---		
12/09/05	1	ND	ND	ND	77	---		
04/11/06	2	ND	ND	ND	61	---		
07/10/06	ND	ND	ND	ND	3	---		
11/03/06	1	ND	ND	ND	16	---		
01/12/07	5	ND	ND	ND	34	---		
04/19/07	ND	ND	ND	ND	4	---		
06/12/07	1	ND	ND	ND	5	---		
09/18/07	1	ND	ND	ND	33	---		
12/19/07	ND	ND	ND	ND	41	---		
06/19/08	ND	ND	ND	ND	2	---		

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb
MW-7 Total Depth: 25 feet Casing: 0-5 feet Screen: 5-25 feet (On-site)	05/23/97	3,800	ND	1,200	1,200	44,000	---
	09/09/97	2,200	140	1,700	900	38,000	---
	12/16/97	1,700	110	1,600	780	45,000	---
	04/14/98	1,500	97	1,400	790	23,000	---
	08/27/98	840	43	1,100	490	14,000	---
	11/17/98	1,000	12	870	ND	33,000	---
	02/16/99	75	7	5	110	4,500	---
	05/19/99	130	2	150	8	1,800	---
	08/19/99	130	ND	140	7	2,800	---
	11/30/99	2	ND	3	2	1,400	---
	02/16/00	250	ND	440	49	8,800	---
	05/11/00	250	6	440	34	10,000	---
	10/05/00	56	ND	80	ND	2,900	---
	01/2001	160	ND	130	10	8,300	---
	06/30/01	170	ND	170	ND	10,000	naphthalene – 220
	10/11/01	170	6	220	18	14,000	---
	01/30/02	160	ND	270	23	5,300	naphthalene – 49
	05/22/02	ND	ND	ND	ND	175	---
	10/17/02	ND	ND	ND	ND	100	---
	12/17/02	6	ND	ND	ND	3,800	---
	02/26/03	ND	ND	ND	ND	75	---
	04/23/03	ND	ND	ND	ND	ND	---
	08/06/03	ND	ND	ND	ND	1,600	---
	12/09/03	43	ND	ND	ND	310	---
	03/11/04	10	ND	6	ND	440	---
	06/29/04	24	ND	ND	4	1,600	---
	09/30/04	ND	ND	ND	ND	800	---
	03/30/05	11	ND	1	ND	330	---
	05/05/05	10	ND	3	ND	240	---
	09/29/05	28	ND	12	ND	480	---
	12/09/05	6	ND	5	4	100	---
	04/11/06	ND	ND	ND	ND	43	---
	07/10/06	ND	ND	ND	ND	4	---
11/03/06	ND	ND	ND	ND	10	---	
01/12/07	3	ND	ND	ND	110	---	
04/19/07	ND	ND	ND	ND	25	---	
06/12/07	18	ND	16	ND	230	---	
09/18/07	10	ND	3	ND	390	---	
12/19/07	ND	ND	ND	ND	130	---	
06/19/08	ND	ND	ND	ND	ND	---	

