

Zink Construction
Intersection of Harford Road and Sunshine Avenue (Zink Construction)
3 Country Hill Court (Russo Residence)
Kingsville, Baltimore County, Maryland
Case No. 1988-0919BA2

The Maryland Department of the Environment (MDE) Oil Control Program (OCP) continues to evaluate petroleum impacts at the Zink Construction properties located in Baltimore County. The property comprises of two contiguous parcels, approximately 1.15 and 23.92 acres. The small parcel houses a residence (Russo) that is served by a private well. The larger parcel (Zink property) formerly housed a gasoline station and automobile repair shop. This parcel is currently abandoned and is occasionally used by a local farmer to grow crops. Despite several proposals for redevelopment of this large parcel (i.e. strip mall and convenience store and gasoline station), the proposed developments have come to fruition.

In March 1965 when gasoline retail activities ceased, the building on the Zink property was utilized as an auto body repair shop until 1976, and for over 10 years (1977 to 1987), garbage trucks were parked on this property. The property was sold to Sunshine Avenue Corporation in 1986. In August 1987, Baltimore County Department of Environmental Protection and Resource Management (BADEPRM) reviewed plans for a subdivision, and required the developer, Sunshine Associates, to remove the underground storage tanks (USTs). In October 1987, four USTs were excavated and perforations were observed.

At the request of the MDE-OCP, in December 1987, Zink Construction Corporation commissioned a subsurface investigation. Three monitoring wells were installed in the vicinity of the UST excavation. Subsequently, Zink Construction Corp commissioned a soil vapor and groundwater contamination assessment that concluded that there were de minimus quantities of soil or groundwater petroleum contamination except in the vicinity of monitoring well - MW3. The validity of this assessment was questioned by the regulatory agencies involved.

In 1988, BADEPRM collected several rounds of samples from select private wells in the area. The property at 3 Country Hill Court (Russo residence) was confirmed to have petroleum impacts, which required the installation of a granular activated carbon (GAC) system. Samples collected on three occasions (March, April and May 1988) revealed benzene up to 323 parts per billion (ppb); 1,2 dichloroethane (DCA) up to 23 ppb, and methyl-tertiary butyl ether (MTBE) up to 28 ppb.

Benzene is a major constituent in gasoline. The U.S. Environmental Protection Agency (EPA) has established a Maximum Contaminant Level (MCL) for benzene at 5 ppb. 1,2 DCA is a gasoline additive with an established MCL at 5 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. Although the EPA has not established a regulated MCL for MTBE, the MDE has adopted an action level of 20 ppb.

Zink Construction Corp. and Sunshine Avenue Corp. declined to finance the installation of a GAC system at the Russo property (3 Country Hill Court), arguing that the MTBE impact was likely from another off-site source. In August 1988, the MDE-OCP assumed responsibility for the installation and maintenance of a GAC system at the Russo property. In coordination with BADEPRM, MDE-OCP proposed the installation of monitoring wells and the performance pump test to delineate the extent of groundwater contamination. The Department issued a Notice of Violation against Sunshine Avenue Corp. requiring the installation of additional monitoring wells. These wells were subsequently installed.

In September 1989, Sunshine Avenue Corp. sold the Zink property at a public auction to International Custom Trailers, Inc. In 1994, Charles Frank purchased the former Zink property at a public auction and commissioned a groundwater-sampling event of the monitoring well network in April 1, 1994.

In December 1998, MDE-OCP approved the abandonment of the on-site monitoring wells as a condition of future redevelopment plans for the property. The developer for the proposed construction of a Royal Farms was also required to properly dispose of any petroleum impacted soil encountered during construction activities. There was significant media coverage because Royal Farms wanted to build a convenience store with five gas pumps at the site. A hearing was held in February 1999, in which residents voiced their concerns. The Baltimore County Zoning Commission acknowledged the environmental problems and issued an order requiring future development of the site to mitigate impacts to the public and the environment. The proposed plans for the redevelopment of the Zink Property as a Royal Farm convenience store and gasoline station was subsequently aborted.

