

MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Land Management Administration • Oil Control Program

**Environmental Investigation
Boulden Company Property
48/50 Old Crystal Beach Road, Earleville
Cecil County, Maryland
MDE Case No. 1987-2553CE**

The Maryland Department of the Environment (MDE), Oil Control Program (OCP), continues to evaluate the impact of petroleum constituents identified at the former Boulden Company, Inc. property, located in Cecil County. The Boulden Company was formerly a petroleum bulk storage facility and transfer plant in the early 1980s. Currently, this property is utilized for residential purposes. There are no longer petroleum storage systems in operation.

In 1986, six steel gasoline underground storage tanks (USTs) were removed following tightness test failures: three 2,000-gallon, a 3,000-gallon, and two 4,000-gallon. Perforations were observed in the piping of the 3,000-gallon UST. One groundwater monitoring well was subsequently installed in 1987. Liquid-phase hydrocarbons (LPH or free product) was detected in the monitoring well and product was recovered via bailing from 1989 to 1990. In 1988, two 10,000-gallon steel USTs were abandoned in place at the facility. In January and February 1990, three additional monitoring wells were installed and a groundwater pump and treat system was activated. During the installation of the remediation system, three improperly abandoned USTs were identified and removed: two 550-gallon tanks and a 1,000-gallon tank. The remediation system operated from 1990 to 1998, recovering approximately 208 gallons of petroleum product.

Between 1999 and 2002, approximately 13 gallons of product was recovered from the monitoring wells via hand-bailing. Due to the continued presence of LPH in the monitoring wells, in 1999, the MDE required the installation of another petroleum recovery system. In November 2001, nine additional monitoring wells were installed. Subsequently, a dual phase remediation system began operation in 2002. Between 2004 and 2006, the dual-phase product and groundwater recovery system, comprising of soil vapor extraction and groundwater pumping, treated approximately 1,042,000 gallons of impacted groundwater. At this time only the SVE portion of the system remains in operation.

Sampling of the on-site drinking water supply well in 1988 detected MTBE at 3 parts per billion. A granular activated carbon (GAC) treatment system was installed on the well in 1996. Sampling of the pre-filtered drinking water in 1999 detected benzene at 110 parts per billion (ppb) and MTBE at 55 (ppb). In 2001, a new drinking water supply well was drilled on the property.

Currently, fourteen (14) monitoring wells and a drinking water supply well exist on-site. The former drinking water supply well was abandoned on September 25, 2008. Groundwater flow at the site is easterly, with depth to groundwater between fifteen and thirty feet. The site is located in a mixed-use commercial residential area served by private drinking water wells. To date, two off-site drinking water wells (one commercial property and one residential), located in close proximity to the subject property, have been sampled in conjunction with MDE *Case No. 87-2553CE*. Both wells have been non-detect for petroleum constituents. At this time, the MDE-OCP does not anticipate expanding the off-site sampling effort beyond sampling needed to ensure community safety.

Chronology

- 1986: UST removal.
 - November 21, 1986. MDE-OCP incident report, a UST failed testing. Lines to be excavated.
 - November 21, 1986. MDE-OCP site visit in response to UST testing failure and line excavation.
 - Cracks noted in piping, petroleum saturation visible;
 - Approximately 100 gallons of product had been removed from each UST on November 20, 1986;
 - Remaining product to be removed prior to UST removal;
 - Five USTs to be removed: two 2,000-gallon gasoline, two 4,000-gallon gasoline, and a 3,000-gallon gasoline;
 - Numerous perforations noted in both piping and the 3,000-gallon gasoline UST.

- November 24, 1986. MDE-OCP site visit to inspect six USTs, which had been removed. Perforations observed in the 3,000-gallon gasoline UST. MDE issued *Site Complaint No. SC-OV-87-086*, requiring:
 - Installation of groundwater monitoring wells to determine the extent of product lost;
 - Recovery of lost product; and
 - Proper disposal of petroleum-impacted material from the UST excavation.

- November 17, 1987. MDE-OCP site visit to inspect observation well. A skim of product observed.

- 1988: Groundwater monitoring.
 - March 16, 1988. MDE-OCP received sampling results for two 03/07/88 sampling events.
 - 26 Old Crystal Beach Road: non-detect for petroleum constituents.
 - 48 Crystal Beach Road (Boulden Company): MTBE - 3 ppb.
 - May 16, 1988. MDE-OCP site visit to discuss the presence of LPH in the monitoring well with the property owner. Well to be bailed on a weekly basis.
 - June 10, 1988. MDE-OCP site visit to inspect the monitoring wells. A sheen was noted in the well.
 - November 21, 1988. MDE-OCP *Notice of Compliance* to Boulden Inc. regarding *SC-OV-87-086*. Installation of the monitoring well met the requirements of the Site Complaint, however, the groundwater well was still required to be regularly monitored.

- 1989: Groundwater monitoring and soil gas survey.
 - January 6, 1989. MDE-OCP site visit to gauge monitoring well (*see Table*).
 - February 24, 1989. MDE-OCP site visit to gauge monitoring well (*see Table*). A drinking water well sample collected.
 - March 14, 1989. MDE-OCP issued *Notice of Violation NV-89-111* to Boulden Company due to the LPH in the monitoring well, and required:
 - Completion of a hydrogeological study to define the total extent of subsurface contamination;
 - Submittal of a plan for groundwater remediation; and
 - Submittal of monthly reports of groundwater recovery data.
 - April 19, 1989. MDE received 02/24/89 on-site drinking water sampling results. MTBE detected at 10 ppb.
 - MDE site visit to discuss the status of the subsurface investigation at the facility. A soil gas survey was to be conducted to aid in placement of a remediation system. The monitoring well was gauged (*see Table*).
 - June 22, 1989. MDE-OCP received *Recommendations for the Remediation of the Release of Gasoline from an Underground Storage Tank in Earleville, Maryland – June 1989*.
 - A soil gas survey conducted in May 1989;
 - Two potential petroleum releases identified: the former 3,000-gallon gasoline UST, and the former pump island location;
 - The extent of the contamination plume was not completely defined;
 - Groundwater flow northerly;
 - Recommendations included: continued sampling of the on-site drinking water supply wells and adjacent properties; installation of a pump and treat system; and installation of two pairs of nested monitoring wells for recovery efforts.
 - September 29, 1989. MDE-OCP site visit to gauge monitoring well. Petroleum odor noted in well, but no LPH observed.
 - October 25, 1989. MDE directive letter to Boulden Company, Inc., approving the proposal to install additional monitoring wells with modifications:
 - Monitoring well installation and use to be assessed by the Department; and
 - Air stripper discharge of the remediation system to be sampled weekly during the first month, then monthly thereafter.
 - November 6 and 17, 1989. MDE-OCP site visit to gauge monitoring well. A sheen was noted in the well.
 - November 24, 1989. MDE-OCP site visit to gauge monitoring well (*see Table*).

