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CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT

GM CETC BEDFORD FACILITY
105 GM DRIVE
BEDFORD, INDIANA

Prepared for: General Motors LLC

Conestoga-Rovers & Associates
651 Colby Drive
Waterloo, Ontario N2V 1C2

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LIST OF ACRONYMS

AAQMP	Ambient Air Quality Monitoring Plan
Agreement	Performance Based Corrective Action Agreement
Approvals	U.S. EPA and IDEM PCB Risk-Based Disposal Approvals for the Vault
ASTM	ASTM International
CETC	Castings, Engines Transmissions and Components
CFR	Code of Federal Regulations
CMP	Corrective Measures Proposal
cm/sec	centimeters per second
CQA	Construction Quality Assurance
CRA	Conestoga-Rovers & Associates, Inc.
cy	cubic yards
EI	Environmental Indicator
EQ tank	equalization tank
Facility	GM CETC Bedford Facility
ft	feet or foot
GCL	Geosynthetic Clay Liner
GM	General Motors LLC
gpm	gallons per minute
GRI	Geosynthetic Research Institute
GUS	Gravel Underdrain System
H	horizontal
HASP	Health and Safety Plan
HDPE	High Density Polyethylene
HP	horsepower
Hz	Hertz
IDEM	Indiana Department of Environmental Management
IM	Interim Measure
INDOT	Indiana Department of Transportation
JFNew	JFNew & Associates or Cardno JFNew

LIST OF ACRONYMS
(continued)

LCS	Leachate Collection System
LDS	Leak Detection System
LLDPE	linear low density polyethylene
mg/kg	milligram per kilogram
MSG	The Mannik & Smith Group
ND	Non Detect
NPDES	National Pollutant Discharge Elimination System
OM&M	Operation, Maintenance, and Monitoring
PCB	Polychlorinated Biphenyl
PCP	Post-Closure Plan, Bedford Plant Vault
PLC	programmable logic controller
PSI	Professional Services, Inc.
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAP	Leachate Detection System Response Action Plan
RCRA	Resource Conservation and Recovery Act
Report	East Plant Area Vault Construction Certification Report
RFI	RCRA Facility Investigation
SES	Sevenson Environmental Services, Inc.
SSC	Site Source Control
SSC WTP	On-Facility Site Source Control Water Treatment Plant
TSC	Testing Service Corporation
TSCA	Toxic Substances Control Act
TSP	Total Suspended Particulates
U.S. Bulk	U.S. Bulk Transport
U.S. DOT	U.S. Department of Transportation
U.S. EPA	United States Environmental Protection Agency
µg/L	micrograms per liter

LIST OF ACRONYMS
(continued)

$\mu g/m^3$	micrograms per cubic meter
Vault	East Plant Area TSCA Permitted Landfill Vault
Vert	Vertical
V	Volt
WTP	Water Treatment Plant

1.0 INTRODUCTION

This East Plant Area Vault Construction Certification Report (Report) has been prepared by Conestoga-Rovers & Associates, Inc. (CRA) on behalf of General Motors LLC (GM) for the Toxic Substances Control Act (TSCA) permitted Landfill Vault (Vault), located within the East Plant Area at the GM Castings Engines Transmissions and Components (CETC; formerly Powertrain) Bedford Facility (Facility) in Lawrence County, Bedford, Indiana. The Vault was constructed as a component of the East Plant Area Interim Measure (IM) during the Resource Conservation and Recovery Act (RCRA) Corrective Action activities being conducted in accordance with the Performance Based Corrective Action Agreement (Agreement) (effective March 20, 2001, amended on October 1, 2002, March 29, 2007, and May 9, 2008). Approval for the disposal of Polychlorinated Biphenyl (PCB) contaminated waste in the Vault pursuant to 40 Code of Federal Regulations (CFR) § 761.61 (c) was received on October 18, 2006. The Risk-Based Approval to Dispose of PCBs, as issued by the Indiana Department of Environmental Management (IDEM), and the TSCA Approval to Dispose PCBs, as issued by the United States Environmental Protection Agency (U.S. EPA) (together referred to as the "Approvals") are included in Appendix A.

The overall Facility location is presented on Figure 1.1. The Vault location, as well as the East Plant Area, West Plant Area, and the Northern Tributary Area, are presented on Figures 1.1 and 1.2. The Vault was constructed within a specific portion of the East Plant Area but ≥50 mg/kg PCB impacted soil excavation activities were performed on the north and south sides of the Vault.

1.1 PURPOSE AND ORGANIZATION OF REPORT

This Report documents the procedures that were followed during construction and filling of the Vault, as well as installation of the final cover system and Vault closure. Activities involving the installation of the gravel underdrain system (GUS), sub-base clay/fill isolation layer, bottom double-liner system, placement of excavated soil material containing PCBs at concentrations greater than or equal to (≥) 50 milligrams per kilogram (mg/kg) from identified locations within the adjacent East Plant Area, the West Plant Area, and the Northern Tributary Area (hereinafter referred to as "≥50 mg/kg PCB impacted soil"); and installation of the final cover system are also included. Design details for the bottom double-liner system and the final cover system were presented to U.S. EPA in the

pre-final report entitled "East Plant Area Vault Design Report", dated October 17, 2005 and the final report entitled "East Plant Area Vault Design Report", dated June 16, 2006. Construction certification of the bottom double-liner system was provided to U.S. EPA on July 19, 2006 as interim construction information prior to waste placement in the memorandum entitled "East Plant Area Vault – Bottom Liner Construction Quality Assurance (CQA) Information", and has been incorporated into this Report. Vault filling procedures were presented to U.S. EPA in the report entitled "East Plant Area Interim Measure Vault Development Plan", dated February 28, 2006.

This Report addresses those activities associated with Vault construction, and the required CQA testing, including the bottom double-liner system, ≥50 mg/kg PCB impacted soil placement activities, and Vault final cover system, consistent with 40 CFR § 761.75 and TSCA. Long-term operation, maintenance and monitoring (OM&M) requirements for the Vault will be coordinated with the overall OM&M Plan, or plans, developed for the entire East Plant Area IM, and the on-Facility Site Source Control Water Treatment Plant (on-Facility SSC WTP). In the interim, a separate report for the Vault entitled "Post-Closure Plan, Bedford Plant Vault" was submitted to U.S. EPA on February 3, 2012. The Post-Closure Plan (PCP) addressed only those activities associated with post-closure of the Vault, consistent with 40 CFR § 761.75, 40 CFR § 264, and TSCA. The PCP included OM&M of the Vault final cover system (including the vegetative cover), the Gravel Underdrain System (GUS), the Leachate Collection System (LCS), and the Leak Detection System (LDS).

This Report is organized as follows:

Section 2.0 - Facility Information

This section provides information regarding the location and description of the Facility, including the East Plant Area and the Vault, (which is located within the East Plant Area), the West Plant Area, and the Northern Tributary Area.

Section 3.0 – Vault Excavation

This section provides details regarding excavation of the Vault footprint.

Section 4.0 – Gravel Underdrain System

This section provides construction details related to the GUS, as well as the associated material specifications.

Section 5.0 – Sub-Base Clay/Fill Placement

This section provides details regarding the clay/fill isolation layer constructed at the base of the Vault.

Section 6.0 – Bottom Liner System

This section provides the previously reported details related to construction of the Vault bottom double-liner system.

Section 7.0 – Leachate Collection System

This section provides construction details related to both the LCS and LDS, as well as associated material specifications for the system components.

Section 8.0 – Waste Placement Procedures

This section provides a description of the waste (soil) placement procedures, including excavation/backfilling and surface water management.

Section 9.0 – Final Cover System

This section summarizes the various layers of the Vault final cover system and the materials that were utilized for construction.

Section 10.0 – Water Treatment Plant

This section provides a general description of the on-Facility SSC WTP that was constructed within the East Plant Area. Leachate and underdrain water collected from the Vault sumps is treated along with groundwater collected from the various SSC systems in the on-Facility SSC WTP (hereinafter referred to as the on-Facility SSC WTP).

Section 11.0 – Monitoring and Sampling Procedures

This section presents the procedures required for monitoring and sampling of leachate, groundwater, surface water, and air, including water treatment and disposal during construction.

Section 12.0 - Health and Safety Plan

This section summarizes the approved health and safety procedures implemented during Vault construction.

Section 13.0 – Vault Security

This section presents a description of the security measures taken to secure the Facility during construction of the Vault.

Section 14.0 – Record Keeping Procedures

This section presents the record keeping procedures implemented during construction.

Section 15.0 – Operation, Maintenance, and Monitoring

This section outlines the OM&M requirements for the constructed Vault.

Section 16.0 – Community Relations

This section presents various means of community participation and awareness that occurred during Vault construction.

Section 17.0 – Construction Certification

This section provides certification of the Vault construction completion.

Section 18.0 – References

This section presents references cited in this Report.

2.0 FACILITY INFORMATION

2.1 FACILITY LOCATION AND DESCRIPTION

The Facility is located at 105 GM Drive in the City of Bedford, Shawswick Township, Lawrence County, Indiana. The Facility lies on approximately 152.5 acres of land on either side of GM Drive. The East Plant Area refers to a portion of the Facility property that is located to the east of GM Drive and west of Bailey Scales Road. The East Plant Area was expanded in 2012 to include an additional 28 acres of residential property to the southeast: Parcels 3, 203, 204, 207, 208, 412, 413, 414, 415, and 416, which are now owned by GM LLC. The West Plant Area is made up of the GM property west of GM Drive and includes the manufacturing operations. The Northern Tributary is located north of the Facility between Breckenridge Road and Broomsage Road, west of North Jackson Street, beginning at the southern boundary of Parcel 386 as a shallow ditch and developing into a more defined ravine as it progresses through adjacent properties to the northeast of the Facility.

Currently, the Facility is bordered by residential and undeveloped areas to the north; to the south by the Canadian and Pacific Railway, and a former IMCO facility (a Kaiser Aluminum recycling facility); to the east by residential and undeveloped areas; and to the west by an abandoned railway, industrial and residential properties, and a cemetery. The Facility property boundaries, buildings, and support facilities are presented on Figures 1.1 and 1.2.

The Facility is currently zoned and utilized for industrial purposes. The reasonably foreseeable future land use is industrial.

2.2 VAULT LOCATION AND DESCRIPTION

The Vault is located within the East Plant Area, to the east of GM Drive and west of the Stormwater Pond, between the former Zipp Trucking parking lot to the north and the former East Plant parking lot to the south. The former Zipp Trucking and East Plant parking lots have subsequently been excavated of ≥50 mg/kg PCB impacted soil and backfilled with <50 mg/kg PCB impacted soil (grading fill) relocated from downstream excavation activities. These creek soils were placed under the East Plant Area IM Final Cover System as grading fill. This grading fill placement effectively buried the northern and southern slopes of

the Vault cover system (see Figure 2.1). A selection of photographs documenting the Vault construction can be found in Appendix B.

The Vault is roughly square in shape with dimensions of approximately 400 feet (ft) in length (north to south) and 375 ft in width (east to west). The final Vault design volume for placement of ≥50 mg/kg PCB impacted soils was 135,462 cubic yards (cy). Based on pre- and post-filling topographic surveys, an estimated 134,667 cy of ≥50 mg/kg PCB impacted soil was placed in the Vault and approximately 795 cy of additional <50 mg/kg PCB impacted soil was also placed in the Vault in order to achieve final design volume and slopes during completion and capping of the Vault.

The Vault was constructed to provide a permanent, secure location for ≥50 mg/kg PCB impacted soil excavated from select areas within the East Plant Area, West Plant Area, and Northern Tributary in a manner that is protective of both human health and the environment.

2.2.1 DESIGN BASIS

The Vault was designed and constructed to ensure that the placed/disposed ≥50 mg/kg PCB impacted soils will not pose a future unreasonable potential risk of injury to either human health or the environment.

2.2.2 VAULT DESIGN COMPONENTS

The Vault was constructed of the following components (from bottom to top):

- Gravel Underdrain System (GUS) over the bedrock surface
- Sub-base clay/fill isolation layer
- Vault bottom double-liner system
- Leachate Collection System (LCS) and Leak Detection System (LDS)
- ≥50 mg/kg PCB impacted soil
- Vault final cover system

A description of each of these components is presented in the following sections of this Report.

3.0 VAULT EXCAVATION

The Vault excavation commenced with the removal of the previously existing clay/fill material within the Vault footprint, to expose and inspect the condition of the underlying bedrock. The excavated material was comprised of previously placed imported clean clayey soils used approximately 20 years ago to backfill the area after the decommissioning of a former stormwater pond. Excess clean clayey soil material removed from the excavation was stockpiled adjacent to the Vault location for re-use in the Vault construction. The lowermost clay material, which could have potentially become impacted from contact with the bedrock surface (where impacted groundwater may have been present), was excavated and placed in a temporary grading fill stockpile area within the East Plant Area for future placement under the East Plant Area IM Cover System (CRA, April 18, 2008). Drawing C-01 presents the surveyed top of bedrock elevations following excavation of the overlying clay/fill backfill and limited removal of rock. Appendix B.1 presents photographs representative of the soil removal and bedrock conditions.

4.0 GRAVEL UNDERDRAIN SYSTEM

Following inspection of the exposed bedrock surface by technical representatives of GM, CRA, U.S. EPA, and IDEM, the GUS was installed over, and partially into, the upper bedrock surface, due to the irregularity of the bedrock surface beneath the footprint of the Vault (i.e., the bedrock surface is a regolith and not a smooth rock surface). The purpose of the GUS is to isolate the Vault from potential effects of fluctuations in the groundwater table within the bedrock beneath the Vault (e.g., uplift, piping of clay material, etc.). The GUS consists of a minimum of 12 inches (more was often required to address the undulating rock surface) of gravel drainage material, overlain by an 8-ounce non-woven geotextile fabric. The gravel drainage material consisted of Indiana Department of Transportation (INDOT) No. 8 stone.

Located at the bottom of the GUS is a network of gravel trenches and seep collection pipes at and notched into the bedrock surface at the base of the Vault excavation. A total of 1,170 ft of 6-inch diameter high-density polyethylene (HDPE) perforated pipe was used within the gravel drainage material and solid wall pipe for the cleanouts and connection to the sump. The pipes were installed along the valleys/channels (both natural and manmade) within the underlying bedrock surface to direct groundwater flow within the gravel drainage layer to the GUS sump located outside but directly adjacent to the Vault footprint. In one isolated area, there was a small oil seep coming out of the bedrock into the gravel underdrain area and this seep was piped for collection as well. Drawing C-02 presents the locations of the oil seep collection and underdrain piping installed as a component of the GUS.

Collected water within the GUS sump is pumped via a submersible pump through an underground forcemain to the equalization tank (EQ tank) at the on-Facility SSC WTP prior to treatment and ultimate discharge via National Pollutant Discharge Elimination System (NPDES) permitted Outfall 003 (IN 0003573). Further details regarding the pumping system in the GUS sump and the associated forcemain to the on-Facility SSC WTP are provided in Section 4.1.

The natural contours of the exposed native bedrock surface included distinct bedrock valleys that were incorporated into the GUS. The most prominent drainage pathway was a northeasterly trending bedrock valley located within the western half of the Vault excavation. Where existing bedrock surface contours did not provide suitable drainage, rock breaking was completed to

create manmade channels. The most extensive rock breaking was completed to connect an isolated low area in the southeast corner of the Vault excavation to the northeasterly trending bedrock valley in the western half of the Vault. All of the bedrock valleys/channels were completely filled with drainage stone, such that all subsurface drainage was directed to the GUS sump.

The surface of the gravel drainage material placed around and over the underdrain piping was graded to provide a smooth and appropriately sloped surface to facilitate construction of the subsequent clay/fill isolation layer. Drawing C-03 presents the surveyed top of drainage stone contours following completion of the GUS. Appendix B.2 presents photographs representative of the GUS installation.

4.1 GUS SUMP

The GUS sump is a vertical 36-inch diameter HDPE pipe that was installed beyond the northern fill limit during excavation for the Vault. The base of the sump, which includes a welded HDPE bottom plate, was set at an elevation of 662.18 ft. Two 6-inch diameter HDPE perforated drain lines, which collect bedrock groundwater from the GUS, constructed beneath the Vault, are connected into the sidewall of the vertical riser pipe approximately one foot above the base elevation.

The HDPE riser pipe has a final top elevation of 739.49 ft, for a total depth of 77.31 ft. During construction of the Vault Final Cover System, a 6-foot diameter concrete manhole section was placed over the top of the 36-inch diameter HDPE riser at the final constructed ground surface to protect the HDPE riser pipe and to house piping and valving equipment. A 36-inch by 48-inch metal hatch set in the top of the concrete manhole allows for access to the piping and equipment located within the manhole section, as well as access for maintenance and/or removal of the pumping equipment within the GUS sump, if required. This structure is treated as confined space entry and guarding and signage has been placed around the manhole.

A single submersible pump is used to remove and transfer water from the GUS sump via forcemain to the on-Facility SSC WTP for treatment. In November 2008, a Grundfos™ Model 40S Series 15-5 submersible pump (referred to as Pump P-101) was permanently installed within a 6-inch diameter steel well casing and well screen (installed vertically within the 36-inch diameter

HDPE sump). The pump is 1.5 horsepower (HP), 460 volt (V), 3-phase, 60 Hertz (Hz), and capable of pumping 40 gallons per minute (gpm) at the approximate 77-foot vertical head (equivalent to the approximate depth of the sump).

As part of the permanent pump installation, a steel shroud was placed around the entire 3-foot length of the pump (motor and impellors) and sealed above the pump to ensure water passes the bottom of the shroud and the motor at the base of the pump to prevent overheating the motor, located below the pump intake. As a result, the pump can operate in as little as two feet of water without overheating. Since the bottom of the GUS sump is approximately 5 ft below the lowest elevation of the secondary liner system beneath the Vault LDS sump, the water depth within the GUS sump is designed to be maintained between two feet and five feet of water depth to maintain groundwater levels below the elevation of the bottom double-liner system of the Vault.

Connected to the submersible pump located within the 6-inch diameter steel well casing is a 2-inch diameter vertical steel discharge pipe. This discharge pipe has a check valve at the top, prior to a pitless adaptor, to allow for removal of both the discharge pipe and the pump for maintenance purposes. The outlet pipe from the pitless adaptor is also a 2-inch diameter steel pipe that connects to an isolation gate valve, all located within the 6-foot diameter concrete manhole section placed at the top of the GUS sump. At this point, the discharge pipe transitions from steel to HDPE before passing through the side of the concrete manhole section and connecting to an underground forcemain located below the Vault final cover system. The steel discharge piping and associated flow meter and gate valve are located directly below the access door within the manhole top section for monitoring and maintenance access.

The 2-inch diameter HDPE underground forcemain exiting the GUS sump is joined to a similarly-sized HDPE forcemain coming from the LCS to the south at a point just outside the GUS concrete manhole top section. The combined discharge from these two Vault collection systems is then carried by a common 3-inch diameter HDPE forcemain (approximately 1,200 ft in length), from the north side of the Vault along the west side of the Stormwater Pond, to the south side of the EQ (equalization) Tank Containment Area at the on-Facility SSC WTP, and discharging into EQ Tank TK-1.

A level sensor probe (E+H Waterpilot FMX-167) installed near the base of the GUS sump is used to operate the submersible pump through the local pump control panel. A local control monitor with display (RIA-250) is present in this

pump control panel. The level signal is also sent to the Programmable Logic Controller (PLC) (Micrologix 1100 – common to both GUS and LCS pump stations), which communicates with the main PLC located in the Facility SSC WTP.

The local PLC that is common to the operation of both the LCS and GUS sumps is located in the Vault Underdrain Control Panel cabinet located directly adjacent to the GUS sump.

Prior to the PLC and level sensor probes becoming operational, the water levels in the GUS sump were manually monitored and recorded daily, and the accumulation of water was pumped to the on-Facility SSC WTP via a temporary on-ground forcemain. A summary of the daily monitoring logs for the GUS sump since commencement of operation in 2006 to the end of 2012 are presented in Appendix C. Subsequent data will be provided in the Vault annual compliance reports.

Detailed instructions for the automated GUS pumping system will be incorporated into the Site Source Control and Vault Collection System OM&M Manual.

5.0 SUB-BASE CLAY/FILL PLACEMENT

An isolation layer (sub-base) was constructed at the base of the Vault, overlying the gravel drainage stone layer, to separate the GUS from the subsequent Vault bottom double-liner system. The sub-base provided a structural base over the gravel drainage stone upon which the Vault bottom double-liner system was constructed. The constructed sub-base isolation layer consisted of a minimum of 12 inches of recompacted clay/fill material, although more was often required to address the undulating gravel underdrain layer placed over the irregular rock surface. The stockpiled clean clay/fill soil previously excavated from within the Vault footprint was utilized in the construction of the sub-base isolation layer. In addition to the clay/fill placed over the base of the Vault, recompacted clay/fill was also placed on the four side slopes to construct these sloped areas to the design grades for the bottom double-liner system. The surveyed top of clay contours following the structural clay/fill sub-base placement over the base and side slopes of the Vault are presented on Drawing C-04. Appendix B.3 presents photographs representative of the sub-base clay/fill placement.

A geotechnical evaluation of the inherent soil properties of the clean clay/fill material removed from within the Vault footprint indicated that placing this material on the side slopes of the Vault could be maintained at slopes of 2.5 horizontal (H) to 1 vertical (Vert). As the sides of the Vault excavation were typically removed to slopes of 2H to 1Vert or steeper during initial excavation to bedrock, clay/fill placement in the toe of slope areas involved considerably more than the minimum 12 inches of recompacted clay/fill material placed over the base of the Vault. The 2.5H to 1Vert design slope was implemented over all (four) side slopes of the Vault, with the exception of the western portion of the south slope area where perched water from beneath the former East Plant Parking Lot necessitated reducing the final designed slope. The implemented procedures for the south slope reconstruction were outlined in a memorandum titled "East Plant Area Vault – South Slope Reconstruction" submitted to U.S. EPA on April 16, 2006, wherein it was recommended that the south slope be redesigned/reconstructed to a slope of 3H to 1Vert.

During placement of the sub-base layer, CQA testing was performed in accordance with the CQA Plan previously provided as an appendix to the pre-final East Plant Area Vault Design Report (CRA, October 17, 2005). The backfilled clay/fill soil material was required to be compacted to 95 percent Standard Proctor Density. In advance of field compaction testing, the contractor collected samples of the stockpiled clay/fill soils that had been excavated from

within the Vault footprint and submitted these samples for analyses of both maximum dry density and optimum moisture content. The laboratory test results were then used to calibrate the nuclear densometer in the field in order to determine that the required 95 percent compaction level had been achieved.

Table 5.1 presents a summary of the sub-base clay compaction test data collected by Professional Services, Inc. (PSI), an independent construction materials testing firm in Indianapolis, Indiana, sub-contracted by the general contractor, Sevenson Environmental Services, Inc. (SES). The field testing results presented in Table 5.1 include the original sub-base clay/fill placement, as well as the initial south slope repair work, the south slope reconstruction work, and the final fine grading/re-rolling work at the base of the Vault to ensure the proper 12-inch minimum thickness was present across the entire Vault base. A total of 301 compaction tests were conducted during the sub-base clay/fill placement work completed between December 19, 2005 and March 19, 2006, of which 33 compaction tests initially failed the 95 percent compaction criteria. In instances of failed compaction test results, the immediate area of clay/fill placement was reworked and retested either that same day or the following day until the 95 percent Standard Proctor Density was achieved or exceeded. The entire clay/fill sub-base was sufficiently tested to ensure uniform compaction to 95 percent Standard Proctor Density.

To further document that the field compaction testing conducted during the clay/fill sub-base placement would achieve the permeability required of the Vault base materials, two types of permeability testing were performed in a laboratory. Prior to commencing clay placement, four samples of the excavated/stockpiled clay/fill were collected from two stockpiles located to the north and south of the Vault and shipped to PSI for remolded permeability testing, in accordance with the American Society for Testing and Materials (ASTM) D5084. The laboratory test results showed that the clay/fill soil from the south stockpile exhibited permeabilities of 1.1×10^{-8} and 1.2×10^{-8} centimeters per second (cm/sec), while the clay/fill soil from the north stockpile exhibited permeabilities of 2.0×10^{-8} and 7.1×10^{-8} cm/sec. Although the testing results exceeded the 1×10^{-7} cm/sec permeability requirement for compacted clay liner placement, it was important to keep the permeability data (as well as associated proctor data) for the two stockpiles separate for QA documentation during potential re-use. It should be noted that clay/fill material from the north stockpile was not utilized during the Vault construction as a sufficient volume of materials were available in the south stockpile to complete the Vault sub-base.

Further to the pre-construction remolded permeability testing described above, undisturbed Shelby tube samples of the completed sub-base layer of the Vault were collected during the initial stages of clay/fill placement to meet the requirements for a test pad, as specified in the CQA Plan, prior to construction of the primary clay liner. Although only one Shelby tube sample was specified in the CQA Plan for the pre-construction test pad, three Shelby tube samples were collected from the Vault sub-base clay/fill layer and were shipped to Testing Service Corporation (TSC) in Carol Stream, Illinois for permeability testing. One of the three collected Shelby tubes could not be tested because of insufficient sample recovery; however, the test results for the other two Shelby tubes showed that the in-situ clay/fill material compacted to 95 percent Standard Proctor Density exhibited permeabilities of 1.7×10^{-8} and 2.4×10^{-8} cm/sec, exceeding the 1×10^{-7} cm/sec permeability specification for the compacted clay liner. Table 5.2 presents the Shelby tube permeability data for Vault sub-base layer.

6.0 BOTTOM LINER SYSTEM

The Vault bottom liner system consists of a double-liner system comprising a primary and secondary liner, between which a leak detection layer was installed. The Vault bottom liner system was designed and constructed to provide a high level of protection, with a hydraulic conductivity less than 1×10^{-7} cm/s.

The components of the Vault bottom double-liner system, in order from bottom to top, are listed below:

- Secondary liner system (from bottom to top):
  - Geosynthetic Clay Liner (GCL) layer
  - 60-mil linear low density polyethylene (LLDPE) geomembrane
- Leak Detection System (LDS):
  - Drainage geocomposite
  - Leak detection manhole set on three layers of non-woven needle-punched geotextile placed over drainage geocomposite for protection against crushing
- Primary liner system (from bottom to top):
  - 12 inches of compacted clay
  - GCL layer
  - 60-mil high density polyethylene (HDPE) geomembrane

Appendix B.4 presents photographs representative of the bottom liner installation.

6.1 SECONDARY LINER PLACEMENT

Following the placement of the clay/fill sub-base isolation layer, the specified GCL (Bentomat DN) was placed over the entire Vault footprint (base and side slopes) and anchored at the top of the slope in anchor trenches, consistent with the design drawings presented in the pre-final East Plant Area Vault Design Report (CRA, October 17, 2005), and updated in the final East Plant Area Vault Design Report (CRA, June 16, 2006). The initial excavation and bottom double-liner system placement was completed in accordance with the pre-final design report, as the final design report was not issued until after the Vault base

was constructed, but there were no differences between the pre-final and final reports for the initial excavation and bottom double-liner system installation tasks. The CQA Plan identified the types of testing required for the complete GCL product, as well as the bentonite powder within the manufactured GCL product. Testing completed by the manufacturer prior to delivery to the Facility included moisture content, free swell, and fluid loss for the bentonite powder, as well as bentonite mass, grab strength, peel strength, and permeability for the complete GCL product. These testing results were provided by the contractor as a submittal and were approved by the design engineer prior to GCL placement.

During placement of the GCL over the clay/fill sub-base, the GCL material was visually inspected for integrity and the product tags removed from each roll to cross-check against the roll numbers approved as part of the contractor submittal. Table 6.1 presents a summary of the GCL installation log maintained by the field QA personnel, indicating roll numbers deployed, field approval for deployment, and the varying lengths of each GCL panel deployed. Drawing C-05 presents the as-recorded panel layout for the GCL layer placed as part of the secondary liner system.

The pre-final East Plant Area Vault Design Report (CRA, October 17, 2005) originally called for the implementation of a 60-mil textured HDPE flexible membrane liner, often referred to as geomembrane, for the secondary liner system; however, 60-mil LLDPE geomembrane material was inadvertently substituted by the geomembrane installation subcontractor during field implementation. Immediately upon recognition of the inadvertent installation, CRA reviewed the properties of the LLDPE material and determined it was acceptable for use in the secondary liner system since it was installed in conformance with the appropriate CQA requirements. The LLDPE material had equivalent (or better) performance criteria to the originally specified HDPE geomembrane for application as the secondary liner system material. To document the inadvertent installation and subsequent determination of conformance, a memorandum titled "Technical Equivalency Evaluation – Flexible Membrane Liner Substitution, Secondary Leak Detection System – East Plant Area Vault" was sent to U.S. EPA, on April 19, 2006. The memorandum requested a substitution of the secondary liner system material from HDPE to LLDPE based on the technical equivalency of these two geomembrane materials, and the acceptable results of field CQA testing. U.S. EPA approved the substitution of this material in an email on April 26, 2006 and the final East Plant Area Vault Design Report (CRA, June 16, 2006) was subsequently revised accordingly.

The CQA Plan (Table C.6.2) identified the types of testing required for the installed geomembrane materials. Testing by the geomembrane manufacturer prior to delivery to the Facility included thickness, carbon black content, density, tensile strength, elongation, puncture resistance, and tear resistance. These testing results were provided by the contractor as a submittal and were approved by the design engineer prior to geomembrane placement.

To complete the secondary liner system installation, 60-mil LLDPE geomembrane was placed over GCL for the entire Vault footprint (base and side slopes). It should be noted that the geomembrane was placed into the same anchor trench at the top of the slopes as the secondary GCL material. Prior to installation, the LLDPE geomembrane material was visually inspected for integrity. The product tags from the rolls of membrane used for the secondary liner system went missing during construction, possibly explaining the inadvertent substitution of LLDPE material for the originally planned HDPE material. Table 6.2 presents a summary of the LLDPE geomembrane installation log maintained by the field QA personnel, indicating the roll numbers deployed, field approval for deployment, and the installed lengths associated with each geomembrane panel deployed. Drawing C-06 presents the as-recorded panel layout for the 60-mil LLDPE geomembrane material placed as part of the secondary liner system.

The critical element of any geomembrane installation is the quality of the seams and associated seam testing. The majority of the geomembrane seams were completed using hot wedge welding, with extrusion welding conducted for the corners that were too difficult to access with the hot wedge welding equipment, as well as the repairs associated with the required destructive seam testing and any field repairs, as necessary. At the start of each day and following the lunch break, test seams were completed for each piece of seaming equipment (hot wedge and extrusion welders) prior to conducting field seaming activities associated with the installed geomembrane. Table 6.3 presents a summary of the test seams (i.e., trial welds) completed for the 60-mil LLDPE geomembrane layer.

The initial process in the verification of geomembrane seam competence is the performance of non-destructive seam testing, accomplished by pressure testing each seam in accordance with Geosynthetic Research Institute (GRI) Test Method GM6. Table 6.4 summarizes the non-destructive seam testing completed at 95 seam locations related to the secondary LLDPE geomembrane installation. In accordance with the technical specifications provided to the contractor,

non-destructive seam testing was required to be performed over the full length of each seam.

Upon completion of non-destructive seam testing, the next step in verification of geomembrane seam competence involved destructive seam testing performed in accordance with GRI Test Method GM19, with specific test procedures outlined in ASTM D6392. As identified in the CQA Plan and in the technical specifications provided to the contractor, destructive seam testing was to be performed "at a frequency of approximately 1 sample per 500 lineal feet of field seam". The LLDPE geomembrane panels installed within the Vault secondary liner system were up-to 150 ft in length, and typically ranged between 50 ft and 150 ft, with every seam over 50 ft in length being destructively tested. However, there were many smaller seams, some as short as 10 ft to 15 ft, in the four corners, due to the square Vault configuration. These were combined into groups of approximately 50 ft in total length for destructive seam testing (as approved in an email from U.S. EPA on March 30, 2006).

Five field test coupons were collected by the geomembrane installer at each selected destructive seam test location and tested for both shear and peel using a calibrated field tensiometer. Thereafter, another set of five test coupons was provided to the field engineer to perform similar laboratory testing for both peel and shear. Table 6.5 summarizes the 48 destructive seam tests completed for the secondary LLDPE geomembrane installation. As shown in Table 6.5, destructive seam tests passed in both the field and the laboratory, with results well in excess of the technical requirements.

Some of the seams were damaged and repaired during construction, due to destructive testing and other construction activities. A summary of the LLDPE geomembrane panel seam repairs is presented in Table 6.6.

6.2 LEAK DETECTION SYSTEM

Following completion of the secondary liner system installation (GCL and LLDPE geomembrane), a drainage geocomposite material was placed over the entire base of the Vault and the side slopes. This drainage material was placed in order to direct any accumulated water toward the leak detection manhole installed at the lowest point in the leak detection system. The leak detection manhole (hereinafter referred to as LDS sump) was placed on top of the completed LLDPE secondary liner system following placement of a triple layer

of non-woven needle-punched geotextile to protect against geomembrane "punch-through". A summary of the geotextile installation log is presented in Table 6.7. The LDS sump is located adjacent to the leachate collection manhole (hereinafter referred to as the LCS sump) (see Section 7.1), but was constructed without permanent pumping equipment. The purpose of the LDS is to collect leachate that passes (i.e., leaks) through the primary HDPE geomembrane layer. The inlet to the LDS sump is located between the two bottom liner systems to detect leakage through the primary liner. The inlet for the LCS sump (discussed in Section 7.0) is located above the primary liner to collect water draining from the waste materials (i.e., leachate) (see drawing C-18).

The CQA Plan identifies the manufacturer and field implementation testing that was required for the drainage geocomposite material. Testing completed by the manufacturer prior to delivery to the Facility included mass per unit area; thickness; density; tensile strength; ply adhesion; and transmissivity. These testing results were provided by the contractor as a submittal and were approved by the engineer prior to placement. Prior to placement of the drainage geocomposite, the material was visually inspected and the product tags removed from each individual roll to cross-check against the submittal. Table 6.8 presents a summary of the drainage geocomposite installation log maintained by the field QA personnel, indicating roll numbers deployed, field approval for deployment, and the lengths of each panel deployed. Drawing C-07 presents the as-recorded panel layout for the drainage geocomposite installed as part of the LDS.

6.2.1 LDS SUMP

The LDS sump is a 6-foot diameter, precast concrete manhole located approximately 35 ft northeast of the LCS sump (which is located above the primary bottom liner at the bottom of the waste). The LDS sump is founded on the lower (secondary) LLDPE geomembrane layer of the Vault, at a base elevation of approximately 668.5 ft. The structure was built up to an elevation of 741.14 ft, with a total measured depth of 72.64 ft. The top elevation of the LDS sump manhole was extended above the original design elevation for the Vault to accommodate the placement of additional grading fill on the north slope of the Vault, prior to construction of the East Plant Area IM Cover System (CRA, April 18, 2008). A temporary pump was installed within the LDS sump to pump out water that had been erroneously pumped into the LDS sump from the LCS sump by the contractor in 2006 (see Section 6.2.1.1).

As there is no permanent discharge piping from the temporary pump located in the LDS sump; temporary hoses used prior to construction of the permanent forcemain from the GUS and LCS to the on-Facility SSC WTP are available when needed. Accumulation of water within the LDS sump is periodically pumped the short distance overland to the LCS sump, with the LCS pumping system manually or automatically operated to ensure the pumped liquids are discharged to the on-Facility SSC WTP for treatment.

A summary of the LDS sump logs since commencement of operation in 2006 to the end of 2012 are provided in Appendix D. A summary of the LDS sump sample results for the same period are provided in Appendix D. Data for subsequent years will be provided in the Vault annual compliance reports.

6.2.1.1 LDS SUMP CONTAMINATION AND REMEDIATION

The LCS and the LDS commenced operation on August 30, 2006. On September 8 and 13, 2006, during maintenance activities, an unknown quantity of water sourced from the LCS was inadvertently allowed to backflow via a 8-inch diameter connector pipe into the LDS sump and mixed with water (present from construction) in the LDS. This inadvertent backflow of impacted water did not result in a release to the environment, but rather the engineered LDS. Upon realizing the error, the contractor (SES) removed the free water from the LDS and collected a sample which was impacted with PCBs at a concentration of 3.9 micrograms/liter (µg/L). Some of the water and particulate had entered the drainage geocomposite and gravel backfill of the sump and was not immediately removable. This water continues to slowly bleed into the sump and is removed periodically by pumping. The pumping configuration which allowed the backflow of groundwater into the LDS was corrected to separate the LCS and underdrain system to prevent future backflows from occurring. A figure showing the updated pumping confirmation is presented in Appendix D.

As discussed above, SES immediately removed retrievable water from the LDS upon realization of the pumping error. The static depth to water inside the LDS sump was measured and a decontaminated submersible pump was placed inside the LDS sump. To enhance removal of suspended sediment, the water was removed as rapidly as possible. Water collected in the LDS sump was monitored daily (except Sundays and holidays) and accumulation in the sump was continually removed as water gradually drained from the LDS layer. Monitoring of the LDS sump has continued as discussed in Section 6.2.1.4.

The difficulty in removing the inadvertently discharged groundwater promptly was caused by the structure of the soil layer between the LDS/secondary liner and the primary liner, which consisted of 12 inches of compacted clay placed over the drainage geocomposite. As such, much of the discharged groundwater would have infiltrated into the clay layer as the drainage geocomposite material became saturated and the low permeability of this clay layer prevents this infiltrating water from quickly releasing back to the drainage geocomposite.

SES subcontracted The Mannik & Smith Group, Inc. (MSG) to prepare a Leachate Detection System Response Action Plan (RAP) to address this issue. The purpose of the RAP, (MSG, October 20, 2006) was to remove impacts to the LDS and rehabilitate the LDS so that it could be used to detect leakage from the LCS in the future. SES and MSG recommended a Response Action Plan (RAP) approach that had been used at other sites where the LDS had been impacted due to a discharge into the LDS either directly (inadvertently via a LDS manhole or pipe) or indirectly (i.e. through a leak in the LCS). The recommended RAP approach included initial characterization of fluids; cleaning of the manhole; manhole flushing (as needed); and manhole decontamination as discussed in the following sections.

MSG's conservative estimate of the total volume of water inadvertently discharged to the LDS was approximately 9,000 gallons, based on dimensions shown on as-built drawings and a reported head of 4.6 ft measured from the bottom of the inside of the LDS manhole (at approximate elevation 668.5 ft). This estimate assumed that the total volume of water consisted of the estimated volume of water in the LDS manhole (approximately 970 gallons), estimated volume of water in the LDS gravel-filled sump (approximately 5,200 gallons) and estimated volume in the LDS drainage geocomposite (up to elevation 673.1 ft – maximum water level recorded) (approximately 2,800 gallons). This preliminary estimate was calculated prior to RAP implementation and did not include additional volumes of potable water used to flush the system (discussed below). MSG's preliminary calculations were included in the RAP previously submitted to U.S. EPA.

The RAP, response to U.S. EPA comments on the Draft LDS RAP, response to additional U.S. EPA comments on the LDS and the RAP Implementation and Monitoring Report (MSG, May 29, 2008) are presented in Appendix D.

6.2.1.2 REPAIR OF LDS MANHOLE JOINTS

After pumping down the leachate detection manhole (described above) and removal of as much water as possible, it was noted that the level in the manhole rose following rain events. After visual inspection of the manhole, it was determined that one particular joint appeared to be the primary cause of the observed infiltration. The third joint from the top of the manhole was observed to have an active leak which allowed the water to cascade down to lower joints where it provided the appearance of multiple leaks. SES prepared a work plan to address this issue prior to cleaning of the manhole (described below) as the manhole had to be watertight at its joints to ensure the structure was not recontaminated during cleaning activities. The SES Work Plan for Repair of Leak Detection System Manhole Joints (SES, December 4, 2006) is presented in Appendix D. Appendix B.5 presents photographs of the LDS Manhole Sealing and Cleaning.

Joint sealing activities were conducted by SES on December 18, 2006. The method involved filling the manhole joint with a polyurethane foam so that water could not penetrate the joint. In order to verify that the sealant application was successful, on December 20, 2006 the joint was power washed to clean staining and drip lines. This allowed the joint to be monitored from an initial clean/dry state. Further cleaning of the entire manhole was conducted as part of the remediation of the entire manhole by MSG/SES, as discussed below. Further inspection found that SES had installed the rings associated with each manhole section and applied a sealant within each joint during installation; however, it appeared that during the installation of additional concrete sections to the manhole structure as a result of higher fill placement elevations, this particular joint must not have been completely sealed.

6.2.1.3 IMPLEMENTATION OF LDS RESPONSE ACTION PLAN

6.2.1.3.1 INITIAL CHARACTERIZATION OF FLUIDS

On January 23, 2007, prior to the LDS decontamination activities, SES collected initial characterization samples of water from the LDS (filtered and unfiltered), leachate from the LCS, underdrain groundwater, and the remedial flushing water. Samples were collected using disposable equipment and low-flow (minimal drawdown) techniques and were submitted for analysis of PCBs, and cations and anions using U.S. EPA Solid Waste 846 Methods. Field parameters

such as conductivity, pH, temperature, flow rate and water levels were also recorded. Analytical results were previously presented in MSG RAP included as Appendix D. PCBs were detected in the LCS and underdrain samples at total PCB concentrations of 0.21 and 10.6 micrograms per liter (µg/L), respectively. Samples collected from the LDS and the remedial flushing water were reported non-detect for PCBs.

6.2.1.3.2 LDS MANHOLE CLEANING

Cleaning of the LDS manhole was performed by SES prior to initiation of the MSG RAP. This consisted of removal of accumulation of water from the LDS manhole followed by power washing of the manhole interior. Appendix B.5 presents photographs of the LDS Manhole Sealing and Cleaning.

6.2.1.3.3 LDS MANHOLE FLUSHING AND DECONTAMINATION

LDS decontamination flushing operations were conducted by MSG/SES between January 23, 2007 and June 5, 2007. The LDS manhole decontamination process consisted of two parts: a clean water surge and removal (together equaling one flush); followed by sampling after designated flushes. In total, the LDS decontamination consisted of two flushing events. The first flush was conducted between January 23-27, 2007 and the second flush was conducted between January 29 and February 5, 2007.

Each clean water flush consisted of the addition of clean water to the leak detection manhole at increments of progressively greater volumes (to prevent sediment moving out of the LDS manhole area and surrounding gravel pack), followed by the rapid removal of the water. The clean water volumes were introduced and removed at increments of 200 gallons up to 1,000 gallons and 1,000 gallons up to 9,000 gallons (approximately one pore volume). The flushing volumes for both flushes are presented in Table 6.9 and in the RAP Implementation and Monitoring Report (MSG, May 29, 2008), presented in Appendix D.3.

During the first flushing event (Jan 23–25, 2007) water was pumped into the LDS manhole and then removed in 200-gallon increments to 1,000 gallons (i.e., 200, 400, 600, 800, and 1,000 gallons) and then in 1,000 gallon increments to 9,000 gallons. Equilibrium was achieved by allowing the water level to stabilize.

Samples (filtered and unfiltered) were collected from the LDS manhole after designated flushes (200 gallon flush, 5,000 gallon flush and 9,000 gallon flush) were removed. PCBs were detected in samples collected from the LDS manhole following the 200 gallon and 9,000 gallon flushes at concentrations of 3.56 µg/L and 1.12 µg/L, respectively. The sample collected from the LDS manhole following the 5,000 gallon flush was reported non-detect for PCBs. The LCS and underdrain were sampled on January 25, 2007 during the initial portion of the 6,000 gallon surge. PCBs were detected at total concentrations of 3.24 µg/L and 35.1 µg/L, respectively.

The same increments of water were utilized during the second flush (January 29 – February 5, 2007), however; the water was allowed to equilibrate between one and two hours before it was removed from the manhole. Water removal times varied due to weather conditions that caused freezing of equipment. PCBs were detected in samples collected from the LDS manhole following the 200 gallon and 9,000 gallon flushes at concentrations of 3.13 µg/L and 0.61 µg/L, respectively. The sample collected from the LDS manhole following the 5,000 gallon surge was non-detect for PCBs. The LCS and underdrain were sampled on February 1, 2007, during the initial portion of the 6,000 gallon surge. PCBs were detected at total concentrations of 39.9 µg/L in the underdrain. The sample collected from the LCS was reported non-detect for PCBs.

Weekly samples continued to be collected by MSG/SES from the LDS manhole at one, two, three, and four weeks following the second round of flushing. PCBs were reported at 1.06, 1.71(2.55), 0.40, and 0.49(0.38) µg/L, respectively. The increased concentration in week 2 may indicate that either the original PCB impact had not been removed from the LDS or that additional impact from another source was occurring (e.g. leakage into the LDS drainage geocomposite via an open anchor trench still under construction).

MSG/SES collected additional samples from the LDS on July 17, 2007, December 22, 2007, January 30, 2008, and February 27, 2008 to further assess impact trends. These four samples were reported non-detect for PCBs. Analytical results are presented in the MSG RAP Implementation and Monitoring Report (MSG, May 29, 2008), presented in Appendix D.3.

CRA has continued to sample the LDS sump annually. A discussion of sampling from 2006 through the end of 2012 is discussed below. Sampling results have been submitted to US EPA in the annual compliance reports for the Vault.

6.2.1.4 CONTINUED PUMPING AND MONITORING

There has continued to be a residual amount of water collected from the LDS sump annually. Through 2012, an estimated 67,000 gallons have been removed from the LDS representing less than 20% of the available interstitial space of the LDS. The quantity of water removed has significantly diminished over time from over 20,000 gallons per year in 2006 and 2007 to approximately 3,800 gallons in 2012. Subsequent sampling within the LDS sump has shown residual water that continues to collect in the LDS sump has low-level PCB detections. A summary of PCB results from the LCS are presented below in Table 6.10.

Table 6.10 Average Total PCB Concentration of the LDS Water

Year	PCB Concentration Range (µg/L)	Average PCB Concentration (µg/L)	Total Volume Pumped (gallons)
2006	40 to ND	8.7	20,000
2007	18.5 to ND	3.5	27,000
2008	13.4 to ND	2.9	7,000
2009	43 to ND	11.3	6,600
2010	2.4 to ND	0.72	1,700
2011	3.6 to ND	0.73	700
2012	59 to ND	14.03	3,800

The concentration of PCBs in the LDS water between August and December 2006 ranged between 40 µg/L and ND, with an average concentration of 8.7 µg/L. From January to December 2007, the concentration of PCBs ranged from 18.5 µg/L and ND, with an average concentration of 3.5 µg/L. The decrease in concentration from 2006 is due to the rehabilitation activities conducted on the LDS (discussed above), which commenced January 23, 2007 and continued through June 5, 2007. During this rehabilitation phase, the LDS system was flushed with potable water to the same elevations reached by the impacted water (to prevent movement of residual PCBs further into the LDS) and the sump pumped until dry. The concentration of PCBs in the LDS generally decreased through 2011, but in 2012 the concentration increased to a range of 59 µg/L to ND, with an average concentration of 14.0 µg/L. These elevated detections corresponded to the increased pumping during February and March 2012 (in preparation for automated pumping in the adjacent LCS) after a reduced pumping schedule in 2010 and 2011.

The typical daily volumes of water removed were not excessive considering that the leak detection layer had yet to completely dry out following initial construction, the inadvertent introduction of water by the contractor, and the manhole joint leakage that was occurring during a period of four to five months duration in early 2007. The increasing water levels observed in the first half of January 2007, as well as the previous few months, were determined to be caused by leaking joints in the manhole itself. As a result, the contractor was requested to repair the leaking joints until the LDS manhole could be maintained in a dry condition (as discussed above). The final joint repairs were not completed until January 20, 2007, so the volume of water removed from the manhole prior to this can be associated with both the consolidation of the clay layer as well as leakage through the joints. In addition, heavy rains would have infiltrated through the waste materials in the Vault and continued to enter the manhole through the leaking joints at the time. As the water infiltrated through the joints and fell to the bottom of the manhole, this water would not have allowed the clay around the base of the manhole to dry.

Additional measures have been completed to address some additional minor infiltration observed at the LDS manhole caused by construction activities. As discussed above, the contractor was performing flushing operations from January 23, 2007 through February 5, 2007, such that large volumes of water were the result of injected clean water and not infiltration of precipitation. Following the flushing operations, infiltration was again noted in the LDS manhole although there were no corresponding observations of leaking joints. Increased volumes of water reported in February through March 2007 were correlated to corresponding rain events; therefore other sources of infiltrating surface waters were investigated. It was observed that there was ponding of surface water on the top of the perimeter clay berms on both the north and east sides of the Vault. Clay placed between the two anchor trenches for the primary and secondary liner systems either had an irregular surface or had slightly eroded in some areas, causing localized ponding. This berm was eventually regraded and shaped as part of installation of the final cover and has since eliminated the water coming from the berms. The Vault cover system (liner and clay) connected with the current clay berm and over the anchor trenches. Due to the berm erosion, the geocomposite drainage net for the leak detection layer was exposed in several locations and the ponded surface water on the berm had access, via the drainage geocomposite, to the leak detection layer within the bottom liner of the vault. It was observed that the ponded water disappeared shortly after each rain event. This condition no longer exists.

The water level in the LDS sump will continue to be monitored in accordance with the PCP to confirm that water levels are being properly maintained. Evaluation of analytical results of samples collected from the LDS sump in the future will include consideration of the historical impacts. The detection of PCBs is not believed to be an indication of a leak in the liner system. The inadvertent introduction of leachate into the system in 2006 has resulted in current detections of PCBs in the LDS, which may continue for some time. Figure 6.1 presents a summary of the average monthly quantity of water removed from the LDS sump annually.

6.3 PRIMARY LINER PLACEMENT

The primary liner system consists (from bottom to top) of 12 inches of compacted clay, a GCL layer and a 60-mil textured HDPE geomembrane. These three components of the primary liner system were installed using the same construction techniques and CQA procedures implemented for the secondary liner system and the underlying clay/fill sub-base.

Table 6.11 presents the clay compaction test data for the 12 inches of compacted clay installed as part of the primary liner system. The compaction data was collected by PSI, a subcontractor to SES. The testing results presented in Table 6.11 include the final clay compaction tests completed on April 13, 18, and 19, 2006. Compaction testing (24 tests) completed on April 13 and 18, 2006 were rejected by the QA personnel because the moisture content of the clay material was less than the minimum moisture content requirements. As a result of failing the moisture content requirements, the previously compacted clay was reworked to incorporate additional moisture prior to recompaction and re-testing. Compaction tests (20 tests) completed following clay reworking and recompaction passed both the moisture content and compaction requirements.

Shelby tube samples of the compacted clay layer within the primary liner system of the Vault were collected during the initial stages of clay placement to determine if they met the requirements specified in the CQA Plan. Four Shelby tube samples were collected and shipped to TSC in Carol Stream, Illinois for permeability testing and results met the acceptable permeability; however, the samples were collected from the initial compacted clay layer that was subsequently rejected due to field moisture content results below optimum

moisture. Therefore, additional permeability testing was completed after the clay layer was reworked and recompacted. Three Shelby tube samples were collected from the reworked and rerolled compacted clay layer, each having acceptable test results. Table 6.12 presents the Shelby tube permeability data for Vault primary liner system compacted clay layer.

Following completion of the primary clay liner installation, another GCL (Bentomat DN) layer was placed over the entire Vault footprint (base and side slopes) and anchored at the top of the slope in anchor trenches, similar to GCL installation for the secondary liner system. Prior to placement of the GCL over the primary clay liner, the GCL material was visually inspected for integrity and the product tags removed from each roll to cross-check against the roll numbers approved as part of the initial contractor submittal. Table 6.13 presents a summary of the GCL installation log maintained by the field QA personnel, indicating roll numbers deployed, field approval for deployment, and the varying lengths of each GCL panel deployed. Drawing C-09 presents the as-recorded panel layout for the GCL layer placed over the 12-inch compacted clay liner as part of the primary liner system.

To complete the primary liner system installation, a 60-mil HDPE geomembrane was placed on top of the previously placed GCL for the entire Vault footprint (base and side slopes). The geomembrane was placed into the same anchor trench at the top of the slopes as the primary GCL material. During installation, the HDPE geomembrane material was visually inspected for integrity and the product tags removed from each roll to cross-check against the contractor submittal. Table 6.14 presents a summary of the HDPE geomembrane installation log maintained by the field QA personnel for the primary liner system installation, indicating the roll numbers deployed, field approval for deployment, and the installed lengths associated with each panel deployed. Drawing C-10 presents the as-recorded panel layout for the 60-mil HDPE material placed as part of for the primary liner system.

Consistent with the requirements for the LLDPE geomembrane installation for the secondary liner system, the HDPE geomembrane installation for the primary liner system also required test seams to be completed at the start of each day and following the lunch break for each piece of seaming equipment (hot wedge and extrusion welders) prior to conducting field seaming activities associated with the installed geomembrane. Table 6.15 presents a summary of the test seams (i.e., trial welds) completed for the 60-mil HDPE geomembrane layer.

Table 6.16 summarizes the non-destructive seam testing completed at 105 seam locations related to the primary HDPE geomembrane installation. In accordance with the technical specifications provided to the contractor, non-destructive seam testing was performed over the full length of each seam. Passing results for non-destructive testing of all seams was obtained.

Table 6.17 summarizes the 49 destructive seam tests completed for the primary liner system installation, which were conducted "at a frequency of approximately 1 sample per 500 lineal feet of field seam", as identified in the CQA Plan and in the technical specifications provided to the contractor. The longest HDPE geomembrane panels installed within the Vault primary liner system were 150 ft in length, and typically ranged between 50 ft and 150 ft, with every seam over 50 ft in length being non-destructively tested. As with the secondary liner system installation, there were many smaller seams (some as short as 10 ft to 15 ft) in the four corners, due to the square Vault configuration, which were combined into groups of approximately 50 ft in total length for destructive seam testing (as approved in an email response from U.S. EPA on March 30, 2006).

Consistent with the destructive seam tests completed on the LLDPE geomembrane in the secondary liner system, each destructive seam test completed on the HDPE geomembrane included five field test coupons tested for both shear and peel using a calibrated field tensiometer. Thereafter, another set of five test coupons was provided to the field engineer to perform similar laboratory testing for both peel and shear. Table 6.17 summarizes the destructive seam tests completed for the primary HDPE geomembrane installation. As shown in Table 6.17, all destructive seam tests passed in both the field and the laboratory, with the results well in excess of the technical requirements.

Some of the seams were damaged and repaired during construction, due to destructive testing and other construction activities. A summary of the HDPE geomembrane panel seam repairs is presented in Table 6.18.

7.0 LEACHATE COLLECTION SYSTEM

Following completion of the primary liner system installation (compacted clay, GCL, and HDPE geomembrane), the LCS was placed over the entire base of the Vault and the side slopes, although the particular components of the LCS are different for the flat base area and the steep side slopes, as described in the next paragraph. The LCS serves to collect and remove potentially impacted water (leachate) captured within the Vault during placement and consolidation of the soil material. Average monthly pumping volumes during 2007 fill placement activities were approximately 7,400 gallons. Since installation of the impermeable liner as part of the Vault final cover system in 2007, which does not allow for significant additional water to be introduced into the Vault via infiltration, the generation rate of leachate for collection and removal has declined. Leachate continues to be collected within the LCS despite no significant introduction of new water because as the soil material placed within the Vault consolidates, it further dewaters, declining to a very low rate over the past few years. The total volume of water pumped from the LCS in 2012 was estimated to be 2,300 gallons (year 2012 total), as compared to the estimated total volume pumped prior to final cover system installation (33,000 gallons in 2006 and 89,000 gallons in 2007). Figure 6.1 presents a summary of the average monthly volume of water removed from the LCS annually since it commenced operation in the middle of 2006. Appendix E presents a summary of the daily LCS sump pumping logs since operation began in 2006 to the end of 2012. A summary of the LCS sump sample results for the same period are also provided in Appendix E.

The LCS consists of a drainage geocomposite placed over the side slope areas, similar to the previously installed LDS collection system installed within the bottom double-liner system. However, on the flat base section of the Vault, additional drainage capacity was required, particularly during the filling stages when the Vault was uncapped. As such, the LCS on the flat base section of the Vault consists of 12 inches of drainage stone with geotextile placed both beneath and above the drainage stone. The drainage geocomposite from the adjacent side slope areas was placed directly over the drainage stone along the toe of slope areas to ensure proper drainage from the drainage geocomposite on the side slopes into the drainage stone on the flat base section. The drainage stone directs accumulated water from precipitation or consolidation of waste materials in the Vault toward the LCS manhole installed at the lowest point in the leachate collection system. The LCS manhole was placed on top of the completed HDPE

primary liner system following placement of a triple layer of non-woven needle-punched geotextile to protect against geomembrane "punch-through".

During placement of the drainage geocomposite, the material was visually inspected and product tags were removed from each individual roll to cross-check against the submittal. Table 7.1 presents a summary of the drainage geocomposite installation log maintained by the field QA personnel, as well as the summary of the geotextile installation log maintained by the field QA personnel, indicating roll numbers deployed, field approval for deployment, and the lengths of each panel deployed. Drawing C-11 presents the top of bottom double-liner system contours following completion of the primary and secondary liner systems, while Drawing C-12 presents the top of the leachate collection system drainage layer contours (approximately 12 inches above the bottom double-liner system over the flat base section of the Vault. Appendix B.6 presents photographs representative of the LCS and LCS sump installation.

7.1 LCS SUMP

The LCS sump is a 6-foot diameter, precast concrete manhole located approximately midway along the northern edge of the Vault. The LCS sump is founded on the upper (primary) HDPE bottom geomembrane layer of the Vault, at a base elevation of approximately 671.00 ft. The structure was built up to an elevation of 740.83 ft, for a total measured depth of 69.83 ft. The final elevation of the top of the LCS sump was extended above the original design elevation to accommodate the placement of additional grading fill on the north slope of the Vault, prior to construction of the East Plant Area IM Cover System (CRA, April 18, 2008). The LCS sump includes a permanent pumping system, as its purpose is to remove and accumulate leachate above the primary HDPE liner such that it does not permeate the primary bottom liner.

Two roof hatches are present in the top slab of the LCS sump, one for personnel access and the other for pump removal. Two lifting davit sockets are located in the top slab to facilitate the use of portable lifts for removal of pumping equipment and/or to assist with confined space entry. Access into the structure is via ladder rungs attached to the concrete manhole wall. Two safety platforms with railings are in place approximately 22 ft apart along the full rise of the LCS sump.

The permanent LCS pumping system consists of two submersible pumps (Flygt Model MP 3085.172). Under normal operation, one pump is a duty unit, with the other being a standby unit (with the PLC at the on-Facility SSC WTP alternating the duty/standby operation such that both pumps are utilized equally). Each pump is 4.0 HP, 460V, 3 phase, 60 Hz, and capable of pumping 40 gpm to the on-Facility SSC WTP. The two pumps are seated into individual base units, with discharge lines originating at the base of the LCS sump. Pump removal from the manhole is performed by lifting the pumps up through the roof hatch via chain pull along separate twin 2-inch guide rails for each pump.

The permanent pumps were installed within the LCS sump in November 2008; however, they were not connected to the forcemain at that time since there was still construction ongoing within the East Plant Area. Therefore, manual operation of the pumps within the LCS sump continued, as required, to keep water levels within the target operating range, until pump automation was initiated March 6, 2012. The LCS pumps now operate within water depths of one foot and three feet, with the lower water depth based on the required depth of water to keep the pump motors submerged in order to prevent overheating of the motor and the higher water level based on keeping the number of pump cycles per hour within the acceptable operating range.

Guide bar and pipe supports have been installed along the approximate 69-foot rise of the pump discharge lines. These pump discharge lines are supported on the manhole walls by metal angles at or near the safety platform elevations. The discharge piping from each pump consists of a 2-inch stainless steel line. Each line has a check valve at the top of the riser, plus an isolating gate valve. The two individual pump discharge lines combine at the underside of the manhole top section into a single 2-inch diameter stainless steel line, and are then routed through a common 1 1/2-inch diameter magnetic flow meter (Endress+Hauser [E+H] Proline Promag 50W). The 2-inch diameter common discharge line within the LCS sump is connected to a 2-inch diameter HDPE forcemain immediately outside of the manhole chamber, below the Vault final cover system structure (clay, liner, drainage geocomposite, fill, and topsoil). This HDPE forcemain from the LCS sump is then joined with the discharge forcemain from the GUS sump and the combined discharge from these two pumping systems (GUS and LCS) is carried via a common 3-inch diameter HDPE forcemain (approximately 1,200 ft in length), from the north end of the Vault along the west side of the Stormwater Pond, to the south side of the EQ Tank Containment Area through an E+H Promag 50W magnetic flow meter and into EQ Tank TK-1 at the on-Facility SSC WTP. Prior to discharging Vault water into the EQ tank, the flow runs through a

E+H Promag 50W magnetic flow meter, which reads total flow volume from the Vault. This total flow volume, less the volume read by the flow meter at the LCS, is the calculated flow volume coming from the GUS.

A level sensor probe (E+H Waterpilot FMX-167) was installed near the base of the LCS sump to signal/control the pump operations via the local pump control panel. A local control monitor with local display (RIA-250) is present in the pump control panel. The level signal is also sent to a PLC (Micrologix 1100 – common to both pump stations) located in the Vault Underdrain Control Panel (located directly adjacent to the GUS sump), which also receives the level signal from the adjacent GUS sump. The readings and signals from this PLC are sent via wireless radio transmission to the PLC located in the on-Facility SSC WTP.

The LCS pump control panel is located directly adjacent to the LCS sump. The pump control panel is contained within a NEMA 4X rated enclosure, which also contains the pump starter. The enclosure is mounted on a stainless steel frame, supported on a single concrete pier footing.

The detailed instructions for operating the automated LCS pumping systems will be incorporated into the on-Facility SSC WTP OM&M Plan.

8.0 WASTE PLACEMENT PROCEDURES

8.1 GENERAL

This section provides a general description of the excavation and backfilling, as well as surface water handling and waste placement procedures that were implemented as part of the Vault portion of the East Plant Area IM. Bid Documents for the "Vault Construction and Over 50 ppm PCB Soil Excavation" (CRA, July 29, 2005) were prepared and a contractor was selected to perform the prescribed work. In accordance with the submittal requirements in the Bid Documents, the selected contractor prepared and submitted a document entitled "Excavation, Material Handling, and On-Site Transportation Plan" (SES, October 24, 2005). Appendix B.7 presents photographs representative of waste placement activities.

8.2 EXCAVATION AND HAULING

The Vault was constructed to accommodate 135,462 cy of ≥50 mg/kg PCB impacted soil that was excavated from within the East Plant Area, the adjacent West Plant Area, and the Northern Tributary. Prior to excavation of the ≥50 mg/kg PCB impacted soil within the East Plant Area, the contractor set up exclusion zones that included the Vault, the ≥50 mg/kg PCB excavation areas, interim staging areas, and haul roads that were used between the various excavation areas and the Vault. Two separate ≥50 mg/kg PCB exclusion zones were delineated within the East Plant Area; one for the excavation areas to the north of the Vault and another for the excavation areas to the south of the Vault, both including the Vault itself and appropriate haul roads.

Prior to loading materials into on-road or off-road hauling vehicles (trucks), the contractor inspected each vehicle to make certain that the truck bed was not damaged and was free from holes, ensured the tailgate was sealed and the tarp functional, and made certain that no water had been introduced into the bed of the truck. Hauling vehicles remained on Facility within the designated exclusion areas and were dedicated to the transport of like materials (only PCB impacted soil) for the duration of the excavation project. If a hauling vehicle was required to leave a particular exclusion zone or needed to switch to a material other than its designated material, appropriate decontamination measures were implemented.

Details regarding excavation and hauling from outside the East Plant Area are presented in the Construction Certification Report for the Parcels 387 and 389 IM (CRA, May 31, 2010), the Construction Certification Report for the Northern Tributary IM (CRA, December 2010), and will be presented in the West Plant Area IM Construction Certification Report.

The as-built topography of the completed Vault bottom double-liner system (secondary and primary) layers, plus the overlying leachate collection system layer, prior to the placement of waste material is presented on Drawing C-12. Drawing C-13 presents the as-built Vault topography following the completion of ≥50 mg/kg PCB soil material placement. The estimated total volume of PCB impacted soil material placed within the Vault is 134,667 cy (as compared to the design volume of 135,462 cy) was calculated using Autodesk LandDesktop® by comparing the pre-placement (top of Vault bottom system, including leachate collection system) survey to the post-placement (fill or subgrade) survey. Recorded quantities of materials placed in the Vault (mostly ≥50 mg/kg PCB impacted soil, as well as approximately 1,000 cy of less than (<) 50 mg/kg PCB impacted soil from the West Plant Area to complete the Vault filling to design grades), as estimated by representative truck loads, using weigh scales, are presented in Table 8.1.

For ≥50 mg/kg PCB impacted soil excavation operations conducted solely within the East Plant Area, decontamination of truck (hauling vehicle) tires between the loading (excavation) and unloading (Vault) operations was not required since both exclusion zones were located atop impacted materials historically placed within the East Plant Area (i.e., existing <50 mg/kg PCB impacted soil) and because a permanent cover system would eventually be placed over the entire area. The contractor implemented measures that prevented the truck tires from contacting the ≥50 mg/kg PCB impacted soils through use of the following: strategic excavation, poly liners, and construction of dump ramps at the Vault access points that prohibited the ≥50 mg/kg PCB impacted soils from falling against the truck tires while the truck unloaded material at the Vault. As necessary, the outside of the trucks were protected while being loaded to prevent loose material from falling against the outside of the trucks, and then potentially falling off the trucks while the ≥50 mg/kg PCB impacted soils were transported to the Vault.

To negate the need for continual decontamination procedures, truck traffic between the excavation and Vault operations utilized only existing and/or constructed "clean" haul roads and loading/unloading structures (dump ramps)

at the excavation areas and the Vault. However, if ≥50 mg/kg PCB impacted soil contacted any portion of the truck other than within the interior of the truck bed, decontamination procedures were implemented, as appropriate (i.e., wheel wash if tires contacted ≥50 mg/kg PCB impacted soil).

The ≥50 mg/kg PCB impacted soils imported from the West Plant Area were excavated and placed directly into on-road trucks for transportation across GM Drive to the on-Facility Vault until September 30, 2008. Starting on October 1, 2008, remaining ≥50 mg/kg PCB impacted soils from the West Plant Area were transported off-Facility by U.S. Bulk Transport (U.S. Bulk) for disposal at Heritage Environmental Services landfill located in Roachdale, Indiana, to expedite the Vault closure schedule (i.e., to allow the final portion of the Vault cover system to be constructed before winter).

Truckloads of waste material with ≥50 mg/kg PCB impacted soils that were transported from the West Plant Area and Northern Tributary to the Vault (prior to October 1, 2008) for final placement were not manifested, as the material was not transported off-Facility (as "Facility" was defined as including West Plant Area and Northern Tributary for the purposes of ≥50 mg/kg PCB impacted soils transportation and placement within the Vault). However, in lieu of manifest procedures, the contractor kept a log of loads transported to the Vault. US EPA confirmed that this practice was acceptable in an email dated February 6, 2007 in which it was confirmed that since GM was both the generator and the disposer, there was no need to prepare manifest documents. This is in accordance with §761.207 The Manifest – General Requirements of the US EPA PCB Q&A Manual. Appendix A.5 presents this communication and the associated language in the US EPA PCB Q&A Manual.

8.3 PLACEMENT OF ≥50 MG/KG PCB MATERIAL IN THE VAULT

The initial Vault design volume for placement of ≥50 mg/kg PCB impacted soil was approximately 120,000 cy with the maximum capacity being increased to 135,462 cy by incorporating 4(Horizontal) to 1(Vertical) side slopes and maximum peak elevations. Based on the estimated volume of material transported from the daily waste summaries, an estimated 127,600 cy (approximately 191,400 tons) of PCB impacted soil material was placed in the Vault. In addition, approximately 1,000 cy of <50 mg/kg PCB impacted soil excavated from the West Plant Area was also placed in the Vault to bring the Vault to final design grade prior to cover system placement.

The calculated volume of material placed in the Vault based on pre- and post-placement surveys is 134,667 cy. This calculated volume is slightly greater than the estimated volume of 127,600 cy, which was based on the daily truck load ticket waste summaries. It is assumed that this difference is likely based on the measurement methods used during hauling of the excavated soils. Typically, several trucks each day would be weighed and then the average weight per truck would be converted to a volume in cubic yards, which would be the assumed volume for all trucks that day. As such, the discrepancy in total volume placed in the Vault could result from a combination of the estimated conversion factor from tons to cubic yards and the probability that some trucks may have arrived with a lighter load than the average for that day. The difference between the measured volume of 134,667 cy and the recorded volumes of 127,600 cy is approximately 7,000 cy, or approximately 5-percent, equivalent to a conversion factor of 1.42 tons/cubic yard instead of the estimated 1.5 tons/cubic yard.

8.4 SURFACE WATER MANAGEMENT

Runoff from disturbed areas (e.g., buffer zones, haul roads outside exclusion zones, interim cover areas, and Facility support areas) which had no contact with ≥50 mg/kg PCB impacted soil was directed around the work area. When landfilling occurred above the surrounding grade, soil berms were constructed around the entire perimeter of the Vault to prevent runoff from leaving active work areas, and to direct uncontaminated runoff from adjacent areas around contaminated fill areas. Runoff collected within the interim soil berms was pumped to the adjacent existing on-Facility SSC WTP. Additional controls (silt fences, straw bales, etc.) were implemented to control erosion of areas outside the Vault area. These controls were constructed/prepared prior to placing ≥50 mg/kg PCB impacted soils from the West Plant Area or Northern Tributary within the Vault, and maintained until the Vault final cover system was constructed.

During landfilling operations below the surrounding grade, surface water drainage was directed to the low point within the Vault, which became a temporary ponding area during storm events. This ponding area had sufficient capacity to contain the volume of runoff generated in a 100-year 24-hour storm event (25,410 cubic feet/acre). Runoff collected in the low ponding area was pumped to the adjacent existing on-Facility SSC WTP. The quantity of surface water runoff requiring treatment was minimized by the placement of tarps over

the ≥50 mg/kg PCB impacted soils during inactive landfilling periods to eliminate contact of precipitation with the landfilled material. These controls were constructed/prepared prior to placing creek cleanup soils within the Vault, and maintained until the Vault final cover system was constructed. A clay berm was constructed around the perimeter of the Vault footprint to ensure overall capture of internal surface water. The ground surface that surrounds the Vault was graded beyond the perimeter berm to prevent run-off from entering the Vault.

At all times, the contractor provided capacity within the Vault area to retain runoff from areas of exposed ≥50 mg/kg PCB impacted soil during potential 100-year storm event. This volume of water storage was reduced, as appropriate, after landfilled areas were capped, to reflect the reduction in the area of exposed material.

9.0 FINAL COVER SYSTEM

The Vault final cover system consists of a multi-layer soil and geosynthetic cap. The Vault final cover system was designed to meet the requirements of 40 CFR § 761.61 (c). The final cover system incorporates a low permeability clay layer overlain with an HDPE liner, a lateral drainage layer (drainage geocomposite), a protective soil cover layer (common fill), and a vegetative topsoil layer to control erosion of the cover materials. The final cover system design and liner performance considered slope stability and potential settlement of the Vault based on conservative assumptions for interface friction between the soil and geosynthetic cover materials and expected waste (soil) compressibility.

The multi-layer Vault final cover system was constructed of both soil and geosynthetic materials placed in the following layers, listed from top to bottom:

- Vegetative cover (grass)
- 6-inch topsoil layer
- 18-inch soil cover (barrier protection layer)
- Drainage geocomposite layer
- 60-mil textured HDPE liner
- 24-inch compacted clay layer

The individual components of the multi-layer Vault final cover system meet the required specifications, as identified in the Bid Documents (CRA, July 29, 2005) and the CQA Plan. The final cover system topography has been designed to promote surface water runoff to intermediate drainage ditches partway down the longer slopes (west and east sides) as well as to the perimeter stormwater drainage ditches at the base of the slopes. The majority of the Vault final cover system has a 25 percent (4H to 1Vert) surface slope, with the slope changing to 5 percent (or less) over the top/peak of the Vault. These slopes were selected to provide adequate surface water drainage and minimize potential erosion.

Appendix B.8 presents photographs representative of the final cover system installation.

9.1 COMPACTED CLAY MATERIAL

As filling of the Vault progressed, the Vault final cover system was completed in two separate construction phases. The cover over the south half was completed in November 2007 using the remaining stockpiled clay from the Vault base excavation, while the north half was completed in October 2008 using clay material removed from an owner-supplied borrow source located in close proximity to the Bedford Facility and the East Plant Area. Regardless of the source of the clay material used for the Vault final cover system; clay used in the final cover system was free of unsuitable materials including:

- Frozen material or material containing snow or ice
- Trees, stumps, branches, roots, or other wood or lumber
- Wire, steel, cast iron, cans, drums, or other foreign material
- Hazardous or toxic constituents at hazardous or toxic concentrations

Clay was trucked from the on-Facility stockpile and/or off-Facility borrow source and end-dumped directly on the pre-graded Vault surface. The clay was spread in approximately eight-inch thick uncompacted lifts using a bulldozer, resulting in approximate six-inch thick compacted lifts. During the placement of each clay layer, CQA testing was performed in accordance with the East Plant Area Vault Design Report (CRA, June 16, 2006). The required QA inspections were provided in the CQA Plan (CRA, October 14, 2005), appended to the East Plant Area Vault Design Report (CRA, June 16, 2006). Section 5 of the East Plant Area Vault Design Report presented the testing procedures that were to be used in the construction of the final cover system. In advance of field compaction testing, the contractor collected samples of the clayey soils in either the on-Facility stockpile or the off-Facility borrow source, as appropriate, and submitted these samples for analyses of both maximum dry density and optimum moisture content. The laboratory testing results were then used to calibrate the nuclear densometer in the field in order to determine that the required 95 percent Standard Proctor Density compaction level had been achieved.

Grade control for the clay placement activities was performed using grade stakes. The depth/thickness of the clay layer was confirmed by an Indiana State licensed surveyor, done by a survey of the ground (clay) surface on a 50 ft grid after the clay placement activities. The top of clay surface was then compared to the previous survey to ensure the specified clay thickness (minimum of

24 inches, compacted) was placed over the entire Vault. The surveyed top of clay contours are presented on Drawing C-14.

Table 9.1 presents a summary of the clay compaction test data collected by PSI. A total of 56 compaction tests were conducted during the clay placement work completed between September 10, 2007 and November 15, 2008, of which 7 tests failed as a result of the actual moisture content being outside the acceptable range. In instances of failed compaction test results, the immediate area of clay/fill placement was reworked and retested either that same day or the following day with subsequent passing results. The entire clay layer for the final cover system was sufficiently tested to ensure uniform compaction to 95 percent or more.

Prior to commencing construction, samples of the on-Facility stockpiled clay/fill and the clayey soils from the off-Facility borrow source areas were collected and tested for remolded permeability (in accordance with ASTM D5084). The remolded permeability results are presented in Table 9.2. Based on the acceptable remolded permeability results, it was determined that compaction to 95 percent in the field would result in an in-place permeability of 1x 10-7 cm/sec.

9.2 60-MIL TEXTURED HDPE GEOMEMBRANE

The textured 60-mil thick HDPE geomembrane was placed above the completed compacted clay layer. Textured geomembrane was used over the entire surface of the Vault to provide greater slope stability, as provided by the increased friction angle between textured geomembrane and the underlying compacted clay and between textured geomembrane and overlying drainage geocomposite material. The specifications for the 60-mil textured HDPE geomembrane utilized are presented in the East Plant Area Vault Design Report (CRA, June 16, 2006). During installation of this layer, the material was visually inspected and the product tags removed from each roll to cross-check against the contractor's submittal. Table 9.3 presents a summary of the textured HDPE geomembrane installation log maintained by the field QA personnel, indicating the roll numbers deployed, field approval for deployment, and the installed lengths associated with each panel deployed. Drawing C-15 presents the as-recorded panel layout for the 60-mil textured HDPE geomembrane material placed for the final cover system.

Consistent with the requirements for the bottom double-liner system (LLDPE geomembrane for the secondary system and HDPE geomembrane for the primary system), the HDPE geomembrane installation for the final cover system also required test seams to be completed at the start of each day and following the lunch break for each piece of seaming equipment (hot wedge and extrusion welders) prior to conducting field seaming activities associated with the installed geomembrane. Table 9.4 presents a summary of the test seams (i.e., trial welds) completed for the 60-mil HDPE geomembrane layer.

Table 9.5 summarizes the non-destructive seam testing completed at 319 seam locations related to the cover system HDPE geomembrane installation. In accordance with the technical specifications provided to the contractor prior to construction, non-destructive seam testing was performed over the full length of each installed seam. Of the 319 seams summarized in Table 9.5, 69 seams were non-destructive seam tests for tie-in seams between the "flap" for the Vault textured HDPE geomembrane and the final cover system for the East Plant Area. Passing results were obtained for non-destructive testing of seams.

Table 9.6 summarizes the 102 destructive seam tests completed for the textured HDPE geomembrane installation, which were conducted at a "frequency of approximately 1 sample per 500 lineal feet of field seam or at least one per seam". As identified in the CQA Plan and in the technical specifications provided to the contractor, each seam test completed on the HDPE geomembrane included five field test coupons tested for both shear and peel using a calibrated field tensiometer. Thereafter, another set of five test coupons for each passing destructive seam test performed in the field was provided to the field oversight engineer to perform similar laboratory testing for both peel and shear. Table 9.6 summarizes the 102 destructive seam tests completed for the cover system HDPE geomembrane installation.

A flap of liner was left in the area that was to also have < 50 mg/kg creek cleanup material placed and integrated under the East Plant Cover System. This liner flap was eventually welded to the East Plant Cover liner to form a complete seal in this area.

Some of the seams were damaged and repaired during construction, due to destructive testing and other construction activities. A summary of the HDPE geomembrane panel seam repairs is presented in Table 9.7.

9.3 DRAINAGE GEOCOMPOSITE MATERIAL

Following completion of the geomembrane installation, a drainage geocomposite material was placed over the entire top portion of the Vault and the side slopes, prior to the placement of soil cover. The drainage geocomposite material consists of a plastic geonet sandwiched between two geotextile fabrics, which were individually connected across panel seams to provide a uniform drainage layer. The drainage geocomposite material was initially placed by unrolling the panels in their general intended location. These panels were then adjusted for proper alignment to provide the required overlap for joining. Appropriate care was exercised to not damage the drainage geocomposite material or the underlying textured HDPE liner material during placement and joining activities.

The CQA Plan identified the testing required for the drainage geocomposite material. Testing was completed by the manufacturer prior to delivery to the Facility, which included mass per unit area, thickness, density, tensile strength, ply adhesion, and transmissivity. These testing results were provided by the contractor as a submittal and were approved by the engineer prior to material placement. During placement of the drainage geocomposite, the material was visually inspected and the product tags removed from each individual roll to cross-check against the submittal. Table 9.8 presents a summary of the drainage geocomposite installation log maintained by the field QA personnel, indicating roll numbers deployed, field approval for deployment, and the lengths of each panel deployed.

9.4 COMMON FILL MATERIAL

Common fill material used in the construction of the final cover system was imported from an approved off-Facility source and was free of unsuitable materials including:

- Frozen material or material containing snow or ice
- Trees, stumps, branches, roots, or other wood or lumber
- Wire, steel, cast iron, cans, drums, or other foreign material
- Hazardous or toxic constituents at hazardous or toxic concentrations

Common fill sources were characterized prior to importation to the Vault location to ensure these soils were acceptable, based on chemical analysis. Only soil material that met the chemical and quality assurance requirements of the project Quality Assurance Project Plan (QAPP) (CRA, July 18, 2001, and as amended August 13, 2003, December 21, 2005, and July 25, 2006) were accepted for use as backfill. Prior to commencing construction, one sample per 1,000 cy of the off-Facility common fill material were collected at the borrow source and tested for remolded permeability (in accordance with ASTM D5084). Each permeability test result passed the required acceptance criteria of 1×10^{-5} cm/s.

The common fill material was placed over the entire surface area covered by the HDPE geomembrane and drainage geocomposite materials. Common fill material was imported via trucks from the approved off-Facility borrow source and end-dumped at the leading edge of the previous lift. The material was then graded and compacted to meet the specifications indicated in the CQA Plan.

During placement of the common fill layer, CQA testing was performed in accordance with the CQA Plan previously provided as an appendix to the pre-final East Plant Area Vault Design Report (CRA, October 17, 2005). The common fill was compacted to achieve 95 percent Standard Proctor Density and within a moisture range of plus or minus two percent of the optimum moisture content, as determined by ASTM D2922 and ASTM D3017. In advance of field compaction testing, the contractor collected samples of the common fill material at the off-Facility source and submitted these samples for analyses of both maximum dry density and optimum moisture content. Laboratory testing results were then used to calibrate the nuclear densometer in the field in order to determine that the required 95 percent compaction level had been achieved.

In addition to the field compaction testing conducted during the common fill placement, recompacted permeability tests at a frequency of 1 sample per 10,000 cy were performed. Each remolded permeability test result passed the required acceptance criteria of 1×10^{-5} cm/s.

9.5 TOPSOIL MATERIAL

Following placement of the common fill material, a 6-inch lift of topsoil was placed over the entire Vault surface area previously covered with common fill material. Topsoil material used as part of the final cover layer was imported from an approved source and was free of unsuitable materials including:

- Frozen material or material containing snow or ice
- Trees, stumps, branches, roots, or other wood or lumber
- Wire, steel, cast iron, cans, drums, or other foreign material
- Hazardous or toxic constituents at hazardous or toxic concentrations

The topsoil material placed over the Vault was:

- pH of 6.38, determined in accordance with ASTM D4972
- 3.74 percent organic matter, determined in accordance with ASTM D2974
- Consistent with ASTM D2487 Group Symbol CH
- Reasonably free of roots, rocks, or lumps larger than 1-inch, weeds, vegetation, and seeds of noxious weeds
- Capable of supporting growth of grass.

Topsoil materials were characterized prior to importation to the Vault location to ensure that these soils were acceptable based on chemical analyses. Only topsoil material that met the chemical and quality assurance requirements of the project QAPP (CRA, July 18, 2001, and as amended August 13, 2003, December 21, 2005, and July 25, 2006) was accepted for use as topsoil.

As-recorded final contours for the Vault representing the final surface of the combined common fill and topsoil layers are presented on Drawing C-16.

