



**FOURTH FIVE-YEAR REVIEW REPORT FOR  
ALBION-SHERIDAN TOWNSHIP LANDFILL SUPERFUND SITE  
CALHOUN COUNTY, MICHIGAN**



**Prepared by**

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5/16/2017

**Date**

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## LIST OF ABBREVIATIONS & ACRONYMS

CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	United States Environmental Protection Agency
FML	Flexible Membrane Liner
FYR	Five-Year Review
ICs	Institutional Controls
MCL	Maximum Contaminant Level
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
mg/kg	Milligrams per kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PCBs	Polychlorinated Biphenyls
PCOR	Preliminary Close Out Report
ppb	Parts per Billion
ppm	Parts per Million
PRP	Potentially Responsible Party
RAOs	Remedial Action Objective
RD/RA	Remedial Design/ Remedial Action
ROD	Record of Decision
SVOCs	Semi-Volatile Organic Compounds
UAO	Unilateral Administrative Order
UU/UE	Unlimited Use and Unrestricted Exposure

## I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine whether the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The United States Environmental Protection Agency (EPA), in cooperation with the Michigan Department of Environmental Quality (MDEQ), is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP)(40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the fourth FYR for the Albion-Sheridan Township Landfill Superfund Site (Site). The triggering action for this statutory review is the completion date of the third FYR signed on August 3, 2012. The FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE). The Site consists of one operable unit (OU) which will be addressed in this FYR. A copy of the FYR start notification is included in Appendix B.

EPA is the lead agency for developing and overseeing the implementation of the remedy for the Site. MDEQ, as the support agency representing the State of Michigan, has reviewed all supporting documentation and provided input to EPA during the FYR process.

### Site Background

The Site is a closed landfill located at 29975 East Erie Road, approximately one mile east of Albion, Michigan, on the eastern edge of Calhoun County (See Figure 1). The City of Albion has a population of approximately 10,000. The area incorporating the landfill occupies about 18 acres of land. A larger area enclosed by the Site security fence is approximately 50 acres in size and includes land to the west and north. A surface water runoff retention basin is located on the western end, and the land in the northern end includes a small wooded area. The Site is surrounded by a combination of residential, agricultural, commercial, and industrial properties. Five residences are located approximately 1000 to 1500 feet southwest of the landfill along East Erie Road. Several residences and commercial businesses are located along Michigan Avenue about 500 feet north of the Site fence. Housing developments are located to the east and west of the Site and undeveloped land formally used for agriculture is immediately west of the Site. An active railroad track borders East Erie Road to the south of the landfill, and beyond the railroad tracks there is an extended wooded area that reaches the North Branch of the Kalamazoo River. South of the river is agricultural land. The Site does not fall within the flood plain of the river.

The Site had been used as a sand and gravel pit and also used for open, non-permitted dumping for an unspecified period of time prior to 1966. Mr. Gordon Stevick privately operated the landfill from 1966 to 1981. The landfill accepted municipal refuse and industrial wastes from households and industries in the City of Albion and nearby townships. In the early 1970s, the Michigan Department of Natural Resources (MDNR) approved the landfill to accept an estimated 6,000 cubic yards of metal plating sludges. Other materials such as paint wastes

and thinners, oil and grease, casting sand and dust, and sand and dirt containing fly ash were also disposed of at the Site landfill. The sludges remained buried at the Site. The landfill ceased operation in 1981. Appendix A contains figures and IC documents reviewed, which identify the Site property boundaries.

**FIVE-YEAR REVIEW SUMMARY FORM**

<b>SITE IDENTIFICATION</b>		
<b>Site Name:</b> Albion-Sheridan Township Landfill Superfund Site		
<b>EPA ID:</b> MID980504450		
<b>Region:</b> 5	<b>State:</b> MI	<b>City/County:</b> City of Albion/Calhoun County
<b>SITE STATUS</b>		
<b>NPL Status:</b> Final		
<b>Multiple OUs?</b> No	<b>Has the site achieved construction completion?</b> Yes	
<b>REVIEW STATUS</b>		
<b>Lead agency:</b> EPA <i>[If "Other Federal Agency", enter Agency name]:</i>		
<b>Author name (Federal or State Project Manager):</b> Jeff Gore		
<b>Author affiliation:</b> EPA, Region 5		
<b>Review period:</b> 8/3/2012 – 6/27/2017		
<b>Date of site inspection:</b> 11/16/2016		
<b>Type of review:</b> Statutory		
<b>Review number:</b> 4		
<b>Triggering action date:</b> 8/3/2012		
<b>Due date (five years after triggering action date):</b> 8/3/2017		

## II. RESPONSE ACTION SUMMARY

### Basis for Taking Action

In 1986, an EPA Field Investigation Team contractor performed a screening inspection to begin the process to score the Site for the National Priorities List (NPL). The Site was proposed for the NPL on June 24, 1988. The Site became a final NPL listing on October 4, 1989.

A remedial investigation (RI) was carried out from January 1992 to April 1994. The major results of the RI and the conditions at the Site at that time found that soil and groundwater were exposure routes which included the following:

- The thickness of the existing landfill cover was between 1 and 4 feet. The minimum cover thickness for a closed landfill in the State of Michigan required at least 2 feet.
- Refuse material was found scattered on the ground surface throughout the area of the landfill. The cover had undergone significant revegetation since landfilling had stopped, consisting mainly of grass with some patches of small trees. The thickness of the fill material in the landfill ranged from 16 to 35 feet.
- The geology of the Site was characterized by approximately 20 to 54 feet of glacial sediments overlying sedimentary bedrock. There were no obvious clay confining layers beneath the Site, although discontinuous layers containing silt and/or clay did exist, creating an unconsolidated sediment aquifer. The uppermost bedrock beneath the Site was generally encountered at an approximate elevation of 935 to 925 mean sea level (MSL).
- Groundwater beneath the Site was contained within the unconsolidated sediment aquifer, which was encountered at depths of 10 to 30 feet below ground surface, and the bedrock aquifer. The direction of groundwater flow in the unconsolidated unit was west-southwest near the landfill and curved in a more southerly direction near the North Branch of the Kalamazoo River.
- Several volatile organic compounds, semi-volatile organic compounds (SVOCs), and pesticides/polychlorinated biphenyls (PCBs) were present in landfill waste samples, although many of them were found in estimated concentrations below the detection limit. 4-methyl phenol was the most concentrated contaminant at 15 milligrams/kilogram (mg/kg). A number of inorganic substances were present above background soil levels including antimony, arsenic, chromium, copper, lead, mercury, and zinc. The highest levels included lead at 208 mg/kg, arsenic at 13 mg/kg, and chromium at 13 mg/kg.
- Test pitting revealed one area of the landfill which contained a large number of drums. Sampling results showed some of the drums contained liquids, solids and suspected paint sludges; contaminant concentrations included levels up to 730,000 parts per million (ppm) 1,2,4-trimethyl benzene, 6500 ppm acetone, 2400 ppm aluminum, and 3 ppm arsenic.

- Groundwater samples taken at 13 monitoring wells surrounding the landfill revealed only one organic compound above the maximum contaminant level (MCL), 1,2-dibromo-3-chloropropane. No SVOCs were detected above background concentrations. Arsenic, ammonia-nitrogen, cobalt, iron, manganese, and nitrate/nitrite were detected above background, and antimony and nitrate exceeded established MCLs at two well locations.

### **Response Actions**

On March 19, 1990, EPA issued a Unilateral Administrative Order (UAO) to five potentially responsible parties (PRPs) stating that a removal action was appropriate for the Site. The UAO was amended on May 3, 1990, to delete one of the PRPs. Two of the PRPs performed the time-critical removal of an estimated 46 drums from the landfill surface later in 1990. Twenty-two drums were overpacked and sent to an off-site facility for incineration. The remaining 24 drums were crushed and sent to a Type 2 Solid Waste Landfill in the State of Michigan.

EPA and MDNR prepared a Record of Decision (ROD) in March of 1995 which outlined the elements of a comprehensive remedy at the Site. In July of 1999, EPA, the City of Albion, and other PRPs signed a Consent Decree (CD) and had it entered in the United States District Court.

The major components of the Site remedy involved implementation of the following:

- Removal, off-site treatment, and disposal of the drums which contained hazardous or liquid wastes, as well as other drums encountered during grading of the landfill surface;
- Construction of a solid waste landfill cover which made use of a Flexible Membrane Liner (FML) over the entire landfill mass,
- Design studies to determine if a passive venting or active landfill gas collection system should be installed at the Albion-Sheridan Site;
- Monitoring of groundwater to ensure effectiveness of the remedial action in lowering the arsenic concentration in groundwater through natural oxidation; and
- Institutional controls (ICs) on landfill property to limit both land and groundwater use, and controls on adjacent property to limit groundwater use until the clean-up standard is attained.

Remedial action objectives (RAOs) of the selected remedy are to reduce the risks associated with exposure to the contaminated materials on-site; to eliminate or reduce migration of contaminants to the groundwater, and to reduce the risks associated with arsenic contamination in the groundwater. The landfill cap will reduce the direct contact and groundwater leachate risks due to the soils contained under the cap. Groundwater monitoring during the remedy will determine progress toward the goal of achieving MCLs for the groundwater plume affected by the landfill.

## **Status of Implementation**

The Remedial Design/ Remedial Action (RD/RA) PRP contractor received approval from EPA for a RD Work Plan in August of 1996. They completed the RD for the Site in August of 1997, and EPA approved the RA Work Plan in September of 1997.

From 1998 through September of 1999, the PRP contractor conducted the construction activities for the RA at the Site, including excavating and disposing of located drums, installing and abandoning monitoring wells, and removing an on-site underground storage tank. The off-site disposal of the drums was completed in December 1998. In 1999, the contractor then installed a permanent Site perimeter fence and constructed the new landfill cover.

Components of the multi-layer landfill cover included:

- **Fill Layer:** The fill layer consists of six inches of graded cover fill placed over the landfill waste;
- **Gas Collection Layer:** This layer consists of a 12-inch thick sand layer on top of the existing waste mass and fill layer for passive gas collection;
- **FML:** The FML consists of a layer of linear low density polyethylene Textured FML was placed along the south end of the landfill with the steepest slope, and smooth FML was placed over the remaining portion of the landfill. The FML panels were joined by a fusion weld;
- **Drainage Layer:** A geocomposite drainage net, which consists of a layer of geonet between layers of geotextile, was installed on top of the FML;
- **Cover Soil Layer:** An 18-inch thick cover soil layer was installed over the entire landfill cap. There was no compaction requirement for the cover soil layer;
- **Topsoil Layer:** A minimum of six inches of top soil was installed over the cover soil layer and fertilized; and
- **Vegetative Cover:** Native plant species seeding was used to establish a vegetative cover to control erosion.

The RD/RA CD was finalized and entered in U.S. District Court in July of 1999. The RD/RA CD brought in the PRPs Decker Corp. and the City of Albion, Michigan to join with RD/RA PRPs. The CD required Decker and the City of Albion to implement all operation and maintenance (O&M) activities at the Site, while the RD/RA PRPs were responsible for the RD and RA construction. RA construction activities officially concluded with the completion of a Site inspection on September 7, 1999 and signing of the Preliminary Close Out Report (PCOR) for the Site on September 28, 1999.



Implementation of the remedy was based on meeting a trend analysis evaluation to be performed on arsenic concentrations in the monitoring wells beginning five years from the completion of the construction of the landfill cap. The statistical test was designed to determine if arsenic was declining sufficiently to fall below the MCL [previously 50 parts per billion (ppb) and currently 10 ppb] within 15 years. This statistical test was completed in the Hull & Associates February 2005 Annual Report on groundwater quality, and confirmed that the historic five-year arsenic data and future trend supported the current remedy of natural oxidation of arsenic in groundwater. Since the revised 10 ppb MCL for arsenic became final in 2006, the multi-year trend analysis for arsenic in groundwater was adjusted accordingly to confirm the effectiveness of the current remedy of natural oxidation of arsenic in groundwater.

**Institutional Controls**

ICs are non-engineered instruments, such as administrative and legal controls, that help to minimize the potential for exposure to contamination and that protect the integrity of the remedy. ICs are required to assure the long-term protectiveness for any areas which do not allow for UU/UE. ICs are required by the 1995 ROD to restrict land and groundwater use, and protect the integrity of the Site remedial action. An IC evaluation study was completed in April 2007 to outline the required ICs for the Site. The areas listed in Table 1 require ICs to protect the integrity of the remedy.

**Table 1:** Summary of Planned and/or Implemented ICs

<b>Media, engineered controls, and areas that do not support UU/UE based on current conditions</b>	<b>ICs Needed</b>	<b>ICs Called for in the Decision Documents</b>	<b>Impacted Parcel(s)</b>	<b>IC Objective</b>	<b>Title of IC Instrument Implemented and Date (or planned)</b>
Site area: (~50 acres)  Site boundary/ Site area: On site soil multi-media landfill cap and adjacent stormwater retention basin.  Groundwater underlying on-site area.  Property parcels owned by CDC Associates.	Yes	Yes	Property parcels owned by CDC Associates	Prohibits use of landfill cap land, groundwater underlying Site, and assures integrity of landfill & other RA components.	Declaration of Restrictive Covenant recorded (liber-2136, page-992) at Calhoun County recorder's office on June 21 1999, pursuant to Michigan Code R. 299.610 (e).

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Site area: (~50 acres)  Site boundary/ Site area: On site soil multi-media landfill cap and adjacent stormwater retention basin.  Groundwater underlying on-site area.  Property parcels owned by Calhoun County, Michigan.	Yes	Yes	Property parcels owned by Calhoun County, Michigan	Prohibits use of landfill cap land, groundwater underlying Site, and assures integrity of landfill & other RA components	Planned restriction in the form of restrictive covenant(s) to be developed, with input from the State of Michigan.

Figure 2 showing the areas in which the ICs apply is included in Appendix A.

Status of Access Restrictions and ICs:

A Declaration of Restrictive Covenant was recorded (liber-2136, page-992) at Calhoun County recorder's office on June 21, 1999, pursuant to Michigan Code R. 299.610 (e) on three parcels owned by CDC Associates covering portions of the Site landfill cap property and adjacent stormwater retention basin. Restrictions on the parcels owned by CDC Associates include that there shall be no use of the groundwater underlying the Property; no residential, commercial or agricultural use of the landfill cap property; no tampering with, development on, or removal of, the contaminant or monitoring systems that remain on the Property; and no use of, or activity at, the Property that may interfere with, damage, or otherwise impair the effectiveness of any response action (or component thereof) selected and/or undertaken by EPA, or any party acting as representative for EPA.

ICs in the form of restrictive covenant(s) are planned for the Site landfill parcels owned by Calhoun County, Michigan. Calhoun County is in the process of completing foreclosure on these parcels in acquiring ownership. These additional ICs will assure that all property on the Site is properly restricted, that the use of groundwater underlying the Site is properly restricted, and that the remedy is protected over the long-term.

Current Compliance

Based on inspections and discussions conducted with MDEQ, EPA is not aware of Site or media uses which are inconsistent with the stated objectives to be achieved by the ICs. The remedy appears to be functioning as intended. The IC currently implemented at the Site on the

parcels owned by CDC Associates was previously reviewed by EPA Regional Counsel and the Michigan Attorney General Office in 2012 and found to be in compliance. The additional planned ICs listed are needed so that the Site remedy can remain protective in the long-term.

#### IC Follow up Actions Needed:

Follow up actions related to ICs include:

- Planned restrictive covenant(s) to be developed on property owned by Calhoun County, Michigan with input from the State of Michigan.

#### Long-Term Stewardship:

ICs are required to restrict property use, maintain the integrity of the remedy, and assure long-term protectiveness for areas which do not allow for UU/UE. Long-term stewardship for the Site is addressed through IC reporting requirements, semi-annual monitoring reports, and enforcement of implemented ICs. Long-term stewardship at the Site is accomplished by the City of Albion and contractor visually verifying Site conditions during operation and maintenance (O&M) inspections, and by providing an update on compliance of ICs as required in the 1999 O&M Plan and in a section included in the annual O&M reports.

#### **Systems Operations/Operation & Maintenance**

PRP contractor Hull, along with the City of Albion, conduct system O&M activities at the Site. System O&M is conducted at various times and consists of monitoring the following system conditions:

- Site-wide groundwater quality monitoring;
- Visual inspection and mowing of the multi-media landfill cap,
- Observation and repair of the landfill gas probes,
- Long-term stewardship of ICs.

Non-routine O&M activities which may result in shut down of an individual well during the maintenance period include:

- Monitoring well cleanout and repair; and
- Landfill cap cover grading repair.

Historical cost summaries indicate that annual O&M costs are approximately \$30,000 per year.

### **III. PROGRESS SINCE THE LAST REVIEW**

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations.

**Table 2: Protectiveness Determinations/Statements from the 2012 FYR**

OU #	Protectiveness Determination	Protectiveness Statement
1	Short-term Protective	The Albion-Sheridan Landfill Site remedy is functioning as intended and is protective of human health and the environment in the short term. The Site Landfill cap remains in place and continues to provide an adequate barrier for waste containment. There is no evidence of a cap breach and the existing use of the Site property is consistent with the objectives of the landfill cap and land use restrictions. There is no evidence of Site arsenic contaminant migration above MCLs impacting drinking water. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure long-term protectiveness: implementing additional institutional controls to ensure Site property and groundwater protectiveness; enforcement, compliance, maintenance, and monitoring of effective ICs; and ongoing implementation of the O&M program.