- 1990: Groundwater monitoring and remediation system installation.
 - January 12, 1990. MDE-OCP site visit to gauge monitoring well (*see Table*). A sorbent was placed in the well.
 - April 1990: MDE-OCP received *Site Assessment Report – April 1990*.

- Three additional monitoring wells were installed in January 1990;
 - Two 10,000-gallon steel USTs (a kerosene and a heating oil) were abandoned in place in 1988;
 - During monitoring well development, oil-contaminated water encountered in one of the 10,000-gallon USTs; all remaining water was subsequently removed from the USTs and filled with concrete;
 - November 7, 1989 and February 27, 1990 sampling events (*see Table*).
 - April 26, 1990. MDE-OCP received the results of the 02/20/90 sampling at the Boulder residence, located at the rear of the Boulder bulk terminal (*see Table*).
 - May 2, 1990. MDE-OCP received soil sample analyses for two samples collected during well drilling. No petroleum constituents detected above regulatory levels.
 - May 8, 1990. MDE-OCP site visit. An abandoned UST located in front of the garage door.
 - Depth from bottom of driveway to bottom of tank 57.5 inches.
 - UST found to contain 48 inches of water and no LPH.
 - May 24, 1990. MDE-OCP issued *Notice of Violation NV-90-194* to Boulden Company due to the presence of three improperly abandoned out-of-service USTs at the facility. The Department required:
 - Proper abandonment of the USTs;
 - Installation of a petroleum recovery system in MW-1 and MW-3; and
 - Monthly submittal of recovery data reports.
 - May 30, 1990. MDE-OCP on site for the removal of three improperly abandoned steel gasoline USTs: a 500-gallon, a 550-gallon, and a 1,000-gallon.
 - Perforations noted in the 550-gallon and 500-gallon USTs;
 - Approximately 18 cubic yards of petroleum-impacted soils were removed.
 - July 12, 1990. MDE-OCP site visit to check status of recovery system installation. The required recovery system had not begun installation.
 - July 25, 1990. MDE-OCP received notification that the on-site monitoring wells had been sampled.
 - July 26, 1990. MDE-OCP received groundwater sample results collected from the UST excavation on 05/30/90.
 - Ethylbenzene 3,000 ppb; xylene 16,000 ppb; naphthalene 13,000 ppb
 - September 27, 1990. MDE-OCP informed that recovery system start-up would occur on October 2, 1990. A pump test had been performed on MW-4. The recovery system was connected to MW-1 and MW-3.
 - October 4, 1990. MDE-OCP site visit to check the status of the remediation system. The system, connected to MW-1 and MW-3, was operational.
- 1991: Operation of a pump and treat groundwater remediation system.
- January 3, 1991. MDE-OCP site visit to check the status of the remediation system. The system was operational.
 - January 14, 1991. MDE-OCP granted verbal permission to sample air stripper discharge monthly.
 - January 18, 1991. MDE-OCP received *Pump Test Report – January 11, 1991*.
 - Four monitoring wells present on-site (MW-1 through MW-4);
 - Groundwater flow northwesterly;
 - Pumping tests conducted on MW-1, MW-3 and MW-4 in 09/90;
 - Pump tests indicated that MW-1 and MW-3 provided sufficient water for a pump-and-treat remediation system;
 - A remediation system installed on MW-1 and MW-3 and began operation on October 2, 1990.
 - February 12, 1991. MDE-OCP received *Installation Report of Remediation System for 48 Old Crystal Beach Road – January 31, 1991*.
 - Installation of the remediation system to MW-1 and MW-3 began August 27, 1990;
 - System start-up began October 2, 1990;
 - The system comprised pumping of groundwater into an oil/water separator, followed by an air-stripper, and a granulated activated carbon (GAC) prior to water discharge.
 - February 19, 1991. MDE-OCP received *Report on the Groundwater Analysis Results – February 1991*.
 - Effluent samples from the groundwater remediation system were non-detect for petroleum constituents;
 - Groundwater sampling events from 11/7/89 to 12/5/90 (*see Table*).
 - June 25, 1991. MDE-OCP received *Groundwater Sampling Update Report – June 1991*.
 - Effluent discharge sampling was conducted on a monthly basis;
 - Effluent samples were non-detect for petroleum constituents.

- September 4, 1991. MDE-OCP site visit to check status of remediation system. The system was operational.
 - October 21, 1991. MDE-OCP received *Groundwater Sampling Update Report, June 10, 1991 to September 9, 1991 – October 1991*.
 - June 10 and September 10, 1991 sampling events (*see Table*).
- 1992: Continued operation of the remediation system.
- February 1992. MDE-OCP received *Quarterly Groundwater Sampling Update Report, October 1991 to December 1991*.
 - Monthly sampling of the remediation system effluent continued to be non-detect for petroleum constituents;
 - October 29, 1991 sampling event (*see Table*).
 - April 1992. MDE-OCP received *Quarterly Groundwater Sampling Update Report, January 1992 to March 1992 – April 1992*.
 - Monthly sampling of the remediation system effluent continued to be non-detect for petroleum constituents;
 - March 1992 sampling events (*see Table*).
 - August 7, 1992. MDE-OCP received *Quarterly Sampling Report – July 21, 1992*.
 - Quarterly sampling of the remediation system had recently been approved;
 - Monthly sampling of the remediation system effluent continued to be non-detect for petroleum constituents;
 - LPH detected in MW-1;
 - April, May and June 1992 sampling events (*see Table*).
 - October 1992. MDE-OCP received *Quarterly Groundwater Sampling Update Report, July 1992 to September 1992 – October 1992*.
 - Quarterly sampling of the remediation system effluent continued to be non-detect for petroleum constituents.
- 1993: Continued operation of the remediation system.
- March 3, 1993. MDE-OCP received *Quarterly Groundwater Sampling Update Report, October 1992 to December 1992 – February 1993*.
 - Quarterly sampling of the remediation system effluent detected benzene at 3.2 ppb; the carbon in the GAC was scheduled to be replaced;
 - LPH detected in MW-1 and MW-3;
 - December 22, 1992 sampling event (*see Table*).
 - February 11, 1993. MDE-OCP site visit to check the status of the remediation system. The system was operational.
 - March 30, 1993. MDE-OCP site visit to check the status of the remediation system. The system was not operational.
 - July 6, 1993. MDE-OCP received *Quarterly Groundwater Sampling Update Report, January 1993 to March 1993 – June 1993*.
 - Quarterly sampling of the remediation system effluent was non-detect for petroleum constituents;
 - March 22, 1993 sampling event (*see Table*);
 - MW-4 not sampled due to presence of 3 in. LPH.
 - July 1993. MDE-OCP received *Quarterly Groundwater Sampling Update Report, April 1993 to June 1993 – July 1993*.
 - Quarterly sampling of the remediation system effluent continued to be non-detect for petroleum constituents;
 - June 30, 1993 sampling event (*see Table*);
 - MW-4 not sampled due to presence of 8 in. LPH;
 - LPH continued to be detected in MW-1 and MW-3, which were connected to the remediation system.
- 1994: Continued operation of the remediation system.
- May 23, 1994. MDE-OCP received *Quarterly Groundwater Sampling Update Report, February 1994 to April 1994 – May 1994*.
 - The system was not operating from September 1993 to March 1994, due to weather issues and equipment failure;
 - System restarted on 04/14/94;
 - LPH was detected in MW-4, and a passive bailer had been installed in the well;
 - Quarterly sampling of the remediation system effluent continued to be non-detect for petroleum constituents;