The unconfined aquifer at the former gas station property is approximately 40-50 feet below grade, and the drinking water well at 3 Country Hill Court is approximately 160 feet below grade. The site is located within the Piedmont Physiographic Province. Local geology indicates significant fracturing of the bedrock in a northeast-southwest oriented zone that runs approximately 2.5 miles in either direction from the site. To date MDE-OCP has sampled 9 drinking water wells and currently maintains a GAC system at one residence:

- 8 wells Non-detect for petroleum constituents.
- 1 well MTBE > 20 ppb; Benzene >5 ppb
3 Country Hill Court (Russo residence)

First exceedance 04/26/88 MTBE - 28 ppb; benzene - 320 ppb; 1,2 dichloroethane - 18 ppb

Last sample result in 03/13/07 Benzene - 10.4 ppb

Case Chronology:

- March 21, 1987. Drinking water well installed at the Russo residence at 3 Country Hill Court.
- August 26, 1987. BADEPRM reviewed subdivision plan for property on corner of Harford Road and Sunshine Avenue. The County recommended that prior to development of the site, fuel storage tanks must be removed.
- October 29, 1987. Maryland Waste Management Administrations (WMA), Initial Report of Oil Spill for Sunshine Ave. and Harford Rd.

- Four (4 USTs) abandoned for 15 years were excavated.
 - USTs in poor condition (two 550 gallon and two 200 gallon tank). Some completely rusted one.
 - One of the USTs contained what appeared to be paint thinner, which was pumped out.
 - This UST had leaked. Strong solvent odors detected in soils.
 - UST excavation to 14 feet below grade, soils stored on plastic.
- October 30, 1987. Maryland Department of Health and Mental Hygiene (DHMH), performed a site visit after UST excavation and required the installation of three monitoring wells
- December 1 –3, 1987. Developer (Sunshine Associates) commissioned well drilling services to install 3 wells (MW1, MW2 and MW3).
- December 3, 1987. Monitoring wells were purged. Split groundwater samples collected by the developer (Sunshine Associates) and BADEPRM.
- January 6, 1988. BADEPRM and MDE-OCP met to discuss contamination detected in MW3. BADEPRM to verify ownership of property at corner of Harford Road and Sunshine Avenue and send letter regarding future requirements.
- February 10, 1988. BADEPRM approved the Site Contamination Assessment Plan prepared in February 2, 1988. which included an evaluation of soil vapors.
- March 24, 1988. BADEPRM memo to file questioned validity of the Report of Soil Vapor Contaminant Assessment prepared in February 24, 1988.
- March 31, 1988. Developer (Sunshine Associates) and BADEPRM split samples during the groundwater monitoring event.
- April 26, 1988. BADEPRM letter to property owner regarding drinking water sample results collected in April 1988.
 - 3 Country Hill Ct (Russo -DW), Benzene -320 ppb; 1,2-DCA - 18 ppb; MTBE - 28 ppb.
- May 16, 1988. Four additional monitoring wells were installed (MW-4 through MW-7).
- May 18, 1988. BADEPRM letter to Zink Construction Company required offsite investigation due to off-site petroleum impact of private wells.
- May 24, 1988. Russo's attorney (3 Country Hill Court) requested MDE-OCP provide copies of all correspondences on the case.
- July 14, 1988. BADEPRM letter to Sunshine Avenue Corp. approving an environmental assessment plan.
- July 15, 1988. Letter from Country Court Estates residents to Councilman Norman Lauenstein regarding high levels of benzene detected in wells after UST removals at adjacent property. Residents requested County Council to intervene and to participate in an upcoming meeting.
- July 21, 1988. Sunshine Avenue Corp. letter declined to install a GAC system at 3 Country Hill Court (Russo residence). Attributed MTBE impact in the drinking water well to another offsite source.