9.6 VEGETATIVE COVER

Following placement of the topsoil, grass seed was planted via drill seeding to establish a vegetative cover over the exposed portions of the Vault. The seed mixture was obtained from JFNew & Associates (JFNew), and was used on both the exposed areas of the vault and the remainder of the cover system. The

JFNew Slope Stabilization Seed mixture was used on the side slope and top areas, and the JFNew Swale Seed mixture was used for the swales.

The north and south slopes did not include topsoil placement or grass seed as these slopes were subsequently covered with additional grading fill as part of completing the immediately adjacent East Plant Area IM Cover System (CRA, April 18, 2008). Erosion control matting was placed over the west and east Vault slopes and the swales to prevent erosion of the topsoil and loss of seed during the first growing season. Details of ongoing inspections and maintenance are provided in Section 15.0.

The final cover on the north side of the Vault was integrated with the cover system of the remaining East Plant. Once < 50 mg/kg soils from the creek cleanup had been placed (in areas along the northern Vault slope), clay liner was installed, and the plastic liner for the Vault and the East Plant cover system was welded together over the fill. The common fill and top soil was then placed over the drainage layer and vegetation was seeded.

10.0 WATER TREATMENT PLANT

A permanent WTP has been constructed on-Facility and is operational. The on-Facility SSC WTP has a maximum design capacity of approximately 2,300 gpm and acts as a dedicated system for the treatment of water collected from the existing SSC System wet wells and the Vault LCS and GUS systems (design flow rate of 300 gpm), as well as available capacity for excess water from the existing Stormwater Pond during high flow events and the future East Plant Area perimeter groundwater collection system (design flow rate of 2,000 gpm). This system is operated on a permanent basis under the NPDES Permit Number IN 0003573 for the Facility.

11.0 MONITORING AND SAMPLING PROCEDURES

This section describes the monitoring and sampling procedures that were performed for groundwater, surface water, leachate and air during Vault construction. Sampling activities were completed in accordance with the approved Site-specific "Field Sampling Plan" (CRA, November 6, 2001), the QAPP (CRA, July 18, 2001, and as amended August 13, 2003, December 21, 2005, and July 25, 2006), and/or the NPDES permit. Validated sampling data were submitted to the U.S. EPA on a periodic basis throughout the Vault construction period.

11.1 MONITORING

The following monitoring programs occurred during Vault construction activities:

- GUS sump monitoring performed in accordance with the Approvals (IDEM and U.S. EPA, October 2006) presented in Appendix A. GUS sump monitoring records up to the end of 2012 are presented in Appendix C. There have not been conditions (i.e., leachate leakage resulting in Total PCBs concentration greater than 1 ppm) at the LCS or LDS to warrant additional sampling of the GUS.
- LDS sump monitoring and sampling performed in accordance with the Approvals (IDEM and U.S. EPA, October 2006). LDS sump monitoring records and sampling results up to the end of 2012 are presented in Appendix D.
- LCS sump monitoring and sampling performed in accordance with the Approvals (IDEM and U.S. EPA, October 2006). Leachate monitoring records up to the end of 2012 are presented in Appendix E. Leachate sampling results up to the end of 2012 are also presented in Appendix E.
- Perimeter air monitoring program, which included monitoring and particulate control measures, performed in accordance with the approved Ambient Air Quality Monitoring Plan (AAQMP), (CRA, May 2004). In particular, impacted materials in inactive work areas were sprayed with a temporary paper mulch material to control potential emissions. Figure 11.1 presents the locations of the air monitoring stations proximate to the Vault, West Plant Area, and the Parcels included in the Northern Tributary IM. The particulate control measures were designed to limit the emissions of total

suspended particulates (TSPs) and PCBs and prevent them from remaining airborne and being carried out of the work area. Air monitoring results for TSPs and PCBs related to the Vault construction and filling are presented in Appendix F.

Analyses of collected leachate, groundwater, surface water, and air samples were performed in accordance with laboratory procedures listed in the QAPP, last revision dated December 21, 2005.

Long term monitoring of the Vault will be conducted in accordance with the PCP for the Vault (CRA, February 3, 2012) and the overall East Plant Area long term OM&M plan, to be developed at a later date as further discussed in Section 15.0.

11.2 GROUNDWATER AND LEACHATE QUALITY SAMPLING PROTOCOLS

Monitoring for the Vault was included as part of the East Plant Area IM, as described below. The GUS directs groundwater flowing beneath the Vault toward a sump located outside the Vault footprint but immediately adjacent to the low point of the Vault. Following completion of construction and filling of the Vault, on March 6, 2012, a permanent pump was placed in the existing sump for the Vault GUS, such that groundwater levels could be regulated between 2.5 to 5 feet of accumulation. Groundwater collected in the GUS sump has not been sampled as part of any required sampling program because there have not been conditions at the LCS or LDS to warrant sampling (e.g., leachate leakage resulting in Total PCBs concentration greater than 1 ppm). Water removed from the Vault sumps is re-directed by a permanent forcemain to the EQ tank where it mixes with water from three wet well groundwater collection systems prior to treatment in the on-Facility SSC WTP. The effluent from the on-Facility SSC WTP is sampled monthly under the NPDES Permit No. IN0003573, prior to discharge at Outfall 003. Data collected from the sampling of the on-Facility SSC WTP effluent is reported according to the requirements of the NDPES permit.

Groundwater monitoring at the perimeter of the East Plant Area is currently conducted bi-annually through the Environmental Indicator (EI) CA750 monitoring program. A Facility-wide, long-term groundwater monitoring program or addendum to the Vault PCP (CRA, February 3, 2012) will be submitted to U.S. EPA as part of the Corrective Measures Proposal (CMP), which will take into consideration future monitoring of the entire East Plant Area. Prior

to implementation of an overall long-term monitoring program, select groundwater samples from coreholes CH-20 and CH-23 (selected to represent direct monitoring of the Vault in groundwater during the bi-annual CA750 monitoring program) will include analysis of the following parameters, at a minimum:

- PCBs
- pH
- Specific Conductance
- Chlorinated organics

As discussed previously in Section 7.0, leachate collection is accomplished via the LCS sump. For the LCS sump, a permanently installed pump regulates leachate (water) levels between one and three foot of accumulation within the Vault. In addition, a temporary pump was also placed in the LDS sump to remove accumulation of water whenever levels exceed two feet, with discharge via temporary hose to the adjacent LCS sump. Water removed from the LCS sump (and the GUS sump) is directed by permanent forcemain to the on-Facility SSC WTP. (The presence of water in the LDS sump is the result of inadvertent discharge of liquid into the LDS sump several years ago and as a result the leak detection layer is still drying out.)

Samples are collected from a sampling port on the LCS sump pump discharge piping, as well as from the LDS sump pump temporary discharge piping. LDS and LCS sump monitoring records and sump sampling analytical results are presented in Appendices D and E, respectively.

Sampling of the LDS and LCS sumps have been performed on a monthly basis during Vault development and may be sampled at a lesser frequency during post-closure activities, as specified in the Post-Closure Plan, Bedford Plant Vault (CRA, February 3, 2012).

All data and records of sampling and analysis will continue to be maintained as required in 40 CFR § 761.180(d) (1). Sampling methods and analytical procedures for these parameters are in compliance with those specified in 40 CFR § 136, as amended in 41 FR 52779 on December 1, 1976.

11.3 SURFACE WATER INVESTIGATION SAMPLING PROTOCOLS

For the purposes of this discussion, surface water shall refer only to water collected within the operational areas of the Vault during fill placement. Surface water outside the perimeter berms was directed away from the Vault and is not part of the project.

Surface water samples were collected for purposes of waste classification only, as surface water was directed for treatment at the on-Facility SSC WTP. Treated water from the on-Facility SSC WTP was released to Outfall 003 in accordance with the NPDES permit.

11.4 AIR QUALITY MONITORING

11.4.1 AIR MONITORING BACKGROUND

Construction activities related to the Vault were performed in accordance with the Ambient Air Quality Monitoring Plan (AAQMP) (CRA, May 2004), with air monitoring station locations adjusted in the field as appropriate. Changes to the AAQMP were implemented only following U.S. EPA approval.

In order to verify that no unacceptable emissions occurred, air monitoring for the emission of PCBs and Total Suspended Particulates (TSPs) (essentially dust measurements) was conducted daily around the Facility perimeter during placement of the ≥50 mg/kg PCB impacted soil within the Vault at locations between placement areas and the closest potential receptors. The perimeter air monitoring program was in addition to air monitoring for contractor health and safety, including personnel air monitoring conducted by the contractor.

In accordance with the AAQMP (CRA, May 2004), PCB and TSP monitoring was performed around the active work areas on a 24-hour basis. The air monitoring program yielded average concentrations in the ambient air for the selected compounds over each 24-hour period. Concentrations of PCBs and TSP were determined by measuring the volume of air and amount of contaminant or particulate collected onto absorbent media, or filters, over a 24-hour period. Meteorological readings (i.e., temperature, humidity, and barometric pressure) were recorded daily from nearby weather stations to interpret (for reporting) the measured data to ambient conditions.

PCB sampling was completed utilizing U.S. EPA Method TO-4A [Compendium Method TO-4A Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using High-Volume Polyurethane Foam Sampling Followed by Gas Chromatographic/ Multi-Detector, Detection January 1999]. TSP sampling was completed using U.S. EPA's Reference Method for Determination of Suspended Particulate Matter (dust) in the Atmosphere (High-Volume Method) (40 CFR § 50).

PCB and TSP samples were obtained from five air monitoring groups positioned around the active work areas. The locations of each air monitoring station and group are presented on Figure 11.1.

11.4.2 AIR MONITORING RESULTS

11.4.2.1 TSP RESULTS

TSP results for air monitoring Groups 9A, 9B, 14, 16, and 17 are presented in Appendix F. TSP results were evaluated against the upwind concentration of each air monitoring group and the Action Level for TSP, which is 100 percent allowable. The Action Level of 100 percent allowable is defined as 67 percent in excess of the upwind ambient air concentration.

As presented in the TSP result tables, TSP exceedances were observed in all five air monitoring groups on various dates throughout the construction period. It should be noted that dust was generated by activities other than the placement of impacted material in the Vault (i.e., transportation activities throughout the Facility and placement of clean cover soils); therefore TSP exceedances were found not to be directly related to air-borne exceedances of PCB criteria concentrations. The majority of exceedances occurred at Group 9B air monitoring stations. Air monitoring Station 1C, of Group 9B, was located east of the intersection of Breckenridge Road and GM Drive. TSP exceedances at this location were correlated to dust from truck traffic along adjacent public roads and plant traffic in the parking lot on the east side of GM Drive.

To minimize the amount of dust generated, the Facility contractor employed various additional and enhanced dust suppression techniques. These were actions taken in response to visual observations and TSP monitoring data. Dust suppression techniques included:

- Monitoring weather conditions and forecasts and scheduling daily work activities in consideration of weather conditions
- Installing tire wash station for haul trucks that were leaving the staging pad area
- Replacing gravel entrances to work areas as they became too dirty
- Wetting on-Facility haul roads on a frequent basis
- Adjusting construction techniques, where necessary
- Restricting vehicle and truck speed on the Facility
- Increasing the frequency of street sweeping activities

11.4.2.2 PCB RESULTS

PCB results for the 19 air PCB monitoring stations shown on Figure 11.1 are presented in Appendix F. PCB results for 12 of the 19 air monitoring groups were consistently below the Stop Work Action Level (1 microgram per cubic meter ($\mu g/m^3$)). Occasional exceedances were observed at Stations 1B, 1C, 22B, 29, 30, and 31 between May and September 2006 during ≥50 mg/kg PCB impacted material placement into the Vault and excavation work in the East Plant Area. Exceedances observed at Station 22B in February and March 2007 were attributed to moving material in AOI 8 very near the air monitoring station. Exceedances occurred at Station 43 in September 2008 and it is believed that these exceedances were related to increased work activities and less than average rainfall. Continuous monitoring allowed for work activities to be modified upon discovery of exceedances, such that work activities would not spread impacts off-site and would be completed in a manner that was protective of public health.

As results of both the TSP and PCB monitoring laboratory analyses were not available immediately (until after the readings were taken), real-time air monitoring for dust emissions was also conducted daily around the excavation perimeter during excavation activities. If either readings or visual observations showed an increase in dust generation and subsequent migration toward the site perimeter, steps were immediately taken to reduce the dust emissions by use of

the techniques listed above. In addition, temporary mulch cover was used to minimize dust throughout the day and prior to shut down at the end of each work day.

12.0 HEALTH AND SAFETY PLAN

Work conducted by CRA was performed in accordance with the Facility-specific Health and Safety Plan (HASP) for the Facility entitled "Consolidated GM Bedford Health and Safety Plan", dated November 2004, and as modified March 27, 2007, and June 24, 2008. Additionally, the Facility-specific HASP prepared by the Vault contractor was followed by the contractor and its subcontractors for the Vault construction and associated waste management activities and health and safety was monitored by the contractor and CRA.

13.0 VAULT SECURITY

To provide overall Facility security during the Vault filling and closure stages, high visibility orange construction fencing was erected to enclose excavation areas within the East Plant Area during active fill placement. During off-hours, access to the Facility was controlled by GM security. GM provided 24-hour security patrols around the perimeter of entire Facility.

The final post-closure condition of the Vault prevents exposure to the waste within the Vault due to the double lined (clay and geomembrane) cover system over the waste, is protective of human health in conformance with the requirements of 40 CFR § 264.117(b), and therefore does not require special security measures. Access to sumps requires a special tool or "key" and GM security does patrol the area.

14.0 RECORD KEEPING PROCEDURES

Record keeping procedures complied with the requirements of 40 CFR § 761.180(b). At a minimum, the record keeping activities included the following:

- Individual/unique truck logs which noted the date and time of loading, identified the source (i.e., location) of excavated material, estimated quantity (volume and/or weight), placement location within Vault, and date and time of placement.
- Records of inspections and cleanups performed during excavation, transportation, and/or placement of ≥50 mg/kg PCB impacted soils, as required.
- Analyses of leachate, groundwater, and surface water obtained during filling of the Vault and during subsequent post-closure monitoring.
- Photographs of the Vault construction, filling, and closure.

Appendix B presents representative photographs of different phases of construction taken during the construction, filling, and closure of the Vault.

15.0 OPERATION, MAINTENANCE AND MONITORING

Long-term OM&M requirements for the Vault were included in the Post-Closure Plan, Bedford Plant Vault (CRA, February 3, 2012). The PCP was intended to address only those activities associated with the post-closure of the Vault, consistent with 40 CFR § 761.75, 40 CFR § 264, and TSCA. A long-term OM&M Plan, or plans, will be developed for the entire East Plant Area IM and the associated on-Facility SSC WTP, which will include the Vault and the associated pumping systems.

The PCP (CRA, February 3, 2012) presented the following OM&M requirements for the Vault:

a) Vault Operations: descriptions of operations of Vault components including the GUS, LCS, and, LDS

b) Vault Monitoring: procedures and schedule for final cover inspections and monitoring and sampling of leachate, groundwater, and surface water, including water treatment and disposal

c) Vault Maintenance: inspection and maintenance procedures for the post-closure period

d) Record Keeping Procedures

e) Reporting Procedures

f) The Facility-specific HASP

g) Vault Security

h) Post-Closure administrative contact information for the Vault during the post-closure period)

i) Financial assurance for post-closure activities

16.0 COMMUNITY RELATIONS

Community relation activities and community participation in the review of the East Plant Area IM, including the Vault included:

- Public notice and comment period (May 31, 2005 to July 14, 2005)
- Project fact sheets specific to the East Plant Area IM activities, including the Vault design and construction (March 8, 2005 to December 1, 2008)
- Project website (www.bedfordpowertraincorrectiveaction.com)
- GM organized community meetings for neighbors and the general public
- Community Liaison Panel involvement

Prior to submission of the East Plant Area RCRA Corrective Action Program, IM Alternatives Review Report (CRA, April 13, 2005) to U.S. EPA and IDEM, discussions were held with U.S. EPA and IDEM that resulted in the proposed IM approach, which was presented to the public at a public meeting on March 31, 2005. A public notice was placed in the local newspaper, the Bedford Times-Mail, on May 31, 2005 requesting comments on the plan no later than July 14, 2005. A copy of this notice and proof of publication is presented in Appendix G. U.S. EPA also mailed a copy of this notice to residents in the area. Another public meeting was held at the Facility on June 2, 2005 to discuss the proposed plan and allow residents to ask questions and provide comments. A total of 92 public meetings have been held to provide an update on the status of the East Plant Area IM and off-Facility cleanup.

17.0 REFERENCES

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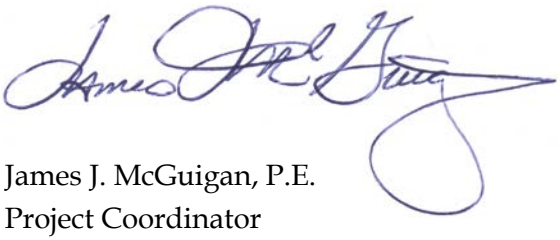
The Mannik & Smith Group, Inc., Leachate Detection System Response Action Plan, General Motors Powertrain Group, Bedford, IN Facility TSCA Vault, October 20, 2006.

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18.0 CONSTRUCTION CERTIFICATION

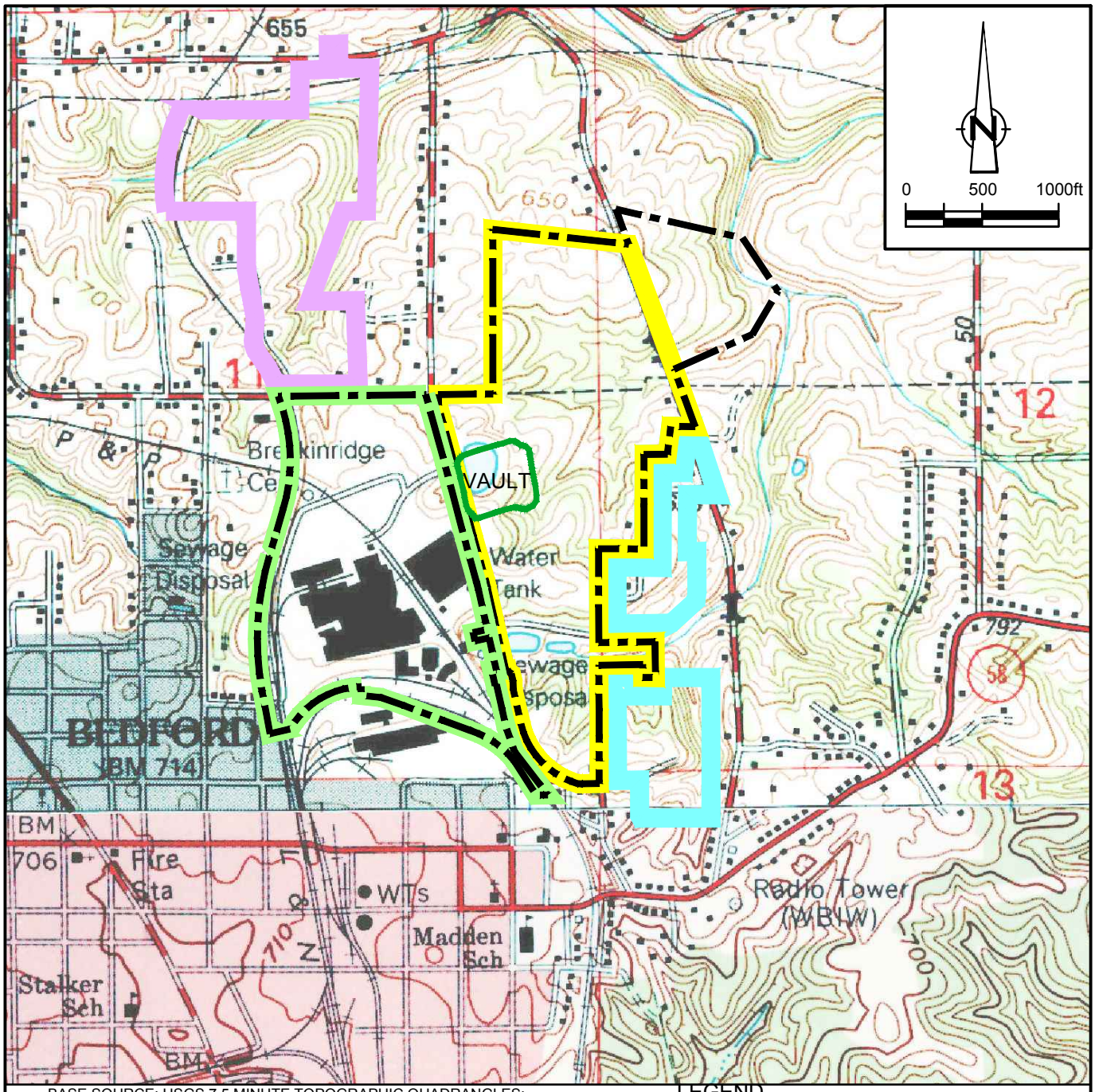
I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

All of Which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES



James J. McGuigan, P.E.
Project Coordinator

FIGURES



BASE SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLES;
BARTLETTSVILLE, INDIANA 1994
BEDFORD EAST, INDIANA 1978
BEDFORD WEST, INDIANA 1993
OOLITIC, INDIANA 1987
GM PROPERTY BOUNDARY SURVEY BY
BLEDSOE RIGGERT GUERRETTAZ
RECEIVED OCTOBER 2007



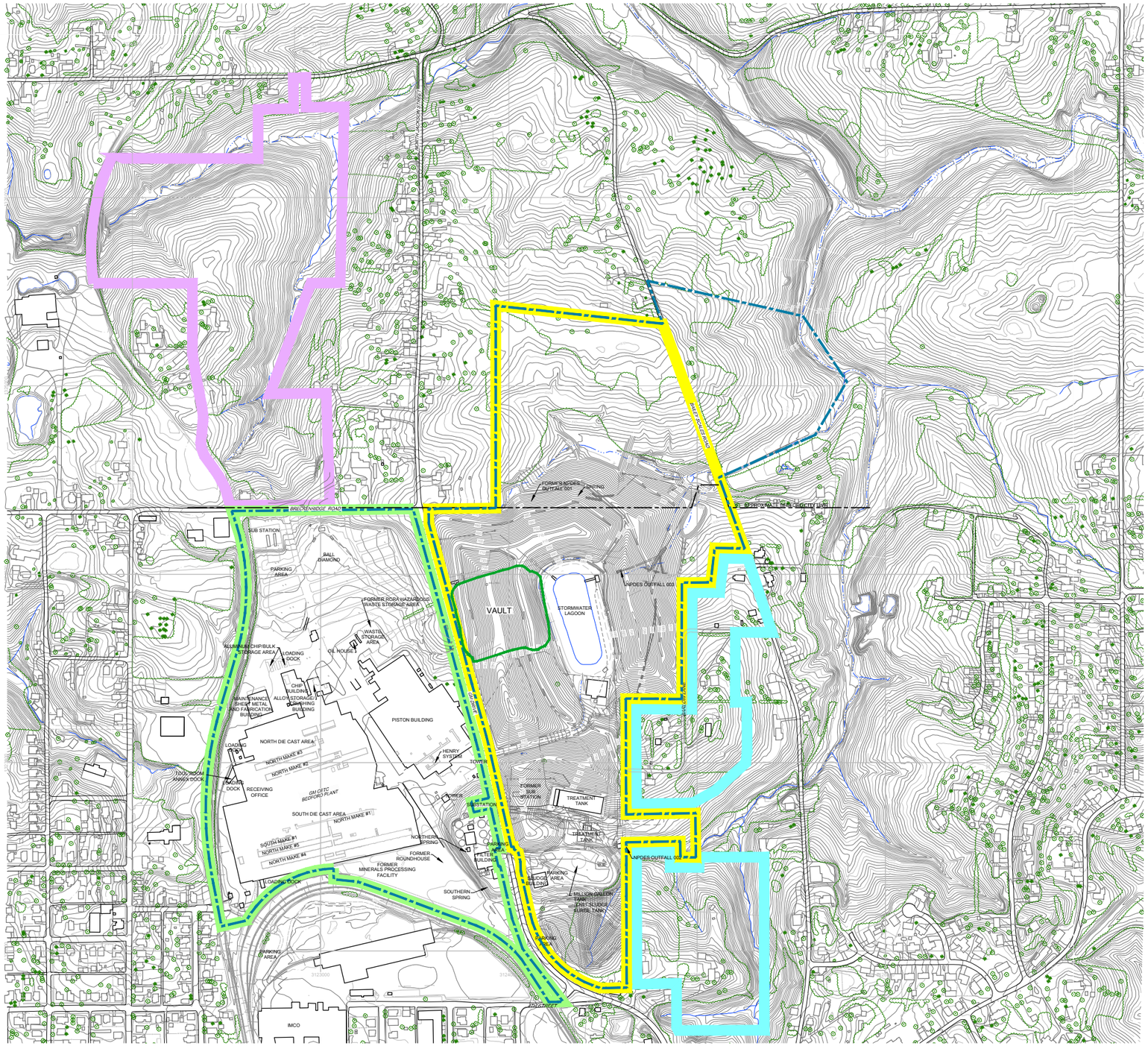
LEGEND

- FACILITY BOUNDARY
- GM LLC OWNED RESIDENTIAL
- EAST PLANT AREA
- WEST PLANT AREA
- NORTHERN TRIBUTARY AREA
- VAULT LOCATION

figure 1.1

FACILITY LOCATION
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
Bedford, Indiana

CRA



No	Revision	Date	Initial

0 100 300ft

LEGEND

- 800 — EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
- EXISTING BUILDINGS
- APPROXIMATE GM PROPERTY BOUNDARY
- STREAMS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / PAVED AREAS
- GM LLC OWNED RESIDENTIAL
- EAST PLANT AREA
- WEST PLANT AREA
- NORTHERN TRIBUTARY AREA
- 700 — TOP OF GROUND CONTOUR (FINAL COVER SYSTEM)
- VAULT LOCATION

NOTE:
GM PROPERTY BOUNDARY SURVEY BY BLEDSOE RIGGERT GUERRETTAZ RECEIVED OCTOBER 2007. ADJACENT PROPERTY BOUNDARY LOCATIONS APPROXIMATED FROM THE LAWRENCE COUNTY SURVEY PLATS. ADJOINING PROPERTY LINES MAY NOT ACCURATELY REPRESENT THE TRUE PROPERTY BOUNDARIES

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

CONSTRUCTION CERTIFICATION REPORT - EAST PLANT AREA VAULT

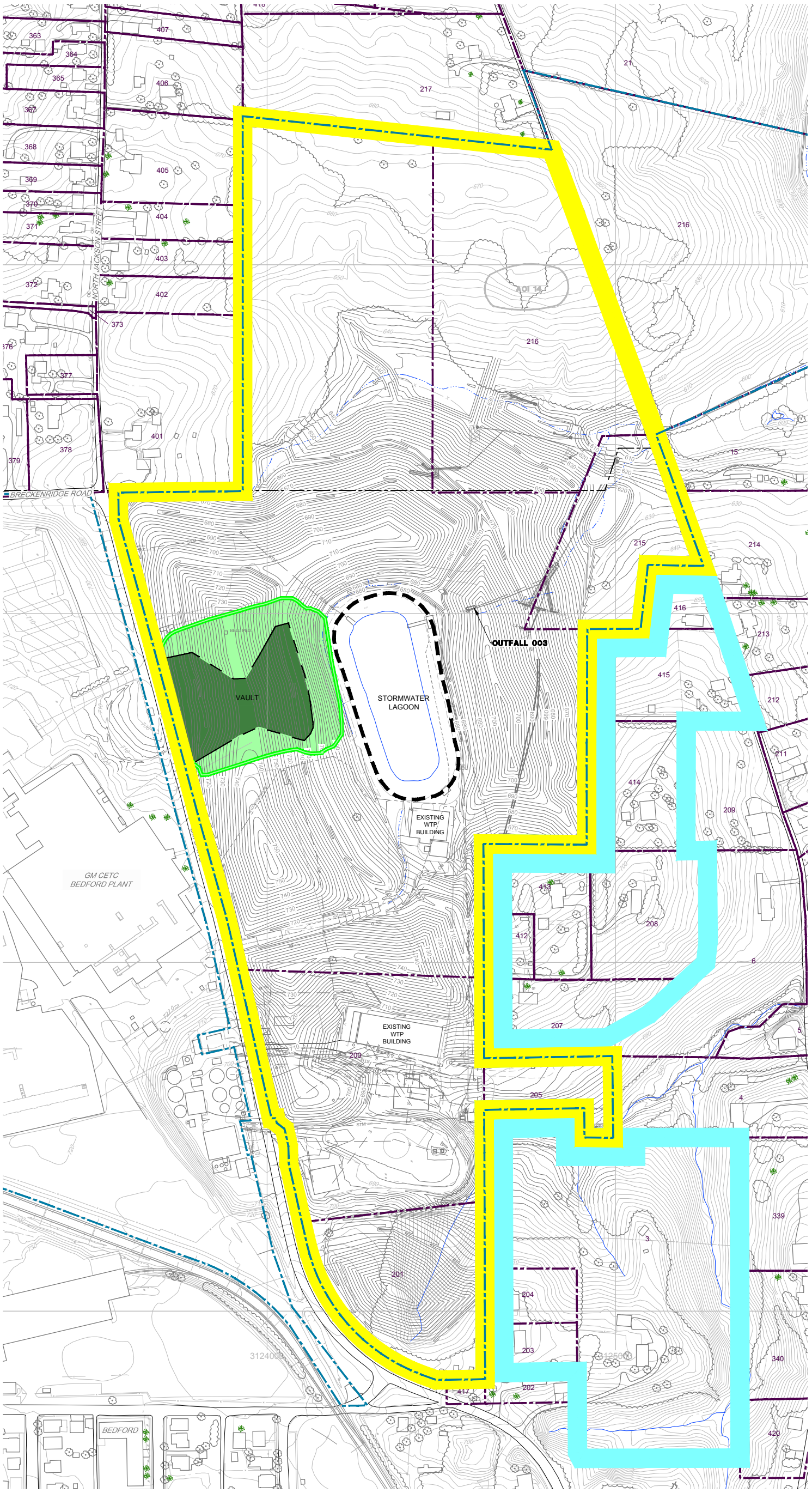
FACILITY PLAN

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI. APRIL 2001 AND CRA SURVEYS 2002 TO 2008

Project Manager:	Reviewed By:	Date:	
J.M.	S.G.	SEPTEMBER 2008	
Scale: AS SHOWN	Project No: 13968-00	Report No: 289	Drawing No: figure 1.2

13968-00(289)GN-WA002 DEC 17/2013



NOTE:
GM PROPERTY BOUNDARY SURVEY BY BLEDSOE RIGGERT GUERRETTAZ RECEIVED OCTOBER 2007. ADJACENT PROPERTY BOUNDARY LOCATIONS APPROXIMATED FROM THE LAWRENCE COUNTY SURVEY PLATS. ADJOINING PROPERTY LINES MAY NOT ACCURATELY REPRESENT THE TRUE PROPERTY BOUNDARIES

Nº	Revision	Date	Initial

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

CONSTRUCTION CERTIFICATION REPORT - EAST PLANT AREA VAULT

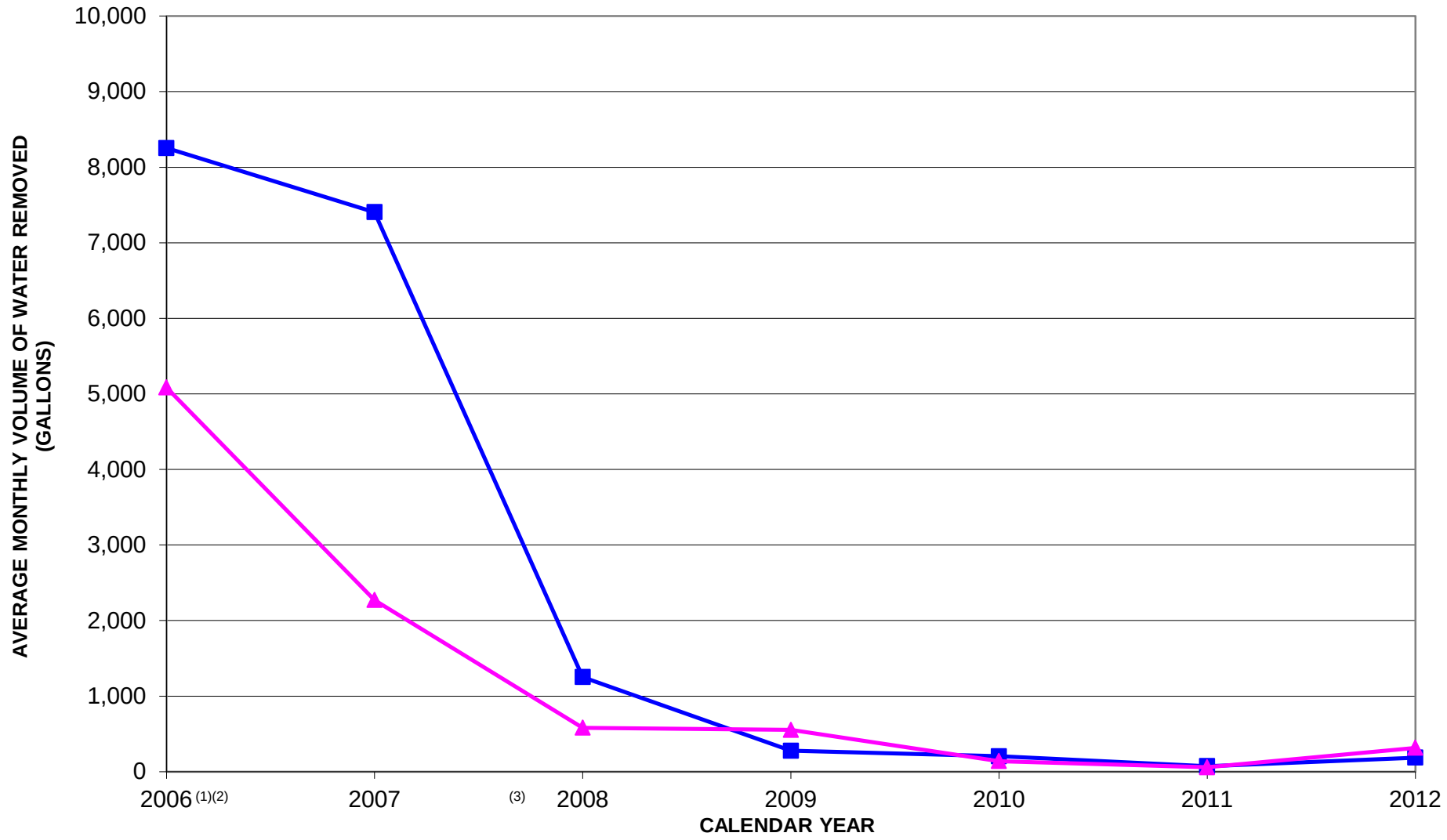
VAULT FOOTPRINT

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001.
AND CRA SURVEYS 2002 TO 2008

Project Manager:	Reviewed By:	Date:	
J.M.	S.G.	SEPTEMBER 2008	
Scale: AS SHOWN	Project Nº: 13968-00	Report Nº: 289	Drawing Nº: figure 2.1

13968-00(289)GN-WA003 DEC 17/2013



LEGEND

- Leachate Collection System
- Leak Detection System

NOTES

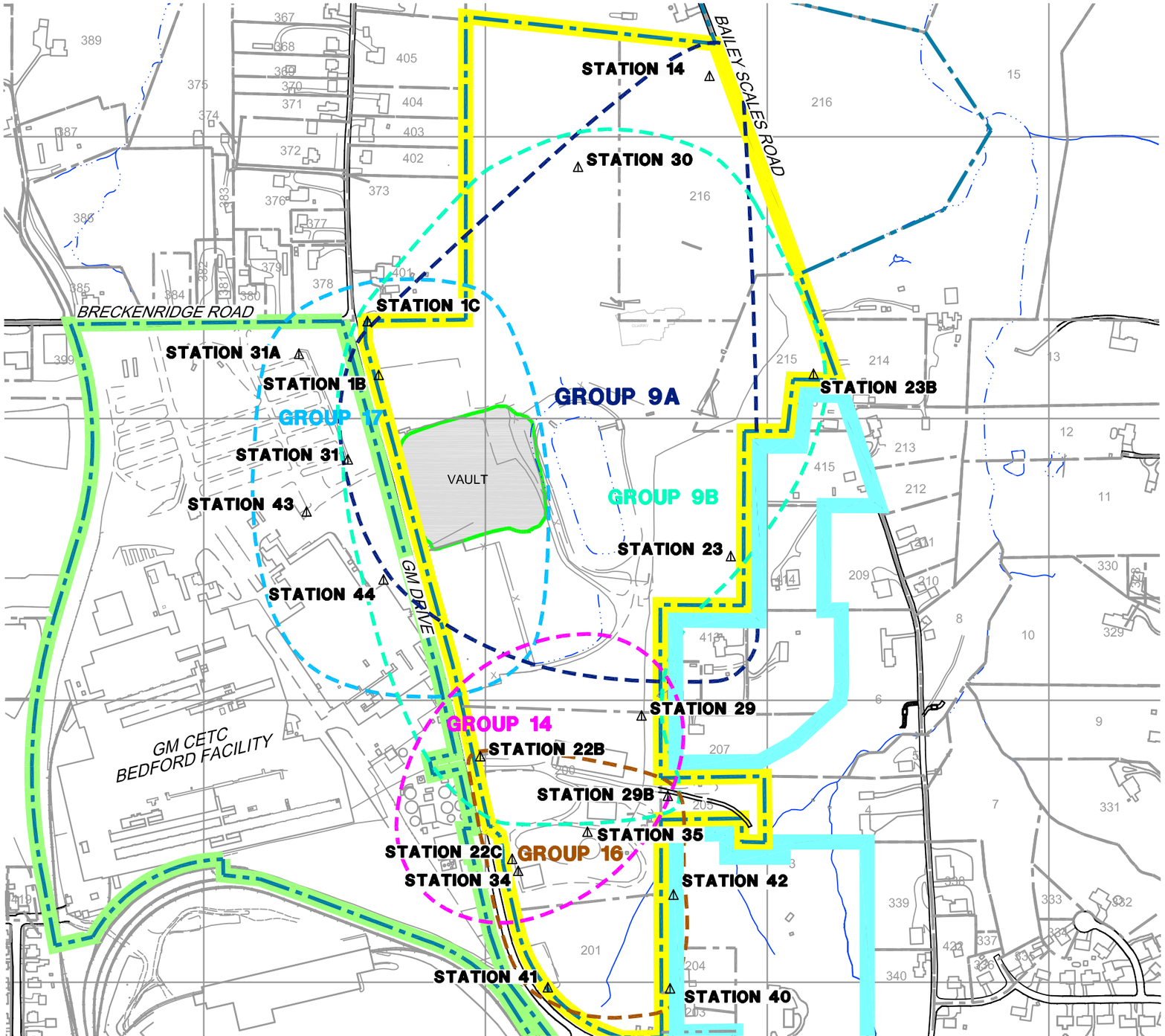
(1) Operation of the LCS and LDS commenced on Aug. 30, 2006.

(2) Water from the underdrain system entered the LDS Sept 8 and 13, 2006.

(3) Rehabilitation activities were conducted on the LDS (flushing) on Jan. 23 - June 5, 2007.

figure 6.1

SUMMARY OF AVERAGE MONTHLY VOLUME OF WATER REMOVED FROM LCS AND LDS
CONSTRUCTION CERTIFICATION REPORT - EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
Bedford, Indiana



0 200 400ft

LEGEND

- EXISTING BUILDINGS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / PAVED AREAS
- APPROXIMATE SURFACE WATER LOCATION
- APPROXIMATE PARCEL BOUNDARY
- APPROXIMATE GM PROPERTY BOUNDARY
- GM LLC OWNED RESIDENTIAL
- EAST PLANT AREA
- WEST PLANT AREA
- STATION 14 — AIR SAMPLING LOCATION
- AIR SAMPLING GROUP
- VAULT FOOTPRINT

NOTES:

1. GM PROPERTY BOUNDARY SURVEY BY BLEDSOE RIGGERT GUERRETTAZ RECEIVED OCTOBER 2007. ADJACENT PROPERTY BOUNDARY LOCATIONS APPROXIMATED FROM THE LAWRENCE COUNTY SURVEY PLATS. ADJOINING PROPERTY LINES MAY NOT ACCURATELY REPRESENT THE TRUE PROPERTY BOUNDARIES

2. STATION 23B SAMPLED FOR PCBs ONLY

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SOURCE: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001.

figure 11.1

AIR MONITORING STATION LOCATIONS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
Bedford, Indiana

13968-00(289)GN-WA006 DEC 17/2013

TABLES

TABLE 5.1

SUMMARY OF CLAY COMPACTION TEST RESULTS (SUB-BASE)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Test Date	*Test ID*	*Daily Test Number*	*Test Depth (inches)*	*Elevation of Test*	*Proctor Soil ID/Lab #* [1]	*Identification* [1]	*Permeability (cm/s)* [1]	*Optimum Moisture Content (%)* [1]	*Moisture Content (%)*	*Moisture Content Above/Below Optimum Moisture Content (%)* [4]	*Maximum Dry Density (Pound-Force per ft³)* [1]	*Dry Density (Pound-Force per ft3)*	*Wet Density (Pound-Force per ft3)*	*Compaction (%)* [5]	*PSI Pass/Fail Code* [6]	*Pass*	*Fail*	*Comments*
Clay/Fill Sub-Base Placement																		
19-Dec-05	1	1	6	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	24.5	5.8	102.9	97.9	121.8	95.1	2A	X		Retested on 12/20/05
	2	2	6	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	23.8	5.1	102.9	99.2	123.0	96.4	2A	X		
20-Dec-05	3	1	6	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	22.0	3.3	102.9	99.8	121.8	97.0	2AC	X		Retest of #1 (12/19/05)
	4 [2]	2	6	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	23.0	4.3	102.9	95.6	117.6	92.9	2B		X	Retested on 12/21/05
21-Dec-05	5	1	6	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	23.0	4.3	102.9	98.2	120.8	95.4	2A	X		
	6 [2]	2	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	24.6	5.9	102.9	97.1	121.0	94.4	2B		X	Should be code 2BC - Retest of #2 (12/20/05)
	7	3	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	24.1	5.4	102.9	98.4	122.0	95.6	2A	X		
	8	4	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	22.0	3.3	102.9	99.1	120.8	96.3	2A	X		
	9	5	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	20.8	2.1	102.9	101.6	122.7	98.7	2A	X		
	10	6	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	22.9	4.2	102.9	101.4	124.6	98.5 [7]	2A	X		
22-Dec-05	11	1	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	23.7	5.0	102.9	99.2	122.8	96.4	1AC	X		Retest of #2 (21/21/05)
	12	2	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	20.9	2.2	102.9	101.6	122.9	98.7 [7]	1A	X		
	13	3	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	23.0	4.3	102.9	99.4	122.3	96.6	1A	X		
	14	4	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	23.6	4.9	102.9	98.4	121.6	95.6	1A	X		
	15	5	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	23.7	5.0	102.9	99.2	122.8	96.4	1A	X		
	16	6	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	21.3	2.6	102.9	101.2	122.7	98.3	1A	X		
	N/A	7	12	-4 ft below stockpile	2940	South Clay/Fill	1.10E-08	18.7	24.7	6.0	102.9	100.2	124.9	97.4 [7]	N/A			Tested to check moisture content of stockpile soil.
	NA	8	12	-3 ft below stockpile	2940	South Clay/Fill	1.10E-08	18.7	18.9	0.2	102.9	105.5	125.4	102.5	NA			Tested to check moisture content of stockpile soil.
	NA	9	12	-2 ft below stockpile	2940	South Clay/Fill	1.10E-08	18.7	21.3	2.6	102.9	93.0	112.8	90.4	NA			Tested to check moisture content of stockpile soil.
	NA	10	12	-1.5 ft below stockpile	2940	South Clay/Fill	1.10E-08	18.7	20.0	1.3	102.9	103.9	124.6	101.0 [7]	NA			Tested to check moisture content of stockpile soil.
	N/A	11	12	-1 ft below stockpile	2940	South Clay/Fill	1.10E-08	18.7	25.5	6.8	102.9	94.3	118.3	91.6	N/A			Tested to check moisture content of stockpile soil.
3-Jan-06	17	1	10	3rd Lift	2942	South Clay/Fill	1.20E-08	21.0	20.1	-0.9	102.1	102.0	122.5	99.1 [7]	2A	X		
	18	2	10	3rd Lift	2942	South Clay/Fill	1.20E-08	21.0	24.3	3.3	102.1	98.3	122.2	95.5 [7]	2A	X		
	19	3	10	3rd Lift	2942	South Clay/Fill	1.10E-08	21.0	21.3	0.3	102.1	101.3	122.9	98.4 [7]	2A	X		
	20	4	10	3rd Lift	2942	South Clay/Fill	1.10E-08	21.0	23.6	2.6	102.1	99.2	122.6	96.4 [7]	2A	X		
	21	5	10	3rd Lift	2942	South Clay/Fill	1.10E-08	21.0	20.7	-0.3	102.1	100.2	120.9	97.4 [7]	2A	X		
4-Jan-06	22	1	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	25.4	6.7	102.9	100.5	125.9	97.7	1A	X		Should be code 1D
	23	2	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	25.7	7.0	102.9	99.2	124.9	96.4	1A	X		Should be code 1D
	24 [2]	3	8	2nd Lift	2940	South Clay/Fill	1.10E-08	18.7	26.5	7.8	102.9	95.4	121.9	92.7	1BD		X	Retested same day
	25	4	8	2nd Lift	2940	South Clay/Fill	1.10E-08	18.7	26.8	8.1	102.9	98.7	123.8	95.9 [7]	1AC	X		Retest of #3(1/04/06)
	26 [2]	5	8	2nd Lift	2940	South Clay/Fill	1.10E-08	18.7	27.2	8.5	102.9	94.2	121.4	91.5	1BD		X	Retested same day
	27 [2]	6	8	2nd Lift	2940	South Clay/Fill	1.10E-08	18.7	26.8	8.1	102.9	95.5	122.4	92.8	1BC		X	Retest of #5 (1/04/06)
5-Jan-06	28	1	8	2nd Lift	2940	South Clay/Fill	1.10E-08	18.7	24.6	5.9	102.9	100.3	125.0	97.5 [7]	1A	X		
	29	2	8	2nd Lift	2940	South Clay/Fill	1.10E-08	18.7	23.8	5.1	102.9	99.3	123.1	96.5 [7]	1AC	X		Retest of #6(1/04/06)
	30 [2]	3	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	25.2	6.5	102.9	95.5	120.7	92.8 [7]	1B		X	Retested same day
	31 [2]	4	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	25.8	7.1	102.9	96.0	121.8	93.3	1B		X	Retested same day
	32	5	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	23.9	5.2	102.9	98.8	122.7	96.0	1A	X		
	33	6	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	23.7	5.0	102.9	98.8	122.3	96.0	1AC	X		Retest of #4(1/05/06)
	34	7	8	1st Lift	2940	South Clay/Fill	1.10E-08	18.7	24.5	5.8	102.9	99.4	123.9	96.6 [7]	1AC	X		Retest of #3(1/05/06)
6-Jan-06	35	1	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	23.7	2.7	102.1	97.0	120.7	95.0	1A	X		
	36 [2]	2	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	29.7	8.7	102.1	90.0	119.7	88.1 [7]	1B		X	Retested on 1/07/06
7-Jan-06	37	1	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	25.5	4.5	102.1	97.0	122.4	95.0	1A	X		
	38 [2]	2	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	26.1	5.1	102.1	95.1	121.2	93.1 [7]	1B		X	Retested same day
	39	3	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	26.8	5.8	102.1	97.5	124.3	95.5 [7]	1AC	X		Retest of #2(1/07/06)
	40 [2]	4	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	26.6	5.6	102.1	95.4	122.1	93.4 [7]	1BC		X	Retest of #2 (1/06/06)
	41 [2]	5	8	1st Lift	2942	South Fill/Clay	1.20E-08	21.0	28.1	7.1	102.1	93.8	121.9	91.9 [7]	1B		X	Retested same day
	42	6	8	1st Lift	2942	South Fill/Clay	1.20E-08	21.0	25.9	4.9	102.1	97.5	123.4	95.5 [7]	1A	X		
	43	7	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	26.8	5.8	102.1	97.0	123.9	95.0	1AC	X		Retest of #4(1/07/06)
	44	8	8	1st Lift	2942	South Fill/Clay	1.20E-08	21.0	24.1	3.1	102.1	98.6	122.7	96.6 [7]	1AC	X		Retest of #5(1/07/06)
9-Jan-06	45	1	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	24.1	3.1	102.1	97.1	121.2	95.1	1A	X		
	46	2	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.1	4.1	102.1	97.8	122.9	95.8 [7]	1A	X		
	47 [2]	3	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	25.4	4.4	102.1	94.6	120.1	92.7	1B		X	Retested same day
	48	4	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.9	2.9	102.1	97.0	120.9	95.0	1A	X		
	49	5	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.4	3.4	102.1	97.4	121.9	95.4 [7]	1A	X		
	50	6	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	25.2	4.2	102.1	97.7	123.0	95.7 [7]	1AC	X		Retest of #3(1/9/06)
11-Jan-06	51 [2]	1	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	27.5	6.5	102.1	93.9	121.4	92.0	1B		X	
	52 [2]	2	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	27.9	6.9	102.1	90.4	118.3	88.5 [7]	1B		X	
	53 [2]	3	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	27.3	6.3	102.1	94.7	122.0	92.8	1B		X	
	54 [2]	4	12	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	27.5	6.5	102.1	93.9	121.4	92.0	1B		X	
	55 [2]	5	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	28.7	7.7	102.1	92.2	120.9	90.3	1B		X	
	56 [2]	6	12	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	28.5	7.5	102.1	93.7	122.2	91.8 [7]	1B		X	Multiple compaction test failures due to rain event on previous day (1/10/06), so testing was ceased. Clay material in this area was re-worked and re-tested following dewatering.
	57 [2]	7	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	27.4	6.4	102.1	95.0	123.4	93.0 [7]	1B		X	
	58 [2]	8	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	28.0	7.0	102.1	95.1	123.1	93.1 [7]	1B		X	
	59 [2]	9	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	27.2	6.2	102.1	91.6	118.8	89.7 [7]	1B		X	
	60 [2]	10	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	27.6	6.6	102.1	92.3	119.9	90.4	1B		X	
	61 [2]	11	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	27.6	6.6	102.1	93.5	121.1	91.6 [7]	1B		X	
	62 [2]	12	12	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	27.3	6.3	102.1	93.8	120.8	91.9 [7]	1B		X	
	63 [2]	13	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	27.0	6.0	102.1	92.2	119.0	90.3	1B		X	
12-Jan-06	64	1	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.6	4.6	102.1	97.2	122.8	95.2 [7]	1AC	X		
	65	2	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.3	4.3	102.1	97.6	122.9	95.6 [7]	1AC	X		
	66	3	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.5	3.5	102.1	97.9	122.4	95.9 [7]	1AC	X		
	67	4	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.1	3.1	102.1	97.9	122.0	95.9 [7]	1AC	X		
	68	5	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.6	3.6	102.1	97.4	122.0	95.4 [7]	1AC	X		
	69	6	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.7	4.7	102.1	98.0	123.6	96.0 [7]	1AC	X		
	70	7	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.6	4.6	102.1	97.2	122.8	95.2 [7]	1AC	X		Re-test of entire clay placement area that previously failed compaction testing on 1/11/06.
	71	8	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.1	4.1	102.1	97.1	122.2	95.1 [7]	1AC	X		
	72	9	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.4	4.4	102.1	97.1	122.6	95.1 [7]	1AC	X		
	73	10	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.9	2.9	102.1	98.9	122.8	96.9 [7]	1AC	X		
	74	11	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.7	4.7	102.1	96.9	122.6	94.9 [7]	1AC	X		
	75	12	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.2	4.2	102.1	97.6	122.8	95.6 [7]	1AC	X		
	76	13	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.6	3.6	102.1	97.6	122.2	95.6 [7]	1AC	X		

TABLE 5.1

SUMMARY OF CLAY COMPACTION TEST RESULTS (SUB-BASE)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Test Date	*Test ID*	*Daily Test Number*	*Test Depth (inches)*	*Elevation of Test*	*Proctor Soil ID/Lab #* [1]	*Identification* [1]	*Permeability (cm/s)* [1]	*Optimum Moisture Content (%)* [1]	*Moisture Content (%)*	*Moisture Content Above/Below Optimum Moisture Content (%)* [4]	*Maximum Dry Density (Pound-Force per ft³)* [1]	*Dry Density (Pound-Force per ft3)*	*Wet Density (Pound-Force per ft3)*	*Compaction (%)* [5]	*PSI Pass/Fail Code* [6]	*Pass*	*Fail*	*Comments*
	77	14	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.5	4.5	102.1	97.4	122.9	95.4 [7]	1AC	X		
16-Jan-06	78 [2]	1	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.7	5.7	102.1	93.8	120.5	91.9 [7]	1B		X	Retested on 1/19/06
	79 [2]	2	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.1	5.1	102.1	95.3	121.5	93.3 [7]	1B		X	Retested on 1/19/06
	80	3	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.7	3.7	102.1	97.1	121.8	95.1	1A	X		
	81 [2]	4	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	28.2	7.2	102.1	92.4	120.6	90.5	1B		X	Retested on 1/19/06
	82 [2]	5	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	28.0	7.0	102.1	92.9	120.9	91.0	1B		X	Retested on 1/20/06
	83 [2]	6	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.7	4.7	102.1	95.3	121.1	93.3 [7]	1B		X	Retested on 1/20/06
19-Jan-06	84	1	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.5	5.5	102.1	97.3	123.7	95.3	1AC	X		Retest of #2 (1/16/06)
	85	2	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.4	5.4	102.1	97.0	123.4	95.0	1AC	X		Retest of #4 (1/16/06)
	86 [2]	3	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	27.9	6.9	102.1	93.4	121.4	91.5	1BC		X	Retest of #1 (1/16/06)
20-Jan-06	87	1	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.0	3.0	102.1	98.3	122.3	96.3	1AC	X		Retest on #5 (1/16/06)
	88	2	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.6	3.6	102.1	98.2	122.8	96.2	1AC	X		Retest on #3 (1/19/06)
	89	3	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.2	4.2	102.1	98.2	123.5	96.2	1AC	X		Retest on #6 (1/16/06)
	90	4	8	1st Lift	2942	South Fill/Clay	1.20E-08	21.0	26.2	5.2	102.1	98.9	125.1	96.9	1A	X		
	91	5	8	1st Lift	2942	South Fill/Clay	1.20E-08	21.0	25.3	4.3	102.1	100.4	125.7	98.3	1A	X		
	92	6	8	1st Lift	2942	South Fill/Clay	1.20E-08	21.0	25.8	4.8	102.1	97.0	122.8	95.0	1A	X		
	93	7	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.6	4.6	102.1	97.3	122.9	95.3	1A	X		
	94	8	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.5	3.5	102.1	100.1	124.5	98.0	1A	X		
21-Jan-06	95	1	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	25.1	4.1	102.1	97.7	122.8	95.7	1A	X		
	96	2	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	25.7	4.7	102.1	98.3	124.0	96.3	1A	X		
	97	3	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.2	3.2	102.1	99.0	123.2	97.0	1A	X		
	98	4	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	25.8	4.8	102.1	98.2	124.0	96.2	1A	X		
	99	5	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	24.6	3.6	102.1	100.2	125.2	98.1	1A	X		
	100	6	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.2	3.2	102.1	98.6	122.8	96.6	1A	X		
	101	7	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.9	5.9	102.1	97.6	124.3	95.6	1A	X		
	102	8	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.2	3.2	102.1	100.2	124.3	98.1	1A	X		
	103	9	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.7	3.7	102.1	98.9	123.6	96.9	1A	X		
	104	10	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.0	4.0	102.1	98.8	123.8	96.8	1A	X		
24-Jan-06	105	1	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.2	4.2	102.1	98.5	123.7	96.5	1A	X		
	106 [2]	2	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.3	5.3	102.1	94.7	120.9	92.8 [7]	1B		X	Retested same day
	107	3	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.1	5.1	102.1	97.6	123.6	95.6	1A	X		
	108	4	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.5	3.5	102.1	98.2	122.7	96.2	1AC	X		Retest of #2 (1/24/06)
	109	5	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.3	4.3	102.1	98.4	123.7	96.4	1A	X		
	110	6	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.0	4.0	102.1	97.6	122.6	95.6	1A	X		
	111	7	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.0	4.0	102.1	98.0	123.0	96.0	1A	X		
	112	8	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.2	4.2	102.1	97.9	123.1	95.9	1A	X		
	113	9	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.2	4.2	102.1	97.1	122.3	95.1	1A	X		
	114	10	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	23.7	2.7	102.1	103.0	126.7	100.9	1A	X		
	115	11	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.2	4.2	102.1	97.7	122.9	95.7	1A	X		
	116	12	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.1	4.1	102.1	97.5	122.6	95.5	1A	X		
	117	13	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.7	3.7	102.1	98.5	123.2	96.5	1A	X		
25-Jan-06	118	1	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.1	4.1	102.1	99.9	125.0	97.8	1A	X		
	119	2	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.4	5.4	102.1	97.8	124.3	95.8	1A	X		
	120	3	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.7	3.7	102.1	97.4	122.1	95.4	1A	X		
	121	4	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	22.3	1.3	102.1	101.9	124.1	99.8	1A	X		
	122	5	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.3	4.3	102.1	97.2	122.5	95.2	1A	X		
	123	6	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.6	4.6	102.1	97.7	123.3	95.7	1A	X		
	124	7	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.6	4.6	102.1	97.5	123.1	95.5	1A	X		
	125	8	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.0	4.0	102.1	99.0	124.0	97.0	1A	X		
	126	9	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.3	4.3	102.1	98.2	123.5	96.2	1A	X		
	127	10	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.8	3.8	102.1	99.4	124.2	97.4 [7]	1A	X		
26-Jan-06	128	1	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.9	4.9	102.1	98.4	124.4	96.4	1A	X		
	129	2	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.4	4.4	102.1	97.9	123.3	95.9	1A	X		
27-Jan-06	130	1	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	20.3	-0.7	102.1	101.6	121.9	99.5	1A	X		
	131	2	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	20.3	-0.7	102.1	101.7	122.0	99.6	1A	X		
	132	3	8	10th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.0	4.0	102.1	98.9	123.6	96.9 [7]	1A	X		
	133	4	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	21.0	0.0	102.1	102.1	123.6	100.0	1A	X		
	134	5	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	21.6	0.6	102.1	103.1	125.4	101.0	1A	X		
	135	6	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	20.8	-0.2	102.1	105.0	126.8	102.8 [7]	1A	X		
	136	7	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	19.0	-2.0	102.1	105.4	125.5	103.2 [7]	1A	X		Should be code 1E
	137	8	8	10th Lift	2942	South Fill/Clay	1.20E-08	21.0	21.4	0.4	102.1	104.2	126.6	102.1	1A	X		
	138	9	8	10th Lift	2942	South Fill/Clay	1.20E-08	21.0	19.4	-1.6	102.1	104.9	125.2	102.7 [7]	1A	X		Should be code 1E
	139	10	8	10th Lift	2942	South Fill/Clay	1.20E-08	21.0	21.7	0.7	102.1	101.3	123.3	99.2	1A	X		
28-Jan-06	140	1	8	1st Lift	2942	South Fill/Clay	1.20E-08	21.0	21.1	0.1	102.1	104.0	125.9	101.9 [7]	1A	X		
	141	2	8	11th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.6	1.6	102.1	102.1	125.1	100.0	1A	X		
Clay/Fill South Slope Repairs										0.0								
2-Feb-06	142	1	8	1st Lift	2942	South Fill/Clay	1.20E-08	21.0	23.4	2.4	102.1	98.9	122.1	96.9	1A	X		
	143	2	8	1st Lift	2942	South Fill/Clay	1.20E-08	21.0	23.6	2.6	102.1	100.1	123.7	98.0 [7]	1A	X		
7-Feb-06	144	1	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	24.6	3.6	102.1	97.7	121.7	95.7	1A	X		
	145	2	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	25.4	4.4	102.1	97.5	122.3	95.5	1A	X		
	146	3	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	24.1	3.1	102.1	99.2	123.1	97.2 [7]	1A	X		
	147	4	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	23.6	2.6	102.1	99.1	122.5	97.1	1A	X		
	148	5	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	24.2	3.2	102.1	99.1	123.1	97.1	1A	X		
	149	6	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	23.9	2.9	102.1	97.9	121.3	95.9	1A	X		
	150	7	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.3	3.3	102.1	99.0	123.1	97.0 [7]	1A	X		
	151	8	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.3	2.3	102.1	99.7	123.0	97.6 [7]	1A	X		
	152	9	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.3	3.3	102.1	98.6	122.5	96.6	1A	X		
	153	10	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.7	4.7	102.1	97.3	122.3	95.3	1A	X		
	154	11	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.0	3.0	102.1	98.5	122.2	96.5	1A	X		
	155	12	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.3	4.3	102.1	97.3	121.9	95.3	1A	X		
8-Feb-06	156	1	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.3	5.3	102.1	97.3	122.9	95.3	1A	X		
	157	2	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.8	4.8	102.1	97.2	122.3	95.2	1A	X		

TABLE 5.1

SUMMARY OF CLAY COMPACTION TEST RESULTS (SUB-BASE)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Test Date	*Test ID*	*Daily Test Number*	*Test Depth (inches)*	*Elevation of Test*	*Proctor Soil ID/Lab #* [1]	*Identification* [1]	*Permeability (cm/s)* [1]	*Optimum Moisture Content (%)* [1]	*Moisture Content (%)*	*Moisture Content Above/Below Optimum Moisture Content (%)* [4]	*Maximum Dry Density (Pound-Force per ft³)* [1]	*Dry Density (Pound-Force per ft3)*	*Wet Density (Pound-Force per ft3)*	*Compaction (%)* [5]	*PSI Pass/Fail Code* [6]	*Pass*	*Fail*	*Comments*
	158	3	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.5	5.5	102.1	97.0	122.7	95.0	1A	X		
	159	4	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.5	4.5	102.1	97.8	122.7	95.8	1A	X		
8-Feb-06	160	5	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.0	4.0	102.1	97.8	122.3	95.8	1A	X		
(cont'd)	161	6	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	27.0	6.0	102.1	98.4	125.0	96.4	1A	X		
	162 [2]	7	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	27.7	6.7	102.1	95.6	122.0	93.6	1B		X	Retested on 2/09/06
	163	8	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.3	4.3	102.1	98.1	123.0	96.1	1A	X		
9-Feb-06	164	1	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.4	2.4	102.1	99.9	123.3	97.8 [7]	1A	X		
	165	2	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.3	1.3	102.1	98.1	119.9	96.1 [7]	1AC	X		Retest of #7 (2/08/06)
	166	3	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	21.3	0.3	102.1	100.1	121.5	98.0	1A	X		
	167	4	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.6	2.6	102.1	97.5	120.5	95.5	1A	X		
	168	5	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.6	3.6	102.1	97.7	121.7	95.7 [7]	1A	X		
	169	6	8	10th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.3	4.3	102.1	97.0	121.5	95.0	1A	X		
	170	7	8	10th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.0	4.0	102.1	97.7	122.1	95.7	1A	X		
	171	8	8	10th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.9	3.9	102.1	97.0	121.2	95.0	1A	X		
	172	9	8	11th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.6	3.6	102.1	99.1	123.5	97.1	1A	X		
	173	10	8	11th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.9	3.9	102.1	97.6	121.8	95.6 [7]	1A	X		
	174	11	8	11th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.5	3.5	102.1	98.1	122.1	96.1 [7]	1A	X		
10-Feb-06	175	1	8	12th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.7	3.7	102.1	97.9	122.0	95.9 [7]	1A	X		
	176	2	8	12th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.8	1.8	102.1	99.9	122.7	97.8	1A	X		
	177	3	8	12th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.6	4.6	102.1	97.0	121.8	95.0	1A	X		
	178	4	8	13th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.6	4.6	102.1	97.0	121.8	95.0	1A	X		
	179	5	8	13th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.6	2.6	102.1	99.7	123.2	97.6	1A	X		
	180	6	8	13th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.5	3.5	102.1	98.4	122.5	96.4	1A	X		
	181	7	8	14th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.5	1.5	102.1	100.4	123.0	98.3	1A	X		
	182	8	8	14th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.8	3.8	102.1	98.7	123.1	96.7 [7]	1A	X		
	183	9	8	14th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.3	3.3	102.1	97.9	121.7	95.9	1A	X		
	184	10	8	15th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.1	4.1	102.1	97.9	122.6	95.9	1A	X		
	185	11	8	15th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.1	3.1	102.1	99.3	123.2	97.3 [7]	1A	X		
	186	12	8	15th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.0	3.0	102.1	98.5	122.1	96.5	1A	X		
	187	13	8	16th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.9	3.9	102.1	98.0	122.4	96.0 [7]	1A	X		
	188	14	8	16th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.5	3.5	102.1	98.8	122.9	96.8 [7]	1A	X		
	189	15	8	16th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.6	1.6	102.1	100.7	123.5	98.6	1A	X		
11-Feb-06	190	1	8	17th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.6	1.6	102.1	101.8	124.8	99.7	1A	X		
	191	2	8	17th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.6	1.6	102.1	101.3	124.2	99.2	1A	X		
	192	3	8	17th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.9	3.9	102.1	98.8	123.3	96.8	1A	X		
	193	4	8	18th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.7	3.7	102.1	97.7	121.8	95.7	1A	X		
	194	5	8	18th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.3	2.3	102.1	99.6	122.8	97.6	1A	X		
	195	6	8	18th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.7	1.7	102.1	101.1	124.1	99.0 [7]	1A	X		
	196	7	8	19th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.9	3.9	102.1	97.9	122.3	95.9	1A	X		
	197	8	8	19th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.3	3.3	102.1	98.2	122.0	96.2	1A	X		
	198	9	8	19th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.5	2.5	102.1	100.8	124.5	98.7	1A	X		
	199	10	8	20th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.3	4.3	102.1	97.2	121.7	95.2	1A	X		
	200	11	8	20th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.6	2.6	102.1	98.2	121.4	96.2	1A	X		
	201	12	8	20th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.0	3.0	102.1	98.8	123.3	96.8	1A	X		
13-Feb-06	204	1	8	21st Lift	2942	South Fill/Clay	1.20E-08	21.0	22.4	1.4	102.1	98.2	120.2	96.2	1A	X		
	205	2	8	21st Lift	2942	South Fill/Clay	1.20E-08	21.0	22.4	1.4	102.1	99.1	121.3	97.1	1A	X		
	206	3	8	21st Lift	2942	South Fill/Clay	1.20E-08	21.0	23.2	2.2	102.1	100.2	123.4	98.1	1A	X		
	207	4	8	22nd Lift	2942	South Fill/Clay	1.20E-08	21.0	24.5	3.5	102.1	98.7	122.9	96.7	1A	X		
	208	5	8	22nd Lift	2942	South Fill/Clay	1.20E-08	21.0	23.3	2.3	102.1	100.1	123.4	98.0 [7]	1A	X		
	209	6	8	22nd Lift	2942	South Fill/Clay	1.20E-08	21.0	23.1	2.1	102.1	102.0	125.5	99.9	1A	X		
Clay/Fill South Slope Reconstruction										0.0								
2-Mar-06	210	1	8	1st Lift	2942	South Fill/Clay	1.20E-08	21.0	25.8	4.8	102.1	97.9	123.2	95.9	1A	X		
	211	2	8	1st Lift	2942	South Fill/Clay	1.20E-08	21.0	22.0	1.0	102.1	102.9	125.6	100.8 [7]	1A	X		
	212	3	8	1st Lift	2942	South Fill/Clay	1.20E-08	21.0	24.8	3.8	102.1	97.6	121.8	95.6	1A	X		
	213	4	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	26.6	5.6	102.1	97.2	123.1	95.2	1A	X		
	214	5	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	26.1	5.1	102.1	97.0	122.3	95.0	1A	X		
	215	6	8	2nd Lift	2942	South Fill/Clay	1.20E-08	21.0	25.6	4.6	102.1	98.4	123.6	96.4	1A	X		
3-Mar-06	216	1	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	26.6	5.6	102.1	98.4	124.6	96.4	1A	X		
	217	2	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	26.9	5.9	102.1	97.3	123.5	95.3	1A	X		
	218	3	8	3rd Lift	2942	South Fill/Clay	1.20E-08	21.0	26.1	5.1	102.1	97.6	123.1	95.6	1A	X		
	219	4	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.7	5.7	102.1	97.2	123.2	95.2	1A	X		
	220	5	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.8	4.8	102.1	98.1	123.4	96.1	1A	X		
	221	6	8	4th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.1	4.1	102.1	98.0	122.6	96.0	1A	X		
	222	7	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.1	5.1	102.1	97.7	123.2	95.7	1A	X		
	223	8	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.3	5.3	102.1	97.8	123.5	95.8	1A	X		
	224	9	8	5th Lift	2942	South Fill/Clay	1.20E-08	21.0	27.0	6.0	102.1	97.5	123.7	95.5	1A	X		
4-Mar-06	225	1	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.0	4.0	102.1	97.9	122.3	95.9	1A	X		
	226	2	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.0	5.0	102.1	97.5	122.9	95.5	1A	X		
	227	3	8	6th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.2	5.2	102.1	97.3	122.8	95.3	1A	X		
	228	4	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.6	4.6	102.1	97.7	122.8	95.7	1A	X		
	229	5	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.6	5.6	102.1	97.0	122.8	95.0	1A	X		
	230	6	8	7th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.5	3.5	102.1	97.7	121.7	95.7	1A	X		
	231	7	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.2	4.2	102.1	99.0	124.0	97.0	1A	X		
	232	8	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.2	5.2	102.1	97.3	122.8	95.3	1A	X		
	233	9	8	8th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.6	4.6	102.1	97.4	122.3	95.4	1A	X		
5-Mar-06	234	1	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.1	3.1	102.1	99.0	123.0	97.0	1A	X		
	235	2	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.9	4.9	102.1	97.2	122.3	95.2	1A	X		
	236	3	8	9th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.3	4.3	102.1	97.1	121.7	95.1	1A	X		
	237	4	8	10th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.4	4.4	102.1	97.2	121.9	95.2	1A	X		
	238	5	8	10th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.6	4.6	102.1	98.1	123.2	96.1	1A	X		
	239	6	8	10th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.9	4.9	102.1	97.7	123.1	95.7	1A	X		
	240	7	8	11th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.2	5.2	102.1	97.5	123.0	95.5	1A	X		

TABLE 5.1

SUMMARY OF CLAY COMPACTION TEST RESULTS (SUB-BASE)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Test Date	*Test ID*	*Daily Test Number*	*Test Depth (inches)*	*Elevation of Test*	*Proctor Soil ID/Lab #* [1]	*Identification* [1]	*Permeability (cm/s)* [1]	*Optimum Moisture Content (%)* [1]	*Moisture Content (%)*	*Moisture Content Above/Below Optimum Moisture Content (%)* [4]	*Maximum Dry Density (Pound-Force per ft³)* [1]	*Dry Density (Pound-Force per ft3)*	*Wet Density (Pound-Force per ft3)*	*Compaction (%)* [5]	*PSI Pass/Fail Code* [6]	*Pass*	*Fail*	*Comments*
	241	8	8	11th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.3	4.3	102.1	97.1	121.7	95.1	1A	X		
	242	9	8	11th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.1	5.1	102.1	98.6	124.3	96.6	1A	X		
6-Mar-06	243	1	8	12th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.8	2.8	102.1	99.4	123.1	97.4	1A	X		
	244	2	8	12th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.0	4.0	102.1	100.1	125.1	98.0	1A	X		
	245	3	8	12th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.5	4.5	102.1	97.0	121.7	95.0	1A	X		
	246	4	8	13th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.9	1.9	102.1	102.1	125.4	100.0	1A	X		
	247	5	8	13th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.8	2.8	102.1	99.5	123.2	97.5	1A	X		
	248	6	8	13th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.5	3.5	102.1	98.4	122.5	96.4 [7]	1A	X		
	249	7	8	14th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.1	5.1	102.1	97.1	122.5	95.1	1A	X		
	250	8	8	14th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.9	3.9	102.1	98.4	122.9	96.4	1A	X		
	251	9	8	14th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.2	4.2	102.1	97.3	121.8	95.3	1A	X		
	252	10	8	15th Lift	2942	South Fill/Clay	1.20E-08	21.0	25.0	4.0	102.1	99.3	124.1	97.3	1A	X		
	253	11	8	15th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.1	5.1	102.1	97.3	122.7	95.3	1A	X		
	254	12	8	15th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.8	3.8	102.1	99.0	123.5	97.0	1A	X		
7-Mar-06	255	1	8	12th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.9	1.9	102.1	101.0	124.1	98.9	1A	X		
	256	2	8	13th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.0	5.0	102.1	98.9	124.3	96.9	1A	X		
	257	3	8	14th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.9	3.9	102.1	101.1	126.3	99.0	1A	X		
	258	4	8	15th Lift	2942	South Fill/Clay	1.20E-08	21.0	26.0	5.0	102.1	98.2	124.0	96.2	1A	X		
15-Mar-06	259	1	8	17th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.0	1.0	102.1	101.1	123.4	99.0	1A	X		
	260	2	8	17th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.5	2.5	102.1	97.7	120.6	95.7	1A	X		
	261	3	8	17th Lift	2942	South Fill/Clay	1.20E-08	21.0	21.2	0.2	102.1	103.1	125.0	101.0	1A	X		
	262	4	8	17th Lift	2942	South Fill/Clay	1.20E-08	21.0	21.7	0.7	102.1	102.0	124.1	99.9	1A	X		
	263	5	8	18th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.3	1.3	102.1	101.4	124.1	99.3	1A	X		
	264	6	8	18th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.3	1.3	102.1	100.4	122.7	98.3	1A	X		
	265	7	8	18th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.0	2.0	102.1	98.0	120.6	96.0	1A	X		
16-Mar-06	266	1	8	19th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.5	1.5	102.1	99.9	122.3	97.8	1A	X		
	267	2	8	19th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.4	2.4	102.1	100.9	124.5	98.8	1A	X		
	268	3	8	19th Lift	2942	South Fill/Clay	1.20E-08	21.0	21.9	0.9	102.1	99.2	120.9	97.2	1A	X		
	269	4	8	20th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.9	2.9	102.1	98.7	122.3	96.7	1A	X		
	270	5	8	20th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.9	1.9	102.1	99.3	122.0	97.3	1A	X		
	271	6	8	20th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.3	2.3	102.1	98.3	121.3	96.3	1A	X		
	272	7	8	21st Lift	2942	South Fill/Clay	1.20E-08	21.0	23.9	2.9	102.1	97.8	121.2	95.8	1A	X		
	273	8	8	21st Lift	2942	South Fill/Clay	1.20E-08	21.0	20.7	-0.3	102.1	102.4	123.7	100.3	1A	X		
	274	9	8	21st Lift	2942	South Fill/Clay	1.20E-08	21.0	21.7	0.7	102.1	101.8	123.9	99.7	1A	X		
17-Mar-06	275	1	8	22nd Lift	2942	South Fill/Clay	1.20E-08	21.0	21.2	0.2	102.1	101.9	123.5	99.8	1A	X		
	276	2	8	22nd Lift	2942	South Fill/Clay	1.20E-08	21.0	22.8	1.8	102.1	98.9	121.5	96.9	1A	X		
	277	3	8	22nd Lift	2942	South Fill/Clay	1.20E-08	21.0	21.7	0.7	102.1	101.1	123.1	99.0	1A	X		
	278	4	8	23rd Lift	2942	South Fill/Clay	1.20E-08	21.0	22.9	1.9	102.1	99.1	121.8	97.1	1A	X		
	279	5	8	23rd Lift	2942	South Fill/Clay	1.20E-08	21.0	22.2	1.2	102.1	101.8	124.4	99.7	1A	X		
	280	6	8	23rd Lift	2942	South Fill/Clay	1.20E-08	21.0	23.4	2.4	102.1	97.7	120.8	95.7	1A	X		
	281	7	8	24th Lift	2942	South Fill/Clay	1.20E-08	21.0	20.4	-0.6	102.1	105.4	126.8	103.2	1A	X		
	282	8	8	24th Lift	2942	South Fill/Clay	1.20E-08	21.0	23.0	2.0	102.1	99.4	122.3	97.4	1A	X		
	283	9	8	24th Lift	2942	South Fill/Clay	1.20E-08	21.0	21.8	0.8	102.1	100.5	122.5	98.4	1A	X		
Fine Grading/Rerolling Floor										0.0								
18-Mar-06	284	1	8	25th Lift	2942	South Fill/Clay	1.20E-08	21.0	21.2	0.2	102.1	101.5	123.0	99.4	2A	X		
	285	2	8	25th Lift	2942	South Fill/Clay	1.20E-08	21.0	20.7	-0.3	102.1	103.2	124.6	101.1	2A	X		
	286	3	8	25th Lift	2942	South Fill/Clay	1.20E-08	21.0	19.8	-1.2	102.1	100.2	120.0	98.1	2A	X		Should be code 1E
	287	4	8	26th Lift	2942	South Fill/Clay	1.20E-08	21.0	21.0	0.0	102.1	104.3	126.2	102.2	2A	X		
	288	5	8	26th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.2	1.2	102.1	100.3	122.6	98.2	2A	X		
	289	6	8	26th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.6	3.6	102.1	97.0	120.9	95.0	2A	X		
	290	7	8	27th Lift	2942	South Fill/Clay	1.20E-08	21.0	22.4	1.4	102.1	99.8	122.2	97.7	2A	X		
	291	8	8	27th Lift	2942	South Fill/Clay	1.20E-08	21.0	24.9	3.9	102.1	98.2	122.7	96.2	2A	X		
	292	9	8	27th Lift	2942	South Fill/Clay	1.20E-08	21.0	20.4	-0.6	102.1	103.5	124.6	101.4	2A	X		
19-Mar-06	293	1	8	28th lift	2942	South Fill/Clay	1.20E-08	21.0	23.5	2.5	102.1	97.7	120.7	95.7	2A	X		
	294	2	8	28th lift	2942	South Fill/Clay	1.20E-08	21.0	21.1	0.1	102.1	99.6	120.6	97.6	2A	X		
	297	3	8	28th lift	2942	South Fill/Clay	1.20E-08	21.0	21.5	0.5	102.1	100.2	121.7	98.1	2A	X		
	298	4	8	29th lift	2942	South Fill/Clay	1.20E-08	21.0	20.3	-0.7	102.1	103.1	124.0	101.0	2A	X		
	299	5	8	29th lift	2942	South Fill/Clay	1.20E-08	21.0	21.2	0.2	102.1	100.8	122.2	98.7	2A	X		
	300	6	8	29th lift	2942	South Fill/Clay	1.20E-08	21.0	22.4	1.4	102.1	100.8	123.4	98.7	2A	X		

Notes:

(1) Soil proctor information.

(2) Test results include a failed compaction test and/or moisture content, which required a subsequent retest either that same day or the next day.

(3) Compaction test results were rejected as a group and clay was reworked (with water addition) to raise moisture content to acceptable conditions.

(4) Accepted moisture content to be within 0-5% of optimum moisture content of proctor (actual range used in field was ±1% above/below optimum range).

(5) Accepted compaction to be at least 95% of maximum dry density of proctor.

(6) PSI Pass/Fail Codes are as follows:

1/2 = Fill/backfill	A = Test results comply with specifications
3 = Base course	B = Compaction does not comply with specifications
4 = Sub-base	C = Retest of previous test
5 = Soil cement	D = Moisture in excess of specifications
6 = Other	E = Moisture below specifications

(7) Percent compaction result differs from PSI's Report of Field Compaction Tests, which had a slightly lower/higher incorrectly calculated percent compaction due to human error.

TABLE 5.2

SUMMARY OF CLAY PERMEABILITY TEST RESULTS (SUB-BASE)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Identification	*Sample Collection Date*	*Sample Start Depth (ft bgs)*	*Sample End Depth (ft bgs)*	*Shelby Tube Number*	*Permeability (cm/sec)* [(1)]	*Comments*
Clay/Fill Sub-Base (Test Pad)						
S-022106-KMV-1216	21-Feb-06	0.00	0.75	ST-3	N/A	Insufficient Sample
S-022106-KMV-1217	21-Feb-06	0.00	0.83	ST-4	1.7×10^{-8}	Approved
S-022106-KMV-1218	21-Feb-06	0.00	0.75	ST-5	2.4×10^{-8}	Approved

Note:

[(1)] Results based on the performance of test permeability ASTM D 5084 by Testing Service Corporation (TSC). Acceptance of results requires 1.0 x 10-7 cm/s.