- April 14, 1994 sampling event (*see Table*);
 - Approximately 200 gallons of LPH had been removed since system start-up in October 1990.
 - August 31, 1994. MDE-OCP received *Quarterly Groundwater Sampling Update Report, May 1994 to July 1994*.
 - Quarterly sampling of the remediation system effluent continued to be non-detect for petroleum constituents;
 - LPH continued to be detected in MW-4; 6.5 gallons of LPH had been removed from the passive bailer;
 - July 28, 1994 sampling event (*see Table*);
 - Approximately 206.5 gallons of LPH had been removed since system start-up in October 1990.
 - October 27, 1994 MDE-OCP directive letter to Boulden Company, approving the modifications to the remediation system.
- 1995: Continued operation of the remediation system.
- June 8, 1995. MDE-OCP received *1995 First and Second Quarter Groundwater Sampling Update Report – May 15, 1995*.
 - A change in the sampling frequency of the was requested, from quarterly sampling to semi-annual sampling;
 - Due to the lowered water table, only the pump in MW-3 was functioning, the pump in MW-1 was inactive;
 - Quarterly sampling of the remediation system effluent continued to be non-detect for petroleum constituents;
 - LPH continued to be detected in MW-4; a passive bailer was present in this well;
 - February and April 1995 sampling events (*see Table*).
- 1996: Groundwater monitoring.
- February 1, 1996. MDE-OCP meeting with children of former property owner, who had recently passed away, to discuss current and future status of the case.
 - April 26, 1996. MDE-OCP directive letter approving modifications to the existing remediation system.
 - May 13, 1996. MDE-OCP received *1996 First Quarter Groundwater Sampling Update Report – May 1, 1996*.
 - Quarterly sampling of the remediation system effluent continued to be non-detect for petroleum constituents;
 - LPH continued to be detected in MW-4; a passive bailer was present in this well;
 - April 1996 sampling event (*see Table*).
 - Approximately 208.5 gallons of LPH had been removed since system start-up in October 1990.
 - June 20, 1996. MDE-OCP received the results of sampling conducted by CCHD (*see Table*).
 - October 22, 1996. MDE-OCP site visit to inspect a filtration system installed at 50 Old Crystal Beach Road.
- 1999: Continued groundwater monitoring.
- February 9, 1999. MDE-OCP site meeting with Boulden Company to discuss the current status of the case. Monitoring wells gauged (*see Table*).
 - The remediation system had been inoperable for approximately one year.
 - The Department required weekly handbailing of monitoring wells until the remediation system was restarted.
 - Drinking water samples collected from the on-site residence.
 - February 12, 1999. MDE-OCP received proposals for the remediation system.
 - March 1, 1999. MDE-OCP issued *Notice of Violation NV-90-194 Addendum*, due to the presence of LPH and the inactivity of the remediation system without Departmental notification or approval. The Department required:
 - Immediate handbailing of monitoring wells containing LPH;
 - Installation of a petroleum recovery system; and
 - Annual sampling of the groundwater monitoring wells.
 - March 8, 1999. MDE-OCP received sampling results from the 02/09/99 event (*see Table*).
 - July 19, 1999. MDE-OCP site visit to gauge the monitoring wells (*see Table*). Due to the presence of LPH in RW-3 and MW4, the Department required the use of sorbent wicks in those wells.
 - August 27, 1999. MDE-OCP site visit to gauge RW-3 and MW-4. Sorbent wicks removed. No LPH was visible on sorbents.
 - September 3, 1999. MDE-OCP site visit to place sorbent wicks in RW-3 and MW-4 .
 - September 13, 1999. MDE-OCP site visit to gauge monitoring wells.
 - RW-3 No measurable LPH; LPH at 4” on sorbent wick
 - MW-5 Sorbent wick completely saturated; wick was removed
 - September 28, 1999. MDE-OCP received *Remediation Design – September 27, 1999*. No design was attached.