- August 10, 1988. Notice of Violation (NOV) NV-89-027 issued to developer (Sunshine Avenue Corp.). Plan approved by the BADEPRM, for site assessment on Harford Rd must be completed within 30 days.
- August 23, 1988. Russo resident (at 3 Country Hill Court) notified MDE-OCP that the GAC system was disconnected because it made the water hard. A water softener was requested to be installed.
- September 15, 1988. Four monitoring wells installed (MW4, MW5, MW6 and MW7). Wells screened 25 to 52 feet bgs.
- September 27, 1988. Pump test conducted at the Zink facility. Existing supply well was pumped and drawdown in monitored in monitoring wells.
- October 26, 1988. BADEPRM letter to developer (Sunshine Avenue Corp) regarding monitoring well sample results collected 09/26/88.
- January 20, 1989. Developer (Sunshine Avenue Corp) submitted a *Report of Groundwater Investigation*, prepared in January 20, 1989.
- March 9, 1989. BADEPRM letter to developer (Sunshine Avenue Corp) regarding *Report of Groundwater Investigation* dated January 20, 1989.
 - Requested clarification on concentrations in the monitoring wells
 - Required the installation of a deep well
 - Required another round of sampling.
- June 29, 1989. A Deed of Transfer recorded from Sunshine Avenue Corp, Grantor, to International Custom Tailors, Inc (ICTI). for the sum of \$325,000.
- October 24, 1989. BADEPRM issued letter to ICTI to continue environmental assessment.
- December 27, 1989. MDE-OCP assumed responsibility from BADEPRM for sampling at 3 Country Hill Court (*See table for sample results*).
- March 2, 1990. MDE-OCP conducted a subsurface conductivity testing on the Zink property.
 - Anomalies observed at the Zink site and Russo property.
- August 30, 1990. MDE-OCP conducted a chain of title investigation and concluded, "no connection between Sunshine Avenue Corporation and Zink Construction".
- November 22, 1993. MDE-OCP site visit to determine the location and condition of the monitoring wells.
- January 31, 1994. MDE-OCP phone conversation with private consultant concerning the Zink property. The MDE-OCP learned that the Zink property was sold at an auction to the current owner, Mr. John Day, who intended to redevelop property.
- January 31, 1994. MDE-OCP phone conversation with Mr. Day's consultant regarding well sampling and concerns about aquifer contamination.

- April 1, 1994. MDE-OCP site visit with the new property owner's (Mr. John Day) consultant. Split groundwater samples collected from the monitoring well network.
- April 21, 1994. MDE-OCP received *Groundwater Investigation Report* dated April 19, 1994 prepared for Charles Frank, who purchased the Zink property at auction. The MDE-OCP has no information when the Zink property was purchased.
- June 13, 1995. MDE-OCP met prospective developer who wants to redevelop the Zink property into a 4 to 5 store strip mall. Discussed geophysical survey requirements.
- February 12, 1998. Prospective developer's letter to the MDE-OCP regarding high cost of geophysical study proposal, proposed alternative fracture trace analysis with aerial photos and topographic maps and yield tests on the new supply well while conducting drawdown monitoring.
- April 7, 1998. MDE-OCP received *Groundwater Sampling Report* prepared in April 5, 1998 for the former Zink property.
- April 10, 1998. MDE-OCP issued letter to private consultant indicating the approval of the proposed well location.
- December 21, 1998. Royal Farms interested in developing property. MDE-OCP recommended that Royal Farm locate water bearing fractures on-site and along Country Hill Ct. as a condition of development.
- January 31, 1999. Royal Farms letter to the MDE-OCP requesting termination of monitoring well sampling and intentions to develop the former Zink property, currently owned by Charles Frank, as a convenience store and a gasoline station.
- February 3, 1999. The Northeast Reporter published article "Kingsville neighbors say no to Royal Farm complex".
- February 12, 1999. MDE-OCP letter to Royal Farms regarding proposed plans for the Zink property as a convenience store and gasoline station.
 - Properly abandon the existing monitoring well network
 - Sample the new on-site supply well for petroleum constituents.
 - If petroleum constituents area detected, install a GAC system
 - Remove and properly dispose of any contaminated soils encountered during construction; and agreement for possible future monitoring well.
- May 5, 1999. Northeast Reporter newspaper article "County Approves a new Royal Farms store in Fork". A public hearing was held. Baltimore County Zoning issued an order to Royal Farms to mitigate potential impacts to residents and environment.
- August 13, 1999. MDE-OCP meeting with BADEPRM and the property owner at 3 Country Hill Court to discuss the location of a new water supply well in the northeast corner of house.
- November 17, 2000. MDE-OCP initiated sampling of select off-site drinking water wells in the area.
- 2000 – Present. MDE-OCP continues to monitor the GAC system at 3 Country Hill Court.