TABLE 6.1

SUMMARY OF GEOSYNTHETIC CLAY LINER INSTALLATION LOG (SECONDARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Contractor*	*Manufacturer's Roll Number*	*Installed Length (ft)* **	*Installed Width (ft)*	*Final Area (ft^2)*	*Installation Approved (Y/N)* ***	*Comments*
				Panel Dimensions				
S1	4-Apr-06	Sevenson, AEGL	1779081	198	14	2772	Y	
S2	4-Apr-06	Sevenson, AEGL	1779077	53	14	742	Y	
S3	4-Apr-06	Sevenson, AEGL	1779064	53	14	742	Y	
S4	4-Apr-06	Sevenson, AEGL	1779068	16	14	224	Y	roll number may be in error
S5	4-Apr-06	Sevenson, AEGL	1779055	25	14	350	Y	roll number may be in error
S6	4-Apr-06	Sevenson, AEGL	1779055	25	14	350	Y	roll number may be in error
S7	4-Apr-06	Sevenson, AEGL	1779077	66	14	924	Y	
S8	4-Apr-06	Sevenson, AEGL	1779068	66	14	924	Y	
S9	4-Apr-06	Sevenson, AEGL	1779068	68	14	952	Y	
S10	4-Apr-06	Sevenson, AEGL	1779068	68	14	952	Y	
S11	4-Apr-06	Sevenson, AEGL	1779076	68	14	952	Y	
S12	4-Apr-06	Sevenson, AEGL	1779076	68	14	952	Y	
S13	4-Apr-06	Sevenson, AEGL	1779076	68	14	952	Y	
S14	4-Apr-06	Sevenson, AEGL	1779077	68	14	952	Y	
S15	4-Apr-06	Sevenson, AEGL	1779064	68	14	952	Y	
S16	4-Apr-06	Sevenson, AEGL	1779064	68	14	952	Y	
S17	4-Apr-06	Sevenson, AEGL	1779062	198	14	2772	Y	
S18	4-Apr-06	Sevenson, AEGL	1779057	198	14	2772	Y	roll number also used for S55
S19	4-Apr-06	Sevenson, AEGL	1779065	198	14	2772	Y	
S20	4-Apr-06	Sevenson, AEGL	1779029	198	14	2772	Y	
S21	4-Apr-06	Sevenson, AEGL	1779071	198	14	2772	Y	
S22	4-Apr-06	Sevenson, AEGL	1779028	198	14	2772	Y	
S23	4-Apr-06	Sevenson, AEGL	1779059	198	14	2772	Y	
S24	4-Apr-06	Sevenson, AEGL	1779033	200	14	2800	Y	
S25	4-Apr-06	Sevenson, AEGL	1779078	200	14	2800	Y	
S26	4-Apr-06	Sevenson, AEGL	1779063	200	14	2800	Y	
S27	4-Apr-06	Sevenson, AEGL	1779058	180	14	2520	Y	
S28	4-Apr-06	Sevenson, AEGL	1779070	200	14	2800	Y	
S29	4-Apr-06	Sevenson, AEGL	1779073	200	14	2800	Y	
S30	4-Apr-06	Sevenson, AEGL	1779036	200	14	2800	Y	
S31	4-Apr-06	Sevenson, AEGL	1779075	200	14	2800	Y	
S32	4-Apr-06	Sevenson, AEGL	1779079	200	14	2800	Y	
S33	4-Apr-06	Sevenson, AEGL	1779050	200	14	2800	Y	
S34	4-Apr-06	Sevenson, AEGL	1779055	77	14	1078	Y	
S35	4-Apr-06	Sevenson, AEGL	1779049	60	14	840	Y	
S36	4-Apr-06	Sevenson, AEGL	1779056	23	14	322	Y	
S37	4-Apr-06	Sevenson, AEGL	1779049	27	14	378	Y	
S38	4-Apr-06	Sevenson, AEGL	1779049	31	14	434	Y	
S39	4-Apr-06	Sevenson, AEGL	1779055	49	14	686	Y	
S40	4-Apr-06	Sevenson, AEGL	1779046	64	14	896	Y	
S41	4-Apr-06	Sevenson, AEGL	1779046	64	14	896	Y	
S42	4-Apr-06	Sevenson, AEGL	1779046	66	14	924	Y	
S43	4-Apr-06	Sevenson, AEGL	1779042	67	14	938	Y	
S44	4-Apr-06	Sevenson, AEGL	1779042	67	14	938	Y	
S45	4-Apr-06	Sevenson, AEGL	1779042	67	14	938	Y	
S46	4-Apr-06	Sevenson, AEGL	1779072	70	14	980	Y	
S47	4-Apr-06	Sevenson, AEGL	1779072	70	14	980	Y	
S48	4-Apr-06	Sevenson, AEGL	1779072	70	14	980	Y	
S49	4-Apr-06	Sevenson, AEGL	1779048	190	14	2660	Y	
S50	4-Apr-06	Sevenson, AEGL	1779074	195	14	2730	Y	
S51	4-Apr-06	Sevenson, AEGL	1779061	185	14	2590	Y	
S52	4-Apr-06	Sevenson, AEGL	1779066	195	14	2730	Y	
S53	4-Apr-06	Sevenson, AEGL	1779069	195	14	2730	Y	
S54	4-Apr-06	Sevenson, AEGL	1779053	195	14	2730	Y	
S55	4-Apr-06	Sevenson, AEGL	1779057	195	14	2730	Y	roll number also used for S18
S56	4-Apr-06	Sevenson, AEGL	1779041	194	14	2716	Y	
S57	4-Apr-06	Sevenson, AEGL	1779039	194	14	2716	Y	
S58	4-Apr-06	Sevenson, AEGL	1779044	194	14	2716	Y	
S59	5-Apr-06	Sevenson, AEGL	1779003	195	14	2730	Y	
S60	5-Apr-06	Sevenson, AEGL	1779035	54	14	756	Y	
S61	5-Apr-06	Sevenson, AEGL	1779056	38	14	532	Y	
S62	5-Apr-06	Sevenson, AEGL	1779056	19	14	266	Y	
S63	5-Apr-06	Sevenson, AEGL	1779035	25	14	350	Y	
S64	5-Apr-06	Sevenson, AEGL	1779035	44	14	616	Y	
S65	5-Apr-06	Sevenson, AEGL	1779035	63	14	882	Y	
S66	5-Apr-06	Sevenson, AEGL	1779031	195	14	2730	Y	
S67	5-Apr-06	Sevenson, AEGL	1779080	190	14	2660	Y	
S68	5-Apr-06	Sevenson, AEGL	1779030	195	14	2730	Y	
S69	5-Apr-06	Sevenson, AEGL	1779051	190	14	2660	Y	

TABLE 6.1

SUMMARY OF GEOSYNTHETIC CLAY LINER INSTALLATION LOG (SECONDARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Contractor*	*Manufacturer's Roll Number*	*Installed Length (ft)* **	*Installed Width (ft)*	*Final Area (ft^2)*	*Installation Approved (Y/N)* ***	*Comments*
				Panel Dimensions				
S70	5-Apr-06	Sevenson, AEGL	1779052	190	14	2660	Y	
S71	5-Apr-06	Sevenson, AEGL	1779038	190	14	2660	Y	
S72	5-Apr-06	Sevenson, AEGL	1779037	190	14	2660	Y	
S73	5-Apr-06	Sevenson, AEGL	1779032	190	14	2660	Y	
S74	5-Apr-06	Sevenson, AEGL	1779008	190	14	2660	Y	
S75	5-Apr-06	Sevenson, AEGL	1779045	190	14	2660	Y	
S76	5-Apr-06	Sevenson, AEGL	1779026	190	14	2660	Y	
S77	5-Apr-06	Sevenson, AEGL	1779024	65	14	910	Y	
S78	5-Apr-06	Sevenson, AEGL	1779024	65	14	910	Y	
S79	5-Apr-06	Sevenson, AEGL	1779024	65	14	910	Y	
S80	5-Apr-06	Sevenson, AEGL	1779023	67	14	938	Y	
S81	5-Apr-06	Sevenson, AEGL	1779023	67	14	938	Y	
S82	5-Apr-06	Sevenson, AEGL	1779054	71	14	994	Y	
S83	5-Apr-06	Sevenson, AEGL	1779054	71	14	994	Y	
S84	5-Apr-06	Sevenson, AEGL	1779025	71	14	994	Y	roll #1779025 used for three individual panels totally more than ~200 feet
S85	5-Apr-06	Sevenson, AEGL	1779025	75	14	1050	Y	
S86	5-Apr-06	Sevenson, AEGL	1779025	75	14	1050	Y	
S87	5-Apr-06	Sevenson, AEGL	1779040	80	14	1120	Y	
S88	5-Apr-06	Sevenson, AEGL	1779040	80	14	1120	Y	
S89	5-Apr-06	Sevenson, AEGL	1779040	30	14	420	Y	
S90	5-Apr-06	Sevenson, AEGL	1779004	40	14	560	Y	roll #1779004 erroneously recorded two times, with both rolls used for three individual panels totally ~200 feet each
S91	5-Apr-06	Sevenson, AEGL	1779004	80	14	1120	Y	
S92	5-Apr-06	Sevenson, AEGL	1779004	75	14	1050	Y	
S93	5-Apr-06	Sevenson, AEGL	1779004	75	14	1050	Y	
S94	5-Apr-06	Sevenson, AEGL	1779004	74	14	1036	Y	
S95	5-Apr-06	Sevenson, AEGL	1779004	60	14	840	Y	
S96	5-Apr-06	Sevenson, AEGL	1779015	78	14	1092	Y	
S97	5-Apr-06	Sevenson, AEGL	1779015	54	14	756	Y	
S98	5-Apr-06	Sevenson, AEGL	1779015	57	14	798	Y	
S99	5-Apr-06	Sevenson, AEGL	1779055	39	14	546	Y	
S100	5-Apr-06	Sevenson, AEGL	1779055	33	14	462	Y	
S101	5-Apr-06	Sevenson, AEGL	1779045	22	14	308	Y	roll number may be in error

Notes:

* Indicates that Quality Assurance (QA) testing procedures were conducted on the roll of liner. A summary of QA test results are presented below:

Manufacturer Roll Number	*Minimum Ply Adhesion (lb/in)* (1)	*Average Ply Adhesion (lb/in)* (1)	*Transmissivity (m^2/s)* (2)	*Permeability (cm/s)* (3)	*Permittivity (sec-1)* (4)	*Apparent Opening Size (sieve size)* (5)
1779030	1.3	2.26				
1779035			1.20E-03	0.5	1.79	70
1779040	1.18	2.03				
1779050	1.29	2.18				
1779070	1.27	2.3	1.15E-03	0.5	1.79	70
1779080	1.22	2.15				

(1) Minimum ply adhesion result requires at least 1.0 lbs/sf for acceptance, tested at a frequency of 1 per 100,000 sf.
(2) Transmissivity results requires at least 9E-04 m^2/s for acceptance, tested at a frequency of 1 per 200,000 sf.
(3) Permeability results required to be at least 0.2 cm/s for acceptance, tested per manufacturer's standard QC testing frequency.
(4) Permittivity results required to be 1.0 s^{-1} for acceptance, tested per manufacturer's standard QC testing frequency.
(5) Apparent opening size accepted up to a maximum sieve size of 70, tested per manufacturer's standard QC testing frequency.

** Installed length represents field measurement of actual deployed length.

*** Approval refers to visual inspection of material and installation procedures.

TABLE 6.2

SUMMARY OF LLDPE GEOMEMBRANE INSTALLATION LOG (SECONDARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Contractor*	*Manufacturer's Roll Number*	*Installed Length (ft)* [2]	*Installed Width (ft)* [2]	*Initial Area (ft^2)*	*Panel Shape*	*Installation Approved (Y/N)* [3]	*Final Length (ft)*	*Final Width (ft)*	*Final Area (ft^2)*
S1	29-Mar-06	Sevenson/AEGL	349790	158	23	3634	Rectangle	Y	157	22.5	3532.5
S10	29-Mar-06	Sevenson/AEGL	350106	164	23	3772	Rectangle	Y	163	22.5	3667.5
S11	29-Mar-06	Sevenson/AEGL	349683	118	23	2714	Rectangle	Y	117	22.5	2632.5
S12	29-Mar-06	Sevenson/AEGL	349683	98/42	23	1610	Trapezoid	Y	97/41	22.5	1587
S13	29-Mar-06	Sevenson/AEGL	349683	42	23	483	Triangle	Y	41	22.5	461
S14	29-Mar-06	Sevenson/AEGL	349786	24	21	252	Triangle	Y	23	20.5	235
S15	29-Mar-06	Sevenson/AEGL	349786	45/24	23	793	Trapezoid	Y	44/23	22.5	753
S16	29-Mar-06	Sevenson/AEGL	349792	59/45	23	1196	Trapezoid	Y	58/44	22.5	1147
S17	29-Mar-06	Sevenson/AEGL	350106	77/59	23	1564	Trapezoid	Y	76/58	22.5	1507
S18	29-Mar-06	Sevenson/AEGL	349683	84	23	1932	Rectangle	Y	83	22.5	1867.5
S19	29-Mar-06	Sevenson/AEGL	349683	84	23	1932	Rectangle	Y	83	22.5	1867.5
S2	29-Mar-06	Sevenson/AEGL	349790	158	23	3634	Rectangle	Y	157	22.5	3532.5
S20	29-Mar-06	Sevenson/AEGL	349788	65	23	1495	Rectangle	Y	64	22.5	1440
S21	29-Mar-06	Sevenson/AEGL	349788	65	23	1495	Rectangle	Y	64	22.5	1440
S22	29-Mar-06	Sevenson/AEGL	349788	62	23	1426	Rectangle	Y	61	22.5	1372.5
S23	29-Mar-06	Sevenson/AEGL	349788	60	23	1380	Rectangle	Y	59	22.5	1327.5
S24	29-Mar-06	Sevenson/AEGL	349788	56/28	23	966	Trapezoid	Y	55	55/27	922
S25	29-Mar-06	Sevenson/AEGL	349788	35	23	402	Triangle	Y	34	22.5	382
S26	29-Mar-06	Sevenson/AEGL	349788	62/35	23	115	Trapezoid	Y	61/34	22.5	1068
S27	30-Mar-06	Sevenson/AEGL	349794	378	23	8694	Rectangle	Y	377	22.5	8482.5
S28	30-Mar-06	Sevenson/AEGL	349787	378	23	8694	Rectangle	Y	377	22.5	8482.5
S29	30-Mar-06	Sevenson/AEGL	349793	378	23	8694	Rectangle	Y	377	22.5	8482.5
S3	29-Mar-06	Sevenson/AEGL	350107	158	23	3634	Rectangle	Y	157	22.5	3532.5
S30	30-Mar-06	Sevenson/AEGL	350102	378	23	8694	Rectangle	Y	377	22.5	8482.5
S31	30-Mar-06	Sevenson/AEGL	350104	382	23	8786	Rectangle	Y	381	22.5	8572.5
S32	30-Mar-06	Sevenson/AEGL	349791	382	23	8786	Rectangle	Y	381	22.5	8572.5
S33	30-Mar-06	Sevenson/AEGL	349682	382	23	8786	Rectangle	Y	381	22.5	8572.5
S34	30-Mar-06	Sevenson/AEGL	349784	382	23	8786	Rectangle	Y	381	22.5	8572.5
S35	30-Mar-06	Sevenson/AEGL	349795	72/41	23	1299	Trapezoid	Y	71/40	22.5	1248
S36	30-Mar-06	Sevenson/AEGL	349795	41/36	23	885	Trapezoid	Y	40/35	22.5	843
S37	30-Mar-06	Sevenson/AEGL	349795	29	17	246	Triangle	Y	28	16.5	231
S38	30-Mar-06	Sevenson/AEGL	349795	58/29	23	1000	Trapezoid	Y	57/28	22.5	956
S39	30-Mar-06	Sevenson/AEGL	349795	72/58	23	1495	Trapezoid	Y	71/57	22.5	1440
S4	29-Mar-06	Sevenson/AEGL	350107	158	23	3634	Rectangle	Y	157	22.5	3532.5
S40	30-Mar-06	Sevenson/AEGL	349795	72	23	1656	Rectangle	Y	71	22.5	1597.5
S41	30-Mar-06	Sevenson/AEGL	350101	75	23	1725	Rectangle	Y	74	22.5	1665
S42	30-Mar-06	Sevenson/AEGL	350101	75	23	1725	Rectangle	Y	74	22.5	1665
S43	30-Mar-06	Sevenson/AEGL	350101	77	23	1771	Rectangle	Y	76	22.5	1710
S44	30-Mar-06	Sevenson/AEGL	350101	77	23	1771	Rectangle	Y	76	22.5	1710
S45	30-Mar-06	Sevenson/AEGL	350101	77	23	1771	Rectangle	Y	76	22.5	1710
S46	30-Mar-06	Sevenson/AEGL	350105	77	23	1771	Rectangle	Y	76	22.5	1710
S47	30-Mar-06	Sevenson/AEGL	350105	75	23	1725	Rectangle	Y	74	22.5	1665
S48	30-Mar-06	Sevenson/AEGL	350105	74	23	1702	Rectangle	Y	73	22.5	1642.5
S49	30-Mar-06	Sevenson/AEGL	350105	73	23	1679	Rectangle	Y	72	22.5	1620
S5	29-Mar-06	Sevenson/AEGL	349786	158	23	3634	Rectangle	Y	157	22.5	3532.5
S50	30-Mar-06	Sevenson/AEGL	350105	73/42	23	1322	Trapezoid	Y	72/41	22.5	1271
S51	30-Mar-06	Sevenson/AEGL	349785	42/14	23	644	Trapezoid	Y	41/13	22.5	607
S52	30-Mar-06	Sevenson/AEGL	349785	47/10	23	667	Trapezoid	Y	46/10	22.5	630
S53	30-Mar-06	Sevenson/AEGL	349785	73/47	23	1380	Trapezoid	Y	72/47	22.5	1327
S6	29-Mar-06	Sevenson/AEGL	349786	157	23	3611	Rectangle	Y	157	22.5	3532.5
S7	29-Mar-06	Sevenson/AEGL	349792	164	23	3772	Rectangle	Y	163	22.5	3667.5
S8	29-Mar-06	Sevenson/AEGL	349792	164	23	3772	Rectangle	Y	163	22.5	3667.5
S9	29-Mar-06	Sevenson/AEGL	350106	164	23	3772	Rectangle	Y	163	22.5	3667.5

Notes:

[1] Approval requires acceptance of quality assurance testing results, which are as follows:

Thickness	60 mil
Density	0.94 g/cc (maximum)
Carbon Black Content	2% to 3%
Tensile Strength at Break	90 ppi
Elongation at Break	100%
Tear Resistance	42 lb
Puncture Resistance	90 lb

[2] installed length represents field measurement of actual deployed length

[3] approval refers to visual inspection of material and installation procedures

PR Denotes Primary Repair area where a small amount of liner was used to fill in a triangular shaped area in one of the corners.

TABLE 6.3

SUMMARY OF LLDPE GEOMEMBRANE TEST SEAMS (SECONDARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

						Fusion		*Inside Track Peel (ppi)*				*Inside Track Shear (ppi)*		*Outside Track Shear (ppi)*		
Date	*Time*	*Ambient Temperature (F)*	*Sample ID*	*Seamer ID*	*Machine ID*	*Speed*	*Temperature (F)*	*1*	*2*	*3*	*4*	*1*	*2*	*1*	*2*	*Pass/Fail* [1]
29-Mar-06	13:00	45	1	AP	3	5	800	128	120	114	121	166	156	165	153	P
29-Mar-06	14:10	55	2	KS	5	5	800	102	106	122	114	161	160	167	164	P
30-Mar-06	12:50	60	3	KS	5	7	800	119	124	123	122	160	163	157	159	P
30-Mar-06	13:00	60	4	AP	3	5	800	113	116	120	120	158	157	163	156	P
30-Mar-06	17:25	60	5	KS	5	6	800	124	119	124	119	153	157	158	155	P
30-Mar-06	17:30	60	6	AP	3	5	800	117	119	121	123	147	156	153	151	P
30-Mar-06	19:00	50	7	AP	4	5	800	117	121	119	118	155	151	150	154	P
31-Mar-06	13:30	55	8	AP	X292	350	500	119	115	118	117	146	147	144	151	P
31-Mar-06	14:10	55	9	IT	X294	400	450	114	121	123	127	151	143	140	147	P
31-Mar-06	15:00	60	10	AH	10	250	230	116	119	121	117	144	143	145	140	P
1-Apr-06	8:00	55	11	AP	10	250	230	113	116	114	113	151	147	153	146	P
1-Apr-06	8:00	55	12	AH	X292	500	375	119	113	115	114	145	148	150	147	P
1-Apr-06	7:40	55	13	IT	X294	450	800	121	123	119	119	144	146	151	144	P
1-Apr-06	13:00	58	14	IT	X294	450	400	117	121	119	123	147	150	148	153	P
1-Apr-06	13:10	58	15	AP	10	250	230	123	119	117	121	155	147	151	144	P

NR Not recorded.

[1] Acceptance of test seams requires shear test results of 120 ppi (2,000 psi) and peel test results of 90 ppi (1,500 psi).

TABLE 6.4

SUMMARY OF LLDPE GEOMEMBRANE NON-DESTRUCTIVE SEAM TEST RESULTS (SECONDARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Seam Number	*Weld Date*	*Time Welded*	*Operator Name/ID*	*Seam Length (ft)*	*Machine No.*	*Machine Speed*	*Machine Temperature (F)*	*Ambient Temperature (F)*	*Test Date*	*Test Type*	*Air Test Time In* [1]	*Air Test Time Out* [1]	*Test Results (Pass/Fail)* [2]	*Destructive Test Sample ID*
S1/S2	29-Mar-06	13:30	AP	158	3	5	800	45	30-Mar-06	Air Test	7:48	7:53	P	DS--10
S2/S3	29-Mar-06	14:00	AP	158	3	5	800	45	30-Mar-06	Air Test	7:49	7:54	P	DS-9
S3/S4	29-Mar-06	NR	AP	158	3	5	800	45	30-Mar-06	Air Test	7:50	7:55	P	DS-8
S4/S5	29-Mar-06	14:20	AP	158	3	5	800	45	30-Mar-06	Air Test	7:54	7:59	P	DS-6
S5/S6	29-Mar-06	NR	AP	158	3	5	800	45	30-Mar-06	Air Test	7:56	8:01	P	DS-5
S6/S7	29-Mar-06	14:30	KS	158	5	5	800	45	30-Mar-06	Air Test	8:28	8:33	P	DS-4
S7/S8	29-Mar-06	14:55	KS	164	5	5	800	45	30-Mar-06	Air Test	8:15	8:20	P	DS-3
S8/S9	29-Mar-06	15:25	KS	164	5	5	800	45	30-Mar-06	Air Test	8:55	9:00	P	DS-2
S9/S10	29-Mar-06	16:00	KS	164	5	5	800	45	30-Mar-06	Air Test	9:20	9:25	P	DS-1
S10/S11	29-Mar-06	16:27	KS	118	5	5	800	45	30-Mar-06	Air Test	15:13	15:18	P	DS-48
S11/S12	29-Mar-06	NR	DP	98	3	5	800	45	30-Mar-06	Air Test	15:32	15:37	P	DS-47
S12/S13	29-Mar-06	NR	DP	42	3	5	800	45	30-Mar-06	Air Test	15:41	15:46	P	DS-46
S14/S15	29-Mar-06	NR	DP	24	3	5	800	45	30-Mar-06	Air Test	15:48	15:51	P	-
S15/S16	29-Mar-06	16:10	AP	45	3	5	800	45	30-Mar-06	Air Test	15:35	15:40	P	DS-45
S16/S17	29-Mar-06	16:05	DP	59	3	5	800	45	30-Mar-06	Air Test	15:25	15:30	P	DS-44
S17/S18	29-Mar-06	15:50	AP	77	3	5	800	45	30-Mar-06	Air Test	15:05	15:10	P	DS-41
S18/S19	29-Mar-06	15:33	AP	84	3	5	800	40	31-Mar-06	Air Test	14:51	14:56	P	DS-42
S20/S21	29-Mar-06	17:00	AP	65	3	5	800	40	31-Mar-06	Air Test	14:01	14:06	P	DS-16
S21/S22	29-Mar-06	17:10	AP	62	3	5	800	40	31-Mar-06	Air Test	13:56	14:01	P	DS-15
S22/S23	29-Mar-06	17:25	AP	60	3	5	800	40	31-Mar-06	Air Test	13:45	13:50	P	DS-14
S23/S24	29-Mar-06	17:30	AP	56	3	5	800	40	31-Mar-06	Air Test	13:43	13:48	P	DS-13
S13/S14	29-Mar-06	NR	KS	25	5	5	800	40	31-Mar-06	Air Test	15:45	15:50	P	-
S13/S15	29-Mar-06	NR	KS	7	5	5	800	40	31-Mar-06	Air Test	15:40	15:45	P	-
S12/S15	29-Mar-06	NR	KS	23	5	5	800	40	31-Mar-06	Air Test	15:34	15:39	P	-
S12/S16	29-Mar-06	NR	KS	24	5	5	800	40	31-Mar-06	Air Test	15:26	15:31	P	-
S17/S11	29-Mar-06	NR	KS	28	5	5	800	40	31-Mar-06	Air Test	15:21	15:26	P	-
S18/S11	29-Mar-06	NR	KS	8	5	5	800	40	31-Mar-06	Air Test	Not Recorded			-
S18/S10	29-Mar-06	NR	KS	19	5	5	800	40	31-Mar-06	Extruded	14:52	14:57	P	-
S19/S10	29-Mar-06	17:07	KS	22	5	5	800	40	31-Mar-06	Air Test	14:47	14:52	P	-
S25/S26	29-Mar-06	17:30	KS	34	5	5	800	40	31-Mar-06	Air Test	13:29	13:34	P	-
S24/R1	29-Mar-06	17:40	KS	27	5	5	800	40	31-Mar-06	Air Test	13:31	13:36	P	-
S1/S26	29-Mar-06	NR	KS	62	5	5	800	40	31-Mar-06	Air Test	Not Recorded			DS-11
S20/S1	29-Mar-06	NR	KS	22	5	5	800	40	31-Mar-06	Air Test	14:02	14:07	P	-
S21/S1	29-Mar-06	NR	KS	22	5	5	800	40	31-Mar-06	Air Test	13:57	14:02	P	-
S22/S1	29-Mar-06	NR	KS	22	5	5	800	40	31-Mar-06	Air Test	13:55	14:00	P	-
S23/S1	29-Mar-06	NR	KS	22	5	5	800	40	31-Mar-06	Air Test	13:44	13:49	P	-
S24/S26	29-Mar-06	17:40	AP	30	3	5	800	40	31-Mar-06	Air Test	13:32	13:37	P	-
S25/R1	29-Mar-06	17:45	AP	28	3	5	800	40	31-Mar-06	Air Test	13:30	13:35	P	DS-12
S19/S27	30-Mar-06	13:50	KS	86	5	7	800	60	31-Mar-06	Air Test	14:50	14:55	P	DS-43
S10/S27	30-Mar-06	14:00	KS	22	5	7	800	60	31-Mar-06	Cap	Not Recorded			-
S9/S27	30-Mar-06	14:05	KS	22	5	7	800	60	31-Mar-06	Air Test	14:33	14:38	P	-

TABLE 6.4

SUMMARY OF LLDPE GEOMEMBRANE NON-DESTRUCTIVE SEAM TEST RESULTS (SECONDARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Seam Number	*Weld Date*	*Time Welded*	*Operator Name/ID*	*Seam Length (ft)*	*Machine No.*	*Machine Speed*	*Machine Temperature (F)*	*Ambient Temperature (F)*	*Test Date*	*Test Type*	*Air Test Time In* [1]	*Air Test Time Out* [1]	*Test Results (Pass/Fail)* [2]	*Destructive Test Sample ID*
S8/S27	30-Mar-06	14:10	KS	22	5	7	800	60	31-Mar-06	Air Test	14:24	14:29	P	-
S7/S27	30-Mar-06	14:15	KS	22	5	7	800	60	31-Mar-06	Air Test	14:23	14:28	P	-
S6/S27	30-Mar-06	NR	-	CAP	-	-	-	-	31-Mar-06	Cap	Not Recorded			-
S5/S27	30-Mar-06	13:45	AP	22	3	5	800	60	31-Mar-06	Air Test	14:20	14:25	P	-
S4/S27	30-Mar-06	13:50	AP	22	3	5	800	60	31-Mar-06	Air Test	14:16	14:21	P	-
S3/S27	30-Mar-06	13:55	AP	22	3	5	800	60	31-Mar-06	Air Test	14:11	14:16	P	-
S2/S27	30-Mar-06	14:00	AP	22	3	5	800	60	31-Mar-06	Air Test	14:10	14:15	P	-
S1/S27	30-Mar-06	14:05	AP	22	3	5	800	60	31-Mar-06	Air Test	14:09	14:14	P	-
S20/S27	30-Mar-06	14:10	AP	66	3	5	800	60	31-Mar-06	Air Test	14:08	14:13	P	DS-17
S27/S28	30-Mar-06	14:20	AP	378	3	5	800	60	31-Mar-06	Air Test	16:34	16:39	P	DS-18
S28/S29	30-Mar-06	14:18	KS	378	5	7	800	60	31-Mar-06	Air Test	16:00	16:05	P	DS-19
S29/S30	30-Mar-06	15:00	AP	378	3	5	800	60	31-Mar-06	Air Test	16:08	16:13	P	DS-20
S30/S31	30-Mar-06	15:05	KS	382	5	7	800	60	31-Mar-06	Air Test	16:15	16:20	P	DS-21
S31/S32	30-Mar-06	18:00	AP	382	3	5	800	55	31-Mar-06	Air Test	16:20	16:25	P	DS-22
S32/S33	30-Mar-06	18:15	KS	382	5	7	800	55	31-Mar-06	Air Test	16:25	16:30	P	DS-7
S33/S34	30-Mar-06	NR	AP	382	4	5	800	55	31-Mar-06	Air Test	16:27	16:32	P	DS-23
S34/S35	30-Mar-06	19:12	KS	72	5	6	800	55	31-Mar-06	Air Test	16:40	16:45	P	DS-24
S35/S36	30-Mar-06	19:43	KS	41	5	6	800	55	31-Mar-06	Air Test	17:11	17:16	P	DS-25
S37/S38	30-Mar-06	19:35	KS	29	5	6	800	55	31-Mar-06	Air Test	20:16	20:21	P	-
S38/S39	30-Mar-06	19:30	KS	56	5	6	800	55	31-Mar-06	Air Test	17:07	17:12	P	DS-26
S39/S40	30-Mar-06	20:00	AP	72	4	5	800	50	31-Mar-06	Air Test	16:44	16:49	P	DS-27
S40/S41	30-Mar-06	20:00	AP	75	4	5	800	50	31-Mar-06	Air Test	20:00	20:11	P	DS-28
S41/S42	30-Mar-06	20:05	AP	75	4	5	800	50	31-Mar-06	Air Test	20:07	20:12	P	DS-29
S42/S43	30-Mar-06	NR	AP	77	4	5	800	50	1-Apr-06	Air Test	10:33	10:38	P	DS-30
S43/S44	30-Mar-06	20:00	KS	77	5	5	800	50	1-Apr-06	Air Test	Not Recorded		P	DS-31
S44/S45	30-Mar-06	20:15	KS	77	5	5	800	50	1-Apr-06	Air Test	Not Recorded		P	DS-32
S45/S46	30-Mar-06	20:45	KS	77	5	5	800	50	1-Apr-06	Air Test	Not Recorded		P	DS-33
S46/S47	30-Mar-06	20:57	KS	75	5	5	800	50	1-Apr-06	Air Test	Not Recorded		P	DS-34
S47/S48	30-Mar-06	21:10	KS	74	5	5	800	50	1-Apr-06	Air Test	8:34	8:39	P	DS-35
S48/S49	30-Mar-06	21:35	AP	73	4	5	800	50	1-Apr-06	Air Test	8:29	8:34	P	DS-36
S49/S50	30-Mar-06	21:21	AP	73	4	5	800	50	1-Apr-06	Air Test	8:52	8:57	P	DS-37
S50/S51	30-Mar-06	21:17	AP	42	4	5	800	50	1-Apr-06	Air Test	9:06	9:11	P	-
S51/R3	30-Mar-06	21:50	AP	14	4	5	800	50	1-Apr-06	Air Test	10:02	10:07	P	-
S52/R3	30-Mar-06	21:38	AP	11	4	5	800	50	1-Apr-06	Air Test	10:01	10:05	P	-
S52/S53	30-Mar-06	21:10	AP	47	4	5	800	50	1-Apr-06	Air Test	9:28	9:33	P	DS-39
S53/S34	30-Mar-06	20:57	AP	73	4	5	800	50	1-Apr-06	Air Test	8:54	8:59	P	DS-40
S36/S37	30-Mar-06	21:25	KS	25	5	5	800	50	1-Apr-06	Air Test	17:25	5:30	P	-
S36/S38	30-Mar-06	21:37	KS	11	5	5	800	50	1-Apr-06	Extruded	Not Recorded		P	-
S35/S38	30-Mar-06	21:38	KS	17	5	5	800	50	1-Apr-06	Air Test	17:08	5:13	P	-
S35/S39	30-Mar-06	21:40	KS	21	5	5	800	50		Extruded	Not Recorded			-
S34/S39	30-Mar-06	21:42	KS	5	5	5	800	50		Extruded	Not Recorded			-

TABLE 6.4

SUMMARY OF LLDPE GEOMEMBRANE NON-DESTRUCTIVE SEAM TEST RESULTS (SECONDARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Seam Number	*Weld Date*	*Time Welded*	*Operator Name/ID*	*Seam Length (ft)*	*Machine No.*	*Machine Speed*	*Machine Temperature (F)*	*Ambient Temperature (F)*	*Test Date*	*Test Type*	*Air Test Time In* [1]	*Air Test Time Out* [1]	*Test Results (Pass/Fail)* [2]	*Destructive Test Sample ID*
S34/S40	30-Mar-06	21:43	KS	22	5	5	800	50	31-Mar-06	Air Test	17:05	17:10	P	-
S34/S41	30-Mar-06	21:45	KS	22	5	5	800	50	1-Apr-06	Air Test	8:05	8:10	P	-
S34/S42	30-Mar-06	21:48	KS	22	5	5	800	50	1-Apr-06	Air Test	10:32	10:37	P	-
S34/S43	30-Mar-06	21:51	KS	22	5	5	800	50		Not Recorded				-
S34/S44	30-Mar-06	21:54	KS	22	5	5	800	50		Not Recorded				-
S34/S45	30-Mar-06	21:57	KS	22	5	5	800	50		Not Recorded				-
S34/S46	30-Mar-06	22:00	KS	22	5	5	800	50		Not Recorded				-
S34/S47	30-Mar-06	22:02	KS	22	5	5	800	50		Not Recorded				-
S34/S48	30-Mar-06	22:05	KS	22	5	5	800	50	1-Apr-06	Air Test	8:27	8:32	P	-
S34/S49	30-Mar-06	22:07	KS	22	5	5	800	50	1-Apr-06	Air Test	8:51	8:56	P	-
S51/S52	30-Mar-06	NR	AP	27	4	5	800	50	1-Apr-06	Cap	Not Recorded			DS-38
S50/S52	30-Mar-06	NR	AP	3	4	5	800	50	1-Apr-06	Cap	Not Recorded			
S50/S53	30-Mar-06	NR	AP	33	4	5	800	50	1-Apr-06	Air Test	8:53	8:58	P	-

Notes:

"-" No destructive seam test was completed due to short length of seam. Destructive seam test for this seam was completed as part of the destructive seam test for a longer seam.

* A non-destructive seam test was not completed due to short length of seam. non-destructive seam test for this seam was completed as part of the non-destructive seam test for A longer seam.

[1] Air pressure test conducted at 30 PSI.

[2] Air pressure test requires an air pressure hold time of 5 minutes, with an allowable air pressure loss of 2 PSI.

NR Not recorded.

TABLE 6.5

SUMMARY OF LLDPE GEOMEMBRANE DESTRUCTIVE SEAM TEST RESULTS (SECONDARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Destructive Test Sample ID	*Seam Number*	*Test Date*	*Weld Type*	*Peel Coupon 1A* [1]	*Peel Coupon 2A* [1]	*Peel Coupon 3A* [1]	*Peel Coupon 4A* [1]	*Peel Coupon 5A* [1]	*Peel Coupon 1B* [1]	*Peel Coupon 2B* [1]	*Peel Coupon 3B* [1]	*Peel Coupon 4B* [1]	*Peel Coupon 5B* [1]	*Coupon 1 Shear* [1]	*Coupon 2 Shear* [1]	*Coupon 3 Shear* [1]	*Coupon 4 Shear* [1]	*Coupon 5 Shear* [1]	*Mean Peel A (ppi)* [1]	*Mean Peel B (ppi)* [1]	*Mean Shear (ppi)* [1]	*Destructive Test Pass/Fail* [2]
DS-1	S9/S10	31-Mar-06	Heat Fusion	128	139	128	136	130	117	134	118	121	132	156	154	161	154	154	132	124	156	Pass
DS-2	S8/S9	31-Mar-06	Heat Fusion	130	131	137	131	141	132	137	144	135	142	153	150	149	153	154	134	138	152	Pass
DS-3	S7/S8	31-Mar-06	Heat Fusion	138	132	131	136	133	138	131	132	133	135	153	151	152	153	150	134	134	152	Pass
DS-4	S6/S7	31-Mar-06	Heat Fusion	133	133	138	135	144	128	124	133	130	134	143	142	144	150	143	137	130	144	Pass
DS-5	S5/S6	31-Mar-06	Heat Fusion	129	129	132	128	132	121	121	124	121	123	146	144	148	146	145	130	122	146	Pass
DS-6	S4/S5	31-Mar-06	Heat Fusion	133	133	136	142	134	121	123	132	134	121	147	146	145	146	149	136	126	147	Pass
DS-7	S32/S33	31-Mar-06	Heat Fusion	144	140	143	144	145	144	134	137	136	136	164	164	166	160	162	143	137	163	Pass
DS-8	S3/S4	31-Mar-06	Heat Fusion	129	132	135	132	130	123	122	127	123	120	147	144	145	152	145	132	123	147	Pass
DS-9	S2/S3	31-Mar-06	Heat Fusion	138	132	133	137	133	141	135	141	136	132	147	147	150	160	152	135	137	151	Pass
DS-10	S1/S2	31-Mar-06	Heat Fusion	147	142	137	146	143	146	149	136	129	138	149	147	152	158	152	143	140	152	Pass
DS-11	S26/S1	31-Mar-06	Heat Fusion	132	132	134	131	131	140	124	131	138	134	146	151	148	158	145	132	133	150	Pass
DS-12	R1/S25	1-Apr-06	Heat Fusion	118	115	119	121	116	125	121	121	126	124	126	126	134	129	126	118	123	128	Pass
DS-13	S23/S24	1-Apr-06	Heat Fusion	135	134	135	147	135	132	135	133	140	133	161	159	163	162	168	137	135	163	Pass
DS-14	S22/S23	1-Apr-06	Heat Fusion	139	131	132	134	130	136	129	126	130	128	166	156	157	156	155	133	130	158	Pass
DS-15	S21/S22	1-Apr-06	Heat Fusion	134	133	142	135	136	130	128	132	126	128	168	153	153	156	156	136	129	157	Pass
DS-16	S20/S21	1-Apr-06	Heat Fusion	137	140	139	141	154	134	134	132	128	138	154	154	155	165	158	142	133	157	Pass
DS-17	S27/S20	1-Apr-06	Heat Fusion	143	138	146	144	142	136	130	138	150	143	154	159	158	164	152	143	139	157	Pass
DS-18	S28/S27	1-Apr-06	Heat Fusion	148	150	153	151	150	139	142	146	144	146	149	150	149	149	154	150	143	150	Pass
DS-19	S29/S28	3-Apr-06	Heat Fusion	149	147	148	160	159	137	139	141	146	139	156	156	157	156	158	153	140	157	Pass
DS-20	S29/S30	3-Apr-06	Heat Fusion	144	138	134	141	138	126	127	129	131	129	161	157	160	159	164	139	128	160	Pass
DS-21	S30/S31	3-Apr-06	Heat Fusion	129	130	132	143	149	139	138	137	142	142	150	151	151	151	160	137	140	153	Pass
DS-22	S31/S32	3-Apr-06	Heat Fusion	136	133	140	134	130	133	130	138	132	127	157	156	156	159	163	135	132	158	Pass
DS-23	S33/S34	3-Apr-06	Heat Fusion	134	131	132	131	130	145	140	147	145	146	151	150	149	147	156	132	145	151	Pass
DS-24	S34/S35	3-Apr-06	Heat Fusion	139	126	141	124	151	131	134	128	138	118	154	157	155	153	160	136	130	156	Pass
DS-25	S35/S36	3-Apr-06	Heat Fusion	132	140	136	134	134	121	130	127	129	129	158	153	161	155	156	135	127	157	Pass
DS-26	S38/S39	3-Apr-06	Heat Fusion	131	127	131	135	140	139	133	137	135	148	155	155	161	152	155	133	138	156	Pass
DS-27	S39/S40	3-Apr-06	Heat Fusion	134	132	129	139	132	142	141	139	138	131	162	153	154	153	155	133	138	155	Pass
DS-28	S41/S40	3-Apr-06	Heat Fusion	143	164	145	145	147	153	159	152	155	154	158	150	154	151	153	149	155	153	Pass
DS-29	S41/S42	3-Apr-06	Heat Fusion	133	143	139	135	135	139	144	142	143	144	156	162	160	152	153	137	142	157	Pass
DS-30	S42/S43	3-Apr-06	Heat Fusion	129	125	130	131	133	133	135	136	135	131	153	155	155	153	155	130	134	154	Pass
DS-31	S43/S44	3-Apr-06	Heat Fusion	140	139	138	135	141	133	130	129	117	118	153	152	155	155	158	139	125	155	Pass
DS-32	S44/S45	3-Apr-06	Heat Fusion	124	149	125	148	142	117	122	116	119	114	150	149	149	147	148	138	118	149	Pass
DS-33	S45/S46	3-Apr-06	Heat Fusion	144	136	135	134	134	125	125	126	129	128	152	150	152	151	151	137	127	151	Pass
DS-34	S46/S47	3-Apr-06	Heat Fusion	131	134	134	139	135	127	138	126	132	136	153	154	148	151	149	135	132	151	Pass
DS-35	S47/S48	3-Apr-06	Heat Fusion	127	147	149	153	151	134	133	133	135	140	159	162	154	155	156	145	135	157	Pass
DS-36	S48/S49	3-Apr-06	Heat Fusion	148	142	140	142	135	142	139	131	146	141	157	166	154	154	157	141	140	158	Pass
DS-37	S49/S50	3-Apr-06	Heat Fusion	142	131	132	136	132	142	135	133	133	133	161	150	156	155	158	135	135	156	Pass
DS-38	S52/S51	3-Apr-06	Heat Fusion	122	128	123	122	124	118	126	122	121	119	124	122	125	124	124	124	121	124	Pass
DS-39	S53/S52	3-Apr-06	Heat Fusion	133	136	134	139	133	142	146	127	145	139	150	149	153	154	156	135	140	152	Pass
DS-40	S53/S34	3-Apr-06	Heat Fusion	139	134	134	134	142	142	142	143	140	136	165	168	167	166	169	137	141	167	Pass
DS-41	S17/S18	3-Apr-06	Heat Fusion	132	130	131	136	140	126	125	123	140	135	149	156	155	157	159	134	130	155	Pass
DS-42	S18/S19	3-Apr-06	Heat Fusion	138	135	137	138	138	132	142	145	146	137	149	155	153	146	157	137	140	152	Pass
DS-43	S19/S27	3-Apr-06	Heat Fusion	129	148	142	129	141	115	112	125	136	136	138	138	143	146	146	138	125	142	Pass
DS-44	S16/S17	3-Apr-06	Heat Fusion	133	131	130	140	131	128	128	126	135	126	152	156	156	159	166	133	129	158	Pass
DS-45	S15/S16	3-Apr-06	Heat Fusion	139	127	135	142	134	128	144	121	126	132	159	157	158	153	160	135	130	157	Pass
DS-46	S12/S13	3-Apr-06	Heat Fusion	140	132	134	136	134	132	124	126	126	125	147	143	151	146	146	135	127	147	Pass
DS-47	S11/S12	3-Apr-06	Heat Fusion	144	127	139	128	125	121	120	131	122	122	144	154	154	152	157	133	123	152	Pass
DS-48	S10/S11	3-Apr-06	Heat Fusion	135	131	130	135	138	130	131	130	127	147	152	153	159	152	153	134	133	154	Pass

Note:

[1] Destructive seam quality assurance test results obtained from TRI/Environmental, Inc. laboratory testing final reports.

[2] Acceptance of destructive seam shear test requires 120 ppi (2,000 psi) and acceptance of destructive seam peel test requires 90 ppi (1,500 psi).

TABLE 6.6

SUMMARY OF LLDPE GEOMEMBRANE SEAM REPAIRS (SECONDARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Repair Number	*Date*	*Damage Code* [1]	*Seam ID*	*Panel*	*Location (Station)* [2]	*Repair Type* [3]	*Repair Test* [4]	*Repair Size*		*P/F*
								Length (in)	*Width (in)*	
R-1	1-Apr-06	AO	24/25		Cross Seam	C	VT	18	16	Pass
R-2	1-Apr-06	AO	6/27		Cross Seam	C	VT	22	4	Pass
R-3	1-Apr-06	AO					VT			Pass
R-4	1-Apr-06		1/2		S EOS	P	VT	2	2	Pass
R-5	1-Apr-06	DS-10	1/2		43 ft N from EOS	P	VT	6	2	Pass
R-6	1-Apr-06	DS-9	2/3		22 ft N from EOS	P	VT	6	2	Pass
R-7	1-Apr-06	DS-8	3/4		82 ft N from EOS	P	VT	6	2	Pass
R-8	1-Apr-06	DS-6	4/5		129 ft N from EOS	P	VT	6	2	Pass
R-9	1-Apr-06	DS-5	5/6		28 ft N from EOS	P	VT	6	2	Pass
R-10	1-Apr-06	DS-4	6/7		58 ft N from EOS	P	VT	6	2	Pass
R-11	1-Apr-06	DS-3	7/8		110 ft N from EOS	P	VT	6	2	Pass
R-12	1-Apr-06	BO	7/8		12 ft S from EOS	P	VT	1.5	1.5	Pass
R-13	1-Apr-06	DS-2	8/9		56 ft N from EOS	P	VT	6	2	Pass
R-14	1-Apr-06	AT	8/9		82 ft N from EOS	P	VT	1.5	1.5	Pass
R-15	1-Apr-06	AT	8/9		100 ft N from EOS	P	VT	1.5	1.5	Pass
R-16	1-Apr-06	AT	8/9		113 ft N from EOS	P	VT	1.5	1.5	Pass
R-17	1-Apr-06	AT	8/9		120 ft N from EOS	P	VT	1.5	1.5	Pass
R-18	1-Apr-06	AT	8/9		150 ft N from EOS	P	VT	1.5	1.5	Pass
R-19	1-Apr-06	DS-10	9/10		33 ft N from EOS	P	VT	6	2	Pass
R-20	1-Apr-06	T	13/14/15		Intersection	P	VT	2	2	Pass
R-21	1-Apr-06	T	12/13/15		Intersection	P	VT	2	2	Pass
R-22	1-Apr-06	T	12/15/6		Intersection	P	VT	2	2	Pass
R-23	1-Apr-06	T	11/12/16		Intersection	P	VT	1.5	1.5	Pass
R-24	1-Apr-06	T	11/16/17		Intersection	P	VT	2	2	Pass
R-25	1-Apr-06	T	11/17/18		Intersection	P	VT	3	2	Pass
R-26	1-Apr-06	T	10/11/18		Intersection	P	VT	2	2	Pass
R-27	1-Apr-06	T	10/18/19		Intersection	P	VT	2	2	Pass
R-28	1-Apr-06	AO	10/27		Cross Seam	C	VT	22	2	Pass
R-29	1-Apr-06	T	27/8/9		Intersection	P	VT	3	3	Pass
R-30	1-Apr-06	T	27/8/7		Intersection	P	VT	3	3	Pass
R-31	1-Apr-06	T	27/4/5		Intersection	P	VT	2	2	Pass
R-32	1-Apr-06	T	27/4/3		Intersection	P	VT	2	2	Pass
R-33	1-Apr-06	T	27/3/2		Intersection	P	VT	2	2	Pass
R-34	1-Apr-06	T	27/2/1		Intersection	P	VT	2	2	Pass
R-35	1-Apr-06	T	27/20/1		Intersection	P	VT	2	2	Pass
R-36	1-Apr-06	T	1/20/21		Intersection	P	VT	2	2	Pass
R-37	1-Apr-06	T	1/21/22		Intersection	P	VT	2	2	Pass
R-38	1-Apr-06	T	1/22/23		Intersection	P	VT	2	2	Pass
R-39	1-Apr-06	T	1/23/24		Intersection	P	VT	1.5	1.5	Pass
R-40	1-Apr-06	T	1/24/26		Intersection	P	VT	1.5	1.5	Pass
R-41	1-Apr-06	DS-11	1/26		14 ft N from EOS	P	VT	6	2	Pass
R-42	1-Apr-06	DS-12	R-1/25		15 ft W from EOS	P	VT	6	2	Pass
R-43	1-Apr-06	T	R-1/24/25/26		Intersection	P	VT	4	3	Pass
R-44	1-Apr-06	DS-13	23/24		17 ft E from EOS	P	VT	6	2	Pass
R-45	1-Apr-06	DS-14	22/23		31 ft E from EOS	P	VT	6	2	Pass
R-46	1-Apr-06	DS-15	21/22		16 ft W from EOS	P	VT	6	2	Pass
R-47	1-Apr-06	DS-16	20/21		9 ft W from EOS	P	VT	6	2	Pass
R-48	1-Apr-06	DS-17	27/20		46 ft W from eOS	P	VT	6	2	Pass
R-49	1-Apr-06	DS-18	27/28		73 ft W from EOS	P	VT	6	2	Pass
R-50	1-Apr-06	AT	27/28		W EOS	P	VT	2	2	Pass
R-51	1-Apr-06	AT	28/29		W EOS	P	VT	2	2	Pass
R-52	1-Apr-06	DS-19	28/29		190 ft E from EOS	P	VT	6	2	Pass
R-53	1-Apr-06	AT	28/29		E EOS	P	VT	2	2	Pass
R-54	1-Apr-06	AO	29/30	27	E EOS	C	VT	22	4	Pass
R-55	1-Apr-06	DS-20	29/30		273 ft W from EOS	P	VT	6	2	Pass
R-56	1-Apr-06	AT	29/30		W EOS	P	VT	6	2	Pass
R-57	1-Apr-06	AT	30/31		W EOS	P	VT	6	2	Pass
R-58	1-Apr-06	DS-21	30/31		13 ft E from EOS	P	VT	6	2	Pass
R-59	1-Apr-06	AT	31/32		E EOS	P	VT	6	2	Pass
R-60	1-Apr-06	DS-22	31/32		325 ft W from EOS	P	VT	6	2	Pass
R-61	1-Apr-06	A	31/32		W EOS	P	VT	6	2	Pass
R-62	1-Apr-06	A	32/33		W EOS	P	VT	6	2	Pass
R-63	1-Apr-06	DS-7	32/33		170 ft W from EOS	P	VT	6	2	Pass
R-64	1-Apr-06	DS-23	33/34		105 ft W from EOS	P	VT	6	2	Pass
R-65	1-Apr-06	AT	34/35		4 ft W from EOS	P	VT	2	2	Pass
R-66	1-Apr-06	DS-24	34/35		20 ft W from EOS	P	VT	6	2	Pass
R-67	1-Apr-06	T	34/35/39		Intersection	P	VT	2	2	Pass
R-68	1-Apr-06	T	34/39/40		Intersection	P	VT	2	2	Pass
R-69	1-Apr-06	T	34/40/41		Intersection	P	VT	2	2	Pass
R-70	1-Apr-06	T	34/41/42		Intersection	P	VT	2	2	Pass
R-71	1-Apr-06	T	34/42/43		Intersection	P	VT	2	2	Pass
R-72	1-Apr-06	T	34/43/44		Intersection	P	VT	2	2	Pass
R-73	1-Apr-06	T	34/44/45		Intersection	P	VT	2	2	Pass
R-74	1-Apr-06	T	34/45/46		Intersection	P	VT	2	2	Pass
R-75	1-Apr-06	T	34/46/47		Intersection	P	VT	2	2	Pass
R-76	1-Apr-06	T	34/47/48		Intersection	P	VT	2	2	Pass
R-77	1-Apr-06	T	34/48/49		Intersection	P	VT	2	2	Pass
R-78	1-Apr-06	T	34/49/50/53		Intersection	P	VT	3	3	Pass
R-79	1-Apr-06	AT	35/36		3 ft W EOS	P	VT	2	2	Pass
R-80	1-Apr-06	AT	37/36		N EOS	P	VT	2	2	Pass
R-81	1-Apr-06	T	36/37/38		Intersection	P	VT	2	2	Pass
R-82	1-Apr-06	T	35/36/38		Intersection	P	VT	2	2	Pass
R-83	1-Apr-06	DS-25	35/36		12 ft E from EOS	P	VT	6	2	Pass
R-84	1-Apr-06	T	35/38/39		Intersection	P	VT	2	2	Pass
R-85	1-Apr-06	DS-26	38/39		17 ft S from EOS	P	VT	6	2	Pass
R-86	1-Apr-06	DS-27	39/40		9 ft N from EOS	P	VT	6	2	Pass
R-87	1-Apr-06	DS-28	40/41		24 ft N from EOS	P	VT	6	2	Pass
R-88	1-Apr-06	AT	40/41		3 ft S from EOS	P	VT	2	2	Pass

TABLE 6.6

SUMMARY OF LLDPE GEOMEMBRANE SEAM REPAIRS (SECONDARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Repair Number	*Date*	*Damage Code* [1]	*Seam ID*	*Panel*	*Location (Station)* [2]	*Repair Type* [3]	*Repair Test* [4]	*Repair Size*		*P/F*
								Length (in)	*Width (in)*	
R-89	1-Apr-06	AT	41/42		3 ft S from EOS	P	VT	2	2	Pass
R-90	1-Apr-06	DS-29	41/42		13 ft S from EOS	P	VT	6	2	Pass
R-91	1-Apr-06	AT	42/43		4 ft S from EOS	P	VT	2	2	Pass
R-92	1-Apr-06	DS-30	42/43		40 ft S from EOS	P	VT	6	2	Pass
R-93	1-Apr-06	DS-31	43/44		63 ft S from EOS	P	VT	6	2	Pass
R-94	1-Apr-06	AT	44/45		4 ft S from EOS	P	VT	2	2	Pass
R-95	1-Apr-06	DS-32	44/45		36 ft S from EOS	P	VT	6	2	Pass
R-96	1-Apr-06	DS-33	45/46		12 ft S from EOS	P	VT	6	2	Pass
R-97	1-Apr-06	AT	45/46		4 ft S from EOS	P	VT	2	2	Pass
R-98	1-Apr-06	AT	46/47		4 ft S from EOS	P	VT	2	2	Pass
R-99	1-Apr-06	DS-34	46/47		38 ft S from EOS	P	VT	6	2	Pass
R-100	1-Apr-06	DS-35	47/48		15 ft S from EOS	P	VT	6	2	Pass
R-101	1-Apr-06	AT	47/48		4 ft S from EOS	P	VT	2	2	Pass
R-102	1-Apr-06	AT	48/49		6 ft S from EOS	P	VT	3	3	Pass
R-103	1-Apr-06	DS-36	48/49		34 ft S from EOS	P	VT	6	2	Pass
R-104	1-Apr-06	T	49/50		4 ft S from EOS	P	VT	3	3	Pass
R-105	1-Apr-06	DS-37	49/50		14 ft S from EOS	P	VT	6	2	Pass
R-106	1-Apr-06	AT	50/51		4 ft S from EOS	P	VT	2	2	Pass
R-107	1-Apr-06	AT	51/52		4 ft S from EOS	P	VT	3	3	Pass
R-108	1-Apr-06	T	52/R-3/51		Intersection	P	VT	2	2	Pass
R-109	1-Apr-06	DS-38	51/52		Cross Seam, 10 ft E from R-108	P	VT	6	2	Pass
R-110	1-Apr-06	T	52/53/50		Intersection	P	VT	2	2	Pass
R-111	1-Apr-06	DS-39	52/53		10 ft E from EOS	P	VT	6	2	Pass
R-112	1-Apr-06	DS-40	53/54		40 ft E from EOS	P	VT	6	2	Pass
R-113	1-Apr-06	DS-41	17/18		25 ft E from EOS	P	VT	6	2	Pass
R-114	1-Apr-06	DS-42	18/19		14 ft E from EOS	P	VT	6	2	Pass
R-115	1-Apr-06	DS-43	26/27		49 ft E from EOS	P	VT	6	2	Pass
R-116	1-Apr-06	DS-44	16/17		15 ft W from EOS	P	VT	6	2	Pass
R-117	1-Apr-06	DS-45	16/15		12 ft E from EOS	P	VT	6	2	Pass
R-118	1-Apr-06	DS-46	12/13		22 ft N from EOS	P	VT	6	2	Pass
R-119	1-Apr-06	DS-47	11/12		30 ft S from EOS	P	VT	6	2	Pass
R-120	1-Apr-06	DS-48	10/11		22 ft S from EOS	P	VT	6	2	Pass

Notes:

[1] Damage Codes:
Bo - Burn Out
CR - Crease
DS-# - Destruct Sample
EE - Earthwork Equipment Damage
FM - Fish Mouth
ES - Exposed Scrim
AO - Add-On
SI - Subgrade Irregularity
RW - Roller Wrinkle in Seam
WR - Wrinkle
WS - Welder Restart
BL - Blister
T - Joint

[2] BOS = Bottom of Slope, EOS = End of Seam, TOS = Top of Slope

[3] Repair Type:
C - Cap Strip
P - Patch
B - Extrusion Bead

[4] Repair Test:
PT - Probe Test
ST - Spark Test
VT - Vacuum Test

TABLE 6.7

SUMMARY OF FILTER FABRIC INSTALLATION LOG (LEAK DETECTION SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel Number	*Manufacturer's Roll Number*	*Date Approved*	*Installed Width (ft)*	*Installed Length (ft)*	*Installed Surface Area (ft^2)*	*Approved (Y/N)*
P1	2004189168	29-Apr-06	15	300	4500	Y
P2	2004032002	29-Apr-06	15	300	4500	Y
P3	2004601949	29-Apr-06	15	300	4500	Y
P4	2004880522	29-Apr-06	15	300	4500	Y
P5	2004880529	1-May-06	15	300	4500	Y
P6	2004200607	1-May-06	15	300	4500	Y
P7	2004880471	1-May-06	15	286	4290	Y
P8	2004601937	1-May-06	15	281	4215	Y
P9	2004031987	1-May-06	15	280	4200	Y
P10	2004601951	1-May-06	15	276	4140	Y
P11	2004212293	1-May-06	15	266	3990	Y
P12	2004268186	1-May-06	15	255	3825	Y
P13	2004601952/53	1-May-06	15	254	3810	Y
P14	2004031997/2004200610	1-May-06	15	250	3750	Y
P15	2004601935	1-May-06	15	245	3675	Y
P16	2004880523	1-May-06	15	245	3675	Y
P17	2004601945	1-May-06	15	240	3600	Y
P18	2004601939 (1)	1-May-06	15	240	3600	Y
P19	2004601944 (1)	1-May-06	15	55	825	Y
P20	2004601945	1-May-06	15	52	780	Y
P21	2004880523	1-May-06	15	50	750	Y
P22	2004601935	1-May-06	15	46	690	Y
P23	2004631997	1-May-06	15	30	450	Y
P24	2004031984	10-May-06				Y
P25	2004880520	10-May-06				Y
P26	2004601948	10-May-06				Y
P27	2004880521	10-May-06				Y
P28	2004032009	10-May-06				Y
P29	NO TAG	10-May-06				Y
P30	2004200610	10-May-06				Y
P31	2004601883	10-May-06				Y
P32	2006730884	12-May-06				Y
P33	200630891	12-May-06				Y
P34	2006730879	12-May-06				Y
P35	2006730886	12-May-06				Y
P36	2006730890	12-May-06				Y
P37	2006730901	12-May-06				Y
P38	2006730902	12-May-06				Y
P39	2006730878	12-May-06				Y
P40	2006730899	12-May-06				Y
P41	2006730887	12-May-06				Y

Note

(1) Panels P18 and P19 did not have a roll tag identifying the Manufacturer's roll number. Two roll numbers on the shipping/inventory list were not accounted for, therefore, it is assumed that these rolls were used for P18 and P19.

TABLE 6.8

SUMMARY OF DRAINAGE GEOCOMPOSITE INSTALLATION LOG (LEAK DETECTION SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Manufacturer Roll Number*	*Overlap (in)*	*Field Notes/Comments*	*Panel Length (ft)*	*Panel Width (ft)*	*Panel Area (ft^2)*	*Approved (Y/N)* **	*Comments*
S1	29-Mar-06	1149	12	Full Roll	150	14.5	2175	Y	
S2	29-Mar-06	1186*	12	Full Roll	150	14.5	2175	Y	
S3	29-Mar-06	1124	12	Full Roll	150	14.5	2175	Y	
S4	29-Mar-06	1159	12	Full Roll	150	14.5	2175	Y	
S5	29-Mar-06	1126	12	Full Roll	150	14.5	2175	Y	
S6	29-Mar-06	1144	12	Full Roll	150	14.5	2175	Y	
S7	29-Mar-06	1125	12	Full Roll	150	14.5	2175	Y	
S8	29-Mar-06	1154	12	Full Roll	150	14.5	2175	Y	
S9	29-Mar-06	1133	12	Full Roll	150	14.5	2175	Y	
S10	29-Mar-06	1181	12	Full Roll	150	14.5	2175	Y	
S11	29-Mar-06	1190	12	Full Roll	150	14.5	2175	Y	
S12	29-Mar-06	1155	12	Full Roll	150	14.5	2175	Y	
S13	29-Mar-06	1136	12	Full Roll	150	14.5	2175	Y	
S14	29-Mar-06	1147	12	Full Roll	150	14.5	2175	Y	
S15	29-Mar-06	1113*	12	Full Roll	150	14.5	2175	Y	
S16	29-Mar-06	1137	12	Full Roll	150	14.5	2175	Y	
S17	29-Mar-06	1130	12	Full Roll	150	14.5	2175	Y	
S18	29-Mar-06	1173	12	Full Roll	150	14.5	2175	Y	
S19	29-Mar-06	1122	12	Partial Roll (c/w panel #20)	87	14.5	1261.5	Y	
S20	29-Mar-06	1122	12	Partial Roll (c/w panel #19)	63	14.5	913.5	Y	
S21	29-Mar-06	1121	12	Partial Roll (c/w panel #22)	69	14.5	1000.5	Y	
S22	29-Mar-06	1121	12	Partial Roll (c/w panel #21)	70	14.5	1015	Y	
S23	29-Mar-06	1183	12	Partial Roll (c/w panel #24)	69	14.5	1000.5	Y	
S24	29-Mar-06	1183	12	Partial Roll (c/w panel #23)	69	14.5	1000.5	Y	
S25	29-Mar-06	1118	12	Partial Roll (c/w panel #26)	66	14.5	957	Y	
S26	29-Mar-06	1118	12	Partial Roll (c/w panel #25)	50	14.5	725	Y	
S27	29-Mar-06	1142	12	Partial Roll (c/w panel #28/29/30/31)	37	14.5	536.5	Y	
S28	29-Mar-06	1142	12	Partial Roll (c/w panel #27/29/30/31)	35	14.5	507.5	Y	
S29	29-Mar-06	1142	12	Partial Roll (c/w panel #27/28/30/31)	35	14.5	507.5	Y	
S30	29-Mar-06	1142	12	Partial Roll (c/w panel #27/28/29/31)	27	14.5	391.5	Y	
S31	29-Mar-06	1142	12	Partial Roll (c/w panel #27/28/29/30)	15	14.5	217.5	Y	
S32	29-Mar-06	1153	12	Full Roll	150	14.5	2175	Y	
S33	29-Mar-06	1161	12	Partial Roll (c/w panel #34/35/36)	25	14.5	362.5	Y	
S34	29-Mar-06	1161	12	Partial Roll (c/w panel #33/35/36)	36	14.5	522	Y	
S35	29-Mar-06	1161	12	Partial Roll (c/w panel #33/34/36)	40	14.5	580	Y	
S36	29-Mar-06	1161	12	Partial Roll (c/w panel #33/34/35)	41	14.5	594.5	Y	
S37	29-Mar-06	1145	12	Partial Roll (c/w panel #38/39)	44	14.5	638	Y	
S38	29-Mar-06	1145	12	Partial Roll (c/w panel #37/39)	44	14.5	638	Y	
S39	29-Mar-06	1145	12	Partial Roll (c/w panel #37/38)	48	14.5	696	Y	
S40	29-Mar-06	1152	12	Partial Roll (c/w panel #41/42)	48	14.5	696	Y	
S41	29-Mar-06	1152	12	Partial Roll (c/w panel #40/42)	41	14.5	594.5	Y	
S42	29-Mar-06	1152	12	Partial Roll (c/w panel #40/41)	53	14.5	768.5	Y	
S43	29-Mar-06	1182	12	Partial Roll (c/w panel #48)	54	14.5	783	Y	
S44	29-Mar-06	1128	24	Full Roll	150	14.5	2175	Y	
S45	30-Mar-06	1141	12	Partial Roll (c/w panel #46)	100	14.5	1450	Y	
S46	30-Mar-06	1141	24	Partial Roll (c/w panel #45)	50	14.5	725	Y	

TABLE 6.8

SUMMARY OF DRAINAGE GEOCOMPOSITE INSTALLATION LOG (LEAK DETECTION SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Manufacturer Roll Number*	*Overlap (in)*	*Field Notes/Comments*	*Panel Length (ft)*	*Panel Width (ft)*	*Panel Area (ft^2)*	*Approved (Y/N)* **	*Comments*
S47	30-Mar-06	1127	12	Full Roll	150	14.5	2175	Y	
S48	30-Mar-06	1182	24	Partial Roll (c/w panel #43)	40	14.5	580	Y	
S49	30-Mar-06	1156	12	Partial Roll (c/w panel #50)	135	14.5	1957.5	Y	
S50	30-Mar-06	1156	24	Partial Roll (c/w panel #49)	15	14.5	217.5	Y	
S51	30-Mar-06	1119	24	Full Roll	150	14.5	2175	Y	
S52	30-Mar-06	1160	12	Partial Roll (c/w panel #53)	100	14.5	1450	Y	
S53	30-Mar-06	1160	24	Partial Roll (c/w panel #52)	50	14.5	725	Y	
S54	30-Mar-06	1129	12	Full Roll	150	14.5	2175	Y	
S55	30-Mar-06	1157	24	Full Roll	150	14.5	2175	Y	
S56	30-Mar-06	1193	12	Partial Roll (c/w panel #57)	75	14.5	1087.5	Y	
S57	30-Mar-06	1193	24	Partial Roll (c/w panel #56)	75	14.5	1087.5	Y	
S58	30-Mar-06	1169	12	Full Roll	150	14.5	2175	Y	
S59	30-Mar-06	1153	24	Full Roll	130	14.5	1885	Y	Should have been roll #1158.
S60	30-Mar-06	1131*	24	Partial Roll (c/w panel #61)	100	14.5	1450	Y	
S61	30-Mar-06	1131*	24	Partial Roll (c/w panel #60)	50	14.5	725	Y	
S62	30-Mar-06	1185	12	Full Roll	150	14.5	2175	Y	
S63	30-Mar-06	1182	12	Full Roll	150	14.5	2175	Y	Should have been roll #1188.
S64	30-Mar-06	1180	12	Full Roll	150	14.5	2175	Y	
S65	30-Mar-06	1194	12	Full Roll	150	14.5	2175	Y	
S66	30-Mar-06	1139	12	Full Roll	150	14.5	2175	Y	
S67	30-Mar-06	1174	12	Full Roll	150	14.5	2175	Y	
S68	30-Mar-06	1177	12	Full Roll	150	14.5	2175	Y	
S69	30-Mar-06	1115	12	Full Roll	150	14.5	2175	Y	
S70	30-Mar-06	1175	12	Full Roll	150	14.5	2175	Y	
S71	30-Mar-06	1164	12	Full Roll	150	14.5	2175	Y	
S72	30-Mar-06	1117	12	Full Roll	150	14.5	2175	Y	
S73	30-Mar-06	1151	12	Full Roll	150	14.5	2175	Y	
S74	30-Mar-06	1150*	12	Full Roll	150	14.5	2175	Y	
S75	30-Mar-06	1140	12	Full Roll	150	14.5	2175	Y	
S76	30-Mar-06	1187	12	Full Roll	150	14.5	2175	Y	
S77	30-Mar-06	1123	12	Partial Roll (c/w panel #78)	80	14.5	1160	Y	roll # 1123 used for two panels totaling more than 150 feet
S78	30-Mar-06	1123	12	Partial Roll (c/w panel #77)	80	14.5	1160	Y	
S79	30-Mar-06	1176	12	Partial Roll (c/w panel #80)	80	14.5	1160	Y	roll # 1176 used for two panels totaling more than 150 feet
S80	30-Mar-06	1176	12	Partial Roll (c/w panel #79)	80	14.5	1160	Y	
S81	30-Mar-06	1120	12	Partial Roll (c/w panel #82)	80	14.5	1160	Y	
S82	30-Mar-06	1120	12	Partial Roll (c/w panel #81)	80	14.5	1160	Y	
S83	30-Mar-06	1191	12	Partial Roll (c/w panel #84/85)	73	14.5	1058.5	Y	roll # 1176 was used for three individual panels totaling more than 150 feet
S84	30-Mar-06	1191	12	Partial Roll (c/w panel #83/85)	57	14.5	826.5	Y	
S85	30-Mar-06	1191	12	Partial Roll (c/w panel #83/84)	44	14.5	638	Y	
S86	30-Mar-06	1172	12	Partial Roll (c/w panel #87/88)	63	14.5	913.5	Y	
S87	30-Mar-06	1172	12	Partial Roll (c/w panel #86/88)	47	14.5	681.5	Y	
S88	30-Mar-06	1172	12	Partial Roll (c/w panel #86/87)	28	14.5	406	Y	
S89	30-Mar-06	1184	12	Full Roll	150	14.5	2175	Y	
S90	30-Mar-06	1148	12	Full Roll	150	14.5	2175	Y	
S91	30-Mar-06	1166	12	Full Roll	150	14.5	2175	Y	
S92	30-Mar-06	1195	12	Full Roll	150	14.5	2175	Y	
S93	30-Mar-06	1168*	12	Full Roll	150	14.5	2175	Y	
S94	30-Mar-06	1132	12	Full Roll	150	14.5	2175	Y	
S95	30-Mar-06	1114	12	Full Roll	150	14.5	2175	Y	

TABLE 6.8

SUMMARY OF DRAINAGE GEOCOMPOSITE INSTALLATION LOG (LEAK DETECTION SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Manufacturer Roll Number*	*Overlap (in)*	*Field Notes/Comments*	*Panel Length (ft)*	*Panel Width (ft)*	*Panel Area (ft^2)*	*Approved (Y/N)* **	*Comments*
S96	30-Mar-06	1165	12	Full Roll	150	14.5	2175	Y	
S97	30-Mar-06	1179	12	Full Roll	150	14.5	2175	Y	
S98	30-Mar-06	1163	12	Partial Roll (c/w panel P128)	122	14.5	1769	Y	
S99	30-Mar-06	1138	12	Partial Roll (c/w panel #100)	91	14.5	1319.5	Y	
S100	30-Mar-06	1138	12	Partial Roll (c/w panel #99)	50	14.5	725	Y	
S101	30-Mar-06	1171	12	Partial Roll - 75 feet (c/w panel #102)	86	14.5	1247	Y	
S102	30-Mar-06	1171	12	Partial Roll - 75 feet (c/w panel #101)	80	14.5	1160	Y	
S103	30-Mar-06	1143	12	Partial Roll - 75 feet (c/w panel #104)	85	14.5	1232.5	Y	
S104	30-Mar-06	1143	12	Partial Roll - 75 feet (c/w panel #103)	75	14.5	1087.5	Y	
S105	30-Mar-06	1116	12	Partial Roll - 75 feet (c/w panel #106)	70	14.5	1015	Y	
S106	30-Mar-06	1116	12	Partial Roll - 75 feet (c/w panel #105)	71	14.5	1029.5	Y	
S107	30-Mar-06	1178	12	Partial Roll - 48 feet (c/w panel #108/109/112)	60	14.5	870	Y	
S108	30-Mar-06	1178	12	Partial Roll - 45 feet (c/w panel #107/109/112)	36	14.5	522	Y	
S109	30-Mar-06	1178	12	Partial Roll - 42 feet (c/w panel #107/108/112)	46	14.5	667	Y	
S110	30-Mar-06	1170	12	Partial Roll - 43 feet (c/w panel #111/P127)	43	14.5	623.5	Y	
S111	30-Mar-06	1170	12	Partial Roll - 24 feet (c/w panel #110/P127)	24	14.5	348	Y	
S112	30-Mar-06	1178	12	Partial Roll - 15 feet (c/w panel #107/108/109)	10	14.5	145	Y	

Notes:

* Indicates that Quality Assurance (QA) testing procedures were conducted on the roll of liner. QA testing was required every 1 per 30 rolls of liner. A summary of QA test results are presented below:

Manufacturer Roll Number	*Grab Strength (lb)* (2)	*Peel Strength (lb)* (3)
1113	331.2	58
1131	238.6	46
1150	238.6	54
1168	238.6	48.8
1186	238.6	59.3

(1)

(2)

(3)

** Approval refers to visual inspection of material from individual rolls and general installation procedures

c/w "complete with" indicates panels that were deployed from the same roll number
- first group of panels installed below secondary liner (no letter designation)
- second group of panels is part of primary liner system (designated with a 'P')

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TABLE 6.9

LDS DECONTAMINATION FLUSHING
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Flush 1				
Date	Gallons	Start Time	End Time	Comments
1/23/2007	200	1215	1315	- -
	400	1350	1430	- -
	600	1435	1510	- -
	800	1515	1605	- -
	1,000	1610	1650	- -
	2,000	1655	1745	- -
1/24/2007	3,000	830	1105	- -
	4,000	1120	1355	- -
	5,000	1400	1815	- -
1/25/2007	6,000	819	1328	- -
	7,000	1330	1955	Completed removal 1/26/07 0735 to 0827
1/26/2007	8,000	830	2000	- -
1/27/2007	9,000	820	2000	- -

Flush 2						
Date	Gallons	Fill		Removal		Comments
		Start Time	End Time	Start Time	End Time	
1/29/2007	200	817	819	1025	1051	- -
	400	1054	1103	1313	1405	- -
	600	1408	1414	1437	1536	- -
	800	1537	1548	1607	1900	- -
1/30/2007	1000	809	820	915	1013	- -
	2000	1015	1040	1145	1300	- -
	3000	1315	1403	1512	1640	- -
1/31/2007	4000	819	845	945	1425	- -
	5000	1430	1600	740	1340	Removed on 2/1/07
2/1/2007	6000	1342	1545	1700	2100	- -
2/2/2007	7000	825	1053	1300	1610	- -
	8000	1615	1830	- -	- -	Fill Completed 2/3/07
2/3/2007	8000	830	900	1100	1454	- -
2/3/2007	9000	1500	1705	808	1510	Removed on 2/5/07

TABLE 6.11

SUMMARY OF CLAY COMPACTION TEST RESULTS (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Test Date	*Test ID*	*Test Number*	*Test Depth (inches)*	*Elevation of Test*	*Proctor Soil ID/Lab #* [1]	*Identification* [1]	*Permeability (cm/s)* [1]	*Moisture Content (%)*	*Optimum Moisture Content (%)* [1]	*Moisture Content Above/Below Optimum Moisture Content (%)* [4]	*Maximum Dry Density (Pound-Force per ft³)* [1]	*Dry Density (Pound-Force per ft3)*	*Wet Density (Pound-Force per ft3)*	*Compaction (%)* [5]	*PSI Pass/Fail Code* [6]	*Pass*	*Fail*	*Comments*
Primary Clay Liner Construction										0.0								
13-Apr-06	301 [2, 3]	1	8	Final Grade	3155	Base Clay Sample	N/A	15.9	17.6	-1.7	106.2	105.8	122.7	99.6	1E		X	
	302 [2, 3]	2	8	Final Grade	3155	Base Clay Sample	N/A	14.7	17.6	-2.9	106.2	105.9	121.5	99.7	1E		X	
	303 [2, 3]	3	8	Final Grade	3155	Base Clay Sample	N/A	13.0	17.6	-4.6	106.2	107.6	121.6	101.3	1E		X	
	304 [2, 3]	4	8	Final Grade	3155	Base Clay Sample	N/A	15.6	17.6	-2.0	106.2	104.4	120.6	98.3	1E		X	
	305 [2, 3]	5	8	Final Grade	3155	Base Clay Sample	N/A	10.7	17.6	-6.9	106.2	109.5	121.3	103.1	1E		X	
	306 [2, 3]	6	8	Final Grade	3155	Base Clay Sample	N/A	15.3	17.6	-2.3	106.2	106.9	123.3	100.7	1E		X	
	307 [2, 3]	7	8	Final Grade	3155	Base Clay Sample	N/A	15.8	17.6	-1.8	106.2	110.0	127.4	103.6	1E		X	
	308 [2, 3]	8	8	Final Grade	3155	Base Clay Sample	N/A	14.3	17.6	-3.3	106.2	109.5	125.2	103.1	1E		X	
	309 [2, 3]	9	8	Final Grade	3155	Base Clay Sample	N/A	13.8	17.6	-3.8	106.2	106.3	121.0	100.1	1E		X	Compaction tests failed due to too low of moisture content. Soil was re-worked, including addition of appropriate amounts of water prior to re-testing.
	310 [2, 3]	10	8	Final Grade	3155	Base Clay Sample	N/A	17.2	17.6	-0.4	106.2	103.7	121.5	97.6	1E		X	
	311 [2, 3]	11	8	Final Grade	3155	Base Clay Sample	N/A	13.4	17.6	-4.2	106.2	107.1	121.4	100.8	1E		X	
	312 [2, 3]	12	8	Final Grade	3155	Base Clay Sample	N/A	12.3	17.6	-5.3	106.2	106.5	119.4	100.3	1E		X	
	313 [2, 3]	13	8	Final Grade	3155	Base Clay Sample	N/A	11.7	17.6	-5.9	106.2	108.2	120.9	101.9	1E		X	
	314 [2, 3]	14	8	Final Grade	3155	Base Clay Sample	N/A	19.4	17.6	1.8	106.2	106.2	126.9	100.0	1E		X	
	315 [2, 3]	15	8	Final Grade	3155	Base Clay Sample	N/A	15.4	17.6	-2.2	106.2	106.7	123.2	100.5	1E		X	
	316 [2, 3]	16	8	Final Grade	3155	Base Clay Sample	N/A	16.2	17.6	-1.4	106.2	106.3	123.5	100.1	1E		X	
	317 [2, 3]	17	8	Final Grade	3155	Base Clay Sample	N/A	16.8	17.6	-0.8	106.2	107.9	126.0	101.6	1E		X	
	318 [2, 3]	18	8	Final Grade	3155	Base Clay Sample	N/A	11.7	17.6	-5.9	106.2	107.4	119.9	101.1	1E		X	
18-Apr-06	319 [2, 3]	1	8	Final Grade	3155	Base Clay Sample	N/A	13.5	17.6	-4.1	106.2	106.4	120.8	100.2	1E		X	
	320 [2, 3]	2	8	Final Grade	3155	Base Clay Sample	N/A	14.5	17.6	-3.1	106.2	107.2	122.8	100.9	1E		X	
	321 [2, 3]	3	8	Final Grade	3155	Base Clay Sample	N/A	15.1	17.6	-2.5	106.2	106.8	122.9	100.6	1E		X	Compaction tests failed due to too low of moisture content. Soil was re-worked, including addition of appropriate amounts of water prior to re-testing.
	322 [2, 3]	4	8	Final Grade	3155	Base Clay Sample	N/A	13.9	17.6	-3.7	106.2	107.6	122.6	101.3	1E		X	
	323 [2, 3]	5	8	Final Grade	3155	Base Clay Sample	N/A	12.8	17.6	-4.8	106.2	97.9	110.4	92.2	1E		X	
	324 [2, 3]	6	8	Final Grade	3155	Base Clay Sample	N/A	15.3	17.6	-2.3	106.2	107.3	123.7	101.0	1E		X	
19-Apr-06	325	1	8	Final Grade	3155	Base Clay Sample	N/A	20.9	17.6	3.3	106.2	103.0	124.5	97.0	1AC	X		
	326	2	8	Final Grade	3155	Base Clay Sample	N/A	20.2	17.6	2.6	106.2	103.9	124.9	97.8	1AC	X		
	327	3	8	Final Grade	3155	Base Clay Sample	N/A	21.2	17.6	3.6	106.2	103.2	125.0	97.2	1AC	X		
	328	4	8	Final Grade	3155	Base Clay Sample	N/A	21.8	17.6	4.2	106.2	101.7	123.9	95.8	1AC	X		
	329	5	8	Final Grade	3155	Base Clay Sample	N/A	20.7	17.6	3.1	106.2	103.4	124.8	97.4	1AC	X		
	330	6	8	Final Grade	3155	Base Clay Sample	N/A	21.0	17.6	3.4	106.2	102.2	123.7	96.2	1AC	X		
	331	7	8	Final Grade	3155	Base Clay Sample	N/A	20.7	17.6	3.1	106.2	101.8	122.9	95.9	1AC	X		
	332	8	8	Final Grade	3155	Base Clay Sample	N/A	20.3	17.6	2.7	106.2	102.7	123.6	96.7	1AC	X		
	333	9	8	Final Grade	3155	Base Clay Sample	N/A	20.5	17.6	2.9	106.2	103.6	124.7	97.6	1AC	X		
	334	10	8	Final Grade	3155	Base Clay Sample	N/A	20.3	17.6	2.7	106.2	103.6	124.7	97.6	1AC	X		Re-testing of primary clay layer compaction testing from 4/13/06 and 4/18/06 after re-working of soil, including addition of water to meet moisture requirements.
	335	11	8	Final Grade	3155	Base Clay Sample	N/A	20.2	17.6	2.6	106.2	101.2	121.7	95.3	1AC	X		
	336	12	8	Final Grade	3155	Base Clay Sample	N/A	20.6	17.6	3.0	106.2	103.9	125.3	97.8	1AC	X		
	337	13	8	Final Grade	3155	Base Clay Sample	N/A	20.9	17.6	3.3	106.2	102.7	124.2	96.7	1AC	X		
	338	14	8	Final Grade	3155	Base Clay Sample	N/A	20.5	17.6	2.9	106.2	102.9	124.0	96.9	1AC	X		
	339	15	8	Final Grade	3155	Base Clay Sample	N/A	22.6	17.6	5.0	106.2	102.9	126.1	96.9	1AC	X		
	340	16	8	Final Grade	3155	Base Clay Sample	N/A	20.1	17.6	2.5	106.2	105.3	126.6	99.2	1AC	X		
	341	17	8	Final Grade	3155	Base Clay Sample	N/A	20.1	17.6	2.5	106.2	105.2	126.3	99.1	1AC	X		
	342	18	8	Final Grade	3155	Base Clay Sample	N/A	20.9	17.6	3.3	106.2	104.8	126.7	98.7	1AC	X		
	343	19	8	Final Grade	3155	Base Clay Sample	N/A	20.1	17.6	2.5	106.2	102.6	123.2	96.6	1AC	X		
	344	20	8	Final Grade	3155	Base Clay Sample	N/A	20.1	17.6	2.5	106.2	101.1	121.3	95.2	1AC	X		

Notes:

(1) Soil proctor information.

(2) Test results include a failed compaction test and/or moisture content, which required a subsequent retest either that same day or the next.

(3) Test results were rejected as a group and clay was reworked (with water addition) to raise moisture content to acceptable conditions.

(4) Accepted moisture content to be within 0-5% of optimum moisture content of proctor.

(5) Accepted compaction to be at least 95% of maximum dry density of proctor.