- October 4 and 5, 1999. MDE-OCP site visit to gauge monitoring wells.
 - RW-3 Sorbent wick completely saturated and replaced
 - MW-4 LPH at 4 in on sorbent wick; petroleum odor noted
 - MW-5 No LPH observed on sorbent wick
 - October 12, 1999. MDE-OCP received *Remediation Design – October 6, 1999*, proposing the installation of a soil vapor extraction remediation system.
 - November 22 and December 6, 1999. MDE-OCP site visit to gauge monitoring wells. Saturated sorbents and petroleum odors were noted in MW-3 (RW-3) and MW-5.
 - December 13 and 23, 1999. MDE-OCP site visit to gauge MW-3 and MW-5 (*see Table*).
- 2000: Groundwater monitoring and bailing.
- January 11 and 12, 2000. MDE-OCP site visit to gauge MW-3 and MW-5 (*see Table*). The Department required sampling of the monitoring wells, the on-site drinking water supply well, and the drinking water supply well at St. Stephen's Church (14 Glebe Road).
 - June 1, 2000. MDE-OCP site visit to gauge the monitoring wells (*see Table*). Sorbents were comprised of nylon socks filled with sawdust.
 - August 9, 2000. MDE-OCP received a letter from Boulden Company, inquiring as to the status of the reimbursement for the facility.
 - September 18, 2000. MDE-OCP site visit to gauge monitoring wells (*see Table*). MW-4 and MW-5 had been hand-bailed, with bailed oil/water being stored on-site. Copies of the bailing logs to be provided to OCP. The Department required gauging and bailing of the monitoring wells every two weeks.
 - September 22, 2000. MDE-OCP received monitoring well bailing logs from 02/09/99 –09/14/00.
 - A total of 3.83 gallons LPH had been recovered from the monitoring wells.
- 2001: Groundwater monitoring and remediation system installation approval.
- May 4, 2001. MDE-OCP site visit following receipt of a report of gasoline odors detected during installation of a new well at 48 Old Crystal Beach Road. The new well was being installed adjacent to the existing drinking water well. The Department suggested obtaining copies of the well logs for the existing drinking water well and on-site monitoring wells, as well as installing double casing on the new drinking water supply well.
 - September 6, 2001. MDE-OCP site visit to observe the newly installed drinking water supply well, Tag No. CE-94-4447. The former drinking water well had not yet been properly abandoned. The monitoring wells were gauged (*see Table*).
 - September 17, 2001. MDE-OCP obtained drinking water supply well completion report from Cecil County Health Department (CECHD).
 - CE-94-4447 drilled 7/11/01 to 202 feet. Four in casing with a depth of 192 feet.
 - October 19 and 25, 2001. MDE site visit to gauge monitoring wells (*see Table*).
 - October 1, 2001. MDE-OCP received *Current Status Review – September 27, 2001*. The system design had been re-evaluated, and monitoring well installation had been contracted.
 - October 29, 2001. MDE-OCP site visit approving the remediation plan, contingent upon:
 - Submittal of a final *Corrective Action Plan* to MDE-OCP;
 - Abandonment of the former drinking water supply well;
 - Prior to abandonment of the former drinking water well, sampling of the well was to be conducted; and
 - Sampling of the new wells following installation.
 - November 5, 2001. MDE-OCP site visit to observe status of remediation system installation. A total of nine additional monitoring wells had been installed.
 - November 16, 2001. MDE-OCP directive letter to Boulden Inc. regarding approval of the proposed remediation system, requiring submittal of system design components and a *Corrective Action Plan*.
 - November 29, 2001. MDE-OCP site visit to observe removal of product holding tank from former pump and treat system. The Department required submittal of disposal receipts.
 - December 7 and 20, 2001. MDE-OCP site visit to observe status of remediation system installation. No additional components had been installed.

- 2002: Continued groundwater monitoring.
 - January 4 and February 11, 2002. MDE-OCP site visit to observe status of remediation system installation. No additional components had been installed.
 - March 1, 2002. MDE-OCP site visit to gauge MW-3 and MW-5 (*see Table*).
 - March 13, 2002. MDE-OCP requested submittal of the most recent monitoring well gauging and bailing logs.
 - April 2, 2002. MDE-OCP site visit to gauge the monitoring wells (*see Table*).
 - April 8, 2002. MDE-OCP received monitoring well bailing logs from 09/14/00 to 09/20/01.
 - 123 oz recovered; Cumulative total 3.94 gallons LPH removed.
 - April 29, 2002. MDE-OCP directive letter to Boulden Inc. requiring product recovery from the monitoring wells on a daily basis, due to the continued presence of LPH in the monitoring wells.
 - May 6, 2002. MDE-OCP received monitoring well bailing logs from 04/04/02 to 04/30/02. A request for decreasing bailing frequency from daily to monthly was made.
 - 87 ounces recovered. Cumulative total 4.51 gallons LPH removed.
 - July 2, 2002. MDE-OCP site visit to gauge monitoring wells (*see Table*).
 - August 21 and 22, 2002. MDE-OCP requested submittal of monitoring well gauging and bailing logs.
 - August 22, 2002. MDE-OCP received monitoring well bailing logs from 05/03/02 to 08/15/02. An increase in the amount of product recovered was noted.
 - 902 ounces recovered. Cumulative total 11.56 gallons LPH removed.
 - MDE site visit to observe monitoring well bailing.
 - 296 ounces recovered. Cumulative total 13.87 gallons LPH removed.
 - October 11, 2002. MDE-OCP requested submittal of the *Corrective Action Plan* required in the October 29, 2001 observation report and November 16, 2001 directive letter.
 - October 11, 2002. MDE-OCP received *Status Update – October 11, 2002*, outlining the details of the SVE system and a schedule for installation.
- 2004: MDE site visits.
 - September 21, 2004. MDE-OCP site visit to observe the status of the remediation system. The system was not operational. MW-3 was gauged (*see Table*).
 - October 26, 2004. MDE-OCP site visit to observe the status of the remediation system. The piping for the vapor recovery had not been connected.
 - December 27, 2004. MDE-OCP site visit to observe the status of the remediation system. The system was not operational.
- 2005: Remediation system in place.
 - February 7, 2005. MDE-OCP site visit to determine the status of the remediation system. According to the remediation log, approximately 33,507 gallons of liquid had been pumped to date.
 - February 15, 2005. MDE-OCP received *Remedial Update – February 10, 2005*.
 - A dual phase treatment system was installed and began operation 09/16/04;
 - Groundwater was pumped from one recovery well, EW-6;
 - LPH was detected in MW-3, MW-4, and MW-5;
 - A skimmer had been installed in MW-4;
 - A sampling event conducted on 12/17/02;
 - Groundwater flow to the east.
 - February 18, March 10, and April 20, 2005. MDE-OCP site visits.
 - Remedial system operational.
 - Approximately 647,974 gallons of water/product had been treated.
 - May 13, 2005. MDE-OCP site visit to determine the status of the remediation system. The system was operational.
 - The remediation log indicated that the first carbon had been replaced and that EW-6 had been developed.
 - Security fencing installed on the property.
 - July 20 and August 26, 2005. MDE-OCP site visits to determine the status of the remediation system.
 - The system was operational.
 - October 31, 2005. MDE-OCP site visit. The system was operational.