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb
MW-8 Well Construction Unknown (Off-site)	10/11/01	ND	ND	ND	ND	87	---
	01/30/02	ND	ND	ND	ND	14	---
	05/23/02	ND	ND	ND	ND	ND	---
	10/17/02	ND	ND	ND	ND	ND	---
	12/19/02	350	28	850	2,100	340	naphthalene – 600
	03/12/03	8	ND	8	2	6,300	---
	04/23/03	180	ND	ND	ND	110,000	---
	08/06/03	ND	ND	ND	ND	43	---
	12/09/03	150	15	520	560	280	naphthalene – 420
	03/11/04	330	11	640	480	550	naphthalene – 640
	06/29/04	ND	ND	ND	ND	ND	---
Abandoned							
W-9 Well Construction Unknown (On-site)	10/11/01	ND	ND	ND	ND	550	---
	01/30/02	ND	ND	ND	ND	440	---
	05/23/02	ND	ND	ND	ND	440	---
	10/17/02	17	5	25	21	3,300	---
	12/19/02	2	ND	ND	ND	1,600	---
	03/03/03	570	22	880	1,260	770	naphthalene – 600
	04/23/03	ND	ND	ND	ND	6	---
	08/06/03	ND	ND	ND	ND	8,100	---
	12/09/03	9	ND	7	13	78	---
	03/11/04	25	ND	ND	27	25,000	---
	06/29/04	4	ND	ND	ND	3,400	---
	09/30/04	ND	ND	ND	ND	1,900	naphthalene – 29
	03/30/05	ND	ND	ND	ND	3,900	---
	05/05/05	13	ND	ND	ND	1,400	---
	09/29/05	76	ND	ND	ND	1,700	---
	12/09/05	48	ND	ND	ND	900	---
	04/11/06	14	ND	ND	ND	670	---
	07/10/06	190	ND	ND	ND	5,100	---
	11/03/06	340	36	10	31	2,200	---
	01/12/07	610	41	10	26	2,500	---
04/19/07	380	31	18	52	1,900	---	
06/12/07	160	7	7	15	960	---	
09/18/07	310	13	4	15	1,000	---	
12/19/07	190	ND	ND	ND	620	---	
06/19/08	ND	ND	ND	ND	1,000	---	
MW-10 Well Construction Unknown (On-site)	10/11/01	ND	ND	ND	ND	470	---
	01/30/02	ND	ND	ND	ND	210	---
	05/23/02	ND	ND	ND	ND	130	---
	10/17/02	ND	ND	ND	ND	50	---
	12/19/02	ND	ND	ND	ND	46	---
	03/03/03	88	16	130	221	36,000	naphthalene – 70
	04/23/03	ND	ND	ND	ND	6	---
	08/06/03	ND	ND	ND	ND	ND	---
	12/09/03	ND	ND	ND	ND	3	---
	03/11/04	ND	ND	ND	ND	8	---
06/29/04	ND	ND	ND	ND	ND	---	
Abandoned							

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb
MW-11 Well Construction Unknown (Off-site)	10/11/01	ND	3	ND	ND	20	---
	01/30/02	36	ND	ND	ND	21	---
	05/23/02	ND	ND	ND	ND	2	---
	10/17/02	9	ND	ND	ND	22	---
	12/19/02	ND	ND	ND	ND	ND	---
	03/12/03	ND	ND	ND	ND	ND	---
	04/23/03	ND	ND	ND	ND	4	---
	08/06/03	ND	ND	ND	ND	24	---
	12/09/03	ND	ND	ND	ND	3	---
	03/11/04	ND	ND	ND	ND	4	---
	06/29/04	ND	ND	ND	ND	23	---
	09/30/04	ND	ND	ND	ND	16	---
	03/30/05	ND	ND	ND	ND	1	---
	05/05/05	ND	ND	ND	ND	3	---
	09/29/05	ND	ND	ND	ND	1	---
	12/09/05	ND	ND	ND	ND	ND	---
	04/11/06	ND	ND	ND	ND	ND	---
	07/10/06	ND	ND	ND	ND	ND	---
	11/03/06	ND	ND	ND	ND	2	---
	01/12/07	ND	ND	ND	ND	21	---
04/19/07	ND	ND	ND	ND	23	---	
06/12/07	ND	ND	ND	ND	64	---	
09/18/07	ND	ND	ND	ND	30	---	
12/19/07	ND	ND	ND	ND	12	---	
06/19/08	ND	ND	ND	ND	5	---	
MW-12 Well Construction Unknown (Off-site)	10/11/01	6	ND	ND	ND	4,500	1,2-dichloroethane – 8
	01/30/02	110	ND	ND	ND	750	chloromethane – 15
	05/22/02	ND	ND	ND	ND	23	---
	10/17/02	ND	ND	ND	ND	ND	---
	12/17/02	ND	ND	ND	ND	ND	---
	02/26/03	ND	ND	ND	ND	75	---
	04/23/03	ND	ND	ND	ND	ND	---
	08/06/03	530	ND	ND	ND	1,700	---
	12/09/03	ND	ND	ND	ND	220	---
	03/11/04	15	ND	9	ND	250	---
06/29/04	110	ND	ND	ND	1,700	---	
Abandoned							