(6) PSI Pass/Fail Codes are as follows:
1 = Fill material A = Test results comply with specifications
2 = Backfill B = Compaction does not comply with specifications
3 = Base course C = Retest of previous test
4 = Sub-base D = Moisture in excess of specifications
5 = Soil cement E = Moisture below specifications
6 = Other

TABLE 6.12

SUMMARY OF CLAY PERMEABILITY TEST RESULTS (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

CONTRACTOR: **Sevenson/TSC**

SAMPLE IDENTIFICATION	*Sample Collection Date*	*Sample Start Depth (ft bgs)*	*Sample End Depth (ft bgs)*	*SHELBY TUBE NUMBER*	*PERMEABILITY (cm/sec)* [1]	*COMMENTS*
Rejected Primary Clay Liner						
S-041306-KMV-1219	13-Apr-06	0.00	0.75	ST-7	2.1 x 10-8 [2]	
S-041306-KMV-1220	13-Apr-06	0.00	0.83	ST-8	2.1 x 10-8 [2]	
S-041306-KMV-1221	13-Apr-06	0.00	0.75	ST-9	2.1 x 10-8 [2]	
S-041306-KMV-1222	13-Apr-06	0.00	0.92	ST-10	1.8 x 10-7 [2]	
Approved Primary Clay Liner						
S-042006-DD-1383	20-Apr-06			ST-11	Disturbed sample	Permeability test not possible due to a piece of gravel within the sample, which created a void during the extrusion process.
S-042006-DD-1384	20-Apr-06			ST-12	1.1 x 10-7 [3]	
S-042006-DD-1385	20-Apr-06			ST-13	3.7 x 10-8	
S-042006-DD-1386	20-Apr-06			ST-14	1.7 x 10-8	

Notes:

[1] Results based on the performance of test permeability ASTM D 5084 by Testing Service Corporation (TSC). Acceptance of results requires 1.0 x 10-7 cm/s.

[2] Shelby tube samples collected from compacted clay that was subsequently rejected due to field moisture content results below optimum moisture

[3] Shelby tube sample took much longer to saturate than other two samples, indicating minor disturbance of sample resulting in elevated permeability

TABLE 6.13

SUMMARY OF GEOSYNTHETIC CLAY LINER INSTALLATION LOG (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Contractor*	*Manufacturer's Roll Number*	*Filed Notes/Comments*	*Panel Length (ft)*	*Panel Width (ft)*	*Panel Area (ft^2)*	*Approved (Y/N)* **	*Comments*
P1	26-Apr-06	Sevenson/AEG	00000037	Full Roll	150	13.5	2025	Y	
P2	26-Apr-06	Sevenson/AEG	00000089	Full Roll	150	13.5	2025	Y	
P3	26-Apr-06	Sevenson/AEG	00000005*	Full Roll	150	13.5	2025	Y	
P4	26-Apr-06	Sevenson/AEG	00000091	Full Roll	150	13.5	2025	Y	
P5	26-Apr-06	Sevenson/AEG	00000006	Full Roll	150	13.5	2025	Y	
P6	26-Apr-06	Sevenson/AEG	00000088	Full Roll	150	13.5	2025	Y	
P7	26-Apr-06	Sevenson/AEG	00000054	Full Roll	150	13.5	2025	Y	
P8	26-Apr-06	Sevenson/AEG	00000040	Full Roll	150	13.5	2025	Y	
P9	26-Apr-06	Sevenson/AEG	00000055	Full Roll	150	13.5	2025	Y	
P10	26-Apr-06	Sevenson/AEG	00000039	Full Roll	150	13.5	2025	Y	
P11	26-Apr-06	Sevenson/AEG	00000087	Full Roll	150	13.5	2025	Y	
P12	26-Apr-06	Sevenson/AEG	00000035	Full Roll	150	13.5	2025	Y	
P13	26-Apr-06	Sevenson/AEG	00000042	Full Roll	150	13.5	2025	Y	
P14	26-Apr-06	Sevenson/AEG	00000034	Full Roll	150	13.5	2025	Y	
P15	26-Apr-06	Sevenson/AEG	00000007	Full Roll	150	13.5	2025	Y	
P16	26-Apr-06	Sevenson/AEG	00000009	Full Roll	150	13.5	2025	Y	
P17	26-Apr-06	Sevenson/AEG	00000118	Full Roll	150	13.5	2025	Y	
P18	26-Apr-06	Sevenson/AEG	00000113	Full Roll	150	13.5	2025	Y	
P19	26-Apr-06	Sevenson/AEG	00000050	Full Roll	150	13.5	2025	Y	
P20	26-Apr-06	Sevenson/AEG	00000028	Partial Roll (c/w panel P29)	104	13.5	1404	Y	
P21	26-Apr-06	Sevenson/AEG	00000049	Full Roll	150	13.5	2025	Y	
P22	26-Apr-06	Sevenson/AEG	00000112	Partial Roll (c/w panel P23)	72	13.5	972	Y	
P23	26-Apr-06	Sevenson/AEG	00000112	Partial Roll (c/w panel P22)	72	13.5	972	Y	
P24	26-Apr-06	Sevenson/AEG	00000108	Partial Roll (c/w panel P25/P30)	72	13.5	972	Y	
P25	26-Apr-06	Sevenson/AEG	00000102	Partial Roll (c/w panel P24/P30)	54	13.5	729	Y	roll number may be in error
P26	26-Apr-06	Sevenson/AEG	00000106	Partial Roll (c/w panel P27/P28)	52	13.5	702	Y	
P27	26-Apr-06	Sevenson/AEG	00000106	Partial Roll (c/w panel P26/P28)	52	13.5	702	Y	
P28	26-Apr-06	Sevenson/AEG	00000106	Partial Roll (c/w panel P26/P27)	46	13.5	621	Y	
P29	26-Apr-06	Sevenson/AEG	00000028	Partial Roll (c/w panel P20)	46	13.5	621	Y	
P30	26-Apr-06	Sevenson/AEG	00000108	Partial Roll (c/w panel P24/P25)	19	13.5	256.5	Y	
P31	26-Apr-06	Sevenson/AEG	00000051	Partial Roll (c/w panel P32/P33)	40	13.5	540	Y	
P32	26-Apr-06	Sevenson/AEG	00000051	Partial Roll (c/w panel P31/P33)	60	13.5	810	Y	
P33	26-Apr-06	Sevenson/AEG	00000051	Partial Roll (c/w panel P31/P32)	40	13.5	540	Y	
P34	26-Apr-06	Sevenson/AEG	00000053	Partial Roll (c/w panel P35/P36)	60	13.5	810	Y	
P35	26-Apr-06	Sevenson/AEG	00000053	Partial Roll (c/w panel P34/P36)	60	13.5	810	Y	
P36	26-Apr-06	Sevenson/AEG	00000053	Partial Roll (c/w panel P35/P36)	34	13.5	459	Y	
P37	26-Apr-06	Sevenson/AEG	00000052	Partial Roll (c/w panel P38)	57	13.5	769.5	Y	
P38	26-Apr-06	Sevenson/AEG	00000052	Partial Roll (c/w panel P37)	57	13.5	769.5	Y	
P39	26-Apr-06	Sevenson/AEG	00000041	Partial Roll (c/w panel P40/P41)	53	13.5	715.5	Y	
P40	26-Apr-06	Sevenson/AEG	00000041	Partial Roll (c/w panel P39/P41)	50	13.5	675	Y	
P41	26-Apr-06	Sevenson/AEG	00000041	Partial Roll (c/w panel P39/P40)	47	13.5	634.5	Y	
P42	26-Apr-06	Sevenson/AEG	00000083	Partial Roll (c/w panel P43/P44/P103)	40	13.5	540	Y	roll number may be in error
P43	26-Apr-06	Sevenson/AEG	00000083	Partial Roll (c/w panel P42/P44/P103)	36	13.5	486	Y	roll number may be in error
P44	26-Apr-06	Sevenson/AEG	00000083	Partial Roll (c/w panel P42/P43/P103)	18	13.5	243	Y	roll number may be in error
P45	27-Apr-06	Sevenson/AEG	00000044*	Full Roll	150	13.5	2025	Y	
P46	27-Apr-06	Sevenson/AEG	00000110	Partial Roll (c/w panel P47)	90	13.5	1215	Y	
P47	27-Apr-06	Sevenson/AEG	00000110	Partial Roll (c/w panel P46)	55	13.5	742.5	Y	
P48	27-Apr-06	Sevenson/AEG	00000107	Full Roll	150	13.5	2025	Y	
P49	27-Apr-06	Sevenson/AEG	00000105	Partial Roll (c/w panel P50)	37	13.5	499.5	Y	

TABLE 6.13

SUMMARY OF GEOSYNTHETIC CLAY LINER INSTALLATION LOG (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Contractor*	*Manufacturer's Roll Number*	*Filed Notes/Comments*	*Panel Length (ft)*	*Panel Width (ft)*	*Panel Area (ft^2)*	*Approved (Y/N)* **	*Comments*
P50	27-Apr-06	Sevenson/AEG	00000105	Partial Roll (c/w panel P49)	114	13.5	1539	Y	
P51	27-Apr-06	Sevenson/AEG	00000023*	Partial Roll (c/w panel P52)	126	13.5	1701	Y	
P52	27-Apr-06	Sevenson/AEG	00000023*	Partial Roll (c/w panel P51)	24	13.5	324	Y	
P53	27-Apr-06	Sevenson/AEG	00000100	Full Roll	150	13.5	2025	Y	
P54	27-Apr-06	Sevenson/AEG	00000043	Partial Roll (c/w panel P55)	70	13.5	945	Y	
P55	27-Apr-06	Sevenson/AEG	00000043	Partial Roll (c/w panel P54)	80	13.5	1080	Y	
P56	27-Apr-06	Sevenson/AEG	00000047	Full Roll	150	13.5	2025	Y	
P57	27-Apr-06	Sevenson/AEG	00000048	Full Roll	150	13.5	2025	Y	
P58	27-Apr-06	Sevenson/AEG	00000101	Partial Roll (c/w panel P59)	110	13.5	1485	Y	
P59	27-Apr-06	Sevenson/AEG	00000101	Partial Roll (c/w panel P58)	39	13.5	526.5	Y	
P60	27-Apr-06	Sevenson/AEG	00000011	Full Roll	150	13.5	2025	Y	
P61	27-Apr-06	Sevenson/AEG	00000018	Partial Roll (c/w panel P62)	54	13.5	729	Y	
P62	27-Apr-06	Sevenson/AEG	00000018	Partial Roll (c/w panel P61)	95	13.5	1282.5	Y	
P63	27-Apr-06	Sevenson/AEG	00000102	Full Roll	150	13.5	2025	Y	
P64	27-Apr-06	Sevenson/AEG	00000109	Full Roll	150	13.5	2025	Y	
P65	27-Apr-06	Sevenson/AEG	00000022	Partial Roll (c/w panel P66)	91	13.5	1228.5	Y	
P66	27-Apr-06	Sevenson/AEG	00000022	Partial Roll (c/w panel P65)	56	13.5	756	Y	
P67	27-Apr-06	Sevenson/AEG	00000025	Full Roll	150	13.5	2025	Y	
P68	27-Apr-06	Sevenson/AEG	00000013	Partial Roll (c/w panel P69)	37	13.5	499.5	Y	
P69	27-Apr-06	Sevenson/AEG	00000013	Partial Roll (c/w panel P68)	112	13.5	1512	Y	
P70	27-Apr-06	Sevenson/AEG	00000020	Partial Roll (c/w panel P71)	132	13.5	1782	Y	
P71	27-Apr-06	Sevenson/AEG	00000020	Partial Roll (c/w panel P70)	17	13.5	229.5	Y	
P72	27-Apr-06	Sevenson/AEG	00000014	Partial Roll (c/w panel P73)	35	13.5	472.5	Y	
P73	27-Apr-06	Sevenson/AEG	00000014	Partial Roll (c/w panel P72)	73	13.5	985.5	Y	
P74	27-Apr-06	Sevenson/AEG	00000024	Partial Roll (c/w panel P75)	82	13.5	1107	Y	
P75	27-Apr-06	Sevenson/AEG	00000024	Partial Roll (c/w panel P74)	67	13.5	904.5	Y	
P76	27-Apr-06	Sevenson/AEG	00000092	Full Roll	150	13.5	2025	Y	
P77	27-Apr-06	Sevenson/AEG	00000012	Full Roll	150	13.5	2025	Y	
P78	27-Apr-06	Sevenson/AEG	00000010	Full Roll	150	13.5	2025	Y	
P79	27-Apr-06	Sevenson/AEG	00000017	Full Roll	150	13.5	2025	Y	
P80	27-Apr-06	Sevenson/AEG	00000084	Full Roll	150	13.5	2025	Y	
P81	27-Apr-06	Sevenson/AEG	00000115	Full Roll	150	13.5	2025	Y	
P82	27-Apr-06	Sevenson/AEG	00000114	Full Roll	150	13.5	2025	Y	
P83	27-Apr-06	Sevenson/AEG	00000027	Full Roll	150	13.5	2025	Y	
P84	27-Apr-06	Sevenson/AEG	00000036	Full Roll	150	13.5	2025	Y	
P85	27-Apr-06	Sevenson/AEG	00000095	Full Roll	150	13.5	2025	Y	
P86	27-Apr-06	Sevenson/AEG	00000116	Full Roll	150	13.5	2025	Y	
P87	27-Apr-06	Sevenson/AEG	00000094	Full Roll	150	13.5	2025	Y	
P88	27-Apr-06	Sevenson/AEG	00000093	Full Roll	150	13.5	2025	Y	
P89	27-Apr-06	Sevenson/AEG	00000085	Full Roll	150	13.5	2025	Y	
P90	27-Apr-06	Sevenson/AEG	00000026	Full Roll	150	13.5	2025	Y	
P91	27-Apr-06	Sevenson/AEG	00000021	Partial Roll (c/w panel P92)	80	13.5	1080	Y	
P92	27-Apr-06	Sevenson/AEG	00000021	Partial Roll (c/w panel P91)	70	13.5	945	Y	
P93	27-Apr-06	Sevenson/AEG	00000046	Partial Roll (c/w panel P94)	76	13.5	1026	Y	
P94	27-Apr-06	Sevenson/AEG	00000046	Partial Roll (c/w panel P93)	57	13.5	769.5	Y	
P95	27-Apr-06	Sevenson/AEG	00000099	Partial Roll (c/w panel P96/P101)	75	13.5	1012.5	Y	
P96	27-Apr-06	Sevenson/AEG	00000099	Partial Roll (c/w panel P95/P101)	20	13.5	270	Y	
P97	27-Apr-06	Sevenson/AEG	00000111	Partial Roll (c/w panel P98)	73	13.5	985.5	Y	
P98	27-Apr-06	Sevenson/AEG	00000111	Partial Roll (c/w panel P97)	73	13.5	985.5	Y	
P99	27-Apr-06	Sevenson/AEG	00000090	Partial Roll (c/w panel P100/P102)	58	13.5	783	Y	

TABLE 6.13

SUMMARY OF GEOSYNTHETIC CLAY LINER INSTALLATION LOG (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Contractor*	*Manufacturer's Roll Number*	*Filed Notes/Comments*	*Panel Length (ft)*	*Panel Width (ft)*	*Panel Area (ft^2)*	*Approved (Y/N)* **	*Comments*
P100	27-Apr-06	Sevenson/AEG	00000090	Partial Roll (c/w panel P99/P102)	53	13.5	715.5	Y	
P101	27-Apr-06	Sevenson/AEG	00000099	Partial Roll (c/w panel P95/P96)	41	13.5	553.5	Y	
P102	27-Apr-06	Sevenson/AEG	00000090	Partial Roll (c/w panel P99/P100)	20	13.5	270	Y	
P103	27-Apr-06	Sevenson/AEG	00000083	Partial Roll (c/w panel P42/P43/P44)	35	13.5	472.5	Y	roll number may be in error
P104	28-Apr-06	Sevenson/AEG	00000045	Full Roll	150	13.5	2025	Y	
P105	28-Apr-06	Sevenson/AEG	00000083	Full Roll	150	13.5	2025	Y	
P106	28-Apr-06	Sevenson/AEG	00000117	Partial Roll (c/w panel P107/P108)	62	13.5	837	Y	
P107	28-Apr-06	Sevenson/AEG	00000117	Partial Roll (c/w panel P106/P108)	46	13.5	621	Y	
P108	28-Apr-06	Sevenson/AEG	00000117	Partial Roll (c/w panel P106/P107)	43	13.5	580.5	Y	
P109	28-Apr-06	Sevenson/AEG	00001039*	Partial Roll (c/w panel P110/P111)	64	13.5	864	Y	
P110	28-Apr-06	Sevenson/AEG	00001039*	Partial Roll (c/w panel P109/P111)	64	13.5	864	Y	
P111	28-Apr-06	Sevenson/AEG	00001039*	Partial Roll (c/w panel P109/P110)	22	13.5	297	Y	
P112	28-Apr-06	Sevenson/AEG	00001042	Partial Roll (c/w panel P113/P114)	34	13.5	459	Y	
P113	28-Apr-06	Sevenson/AEG	00001042	Partial Roll (c/w panel P112/P114)	64	13.5	864	Y	
P114	28-Apr-06	Sevenson/AEG	00001042	Partial Roll (c/w panel P112/P113)	35	13.5	472.5	Y	
P115	28-Apr-06	Sevenson/AEG	00001051	Partial Roll (c/w panel P116/P118)	64	13.5	864	Y	
P116	28-Apr-06	Sevenson/AEG	00001051	Partial Roll (c/w panel P115/P118)	64	13.5	864	Y	
P117	28-Apr-06	Sevenson/AEG	00001048	Partial Roll (c/w panel P119)	64	13.5	864	Y	
P118	28-Apr-06	Sevenson/AEG	00001051	Partial Roll (c/w panel P115/P116)	32	13.5	432	Y	
P119	28-Apr-06	Sevenson/AEG	00001048	Partial Roll (c/w panel P117)	82	13.5	1107	Y	
P120	28-Apr-06	Sevenson/AEG	00000104	Partial Roll (c/w panel P121)	93	13.5	1255.5	Y	
P121	28-Apr-06	Sevenson/AEG	00000104	Partial Roll (c/w panel P120)	54	13.5	729	Y	
P122	28-Apr-06	Sevenson/AEG	00001049	Partial Roll (c/w panel P123/P124)	39	13.5	526.5	Y	
P123	28-Apr-06	Sevenson/AEG	00001049	Partial Roll (c/w panel P122/P124)	79	13.5	1066.5	Y	
P124	28-Apr-06	Sevenson/AEG	00001049	Partial Roll (c/w panel P122/P123)	40	13.5	540	Y	
P125	28-Apr-06	Sevenson/AEG	00001053	Partial Roll (c/w panel P126)	92	13.5	1242	Y	
P126	28-Apr-06	Sevenson/AEG	00001053	Partial Roll (c/w panel P125)	54	13.5	729	Y	
P127	28-Apr-06	Sevenson/AEG	00001170*	Partial Roll (c/w panel #110/#111)	78	13.5	1053	Y	
P128	28-Apr-06	Sevenson/AEG	00001163	Partial Roll (c/w panel #98)	38	13.5	513	Y	

Notes:

* Indicates that Quality Assurance (QA) testing procedures were conducted on the roll of liner. QA testing was required every 1 per 30 rolls of liner. A summary of QA test results are presented below:

Manufacturer Roll Number	*Mass Area (lb/ft^2)* [(1)]	*Grab Strength (lb)* [(2)]	*Peel Strength (lb)* [(3)]
00000005	0.89	306.1	24.5
00000023	0.89	306.1	25
00000044	0.90	306.1	31.2
00001039	0.92	328.6	31.3
00001170	0.89	238.6	48.8

[(1)] Mass area result requires at least 0.75 lb/ft^2 Minimum Average Roll Value (MARV) for acceptance
[(2)] Grab strength result requires at least 150 lb MARV for acceptance
[(3)] Peel strength result requires at least 15 lb MARV for acceptance

** Approval refers to visual inspection of material from individual rolls and general installation procedures
c/w "complete with" indicates panels that were deployed from the same roll number
- first group of panels installed below secondary liner (no letter designation)
- second group of panels is part of primary liner system (designated with a 'P')
AEG American Environmental Group Ltd.

TABLE 6.14

SUMMARY OF HDPE GEOMEMBRANE INSTALLATION LOG (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

					Panel Dimensions						
Panel ID	*Date Deployed*	*Contractor*	*Manufacturer's Roll Number*	*Panel Shape*	*Installed Length (ft)* [2]	*Installed Width (ft)* [2]	*Initial Area (ft^2)*	*Final Length (ft)*	*Final Width (ft)*	*Final Area (ft^2)*	*Installation Approved (Y/N)* [3]
P1	26-Apr-06	Sevenson/AEGL	146795-05	Rectangle	151	23	3473	150	22.5	3375	Y
P2	26-Apr-06	Sevenson/AEGL	146795-05	Rectangle	151	23	3473	150	22.5	3375	Y
P3	26-Apr-06	Sevenson/AEGL	146790-05	Rectangle	151	23	3473	150	22.5	3375	Y
P4	26-Apr-06	Sevenson/AEGL	146790-05	Rectangle	151	23	3473	150	22.5	3375	Y
P5	26-Apr-06	Sevenson/AEGL	146677-05	Rectangle	153	23	3519	152	22.5	3420	Y
P6	26-Apr-06	Sevenson/AEGL	146677-05	Rectangle	157	23	3611	156	22.5	3510	Y
P7	26-Apr-06	Sevenson/AEGL	146688-05	Rectangle	159	23	3657	158	22.5	3555	Y
P8	26-Apr-06	Sevenson/AEGL	146688-05	Rectangle	162	23	3726	161	22.5	3622.5	Y
P9	26-Apr-06	Sevenson/AEGL	146680-05	Rectangle	162	23	3726	161	22.5	3622.5	Y
P10	26-Apr-06	Sevenson/AEGL	146680-05	Rectangle	162	23	3726	161	22.5	3622.5	Y
P11	26-Apr-06	Sevenson/AEGL	146793-05	Rectangle	161	23	3703	160	22.5	3600	Y
P12	26-Apr-06	Sevenson/AEGL	146793-05	Trapezoid	129/85	23	2461	128/84	22.5	2385	Y
P13	26-Apr-06	Sevenson/AEGL	146793-05	Trapezoid	85/33	23	1357	84/32	22.5	1305	Y
P14	26-Apr-06	Sevenson/AEGL	146466-05	Rectangle	79	23	1817	78	22.5	1755	Y
P15	26-Apr-06	Sevenson/AEGL	146466-05	Trapezoid	79/67	23	1679	78/66	22.5	1620	Y
P16	26-Apr-06	Sevenson/AEGL	146466-05	Trapezoid	67/53	23	1380	66/52	22.5	1327	Y
P17	26-Apr-06	Sevenson/AEGL	146466-05	Trapezoid	53/36	23	1023	52/35	22.5	978	Y
P18	26-Apr-06	Sevenson/AEGL	146466-05	Trapezoid	36/17	23	609	35/16	22.5	573	Y
P19	26-Apr-06	Sevenson/AEGL	146466-05	Trapezoid	73/33	23	1219	72/32	22.5	1170	Y
P20	26-Apr-06	Sevenson/AEGL	146466-05	Triangle	33	15	247	32	14.5	232	Y
P21	26-Apr-06	Sevenson/AEGL	146795-05	Rectangle	57	23	1311	56	22.5	1260	Y
P22	26-Apr-06	Sevenson/AEGL	146790-05	Rectangle	57	23	1311	56	22.5	1260	Y
P23	26-Apr-06	Sevenson/AEGL	146680-05	Rectangle	57	23	1311	56	22.5	1260	Y
P24	26-Apr-06	Sevenson/AEGL	146677-05	Trapezoid	52/36	23	1012	51/35	22.5	967	Y
P25	26-Apr-06	Sevenson/AEGL	146677-05	Trapezoid	36/16	23	598	35/15	22.5	562	Y
P26	27-Apr-06	Sevenson/AEGL	146687-05	Rectangle	383	23	8809	382	22.5	8595	Y
P27	27-Apr-06	Sevenson/AEGL	146684-05	Rectangle	383	23	8809	382	22.5	8595	Y
P28	27-Apr-06	Sevenson/AEGL	146689-05	Rectangle	383	23	8809	382	22.5	8595	Y
P29	27-Apr-06	Sevenson/AEGL	146792-05	Rectangle	386	23	8878	385	22.5	8662.5	Y
P30	27-Apr-06	Sevenson/AEGL	146679-05	Rectangle	386	23	8878	385	22.5	8662.5	Y
P31	27-Apr-06	Sevenson/AEGL	146791-05	Rectangle	386	23	8878	385	22.5	8662.5	Y
P32	27-Apr-06	Sevenson/AEGL	146573-05	Rectangle	386	23	8878	385	22.5	8662.5	Y
P33	27-Apr-06	Sevenson/AEGL	146700-05	Rectangle	151	23	3473	150	22.5	3375	Y
P34	27-Apr-06	Sevenson/AEGL	146700-05	Rectangle	85	23	1955	84	22.5	1890	Y
P35	27-Apr-06	Sevenson/AEGL	146700-05	Rectangle	85	23	1955	84	22.5	1890	Y
P36	27-Apr-06	Sevenson/AEGL	146700-05	Rectangle	85	23	1955	84	22.5	1890	Y
P37	27-Apr-06	Sevenson/AEGL	146567-05	Trapezoid	87/52	23	1598	84/51	22.5	1518	Y
P38	27-Apr-06	Sevenson/AEGL	146567-05	Trapezoid	52/20	23	828	51/19	22.5	787	Y
P39	27-Apr-06	Sevenson/AEGL	146567-05	Trapezoid	82/58	23	1610	81/57	22.5	1552	Y
P40	27-Apr-06	Sevenson/AEGL	146567-05	Trapezoid	58/28	23	989	57/27	22.5	945	Y
P41	27-Apr-06	Sevenson/AEGL	146567-05	Triangle	28	16	224	27	15.6	209	Y
P42	28-Apr-06	Sevenson/AEGL	146567-05	Rectangle	87	23	2001	86	22.5	1935	Y
P43	28-Apr-06	Sevenson/AEGL	146571-05	Rectangle	87	23	2001	86	22.5	1935	Y
P44	28-Apr-06	Sevenson/AEGL	146571-05	Rectangle	87	23	2001	86	22.5	1935	Y
P45	28-Apr-06	Sevenson/AEGL	146571-05	Rectangle	91	23	2093	90	22.5	2025	Y
P46	28-Apr-06	Sevenson/AEGL	146571-05	Rectangle	93	23	2139	92	22.5	2070	Y
P47	28-Apr-06	Sevenson/AEGL	146569-05	Rectangle	93	23	2139	92	22.5	2070	Y
P48	28-Apr-06	Sevenson/AEGL	146569-05	Rectangle	91	23	2093	90	22.5	2025	Y
P49	28-Apr-06	Sevenson/AEGL	146572-05	Rectangle	243	23	5589	242	22.5	5445	Y
P50	28-Apr-06	Sevenson/AEGL	146572-05	Rectangle	81	23	1863	80	22.5	1800	Y
P51	28-Apr-06	Sevenson/AEGL	146572-05	Trapezoid	72/33	23	1207	71/32	22.5	1158	Y
P52	28-Apr-06	Sevenson/AEGL	146572-05	Triangle	33	18	297	32	17.5	280	Y
P53	28-Apr-06	Sevenson/AEGL	146569-05	Trapezoid	66/52	23	1357	65/51	22.5	1305	Y
P54	28-Apr-06	Sevenson/AEGL	146569-05	Trapezoid	52/24	23	874	51/23	22.5	832	Y
P55	28-Apr-06	Sevenson/AEGL	146569-05	Triangle	24	16	192	23	15.5	178	Y
PR1	26-Apr-06	Sevenson/AEGL	146793-05		Dimensions of small repair area not recorded						Y
PR2	26-Apr-06	Sevenson/AEGL	146466-05		Dimensions of small repair area not recorded						Y
PR3		Sevenson/AEGL	146677-05	Rectangle	383	23	8809	382	22.5	8595	Y
PR4		Sevenson/AEGL	146567-05		Dimensions of small repair area not recorded						Y

Notes:

[1] Approval requires acceptance of quality assurance testing results, which are as follows:

Thickness	60 mil
Density	2% to 3%
Carbon Black Content	0.94 g/cc (maximum)
Tensile Strength at Yield	126 ppi
Tensile Strength at Break	90 ppi
Elongation at Yield	12%
Elongation at Break	100%
Tear Resistance	42 lb
Puncture Resistance	90 lb
Resistance Stress Crack	200 hr (min)

[2] Installed length represents field measurement of actual deployed length

[3] Approval refers to visual inspection of material and installation procedures

PR Denotes Primary Repair area where a small amount of liner was used to fill in a triangular shaped area in one of the corners.

TABLE 6.15

SUMMARY OF HDPE GEOMEMBRANE TEST SEAMS (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

				Fusion		*Peel Test - A (ppi)*				*Peel Test - B (ppi)*				*Shear Test - A (ppi)*		*Shear Test - B (ppi)*		
Date	*Time*	*Seamer ID*	*Machine ID*	*Speed*	*Temperature (F)*	*Coupon 1*	*Coupon 2*	*Coupon 3*	*Coupon 4*	*Coupon 1*	*Coupon 2*	*Coupon 3*	*Coupon 4*	*Coupon 1*	*Coupon 2*	*Coupon 1*	*Coupon 2*	*Pass/Fail* [1]
26-Apr-06	13:00	KS	4	6	800	124	109	100	103	122	119	120	104	157	155	159	157	Pass
26-Apr-06	14:00	AP	9	6	800	126	115	113	116	128	110	111	114	163	161	157	159	Pass
26-Apr-06	14:00	VP	3	9	800	125	121	123	123	117	118	121	120	158	157	162	160	Pass
27-Apr-06	8:00	KS	X292	375	500	114	113	127	110	NR	NR	NR	NR	160	163	157	150	Pass
27-Apr-06	13:10	KS	X292	375	450	112	110	117	112	NR	NR	NR	NR	153	151	156	158	Pass
27-Apr-06	13:00	AP	9	6	800	109	114	113	116	107	111	110	109	157	155	151	153	Pass
27-Apr-06	13:20	VP	3	9.2	800	105	115	116	114	107	113	114	110	157	152	153	156	Pass
28-Apr-06	8:00	KS	X292	375	400	127	124	131	133	NR	NR	NR	NR	158	157	155	153	Pass
28-Apr-06	10:20	VP	3	9	800	114	112	117	112	108	109	114	110	160	158	153	154	Pass
28-Apr-06	10:35	AP	9	6	800	106	115	116	113	104	111	114	110	150	154	151	156	Pass
28-Apr-06	13:00	AP	9	6	800	110	111	113	113	107	109	110	111	154	150	153	155	Pass
28-Apr-06	13:15	KS	X292	350	400	106	105	109	107	NR	NR	NR	NR	143	144	147	140	Pass
28-Apr-06	13:15	VP	3	9.2	800	112	110	111	113	108	108	107	109	151	142	150	153	Pass

Notes:

NR Not recorded.

[1] Acceptance of test seams requires shear test results of 120 ppi (2,000 psi) and peel test results of 90 ppi (1,500 psi).

TABLE 6.16

SUMMARY OF HDPE GEOMEMBRANE NON-DESTRUCTIVE SEAM TEST RESULTS (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Seam Number	*Weld Date*	*Time Welded*	*Operator Name/ID*	*Seam Length (ft)*	*Machine No.*	*Machine Speed*	*Machine Temperature (F)*	*Ambient Temperature (F)*	*Test Date*	*Test Type*	*Air Test Time In (1)*	*Air Test Time Out (1)*	*Test Results (Pass/Fail) (2)*	*Non-Destructive Test Completed? (Y/N)**	*Destructive Test Sample ID*
P1/P2	26-Apr-06	13:55	KS	150	4	6	800	68	26-Apr-06	Air Test	14:27	14:32	Pass	Y	DT-16
P2/P3	26-Apr-06	14:10	AP	150	9	6	800	68	26-Apr-06	Air Test	14:28	14:33	Pass	Y	DT-15
P3/P4	26-Apr-06	14:30	VP	150	3	9	800	65	26-Apr-06	Air Test	14:50	14:55	Pass	Y	DT-14
P4/P5	26-Apr-06	14:35	KS	152	4	6	800	65	26-Apr-06	Air Test	15:00	15:05	Pass	Y	DT-13
P5/P6	26-Apr-06	14:28	AP	156	9	6	800	65	26-Apr-06	Air Test	15:51	14:56	Pass	Y	DT-12
P6/P7	26-Apr-06	14:55	VP	158	3	9	800	65	26-Apr-06	Air Test	15:25	15:30	Pass	Y	DT-11
P7/P8	26-Apr-06	15:00	KS	161	4	6	800	65	26-Apr-06	Air Test	15:26	15:31	Pass	Y	DT-10
P8/P9	26-Apr-06	14:53	AP	161	9	6	800	65	26-Apr-06	Air Test	15:27	15:32	Pass	Y	DT-9
P9/P10	26-Apr-06	15:20	VP	161	3	9	800	65	26-Apr-06	Air Test	15:50	15:55	Pass	Y	DT-8
P10/P11	26-Apr-06	15:24	AP	160	9	6	800	65	26-Apr-06	Air Test	15:51	15:56	Pass	Y	DT-7
P11/P12	26-Apr-06	15:35	KS	128	4	6	800	65	26-Apr-06	Air Test	16:25	16:30	Pass	Y	DT-6
P12/P13	26-Apr-06	15:55	AP	84	9	6	800	65	26-Apr-06	Air Test	16:35	16:40	Pass	Y	DT-5
P13/R1	26-Apr-06	Not recorded	AP	32	9	6	800	65	26-Apr-06	Air Test	16:50	16:55	Pass	Y	-
P14/P15	26-Apr-06	16:00	VP	78	3	9	800	65	26-Apr-06	Air Test	16:10	16:15	Pass	Y	DT-1
P15/P16	26-Apr-06	16:00	KS	66	4	6	800	65	26-Apr-06	Air Test	16:18	16:23	Pass	Y	DT-2
P16/P17	26-Apr-06	16:15	KS	52	4	6	800	65	26-Apr-06	Air Test	16:26	16:31	Pass	Y	DT-3
P17/P18	26-Apr-06	16:20	VP	35	3	9	800	65	26-Apr-06	Air Test	16:41	16:46	Pass	Y	DT-4
P18/R2	26-Apr-06	16:30	VP	16	3	9	800	65	26-Apr-06	Air Test	16:43	16:48	Pass	Y	-
P14/P11	26-Apr-06	16:50	AP	22	9	6	800	65	26-Apr-06	Air Test	17:13	17:18	Pass	Y	-
P15/P11	26-Apr-06	16:55	AP	12	9	6	800	65	26-Apr-06	Air Test	17:13	17:18	Pass	Y	-
P15/P12	26-Apr-06	16:58	AP	14	9	6	800	65	26-Apr-06	Air Test	17:20	17:25	Pass	Y	-
P16/P12	26-Apr-06	17:02	AP	26	9	6	800	65	26-Apr-06	Air Test	17:20	17:25	Pass	Y	-
P17/P12	26-Apr-06	17:07	AP	11	9	6	800	65	26-Apr-06	Air Test	17:26	17:31	Pass	Y	-
P17/P13	26-Apr-06	17:11	AP	15	9	6	800	65	26-Apr-06	Air Test	17:26	17:31	Pass	Y	-
P18/P13	26-Apr-06	17:14	AP	28	9	6	800	65	26-Apr-06	Air Test	17:32	17:37	Pass	Y	-
R1/R2	26-Apr-06	17:20	AP	18	9	6	800	65	26-Apr-06	Air Test	17:32	17:37	Pass	Y	-
P1/P19	26-Apr-06	16:25	KS	72	4	6	800	65	26-Apr-06	Air Test	17:00	17:05	Pass	Y	DT-17
P19/P20	26-Apr-06	16:43	VP	32	3	9	800	65	26-Apr-06	Air Test	17:01	17:06	Pass	Y	DT-18
P21/P22	26-Apr-06	17:40	KS	56	4	6	800	65	26-Apr-06	Air Test	17:46	17:51	Pass	Y	DT-22
P22/P23	26-Apr-06	17:50	VP	56	3	9	800	65	26-Apr-06	Air Test	17:59	18:04	Pass	Y	DT-21
P23/P24	26-Apr-06	17:53	KS	51	4	6	800	65	26-Apr-06	Air Test	17:58	.18:03	Pass	Y	DT-20
P24/P25	26-Apr-06	17:58	VP	35	3	9	800	65	26-Apr-06	Air Test	18:06	17:11	Pass	Y	DT-19
P25/R3	26-Apr-06	17:05	VP	15	3	9	800	63	26-Apr-06	Air Test	18:07	18:12	Pass	Y	-
P21/P1	26-Apr-06	18:05	KS	22	4	6	800	63	26-Apr-06	Air Test	18:15	18:20	Pass	Y	-
P22/P1	26-Apr-06	18:10	KS	22	4	6	800	63	26-Apr-06	Air Test	18:15	18:20	Pass	Y	-
P23/P1	26-Apr-06	18:15	KS	22	4	6	800	63	26-Apr-06	Air Test	18:21	18:26	Pass	Y	-
P24/P1	26-Apr-06	18:20	KS	6	4	6	800	63	26-Apr-06	Extrusion	N/A	N/A	N/A	Y	-
P24/P19	26-Apr-06	18:21	KS	20	4	6	800	63	26-Apr-06	Air Test	18:22	18:27	Pass	Y	-
P25/P19	26-Apr-06	18:24	KS	18	4	6	800	63	27-Apr-06	Air Test	18:50	18:55	Pass	Y	-
P25/P20	26-Apr-06	18:26	KS	10	4	6	800	63	27-Apr-06	Air Test	19:37	19:42	Pass	Y	-
R3/P20	26-Apr-06	18:28	KS	12	4	6	800	63	27-Apr-06	Air Test	19:37	19:42	Pass	Y	-
P26/P27	27-Apr-06	14:20	VP	382	3	9.2	800	75	27-Apr-06	Air Test	15:48	15:53	Pass	Y	DT-24
P14/P26	27-Apr-06	14:15	AP	78	9	6	800	75	27-Apr-06	Air Test	15:05	15:10	Pass	Y	-

TABLE 6.16

SUMMARY OF HDPE GEOMEMBRANE NON-DESTRUCTIVE SEAM TEST RESULTS (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Seam Number	*Weld Date*	*Time Welded*	*Operator Name/ID*	*Seam Length (ft)*	*Machine No.*	*Machine Speed*	*Machine Temperature (F)*	*Ambient Temperature (F)*	*Test Date*	*Test Type*	*Air Test Time In (1)*	*Air Test Time Out (1)*	*Test Results (Pass/Fail) (2)*	*Non-Destructive Test Completed? (Y/N)**	*Destructive Test Sample ID*
P11/P26	27-Apr-06	14:25	AP	22	9	6	800	75	27-Apr-06	Air Test	15:05	15:10	Pass	Y	-
P10/P26	27-Apr-06	14:27	AP	22	9	6	800	75	27-Apr-06	Air Test	15:12	15:17	Pass	Y	-
P9/P26	27-Apr-06	14:30	AP	22	9	6	800	75	27-Apr-06	Air Test	15:12	15:17	Pass	Y	-
P8/P26	27-Apr-06	14:33	AP	22	9	6	800	75	27-Apr-06	Air Test	15:19	15:26	Pass	Y	-
P7/P26	27-Apr-06	14:37	AP	22	9	6	800	75	27-Apr-06	Air Test	15:19	15:26	Pass	Y	-
P6/P26	27-Apr-06	14:41	AP	22	9	6	800	75	27-Apr-06	Air Test	15:26	15:31	Pass	Y	-
P5/P26	27-Apr-06	14:45	AP	22	9	6	800	75	27-Apr-06	Air Test	15:26	15:31	Pass	Y	-
P4/P26	27-Apr-06	14:49	AP	22	9	6	800	75	27-Apr-06	Air Test	1:33	15:38	Pass	Y	-
P3/P26	27-Apr-06	14:53	AP	22	9	6	800	75	27-Apr-06	Air Test	15:33	15:38	Pass	Y	-
P2/P26	27-Apr-06	14:57	AP	22	9	6	800	75	27-Apr-06	Air Test	15:40	15:45	Pass	Y	-
P1/P26	27-Apr-06	15:02	AP	22	9	6	800	75	27-Apr-06	Air Test	15:40	15:45	Pass	Y	-
P21/P26	27-Apr-06	15:06	AP	57	9	6	800	75	27-Apr-06	Air Test	15:47	15:52	Pass	Y	DT-23
P27/P28	27-Apr-06	15:28	AP	382	9	6	800	75	27-Apr-06	Air Test	16:42	16:47	Pass	Y	DT-25
P28/P29	27-Apr-06	15:35	VP	385	3	9.2	800	75	27-Apr-06	Air Test	16:40	16:45	Pass	Y	DT-26
P29/P30	27-Apr-06	16:20	AP	385	9	6	800	75	27-Apr-06	Air Test	17:17	17:22	Pass	Y	DT-27
P30/P31	27-Apr-06	16:30	VP	385	3	9.2	800	75	27-Apr-06	Air Test	17:15	17:20	Pass	Y	DT-28
P31/P32	27-Apr-06	17:15	AP	385	9	6	800	75	27-Apr-06	Air Test	18:05	18:10	Pass	Y	DT-29
P32/P33	27-Apr-06	17:20	VP	150	3	9.2	800	70	27-Apr-06	Air Test	17:50	17:55	Pass	Y	DT-30
P34/P35	27-Apr-06	17:50	VP	84	3	9.2	800	70	27-Apr-06	Air Test	18:16	18:21	Pass	Y	DT-33
P35/P36	27-Apr-06	18:05	VP	84	3	9.2	800	70	27-Apr-06	Air Test	18:15	18:20	Pass	Y	DT-32
P36/P37	27-Apr-06	18:00	AP	84	9	6	800	70	27-Apr-06	Air Test	18:25	18:30	Pass	Y	DT-31
P37/P38	27-Apr-06	18:21	AP	51	9	6	800	70	28-Apr-06	Air Test	18:27	18:32	Pass	Y	DT-34
P38/R4	27-Apr-06	18:40	AP	19	9	6	800	70	28-Apr-06	Air Test	20:03	20:08	Pass	Y	-
P33/P39	27-Apr-06	18:20	VP	80	3	9.2	800	70	27-Jun-06	Air Test	6:36	18:41	Pass	Y	DT-35
P39/P40	27-Apr-06	18:30	AP	57	9	6	800	70	27-Jun-06	Air Test	6:40	18:45	Pass	Y	DT-36
P40/P41	27-Apr-06	18:35	AP	27	9	6	800	70	27-Jun-06	Air Test	7:50	7:55	Pass	Y	-
P33/P34	27-Apr-06	18:40	VP	20	3	9.2	800	70	27-Jun-06	Air Test	7:35	7:40	Pass	Y	-
P33/P35	27-Apr-06	18:44	VP	22	3	9.2	800	70	27-Jun-06	Air Test	7:35	7:40	Pass	Y	-
P33/P36	27-Apr-06	18:47	VP	22	3	9.2	800	70	27-Jun-06	Air Test	7:42	7:47	Pass	Y	-
P37/P39	27-Apr-06	18:40	AP	29	9	6	800	70	27-Jun-06	Air Test	7:23	7:28	Pass	Y	-
P38/P40	27-Apr-06	18:45	AP	26	9	6	800	70	27-Jun-06	Air Test	7:50	7:55	Pass	Y	-
P38/P41	27-Apr-06	18:49	AP	10	9	6	800	70	27-Jun-06	Air Test	7:57	8:02	Pass	Y	-
R4/P41	27-Apr-06	18:52	AP	14	9	6	800	70	27-Jun-06	Air Test	7:57	8:02	Pass	Y	-
P37/P40	27-Apr-06	18:44	AP	6	9	6	800	70	27-Jun-06	Extrusion	N/A	N/A	N/A	Y	-
P34/P42	28-Apr-06	10:40	VP	86	3	9	800	70	28-Apr-06	Air Test	11:05	11:10	Pass	Y	DT-37
P42/P43	28-Apr-06	10:50	AP	86	9	6	800	70	28-Apr-06	Air Test	11:06	11:11	Pass	Y	DT-38
P43/P44	28-Apr-06	11:10	VP	73	3	9	800	70	28-Apr-06	Air Test	11:25	11:30	Pass	Y	DT-39
P44/P45	28-Apr-06	11:13	AP	90	9	6	800	70	28-Apr-06	Air Test	11:26	11:31	Pass	Y	DT-40
P45/P46	28-Apr-06	11:35	AP	92	9	6	800	70	28-Apr-06	Air Test	13:05	13:10	Pass	Y	DT-41
P46/P47	28-Apr-06	11:25	VP	92	3	9	800	70	28-Apr-06	Air Test	13:06	13:11	Pass	Y	DT-42
P47/P48	28-Apr-06	11:37	VP	90	3	9	800	70	28-Apr-06	Air Test	13:15	13:20	Pass	Y	DT-43
P32/P49	28-Apr-06	13:30	AP	242	9	6	800	80	28-Apr-06	Air Test	15:30	15:35	Pass	Y	DT-45
P50/P49	28-Apr-06	13:25	VP	80	3	9	800	80	28-Apr-06	Air Test	13:55	14:00	Pass	Y	DT-44

TABLE 6.16

SUMMARY OF HDPE GEOMEMBRANE NON-DESTRUCTIVE SEAM TEST RESULTS (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Seam Number	*Weld Date*	*Time Welded*	*Operator Name/ID*	*Seam Length (ft)*	*Machine No.*	*Machine Speed*	*Machine Temperature (F)*	*Ambient Temperature (F)*	*Test Date*	*Test Type*	*Air Test Time In* [1]	*Air Test Time Out* [1]	*Test Results (Pass/Fail)* [2]	*Non-Destructive Test Completed? (Y/N)**	*Destructive Test Sample ID*
P50/P51	28-Apr-06	13:37	VP	71	3	9	800	80	28-Apr-06	Air Test	13:47	13:52	Pass	Y	DT-46
P53/P54	28-Apr-06	14:05	VP	51	3	9	800	80	28-Apr-06	Air Test	14:12	14:17	Pass	Y	DT-48
P54/P55	28-Apr-06	13:55	VP	25	3	9	800	80	28-Apr-06	Air Test	14:03	14:08	Pass	Y	-
P51/P52	28-Apr-06	13:50	VP	32	3	9	800	80	28-Apr-06	Air Test	14:02	14:07	Pass	Y	DT-47
P48/P53	28-Apr-06	14:42	VP	65	3	9	800	80	28-Apr-06	Air Test	14:51	14:56	Pass	Y	DT-49
P48/P50	28-Apr-06	14:37	VP	22	3	9	800	80	28-Apr-06	Air Test	14:45	14:50	Pass	Y	-
P55/P52	28-Apr-06	14:25	VP	23	3	9	800	80	28-Apr-06	Air Test	14:30	14:35	Pass	Y	-
P54/P52	28-Apr-06	Not recorded	VP	5	3	9	800	85	28-Apr-06	Extrusion	N/A	N/A	N/A	Y	-
P51/P54	28-Apr-06	Not recorded	VP	23	3	9	800	85	28-Apr-06	Air Test	14:37	14:42	Pass	Y	-
P51/P53	28-Apr-06	Not recorded	VP	16	3	9	800	85	28-Apr-06	Air Test	14:37	14:42	Pass	Y	-
P53/P50	28-Apr-06	Not recorded	VP	10	3	9	800	85	28-Apr-06	Air Test	14:45	14:50	Pass	Y	-
P33/P49	28-Apr-06	14:10	AP	22	9	6	800	85	28-Apr-06	Air Test	15:22	15:27	Pass	Y	-
P42/P49	28-Apr-06	14:28	AP	22	9	6	800	85	28-Apr-06	Air Test	15:15	15:20	Pass	Y	-
P43/P49	28-Apr-06	14:33	AP	22	9	6	800	85	28-Apr-06	Air Test	15:15	15:20	Pass	Y	-
P44/P49	28-Apr-06	14:36	AP	22	9	6	800	85	28-Apr-06	Air Test	15:07	15:12	Pass	Y	-
P45/P49	28-Apr-06	14:38	AP	22	9	6	800	85	28-Apr-06	Air Test	15:07	15:12	Pass	Y	-
P46/P49	28-Apr-06	14:42	AP	22	9	6	800	85	28-Apr-06	Air Test	15:00	15:05	Pass	Y	-
P47/P49	28-Apr-06	14:45	AP	22	9	6	800	85	28-Apr-06	Air Test	15:00	15:05	Pass	Y	-
P48/P49	28-Apr-06	15:00	AP	22	9	6	800	85	28-Apr-06	Air Test	14:53	14:58	Pass	Y	-

Notes:

"-" No destructive seam test was completed due to short length of seam. Destructive seam test for this seam was completed as part of the destructive seam test for a longer seam.

* A non-destructive seam test was not completed due to short length of seam. non-destructive seam test for this seam was completed as part of the non-destructive seam test for A longer seam.

[1] Air pressure test conducted at 30 PSI.

[2] Air pressure test requires an air pressure hold time of 5 minutes, with an allowable air pressure loss of 2 PSI.

TABLE 6.17

SUMMARY OF HDPE GEOMEMBRANE DESTRUCTIVE SEAM TEST RESULTS (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Destructive Test Sample ID	*Seam Number*	*AEG Test Date*	*AEG Weld Type*	*AEG Peel Coupon 1A*	*AEG Peel Coupon 1B*	*AEG Peel Coupon 2A*	*AEG Peel Coupon 2B*	*AEG Peel Coupon 3A*	*AEG Peel Coupon 3B*	*AEG Peel Coupon 4A*	*AEG Peel Coupon 4B*	*AEG Coupon 1 Shear*	*AEG Coupon 2 Shear*	*Test Date* [1]	*Weld Type* [1]	*Peel Coupon 1A* [1]	*Peel Coupon 2A* [1]	*Peel Coupon 3A* [1]	*Peel Coupon 4A* [1]	*Peel Coupon 5A* [1]	*Peel Coupon 1B* [1]	*Peel Coupon 2B* [1]	*Peel Coupon 3B* [1]	*Peel Coupon 4B* [1]	*Peel Coupon 5B* [1]	*Coupon 1 Shear* [1]	*Coupon 2 Shear* [1]	*Coupon 3 Shear* [1]	*Coupon 4 Shear* [1]	*Coupon 5 Shear* [1]	*Mean Peel A (ppi)* [1]	*Mean Peel B (ppi)* [1]	*Mean Shear (ppi)* [1]	*Destructive Test Pass/Fail* [2]
DT-1	P14/P15	26-Apr-06	Heat Fusion	129	128	127	133	130	133	121	123	167/157	157/160	27-Apr-06	Heat Fusion	132	133	134	143	134	125	128	121	123	121	168	167	168	171	168	135	124	168	Pass
DT-2	P15/P16	26-Apr-06	Heat Fusion	122	129	121	117	123	119	130	127	166/151	153/158	27-Apr-06	Heat Fusion	137	140	133	136	134	126	125	126	125	121	171	171	177	173	174	136	125	173	Pass
DT-3	P16/P17	26-Apr-06	Heat Fusion	123	123	121	123	119	124	129	127	155/157	151/153	27-Apr-06	Heat Fusion	138	134	133	134	134	129	119	121	120	122	169	169	172	169	174	135	122	171	Pass
DT-4	P17/P18	26-Apr-06	Heat Fusion	119	127	133	129	136	130	126	120	165/160	156/160	27-Apr-06	Heat Fusion	137	129	135	134	131	122	124	123	127	119	165	163	164	164	163	133	123	164	Pass
DT-5	P12/P13	26-Apr-06	Heat Fusion	121	123	131	127	124	125	126	129	158/153	153/157	27-Apr-06	Heat Fusion	131	121	125	134	128	140	148	139	139	141	172	168	172	170	171	128	141	171	Pass
DT-6	P11/P12	26-Apr-06	Heat Fusion	138	134	133	127	129	131	130	133	158/170	153/151	27-Apr-06	Heat Fusion	133	137	136	136	134	125	121	120	128	132	175	175	172	172	171	135	125	173	Pass
DT-7	P10/P11	26-Apr-06	Heat Fusion	120	124	130	126	131	130	127	123	164/161	158/159	27-Apr-06	Heat Fusion	134	135	137	132	136	141	126	129	148	138	178	173	173	171	169	135	136	173	Pass
DT-8	P9/P10	26-Apr-06	Heat Fusion	123	130	127	131	133	128	129	134	160/159	165/157	27-Apr-06	Heat Fusion	142	138	133	135	132	120	124	127	124	126	178	173	172	173	173	136	124	174	Pass
DT-9	P8/P9	26-Apr-06	Heat Fusion	122	120	129	123	128	133	131	127	163/157	164/159	27-Apr-06	Heat Fusion	126	129	133	135	125	135	144	141	139	140	176	177	178	176	176	130	140	177	Pass
DT-10	P7/P8	26-Apr-06	Heat Fusion	121	126	131	133	127	128	123	129	171/167	166/160	27-Apr-06	Heat Fusion	138	138	141	142	138	130	121	121	127	124	171	169	169	168	169	139	125	169	Pass
DT-11	P6/P7	26-Apr-06	Heat Fusion	122	128	128	123	131	133	130	127	161/166	167/168	27-Apr-06	Heat Fusion	139	135	137	139	135	124	122	139	129	122	170	177	172	172	174	137	127	173	Pass
DT-12	P5/P6	26-Apr-06	Heat Fusion	124	126	131	133	127	121	126	124	172/161	166/164	27-Apr-06	Heat Fusion	126	135	127	130	128	130	147	146	144	146	172	176	173	172	174	129	143	173	Pass
DT-13	P4/P5	26-Apr-06	Heat Fusion	125	126	127	131	128	127	130	133	171/167	158/163	27-Apr-06	Heat Fusion	123	119	123	132	128	115	136	133	133	121	168	169	170	167	173	125	128	169	Pass
DT-14	P3/P4	26-Apr-06	Heat Fusion	126	120	117	118	130	127	128	127	161/163	157/155	27-Apr-06	Heat Fusion	140	138	146	138	136	114	121	115	114	120	170	168	168	171	170	140	117	169	Pass
DT-15	P2/P3	26-Apr-06	Heat Fusion	118	122	119	120	127	126	125	123	157/161	163/159	27-Apr-06	Heat Fusion	123	124	123	127	124	137	132	123	140	132	175	167	171	171	171	124	133	171	Pass
DT-16	P1/P2	26-Apr-06	Heat Fusion	127	126	131	126	124	122	130	129	157/166	158/161	27-Apr-06	Heat Fusion	142	138	138	139	134	120	120	124	120	124	180	177	173	174	174	138	122	176	Pass
DT-17	P1/P19	26-Apr-06	Heat Fusion	122	123	124	123	119	118	123	122	163/161	157/155	27-Apr-06	Heat Fusion	132	135	135	112	131	121	117	124	122	121	169	168	175	170	169	129	121	170	Pass
DT-18	P19/P20	26-Apr-06	Heat Fusion	124	129	131	133	117	116	121	124	163/156	160/162	27-Apr-06	Heat Fusion	128	128	128	133	133	123	121	127	119	114	169	170	169	167	165	130	121	168	Pass
DT-19	P24/P25	26-Apr-06	Heat Fusion	121	120	123	122	131	126	127	121	156/158	160/157	27-Apr-06	Heat Fusion	139	129	142	126	141	126	114	123	115	119	175	174	171	176	173	135	119	174	Pass
DT-20	P23/P24	26-Apr-06	Heat Fusion	129	121	127	122	131	133	128	123	146/151	144/147	27-Apr-06	Heat Fusion	145	132	134	135	133	132	128	131	123	127	180	177	178	179	179	136	128	179	Pass
DT-21	P22/P23	26-Apr-06	Heat Fusion	125	124	131	130	133	127	128	122	155/160	157/150	27-Apr-06	Heat Fusion	131	122	122	122	121	120	118	140	124	118	178	174	174	170	168	124	124	173	Pass
DT-22	P21/P22	26-Apr-06	Heat Fusion	125	121	123	120	131	126	127	122	154/153	149/152	27-Apr-06	Heat Fusion	140	133	143	141	136	139	121	133	133	114	177	176	174	178	174	139	128	176	Pass
DT-23	P26/P21	27-Apr-06	Heat Fusion	128	121	127	124	133	129	122	120	152/150	157/160	27-Apr-06	Heat Fusion	114	112	116	116	114	131	141	143	136	140	174	178	176	172	172	114	138	174	Pass
DT-24	P27/P26	27-Apr-06	Heat Fusion	120	117	123	121	127	129	130	131	154/151	147/149	27-Apr-06	Heat Fusion	122	123	139	124	120	122	124	123	149	131	168	167	168	170	169	126	130	168	Pass
DT-25	P28/P27	27-Apr-06	Heat Fusion	119	119	121	120	127	126	125	124	150/153	157/160	27-Apr-06	Heat Fusion	136	147	127	153	133	130	133	114	123	127	174	173	172	170	173	139	125	172	Pass
DT-26	P29/P28	27-Apr-06	Heat Fusion	116	115	117	114	121	122	119	120	160/159	153/161	27-Apr-06	Heat Fusion	137	123	133	137	136	123	132	121	124	120	171	171	171	171	174	133	124	172	Pass
DT-27	P29/P30	27-Apr-06	Heat Fusion	128	120	123	121	129	130	133	130	149/151	155/156	27-Apr-06	Heat Fusion	125	127	122	126	134	139	129	141	136	143	171	168	170	167	172	127	138	170	Pass
DT-28	P31/P30	27-Apr-06	Heat Fusion	128	127	123	121	120	119	123	122	150/147	153/155	27-Apr-06	Heat Fusion	125	124	126	129	132	124	122	124	128	123	173	173	176	173	173	127	124	174	Pass
DT-29	P32/P31	27-Apr-06	Heat Fusion	125	122	127	125	121	119	127	126	150/147	151/153	27-Apr-06	Heat Fusion	119	129	129	128	127	133	137	136	130	133	181	177	179	177	171	126	134	177	Pass
DT-30	P33/P32	27-Apr-06	Heat Fusion	129	124	127	123	126	126	125	131	147/151	144/148	27-Apr-06	Heat Fusion	137	139	135	139	137	127	130	127	127	127	168	169	167	170	177	137	128	170	Pass
DT-31	P36/P37	27-Apr-06	Heat Fusion	121	122	119	117	123	121	119	116	147/146	151/155	27-Apr-06	Heat Fusion	114	119	118	125	125	133	127	128	133	120	180	175	176	180	184	120	128	179	Pass
DT-32	P35/P36	27-Apr-06	Heat Fusion	124	122	119	117	130	127	128	126	147/144	151/155	27-Apr-06	Heat Fusion	132	133	131	132	131	123	125	126	122	124	186	179	181	181	183	132	124	182	Pass
DT-33	P34/P35	27-Apr-06	Heat Fusion	122	121	127	121	130	139	129	126	150/147	151/154	27-Apr-06	Heat Fusion	131	134	135	129	129	133	140	131	124	116	177	176	181	177	177	132	129	178	Pass
DT-34	P37/P38	27-Apr-06	Heat Fusion	122	121	127	125	126	121	127	124	157/155	151/156	27-Apr-06	Heat Fusion	123	126	123	120	121	134	129	133	133	133	177	172	180	175	179	123	132	177	Pass
DT-35	P33/P39	27-Apr-06	Heat Fusion	130	127	128	127	119	118	123	121	147/151	147/153	27-Apr-06	Heat Fusion	133	139	129	132	135	125	129	123	128	124	171	171	172	169	169	134	126	170	Pass
DT-36	P39/P40	27-Apr-06	Heat Fusion	130	124	127	125	126	123	133	131	146/148	151/150	27-Apr-06	Heat Fusion	124	121	124	124	126	130	135	138	138	134	175	175	180	177	173	124	135	176	Pass
DT-37	P34/P42	28-Apr-06	Heat Fusion	124	122	127	128	133	131	126	125	149/153	151/155	28-Apr-06	Heat Fusion	118	116	122	117	118	157	122	154	141	126	171	171	173	170	170	118	140	171	Pass
DT-38	P43/P42	28-Apr-06	Heat Fusion	120	119	123	121	133	131	135	130	151/147	160/159	28-Apr-06	Heat Fusion	129	123	126	126	130	137	145	153	144	120	180	180	171	176	175	127	140	176	Pass
DT-39	P43/P44	28-Apr-06	Heat Fusion	129	122	127	125	130	131	137	133	151/155	150/153	28-Apr-06	Heat Fusion	137	143	138	142	138	128	129	132	140	118	187	188	186	190	190	140	129	188	Pass
DT-40	P44/P45	28-Apr-06	Heat Fusion	123	124	121	123	127	125	119	122	151/147	156/153	28-Apr-06	Heat Fusion	133	131	129	135	129	140	118	133	135	126	182	177	185	183	180	131	130	181	Pass
DT-41	P45/P46	28-Apr-06	Heat Fusion	121	118	130	127	133	129	131	130	147/151	153/158	28-Apr-06	Heat Fusion	128	125	129	126	125	127	128	133	141	119	180	176	180	182	177	127	130	179	Pass
DT-42	P46/P47	28-Apr-06	Heat Fusion	127	125	119	118	130	126	127	123	147/151	153/155	28-Apr-06	Heat Fusion	122	137	131	137	133	117	140	121	120	147	179	179	176	178	178	132	129	178	Pass
DT-43	P47/P48	28-Apr-06	Heat Fusion	123	117	125	119	123	121	129	127	151/156	149/151	28-Apr-06	Heat Fusion	121	130	120	126	139	122	139	123	134	130	181	182	178	182	181	127	130	181	Pass
DT-44	P49/P50	28-Apr-06	Heat Fusion	119	117	121	120	130	129	127	128	145/153	150/151	28-Apr-06	Heat Fusion	142	137	150	137	137	124	119	136	124	134	174	175	176	178	177	141	127	176	Pass
DT-45	P32/P49	28-Apr-06	Heat Fusion	125	121	123	119	131	126	129	123	151/147	155/158	28-Apr-06	Heat Fusion	129	129	131	138	130	132	142	137	146	139	181	175	177	177	175	131	139	177	Pass
DT-46	P51/P50	28-Apr-06	Heat Fusion	119	130	133	129	127	126	133	129	147/150	149/153	28-Apr-06	Heat Fusion	119	128	119	121	124	126	131	133	139	133	181	183	182	180	184	122	132	182	Pass
DT-47	P52/P51	28-Apr-06	Heat Fusion	133	129	127	125	130	127	126	126	153/147	153/151	28-Apr-06	Heat Fusion	130	142	137	144	133	126	127	137	131	131	180	176	185	178	180	137	130	180	Pass
DT-48	P53/P54	28-Apr-06	Heat Fusion	125	127	133	131	126	124	127	121	153/155	147/149	28-Apr-06	Heat Fusion	135	131	133	137	125	129	120	132	131	131	179	184	180	183	185	132	129	182	Pass
DT-49	P48/P53	28-Apr-06	Heat Fusion	121	119	127	123	130	127	131	136	150/151	157/158	28-Apr-06	Heat Fusion	129	130	130	132	124	118	123	126	122	137	180	187	284	180	182	129	125	203	Pass

Note:

[1] Destructive seam quality assurance test results obtained from TRI/Environmental, Inc. laboratory testing final reports.

[2] Acceptance of destructive seam shear test requires 120 ppi (2,000 psi) and acceptance of destructive seam peel test requires 90 ppi (1,500 psi).

TABLE 6.18

SUMMARY OF HDPE GEOMEMBRANE SEAM REPAIRS (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Repair Number	Test Date	Damage Code [1]	Seam ID	Location (Station) [2]	Repair Type [3]	Repair Test [4]	Repair Size		P/F
							Length (in)	Width (in)	
R1	28-Apr-06	AO	13/R2	Intersection	Patch	VT	32	15	Pass
R2	28-Apr-06	AO	18/R2	Intersection	Patch	VT	10	16	Pass
R3	28-Apr-06	AO	25/20	Intersection	Patch	VT	10	10	Pass
R4	28-Apr-06	T	14/15/11	Intersection	Patch	VT	2	2	Pass
R5	28-Apr-06	T	15/11/12	Intersection	Patch	VT	2	2	Pass
R6	28-Apr-06	T	12/15/16	Intersection	Patch	VT	2	2	Pass
R7	28-Apr-06	T	12/16/17	Intersection	Patch	VT	2	2	Pass
R8	28-Apr-06	T	12/13/17	Intersection	Patch	VT	2	2	Pass
R9	28-Apr-06	T	13/17/18	Intersection	Patch	VT	2	2	Pass
R10	28-Apr-06	T	13/18/R1/R2	Intersection	Patch	VT	3	3	Pass
R11	28-Apr-06	DS-5	12/13	25 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R12	28-Apr-06	DS-6	11/12	100 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R13	28-Apr-06	DS-7	11/10	55 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R14	28-Apr-06	DS-8	9/10	10 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R15	28-Apr-06	DS-9	8/9	80 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R16	28-Apr-06	DS-10	7/8	115 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R17	28-Apr-06	DS-11	6/7	150 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R18	28-Apr-06	DS-12	5/6	110 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R19	28-Apr-06	DS-13	4/5	65 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R20	28-Apr-06	DS-14	3/4	120 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R21	28-Apr-06	DS-15	2/3	105 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R22	28-Apr-06	DS-16	1/2	70 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R23	28-Apr-06	DS-17	1/19	30 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R24	28-Apr-06	T	1/21/22	Intersection	Patch	VT	2	2	Pass
R25	28-Apr-06	T	1/22/23	Intersection	Patch	VT	2	2	Pass
R26	28-Apr-06	T	1/23/24	Intersection	Patch	VT	2	2	Pass
R27	28-Apr-06	T	1/24/19	Intersection	Patch	VT	2	2	Pass
R28	28-Apr-06	T	19/24/25	Intersection	Patch	VT	2	2	Pass
R29	28-Apr-06	T	25/20/19	Intersection	Patch	VT	2	2	Pass
R30	28-Apr-06	T	25/20/R3	Intersection	Patch	VT	2	2	Pass
R31	28-Apr-06	DS-1	14/15	18 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R32	28-Apr-06	DS-2	15/16	40 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R33	28-Apr-06	DS-3	17/16	33 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R34	28-Apr-06	DS-4	17/18	12 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R35	28-Apr-06	DS-18	20/19	10 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R36	28-Apr-06	DS-19	24/25	21 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R37	28-Apr-06	DS-20	23/24	33 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R38	28-Apr-06	DS-21	23/22	44 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R39	28-Apr-06	DS-22	21/22	37 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R40	28-Apr-06	T	14/11/26	Intersection	Patch	VT	3	3	Pass
R41	28-Apr-06	T	26/11/10	Intersection	Patch	VT	2	2	Pass
R42	28-Apr-06	T	26/10/9	Intersection	Patch	VT	2	2	Pass
R43	28-Apr-06	T	26/8/9	Intersection	Patch	VT	2	2	Pass
R44	28-Apr-06	T	26/8/7	Intersection	Patch	VT	2	2	Pass
R45	28-Apr-06	T	26/7/6	Intersection	Patch	VT	2	2	Pass
R46	28-Apr-06	T	26/6/5	Intersection	Patch	VT	2	2	Pass
R47	28-Apr-06	T	26/5/4	Intersection	Patch	VT	2	2	Pass
R48	28-Apr-06	T	26/4/3	Intersection	Patch	VT	2	2	Pass
R49	28-Apr-06	T	26/2/3	Intersection	Patch	VT	2	2	Pass
R50	28-Apr-06	T	26/1/2	Intersection	Patch	VT	2	2	Pass
R51	28-Apr-06	T	26/1/21	Intersection	Patch	VT	3	3	Pass
R52	28-Apr-06	DS-23	26/21	5 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R53	28-Apr-06	DS-24	26/27	290 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R54	28-Apr-06	DS-25	27/28	225 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R55	28-Apr-06	DS-26	28/29	32 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R56	28-Apr-06	DS-27	29/30	37 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R57	28-Apr-06	DS-28	30/31	214 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R58	28-Apr-06	DS-29	31/32	28 ft of Seam Extending West to East	Patch	VT	6	2	Pass
R59	28-Apr-06	DS-30	32/33	100 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R60	28-Apr-06	DS-31	36/37	15 ft of Seam Extending North to South	Patch	VT	6	2	Pass
R61	28-Apr-06	DS-32	35/36	38 ft of Seam Extending North to South	Patch	VT	6	2	Pass
R62	28-Apr-06	DS-33	34/35	25 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R63	28-Apr-06	DS-34	37/38	12 ft of Seam Extending North to South	Patch	VT	6	2	Pass
R64	28-Apr-06	DS-35	33/39	25 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R65	28-Apr-06	DS-36	39/40	12 ft of Seam Extending West to East	Patch	VT	6	2	Pass
R66	28-Apr-06	T	41/38/R4	Intersection	Patch	VT	2	2	Pass
R67	28-Apr-06	T	38/40/41	Intersection	Patch	VT	2	2	Pass
R68	28-Apr-06	T	38/37/40	Intersection	Patch	VT	2	2	Pass
R69	28-Apr-06	T	39/40/37	Intersection	Patch	VT	2	2	Pass
R70	28-Apr-06	T	36/37/33/39	Intersection	Patch	VT	6	2	Pass
R71	28-Apr-06	T	35/36/33	Intersection	Patch	VT	6	2	Pass
R72	28-Apr-06	T	34/35/33	Intersection	Patch	VT	2	2	Pass
R73	28-Apr-06	T	32/33/49	Intersection	Patch	VT	2	2	Pass
R74	28-Apr-06	T	33/49/34/42	Intersection	Patch	VT	8	8	Pass
R75	28-Apr-06	T	49/43/42	Intersection	Patch	VT	2	2	Pass
R76	28-Apr-06	T	49/43/44	Intersection	Patch	VT	2	2	Pass
R77	28-Apr-06	T	49/44/45	Intersection	Patch	VT	2	2	Pass
R78	28-Apr-06	T	49/45/46	Intersection	Patch	VT	2	2	Pass
R79	28-Apr-06	T	49/44/47	Intersection	Patch	VT	2	2	Pass
R80	28-Apr-06	T	49/47/48	Intersection	Patch	VT	2	2	Pass
R81	28-Apr-06	T	49/48/50	Intersection	Patch	VT	4	2	Pass

TABLE 6.18

SUMMARY OF HDPE GEOMEMBRANE SEAM REPAIRS (PRIMARY LINER)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Repair Number	*Test Date*	*Damage Code* [1]	*Seam ID*	*Location (Station)* [2]	*Repair Type* [3]	*Repair Test* [4]	*Repair Size*		*P/F*
							Length (in)	*Width (in)*	
R82	28-Apr-06	T	48/50/53	Intersection	Patch	VT	2	2	Pass
R83	28-Apr-06	T	50/51/53	Intersection	Patch	VT	2	2	Pass
R84	28-Apr-06	T	51/53/54	Intersection	Patch	VT	2	2	Pass
R85	28-Apr-06	T	54/51/52	Intersection	Patch	VT	2	2	Pass
R86	28-Apr-06	T	54/55/52	Intersection	Patch	VT	2	2	Pass
R87	28-Apr-06	DS-37	34/42	28 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R88	28-Apr-06	DS-38	42/43	50 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R89	28-Apr-06	DS-39	43/44	26 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R90	28-Apr-06	DS-40	44/45	26 ft of Seam Extending North to South	Patch	VT	6	2	Pass
R91	28-Apr-06	DS-41	45/46	39 ft of Seam Extending South to North	Patch	VT	6	2	Pass
R92	28-Apr-06	DS-42	46/47	31 ft of Seam Extending North to South	Patch	VT	6	2	Pass
R93	28-Apr-06	DS-43	48/48	52 ft of Seam Extending North to South	Patch	VT	6	2	Pass
R94	28-Apr-06	DS-44	50/49	40 ft of Seam Extending East to West	Patch	VT	6	2	Pass
R95	28-Apr-06	DS-45	49/32	38 ft of Seam Extending West to East	Patch	VT	6	2	Pass
R96	28-Apr-06	DS-46	50/51	32 ft of Seam Extending West to East	Patch	VT	6	2	Pass
R97	28-Apr-06	DS-47	52/51	21 ft of Seam Extending West to East	Patch	VT	6	2	Pass
R98	28-Apr-06	DS-48	53/54	23 ft of Seam Extending North to South	Patch	VT	6	2	Pass
R99	28-Apr-06	DS-49	48/53	15 ft of Seam Extending North to South	Patch	VT	6	2	Pass
R100	28-Apr-06	10 ft Boot	43/44	South End of Panels	Cap Strip	VT	38	2	Pass

Notes:

[1] Damage Codes:
Bo - Burn Out
CR - Crease
DS-# - Destruct Sample
EE - Earthwork Equipment Damage
FM - Fish Mouth
ES - Exposed Scrim
AO - Add-On
SI - Subgrade Irregularity
RW - Roller Wrinkle in Seam
WR - Wrinkle
WS - Welder Restart
BL - Blister
T - Joint

[2] BOS = Bottom of Slope, EOS = End of Seam, TOS = Top of Slope

[3] Repair Type:
C - Cap Strip
P - Patch
B - Extrusion Bead

[4] Repair Test:
PT - Probe Test
ST - Spark Test
VT - Vacuum Test

TABLE 7.1

SUMMARY OF DRAINAGE GEOCOMPOSITE INSTALLATION LOG (LEACHATE COLLECTION SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Contractor*	*Manufacturer's Roll Number*	*Panel Dimensions*			*Installation Approved*
				Installed Length (ft) **	*Installed Width (ft)* **	*Final Area (ft^2)*	
P1	29-Apr-06	Sevenson, AEGL	1779001	69	13.5	931.5	Y
P2	29-Apr-06	Sevenson, AEGL	1779001	70	13.5	945	Y
P3	29-Apr-06	Sevenson, AEGL	1779001	60	13.5	810	Y
P4	28-Apr-06	Sevenson, AEGL	1779002	37	13.5	499.5	Y
P5	28-Apr-06	Sevenson, AEGL	1779002	48	13.5	648	Y
P6	28-Apr-06	Sevenson, AEGL	1779002	47	13.5	634.5	Y
P7	28-Apr-06	Sevenson, AEGL	1779002	36	13.5	486	Y
P8	28-Apr-06	Sevenson, AEGL	1779005	42	13.5	567	Y
P9	28-Apr-06	Sevenson, AEGL	1779005	122	13.5	1647	Y
P10	29-Apr-06	Sevenson, AEGL	1779006	21	13.5	283.5	Y
P11	29-Apr-06	Sevenson, AEGL	1779006	70	13.5	945	Y
P12	29-Apr-06	Sevenson, AEGL	1779006	70	13.5	945	Y
P13	29-Apr-06	Sevenson, AEGL	1779006	36	13.5	486	Y
P14	29-Apr-06	Sevenson, AEGL	1779007	10	13.5	135	Y
P15	29-Apr-06	Sevenson, AEGL	1779007	70	13.5	945	Y
P16	29-Apr-06	Sevenson, AEGL	1779007	70	13.5	945	Y
P17	29-Apr-06	Sevenson, AEGL	1779007	50	13.5	675	Y
P18	29-Apr-06	Sevenson, AEGL	1779009	32	13.5	432	Y
P19	29-Apr-06	Sevenson, AEGL	1779009	13	13.5	175.5	Y
P20	29-Apr-06	Sevenson, AEGL	1779009	61	13.5	823.5	Y
P21	29-Apr-06	Sevenson, AEGL	1779009	62	13.5	837	Y
P22	29-Apr-06	Sevenson, AEGL	1779009	18	13.5	243	Y
P23	29-Apr-06	Sevenson, AEGL	1779010	72	13.5	972	Y
P24	29-Apr-06	Sevenson, AEGL	1779010	72	13.5	972	Y
P25	29-Apr-06	Sevenson, AEGL	1779010	50	13.5	675	Y
P26	29-Apr-06	Sevenson, AEGL	1779011	55	13.5	742.5	Y
P27	29-Apr-06	Sevenson, AEGL	1779011	55	13.5	742.5	Y
P28	29-Apr-06	Sevenson, AEGL	1779011	51	13.5	688.5	Y
P29	29-Apr-06	Sevenson, AEGL	1779011	31	13.5	418.5	Y
P30	28-Apr-06	Sevenson, AEGL	1779012	34	13.5	459	Y
P31	28-Apr-06	Sevenson, AEGL	1779012	20	13.5	270	Y
P32	28-Apr-06	Sevenson, AEGL	1779012	65	13.5	877.5	Y
P33	28-Apr-06	Sevenson, AEGL	1779012	70	13.5	945	Y
P34	28-Apr-06	Sevenson, AEGL	1779013	60	13.5	810	Y
P35	28-Apr-06	Sevenson, AEGL	1779013	63	13.5	850.5	Y
P36	28-Apr-06	Sevenson, AEGL	1779013	63	13.5	850.5	Y
P37	28-Apr-06	Sevenson, AEGL	1779014	10	13.5	135	Y
P38	28-Apr-06	Sevenson, AEGL	1779014	112	13.5	1512	Y
P39	28-Apr-06	Sevenson, AEGL	1779014	79	13.5	1066.5	Y
P40	28-Apr-06	Sevenson, AEGL	1779017	72	13.5	972	Y
P41	28-Apr-06	Sevenson, AEGL	1779017	72	13.5	972	Y
P42	28-Apr-06	Sevenson, AEGL	1779017	55	13.5	742.5	Y
P43	29-Apr-06	Sevenson, AEGL	1779018	16	13.5	216	Y
P44	29-Apr-06	Sevenson, AEGL	1779018	47	13.5	634.5	Y
P45	29-Apr-06	Sevenson, AEGL	1779018	45	13.5	607.5	Y
P46	29-Apr-06	Sevenson, AEGL	1779018	45	13.5	607.5	Y
P47	29-Apr-06	Sevenson, AEGL	1779018	45	13.5	607.5	Y
P48	29-Apr-06	Sevenson, AEGL	1779019	56	13.5	756	Y
P49	29-Apr-06	Sevenson, AEGL	1779019	56	13.5	756	Y

TABLE 7.1

SUMMARY OF DRAINAGE GEOCOMPOSITE INSTALLATION LOG (LEACHATE COLLECTION SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Contractor*	*Manufacturer's Roll Number*	*Panel Dimensions*			*Installation Approved*
				Installed Length (ft) **	*Installed Width (ft)* **	*Final Area (ft^2)*	
P50	29-Apr-06	Sevenson, AEGL	1779019	52	13.5	702	Y
P51	29-Apr-06	Sevenson, AEGL	1779019	26	13.5	351	Y
P52	29-Apr-06	Sevenson, AEGL	1779022	24	13.5	324	Y
P53	29-Apr-06	Sevenson, AEGL	1779022	73	13.5	985.5	Y
P54	29-Apr-06	Sevenson, AEGL	1779022	72	13.5	972	Y
P55	29-Apr-06	Sevenson, AEGL	1779022	32	13.5	432	Y
P56	29-Apr-06	Sevenson, AEGL	1779027	40	13.5	540	Y
P57	29-Apr-06	Sevenson, AEGL	1779027	60	13.5	810	Y
P58	29-Apr-06	Sevenson, AEGL	1779027	60	13.5	810	Y
P59	29-Apr-06	Sevenson, AEGL	1779027	33	13.5	445.5	Y
P60	28-Apr-06	Sevenson, AEGL	1779034	100	13.5	1350	Y
P61	28-Apr-06	Sevenson, AEGL	1779034	102	13.5	1377	Y
P62	29-Apr-06	Sevenson, AEGL	1779043	19	13.5	256.5	Y
P63	29-Apr-06	Sevenson, AEGL	1779043	26	13.5	351	Y
P64	29-Apr-06	Sevenson, AEGL	1779043	60	13.5	810	Y
P65	29-Apr-06	Sevenson, AEGL	1779043	60	13.5	810	Y
P66	29-Apr-06	Sevenson, AEGL	1779043	21	13.5	283.5	Y
P67	29-Apr-06	Sevenson, AEGL	1779047	35	13.5	472.5	Y
P68	29-Apr-06	Sevenson, AEGL	1779047	65	13.5	877.5	Y
P69	29-Apr-06	Sevenson, AEGL	1779047	62	13.5	837	Y
P70	29-Apr-06	Sevenson, AEGL	1779047	31	13.5	418.5	Y
P71	28-Apr-06	Sevenson, AEGL	1779060	25	13.5	337.5	Y
P72	28-Apr-06	Sevenson, AEGL	1779060	85	13.5	1147.5	Y
P73	28-Apr-06	Sevenson, AEGL	1779060	88	13.5	1188	Y
P74	29-Apr-06	Sevenson, AEGL	1779082	57	13.5	769.5	Y
P75	29-Apr-06	Sevenson, AEGL	1779082	136	13.5	1836	Y
P76	29-Apr-06	Sevenson, AEGL	1779083	45	13.5	607.5	Y
P77	29-Apr-06	Sevenson, AEGL	1779083	60	13.5	810	Y
P78	29-Apr-06	Sevenson, AEGL	1779083	56	13.5	756	Y
P79	29-Apr-06	Sevenson, AEGL	1779083	33	13.5	445.5	Y
P80	29-Apr-06	Sevenson, AEGL	1779084	15	13.5	202.5	Y
P81	29-Apr-06	Sevenson, AEGL	1779084	41	13.5	553.5	Y
P82	29-Apr-06	Sevenson, AEGL	1779085	62	13.5	837	Y
P83	29-Apr-06	Sevenson, AEGL	1779085	62	13.5	837	Y
P84	29-Apr-06	Sevenson, AEGL	1779085	62	13.5	837	Y
P85	29-Apr-06	Sevenson, AEGL	1779086	40	13.5	540	Y
P86	29-Apr-06	Sevenson, AEGL	1779086	63	13.5	850.5	Y
P87	29-Apr-06	Sevenson, AEGL	1779086	69	13.5	931.5	Y
P88	29-Apr-06	Sevenson, AEGL	1779086	25	13.5	337.5	Y
P89	29-Apr-06	Sevenson, AEGL	1779087	38	13.5	513	Y
P90	29-Apr-06	Sevenson, AEGL	1779087	43	13.5	580.5	Y
P91	29-Apr-06	Sevenson, AEGL	1779087	43	13.5	580.5	Y
P92	29-Apr-06	Sevenson, AEGL	1779087	62	13.5	837	Y
P93	29-Apr-06	Sevenson, AEGL	1779088	44	13.5	594	Y
P94	29-Apr-06	Sevenson, AEGL	1779088	68	13.5	918	Y
P95	29-Apr-06	Sevenson, AEGL	1779088	66	13.5	891	Y
P96	29-Apr-06	Sevenson, AEGL	1779088	22	13.5	297	Y
P97	29-Apr-06	Sevenson, AEGL	1779089	133	13.5	1795.5	Y
P98	29-Apr-06	Sevenson, AEGL	1779089	72	13.5	972	Y

TABLE 7.1

SUMMARY OF DRAINAGE GEOCOMPOSITE INSTALLATION LOG (LEACHATE COLLECTION SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Contractor*	*Manufacturer's Roll Number*	*Panel Dimensions*			*Installation Approved*
				Installed Length (ft) **	*Installed Width (ft)* **	*Final Area (ft^2)*	
P99	29-Apr-06	Sevenson, AEGL	1779090	128	13.5	1728	Y
P100	29-Apr-06	Sevenson, AEGL	1779090	71	13.5	958.5	Y
P101	29-Apr-06	Sevenson, AEGL	1779091	43	13.5	580.5	Y
P102	29-Apr-06	Sevenson, AEGL	1779091	44	13.5	594	Y
P103	29-Apr-06	Sevenson, AEGL	1779091	44	13.5	594	Y
P104	29-Apr-06	Sevenson, AEGL	1779091	42	13.5	567	Y
P105	29-Apr-06	Sevenson, AEGL	1779091	28	13.5	378	Y
P106	29-Apr-06	Sevenson, AEGL	1779092	35	13.5	472.5	Y
P107	29-Apr-06	Sevenson, AEGL	1779092	68	13.5	918	Y
P108	29-Apr-06	Sevenson, AEGL	1779092	68	13.5	918	Y
P109	29-Apr-06	Sevenson, AEGL	1779092	24	13.5	324	Y
P110	29-Apr-06	Sevenson, AEGL	1779093	31	13.5	418.5	Y
P111	29-Apr-06	Sevenson, AEGL	1779093	22	13.5	297	Y
P112	29-Apr-06	Sevenson, AEGL	1779093	68	13.5	918	Y
P113	29-Apr-06	Sevenson, AEGL	1779093	68	13.5	918	Y
P114	29-Apr-06	Sevenson, AEGL	1779094	46	13.5	621	Y
P115	29-Apr-06	Sevenson, AEGL	1779094	72	13.5	972	Y
P116	29-Apr-06	Sevenson, AEGL	1779094	72	13.5	972	Y
P117	29-Apr-06	Sevenson, AEGL	1779021A	26	13.5	351	Y
P118	29-Apr-06	Sevenson, AEGL	1779021A	56	13.5	756	Y
P119	29-Apr-06	Sevenson, AEGL	1779021B	27	13.5	364.5	Y
P120	29-Apr-06	Sevenson, AEGL	1779021B	53	13.5	715.5	Y

Notes:

* Indicates that Quality Assurance (QA) testing procedures were conducted on the roll of liner. A summary of QA test results are presented below:

Manufacturer Roll Number	*Minimum Ply Adhesion (lb/in)* (1)	*Average Ply Adhesion (lb/in)* (1)	*Transmissivity (m^2/s)* (2)	*Mass Area (lb/ft^2)* (3)	*Thickness (mil)* (4)	*Carbon Black (%)* (5)	*Tensile Strength (lb/in)* (6)	*Permeability (cm/s)* (7)	*Permittivity (sec-1)* (8)	*Apparent Opening Size (sieve size)* (9)
1779001	1.2	1.77	1.13E-03					0.5	1.79	70
1779010	1.32	1.96								
1779060	1.17	2.09								
1779090	1.33	2.27		0.354	304	2.36	105			

(1) Minimum ply adhesion result required to be equivalent to 0.94 g/cc for acceptance, tested at a frequency of 1 per 100,000 sf.
(2) Transmissivity results requires at least 9E-04 m^2/s for acceptance, tested at a frequency of 1 per 200,000 sf.
(3) Mass Area required to be to 8 oz/sy (depending on the material property) for acceptance, tested at a frequency of 1 per 100,000sf.
(4) Carbon black content results required to be at least 2.0 percent for acceptance, tested at a frequency of 1 per 100,000 sf.
(5) Thickness results required to be at least 300 mils for acceptance, tested at a frequency of 1 per 50,000 sf.
(6) Tensile strength results required to be at least 900 lbs/ft for acceptance, tested at a frequency of 1 per 50,000 sf.
(7) Permeability results required to be at least 0.2 cm/s for acceptance, tested per manufacturer's standard QC testing frequency.
(8) Permittivity results required to be 1.0 $^{s-1}$ for acceptance, tested per manufacturer's standard QC testing frequency.
(9) Apparent opening size accepted up to a maximum sieve size of 70, tested per manufacturer's standard QC testing frequency.