- The Department discussed the connection of an additional monitoring well to the system, and required sampling of the on-site drinking water supply well.
- December 7, 2005. MDE-OCP site visit to determine the status of the remediation system.
 - The system was not operational.
 - Approximately 964,962 gallons of water/product had been treated.
- 2006: Remediation system in place.
 - January 9, 2006. MDE-OCP site visit to determine the status of the remediation system.
 - The system was not operational due to leaking carbon drums.
 - Approximately 967,098 gallons of water/product had been treated.
 - February 1, 2006. MDE-OCP site visit to determine the status of the remediation system. The system was not operational.
 - February 2, 2006. MDE-OCP was informed that the carbon drums had been replaced and the system re-started.
 - April 11 and May 16, 2006. MDE-OCP site visits. The remediation system was not operational.
 - Approximately 1,042,942 gallons of water/product had been treated.
- February 29, 2008. MDE-OCP site visit to gauge the monitoring wells. The Department requested sampling data and a site status update from the consultant.
 - Twelve (12) of the fourteen (14) monitoring wells were located;
 - Six wells were currently connected to the remediation system;
 - The remediation system had been shut-down for the winter on November 30, 2007;
 - Two drinking water supply wells were located on-site: the former drinking water supply well (CE-81-0964), no longer utilized, and the current drinking water supply well (CE-94-4447).
- April 23, 2008. MDE-OCP directive letter to Boulden, Inc. requiring:
 - Quarterly gauging and sampling of the monitoring wells;
 - Semi-annual sampling of the on-site drinking water supply well;
 - Documentation of proper abandonment of the former drinking water supply well; and
 - A *Site Status Remediation Report*, including a *Site Conceptual Model* and detailed site history.
- July 28, 2008. MDE-OCP received response package from the responsible party (RP) Boulden Propane.
 - Copies of previous remediation reports from January 1, 2005 to April 23, 2008.
 - A history of remediation activity at the site.
 - Quarterly sampling reports (*see Table*).
- August 28, 2008. MDE-OCP issued Final Extension Granted to Boulden, Incorporated.
- October 16, 2008. MDE-OCP received *Site Status Remediation Report – October 15, 2008*.
 - Report includes a *Site Conceptual Model*.
 - Summary of site history.
 - Documentation of well abandonment activities for the former supply well at 48 Old Crystal Beach Road.
 - Groundwater sampling data 08/25/08 (*see Table*).
- October 24, 2008. MDE-OCP site visit.
 - Additional documentation of well abandonment.

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].

Contacts

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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 liability, involvement in a wrongful act or contribution to environmental damage.

Drinking Water Sampling Results Collected in the vicinity of the former Boulden Company Inc. property

Sample Location	Sample Date	Petroleum Constituents of Concern		
		Benzene (MCL - 5 ppb)	MTBE (20 ppb – action level)	Other petroleum constituents of concern <i>Ethylbenzene – MCL at 700 ppb Toluene – MCL at 1000 ppb Xylene – MCL at 10,000 ppb</i>
Transient Non-Community Supply Well				
48/50 Crystal Beach Road (Boulden Company, MDE Case No. 1987-2553CE) (70 feet) GAC confirmed installed 1996 New well drilled 7/11/01 (202 feet)	03/07/88	ND	3	ND
	02/24/89	ND	10	ND
	11/07/89	16	6.4	---
	02/02/90	17	28	---
	02/27/90	5.2	Not analyzed (NA)	---
	05/30/90	34	12	---
	06/29/90	26 (pre-filtration) 12 (post-filtration)	ND (pre-filtration) ND (post-filtration)	--- (pre-filtration) --- (post-filtration)
	06/04/96 02/09/99	10 110 (pre-filtration) ND (post-filtration)	45 55 (pre-filtration) ND (post-filtration)	--- (pre-filtration) ND (post-filtration)
Off-site Private Wells				
36 Old Crystal Beach Road (Price Residence)	03/07/88	ND	ND	ND
	06/04/96	ND	ND	ND
	05/10/06 (8260)	ND	ND	ND
St. Stephens Episcopal Church 14 Glebe Road	06/04/96	ND	ND	ND

Groundwater Sampling Data Collected at the former Boulden Company Inc. property

Well Information	Sample Dates	LPH (feet)	Benzene (MCL -5 ppb)	Toluene – MCL at 1000 ppb	Ethylbenzene – MCL at 700 ppb	Xylene – MCL at 10,000 ppb	MTBE (Action Level – 20 ppb)
Monitoring Wells							
MW-1 CE-81-2676 4 in. diameter well; borehole depth 32 ft. Screen depth 22 to 32 ft; casing depth 4 – 22 ft.	01/06/89	0.75 ft	Not analyzed	NA	NA	NA	NA
	02/24/89	2.14 ft	NA	NA	NA	NA	NA
	04/19/89	0.33 ft.	NA	NA	NA	NA	NA
	11/07/89	Skim	437	---	---	---	NA
	02/27/90	Skim	1,750	2,790	1,100	---	ND
	5/30/90	---	792	2,680	1,040	---	ND
	9/11/90	---	5,890	5,890	1,280	---	2,360
	10/12/90	---	12,200	13,200	1,100	---	NA
	10/19/90	---	12,500	14,900	1,060	---	NA
	10/24/90	---	13,000	14,100	1,270	---	NA
	10/29/90	---	12,900	14,500	1,090	---	NA
	11/5/90	---	9,240	10,200	---	---	NA
	12/5/90	---	6,380	7,770	---	---	NA
	6/10/91	---	7,020	9,680	824	---	NA
	9/10/91	---	3,800	5,850	---	---	NA
	10/29/91	---	3,600	7,350	1,270	---	NA
	12/12/91	---	2,860	4,320	---	---	NA
	1/2/92	---	1,760	6,260	1,400	---	NA
	2/4/92	---	3,490 ppb	7,150	1,020	---	NA
	3/20/92	---	3,720	18,800	3,520	25,900	NA
	4/24/92	---	2,280	13,600	2,580	14,000	NA
	5/26/92	---	890	4,460	890	11,500	NA
	6/19/92	---	7,900	33,400	6,800	48,400	NA
	12/22/92	---	444	2,510	---	---	NA
	3/22/93	---	4,740	11,500	1,710	13,000	NA
	6/30/93	---	4,380	10,800	738	---	NA
	4/14/94	---	9	---	---	---	NA
	7/28/94	---	222	---	---	---	NA
	2/2/95	---	Dry	Dry	Dry	Dry	Dry
	4/25/95	---	Dry	Dry	Dry	Dry	Dry
4/1/96	---	53	---	---	---	NA	
6/1/00	---	NA	NA	NA	NA	NA	
9/18/00	---	NA	NA	NA	NA	NA	
12/18/02	---	50	---	---	---	Not analyzed	
8/25/08	---	Not sampled	Not sampled	Not sampled	Not sampled	Not sampled	