Future Activities:

- MDE-OCP currently maintains one GAC unit at 3 Country Hill Court at no cost to the homeowner.
- 2007-2008 the MDE-OCP will continue to monitor the GAC filtration system at 3 Country Hill Court

Future Updates:

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

Contacts:

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

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 Data from the Former Zink Property located at the Intersection of Harford and Sunshine Avenue

Sample Locations	Date	Sampled by	Benzene MCL at 5 ppb	MTBE State's Action Level – 20 ppb	Other Constituents 1,2 dichloroethane (DCA) – MCL at 5 ppb
MW1 BA-81-7465 Installed 12/1987 Well Depth 52 ft. Screened 42 to 52 ft 4 in. diameter well	12/08/87	Private contractor	ND	Not sampled (NS)	
	03/31/88	Private contractor	55	NS	
	09/26/88	BA DEPRM	14	ND	
	4/1/94	Private contractor	39.7	NS	
	3/23/98	Private contractor	ND	ND	
MW2 BA-81-7467 Installed 12/1987 Well Depth 51 ft. Screened 41 to 51 ft 4 in. diameter well	12/08/87	Private contractor	110	NS	
	03/31/88	Private contractor	890	NS	
	09/26/88	BA DEPRM	682	11	DCA-19
	4/1/94	Private contractor	17.6	NS	
	3/23/98	Private contractor	ND	ND	
MW3 BA-81-7466 Installed 12/1987 Well Depth 50 ft. Screened 40 to 50 ft 4 in. diameter well	12/08/87	Private contractor	460	NS	
	03/31/88	Private contractor	4000	NS	
	09/26/88	BA DEPRM	370	ND	DCA-130
	4/1/94	Private contractor	NS	NS	Unable to find well
MW4 BA-81-8587 Installed 10/15/1988 Well Depth 50 ft Screened 30 to 50 ft. 4 in. diameter well	09/26/88	BA DEPRM	ND	ND	ND
	4/1/94	Private contractor	ND	NS	
	3/23/98	Private contractor	ND	ND	
MW5 BA-81-7499 Installed 10/15/1988 Well depth 52 ft. Screened 32 to 52 ft. 4 in. diameter well	09/26/88	BA DEPRM	ND	ND	ND
	4/1/94	Private contractor	ND	NS	
	3/23/98	Private contractor	ND	ND	
MW6	09/26/88	BA DEPRM	ND	ND	ND

BA-81-750 Installed 10/05/1988 Well depth 50 ft. Screened 30 to 50 ft. 4 in. well diameter	4/1/94	Private contractor	ND	NS	
	3/23/98	Private contractor	ND	ND	
MW7 Ba-88-0030 Installed 10/15/1988 Well depth 50 ft. Screened 25 to 50 ft. 4 in. well diameter	09/26/88	BA DEPRM	ND	ND	ND
	4/1/94	Private contractor	ND	NS	
	3/23/98	Private contractor	ND	ND	

Drinking Water Sampling Data from the adjacent parcel at 3 Country Hill Court (Russo Property)

Sample Location	GAC installed ✓	Sampled by	Sample Event	Petroleum Constituents of Concern			
				Benzene MCL at 5 ppb	MTBE State's Action Level – 20 ppb	Other Constituents 1,2 dichloroethane (DCA) –MCL at 5 ppb TBA unregulated compound	
ON-SITE PRIVATE WELL							
3 COUNTRY HILL COURT Russo Residence	✓ GAC installed 8/1988 Domestic Well 160'	system	MDE-OCP	02/16/94 (pre-filter)	116	ND	
				02/16/94 (post-filter)	ND	ND	
				02/16/94 (post filter)	ND	ND	
			MDE-OCP	05/20/94 (pre filter)	73	ND	
				05/20/94 (mid filter)	ND	ND	
				05/20/94 (post-filter)	ND	ND	
			MDE-OCP	10/05/94 (pre-filter)	35	ND	
				10/05/94 (mid-filter)	26	ND	
				10/05/94 (post-filter)	ND	ND	
			MDE-OCP	03/01/95 (pre-filter)	105	ND	
				03/01/95 (mid-filter)	25	ND	
				03/01/95 (post-filter)	ND	ND	
			MDE-OCP	08/23/95 (pre-filter)	79	ND	DCA-20
				08/23/95 (mid-filter)	16	ND	DCA-17
				08/23/95 (post-filter)	ND	ND	DCA-23
			MDE-OCP	01/17/96 (pre-filter)	30	ND	DCA-8
				01/17/96 (mid filter)	ND	ND	DCA-7
				01/17/96 (post filter)	ND	ND	
			MDE-OCP	08/22/96 (pre-filter)	34	ND	DCA-13
				08/22/96 (mid-filter)	22	ND	DCA-20
				08/22/96 (post-filter)	2	ND	DCA-6
			MDE-OCP	12/03/96 (pre-filter)	28	ND	DCA-11
				12/03/96 (mid filter)	2	ND	DCA-11
				12/03/96 (post filter)	ND	ND	
			MDE-OCP	01/27/97 (pre-filter)	29	ND	DCA-16
				01/27/97 (mid-filter)	4	ND	DCA-20
				01/27/97 (post-filter)	ND	ND	DCA-5
			MDE-OCP	02/20/97 (pre-filter)	31	ND	
				02/20/97 (mid-filter)	23	ND	DCA-21
				02/20/97 (post-filter)	ND	ND	DCA-6
			MDE-OCP	02/27/97 (pre-filter)	20	1	DCA-10
				02/27/97 (mid filter)	ND	ND	
				02/27/97 (post filter)	ND	ND	
			MDE-OCP	04/04/97 (pre-filter)	180	ND	DCA-28
				04/04/97 (mid-filter)	ND	ND	
				04/04/97 (post-filter)	ND	ND	
			MDE-OCP	05/22/97 (pre-filter)	39	ND	DCA-20
				05/22/97 (mid filter)	ND	ND	DCA-7
				05/22/97 (post filter)	ND	ND	
			MDE-OCP	07/08/97 (pre-filter)	140	250	DCA-28
	07/08/97 (mid-filter)	ND	ND	DCA-12			
	07/08/97 (post-filter)	ND	ND	DCA-7			
MDE-OCP	10/09/97 (pre-filter)	35	ND	DCA-11			
	10/09/97 (mid-filter)	ND	ND				
	10/09/97 (post-filter)	ND	ND				
MDE-OCP	12/10/97 (pre-filter)	17	ND	DCA-6			
	12/10/97 (mid-filter)	ND	ND				
	12/10/97 (post-filter)	ND	ND				