** Installed length represents field measurement of actual deployed length.
*** Approval refers to visual inspection of material and installation procedures.

TABLE 8.1

SUMMARY OF VAULT DAILY WASTE MATERIAL PLACEMENT
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Estimated Quantity of Material Excavated/Placed (cy)*	*Source of Excavated Material* *	*Remarks*
05/19/06	987	AOI 4 Stockpile, East End	
05/20/06	0		No >50 excavations performed
05/21/06	0		Sunday (no work)
05/22/06	1,780	AOI 4 Stockpile, East End	
05/23/06	1,688	AOI 4 Stockpile, Center	
05/24/06	1,868	AOI 4 Stockpile, West End	
05/25/06	1,069	AOI 4 Stockpile, Berms	
05/26/06	235	AOI 4 Stockpile, Berms	
05/27/06	0		No East Plant Work performed
05/28/06	0		Sunday (no work)
05/29/06	0		No East Plant Work performed
05/30/06	1,057	Exc. Area #1 GA-4 South End and East Face	
05/31/06	1,210	GA-4 West and North Ends	
06/01/06	2,145	Exc. Area #2 725' - 720', 720' - 715' South End, & 715' - 710'	
06/02/06	1,573	Exc. Area #2 725' - 720', 720' -715', & 715' - 710'	
06/03/06	1,606	Exc. Area #2 725' - 720', 720' -715', & 715' - 710'	
06/04/06	0		Sunday (no work)
06/05/06	2,134	Exc. Area #2 725' - 720', NE 720' - 715', & Center 715' - 710'	
06/06/06	2,090	Exc. Area #2 West End 715' - 710', Center 715' - 720', & 725' - 720' Zipp Lot 695' - 690'	
06/07/06	1,100	Exc. Area #2 725' - 720', 720' - 715', Center 715' - 710', & Exc. Area #1 SW 695' - 690'	
06/08/06	1,969	Exc. Area #1 NW 695' - 690' & Exc. Area #2 Finger West, 725' - 720', 720' - 715', E Center 715' - 710'	
06/09/06	1,166	Exc. Area #1 695' - 690' & Exc. Area #2 725' - 720', 720' - 715', & 715' - 710'	
06/10/06	1,683	Exc. Area #1 690' - 685' & Exc. Area #2 725' - 720', 720' - 715', & 715' - 710'	
06/11/06	0		Sunday (no work)
06/12/06	1,177	Exc. Area #2 SE 715'-710' & Exc. Area #1 685'-680'	
06/13/06	3,338	Exc. Area #2 SE 715'-710' & Exc. Area #1 685'-680'	
06/14/06	88	Exc. Area #2 715' - 710'	
06/15/06	0		No >50 excavations performed
06/16/06	946	Exc. Area #2 715 - 710'	
06/17/06	990	Exc. Area #2 NE 715' - 710'	
06/18/06	0		Sunday (no work)
06/19/06	0		No excavation due to weather
06/20/06	1,050	Exc. Area #2 715' - 710'	
06/21/06	1,100	Exc. Area #2 NW 715' - 710'	
06/22/06	500	Exc. Area #2 715' - 710'	
06/23/06	1,090	Exc. Area #2 North End 710' - 705'	
06/24/06	1,045	Exc. Area #2 North End 710' - 705'	
06/25/06	0		Sunday (no work)
06/26/06	980	Exc. Area #2 710' - 705'	
06/27/06	0		No >50 excavations performed
06/28/06	1,200	Exc. Area #2 705' - 700'	
06/29/06	1,300	Exc. Area #2 705' - 700'	
06/30/06	900	Exc. Area #2 705' - 700'	
07/01/06	0		4th Of July Holiday Weekend
07/02/06	0		4th Of July Holiday Weekend
07/03/06	0		4th Of July Holiday Weekend
07/04/06	0		4th Of July Holiday Weekend
07/05/06	780	Exc. Area #2 700' - 695'	
07/06/06	1,400	Exc. Area #2 700' - 695'	
07/07/06	1,375	Exc. Area #2 700' - 695'	
07/08/06	1,400	Exc. Area #2 700' - 695'	
07/09/06	0		Sunday (no work)
07/10/06	1,650	Exc. Area #2 SE 720' - 715'	
07/11/06	0		No excavation due to weather
07/12/06	0		No excavation due to weather
07/13/06	0		No excavation due to weather
07/14/06	0		No excavation due to weather
07/15/06	0		No excavation due to weather

TABLE 8.1

SUMMARY OF VAULT DAILY WASTE MATERIAL PLACEMENT
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Estimated Quantity of Material Excavated/Placed (cy)*	*Source of Excavated Material* *	*Remarks*
07/16/06	0		Sunday (no work)
07/17/06	1,364	Exc. Area #2 715' - 710'	
07/18/06	1,200	Exc. Area #2 715' - 710'	
07/19/06	800	Exc. Area #2 715' - 710' & 695' - 690'	
07/20/06	600	Exc. Area #2 690' - 685'	
07/21/06	1,100	Exc. Area #2 690' - 685' & 710' - 705'	
07/22/06	1,700	Exc. Area #2 710' - 705'	
07/23/06	0		Sunday (no work)
07/24/06	2,100	Exc. Area #2 710' - 705'	
07/25/06	2,050	Exc. Area #2 710' - 705'	
07/26/06	1,420	Exc. Area #2 710' - 705' & 685' - 680'	
07/27/06	0		No excavation due to weather
07/28/06	1,100	Exc. Area #2 685' - 680'	
07/29/06	900	Exc. Area #2 685' - 680'	
07/30/06	0		Sunday (no work)
07/31/06	2,000	Exc. Area #2 705' - 700'	
08/01/06	1,200	Exc. Area #2 705' - 700'	
08/02/06	1,200	Exc. Area #2 705' - 700' & 700' - 695'	
08/03/06	1,350	Exc. Area #2 700' - 695'	
08/04/06	1,400	Exc. Area #2 700' - 695'	
08/05/06	950	Exc. Area #1 690' - 685' & Exc. Area #2 700' - 695'	
08/06/06	0		Sunday (no work)
08/07/06	800	Exc. Area #1 630' - 625'	
08/08/06	250	Exc. Area #1 625' - 620'	
08/09/06	100	Exc. Area #1 675' - 670', 670' - 665'	
08/10/06	0		No >50 excavations performed
08/11/06	225	Exc. Area #1 635' - 630'	
08/12/06	1,100	Exc. Area #1 635' - 630', 630' - 625', & 680' - 675'	
08/13/06	0		Sunday (no work)
08/14/06	700	Exc. Area #1 680' - 675', 670' - 665', 620' - 615', & 630' - 625',	
08/15/06	250	Exc. Area #1 South Dig 630' - 625'	
08/16/06	350	Exc. Area #1 625' - 620'	
08/17/06	2,100	Exc. Area #1 680' - 675'	
08/18/06	2,000	Exc. Area #1 680' - 675'	
08/19/06	1,500	Exc. Area #1 680' - 675' & 675' - 670'	
08/20/06	0		Sunday (no work)
08/21/06	1,400	Exc. Area #1 675' - 670'	
08/22/06	1,400	Exc. Area #1 675' - 670'	
08/23/06	0		No >50 excavations performed
08/24/06	900	Exc. Area #1 680' - 675' & 675' - 670'	
08/25/06	1,400	Exc. Area #1 675' - 670'	
08/26/06	500	Exc. Area #1 675' - 670'	
08/27/06	0		Sunday (no work)
08/28/06	0		No >50 excavations performed
08/29/06	0		No >50 excavations performed
08/30/06	0		No >50 excavations performed
08/31/06	0		No >50 excavations performed
09/01/06	0		No >50 excavations performed
09/02/06	0		Labor Day Holiday weekend
09/03/06	0		Labor Day Holiday weekend
09/04/06	0		Labor Day Holiday weekend
09/05/06	0		No >50 excavations performed
09/06/06	0		No >50 excavations performed
09/07/06	400	Exc. Area #1 660 - 655' East End	
09/08/06	900	Exc. Area #1 660 - 655' South End	
09/09/06	950	Exc. Area #1 660 - 655' South End	
09/10/06	0		Sunday (no work)
09/11/06	260	Exc. Area #1 660 - 655' Center	
09/12/06	0		No excavation due to weather
09/13/06	0		No excavation due to weather
09/14/06	1,000	Exc. Area #1 660 - 655' Center	
09/15/06	0		No >50 excavations performed
09/16/06	0		No >50 excavations performed
09/17/06	0		Sunday (no work)

TABLE 8.1

SUMMARY OF VAULT DAILY WASTE MATERIAL PLACEMENT
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Estimated Quantity of Material Excavated/Placed (cy)*	*Source of Excavated Material* *	*Remarks*
09/18/06	0		No >50 excavations performed
09/19/06	0		No >50 excavations performed
09/20/06	0		No >50 excavations performed
09/21/06			
09/22/06	0		No excavation due to weather
09/23/06	0		No excavation due to weather
09/24/06	0		Sunday (no work)
09/25/06	0		No >50 excavations performed
09/26/06	0		No >50 excavations performed
09/27/06	750	Exc. Area #1 660 - 655' Center	
09/28/06	0		No >50 excavations performed
09/29/06	0		No >50 excavations performed
09/30/06	0		No excavation due to weather
10/01/06	0		Sunday (no work)
10/02/06	725	Exc. Area #2 FA-1B Berm Material	
10/03/06	0		No excavation due to weather
10/04/06	425	Exc. Area #2 FA-1B Berm Material	
10/05/06	0		No placement (haul road repair)
10/06/06	450	Exc. Area #1 660 - 655' Southeast Area (Re-dig)	
10/07/06	500	Exc. Area #1 660 - 655' Southwest Area	
10/08/06	0		Sunday (no work)
10/09/06	625	Exc. Area #1 660 - 655' Far West End Area	
10/10/06	0		No >50 excavations performed
10/11/06	0		No >50 excavations performed
10/12/06	0		No >50 excavations performed
10/13/06	0		No >50 excavations performed
10/14/06	0		No >50 excavations performed
10/15/06	0		Sunday (no work)
10/16/06	0		No >50 excavations performed
10/17/06	0		No excavation due to weather
10/18/06	0		No excavation due to weather
10/19/06	0		No excavation due to weather
10/20/06	0		No excavation due to weather
10/21/06	0		No excavation due to weather
10/22/06	0		Sunday (no work)
10/23/06	1,750	Exc. Area #1 655' - 650' Northeast End	
10/24/06	1,800	Exc. Area #1 660' - 655' Southeast End	
10/25/06	1,300	Exc. Area #1 655' - 650' Southeast End	
10/26/06	0		No excavation due to weather
10/27/06	0		No excavation due to weather
10/28/06	0		No excavation due to weather
10/29/06	0		Sunday (no work)
10/30/06	600	Exc. Area #1 655' - 650'	
10/31/06	500	Exc. Area #1 655' - 650'	
11/01/06	1,000	Exc. Area #1 655' - 650'	
11/02/06	1,400	Exc. Area #1 655' - 650'	
11/03/06	1,400	Exc. Area #1 650' - 645' Center	
11/04/06	1,100	Exc. Area #1 650' - 645' Center to East	
11/05/06	0		Sunday (no work)
11/06/06	1,600	Exc. Area #1 650' - 645' Center to East	
11/07/06	0		No excavation due to weather
11/08/06	1,600	Exc. Area #1 650' - 645' Center East	
11/09/06	1,400	Exc. Area #1 650' - 645' & 645' - 640'	
11/10/06	1,000	Exc. Area #1 650' - 645' & 645' - 640'	
11/11/06	1,200	Exc. Area #1 645' - 640'	
11/12/06	1,200	Exc. Area #1 645' - 640' & 640' - 635'	Approved to work Sunday
11/13/06	600	Exc. Area #1 640' - 635'	
11/14/06	1,400	Exc. Area #1 640' - 635'	
11/15/06	0		No excavation due to weather
11/16/06	0		No excavation due to weather
11/17/06	0		No >50 excavations performed
11/18/06	900	Exc. Area #1 635' - 630'	
11/19/06	1,000	Exc. Area #1 635' - 630'	Approved to work Sunday
11/20/06	900	Exc. Area #1 635' - 630'	
11/21/06	600	Exc. Area #1 635' - 630'	

TABLE 8.1

SUMMARY OF VAULT DAILY WASTE MATERIAL PLACEMENT
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Estimated Quantity of Material Excavated/Placed (cy)*	*Source of Excavated Material* *	*Remarks*
11/21/06			All East Plant >50 mg/kg PCBs soil removal completed
07/25/07	224	>50ppm prescribed area removal at Northern Tributary	ENTACT hauling to Vault
08/02/07	736	>50ppm material from HRC pile - AOI-8	ENTACT hauling to Vault
08/03/07	1,216	>50ppm material from HRC pile - AOI-8	ENTACT hauling to Vault
08/03/07	1,024	>50ppm Northern Tributary Stockpiles # 8, 9 & 10	ENTACT hauling to Vault
08/06/07	688	>50ppm Northern Tributary Stockpile # 11	ENTACT hauling to Vault
08/10/07	7	>50ppm material from HRC roll-off container	ENTACT hauling to Vault
08/20/07	976	>50ppm Northern Tributary Stockpiles # 34 & #37	ENTACT hauling to Vault
09/07/07	464	>50ppm Northern Tributary Stockpile # 70	ENTACT hauling to Vault
09/13/07	512	>50ppm Northern Tributary Stockpile # 79	ENTACT hauling to Vault
10/04/07	448	>50ppm Northern Tributary Stockpile # 122	ENTACT hauling to Vault
10/19/07	512	>50ppm Northern Tributary Stockpile # 154	ENTACT hauling to Vault
10/20/07			EPA approval for additional Vault placement pending
05/21/08	192	>50 ppm Parcel 201 >50 excavation	SES hauling to Vault
05/22/08	880	>50 ppm Parcel 201 >50 excavation	SES hauling to Vault
05/28/08	480	>50 ppm Parcel 201 >50 excavation	SES hauling to Vault
06/02/08	320	>50 ppm Parcel 201 >50 excavation	SES hauling to Vault
06/12/08	48	>50 ppm from Sewer Abandonment	SES hauling to Vault
06/16/08	51	>50 ppm from Sewer Abandonment	SES hauling to Vault
06/24/08	17	>50 ppm from Sewer Abandonment	SES hauling to Vault
07/10/08	15	>50 ppm from West Plant Excavation (AOI-18 Concrete Pad)	SES hauling to Vault
07/14/08	51	>50 ppm from West Plant Excavation (AOI-18 Elevation 724.5' - 722.1')	SES hauling to Vault
08/26/08	2	Weeds from Modutank	SES hauling to Vault
08/27/08	8	Weeds from Modutank	SES hauling to Vault
09/02/08	2	Weeds from Modutank	SES hauling to Vault
09/18/08	304	>50 ppm from West Plant Excavation	SES hauling to Vault
09/19/08	576	>50 ppm from West Plant Excavation	SES hauling to Vault
09/26/08	496	>50 ppm from West Plant Excavation	SES hauling to Vault
09/26/08	208	<50 ppm from West Plant Excavation	SES hauling to Vault
09/27/08	832	<50 ppm from West Plant Excavation	SES hauling to Vault
TOTAL	127,602		VAULT PLACEMENT COMPLETED
TOTAL	134,667	(based on pre- and post-filling surveys)	

Notes:

* Excavated areas ("Exc. Area") are presented on the Excavation Plan Drawings (C-05 through C-32) in the Over 50 mg/kg PCB Soil Removal Design Report for the East Plant Area (CRA, May 2006).

TABLE 9.1

SUMMARY OF CLAY COMPACTION TEST RESULTS (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Test Date	*Approximate Sample Collection Location (Gridline/General Area)*	*Test ID*	*Daily Test Number*	*Test Depth (inches)*	*Elevation of Test*	*Proctor Soil ID/Lab #* [1]	*Permeability (cm/s)* [1]	*Optimum Moisture Content (%)* [1]	*Moisture Content (%)*	*Moisture Content Above/Below Optimum Moisture Content (%)* [3]	*Moisture Content Test Pass/Fail*	*Maximum Dry Density (Pound-Force per ft³)* [1]	*Dry Density (Pound-Force per ft3)*	*Wet Density (Pound-Force per ft3)*	*Compaction (%)* [4]	*Compaction Test Pass/Fail*	*PSI Pass/Fail Code* [5]	*Pass*	*Fail*	*Comment*
10-Sep-07	F21-22	1	1	6	12	3436	4.00E-08/8.70E-09	17.9	16.40	-1.5	FAIL	107.6	109.5	127.5	101.8	PASS	1E		X	Moisture not between 3% to 5%
10-Sep-07	G21-22	2	2	6	12	3436	4.00E-08/8.70E-09	17.9	18.70	0.8	FAIL	107.6	103.6	123.0	96.3	PASS	1E		X	Moisture not between 3% to 5%
10-Sep-07	I-22	3	3	6	12	3436	4.00E-08/8.70E-09	17.9	19.60	1.7	FAIL	107.6	104.8	125.4	97.4	PASS	1E		X	Moisture not between 3% to 5%
10-Sep-07	I-24	4	4	6	12	3436	4.00E-08/8.70E-09	17.9	20.60	2.7	FAIL	107.6	104.4	125.9	97.0	PASS	1E		X	Moisture not between 3% to 5%
10-Sep-07	H-25	5	5	6	12	3436	4.00E-08/8.70E-09	17.9	18.10	0.2	FAIL	107.6	108.4	128.1	100.7	PASS	1E		X	Moisture not between 3% to 5%
11-Sep-07	F21-22	1R	1	6	12	3436	4.00E-08/8.70E-09	17.9	21.20	3.3	PASS	107.6	102.9	124.7	95.6	PASS	1AC	X		Retest of #2
11-Sep-07	G21-22	2R	2	6	12	3436	4.00E-08/8.70E-09	17.9	21.40	3.5	PASS	107.6	102.4	124.3	95.2	PASS	1AC	X		Retest of #1
11-Sep-07	I-22	3R	3	6	12	3436	4.00E-08/8.70E-09	17.9	22.00	4.1	PASS	107.6	104.7	127.8	97.3	PASS	1AC	X		Retest of #3
11-Sep-07	I-24	4R	4	6	12	3436	4.00E-08/8.70E-09	17.9	21.20	3.3	PASS	107.6	102.5	124.2	95.3	PASS	1AC	X		Retest of #4
11-Sep-07	H-25	5R	5	6	12	3436	4.00E-08/8.70E-09	17.9	21.80	3.9	PASS	107.6	104.6	127.3	97.2	PASS	1AC	X		Retest of #5
12-Sep-07	G-22	6	1	6	18	3436	4.00E-08/8.70E-09	17.9	21.60	3.7	PASS	107.6	102.3	124.3	95.1	PASS	1A	X		
12-Sep-07	H-25	7	2	6	18	3436	4.00E-08/8.70E-09	17.9	21.20	3.3	PASS	107.6	103.1	124.9	95.8	PASS	1A	X		
12-Sep-07	I-23	8	3	6	18	3436	4.00E-08/8.70E-09	17.9	21.60	3.7	PASS	107.6	102.4	124.5	95.2	PASS	1A	X		
12-Sep-07	F-21	9	4	6	18	3436	4.00E-08/8.70E-09	17.9	21.80	3.9	PASS	107.6	102.7	125.2	95.4	PASS	1A	X		
13-Sep-07	I-26	10	1	6	12	3436	4.00E-08/8.70E-09	17.9	21.10	3.2	PASS	107.6	102.7	124.3	95.4	PASS	1A	X		
14-Sep-07	F-23	11	1	6	24	3436	4.00E-08/8.70E-09	17.9	21.50	3.6	PASS	107.6	104.2	126.6	96.8	PASS	1A	X		
14-Sep-07	I-27	12	2	6	18	3436	4.00E-08/8.70E-09	17.9	21.20	3.3	PASS	107.6	103.8	125.8	96.5	PASS	1A	X		
14-Sep-07	I-24	13	3	6	24	3436	4.00E-08/8.70E-09	17.9	20.90	3.0	PASS	107.6	103.1	125.0	95.8	PASS	1A	X		
14-Sep-07	I-23	14	4	6	24	3436	4.00E-08/8.70E-09	17.9	22.40	4.5	PASS	107.6	102.3	125.2	95.1	PASS	1A	X		
18-Sep-07	G-25	15	1	6	12	3436	4.00E-08/8.70E-09	17.9	20.90	3.0	PASS	107.6	106.5	128.7	99.0	PASS	1A	X		
18-Sep-07	I-26	16	2	6	24	3436	4.00E-08/8.70E-09	17.9	22.00	4.1	PASS	107.6	104.6	127.6	97.2	PASS	1A	X		
18-Sep-07	G-24	17	3	6	18	3436	4.00E-08/8.70E-09	17.9	21.60	3.7	PASS	107.6	103.0	125.3	95.7	PASS	1A	X		
18-Sep-07	G-24	18	4	6	24	3436	4.00E-08/8.70E-09	17.9	21.10	3.2	PASS	107.6	106.3	128.7	98.8	PASS	1A	X		
1-Oct-08	19J	38	1	6	12	TP74	2.10E-07/3.80E-08	18.4	21.40	3.0	PASS	104.9	100.3	121.7	95.6	PASS	1A	X		
1-Oct-08	21J	39	2	6	12	TP74	2.10E-07/3.80E-08	18.4	22.20	3.8	PASS	104.9	102.9	125.7	98.1	PASS	1A	X		
1-Oct-08	21H	40	3	6	12	TP74	2.10E-07/3.80E-08	18.4	21.40	3.0	PASS	104.9	104.3	126.7	99.4	PASS	1A	X		
1-Oct-08	19F	41	4	6	12	TP74	2.10E-07/3.80E-08	18.4	21.40	3.0	PASS	104.9	101.6	122.1	96.9	PASS	1A	X		
2-Oct-08	20I	42	1	6	18	TP74	2.10E-07/3.80E-08	18.4	23.40	5.0	PASS	104.9	102.9	127.1	98.1	PASS	1A	X		
2-Oct-08	19K	43	2	6	18	TP74	2.10E-07/3.80E-08	18.4	21.60	3.2	PASS	104.9	102.9	125.2	98.1	PASS	1A	X		
2-Oct-08	21H	44	3	6	18	TP74	2.10E-07/3.80E-08	18.4	22.00	3.6	PASS	104.9	101.2	123.4	96.5	PASS	1A	X		
2-Oct-08	19F	45	4	6	18	TP74	2.10E-07/3.80E-08	18.4	22.00	3.6	PASS	104.9	100.0	122.0	95.3	PASS	1A	X		
1-Oct-08	20G	46	1	6	24	TP74	2.10E-07/3.80E-08	18.4	22.10	3.7	PASS	104.9	102.0	124.5	97.2	PASS	1A	X		
2-Oct-08	21I	47	2	6	24	TP74	2.10E-07/3.80E-08	18.4	23.10	4.7	PASS	104.9	101.9	125.5	97.1	PASS	1A	X		
2-Oct-08	J19	48	3	6	24	TP74	2.10E-07/3.80E-08	18.4	22.40	4.0	PASS	104.9	102.4	125.3	97.6	PASS	1A	X		
2-Oct-08	21I	49	4	6	24	TP74	2.10E-07/3.80E-08	18.4	22.70	4.3	PASS	104.9	100.9	123.8	96.2	PASS	1A	X		
1-Nov-07	Top	19	1	8	12	3842	2.8E-08/8.00E-09	16.6	16.20	-0.4	FAIL	109.4	110.6	128.5	101.1	PASS	1E		X	Moisture not between 3% to 5%
1-Nov-07	East, Southeast Corner	20	2	8	12	3842	2.8E-08/8.00E-09	16.6	13.70	-2.9	FAIL	109.4	112.4	127.8	102.7	PASS	1E		X	Moisture not between 3% to 5%
1-Nov-07	South and Southeast	21	3	8	12	3842	2.8E-08/8.00E-09	16.6	19.90	3.3	PASS	109.4	107.2	128.5	98.0	PASS	1A	X		
1-Nov-07	East, Southeast Corner	16R	4	8	12	3842	2.8E-08/8.00E-09	16.6	19.70	3.1	PASS	109.4	107.0	128.1	97.8	PASS	1AC	X		Retest of #16
1-Nov-07	Top	15R	5	8	12	3842	2.8E-08/8.00E-09	16.6	21.10	4.5	PASS	109.4	106.7	129.2	97.5	PASS	1AC	X		Retest of #15
1-Nov-07	East, Southeast Corner	22	6	6	18	3842	2.8E-08/8.00E-09	16.6	21.40	4.8	PASS	109.4	106.5	129.3	97.3	PASS	1A	X		
2-Nov-07	East, Southeast Corner	23	1	6	24	3842	2.8E-08/8.00E-09	16.6	21.00	4.4	PASS	109.4	105.9	128.1	96.8	PASS	1A	X		
2-Nov-07	South and Southeast	24	2	6	18	3842	2.8E-08/8.00E-09	16.6	21.20	4.6	PASS	109.4	104.0	126.0	95.1	PASS	1A	X		
2-Nov-07	South and Southeast	25	3	6	24	3842	2.8E-08/8.00E-09	16.6	20.20	3.6	PASS	109.4	105.4	126.7	96.3	PASS	1A	X		
6-Nov-07	23K	26	1	6	12	3842	2.8E-08/8.00E-09	16.6	19.70	3.1	PASS	109.4	105.2	125.9	96.2	PASS	1A	X		
6-Nov-07	23K	27	2	6	18	3842	2.8E-08/8.00E-09	16.6	21.10	4.5	PASS	109.4	106.2	128.6	97.1	PASS	1A	X		
6-Nov-07	23K	28	3	6	24	3842	2.8E-08/8.00E-09	16.6	20.00	3.4	PASS	109.4	107.0	128.4	97.8	PASS	1A	X		
7-Nov-07	22K	29	1	6	12	3842	2.8E-08/8.00E-09	16.6	20.40	3.8	PASS	109.4	107.8	129.8	98.5	PASS	1A	X		
7-Nov-07	21L	30	2	6	12	3842	2.8E-08/8.00E-09	16.6	21.00	4.4	PASS	109.4	106.3	128.6	97.2	PASS	1A	X		
7-Nov-07	22K	31	3	6	18	3842	2.8E-08/8.00E-09	16.6	21.30	4.7	PASS	109.4	104.7	127.0	95.7	PASS	1A	X		
7-Nov-07	21L	32	4	6	18	3842	2.8E-08/8.00E-09	16.6	21.00	4.4	PASS	109.4	105.2	127.3	96.2	PASS	1A	X		
7-Nov-07	22K	33	5	6	24	3842	2.8E-08/8.00E-09	16.6	20.20	3.6	PASS	109.4	105.0	126.2	96.0	PASS	1A	X		
8-Nov-07	21L	34	1	6	24	3842	2.8E-08/8.00E-09	16.6	20.60	4.0	PASS	109.4	106.1	128.0	97.0	PASS	1A	X		
8-Nov-07	22J	35	2	6	24	3842	2.8E-08/8.00E-09	16.6	21.00	4.4	PASS	109.4	106.7	129.1	97.5	PASS	1A	X		
15-Nov-07	Top of Vault	36	1	6	18	3842	2.8E-08/8.00E-09	16.6	20.40	3.8	PASS	109.4	106.0	127.6	96.9	PASS	1A	X		
15-Nov-07	Top of Vault	37	2	6	24	3842	2.8E-08/8.00E-09	16.6	20.90	4.3	PASS	109.4	106.4	128.6	97.3	PASS	1A	X		

Notes:

(1) Soil proctor information.

(2) Test results include a failed compaction test and/or moisture content, which required a subsequent retest either that same day or the next.

(3) Accepted moisture content to be within 0-5% of optimum moisture content of proctor.

(4) Accepted compaction to be at least 95% of maximum dry density of proctor.

(5) PSI Pass/Fail Codes are as follows:

1/2 = Fill/Backfill	A = Test results comply with specifications
3 = Base course	B = Compaction does not comply with specifications
4 = Sub-base	C = Retest of previous test
5 = Soil cement	D = Moisture in excess of specifications
6 = Other	E = Moisture below specifications

TABLE 9.2

SUMMARY OF CLAY PERMEABILITY TEST RESULTS (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

SAMPLE IDENTIFICATION	*Sample Date*	*TEST LOCATION*	*TEST LAYER*	*TEST NUMBER*	*Permeability (cm/sec)* [1]	*SOIL ID*	*Specimen Description*
S-091207-YM-EES100	12-Sep-07	W GM VAULT (AOI-7)	18"	ST-19	4.00E-08	3436	Silty CLAY, trace sand
S-091207-YM-EES101	12-Sep-07	S GM VAULT (AOI-7)	18"	ST-20	8.70E-09	3436	Silty CLAY, trace sand
S110707-YM-EES103	21-Nov-07	E GM VAULT (AOI-7)	18"	ST-21	2.80E-08	3842	Silty CLAY, trace sand
S-110707-YM-EES104	21-Nov-07	TOP GM VAULT (AOI-7)	18"	ST-22	8.00E-09	3842	Silty CLAY, trace sand
S-100208-YM-SES138	2-Oct-08	N GM VAULT (AOI-7)	18"	ST-44	2.10E-07	TP-74	
S-100208-YM-SES139	2-Oct-08	N GM VAULT (AOI-7)	18"	ST-45	3.80E-08	TP-74	
				AVERAGE:	5.55E-08		

Note:

[1] Permeability of saturated porous material measured by using a flexible wall permeater and constant head method (ASTM D-5084)

TABLE 9.3

SUMMARY OF HDPE GEOCOMPOSITE INSTALLATION LOG (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Location*	*Manufacturer's Roll Number*	*Panel Shape*	Panel Dimensions			*Installation Approved (Y/N)* [3]	*Comment*
					Final Length (ft) [2]	*Final Width (ft)*	*Final Area (ft^2)*		
1	22-Apr-08	East Slope	146685	Rectangle	188	22.5	4230	Y	
2	22-Apr-08	East Slope	146685	Rectangle	188	22.5	4230	Y	
3	22-Apr-08	East Slope	146686	Rectangle	183	22.5	4117.5	Y	
4	22-Apr-08	East Slope	146686	Rectangle	181	22.5	4072.5	Y	
5	22-Apr-08	East Slope	146682	Rectangle	180	22.5	4050	Y	
6	22-Apr-08	East Slope	146682	Trapezoid	174	22.5	3453	Y	
7	22-Apr-08	East Slope	146686	Trapezoid	128	22.5	2385	Y	
8	22-Apr-08	South Slope	146575	Trapezoid	84	22.5	1507	Y	
9	22-Apr-08	South Slope	146575	Rectangle	27	10.5	283.5	Y	
10	22-Apr-08	South Slope	146686	Trapezoid	26	22.5	292	Y	
11	22-Apr-08	South Slope	146575	Trapezoid	44	22.5	787	Y	
12	22-Apr-08	South Slope	146575	Trapezoid	59	22.5	1158	Y	
13	22-Apr-08	South Slope	146575	Trapezoid	75	22.5	1507	Y	
14	22-Apr-08	South Slope	146575	Trapezoid	87	22.5	1822	Y	
15	22-Apr-08	South Slope	146794	Rectangle	92	22.5	2070	Y	
16	22-Apr-08	South Slope	146794	Rectangle	94	22.5	2115	Y	
17	22-Apr-08	South Slope	146794	Trapezoid	94	22.5	1878	Y	
18	22-Apr-08	South Slope	146794	Trapezoid	73	22.5	1552	Y	
19	22-Apr-08	South Slope	146570	Trapezoid	65	22.5	1383	Y	
20	22-Apr-08	South Slope	146570	Trapezoid	58	22.5	1192	Y	
21	22-Apr-08	South Slope	146570	Trapezoid	48	22.5	990	Y	
22	22-Apr-08	South Floor	146570	Trapezoid	40	22.5	450	Y	
23	23-Apr-08	West Slope	146570	Trapezoid	114	22.5	2013	Y	
24	23-Apr-08	West Floor	146570	Trapezoid	23	18	202	Y	
25	23-Apr-08	West Slope	146676	Trapezoid	169	22.5	3296	Y	
26	23-Apr-08	West Slope	146676	Trapezoid	220	22.5	4375	Y	
27	23-Apr-08	West Slope	146799	Rectangle	223	22.5	5017.5	Y	
28	23-Apr-08	West Slope	146799	Rectangle	163	22.5	3667.5	Y	
29	23-Apr-08	West Slope	146796	Rectangle	201	22.5	4522.5	Y	
30	23-Apr-08	West Slope	146796	Rectangle	196	22.5	4410	Y	
31	23-Apr-08	West Slope	146798	Rectangle	204	22.5	4590	Y	
32	23-Apr-08	Top	146570	Rectangle	196	22.5	4410	Y	
33	23-Apr-08	Top	146570	Rectangle	7	22.5	157.5	Y	
34	25-Apr-08	South Slope	350108	Rectangle	39	11.5	448.5	Y	Flap [4]
35	25-Apr-08	South Slope	350108	Rectangle	104	11.5	1196	Y	Flap
36	25-Apr-08	South Slope	350108	Rectangle	66	11.5	759	Y	Flap
37	25-Apr-08	South Slope	350108	Rectangle	142	11.5	1633	Y	Flap
38	30-Apr-08	East Slope	350108	Rectangle	25	11.5	287.5	Y	Flap
39	30-Apr-08	East Slope	350108	Rectangle	17	11.5	195.5	Y	Flap
40	30-Apr-08	East Slope	350108	Rectangle	142	11.5	1633	Y	Flap
41	30-Apr-08	East Slope	350108	Rectangle	12	11.5	138	Y	Flap
42	10-Oct-08	East Slope	6568	Rectangle	190	23	4370	Y	
43	10-Oct-08	East Slope	6568	Rectangle	189	23	4347	Y	
44	10-Oct-08	East Slope	9789	Trapezoid	179	11.5	1880.25	Y	

TABLE 9.3

SUMMARY OF HDPE GEOCOMPOSITE INSTALLATION LOG (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Location*	*Manufacturer's Roll Number*	*Panel Shape*	Panel Dimensions			*Installation Approved (Y/N)* [3]	*Comment*
					Final Length (ft) [2]	*Final Width (ft)*	*Final Area (ft^2)*		
45	10-Oct-08	East Slope	9789	Trapezoid	148	11.5	1575.5	Y	
46	10-Oct-08	East Slope	0103	Trapezoid	100	11.5	1006.25	Y	
47	10-Oct-08	East Slope	0103	Trapezoid	75	11.5	724.5	Y	
48	10-Oct-08	East Slope	0103	Trapezoid	77	23	1771	Y	
49	10-Oct-08	East Slope	0103	Trapezoid	54	23	1242	Y	
50	10-Oct-08	East Slope	9789	Trapezoid	27	23	621	Y	
51	10-Oct-08	North Slope	9785	Rectangle	180	23	4140	Y	
52	10-Oct-08	North Slope	6683	Trapezoid	178	23	4094	Y	
53	10-Oct-08	North Slope	6683	Trapezoid	165	23	3795	Y	
54	10-Oct-08	North Slope	6681	Trapezoid	144	23	3312	Y	
55	10-Oct-08	North Slope	6681	Trapezoid	117	23	2691	Y	
56	10-Oct-08	North Slope	6681	Trapezoid	95	23	2185	Y	
57	11-Oct-08	North Slope	0107	Trapezoid	NR	NR	967.5	Y	
58	11-Oct-08	North Slope	6683	Trapezoid	27	22	599	Y	
59	11-Oct-08	North Slope	6798	Trapezoid	184	22.5	4140	Y	
60	11-Oct-08	North Slope	6574	Trapezoid	160	22.5	3600	Y	
61	11-Oct-08	North Slope	6574	Trapezoid	136	22.5	3060	Y	
62	11-Oct-08	North Slope	6574	Trapezoid	89	22.5	2002.5	Y	
63	11-Oct-08	North Slope	6678	Rectangle	11	22.5	247.5	Y	
64	11-Oct-08	North Slope	6678	Trapezoid	90	22.5	2025	Y	
65	11-Oct-08	West Slope	6678	Rectangle	204	22.5	4590	Y	
66	11-Oct-08	West Slope	6678	Rectangle	77	22.5	1732.5	Y	
67	11-Oct-08	West Slope	6797	Rectangle	126	22.5	2835	Y	
68	11-Oct-08	West Slope	6797	Trapezoid	127	22.5	2857.5	Y	
69	11-Oct-08	West Slope	6797	Rectangle	70	22.5	1575	Y	
70	11-Oct-08	West Slope	9796	Trapezoid	11	22.5	247.5	Y	
71	11-Oct-08	West Slope	9796	Trapezoid	171	22.5	3847.5	Y	
72	11-Oct-08	West Slope	9796	Trapezoid	120	22.5	2700	Y	
73	11-Oct-08	North Slope	9796	Rectangle	25	22.5	562.5	Y	
74	11-Oct-08	North Slope	6570	Rectangle	135	22.5	3037.5	Y	
75	11-Oct-08	North Slope	6682	Trapezoid	34	22.5	765	Y	
76	11-Oct-08	North Slope	9789	Trapezoid	27	22.5	607.5	Y	
77	11-Oct-08	North Slope	9789	Trapezoid	25	22.5	562.5	Y	
78	11-Oct-08	North Slope	6595	Trapezoid	50	22.5	1125	Y	
79	13-Oct-08	West Slope	9795	Rectangle	28	22.5	630	Y	
80	13-Oct-08	West Slope	9795	Rectangle	15	22.5	337.5	Y	
81	13-Oct-08	West Slope	9795	Rectangle	13	22.5	292.5	Y	
82	13-Oct-08	West Slope	6571	Rectangle	28	22.5	630	Y	
83	13-Oct-08	West Slope	6571	Rectangle	28	22.5	630	Y	
84	3-Nov-08	West Slope	1770-5		102	23	2346	Y	0+67/1+69
85	3-Nov-08	West Slope	1770-5		148	23	3404	Y	0+00/1+48
86	3-Nov-08	West Slope	1770-5		125	23	2875	Y	0+00/1+25
87	3-Nov-08	West Slope	1770-5		34	23	782	Y	0+00/0+34
88	3-Nov-08	West Slope	1770-5		19	23	437	Y	0+00/0+19

TABLE 9.3

SUMMARY OF HDPE GEOCOMPOSITE INSTALLATION LOG (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Location*	*Manufacturer's Roll Number*	*Panel Shape*	Panel Dimensions			*Installation Approved (Y/N)* [3]	*Comment*
					Final Length (ft) [2]	*Final Width (ft)*	*Final Area (ft^2)*		
89	3-Nov-08	West Slope	1770-5		12	7	84	Y	0+00/0+12
90	3-Nov-08	West Slope	1770-5		16	23	368	Y	0+00/0+16
91	3-Nov-08	West Slope	1770-5		23	4	92	Y	0+34/0+57
92	3-Nov-08	West Slope	1770-5		22	4	88	Y	0+57/0+79
93	3-Nov-08	North Slope	1770-5		21	2	42	Y	0+00/0+21
94	4-Nov-08	North Slope	1761-5		217	23	4991	Y	
95	4-Nov-08	North Slope	1761-5		112	3	336	Y	1+10/2+22
96	4-Nov-08	North Slope	1761-5		110	3	330	Y	0+00/1+10
97	5-Nov-08	East Slope	1764-5		182	23	4186	Y	
98	5-Nov-08	East Slope	1764-5		156	23	3588	Y	
99	5-Nov-08	East Slope	1765-5		132	23	3036	Y	
100	5-Nov-08	East Slope	1765-5		106	23	2438	Y	
101	5-Nov-08	East Slope	1765-5		79	23	1817	Y	
102	5-Nov-08	North Slope	1765-5		63	23	1449	Y	
103	5-Nov-08	North Slope	1765-5		33	23	759	Y	
104	5-Nov-08	East Slope	1765-5		52	23	1196	Y	
105	5-Nov-08	East Slope	1765-5		25	11	275	Y	
106	6-Nov-08	West Slope	1761-5		28	23	644	Y	
107	6-Nov-08	West Slope	1761-5		31	23	713	Y	
108	6-Nov-08	West Slope	1761-5		31	23	713	Y	
109	6-Nov-08	West Slope	1761-5		29	23	667	Y	
EP155	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	9795	Trapezoid	15	12	180	Y	
EP156	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	9795	Trapezoid	10	12	120	Y	
EP157	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	0108	Trapezoid	109	12	1308	Y	0+25/1+34
EP157	4-Nov-08	North Slope	0108		13	11	143	Y	Reused Material EP157
EP158	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	6567	Trapezoid	35	12	420	Y	1+34/1+69
EP159	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	6507	Trapezoid	35	12	420	Y	1+69/2+04
EP160	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	6679	Rectangle	21	12	252	Y	2+04/2+25
EP161	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	6679	Rectangle	20	12	240	Y	2+25/2+45
EP162	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	0103	Rectangle	18	12	216	Y	2/45/2+63
EP163	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	0103	Rectangle	18	12	216	Y	2+63/2+81
EP164	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	6791	Rectangle	19	12	228	Y	2+81/3+00
EP165	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	6791	Rectangle	18	12	216	Y	3+00/3+18
EP166	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	6791	Rectangle	21	12	252	Y	3+18/3+39
EP167	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	6791	Rectangle	18	12	216	Y	3+39/3+57
EP168	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	6508	Rectangle	16	12	192	Y	3+57/3+73
EP169	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	6568	Rectangle	7	12	84	Y	3+73/3+80
EP170	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	6689	Rectangle	17	12	204	Y	3+80/3+97
EP171	15-Oct-08	North Slope (EP Flap to Tie in to Vault)	6689	Rectangle	22	12	264	Y	3+97/4+19
EP172	15-Oct-08	East Slope (EP Flap to Tie in to Vault)	6790	Rectangle	15	10	150	Y	3+46/3+61
EP173	15-Oct-08	East Slope (EP Flap to Tie in to Vault)	6676	Rectangle	23	7	161	Y	3+23/3+46
EP174	16-Oct-08	East Slope (EP Flap to Tie in to Vault)	6346	Rectangle	42	11	462	Y	2+81/3+23
EP175	16-Oct-08	East Slope (EP Flap to Tie in to Vault)	6346	Rectangle	43	11	473	Y	2+38/2+81
EP176	16-Oct-08	East Slope (EP Flap to Tie in to Vault)	6682	Rectangle	17	11	187	Y	2+21/2+38

TABLE 9.3

SUMMARY OF HDPE GEOCOMPOSITE INSTALLATION LOG (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Panel ID	*Date Deployed*	*Location*	*Manufacturer's Roll Number*	*Panel Shape*	Panel Dimensions			*Installation Approved (Y/N)* [3]	*Comment*
					Final Length (ft) [2]	*Final Width (ft)*	*Final Area (ft^2)*		
EP177	16-Oct-08	East Slope (EP Flap to Tie in to Vault)	6346	Rectangle	21	11	231	Y	2+00/2+21
EP178	16-Oct-08	North Slope (EP Flap to Tie in to Vault)	6682	Rectangle	14	11	154	Y	
EP179	16-Oct-08	North Slope (EP Flap to Tie in to Vault)	6314	Rectangle	20	11	220	Y	
EP180	16-Oct-08	North Slope (EP Flap to Tie in to Vault)	6314	Rectangle	16	11	176	Y	
EP181	4-Nov-08	North Slope	0108		99	11	1089	Y	Reused Material EP157
EP182	4-Nov-08	North Slope	9785		78	11	858	Y	Former Panel 51
EP183	7-Nov-08	Northeast Slope	9789		69	10	690	Y	44
EP184	7-Nov-08	Northeast Slope	9789		110	10	1100	Y	44
EP185	7-Nov-08	East Slope	9789	675	117	9	1053	Y	44
EP186	7-Nov-08	East Slope	1765-5		54	9	486	Y	
EP187	7-Nov-08	East Slope	1765-5		28	10	280	Y	
EP188	7-Nov-08	East Slope			11	10	110	Y	

Notes:

[1] Approval requires acceptance of quality assurance testing results, which are as follows:

Thickness	60 mil
Density	2% to 3%
Carbon Black Content	0.94 g/cc (maximum)
Tensile Strength at Yield	126 ppi
Tensile Strength at Break	90 ppi
Elongation at Yield	12%
Elongation at Break	100%
Tear Resistance	42 lb
Puncture Resistance	90 lb
Resistance Stress Crack	200 hr

[2] Installed length represents field measurement of actual deployed length. For trapezoidal shapes, the measured length was the longer side.

[3] Approval refers to visual inspection of material and installation procedures.

[4] Panel lengths recorded for flap sections were measured after cutting roll in half (i.e., width = 11.5 ft)

PR Denotes Primary Repair area where a small amount of liner was used to fill in a triangular-shaped area in one of the corners.

TABLE 9.4

SUMMARY OF HDPE GEOMEMBRANE TEST SEAMS (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

				Fusion		*Peel Test - A (ppi)*			*Peel Test - B (ppi)*			*Shear Test - A (ppi)*		*Shear Test - B (ppi)*		
Date	*Time*	*Seamer ID*	*Machine ID*	*Speed*	*Temperature (F)*	*Coupon 1*	*Coupon 2*	*Coupon 3*	*Coupon 1*	*Coupon 2*	*Coupon 3*	*Coupon 1*	*Coupon 2*	*Coupon 1*	*Pass/Fail* [1]	*Comments*
22-Apr-08	7:30	CP	7	4	850	108	95	115	127	129	124	192	191	197	P	
22-Apr-08	8:00	VP	6	5	850	147	114	115	129	124	111	190	194	177	P	
22-Apr-08	8:05	NP	3	4.5	750	130	132	122	138	141	123	156	117	177	P	
22-Apr-08	12:45	CP	7	5	850	101	94	118	104	99	115	147	152	146	P	
22-Apr-08	13:00	NP	3	3.5	750	130	135	134	122	138	128	151	150	147	P	
22-Apr-08	13:10	VP	6	6	850	143	111	120	127	130	111	150	148	152	P	
23-Apr-08	7:40	CP	7	5	750	128	136	126	133	123	135	201	135	198	P	
23-Apr-08	7:45	NP	3	4	750	128	139	137	131	125	130	190	190	172	P	
23-Apr-08	7:48	NP	3	4	750	135	138	139	155	139	141	161	177	175	P	
23-Apr-08	7:55	VP	6	5	850	138	106	113	139	120	101	193	193	183	P	
23-Apr-08	13:15	CP	7	5	850	125	115	114	126	119	109	136	127	145	P	
23-Apr-08	13:00	NP	3	4	750	114	120	113	115	113	101	145	152	128	P	
23-Apr-08	13:20	AP	G#52	450	500	114	122	116	NR	NR	NR	136	137	148	P	
23-Apr-08	13:50	VP	G#27	450	350	99	122	124	NR	NR	NR	131	137	140	P	
24-Apr-08	7:40	AP	G#52	470	500	109	99	106	NR	NR	NR	200	216	199	P	
24-Apr-08	7:45	VP	G#27	350	450	153	148	129	NR	NR	NR	195	183	185	P	
25-Apr-08	10:37	VP	G#27	450	350	150	130	149	NR	NR	NR	166	166	160	P	Flap
25-Apr-08	10:30	AP	G#52	450	550	150	146	142	NR	NR	NR	164	162	163	P	Flap
28-Apr-08	10:00	AP	G#52	450	550	100	91	112	NR	NR	NR	163	145	167	P	Flap
30-Apr-08	7:50	AP	G#52	450	550	119	113	126	NR	NR	NR	190	170	168	P	
30-Apr-08	8:40	DT	G#27	450	390	105	128	132	NR	NR	NR	145	151	149	P	
10-Oct-08	14:40	KC	43	10	800	105	118	109	98	119	109	167	178	172	P	
10-Oct-08	14:45	WAT	30	8.5	800	101	99	105	96	101	101	107	NR	NR	F	
10-Oct-08	15:15	WAT	30	8.5	800	120	137	117	117	126	130	179	191	185	P	
10-Oct-08	17:30	WAT	30	8.5	800	107	132	114	108	109	117	132	140	141	P	
10-Oct-08	17:35	KC	43	9	800	121	118	115	114	108	117	135	141	138	P	
10-Oct-08	19:20	WAT	30	7.5	800	108	105	101	102	100	105	131	130	122	P	
11-Oct-08	7:50	WAT	30	7.5	800	128	135	136	132	125	131	210	215	200	P	
11-Oct-08	7:50	WAT	30	7.5	800	126	119	130	130	128	119	188	196	191	P	
11-Oct-08	8:00	KC	43	9	800	141	139	142	140	132	138	151	150	168	P	
11-Oct-08	8:00	KC	43	9	800	126	122	129	124	125	120	125	123	136	P	
11-Oct-08	13:30	WAT	30	8.5	800	137	140	126	126	140	116	172	163	162	P	
11-Oct-08	13:30	WAT	30	8.5	800	153	126	144	143	116	150	150	134	147	P	
11-Oct-08	14:15	KC	43	9.5	800	139	133	122	118	121	143	166	171	162	P	
11-Oct-08	14:15	KC	43	9.5	800	130	130	146	136	133	134	158	160	161	P	
13-Oct-08	7:50	WAT	43	7.5	800	128	133	145	155	139	149	173	175	NR	P	
13-Oct-08	7:50	WAT	43	7.5	800	125	120	125	145	142	129	195	197	NR	P	
13-Oct-08	7:25	VC	G#64	NR	NR	116	127	NR	119	NR	NR	NR	123	NR	P	
13-Oct-08	8:30	ST	X-25	NR	NR	133	130	129	NR	NR	NR	NR	127	NR	P	
13-Oct-08	13:15	VC	G#64	NR	NR	145	137	130	NR	NR	NR	NR	129	NR	P	
13-Oct-08	13:30	ST	X-25	NR	NR	117	129	124	NR	NR	NR	NR	163	NR	P	
14-Oct-08	7:40	WAT	X-25	NR	450	118	156	152	NR	NR	NR	197	179	NR	P	
14-Oct-08	7:50	VC	G#64	NR	600	156	111	166	NR	NR	NR	NR	174	NR	P	
14-Oct-08	13:15	VC	G#64	250	450	126	104	137				182	169	158	P	
14-Oct-08	13:20	WAT	G#25	500	500	168	129	128				123	135	127	P	
14-Oct-08	17:15	WAT	G#25	500	500	99	100	101				120	130	125	P	
14-Oct-08	17:18	VC	G#64	250	450	100	101	101				125	126	128	P	
15-Oct-08	7:50	WAT	G#25	500	500	110	120	169				166	180	175	P	
15-Oct-08	13:22	WAT	G#25	500	500	99	106	106				120	121	125	P	
16-Oct-08	8:15	WAT	G#25	500	500	109	110	115				130	131	132	P	
16-Oct-08	12:50	WAT	G#25	500	500	115	120	119				170	180	165	P	
17-Oct-08	9:30	VC	G#64	500	500	104	116	122				145	129	135	P	
17-Oct-08	12:45	VC	G#64	500	500	122	98	112				142	124	120	P	
3-Nov-08	13:10	RV	DT#19	5	800	126	133	131	123	130	131	182	182	182	P	Smooth/Smooth
3-Nov-08	13:04	MK	DT#15	3	800	103	126	99	106	104	109	169	178	177	P	Smooth/Textured
3-Nov-08	13:08	MK	DT#14	5	800	147	123	124	138	137	131	195	197	202	P	Smooth/Smooth
3-Nov-08	13:12	MK	DT#2	2.5	800	109	107	112	116	123	111	183	184	190	P	Textured/Textured
3-Nov-08	14:05	BV	G#8	500	400				128	131	130	180	179	178	F	
4-Nov-08	8:00	BV	G#70	400	500				132	108	131	215	207	227	P	Extrusion
4-Nov-08	13:25	VK	DT#2	5	800	114	115	118	126	129	128	190	178	191	P	Smooth/Smooth
4-Nov-08	13:20	MK	DT#15	5	800	130	102	120	121	125	124	171	163	171	P	Smooth/Smooth
4-Nov-08	13:30	VK	DT#2	3	800	123	143	132	137	138	135	140	132	145	P	Textured/Textured
4-Nov-08	13:50	BV	G#70	400	500	111	116	116				188	172	169	P	Extrusion
4-Nov-08	16:30	RV	G#49	400	500	112	134	123				167	153	165	P	Extrusion
5-Nov-08	8:00	BV	G#70	400	500	124	109	119				185	185	187	P	Extrusion
5-Nov-08	9:40	MK	15	5	800	161	129	119	124	118	123	214	208	225	P	Smooth/Smooth
5-Nov-08	9:45	MK	15	3	800	116	127	119	134	138	142	189	180	192	P	Textured/Textured
5-Nov-08	10:00	VK	2	5	800	116	102	121	119	123	99	203	193	199	P	Smooth/Smooth
4-Nov-08	11:57	MK	DT#15	3	800	108	108	121	126	111	119	157	149	170	P	Smooth/Textured
5-Nov-08	13:30	VK	2	2.5	800	110	86	99	108	106	112	161	139	146	P	Textured/Textured
5-Nov-08	13:30	BK	G#70	400	800				136	129	134	170	172	172	P	Extrusion
5-Nov-08	16:00	RV	G#49	400	500				119	106	122	150	156	169	P	Extrusion
6-Nov-08	10:55	VK	DT#2	3	800	137	111	120	123	133	151	175	170	183	P	Smooth/Textured
6-Nov-08	10:50	MK	DT#15	5	800	122	129	110	115	135	118	183	192	177	P	Smooth/Smooth
6-Nov-08	13:30	BV	G#70	400	500				158	113	144	172	160	171	P	Extrusion
7-Nov-08	8:00	BV	G#70	400	500				132	137	130	176	168	183	P	Extrusion
7-Nov-08	9:50	RV	G#49	400	500				122	136	128	136	138	146	P	Extrusion
7-Nov-08	13:15	BV	G#70	400	500				140	139	159	188	178	194	P	Extrusion
7-Nov-08	13:30	RV	G#49	400	500				135	123	129	167	158	174	P	Extrusion
17-Nov-08	8:40	RV	G#49	400	500	150	169	170				218	215	215	P	

Notes:
NR = Not recorded.
Acceptance of test seams requires shear test results of 120 ppi (2,000 psi) and peel test results of 90 ppi (1,500 psi).

TABLE 9.5

SUMMARY OF HDPE GEOMEMBRANE NON-DESTRUCTIVE SEAM TEST RESULTS (COVER SYSTEM)
EAST PLANT AREA VAULT
CONSTRUCTION CERTIFICATION REPORT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Seam Number	*Seam Location*	*Weld Date*	*Operator Name/ID*	*Machine No.*	*Machine Temperature (F)*	*Machine Speed*	*Ambient Temperature (F)*	*Beginning Seam Station*	*Ending Seam Station*	*Seam Length (ft)*	*Test Date*	*Test Type*	*Air Test Time In* (1)	*Air Test Time Out* (1)	*Test Results (Pass/Fail)* (2)	*Destructive Test Sample ID*	*Comments*
1/2	East Slope	22-Apr-08	CP	7	800	5	70	0+00	1+88	188	22-Apr-08	AT	9:50	9:55	P	DS1 (at 1+35)	
4/5	East Slope	22-Apr-08	CP	7	800	5	70	0+00	1+81	181	22-Apr-08	AT	9:58	10:03	P	DS7 (at 1+50)	
11/12	East Slope	22-Apr-08	CP	7	800	5	70	0+00	0+44	4	22-Apr-08	AT	13:18	13:23	P		
13/14	South Slope	22-Apr-08	CP	7	800	5	70	0+00	0+75	75	22-Apr-08	AT	13:42	13:47	P	DS11 (at 0+20)	
14/15	South Slope	22-Apr-08	CP	7	800	5	70	0+00	0+87	87	22-Apr-08	AT	15:48	15:53	P		
15/16	South Slope	22-Apr-08	CP	7	800	5	70	0+00	0+92	92	22-Apr-08	AT	15:57	16:02	P	DS12 (at 0+85)	
17/18	South Slope	22-Apr-08	CP	7	800	5	70	0+00	0+73	73	23-Apr-08	AT	8:05	8:10	p	DS6 (at 0+25)	
19/20	South Slope	22-Apr-08	CP	7	800	5	70	0+58	0+00	58	23-Apr-08	AT	9:38	9:43	P		
2/3	East Slope	22-Apr-08	VP	6	850	5	70	0+00	1+83	183	22-Apr-08	AT	9:55	10:00	P	DS9 (at 1+00)	
5/6	East Slope	22-Apr-08	VP	6	850	5	70	0+00	1+79	179	22-Apr-08	AT	11:40	11:45	P	DS10 (at 0+50)	
7/8	South Slope	22-Apr-08	VP	6	850	5	70	0+00	0+84	84	22-Apr-08	AT	13:02	13:07	P		
8/9	South Floor	22-Apr-08	VP	6	850	5	70	0+00	0+27	27	22-Apr-08	AT	15:30	15:35	P	DS4 (at (0+13)	
10/11	South Slope	22-Apr-08	VP	6	850	5	70	0+00	0+26	26	22-Apr-08	AT	13:18	13:23	P		
12/13	South Slope	22-Apr-08	VP	6	850	5	70	0+00	0+59	59	22-Apr-08	AT	13:20	13:25	P		
16/17	South Slope	22-Apr-08	VP	6	850	4.5	70	0+00	0+94	94	23-Apr-08	AT	15:58	16:02		DS8 (at 0+50)	
18/19	South Slope	22-Apr-08	VP	6	850	5	70	0+00	0+65	65	23-Apr-08	AT	9:25	9:30	P		
20/21	South Slope	22-Apr-08	VP	6	850	5	70	0+48	0+00	48	23-Apr-08	AT	9:47	9:52	P		
21/22	South Slope	22-Apr-08	VP	6	850	5	70	0+40	0+00	40	23-Apr-08	AT	10:02	10:07	P	DS13 (at 0+25)	
3/4	East Slope	22-Apr-08	NP	3	750	4.5	70	0+00	1+80	180	22-Apr-08	AT	9:57	10:02	P	DS2 (at 0+75)	
6/7	East Slope	22-Apr-08	NP	3	800	4.5	70	0+00	1+28	128	22-Apr-08	AT	13:00	13:05	P	DS3 (at 0+25)	
6/14	South Slope	22-Apr-08	NP	3	750	4	72	0+00	0+26	26	22-Apr-08	AT	13:30	13:35	P	DS5 (at 0+17)	
6/13	South Slope	22-Apr-08	NP	3	750	4	72	0+26	0+50	24	22-Apr-08	AT	13:30	13:35	P		
7/13	South Slope	22-Apr-08	NP	3				0+50	0+54	4							
7/12	South Slope	22-Apr-08	NP	3	750	4	72	0+54	0+80	26	22-Apr-08	AT	13:56	14:01	P		
7/11	South Slope	22-Apr-08	NP	3	750	4	72	0+80	0+97	17	22-Apr-08	AT	14:05	14:10	P		
8/11	South Slope	22-Apr-08	NP	3	750	4	72	0+97	1+08	11	22-Apr-08	AT	14:05	14:10	P		
8/10	South Slope	22-Apr-08	NP	3	750	4	72	1+08	1+35	27	22-Apr-08	AT	14:13	14:18	P		
9/10	South Slope	22-Apr-08	NP	3	750	4	72	1+35	1+45	10	22-Apr-08	AT	11:12	11:17	P		
22/24	West Floor	23-Apr-08	VP	6	850	5	73	0+21	0+00	21	23-Apr-08	AT	10:19	10:24	P		
23/25	West Slope	23-Apr-08	VP	6	850	5	73	1+14	0+00	114	23-Apr-08	AT	10:32	10:37	P	DS14 (at 0+35)	
26/27	West Slope	23-Apr-08	VP	6	850	5	73	2+24	0+00	224	23-Apr-08	AT	11:16	11:21	P	DS15 (at 1+75)	
27/28	West Slope	23-Apr-08	VP	6	850	5	73	2+00	0+30	170	23-Apr-08	AT	11:43	11:48	P	DS16 (at 0+35)	
27/32	Top	23-Apr-08	VP	6	850	5	73	0+30	0+00	30	23-Apr-08	AT	13:12	13:17	P	DS18 (at 0+22)	
25/26	West Slope	23-Apr-08	CP	7	850	5	73	1+69	0+00	169	23-Apr-08	AT	11:21	11:26	P	DS22 (at 0+25)	
28/29	West Slope	23-Apr-08	CP	7	850	4	73	2+01	0+32	169	23-Apr-08	AT	13:17	13:22	P	DS19 (at 1+50)	
29/32	Top	23-Apr-08	CP	7	850	5	73	0+32	0+00	32	23-Apr-08	AT	13:07	13:12	P	DS21 (at 0+13)	
30/31	West Slope	23-Apr-08	CP	7	850	5	73	2+03	0+09	194	23-Apr-08	AT	14:50	14:55	P	DS20 (at 0+19)	
31/33	Top	23-Apr-08	CP	7	850	5	73	0+09	0+00	9	23-Apr-08	AT	14:47	14:52	P		
15/26	Top	23-Apr-08	NP	3			Not Recorded	0+00	0+15	15	23-Apr-08	AT	11:12	11:17	P		
16/26	Top	23-Apr-08	NP	3			Not Recorded	0+15	0+38	23	23-Apr-08	AT	11:12	11:17	P	DS23 (at 0+20)	
17/26	Top	23-Apr-08	NP	3			Not Recorded	0+38	0+55	17	23-Apr-08	Not Recorded			P	Cap	
17/25	SW Slope	23-Apr-08	NP	3			Not Recorded	0+00	0+10	10	23-Apr-08	AT	10:55	11:00	P		
18/25	SW Slope	23-Apr-08	NP	3			Not Recorded	0+10	0+34	24	23-Apr-08	A	10:49	10:54	P		
19/25	SW Slope	23-Apr-08	NP	3			Not Recorded	0+34	0+54	20	23-Apr-08	A	10:49	10:54	P		0+54/0+61 at R28
20/23	SW Slope	23-Apr-08	NP	3			Not Recorded	0+61	0+83	22	23-Apr-08	AT	10:23	10:28	P		
21/23	SW Slope	23-Apr-08	NP	3			Not Recorded	0+83	1+08	25	23-Apr-08	A	10:23	10:28	P	DS24 (at 0+90)	
22/23	SW Slope	23-Apr-08	NP	3			Not Recorded	1+08	1+26	18	23-Apr-08	A	10:23	10:28	P		1+26/1+32 at R32
24/23	West Floor	23-Apr-08	NP	3			Not Recorded	1+32	1+50	18	23-Apr-08	A	10:34	10:39	P		
29/30	West Slope	23-Apr-08	NP	3	750	4	73	2+04	0+08	196	23-Apr-08	AT	13:40	13:45	P	DS17 (at 1+00)	
30/33	Top	23-Apr-08	NP	3	750	4	73	0+00	0+23	23	23-Apr-08	AT	14:47	14:52	P		
29/33	Top	23-Apr-08	NP	3	750	4	73	0+08	0+00	8	23-Apr-08	AT	13:46	13:51	P		
1/33	Top	23-Apr-08	NP	3			Not Recorded	0+97	0+90	7	23-Apr-08	AT	15:00	15:05	P		
2/33	Top	23-Apr-08	NP	3			Not Recorded	0+90	0+76	26	23-Apr-08	AT	14:00	14:05	P	DS25 (at 0+07)	
2/29	Top	23-Apr-08	NP	3				0+76	0+65	11							
3/29	Top	23-Apr-08	NP	3				0+65	0+51	14							
3/32	Top	23-Apr-08	NP	3			Not Recorded	0+51	0+43	8	23-Apr-08	AT	14:25	14:30	P		
4/32	Top	23-Apr-08	NP	3			Not Recorded	0+43	0+29	14	23-Apr-08	AT	14:25	14:30	P		
4/27	Top	23-Apr-08	NP	3			Not Recorded	0+29	0+20	9	23-Apr-08	AT	14:25	14:30	P		
5/27	Top	23-Apr-08	NP	3				0+20	0+06	14							
5/26	Top	23-Apr-08	NP	3				0+06	0+00	6							
28/32	Top	23-Apr-08	NP	3	750	4	73	0+00	0+23	23	23-Apr-08	AT	14:42	14:47	P	DS26 (at 0+18)	
30/2										11	23-Apr-08	AT	14:00	14:05	P		
30/3										14	23-Apr-08	AT	14:12	14:17	P		
Tie in #1	South Tie In	25-Apr-08	VP	G#27				0+39	0+00	39							South Tie In (Vault) to EP
Tie in #1	South Tie In	25-Apr-08	VP	G#27				1+43	0+39	104						DS27 (at 0+98)	South Tie In (Vault) to EP
Tie in #1	South Tie In	25-Apr-08	AP	G#52				1+43	2+09	66							South Tie In (Vault) to EP
Tie in #1	South Tie In	25-Apr-08	AP	G#52				2+09	3+51	142						DS28 (at 2+50)	South Tie In (Vault) to EP

TABLE 9.5

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EAST PLANT AREA VAULT
CONSTRUCTION CERTIFICATION REPORT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Seam Number	*Seam Location*	*Weld Date*	*Operator Name/ID*	*Machine No.*	*Machine Temperature (F)*	*Machine Speed*	*Ambient Temperature (F)*	*Beginning Seam Station*	*Ending Seam Station*	*Seam Length (ft)*	*Test Date*	*Test Type*	*Air Test Time In* (1)	*Air Test Time Out* (1)	*Test Results (Pass/Fail)* (2)	*Destructive Test Sample ID*	*Comments*
Tie in #2	East Slope	30-Apr-08	DT	G#27				0+79	0+54	23						DS30 (at 0+70)	Tie in (Vault Flap)
40/41	East Slope	30-Apr-08	DT	G#27				0+00	0+11	11							
Tie in #2	East Slope	30-Apr-08	DT	G#27				0+54	0+42	12							
39/41	East Slope	30-Apr-08	DT	G#27				0+00	0+11	11							
Tie in #2	East Slope	30-Apr-08	DT	G#27				0+42	0+25	17							
38/39	East Slope	30-Apr-08	DT	G#27				0+00	0+11	11							
Tie in #2	East Slope	30-Apr-08	DT	G#27				0+25	0+00	25							
Tie in #2	East Slope	30-Apr-08	AP	G#52				2+00	0+00	200						DS29 (at 1+70)	Tie in (Vault Flap)
1/42	West Slope	10-Oct-08	WT	30	800	8.5	76	1+83	0+00	183	10-Oct-08	AT	15:51	15:56	P	DS31 (at 1+39)	
1/42	West Slope	10-Oct-08	WT	30	800	8.5	76	1+83	0+00	183	10-Oct-08	AT	15:59	16:04	P	DS31 (at 1+39)	
44/45	West Slope	10-Oct-08	WT	30	800	8.5	80	1+47	0+00	147	10-Oct-08	AT	16:40	16:45	P	DS34 (at 0+65)	
44/45	West Slope	10-Oct-08	WT	30	800	8.5	80	1+47	0+00	147	10-Oct-08	AT	16:45	16:50	P	DS34 (at 0+65)	
46/47	West Slope	10-Oct-08	WT	30	800	8.5	80	1+00	0+00	100	10-Oct-08	AT	17:11	17:16	P	DS36 (at 0+72)	
47/48	West Slope	10-Oct-08	WT	30	800	8.5	80	0+75	0+00	75	10-Oct-08	AT	17:15	17:20	P	DS37 (at 0+50)	
48/49	West Slope	10-Oct-08	WT	30	800	8.5	80	0+55	0+00	55	10-Oct-08	AT	17:24	17:29	P	DS38 (at 0+30)	
49/50	West Slope	10-Oct-08	WT	30	800	8.5	80	0+27	0+00	27	10-Oct-08	AT	17:25	17:30	P	DS47 (at 0+16)	
51/52	North Slope	10-Oct-08	WT	30	800	8.5	70	1+85	0+00	185	11-Oct-08	AT	9:30	9:35	P	DS46 (at 1+00)	
54/55	North Slope	10-Oct-08	WT	30	800	8.5	70	1+20	0+00	120	11-Oct-08	AT	8:52	8:57	P	DS41 (at 0+80)	
55/56	North Slope	10-Oct-08	WT	30	800	8.5	70	0+95	0+00	95	11-Oct-08	AT	8:51	8:56	P	DS40 (0+55)	
42/43		10-Oct-08	KC	43	800	9	76			194	13-Oct-08	AT	16:15	16:20	P	DS32 (at 0+77)	
42/43		10-Oct-08	KC	43	800	9	76			194	13-Oct-08	AT	16:15	16:20	P	DS32 (at 0+77)	
43/44		10-Oct-08	KC	43	800	9	76				10-Oct-08	AT	16:28	16:33	P	DS33 (at 0+25)	
43/44		10-Oct-08	KC	43	800	9	76				10-Oct-08	AT	16:27	16:32	P	DS33 (at 0+25)	
45/46		10-Oct-08	KC	43	800	9	80			126	10-Oct-08	AT	16:58	17:03	P	DS35 (at 0+17)	
45/46		10-Oct-08	KC	43	800	9	80			126	10-Oct-08	AT	16:51	16:56	P	DS35 (at 0+17)	
45/46		10-Oct-08	KC	43	800	9	80			126	10-Oct-08	AT	16:54	15:59	P	DS35 (at 0+17)	
52/53		10-Oct-08	KC	43	800	9	70			168	11-Oct-08	AT	9:21	9:25	P	DS43 (at 1+29)	
53/54		10-Oct-08	KC	43	800	9	70			148	11-Oct-08	AT	9:21	9:25	P	DS42 (at 1+15)	
53/54		10-Oct-08	KC	43	800	9	70			148	11-Oct-08	AT	9:15	9:20	P	DS42 (at 1+15)	
64/52		10-Oct-08	WT	30	800	8.5	70			24							
56/57	North Slope	11-Oct-08	WT	30	800	8.5	70	0+65	0+00	65	11-Oct-08	AT	13:26	13:31	P	DS45 (at 0+40)	
57/58	North Slope	11-Oct-08	WT	30	800	8.5	70	0+30	0+00	30	11-Oct-08	AT	11:21	11:24	P		
44/52	North Slope	11-Oct-08	WT	30	800	8.5	70	2+29	2+02	27	11-Oct-08	AT	10:59	11:04	P		
44/53	North Slope	11-Oct-08	WT	30	800	8.5	70	2+02	1+91	11	11-Oct-08	AT	10:54	10:59	P		
45/53	North Slope	11-Oct-08	WT	30	800	8.5	70	1+91	1+69	22	11-Oct-08	AT	11:05	11:10	P		
45/54	North Slope	11-Oct-08	WT	30	800	8.5	70	1+69	1+58	11	11-Oct-08	AT	11:11	11:36	P		
46/54	North Slope	11-Oct-08	WT	30	800	8.5	70	1+58	1+34	24	11-Oct-08	AT	11:30	11:35	P		
46/54	North Slope	11-Oct-08	WT	30	800	8.5	70	1+58	1+34	24	11-Oct-08	AT	11:28	11:33	P		
46/55	North Slope	11-Oct-08	WT	30	800	8.5	70	1+34	1+23	11	11-Oct-08	AT	11:31	11:36	P		
47/55	North Slope	11-Oct-08	WT	30	800	8.5	60	1+23	1+00	23	11-Oct-08	AT	11:33	11:38	P	DS44 (at 1+07)	
47/56	North Slope	11-Oct-08	WT	30	800	8.5	60	1+00	0+90	10	11-Oct-08	AT	11:39	11:44	P		
48/56	North Slope	11-Oct-08	WT	30	800	8.5	60	0+90	0+65	25	11-Oct-08	AT	11:40	11:45	P		
48/57	North Slope	11-Oct-08	WT	30	800	8.5	60	0+65	0+60	5	11-Oct-08	AT	11:41	11:46	P		
49/57	North Slope	11-Oct-08	WT	30	800	8.5	60	0+60	0+28	32	11-Oct-08	AT	11:11	11:16	P		
49/58	North Slope	11-Oct-08	WT	30	800	8.5	70	0+28	0+27	1							
50/58	North Slope	11-Oct-08	WT	30	800	8.5	70	0+27	0+12	15	11-Oct-08	AT	11:13	11:18	P		
50/58	North Slope	11-Oct-08	WT	30	800	8.5	70	0+12	0+00	-						R104	
51/59	North Slope	11-Oct-08	WT	30	800	8.5	80	1+84	0+00	184	13-Oct-08	AT	11:43	11:48	P	DS48 (at 1+25)	
51/59	North Slope	11-Oct-08	WT	30	800	8.5	80	1+84	0+00	184	13-Oct-08	AT	16:47	16:52	P	DS48 (at 1+25)	
62/64	North Slope	11-Oct-08	KC	30	800	9	75	0+88	0+09	79	13-Oct-08	AT	14:24	14:29	P	DS39 (at 0+75)	
62/64	North Slope	11-Oct-08	KC	30	800	9	75	0+88	0+09	79	13-Oct-08	AT	14:20	14:25	P	DS39 (at 0+75)	
63/64	North Slope	11-Oct-08	WT	30	800	9	75	0+09	0+00	9	13-Oct-08	AT	14:31	14:35	P		
31/65	West Slope	11-Oct-08	WT	30	800	8.5	75	0+35	2+04	169	13-Oct-08	AT	8:30	8:35	P	DS49 (at 1+50)	
31/65	West Slope	11-Oct-08	WT	30	800	8.5	75	0+35	2+04	169	13-Oct-08	AT	8:40	8:45	P		
31/65	West Slope	11-Oct-08	WT	30	800	8.5	75	0+35	2+04	169	13-Oct-08	AT	9:10	9:15	P		
65/67	West Slope	11-Oct-08	WT	30	800	8.5	75	2+04	0+77	127	13-Oct-08	AT	8:18	8:23	P	DS50 (at 1+00)	
65/67	West Slope	11-Oct-08	WT	30	800	8.5	75	2+04	0+77	127	13-Oct-08	AT	8:50	8:55	P		
66/67/68	West Slope	11-Oct-08	KC	4	800	9	75	0+00	0+23	23							
65/66	West Slope	11-Oct-08	WT	30	800	8.5	80	0+77	0+00	77	13-Oct-08	AT	9:08	9:13	P		
70/71	West Slope	11-Oct-08	WT	30	800	8.5	75	1+49	0+66	83	13-Oct-08	AT	11:20	11:25	P	DS51 (at 0+75)	
69/71	West Slope	11-Oct-08	WT	30	800	8.5	75	0+66	0+00	66	13-Oct-08	AT	11:14	11:19	P		
64/74	North Slope	11-Oct-08	WT	30	800	8.5	75	0+64	0+25	39	13-Oct-08	AT	14:45	14:50	P		
64/73	North Slope	11-Oct-08	WT	30	800	8.5	75	0+25	0+00	25	14-Oct-08	AT	14:45	14:50	P	DS52 (at 0+16)	
73/74	North Slope	11-Oct-08	WT	30	800	8.5	75	0+00	0+23	23	13-Oct-08	AT	14:48	14:53	P		
74/78	North Slope	11-Oct-08	KC	4	800	9	75	0+54	0+20	34	13-Oct-08	AT	15:48	15:53	P		
73/78	North Slope	11-Oct-08	KC	4	800	9	75	0+20	0+00	20	13-Oct-08	AT	15:50	15:55	P		
77/78	North Slope	11-Oct-08	KC	4	800	9	75	0+26	0+00	26	13-Oct-08	AT	15:50	15:55	P	DS53 (at 0+11)	