**Table 3: Status of Recommendations from the 2012 FYR**

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
1	Arsenic groundwater trend analysis for Site.	The multi-year trend analysis for arsenic in the O&M program will continue to monitor arsenic levels during the next five years to see if the trend of reduced arsenic levels and migration in groundwater remains at the Site.	Ongoing	Implementation status discussed below	NA
1	Additional ICs for Site property parcel(s).	EPA will be working with the PRPs, Calhoun County, Michigan and MDEQ to ensure that ICs in the form of restrictive covenant(s) are implemented on Site property parcel(s) owned by Calhoun County, Michigan. The ICs will assure that land and groundwater use on Site parcel(s) are adequately restricted and the Site remedy is protected.	Ongoing	Implementation status discussed below	NA

### Recommendation 1

- The multi-year trend analysis presented in the *2016 Annual Report of Groundwater Quality* (Hull, November 2016) indicates that concentrations of total arsenic generally appear to be decreasing for the monitoring well system. This continues the trend shown during the 2012 FYR. The exception is isolated to an off-site monitoring well along the railroad tracks across from the road south of the Site.

### Recommendation 2

- EPA has been working with Calhoun County, Michigan and their legal counsel since the 2012 FYR as they proceed in obtaining ownership of Site landfill property parcels through a multi-year foreclosure process. This foreclosure process is expected to be completed in 2017, so the planned additional restrictive covenant with Calhoun County and the State of Michigan can be implemented thereafter.

There have been some non-routine maintenance activities during the current FYR reporting period, including Site surface grading and fence repair.

## **IV. FIVE-YEAR REVIEW PROCESS**

### **Community Notification, Involvement & Site Interviews**

A notice was published in the local newspaper, the Albion Recorder, on May 4, 2017, stating that there was a FYR and inviting the public to contact EPA with any questions or concerns. The results of the review and the report will be made available at the Site information repository located at the Albion Public Library, 501 Superior Street, Albion MI. Additional information can be found at [www.epa.gov/superfund](http://www.epa.gov/superfund). A copy of the public notice is included in Appendix B.

### **Data Review**

The O&M program formally began monitoring groundwater and fence line gas probes, as approved in the Site O&M Plan in October 1999. Two additional fence line gas probes and two additional groundwater monitoring wells were constructed in June 2001. As a result of a condition outlined in the O&M Plan, the perimeter fence line monitoring was discontinued at the end of 2002 after limited, if any, landfill gas detections occurred over eight consecutive sampling events at the seven gas probes.

The landfill cap requires regular maintenance involving inspection and repair of any soil burrowing or erosion locations, and mowing of the landfill surface. Other than minor surface repairs for erosion and grade control, the cap has not required major maintenance since the Site landfill cap maintenance in 2000 to correct and control significant erosion damage.

A review of the groundwater data from the November 2016 Annual Report on Groundwater Quality for the Site indicates that most monitoring wells continue to show arsenic as the contaminant of concern with a trend of decreasing total arsenic levels in groundwater. Monitoring results in 2016 found all monitoring wells located within the Site fence line boundary, with the exception of MW-04SG, to be below the 10 ppb MCL. Although total arsenic levels for MW-04SG continue to be above the MCL (14 ppb, 13 ppb, and 47 ppb over the last three years), it is located in an isolated unconsolidated saturated unit which is not part of a continuous aquifer which impacts groundwater migration. As a result, the three monitoring wells along the downgradient southern fence line (MW09SB, MW06SB, and MW07SB) are indicating that total arsenic at or above the 10 ppb MCL is not migrating off-site. This is a continuation of the arsenic trend analysis outlined in the 2012 FYR. Although one off-site monitoring well (MW15SB) continues to have total arsenic levels above the MCL (70 ppb, 73 ppb, and 65 ppb over the last three years), it is located on the Norfolk & Southern Railway right-of way which seems to be an isolated off-site concern. There are no known exposures related to this Norfolk & Southern Railway groundwater monitoring well as the extent of arsenic groundwater migration from this location seem limited from groundwater modeling. It is recommended that these positive trends regarding total arsenic levels in groundwater be monitored over the next five years to see if they continue to be confirmed.

Michigan groundwater cleanup criteria were exceeded at certain groundwater monitoring well locations for ammonia (10 ppm), aluminum (50 ppb), and manganese (50 ppb). There are no EPA primary MCLs for ammonia, total aluminum and total manganese. Regarding residential well sampling, there were no MCL exceedances with only manganese reported slightly above Michigan criteria at one location. A review of the monitoring results for upgradient residential well RW06 and downgradient residential well RW04 since the 2012 FYR indicates that manganese sampling results have improved for RW06 and remained stable over time for RW04. Manganese results for RW06 were 10 ppb (2016) compared to 67 ppb (2011), while levels at RW04 were 61 ppb (2016) similar to 62 ppb (2011) and was the only result slightly above the Michigan standards.

MDEQ believes that additional data is needed in order to determine whether or not Site arsenic contamination is migrating off-site. They would like to see additional statistical analysis to determine with any certainty that arsenic is increasing, decreasing, or stable at the Site. MDEQ would also like to discuss re-initiating landfill gas sampling at the Site. As stated in the 2007 FYR report, EPA documented that the PRPs were adequately implementing the arsenic groundwater trend analysis under the approved O&M program and that it should and does continue. The 2007 FYR report also documented that the PRPs had adequately completed the requirements of the landfill gas probe sampling program as required in the O&M Plan. Even though EPA believes that the current monitoring program is appropriate at the Site, an ongoing discussion between EPA, MDEQ and the PRPs at the Site is always beneficial and will occur to assure that the O&M program is being properly implemented as required under the Site O&M Plan.

### **Site Inspection**

EPA project manager Jeff Gore met MDEQ project manager Priyank Patel for the Site inspection on November 16, 2016. The purpose of the inspection was to assess the Site O&M

and the protectiveness of the remedy. Issues impacting current or future protectiveness were not observed. Photographs from the Site inspection are included as Appendix F.

No major issues were observed during the Site inspection. Minor issues included the need for perimeter fence repair on a portion of the east fence line and the repair of an animal burrow at the surface along an area of the east fence line. The City of Albion and contractor Hull ensure that the Site monitoring wells, landfill cap, passive venting system, Site fence and ICs are inspected as part of the O&M. All aspects of the remedy were operational, inspected monitoring wells were properly locked, and the perimeter fence entrance gates were secure with signs in place.

During the inspection, Jeff Gore and Priyank Patel walked the perimeter of the landfill, the surface of the landfill, and inspected the monitoring well system. Jeff Gore provided Priyank Patel a brief summary of the Site O&M program as he has recently been assigned as the MDEQ project manager for the Site. The Site inspection is included in Appendix E.

## **V. TECHNICAL ASSESSMENT**

**QUESTION A:** Is the remedy functioning as intended by the decision documents?

### **Question A Summary:**

Yes, the selected remedy is functioning as intended by the decision documents to prevent unacceptable exposures, to remove groundwater contaminants, and limit migration of arsenic impacted groundwater in the vicinity of the Site. Site groundwater over the last five years has continued to confirm the trend in decreasing arsenic levels on-Site and indicating that total arsenic at or above the 10 ppb MCL is not migrating off-site. With continued maintenance of the Site solid waste cap with flexible membrane liner, the source area remedy should contain any soil contamination and ensure that no unacceptable human health risks develop.

Opportunities for optimization include the monitoring of the trend of no off-site migration above the arsenic MCL and should continue over the next five years for ongoing confirmation.

The 1995 ROD included measures implementing the use of ICs on landfill property to limit both land and groundwater use, and to limit groundwater use on adjacent property until the arsenic clean-up standard is attained. The Site property owned by CDC Associates had a restrictive covenant recorded at Calhoun County recorder's office on June 21 1999. The restrictive covenant limits land and groundwater use on the Site, and protects the remedy. ICs in the form of restrictive covenant(s) are planned for the Site landfill parcels owned by Calhoun County, Michigan. These additional ICs will ensure that all property on the Site is properly restricted, that the use of groundwater underlying the Site is properly restricted, and that the remedy is protective over the long-term. The issues and recommendations from the previous 2012 FYR have been updated in this FYR.

**QUESTION B:** Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Yes. Exposure assumptions, toxicity data and RAOs used at the time of remedy selection are still valid. General land use and exposure pathways have not changed since the remedy selection. In 2006, EPA revised the arsenic MCL for drinking water from 50 ppb to 10 ppb. There have been no known changes in standards to be considered since the last review in the 2012 FYR report.

**QUESTION C:** Has any other information come to light that could call into question the protectiveness of the remedy?

No information has come to light that could call into question the selected remedy's protectiveness. Regulatory changes or additional receptor pathways have not been identified during this FYR. Unanticipated events that could affect the Site remedy have not occurred.

## VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations				
<b>OU(s) without Issues/Recommendations Identified in the Five-Year Review:</b>				
None				

Issues and Recommendations Identified in the Five-Year Review:				
OU(s): 1	Issue Category: Operations and Maintenance			
	Issue: Arsenic groundwater trend analysis for Site.			
	Recommendation: Continue the trend analysis to monitor reduced arsenic levels over the next five years at the Site.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA/State	7/1/2022

Issues and Recommendations Identified in the Five-Year Review:				
OU(s): 1	Issue Category: Institutional Controls			
	Issue: Additional ICs for Site property parcel(s) needed.			
	Recommendation: Implement Restrictive Covenant(s) for property parcel(s) owned by Calhoun County, Michigan.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA/State	7/1/2018



## VII. PROTECTIVENESS STATEMENT

<b>OU1 and Sitewide Protectiveness Statement</b>
<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The remedy at the Albion-Sheridan Township Landfill Site is currently protective of human health and the environment because it is functioning as designed to remove groundwater contaminants and limit arsenic impacted groundwater in the vicinity of the Site. No one is drinking groundwater impacted by the Site. However, in order for the Site remedy to be protective in the long-term, the following actions need to be taken: continue the trend analysis to monitor reduced arsenic levels over the next five years at the Site, and record Restrictive Covenant(s) for property parcel(s) owned by Calhoun County, Michigan. Continued compliance with existing Site ICs, and the continued maintenance and monitoring of the Site remedy components and groundwater will ensure protectiveness of human health and the environment

## VIII. NEXT REVIEW

The next FYR report for the Albion-Sheridan Township Landfill Superfund Site is required no less than five years from the signature date of this review.

## APPENDIX A1 - FIGURES

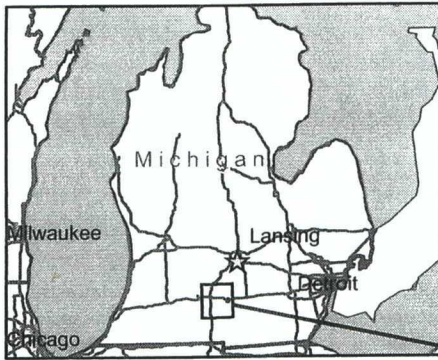
# Site Location

Superfund  
U.S. Environmental Protection Agency

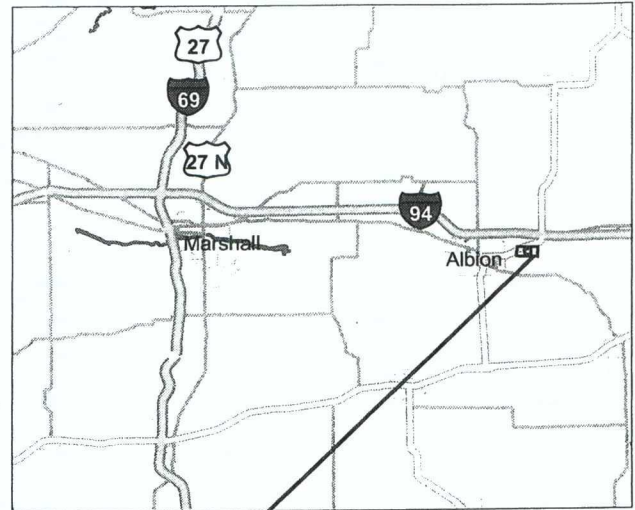


## Albion-Sheridan Township Landfill Calhoun County, MI

MID980504450



State



County



Site

Produced by Sarah Backhouse  
U.S. EPA Region 5 on 5/31/07  
Image Date: 2006







## APPENDIX A2 – IC DOCUMENTS



21 JUN 1999 9:02:13 AM

ANNE K. NORLANDER  
CLERK - REGISTER OF DEEDS

LITER 2136 PAGE 992

**ENVIRONMENTAL PROTECTION EASEMENT  
AND  
DECLARATION OF RESTRICTIVE COVENANTS**

1. This Environmental Protection Easement and Declaration of Restrictive Covenants is made ~~April~~ June 8, 1999, by and between CDC ASSOCIATES, INC. ("Grantor"), a Michigan corporation, having an address of 402 S. Brown Street, Jackson, Michigan 49203, and STATE OF MICHIGAN, DEPARTMENT OF ENVIRONMENTAL QUALITY, and its assigns, ("Grantee"), having an address of 300 South Washington, P.O. Box 30426, Lansing, Michigan 48909-7926.

**WITNESSETH:**

2. **WHEREAS**, Grantor is the owner of three parcels of land located in the County of Calhoun, State of Michigan, more particularly described on Exhibit A attached hereto and made a part hereof (the "Property"); and

3. **WHEREAS**, the Property is a part of and adjacent to the Albion-Sheridan Township Landfill Superfund Site ("Site"), which the U.S. Environmental Protection Agency ("EPA"), pursuant to Section 105 of the comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. 9605, placed on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on October 4, 1989; and

4. **WHEREAS**, in a Record of Decision dated March 28, 1995 (the "ROD"), the EPA Region 5 Regional Administrator selected a "remedial action" for the Site, which provides, in part, for the following actions:

- a. Removal and off-site treatment and disposal of drums containing hazardous wastes;
- b. Construction of a solid waste landfill cap consisting of a flexible membrane liner;
- c. Installation of a passive landfill gas collection system;
- d. Long term monitoring to ensure that the remedy is effectively lowering hazardous substances in the groundwater;
- e. Institutional controls to limit land and groundwater use on-site and groundwater on adjacent property, installation of perimeter fence, and advisories to property owners as required by EPA; and
- f. A contingent remedy of in situ oxidation in the event groundwater contaminant levels are not timely and/or sufficiently lowered as determined by EPA; and

5. **WHEREAS**, the remedial action has not been fully implemented at the Site; and

6. **WHEREAS**, the parties hereto have agreed pursuant to terms of a Consent Decree: 1) to grant a permanent right of access over the Property for purposes of implementing, facilitating and monitoring the remedial action; and 2) to impose on the Property use restrictions as covenants that will run with the land for the purpose of protecting human health and the environment; and

7. **WHEREAS**, Grantor wishes to cooperate fully in the implementation of all response actions at the Site;

*Handwritten signature and date: Anne K. Norlander, June 8, 1999*

## NOW, THEREFORE:

8. **Grant:** Grantor, on behalf of itself, its successors and assigns, (collectively the "Grantor") in consideration of the terms of the Consent Decree in the case of United States v. City of Abion, Michigan et al., Case No. 1:97-CV-1037 (W.D. Mich.), does hereby covenant and declare that the Property shall be subject to the restrictions on use set forth below, and does give, grant and convey to the Grantee, and its successors and assigns, (but without any warranties of title except the warranty that Grantor has not taken any action to impair its title other than as provided in this easement and in the Consent Decree referred to above), 1) the perpetual right to enforce said use restrictions, and 2) an environmental protection easement of the nature and character, and for the purposes hereinafter set forth, with respect to the Property.

9. **Purpose:** It is the purpose of this instrument to convey to the Grantee real property rights, which will run with the land, to facilitate the remediation of past environmental contamination and to protect human health and the environment by reducing the risk of exposure to contaminants.

10. **Restrictions On Use:** The following covenants, conditions, and restrictions apply to the use of the Property, run with the land and are binding on the Grantor:

- a. The Grantor shall not itself make, nor may it authorize, any consumptive or other use of the groundwater underlying the Property that could cause exposure of humans or animals to the groundwater underlying the Property, without the consent of the Grantee;
- b. As to the portions of the Property that are covered by the Landfill Cap (as identified in the Consent Decree appendices), Grantor shall not itself, nor may it authorize, any residential, commercial, or agricultural use, including, but not limited to, on-site excavation, landfilling, mining, invasive construction, drilling, and installation of drinking water production wells, except as approved by Grantee;
- c. The Grantor shall not itself, nor may it authorize, any tampering with, development on, or removal of, the containment or monitoring systems that remain on the Property as a result of the implementation of any response action by the EPA, or any party acting as representative for EPA, and which is selected or undertaken by EPA pursuant to Section 104 of CERCLA; and
- d. The Grantor shall not itself, nor may it authorize, any use of, or activity at, the Property that may interfere with, damage, or otherwise impair the effectiveness of any response action (or component thereof) selected and/or undertaken by EPA, or any party acting as representative for EPA, pursuant to Section 104 of CERCLA, except with written approval of EPA, and consistent with all statutory and regulatory requirements.

11. **Modification of Restrictions:** The above restrictions may be modified, or terminated in whole or in part, in writing, by the mutual agreement of the Grantor and the Grantee. If requested by the Grantor or Grantee, such writing will be executed by the parties in recordable form.

12. **Environmental Protection Easement:** Grantor hereby grants to the Grantee an irrevocable, permanent and continuing right of access at all reasonable times to the Property for purposes of:

- a. Implementing the response actions in the ROD, including but not limited to response actions specified in Paragraph 4 herein;
- b. Verifying any data or information submitted to EPA.
- c. Verifying that no action is being taken on the Property in violation of the terms of this



instrument or of any federal or state environmental laws or regulations;

- d. Monitoring response actions on the Site and conducting investigations relating to contamination on or near the Site, including, without limitation, sampling of air, water, sediments, soils, and specifically, without limitation, obtaining split or duplicate samples;
- e. Conducting periodic reviews of the remedial action, including but not limited to, reviews required by applicable statutes and/or regulations; and
- f. Implementing additional or new response actions if the Grantee, in its sole discretion, determines i) that such actions are necessary to protect the environment because either the original remedial action has proven to be ineffective or because new technology has been developed which will accomplish the purposes of the remedial action in a significantly more efficient or cost effective manner; and ii) that the additional or new response actions will not impose any significantly greater burden on the Property or unduly interfere with the then existing uses of the Property.