Drinking Water Sampling Data from the adjacent parcel at 3 Country Hill Court (Russo Property)

Sample Location	GAC installed ✓	Sampled by	Sample Event	Petroleum Constituents of Concern		
				Benzene MCL at 5 ppb	MTBE State's Action Level – 20 ppb	Other Constituents 1,2 dichloroethane (DCA) –MCL at 5 ppb TBA unregulated compound
ON-SITE PRIVATE WELL						
3 Country Hill Court Russo Residence (continued)		MDE-OCP	03/09/98 (pre-filter)	26	ND	DCA-24
			03/09/98 (mid-filter)	ND	ND	DCA-22
			03/09/98 (post-filter)	ND	ND	DCA-7
		MDE-OCP	06/04/98 (pre-filter)	18	ND	
			06/04/98 (mid-filter)	1	ND	
			06/04/98 (post-filter)	ND	ND	
		MDE-OCP	10/14/98 (pre-filter)	10	ND	
			10/14/98 (mid-filter)	ND	ND	
			10/14/98 (post-filter)	ND	ND	
		MDE-OCP	12/09/98 (pre-filter)	12	ND	
			12/09/98 (mid-filter)	ND	ND	
			12/09/98 (post-filter)	ND	ND	
		MDE-OCP	01/13/99 (pre-filter)	12	ND	
			01/13/99 (post-filter)	ND	ND	
		MDE-OCP	03/31/99 (pre-filter)	6	ND	
			03/31/99 (mid-filter)	ND	ND	
			03/31/99 (post-filter)	ND	ND	
		MDE-OCP	05/13/99 (pre-filter)	ND	ND	
			05/13/99 (mid-filter)	ND	ND	
			05/13/99 (post-filter)	ND	ND	
		MDE-OCP	07/06/99 (pre-filter)	14.7	ND	
			07/06/99 (mid-filter)	ND	ND	
			07/06/99 (post-filter)	ND	ND	
		MDE-OCP	09/22/99 (pre-filter)	11.3	ND	
			09/22/99 (mid-filter)	ND	ND	
			09/22/99 (post-filter)	ND	ND	
		MDE-OCP	01/19/00 (pre-filter)	9.2	ND	
			01/19/00 (mid-filter)	ND	ND	
			01/19/00 (post-filter)	ND	ND	
		MDE-OCP	04/04/00 (pre-filter)	53.8	ND	
			04/04/00 (mid-filter)	ND	ND	
			04/04/00 (post-filter)	ND	ND	
		MDE-OCP	07/19/00 (pre-filter)	21	ND	DCA-5.9
			07/19/00 (mid-filter)	ND	ND	DCA-6.3
			07/19/00 (post-filter)	ND	ND	
		MDE-OCP	10/03/00 (pre-filter)	45.2	ND	DCA-7
10/03/00 (mid-filter)	10.10		ND			
10/03/00 (post-filter)	ND		ND			
MDE-OCP	01/31/01 (pre-filter)	11.6	10.6			
	01/31/01 (mid-filter)	ND	ND			
	01/31/01 (post-filter)	ND	ND			
MDE-OCP	04/24/01 (pre-filter)	24.1	ND			
	04/24/01 (mid-filter)	ND	ND			
	04/24/01 (post-filter)	ND	ND			
MDE-OCP	07/11/01 (pre-filter)	17.2	ND			
	07/11/01 (mid-filter)	2.78	ND			
	07/11/01 (post-filter)	ND	ND			
MDE-OCP	09/28/01 (pre-filter)	5.9	ND			
	09/28/01 (mid-filter)	ND	ND			