Groundwater Sampling Data Collected at the former Boulden Company Inc. property

Well Information	Sample Dates	LPH (feet)	Benzene (MCL -5 ppb)	Toluene - MCL at 1000 ppb	Ethylbenzene - MCL at 700 ppb	Xylene - MCL at 10,000 ppb	MTBE (Action Level - 20 ppb)
Monitoring Wells							
MW-2 CE-88-1082 4 in. diameter well; borehole depth 34.5 ft. Screen depth 13 to 33 ft; casing depth 4 - 13 ft.	2/27/90	---	69	---	---	---	Not analyzed (NA)
	5/30/90	---	89	---	---	---	Non-detect (ND)
	10/4/90	---	NA	NA	NA	NA	NA
	9/11/90	---	146	---	---	---	ND
	10/4/90	---	NA	NA	NA	NA	NA
	12/12/91	---	28	---	---	---	NA
	3/9/92	---	10	---	---	---	NA
	6/22/92	---	4.2	---	---	---	NA
	12/22/92	---	2.1	---	---	---	NA
	3/22/93	---	13	---	---	---	NA
	6/30/93	---	11	---	---	---	NA
	4/14/94	---	3.7 (estimated)	---	---	---	NA
	7/28/94	---	21	---	---	---	NA
	2/2/95	---	7	---	---	---	NA
	4/25/95	---	8.4	---	---	---	NA
	4/1/96	---	7.3	---	---	---	NA
	7/19/99	---	NA	NA	NA	NA	NA
	9/18/00	---	NA	NA	NA	NA	NA
	10/19/01	Dry	Dry	Dry	Dry	Dry	Dry
4/2/02	---	NA	NA	NA	NA	NA	
8/25/08	---	ND	ND	ND	ND	ND	
MW-3 CE-88-1096 4 in. diameter well; borehole depth 35 ft. Screen depth 15 to 35 ft; casing depth 4 - 15 ft.	2/27/90	---	21,000	53,700	3,450	18,800	NA
	5/30/90	---	21,400	50,400	3,270	18,700	ND
	9/11/90	---	20,400	50,700	3,720	19,000	ND
	10/4/90	Skim	NA	NA	NA	NA	NA
	10/12/90	---	15,600	30,600	2,400	14,100	NA
	10/19/90	---	12,900	27,400	1,970	11,500	NA
	10/24/90	---	12,800	22,800	1,950	11,300	NA
	10/29/90	---	17,000	34,200	2,240	12,200	NA
	11/5/90	---	15,700	29,200	2,380	13,500	NA
	12/5/90	---	13,300	25,800	1,500 (estimated)	13,000	NA
	6/10/91	---	7,020	18,500	1,170	---	NA
	9/10/91	---	8,520	17,700	---	---	NA
	10/29/91	---	7,800	13,900	880	---	NA
	12/12/91	---	6,100	10,200	912	---	NA
	1/2/92	---	5,150	9,450	---	---	NA
	2/4/92	---	6,170	11,800	---	---	NA
	3/9/92	---	3,960	7,050	---	---	NA
	3/20/92	---	5,050	9,050	---	---	NA
	4/24/92	---	3,850	7,400	---	---	NA
	5/26/92	---	3,280	6,250	---	---	NA
	6/22/92	---	4,460	10,200	1,800	13,300	NA
	12/22/92	---	3,960	11,700	2,460	14,500	NA
	3/22/93	---	10,200	38,000	4,940	26,600	NA
	6/30/93	---	8,480	13,200	1,130	---	NA
	4/14/94	---	15,000	22,300	1,650	12,400	NA
	7/28/94	---	5,290	8,330	---	---	NA
	2/2/95	---	4,320	9,120	1,060	---	NA
	4/25/95	---	8,560	27,200	4,580	26,600	NA
	4/1/96	---	3,240	5,540	---	---	NA
	12/1999	Skim	NA	NA	NA	NA	NA
	1/11/00	Skim	NA	NA	NA	NA	NA
	6/1/00	---	NA	NA	NA	NA	NA
	9/18/00	---	NA	NA	NA	NA	NA
9/6/01	Skim	NA	NA	NA	NA	NA	
10/19/01	Skim	NA	NA	NA	NA	NA	
3/1/02	0.042 ft	NA	NA	NA	NA	NA	
7/2/02	0.33 ft	NA	NA	NA	NA	NA	
9/21/04	Skim	NA	NA	NA	NA	NA	
8/26/08	---	2,400	5,500	930	8,100	ND	