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EAST PLANT AREA VAULT
CONSTRUCTION CERTIFICATION REPORT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Seam Number	*Seam Location*	*Weld Date*	*Operator Name/ID*	*Machine No.*	*Machine Temperature (F)*	*Machine Speed*	*Ambient Temperature (F)*	*Beginning Seam Station*	*Ending Seam Station*	*Seam Length (ft)*	*Test Date*	*Test Type*	*Air Test Time In* (1)	*Air Test Time Out* (1)	*Test Results (Pass/Fail)* (2)	*Destructive Test Sample ID*	*Comments*
77/78	North Slope	11-Oct-08	KC	4	800	9	75	0+26	0+00	26	13-Oct-08	AT	13:35	15:40	P		
59/60	North Slope	11-Oct-08	KC	43	800	9	75	1+59	0+00	159	13-Oct-08	AT	11:45	11:50	P	DS54 (at 0+75)	
59/60	North Slope	11-Oct-08	KC	43	800	9	75	1+59	0+00	159	13-Oct-08	AT	13:10	13:35	P	DS54 (at 0+75)	
60/61	North Slope	11-Oct-08	KC	43	800	9	75	1+37	0+00	137	13-Oct-08	AT	13:32	1337	P	DS55 (at 0+25)	
61/62	North Slope	11-Oct-08	KC	43	800	9	75	1+11	0+11	100	13-Oct-08	AT	13:43	13:48	P		
61/63	North Slope	11-Oct-08	KC	43	800	9	75	0+11	0+00	11	13-Oct-08	AT	14:31	14:35	P		
62/63	North Slope	11-Oct-08	KC	43	800	9	75	0+00	0+23	23	13-Oct-08	AT	14:25	14:30	P	DS56 (at 0+08)	
67/68	West Slope	11-Oct-08	KO	43				1+92	0+80	112	13-Oct-08	AT	8:14	8:19	P		
66/68	West Slope	11-Oct-08	KO	43				0+80	0+00	80	13-Oct-08	AT	10:20	10:25	P	DS57 (at 0+55)	
66/68	West Slope	11-Oct-08	KO	43				0+80	0+00	80	13-Oct-08	AT	9:20	9:25	P	DS57 (at 0+55)	
68/70	West Slope	11-Oct-08	KO	43				1+68	0+70	98	13-Oct-08	AT	10:01	10:06	P		
68/70	West Slope	11-Oct-08	KO	43				1+68	0+70	98	13-Oct-08	AT	10:06	10:11	P		
68/70	West Slope	11-Oct-08	KO	43				1+68	0+70	98	13-Oct-08	AT	9:41	9:46	P		
68/70	West Slope	11-Oct-08	KO	43				1+68	0+70	98	13-Oct-08	AT	9:42	9:47	P		
68/70	West Slope	11-Oct-08	KO	43				1+68	0+70	98	13-Oct-08	AT	9:35	9:40	P		
69/70	West Slope	11-Oct-08	KC	4	800	9	75	0+00	0+23	23	13-Oct-08	AT	10:12	10:17	P	DS58 (at 0+15)	
68/69/70	West Slope	11-Oct-08	KC	4	800	9	75	0+70	0+00	70							
68/69											13-Oct-08	AT	10:03	10:08	P		
68/69											13-Oct-08	AT	10:25	10:30	P		
68/69											13-Oct-08	AT	10:29	10:34	P		
68/69											13-Oct-08	AT	10:03	10:08	P		
68/69											13-Oct-08	AT	10:25	10:30	P		
68/69											13-Oct-08	AT	9:20	9:25	P		
65/69											13-Oct-08	AT	9:08	9:13	P		
65/84											13-Oct-08	AT	15:15	15:20	P		
81/83											13-Oct-08	AT	15:20	15:25	P		
80/83											13-Oct-08	AT	15:18	15:23	P		
79/80											13-Oct-08	AT	15:29	15:34	P		
71/72	West Slope	11-Oct-08	KO	43	800	9	75	1+20	0+00	120	13-Oct-08	AT	11:30	11:35	P	DS59 (at 1+00)	
75/76	West Slope	11-Oct-08	KC	4	800	9	75	0+00	0+23	23	13-Oct-08	AT	15:11	15:16	P		
72/75/76	West Slope	11-Oct-08	KC	4	800	9	75	0+50	0+27	23							
72/75											13-Oct-08	AT	15:10	15:15	P		
72/76	West Slope	11-Oct-08	KO	43				0+27	0+00	27	13-Oct-08	AT	15:20	15:25	P	DS60 (at 0+20)	
66/67		11-Oct-08	WT	30	800	8.5	80			23	13-Oct-08	AT	15:20	15:25	P		
42/51	Top	13-Oct-08	WT	30				2+06	2+25	19	13-Oct-08	AT	14:00	14:05	P		
43/51/42	Top	13-Oct-08	WT	30	800	8.5	70	1+89	2+06	17							
43/51											13-Oct-08	AT	13:55	14:00	p		
42/51	Top	13-Oct-08	WT	30				1+83	1+89	-						R122	
51/65	Top	13-Oct-08	WT	30	800	8.5	70	2+15	1+92	23	13-Oct-08	AT	14:05	14:10	P		
51/67	Top	13-Oct-08	WT	30	800	8.5	70	1+92	1+85	7	13-Oct-08	AT	14:11	14:16	P		
59/67	West Slope	13-Oct-08	WT	30				1+56	1+36	20	13-Oct-08	AT	13:24	13:29	P		
59/68	West Slope	13-Oct-08	WT	30				1+36	1+25	11	13-Oct-08	AT	13:20	13:25	P		
60/68	West Slope	13-Oct-08	WT	30				1+25	1+01	24	13-Oct-08	AT	13:31	13:36	P		
60/70	West Slope	13-Oct-08	WT	30				1+01	0+95	6							
61/70	West Slope	13-Oct-08	WT	30				0+95	0+71	24	13-Oct-08	AT	13:42	13:47	P	DS62 (at 0+83)	
61/71	West Slope	13-Oct-08	WT	30				0+71	0+63	8	13-Oct-08	AT	13:42	13:47	P		
62/71	West Slope	13-Oct-08	WT	30				0+63	0+36	27	13-Oct-08	AT	13:50	13:55	P		
64/72	West Slope	13-Oct-08	WT	30	800	8.5	70	0+00	0+34	34	13-Oct-08	AT	14:52	14:57	P		Tie-in
64/72	West Slope	13-Oct-08	WT	30	800	8.5	70	0+00	0+34	34	14-Oct-08	AT	14:52	14:57	P		
62/71	West Slope	13-Oct-08	WT	30	800	8.5	70	0+34	0+36	32	13-Oct-08	AT	13:50	13:55	P	R134	
72/74	West Slope	13-Oct-08	WT	30	800	8.5	70	0+73	0+50	23	13-Oct-08	AT	15:00	15:05	P		
72/74	West Slope	13-Oct-08	WT	30	800	8.5	70	0+73	0+50	23	13-Oct-08	AT	15:06	15:11	P		
74/75	West Slope	13-Oct-08	WT	30	800	8.5	70	0+61	0+50	11							
75/78	West Slope	13-Oct-08	WT	30				0+50	0+23	27	13-Oct-08	AT	15:45	15:50	P		
75/77	West Slope	13-Oct-08	WT	30				0+23	0+18	5							
64/77											13-Oct-08	AT	14:45	14:50	P		
76/77	West Slope	13-Oct-08	WT	30				0+18	0+00	18	13-Oct-08	AT	15:30	15:35	P	DS63 (at 0+09)	
65/83	West Slope	13-Oct-08	WT	30	800	8.5	70	0+00	0+35	35	13-Oct-08	AT	15:15	15:20	P		
82/83	West Slope	13-Oct-08	WT	30	800	8.5	70	0+00	0+30	30	13-Oct-08	AT	15:16	15:21	P		
80/81	West Slope	13-Oct-08	WT	30	800	8.5	70	0+00	0+23	23	13-Oct-08	AT	15:24	15:29	P		
80/82	West Slope	13-Oct-08	WT	30	800	8.5	70	0+00	0+17	17	13-Oct-08	AT	15:18	15:23	P	DS64 (at 0+14)	
82/81	West Slope	13-Oct-08	WT	30	800	8.5	70	0+17	0+30	13	13-Oct-08	AT	15:20	15:25	P		
79/80/81	West Slope	13-Oct-08	WT	30	800	8.5	70	0+00	0+15	15							
79/81	West Slope	13-Oct-08	WT	30				0+15	0+30	15	13-Oct-08	AT	15:30	15:35	P		
61/71		13-Oct-08	wt	30	800	8.5	70			8	13-Oct-08	AT	13:42	13:47	P		Tie-in
61/70		13-Oct-08	WT	30	800	8.5	70			29	13-Oct-08	AT	13:40	13:45	P		Tie-in
60/70		13-Oct-08	WT	30	800	8.5	70			6	13-Oct-08						

TABLE 9.5

SUMMARY OF HDPE GEOMEMBRANE NON-DESTRUCTIVE SEAM TEST RESULTS (COVER SYSTEM)
EAST PLANT AREA VAULT
CONSTRUCTION CERTIFICATION REPORT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Seam Number	*Seam Location*	*Weld Date*	*Operator Name/ID*	*Machine No.*	*Machine Temperature (F)*	*Machine Speed*	*Ambient Temperature (F)*	*Beginning Seam Station*	*Ending Seam Station*	*Seam Length (ft)*	*Test Date*	*Test Type*	*Air Test Time In* (1)	*Air Test Time Out* (1)	*Test Results (Pass/Fail)* (2)	*Destructive Test Sample ID*	*Comments*
60/68		13-Oct-08	WT	30	800	8.5	70			30	13-Oct-08	AT	13:31	13:36	P		Tie-in
68/59		13-Oct-08	WT	30	800	8.5	70			11	13-Oct-08	AT	13:20				Tie-in
67/59		13-Oct-08	WT	30	800	8.5	70			20	13-Oct-08	AT	11:24	11:29	P		Tie-in
31/83	West Slope	14-Oct-08	WT	G#25				0+00	0+23	23							
30/82	West Slope	14-Oct-08	WT	G#25				0+23	0+46	23						DS61 (at 0+53)	
29/81	West Slope	14-Oct-08	WT	G#25				0+46	0+69	23							
28/79	West Slope	14-Oct-08	WT	G#25				0+69	0+92	23							
27/79	West Slope	14-Oct-08	WT	G#25				0+30	0+00	30							
43-51 & 67/EP159	Top	14-Oct-08	WT	G#25				2+04	1+69	35							
67-68/EP158	North Slope	14-Oct-08	WT	G#25				1+69	1+34	35							
EP157/EP158	North Slope	14-Oct-08	WT	G#25				0+00	0+12	12							
68-70 & 71-72/EP157	North Slope	14-Oct-08	WT	G#25				1+34	0+25	109						DS68 (at 0+95)	
72/EP156	North Slope	14-Oct-08	WT	G#25				0+25	0+15	10							
72/EP155	North Slope	14-Oct-08	WT	G#25				0+15	0+00	15							
43-44/EP160	North Slope	14-Oct-08	WT	G#25				2+04	2+25	21							
44/EP161	North Slope	14-Oct-08	WT	G#25				2+25	2+45	20							
44-45/EP162	North Slope	14-Oct-08	WT	G#25				2+45	2+63	18							
45/EP163	North Slope	14-Oct-08	WT	G#25				2+63	2+81	18							
45-46/EP164	North Slope	14-Oct-08	WT	G#25				2+81	3+00	19							
46/EP165	North Slope	14-Oct-08	WT	G#25				3+00	3+18	18						DS67 (at 3+10)	
31/83		14-Oct-08	WT	G#25						23							
30/82		14-Oct-08	WT	G#25						23							
29/81		14-Oct-08	WT	G#25						23							
28/79		14-Oct-08	WT	G#25						23							
27/79		14-Oct-08	WT	G#25						30							
157/158		14-Oct-08	WT	G#25						12							
EP155/EP171		14-Oct-08	WT	64	500	500	70			419							
45-47/EP166	North Slope	15-Oct-08	WT	G#25				3+18	3+25	7							
46-47/EP166	North Slope	15-Oct-08	WT	G#25				3+25	3+39	14							
47-48/EP167	North Slope	15-Oct-08	WT	G#25				3+39	3+57	18							
48/EP168	North Slope	15-Oct-08	WT	G#25				3+57	3+73	16							
48-49/EP169	North Slope	15-Oct-08	WT	G#25				3+73	3+80	7							
49/EP170	North Slope	15-Oct-08	WT	G#25				3+80	3+97	17							
49/EP171	North Slope	15-Oct-08	WT	G#25				3+97	4+19	22						DS69 (at4+09)	Retest of failed DS69, DS69B (at 3+99)
48/EP172	East Slope	15-Oct-08	WT	G#25				3+61	3+46	15							Retest of failed DS69, DS69A (at 3+54)
47/EP173	East Slope	15-Oct-08	WT	G#25				3+46	3+23	23							
EP173/EP172		15-Oct-08	VS	35	500	500	70			37							
45-46 & 47/EP174	East Slope	16-Oct-08	WT	G#25				3+23	2+81	42							
43-44/EP175	East Slope	16-Oct-08	WT	G#25				2+81	2+38	43						DS70 (at 2+56)	
42-43/EP176	East Slope	16-Oct-08	WT	G#25				2+38	2+21	17							
1-42/EP177	East Slope	16-Oct-08	WT	G#25				2+21	2+00	21							
75/EP178	North Slope	16-Oct-08	WT	G#25				0+00	0+14	14						DS71 (at 0+08)	
75-76/EP179	North Slope	16-Oct-08	WT	G#25				0+14	0+35	21							
76/EP180	North Slope	16-Oct-08	WT	G#25				0+35	0+51	16							
84/83	West Slope	3-Nov-08	RV	19				0+63	1+48	85	13-Oct-08	AT	15:16	15:21	P	DS73 (at 0+78)	
83/86	West Slope	3-Nov-08	RV	19				0+00	1+30	130							
86/87	West Slope	3-Nov-08	RV	19				0+00	0+134	134	3-Nov-08	AT	14:25	14:30	P		
87/88	West Slope	3-Nov-08	RV	19				0+00	0+25	25	3-Nov-08	AT	15:05	15:10	P	DS75 (at 0+13)	
88/89	West Slope	3-Nov-08	RV	19				0+00	0+12	12	3-Nov-08	AT	15:08	15:13	P		
68/84	West Slope	3-Nov-08	MK	15				1+69	0+67	102	3-Nov-08	AT	14:10	14:15	P	DS74 (at 1+45)	
69/85	West Slope	3-Nov-08	MK	15				0+00	0+63	63	3-Nov-08	AT	14:42	14:47	P		
91/92	West Slope	3-Nov-08	MK	15				0+00	0+05	5							
86/92	West Slope	3-Nov-08	MK	15				0+79	0+56	23	3-Nov-08	AT	15:24	15:29	P		
86/91	West Slope	3-Nov-08	MK	15				0+56	0+34	22	3-Nov-08	AT	15:42	15:47	P		
75/91	West Slope	3-Nov-08	MK	15				0+00	0+17	17	3-Nov-08	AT	15:44	15:49	P		
74/92	West Slope	3-Nov-08	MK	15				0+22	0+39	17	3-Nov-08	AT	15:35	15:40	P		
75/87	West Slope	3-Nov-08	MK	15				0+00	0+19	19	3-Nov-08	AT	15:55	16:00	P		
75/88	West Slope	3-Nov-08	MK	15				0+19	0+21	2							
78/88	West Slope	3-Nov-08	MK	15				0+21	0+41	19	3-Nov-08	AT	16:02	16:07	P	DS77 (at 0+33)	
78/89	West Slope	3-Nov-08	MK	15				0+41	0+52	11	3-Nov-08	AT	16:02	16:07	P		
78/90	North Slope	3-Nov-08	MK	15				0+18	0+00	18	3-Nov-08	AT	16:14	16:19	P		
74/90	North Slope	3-Nov-08	MK	15				0+00	0+23	23	3-Nov-08	AT	16:26	16:31	P		
90/93	North Slope	3-Nov-08	MK	15				0+23	0+00	23	3-Nov-08	AT	16:45	16:50	P	DS78 (at 0+10)	
69/84	West Slope	3-Nov-08	VK	2				0+00	0+23	22.5	November 3, 2-008	AT	14:07	14:12	P		
64/86	West Slope	3-Nov-08	VK	2				0+79	1+02	22	3-Nov-08	AT	15:17	15:22	P		
62/86	West Slope	3-Nov-08	VK	2				1+02	1+14	11	3-Nov-08	AT	15:17	15:22	P		
62/85	West Slope	3-Nov-08	VK	2				1+14	1+32	18	3-Nov-08	AT	15:17	15:22	P	DS76 (at 1+22)	

TABLE 9.5

SUMMARY OF HDPE GEOMEMBRANE NON-DESTRUCTIVE SEAM TEST RESULTS (COVER SYSTEM)
EAST PLANT AREA VAULT
CONSTRUCTION CERTIFICATION REPORT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Seam Number	*Seam Location*	*Weld Date*	*Operator Name/ID*	*Machine No.*	*Machine Temperature (F)*	*Machine Speed*	*Ambient Temperature (F)*	*Beginning Seam Station*	*Ending Seam Station*	*Seam Length (ft)*	*Test Date*	*Test Type*	*Air Test Time In (1)*	*Air Test Time Out (1)*	*Test Results (Pass/Fail) (2)*	*Destructive Test Sample ID*	*Comments*
61/85	West Slope	3-Nov-08	VK	2				1+32	1+47	15	3-Nov-08	AT	15:17	15:22	P		
61/84	West Slope	3-Nov-08	VK	2				1+47	1+63	16	3-Nov-08	AT	15:17	15:22	P		
60/84	West Slope	3-Nov-08	VK	2				1+63	1+76	12	3-Nov-08	AT	15:17	15:22	P		
95/96	North Slope	4-Nov-08	MK	15				0+00	0+03	3							
94/95	North Slope	4-Nov-08	MK	15				2+22	1+10	111	4-Nov-08	AT	14:08	14:13	P	DS80 (at 1+86)	
94/96	North Slope	4-Nov-08	MK	15				1+10	0+00	110	4-Nov-08	AT	14:08	14:13	P		
65/94	North Slope	4-Nov-08	MK	15				2+17	1+93	18	4-Nov-08	AT	16:42	16:47	P	DS85 (at 2+01)	
59/94	North Slope	4-Nov-08	VK	2				0+81	1+83	103	4-Nov-08	AT	14:31	14:36	P		
59/94	North Slope	4-Nov-08	VK	2				0+00	0+71	71	4-Nov-08	AT	14:34	14:39	P	DS81 (at 0+54)	
52/96	North Slope	4-Nov-08	VK	2				0+00	1+04	104	4-Nov-08	AT	16:32	16:37	P	DS83 (at 0+58)	
52/95	North Slope	4-Nov-08	VK	2				1+04	1+75	70	4-Nov-08	AT	16:27	16:32	P		
43/95	North Slope	4-Nov-08	VK	2				1+75	1+97	23	4-Nov-08	AT	16:00	16:05	P		
42/95	North Slope	4-Nov-08	VK	2				1+97	2+15	16	4-Nov-08	AT	16:39	16:44	P	DS84 (at 2+03)	
86/EP181	North Slope	4-Nov-08	BV	G#70				0+80	1+10	30						DS82 (at 1+06)	
85/EP181	North Slope	4-Nov-08	BV	G#70				1+10	1+42	32							
84/EP181	North Slope	4-Nov-08	BV	G#70				1+42	1+74	32							
68/EP181	North Slope	4-Nov-08	BV	G#70				1+74	1+77	3							
68/EP157	North Slope	4-Nov-08	BV	G#70				1+77	1+87	10							
68/EP158	North Slope	4-Nov-08	BV	G#70				1+87	1+90	3							
87/EP182	North Slope	4-Nov-08	BV	G#70				0+00	0+32	32							
91/EP182	North Slope	4-Nov-08	BV	G#70				0+32	0+55	23							
92/EP182	North Slope	4-Nov-08	BV	G#70				0+55	0+78	23							
86/EP181	North Slope	4-Nov-08	BV	G#70				0+78	0+80	2							
EP159/R287	North Slope	5-Nov-08	RV	G#49				2+23	2+26	3							
94/EP159	North Slope	5-Nov-08	RV	G#49						33						DS94 (at 2+34)	
95/EP159	North Slope	5-Nov-08	RV	G#49				2+47	2+49	2							
43/EP159	North Slope	5-Nov-08	RV	G#49				2+49	2+55	6							
43/97	East Slope	5-Nov-08	MK	15				1+82	0+00	182	5-Nov-08	AT	10:28	10:33	P	DS86 (at 1+56)	
98/99	East Slope	5-Nov-08	MK	15				1+32	0+00	136	5-Nov-08	AT	10:44	10:49	P	DS88 (at 0+96)	
99/100	East Slope	5-Nov-08	MK	15				1+06	0+00	110	5-Nov-08	AT	11:05	11:10	P	DS89 (at 0+19)	
100/104	East Slope	5-Nov-08	MK	15				0+52	0+00	52	5-Nov-08	AT	11:51	11:56	P		
56/102	North Slope	5-Nov-08	MK	15				0+00	0+63	63	5-Nov-08	AT	13:10	13:15	P		
97/98	East Slope	5-Nov-08	VK	2				1+56	0+00	160	5-Nov-08	AT	10:48	10:53	P	DS87 (at 0+25)	
100/101	East Slope	5-Nov-08	VK	2				0+79	0+00	80	5-Nov-08	AT	11:16	11:21	P		
104/105	North Slope	5-Nov-08	VK	2				0+25	0+00	25	5-Nov-08	AT	11:44	11:49	P		
102/103	North Slope	5-Nov-08	VK	2				0+00	0+33	33	5-Nov-08	AT	12:03	12:08	P	DS90 (at 0+18)	
52/97	Northeast Slope	5-Nov-08	VK	2						102	5-Nov-08	AT	16:03	16:08	P	DS93 (at 2+05)	Intersection
53/97	Northeast Slope	5-Nov-08	VK	2				1+99	1+94	5	5-Nov-08	AT	16:03	16:08	P		Intersection
53/98	Northeast Slope	5-Nov-08	VK	2				1+94	1+65	29	5-Nov-08	AT	15:55	16:00	P		Intersection
54/98	Northeast Slope	5-Nov-08	VK	2				1+65	1+60	5	5-Nov-08	AT	15:35	15:40	P		intersection
54/99	Northeast Slope	5-Nov-08	VK	2				1+60	1+30	30	5-Nov-08	AT	15:35	15:40	P	DS92 (at 1+36)	
55/99	Northeast Slope	5-Nov-08	VK	2				1+30	1+25	5	5-Nov-08	AT	15:35	15:40	P		
55/100	Northeast Slope	5-Nov-08	VK	2				1+25	1+00	25	5-Nov-08	AT	15:35	15:40	P		
56/100	Northeast Slope	5-Nov-08	VK	2				1+00	0+91	9	5-Nov-08	AT	15:35	15:40	P		
56/101	Northeast Slope	5-Nov-08	VK	2				0+91	0+63	28	5-Nov-08	AT	15:35	15:40	P		
101/102	Northeast Slope	5-Nov-08	VK	2				0+63	0+59	4	5-Nov-08	AT	15:35	15:40	P		
102/104	Northeast Slope	5-Nov-08	VK	2				0+59	0+30	29	5-Nov-08	AT	15:35	15:40	P	DS91 (at 0+48)	
103/104	Northeast Slope	5-Nov-08	VK	2				0+30	0+25	5	5-Nov-08	AT	15:35	15:40	P		
103/105	Northeast Slope	5-Nov-08	VK	2				0+00	0+00	25	5-Nov-08	AT	15:35	15:40	P		
31/83	West Slope	6-Nov-08	BV	G#70				0+00	0+01	1							
31/109	West Slope	6-Nov-08	BV	G#70				0+01	0+18	17							
30/109	West Slope	6-Nov-08	BV	G#70				0+18	0+20	2							
30/108	West Slope	6-Nov-08	BV	G#70				0+20	0+41	21							
29/108	West Slope	6-Nov-08	BV	G#70				0+41	0+44	3							
29/107	West Slope	6-Nov-08	BV	G#70				0+4	0+66	22						DS96 (at 0+53)	
28/107	West Slope	6-Nov-08	BV	G#70				0+66	0+67	1							
28/106	West Slope	6-Nov-08	BV	G#70				0+67	0+87	20							
27/106	West Slope	6-Nov-08	BV	G#70				0+87	0+88	1						R316	
27/106	West Slope	6-Nov-08	VK	2				0+28	0+00	28		11/6/2008	11:15	11:20	P		
106/107	West Slope	6-Nov-08	VK	2				0+00	0+31	31	6-Nov-08	AT	11:20	11:25	P		
107/108	West Slope	6-Nov-08	VK	2				0+00	0+31	31	5-Nov-08	AT	11:30	11:35	P	DS95 (at 0+25)	
108/109	West Slope	6-Nov-08	VK	2				0+00	0+29	29	6-Nov-08	AT	11:40	11:45	P		
83/109	West Slope	6-Nov-08	VK	2				0+00	0+29	29	6-Nov-08	AT	11:49	11:54	P		
43/EP183	Northeast Slope	7-Nov-08	RV	G#49				2+55	2+72	17							
97/EP183	Northeast Slope	7-Nov-08	RV	G#49				2+72	3+05	33							
98/EP183	Northeast Slope	7-Nov-08	RV	G#49				3+05	3+24	19							
98/EP184	Northeast Slope	7-Nov-08	RV	G#49				3+24	3+38	14		Extrusion					Rain Flap

TABLE 9.5

SUMMARY OF HDPE GEOMEMBRANE NON-DESTRUCTIVE SEAM TEST RESULTS (COVER SYSTEM)
EAST PLANT AREA VAULT
CONSTRUCTION CERTIFICATION REPORT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Seam Number	*Seam Location*	*Weld Date*	*Operator Name/ID*	*Machine No.*	*Machine Temperature (F)*	*Machine Speed*	*Ambient Temperature (F)*	*Beginning Seam Station*	*Ending Seam Station*	*Seam Length (ft)*	*Test Date*	*Test Type*	*Air Test Time In* (1)	*Air Test Time Out* (1)	*Test Results (Pass/Fail)* (2)	*Destructive Test Sample ID*	*Comments*
99/EP184	Northeast Slope	7-Nov-08	RV	G#49				3+38	3+70	32		Extrusion					Rain Flap
101/EP188	Northeast Slope	7-Nov-08	RV	G#49				4+34	4+45	11		Extrusion					Rain Flap
101/EP187	Northeast Slope	7-Nov-08	RV	G#49				4+45	4+73	28		Extrusion				DS99 (at 4+60)	Rain Flap
100/EP184	Northeast Slope	7-Nov-08	BV	G#70				3+70	4+01	31		Extrusion				DS97 (at 3+90)	
101/EP184	Northeast Slope	7-Nov-08	BV	G#70				4+01	4+34	33		Extrusion					
101/EP186	East Slope	7-Nov-08	BV	G#70				0+00	0+22	22		Extrusion					Rain Flap
100/EP186	East Slope	7-Nov-08	BV	G#70				0+22	0+45	32		Extrusion					Rain Flap
99/EP186	East Slope	7-Nov-08	BV	G#70				0+45	0+54	9		Extrusion					
99/EP185	East Slope	7-Nov-08	BV	G#70				0+54	0+68	14		Extrusion					
98/EP185	East Slope	7-Nov-08	BV	G#70				0+68	0+91	23		Extrusion					
97/EP185	East Slope	7-Nov-08	BV	G#70				0+91	1+14	23		Extrusion				DS98 (at 0+97)	
43/EP185	East Slope	7-Nov-08	BV	G#70				1+14	1+17	3		Extrusion					
1/31	Top																
5/15	Top																
R197/59																DS65 (at 0+96)	
R175/31																DS66 (at 2+16)	
R230/49																DS72 (at 4+15)	
64/93																DS79 (at 0+14)	
R331/67																DS100 (at 0+33)	
47/55																DS44 (at 1+07)	
EP159/EP184/143/97		7-Nov-08	RV	G#49						71		Extrusion					Rain Flap
EP183/100/101		7-Nov-08	BV	G#70						64		Extrusion					Rain Flap
Tie in Intersection		6-Nov-08	BV	G#70						88							
Tie in Rain Flap		4-Nov-08	BV	G#70						193						Rain Flap	

TABLE 9.6

SUMMARY OF HDPE GEOMEMBRANE DESTRUCTIVE SEAM TEST RESULTS (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Destructive Test Sample ID	*Seam Number*	*Station*	*AEG Seamer ID*	*AEG Machine ID*	*AEG Test Date*	*AEG Peel Coupon 1A*	*AEG Peel Coupon 1B*	*AEG Peel Coupon 2A*	*AEG Peel Coupon 2B*	*AEG Peel Coupon 3A*	*AEG Peel Coupon 3B*	*AEG Peel Coupon 4A*	*AEG Peel Coupon 4B*	*AEG Peel Coupon 5A*	*AEG Peel Coupon 5B*	*AEG Coupon 1 Shear*	*AEG Coupon 2 Shear*	*AEG Coupon 3 Shear*	*AEG Coupon 4 Shear*	*AEG Coupon 5 Shear*	*Test Date* [1]	*Weld Type* [2]	*Peel Coupon 1A* [1]	*Peel Coupon 2A* [1]	*Peel Coupon 3A* [1]	*Peel Coupon 4A* [1]	*Peel Coupon 5A* [1]	*Peel Coupon 1B* [1]	*Peel Coupon 2B* [1]	*Peel Coupon 3B* [1]	*Peel Coupon 4B* [1]	*Peel Coupon 5B* [1]	*Coupon 1 Shear* [1]	*Coupon 2 Shear* [1]	*Coupon 3 Shear* [1]	*Coupon 4 Shear* [1]	*Coupon 5 Shear* [1]	*Mean Peel A (ppi)* [1]	*Mean Peel B (ppi)* [1]	*Mean Shear (ppi)* [1]	*Destructive Test Pass/Fail* [2]	*Comment*
DS-1	1/2		CP	7	22-Apr-08	125	108	111	114	108	121	107	113	N/A	N/A	167	165		160		22-Apr-08	Heat Fusion	133	152	151	147	140	133	138	133	137	140	167	165	167	166	166	145	136	166	Pass	
DS-2	3/4	0+75	NP	3	22-Apr-08	109	115	118	108	115	108	110	120	N/A	N/A	177	173		169		22-Apr-08	Heat Fusion	124	124	122	120	118	138	137	137	132	129	172	174	173	172	175	122	135	173	Pass	
DS-3	6/7	0+25	NP	3	22-Apr-08	114	112	110	117	115	108	110	113	N/A	N/A	167	157		172		22-Apr-08	Heat Fusion	130	127	132	129	122	122	120	114	116	116	172	173	172	173	172	128	120	172	Pass	
DS-4	8/9	0+13	VP	6	22-Apr-08	121	114	115	117	110	107	120	112	N/A	N/A	160	163		165		22-Apr-08	Heat Fusion	147	140	128	135	133	144	134	119	124	132	174	176	174	175	175	137	131	175	Pass	
DS-5	6/14	0+17	NP	3	22-Apr-08	126	113	110	112	114	110	108	101	N/A	N/A	169	159		166		22-Apr-08	Heat Fusion	147	144	145	143	138	164	160	148	141	152	171	171	171	173	176	143	153	172	Pass	
DS-6	17/18	0+25	CP	7	22-Apr-08	117	123	108	114	111	114	113	121	N/A	N/A	174	176		170		22-Apr-08	Heat Fusion	130	134	137	139	136	130	141	136	121	143	167	176	170	174	173	135	134	172	Pass	
DS-7	4/5	1+50	CP	7	22-Apr-08	123	114	108	111	116	113	109	120	N/A	N/A	175	169		171		22-Apr-08	Heat Fusion	120	117	137	129	132	148	143	139	144	140	178	179	175	176	179	127	143	177	Pass	
DS-8	16/17	0+50	VP	6	22-Apr-08	126	113	110	112	114	110	107	112	N/A	N/A	165	177		172		22-Apr-08	Heat Fusion	134	133	128	130	136	138	125	118	131	130	170	172	172	171	174	132	128	172	Pass	
DS-9	2/3	1+00	VP	6	22-Apr-08	103	113	109	129	109	105	100	105	N/A	N/A	170	171		167		22-Apr-08	Heat Fusion	146	142	137	137	138	133	119	119	123	123	167	170	170	169	171	140	123	169	Pass	
DS-10	5/6	0+50	VP	6	22-Apr-08	112	109	121	109	110	101	112	113	N/A	N/A	173	169		171		22-Apr-08	Heat Fusion	131	127	123	129	123	134	136	144	138	125	170	170	171	168	171	127	135	170	Pass	
DS-11	13/14	0+20	CP	7	22-Apr-08	110	103	119	114	114	105	120	110	N/A	N/A	177	171		178		22-Apr-08	Heat Fusion	135	136	149	122	131	136	134	127	135	125	177	179	180	180	178	135	131	179	Pass	
DS-12	15/16	0+85	CP	7	22-Apr-08	121	114	108	113	111	109	113	107	N/A	N/A	166	169		175		22-Apr-08	Heat Fusion	126	126	132	143	133	135	132	132	139	127	179	179	177	178	174	132	133	177	Pass	
DS-13	21/22	0+25	VP	6	22-Apr-08	105	101	102	107	112	121	117	112	N/A	N/A	171	172		174		22-Apr-08	Heat Fusion	128	132	124	138	141	146	122	143	146	125	186	186	182	181	182	133	136	183	Pass	
DS-14	23/25	0+35	VP	6	23-Apr-08	111	110	114	121	107	110	113	111	N/A	N/A	172	169		168		23-Apr-08	Heat Fusion	140	121	121	123	132	131	130	121	122	124	183	183	180	187	183	127	126	183	Pass	
DS-15	26/27	1+75	VP	6	23-Apr-08	127	116	108	119	127	113	112	110	N/A	N/A	171	167		160		23-Apr-08	Heat Fusion	126	125	121	125	124	126	124	119	119	112	183	180	181	177	179	124	120	180	Pass	
DS-16	27/28	0+35	VP	6	23-Apr-08	113	107	106	103	121	110	107	102	N/A	N/A	165	170		173		23-Apr-08	Heat Fusion	136	138	123	137	137	127	120	128	137	118	181	179	180	180	177	134	126	179	Pass	
DS-17	30/29	1+00	NP	3	23-Apr-08	120	112	111	110	109	112	112	113	N/A	N/A	156	167		178		23-Apr-08	Heat Fusion	127	127	123	126	127	122	127	119	118	124	179	180	178	179	176	126	122	178	Pass	
DS-18	27/32	0+22	VP	6	23-Apr-08	110	112	107	101	103	115	110	118	121	102	173	167		170		23-Apr-08	Heat Fusion	129	140	142	136	132	132	139	141	128	128	189	189	190	191	187	136	134	189	Pass	
DS-19	28/29	1+50	CP	7	23-Apr-08	110	112	111	105	108	113	118	121	112	114	174	169		180		23-Apr-08	Heat Fusion	148	153	121	137	126	121	117	141	142	138	171	174	172	172	170	137	132	173	Pass	
DS-20	30/31	0+19	CP	7	23-Apr-08	112	113	110	112	109	107	102	121	111	110	167	172		163		23-Apr-08	Heat Fusion	142	121	130	127	131	128	127	131	128	122	173	173	173	173	169	130	127	172	Pass	
DS-21	32/29	0+13	CP	7	23-Apr-08	106	102	104	112	113	119	121	110	107	103	171	175		167		23-Apr-08	Heat Fusion	141	138	136	138	130	145	145	130	140	128	177	174	170	174	167	137	138	172	Pass	
DS-22	22/26	0+25	CP	7	23-Apr-08	113	110	109	107	113	118	113	113	112	115	170	174		167		23-Apr-08	Heat Fusion	125	129	121	135	132	136	121	120	136	139	178	178	176	181	174	128	130	177	Pass	
DS-23	26/16	0+20	NP	3	23-Apr-08	113	110	109	107	103	117	119	120	118	115	167	172		175		23-Apr-08	Heat Fusion	150	152	152	148	152	138	158	154	150	151	170	171	171	170	164	151	150	169	Pass	
DS-24	23/21	0+90	NP	3	23-Apr-08	116	111	110	107	120	115	109	107	102	104	169	170		176		23-Apr-08	Heat Fusion	152	152	148	147	140	141	139	135	139	137	168	169	167	159	164	148	138	167	Pass	
DS-25	33/2	0+07	NP	3	23-Apr-08	115	121	120	123	117	119	120	108	104	103	17	175		174		23-Apr-08	Heat Fusion	156	151	155	158	155	160	146	144	152	147	165	168	165	166	163	155	150	165	Pass	
DS-26	29/32	0+18	NP	3	23-Apr-08	107	103	112	113	114	115	107	109	110	113	176	170		178		23-Apr-08	Heat Fusion	165	159	152	165	154	154	158	152	162	159	166	168	171	172	169	159	157	169	Pass	
DS-27 EP	Vault Flap to Tie in #1/35	0+98	VP	G#27	25-Apr-08	109		98		100		99		93		147	157		169		25-Apr-08	Single Extrusion	142	143	136	144	147	-	-	-	-	-	164	162	156	161	161	142	-	161	Pass	
DS-28 EP	Vault Flap to Tie in #1/37	2+50	AP	G#52	25-Apr-08	108		100		102		101		103		157	165		150		25-Apr-08	Single Extrusion	146	121	150	154	137	-	-	-	-	-	153	153	151	151	148	142	-	151	Pass	
DS-29 EP	Tie in #2	1+70	AP	G#52	30-Apr-08	110		102		114		105		101		165	163		168		30-Apr-08	Single Extrusion	127	121	125	133	134	-	-	-	-	-	144	143	144	142	141	128	-	143	Pass	
DS-30 EP	Tie in #2	0+70	DT	G#27	30-Apr-08	100		97		99		101		103		157	162		166		30-Apr-08	Single Extrusion	127	122	134	132	121	-	-	-	-	-	140	137	137	143	140	127	-	139	Pass	
DS-31	1/42	1+39	WAT	30	10-Oct-08																10-Oct-08	Heat Fusion	116	115	127	123	109	115	134	140	140	124	183	180	179	180	181	118	131	181	Pass	
DS-32	42/43	0+77	KC	43	10-Oct-08																10-Oct-08	Heat Fusion	112	124	120	113	119	136	123	126	127	124	181	181	181	183	118	127	181	Pass	
DS-33	43/44	0+25	KC	43	10-Oct-08																10-Oct-08	Heat Fusion	126	125	130	133	130	126	111	120	127	115	146	145	143	148	147	129	120	146	Pass	
DS-34	44/45	0+65	WAT	30	10-Oct-08	125	130	128	114	121	130	97	125	121	130	121	121		148	135	10-Oct-08	Heat Fusion	129	134	127	142	126	128	126	138	138	137	140	140	138	144	139	132	133	140	Pass	
DS-35	45/46	0+17	KC	43	10-Oct-08	144	134	144	141	143	143	139	140	138	137	152	159		144	165	10-Oct-08	Heat Fusion	140	148	139	147	150	141	136	143	143	139	157	159	157	159	159	145	140	158	Pass	
DS-36	46/47	0+72	WAT	30	10-Oct-08	100	132	135	124	119	120	120	129	120	121	130	131		129	139	10-Oct-08	Heat Fusion	127	135	128	138	128	128	124	130	126	127	147	145	146	146	144	131	127	146	Pass	
DS-37	47/48	0+50	WAT	30	10-Oct-08	101	119	110	112	115	109	98	120	121	124	124	125		134	145	10-Oct-08	Heat Fusion	134	138	139	141	138	143	143	140	128	149	148	148	147	147	138	133	138	148	Pass	
DS-38	48/49	0+30	WAT	30	10-Oct-08	117	116	117	116	116	115	118	119	121	115	129	135		130	135	10-Oct-08	Heat Fusion	140	136	136	138	138	141	134	139	135	142	141	140	142	141	143	138	138	141	Pass	
DS-39	62/64	0+75	WAT	30	11-Oct-08	118	111	131	125	127	110	109	111	107	118	173	162	167	169	166	11-Oct-08	Heat Fusion	146	132	140	131	127	133	133	135	134	134	187	185	185	186	186	135	134	186	Pass	
DS-40	55/56	0+55	WAT	30	10-Oct-08																10-Oct-08	Heat Fusion	127	129	122	128	123	131	119	130	124	125	185	180	181	180	181	126	126	181	Pass	
DS-41	54/55	0+80	WAT	30	10-Oct-08	112	108	117	117	110	108	120	111	108	114	166	169		166	169	10-Oct-08	Heat Fusion	123	146	134	138	125	130	131	147	122	122	177	180	177	182	178	133	130	179	Pass	
DS-42	53/54	1+15	KC	43	10-Oct-08	99	98	112	95	98	117	106	109	105	91	186	192		186	192	10-Oct-08	Heat Fusion	128	127	120	126	122	117	119	118	116	118	185	185	183	185	185	122	118	185	Pass	
DS-43	52/53	1+29	KC	43	10-Oct-08	104	103	90	108	97	111	98	100	103	97	180	177		180	177	10-Oct-08	Heat Fusion	122	124	124	125	129	126	132	118	134	123	181	180	179	180	180	124	127	180	Pass	
DS-44	47/55	1+07	WAT	30	11-Oct-08	105	103	106	99	105	104	110	101	103	99	129			129		11-Oct-08	Heat Fusion	119	117	119	119	120	121	119	115	117	115	129	127	130	124	125	119	117	127	Pass	
DS-45	56/57	0+40	WAT	30	11-Oct-08	95	113	110	114	120	110	100	99	114	116	140	141		140	141	11-Oct-08	Heat Fusion	136	133	129	132	128	126	126	126	124	119	145	144	146	146	146	132	124	145	Pass	
DS-46	51/52	1+00	WAT	30	10-Oct-08	125	113	123	109	121	120	111	118	115	110	159	160		159	160	10-Oct-08	Heat Fusion	144	142	144	145	141	117	118	123	122	117	164	166	163	167	162	143	119	164	Pass	
DS-47	49/50	0+16	WAT	30	10-Oct-08	109	115	110	136	120	122	119	120	125	150	140	150		140	150	10-Oct-08	Heat Fusion	133	138	134	134	136	135	136	130	133	125	126	150	148	149	139	148	135	130	147	Pass	
DS-48	51/59	1+25	WAT	30	11-Oct-08	110	112	121	114	114	116	140	120	120	121	140	150		140	150	11-Oct-08	Heat Fusion	126	150	127	130	127	122	135	127	128	127	118	139	136	140	138	140	138	127	127	139	Pass	
DS-49	31/65	1+50	WAT	30	11-Oct-08	96	111	110	96	114	115	120	124	141	115	160	120		160	120	11-Oct-08	Heat Fusion	132	132	126	124	128	137	128	134	132	129	186	178	182	182	182	128	132	182	Pass	
DS-50	65/67	1+00	WAT	30	11-Oct-08	92	95	94	100	110	112	114	110	115	120	123	140		123	140	11-Oct-08	Heat Fusion	125	125	125	131	118	127	118	121	119	123	121	187	179	187	185	183	125	120	184	Pass	
DS-51	70/71	0+75	WAT	30	11-Oct-08	132	124	122	136	120	115	120	125	130	124	141	145		141	145	11-Oct-08	Heat Fusion	144	138	137	140	138	134	131	126	142	142	146	146	145	145	146	138	135	146	Pass	
DS-52	64/73	0+16	WAT	30	11-Oct-08	108	109	120	99	101	110	109	110	107	105	160	159		160	159	11-Oct-08	Heat Fusion	137	148	147	145	144	132	137	130	131	127	168	168	168	169	169	170	144	131	169	Pass	
DS-53	77/78	0+11	WAT	30	11-Oct-08	99	125	111	95	99	101	105	106	111	115	129	130		129	130	11-Oct-08	Heat Fusion	125	125	121	125	123	152	148	151	142	149	163	163	164	163	162	124	148	163	Pass	
DS-54	59/60	0+75	KC	43	11-Oct-08	92	95	115	114	101	125	120	115	101	109	190	160		190	160	11-Oct-08	Heat Fusion	138	138	120	139	123	147	126	131	127	127	190	190	191	190	193	132	132	191	Pass	
DS-55	60/61	0+25	KC	43	11-Oct-08	120	124	143	124	120	139	134	139	140	140	181	170		181	170	11-Oct-08	Heat Fusion	144	130	132	131	127	150	138	133	145	147	194	192	195	194	193	133	143	194	Pass	
DS-56	62/63	0+08	KC	43	11-Oct-08	140	151	157	137	120	130	115	120	115	130	160	160		160	160	11-Oct-08	Heat Fusion	118	128	152	125	131	138	135	127	129	121	183	183	184	181	183	131	130	183	Pass	
DS-57	66/68	0+55	KC	43	11-Oct-08	109	97	115	119	115	120	120	119	120	130	160	160		160	160	11-Oct-08	Heat Fusion	118	128	152	125	131	138	135	127	129	121	183	183	184	181	183	131	130	183	Pass	
DS-58	69/70	0+15	KC	43	11-Oct-08	125	121	114	120	115	116	101	132	130	131	130	125		130	125	11-Oct-08	Heat Fusion	123	124	121	124	122	122	126	122	122	123	123	125	122	124	125	123	123	124	Pass	
DS-59	71/72	1+00	KC	43	11-Oct-08																11-Oct-08	Heat Fusion	142	139	141	145	141	139	133	131	143	138	140	137	140	138	139	142	137	139	Pass	
DS-60	72/76	0+20	KC	43	11-Oct-08	120	135	132	134	130	119	120	125	120	125	150	142		150	142	11-Oct-08	Heat Fusion	138	137	133	135	136	124	126	123	135	134	142	145	145	141	141	136	128	143	Pass	
DS-61	30/82	0+53	WAT	G#25																	14-Oct-08	Single Extrusion	149	115	138	125	129				-	-	174	174	176	176	173	131	-	175	Pass	
DS-62	61/70	0+83	WAT	30	13-Oct-08	109	105	111	101	110	121	131	115	129	115	121	124		121	124	13-Oct-08	Heat Fusion	109	114	108	112	108	118	117	107	114	116	122	117	116	118	117	110	114	118	Pass?	
DS-63	76/77	0+09	WAT	30	13-Oct-08	109	108	124	117	104	120	111	119	120	119	129	130		129	130	13-Oct-08	Heat Fusion	135	138	136	130	131	134	131	136	133	126	129	132	130	127	129	134	132	129	Pass	
DS-64	80/82	0+14	WAT	30	13-Oct-08	125	113	120	120	130	136	115	120	119	120	140	146		140	146	13-Oct-08	Heat Fusion	147	149	144	150	142	140	128	143	147	143	176	169	169	171	169	146	140	171	Pass	
DS-65	R197/59	0+96	ST	G#25	13-Oct-08	141		105		129		103		138		180	181		180	181	13-Oct-08	Single Extrusion	132	126	138	122	159	-	-	-	-	-	173	171	171	173	176	135	-	173	Pass	
DS-66	R175/51	2+16	VC	G#64	13-Oct-08	95		84		82		82		130		134	144		120	124	13-Oct-08	Single Extrusion	100	79	72	74	90	-	-	-	-	-	114	116	113	112	113	83	-	114	Pass?	
DS-67	46/EP165	3+10	WAT	G#25	14-Oct-08	94		105		108		109		110		120	121		125	125	14-Oct-08	Single Extrusion	109	122	115	123	113	-	-	-	-	-	119	118	120	120	120	116	-	119	Pass?	Flap north to tie in to EP
DS-68	70/EP157	0+95	WAT	G#25	14-Oct-08	105		99		99		100		102		124	122		125	125	14-Oct-08	Single Extrusion	122	125	123	124	122	-	-	-	-	-	116	113	116	116	114	123	-	115	Pass?	Flap north to tie in to EP
DS-69	49/EP171	4+09	WAT	G#25	15-Oct-08	104		93		106		92		105		120	121		121	122	15-Oct-08	Single Extrusion	71	89	105	70	91	-	-	-	-	-	128	127	125	129	126	85	-	127	Fail	Flap north to tie in to EP
DS-69A	48/EP172	3+54	VC	G#64																	17-Oct-08	Single Extrusion	156	121	166	153	146	-	-	-	-	-	132	156	141	129	125	148	-	137	Pass	Retest of DS-69
DS-69B	49/EP171	3+99	VC	G#64																	17-Oct-08	Single Extrusion	121	108	116	115	110	-	-	-	-	-	129	134	131	130	128	114	-	130	Pass	Retest of DS-69
DS-70	44/EP175	2+56	WAT	G#25	16-Oct-08	79		115		114		110		80		130	130		128	130	16-Oct-08	Single Extrusion	109	103	102	102	112	-	-	-	-	-	109	103	102	102	112	106	-	106	Pass?	
DS-71	75/EP178	0+08	WAT	G#25	16-Oct-08	115		120		119		115				120	180		165	180	16-Oct-08	Single Extrusion	94	111	118	111	114	-	-	-	-	-	151	150	153	154	148	110	-	151	Pass	
DS-72	R230/49	4+15	VC	G#64																	17-Oct-08	Single Extrusion	113	112	123	103	111	-	-	-	-	-	133	132	137	136	132	112	-	134	Pass	Taken during reconstruction of S. Berm, making flawed DS69
DS-73	84/85	0+78	RV	19	3-Nov-08	160	164	135	170	125	160	156	124	130	150	228	211	227	218	244	3-Nov-08	Heat Fusion	152	134	160	128	157	153	158	166	159	162	193	194	194	189	193	146	160	193	Pass	
DS-74	68/84	1+45	MK	15	3-Nov-08	111	144	128	131	126	122	119	124	130	140	219	214	222	220	216	3-Nov-08	Heat Fusion	122	125	123	123	127	119	125	120	124	117	168	165	164	168	173	124	121	168	Pass	
DS-75	87/88	0+13	RV	19	3-Nov-08	135	155	134	163	156	165	137	123	155	166	249	240	246	242	250	3-Nov-08	Heat Fusion	155	125	142	151	152	158	152	166	163	165	187	184	186	188	188	145	161	187	Pass	
DS-76	62/85	1+22	VK	2	3-Nov-08	180	143	157	134	159	152	134	154	160	166	221	210	215	199	223	3-Nov-08	Heat Fusion	145	145	149	145	141	154	145	149	145	146	167	173	168	174	174	145	148	171	Pass	
DS-77	78/88	0+33	MK	15	3-Nov-08	110	170	98	104	129	119	115	102	143	122	224	212	224	210	215	3-Nov-08	Heat Fusion	124	136	144	117	117	120	120	111	111	115	174	169	173	173	169	128	115	172	Pass	
DS-78	90/93	0+10	MK	15	3-Nov-08	166	163	161	154	134	182	135	178	125	165	223	223	219	210	218	3-Nov-08	Heat Fusion	160	141	158	158	151	148	134	153	132	142	173	179	179	181	180	154	142	178	Pass	
DS-79	64/93	0+14	BV	G#70	3-Nov-08	154		100		100		105		106		190	177	187	189	185	3-Nov-08	Single Extrusion	107	126	83	101	104	-	-	-	-	-	156	162	162	159	160	104	-	160	Pass	
DS-80	94/95	1+86	MK	15	4-Nov-08	121	111	117	108	125	115	99	120	135	116	157	153	159	153	160	4-Nov-08	Heat Fusion	134	150	132	152	132	143	141	153	140	142	173	155	172	165	177	140	144	168	Pass	
DS-81	59/94	0+54	VK	2	4-Nov-08	110	123	104	122	101	127	101	115	100	109	165	152	159	155	170	4-Nov-08	Heat Fusion	142	142	144	142	141	127	127	125	126	125	181	180	179	182	164	142	126	177	Pass	
DS-82	86/EP181	1+06	BV	G#70	4-Nov-08	118		118		132		118		142		136	133	136	127	129

TABLE 9.7

SUMMARY OF HDPE GEOMEMBRANE SEAM REPAIRS (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

								Repair Size		*Repair Crew*		*Repair Testing*			
Repair Number	*Date*	*Damage Code* [1]	*Seam ID*	*Panel*	*Location (Station)* [2]	*Repair Type* [3]	*Repair Test* [4]	*Length (in)*	*Width (in)*	*Technician ID*	*Machine ID*	*Tech ID*	*QA ID*	*P/F*	*Comment*
R-1	23-Apr-08	D	3/4		158 ft E, 8 ft N	P	VT ST PT	1	1	VP	G#27	DS	EC	Pass	
R-2	23-Apr-08	D	3/4		165 ft E, 8 ft N	P	VT ST PT	1	2	VP	G#27	DS	EC	Pass	
R-3	23-Apr-08	D	3/4		174 ft E, 8 ft N	P	VT ST PT	1	2	VP	G#27	DS	EC	Pass	
R-4	23-Apr-08	DS-1	1/2		135 ft E from BOS	P	VT ST PT	2	4	VP	G#27	DS	EC	Pass	
R-5	23-Apr-08	DS-2	3/4		115 ft E from BOS	P	VT ST PT	2	4	VP	G#27	DS	EC	Pass	NP/3
R-6	23-Apr-08	DS-3	6/7		25 ft E from BOS	P	VT ST PT	2	4	AP	G#52	DS	EC	Pass	
R-7	23-Apr-08	D	11/12		5 ft S from EOS, 9 ft E	P	VT ST PT	1	1	AP	G#52	DS	EC	Pass	
R-8	23-Apr-08	DS-4	8/9		13 ft E from BOS	P	VT ST PT	2	4	AP	G#52	DS	EC	Pass	
R-9	23-Apr-08	T	13-14/6		13 ft E from BOS	P	VT ST PT	2	3	AP	G#52	DS	EC	Pass	
R-10	23-Apr-08	Covered by R-11													
R-11	23-Apr-08	T	6-7/13		Covered by R-11	P	VT ST PT	2	6	AP	G#52	DS	EC	Pass	
R-12	23-Apr-08	T	11-12/7		Covered by R-11	P	VT ST PT	2	2	AP	G#52	DS	EC	Pass	
R-13	23-Apr-08	T	7-8/11		Covered by R-11	P	VT ST PT	2	3	AP	G#52	DS	EC	Pass	
R-14	23-Apr-08	T	10-11/8		Covered by R-11	P	VT ST PT	1	3	AP	G#52	DS	EC	Pass	
R-15	23-Apr-08	T	8-9/10		Covered by R-11	P	VT ST PT	1	3	AP	G#52	DS	EC	Pass	
R-16	23-Apr-08	BO	8/10		26 ft NE from BOS	P	VT ST PT	1	2	AP	G#52	DS	EC	Pass	
R-17	23-Apr-08	BOOT	16/17		7 ft S from BOS, 10 ft W	P	VT ST PT	5	7	AP	G#52	DS	EC	Pass	
R-18	23-Apr-08	DS-5	6/14		17 ft E from BOS	P	VT ST PT	2	4	AP	G#52	DS	EC	Pass	
R-19	23-Apr-08	DS-6	17/18		25 ft W from EOS	P	VT ST PT	2	4	AP	G#52	DS	EC	Pass	
R-20	23-Apr-08	DS-7	4/5		150 ft E from BOS	P	VT ST PT	2	4	VP	G#27	DS	EC	Pass	CP/7
R-21	23-Apr-08	DS-9	2/3		100 ft E from BOS	P	VT ST PT	2	4	VP	G#27	DS	EC	Pass	VP/6
R-22	23-Apr-08	DS-8	16/17		50 ft S from EOS	P	VT ST PT	2	4	AP	G#52	DS	EC	Pass	VP/6
R-23	23-Apr-08	D	5/6		30 ft E from BOS, 6 ft N	P	VT ST PT	1	1	AP	G#52	DS	EC	Pass	
R-24	23-Apr-08	T	14-15/5		30 ft E from BOS, 6 ft N	P	VT ST PT	2	3	AP	G#52	DS	EC	Pass	
R-25	23-Apr-08	T	25-26/17		30 ft E from BOS, 6 ft N	P	VT ST PT	3	5	Cover By R37				Pass	Cover By R37
R-26	23-Apr-08	T	17-18/25		30 ft E from BOS, 6 ft N	P	VT ST PT	1	1	AP	G#52	DS	EC	Pass	
R-27	23-Apr-08	T	18-19/25		30 ft E from BOS, 6 ft N	P	VT ST PT	1	2	AP	G#52	DS	EC	Pass	
R-28	23-Apr-08	T	19-20/25-23		30 ft E from BOS, 6 ft N	P	VT ST PT	5	8	AP	G#52	DS	EC	Pass	
R-29	23-Apr-08	T	20-21/23		30 ft E from BOS, 6 ft N	P	VT	1	1	AP	G#52	DS	EC	Pass	
R-30	23-Apr-08	T	21-22/23		30 ft E from BOS, 6 ft N	P	VT	1	3	AP	G#52	DS	EC	Pass	
R-31	23-Apr-08	BO	21/22		5 ft N from BOS	P	VT	1	2	AP	G#52	DS	EC	Pass	
R-32	24-Apr-08	T	22-24/23		5 ft N from BOS	P	VT	6	6	AP	G#52	DS	EC	Pass	
R-33	24-Apr-08	BO	23/25		75 ft E from EOS	P	VT	2	2	AP	G#52	DS	EC	Pass	
R-34	24-Apr-08	D	24/23		9 ft E from BOS	P	VT	1	1	AP	G#52	DS	EC	Pass	
R-35	24-Apr-08	BO	23/24		4 ft E from BOS	P	VT	1	2	AP	G#52	DS	EC	Pass	
R-36	24-Apr-08	ES	23/24		EOS	P	VT	4	6	AP	G#52	DS	EC	Pass	
R-37	23-Apr-08	T	17-16/26		EOS	C	VT	2	17	AP	G#52	DS	EC	Pass	
R-38	23-Apr-08	T	16-15/26		EOS	P	VT	1	2	AP	G#52	DS	EC	Pass	
R-39	23-Apr-08	T	26-15/5		EOS	P	VT	2	2	VP	G#27	DS	EC	Pass	
R-40	23-Apr-08	BO	26/25		39 ft E from EOS	P	VT	2	3	AP	G#52	DS	EC	Pass	
R-41	23-Apr-08	BO	28/29		58 ft W from EOS	P	VT	2	3	VP	G#27	DS	EC	Pass	
R-42	23-Apr-08	T	32-28/29		58 ft W from EOS	P	VT	2	2	VP	G#27	DS	EC	Pass	
R-43	23-Apr-08	T	27/32-28		58 ft W from EOS	P	VT	2	2	VP	G#27	DS	EC	Pass	
R-44	23-Apr-08	T	29/33-30		58 ft W from EOS	P	VT	2	2	VP	G#27	DS	EC	Pass	
R-45	23-Apr-08	T	33-30/31		58 ft W from EOS	P	VT	2	2	VP	G#27	DS	EC	Pass	
R-46	23-Apr-08	DS-10	6/5		50 ft E from BoS	P	VT	2	4	VP	G#27	DS	EC	Pass	
R-47	23-Apr-08	DS-11	13/14		20 ft N from BOS	P	VT	2	4	AP	G#52	DS	EC	Pass	
R-48	23-Apr-08	DS-12	15/16		84 ft N from BOS	P	VT	2	4	AP	G#52	DS	EC	Pass	
R-49	23-Apr-08	DS-13	21/22		31 ft N from EOS	P	VT	2	4	AP	G#52	DS	EC	Pass	
R-50	23-Apr-08	T	33/1-2		31 ft N from EOS	P	VT	1	1	VP	G#27	DS	EC	Pass	
R-51	23-Apr-08	T	33-29/2		31 ft N from EOS	P	VT	2	2	VP	G#27	DS	EC	Pass	
R-52	23-Apr-08	T	2/3/20-29		31 ft N from EOS	P	VT	2	2	VP	G#27	DS	EC	Pass	
R-53	23-Apr-08	T	29-32/3		31 ft N from EOS	P	VT	1	2	VP	G#27	DS	EC	Pass	

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EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

								Repair Size		*Repair Crew*		*Repair Testing*			
Repair Number	*Date*	*Damage Code* [1]	*Seam ID*	*Panel*	*Location (Station)* [2]	*Repair Type* [3]	*Repair Test* [4]	*Length (in)*	*Width (in)*	*Technician ID*	*Machine ID*	*Tech ID*	*QA ID*	*P/F*	*Comment*
R-54	23-Apr-08	T	32/3-4		31 ft N from EOS	P	VT	2	2	VP	G#27	DS	EC	Pass	
R-55	23-Apr-08	T	27-32/4		31 ft N from EOS	P	VT	2	2	VP	G#27	DS	EC	Pass	
R-56	23-Apr-08	T	27/4-5		31 ft N from EOS	P	VT	Not Recorded		VP	G#27	DS	EC	Pass	
R-57	23-Apr-08	T	27-26/5		31 ft N from EOS	P	VT	1	1	VP	G#27	DS	EC	Pass	
R-58	23-Apr-08	DS-14	23/25		35 ft W from BOS	P	VT	2	4	AP	G#52	DS	EC	Pass	
R-59	23-Apr-08	DS-15	26/27		175 ft W from EOS	P	VT	2	4	AP	G#52	DS	EC	Pass	
R-60	23-Apr-08	DS-16	28/27		4 ft W from EOS	P	VT	2	4	VP	G#27	DS	EC	Pass	
R-61	23-Apr-08	ES	31/1		4 ft W from EOS	P	VT	3	11	VP	G#27	DS	EC	Pass	
R-62	23-Apr-08	T	31/1		4 ft W from EOS	P	VT	2	4	VP	G#27	DS	EC	Pass	
R-63	24-Apr-08	DS-19	28/29		4 ft W from EOS	P	VT	2	4	VP	G#27	DS	EC	Pass	
R-64	24-Apr-08	DS-20	30/31		4 ft W from EOS	P	VT	2	4	VP	G#27	DS	EC	Pass	
R-65	23-Apr-08	DS-21	29/32		13 ft W from EOS	P	VT	2	4	VP	G#27	DS	EC	Pass	
R-66	23-Apr-08	T	26-5/15		13 ft W from EOS	P	VT	1	1	VP	G#27	DS	EC	Pass	
R-67	23-Apr-08	B	15/5		BOS	B	VT	15	0	VP	G#27	DS	EC	Pass	
R-68	23-Apr-08	B	26/15		BOS	B	VT	3	0	VP	G#27	DS	EC	Pass	
R-69	23-Apr-08	DS-22	26/26		25 ft W from EOS	P	VT	2	4	AP	G#52	DS	EC	Pass	
R-70	23-Apr-08	DS-18	32/27		5 ft E from BOS	P	VT	2	4	VP	G#27	DS	EC	Pass	
R-71	23-Apr-08	DS-23	16/26		4 ft W from EOS	P	VT	2	4	VP	G#27	DS	EC	Pass	
R-72	23-Apr-08	DS-24	23/21		5 ft W from EOS	P	VT	2	4	AP	G#52	DS	EC	Pass	
R-73	24-Apr-08	DS-17	29/30		100 ft W from EOS	P	VT	2	4	VP	G#27	DS	EC	Pass	
R-74	24-Apr-08	DS-25	33/2		3 ft N from BOS 4 ft N from E	P	VT	2	4	VP	G#27	DS	EC	Pass	
R-75	23-Apr-08	DS-26	32/28		B	P	VT	2	4	VP	G#27	DS	EC	Pass	
R-76	23-Apr-08	B	33/1		BOS W	B	VT	1	0	VP	G#27	DS	EC	Pass	
R-77	24-Apr-08	ES	28/27		BOS W	P	VT	2	10	VP	G#27	DS	EC	Pass	
R-78	24-Apr-08	ES	30/31		BOS W	P	VT	3	10	VP	G#27	DS	EC	Pass	
R-79	24-Apr-08	ES		31	BOS W	P	VT	3	10	VP	G#27	DS	EC	Pass	
R-80	24-Apr-08	BO	30/29		BOS W	P	VT	2	3	VP	G#27	DS	EC	Pass	
R-81	25-Apr-08	BO	15/16		EOS	P	VT	1	3	VP	G#27	DS	EC	Pass	
R-82	28-Apr-08	DS-27EP		35	98 ft SW from BOS	P	VT	2	4	AP	G#52	DS	RL	Pass	Tie in #1 - 60 mill HDPE/60 mil LLDPE
R-83	28-Apr-08	DS-28EP		37	250 ft W from BOS	P	VT	2	4	AP	G#52	DS	RL	Pass	Tie in #1 - 60 mill HDPE/60 mil LLDPE
R-84	28-Apr-08	DS-27EP		35	98 ft SW from BOS	P	VT	3	6	AP	G#52	DS	RL	Pass	Tie in #1/Top
R-85	28-Apr-08	DS-28EP		37	250 ft W from BOS	P	VT	3	6	AP	G#52	DS	RL	Pass	Tie in #1/Top
R-86	30-Apr-08	DS-29EP		40	170 ft N from BOS	P	VT	2	4	AP	G#52	AP	EC	Pass	Tie in #2 - 60 mill HDPE/60 mil LLDPE
R-87	30-Apr-08	DS-29EP		40	170 ft N from BOS	P	VT	3	6	AP	G#52	AP	EC	Pass	Tie in #2/Top
R-88	30-Apr-08	DS-30EP		40	170 ft N from BOS	P	VT	2	4	DT	G#27	DS	EC	Pass	Tie in #2 - 60 mill HDPE/60 mil LLDPE
R-89	30-Apr-08	DS-30EP		40	170 ft N from BOS	P	VT	3	6	AP	G#52	DS	EC	Pass	Tie in #2/Top
R-90	13-Oct-08	DS-31	1/42		139 ft E of Seam	P	VT	2	8	ST	G#25	DC	SM	Pass	
R-91	13-Oct-08	DS-32	42/43		77 ft E of Seam	P	VT	2	7	ST	G#25	DC	SM	Pass	
R-92	13-Oct-08	DS-33	43/44		25 ft EOS	P	VT	2	4	ST	G#25	DC	SM	Pass	
R-93	13-Oct-08	DS-34	44/45		68 ft eos	P	VT	2	5	ST	G#25	DC	SM	Pass	
R-94	13-Oct-08	DS-35	45/46		15 ft eos	P	VT	2	6	ST	G#25	DC	SM	Pass	
R-95	13-Oct-08	DS-36	46/47		72 ft E of Seam	P	VT	2	4	ST	G#25	DC	SM	Pass	
R-96	13-Oct-08	DS-37	47/48		50 ft E of Seam	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-97	13-Oct-08	DS-38	48/49		80 ft E of Seam	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-98	13-Oct-08	DS-39	49/50		12 ft E of Seam	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-99	13-Oct-08	DS-40	55/56		55 ft S O S	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-100	13-Oct-08	DS-41	54/55		90 ft S O S	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-101	13-Oct-08	DS-42	53/54		115 ft S O S	P	VT	2	5	VC	G#64	DC	SM	Pass	
R-102	13-Oct-08	DS-43	52/53		129 ft S of Seam	P	VT	2	5	VC	G#64	DC	SM	Pass	
R-103	13-Oct-08	DS-44	47/55		107 ft E os Tie-In	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-104	13-Oct-08	FM	50/58		At NW Trance	P	VT	2	10	VC	G#64	DC	SM	Pass	
R-105	13-Oct-08	T	49/50/57/58		28 ft S O S 58/57	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-106	13-Oct-08	DS-46	51/52		106 ft S O S	P	VT	2	4	ST	G#25	DC	SM	Pass	

TABLE 9.7

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EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

								Repair Size		*Repair Crew*		*Repair Testing*			
Repair Number	*Date*	*Damage Code* [1]	*Seam ID*	*Panel*	*Location (Station)* [2]	*Repair Type* [3]	*Repair Test* [4]	*Length (in)*	*Width (in)*	*Technician ID*	*Machine ID*	*Tech ID*	*QA ID*	*P/F*	*Comment*
R-107	13-Oct-08	DS-45	56/57		40 ft S O S 57/56	P	VT	2	5	VC	G#64	DC	SM	Pass	
R-108	13-Oct-08	DS-39	62/64		79 ft S of Seam	P	VT	2	5	ST	G#25	DC	SM	Pass	
R-109	13-Oct-08	DS-48	57/59		125 ft S O S	P	VT	2	2	ST	G#25	DC	SM	Pass	
R-110	14-Oct-08	DS-49	31/65		150 ft W O S	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-111	14-Oct-08	DS-50	65/67		100 ft W O S	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-112	14-Oct-08	DS-51	70/71		75 ft W of Seam	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-113	13-Oct-08	DS-52	64/73		15 ft S O S	P	VT	2	5	ST	G#25	DC	SM	Pass	
R-114	14-Oct-08	DS-53	77/78		5 ft W O S	P	VT	2	5	VC	G#64	DC	SM	Pass	
R-115	13-Oct-08	DS-54	59/60		75 ft S O S	P	VT	2	5	ST	G#25	DC	SM	Pass	
R-116	13-Oct-08	DS-55	60/61		25 ft S O S	P	VT	2	5	ST	G#25	DC	SM	Pass	
R-117	13-Oct-08	DS-56	62/63		8 ft E of R172	P	VT	2	3	ST	G#25	DC	SM	Pass	
R-118	14-Oct-08	DS-57	66/68		55 ft W O S	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-119	14-Oct-08	DS-58	69/70		66 ft W O P	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-120	14-Oct-08	DS-59	71/72		100 ft W O S	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-121	14-Oct-08	DS-60	72/76		20 ft S O S	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-122	13-Oct-08	FM	43/51		Extr. Seam From R123 to R1	B	VT	8		VC	G#64	DC	SM	Pass	
R-123	13-Oct-08	WR	43/51		189 ft S of Seam	P	VT	1	2	VC	G#64	DC	SM	Pass	
R-124	13-Oct-08	B	43/52		5 ft Long	B	VT	5		VC	G#64	DC	SM	Pass	
R-125	13-Oct-08	T	43/44/52		180 ft E of Seam	P	VT	2	3	VC	G#64	DC	SM	Pass	
R-126	13-Oct-08	DS	51/52		void DS	P	VT	2	4	VC	G#64	DC	SM	Pass	
R-127	13-Oct-08	T	51/65/67		204 ft W of S 63/67	P	VT	2	2	VC	G#64	DC	SM	Pass	
R-128	13-Oct-08	T	51/59/67		184 ft S of Seam 51/59	P	VT	2	6	VC	G#64	DC	SM	Pass	
R-129	13-Oct-08	T	59/67/68		192' W of Seam	P	VT	2	2	VC	G#64	DC	SM	Pass	
R-130	13-Oct-08	T	59/60/68		125 ft W O S	P	VT	1	2	VC	G#64	DC	SM	Pass	
R-131	13-Oct-08	T	60/68/61/70		168 ft W O S	P	VT	2	8	VC	G#64	DC	SM	Pass	
R-132	13-Oct-08	T	61/70/71		149 ft W O S	P	VT	2	2	ST	G#25	DC	SM	Pass	
R-133	13-Oct-08	T	61/62/71		163 ft W O Panel	P	VT	2	5	ST	G#25	DC	SM	Pass	
R-134	13-Oct-08	T	62/64/71/72		120 ft W O S 71/77	P	VT	2	5	ST	G#25	DC	SM	Pass	
R-135	14-Oct-08	T	64/72/74		64 ft S of Seam 74/64	P	VT	2	3	VC	G#64	DC	SM	Pass	
R-136	14-Oct-08	T	72/74/75/78		50 ft W O S 72/75	P	VT	2	8	VC	G#64	DC	SM	Pass	
R-137	-	-	75/77/78		VOID	P				-	-	-	-	-	Cover by R167
R-138	-	-	75/76/77		VOID	P				-	-	-	-	-	Cover by R167
R-139	14-Oct-08	CR	72/75/69/70		30 ft W O S	P	VT	1	1	VC	G#64	DC	SM	Pass	
R-140	14-Oct-08	T	69/70/71		66 ft W O S	P	VT	1	1	VC	G#64	DC	SM	Pass	
R-141	14-Oct-08	T	68/69/70		70 ft W O S	P	VT	1	2	VC	G#64	DC	SM	Pass	
R-142	14-Oct-08	T	66/67/68		80 ft W O S	P	VT	1	1	VC	G#64	DC	SM	Pass	
R-143	14-Oct-08	T	65/66/67		77 ft W O S	P	VT	1	1	VC	G#64	DC	SM	Pass	
R-144	14-Oct-08	BO	65/67		115 ft W O S	P	VT	3	7	VC	G#64	DC	SM	Pass	
R-145	14-Oct-08	BO	31/65		123 ft W O S	P	VT	2	2	VC	G#64	DC	SM	Pass	
R-146	14-Oct-08	BO	31/65		75 ft W O S	P	VT	1	2	VC	G#64	DC	SM	Pass	
R-147	14-Oct-08	BL	31/65/83		30 ft W O S 83/65	P	VT	2	8	WAT	G#25	DC	SM	Pass	
R-148	14-Oct-08	FM	66/68		East Side At Top	B	VT	12		VC	G#64	DC	SM	Pass	
R-149	14-Oct-08	BOOT	-	71	A Tarance 4 In. BOOTS	P	VT	3	3	VC	G#64	DC	EC	Pass	Boot
R-150	14-Oct-08	BOOT	65/66		A Tarance 4 In. BOOTS	P	VT	4	4	VC	G#64	DC	SM	Pass	
R-151	14-Oct-08	CR	-	79	Top of Ditch	P	VT	1	1	WAT	G#25	DC	SM	Pass	
R-152	14-Oct-08	BO	-	79	Top of Ditch	P	VT	1	1	WAT	G#25	DC	SM	Pass	
R-153	14-Oct-08	T	79/80/81		Ditch	P	VT	1	1	WAT	G#25	DC	SM	Pass	
R-154	14-Oct-08	T	80/81/82		Ditch 17 ft S O S	P	VT	1	1	WAT	G#25	DC	SM	Pass	
R-155	14-Oct-08	BO	66/68		25 ft W of Seam	P	VT	2	11	VC	G#64	DC	SM	Pass	
R-156	14-Oct-08	WR	-	68	19 ft W O Panel	B	VT	5		VC	G#64	DC	SM	Pass	
R-157	14-Oct-08	BO	68/69		18 ft W of Panel	P	VT	2	5	VC	G#64	DC	SM	Pass	
R-158	14-Oct-08	D	68/69		29 ft W O S	P	VT	1	1	VC	G#64	DC	SM	Pass	
R-159	13-Oct-08	BO	68/70		139 ft W O S	P	VT	1	1	ST	G#25	DC	SM	Pass	

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GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

								Repair Size		*Repair Crew*		*Repair Testing*			
Repair Number	*Date*	*Damage Code* [1]	*Seam ID*	*Panel*	*Location (Station)* [2]	*Repair Type* [3]	*Repair Test* [4]	*Length (in)*	*Width (in)*	*Technician ID*	*Machine ID*	*Tech ID*	*QA ID*	*P/F*	*Comment*
R-160	13-Oct-08	BO	68/70		122 ft W O S	P	VT	1	2	ST	G#25	DC	SM	Pass	
R-161	13-Oct-08	BO	68/70		132 ft W O S	P	VT	2	3	ST	G#25	DC	SM	Pass	
R-162	14-Oct-08	D	-	70	4 ft W of Panel	B	VT	6		VC	G#64	DC	SM	Pass	
R-163	14-Oct-08	D	-	70	4 ft W of Panel	B	VT	6		VC	G#64	DC	SM	Pass	
R-164	14-Oct-08	D	76/72		At Trance	P	VT	1	1	VC	G#64	DC	SM	Pass	
R-165	13-Oct-08	T	72/75/76		27 ft W O S	P	VT	1	1	VC	G#64	DC	SM	Pass	
R-166	14-Oct-08	CR	72/76		45 ft W O S	P	VT	1	1	VC	G#64	DC	SM	Pass	
R-167	14-Oct-08	D	75/76/77/78		18 ft S O S Cover R137/138	P	VT	2	7	VC	G#64	DC	SM	Pass	Covering R137/R138
R-168	13-Oct-08	T	73/74/78		20 ft S O S	P	VT	2	2	ST	G#25	DC	SM	Pass	
R-169	13-Oct-08	T	64/73/74		26 ft S O S	P	VT	1	1	ST	G#25	DC	SM	Pass	
R-170	13-Oct-08	BO	62/64		25 ft S O S	P	VT	2	4	ST	G#25	DC	SM	Pass	
R-171	13-Oct-08	T	62/63/64		9 ft S O S	P	VT	1	1	ST	G#25	DC	SM	Pass	
R-172	13-Oct-08	T	61/62/63		11 ft S O S	P	VT	2	2	ST	G#25	DC	SM	Pass	
R-173	14-Oct-08	BO	72/74		60 ft W of S	P	VT	2	2	VC	G#64	DC	SM	Pass	
R-174	13-Oct-08	T	31/51/65		Top of Panel 51 223 ft	B	VT	60		VC	G#64	DC	SM	Pass	
R-175	13-Oct-08	FM	31/51		Top of Cap N Side	B	VT	132		VC	G#64	DC	SM	Pass	
R-176	13-Oct-08	CR	-	31	Top of Cap	P	VT	1	1	VC	G#64	DC	SM	Pass	
R-177	13-Oct-08	CR	-	31	Top of Cap	B	VT	120		VC	G#64	DC	SM	Pass	
R-178	13-Oct-08	D	-	51	Top Of Panes 51 223 ft	P	VT	2	2	VC	G#64	DC	SM	Pass	
R-179	13-Oct-08	T	31/51/42/1/R61		225 ft S of Seam	P	VT	3	7	VC	G#64	DC	SM	Pass	
R-180	13-Oct-08	WR	-	51	222 ft S of Panel	P	VT	1	1	VC	G#64	DC	SM	Pass	
R-181	13-Oct-08	CR/T	-	51	220 ft S of Panel	B	VT	60		VC	G#64	DC	EC	Pass	
R-182	14-Oct-08	CR	43/44		170 ft E of Seam	P	VT	1	1	WAT	G#25	DC	SM	Pass	
R-183	13-Oct-08	BP	46/54		10 ft NW of R188	P	VT	1	1	VC	G#64	DC	EC	Pass	
R-184	13-Oct-08	T	44/52/53		163 ft S of Seam 52/53	P	VT	2	3	VC	G#64	DC	EC	Pass	
R-185	13-Oct-08	T	44/45/53		12 ft NW of Tie-In	P	VT	1	2	VC	G#64	DC	EC	Pass	
R-186	13-Oct-08	T	42/43/51		206 ft S of Seam 51/43	P	VT	1	1	VC	G#64	DC	EC	Pass	
R-187	13-Oct-08	T	45/53/54		131 ft S of Seam 53/54	P	VT	2	2	VC	G#64	DC	EC	Pass	
R-188	13-Oct-08	T	45/46/54		8 ft NW of R187	P	VT	2	3	VC	G#64	DC	EC	Pass	
R-189	13-Oct-08	T	46/54/55		9 ft NW of 183	P	VT	1	1	VC	G#64	DC	EC	Pass	
R-190	13-Oct-08	T	46/47/55		123 ft S of Tie-In/Pie	P	VT	2	4	VC	G#64	DC	EC	Pass	
R-191	13-Oct-08	T	47/55/56		100 ft S of Tie-In/Pie	P	VT	1	2	VC	G#64	VC	EC	Pass	
R-192	13-Oct-08	T	47/48/56		90ft so of Tie-In	P	VT	1	1	VC	G#64	VC	EC	Pass	
R-193	13-Oct-08	T	48/56/57		65 ft S O S	P	VT	1	1	VC	G#64	VC	EC	Pass	
R-194	13-Oct-08	T	48/49/57		62 ft S O S 65/67 1 ft W	P	VT	2	3	VC	G#64	VC	EC	Pass	
R-195	14-Oct-08	D	-	59	95 ft S of Panel	P	VT	1	1	WAT	G#25	DC	SM	Pass	
R-196	13-Oct-08	BOOT	51/59		Boots 6ft/75ft S O S	P	VT	10	10	ST	G#25	VC	EC	Pass	Manhole
R-197	13-Oct-08	BOOT	59/60		6 ft Boots 100 ft S O S	P	VT	9	9	ST	G#25	VC	EC	Pass	Manhole
R-198	13-Oct-08	T	59/60		118 ft S O S	P	VT	2	2	ST	G#25	VC	EC	Pass	
R-199	13-Oct-08	BO	45/46		8 ft E of R94	P	VT	1	2	ST	G#25	VC	EC	Pass	
R-200	14-Oct-08	FM	1/42		0 ft Inside Trance	P	VT	2	4	WT	G#25	DC	EC	Pass	
R-201	14-Oct-08	DS-61	30/81		30 ft W o P	P	VT	2	4	WT	G#25	DC	EC	Pass	
R-202	14-Oct-08	DS-63	76/77		10 ft S O S	P	VT	2	4	VC	G#64	DC	EC	Pass	
R-203	14-Oct-08	D		81	25 ft W O P	P	VT	1	1	WT	G#25	DC	EC	Pass	
R-204	14-Oct-08	T	79/81		29 ft W O S	P	VT	1	1	WT	G#25	DC	EC	Pass	
R-205	14-Oct-08	Tie-in	81/82		W O Panel 26 ft	B/P	VT	132		WT	G#25	DC	EC	Pass	
R-206	14-Oct-08	T	30/82		W O Panel 26 ft	B/P	VT	240		WT	G#25	DC	EC	Pass	
R-207	14-Oct-08	WR		68	20 ft W of Panel	P	VT	1	1	VC	G#64	DC	EC	Pass	
R-208	14-Oct-08	WR		68	10 ft W	P	VT	2	3	VC	G#64	DC	EC	Pass	
R-209	14-Oct-08	DS-62	61/70		150 ft W of Panel	P	VT	2	4	WT	G#25	DC	EC	Pass	
R-210	14-Oct-08	DS-64	80/82		12 ft W O S	P	VT	2	4	WT	G#25	DC	EC	Pass	
R-211	14-Oct-08	DS-65	R197/59		98 ft S of Panel	P	VT	2	4	WT	G#25	DC	EC	Pass	ST/G#25
R-212	14-Oct-08	DS-66	R175/31		31 ft Top of Cap	P	VT	2	4	WT	G#25	DC	EC	Pass	VC/G#64

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								Repair Size		*Repair Crew*		*Repair Testing*			
Repair Number	*Date*	*Damage Code* [1]	*Seam ID*	*Panel*	*Location (Station)* [2]	*Repair Type* [3]	*Repair Test* [4]	*Length (in)*	*Width (in)*	*Technician ID*	*Machine ID*	*Tech ID*	*QA ID*	*P/F*	*Comment*
R-213	14-Oct-08	CR	27/79		Ditch	P	VT	48		WT	G#25	DC	EC	Pass	
R-214	14-Oct-08	CR		79	Ditch	B	VT	24		WT	G#25	DC	EC	Pass	
R-215	14-Oct-08	CR		27	At Trance	B	VT	12		WT	G#25	DC	EC	Pass	
R-216	14-Oct-08	BOOT		27	At Trance	P	VT	4	5	WT	G#25	DC	EC	Pass	
R-217	14-Oct-08	CR		31	30 ft W of P	B	VT	276		WT	G#25	DC	EC	Pass	
R-218	13-Oct-08	BO	59/60		TOE/At Trance	P	VT	1	1	ST	G#25	DC	EC	Pass	
R-219	14-Oct-08	BOOT		59	TOE/At Trance	P	VT	4	4	VC	G#64	DC	EC	Pass	
R-220	15-Oct-08	DS-67	46/EP165		310 ft on Rain Flap	P	VT	2	3	WT	G#25	VC	EC	Pass	Flap tie in
R-221	15-Oct-08	DS-68	70/EP157		95 ft on Rain Flap	P	VT	2	3	WT	G#25	VC	EC	Pass	
R-222	15-Oct-08	DS-69	49/EP171		412 ft W of RF Seam	P	VT	2	4	WT	G#25	VC	EC	Pass	
R-223	15-Oct-08	D		EP172	12 ft W of R222	P	VT	2	5	WT	G#25	VC	EC	Pass	
R-224	15-Oct-08	T		59	130 ft W O S	P	VT	2	2	WT	G#25	VC	EC	Pass	
R-225	16-Oct-08	DS-70	44/EP175		5 B O S	P	VT	2	3	WT	G#25	VC	EC	Pass	
R-226	16-Oct-08	DS-71	75/EP178		To E of 155 Panel	P	VT	2	4	WT	G#25	VC	EC	Pass	
R-227	16-Oct-08	FM		72	At Trance	P	VT	4	23	WT	G#25	VC	EC	Pass	
R-228	17-Oct-08	DS-69A	48/EP172		354 ft	P	VT	11	2	VC	G#64	VC	EC	Pass	Tracking DS-69
R-229	17-Oct-08	DS-69B	49/EP171		399 ft	P	VT	5	2	VC	G#64	VC	EC	Pass	Tracking DS-69
R-230	17-Oct-08	T	49/EP171		405 ft	P	VT	12	2	VC	G#64	VC	EC	Pass	Tracking DS-69
R-231	17-Oct-08	T	49/EP171		403 ft	P	VT	6	2	VC	G#64	VC	EC	Pass	Tracking DS-69
R-232	17-Oct-08	T	49/EP171		405 ft	P	VT	2	2	VC	G#64	VC	EC	Pass	Tracking DS-69
R-233	17-Oct-08	DS-72	R230/49		415 ft	P	VT	5	2	VC	G#64	VC	EC	Pass	DS- from recon. Seam @ DS-69
R-234	3-Nov-08	T-WS	68/69/84		67 ft E - EOS	P	VT	60	24	BV	G#70	TR	CH	Pass	
R-235	3-Nov-08	DS--73	84/85		16 ft E- EOS	DS--73	VT	60	24	BV	G#70	TR	CH	Pass	
R-236	3-Nov-08	DS--74	68/84		26 ft W - EOS	DS--74	VT	60	24	BV	G#70	TR	CH	Pass	
R-237	3-Nov-08	BO	69/85		35 ft E - EOS	P	VT	36	24	BV	G#70	TR	CH	Pass	
R-238	3-Nov-08	WT-WS	69/84/85		63 ft E - EOS	P	VT	24	24	BV	G#70	TR	CH	Pass	
R-239	3-Nov-08	DS-75	87/88		13 ft E -EOS	DS-75	VT	72	24	BV	G#70	TR	CH	Pass	
R-240	4-Nov-08	BO	69/85		7 ft E - EOS	P	VT	24	24	-	-	-	-	-	Cover by R266
R-241	3-Nov-08	DS-76	62/85		9 ft E - EOS	DS-76	VT	72	24	BV	G#70	TR	EC	Pass	
R-242	3-Nov-08	WS	60/68/84		12 ft W - EOS	P	VT	36	24	BV	G#70	TR	EC	Pass	
R-243	3-Nov-08	T	60/61/84		16 ft NE - EOS	P	VT	24	24	BV	G#70	TR	EC	Pass	
R-244	3-Nov-08	T	61/84/85		15 ft NE- EOS	P	VT	12	12	BV	G#70	TR	EC	Pass	
R-245	3-Nov-08	T	61/62/85		18 ft NE - EOS	P	VT	12	12	BV	G#70	TR	EC	Pass	
R-246	3-Nov-08	T	62/85/86		11 ft NE - EOS	P	VT	12	12	BV	G#70	TR	EC	Pass	
R-247	3-Nov-08	T	62/64/86		22 ft E - EOS	P	VT	12	12	BV	G#70	TR	CH	Pass	
R-248	3-Nov-08	WS	64/86/92		23 ft E - EOS	P	VT	36	12	BV	G#70	TR	CH	Pass	
R-249	3-Nov-08	T	86/91/92		20 ft E - EOS	P	VT	24	24	BV	G#70	TR	CH	Pass	
R-250	3-Nov-08	WS	74/92		17 ft E - EOS	P	VT	12	12	BV	G#70	TR	CH	Pass	
R-251	3-Nov-08	Ext	64/92		20 ft E - EOS	B	VT	96		BV	G#70	TR	CH	Pass	
R-252	3-Nov-08	Ext	91/92		22 ft E - EOS	B	VT	36		BV	G#70	TR	CH	Pass	
R-253	3-Nov-08	BO	75/91		17 ft E - EOS	P	VT	12	12	BV	G#70	TR	CH	Pass	
R-254	3-Nov-08	BO	74/75/91		19 ft E - 1 ft om R136	B	VT	48		BV	G#70	TR	CH	Pass	
R-255	3-Nov-08	T	74/91/92		17 ft W - EOS	P	VT	12	12	BV	G#70	TR	CH	Pass	
R-256	3-Nov-08	WS	86/87/91		13 ft W - EOS	P	VT	36	24	BV	G#70	TR	CH	Pass	
R-257	3-Nov-08	Ext	87/91		1 ft of R256	B	VT	24		BV	G#70	TR	CH	Pass	
R-258	3-Nov-08	WS	75/87/91		19 ft S - EOS	P	VT	12	12	BV	G#70	TR	CH	Pass	
R-259	3-Nov-08	WS	75/87/78/88		19 ft S - EOS	P	VT	72	24	BV	G#70	TR	CH	Pass	
R-260	3-Nov-08	T	78/88/89		12 ft E - EOS	P	VT	12	12	BV	G#70	TR	CH	Pass	
R-261	3-Nov-08	DS-77	78/88		9 ft S - EOS	DS-77	VT	72	24	BV	G#70	TR	EC	Pass	
R-262	3-Nov-08	WS	74/78/90		70ft S - EOS	P	VT	48	48	BV	G#70	TR	EC	Pass	
R-263	3-Nov-08	WS	64/74/90/93		23 ft S - EOS	P	VT	60	48	BV	G#70	TR	EC	Pass	
R-264	3-Nov-08	WS	78/89		8 ft N - EOS	P	VT	12	12	BV	G#70	TR	EC	Pass	
R-265	4-Nov-08	Pipe	-	85	4 ft W - 6 ft S of P86	Boot	VT			BV	G#70	SW	CH	Pass	