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb
MW-13 Well Construction Unknown (Off-site)	10/11/01	ND	ND	ND	ND	3,100	----
	01/30/02	8	ND	ND	ND	1,900	----
	05/22/02	ND	ND	ND	ND	680	---
	10/17/02	10	ND	ND	ND	1,300	---
	12/17/02	ND	ND	ND	ND	48	---
	02/26/03	ND	ND	ND	ND	75	---
	04/23/03	ND	ND	ND	ND	46	---
	08/06/03	ND	ND	ND	ND	320	---
	12/09/03	ND	ND	ND	ND	220	---
	03/11/04	ND	ND	ND	ND	150	---
06/29/04	ND	ND	ND	ND	100	---	
Abandoned							
MW-14 Well Construction Unknown (Off-site)	10/11/01	ND	ND	ND	ND	46	---
	01/30/02	ND	ND	ND	ND	36	---
	05/22/02	ND	ND	ND	ND	27	---
	10/17/02	ND	ND	ND	ND	28	---
	12/17/02	ND	ND	ND	ND	32	---
	02/26/03	ND	ND	ND	ND	75	---
	04/23/03	ND	ND	ND	ND	430	---
	08/06/03	ND	ND	ND	ND	43	---
	12/09/03	ND	ND	ND	ND	210	---
	03/11/04	ND	ND	ND	ND	37	---
06/29/04	ND	ND	ND	ND	37	---	
Abandoned							
MW-15 Well Construction Unknown (Off-site)	10/11/01	150	1	1	ND	3,200	---
	01/30/02	2,200	72	140	90	10,000	---
	05/22/02	1,000	33	58	59	9,300	---
	10/17/02	1,800	71	360	170	6,700	naphthalene – 17
	12/17/02	2,200	120	790	350	11,000	---
	03/03/03	ND	ND	ND	ND	140	---
	04/23/03	ND	ND	ND	ND	48	---
	08/06/03	16	ND	ND	ND	310	---
	12/09/03	3	ND	2	2	190	---
	03/11/04	ND	ND	ND	ND	140	---
06/29/04	ND	ND	ND	ND	13	---	
Abandoned							
MW-16 Well Construction Unknown (Off-site)	10/11/01	110	ND	ND	4	140	naphthalene – 18
	01/30/02	ND	ND	ND	ND	1	---
	05/22/02	ND	ND	ND	ND	ND	---
	10/17/02	ND	ND	ND	ND	ND	---
	12/17/02	ND	ND	ND	ND	ND	---
	03/03/03	ND	ND	ND	ND	140	---
	04/23/03	ND	ND	ND	ND	ND	---
	08/06/03	ND	ND	ND	ND	ND	---
	12/09/03	3	ND	2	2	220	---
	03/11/04	ND	ND	ND	ND	150	---
06/29/04	2	ND	ND	ND	13	---	
Abandoned							

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb
MW-17 Well Construction Unknown (Off-site)	10/11/01	ND	ND	ND	ND	ND	---
	01/30/02	ND	ND	ND	ND	ND	---
	05/22/02	ND	ND	ND	ND	ND	---
	10/17/02	ND	ND	ND	ND	ND	---
	12/17/02	ND	ND	ND	ND	ND	---
	03/03/03	ND	ND	ND	ND	140	---
	04/23/03	880	27	110	36	4,300	---
	08/06/03	ND	ND	ND	ND	ND	---
	12/09/03	3	ND	2	2	220	---
	03/11/04	18	ND	ND	ND	170	---
06/29/04	ND	ND	ND	ND	ND	---	
Abandoned							
MW-18 Well Construction Unknown (Off-site)	10/11/01	57	99	660	830	370	naphthalene – 170
	01/30/02	140	740	1,000	2,300	230	naphthalene – 350
	05/22/02	500	180	670	970	130	naphthalene – 250
	10/17/02	1,200	450	810	1,900	1,100	naphthalene – 110
	12/17/02	ND	ND	ND	ND	43	---
	02/26/03	ND	ND	ND	ND	74	---
	04/23/03	1,000	30	130	41	4,300	---
	08/06/03	30	4	150	ND	100	---
	12/09/03	38	ND	ND	ND	310	---
	03/11/04	9	ND	ND	ND	1,400	---
	06/29/04	ND	ND	ND	ND	6	---
	09/30/04	6	7	130	40	26	---
	03/30/05	ND	3	ND	12	17	---
	05/05/05	ND	ND	2	2	7	---
	09/29/05	72	310	1,100	1,870	300	naphthalene – 230
	12/09/05	47	160	770	870	210	naphthalene – 190
	04/11/06	36	100	540	805	110	naphthalene – 79
	07/10/06	ND	ND	ND	ND	ND	---
	11/03/06	ND	ND	5	4	ND	---
	01/12/07	ND	ND	ND	ND	1	---
04/19/07	ND	ND	ND	ND	ND	---	
06/12/07	2	ND	11	ND	ND	---	
09/18/07	150	520	1,800	3,140	530	naphthalene – 390	
12/19/07	360	100	980	1,100	680	naphthalene – 140	
06/19/08	ND	ND	ND	ND	ND	---	
MW-19 Well Construction Unknown (Off-site)	10/11/01	25	ND	ND	ND	23,000	---
	01/30/02	19	ND	ND	ND	15,000	---
	05/22/02	23	ND	ND	ND	9,100	---
	10/17/02	14	ND	3	5	3,000	---
	12/17/02	390	220	570	1,000	480	naphthalene – 110
	02/26/03	3	ND	ND	ND	2,600	---
	04/23/03	18	ND	ND	ND	3,900	---
	08/06/03	91	ND	ND	ND	6,200	---
	12/09/03	31	ND	ND	ND	250	---
03/11/04	6	ND	4	ND	410	---	
06/29/04	79	ND	2	ND	2,900	---	