		09/28/01 (post-filter)	ND	ND	
	MDE-OCP	03/21/02 (pre-filter)	ND	ND	
		03/21/02 (mid-filter)	ND	ND	
		03/21/02 (post-filter)	ND	ND	

Off-site Drinking Water Sample Results in the vicinity of the Zink Property

Sample Location	GAC installed ✓	Sampled by	Sample Event	Petroleum Constituents of Concern		
				Benzene MCL at 5 ppb	MTBE State's Action Level – 20 ppb	Other Constituents 1,2 dichloroethane (DCA) –MCL at 5 ppb TBA unregulated compound
ON-SITE PRIVATE WELL						
3 Country Hill Court Russo Residence (continued)		MDE-OCP	06/04/02 (pre-filter)	3.4	ND	
			06/04/02 (mid-filter)	ND	ND	
			06/04/02 (post-filter)	ND	ND	
		MDE-OCP	02/06/03 (pre-filter)	28	ND	
			02/06/03 (mid-filter)	ND	ND	
			02/06/03 (post-filter)	ND	ND	
		MDE-OCP	04/29/03 (pre-filter)	60	ND	
			04/29/03 (mid-filter)	ND	ND	
			04/29/03 (post-filter)	ND	ND	
		MDE-OCP	07/22/03 (pre-filter)	4.3	ND	TBA-7.5
			07/22/03 (mid-filter)	ND	ND	TBA-10
			07/22/03 (post-filter)	ND	ND	
		MDE-OCP	10/29/03 (pre-filter)	31	ND	
			10/29/03 (mid-filter)	ND	ND	
			10/29/03 (post-filter)	ND	ND	
		MDE-OCP	02/06/04 (pre-filter)	14	ND	
			02/06/04 (mid-filter)	ND	ND	
			02/06/04 (post-filter)	ND	ND	
		MDE-OCP	04/27/04 (pre-filter)	9	ND	TBA-6
			04/27/04 (mid-filter)	ND	ND	
			04/27/04 (post-filter)	ND	ND	
		MDE-OCP	07/15/04 (pre-filter)	11	ND	TBA-7
			07/15/04 (mid-filter)	ND	ND	
			07/15/04 (post-filter)	ND	ND	
		MDE-OCP	11/18/04 (pre-filter)	3	ND	
			11/18/04 (mid-filter)	ND	ND	
			11/18/04 (post-filter)	ND	ND	
		MDE-OCP	01/21/05 (pre-filter)	23	ND	
			01/21/05 (mid-filter)	ND	ND	
			01/21/05 (post-filter)	ND	ND	
		MDE-OCP	04/12/05 (pre-filter)	3	ND	
			04/12/05 (mid-filter)	ND	ND	
			04/12/05 (post-filter)	ND	ND	
		MDE-OCP	08/15/05 (pre-filter)	14	ND	
			08/15/05 (mid-filter)	0.6	ND	
			08/15/05 (post-filter)	ND	ND	
		MDE-OCP	10/07/05 (pre-filter)	14	ND	
			10/07/05 (mid-filter)	ND	ND	
			10/07/05 (post-filter)	ND	ND	
		MDE-OCP	02/08/06 (pre-filter)	17	ND	
			02/08/06 (mid-filter)	ND	ND	
			02/08/06 (post-filter)	ND	19	
MDE-OCP	03/21/06 (pre-filter)	19	ND			
	03/21/06 (mid-filter)	ND	ND			
	03/21/06 (post-filter)	ND	7.2			
MDE-OCP	07/25/06 (pre-filter)	11.7	ND			
	07/25/06 (mid-filter)	ND	ND			
	07/25/06 (post-filter)	ND	ND			
MDE-OCP	11/14/06 (pre-filter)	1.4	ND			
	11/14/06 (mid-filter)	ND	ND			
	11/14/06 (post-filter)	ND	ND			
MDE-OCP		03/13/07 (pre-filter)	10.4	ND		