13. **Reserved Rights of Grantor:** Grantor hereby reserves unto itself, its successors, and assigns, all rights and privileges in and to the use of the Property which are not incompatible with the restrictions, rights and easements granted herein.

14. **Other Rights of EPA:** Nothing in this document shall limit or otherwise affect EPA's rights of entry and access or EPA's authority to take response actions under CERCLA, the NCP, or other federal law.

15. **No Public Access and Use:** No right of access or use by the general public to any portion of the Property is conveyed by this instrument. Access to the Site shall be controlled at all times by means of a perimeter fence installed and maintained by persons or entities other than Grantor.

16. **Notice Requirement:** Grantor agrees to include in any instrument conveying any interest in any portion of the Property, including but not limited to deeds, leases and mortgages, a notice which is in substantially the following form:

Notice: the interest conveyed hereby is subject to an environmental protection easement and declaration of restrictive covenants, dated April \_\_, 1999, in Liber \_\_, Page \_\_, in favor of, and enforceable by, The United States of America. *[insert appropriate date and numbers in the instrument]*

Within thirty (30) days of the date any such instrument of conveyance is executed, Grantor must provide Grantee with a certified true copy of said instrument and, if it has been recorded in the public land records, its recording reference.

17. **Administrative Jurisdiction:** The federal agency having administrative jurisdiction over the interests acquired by the United States by this instrument is the EPA.

18. **Enforcement:** The Grantee shall be entitled to enforce the terms of this instrument by resort to specific performance or legal process. All remedies available hereunder shall be in addition to any and all other remedies at law or in equity, including CERCLA. Enforcement of the terms of this instrument shall be at the discretion of the Grantee, and any forbearance, delay or omission to exercise its rights under this instrument in the event of a breach of any term of this instrument shall not be deemed to be a waiver by the Grantee of such term or of any subsequent breach of the same or any other term, or of any of the rights of the Grantee under this instrument.

19. **Damages:** Grantee shall be entitled to recover damages for violations of the terms of this

instrument, or for any injury to the remedial action, to the public or to the environment protected by this instrument.

20. **Waiver of Certain Defenses:** Grantor hereby waives any defense of laches, estoppel, or prescription as to claims for violations of the terms of this instrument brought by the Grantee and its assigns.

21. **Covenants:** Grantor hereby covenants to and with the Grantee and its assigns, that, based upon the receipt of title insurance policies (Ticor Title Insurance Company, policy number 23510808700005834, and First American Title Insurance Company, policy number OP 5702195), it is of the opinion that: 1) the Grantor is lawfully seized in fee simple of the Property, and 2) that the Grantor has a good and lawful right and power to sell and convey it or any interest therein.

22. **Notices:** Any notice, demand, request, consent, approval, or communication that either party desires or is required to give to the other shall be in writing and shall either be served personally or sent by first-class mail, postage prepaid, addressed to the Grantor and Grantee at the addresses stated above.

23. **General Provisions:**

a. **Controlling Law:** The interpretation and performance of this instrument shall be governed by the laws of the United States or, if there are no applicable federal laws, by the law of the State of Michigan.

b. **Liberal Construction:** Any general rule of construction to the contrary notwithstanding, this instrument shall be liberally construed in favor of the grant to effect the purpose of this instrument and the policy and purpose of CERCLA. If any provision of this instrument is found to be ambiguous, an interpretation consistent with the purpose of this instrument that would render the provision valid shall be favored over any interpretation that would render it invalid.

c. **Severability:** If any provision of this instrument, or the application of it to any person or circumstance, is found to be invalid, the remainder of the provisions of this instrument, or the application of such provisions to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.

d. **Entire Agreement:** This instrument sets forth the entire agreement of the parties with respect to rights and restrictions created hereby, and supersedes all prior discussions, negotiations, understandings, or agreements relating thereto, all of which are merged herein.

e. **No Forfeiture:** Nothing contained herein will result in a forfeiture or reversion of Grantor's title in any respect.

f. **Joint Obligation:** If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

g. **Successors:** The covenants, terms, conditions, and restrictions of this instrument shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, heirs, successors, and assigns and shall continue as a servitude running in perpetuity with the Property. The term "Grantor," wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as "Grantor" and their personal representatives, heirs, successors, and assigns. The term "Grantee," wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as "Grantee" and their personal representatives, heirs, successors, and assigns. The rights of the Grantee and Grantor under this instrument are freely assignable, subject to the notice provisions hereof.

h. Termination of Rights and Obligations: A party's rights and obligations under this instrument terminate upon transfer of the party's interest in the Easement or Property, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

i. Captions: The captions in this instrument have been inserted solely for convenience of reference and are not part of this instrument and shall have no effect upon construction or interpretation.

TO HAVE AND TO HOLD unto the Grantee and its assigns forever.

IN WITNESS WHEREOF, Grantor has caused this Agreement to be signed in its name.

Executed April \_\_\_\_\_, 1999.

**WITNESSES**

Elaine Kay Cole  
Elaine Kay Cole

CDC ASSOCIATES, INC.  
By Terry J. Klaasen  
Terry J. Klaasen, President

Roxanne X. Wright  
Roxanne X. Wright

Pamela F. Meadows  
Pamela F. Meadows

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
By Alan Howard  
Alan Howard, Chief  
Environmental Response Division

Joan Capel  
Joan Capel

STATE OF MICHIGAN )  
COUNTY OF JACKSON )

On <sup>June 2<sup>nd</sup></sup> ~~April 2~~, 1999, before me, a Notary Public in and for the State of Michigan, personally appeared TERRY J. KLAASEN, known to be the President of CDC Associates, Inc., the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that he is authorized to execute said instrument.

Witness my hand and official seal hereto affixed the day and year written above.

Elaine Kay Cole  
Elaine Kay Cole  
Notary Public, Jackson County,  
State of Michigan  
My commission expires: 5/16/02

STATE OF MICHIGAN )  
COUNTY OF INGHAM )

On <sup>MAY 7<sup>th</sup></sup> ~~April 7<sup>th</sup>~~, 1999, before me, a Notary Public in and for the State of Michigan, personally appeared ALAN J. HOWARD known to be the Chief, Environmental Response Division of the Grantee, that

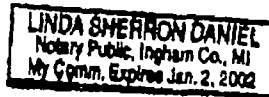
executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said Grantee, for the uses and purposes therein mentioned, and on oath stated that he is authorized to execute said instrument.

Witness my hand and official seal hereto affixed the day and year written above.

*Linda Sherron Daniel*

Notary Public, Ingham County,  
State of Michigan

My commission expires: 1-2-2002



PREPARED BY:  
Philip M. Moilanen  
402 S. Brown Street  
Jackson, MI 49203

LIBER 2136 PAGE 997

EXHIBIT A

Parcel 1:

Sheridan Township, Section 36, Town 2 South, Range 4 West, Supervisors Plat - the South 1287 Feet of Lot 26.

Property Tax Identification Number: 1301936203300

Parcel 2:

Commencing at the Southwest Corner of Lot 28 of Supervisors Plat, Thence North 250 Feet along the West Line of Lot 28; Thence East 300 Feet; Thence South to the South Line of Lot 28; Thence Westerly along South Line of Lot 28 to Point of Beginning.

Property Tax Identification Number: 1301936204510

Parcel 3:

Commencing at the Southeast Corner of Lot 28, Supervisors Plat; Thence Westerly along the South Line of Said Lot, 389.3 Feet; Thence North 350 Feet; Thence East to a Point 200 Feet West of the East Lot Line; Thence North to a Point being 200 Feet West and 720 Feet North of the Point of Beginning; Thence East 200 Feet; Thence South to the Point of Beginning.

Property Tax Identification Number: 1301036204520

## **APPENDIX B**

### **PUBLIC NOTICE and FYR START NOTIFICATION**



## **EPA Begins Review of Albion-Sheridan Township Landfill Superfund Site Albion, Michigan**

The U.S. Environmental Protection Agency is conducting a five-year review of the Albion-Sheridan Township Landfill Superfund site about a mile east of Albion. The Superfund law requires regular checkups of sites that have been cleaned up – with waste managed on-site – to make sure the cleanup continues to protect people and the environment. This is the fourth five-year review of this site.

The cleanup includes a multi-layer cap with venting over an 18-acre landfill, cap maintenance, long-term ground water treatment, monitoring and limits on use of the area.

More information is available at the Albion Public Library, 501 Superior St. The review should be completed by August, 2017.

The five-year review is an opportunity for you to tell the EPA about site conditions and any concerns you have. Contact:

**Jeff Gore**  
Remedial Project Manager  
312-886-6552  
gore.jeffrey@epa.gov

**Cheryl Allen**  
Community Involvement Coordinator  
312-353-6196  
allen.cheryl@epa.gov

You may also call the EPA toll-free at 800-621-8431, 9:30 a.m. to 5:30 p.m., weekdays.

**EPA  
Superfund Division  
77 W. Jackson Blvd.  
Chicago, IL 60604**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, ILLINOIS 60604

September 19, 2016

SR-6J

Mary Schafer  
Michigan Department of Environmental Quality  
Constitution Hall, P.O. Box 30426  
Lansing, MI 48909

Re: Notification of Five Year Review Start for the Albion-Sheridan Township Landfill Site

Dear Ms Schafer:

This letter is to notify you that the United States Environmental Protection Agency (EPA) has begun the process of the Five Year Review for the Albion-Sheridan Township Landfill Superfund Site in Albion, MI. A Statutory Five Year Review for the Site will be conducted as required by Section 121 of CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

The Five Year Review for the Albion-Sheridan Township Landfill Site is due June 27, 2017, and we are providing you this notification so that EPA and the Michigan Department of Environmental Quality (MDEQ) can begin the necessary activities for the review process. A site inspection will be scheduled and I am available pertaining to any of the matters concerning the Site Five Year Review process.

Please contact me at 312-886-6552 if you have any questions or concerns regarding this Five Year Review for the Albion-Sheridan landfill Site.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeff Gore", is written over the typed name.

Jeff Gore  
Remedial Project Manager  
U.S. EPA

bcc. Stephanie Cwik  
Timothy Fischer  
Robert Franks, MDEQ  
Cheryl Allen, OPA  
Robert Peachey, ORC



## APPENDIX C

### DOCUMENTS REVIEWED

**Fourth FYR Report  
Albion-Sheridan Township Landfill Site  
List of Documents Reviewed**

In preparation for this FYR report, Albion-Sheridan Township Landfill Site documents were reviewed including the following:

- Third FYR Report, August 2012
- Second FYR Report, August 2007
- First FYR Report, September 2002
- RD/RA Consent Decree, December 1999
- Record of Decision, March 1995.
- Albion-Sheridan Township Landfill Site file, and operation & maintenance reports

**APPENDIX D**

**SITE TREATMENT MONITORING DATA**

ALBION-SHERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE I  
ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-615B

PARAMETER	UNITS	10/27/1999	01/25/2000	04/19/2000	07/20/00	10/24/2000	10/24/00#	01/23/2001	10/24/2001	10/29/2002	10/29/2003	10/21/2004	1/11/2005	05/27/2005	09/27/05#	11/26/2007	10/07/08	11/17/09	11/06/10	11/07/11	11/14/12	11/11/13	09/23/14	12/07/15	06/29/16	8/29/2016#	
<b>Analyte Parameters</b>																											
Ammonia, Ammonia	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.141*	0.053	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ammonia, Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Ammonia, Total	mg/L																										
Aluminum, Dissolved	mg/L					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Aluminum, Total	mg/L																										
Antimony, Dissolved	mg/L					<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	0.0972	0.0747	0.0307	0.0131	0.0231	0.034*	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Antimony, Total	mg/L																										
Cadmium, Dissolved	mg/L					<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium, Total	mg/L																										
Manganese, Dissolved	mg/L					0.19	0.195	<0.02	0.158	0.047	<0.02	0.195	0.158	0.158	0.168	0.215	0.173	0.197	0.233	0.226	0.28	0.36	0.24	0.27	0.23	0.23	0.23
Manganese, Total	mg/L																										
Barium, Dissolved	mg/L					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.007	<0.007	<0.005	<0.006	<0.0055	<0.005	<0.005	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Barium, Total	mg/L																										
Benzene	ug/L	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloro-2-Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.07	<0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>Trace Element Parameters</b>																											
<b>Chloride</b>																											
Chloride	mg/L																										
Chloride, Total	mg/L																										
Cyanide, Total	mg/L																										
Fluoride, Total	mg/L																										
Boron, Dissolved	mg/L																										
Beryllium, Dissolved	mg/L																										
Cadmium, Dissolved	mg/L																										
Cadmium, Total	mg/L																										
Chromium, Dissolved	mg/L																										
Chromium, Total	mg/L																										
Copper, Dissolved	mg/L																										
Copper, Total	mg/L																										
Iron, Dissolved	mg/L																										
Iron, Total	mg/L																										
Lead, Dissolved	mg/L																										
Lead, Total	mg/L																										
Magnesium, Dissolved	mg/L																										
Magnesium, Total	mg/L																										
Manganese, Dissolved	mg/L																										
Manganese, Total	mg/L																										
Mercury, Dissolved	mg/L																										
Mercury, Total	mg/L																										
Nickel, Dissolved	mg/L																										
Nickel, Total	mg/L																										
Silver, Dissolved	mg/L																										
Silver, Total	mg/L																										
Sodium, Dissolved	mg/L																										
Sodium, Total	mg/L																										
Thallium, Dissolved	mg/L																										
Thallium, Total	mg/L																										
Vanadium, Dissolved	mg/L																										
Vanadium, Total	mg/L																										
Zinc, Dissolved	mg/L																										
Zinc, Total	mg/L																										
<b>ICL VOCs*</b>																											
ICL VOCs*	ug/L																										
<b>ICL SVOCs*</b>																											
ICL SVOCs*	ug/L																										
2,4-Dinitrotoluene	ug/L																										
2,4-Dinitrotoluene	ug/L																										
2,4-Dinitrotoluene	ug/L																										
1,1-Dichloro-2,2-Dichloroethane	ug/L																										
1,1-Dichloro-2,2-Dichloroethane	ug/L																										
1,1-Dichloro-2,2-Dichloroethane	ug/L																										
<b>ICL Pesticides*</b>																											
ICL Pesticides*	ug/L																										
<b>Field Parameters</b>																											
pH	5 U	7.41	7.46	7.48	7.27	7.58	7.58	7.45	7.33	7.73	7.39	7.29	7.34	7.46	7.46	6.1	6.68	6.78	7.29	6.67	6.64	6.74	6.45	6.80	5.55	5.55	
Conductivity	umhos/cm	1083	1108	1147	1177	1272	1272	1200	1080	912	862	908	934	985	985	900	943	950	1060	980	899	950	1090	980	908	908	
Temperature	°C	10.8	10	11.1	11.5	15	15	9.5	11.5	9.9	11.4	10.7	10.8	10.5	10.5	9.6	10.5	9.5	9.3	12.2	9.8	11.1	11.2	8.4	11.6	11.6	
pH	millim	-18	22	43	16			31	31	59.8	21			17	17	1											

ALBION-SHERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE 2  
ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-0210

PARAMETER	UNITS	10/24/00	10/24/2001	10/29/2001	10/09/2003	10/21/2004	1/11/2006	09/27/2006	11/26/2007	10/07/08	11/17/09	11/04/10	11/07/11	11/14/13	11/11/13	09/23/14	12/07/13	08/29/16	8/29/2016*
<b>Annual Parameters</b>																			
Nitrogen, Ammonia	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.20 <sup>†</sup>	0.058	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic, Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.005
Arsenic, Total	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.005
Aluminum, Dissolved	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.02	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Aluminum, Total	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.001	<0.001	0.119	0.0181	0.034	<0.02	<0.05	<0.05	0.17	<0.05	0.073	0.11
Antimony, Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Antimony, Total	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt, Dissolved	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt, Total	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese, Dissolved	mg/L	0.038	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	0.04	<0.005	0.023	0.025
Manganese, Total	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0107	0.024	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	0.04	<0.005	0.023	0.025
Nickel, Dissolved	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nickel, Total	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Benzene	ug/L	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-Chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
<b>Trace Elements</b>																			
Chloride	mg/L						9				4.1							10	
Chromate Total	mg/L						<0.005											<0.010	
Nitrate-Nitrite	mg/L						2.7				0.95							2	
Sulfate	mg/L						29				22.5							25	
Barium, Dissolved	mg/L						<0.2				0.0239							0.02	
Barium, Total	mg/L						<0.001				<0.0002							<0.001	
Cadmium, Dissolved	mg/L						<0.0002				<0.0002							<0.0002	
Cadmium, Total	mg/L						101				25							96	
Chromium, Dissolved	mg/L						<0.005				<0.001							<0.002	
Copper, Dissolved	mg/L						<0.025				<0.01							<0.002	
Copper, Total	mg/L						<0.1				<0.1							<0.1	
Lead, Dissolved	mg/L						<0.003				<0.0002							<0.001	
Lead, Total	mg/L						23.4				20.2							26	
Magnesium, Dissolved	mg/L						<0.0002				<0.0002							<0.0002	
Magnesium, Total	mg/L						26.5				24.2							15	
Potassium, Dissolved	mg/L						<0.005				<0.002							<0.005	
Potassium, Total	mg/L						<0.0005				<0.0001							<0.001	
Silver, Dissolved	mg/L						7.3				5.81							6.2	
Silver, Total	mg/L						<0.002				<0.0002							<0.002	
Vanadium, Dissolved	mg/L						<0.02				<0.002							<0.05	
Vanadium, Total	mg/L						<0.02				<0.002							<0.020	
Zinc, Dissolved	mg/L						<0.1				0.025							0.023	
Zinc, Total	mg/L						<0.001				<0.001							<0.001	
Barium, Total	mg/L						70.9				70.9							69	
Beryllium, Total	mg/L						<0.002				<0.002							<0.002	
Cadmium, Total	mg/L						<0.005				<0.005							<0.002	
Calcium, Total	mg/L						4.0				4.0							0.3	
Chromium, Total	mg/L						<0.001				<0.001							<0.001	
Copper, Total	mg/L						21				21							27	
Iron, Total	mg/L						<0.0002				<0.0002							<0.0002	
Lead, Total	mg/L						26.4				26.4							16	
Magnesium, Total	mg/L						<0.005				<0.005							<0.005	
Mercury, Total	mg/L						<0.0005				<0.0005							<0.001	
Potassium, Total	mg/L						6.23				6.23							6.4	
Selenium, Total	mg/L						<0.001				<0.001							<0.001	
Silver, Total	mg/L						6.23				6.23							6.4	
Sodium, Total	mg/L						<0.001				<0.001							<0.001	
Thallium, Total	mg/L						<0.005				<0.005							<0.005	
Vanadium, Total	mg/L						<0.002				<0.002							<0.020	
Zinc, Total	mg/L						<0.001				<0.001							<0.001	
<b>Field Parameters</b>																			
pH	S.U.	7.59	7.37	7.42	7.53	7.29	7.33	7.56	6.04	6.39	6.23	6.58	6.27	6.37	7.07	6.18	6.49	6.22	6.27
Conductivity	umhos/cm	641	552	554	574	598	621	685	926	648	620	610	637	648	603	512	540	540	540
Temperature	°C	15.2	11.1	10	11.1	10.4	10.1	10.3	9.5	10.2	9.8	9.5	11.1	10.5	10.7	10.5	9.7	11.4	11.4
pH	mV/uv	32	105		80		100	236	231	282	154	167	185	189	202	172	20	90	90
Dissolved Oxygen	mg/L	1.41	6.76		3.66		2.11	7.15	279	4.15	11.8	7.6	6.76	6.28	5.27	7.35	6.92	6.92	6.92
Residual Chlorine	+1U							11	13	13	1	2	1	1	2	17			
<b>Seasonal/Annual Parameters</b>																			
Total Dissolved Solids	mg/L	413	337	273	356	350	303	726	679	384	478	65	7.5	65	64	400	6	8	8
Total Suspended Solids	mg/L																		