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb
MW-19 (cont) Well Construction Unknown (Off-site)	09/30/04	ND	ND	ND	ND	580	---
	03/30/05	ND	ND	ND	ND	81	---
	05/05/05	58	5	49	26	750	---
	09/29/05	59	ND	110	ND	1,100	---
	12/09/05	39	ND	46	ND	920	---
	04/11/06	12	ND	5	ND	730	---
	07/10/06	ND	ND	ND	ND	72	---
	11/03/06	14	ND	2	ND	1,100	---
	01/12/07	ND	ND	ND	ND	29	---
	04/19/07	ND	ND	ND	ND	32	---
	06/12/07	32	ND	34	ND	520	---
	09/18/07	21	ND	3	ND	550	---
	12/19/07	ND	ND	ND	ND	350	---
06/19/08	ND	ND	ND	ND	220	---	
MW-20 Well Construction Unknown (Off-site)	10/11/01	12	ND	ND	ND	330	---
	01/30/02	2	ND	ND	ND	160	---
	05/22/02	10	ND	ND	ND	83	---
	10/17/02	ND	ND	ND	1	53	---
	12/17/02	7	ND	ND	ND	59	---
	02/26/03	ND	ND	ND	ND	78	---
	04/23/03	630	19	81	29	4,400	---
	08/06/03	ND	ND	ND	ND	130	---
	12/09/03	2	ND	ND	ND	42	---
	03/11/04	19	ND	ND	ND	170	---
	06/29/04	5	ND	ND	ND	150	---
Abandoned							
MW-21 Well Construction Unknown (Off-site)	10/11/01	ND	ND	ND	ND	830	---
	01/30/02	ND	ND	ND	ND	550	----
	05/22/02	ND	ND	ND	ND	620	---
	10/17/02	ND	ND	ND	ND	970	---
	12/19/02	ND	ND	ND	ND	600	---
	02/26/03	ND	ND	ND	ND	79	---
	04/23/03	ND	ND	ND	ND	47	---
	08/06/03	ND	ND	ND	ND	ND	---
	12/09/03	2	ND	ND	ND	47	---
	03/11/04	ND	ND	ND	ND	36	---
	06/29/04	ND	ND	ND	ND	25	---
Abandoned							
MW-22 Well Construction Unknown (Off-site)	10/11/01	2,200	210	810	690	12,000	naphthalene – 24
	01/30/02	1,300	100	540	400	8,000	naphthalene – 15
	05/22/02	25	95	450	330	8,700	naphthalene – 15
	10/17/02	1,500	170	750	640	5,000	naphthalene – 120
	12/19/02	1,800	210	1,000	840	8,200	---
	02/26/03	ND	ND	ND	ND	73	---
	04/23/03	ND	ND	ND	ND	450	---
	08/06/03	530	ND	53	ND	4,300	---
	12/09/03	2	ND	ND	ND	47	---
	03/11/04	ND	ND	ND	ND	36	---
	06/29/04	1,400	42	410	241	6,200	naphthalene – 23
Abandoned							