03/13/07 (mid-filter)	ND	ND	
03/13/07 (post-filter)	ND	ND	

Off-site Drinking Water Sample Results in the vicinity of the Zink Property

Sample Location	GAC installed ✓	Sampled by	Sample Event	Petroleum Constituents of Concern			
				Benzene MCL at 5 ppb	MTBE State's Action Level – 20 ppb	Other Constituents 1,2 dichloroethane (DCA) –MCL at 5 ppb TBA unregulated compound	
		MDE-OCP	7/19/07(raw)	3.9	ND		
			7/19/079(mid-filter)	ND	ND		
			7/19/07 (post-filter)	ND	ND		
		MDE-OCP	11/13/07 (raw)	11/13/07 (raw)	5.5	ND	
				11/13/07 (mid-filter)	ND	ND	
				11/13/07 (post-filter)	ND	ND	
		MDE-OCP	03/19/08 (raw)	03/19/08 (raw)	2.6	ND	
				03/19/08 (mid-filter)	ND	ND	
				03/19/08 (post-filter)	ND	ND	
OFF-SITE PRIVATE WELLS							
1 Country Hill Court Sampling terminated October 2006		MDE-OCP	04/04/00 (raw)	ND	ND		
			10/03/00 (raw)	ND	ND		
			03/08/01 (raw)	ND	ND		
			09/28/01 (raw)	ND	ND		
			03/21/02 (raw)	ND	ND		
			09/26/02 (raw)	ND	ND		
			04/29/03 (raw)	ND	ND		
			10/29/03 (raw)	ND	ND		
			04/22/04 (raw)	ND	ND		
			10/28/04 (raw)	ND	ND		
			04/12/05 (raw)	ND	ND		
			10/05/05 (raw)	ND	ND		
			04/18/06 (raw)	ND	ND		
2 Country Hill Court Sampling terminated October 2006		MDE-OCP	04/04/00 (raw)	ND	ND		
			10/03/00 (raw)	ND	ND		
			03/08/01 (raw)	ND	ND		
			09/28/01 (raw)	ND	ND		
			03/21/02 (raw)	ND	ND		
			09/26/02 (raw)	ND	ND		
			04/29/03 (raw)	ND	ND		
			10/29/03 (raw)	ND	ND		
			04/22/04 (raw)	ND	ND		
			10/28/04 (raw)	ND	ND		
			04/12/05 (raw)	ND	ND		
			10/05/05 (raw)	ND	ND		
			04/18/06 (raw)	ND	ND		
4 Country Hill Court Sampling terminated October 2006		MDE-OCP	04/04/00 (raw)	ND	ND		
			10/03/00 (raw)	ND	ND		
			11/17/00 (raw)	ND	ND		
			03/08/01 (raw)	ND	ND		
			09/28/01 (raw)	ND	ND		
			03/21/02 (raw)	ND	ND		
			09/26/02 (raw)	ND	ND		
			10/29/03 (raw)	ND	ND		
			04/22/04 (raw)	ND	ND		
			10/28/04 (raw)	ND	ND		
			04/12/05 (raw)	ND	ND		
			10/05/05 (raw)	ND	ND		
			04/18/06 (raw)	ND	ND		