NOTES:

(1A) Target Analyte List from Table 7.5 of the Remedial Action Quality Assurance Project Plan (WCC, 1995) (RA QAPP) for the Albion Landfill

(1C) Target Compound List from Table 7.4 of the RA QAPP for the Albion Landfill

(\*) All TCL parameters listed on Table 7.4 of the RA QAPP are analyzed

Only those parameters reported as or above the laboratory practical quantitation limit are listed

(B) Parameter was reported above the PQL in field blank during this event

(†) Not Tested

(R) Duplicate sample

(ND) Non-detect (i.e. not reported as or

above the laboratory practical quantitation limit)

ALBION-SHERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE 3

ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-0338A

PARAMETER	UNITS	10/25/00	10/24/2001	10/29/2003	10/09/2003	10/21/2004	1/10/2006	09/27/2006	11/26/2007	10/07/08	11/13/08	11/08/10	11/07/11	11/14/12	11/11/13	09/23/14	9/23/14R	12/07/15	08/29/16
<b>Anion Parameters</b>																			
Nitrogen Ammonio	mg/L	7.31	0.21	<0.05	<0.05	<0.05	<0.05	7.39	0.539	0.269	0.199	0.373 <sup>a</sup>	0.425	0.24	0.23	0.34	0.35	0.49	0.21
Arsenic Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic Total	mg/L					<0.1	<0.1	<0.05	<0.05	<0.02	<0.01	<0.01	<0.003	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aluminum Dissolved	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.056	0.0307	0.029	0.037	0.0339	0.19 <sup>a</sup>	<0.05 <sup>a</sup>	<0.050	<0.050	<0.05	<0.05
Aluminum Total	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Antimony Dissolved	mg/L																		
Antimony Total	mg/L																		
Cobalt Dissolved	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt Total	mg/L																		
Manganese Dissolved	mg/L	0.182	<0.02	0.049	<0.02	<0.02	<0.02	0.106	0.074	0.0633	0.048								
Manganese Total	mg/L								0.0833	0.0664	0.0719	0.067	0.0694	0.07	0.074	0.069	0.075	0.075	0.069
Nickel Dissolved	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.007	<0.008	<0.005	<0.0053								
Nickel Total	mg/L								<0.007	<0.005	<0.006	<0.005	<0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Benzene	ug/L	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloro-3-Chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.011	<2	<0.01	<0.01	<0.01
<b>Trace Element Parameters</b>																			
<b>Chloride</b>																			
Chloride	mg/L						78				73.4					79	80		
Cyanide Total	mg/L						<0.005				<0.005					<0.010	<0.010		
Nitrate Nitrate	mg/L						0.17				0.0743					<0.050	<0.050		
Sulfate	mg/L						68				69.8					65	71		
Barium Dissolved	mg/L						<0.2				0.0952					0.11	0.11		
Beryllium Dissolved	mg/L						<0.001				<0.0002					<0.001	<0.001		
Cadmium Dissolved	mg/L						0.0001				<0.0002					<0.001	<0.001		
Cadmium Total	mg/L						132				14					120	120		
Cobaltum Dissolved	mg/L						<0.005				<0.001					<0.007	<0.007		
Chromium Dissolved	mg/L						<0.025				<0.001					<0.002	<0.002		
Copper Dissolved	mg/L						<0.01				0.762					0.86	0.84		
Lead Dissolved	mg/L						<0.003				<0.0002					<0.001	<0.001		
Magnesium Dissolved	mg/L						36.7				31.2					33	32		
Mercury Dissolved	mg/L						<0.0002				<0.0002					<0.0002	<0.0002		
Potassium Dissolved	mg/L						13.5				1.43					7	1.9		
Selenium Dissolved	mg/L						<0.005				<0.002					<0.005	<0.005		
Silver Dissolved	mg/L						<0.0003				<0.0001					<0.001	<0.001		
Sodium Dissolved	mg/L						49.4				49.4					36	35		
Thallium Dissolved	mg/L						<0.002				<0.0002					<0.001	<0.001		
Vanadium Dissolved	mg/L						<0.02				<0.002					<0.005	<0.005		
Zinc Dissolved	mg/L						0.022				<0.0045					<0.020	<0.020		
Barium Total	mg/L										0.0916					0.11	0.11		
Beryllium Total	mg/L										<0.001					<0.001	<0.001		
Cadmium Total	mg/L										<0.0001					<0.001	<0.001		
Cobaltum Total	mg/L										123					120	120		
Chromium Total	mg/L										<0.003					<0.002	<0.002		
Copper Total	mg/L										<0.005					<0.002	<0.002		
Iron Total	mg/L										0.978					0.9	0.94		
Lead Total	mg/L										<0.001					<0.001	<0.001		
Magnesium Total	mg/L										32.6					33	34		
Mercury Total	mg/L										<0.0002					<0.0002	<0.0002		
Potassium Total	mg/L										1.58					1.9	1.9		
Selenium Total	mg/L										<0.005					<0.005	<0.005		
Silver Total	mg/L										<0.0003					<0.001	<0.001		
Sodium Total	mg/L										33.4					35	36		
Thallium Total	mg/L										<0.001					<0.002	<0.002		
Vanadium Total	mg/L										<0.005					<0.005	<0.005		
Zinc Total	mg/L										<0.0065					<0.020	<0.020		
<b>ICL VOC's</b>																			
ICL VOC's	ug/L						ND				ND					ND	ND		
<b>ICL SVOC's</b>																			
ICL SVOC's	ug/L						ND				ND					ND	ND		
<b>ICL Pesticides</b>																			
ICL Pesticides	ug/L						ND				ND					ND	ND		
<b>ICL PCB's</b>																			
ICL PCB's	ug/L						ND				ND					ND	ND		
<b>Field Parameters</b>																			
pH	S.U.	7.22	7.16	7.81	7.3	7.59	7.16	7.39	6.8	6.99	7.1	7.27	6.7	6.69	6.48	6.63	6.67	7.15	6.07
Conductivity	umhos/cm	1228	1180	975	1097	1066	1087	1061	900	1030	976	940	982	976	879	1010	1010	727	825
Temperature	°C	14.5	12.9	10.5	13	11.5	10.6	11.2	10.2	11.5	10.8	10.6	11.6	9.1	11	12.6	12.6	9.8	13
pH	mPHs	69			14			84	54	64	59	15	38	20	45	-45	-123	75	75
Dissolved Oxygen	mg/L		7.08		0.71			7	5.8	1.33	0.61	1.48	1.18	1.3	0	0.15	0.15	1.1	0.58
Turbidity	NTU							25	12	1	1	1	1	4	9	2	2		
<b>Inorganic Parameters</b>																			
Total Dissolved Solids	mg/L	776	464	550	435	372	456	1170	623	503	641	65	0	11	13	16	370	570	414
Total Suspended Solids	mg/L										<5					<4	<4	<4	<4

NOTES

- (A) Target Analyte List from Table 7.3 of the Remedial Action Quality Assurance Project Plan (WCC 1996) (RA QAPP) for the Albion Landfill
- (C) Target Compound List from Table 7.4 of the RA QAPP for the Albion Landfill
- (\*) All ICL parameters listed on Table 7.4 of the RA QAPP were analyzed
- Only those parameters reported at or above the laboratory practical quantitation limit are listed
- (B) Parameter was reported above the PQL in field blank during this event

- ( ) Not Tested
- (#) Duplicate sample
- (ND) Non detect (e.g. not reported at or above the laboratory practical quantitation limit)
- (b) Target analyte detected in remedi blank

ALMON-SHERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE 4  
ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-0458

PARAMETER	UNITS	10/28/89	01/25/90	04/19/90	07/20/90	7/20/90*	10/24/90	01/23/91	10/24/91	10/29/92	10/09/93	10/21/94	1/10/96	05/28/96	11/26/97	10/07/98	11/17/99	11/08/10	11/07/11	11/14/12	11/11/13	09/23/14	12/07/15	04/29/16
<b>Annual Parameters</b>																								
Nitrogen, Ammonia	mg/L	29	26.7	33.6	31.6	30.6	28.5	28.8	21.2	22	21.6	21.9	19.1	18.8	20.9	16.7	13	14	16.8	12	13	11	11	11
Nitrate, Dissolved	mg/L	0.023	0.03	0.0557	0.0319	0.0318	0.0307	0.0292		0.0108	0.0234	0.0091	0.0081	0.0115	0.0127	< 0.001	0.0004	0.00335				< 0.005	< 0.005	< 0.005
Arsenic, Total	mg/L																							
Aluminum, Dissolved	mg/L																							
Aluminum, Total	mg/L																							
Antimony, Dissolved	mg/L																							
Antimony, Total	mg/L																							
Cadmium, Dissolved	mg/L																							
Cadmium, Total	mg/L																							
Cobalt, Dissolved	mg/L																							
Cobalt, Total	mg/L																							
Copper, Dissolved	mg/L																							
Copper, Total	mg/L																							
Manganese, Dissolved	mg/L																							
Manganese, Total	mg/L																							
Nickel, Dissolved	mg/L																							
Nickel, Total	mg/L																							
Benzo(a)pyrene	ug/L																							
Vinyl Chloride	ug/L																							
1,2-Dibromo-3-Chloropropane	ug/L																							
<b>Trace Element Parameters</b>																								
Chloride	mg/L																							
Cyanide, Total	mg/L																							
Fluoride, Total	mg/L																							
Beryllium, Dissolved	mg/L																							
Beryllium, Total	mg/L																							
Cadmium, Dissolved	mg/L																							
Cadmium, Total	mg/L																							
Chromium, Dissolved	mg/L																							
Chromium, Total	mg/L																							
Copper, Dissolved	mg/L																							
Copper, Total	mg/L																							
Iron, Dissolved	mg/L																							
Iron, Total	mg/L																							
Lead, Dissolved	mg/L																							
Lead, Total	mg/L																							
Magnesium, Dissolved	mg/L																							
Magnesium, Total	mg/L																							
Mercury, Dissolved	mg/L																							
Mercury, Total	mg/L																							
Potassium, Dissolved	mg/L																							
Potassium, Total	mg/L																							
Selenium, Dissolved	mg/L																							
Selenium, Total	mg/L																							
Silver, Dissolved	mg/L																							
Silver, Total	mg/L																							
Sulfur, Dissolved	mg/L																							
Sulfur, Total	mg/L																							
Thallium, Dissolved	mg/L																							
Thallium, Total	mg/L																							
Vanadium, Dissolved	mg/L																							
Vanadium, Total	mg/L																							
Zinc, Dissolved	mg/L																							
Zinc, Total	mg/L																							
Barium, Total	mg/L																							
Bismuth, Total	mg/L																							
Cadmium, Total	mg/L																							
Calcium, Total	mg/L																							
Chromium, Total	mg/L																							
Copper, Total	mg/L																							
Iron, Total	mg/L																							
Lead, Total	mg/L																							
Magnesium, Total	mg/L																							
Mercury, Total	mg/L																							
Potassium, Total	mg/L																							
Selenium, Total	mg/L																							
Silver, Total	mg/L																							
Sodium, Total	mg/L																							
Thallium, Total	mg/L																							
Vanadium, Total	mg/L																							
Zinc, Total	mg/L																							
<b>ICL Parameters</b>																								
1,2-Dichloroethane	ug/L																							
Aceone	ug/L																							
ICL SVOCs	ug/L																							
NI(2-methyl-5-ethyl)phthalate	ug/L																							
Phenol	ug/L																							
ICL Pesticides	ug/L																							
ICL PCBs	ug/L																							
<b>Field Parameters</b>																								
pH	S.U.	7.14	7.29	7.23	7.01	7.01	7.05	7.08	7.9	11.70	7.53	7.69	10.67	10.4	8.15	11.98	12	12.7	12.6	12.42	12.83	12.28	12.34	11.49
Conductivity	umhos/cm	1366	1383	1424	1458	1458	1457	1470	1370	2090	1300	1271	1290	1871	1030	4380	7150	6400	7120	6600	5880	5470	3400	2750
Temperature	°C	11.8	10.5	12.2	12.5	12.5	12.5	10.1	13.4	10.5	12.8	11.5	10.6	11.6	10.4	11.7	10.8	11	11.7	10.9	10.5			

ALBION-MERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE 5

ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-0450

PARAMETER	UNITS	10/24/00	10/24/2001	10/29/2002	10/09/2003	10/21/2004	1/10/2006	09/27/2006	11/26/2007	10/07/08	08/27/09	11/17/09	11/06/10	11/07/11	11/14/12	11/15/13	09/23/14	12/07/15	12/7/15#	08/29/16	
<b>Annual Parameters</b>																					
Nitrogen Ammonia	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.124	<0.05	<0.05	<0.05	<0.05	0.130 <sup>1</sup>	0.091	<0.2	0.28	<0.2	<0.2	<0.2	<0.2	
Arsenic Dissolved	mg/L	0.0222	0.007	0.0123	0.0092	0.0057	0.0066	0.0101	0.00631	0.00829	0.0096	0.00913	0.0173	0.0746	0.14	0.024	0.009	0.033	0.014	0.013	0.047
Arsenic Total	mg/L								0.167	0.167	0.022	0.0238	0.0173	0.0746	0.14	0.024	0.009	0.033	0.014	0.013	0.047
Aluminum Dissolved	mg/L	1.9	<0.1	<0.1	0.26	<0.1	<0.1	<0.05	<0.05	<0.02	0.026	<0.01					<0.050				
Aluminum Total	mg/L								7.74	4.47	0.561	0.517	0.108	1.54	3.1 <sup>1</sup>	0.21 <sup>1</sup>	0.46	<0.05	<0.05	0.87	
Ammony Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	
Ammony Total	mg/L								0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	
Cobalt Dissolved	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	
Cobalt Total	mg/L								0.00931	0.00701	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	
Manganese Dissolved	mg/L	0.43	0.276	0.304	0.338	0.345	0.288	0.236	0.195	0.264	0.133						0.17	0.19	0.19	0.19	
Manganese Total	mg/L								0.332	0.488	0.185	0.198	0.473	0.244	0.26	0.27	0.2	0.2	0.19	0.19	
Nickel Dissolved	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	0.00609	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	
Nickel Total	mg/L								0.0137	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	
Benzene	ug/L	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Vinyl Chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2 Dibromo 3-Chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
<b>Five Year Parameters</b>																					
<b>ICL Parameters</b>																					
Chloride	mg/L						<5													<10	
Cyanide Total	mg/L						<0.005													<0.010	
Nitrate Nitrite	mg/L						<0.02													<0.050	
Sulfate	mg/L						58													36	
Barium Dissolved	mg/L						<0.2					0.234								0.025	
Beryllium Dissolved	mg/L						<0.001					<0.002								<0.001	
Cadmium Dissolved	mg/L						<0.0005					<0.0002								<0.001	
Calcium Dissolved	mg/L						105					75.1								71	
Chromium Dissolved	mg/L						<0.005					<0.001								<0.002	
Copper Dissolved	mg/L						<0.025					<0.001								<0.002	
Iron Dissolved	mg/L						2.22					0.714								1.2	
Lead Dissolved	mg/L						<0.001					<0.0002								<0.001	
Magnesium Dissolved	mg/L						26.2					19.8								18	
Mercury Dissolved	mg/L						<0.0002					<0.0002								<0.0002	
Potassium Dissolved	mg/L						<5					<1								1.1	
Selenium Dissolved	mg/L						<0.005					<0.002								<0.005	
Silver Dissolved	mg/L						<0.0005					<0.0001								<0.001	
Sodium Dissolved	mg/L						33					<5								1.6	
Thallium Dissolved	mg/L						<0.002					<0.0002								<0.002	
Vanadium Dissolved	mg/L						<0.02					<0.002								<0.005	
Zinc Dissolved	mg/L						<0.02					<0.0045								<0.020	
Barium Total	mg/L											0.295								0.031	
Beryllium Total	mg/L											<0.001								<0.001	
Cadmium Total	mg/L											<0.0002								<0.001	
Calcium Total	mg/L											76.7								72	
Chromium Total	mg/L											<0.002								<0.002	
Copper Total	mg/L											<0.005								<0.002	
Iron Total	mg/L											2.06								3.4	
Lead Total	mg/L											0.003								0.0018	
Magnesium Total	mg/L											19.7								20	
Mercury Total	mg/L											<0.0002								<0.0002	
Potassium Total	mg/L											<1								1.2	
Selenium Total	mg/L											<0.005								<0.005	
Silver Total	mg/L											<0.0005								<0.001	
Sodium Total	mg/L											<5								1.6	
Thallium Total	mg/L											<0.001								<0.002	
Vanadium Total	mg/L											<0.005								<0.005	
Zinc Total	mg/L											0.00588								<0.020	
ICL VOCs*	ug/L						ND					ND								ND	
ICL SVOCs*	ug/L						ND					ND								ND	
BH2-ethyleneglycol ether	ug/L						<10					<10								2.8 <sup>1</sup>	
ICL Pesticides*	ug/L						ND					ND								ND	
ICL PCBs*	ug/L						ND					ND								ND	
<b>Field Parameters</b>																					
pH	S.U.	7.16	7.5	8.34	8.35	7.94	7.25	7.86	7.85	6.91	6.34	7.15	6.26	6.63	6.23	6.14	6.13	6.38	6.38	5.27	
Conductivity	umhos/cm	637	604	605	609	593	573	549	680	505	444	528	516	523	462	394	489	383	383	407	
Temperature	°C	16.1	13.3	10.5	12.1	11.5	11.3	10.5	10	11.6	11.3	10.9	11.3	12.2	9.8	11.6	13.3	10.2	10.2	12.5	
pH	millivolts		71		35			84	46	47	37	58	53	12	4	66	26	27	27	36	
Dissolved Oxygen	mg/L		8.3		2.59			1.9	4.21	1.15	11.6	3.5	1.68	1.21	1.45	0	0.47	1.85	1.85	0.63	
Turbidity	NTU							116	112		49	84	35	127	57	2					
<b>Supplemental Parameters</b>																					
Total Dissolved Solids	mg/L	448	395	344	421	332	240	246	451	262	304	472					260				
Total Suspended Solids	mg/L										30	13.1	6	57.5	50	<4		<4	<4	17	