TABLE 9.7

SUMMARY OF HDPE GEOMEMBRANE SEAM REPAIRS (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

								Repair Size		*Repair Crew*		*Repair Testing*			
Repair Number	*Date*	*Damage Code* [1]	*Seam ID*	*Panel*	*Location (Station)* [2]	*Repair Type* [3]	*Repair Test* [4]	*Length (in)*	*Width (in)*	*Technician ID*	*Machine ID*	*Tech ID*	*QA ID*	*P/F*	*Comment*
R-266	4-Nov-08	BO	69/85		4 ft E - EOS	P	VT	96	24	BV	G#70	SW	CH	Pass	
R-267	3-Nov-08	DS-78	90/93		12 ft N - EOS	DS-78	VT	60	24	BV	G#70	TR	EC	Pass	
R-268	3-Nov-08	DS-79	64/93		14 ft N - EOS	DS-79	VT	72	36	BV	G#70	TR	EC	Pass	BV/G#90
R-269	-	BO	90/93		16 ft N - EOS Cover by P26	P	VT			-	-	-	-	-	Cover by R268
R-270	3-Nov-08	Ext	64/93		15 ft N - EOS	B	VT	252		BV	G#70	TR	EC	Pass	
R-271	3-Nov-08	Ext	90/93		16 ft N - 21 ft S	B	VT	60		BV	G#70	TR	EC	Pass	
R-272	-	DS-80	94/95		17 ft N - EOS	DS-80	VT			-	-	-	-	-	Cover by R291
R-273	4-Nov-08	DS-81	59/94		54 ft S - EOS	DS-81	VT	72	24	BV	G#70	SW	CH	Pass	
R-274	4-Nov-08	DS-82	86/EP181		105 ft NE - EOS	DS-82	VT	60	24	BV	G#70	SW	CH	Pass	Flap tie in to EP
R-275	4-Nov-08	DS-82	64/86		4 ft SW - 1 ft from P85	P	VT	60	36	BV	G#70	SW	CH	Pass	
R-276	4-Nov-08	DS-83	52/96			DS-83	VT	72	24	BV	G#70	SW	CH	Pass	
R-277	4-Nov-08	DS-84	42/95		10 ft N - EOS	DS-84	VT	60	24	RV	G#49	SW	CH	Pass	
R-278	4-Nov-08	DS-85	65/94		14 ft N - EOS	DS-85	VT	60	24	RV	G#49	SW	CH	Pass	
R-279	5-Nov-08	DS-86	43/97		156 ft W - EOS	DS-86	VT			BV	G#70	SW	CH	Pass	
R-280	5-Nov-08	DS-87	97/98		25 ft W - EOS	DS-87	VT	60	24	BV	G#70	SW	CH	Pass	
R-281	5-Nov-08	Pipe		94	80 ft S - 4 ft of W	P	VT	180	180	BV	G#70	SW	SM	Pass	
R-282	5-Nov-08	BO	59/94		5 ft S - EOS	P	VT	48	24	BV	G#70	SW	SM	Pass	
R-283	5-Nov-08	BO	59/94		123 ft N - EOS	P	VT	24	24	BV	G#70	SW	SM	Pass	
R-284	5-Nov-08	T	95/96		110 ft S - EOS	P	VT	48	36	BV	G#70	SW	SM	Pass	
R-285	5-Nov-08	Patch	52/94/96		5 ft S - EOS	P	VT	60	36	BV	G#70	SW	SM	Pass	
R-286	-	BO	65/67/94		193 ft cover by R287	P	VT			-	-	-	-	-	Cover by R287
R-287	5-Nov-08	BO	59/97/94		190 ft S - EOS	P	VT	156	36	BV	G#70	SW	SM	Pass	
R-288	-	W	42/95		6 ft N - EOS	P	VT	108	24	-	-	-	-	-	Cover by R277
R-289	4-Nov-08	BO	42/43/95		17 ft N - EOS	P	VT	36	24	RV	G#49	SW	SM	Pass	
R-290	-	BO	43/95		175 ft S - Cover by R291	P	VT	72	24	-	-	-	-	-	Cover by R291
R-291	5-Nov-08	WS	43/52/95		221 ft SW - EOS	P	VT	84	60	BV/RV	G#70/G#49	SW	SM	Pass	
R-292	4-Nov-08	WS	65/94		3 ft N- EOS	P	VT	24	24	RV	G#49	SW	SM	Pass	
R-293	4-Nov-08	Ext	31/94		12 ft W - 1 of P94	B	VT	288		RV	G#49	SW	SM	Pass	
R-294	5-Nov-08	BO	100/101		65 ft W - EOS	P	VT	24	24	BV	G#70	SW	SM	Pass	
R-295	5-Nov-08	BO	56/102		5 ft S - EOS	P	VT	12	12	BV	G#70	SW	SM	Pass	
R-296	5-Nov-08	T	103/104/105		23 ft SW - EOS	P	VT	24	24	BV	G#70	SW	SM	Pass	
R-297	5-Nov-08	T	102/103/104		30 ft SW - EOS	P	VT	24	24	BV	G#70	SW	SM	Pass	
R-298	5-Nov-08	T	101/102/104		29 ft SW - EOS	P	VT	24	24	BV	G#70	SW	SM	Pass	
R-299	5-Nov-08	T	56/101/102		5 ft SW - EOS	P	VT	24	24	BV	G#70	SW	SM	Pass	
R-300	5-Nov-08	T	56/100/101		28 ft SW - EOS	P	VT	24	24	BV	G#70	SW	SM	Pass	
R-301	5-Nov-08	DS-88	98/99		96 ft W - EOS	DS-88	VT	60	24	BV	G#70	SW	CH	Pass	
R-302	5-Nov-08	BO	43/97		169 ft W - EOS	P	VT	84	24	BV	G#70	SW	CH	Pass	
R-303	5-Nov-08	DS-89	101/104		19 ft E - EOS	DS-89	VT	72	24	BV	G#70	SW	CH	Pass	
R-304	5-Nov-08	DS-90	102/103		18 ft S - EOS	DS-90	VT	72	24	BV	G#70	SW	CH	Pass	
R-305	5-Nov-08	DS-91	102/104		48 ft SW - EOS	DS-91	VT	72	24	BV	G#70	SW	CH	Pass	
R-306	5-Nov-08	DS-92	54/99		6 ft SW - EOS	DS-92	VT	72	24	BV	G#70	SW	CH	Pass	
R-307	5-Nov-08	DS-93	52/97		6 ft SW - EOS	DS-93	VT	72	24	RV	G#49	SW	CH	Pass	
R-308	5-Nov-08	DS-94	94/EP159		13 ft E - EOS	DS-94	VT	72	24	BV	G#70	SW	CH	Pass	
R-309	6-Nov-08	BO	108/109		27 ft E - EOS	P	VT	48	24	BV	G#70	IK	SM	Pass	
R-310	6-Nov-08	BO	83/109		20 ft E - EOS	P	VT	36	36	BV	G#70	IK	SM	Pass	
R-311	6-Nov-08	DS-95	107/108		25 ft E - EOS	DS-95	VT	72	24	BV	G#70	IK	SM	Pass	
R-312	6-Nov-08	WS	65/83/109		29 ft E - EOS	P	VT	60	84	BV	G#70	IK	SM	Pass	
R-313	6-Nov-08	DS-96	29/107		53 ft S - EOS	DS-96	VT	60	24	BV	G#70	IK	SM	Pass	
R-314	6-Nov-08	T	29/107/108		44 ft S - EOS	P	VT	12	12	BV	G#70	IK	SM	Pass	
R-315	6-Nov-08	T	28/106/107		66 ft S - EOS	P	VT	12	12	BV	G#70	IK	SM	Pass	
R-316	6-Nov-08	T	27/28/106		88 ft S - EOS	P	VT	36	24	BV	G#70	IK	SM	Pass	
R-317	7-Nov-08	B	-	104	5 ft N - 4 ft W	B	VT	120		BV	G#70	SW	SM	Pass	
R-318	7-Nov-08	DS-97	100/EP184		390 ft N	DS-97	VT	60	24	RV	G#49	SW	CH	Pass	

TABLE 9.7

SUMMARY OF HDPE GEOMEMBRANE SEAM REPAIRS (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

								Repair Size		*Repair Crew*		*Repair Testing*			
Repair Number	*Date*	*Damage Code* [1]	*Seam ID*	*Panel*	*Location (Station)* [2]	*Repair Type* [3]	*Repair Test* [4]	*Length (in)*	*Width (in)*	*Technician ID*	*Machine ID*	*Tech ID*	*QA ID*	*P/F*	*Comment*
R-319	7-Nov-08	DS-97	100/DP184		390 ft N Cover by R319	P	VT	72	36	RV	G#49	SW	CH	Pass	
R-320	7-Nov-08	DS-98	97/EP185		97 ft S on Flap	DS-98	VT	60	24	BV	G#70	IK	CH	Pass	
R-321	5-Nov-08	T	55/569/100		5 ft SW - EOS	P	VT	24	24	BV	G#70	SW	SM	Pass	
R-322	5-Nov-08	T	55/99/100		25 ft SW - EOS	P	VT	24	24	BV	G#70	SW	SM	Pass	
R-323	5-Nov-08	T	54/55/99		5 ft SW - EOS	P	VT	24	12	BV	G#70	SW	SM	Pass	
R-324	5-Nov-08	DS.92	54/98/99		6 ft SW - EOS	P	VT	72	24	BV	G#70	SW	SM	Pass	
R-325	5-Nov-08	T	53/54/98		29 ft SW - EOS	P	VT	24	24	BV	G#70	SW	SM	Pass	
R-326	5-Nov-08	T	53/52/99/98		5 ft SW - EOS	P	VT	72	24	RV	G#49	SW	SM	Pass	
R-327	7-Nov-08	DS-99	101/EP187		460 ft E on Flap	DS-99	VT	60	24	RV	G#49	SW	CH	Pass	
R-328	7-Nov-08	DS-99	101/EP187		460 ft E cover by R327	P	VT	72	36	RV	G#49	SW	CH	Pass	
R-329	7-Nov-08	DS-98	97/EP185		97 ft S cover by R320	P	VT	72	24	BV	G#70	IK	CH	Pass	
R-330	17-Nov-08	DS-100	R331/67			DS-100				RV	G#49	RV	EC	Pass	
R-331	17-Nov-08	Cap	31/165/67/68/84/85			C				RV	G#49	RV	EC	Pass	

Notes:

[1] Damage Codes:
Bo - Burn Out
CR - Crease
DS-# - Destruct Sample
EE - Earthwork Equipment Damage
FM - Fish Mouth
ES - Exposed Scrim
AO - Add-On
SI - Subgrade Irregularity
RW - Roller Wrinkle in Seam
WR - Wrinkle
WS - Welder Restart
BL - Blister
T - Joint

[2] BOS = Bottom of Slope, EOS = End of Seam, TOS = Top of Slope

[3] Repair Type:
C - Cap Strip
P - Patch
B - Extrusion Bead

[4] Repair Test:
PT - Probe Test
ST - Spark Test
VT - Vacuum Test

TABLE 9.8

SUMMARY OF DRAINAGE GEOCOMPOSITE INSTALLATION LOG (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

				Panel Dimensions				
Panel Number	*Date Installed*	*Roll Number*	*Location*	*Length (feet)*	*Width (feet)*	*Area (sq. ft)*	*Approved?*	*Comments*
1	25-Apr-08	185410067	South Slope	197	14	2,758	Y	
2	25-Apr-08	185410050	South Slope	197	14	2,758	Y	
3	25-Apr-08	185410054	South Slope	196	14	2,744	Y	
4	25-Apr-08	185410046	South Slope	197	14	2,758	Y	
5	25-Apr-08	185410043	South Slope	197	14	2,758	Y	
6	25-Apr-08	185410052	South Slope	197	14	2,758	Y	
7	25-Apr-08	185410048	South Slope	196	14	2,744	Y	
8	25-Apr-08	185410047	South Slope	194	14	2,716	Y	
9	25-Apr-08	185410033	South Slope	194	14	2,716	Y	
10	25-Apr-08	185410070	South Slope	131	14	1,834	Y	
11	28-Apr-08	185410064	East Slope	195	14	2,730	Y	
12	28-Apr-08	185410066	East Slope	195	14	2,730	Y	roll # 185410066 recorded for two different panels
13	28-Apr-08	185410059	East Slope	196	14	2,744	Y	
14	28-Apr-08	185410049	East Slope	195	14	2,730	Y	
15	28-Apr-08	185410053	East Slope	195	14	2,730	Y	
16	28-Apr-08	185410044	East Slope	193	14	2,702	Y	
17	28-Apr-08	185410038	East Slope	196	14	2,744	Y	
18	28-Apr-08	185410034	East Slope	194	14	2,716	Y	
19	28-Apr-08	185410051	East Slope	194	14	2,716	Y	
20	28-Apr-08	185410045	East Slope	195	14	2,730	Y	
21	28-Apr-08	185410040	East Slope	195	14	2,730	Y	
22	28-Apr-08	185410035	West Slope	196	14	2,744	Y	
23	28-Apr-08	185410036	West Slope	194	14	2,716	Y	
24	28-Apr-08	185410041	West Slope	195	14	2,730	Y	
25	28-Apr-08	185410005	West Slope	193	14	2,702	Y	
26	28-Apr-08	185410004	West Slope	190	14	2,660	Y	
27	28-Apr-08	185410042	West Slope	194	14	2,716	Y	
28	28-Apr-08	185410068	West Slope	193	14	2,702	Y	
29	28-Apr-08	185410037	West Slope	191	14	2,674	Y	
30	28-Apr-08	185410027	West Slope	189	14	2,646	Y	
31	28-Apr-08	185410028	West Slope	78	14	1,092	Y	roll # recorded in error, as entire roll used for panel 47
32	30-Apr-08	185410006	East Slope	200	14	2,800	Y	
33	15-Oct-08	185410012	North Slope	200	14	2,800	Y	
34	15-Oct-08	185410007	North Slope	200	14	2,800	Y	
35	15-Oct-08	185410022	North Slope	200	14	2,800	Y	
36	15-Oct-08	185410013	North Slope	200	14	2,800	Y	
37	15-Oct-08	185410025	North Slope	200	14	2,800	Y	
38	15-Oct-08	185410016	North Slope	200	14	2,800	Y	
39	15-Oct-08	185410031	North Slope	200	14	2,800	Y	
40	15-Oct-08	185410029	North Slope	200	14	2,800	Y	
41	15-Oct-08	185410002	North Slope	200	14	2,800	Y	
42	15-Oct-08	185410021	North Slope	200	14	2,800	Y	
43	15-Oct-08	185410003	North Slope	200	14	2,800	Y	
44	15-Oct-08	185410023	North Slope	200	14	2,800	Y	
45	15-Oct-08	185410017	North Slope	200	14	2,800	Y	
46	15-Oct-08	185410001	North Slope	200	14	2,800	Y	
47	15-Oct-08	185410028	North Slope	200	14	2,800	Y	
48	15-Oct-08	185410018	East Slope	200	14	2,800	Y	
49	15-Oct-08	185410069	East Slope	200	14	2,800	Y	
50	15-Oct-08	185410008	East Slope	200	14	2,800	Y	
51	15-Oct-08	185410010	East Slope	200	14	2,800	Y	
52	15-Oct-08	185410062	East Slope	200	14	2,800	Y	
53	15-Oct-08	185410014	East Slope	200	14	2,800	Y	
54	15-Oct-08	185410011	East Slope	200	14	2,800	Y	
55	15-Oct-08	185410056	East Slope	200	14	2,800	Y	
56	15-Oct-08	185410015	East Slope	200	14	2,800	Y	
57	16-Oct-08	185410019	West Slope	200	14	2,800	Y	
58	16-Oct-08	185410020	West Slope	200	14	2,800	Y	
59	16-Oct-08	185410024	West Slope	200	14	2,800	Y	
60	16-Oct-08	185410026	West Slope	200	14	2,800	Y	
61	16-Oct-08	185410030	West Slope	200	14	2,800	Y	
62	16-Oct-08	185410032	West Slope	200	14	2,800	Y	
63	16-Oct-08	185410058	West Slope	200	14	2,800	Y	
64	16-Oct-08	185410061	West Slope	200	14	2,800	Y	
65	16-Oct-08	185410063	West Slope	200	14	2,800	Y	
66	16-Oct-08	185410066	West Slope	200	14	2,800	Y	roll # 185410066 recorded for two different panels
67	6-Nov-08	185410055	North Slope	200	14	2,800	Y	
68	7-Nov-08	185410065	Northeast Slope	30	14	420	Y	roll # recorded in error, as entire roll used for panel 69
69	8-Nov-08	185410065	Northeast Slope	200	14	2,800	Y	

TABLE 9.8

SUMMARY OF DRAINAGE GEOCOMPOSITE INSTALLATION LOG (COVER SYSTEM)
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Notes:

* Indicates that Quality Assurance (QA) testing procedures were conducted on the roll of liner. A summary of QA test results are presented below:

Manufacturer Roll Number	*Minimum Ply Adhesion (lb/in)* [1]	*Average Ply Adhesion (lb/in)* [1]	*Transmissivity (m^2/s)* [1]	*Mass Area (lb/ft^2)* [2]	*Thickness (mil)* [2]	*Carbon Black (%)* [2]	*Tensile Strength (lb/in)* [2]	*Permeability (cm/s)* **	*Permittivity (sec-1)* **	*Apparent Opening Size (sieve size)* **
185410001	1.55	2.85	2.45E-03	0.364	319	2.49	110	0.5	1.82	70
185410010	1.39	2.48		0.355	313	2.37	107			
185410020	1.67	2.76		0.362	321	2.62	112			
185410030	1.42	2.39		0.353	315	2.42	109			
185410035			2.39E-03					0.5	1.82	70
185410040	1.58	2.61		0.366	318	2.58	111			
185410050	1.37	2.28		0.36	312	2.39	106			
185410060	1.62	2.96		0.363	316	2.67	110			
185410070	1.4	2.72	2.48E-03	0.357	310	2.4	108	0.5	1.82	70
185410080	1.54	2.94		0.361	317	2.65	112			

[1] Property refers to geocomposite and geonet roll results.
Minimum ply adhesion result requires at least 0.5 lbs/sf for acceptance
Average ply adhesion result requires at least 0.5 lbs/sf for acceptance
Transmissivity result requires at least 1E-3 m^2/sec for acceptance

[2] Property refers to geonet roll results.
Mass area test results not required as part of the QA testing procedures.
Thickness test results not required as part of the QA testing procedures.
Carbon black result requires at least 2.0 percent for acceptance.
Tensile strength result requires at least 450 lbs/ft for acceptance.

** QA testing procedures required that one permeability test, one permittivity test, and one apparent opening size test be conducted per 100,000 SF of liner.
Permeability results of a minimum of 0.3 cm/s are acceptable.
Permittivity results of a minimum of 0.5sec^{-1} are acceptable.
Apparent opening size results acceptable up to a maximum of 70 sieve size.

*** Approval refers to visual inspection of material from individual rolls and general installation procedures

APPENDICES

APPENDIX A

VAULT APPROVALS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

OCT 2 6 2006

REPLY TO THE ATTENTION OF:

D-8J

Cheryl R. Hiatt, Project Manager
General Motors Corporation
Worldwide Facilities Group Remediation Team
2000 Centerpoint Parkway (483-520-190)
Pontiac, Michigan 48341-3147

Re: Toxic Substances Control Act Approval to Dispose of Polychlorinated Biphenyls

Dear Ms. Hiatt:

Enclosed is the Toxic Substances Control Act (TSCA) Risk-Based Approval to Dispose of Polychlorinated Biphenyls (PCBs). This Approval is issued pursuant to 40 CFR § 761.61(c) of the Federal PCB regulations for the disposal of PCB contaminated waste in the PCB disposal facility (vault) located in the former north stormwater basin at the East Plant Area of General Motors Corporation's (GM) Bedford, Indiana facility (Site).

We are granting this Approval based on our finding that the disposal of PCBs in the vault is in compliance with the conditions in the enclosed Approval and does not pose an unreasonable risk of injury to health or the environment. This Approval is effective today and is based on our review of the East Plant Area Vault Design Report (application), the Vault Development Plan, supplemental information that you submitted in support of your application, and all of the other site-specific factors and information that you submitted as part of the East Plant Area Interim Measure.

This Approval is solely for the disposal of the following PCB contaminated material in the vault, as identified in the conditions of the enclosed approval. No other PCB contaminated material may be disposed of in the vault.

1. Approximately 110,000 cubic yards of PCB contaminated soil and incidental debris from the excavation of 50 ppm and over PCB contaminated fill or overburden soil within the East Plant Area of the Site.

2. 50 ppm and over PCB contaminated material from the northern tributary fill area excavation.

3. Sediments collected from the wheel wash operation.

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4. Imported granular material originally used for access road construction but which has contacted PCB contaminated fill or soil excavated from the East Plant Area.

The Approval does not relieve GM from the responsibility to comply with all applicable provisions of TSCA and the Federal PCB regulations or any other applicable Federal, state or local regulations.

If you have any questions regarding this approval, please contact Jean Greensley, of my staff, at (312) 353-1171.

Sincerely,

Bruce F. Sypniewski, Deputy Director
Waste, Pesticides and Toxics Division

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF: General Motors Powertrain Bedford Facility 105 GM Drive Bedford, Indiana 47421-1558 Corporate Address: General Motors Corporation Worldwide Facilities Group Remediation Team 2000 Centerpoint Parkway Pontiac, Michigan 48341-3147 **PERMITTEE**	**RISK-BASED APPROVAL TO DISPOSE OF POLYCHLORINATED BIPHENYLS (PCBs) ISSUED PURSUANT TO 40 CFR § 761.61(c)**

AUTHORITY

This risk-based disposal approval (Approval) is issued pursuant to Section 6(e)(1) of the Toxic Substances Control Act (TSCA) of 1976, Public Law No. 94-469, 15 U.S.C. § 2605(e)(1), and the Federal PCB regulations promulgated thereunder, 40 CFR § 761.61(c).

Any and all information required to be maintained under or submitted pursuant to this Approval is not subject to the requirements of the Paperwork Reduction Act of 1980, 44 U.S.C. § 3501, et seq., because such information is collected by the United States Environmental Protection Agency (U.S. EPA or Agency), Region 5 from the Permittee for the purpose of assuring compliance with this Approval.

EFFECTIVE DATES

This Approval is effective upon the signature of the Director of the Waste, Pesticides and Toxics Division, U.S. EPA, Region 5. On that date, the issuance of this Approval shall be considered a final Agency action.

BACKGROUND

Section 6(e)(l)(A) of TSCA requires that the U.S. EPA promulgate rules for the disposal of PCBs. The rules implementing Section 6(e)(l)(A) were published in the Federal Register on February 17, 1978, (43 Fed. Reg. 7150), recodified in the Federal Register on May 6, 1982, (47 Fed. Reg. 19527), and modified in the Federal Register of June 29, 1998. Those rules require, among other things, that various types of PCBs be disposed of in U.S. EPA-approved disposal facilities. The February 17, 1978 Federal Register also designated the Regional Administrator as the approval authority for PCB disposal facilities. On June 5, 2001, the U.S. EPA delegated, among other things, the authority to approve or deny permit applications to operate PCB storage and disposal facilities from the Regional Administrator to the Director of the Waste, Pesticides and Toxics Division. This Approval is based on the Federal PCB regulations at 40 CFR § 761.61(c).

On October 17, 2005, General Motors (Permitee), as owner of the General Motors Powertrain Bedford, Indiana Facility (Site) and operator of the proposed PCB disposal facility (vault), submitted an East Plant Area Vault Design Report (application) to the U.S. EPA for approval under 40 CFR § 761.61(c) to dispose of PCB contaminated waste generated from the clean up of PCB contaminated soil at the Site. On June 16, 2006, the Permitee submitted a revised East Plant Area Vault Design Report (revised application) to U.S. EPA. The vault that is the subject of this Approval has been constructed in the former north stormwater basin (AOI 7) that is no longer in service. The vault is located in the East Plant Area of the Site which is east of GM Drive, west of the existing Stormwater Lagoon and between a General Motors (GM) owned parking lot referred to as the Zipp Trucking parking lot to the north and the East Plant parking lot to the south (Figure 1.3, Vault Application).

FINDINGS

1. The Site is an approximately 152.5 acre property located at 105 GM Drive in Bedford, Indiana 47421-1558. The property is located on either side of GM Drive and extends north along Bailey Scales Road (Figure 1.2, Vault Application).

2. The coordinates for the Site are latitude North 38° 52' 54" and longitude West 86° 28' 52".

3. The Site is zoned and used for industrial purposes.

4. The Permittee's mailing address and physical address is: General Motors Corporation, Worldwide Facilities Group Remediation Team, 2000 Centerpoint Parkway, Pontiac, Michigan 48341-3146.

5. The East Plant Area is east of GM Drive and west of Bailey Scales Road (Figure 1.3, Vault Application).

6. The Site stratigraphy, from top to bottom, is:

    a. Variable thicknesses of overburden materials consisting of foundry sand fill, clay and silt.

    b. The St. Louis Formation which is a limestone that is highly weathered and fractured near the surface, with the degree of weathering decreasing with depth. The formation is about 25 feet thick in the area of the vault.

    c. The Salem Limestone which is 70 to 80 feet thick. The Salem Limestone formation is generally less weathered and fractured than the St. Louis Formation. The weathering and fractures are evident at the erosional rock surface but the formation becomes more homogeneous with depth.

7. Borings drilled into the bedrock at the Site, along with optical televiewer logs, indicate that the shallow bedrock contains solution enhanced features (epikarst) and that the deeper bedrock lacks significant amounts of weathering and fractures and has a lower overall hydraulic conductivity (January 20, 2006 Technical Memorandum by Dr. B.H. Kueper titled Site Conceptual Model Contaminant Migration, GM Powertrain Bedford Facility, Bedford, Indiana).

8. Regionally, the area is characterized by sinkholes that are five to ten miles west of the Site and caves that are between one to five miles of the Site. None of these features are evident in the area of the vault.

9. The vault has been constructed in the former north stormwater basin (AOI 7) which is no longer in service.

10. The bedrock exposed in the excavation of the former north stormwater basin showed the following:

    a. Subaerial dissolution and epikarst development on the surface of the bedrock.

    b. A 2 x 2 foot void in the southeast corner of the excavation.

    c. A clay-filled vertical fracture in the northeast corner of the excavation within the St. Louis Formation.

11. Geophysical investigation of the bedrock and the void showed the following:

    a. No indication that there was any continuation of the void at depth or that the void extended laterally beyond the bounding lines 240E and 260E (Figure 2.2, Comments – Technical Memorandum Regarding U.S. EPA Comments on October 14, 2005 Geophysics Memorandum East Plant Area Vault Design Report [October 17, 2005]).

    b. No additional voids of significance in the footprint of the vault.

    c. The clay in the vertical fracture was excavated and the fracture was found to be only 12 to 18 inches deep and above the groundwater elevation at the Site.

12. The fracture, as well as another fracture, was bridged with larger diameter rock and covered with concrete to eliminate any potential for settlement.

13. A gravel underdrain was placed on the bedrock surface of the excavated stormwater basin to eliminate any potential for piping of the clay liner into bedrock voids in the epikarst through seasonal groundwater fluctuation or leakage through the bottom liner system.

14. Regionally, groundwater resources are found along the valley of major streams and within a thick Mississippian carbonate aquifer system.

15. The hydrogeology at the East Plant Area is as follows:

    a. Shallow groundwater flow through the unconsolidated overburden material and the upper fractured and weathered bedrock.

    b. Recharge to the aquifer through the overburden material and directly into the bedrock where it is exposed.

    c. Discharge of the shallow bedrock groundwater occurs through springs and seeps in topographically low areas such as creeks and ditches.

    d. Surface runoff is primarily to the east and northeast in small valleys which are tributaries of Bailey's Branch of Pleasant Run Creek. Surface runoff to the west of the facility is minimal.

16. The water table occurs at depths of 5 to 15 feet below ground surface.

17. There are domestic wells within the vicinity of the Site but none are used for drinking water.

18. The vault is not in the 100 year floodplain.

19. The vault has been constructed with the following features:

    a. An underdrain consisting of a minimum of six inches of gravel, perforated high density polyethylene (HDPE) collection pipes and an eight ounce non-woven, needle punched geotextile with three oil seep collection pipes and sumps (Drawing C-02, Vault Application).

    b. A primary 60 mil textured HDPE synthetic membrane liner and a secondary 60 mil thick low level density polyethylene (LLDPE) liner each of which exceeds the 30 mil thickness specified in the TSCA Chemical Waste Landfill regulations at 40 CFR § 761.75 for a landfill that is not located on a clay pan.

    c. A primary and secondary liner each comprised of 12 inches of re-compacted clay and a Geocomposite Clay Liner (GCL). Twelve inches of re-compacted clay and the GCL is an acceptable substitute for the 36 inches of re-compacted clay which is the TSCA Chemical Waste Landfill minimum requirement (40 CFR § 761.75). The hydraulic conductivity of the clay and the GCL meet the required hydraulic conductivity of 10^{-7} cm/sec.

    d. A compound leachate collection system that consists of a primary leachate collection system and a secondary leak detection system. The primary leachate collection system consists of 6 inch HDPE perforated piping installed within 12 inches of ½ inch diameter gravel. The secondary leak detection system consists of a geocomposite drainage net placed between the 12 inches of clay in the primary liner and the LLDPE liner with geotextile fabric on either side of the geonet. The compound leachate collection system meets the requirements for a TSCA Chemical Waste Landfill under 40 CFR § 761.75.

    e. A secondary LLDPE liner above the secondary clay/GCL liner and below the secondary leachate collection system. Above this is the primary clay/GCL liner overlain by the HDPE liner and the primary leachate collection system. The underdrain is below this double liner/double leachate collection system.

20. When the vault is filled, it will be covered with a cap constructed of 24 inches of compacted clay, a 60 mil textured flexible membrane liner (fml), a geonet, 18 inches of cover fill, 6 inches of top soil and a vegetative cover.

21. The vault will have a maximum capacity of approximately 135,000 cubic yards based on 4H:1V slopes on the cap.

22. Disposal in the vault involves the following:

    a. Placement of approximately 110,000 cubic yards of PCB contaminated soil and incidental debris from the excavation of 50 ppm and over PCB contaminated fill or overburden soil within the East Plant Area of the Site into the vault including:

        i. Material from the staging pad immediately north of the storm water pond, which will be placed into the vault first.

        ii. Material from the east parking lot, currently staged in Grading Area 4, which will be placed into the vault second.

        iii. Material from the Phase I excavation in the Zipp Trucking parking lot.

        iv. 50 ppm and over PCB contaminated material that will be excavated from the east parking lot.

        v. 50 ppm and over PCB contaminated material excavated from AOI 4.

    b. Placement in the vault of 50 ppm and over PCB contaminated material from the northern tributary fill area excavation.

    c. Placement in the vault of sediments collected from the wheel wash operation.

    d. Placement in the vault of imported granular material originally used for access road construction but which has contacted PCB contaminated fill or soil excavated from the East Plant Area.

23. The leachate from the collection system and the leak detection system and the water from the underdrain will be treated at the temporary water treatment facility under requirements established under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) until the new water treatment system is operational when it will be discharged under a National Pollutant Discharge Elimination System (NPDES) Permit.

24. While the vault is actively operating and accepting PCB contaminated material, the Permittee will maintain an operating log that contains the following information:

    i. Source (i.e., location) of excavated material.

    ii. Estimated quantity (volume and/or weight) of excavated material.

    iii. The estimated volume of excavated material disposed of in the vault on a daily basis.

25. The Permittee has filed the document, "Notification of PCB Waste Activity," Form 7710-53 (12-89) and has received the U.S. EPA identification number IND 006036099.

CONDITIONS OF APPROVAL

SCOPE OF WORK

1. The Permittee can dispose of the following PCB contaminated waste in the vault located at latitude North 38° 52' 54" and longitude West 86° 28' 52": approximately 110,000 cubic yards of PCB contaminated soil generated from the excavation of 50 ppm and over PCB contaminated soil within the East Plant Area of the Site, PCB contaminated soil generated from the excavation of 50 ppm and over PCB contaminated soil from the northern tributary, sediments collected from the wheel wash operation and imported granular material originally used for access road construction but which has contacted PCB contaminated fill or soils excavated from the East Plant Area.

2. The leachate from the leachate collection system and the leak detection system, the water from the underdrain and groundwater from the groundwater collection trench must be treated at the temporary water treatment facility until the permanent water treatment facility is operational. Water released from the temporary water treatment facility must be discharged under requirements established under CERCLA. Water released from the permanent water treatment facility must be discharged under a NPDES Permit.

WASTE PLACEMENT

3. The PCB contaminated waste placed in the vault must be capable of attaining sufficient strength to prevent subsidence, ponding on the waste or on the cap, and slope movement, i.e., creep.

4. All vehicles delivering waste to the vault must be washed before entering the public road. Waste water generated from truck washing activities must be collected and treated for disposal.

5. If a truck leaves an exclusion zone or switches use to a material other than PCB contaminated waste, it must be decontaminated.

UNDERDRAIN WATER MONITORING AND DISPOSAL

6. The level of water in the underdrain must be monitored daily and any accumulation must be discharged to the temporary water treatment facility. The Permittee can propose an alternate schedule once the permanent water treatment facility is operational.

7. The level of water in the underdrain must be maintained at less than one foot. Should the level increase beyond one foot in response to a storm event, accumulated water must be removed for treatment at the maximum achievable removal rate until the level is reduced to below one foot.

LEACHATE AND LEAK DETECTION SYSTEM WATER MONITORING AND DISPOSAL

8. While the vault is open and receiving PCB contaminated material, the Permittee must sample the leachate and the leak detection system water monthly for PCBs before it is sent to the temporary water treatment facility. This same schedule will apply once the leachate and leak detection water is sent to the permanent water treatment facility.

9. After closure of the vault, the Permittee may submit an alternate leachate and leak detection monitoring schedule, as part of the East Plant Area long-term monitoring plan, for U.S. EPA, Region 5 review and approval.

10. The leachate and leak detection system water must be managed in accordance with the following TSCA leachate management policy:

    a. Leachate and leak detection water whose PCB content is equal to or greater than 50 ppm PCBs is PCB waste and must be treated or disposed of in accordance with the PCB regulations.

    b. Leachate and leak detection water with PCB concentrations from 1 ppm to, but not including, 50 ppm is TSCA reportable material that must be managed in compliance with the U.S. EPA CERCLA order or a NPDES permit.

    c. Leachate and leak detection water with a PCB concentration of less than 1 ppm must be managed in compliance with the U.S. EPA CERCLA order or a NPDES permit.

11. Leachate samples must be tested for

    a. PCBs

    b. pH

    c. Specific Conductance

    d. Chlorinated Organics identified in Table 1 (attached) and analyzed according to Method 8260B.

    e. Physicochemical characteristics necessary to characterize the leachate for treatment in the temporary and permanent water treatment facility.

12. The secondary leak detection system must be monitored for:

    a. Quantity of water

    b. PCBs

c. Sufficient physiochemical characteristics of the water produced in order to determine whether a leak of the membrane has occurred and to characterize the water for treatment in the temporary and permanent water treatment facility.

13. While the vault is open and receiving PCB contaminated material, the Permittee must monitor the water level over the primary liner to ensure that it does not exceed one foot. Should the level increase beyond one foot in response to a storm event, accumulated water shall be removed for treatment at the maximum achievable removal rate until the level is reduced below one foot. The maximum water elevation must be recorded monthly and reported annually.

14. After closure of the vault, the Permittee may submit an alternate schedule for monitoring the water level over the primary liner, as part of the East Plant Area long-term monitoring plan, for U.S. EPA, Region 5 review and approval.

GROUNDWATER MONITORING

15. The Permittee must construct a groundwater collection trench around the perimeter of the East Plant Area. If the trench is not constructed, the U.S. EPA may terminate this Approval and might require the PCB waste to be removed from the vault and disposed of at a facility permitted to accept this waste.

16. The construction and monitoring schedule for the perimeter groundwater collection trench must be submitted to the U.S. EPA, Region 5 for review and approval.

17. Groundwater, including background samples, must be monitored for:

    a. PCBs

    b. pH

    c. Specific Conductance

    d. Chlorinated Organics identified in Table 1 (attached) and analyzed according to Method 8260B.

18. The groundwater must be treated at the temporary or permanent water treatment facility and discharged in compliance with the U.S. EPA CERCLA order or a NPDES permit.

SPILL CLEANUP

19. Cleanup of onsite PCB spills which are outside of the Exclusion Zones established in accordance with the Site Health and Safety Plan must begin upon discovery by the Permittee. These spills must be cleaned up in accordance with 40 CFR Part 761, Subpart G, PCB Spill Cleanup Policy, or 40 CFR § 761.61, PCB Remediation Waste, as applicable. PCB spills on public roads must be cleaned up in accordance with 40 CFR Part 761,

Subpart G, PCB Spill Cleanup Policy. The cleanup standards in the PCB Spill Cleanup Policy may only be applied for spills of PCBs that are less than 72 hours old.

20. Any debris or solid wastes generated as a result of cleanup or decontamination of a PCB spill or release may be disposed of in the vault.

AMBIENT AIR MONITORING

21. While the vault is open and accepting PCB contaminated material, total suspended particulate (TSP) and high volume PCB air monitoring must be conducted in accordance with the report submitted by the Permittee titled Air Monitoring Requirements During the Over 50 mg/kg PCB Soil Removal for the East Plant Area.

FLOOD PROTECTION

22. If the vault is ever determined to be in the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map 100 year flood plain, the waste in the vault must be removed or protected by a flood control structure whose minimum elevation is at least 2 feet above the respective 100 year flood plain elevation. Rainwater falling on the vault must not be allowed to accumulate to a level that would allow its entry to the leachate collection system or the secondary leak detection system through the manhole risers or clean outs.

QUALITY ASSURANCE FOR ENVIRONMENTAL DATA AND INFORMATION

23. The Permittee must perform sampling and analysis in accordance with the Quality Assurance Project Plan RCRA Facility Investigation and Removal Action Work Plans Addendum No. 2 dated July 19, 2006.

FINAL CONSTRUCTION REPORT

24. The Final Construction Report for the vault must contain the information as described in the vault application plus all photographs taken during the construction of the vault.

RECORDKEEPING

25. The Permittee must record the following information in a log:

    a. Daily waste information.

        i. identification of the source (i.e., location) of excavated material

        ii. estimated quantity (volume and/or weight) of material excavated and placed in the vault

    b. The quantity of liquid collected from the leachate collection system.

c. The quantity of liquid collected from the leak detection system.

d. The quantity of liquid collected from the underdrain.

e. The water elevation in the underdrain and over the primary liner.

f. The amount of water treated in the water treatment facility and the PCB concentration, if known.

26. All required documents must be collected and maintained for at least 20 years after the vault is no longer used for the disposal of PCB waste. The required documents must be kept at one central location and must be made available for inspection by authorized representatives of the U.S. EPA, Region 5.

REPORTING

27. An annual report for the previous calendar year must be submitted to the U.S. EPA, Region 5 by July 15 of each year. The report must include:

    a. A summary of the information itemized in the log required by Condition 25 of this Approval.

    b. All analytical results from the monitoring of the air, groundwater, leachate, leak detection and underdrain and the water treatment facility analytical results.

    c. The volume, PCB concentration and disposal destination for leachate and leak detection water with a PCB concentration equal or greater than 1 ppm.

    d. A summary of the water elevation over the primary liner and in the underdrain.

    e. Spill cleanup reports, if any.

    f. Updated financial assurance for the operation, closure and post-closure care costs adjusted annually.

28. The first annual report submitted under this Approval must contain the most recent analytical results for groundwater collected from the closest wells around the vault, prior to any placement of PCB contaminated waste in the vault.

NOTICE

29. Within one working day of discovery, the Permittee must notify the U.S. EPA, Region 5 by telephone of any incident, anomaly or accident that may affect the disposal conditions of this Approval or that has or may result in the release of PCBs to the environment. The Permittee also must provide a written notification within seven days.

30. Within one working day of discovery, the Permittee must notify the U.S. EPA, Region 5 by telephone of any statistically significant increase in leak detection system samples. The Permittee also must provide a written notification within seven days.

31. Within one working day of discovery, the Permittee must notify the U.S. EPA, Region 5 by phone if the water level over the primary liner or in the underdrain exceeds one foot.

32. Within five days of discovery, the Permittee must verbally notify the U.S. EPA, Region 5 of any non-compliance of the NPDES permit at Outfall 003 or the requirements established under CERCLA followed by a written report regarding the incident and the steps taken or that will be taken to correct the situation.

33. For the one working day telephone notification, the Permittee must contact the U.S. EPA, Region 5, Toxics Program Section, at (312) 886-6003. For the seven day written notification, the Permittee must submit the report to the Director of the Waste Pesticides and Toxics Division at the following address:

    WPTD Director (D-8J)
    U.S. EPA, Region 5
    77 W. Jackson Blvd.
    Chicago, Illinois 60604-3590

34. If there is a spill or release of the equivalent of 1 pound or more of pure PCBs, the Permittee must notify the National Response Center at (800) 424-8802 within 24 hours.

VAULT SECURITY

35. The vault must be secured to restrict public access in accordance with the procedures outlined in Section 8.0 of the Vault Development Plan.

INSPECTION

36. The Agency reserves the right for its employees and authorized representatives to perform inspections, review records, and take samples at any reasonable time.

CLOSURE AND POST-CLOSURE

37. PCB waste may not be disposed of in the vault after the placement of:

    a. Approximately 110,000 cubic yards of PCB contaminated soil generated from the excavation of 50 ppm and over PCB contaminated soil within the East Plant Area of the Site.

    b. PCB contaminated soil generated from the excavation of 50 ppm and over PCB contaminated soil from the northern tributary fill area.

c. Sediments collected from the wheel wash operation while the 50 ppm and over material excavated from the East Plant Area is being placed in the vault.

d. Imported granular materials originally used for access road construction but which has contacted the 50 ppm and over PCB contaminated fill or soils excavated from the East Plant Area.

38. The Permittee must submit a closure and post-closure plan to the U.S. EPA, Region 5 for review and approval a minimum of 21 days prior to closure of the vault.

39. The closure and post-closure plan must contain the information described in Section 11.0 of the Vault Development Plan plus a detailed estimate of closure and post-closure care costs.

40. The Permittee cannot close the vault unless the Permittee has received written approval of the closure plan from the Director of the Waste Pesticides and Toxics Division, U.S. EPA, Region 5.

41. The Permittee must clean any surfaces within the East Plant Area contaminated by spills of PCB material that was to be disposed of in the vault. The surfaces must be cleaned to 50 ppm or 10 $\mu g/100\ cm^2$.

42. Upon closure of the vault, the Permittee must remediate the roads and parking lots used during the disposal of the PCB contaminated material, except roads and parking areas which are otherwise addressed as part of the Corrective Action activities, in accordance with the cleanup standards outlined in 40 CFR § 761.61.

43. The Permittee must care for the vault and perform post-closure environmental monitoring and maintenance in perpetuity.

FINANCIAL ASSURANCE

44. The Permittee must establish financial assurance for the operation, closure and post-closure care costs. The Permittee may use any combination of financial assurance mechanisms described in 40 CFR § 761.65(g). The financial assurance mechanism can be part of the financial assurance mechanism developed for the East Plant Area or the Final Corrective Measure.

45. The Permittee must submit proof of financial assurance to the U.S. EPA, Region 5 annually. If the U.S. EPA, Region 5 determines that the amount is inadequate, the Permittee must obtain additional financial assurance funding.

46. The Permittee must annually adjust the closure and post-closure care cost estimates for inflation. This may require an increase in the financial assurance funding mechanism.

47. The Permittee must adjust the operation, closure and post-closure care cost estimates for any modification or change that increases these costs. This may require an increase in the financial assurance funding mechanism.

48. Financial assurance must be maintained in perpetuity.

MODIFICATIONS

49. The Permittee must notify the U.S. EPA, Region 5 in writing of any intended modifications to this Approval or their application.

50. Any major modification of this Approval requires the written approval of the Director of the Waste Pesticides and Toxics Division, U.S. EPA, Region 5. A major modification is a material change in design or operation of the vault. Such changes include, but are not limited to, changes in the scope of work of the Approval. Increasing disposal capacity beyond that specified in Condition 1 is an example of a major modification.

51. Any minor modification of this Approval requires written approval of the Chief of the Pesticides and Toxic Substances Branch, Waste Pesticides and Toxics Division, U.S. EPA, Region 5. A minor modification is a change in operations that is not a major modification, such as changing the groundwater, leachate or air monitoring locations, the analytical methodology or waste acceptance procedures.

52. If there is any question as to whether a change in operations is a major or minor modification, such question should be raised to the appropriate representative(s) of the U.S. EPA, Region 5 as soon as possible. In such cases, the Agency will determine whether a proposed change is major or minor.

APPROVAL EXPIRATION

53. This Approval does not expire unless and until all PCBs are removed from the vault. Otherwise, the Approval's conditions remain valid in perpetuity.

54. The Permittee's authorization to place PCBs in the vault will expire upon placement of the material itemized in Condition 1.

COMPLIANCE AND APPROVAL SUSPENSION AND TERMINATION

55. Nothing in this Approval relieves the Permittee from the duty to comply with all applicable state and Federal laws, including, but not limited to CERCLA, RCRA and TSCA and the regulations promulgated thereunder.

56. Any knowing or persistent failure of the Permittee to comply with all applicable Federal laws, regulations, requirements or orders could result in the termination of the Permittee's authority to dispose of PCBs in the vault.

57. Failure to comply with any provision of this Approval, TSCA, the Federal PCB regulations found at 40 CFR Part 761, or any other applicable Federal, state or local requirements may constitute a sufficient basis for suspension or termination of the Approval.

58. Failure to completely and effectively implement components and tasks of the East Plant Area Interim Measure in a manner that will not present an unreasonable risk to human health and the environment may result in the termination of this Approval and, subsequently, may result in the requirement to remove the PCB waste from the vault and dispose of the removed material at a permitted facility.

59. This Approval may be terminated if the Director of the Waste, Pesticides and Toxics Division, U.S. EPA, Region 5 determines that the vault poses an unreasonable risk to human health or the environment.

PCB DISPOSAL AUTHORITY REINSTATEMENT

60. The Director of the Waste, Pesticides and Toxics Division, U.S. EPA, Region 5 may reinstate the Approval if it is determined that the Permittee is in compliance with the applicable state and Federal laws and the conditions of the Approval and the vault no longer poses an unreasonable risk to human health or the environment.

SEVERABILITY

61. All terms and/or conditions of this Approval are severable. If any provision(s) of this Approval or any application of any provision, is changed, amended, or held invalid, the remaining terms and conditions will still be valid and not affected thereby.

OWNERSHIP TRANSFER

62. The requirement and responsibilities for perpetual care transfers with ownership of the vault.

63. The Permittee must provide a written notice to the U.S. EPA, Region 5 at least 90 days in advance of any planned transfer in ownership of the vault. The name of the prospective transferee must be included in the notice

64. The prospective transferee must submit to the U.S. EPA, Region 5 at least 90 days before the transfer:

    a. A notarized affidavit signed by the transferee which states that the transferee will abide by the conditions of the Approval.

    b. A listing of past environmental violations by the transferee, its employees or assigns.

    c. The qualifications of the principals and key employees.

d. Documentation of acceptable financial assurance and funding pursuant to the TSCA regulations at 40 C.F.R. § 761.65(g).

65. After reviewing the notification, affidavit and background information, the U.S. EPA, Region 5 will either issue a modified approval substituting the transferee's name for the transferor's name, or require the transferee to apply for a new PCB disposal approval. The transferee must abide by the conditions of the Approval and the application submitted by General Motors Corporation on October 17, 2005 and the revised application submitted by General Motors Corporation on June 16, 2006, until the U.S. EPA, Region 5 issues a modified approval or until notified otherwise.

66. If the U.S. EPA, Region 5 requires the transferee to apply for a new PCB disposal approval, the transferee must submit to the Regional Administrator a complete TSCA application for disposal, closure and post-closure care. The Regional Administrator may also require any additional information necessary to ensure that the vault poses no unreasonable risk to health and the environment.

BANKRUPTCY

67. In the event that the Permittee, or its successor or assigns, declare bankruptcy, the Permittee shall immediately provide written notice of such to the Director of the Waste, Pesticides and Toxics Division, U.S. EPA, Region 5.

APPROVAL

Approval is hereby granted to General Motors Corporation to dispose of PCB contaminated material from the East Plant Area of the Bedford Powertrain Facility in a vault constructed on the Site at 105 GM Drive in Bedford, Indiana at latitude North 38° 52' 54" and longitude West 86° 28' 52", subject to the Approval Conditions stated herein, and based on the information described in the application submitted by General Motors Corporation on October 17, 2005; the Vault Development Plan submitted by General Motors Corporation on February 28, 2006; the revised application submitted by General Motors Corporation on June 16, 2006 and additional information submitted by General Motors at the request of the U.S. EPA, Region 5.

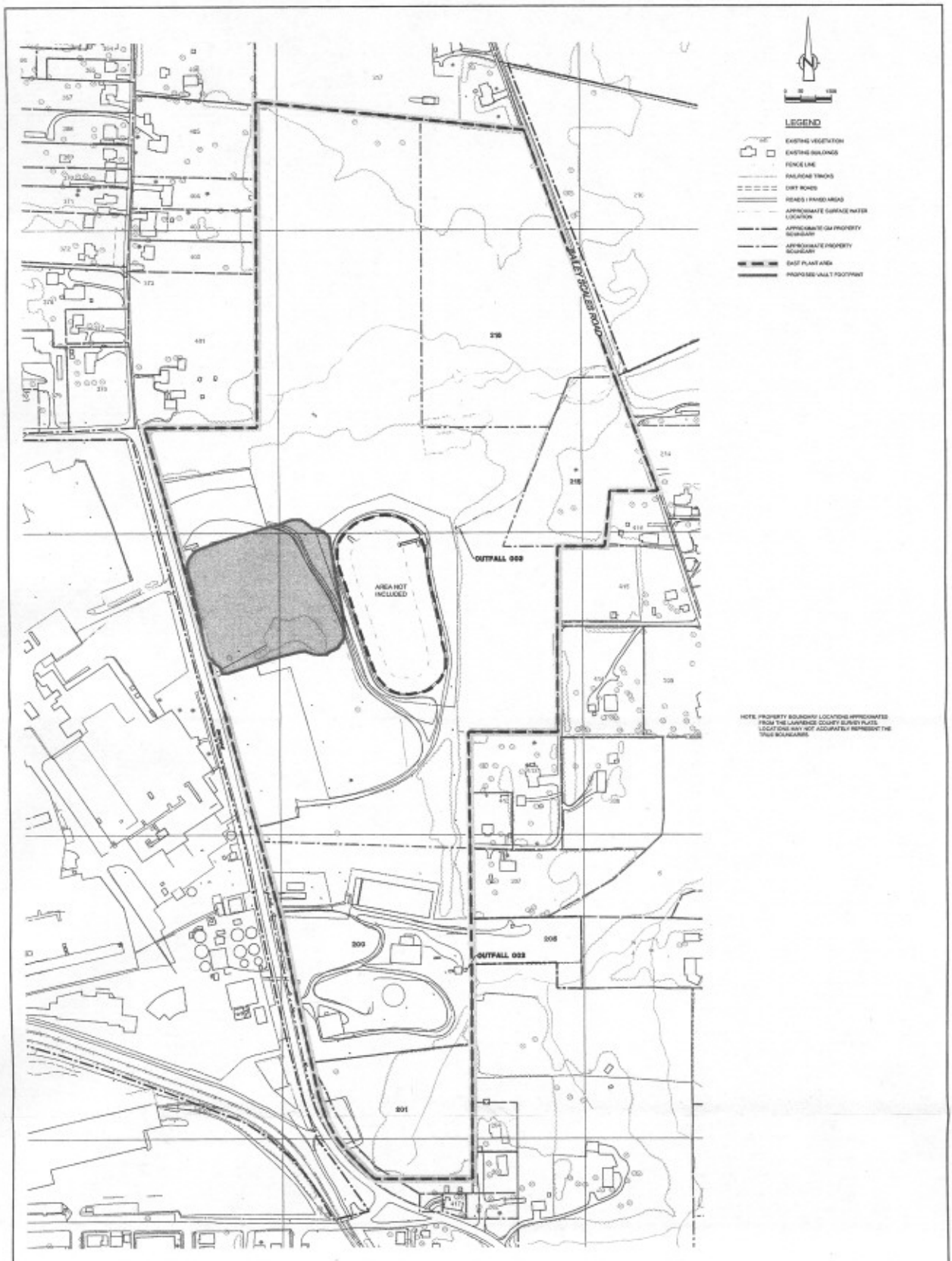
The Approval shall become effective on the date of the signature and remain in effect unless revoked, suspended or terminated in accordance with the Approval Conditions stated herein

General Motors Corporation is responsible for all actions of any of its agents, assigns, employees and contractors when those actions are within the scope of operating or administering the vault. This Approval does not relieve General Motors Corporation from compliance with all applicable Federal, state and local regulatory requirements, including the Federal PCB regulations at 40 CFR Part 761.

The United States Environmental Protection Agency reserves the right for its employees or agents to inspect the vault and the support facilities at any reasonable time. The U.S. EPA also reserves all legal rights available under all applicable statutes and regulations.

Bruce Sypniewski, Deputy Director
Waste, Pesticides and Toxics Division
United States Environmental Protection Agency
Region 5

10/18/06
Date



NO	Revision	Date	Initial

SCALE VERIFICATION
THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

VAULT DESIGN REPORT

PROPOSED VAULT FOOTPRINT

CRA CONESTOGA-ROVERS & ASSOCIATES

Source Reference: BASE MAP COMPILED BY: KIR-LAND SURVEYS, FLINT, MI, APRIL 2001.

Project Manager	Reviewed By	Date
J.M.	D.C.	APRIL 2005

Scale	Project No.	Report No.	Drawing No.
AS SHOWN	13968-00	149	figure 1.3

13968-00(149)GN-WA005 OCT 15/2005

TABLE I

Parameter	STORET No.	CAS No.
Bromodichloromethane	32101	75-27-4
Bromoform	32104	75-25-2
Bromomethane	34413	74-83-9
Carbon tetrachloride	32102	56-23-5
Chlorobenzene	34301	108-90-7
Chloroethane	34311	75-00-3
2-Chloroethylvinyl ether	34576	100-75-8
Chloroform	32106	67-66-3
Chloromethane	34418	74-87-3
Dibromochloromethane	32105	124-48-1
1,2-Dichlorobenzene	34536	95-50-1
1,3-Dichlorobenzene	34566	541-73-1
1,4-Dichlorobenzene	34571	106-46-7
Dichlorodifluoromethane	34668	75-71-8
1,1-Dichloroethane	34496	75-34-3
1,2-Dichloroethane	34531	107-06-2
1,1-Dichloroethene	34501	75-35-4
trans-1,2-Dichloroethene	34546	156-60-5
1,2-Dichloropropane	34541	78-87-5
cis-1,3-Dichloropropene	34704	10061-01-5
trans-1,3-Dichloropropene	34699	10061-02-6
Methylene chloride	34423	75-09-2
1,1,2,2-Tetrachloroethane	34516	79-34-5
Tetrachloroethene	34475	127-18-4
1,1,1-Trichloroethane	34506	71-55-6
1,1,2-Trichloroethane	34511	79-00- 5
Tetrachloroethene	39180	79-01-6
Trichlorofluoromethane	34488	75-69-4
Vinyl chloride	39715	75-01-4

Parameter	STORET No.	CAS No.
Benzene	34030	71-43-2
Chlorobenzene	34301	108-90-7
1,2-Dichlorobenzene	34536	95-50-1
1,3-Dichlorobenzene	34566	541-73-1
1,4-Dichlorobenzene	34571	106-46-7
Ethylbenzene	34371	100-41-4
Toluene	34010	108-88-3

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live.

Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
(800) 451-6027
www.idem.IN.gov

VIA CERTIFIED MAIL: 7002 350 0003 3227 6212 October 26, 2006

Ms. Cheryl R. Hyatt
Project Manager
General Motors Corporation
Worldwide Facilities Group
2000 Centerpoint Parkway
Mail Code: 483-520-190
Pontiac, Michigan 48341-3147

Re: PCB Risk-Based Disposal Approval
General Motors Powertrain Bedford Facility
EPA ID # IND006036099
Bedford, Lawrence County

Dear Ms. Hyatt:

This will acknowledge receipt of the application for approval of the PCB Risk-based disposal proposal received by this Office on April 28, 2006, as well as subsequent additional information for the above mentioned disposal facility.

The proposed PCB Risk-based disposal "vault" is located at 105 GM Drive in Bedford, Lawrence County, Indiana. The specific coordinates for this "vault" are as follows: latitude North 38° 52'54" and longitude West 86° 28'52".

Approval of this proposal is hereby granted in accordance with the Indiana Regulations of Wastes Containing PCBs, 329 IAC 4.1-4-1 and subject to the terms of this letter and the enclosed "Conditions for Approval". The Indiana Department of Environmental Management reserves the right to take enforcement action against the applicant herein for failure to comply with the terms and conditions of this approval.

This approval allows for the disposal of a maximum capacity of approximately 125,000 cubic yards into the "vault." To dispose of additional waste, or other waste not discussed in the "Conditions for Approval", you must make a request, in writing, to the IDEM. This request must include information demonstrating that the additional disposal is protective of human health and the environment.

The issuance of this approval does not supersede the requirements of any other agency of local, state or federal government.

Pursuant to IC 4-21.5, a Petition for Review of this approval letter may be initiated by you, as applicant, or by an "aggrieved or adversely affected person". This approval becomes effective once all applicable time periods for petitioning for Stay of Effectiveness have expired, unless you are notified in writing by an Environmental Law Judge that the approval has been further stayed. As discussed in the enclosed "Notice of Decision", if you wish to challenge this decision, you must file a Petition for Review with the Office of Environmental Adjudication within eighteen (18) days from the date that this approval letter was mailed, pursuant to IC 4-21.5-3-7.

If you have further questions regarding this matter, please contact Mr. George Ritchotte of the Office of Land Quality's Industrial Waste Section at (317) 308-3123.

Sincerely,

Bruce H Palin

Bruce H Palin
Assistant Commissioner
Office of Land Quality

Enclosures

cc: Lawrence County Health Department

CONDITIONS OF APPROVAL

SCOPE OF WORK

1. The Permittee may dispose of the following PCB contaminated waste in the vault located at latitude North 38° 52' 54" and longitude West 86° 28' 52": approximately 110,000 cubic yards of PCB contaminated soil generated from the excavation of 50 ppm and over PCB contaminated soil from the East Plant Area of the site, PCB contaminated soil generated from the excavation of 50 ppm and over PCB contaminated soil from the northern tributary, sediments collected from the wheel wash operation and imported granular material originally used for access road construction but which has contacted PCB contaminated fill or soils excavated from the East Plant Area.

2. The leachate from the leachate collection system and the leak detection system, the water from the underdrain and groundwater from the groundwater collection trench must be treated at the temporary water treatment facility until the permanent water treatment facility is operational. Water released from the temporary water treatment facility must be discharged under requirements established under CERCLA. Water released from the permanent water treatment facility must be discharged under a National Pollutant Discharge Elimination System (NPDES) Permit.

WASTE PLACEMENT

3. The PCB contaminated waste placed in the vault must be capable of attaining sufficient strength to prevent subsidence, ponding on the waste or on the cap, and slope movement, i.e., creep.

4. All vehicles delivering waste to the vault must be washed before entering the public road. Waste water generated from truck washing activities must be collected and treated for disposal.

5. If a truck leaves an exclusion zone or switches to a material other than PCB contaminated waste, it must be decontaminated.

UNDERDRAIN WATER MONITORING AND DISPOSAL

6. The level of water in the underdrain must be monitored daily and any accumulation discharged to the temporary water treatment facility. The Permittee can propose an alternate schedule once the permanent water treatment facility is operational.

7. The level of water in the underdrain must be maintained at less than 1 foot. Should the level increase beyond one foot in response to a storm event, accumulated water shall be removed for treatment at the maximum achievable removal rate until the level is reduced to below one foot.

LEACHATE AND LEAK DETECTION SYSTEM WATER MONITORING AND DISPOSAL

8. While the vault is open and receiving PCB contaminated material, the Permittee must sample the leachate and the leak detection system water monthly for PCBs before it is sent to the

temporary water treatment facility. This same schedule will apply once the leachate and leak detection water is sent to the permanent water treatment facility.

9. After closure of the vault, the Permittee may submit an alternate leachate and leak detection monitoring schedule, as part of the East Plant Area long-term monitoring plan, for IDEM review and approval.

10. The leachate and leak detection system water must be managed in accordance with the following Federal TSCA leachate management policy:

    a. Leachate and leak detection water whose PCB content is equal to or greater than 50 ppm PCBs is PCB waste and must be treated or disposed of in accordance with the PCB regulations.

    b. Leachate and leak detection water with PCB concentrations between 1 ppm to, but not including, 50 ppm is TSCA reportable material that must be managed in compliance with the U.S. EPA CERCLA order or a NPDES permit.

    c. Leachate and leak detection water with a PCB concentration of less than 1 ppm must be managed in compliance with the U.S. EPA CERCLA order or a NPDES permit.

11. Leachate samples must be tested for

    a. PCBs

    b. pH

    c. Specific Conductance

    d. Chlorinated Organics identified in Table 1 (attached) and analyzed according to Method 8260B.

    e. Physicochemical characteristics necessary to characterize the leachate for treatment in the temporary and permanent water treatment facility.

12. The secondary leak detection system must be monitored for:

    a. Quantity of water

    b. PCBs

    c. Sufficient physicochemical characteristics of the water produced in order to determine whether a leak of the membrane has occurred and to characterize the water for treatment in the temporary and permanent water treatment facility.

13. While the vault is open and receiving PCB contaminated material, the Permittee must monitor the water level over the primary liner to ensure that it does not exceed 1 foot. Should the level increase beyond one foot in response to a storm event, accumulated water shall be removed for treatment at the maximum achievable removal rate until the level is reduced below one foot. The maximum water elevation must be recorded monthly and reported annually.

14. After closure of the vault, the Permittee may submit an alternate schedule for monitoring the water level over the primary liner, as part of the East Plant Area long-term monitoring plan, for IDEM review and approval.

GROUNDWATER MONITORING

15. The Permittee must construct a groundwater collection trench around the perimeter of the East Plant Area. If the trench is not constructed, the IDEM may terminate this approval and might require the PCB waste to be removed from the vault and disposed of at a facility permitted to accept this waste.

16. The construction and monitoring schedule for the perimeter groundwater collection trench must be submitted to the IDEM for review and approval.

17. Groundwater, including background samples, must be monitored for:

    a. PCBs

    b. pH

    c. Specific Conductance

    d. Chlorinated Organics identified in Table 1 (attached) and analyzed according to Method 8260B.

18. The groundwater must be treated at the temporary water treatment facility and discharged under the requirements established under CERCLA or the permanent water treatment facility and discharged in compliance with a NPDES permit.

SPILL CLEANUP

19. Cleanup of onsite PCB spills/releases which are outside the Exclusion Zones established in accordance with the Site Health and Safety Plan must begin upon discovery by the Permittee. These spills must also be cleaned up pursuant to 329 IAC 4.1, which incorporates 40 CFR Part 761, Subpart G, PCB Spill Cleanup Policy, or 40 CFR § 761.61, PCB Remediation Waste, as applicable. PCB spills/releases on public roads must be cleaned up in accordance with 40 CFR Part 761, Subpart G, PCB Spill Cleanup Policy. The cleanup standards in the PCB Spill Cleanup Policy may only be applied for spills of PCBs that are less than 72 hours old.

20. Any debris or solid wastes generated as a result of cleanup or decontamination of a PCB spill or release may be disposed of in the vault.

AMBIENT AIR MONITORING

21. While the vault is open and accepting PCB contaminated material, total suspended particulate (tsp) and high volume PCB air monitoring must be conducted in accordance with the report submitted by the Permittee titled Air Monitoring Requirements During the Over 50 mg/kg PCB Soil Removal for the East Plant Area.

FLOOD PROTECTION

22. If the vault is ever determined to be in the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map 100 year flood plain, the waste in the vault must be removed or protected by a flood control structure whose minimum elevation is at least 2 feet above the respective 100 year flood plain elevation. Rainwater falling on the vault must not be allowed to accumulate to a level that would allow its entry to the leachate collection system or the secondary leak detection system through the manhole risers or clean outs.

QUALITY ASSURANCE FOR ENVIRONMENTAL DATA AND INFORMATION

23. The Permittee must perform sampling and analysis in accordance the Quality Assurance Project Plan, RCRA Facility Investigation and Removal Action Works Plans Addendum No.2 dated July 19, 2006.

FINAL CONSTRUCTION REPORT

24. The Final Construction Report for the vault must contain the information as described in the vault application plus all photographs taken during the construction of the vault.

RECORDKEEPING

25. The Permittee must maintain a log of the following information:

    a. Daily waste information

        i. identification of the source (i.e. location) of excavated material

        ii. estimated quantity (volume and/or weight) of material excavated and placed in the vault

    b. The quantity of liquid collected from the leachate collection system.

    c. The quantity of liquid collected from the leak detection system.

    d. The quantity of liquid collected from the underdrain.

    e. The water elevation in the underdrain and over the primary liner.

    f. The amount of water treated in the water treatment facility and the PCB concentration, if known.

26. All required documents must be collected and maintained for at least 20 years after the vault is no longer used for the disposal of PCB waste. The required documents must be kept at one central location and must be made available for inspection by authorized representatives of the IDEM.

REPORTING

27. An annual report for the previous calendar year must be submitted to the IDEM by July 15 of each year. The report must include:

    a. A summary of the information itemized in the log required by Condition 25 of this Approval.

    b. All analytical results from the monitoring of the air, groundwater, leachate, leak detection and underdrain and the water treatment facility analytical results.

    c. The volume, PCB concentration and disposal destination for leachate and leak detection water with a PCB concentration equal or greater than 1 ppm.

    d. A summary of the water elevation over the primary liner and in the underdrain.

    e. Spill cleanup reports, if any.

    f. Updated financial assurance for the operation, closure and post-closure care costs adjusted annually.

28. The first annual report submitted under this Approval must contain the most recent analytical results for groundwater collected from the closest wells around the vault, prior to any placement of PCB contaminated waste in the vault.

NOTICE

29. Within 1 working day of discovery, the Permittee must notify the IDEM by telephone of any incident, anomaly or accident that may affect the disposal conditions of this Approval or that has or may result in the release of PCBs to the environment. The Permittee also must provide a written notification within 7 days.

30. Within 1 working day of discovery, the Permittee must notify the IDEM by telephone of any statistically significant increase in leak detection system samples. The Permittee also must provide a written notification within 7 days.

31. Within 1 working day of discovery, the Permittee must notify the IDEM by phone if the water level over the primary liner or in the underdrain exceeds 1 foot.

32. Within 5 days of discovery, the Permittee must verbally notify the IDEM of any non-compliance of the NPDES permit at Outfall 003, or the requirements established under CERCLA followed by a written report regarding the incident and the steps taken or that will be taken to correct the situation.

33. For the 1 working day telephone notification, the Permittee must contact the IDEM at (317) 308-3103. For the 7 day written notification, the Permittee must submit the report to the Commissioner of IDEM at the following address:

Attn: Commissioner
Indiana Department of Environmental Management
100 N. Senate Avenue
Indianapolis, Indiana 46204-2251

34. If there is a spill or release of the equivalent of 1 pound or more of pure PCBs, the Permittee must notify the National Response Center at (800) 424-8802 and the IDEM Emergency Response Section at (888) 233-7745 within 24 hours.

VAULT SECURITY

35. The vault must be secured to restrict public access in accordance with the procedures outlined in Section 8.0 of the Vault Development Plan.

INSPECTION

36. The IDEM reserves the right for its employees and authorized representatives to perform inspections, review records, and take samples at any reasonable time.

CLOSURE AND POST-CLOSURE

37. PCB waste may not be disposed of in the vault after the placement of:

    a. Approximately 110,000 cubic yards of PCB contaminated soil generated from the excavation of 50 ppm and over PCB contaminated soil from the East Plant Area of the site.

    b. PCB contaminated soil generated from the excavation of 50ppm and over PCB contaminated soil from the northern tributary fill area.

    c. Sediments collected from the wheel wash operation while the 50 ppm and over material excavated from the East Plant Area is being placed in the vault.

    d. Imported granular materials originally used for access road construction but which has contacted the 50 ppm and over PCB contaminated fill or soils excavated from the East Plant Area.

38. As described in Section 11.0 of the Vault Development Plan, the Permittee must submit a closure and post-closure plan to the IDEM for review and approval a minimum of 21 days prior to closure of the vault.

39. The closure and post-closure plan must contain the information described in Section 11.0 of the Vault Development Plan plus a detailed estimate of closure and post-closure care costs.

40. The Permittee must receive written approval of the closure plan from the Commissioner of IDEM, or a designee, prior to closing the vault.

41. Any surfaces outside of the vault, but within the area to be capped under the Final Corrective Measure, that was contaminated by spills of PCB contaminated material that was to be disposed of in the vault, must be cleaned to 50 ppm or 10 $\mu g/100\ cm^2$ of PCBs.

42. Upon closure of the vault, the Permittee must remediate the roads and parking lots used during the disposal of the PCB contaminated material, except roads and parking areas which are otherwise addressed as part of the Corrective Action activities, in accordance with the cleanup standards outlined in 329 IAC 4.1-4-1, incorporating 40 CFR § 761.61.

43. The Permittee must care for the vault and perform post-closure environmental monitoring and maintenance in perpetuity.

FINANCIAL ASSURANCE

44. The Permittee must establish financial assurance for the operation, closure and post-closure care costs. The Permittee may use any combination of financial assurance mechanisms described in 329 IAC 4.1-4-1, incorporating 40 CFR § 761.65(g). The financial assurance mechanism can be part of the financial assurance mechanism developed for the East Plant Area or the Final Corrective Measure.

45. The Permittee must submit proof of financial assurance to the IDEM annually. If the IDEM determines that the amount is inadequate, the Permittee must obtain additional financial assurance funding.

46. The Permittee must annually adjust the closure and post-closure care cost estimates for inflation. This may require an increase in the financial assurance funding mechanism.

47. The Permittee must adjust the operation, closure and post-closure care cost estimates for any modification or change that increases these costs. This may require an increase in the financial assurance funding mechanism.

48. Post-closure financial assurance must be maintained in perpetuity.

MODIFICATIONS

49. The Permittee must notify the IDEM in writing of any intended modifications to this Approval or their application.

50. Any major modification of this Approval requires the written approval of the Commissioner of IDEM, or a designee. A major modification is a material change in design or operation of the vault. Such changes include, but are not limited to, changes in the scope of work of the Approval. Increasing disposal capacity beyond that specified in Condition 1 is an example of a major modification.

51. Any minor modification of the PCB disposal operations and monitoring procedures requires written approval of the Commissioner of IDEM, or a designee. A minor modification is a change in operations that is not a major modification, such as changing the groundwater, leachate or air monitoring locations, the analytical methodology or waste acceptance procedures.

52. If there is any question as to whether a change in operations is a major or minor modification, such question should be raised to the appropriate representative(s) of the IDEM as soon as possible. In such cases, the IDEM will determine whether a proposed change in major or minor.

APPROVAL EXPIRATION

53. This Approval does not expire unless and until all PCBs are removed from the vault. Otherwise, the Approval's conditions remain valid in perpetuity.

54. The Permittee's authorization to place PCBs in the vault will expire upon placement of the material itemized in Condition 1.

COMPLIANCE AND APPROVAL SUSPENSION AND TERMINATION

55. Nothing in this Approval relieves the Permittee from the duty to comply with all applicable state and Federal laws, including, but not limited to CERCLA, RCRA and TSCA and the regulations promulgated there under.

56. Any knowing or persistent failure of the Permittee to comply with all applicable Federal laws, regulations, requirements or orders could result in the termination of the Permittee's authority to dispose of PCBs in the vault.

57. Failure to comply with any provision of this Approval, TSCA, and the Federal PCB regulations found at 40 CFR Part 761, or any other applicable Federal, state or local requirements may constitute a sufficient basis for suspension or termination of the Approval.

58. The Approval also may be terminated if the Commissioner of the IDEM, or a designee, determines that the vault poses an unreasonable risk to human health or the environment.

PCB DISPOSAL AUTHORITY REINSTATEMENT

59. The Commissioner of IDEM, or a designee, may reinstate the Approval if it is determined that the Permittee is in compliance with the applicable state and Federal laws and the conditions of the Approval and the vault no longer poses an unreasonable risk to human health or the environment.

SEVERABILITY

60. All terms and/or conditions of this Approval are severable. If any provision(s) of this Approval or any application of any provision, is changed, amended, or held invalid, the remaining terms and conditions will still be valid and not affected thereby.

OWNERSHIP TRANSFER

61. The requirement and responsibilities for perpetual care transfers with ownership of the vault.

62. The Permittee must provide a written notice to the IDEM at least 90 days in advance of any planned transfer in ownership of the vault. The name of the prospective transferee must be included in the notice

63. The prospective transferee must submit to the IDEM at least 90 days before the transfer:
    a. A notarized affidavit signed by the transferee which states that the transferee will abide by the conditions of the Approval.

    b. A listing of past environmental violations by the transferee, its employees or assigns.

    c. The qualifications of the principals and key employees.

    d. Documentation of acceptable financial assurance and funding pursuant to 329 IAC 4.1-4-1, incorporating the TSCA regulations at 40 C.F.R. § 761.65(g).

64. After reviewing the notification, affidavit and background information, the IDEM will either issue a modified approval substituting the transferee's name for the transferor's name, or require the transferee to apply for a new PCB disposal approval. The transferee must abide by the conditions of the Approval and the application submitted by General Motors Corporation on October 17, 2005, and the revised application submitted by General Motors Corporation on June 16, 2006, until the IDEM issues a modified approval or until notified otherwise.

65. If the IDEM requires the transferee to apply for a new PCB disposal approval, the transferee must submit to the Commissioner of IDEM a complete TSCA application for disposal, closure and post-closure care. The Commissioner may also require any additional information necessary to ensure that the vault poses no unreasonable risk to health and the environment.

BANKRUPTCY

66. In the event that the Permittee, or its successor or assigns, file for bankruptcy, the Permittee shall immediately provide written notice of such to the Commissioner of IDEM.

TABLE I

Parameter	STORET No.	CAS No.
Bromodichloromethane	32101	75-27-4
Bromoform	32104	75-25-2
Bromomethane	34413	74-83-9
Carbon tetrachloride	32102	56-23-5
Chlorobenzene	34301	108-90-7
Chloroethane	34311	75-00-3
2-Chloroethylvinyl ether	34576	100-75-8
Chloroform	32106	67-66-3
Chloromethane	34418	74-87-3
Dibromochloromethane	32105	124-48-1
1,2-Dichlorobenzene	34536	95-50-1
1,3-Dichlorobenzene	34566	541-73-1
1,4-Dichlorobenzene	34571	106-46-7
Dichlorodifluoromethane	34668	75-71-8
1,1-Dichloroethane	34496	75-34-3
1,2-Dichloroethane	34531	107-06-2
1,1-Dichloroethene	34501	75-35-4
trans-1,2-Dichloroethene	34546	156-60-5
1,2-Dichloropropane	34541	78-87-5
cis-1,3-Dichloropropene	34704	10061-01-5
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Methylene chloride	34423	75-09-2
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Tetrachloroethene	34475	127-18-4
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Tetrachloroethene	39180	79-01-6
Trichlorofluoromethane	34488	75-69-4
Vinyl chloride	39715	75-01-4

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1,4-Dichlorobenzene	34571	106-46-7
Ethylbenzene	34371	100-41-4
Toluene	34010	108-88-3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGIONS 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAY 09 2007

REPLY TO THE ATTENTION OF:

DT-8J

Cheryl R. Hiatt, Project Manager
General Motors Corporation
Worldwide Facilities Group Remediation Team
2000 Centerpoint Parkway (483-520-190)
Pontiac, Michigan 48341-3147

Re: Toxic Substances Control Act Approval to Dispose of Polychlorinated Biphenyls

Dear Ms. Hiatt:

This letter is to confirm that General Motors (GM) may dispose of approximately 20 cubic yards of sediment into the Toxic Substances Control Act (TSCA) approved disposal facility (vault) located at the East Plant Area of GM's Bedford, Indiana facility.

The TSCA approval allows GM to dispose of PCB contaminated soil from the East Plant area into the vault. This sediment was generated from construction and dewatering activities associated with GM's excavation of soil and rock for the installation of a 48-inch gravity sewer pipe within the East Plant area.

You may dispose of the sediment into the vault provided you comply with our conditions regarding stabilization of the sediment and removal and disposal of the oil in the sediment. These conditions are discussed in the following paragraphs.

GM must remove the oil droplets from the sediment in accordance with the procedure described in your April 12, 2007 email to Jean Greensley. This must be done before GM transfers the sediment from a frac tank to a double lined roll-off box. The oil and the remediation waste associated with the collection of the oil must be incinerated.

GM may use bed ash to stabilize the sediment provided it does not raise the temperature and volatilize PCBs that may be in the sediment. The amount of bed ash added to the sediment must be sufficient to strengthen the material so it can support the vault cap.

If you have any questions regarding the conditions in this letter, please contact Jean Greensley, of my staff, at 312-353-1171.

Sincerely,

Tony Martig

Tony Martig, Chief
Toxics Program Section

cc: Jerry O'Callahan – IDEM
George Ritchotte – IDEM
Peter Ramanauskas – U.S. EPA

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

APR 15 2008

L-8J

Cheryl R. Hiatt, Project Manager
General Motors Corporation
Worldwide Facilities Group Remediation Team
2000 Centerpoint Parkway (483-520-190)
Pontiac, Michigan 48341-3147

Re: General Motors Corporation Request for Modification to the October 26, 2006 Toxic Substances Control Act Approval to Dispose of Polychlorinated Biphenyls

Dear Ms. Hiatt:

The U.S. Environmental Protection Agency has reviewed your October 5, 2007 request for a modification to the October 26, 2006 Approval (Approval) EPA issued to General Motors Corporation (GM). The Approval allowed GM to dispose of over 50 parts per million (ppm) material excavated from the Northern Tributary and East Plant Area at GM's Bedford Powertrain Facility (Facility) into the on-site constructed landfill vault (vault).

You are requesting a change to the Scope of Work of the Approval that would allow GM to dispose of approximately 1,407 cubic yards (cy) excavated from a portion of the Facility located west of GM Drive (West Plant Area) into the vault. Additionally, material excavated from Parcel 201 of the East Plant Area would be disposed of in the vault.