Groundwater Sampling Data Collected at the former Boulden Company Inc. property

Well Information	Sample Dates	LPH (feet)	Benzene (MCL -5 ppb)	Toluene - MCL at 1000 ppb	Ethylbenzene - MCL at 700 ppb	Xylene - MCL at 10,000 ppb	MTBE (Action Level - 20 ppb)
Monitoring Wells							
MW-4 CE-88-1083 4 in. diameter well; borehole depth 34 ft. Screen depth 13 to 33 ft; casing depth 4 - 13 ft.	2/27/90	---	1,200	---	---	---	113
	5/30/90	---	34	---	---	---	412
	9/11/90	---	1,170	---	---	---	340
	10/4/90	Skim	NA	NA	NA	NA	NA
	12/12/91	---	725	---	---	---	NA
	3/9/92	---	398	---	---	---	NA
	6/19/92	---	334	---	---	---	NA
	12/22/92	---	338	---	---	---	NA
	3/22/92	0.25 ft.	NA	NA	NA	NA	NA
	6/30/92	0.67	NA	NA	NA	NA	NA
	4/14/94	0.33 ft.	NA	NA	NA	NA	NA
	7/28/94	0.33 ft.	NA	NA	NA	NA	NA
	2/2/95	Skim	NA	NA	NA	NA	NA
	4/25/95	Skim	NA	NA	NA	NA	NA
	4/1/96	1.67 ft.	NA	NA	NA	NA	NA
	2/9/99	Skim	NA	NA	NA	NA	NA
	7/19/99	0.13 ft	NA	NA	NA	NA	NA
	6/1/00	0.083 ft	NA	NA	NA	NA	NA
	9/18/00	0.19 ft	NA	NA	NA	NA	NA
	10/19/01	0.42 ft	NA	NA	NA	NA	NA
4/2/02	0.5 ft	NA	NA	NA	NA	NA	
8/26/08	---	480	110	87	340	ND	
MW-5 CE-94-2614	2/9/99	Skim	NA	NA	NA	NA	NA
	7/19/99	---	NA	NA	NA	NA	NA
	12/1999	Skim	NA	NA	NA	NA	NA
	1/11/00	Skim	NA	NA	NA	NA	NA
	6/1/00	0.05 ft	NA	NA	NA	NA	NA
	9/18/00	0.375 ft	NA	NA	NA	NA	NA
	9/6/01	0.35 ft	NA	NA	NA	NA	NA
	10/19/01	0.10 ft	NA	NA	NA	NA	NA
	3/1/02	0.21 ft	NA	NA	NA	NA	NA
	4/2/02	0.5 ft	NA	NA	NA	NA	NA
7/2/02	0.042 ft	NA	NA	NA	NA	NA	
8/26/08	---	2,700	2,000	300	2,100	24	
Former Recovery wells							
RW-1	7/19/99	---	NA	NA	NA	NA	NA
RW-3	2/9/99	0.083 ft	NA	NA	NA	NA	NA
	7/19/99	0.063 ft	NA	NA	NA	NA	NA
EW-1 CE-94-4834	12/18/02	---	430	2,000	---	---	NA
	8/26/08	---	68	39	74	140	ND
EW-2	8/25/08	---	3,500	5,700	720	440	ND
EW-3 CE-94-4836	12/18/02	---	400	1,400	---	---	NA
	8/25/08	---	3,400	430	200	410	540
EW-4	8/25/08	---	9,300	8,000	710	3,400	2,300
EW-5 CE-94-4838	12/18/02	---	29,000	39,000	3,300	19,000	3,400
	8/26/08	---	12,000	24,000	2,400	14,000	27
EW-6 CE-94-4839	12/18/02	---	21,000	36,000	2,800	18,000	7,800
	11/23/04	---	10,500	5,600	---	---	1,700
	8/26/08	---	19,000	22,000	1,800	12,000	700
EW-7 CE-94-4840	12/18/02	---	240	6,000	---	---	2,620
	8/25/08	---	29	11	4.0	ND	2.4

Groundwater Sampling Data Collected at the former Boulden Company Inc. property

Well Information	Sample Dates	LPH (feet)	Benzene (MCL -5 ppb)	Toluene – MCL at 1000 ppb	Ethylbenzene – MCL at 700 ppb	Xylene – MCL at 10,000 ppb	MTBE (Action Level – 20 ppb)
Monitoring Wells							
EW-8	8/26/08	---	3,800	8,100	1,400	7,200	ND

**Dual Phase Remediation System Sampling Data Collected at the former Boulden Company Inc.
property**

Sample Source	Sample Dates	Estimated (Quarterly Average) Gallons of Flow Per Day	Benzene (MCL – 5 ppb)	Toluene – MCL at 1000 ppb	Ethylbenzene – MCL at 700 ppb	Xylene – MCL at 10,000 ppb	MTBE (Action Level – 20 ppb)
Discharge Monitoring							
Discharge wastewater	January 2005	1,493	ND	ND	ND	ND	ND
Discharge wastewater	February 2005	1,493	ND	ND	ND	ND	18
Discharge wastewater	March 2005	1,493	ND	ND	ND	ND	523
Discharge wastewater	April 2005	1,641	ND	ND	ND	ND	390
Discharge wastewater	May 2005	1,641	ND	ND	ND	ND	268
Discharge wastewater	June 2005	1,641	ND	ND	ND	ND	317
Post Carbon 1	July 2005	1,814	4.4	ND	ND	ND	180
Discharge wastewater	July 2005	1,814	ND	ND	ND	ND	220
Post Carbon 1	August 2005	1,814	ND	ND	ND	ND	160
Discharge wastewater	August 2005	1,814	ND	ND	ND	ND	ND
Post Carbon 1	September 2005	1,814	2.3	ND	ND	ND	150
Discharge wastewater	September 2005	1,814	ND	ND	ND	ND	160
Post Carbon 1	October 2005	1,719	ND	ND	ND	ND	140
Discharge wastewater	October 2005	1,719	ND	ND	ND	ND	ND
Post Carbon 1	November 2005	1,719	8.6	5.0	ND	ND	80
Discharge wastewater	November 2005	1,719	ND	ND	ND	ND	110
Post Carbon 1	December 2005	1,719	ND	ND	ND	ND	116
Discharge wastewater	December 2005	1,719	ND	ND	ND	ND	1
Post Carbon 1	January 2006	998	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Discharge wastewater	January 2006	998	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Post Carbon 1	February 2006	998	---	---	---	---	---
Discharge wastewater	February 2006	998	ND	ND	ND	ND	ND
Post Carbon 1	March 2006	998	---	---	---	---	---
Discharge wastewater	March 2006	998	ND	ND	ND	ND	2
Post Carbon 1	April 2006	464	ND	ND	ND	ND	95
Discharge wastewater	April 2006	464	ND	ND	ND	ND	2
Post Carbon 1	May 2006	464	ND	1.0	ND	ND	45
Discharge wastewater	May 2006	464	ND	ND	ND	ND	5
Post Carbon 1	June 2006	464	42	26	ND	26	146
Discharge wastewater	June 2006	464	3	5	ND	ND	51

Dual Phase Remediation System Sampling Data Collected at the former Boulden Company Inc. property