NOTES:

- (1A) Target Analyte List from Table 7.5 of the Remedial Action Quality Assurance Project Plan (WCC 1990) (RA QAPP) for the Albion Landfill
- (1C) Target Compound List from Table 7.4 of the RA QAPP for the Albion Landfill
- (\*) All ICL parameters listed on Table 7.4 of the RA QAPP were analyzed.
- Only those parameters reported at or above the laboratory practical quantitation limit are listed.
- (B.1) Parameter was reported above the PQL in field work during this event.

- 1 | Not Tested
- 1# | Duplicate sample
- (ND) | Non-detect i.e. not reported or at above the laboratory practical quantitation limit
- (a) | Target analyte detected in method blank











ALBION-SHERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE 10

ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-0750

PARAMETER	UNITS	10/24/00	10/24/2001	10/20/2003	10/09/2003	10/21/2004	1/11/2006	09/22/2006	11/26/2007	10/27/08	10/7/08*	11/18/09	11/09/10	11/08/11	11/15/12	11/15/13*	11/12/13*	9/24/2014	12/8/2013	8/20/2014	
<b>Annual Parameters</b>																					
Nitrogen Ammonia	mg/L	8.64	3.98	3.66	3.5	5.07	5.96	4.04	4.38	1.28	1.2	1.58	2.69 <sup>†</sup>	1.85	2.8	2.9	2.1	2.2	1.5	2.3	1.3
Arsenic Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00316	0.00464	<0.004	0.0056	0.005	0.005	<0.005	0.005 <sup>†</sup>	<0.005
Arsenic Total	mg/L																			0.0054	<0.005
Aluminum Dissolved	mg/L	0.24	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.02	<0.02	<0.01								<0.05	<0.05
Aluminum Total	mg/L																			<0.05	<0.05
Antimony Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony Total	mg/L																			<0.001	<0.001
Cobalt Dissolved	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt Total	mg/L																			0.0025	<0.001
Manganese Dissolved	mg/L	1.37	1.22	1.11	1.17	1.02	1	0.794	0.741	0.752	0.751	0.591	0.598	0.628	0.64	0.63	0.71	0.74	0.74	0.51	0.59
Manganese Total	mg/L																			0.48	0.59
Nickel Dissolved	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.00594	0.00742	<0.005	<0.005	<0.005	0.598	0.628	0.64	0.63	0.71	0.74	0.74	0.0027	0.0027
Nickel Total	mg/L																			0.0027	0.0027
Benzene	ug/L	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-Chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>Five Year Parameters</b>																					
<b>Halocarbons</b>																					
Chloride	mg/L						5					1.48								1	
Cyanide Total	mg/L						<0.005					<0.005								<0.01	
Nitrate Nitrate	mg/L						<0.01					<0.01								<0.05	
Sulfate	mg/L						6					41								<1	
Barium Dissolved	mg/L						<0.2					<0.001								0.1	
Barium Total	mg/L						<0.001					<0.0002								<0.001	
Cadmium Dissolved	mg/L						<0.0005					<0.0002								<0.001	
Cadmium Total	mg/L						122					91.7								94	
Chromium Dissolved	mg/L						<0.005					<0.001								<0.002	
Copper Dissolved	mg/L						<0.025					<0.001								<0.002	
Iron Dissolved	mg/L						0.49					0.898								5.1	
Lead Dissolved	mg/L						<0.001					0.000334								<0.001	
Magnesium Dissolved	mg/L						25.4					15.5								15	
Mercury Dissolved	mg/L						<0.0002					<0.0002								<0.0002	
Potassium Dissolved	mg/L						8.7					3.75								3	
Selenium Dissolved	mg/L						<0.005					<0.002								<0.005	
Silver Dissolved	mg/L						<0.0005					<0.0001								<0.001	
Sodium Dissolved	mg/L						5					<5								1.7	
Thorium Dissolved	mg/L						<0.002					<0.0002								<0.002	
Vanadium Dissolved	mg/L						<0.02					<0.002								<0.005	
Zinc Dissolved	mg/L						<0.02					<0.005								<0.02	
Barium Total	mg/L						<0.02					0.138								0.09	
Barium Total	mg/L						<0.001					<0.001								<0.001	
Cadmium Total	mg/L						<0.0002					<0.0002								<0.001	
Calcium Total	mg/L						94.4					94.4								88	
Chromium Total	mg/L						<0.002					<0.002								<0.002	
Copper Total	mg/L						<0.005					<0.005								<0.002	
Iron Total	mg/L						0.84					0.84								2.7	
Lead Total	mg/L						<0.001					<0.001								<0.001	
Magnesium Total	mg/L						15.6					15.6								14	
Mercury Total	mg/L						<0.0002					<0.0002								<0.0002	
Potassium Total	mg/L						4.09					4.09								2.8	
Selenium Total	mg/L						<0.005					<0.005								<0.005	
Silver Total	mg/L						<0.0005					<0.0005								<0.001	
Sodium Total	mg/L						5					<5								1.5	
Thorium Total	mg/L						<0.001					<0.001								<0.002	
Vanadium Total	mg/L						<0.005					<0.005								<0.005	
Zinc Total	mg/L						<0.02					0.00259								<0.02	
<b>ICL Parameters</b>																					
ICL VOCL	ug/L						ND					ND								ND	
ICL SVOCL	ug/L						ND					ND								ND	
BH2-ethylene dichloride	ug/L						<10					<10								3.3 <sup>†</sup>	
ICL Perchlorate	ug/L						ND					ND								ND	
ICL PCBs	ug/L						ND					ND								ND	
<b>Field Parameters</b>																					
pH	SU	6.77	7.25	7.11	7.39	7.38	7.11	7.35	6.72	6.79	6.75	6.63	7.10	6.93	6.55	6.55	6.89	6.89	7	6.87	6.57
Conductivity	umhos/cm	1090	745	703	764	708	703	880	852	656	656	605	607	623	623	693	658	658	600	590	581
Temperature	°C	17.2	15.1	13.7	13.6	13	11	13.3	11.6	14.2	14.2	12	11.9	12.7	11.4	11.4	2.3	9.3	13	11.2	13.8
pH	mV/mV	140	158	158	158	158	111	73	52	52	52	45	116	57	96	96	50	50	135	124	191
Dissolved Oxygen	mg/L	3.84			2.05			3.7	1.38	2	2	1.7	1.53	1.16	0	0	0	0	4.46	1.25	5.7
Turbidity	NTU							1.7	21.2		21.2	46	1	1	1	1	3	3	1		
<b>Hydrological Parameters</b>																					
Total Dissolved Solids	mg/L	601	460	424	433	406	365	342	225	322	320	300	<5	<5	4	4	<4	<4	330	7	6
Total Suspended Solids	mg/L											58								4	

NOTES:

(1A) Target Analyte list from Table 7.5 of the Remedial Action Quality Assurance Project Plan (MCC 1995) (RA QAPP) for the Albion Landfill

(1C) Target Compound list from Table 7.4 of the RA QAPP for the Albion Landfill

(\*) All ICL parameters listed on Table 7.4 of the RA QAPP were analyzed

(†) Only those parameters reported at or above the laboratory practical quantitation limit are listed

(B) Parameter was reported above the PQL in field blank during this event

( ) Not Tested

(M) Duplicate sample

(ND) Non-detect (ie, not reported at or above the laboratory practical quantitation limit)

ALBION SHERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE II  
ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-058

PARAMETER	UNITS	10/28/1999	01/23/2000	04/19/2000	07/20/00	10/24/2000	01/23/2001	01/23/01*	10/24/2001	10/19/2002	10/09/2003	10/21/2004	11/02/2006	09/27/2006	11/27/2007	10/07/08	8/27/2009	11/17/09	11/08/10	11/07/11	11/14/13	11/11/13	09/24/14	12/07/13	09/29/14	
<b>Annual Average</b>																										
Nitrogen Ammonia	mg/L	0.52	0.9	0.4	0.52	0.45	0.52	0.49	0.7	0.18	<0.05	0.07	0.15	0.162	<0.05	<0.05	0.145	0.257 <sup>†</sup>	0.115	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
Arsenic, Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0054	0.0099	0.0152	0.0079	<0.005	0.00504	<0.005	0.00525	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Arsenic, Total	mg/L																									
Aluminum, Dissolved	mg/L								<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Aluminum, Total	mg/L																									
Antimony, Dissolved	mg/L								<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	0.108	0.289	0.198	0.025	0.0978	0.0783	0.064 <sup>†</sup>	0.058 <sup>†</sup>	
Antimony, Total	mg/L																									
Cobalt, Dissolved	mg/L								<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt, Total	mg/L																									
Manganese, Dissolved	mg/L								0.087	0.135	0.072	<0.020	0.081	0.066	0.0594	0.0464	0.0179	0.0631	0.0591	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	
Manganese, Total	mg/L																									
Nickel, Dissolved	mg/L								<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.006	<0.005	<0.005	<0.005	<0.005	0.0661	0.0467	0.034	0.047	<0.005	0.036	0.039
Nickel, Total	mg/L																									
Benzene	ug/l								<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Vinyl Chloride	ug/L								<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2-Dibromo-3-Chloropropane	ug/L								<1	<1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>Trace Elements</b>																										
<b>Chlorides</b>																										
Chloride	mg/L												38					19.5							6.5	
Cyanide, Total	mg/L												<0.005					<0.005							<0.01	
Nitrate-Nitrite	mg/L												<0.05					<0.05							<0.05	
Sulfate	mg/L												82					67.5							51	
Barium, Dissolved	mg/L												<0.2					0.0606							0.04	
Barium, Total	mg/L												<0.001					<0.002							<0.001	
Cadmium, Dissolved	mg/L												<0.0005					<0.0002							<0.001	
Cadmium, Total	mg/L												118					83.1							73	
Calcium, Dissolved	mg/L												<0.005					<0.005							<0.005	
Chromium, Dissolved	mg/L												<0.005					<0.001							<0.005	
Chromium, Total	mg/L												<0.005					<0.001							<0.005	
Copper, Dissolved	mg/L												0.8					0.453							0.45	
Copper, Total	mg/L												<0.002					0.00274							<0.001	
Magnesium, Dissolved	mg/L												30.9					23.7							20	
Magnesium, Total	mg/L												<0.0005					<0.0005							<0.0005	
Manganese, Dissolved	mg/L												<5					1.17							1.1	
Manganese, Total	mg/L												<0.005					<0.002							<0.005	
Selenium, Dissolved	mg/L												<0.005					<0.001							<0.005	
Selenium, Total	mg/L												<0.0005					<0.0001							<0.001	
Silver, Dissolved	mg/L												72.6					10.9							4.3	
Silver, Total	mg/L												<0.002					<0.0003							<0.002	
Sodium, Dissolved	mg/L												<0.02					<0.002							<0.005	
Sodium, Total	mg/L												<0.02					<0.002							<0.005	
Zinc, Dissolved	mg/L												<0.02					<0.005							<0.02	
Zinc, Total	mg/L												<0.02					0.0611							0.037	
Barium, Total	mg/L												<0.001					<0.001							<0.001	
Cadmium, Total	mg/L												<0.0005					<0.0003							<0.001	
Calcium, Total	mg/L												89					70							70	
Chromium, Total	mg/L												<0.007					<0.005							<0.007	
Copper, Total	mg/L												<0.005					0.558							0.57	
Iron, Total	mg/L												<0.001					<0.001							<0.001	
Lead, Total	mg/L												<0.005					24.1							19	
Magnesium, Total	mg/L												<0.0002					<0.0002							<0.0002	
Mercury, Total	mg/L												1.62					1.62							1.1	
Perchlorate, Total	mg/L												<0.005					<0.005							<0.005	
Selenium, Total	mg/L												<0.0005					<0.0005							<0.001	
Silver, Total	mg/L												10.6					10.6							3.5	
Sodium, Total	mg/L												<0.001					<0.001							<0.002	
Thallium, Total	mg/L												<0.005					<0.005							<0.005	
Vanadium, Total	mg/L												<0.006					<0.006							<0.02	
Zinc, Total	mg/L												<10					5.84							<0.7	
<b>ICLVOCs*</b>																										
Methylene Chloride	ug/l												<10					<10							4.1 <sup>†</sup>	
1,1-Dichloroethene	ug/l												<10					<10							1.6 <sup>†</sup>	
1,1,1-Trichloroethene	ug/l												<10					<10							ND	
1,1,2-Trichloroethene	ug/l												<10					<10							ND	
1,2-Dichloroethane	ug/l												<10					<10							ND	
1,1,1,2-Tetrachloroethane	ug/l												<10													

ALBION SHERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE 12  
ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-0958

PARAMETER	UNITS	10/28/1999	01/25/2000	04/19/2000	04/19/00M	07/25/00	10/24/2000	01/23/2001	10/24/2001	10/29/2002	10/29/02M	10/09/2003	10/09/03M	10/31/2004	1/10/2006	09/27/2006	11/27/2007	10/07/08	11/17/2009	11/08/10	11/07/11	11/14/12	11/11/13	09/24/14	12/07/15	08/29/16
<b>Annual Parameters</b>																										
Nitrogen Ammonia	mg/L	13	13	11.8	9.8	10.3	10.4	11.3	10.4	8.24	8.44	7.28	7.32	7.87	6.84	6.6	6.12	3.16	3.66	4.98 <sup>1</sup>	4.41	4.8	4.7	4.2	4.6	4.3
Arsenic Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic Total	mg/L																									
Aluminum Dissolved	mg/L						<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aluminum Total	mg/L																									
Antimony Dissolved	mg/L						<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony Total	mg/L																									
Cobalt Dissolved	mg/L						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt Total	mg/L																									
Manganese Dissolved	mg/L						0.095	0.08	0.071	0.073	0.084	0.085	0.08	0.074	0.0675	0.0663	0.0518	0.0586	0.054	0.0629	0.0612	0.06	0.066	0.055	0.054	0.06
Manganese Total	mg/L																									
Nickel Dissolved	mg/L						<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel Total	mg/L																									
Benzene	ug/L						<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl Chloride	ug/L						<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-Chloropropane	ug/L						<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>Trace Organic Compounds</b>																										
Chloride	mg/L														84				39.1							33
Cyanide Total	mg/L														<0.005				<0.005							<0.01
Nitrate Nitrite	mg/L														<0.02				0.343							<0.05
Sulfate	mg/L														49				42.3							56
Barium Dissolved	mg/L														0.236				0.153							0.15
Beryllium Dissolved	mg/L														<0.001				<0.0002							<0.001
Cadmium Dissolved	mg/L														<0.0005				<0.0002							<0.001
Cadmium Total	mg/L														129				96							94
Chromium Dissolved	mg/L														<0.005				<0.001							<0.005
Cesium Dissolved	mg/L														<0.025				<0.001							<0.002
Iron Dissolved	mg/L														1.4				0.77							0.94
Lead Dissolved	mg/L														<0.003				<0.0002							<0.001
Magnesium Dissolved	mg/L														37.6				30.4							39
Mercury Dissolved	mg/L														<0.0002				<0.0002							<0.0002
Potassium Dissolved	mg/L														13.2				8.03							7.9
Selenium Dissolved	mg/L														<0.005				<0.002							<0.005
Silver Dissolved	mg/L														<0.0005				<0.0001							<0.001
Sodium Dissolved	mg/L														45.6				31.5							32
Thallium Dissolved	mg/L														<0.002				<0.0002							<0.002
Vanadium Dissolved	mg/L														<0.002				<0.002							<0.005
Zinc Dissolved	mg/L														<0.02				<0.006							<0.02
Barium Total	mg/L														0.158				0.158							0.15
Beryllium Total	mg/L														<0.001				<0.001							<0.001
Cadmium Total	mg/L														<0.002				<0.0002							<0.001
Cobalt Total	mg/L														1.06				0.96							0.91
Chromium Total	mg/L														<0.002				<0.002							<0.002
Copper Total	mg/L														<0.005				<0.005							<0.002
Iron Total	mg/L														<0.005				<0.005							<0.002
Lead Total	mg/L														<0.001				<0.001							<0.001
Magnesium Total	mg/L														30.9				30.9							38
Mercury Total	mg/L														<0.0002				<0.0002							<0.0002
Potassium Total	mg/L														8.77				8.77							7.7
Selenium Total	mg/L														<0.005				<0.005							<0.005
Silver Total	mg/L														<0.0001				<0.0001							<0.001
Sodium Total	mg/L														21.4				21.4							32
Thallium Total	mg/L														<0.001				<0.001							<0.002
Vanadium Total	mg/L														<0.005				<0.005							<0.005
Zinc Total	mg/L														<0.0095				<0.0095							<0.02
<b>ICL SVOCs</b>																										
ICL SVOCs	ug/L														ND				ND							ND
B-12 ethylhexylphthalate	ug/L														<10				<10							3
Dibutyl phthalate	ug/L														<10				<10							1.4
ICL PAHs	ug/L														ND				ND							ND
ICL PCBs	ug/L														ND				ND							ND
<b>Field Parameters</b>																										
pH	SU	7.17	7.31	7.26	7.26	7.17	7.13	6.99	7.29	7.38	7.38	7.14	7.14	7.24	7.25	7.43	6.45	7.11	7.85	7.44	7.12	7.04	7.45	6.87	7.32	6.86
Conductivity	umho/cm	1239	1235	1190	1190	1210	1246	1240	930	937	937	951	951	993	941	978	900	905	928	911	944	946	828	858	748	725
Temperature	°C	11.3	10	11.2	11.2	12.3	14	9.7	14.9	10.9	10.9	12.3	12.3	10.8	10.4	11.5	8	11	10.6	12.3	12.3	9.5	9.5			