Off-site Drinking Water Sample Results in the vicinity of the Zink Property

Sample Location	GAC installed ✓	Sampled by	Sample Event	Petroleum Constituents of Concern		
				Benzene MCL at 5 ppb	MTBE State's Action Level – 20 ppb	Other Constituents 1,2 dichloroethane (DCA) –MCL at 5 ppb TBA unregulated compound
		MDE-OCP	10/17/06 (raw)	ND	ND	
OFF-SITE PRIVATE WELL						
5 COUNTRY HILL COURT Sampling terminated October 2006		MDE-OCP	04/04/00 (raw)	ND	ND	
		MDE-OCP	11/17/00 (raw)	ND	ND	
		MDE-OCP	03/08/01 (raw)	ND	ND	
		MDE-OCP	09/28/01 (raw)	ND	ND	
		MDE-OCP	03/21/02 (raw)	ND	ND	
		MDE-OCP	09/26/02 (raw)	ND	ND	
		MDE-OCP	04/29/03 (raw)	ND	ND	
		MDE-OCP	10/29/03 (raw)	ND	ND	
		MDE-OCP	04/22/04 (raw)	ND	ND	
		MDE-OCP	10/28/04 (raw)	ND	ND	
		MDE-OCP	04/12/05 (raw)	ND	ND	
		MDE-OCP	10/05/05 (raw)	ND	ND	
		MDE-OCP	04/18/06 (raw)	ND	ND	
		MDE-OCP	10/17/06 (raw)	ND	ND	
7 COUNTRY HILL COURT Sampling terminated October 2006		MDE-OCP	11/17/00 (raw)	ND	ND	
		MDE-OCP	03/08/01 (raw)	ND	3	
		MDE-OCP	09/28/01 (raw)	ND	16	
		MDE-OCP	03/21/02 (raw)	ND	6	
		MDE-OCP	09/26/02 (raw)	ND	10	
		MDE-OCP	04/29/03 (raw)	ND	3	
		MDE-OCP	10/29/03 (raw)	ND	4	
		MDE-OCP	10/29/03 (raw)	ND	5	
		MDE-OCP	04/22/04 (raw)	ND	8	
		MDE-OCP	10/28/04 (raw)	ND	9	
		MDE-OCP	04/12/05 (raw)	ND	4	
		MDE-OCP	10/05/05 (raw)	ND	8.7	
		MDE-OCP	04/18/06 (raw)	ND	6.5	
		MDE-OCP	10/17/06 (raw)	ND	3.8	
9 COUNTRY HILL COURT Sampling terminated April 2007		MDE-OCP	11/17/00 (raw)	ND	0.7	
		MDE-OCP	03/08/01 (raw)	ND	0.6	
		MDE-OCP	09/28/01 (raw)	ND	ND	
		MDE-OCP	03/21/02 (raw)	ND	ND	
		MDE-OCP	09/26/02 (raw)	ND	ND	
		MDE-OCP	04/29/03 (raw)	ND	ND	
		MDE-OCP	10/29/03 (raw)	ND	ND	
		MDE-OCP	04/22/04 (raw)	ND	ND	
		MDE-OCP	10/28/04 (raw)	ND	ND	
		MDE-OCP	04/12/05 (raw)	ND	ND	
		MDE-OCP	10/05/05 (raw)	ND	ND	
		MDE-OCP	04/18/06 (raw)	ND	ND	
		MDE-OCP	10/17/06 (raw)	ND	ND	
		MDE-OCP	03/23/07 (raw)	ND	ND	

Off-site Drinking Water Sample Results in the vicinity of the Zink Property

Sample Location	GAC installed ✓	Sampled by	Sample Event	Petroleum Constituents of Concern		
				Benzene MCL at 5 ppb	MTBE State's Action Level – 20 ppb	Other Constituents 1,2 dichloroethane (DCA) –MCL at 5 ppb TBA unregulated compound
OFF-SITE PRIVATE WELL						
11 COUNTRY HILL COURT Sampling terminated October 2006		MDE-OCP	11/17/00 (raw)	37	260	
		MDE-OCP	03/08/01 (raw)	ND	ND	
		MDE-OCP	09/28/01 (raw)	3	130	
		MDE-OCP	03/21/02 (raw)	ND	ND	
		MDE-OCP	09/26/02 (raw)	ND	ND	
		MDE-OCP	04/29/03 (raw)	ND	ND	
		MDE-OCP	10/29/03 (raw)	ND	ND	
		MDE-OCP	04/22/04 (raw)	ND	ND	
		MDE-OCP	10/28/04 (raw)	ND	ND	
		MDE-OCP	04/12/05 (raw)	ND	ND	
		MDE-OCP	10/05/05 (raw)	ND	ND	
		MDE-OCP	04/18/06 (raw)	ND	ND	
		MDE-OCP	10/17/06 (raw)	ND	ND	
13 COUNTRY HILL COURT Sampling terminated November 2000		MDE-OCP	11/17/00 (raw)	ND	ND	