Groundwater Sampling Results at Gibson's Texaco, Lothian, Anne Arundel County

Monitoring Wells	Sampling date	Benzene (MCL – 5 ppb)	Toluene (MCL – 700 ppb)	Ethylbenzene (MCL – 1000 ppb)	Xylene (MCL - 10,000ppb)	MTBE (Action Level – 20 ppb)	Other Petroleum Constituents (ppb) Naphthalene – 10 ppb
MW-23 Well Construction Unknown (Off-site)	10/11/01	790	c	2000	2000	42,000	---
	01/30/02	2,400	25	950	620	43,000	naphthalene – 160
	05/23/02	1,700	18	1,500	790	37,000	naphthalene – 240
	10/17/02	2,700	28	1,500	1,000	41,000	naphthalene – 230
	12/19/02	250	ND	ND	70	2,300	---
	03/03/03	14	1	22	50	94	naphthalene – 11
	04/23/03	ND	ND	ND	ND	420	---
	08/06/03	170	14	530	15	3,400	---
	12/09/03	ND	ND	ND	ND	20	---
	03/11/04	770	ND	750	ND	7,300	---
	06/29/04	100	ND	400	ND	3,200	---
	09/30/04	120	ND	570	300	3,900	naphthalene – 190
	03/30/05	460	11	630	357	2,500	naphthalene – 110
	05/05/05	570	11	630	215	2,900	naphthalene – 100
	09/29/05	190	11	760	567	3,000	naphthalene – 290
	12/09/05	1,300	18	860	524	2,600	naphthalene – 170
	04/11/06	450	11	1,200	846	ND	naphthalene – 120
	07/10/06	130	ND	570	272	1,100	naphthalene – 35
	11/03/06	670	18	860	1,168	1,500	naphthalene – 450
	01/12/07	300	ND	610	51	1,600	naphthalene – 16
	04/19/07	170	ND	310	ND	1,000	naphthalene – 14
	06/12/07	38	ND	25	ND	830	---
	09/18/07	480	7	290	146	1,000	naphthalene – 58
12/19/07	1,300	ND	410	ND	1,200	---	
06/19/08	ND	ND	ND	ND	ND	---	
MW-24 Well Construction Unknown (Off-site)	10/11/01	25	ND	ND	ND	23	naphthalene – 25
	01/30/02	2	ND	2	2	21	---
	05/23/02	25	ND	ND	ND	18	---
	10/17/02	ND	ND	ND	ND	18	---
	12/19/02	ND	ND	ND	ND	14	---
	03/03/03	ND	ND	ND	ND	140	---
	04/23/03	ND	ND	ND	ND	4	---
	08/06/03	ND	ND	ND	ND	9	---
	12/09/03	ND	ND	ND	ND	18	---
	03/11/04	820	ND	770	ND	7,500	---
	06/29/04	ND	ND	ND	ND	17	---
	09/30/04	ND	ND	ND	ND	18	---
	03/30/05	ND	ND	ND	ND	17	---
	05/05/05	ND	ND	ND	ND	9	---
	09/29/05	ND	ND	ND	ND	10	---
	12/09/05	ND	ND	ND	ND	8	---
	04/11/06	ND	ND	ND	ND	7	---
	07/10/06	ND	ND	ND	ND	12	---
	11/03/06	ND	ND	ND	ND	4	---
	01/12/07	ND	ND	ND	ND	5	---
04/19/07	ND	ND	ND	ND	3	---	
06/12/07	ND	ND	ND	ND	2	---	
09/18/07	ND	ND	ND	ND	3	---	
12/19/07	ND	ND	ND	ND	ND	---	
06/19/08	ND	ND	ND	ND	1	---	

Drinking Water Sampling in the Vicinity of Gibson's Texaco, Lothian, Anne Arundel County

Sample Location	Sampling Event	MTBE (Action Level 20 ppb)	Other Petroleum Constituents
MD Routes 2 and 408 (Former Texaco) Well Tag No. AA-88-0251 Depth: 330 ft; Casing: 0-310 ft Screen: 310-320 ft	03/09/95	ND	---
	11/30/99	ND	---
	09/29/06	ND	---
5155 Solomons Island Road Well Information Unknown	11/30/99	ND	---
5087 Solomons Island Road Well Information Unknown	12/03/99	ND	---
8 Bella Place Well Information Unknown	01/06/03	ND	---