ALBION-SHERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE 13

ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-09DB

PARAMETER	UNITS	10/25/00	10/24/2001	10/30/2003	10/09/2003	10/21/2004	1/11/2006	09/28/2006	11/27/2007	10/09/08	11/10/09	11/09/10	11/08/11	11/15/12	11/17/13	09/25/14	12/06/15	12/8/15B	08/20/16
<b>Annual Parameters</b>																			
Nitrogen Ammonia	mg/L	0.11	1.45	0.14	0.83	<0.03	0.11	0.082	<0.03	0.094	0.082	0.221	0.173	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.003	<0.003	<0.003	<0.003	<0.005	<0.003	<0.005	<0.005	<0.005	<0.005
Arsenic Total	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.005	<0.003	<0.005	<0.005	<0.005	<0.005
Aluminum Dissolved	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.005	<0.003	<0.005	<0.005	<0.005	<0.005
Aluminum Total	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Antimony Dissolved	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Antimony Total	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.003	<0.003	<0.003	<0.003	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
Cobalt Dissolved	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.003	<0.003	<0.003	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt Total	mg/L	0.038	<0.02	0.04	<0.020	<0.020	0.035	0.0312	<0.01	0.0444	0.0396	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese Dissolved	mg/L	<0.05	0.0541	<0.05	<0.05	<0.05	<0.05	<0.005	0.0231	<0.005	<0.005	<0.005	<0.005	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Manganese Total	mg/L	<0.05	0.0541	<0.05	<0.05	<0.05	<0.05	<0.005	0.0219	<0.005	<0.005	<0.005	<0.005	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Nickel Dissolved	mg/L	<0.05	0.0541	<0.05	<0.05	<0.05	<0.05	<0.005	0.0219	<0.005	<0.005	<0.005	<0.005	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Nickel Total	mg/L	<0.05	0.0541	<0.05	<0.05	<0.05	<0.05	<0.005	0.0219	<0.005	<0.005	<0.005	<0.005	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Benzene	ug/L	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-2-Chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
<b>Five Year Parameters</b>																			
<b>ICL Parameters</b>																			
Chloride	mg/L						18				23.4								20
Cyanide Total	mg/L						<0.005				<0.005								<0.01
Nitrate-N/No3	mg/L						<0.07				0.0248								<0.05
Sulfate	mg/L						24				51.5								43
Barium Dissolved	mg/L						<0.2				0.0463								0.053
Barium Total	mg/L						<0.001				<0.0003								<0.001
Cadmium Dissolved	mg/L						<0.0003				<0.0002								<0.001
Cadmium Total	mg/L						0.12				0.72								0.2
Chromium Dissolved	mg/L						<0.003				<0.001								<0.002
Copper Dissolved	mg/L						<0.023				<0.001								<0.002
Copper Total	mg/L						0.36				0.66								0.6
Lead Dissolved	mg/L						<0.003				0.00234								<0.001
Magnesium Dissolved	mg/L						28.7				28.1								28
Mercury Dissolved	mg/L						<0.0002				<0.0002								<0.0002
Potassium Dissolved	mg/L						<3				1.3								1.5
Selenium Dissolved	mg/L						<0.005				<0.002								<0.005
Selenium Total	mg/L						<0.0005				<0.0001								<0.001
Sodium Dissolved	mg/L						16.4				10.4								13
Thallium Dissolved	mg/L						<0.002				<0.0002								<0.002
Vanadium Dissolved	mg/L						<0.02				<0.002								<0.005
Zinc Dissolved	mg/L						<0.02				<0.004								<0.02
Barium Total	mg/L										0.0568								0.059
Barium Total	mg/L										<0.001								<0.001
Cadmium Total	mg/L										<0.0002								<0.001
Cadmium Total	mg/L										0.72								0.4
Chromium Total	mg/L										0.0002								0.002
Chromium Total	mg/L										0.0002								0.002
Copper Total	mg/L										<0.003								<0.002
Copper Total	mg/L										0.699								0.75
Lead Total	mg/L										<0.001								<0.001
Magnesium Total	mg/L										28.8								28
Mercury Total	mg/L										<0.0002								<0.0002
Potassium Total	mg/L										1.32								1.4
Selenium Total	mg/L										<0.003								<0.005
Selenium Total	mg/L										<0.0005								<0.001
Sodium Total	mg/L										10.9								13
Thallium Total	mg/L										<0.001								<0.002
Vanadium Total	mg/L										<0.005								<0.005
Zinc Total	mg/L										<0.0045								<0.02
ICL VOCs	ug/L						ND				ND								ND
ICL SVOCs	ug/L						ND				ND								ND
ICL Pesticides	ug/L						ND				ND								ND
ICL PCBs	ug/L						ND				ND								ND
<b>Field Parameters</b>																			
pH	SU	7.38	9.44	7.65	7.81	7.56	7.43	7.75	8.7	6.86	6.97	7.39	7.7	6.87	7.33	7.38	7.02	7.03	6.9
Conductivity	umhos/cm	817	579	546	563	586	573	625	783	659	698	719	697	727	639	721	616	616	607
Temperature	°C	14.9	14.9	11.5	12	10.8	10.2	10.5	10.4	12	11.2	10.2	12.1	9	8.3	12.1	9.7	9.7	14.3
pH	mV/mV	6	43		39			111	98	66	59	94	44	97	51	133	116	116	148
Dissolved Oxygen	mg/l	2.13	4.48		0.6			2.05	1.93	1.31	0.95	0.81	0.97	0	0	0	0.98	0.98	1.28
Turbidity	NTU								7	108	58	1	6	1	10	24			
<b>Subsidiary Parameters</b>																			
Total Dissolved Solids	mg/L	381	339	316	314	295	289	283	388	369	534					470			470
Total Suspended Solids	mg/L										<5	<5	7	3	<4	<4	<4	<4	<4

NOTES:

(TAL) Target Analyte List from Table 7.3 of the Remedial Action Quality Assurance Project Plan (WCC, 1996) (PA QAPP) for the Albion Landfill

(ICL) Target Compound List from Table 7.4 of the PA QAPP for the Albion Landfill

(\*) All ICL parameters listed on Table 7.4 of the PA QAPP were analyzed

Only those parameters reported at or above the laboratory practical quantitation limit are listed

(B) Parameter was reported above the PQL in field blank during this event

( ) Not Tested

(#) Duplicate sample

(ND) Non-detect: i.e. not reported at or above the laboratory practical quantitation limit



ALBION-SHERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE 14

ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-1050

PARAMETER	UNITS	10/23/2000	10/24/2001	10/30/2002	10/09/2003	10/21/2004	1/11/2006	09/28/2006	11/27/2007	10/09/08	11/17/09	11/08/10	11/07/11	11/14/13	11/21/13	09/23/14	12/07/15	08/20/16	
<b>Annual Parameters</b>																			
Nitrogen Ammonia	mg/L	1.55	1.71	0.92	1.12	1.24	0.85	1.21	0.124	1.37	1.11	1.64 <sup>(*)</sup>	2.63	1.7	1.9	1.2	0.91	0.39	
Arsenic Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.005	<0.005	<0.005	
Arsenic Total	mg/L									<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.005	<0.005	<0.005	
Aluminum Dissolved	mg/L	<0.1	<0.1	<0.1	0.233	<0.1	<0.1	<0.05	<0.05	<0.02	<0.01					<0.050		0.14	
Aluminum Total	mg/L								0.702	0.875	0.443					0.26		0.33	
Antimony Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	2.27	0.521	0.64 <sup>(*)</sup>	1.3 <sup>(*)</sup>			<0.005	
Antimony Total	mg/L								<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	
Cobalt Dissolved	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Cobalt Total	mg/L								<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Manganese Dissolved	mg/L	0.124	0.102	0.099	0.184	0.117	0.135	0.119	0.026	0.108	0.103					0.001	0.01	0.12	
Manganese Total	mg/L								0.019	0.13	0.117		0.137	0.129	0.13	0.15	0.12	0.17	
Nickel Dissolved	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005					<0.005	<0.005	<0.005	
Nickel Total	mg/L								<0.005	<0.005	0.00537					<0.007	<0.005	<0.002	
Benzene	ug/L	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Vinyl Chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2-Dibromo-3-Chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.011	<0.01	
<b>Trace Level Parameters</b>																			
<b>Halogenides</b>																			
Chloride	mg/L						34				55.8					58			
Cyanide Total	mg/L						<0.005									<0.010			
Fluoride	mg/L						<0.02				0.0367					0.051			
Sulfate	mg/L						24				40.6					38			
Boron Dissolved	mg/L						<0.2				0.0163					0.1			
Beryllium Dissolved	mg/L						<0.001				<0.0002					<0.001			
Cadmium Dissolved	mg/L						<0.0005				<0.0002					<0.001			
Calcium Dissolved	mg/L						115				95.3					95			
Chromium Dissolved	mg/L						<0.005				<0.001					<0.002			
Copper Dissolved	mg/L						<0.025				<0.001					<0.002			
Iron Dissolved	mg/L						<0.1				<0.1					0.41			
Lead Dissolved	mg/L						<0.003				0.000337					<0.001			
Magnesium Dissolved	mg/L						32.8				29.9					29			
Mercury Dissolved	mg/L						<0.0002				<0.0002					<0.0002			
Potassium Dissolved	mg/L						23				3.16					5.3			
Selenium Dissolved	mg/L						<0.003				<0.002					<0.005			
Silver Dissolved	mg/L						<0.0005				<0.0001					<0.001			
Sodium Dissolved	mg/L						20.1				33					37			
Thallium Dissolved	mg/L						<0.002				<0.0002					<0.002			
Vanadium Dissolved	mg/L						<0.02				<0.002					<0.005			
Zinc Dissolved	mg/L						<0.07				<0.0355					<0.030			
Barium Total	mg/L										0.00974					0.12			
Beryllium Total	mg/L										<0.001					<0.001			
Cadmium Total	mg/L										0.000665					0.0012			
Calcium Total	mg/L										103					96			
Chromium Total	mg/L										<0.002					<0.002			
Copper Total	mg/L										<0.005					0.0044			
Iron Total	mg/L										0.917					17			
Lead Total	mg/L										0.00215					0.0017			
Magnesium Total	mg/L										31					28			
Mercury Total	mg/L										<0.0002					<0.0002			
Potassium Total	mg/L										3.99					5.2			
Selenium Total	mg/L										<0.005					<0.005			
Silver Total	mg/L										<0.0005					<0.001			
Sodium Total	mg/L										33.4					36			
Thallium Total	mg/L										<0.001					<0.002			
Vanadium Total	mg/L										<0.005					<0.005			
Zinc Total	mg/L										0.115					0.22			
<b>ICL VOCs*</b>																			
ICL VOCs*	ug/L						ND				ND					ND			
<b>ICL SVOCs*</b>																			
ICL SVOCs*	ug/L						ND				ND					ND			
<b>ICL Pesticides*</b>																			
ICL Pesticides*	ug/L						ND				ND					ND			
<b>Field Parameters</b>																			
pH		7.44	6.76	6.71	7.55	7.55	7.29	7.47	7.64	7.17	6.54	6.62	6.85	5.86	6.97	7.43	7.97	7.14	
Conductivity	umhos/cm	782	662	652	248	223	730	730	756	784	940	822	857	714	790	781	805	786	
Temperature	°C	15.4	14	10.4	13.9	11.3	5.1	13	9.9	14.4	8	9	12.8	8.2	9.5	14	8.2	17.9	
pH	millimhos	6	108		76			5	92	36	82		-30	8		23		158	
Dissolved Oxygen	mg/L	3.52	5.68		2.99			4.16	3.66	3.63	8.31		4.66	3.87		4.48		7.02	
Turbidity	NTU								84	77	211		360	44		40			
<b>Environmental Parameters</b>																			
Total Dissolved Solids	mg/L	472	382	381	430	414	371	330	511	458	484					460			
Total Suspended Solids	mg/L										<5	12.5	21.5	6.6	7.9	28	10	33	

NOTES:

(1A) Target Analyte list from Table 2.3 of the Remedial Action Quality Assurance Project Plan (WCC, 1996) (PA QAPP) for the Albion Landfill

(\*) ND - Not Detected

(1C) Target Compound list from Table 2.4 of the RA QAPP for the Albion Landfill

(#) Duplicate sample

(\*\*) All ICL parameters listed on Table 2.4 of the RA QAPP were analyzed

(#) Non-detects are not reported as are above the laboratory practical quantitation limit

Only those parameters reported as are above the laboratory practical quantitation limit are listed

(B) Parameter was reported above the PQL in field blank during this event

ALBION-MERIDIAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE 13  
ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-1518

PARAMETER	UNITS	10/23/00	10/24/01	10/30/02	10/09/03	10/21/04	1/11/2006	06/28/2006	11/27/2007	10/09/08	11/18/09	11/09/10	11/08/11	11/13/12	11/12/13	09/23/14	12/08/15	08/20/16	
<b>Annual Parameters</b>																			
Nitrogen Ammonia	mg/L	3.26	3.29	4.04	2.58	2.07	2.79	2.32	2.41	4.52	4.69	4.7*	4.13	3.4	3.5	3.3	3.2	2.6	
Arsenic Dissolved	mg/L	0.0304	0.0164	0.0573	0.0289	0.0074	0.0278	0.0358	0.0355	0.0407	0.0591	0.0614	0.0609	0.056	0.074	0.063	0.07	0.065	
Arsenic Total	mg/L	0.64	<0.1	<0.1	<0.1	<0.1	0.151	<0.05	<0.05	<0.02	<0.01	0.058	0.0614	0.056	0.074	<0.05	0.07	0.065	
Aluminum Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Aluminum Total	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Antimony Dissolved	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Antimony Total	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt Dissolved	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt Total	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese Dissolved	mg/L	0.304	0.204	0.211	0.152	0.148	0.161	0.132	0.145	0.16	0.152	0.136	0.14	0.14	0.16	0.14	0.13	0.14	
Manganese Total	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Nickel Dissolved	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Nickel Total	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Benzene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
<b>Site Blank Parameters</b>																			
<b>Halogenides</b>																			
Chloride	mg/L						50				56.9					48			
Cyanide Total	mg/L						<0.005				<0.005					<0.005			
Nitrate Nitrate	mg/L						<0.02				0.0416					<0.05			
Sulfate	mg/L						44				41.6					33			
Barium Dissolved	mg/L						<0.2				0.08					0.088			
Beryllium Dissolved	mg/L						<0.001				<0.0002					<0.001			
Cadmium Dissolved	mg/L						<0.0005				<0.0002					<0.001			
Calcium Dissolved	mg/L						106				92.6					94			
Chromium Dissolved	mg/L						<0.003				<0.001					<0.002			
Copper Dissolved	mg/L						<0.025				<0.001					<0.002			
Iron Dissolved	mg/L						2.24				2.25					2.9			
Lead Dissolved	mg/L						<0.003				0.000224					<0.001			
Magnesium Dissolved	mg/L						30.2				28.3					28			
Mercury Dissolved	ug/L						<0.0002				<0.0002					<0.00019			
Potassium Dissolved	mg/L						5.6				7.91					6.5			
Selenium Dissolved	mg/L						<0.005				<0.002					<0.005			
Silver Dissolved	mg/L						<0.0005				<0.0001					<0.001			
Sodium Dissolved	mg/L						35				35					35			
Thallium Dissolved	mg/L						<0.007				<0.0002					<0.002			
Vanadium Dissolved	mg/L						<0.02				<0.001					<0.005			
Zinc Dissolved	mg/L						<0.02				<0.005					<0.02			
Barium Total	mg/L						<0.02				0.118					0.096			
Beryllium Total	mg/L						<0.001				<0.001					<0.001			
Cadmium Total	mg/L						<0.0004				<0.0004					<0.001			
Calcium Total	mg/L						94.8				94.8					93			
Chromium Total	mg/L						<0.007				<0.001					<0.002			
Copper Total	mg/L						<0.005				<0.005					<0.007			
Iron Total	mg/L						2.24				2.25					2.9			
Lead Total	mg/L						<0.003				<0.001					<0.001			
Magnesium Total	mg/L						29.3				29.3					27			
Mercury Total	ug/L						<0.0002				<0.0002					<0.0002			
Potassium Total	mg/L						9.25				9.25					6.4			
Selenium Total	mg/L						<0.005				<0.005					<0.005			
Silver Total	mg/L						<0.0005				<0.0005					<0.001			
Sodium Total	mg/L						35.3				35.3					34			
Thallium Total	mg/L						<0.007				<0.001					<0.002			
Vanadium Total	mg/L						<0.02				<0.005					<0.005			
Zinc Total	mg/L						<0.02				<0.005					<0.02			
<b>Field Parameters</b>																			
pH	S.U.	7.22	7.28	7.37	7.33	7.6	7.31	7.21	6.77	6.77	6.69	7.34	7.25	6.76	6.28	7.23	7.57	6.81	
Conductivity	umhos/cm	782	693	740	742	761	749	824	960	827	891	899	905	874	851	906	731	715	
Temperature	°C	15.4	15.1	12.2	12.5	11.4	10.8	10.3	10.5	12.1	11.2	10.5	11.8	10.2	7.4	11.6	10.3	13.1	
pH	mV/mV	27	115	20	27	27	59	107	97	97	92	130	25	127	99	171	150	182	
Dissolved Oxygen	mg/L	2.65	2.17	2.7	2.7	2.7	4.29	1.33	1.5	0.27	1.05	0.99	0	0	0	0.87	0.8		
Turbidity	NTU							9	174	60	60	2	1	1	19	18			
<b>Environmental Parameters</b>																			
Total Dissolved Solids	mg/L	433	384	398	426	398	383	387	467	447	570	612	6	8	64	480	5	64	
Total Suspended Solids	mg/L																		