Sample Source	Sample Dates	Estimated (Quarterly Average) Gallons of Flow Per Day	Benzene (MCL – 5 ppb)	Toluene – MCL at 1000 ppb	Ethylbenzene – MCL at 700 ppb	Xylene – MCL at 10,000 ppb	MTBE (Action Level – 20 ppb)
Discharge Monitoring							
Post Carbon 1	July 2006	452	---	---	---	---	---
Discharge wastewater	July 2006	452	8	10	ND	6	3
Post Carbon 1	August 2006	452	---	---	---	---	---
Discharge wastewater	August 2006	452	3	6	ND	3	ND
Post Carbon 1	September 2006	452	---	---	---	---	---
Discharge wastewater	September 2006	452	ND	ND	ND	ND	ND
Post Carbon 1	October 2006	1,158	---	---	---	---	---
Discharge wastewater	October 2006	1,158	ND	ND	ND	ND	16
Post Carbon 1	November 2006	1,158	---	---	---	---	---
Discharge wastewater	November 2006	1,158	ND	ND	ND	ND	24
Post Carbon 1	December 2006	1,158	---	---	---	---	---
Discharge wastewater	December 2006	1,158	ND	2	ND	1	16
Post Carbon 1	January 2007	902	ND	1	ND	1	37
Discharge wastewater	January 2007	902	ND	ND	ND	ND	ND
Post Carbon 1	February 2007	902	3	4	ND	6	37
Discharge wastewater	February 2007	902	ND	2	ND	5	17
Post Carbon 1	March 2007	902	ND	ND	ND	ND	10
Discharge wastewater	March 2007	902	ND	ND	ND	ND	ND
Post Carbon 1	April 2007	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Discharge wastewater	April 2007	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Post Carbon 1	May 2007	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Discharge wastewater	May 2007	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Post Carbon 1	June 2007	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Discharge wastewater	June 2007	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Post Carbon 1	July 2007	931	1	1	ND	1	8
Discharge wastewater	July 2007	931	ND	ND	ND	ND	ND
Post Carbon 1	August 2007	931	ND	ND	ND	ND	16
Discharge wastewater	August 2007	931	ND	ND	ND	ND	ND
Post Carbon 1	September 2007	931	ND	ND	ND	ND	2
Discharge wastewater	September 2007	931	ND	ND	ND	ND	ND

Dual Phase Remediation System Sampling Data Collected at the former Boulden Company Inc. property

Sample Source	Sample Dates	Estimated (Quarterly Average) Gallons of Flow Per Day	Benzene (MCL – 5 ppb)	Toluene – MCL at 1000 ppb	Ethylbenzene – MCL at 700 ppb	Xylene – MCL at 10,000 ppb	MTBE (Action Level – 20 ppb)
Discharge Monitoring							
Post Carbon 1	October 2007	374	6	7	ND	ND	31
Discharge wastewater	October 2007	374	ND	ND	ND	ND	10
Post Carbon 1	November 2007	374	1	1	ND	3	7
Discharge wastewater	November 2007	374	ND	ND	ND	2	5
Post Carbon 1	December 2007	374	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Discharge wastewater	December 2007	374	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Post Carbon 1	January 2008	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Discharge wastewater	January 2008	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Post Carbon 1	February 2008	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Discharge wastewater	February 2008	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Post Carbon 1	March 2008	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Discharge wastewater	March 2008	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge

Note: Results generated from a wastewater grab sample collected once every thirty days.

Price Well sampled on 5/10/06 sample results were non-detect for VOC's Method 8260B.

--- Results were unavailable

Dual Phase Remediation System Air Stripper Sampling Data Collected at the former Boulden Company Inc. property

Air Stripper Influent (Groundwater) sampling – Calculated Air Emissions from Air Stripper

Recovery wells	Sample Dates	Gallons of Flow Per Day (GPD)	Benzene	Total BTEX	MTBE	Lbs./hr Benzene (0.02 lbs./hr max)	Lbs./day BTEX (20 lbs./day max)
EW-6	Nov. 2004	1,900	10,500	18,350	1,700	0.007	0.291
EW-6	Dec. 2004	1,745	4,800	12,930	2,620	0.003	0.188
EW-6	Jan. 2005	1,595	5,000	13,000	3,000	0.003	0.173e
EW-6	Feb. 2005	1,523	3,600	8,950	1,500	0.002	0.114
EW-6	Mar. 2005	1,365	4,000	9,000	2,500	0.002	0.102e
EW-6	Apr. 2005	1,476	<20	2,740	2,210	0.000	0.034
EW-6	May 2005	3,365	4,200	11,920	1,830	0.005	0.335
EW-6	Jun. 2005	3,104	3,900	10,970	1,650	0.004	0.284
EW-6	Jul. 2005	3,802	6,100	20,560	1,300	0.008	0.652
EW-6	Aug. 2005	2,002	8,700	26,490	2,200	0.006	0.442
EW-6	Sep. 2005	3,211	5,100	15,890	1,200	0.006	0.426e
EW-6	Oct. 2005	1,944	6,000	16,000	1,500	0.004	0.260
EW-6	Nov. 2005	2,304	3,500	10,840	420	0.003	0.208
EW-6	Dec. 2005	72	4,660	17,754	281	0.000	0.011
	Jan. 2006	No discharge	No discharge	No discharge	No discharge	No discharge	No discharge
EW-6	Feb. 2006	1,652	6,650	15,428	284	0.004	0.213
EW-6	Mar. 2006	1,406	4,190	11,166	588	0.002	0.131
EW-6	Apr. 2006	408	630	1,876	142	0.000	0.006
EW-6	May 2006	419	3,230	9,483	404	0.000	0.033
EW-6	Jun. 2006	564	1,960	5,521	265	0.000	0.026
EW-6	Jul. 2006	483	4,070	7,018	508	0.001	0.028
EW-6	Aug. 2006	250	8,400	26,015	656	0.001	0.054
EW-6	Sep. 2006	720	816	2,109	33	0.000	0.013
EW-6	Oct. 2006	1,888	10,500	35,600	540	0.007	0.561
EW-6	Nov. 2006	609	14,700	37,215	1,670	0.003	0.189
EW-6	Dec. 2006	1,745	11,200	32,970	1,000	0.007	0.480
EW-6	Jan. 2007	1,199	4,780	11,968	404	0.002	0.120
EW-6	Feb. 2007	1,217	5,700	13,377	605	0.002	0.136
EW-6	Mar. 2007	289	5,040	12,963	496	0.001	0.031
	Apr. 2007	No discharge	No discharge	No discharge	No discharge	No discharge	No discharge
	May 2007	No discharge	No discharge	No discharge	No discharge	No discharge	No discharge
	Jun. 2007	No discharge	No discharge	No discharge	No discharge	No discharge	No discharge
EW-5, EW-6	Jul. 2007	1,384	6,600	16,530	680	0.003	0.191
EW-5, EW-6	Aug. 2007	552	1,640	5,310	311	0.000	0.024
EW-5, EW-6	Sep. 2007	858	15,000	42,000	2,000	0.004	0.301
EW-5, EW-6	Oct. 2007	662	10,700	32,990	890	0.002	0.182
EW-5, EW-6	Nov. 2007	461	10,900	32,110	190	0.002	0.124
	Dec. 2007	No discharge	No discharge	No discharge	No discharge	No discharge	No discharge

e: estimated analytical