NOTES:

(IAI) Target Analyte (I) from Table 7.5 of the Remedial Action Quality Assurance Project Plan (WCC 1998) (IA QAPP) for the Albion Landfill

( ) Not tested

(IC) Target Compound (I) from Table 7.4 of the IA QAPP for the Albion Landfill

(P) Duplicate sample

(\*) All IC parameters listed on Table 7.4 of the IA QAPP were analyzed

(ND) Non detect (ie not reported at or above the laboratory practical quantitation limit)

Only those parameters reported at or above the laboratory practical quantitation limit are listed

(\*) Parameter was reported above the PQL in field blank during this event

ALBION-SHERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE 1A

ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-160B

PARAMETER	UNITS	10/24/00	10/24/01	10/30/02	10/09/03	10/31/04	1/1/2006	09/28/2006	11/27/2007	10/09/08	11/18/09	11/09/10	11/08/11	11/15/12	11/15/13	09/23/14	12/08/15	08/30/16	
<b>Annual Parameters</b>																			
Nitrogen, Ammonia	mg/L	0.12	<0.05	0.08	<0.05	<0.05	0.08	0.097	<0.05	0.065	0.105	0.229 <sup>1</sup>	0.135	<0.2	0.54	<0.2	<0.2	<0.2	
Arsenic Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.005	<0.005	<0.005	
Arsenic Total	mg/L									<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.005	<0.005	<0.005	
Aluminum Dissolved	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.02	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	
Aluminum Total	mg/L									<0.05	0.031	0.0163	0.0216	0.0289	<0.05	<0.05	<0.05	<0.05	
Antimony Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Antimony Total	mg/L									<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt Dissolved	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Cobalt Total	mg/L									<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Manganese Dissolved	mg/L	0.026	0.036	0.035	<0.02	<0.02	0.03	0.0279	0.0187	0.0338	0.0317								
Manganese Total	mg/L									0.0257	0.0433	0.0341	0.0304	0.0313	0.031	0.039	0.034	0.034	
Nickel Dissolved	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Nickel Total	mg/L									<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Benzene	ug/L	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Vinyl Chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2-Dibromo-3-Chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>Five Year Parameters</b>																			
<b>As Parameters</b>																			
As Chloride	mg/L						22				17.7						17		
Cyanide Total	mg/L						<0.005				<0.005						<0.01		
Nitrate Nitrate	mg/L						<0.02				<0.02						<0.03		
Sulfate	mg/L						21				25.3						35		
Barium Dissolved	mg/L						<0.2				0.0388						0.049		
Barium Total	mg/L						<0.001				<0.002						<0.001		
Cadmium Dissolved	mg/L						<0.0005				<0.0002						<0.001		
Cadmium Total	mg/L						89.1				76.5						88		
Chromium Dissolved	mg/L						<0.005				<0.001						<0.002		
Chromium Total	mg/L						<0.025				<0.001						<0.002		
Copper Dissolved	mg/L						0.57				0.81						0.84		
Copper Total	mg/L						<0.001				0.00227						<0.001		
Lead Dissolved	mg/L						28				25.7						28		
Lead Total	mg/L						<0.0002				<0.0002						<0.0002		
Magnesium Dissolved	mg/L						<5				1.33						1.5		
Magnesium Total	mg/L						<0.005				<0.002						<0.005		
Selenium Dissolved	mg/L						<0.0005				<0.001						<0.001		
Selenium Total	mg/L						16.2				13.8						11		
Thallium Dissolved	mg/L						<0.002				<0.0002						<0.002		
Thallium Total	mg/L						<0.02				<0.002						<0.005		
Vanadium Dissolved	mg/L						<0.02				<0.004						<0.02		
Zinc Dissolved	mg/L						<0.02				0.0459						0.048		
Barium Total	mg/L						<0.001				<0.001						<0.001		
Cadmium Total	mg/L						<0.0005				<0.0005						<0.001		
Calcium Total	mg/L						81.7				81.7						88		
Chromium Total	mg/L						<0.002				<0.002						<0.002		
Copper Total	mg/L						<0.005				<0.005						<0.002		
Iron Total	mg/L						0.823				0.823						0.86		
Lead Total	mg/L						<0.001				<0.001						<0.001		
Magnesium Total	mg/L						27				27						28		
Mercury Total	mg/L						<0.0002				<0.0002						<0.0002		
Potassium Total	mg/L						1.57				1.57						1.5		
Selenium Total	mg/L						<0.005				<0.005						<0.005		
Silver Total	mg/L						<0.0005				<0.0005						<0.001		
Sodium Total	mg/L						14.5				14.5						11		
Thallium Total	mg/L						<0.001				<0.001						<0.002		
Vanadium Total	mg/L						<0.005				<0.005						<0.005		
Zinc Total	mg/L						<0.005				<0.005						<0.02		
<b>Eight Parameters</b>																			
pH	SI	7.24	7.53	7.5	7.14	7.53	7.42	7.79	6.96	6.96	6.98	7.5	7.21	6.9	6.63	7.2	7.1	6.95	
Conductivity	umhos/cm	614	530	536	564	570	568	613	811	593	609	651	672	671	616	700	560	564	
Temperature	°C	15.1	15.7	11.7	11.9	10.9	10.6	10.7	10	11.7	11.2	10.5	11.7	10.2	7.9	12	10.3	12.7	
pH	ml/min	12	76		42		84	56	13	59	116	82	116	72	136	133	156	158	
Dissolved Oxygen	mg/L	2.8	6.86		3.2		4.71	5.13	1.81	0.73	0.84	0.97	0	0	0	0.78	1.45		
Turbidity	NTU						1	1.5	54		8	2	1	8	17				
<b>Non-Analytical Parameters</b>																			
Total Dissolved Solids	mg/L	362	305	319	336	321	294	284	376	334	485					410			
Total Suspended Solids	mg/L										6.5	5	5	5	4	4	4	4	

(1A) Target Analyte List from Table 7.5 of the Remedial Action Quality Assurance Project Plan (WCC 1996) (RA QAPP) for the Albion Landfill

( ) 1:1 Not Tested

(1C1) Target Compound List from Table 7.4 of the RA QAPP for the Albion Landfill

(#) Duplicate sample

(\*) All TCL parameters listed on Table 7.4 of the RA QAPP were analyzed

(ND) Non-detect; not reported at or above the laboratory practical quantitation limit

(C) All other parameters reported at or above the laboratory practical quantitation limit are listed

(B) Parameter was reported above the PQL in field blank during this event

ALBION-SHERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE 17

ANALYTICAL SUMMARY TABLE  
MONITORING WELL MW-1558

PARAMETER	UNITS	10/24/00	10/24/01	10/30/02	10/09/03	10/21/04	1/11/2006	09/28/2006	11/27/2007	10/06/08	11/18/09	11/09/10	11/08/11	11/13/12	11/13/13	09/23/14	12/08/13	08/30/16	
<b>Annual Parameters</b>																			
Nitrogen Ammonia	mg/L	7.58	6.96	9.96	6.06	6.69	6.29	5.7	5.58	4.51	3.69	3.64	3.12	2.6	2.6	2.8	2.4	2	
Arsenic, Dissolved	mg/L	0.0083	0.0062	<0.005	0.0098	<0.005	0.0077	0.0102	<0.005	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	0.005	<0.005	<0.005	
Arsenic, Total	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Aluminum, Dissolved	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	0.0157	0.0117	<0.07	<0.05	<0.05	<0.007	<0.05	<0.05	
Aluminum, Total	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.267	0.264	0.0157	0.0117	<0.07	<0.05	<0.05	<0.007	<0.05	<0.05	<0.05	
Antimony, Dissolved	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	
Antimony, Total	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	
Cobalt, Dissolved	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	
Cobalt, Total	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	
Manganese, Dissolved	mg/L	0.112	0.257	0.097	0.106	0.192	<0.07	0.0728	0.0908	0.0863	0.0873	0.0873	0.081	0.0794	0.081	0.091	0.085	0.075	
Manganese, Total	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	
Nickel, Dissolved	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	
Nickel, Total	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	
Benzene	ug/L	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Vinyl Chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2-Dibromo-3-Chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	
<b>Trace Element Parameters</b>																			
<b>HALOGENIDES</b>																			
Chloride	mg/L						58				58						45		
Chloride, Total	mg/L						<0.005				<0.005						<0.01		
Bromide	mg/L						<0.02				<0.02						<0.05		
Sulfate	mg/L						58				58						50		
Fluoride	mg/L						0.211				0.135						0.13		
Beryllium, Dissolved	mg/L						<0.001				<0.001						<0.001		
Cadmium, Dissolved	mg/L						<0.0005				<0.0005						<0.001		
Calcium, Dissolved	mg/L						116				98.7						100		
Chromium, Dissolved	mg/L						<0.005				<0.001						<0.002		
Copper, Dissolved	mg/L						<0.015				<0.001						<0.002		
Iron, Dissolved	mg/L						1.55				1.14						1.2		
Lead, Dissolved	mg/L						<0.003				0.000219						<0.001		
Magnesium, Dissolved	mg/L						34.4				31.4						30		
Mercury, Dissolved	mg/L						<0.0002				<0.0002						<0.0002		
Polonium, Dissolved	mg/L						12				8.9						7.5		
Selenium, Dissolved	mg/L						<0.005				<0.002						<0.005		
Silver, Dissolved	mg/L						<0.0005				<0.0001						<0.001		
Sodium, Dissolved	mg/L						45.6				30.8						31		
Thallium, Dissolved	mg/L						<0.002				<0.0002						<0.002		
Vanadium, Dissolved	mg/L						<0.07				<0.002						<0.005		
Zinc, Dissolved	mg/L						<0.07				<0.002						<0.07		
Boron, Total	mg/L						<0.07				0.148						0.17		
Beryllium, Total	mg/L						<0.001				<0.001						<0.001		
Cadmium, Total	mg/L						<0.0002				<0.0002						<0.001		
Calcium, Total	mg/L						105				105						100		
Chromium, Total	mg/L						<0.002				<0.002						<0.002		
Copper, Total	mg/L						<0.005				<0.005						<0.005		
Iron, Total	mg/L						1.39				1.39						1.2		
Lead, Total	mg/L						<0.001				<0.001						<0.001		
Magnesium, Total	mg/L						33				33						31		
Mercury, Total	mg/L						<0.0002				<0.0002						<0.0002		
Polonium, Total	mg/L						9.5				9.5						7.5		
Selenium, Total	mg/L						<0.005				<0.005						<0.005		
Silver, Total	mg/L						<0.0005				<0.0005						<0.001		
Sodium, Total	mg/L						45.6				31.4						31		
Thallium, Total	mg/L						<0.002				<0.002						<0.002		
Vanadium, Total	mg/L						<0.07				<0.002						<0.005		
Zinc, Total	mg/L						<0.07				0.00029						<0.07		
<b>ICL VOC's*</b>																			
ICL SVOC's*	ug/L						ND				ND						ND		
ICL Pesticides*	ug/L						ND				ND						ND		
ICL PCB's*	ug/L						ND				ND						ND		
<b>Field Parameters</b>																			
pH	S.U.	7.13	7.25	7.26	7.31	7.41	7.23	7.43	6.68	6.72	6.77	7.32	7.07	6.78	7.33	7.37	6.94	6.79	
Conductivity	umho/cm	1015	897	935	870	878	872	940	890	878	934	921	941	892	828	929	248	229	
Temperature	°C	15.5	15.3	11.8	11.5	11.4	11.3	10.9	12.1	11.4	10.8	11.8	11.3	8.3	11.5	10.5	13.5	13.5	
pH	mm	18	60		56			87	59	70	116	83	114		-72	145	131	150	
Dissolved Oxygen	mg/L	2.07	5.02		7.02			5.11	1.72	1.46	0.55	0.89	0.93	0	0	0	0.67	0.8	
Stability	HTU								7	92	53	4	7	1	7	7			
<b>Inorganical Parameters</b>																			
Total Dissolved Solids	mg/L	556	534	528	502	496	430	360	570	574	616						570		
Total Suspended Solids	mg/L																<4	<4	

NOTES:

- (TA) Target Analyte list from Table 7.3 of the Remedial Action Quality Assurance Project Plan (WCC, 1996) (RA QAPP) for the Albion Landfill
- (TC) Target Contaminant list from Table 7.4 of the RA QAPP for the Albion Landfill
- (\*) All ICL parameters listed on Table 7.4 of the RA QAPP were analyzed
- Only those parameters reported at or above the laboratory practical quantitation limit are listed
- (B) Parameter was reported above the PQL in field blank during this event

- ( ) Not tested
- (#) Duplicate sample
- (ND) Non detect (ie not reported at or above the laboratory practical quantitation limit)







ALBION-SHERIDAN TOWNSHIP LANDFILL  
OPERATION AND MAINTENANCE MONITORING

TABLE 21

SUMMARY OF GROUNDWATER ELEVATIONS<sup>1</sup> IN MONITORING WELLS

MONITORING WELL ID	10/27/99	1/25/00	4/19/00	7/20/00	10/24/00	01/24/01	10/23/01	10/29/02	10/8/03	10/20/04	01/10/06	06/27/06	11/26/07	10/7/08	11/17/09	11/8/10	11/07/11	11/14/12	11/11/13	9/23/14	12/7/15	8/29/16
<b>UNCONFOURATED SATURATED UNIT</b>																						
MW015G	982.36	-	--	--	-	-	930.97	931.05	949.68	930.97	949.66	949.78	949.99	952.68	932.90	932.42	932.31	931.46	931.89	931.93	931.20	930.90
MW025G	949.61	949.22	948.84	949.80	949.66	949.38	951.10	950.96	949.64	951.10	949.78	949.89	950.06	952.64	952.88	952.43	952.33	951.50	951.88	951.92	951.17	950.89
MW035G	946.63	946.63	-	-	--	--	948.16	947.33	946.64	948.16	947.15	947.07	947.17	948.73	948.74	948.40	948.47	947.86	948.34	948.25	947.98	947.93
MW045G(WB)	946.07	945.93	945.81	946.52	946.43	946.27	947.51	946.32	946.56	947.51	946.56	946.48	946.65	947.90	947.89	947.62	947.65	947.16	947.39	947.53	947.28	947.27
MW055G	948.89	-	--	--	948.96	-	950.34	949.32	948.40	950.34	949.19	948.92	949.10	951.47	951.32	950.81	950.91	950.04	950.62	950.28	950.01	949.91
MW065G	946.92	-	--	--	--	--	950.83	947.59	947.25	950.83	948.09	946.99	947.44	951.39	949.22	948.00	948.91	947.70	948.83	947.97	948.02	949.02
MW075G	946.40	--	--	948.04	946.92	--	948.83	947.43	946.97	948.83	947.53	946.70	947.06	949.41	948.56	947.85	948.29	947.45	948.17	947.71	947.68	948.05
MW085G	955.30	--	--	--	--	--	948.18	945.73	954.83	948.18	954.44	954.85	954.72	956.94	955.80	955.72	955.82	954.73	956.15	955.71	955.31	955.43
MW095G	945.69	945.56	945.52	946.19	--	--	947.02	945.99	946.13	947.02	945.88	946.02	946.13	947.27	947.15	946.92	946.96	946.50	946.97	946.87	946.71	946.70
MW105G	945.68	-	--	--	946.16	-	946.11	946.09	945.64	946.11	946.05	945.93	942.22	946.75	946.69	946.63	946.66	947.35	946.80	946.74	946.62	946.60
MW115G	-	--	--	--	-	-	-	949.13	949.13	-	-	-	-	-	-	-	-	-	-	-	-	-
MW125G	-	--	--	--	-	-	-	950.72	950.72	-	-	-	-	-	-	-	-	-	-	-	-	-
MW135G	--	--	--	--	--	--	--	949.49	949.49	-	-	-	-	-	-	-	-	-	-	-	-	-
MW175G	-	-	-	-	-	-	954.38	-	-	954.38	952.26	-	952.21	955.92	954.59	947.89	954.37	952.83	954.34	953.27	953.18	953.04
<b>DEEP BEDROCK UNIT</b>																						
MW04DB	945.24	945.88	945.66	946.51	--	946.18	947.81	947.94	947.17	947.81	946.76	946.76	946.90	948.91	948.98	948.67	948.68	948.08	948.50	948.47	948.09	948.00
MW16DB	--	--	--	--	946.27	--	947.06	946.96	946.43	947.06	946.51	946.43	946.48	947.89	947.89	947.71	948.16	947.33	947.71	947.27	947.56	947.62
<b>SHALLOW BEDROCK UNIT</b>																						
MW015B	--	--	--	--	948.40	948.65	950.40	950.41	949.19	950.40	949.15	949.23	949.45	951.94	952.72	951.75	951.64	950.88	951.28	951.31	950.63	950.39
MW025B	948.99	948.60	948.22	949.08	948.84	948.76	950.50	950.35	949.10	950.50	949.15	949.28	949.50	951.98	952.23	951.78	951.22	950.92	951.29	951.36	950.59	950.38
MW035BA	946.16	946.00	945.90	946.60	946.50	946.35	947.64	946.98	946.26	947.64	946.67	946.60	946.74	948.04	948.03	947.71	947.73	947.24	947.66	947.57	947.35	947.33
MW045B(SB2)	946.07	945.91	954.80	946.51	946.44	946.28	947.51	947.09	946.35	947.51	946.58	946.49	946.65	947.88	947.88	947.59	947.04	947.13	947.36	947.48	947.33	947.33
MW055B	946.95	-	946.43	947.25	947.18	946.98	948.57	947.82	947.02	948.57	947.46	947.46	947.65	949.66	949.68	949.39	949.39	948.69	949.12	949.15	948.69	948.58
MW065B	946.08	945.93	-	946.45	946.38	946.26	947.49	946.97	946.50	947.49	946.56	946.48	946.62	947.88	947.86	947.59	947.65	947.07	947.57	947.50	947.26	947.25
MW075B	946.02	945.85	945.75	946.55	946.48	946.33	947.54	947.05	946.59	947.54	946.44	946.52	946.69	947.92	947.95	947.65	947.69	947.19	947.63	947.56	947.35	947.34
MW085B	946.10	--	945.82	946.57	946.48	946.32	947.56	947.06	946.54	947.56	946.65	946.55	946.71	947.96	947.95	947.67	947.73	947.22	947.67	947.57	947.35	947.34
MW095B	946.06	945.90	945.78	946.42	946.21	946.19	947.41	946.94	946.48	947.41	946.49	946.41	946.57	947.81	947.79	947.52	947.57	947.08	947.51	947.42	947.20	947.20
MW155B	-	--	--	946.17	946.10	945.95	947.05	946.52	946.04	947.05	946.21	946.11	946.22	947.30	947.22	946.99	947.06	946.63	947.08	947.02	946.83	946.85
MW165B	--	--	--	-	946.14	946.02	947.47	946.57	946.12	947.47	946.20	945.15	946.28	947.29	947.28	947.05	947.09	946.67	947.10	947.02	946.86	946.86
MW175B	-	-	-	-	-	-	947.55	-	-	947.55	946.63	946.56	946.71	947.94	947.93	947.66	947.70	947.19	947.65	947.56	947.33	947.32
<b>WEATHERED BEDROCK UNIT</b>																						
MW01WB	--	--	--	--	-	-	950.45	950.43	949.19	950.45	949.17	949.27	949.43	951.98	952.22	951.77	951.70	950.91	951.27	951.32	950.62	950.39
MW02WB	949.33	948.95	948.57	949.43	-	949.08	950.78	950.64	949.37	950.78	949.49	949.61	949.80	952.34	952.57	952.13	952.06	951.24	951.62	951.67	950.91	950.67
MW03WB	946.08	946.08	-	--	-	--	947.48	946.80	946.34	947.48	946.58	946.51	946.66	947.81	947.89	947.65	947.67	947.16	947.59	947.52	947.29	947.29
MW04WB(SB1)	946.07	945.93	945.82	946.52	-	946.26	947.51	947.15	946.66	947.51	946.56	946.47	946.84	947.88	947.89	947.61	947.65	947.16	947.60	947.51	947.29	947.27
MW06WB	945.70	-	--	--	--	--	946.94	946.44	946.02	946.94	946.08	946.00	946.13	947.16	947.15	946.89	946.96	946.53	946.96	946.88	946.71	946.71
MW07WB	946.01	-	--	946.54	-	--	947.56	947.04	946.55	947.56	946.65	946.53	946.71	947.93	947.96	947.66	947.69	947.22	947.67	947.57	947.35	947.34
MW08WB	946.14	-	--	--	--	946.40	947.62	947.29	946.62	947.82	946.76	946.75	946.87	946.56	946.49	946.22	946.28	946.70	948.21	948.12	947.83	947.81
MW09WB	945.72	945.58	945.52	946.11	-	-	947.00	946.60	946.16	947.00	946.12	946.05	946.17	947.24	947.18	946.94	947.01	946.59	947.01	946.92	946.74	946.75

Notes: 1) All groundwater elevation data are in ft./USGS  
2) Fluctuations listed represent maximum variations of groundwater elevations recorded on consecutive sampling events  
(-) Not available



## APPENDIX E

### SITE INSPECTION CHECKLIST

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

### Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION													
Site name: <u>W. BION-SHERIDAN TS LF</u>	Date of inspection: <u>11/16/16</u>												
Location and Region: <u>S</u>	EPA ID:												
Agency, office, or company leading the five-year review: <u>EPA</u>	Weather/temperature: <u>MILD, P. CLOUDY</u>												
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td><input checked="" type="checkbox"/> Landfill cover/containment</td> <td><input type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input checked="" type="checkbox"/> Access controls</td> <td><input type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Other: <u>O &amp; M MONITORING</u></td> <td></td> </tr> </table>		<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation	<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls	<input type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input checked="" type="checkbox"/> Other: <u>O &amp; M MONITORING</u>	
<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation												
<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment												
<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls												
<input type="checkbox"/> Groundwater pump and treatment													
<input type="checkbox"/> Surface water collection and treatment													
<input checked="" type="checkbox"/> Other: <u>O &amp; M MONITORING</u>													
Attachments: <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached													
II. INTERVIEWS (Check all that apply) <u>NONE (OTHER THAN MDEP)</u>													
1. O&M site manager _____ <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;">Name</td> <td style="width: 30%;">Title</td> <td style="width: 30%;">Date</td> </tr> </table> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____		Name	Title	Date									
Name	Title	Date											
2. O&M staff _____ <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;">Name</td> <td style="width: 30%;">Title</td> <td style="width: 30%;">Date</td> </tr> </table> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____		Name	Title	Date									
Name	Title	Date											

3 Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency MDEQ  
Contact PRIYANK PATEL P.M. 11/16/16 517-294-5143  
Name Title Date Phone no.  
Problems, suggestions,  Report attached NEW STATE P.M. HAD QUESTION ABOUT OYM DURING SITE INSPECTION

Agency \_\_\_\_\_  
Contact \_\_\_\_\_  
Name Title Date Phone no.  
Problems; suggestions,  Report attached \_\_\_\_\_

Agency \_\_\_\_\_  
Contact \_\_\_\_\_  
Name Title Date Phone no.  
Problems; suggestions,  Report attached \_\_\_\_\_

Agency \_\_\_\_\_  
Contact \_\_\_\_\_  
Name Title Date Phone no.  
Problems; suggestions,  Report attached \_\_\_\_\_

4 Other interviews (optional)  Report attached


III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1.	<b>O&amp;M Documents</b> <input type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input type="checkbox"/> Maintenance logs Remarks: <u>REVIEW OF DOCUMENTS LISTED IN FUR REPORT APPENDIX</u>	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
2.	<b>Site-Specific Health and Safety Plan</b> <input type="checkbox"/> Contingency plan/emergency response plan Remarks: _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A
3.	<b>O&amp;M and OSHA Training Records</b> Remarks: _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
4.	<b>Permits and Service Agreements</b> <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks: _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
5.	<b>Gas Generation Records</b> Remarks: _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
6.	<b>Settlement Monument Records</b> Remarks: _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
7.	<b>Groundwater Monitoring Records</b> Remarks: _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
8.	<b>Leachate Extraction Records</b> Remarks: _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
9.	<b>Discharge Compliance Records</b> <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks: _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A
10.	<b>Daily Access/Security Logs</b> Remarks: _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A



C. Institutional Controls (ICs)

1 **Implementation and enforcement** IN FYR REPORT

Site conditions imply ICs not properly implemented  Yes  No  N/A

Site conditions imply ICs not being fully enforced  Yes  No  N/A

Type of monitoring (e.g., self-reporting, drive by) PRF CONTRACTOR + ALBION

Frequency ANNUAL AND PERIODIC INSPECTIONS

Responsible party/agency \_\_\_\_\_

Contact \_\_\_\_\_

Name	Title	Date	Phone no.

Reporting is up-to-date  Yes  No  N/A

Reports are verified by the lead agency  Yes  No  N/A

Specific requirements in deed or decision documents have been met  Yes  No  N/A

Violations have been reported  Yes  No  N/A

Other problems or suggestions:  Report attached

\_\_\_\_\_

\_\_\_\_\_

2. **Adequacy**  ICs are adequate  ICs are inadequate  N/A

Remarks \_\_\_\_\_

\_\_\_\_\_

D. General

1 **Vandalism/trespassing**  Location shown on site map  No vandalism evident

Remarks \_\_\_\_\_

2 **Land use changes on site**  N/A

Remarks ACCESS FENCE CUT OPEN AND ROLLED BACK ON EAST FENCE LINE 1/3 WAY IN FROM NORTH GATE AT ENTRANCE

3 **Land use changes off site**  N/A

Remarks \_\_\_\_\_

VI. GENERAL SITE CONDITIONS

A. **Roads**  Applicable  N/A

1. **Roads damaged**  Location shown on site map  Roads adequate  N/A

Remarks \_\_\_\_\_

TWO ONE NO TRESPASSING SIGN ON N. FENCE LINE  
BRICE OFF OF FENCE

<b>B Other Site Conditions</b>	
Remarks <u>POTENTIAL SMALL BURROW AREA UNDER FENCE</u> <u>LINE ON EAST SIDE. ALSO POSSIBLE SURFACE WATER</u> <u>RUNOFF EROSION</u>	
<u>LARGE BURROW ACCESS ~ 3 FT UNDER FENCE LINE</u> <u>ON EAST SIDE ALONG N. TOE OF LF</u>	
<b>VII. LANDFILL COVERS</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
<b>A. Landfill Surface</b>	
1	Settlement (Low spots) <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident Areal extent _____                      Depth _____ Remarks _____
2	Cracks <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Cracking not evident Lengths _____                      Widths _____                      Depths _____ Remarks _____
3	Erosion <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Erosion not evident Areal extent _____                      Depth _____ Remarks _____
4.	Holes <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Holes not evident Areal extent _____                      Depth _____ Remarks _____
5	Vegetative Cover <input type="checkbox"/> Grass <input type="checkbox"/> Cover properly established <input type="checkbox"/> No signs of stress <input type="checkbox"/> Tree/Shrubs (indicate size and locations on a diagram) Remarks _____
6.	Alternative Cover (armored rock, concrete, etc.) <input type="checkbox"/> N/A Remarks _____
7.	Bulges <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Bulges not evident Areal extent _____                      Height _____ Remarks _____

8	<b>Wet Areas/Water Damage</b> <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____	<input type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map    Areal extent _____ <input type="checkbox"/> Location shown on site map    Areal extent _____ <input type="checkbox"/> Location shown on site map    Areal extent _____ <input type="checkbox"/> Location shown on site map    Areal extent _____	
9.	<b>Slope Instability</b> <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of slope instability Areal extent _____ Remarks _____	WALKED LANDFILL SURFACE. SLOPE INTEGRITY GOOD	
<b>B. Benches</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel )			
1	<b>Flows Bypass Bench</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____		
2.	<b>Bench Breached</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____		
3	<b>Bench Overtopped</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____		
<b>C. Letdown Channels</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies )			
1	<b>Settlement</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of settlement Areal extent _____    Depth _____ Remarks _____		
2.	<b>Material Degradation</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of degradation Material type _____    Areal extent _____ Remarks _____		
3	<b>Erosion</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of erosion Areal extent _____    Depth _____ Remarks _____		



4.	<b>Undercutting</b> Areal extent _____ Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of undercutting	
5.	<b>Obstructions</b> Type _____ <input type="checkbox"/> Location shown on site map Areal extent _____ Size _____ Remarks _____	<input type="checkbox"/> No obstructions	
6.	<b>Excessive Vegetative Growth</b> Type _____ <input type="checkbox"/> No evidence of excessive growth <input type="checkbox"/> Vegetation in channels does not obstruct flow <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks _____		
<b>D. Cover Penetrations</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A <b>LANDFILL VENTS</b>			
1.	<b>Gas Vents</b> <input checked="" type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> N/A Remarks _____	<input type="checkbox"/> Active <input checked="" type="checkbox"/> Passive <input type="checkbox"/> Functioning <input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
2.	<b>Gas Monitoring Probes</b> <input checked="" type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks _____	<input type="checkbox"/> Functioning <input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> N/A
3.	<b>Monitoring Wells (within surface area of landfill)</b> <input checked="" type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks _____	<input type="checkbox"/> Functioning <input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> N/A
4.	<b>Leachate Extraction Wells</b> <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks _____	<input type="checkbox"/> Functioning <input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> N/A
5.	<b>Settlement Monuments</b> Remarks _____	<input type="checkbox"/> Located <input type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A	

E. Gas Collection and Treatment <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1	<b>Gas Treatment Facilities</b> <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
2	<b>Gas Collection Wells, Manifolds and Piping</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
3	<b>Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings)</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____	
F. Cover Drainage Layer <input type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1	<b>Outlet Pipes Inspected</b> <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____	
2.	<b>Outlet Rock Inspected</b> <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____	
G. Detention/Sedimentation Ponds <input type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1	<b>Siltation</b> Areal extent _____ Depth _____ <input type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____ _____	
2.	<b>Erosion</b> Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____ _____	
3.	<b>Outlet Works</b> <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____	
4	<b>Dam</b> <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____	

<b>H. Retaining Walls</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1	<b>Deformations</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Deformation not evident Horizontal displacement _____    Vertical displacement _____ Rotational displacement _____ Remarks _____
2	<b>Degradation</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Degradation not evident Remarks _____
<b>I. Perimeter Ditches/Off-Site Discharge</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1	<b>Siltation</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Siltation not evident Areal extent _____    Depth _____ Remarks _____
2	<b>Vegetative Growth</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A <input type="checkbox"/> Vegetation does not impede flow Areal extent _____    Type _____ Remarks _____
3	<b>Erosion</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Erosion not evident Areal extent _____    Depth _____ Remarks _____
4	<b>Discharge Structure</b> <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____
<b>VIII. VERTICAL BARRIER WALLS</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1.	<b>Settlement</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident Areal extent _____    Depth _____ Remarks _____
2	<b>Performance Monitoring</b> Type of monitoring _____ <input type="checkbox"/> Performance not monitored Frequency _____ <input type="checkbox"/> Evidence of breaching Head differential _____ Remarks _____

<b>IX. GROUNDWATER/SURFACE WATER REMEDIES</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
<b>A. Groundwater Extraction Wells, Pumps, and Pipelines</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1	<b>Pumps, Wellhead Plumbing, and Electrical</b> <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____ _____
2	<b>Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
3	<b>Spare Parts and Equipment</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____
<b>B. Surface Water Collection Structures, Pumps, and Pipelines</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1	<b>Collection Structures, Pumps, and Electrical</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
2	<b>Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
3	<b>Spare Parts and Equipment</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____

<b>C. Treatment System</b>		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1	<b>Treatment Train</b> (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters _____ <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input type="checkbox"/> Others _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____		
2.	<b>Electrical Enclosures and Panels</b> (properly rated and functional) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____		
3.	<b>Tanks, Vaults, Storage Vessels</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____		
4	<b>Discharge Structure and Appurtenances</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____		
5.	<b>Treatment Building(s)</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____		
6.	<b>Monitoring Wells</b> (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____		
<b>D. Monitoring Data</b>			
1	Monitoring Data <input type="checkbox"/> Is routinely submitted on time <input type="checkbox"/> Is of acceptable quality		
2	Monitoring data suggests: <input type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining		

<b>D. Monitored Natural Attenuation</b>	
1.	<b>Monitoring Wells</b> (natural attenuation remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____ _____ _____
<b>X. OTHER REMEDIES</b>	
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
<b>XI. OVERALL OBSERVATIONS</b>	
<b>A.</b>	<b>Implementation of the Remedy</b>  Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.) <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">                     SITE REMEDY SYSTEMS IN GOOD                      CONDITION                 </div> _____ _____ _____ _____ _____ _____ _____
<b>B.</b>	<b>Adequacy of O&amp;M</b>  Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">                     O&amp;M LOOKED TO BE OPERATING AS                      REQUIRED IN THE SITE REMEDY. SOME FENCE                      REPAIR NEEDED ON EAST SIDE FENCE LINE AND                      SMALL ANIMAL BURROW                 </div> _____ _____ _____ _____ _____

**C. Early Indicators of Potential Remedy Problems**

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be *compromised in the future*.

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**D. Opportunities for Optimization**

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

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**APPENDIX F**

**SITE PHOTOGRAPHS**