We are granting this modification to the Approval based on our review of information in your October 5, 2007 request, additional information provided in the *Request for Amendment 40 CFR 761.61(c) Approval Over 50 mg/kg PCB Soil Source Removal and Cover System Design West Plant Area* dated December 12, 2007, and supplemental information provided in response to EPA comments. EPA approves this modification provided disposal of the material excavated from the West Plant Area and Parcel 201 does not exceed the 135,000 cy capacity of the vault. If it does, the excess material must be disposed of in an off-site facility permitted to accept PCB material. To verify that GM has not exceeded the capacity of the vault, you must submit a weekly report to EPA itemizing the amount of material from the West Plant Area and Parcel 201 deposited in the vault and the remaining capacity of the vault. This report must be sent to Jean Greensley, of my staff, at the above address or submitted via email to greensley.jean@epa.gov.

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This modification to the Approval is effective today and is issued pursuant to 40 CFR § 761.61(c) of the federal PCB regulations. This modification is solely for the disposal of the material generated from the West Plant Area. Disposal of the material excavated from Parcel 201 is covered under the Scope of Work of the October 26, 2006 Approval. No other PCB contaminated material may be disposed of in the vault. EPA will decide whether GM's backfilling and restoration plan for the West Plant Area excavation is acceptable once additional investigative activities in this area are performed to EPA's satisfaction. EPA will notify GM of our decision on the West Plant Area excavation in a separate letter.

This modification to the Approval does not relieve GM from the responsibility to comply with all applicable provisions of the Toxic Substances Control Act (TSCA) and the federal PCB regulations or any other applicable federal, state or local regulations. Since the State of Indiana has adopted the federal PCB regulations, no material from the West Plant Area may be disposed of in the vault until GM receives an approval for this activity from the state. This modification to the Approval does not preclude EPA from initiating an enforcement action, including seeking civil penalties, for violations of TSCA or the federal PCB regulations.

If you have any questions regarding this approval, please contact Jean Greensley at (312) 353-1171.

Sincerely,



Bruce F. Sypniewski, Deputy Director
Land and Chemicals Division

cc: Gerald O'Callahan, IDEM
George Ritchotte, IDEM

McGuigan, Jim

From: McGuigan, Jim
Sent: Tuesday, February 06, 2007 3:04 PM
To: 'Ramanauskas.Peter@epamail.epa.gov'; cheryl.r.hiatt@gm.com; ed.e.peterson@gm.com
Cc: Stimple.Brad@epamail.epa.gov; Grady, Sean; Romzick, Peter; Kamm, Katie; Bridcut, Pete; Filing
Subject: 13968 Bedford RE: Manifesting Question - TSCA Waste to On-Site Vault

Pete,
Thanks for the confirmation.

Jim McGuigan

-----Original Message-----
From: Ramanauskas.Peter@epamail.epa.gov [mailto:Ramanauskas.Peter@epamail.epa.gov]
Sent: Tuesday, February 06, 2007 2:39 PM
To: cheryl.r.hiatt@gm.com; ed.e.peterson@gm.com
Cc: McGuigan, Jim; Stimple.Brad@epamail.epa.gov
Subject: Manifesting Question

Cheryl/Ed/Jim,

According to Jean & Tony, since GM is the generator and the disposer, there is no need to manifest.

From the EPA PCB Q&A Manual:

§761.207 The Manifest - General Requirements

Q: Can a company that sends PCB wastes to its affiliated company for purposes of consolidation prior to disposal treat those shipments as internal consolidation not subject to the PCB manifesting requirements at 40 C.F.R. §761.207?

A: Yes, provided the “affiliated company” qualifies as a “related company” as discussed in the definition of “commercial storer” in §761.3.

Let me know if you have other questions.
P

APPENDIX B

SELECTED VAULT PHOTOGRAPHS

B.1 SOIL REMOVAL AND BEDROCK CONDITIONS

B.2 GUS INSTALLATION

B.3 SUB-BASE CLAY/FILL PLACEMENT

B.4 BOTTOM LINER INSTALLATION

B.5 LDS MANHOLE SEALING AND CLEANING

B.6 LCS AND LCS SUMP INSTALLATION

B.7 WASTE PLACEMENT ACTIVITIES

B.8 FINAL COVER SYSTEM INSTALLATION

APPENDIX B.1

SOIL REMOVAL AND BEDROCK CONDITIONS



PHOTO No. 1: TSCA LANDFILL VAULT EXCAVATION. JUNE 2005



PHOTO No. 2: TSCA LANDFILL VAULT EXCAVATION. AUGUST 2005

APPENDIX B.1
SOIL REMOVAL AND BEDROCK CONDITIONS
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO No. 3: TSCA LANDFILL VAULT EXCAVATION. SEPTEMBER 2005



PHOTO No. 4: PEOPLE EXAMINING BEDROCK FEATURES. SEPTEMBER 2005

APPENDIX B.1
SOIL REMOVAL AND BEDROCK CONDITIONS
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PHOTO No. 5: OVERLOOKING TSCA LANDFILL VAULT EXCAVATION. SEPTEMBER 2005



PHOTO No. 6: INSPECTION OF TSCA LANDFILL VAULT EXCAVATION. SEPTEMBER 2005

APPENDIX B.1
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PHOTO No. 7: VAULT EXCAVATION BEDROCK CLEANING/SCRAPING. OCTOBER 2005



PHOTO No. 8: VAULT EXCAVATED BEDROCK FRACTURE. OCTOBER 2005

APPENDIX B.1
SOIL REMOVAL AND BEDROCK CONDITIONS
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PHOTO No. 9: ROCK BREAKING WITHIN VAULT EXCAVATION. OCTOBER 2005



PHOTO No. 10: ROCK BREAKING WITHIN VAULT EXCAVATION. OCTOBER 2005

APPENDIX B.1
SOIL REMOVAL AND BEDROCK CONDITIONS
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APPENDIX B.2

GUS INSTALLATION



PHOTO No. 11: VAULT EXCAVATION CLEANOUTS "E,F,G,H". NOVEMBER 2005



PHOTO No. 12: PIPE WELDING WITHIN VAULT EXCAVATION. NOVEMBER 2005



PHOTO No. 13: VAULT UNDERDRAIN PIPE INSTALLATION. NOVEMBER 2005



PHOTO No. 14: INSTALL CLEANOUT WITHIN VAULT. DECEMBER 2005

APPENDIX B.2
GUS INSTALLATION
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO No. 15: #861 FABRIC PLACEMENT AT BASE OF VAULT. DECEMBER 2005



PHOTO No. 16: PLACING UNDERDRAIN SUMP IN VAULT. DECEMBER 2005

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PHOTO No. 17: UNDERDRAIN SUMP PLACED IN VAULT. DECEMBER 2005



PHOTO No. 18: UNDERDRAIN PIPE PLACEMENT IN VAULT. DECEMBER 2005



PHOTO No. 19: STONE PLACEMENT FOR VAULT UNDERDRAIN. DECEMBER 2005



PHOTO No. 20: #861 FABRIC PLACEMENT AT BASE OF VAULT. DECEMBER 2005

APPENDIX B.2
GUS INSTALLATION
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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APPENDIX B.3

SUB-BASE CLAY/FILL PLACEMENT



PHOTO No. 21: VAULT BASE CLAY CONSTRUCTION. DECEMBER 2005



PHOTO No. 22: VAULT BASE CLAY CONSTRUCTION. DECEMBER 2005

APPENDIX B.3
SUB-BASE CLAY/FILL PLACEMENT
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO No. 23: VAULT BASE CLAY CONSTRUCTION. JANUARY 2006



PHOTO No. 24: CLAY PLACEMENT/COMPACTION ACTIVITIES. JANUARY 2006

APPENDIX B.3
SUB-BASE CLAY/FILL PLACEMENT
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PHOTO No. 25: FINE GRADING OF VAULT CLAY BASE. FEBRUARY 2006



PHOTO No. 26: VAULT CLAY BASE LIFT PLACEMENT. MARCH 2006

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SUB-BASE CLAY/FILL PLACEMENT
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PHOTO No. 27: VAULT BASE CLAY CONSTRUCTION. MARCH 2006



PHOTO No. 28: VAULT EAST SLOPE CONSTRUCTION. MARCH 2006

APPENDIX B.3
SUB-BASE CLAY/FILL PLACEMENT
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PHOTO No. 29: VAULT 1ft CLAY BASE COMPLETED. MARCH 2006



PHOTO No. 30: VAULT 1ft CLAY BASE COMPLETED. MARCH 2006

APPENDIX B.3
SUB-BASE CLAY/FILL PLACEMENT
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APPENDIX B.4

BOTTOM LINER INSTALLATION



PHOTO No. 31: VAULT LINER (GEOMEMBRANE) PLACEMENT. MARCH 2006



PHOTO No. 32: VAULT LINER (GEOMEMBRANE) PLACEMENT. MARCH 2006



PHOTO No. 33: VAULT LINER (GEOMEMBRANE) WELDING. MARCH 2006



PHOTO No. 34: VAULT LINER (GEOMEMBRANE) PLACEMENT. MARCH 2006

APPENDIX B.4
BOTTOM LINER INSTALLATION
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PHOTO No. 35: VAULT LINER (GEOMEMBRANE) PLACEMENT. MARCH 2006



PHOTO No. 36: VAULT DESTRUCTIVE SEAM TESTING. MARCH 2006

APPENDIX B.4
BOTTOM LINER INSTALLATION
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PHOTO No. 37: VAULT ANCHOR TRENCH INSTALLATION. APRIL 2006



PHOTO No. 38: VAULT DRAINAGE GEOCOMPOSITE SEAMING. APRIL 2006

APPENDIX B.4
BOTTOM LINER INSTALLATION
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PHOTO No. 39: OVERVIEW OF DRAINAGE/GEOCOMPOSITE PLACEMENT. APRIL 2006



PHOTO No. 40: CLAY PLACEMENT OVER VAULT SECONDARY LINER. APRIL 2006

APPENDIX B.4
BOTTOM LINER INSTALLATION
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PHOTO No. 41: SETTING OF LEAK DETECTION SUMP. APRIL 2006



PHOTO No. 42: STONE AROUND LEAK DETECTION SUMP. APRIL 2006

APPENDIX B.4
BOTTOM LINER INSTALLATION
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PHOTO No. 43: MANHOLE LINER (GEOMEMBRANE) BOOTING. APRIL 2006



PHOTO No. 44: CLAY LAYER PLACEMENT OVER VAULT SECONDARY LINER. APRIL 2006



PHOTO No. 45: VAULT SECONDARY LINER CLAY LAYER. APRIL 2006



PHOTO No. 46: PRIMARY LINER (GEOMEMBRANE) INSTALLATION. APRIL 2006

APPENDIX B.4
BOTTOM LINER INSTALLATION
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO No. 47: LINER INSTALLATION AT CORNER OF VAULT. APRIL 2006



PHOTO No. 48: VAULT LINER NON-DESTRUCTIVE SEAM TESTING. APRIL 2006

APPENDIX B.4
BOTTOM LINER INSTALLATION
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO No. 49: MANHOLE LINER (GEOMEMBRANE) BOOTING. APRIL 2006



PHOTO No. 50: VAULT SEAM TESTING REPAIRS. APRIL 2006



PHOTO No. 51: FIELD DESTRUCTIVE SEAM TESTING. APRIL 2006



PHOTO No. 52: VAULT ANCHOR TRENCH INSTALLATION. APRIL 2006

APPENDIX B.4
BOTTOM LINER INSTALLATION
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PHOTO No. 53: VAULT DRAINAGE GEOCOMPOSITE SEAMING. APRIL 2006

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BOTTOM LINER INSTALLATION
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PHOTO No. 54: OVERVIEW OF VAULT LINER INSTALLATION. APRIL 2006



PHOTO No. 55: OVERVIEW OF VAULT LINER INSTALLATION. MAY 2006

APPENDIX B.4
BOTTOM LINER INSTALLATION
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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APPENDIX B.5

LDS MANHOLE SEALING AND CLEANING



PHOTO NO. 56: VAULT SUMPS/MANHOLES. DECEMBER 2006



PHOTO NO. 57: VAULT SUMPS/MANHOLES. DECEMBER 2006

APPENDIX B.5
LDS MANHOLE SEALING AND CLEANING
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO NO. 58: LEAK DETECTION MANHOLE 4/5 JOINT REPAIR (DRILLING #6). DECEMBER 2006

APPENDIX B.5
LDS MANHOLE SEALING AND CLEANING
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO NO. 59: LEAK DETECTION MANHOLE 4/5 JOINT REPAIR (COMPLETED HOLE #2). DECEMBER 2006

APPENDIX B.5
LDS MANHOLE SEALING AND CLEANING
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PHOTO NO. 60: LEAK DETECTION MANHOLE 4/5 JOINT REPAIR (COMPLETED HOLE #1). DECEMBER 2006



PHOTO NO. 61: LEAK DETECTION MANHOLE 4/5 JOINT REPAIR (COMPLETED HOLE #4). DECEMBER 2006

APPENDIX B.5
LDS MANHOLE SEALING AND CLEANING
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PHOTO NO. 62: LEAK DETECTION MANHOLE 4/5 JOINT REPAIR (COMPLETED HOLE #5). DECEMBER 2006



PHOTO NO. 63: OVERALL VIEW OF EQUIPMENT OVER LDS MANHOLE. JANUARY 2007

APPENDIX B.5
LDS MANHOLE SEALING AND CLEANING
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PHOTO NO. 64: GROUTING LEAKING JOINT IN LDS MANHOLE. JANUARY 2007



PHOTO NO. 65: LEAK DETECTION MANHOLE MANHOLE. JANUARY 2007

APPENDIX B.5
LDS MANHOLE SEALING AND CLEANING
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO NO. 66: LDS MANHOLE AFTER PRESSURE WASHING JOINTS 4&5. JANUARY 2007



PHOTO NO. 67: LDS MANHOLE (LEFT) & LCS MANHOLE (RIGHT). JANUARY 2007

APPENDIX B.5
LDS MANHOLE SEALING AND CLEANING
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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APPENDIX B.6

LCS AND LCS SUMP INSTALLATION



PHOTO No. 68: VAULT LEACHATE COLLECTION SYSTEM. MAY 2006



PHOTO No. 69: PLACEMENT OF DRAINAGE STONE LAYER IN VAULT. MAY 2006



PHOTO No. 70: PLACEMENT OF DRAINAGE STONE LAYER IN VAULT. MAY 2006



PHOTO No. 71: VAULT LEACHATE COLLECTION SUMP. MAY 2006

APPENDIX B.6
LCS AND LCS SUMP INSTALLATION
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PHOTO No. 72: COLLECTION PIPE FOR LEACHATE COLLECTION SYSTEM. MAY 2006



PHOTO No. 73: COLLECTION PIPE FOR LEACHATE COLLECTION SYSTEM. MAY 2006

APPENDIX B.6
LCS AND LCS SUMP INSTALLATION
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO No. 74: COLLECTION PIPE FOR THE LEACHATE COLLECTION SYSTEM. MAY 2006



PHOTO No. 75: PLACEMENT OF DRAINAGE STONE LAYER IN VAULT. MAY 2006

APPENDIX B.6
LCS AND LCS SUMP INSTALLATION
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO No. 76: GEOTEXTILE PLACED OVER DRAINAGE STONE LAYER IN VAULT. MAY 2006



PHOTO No. 77: GEOTEXTILE PLACED OVER DRAINAGE STONE LAYER IN VAULT. MAY 2006

APPENDIX B.6
LCS AND LCS SUMP INSTALLATION
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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APPENDIX B.7

WASTE PLACEMENT ACTIVITIES



PHOTO No. 78: FIRST LOAD PLACED INTO VAULT. MAY 2006



PHOTO No. 79: VAULT MATERIAL PLACEMENT. MAY 2006



PHOTO No. 80: VAULT MATERIAL PLACEMENT. MAY 2006



PHOTO No. 81: VAULT MATERIAL PLACEMENT. JUNE, 2006

APPENDIX B.7
WASTE PLACEMENT ACTIVITIES
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO No. 82: VAULT WITH TEMPORARY DAILY COVER MATERIAL. JUNE 2006



PHOTO No. 83: TEMPORARY DAILY COVER PLACEMENT. JULY 2006

APPENDIX B.7
WASTE PLACEMENT ACTIVITIES
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO No. 84: VAULT MATERIAL PLACEMENT. JULY 2006



PHOTO No. 85: VAULT DUMPING, SPREADING, AND ROLLING. AUGUST 2006

APPENDIX B.7
WASTE PLACEMENT ACTIVITIES
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO No. 86: VAULT PUMPING OPERATIONS. AUGUST 2006



PHOTO No. 87: VAULT MATERIAL PLACEMENT. AUGUST 2006

APPENDIX B.7
WASTE PLACEMENT ACTIVITIES
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO No. 88: VAULT MATERIAL GRADING. SEPTEMBER 2006



PHOTO No. 89: VAULT MATERIAL WORKING TO DE-WATER. SEPTEMBER 2006



PHOTO No. 90: BED-ASH MIXING IN VAULT FOR DE-WATERING. OCTOBER 2006



PHOTO No. 91: BED-ASH MIXING IN VAULT FOR DE-WATERING. OCTOBER 2006

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PHOTO No. 92: VAULT TEMPORARY PUMPING OPERATIONS. NOVEMBER 2006



PHOTO No. 93: VAULT MATERIAL GRADING. NOVEMBER 2006

APPENDIX B.7
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PHOTO No. 94: VAULT MATERIAL GRADING. NOVEMBER 2006



PHOTO No. 95: VAULT TEMPORARY PUMPING OPERATIONS. DECEMBER 2006



PHOTO No. 96: VAULT MATERIAL GRADING. DECEMBER 2006



PHOTO No. 97: VAULT MATERIAL GRADING. DECEMBER 2006

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PHOTO No. 98: UNLOADING/SPREADING >50 PPM SOILS IN VAULT. JANUARY 2007



PHOTO No. 99: UNLOADING >50 PPM SOILS IN VAULT. JULY 2007

APPENDIX B.7
WASTE PLACEMENT ACTIVITIES
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PHOTO No. 100: >50 PPM SOIL UNLOADING AT VAULT. AUGUST 2007



PHOTO No. 101: UNLOADING >50 PPM MATERIAL AT VAULT. AUGUST 2007

APPENDIX B.7
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PHOTO No. 102: NORTHERN TRIBUTARY MATERIAL STOCKPILING. AUGUST 2007



PHOTO No. 103: NORTHERN TRIBUTARY >50 PPM STOCKPILE RELOCATION. SEPTEMBER 2007

APPENDIX B.7
WASTE PLACEMENT ACTIVITIES
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PHOTO No. 104: RAIN EVENT – GM DRIVE CLEANING. OCTOBER 2007



PHOTO No. 105: TIRE WASH AT EAST PLANT AREA ENTRANCE. DECEMBER 2007

APPENDIX B.7
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PHOTO No. 106: PLACING >50 PPM MATERIAL IN VAULT. MAY 2008



PHOTO No. 107: RECEIVING >50 PPM MATERIAL IN VAULT. MAY 2008

APPENDIX B.7
WASTE PLACEMENT ACTIVITIES
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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PHOTO No. 108: PLACING TEMPORARY COVER OVER VAULT. MAY 2008



PHOTO No. 109: DECONTAMINATING TRUCK BED. MAY 2008



PHOTO No. 110: PLACING > 50 PPM MATERIAL IN VAULT. MAY 2008



PHOTO No. 111: DECONTAMINATING CONSTRUCTION EQUIPMENT. JUNE 2008

APPENDIX B.7
WASTE PLACEMENT ACTIVITIES
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APPENDIX B.8

FINAL COVER SYSTEM INSTALLATION



PHOTO No. 112: SPRAY MULCH OVER VAULT MATERIAL. AUGUST 2007



PHOTO No. 113: APPLYING MULCH OVER VAULT. SEPTEMBER 2007

APPENDIX B.8
FINAL COVER SYSTEM INSTALLATION
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PHOTO No. 114: CLAY PLACEMENT ON VAULT. SEPTEMBER 2007



PHOTO No. 115: CLAY PLACEMENT ON VAULT. NOVEMBER 2007

APPENDIX B.8
FINAL COVER SYSTEM INSTALLATION
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PHOTO No. 116: CLAY PLACEMENT 0N VAULT. DECEMBER 2007



PHOTO No. 117: DEPLOYING LINER OVER VAULT. APRIL 2008

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PHOTO No. 118: DEPLOYING LINER OVER VAULT. APRIL 2008



PHOTO No. 119: DEPLOYING LINER OVER VAULT. APRIL 2008

APPENDIX B.8
FINAL COVER SYSTEM INSTALLATION
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PHOTO No. 120: DEPLOYING LINER OVER VAULT. APRIL 2008



PHOTO No. 121: LINER PATCH INSTALLATION. APRIL 2008

APPENDIX B.8
FINAL COVER SYSTEM INSTALLATION
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
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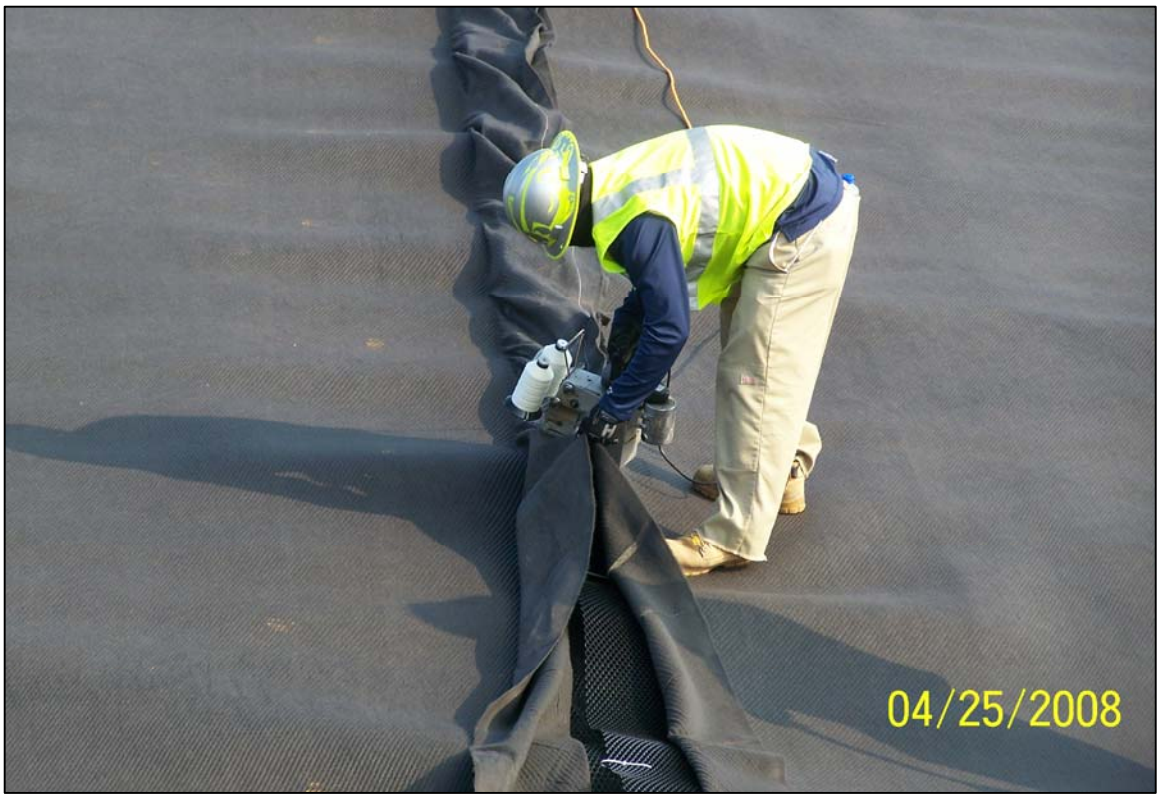


PHOTO No. 122: SEWING GEOCOMPOSITE DRAINAGE NET TOGETHER. APRIL 2008



PHOTO No. 123: INSTALLING GEOCOMPOSITE DRAINAGE NET ON WEST SIDE OF VAULT. APRIL 2008

APPENDIX B.8
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PHOTO No. 124: VAULT GEOCOMPOSITE DRAINAGE NET INSTALLATION. APRIL 2008



PHOTO No. 125: VAULT GEOCOMPOSITE DRAINAGE NET INSTALLATION. APRIL 2008

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PHOTO No. 126: VAULT GEOCOMPOSITE DRAINAGE NET INSTALLATION. APRIL 2008



PHOTO No. 127: COMMON FILL PLACEMENT 0N VAULT. JUNE 2008

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PHOTO No. 128: WEST SIDE OF VAULT. JUNE 2008



PHOTO No. 129: INSTALLING LINER OVER VAULT. OCTOBER 2008

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PHOTO No. 130: DEPLOYING LINER OVER VAULT. OCTOBER 2008



PHOTO No. 131: DEPLOYING LINER OVER VAULT. OCTOBER 2008

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FINAL COVER SYSTEM INSTALLATION
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PHOTO No. 132: DEPLOYING LINER OVER VAULT. OCTOBER 2008



PHOTO No. 133: DEPLOYING LINER OVER VAULT. OCTOBER 2008

APPENDIX B.8
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PHOTO No. 134: DEPLOYING LINER OVER VAULT. OCTOBER 2008

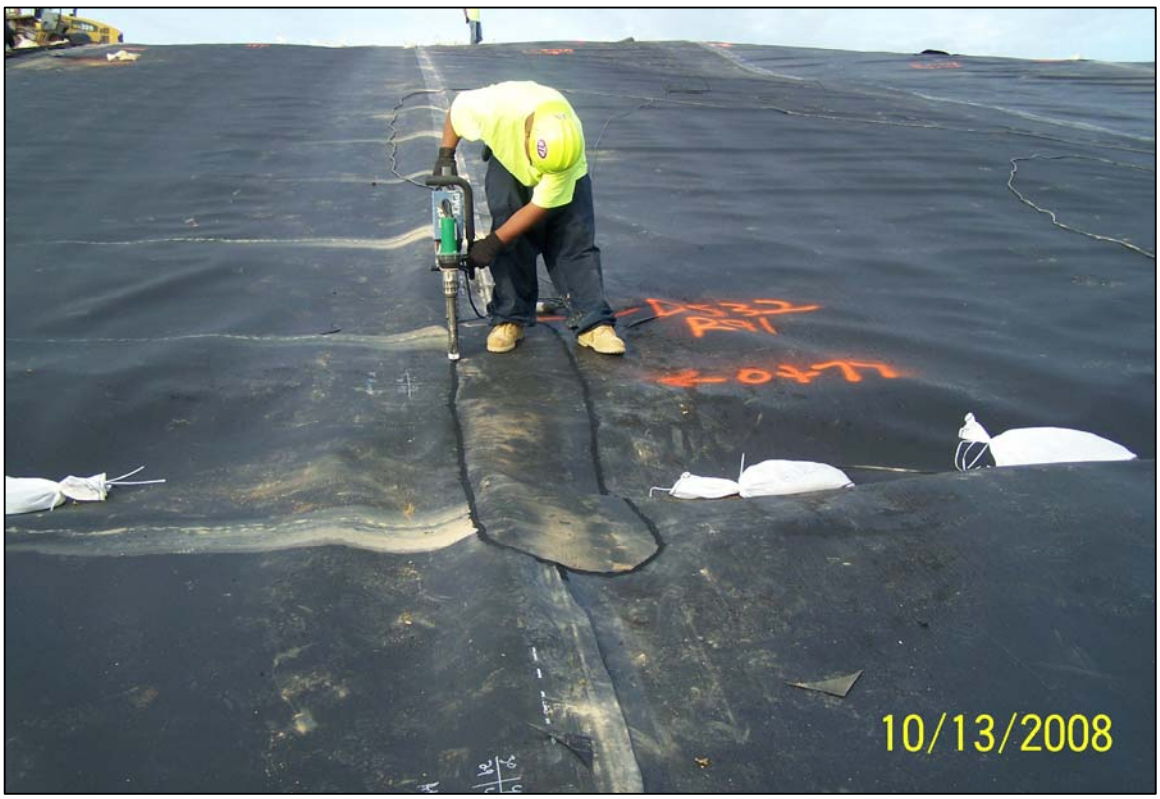


PHOTO No. 135: REPAIR PATCH IN LINER. OCTOBER 2008



PHOTO No. 136: INSTALLATION OF BOOT AROUND LEACHATE SUMP. OCTOBER 2008



PHOTO No. 137: DEPLOYING GEOCOMPOSITE DRAINAGE NET. OCTOBER 2008

APPENDIX B.8
FINAL COVER SYSTEM INSTALLATION
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PHOTO No. 138: PLACING COVER SOIL OVER VAULT. OCTOBER 2008



PHOTO No. 139: PLACING RISER ON LEAK DERECTION SUMP. DECEMBER 2008

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PHOTO No. 140: INSTALLED FLANGE ON 36-INCH HDPE UNDERDRAIN SUMP. DECEMBER 2008



PHOTO No. 141: VAULT COMMON FILL PLACEMENT. DECEMBER 2008

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PHOTO No. 142: INSTALLATION OF UNDERDRAIN SUMP PIPE EXTENSION.
DECEMBER 2008

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PHOTO No. 143: PLACEMENT OF COMMON FILL OVER LINER. JANUARY 2009

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PHOTO No. 144: VAULT TEMPORARY LINER DEPLOYMENT. JANUARY 2009



PHOTO No. 145: TEMPORARY LINER OVER VAULT. JANUARY 2009

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GM CETC BEDFORD FACILITY
Bedford, Indiana



PHOTO No. 146: VAULT TEMPORARY LINER DEPLOYMENT. JANUARY 2009



PHOTO No. 147: DEPLOYMENT OF TEMPORARY LINER ON EAST SLOPE. MARCH 2009

APPENDIX B.8
FINAL COVER SYSTEM INSTALLATION
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
Bedford, Indiana



PHOTO NO. 148: CLAY PLACEMENT ON TOP OF VAULT. SEPTEMBER 2011



PHOTO NO. 149: CLAY PLACEMENT ON TOP OF VAULT. SEPTEMBER 2011

APPENDIX B.8
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PHOTO NO. 150: EXTENDING OF UNDERDRAIN SUMP AT VAULT. SEPTEMBER 2011



PHOTO NO. 151: CLAY PLACEMENT ON TOP OF VAULT. SEPTEMBER 2011

APPENDIX B.8
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PHOTO NO. 152: STRUCTURE PLACEMENT AROUND SUMP. SEPTEMBER 2011



PHOTO NO. 153: GRASS COVER ON VAULT. MARCH 2012

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GM CETC BEDFORD FACILITY
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PHOTO NO. 154: GRASS COVER ON VAULT. MARCH 2012



PHOTO NO. 155: VAULT COVER SYSTEM MAINTENANCE. MAY 2012

APPENDIX B.8
FINAL COVER SYSTEM INSTALLATION
CONSTRUCTION CERTIFICATION REPORT EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
Bedford, Indiana

APPENDIX C

SUMMARY OF GUS SUMP DAILY MONITORING LOGS

TABLE C.1

2006 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information	Aug. 30 - Dec. 31
Top of sump (datum reference)	0
Bottom of sump (feet BTOS)	35.91
sump diameter (feet)	3

Date	*Water Level (feet BTOS) start*	*end*	*Water Depth (feet AFOS) start*	*end*	*Change in Water Depth (feet)*	*Time (hh:mm) start*	*end*	*Duration of Pumping h*	*m*	*Volume Pumped [1] (cu. ft)*	*Volume Pumped [*] (gallons)*	*Flow Rate (gallons/min)*	*Comments*	*Note*	*max water level*	*max depth*
8/30/2006	35.8	32.8	0.11	3.11	3.0	8:00	19:40	11	40				Volume not calculated (water level rose)		32.9	3.01
8/31/2006	32.9	34.9	3.01	1.01	-2.0	13:45	18:05	4	20	14.1	105.7	0.41				
9/1/2006	33.3	34.3	2.61	1.61	-1.0	8:55	14:00	5	5	7.1	52.9	0.17			32.5	3.41
9/2/2006	33.3	35.1	2.61	0.81	-1.8	9:50	12:15	2	25	12.7	95.2	0.66				
9/3/2006	33.3	35.4	2.61	0.51	-2.1	10:00	11:20	1	20	14.8	111.0	1.39				
9/4/2006	33.1	35.6	2.81	0.31	-2.5	9:40	11:25	1	45	17.7	132.2	1.26				
9/5/2006	33.1	35.7	2.81	0.21	-2.6	14:10	17:00	2	50	18.4	137.5	0.81				
9/6/2006	32.5	35.9	3.41	0.01	-3.4	14:45	18:00	3	15	24.0	179.8	0.92				
9/7/2006	33.4	35.8	2.51	0.11	-2.4	14:15	19:10	4	55	17.0	126.9	0.43				
9/8/2006	35.5	35.8	0.41	0.11	-0.3	13:50	19:30	5	40	2.1	15.9	0.05				
9/9/2006	33.5	35.7	2.41	0.21	-2.2	10:50	19:00	8	10	15.6	116.3	0.24				
9/10/2006	33.5	35.7	2.41	0.21	-2.2	9:50	11:00	1	10	15.6	116.3	1.66				
9/11/2006	33.2	35.1	2.71	0.81	-1.9	11:00	18:30	7	30	13.4	100.5	0.22	Rain event			
9/12/2006	35.0	35.6	0.91	0.31	-0.6	10:30	18:45	8	15	4.2	31.7	0.06	Heavy rainfall event			
9/13/2006	35.9	34.9	0.01	1.01	1.0	9:45	17:45	8	0				Volume not calculated (water level rose)			
9/14/2006	35.9	35.8	0.01	0.11	0.1	8:40	19:30	10	50				Volume not calculated (water level rose)			
9/15/2006	33.7	35.9	2.21	0.01	-2.2	18:20	Not read						Pumped to empty			
9/16/2006	33.3	35.8	2.61	0.11	-2.5	8:30	16:40	8	10	17.7	132.2	0.27				
9/17/2006	34.4	35.8	1.51	0.11	-1.4	8:05	14:00	5	55	9.9	74.0	0.21	Rain event			
9/18/2006	35.8	35.7	0.11	0.21	0.1	9:20	17:00	7	40				Volume not calculated (water level rose)			
9/19/2006	35.9	35.8	0.01	0.11	0.1	11:40	17:15	5	35				Volume not calculated (water level rose)			
9/20/2006	33.1	35.2	2.81	0.71	-2.1	17:10	13:30	20	20	14.8	111.0	0.09				
9/21/2006	33.6		2.31			18:22							Pumped throughout the night	(3)		
9/22/2006	34.5	34.3	1.41	1.61	0.2	8:15	9:50	1	35							
9/23/2006	34.4	33.9	1.51	2.01	0.5	8:46	12:51	4	5				Rain event, water level rising			
9/24/2006	33.3		2.61			8:10	18:15	10	5				Rain event, pumped throughout the night	(3)		
9/25/2006	33.6	35.0	2.31	0.91	-1.4	17:30	20:30	3	0	9.9	74.0	0.41				
9/26/2006	33.6	35.7	2.31	0.21	-2.1	14:25	20:00	5	35	14.8	111.0	0.33				
9/27/2006	36.2	35.5	-0.29	0.41		9:00	17:30	8	30				Error in reading start depth			
9/28/2006	33.3		2.61			11:05							Pumped throughout day and night	(3)		
9/29/2006	35.9	35.9	0.01	0.01	0.0	13:24	14:05	0	41							
9/30/2006	35.8	34.7	0.11	1.21	1.1	13:07	13:51	0	44	7.8	58.2	1.32	Readings appear to be reversed			
10/1/2006	35.6	34.2	0.31	1.71	1.4	10:06	10:40	0	34	9.9	74.0	2.18	Readings appear to be reversed		32.8	3.11
10/2/2006	35.7	34.3	0.21	1.61	1.4	8:48	9:19	0	31	9.9	74.0	2.39	Readings appear to be reversed			
10/3/2006	35.8	34.1	0.11	1.81	1.7	13:53	16:33	2	40	12.0	89.9	0.56	Readings appear to be reversed			
10/4/2006	35.9	34.3	0.01	1.61	1.6	14:00	15:00	1	0	11.3	84.6	1.41	Readings appear to be reversed			
10/5/2006	34.3	33.1	1.61	2.81	1.2	10:38	14:31	3	53	8.5	63.4	0.27	Readings appear to be reversed			
10/6/2006	35.8	34.2	0.11	1.71	1.6	14:04	15:22	1	18	11.3	84.6	1.08	Readings appear to be reversed			
10/7/2006	35.7	34.2	0.21	1.71	1.5	13:08	13:51	0	43	10.6	79.3	1.84	Readings appear to be reversed			
10/8/2006	35.8	34.4	0.11	1.51	1.4	10:20	10:47	0	27	9.9	74.0	2.74	Readings appear to be reversed			
10/9/2006	35.8	34.4	0.11	1.51	1.4	13:10	13:34	0	24	9.9	74.0	3.08	Readings appear to be reversed			
10/10/2006	35.7	34.3	0.21	1.61	1.4	13:55	14:21	0	26	9.9	74.0	2.85	Readings appear to be reversed			
10/11/2006	35.7	34.1	0.21	1.81	1.6	14:10	15:33	1	23	11.3	84.6	1.02	Readings appear to be reversed			
10/12/2006	35.7	34.5	0.21	1.41	1.2	13:23	14:04	0	41	8.5	63.4	1.55	Readings appear to be reversed			
10/13/2006	35.8	34.2	0.11	1.71	1.6	9:50	10:42	0	52	11.3	84.6	1.63	Readings appear to be reversed			
10/14/2006	35.8	34.3	0.11	1.61	1.5	10:21	10:38	0	17	10.6	79.3	4.67	Readings appear to be reversed			
10/15/2006	35.7	34.4	0.21	1.51	1.3	7:24	7:36	0	12	9.2	68.7	5.73	Readings appear to be reversed			
10/16/2006	35.8	34.4	0.11	1.51	1.4	9:20	9:47	0	27	9.9	74.0	2.74	Readings appear to be reversed			
10/17/2006	33.4		2.51			17:15	0:05	6	50				End time is 12:05AM. Rain event.			
10/18/2006	35.8	34.6	0.11	1.31	1.2	13:45	14:20	0	35	8.5	63.4	1.81	Readings appear to be reversed			
10/19/2006	35.7	34.5	0.21	1.41	1.2	14:22	15:50	1	28	8.5	63.4	0.72	Readings appear to be reversed			
10/20/2006	35.9		0.01			13:23	15:06	1	43							
10/21/2006	35.8		0.11			10:54	13:05	2	11							
10/22/2006	35.8	34.6	0.11	1.31	1.2	10:10	10:55	0	45	8.5	63.4	1.41	Readings appear to be reversed			
10/23/2006	35.9	34.7	0.01	1.21	1.2	13:15	14:15	1	0	8.5	63.4	1.06	Readings appear to be reversed			
10/24/2006	35.9		0.01			13:50	16:00	2	10							

TABLE C.1

2006 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (feet BTOS) start	Water Level (feet BTOS) end	Water Depth (feet AFOS) start	Water Depth (feet AFOS) end	Change in Water Depth (feet)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping h	Duration of Pumping m	Volume Pumped (1) (cu. ft)	Volume Pumped (*) (gallons)	Flow Rate (gallons/min)	Comments	Note	max water level	max depth
10/25/2006	35.7	34.2	0.21	1.71	1.5	13:12	13:43	0	31	10.6	79.3	2.56	Readings appear to be reversed			
10/26/2006	33.9	34.3	2.01	1.61	-0.4	7:26	11:00	3	34							
10/27/2006								0	0				Rain event, SES pumped all day, no readings.	(3)		
10/28/2006	35.9	33.5	0.01	2.41	2.4	9:08	13:16	4	8	17.0	126.9	0.51	Readings appear to be reversed, Rain event			
10/29/2006	32.8	32.8	3.11	3.11	0.0	10:42	11:05	0	23							
10/30/2006	35.7	34.1	0.21	1.81	1.6	13:26	15:12	1	46	11.3	84.6	0.80	Readings appear to be reversed			
10/31/2006	35.9	35.2	0.01	0.71	0.7	13:55	14:32	0	37	4.9	37.0	1.00	Readings appear to be reversed			
11/1/2006	35.8	33.5	0.11	2.41	2.3	13:16	13:45	0	29	16.3	121.6	4.19	Readings appear to be reversed		35.7	0.21
11/2/2006	35.8	34.1	0.11	1.81	1.7	13:36	14:30	0	54	12.0	89.9	1.66	Readings appear to be reversed			
11/3/2006	35.7	33.4	0.21	2.51	2.3	9:29	10:41	1	12	16.3	121.6	1.69	Readings appear to be reversed			
11/4/2006	35.7	34.2	0.21	1.71	1.5	13:11	13:55	0	44	10.6	79.3	1.80	Readings appear to be reversed			
11/5/2006	35.8	34.8	0.11	1.11	1.0	9:59	10:30	0	31	7.1	52.9	1.71	Readings appear to be reversed			
11/6/2006	35.75	34.6	0.16	1.31	1.15	14:44	15:10	0	26	8.1	60.8	2.34	Readings appear to be reversed			
11/7/2006	35.7	35.2	0.21	0.71	0.5	13:30	13:52	0	22	3.5	26.4	1.20	Readings appear to be reversed, Rain event			
11/8/2006	35.75		0.16			13:09	23:02	9	53				Rain event			
11/9/2006	35.7	33.3	0.21	2.61	2.4	13:11	14:12	1	1	17.0	126.9	2.08	Readings appear to be reversed			
11/10/2006	35.7	33.3	0.21	2.61	2.4	14:05	15:17	1	12	17.0	126.9	1.76	Readings appear to be reversed			
11/11/2006	35.7	34.1	0.21	1.81	1.6	13:40	14:51	1	11	11.3	84.6	1.19	Readings appear to be reversed			
11/12/2006								0	0				Sunday, no readings	(2)		
11/13/2006	35.75		0.16			13:22	18:00	4	38							
11/14/2006	35.75		0.16			13:48	17:04	3	16							
11/15/2006	35.7		0.21			7:30							Rain event			
11/16/2006							17:20	17	20				Rain event, no readings			
11/17/2006	35.75	34.2	0.16	1.71	1.55	13:31	15:37	2	6	11.0	82.0	0.65	Readings appear to be reversed, system was turned on and off throughout the day and night to accommodate pumping of the leachate and surface waters	(4)		
11/18/2006	35.7	34.3	0.21	1.61	1.4	13:17	14:35	1	18	9.9	74.0	0.95	Readings appear to be reversed, system was turned on and off throughout the day and night to accommodate pumping of the leachate and surface waters	(4)		
11/19/2006								0	0							
11/20/2006	35.7	34.1	0.21	1.81	1.6	13:24	14:04	0	40	11.3	84.6	2.11	Readings appear to be reversed			
11/21/2006	35.9	34.2	0.01	1.71	1.7	15:25	18:22	2	57	12.0	89.9	0.51	Readings appear to be reversed			
11/22/2006	35.8	34.1	0.11	1.81	1.7	10:19	19:22	9	3	12.0	89.9	0.17	Readings appear to be reversed			
11/23/2006								0	0				Holiday	(2)		
11/24/2006	35.8	34.2	0.11	1.71	1.6	10:12	10:53	0	41	11.3	84.6	2.06	Readings appear to be reversed			
11/25/2006								0	0				Holiday	(2)		
11/26/2006	35.8	34.2	0.11	1.71	1.6	10:13	10:49	0	36	11.3	84.6	2.35	Readings appear to be reversed			
11/27/2006	35.8	34.1	0.11	1.81	1.7	13:03	13:53	0	50	12.0	89.9	1.80	Readings appear to be reversed			
11/28/2006	35.9	34.2	0.01	1.71	1.7	16:24	17:02	0	38	12.0	89.9	2.37	Readings appear to be reversed			
11/29/2006	35.8	34.25	0.11	1.66	1.55	13:13	13:50	0	37	11.0	82.0	2.21	Readings appear to be reversed			
11/30/2006						8:35							Rain event, turned off underdrain to clear all surface wate	(4)		
12/1/2006						9:00	Not read						Rain event		35.6	0.31
12/2/2006	35.7	34.1	0.21	1.81	1.6	7:15	21:55	14	40	11.3	84.6	0.10	Readings appear to be reversed, Rain event			
12/3/2006								0	0							
12/4/2006						7:30	17:45	10	15				Rain event. Pump shut off in AM and turned back on in PM.			
12/5/2006						7:50	17:00	9	10				Pump shut down in AM and turned back on in PM due to trucking			
12/6/2006						7:30							Not pumped			
12/7/2006	35.7	34.0	0.21	1.91	1.7	10:22	14:28	4	6	12.0	89.9	0.37	Readings appear to be reversed			
12/8/2006								0	0				Not pumped, SES offsite.	(8)		
12/9/2006	35.8	35.5	0.11	0.41	0.3	9:07	10:57	1	50	2.1	15.9	0.14	Readings appear to be reversed			
12/10/2006								0	0				Sunday, not pumped	(2)		
12/11/2006	35.9	34.1	0.01	1.81	1.8	15:30	17:37	2	7	12.7	95.2	0.75	Readings appear to be reversed			
12/12/2006	35.8	34.2	0.11	1.71	1.6	13:13	20:07	6	54	11.3	84.6	0.20	Readings appear to be reversed			
12/13/2006	35.9	34.0	0.01	1.91	1.9	14:51	16:12	1	21	13.4	100.5	1.24	Readings appear to be reversed, Rain event			
12/14/2006	35.8	34.4	0.11	1.51	1.4	23:24										
12/15/2006	35.9	34.2	0.01	1.71	1.7	13:24	13:35	0	11	12.0	89.9	8.17	Readings appear to be reversed			
12/16/2006	35.8		0.11			14:40										
12/17/2006								0	0				Sunday	(2)		
12/18/2006	35.75		0.16			9:22										
12/19/2006	35.9		0.01			13:25										
12/20/2006	35.8		0.11			12:20										

TABLE C.1

2006 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (feet BTOS) start	Water Level (feet BTOS) end	Water Depth (feet AFOS) start	Water Depth (feet AFOS) end	Change in Water Depth (feet)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping h	Duration of Pumping m	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note	max water level	max depth
12/21/2006	35.6	33.9	0.31	2.01	1.7	11:15	13:20	2	5	12.0	89.9	0.72	Readings appear to be reversed			
12/22/2006	35.7	34.2	0.21	1.71	1.5	7:30	9:00	1	30	10.6	79.3	0.88	Readings appear to be reversed, Rain event			
12/23/2006	35.7	34.0	0.21	1.91	1.7	18:30	19:45	1	15	12.0	89.9	1.20	Readings appear to be reversed			
12/24/2006								0	0				Sunday	(2)		
12/25/2006	35.8	34.1	0.11	1.81	1.7	13:41	15:00	1	19	12.0	89.9	1.14	Readings appear to be reversed			
12/26/2006	35.8	35.8	0.11	0.11	0.0	9:00	14:15	5	15				For the remainder of 2006, pumps are running continuously (one or two water level readings are taken per day to confirm pumps are working). Volume of water extracted is not calculated.			
12/27/2006	35.8	35.8	0.11	0.11	0.0	18:15	19:30	1	15							
12/28/2006	35.8	35.8	0.11	0.11	0.0	18:30	19:43	1	13							
12/29/2006	35.8	35.8	0.11	0.11	0.0	13:00	13:30	0	30							
12/30/2006	35.8	35.8	0.11	0.11	0.0	18:30	19:10	0	40							
12/31/2006	35.8	35.8	0.11	0.11	0.0	7:00	10:00	3	0							
									Total							

Note:
BTOS - Below top of sump
AFOS - Above floor of sump
[*] Assumed pump operated at a constant flow rate based on pump specifications and total head
(1) No water was pumped on this date, however the water level rose slightly between the two observation times.
(2) Sunday or holiday (no reading unless rain). Maximum 1 day without pumping unless currently raining or rain event has occurred in the previous 24 hours.
(3) System was operated throughout the day to accommodate pumping of the accumulating water.
(4) Underdrain pumped turned off to clear all surface water
(5) Not pumped due to GM Union strike.
(6) Not pumped, Contractor repairing pumping equipment
(7) Not pumped, water is at an acceptable level.
(8) Contractor not on Site, manhole pumped next day.
(9) Readings not collected on this date because Contractor is overly busy (no rain occurred)

TABLE C.2

2007 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information	Jan. 1 - Dec. 31
Top of sump (datum reference)	0
Bottom of sump (feet BTOS)	35.91
sump diameter (feet)	1.5

Date	*Water Level (ft BTOS)* start	end	*Water Depth* start	end	*Change in Water Depth (feet)*	*Time (hh:mm)* start	end	*Duration of Pumping?* h	m	*Volume Pumped [1] (cu. ft)*	*Volume Pumped [*] (gallons)*	*Flow Rate (gallons/min)*	*Comments*	*Note*
													For all of 2007, pumps are running continuously (one or two water level readings are taken per day to confirm pumps are working). Volume of water extracted is not calculated.	
1/1/2007														
1/2/2007	35.8	35.8	0.11	0.11	0	15:00	17:00	2	0					
1/3/2007	35.8	35.8	0.11	0.11	0	13:14	14:57	1	43					
1/4/2007	35.8	35.8	0.11	0.11	0	8:00	17:00	9	0					
1/5/2007	35.8	35.8	0.11	0.11	0	8:11	15:30	7	19					
1/6/2007	35.8	35.8	0.11	0.11	0	8:10	15:30	7	20					
1/7/2007	35.8	35.8	0.11	0.11	0	11:30	15:10	3	40					
1/8/2007	35.8	35.8	0.11	0.11	0	8:00	17:00	9	0					
1/9/2007	35.8	35.7	0.11	0.21	0.1	8:00	17:00	9	0					
1/10/2007	35.7	35.7	0.21	0.21	0	8:45	17:45	9	0					
1/11/2007	35.7	35.7	0.21	0.21	0	7:45	16:00	8	15					
1/12/2007	35.7	35.7	0.21	0.21	0	7:15	16:00	8	45				Heavy rain	
1/13/2007	35.7	35.7	0.21	0.21	0	7:00	16:00	9	0				Heavy rain	
1/14/2007	35.7	35.7	0.21	0.21	0	7:02	17:00	9	58				Heavy rain	
1/15/2007	35.7	35.7	0.21	0.21	0	7:15	17:05	9	50				Heavy rain	
1/16/2007	35.7	35.7	0.21	0.21	0	7:30							Heavy rain	
1/17/2007	35.7	35.7	0.21	0.21	0	7:30	15:30	8	0					
1/18/2007	35.7	35.7	0.21	0.21	0	7:30	16:00	8	30					
1/19/2007	35.7	35.7	0.21	0.21	0	8:15	14:00	5	45					
1/20/2007	35.7	35.7	0.21	0.21	0	8:00	16:00	8	0					
1/21/2007	35.7	35.7	0.21	0.21	0	10:00	15:30	5	30					
1/22/2007	35.7	35.7	0.21	0.21	0	8:30	15:30	7	0					
1/23/2007	35.7	33.7	0.21	2.21	2.0	8:30	17:00	8	30				Continuous pumping?	
1/24/2007	35.7	33.4	0.21	2.51	2.3	7:00	17:30	10	30				Continuous pumping?	
1/25/2007	35.9		0.01			7:30								
1/26/2007	35.7	33.7	0.21	2.21	2.0	7:30	17:00	9	30				Continuous pumping?	
1/27/2007	35.7	33.9	0.21	2.01	1.8	7:36	15:00	7	24				Continuous pumping?	
1/28/2007													Sunday	(1)
1/29/2007	35.7	35.7	0.21	0.21	0	7:40	15:30	7	50					
1/30/2007	35.7	35.7	0.21	0.21	0	7:50	15:30	7	40					
1/31/2007	35.7	35.7	0.21	0.21	0	11:00	15:30	4	30					
2/1/2007	35.7		0.21			7:41								
2/2/2007	35.7		0.21			8:11								
2/3/2007	35.7		0.21			8:04								
2/5/2007	35.7		0.21			9:00								
2/6/2007	35.7		0.21			13:00								
2/7/2007	35.7		0.21			10:30								
2/8/2007	35.7		0.21			7:45								
2/9/2007	35.7		0.21			7:45								
2/10/2007	35.7		0.21			7:30								
2/11/2007													Sunday	(1)
2/12/2007	35.7		0.21			7:30								
2/13/2007	34.0		1.91			8:15							Heavy rain/sleet	
2/14/2007	35.7		0.21			8:45								
2/15/2007	35.7		0.21			8:00								
2/16/2007	35.7		0.21			8:00								
2/17/2007	35.7		0.21			7:30								
2/18/2007													Sunday	(1)
2/19/2007	35.7		0.21			7:30								
2/20/2007	34.0		1.91			11:25							Continuous pumping?	
2/21/2007	35.7		0.21			7:30							Rain event	

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GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (ft BTOS) start	Water Level (ft BTOS) end	Water Depth start	Water Depth end	Change in Water Depth (feet)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping? h	Duration of Pumping? m	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
2/22/2007	35.7		0.21			7:30								
2/23/2007	35.7		0.21			7:30								
2/24/2007	35.7		0.21			10:00							Rain event	
2/25/2007	35.7		0.21			10:00							Rain event	
2/26/2007	35.7		0.21			7:30								
2/27/2007													Water level not read due to work load.	(2)
2/28/2007	35.7		0.21			7:30								
3/1/2007	35.7		0.21			7:30							Rain event	
3/2/2007	35.7		0.21			7:30								
3/3/2007	35.7		0.21			7:30							Rain event	
3/4/2007	35.7		0.21			7:30								
3/5/2007	35.7		0.21			7:30								
3/6/2007	35.7		0.21			7:30								
3/7/2007	35.7		0.21			9:00								
3/8/2007	35.7		0.21			7:30								
3/9/2007	35.7		0.21			14:00								
3/10/2007	35.7		0.21			7:30								
3/11/2007													Sunday	(1)
3/12/2007	35.7		0.21			7:30								
3/13/2007														
3/14/2007	35.7		0.21			7:30								
3/15/2007	35.7		0.21			9:00							Heavy rainfall event	
3/16/2007													Water level not read due to work load.	(2)
3/17/2007	35.7		0.21			9:10								
3/18/2007													Sunday	(1)
3/19/2007	35.7		0.21			8:20								
3/20/2007	35.7		0.21			7:30								
3/21/2007	35.7		0.21			13:20								
3/22/2007	35.7		0.21			10:30							Rain event	
3/23/2007	35.7		0.21			10:30							Rain event	
3/24/2007	35.7		0.21			7:30								
3/25/2007													Sunday	(1)
3/26/2007	35.7		0.21			8:30								
3/27/2007	35.7		0.21			15:30								
3/28/2007	35.7		0.21			7:30							Rain event	
3/29/2007	35.7		0.21			8:30								
3/30/2007	35.7		0.21			8:00								
3/31/2007	35.7		0.21			8:30							Rain event	
4/1/2007													Sunday	(1)
4/2/2007	35.7		0.21			7:30								
4/3/2007	35.7		0.21			7:30							Rain event	
4/4/2007	35.7		0.21			8:30								
4/5/2007	35.7		0.21			8:00								
4/6/2007	35.7		0.21			8:00								
4/7/2007	35.7		0.21			7:30								
4/8/2007													Sunday	(1)
4/9/2007	35.7		0.21			7:30								
4/10/2007	35.7		0.21			7:30								
4/11/2007	35.7		0.21			7:30							Rain event	
4/12/2007	34.1		1.81			7:30							Continuous pumping?	
4/13/2007	35.7		0.21			8:50								
4/14/2007	35.7		0.21			8:00							Rain event	
4/15/2007													Sunday	(1)
4/16/2007	35.7		0.21			7:30								
4/17/2007	35.7		0.21			7:30								
4/18/2007	35.7		0.21			7:30								
4/19/2007	35.7		0.21			7:30								
4/20/2007	35.7		0.21			7:30								

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GM CETC BEDFORD FACILITY
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Date	Water Level (ft BTOS) start	Water Level (ft BTOS) end	Water Depth start	Water Depth end	Change in Water Depth (feet)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping? h	Duration of Pumping? m	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
4/21/2007	35.7		0.21			8:40								
4/22/2007													Sunday	(1)
4/23/2007	35.7		0.21			7:30								
4/24/2007	35.7		0.21			7:30								
4/25/2007	35.7		0.21			7:30							Rain event	
4/26/2007	35.7		0.21			7:30							Rain event	
4/27/2007	35.7		0.21			7:30								
4/28/2007	35.7		0.21			7:30								
4/29/2007													Sunday	(1)
4/30/2007	35.7		0.21			7:40								
5/1/2007	35.7		0.21			7:30								
5/2/2007	35.7		0.21			7:30							Rain event	
5/3/2007	35.7		0.21			7:30								
5/4/2007	35.7		0.21			7:30							Rain event	
5/5/2007													Saturday	(1)
5/6/2007													Sunday	(1)
5/7/2007	35.7		0.21			7:30								
5/8/2007	35.7		0.21			7:30								
5/9/2007	35.7		0.21			7:30								
5/10/2007	35.7		0.21			7:30								
5/11/2007	35.7		0.21			7:30								
5/12/2007													Saturday	(1)
5/13/2007													Sunday	(1)
5/14/2007	35.7		0.21			7:30								
5/15/2007	35.7		0.21			7:30							Rain event	
5/16/2007	35.8		0.11			7:30								
5/17/2007	35.8		0.11			8:30								
5/18/2007	35.8		0.11			8:30								
5/19/2007													Saturday	(1)
5/20/2007													Sunday	(1)
5/21/2007	35.8		0.11			8:00								
5/22/2007	35.7		0.21			7:45								
5/23/2007	35.6		0.31			7:50								
5/24/2007	35.7		0.21			7:30								
5/25/2007													Holiday	(1)
5/26/2007													Saturday	(1)
5/27/2007													Sunday, rain event	(1)
5/28/2007													Holiday	(1)
5/29/2007	35.6		0.31			7:35								
5/30/2007	35.7		0.21			19:35								
5/31/2007	35.7		0.21			11:30								
6/1/2007	35.75		0.16			7:50								
6/2/2007	35.75		0.16			7:20								
6/3/2007	35.4		0.51			7:30								
6/4/2007	35.45		0.46			8:00							Heavy rainfall event	
6/5/2007	35.7		0.21			10:50								
6/6/2007														
6/7/2007	35.75		0.16			10:40								
6/8/2007	35.4		0.51			8:34							Heavy rainfall event	
6/9/2007	35.75		0.16			7:24								
6/10/2007	35.75		0.16			8:00								
6/11/2007	35.75		0.16			7:37								
6/12/2007	35.75		0.16			7:30								
6/13/2007	35.75		0.16			7:30								
6/14/2007	35.75		0.16			8:11								
6/15/2007	35.75		0.16			7:40								
6/16/2007	35.4		0.51			7:41								
6/17/2007													Sunday	(1)

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GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (ft BTOS) start	Water Level (ft BTOS) end	Water Depth start	Water Depth end	Change in Water Depth (feet)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping? h	Duration of Pumping? m	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
6/18/2007	35.7		0.21			7:35								
6/19/2007	35.75		0.16			8:27								
6/20/2007	35.75		0.16			13:15								
6/21/2007	35.7		0.21			7:36								
6/22/2007	35.7		0.21			9:30								
6/23/2007	35.75		0.16			7:27								
6/24/2007													Sunday	(1)
6/25/2007	35.7		0.21			7:37								
6/26/2007	35.75		0.16			8:20								
6/27/2007	35.55		0.36			13:14								
6/28/2007	35.75		0.16			8:38								
6/29/2007	35.75		0.16			7:48								
6/30/2007	35.75		0.16			8:16								
7/1/2007													Sunday	(1)
7/2/2007	35.7		0.21			7:45								
7/3/2007	35.7		0.21			7:30								
7/4/2007														
7/5/2007	35.6		0.31			7:33								
7/6/2007	35.7		0.21			7:36								
7/7/2007	35.7		0.21			7:27								
7/8/2007													Sunday	(1)
7/9/2007	35.7		0.21			8:14								
7/10/2007	35.75		0.16			7:26								
7/11/2007	35.75		0.16			7:34								
7/12/2007	35.75		0.16			10:23								
7/13/2007	35.75		0.16			7:26								
7/14/2007	35.75		0.16			7:50								
7/15/2007													Sunday	(1)
7/16/2007	35.75		0.16			13:40								
7/17/2007	35.4		0.51			7:30								
7/18/2007	34.3		1.61			8:55							Continuous pumping?	
7/19/2007	35.5		0.41			9:38							Continuous pumping?	
7/20/2007	35.08		0.83			8:34							Continuous pumping?	
7/21/2007	35.5		0.41			8:15							Continuous pumping?	
7/22/2007													Sunday	(1)
7/23/2007	35.75		0.16			8:07								
7/24/2007	35.75		0.16			7:35								
7/25/2007	35.75		0.16			7:30								
7/26/2007	35.7		0.21			7:37								
7/27/2007	35.75		0.16			7:32								
7/28/2007	35.75		0.16			7:42								
7/29/2007													Sunday	(1)
7/30/2007	35.8		0.11			7:36								
7/31/2007														
8/1/2007	35.75		0.16			10:08								
8/2/2007	35.75		0.16			9:07								
8/3/2007	35.80		0.11			17:58								
8/4/2007	35.75		0.16			10:07								
8/5/2007													Sunday	(1)
8/6/2007	35.80		0.11			14:06								
8/7/2007	35.70		0.21			7:53								
8/8/2007													No pumping, power off to place additional risers	(4)
8/9/2007													No pumping, power off to place additional risers	(4)
8/10/2007													No pumping, power off to place additional risers	(4)
8/11/2007													No pumping, power off to place additional risers	(4)
8/12/2007													Sunday	(1)

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GM CETC BEDFORD FACILITY
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Date	Water Level (ft BTOS) start	Water Level (ft BTOS) end	Water Depth start	Water Depth end	Change in Water Depth (feet)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping? h	Duration of Pumping? m	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
8/13/2007													No pumping, power off to place additional risers	(4)
8/14/2007	35.70		0.21			10:24								
8/15/2007	33.70		2.21			16:00								
8/16/2007	35.75		0.16			7:58								
8/17/2007	35.75		0.16			9:39								
8/18/2007	35.70		0.21			9:50								
8/19/2007	35.50		0.41			9:30								
8/20/2007													No pumping, systems shut down to work on effluent lines to moduta	(5)
8/21/2007													No pumping, systems shut down to work on effluent lines to moduta	(5)
8/22/2007													No pumping, systems shut down to work on effluent lines to moduta	(5)
8/23/2007	32.95		2.96			13:40								
8/24/2007	35.75		0.16			8:06								
8/25/2007	35.75		0.16			8:41								
8/26/2007													Sunday	(1)
8/27/2007	35.75		0.16			8:12								
8/28/2007	35.75		0.16			14:51								
8/29/2007	35.75		0.16			20:51								
8/30/2007	34.10		1.81			13:10							Continuous pumping?	
8/31/2007	35.75		0.16			8:26								
9/1/2007	35.75		0.16			7:51								
9/2/2007													Sunday	(1)
9/3/2007	35.75		0.16			8:12								
9/4/2007	35.75		0.16			13:24								
9/5/2007	35.75		0.16			8:03								
9/6/2007	35.75		0.16			14:33								
9/7/2007	35.75		0.16			7:41								
9/8/2007	35.75		0.16			7:20								
9/9/2007													Sunday	(1)
9/10/2007	35.75		0.16			7:49								
9/11/2007	35.75		0.16			8:05								
9/12/2007	35.75		0.16			8:03								
9/13/2007	35.75		0.16			7:52								
9/14/2007	35.75		0.16			7:35								
9/15/2007	35.75		0.16			8:25								
9/16/2007													Sunday	(1)
9/17/2007	35.75		0.16			7:45								
9/18/2007	35.75		0.16			7:34								
9/19/2007	35.75		0.16			7:35								
9/20/2007	35.75		0.16			8:40								
9/21/2007	35.75		0.16			8:35								
9/22/2007	35.70		0.21			9:42								
9/23/2007													Sunday	(1)
9/24/2007	35.75		0.16			9:45								
9/25/2007														
9/26/2007	35.75		0.16			8:15								
9/27/2007	35.80		0.11			7:25								
9/28/2007	35.80		0.11			9:45								
9/29/2007													Saturday	(1)
9/30/2007													Sunday	(1)
10/1/2007	35.80		0.11			8:49								
10/2/2007	35.75		0.16			16:55								
10/3/2007	35.75		0.16			7:52								
10/4/2007	35.75		0.16			10:54								
10/5/2007	35.75		0.16			9:11								
10/6/2007	35.75		0.16			9:31								
10/7/2007													Sunday	(1)

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GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (ft BTOS) start	Water Level (ft BTOS) end	Water Depth start	Water Depth end	Change in Water Depth (feet)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping? h	Duration of Pumping? m	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
10/8/2007	35.75		0.16			7:43								
10/9/2007	35.75		0.16			9:21								
10/10/2007	35.75		0.16			10:06								
10/11/2007	35.75		0.16			13:26								
10/12/2007	35.75		0.16			9:37								
10/13/2007	35.75		0.16			7:24								
10/14/2007	35.75		0.16			20:17								
10/15/2007	35.75		0.16			21:35								
10/16/2007	35.75		0.16			20:32								
10/17/2007	35.75		0.16			22:14								
10/18/2007	35.75		0.16			20:37								
10/19/2007	35.75		0.16			20:44								
10/20/2007													Saturday	(1)
10/21/2007													Sunday	(1)
10/22/2007	35.75		0.16			13:31								
10/23/2007	35.75		0.16			8:08								
10/24/2007	35.75		0.16			7:45								
10/25/2007	35.75		0.16			13:28								
10/26/2007	35.75		0.16			9:53								
10/27/2007													Saturday	(1)
10/28/2007													Sunday	(1)
10/29/2007														
10/30/2007														
10/31/2007														
11/1/2007	35.75		0.16			11:19								
11/2/2007														
11/3/2007														
11/4/2007													Sunday	(1)
11/5/2007														
11/6/2007														
11/7/2007														
11/8/2007														
11/9/2007														
11/10/2007														
11/11/2007													Sunday	(1)
11/12/2007	35.7		0.21			13:31							Not pumped	
11/13/2007													Not pumped	
11/14/2007													Not pumped	
11/15/2007													Not pumped	
11/16/2007													Not pumped	
11/17/2007													Not pumped	
11/18/2007													Sunday	(1)
11/19/2007	34.1		1.81			10:14							Not pumped?	
11/20/2007	33.8		2.11			9:33							Not pumped?	
11/21/2007	33.6		2.31			10:15							Not pumped?	
11/22/2007														
11/23/2007	33.1		2.81			9:40							Not pumped?	
11/24/2007	33.1		2.81			20:40							Not pumped?	
11/25/2007													Sunday	(1)
11/26/2007	32.7		3.21			21:41							Not pumped?	
11/27/2007	32.5		3.41			2:29							Pumped?	
11/28/2007	35.7		0.21			19:49								
11/29/2007	35.7		0.21			21:27								
11/30/2007	35.7		0.21			22:04								
12/1/2007													Saturday	(1)
12/2/2007													Sunday	(1)
12/3/2007	35.8		0.11			13:15								
12/4/2007	35.8		0.11			7:45								

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Date	Water Level (ft BTOS) start	Water Level (ft BTOS) end	Water Depth start	Water Depth end	Change in Water Depth (feet)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping? h	Duration of Pumping? m	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
12/5/2007														
12/6/2007	35.8		0.11			10:00								
12/7/2007													Not pumped	
12/8/2007	35.8		0.11			10:30								
12/9/2007													Sunday	(1)
12/10/2007													Not pumped	
12/11/2007	35.8		0.11			13:30								
12/12/2007	35.8		0.11			13:25								
12/13/2007														
12/14/2007	35.8		0.11			8:50								
12/15/2007	35.8		0.11			21:45								
12/16/2007													Sunday	(1)
12/17/2007	35.8		0.11			2:10								
12/18/2007	35.8		0.11			23:25								
12/19/2007	35.8		0.11			23:41								
12/20/2007	35.8		0.11			22:53								
12/21/2007	35.8		0.11			21:50								
12/22/2007	35.8		0.11			5:02								
12/23/2007													Sunday	(1)
12/24/2007	35.8		0.11			9:57								
12/25/2007	35.8		0.11			14:02								
12/26/2007	35.8		0.11			13:24								
12/27/2007	35.8		0.11			14:23								
12/28/2007	35.8		0.11			14:12								
12/29/2007	35.7		0.21			13:33								
12/30/2007	35.9		0.01			1:24								
12/31/2007	35.9		0.01			2:31								
								Total						
								Average/day						

Note:
BTOS - Below top of sump
AFOS - Above floor of sump
(*) Assumed pump operated at a constant flow rate based on pump specifications and total head
(1) Sunday or holiday (no reading unless rain).
(2) Readings not collected on this date because Contractor is overly busy (no rain occurred)
(3) No water was pumped on this date, however the water level rose slightly between the two observation times.
(4) No pumping, power off to place additional risers
(5) No pumping, systems shut down to work on effluent lines to modutank
(6) Not pumped due to GM Union strike.
(7) Not pumped, Contractor repairing pumping equipment
(8) Not pumped, water is at an acceptable level.
(9) Contractor not on Site, manhole pumped next day.

TABLE C.3

2008 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information	Jan. 1 - Feb. 11	Dec. 22 - Dec. 31
Top of sump (datum reference)	0	0
Bottom of sump (feet BTOS)	35.91	46.91
sump diameter (feet)	3.0	3.0

Date	*Water Level (ft BTOS) start*	*Time (hh:mm)*	*Water Depth (feet AFOS)*	*Comments*	*Note*
1/1/2008	35.8	1:41	0.11	Pump ran continuously for 2008. Water levels taken	
1/2/2008	35.8	2:21	0.11	once per day. Volume of water extracted is not	
1/3/2008	35.8	1:16	0.11	calculated.	
1/4/2008	35.9	2:53	0.01		
1/5/2008	35.9	6:10	0.01	Rain event	
1/6/2008	35.9	13:43	0.01		
1/7/2008	35.9	11:12	0.01		
1/8/2008	35.9	11:37	0.01	Rain event	
1/9/2008	35.9	10:57	0.01		
1/10/2008	35.9	14:08	0.01	Rain event	
1/11/2008	35.8	14:44	0.11		
1/12/2008	35.9	1:06	0.01		
1/13/2008	35.9	1:23	0.01	Rain event	
1/14/2008	35.9	1:41	0.01		
1/15/2008	35.9	2:23	0.01		
1/16/2008	35.9	1:46	0.01		
1/17/2008	35.9	1:21	0.01	Rain event	
1/18/2008	35.9	3:04	0.01		
1/19/2008				No water level reading	(1)
1/20/2008				No water level reading	(1)
1/21/2008				No water level reading	(1)
1/22/2008				No water level reading - Rain event	(1)
1/23/2008				No water level reading	(1)
1/24/2008				No water level reading	(1)
1/25/2008				No water level reading	(1)
1/26/2008				No water level reading	(1)
1/27/2008				No water level reading	(1)
1/28/2008				No water level reading	(1)
1/29/2008				No water level reading - Rain event	(1)
1/30/2008				No water level reading	(1)
1/31/2008				No water level reading	(1)
2/1/2008				No water level reading	(1)
2/2/2008				No water level reading	(1)
2/3/2008				No water level reading	(1)
2/4/2008				No water level reading	(1)
2/5/2008				No water level reading - Rain event	(1)
2/6/2008				No water level reading - Rain event	(1)
2/7/2008				No water level reading	(1)
2/8/2008	35.8	13:45	0.11		
2/9/2008	35.7	21:31	0.21		
2/10/2008	35.7	23:22	0.21		
2/11/2008	35.7	22:54	0.21		
2/12/2008	35.7	0:00	0.21	Rain event	
2/13/2008	35.7	14:47	0.21		
2/14/2008	35.7	10:37	0.21	Rain event	
2/15/2008	35.8	11:06	0.11		
2/16/2008	35.9	14:10	0.01		
2/17/2008	35.9	9:12	0.01	Rain event	
2/18/2008	35.9	8:31	0.01		
2/19/2008	35.9	10:12	0.01		
2/20/2008	35.9	9:31	0.01		
2/21/2008	35.9	10:34	0.01		
2/22/2008	35.9	14:27	0.01		
2/23/2008	35.9	15:46	0.01	Rain event	
2/24/2008	35.9	11:47	0.01	Rain event	
2/25/2008	35.9	10:19	0.01	Rain event	
2/26/2008	35.9	9:57	0.01	Rain event	
2/27/2008	35.9	11:07	0.01	Rain event	
2/28/2008	35.9	9:34	0.01		
2/29/2008	35.9	10:39	0.01		
3/1/2008	35.9	06/;42	0.01		
3/2/2008	35.9	10:34	0.01		
3/3/2008	35.9	11:22	0.01	Rain event	
3/4/2008	35.9	13:41	0.01	Rain event	
3/5/2008	35.9	11:26	0.01		
3/6/2008	35.9	13:46	0.01		
3/7/2008	35.9	13:40	0.01		
3/8/2008	35.9	9:46	0.01		
3/9/2008				Sunday	(2)
3/10/2008	35.9	15:05	0.01		
3/11/2008	35.9	12:04	0.01		
3/12/2008	35.9	11:42	0.01		

TABLE C.3

2008 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (ft BTOS) start*	*Time (hh:mm)*	*Water Depth (feet AFOS)*	*Comments*	*Note*
3/13/2008	35.9	15:04	0.01		
3/14/2008	35.9	14:41	0.01	Rain event	
3/15/2008	35.9	13:56	0.01		
3/16/2008				Sunday	(2)
3/17/2008	35.9	14:24	0.01		
3/18/2008	35.9	13:17	0.01	Rain event	
3/19/2008	35.9	13:23	0.01	Rain event	
3/20/2008	35.9	15:47	0.01		
3/21/2008	35.9	13:05	0.01		
3/22/2008				Saturday, Off-Site	(2)
3/23/2008	35.9	13:34	0.01	Rain event	
3/24/2008	35.9	16:38	0.01		
3/25/2008	35.9	10:06	0.01		
3/26/2008	35.9	15:48	0.01	Rain event	
3/27/2008	35.9	16:35	0.01	Rain event	
3/28/2008	35.9	13:30	0.01	Rain event	
3/29/2008	35.9	12:52	0.01		
3/30/2008	35.9	9:49	0.01	Rain event	
3/31/2008	35.85	14:04	0.06	Rain event	
4/1/2008	35.9	11:42	0.01	Rain event	
4/2/2008	32.7	14:19	3.21	Off for pipe work	(3)
4/3/2008	32.2	9:22	3.71	Off for pipe work - Rain event	(3)
4/4/2008	35.9	13:19	0.01	Rain event	
4/5/2008	35.9	9:14	0.01		
4/6/2008	35.9	14:16	0.01	Off for pipe work	(3)
4/7/2008	32.6	15:39	3.31	Off for pipe work	(3)
4/8/2008	32.0	10:13	3.91	Off for pipe work	(3)
4/9/2008	31.6	13:56	4.31	Back on at 2:10 PM - Rain event	
4/10/2008	35.9	11:42	0.01	Rain event	
4/11/2008	35.9	10:20	0.01	Rain event	
4/12/2008	35.9	13:42	0.01	Rain event	
4/13/2008				Sunday	(2)
4/14/2008	35.9	16:27	0.01		
4/15/2008	35.9	16:42	0.01		
4/16/2008	35.9	15:39	0.01		
4/17/2008	35.9	16:18	0.01		
4/18/2008	35.9	13:31	0.01		
4/19/2008				Saturday, Off-Site	(2)
4/20/2008	35.85	14:37	0.06		
4/21/2008	35.9	16:31	0.01		
4/22/2008	35.9	12:17	0.01	Shut down 4:24 pm broke pipe	(3)
4/23/2008	35.9	13:33	0.01	Turned back on at 9:57 AM	
4/24/2008	35.9	14:23	0.01	Rain event	
4/25/2008	35.9	11:08	0.01		
4/26/2008	35.9	14:16	0.01	Rain event	
4/27/2008				Sunday	(2)
4/28/2008	35.9	0:00	0.01	CRA Tested Sump - Rain event	(4)
4/29/2008	35.9	12:50	0.01	CRA Tested Sump	(4)
4/30/2008	35.9	14:52	0.01		
5/1/2008	35.9	14:09	0.01		
5/2/2008	35.9	11:20	0.01	Rain event	
5/3/2008				Saturday, Off-Site - Rain event	(2)
5/4/2008	35.9	13:43	0.01		
5/5/2008	35.9	15:07	0.01		
5/6/2008	35.9	12:53	0.01		
5/7/2008	35.9	11:24	0.01	Rain event	
5/8/2008	35.9	9:44	0.01	Rain event	
5/9/2008	35.9	13:39	0.01	Rain event	
5/10/2008				Saturday, Off-Site	(2)
5/11/2008	35.9	13:37	0.01	Rain event	
5/12/2008	35.9	10:47	0.01		
5/13/2008	35.9	10:13	0.01		
5/14/2008	35.9	16:54	0.01	Rain event	
5/15/2008	35.9	15:05	0.01	Rain event	
5/16/2008	35.8	12:54	0.11		
5/17/2008	35.8	13:54	0.11		
5/18/2008				Sunday, Rain event	(2)
5/19/2008	35.8	14:17	0.11	Rain event	
5/20/2008	35.8	13:52	0.11		
5/21/2008	35.8	14:14	0.11		
5/22/2008	35.9	9:11	0.01		
5/23/2008	35.8	9:37	0.11	Rain event	
5/24/2008				Saturday, Off-Site	(2)
5/25/2008	35.8	14:06	0.11		
5/26/2008				Holiday, Off-Site	(2)
5/27/2008	35.8	7:55	0.11	Rain event	
5/28/2008	35.8	16:18	0.11		

TABLE C.3

2008 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (ft BTOS) start*	*Time (hh:mm)*	*Water Depth (feet AFOS)*	*Comments*	*Note*
5/29/2008	35.8	15:27	0.11		
5/30/2008	35.8	14:17	0.11		
5/31/2008				Saturday, Off-Site	(2)
6/1/2008	35.8	13:35	0.11		
6/2/2008	35.85	10:34	0.06		
6/3/2008	35.85	10:57	0.06	Rain event	
6/4/2008	35.8	14:14	0.11	Rain event	
6/5/2008	35.8	10:16	0.11		
6/6/2008	35.8	12:24	0.11		
6/7/2008	35.9	14:37	0.01	Rain event	
6/8/2008				Sunday	(2)
6/9/2008	35.8	12:56	0.11	Rain event	
6/10/2008	35.8	9:26	0.11	Rain event	
6/11/2008	35.85	10:59	0.06		
6/12/2008	35.85	8:54	0.06		
6/13/2008	35.9	17:04	0.01	Rain event	
6/14/2008				Saturday, Off-Site	
6/15/2008	35.8	13:15	0.11		
6/16/2008	35.85	17:02	0.06		
6/17/2008	35.85	8:39	0.06		
6/18/2008	35.85	13:29	0.06		
6/19/2008	35.85	17:24	0.06		
6/20/2008	35.85	14:17	0.06		
6/21/2008	35.9	13:21	0.01		
6/22/2008				Sunday	
6/23/2008	35.9	17:21	0.01		
6/24/2008	35.9	17:28	0.01		
6/25/2008	35.9	14:31	0.01		
6/26/2008	35.9	10:29	0.01		
6/27/2008	35.9	15:38	0.01	Rain event	
6/28/2008				Saturday, Off-Site - Rain event	(2)
6/29/2008	35.9	11:14	0.01	Rain event	
6/30/2008	35.9	17:24	0.01		
7/1/2008	35.9	15:37	0.01		
7/2/2008	35.9	12:04	0.01		
7/3/2008	35.8	9:32	0.11	Rain event	
7/4/2008	35.9	10:13	0.01	Rain event	
7/5/2008	35.9	12:43	0.01		
7/6/2008	35.9	10:21	0.01		
7/7/2008	35.9	14:56	0.01	Rain event	
7/8/2008	35.85	11:48	0.06	Rain event	
7/9/2008	35.9	10:22	0.01		
7/10/2008	35.9	12:24	0.01		
7/11/2008	35.9	14:34	0.01		
7/12/2008	35.9	14:58	0.01	Rain event	
7/13/2008	35.9	9:44	0.01		
7/14/2008	35.9	14:31	0.01		
7/15/2008	35.8	12:11	0.11		
7/16/2008	35.9	9:22	0.01		
7/17/2008	35.9	10:28	0.01		
7/18/2008	35.8	12:55	0.11		
7/19/2008				Saturday, Off-Site	
7/20/2008	35.8	13:17	0.11	Rain event	
7/21/2008	35.8	10:53	0.11		
7/22/2008	35.9	10:34	0.01	Rain event	
7/23/2008	35.8	12:35	0.11		
7/24/2008	35.8	12:20	0.11		
7/25/2008	35.8	15:31	0.11		
7/26/2008	35.8	13:58	0.11		
7/27/2008				Sunday	
7/28/2008	35.8	12:34	0.11		
7/29/2008	35.8	12:30	0.11		
7/30/2008	35.8	9:24	0.11	Rain event	
7/31/2008	35.8	13:19	0.11	Rain event	
8/1/2008	35.8	9:33	0.11		
8/2/2008				Saturday, Off-Site	
8/3/2008	35.8	14:07	0.11		
8/4/2008	35.8	11:30	0.11		
8/5/2008	35.8	11:23	0.11	Rain event	
8/6/2008	35.8	9:27	0.11	Rain event	
8/7/2008	35.8	13:16	0.11		
8/8/2008	35.8	13:41	0.11		
8/9/2008	35.8	13:32	0.11		
8/10/2008				Sunday	
8/11/2008	35.8	16:33	0.11		
8/12/2008	35.8	11:26	0.11		
8/13/2008	35.8	13:19	0.11		

TABLE C.3

2008 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (ft BTOS) start*	*Time (hh:mm)*	*Water Depth (feet AFOS)*	*Comments*	*Note*
8/14/2008	35.8	9:24	0.11		
8/15/2008	35.9	16:24	0.01		
8/16/2008	35.9	14:04	0.01		
8/17/2008	35.9	15:15	0.01		
8/18/2008	35.9	11:42	0.01		
8/19/2008	35.9	16:27	0.01		
8/20/2008	35.9	13:43	0.01		
8/21/2008	35.9	12:42	0.01		
8/22/2008	35.9	17:41	0.01		
8/23/2008	35.9	12:09	0.01		
8/24/2008	35.8	15:08	0.11		
8/25/2008	35.9	13:28	0.01		
8/26/2008	35.9	16:51	0.01		
8/27/2008	35.9	15:35	0.01	Rain event	
8/28/2008	35.9	12:21	0.01	Rain event	
8/29/2008	35.9	9:20	0.01		
8/30/2008				Saturday, off-Site	
8/31/2008	35.9	14:19	0.01		
9/1/2008	35.9	11:39	0.01		
9/2/2008	35.8	8:32	0.11		
9/3/2008	35.8	14:03	0.11		
9/4/2008	35.9	14:47	0.01		
9/5/2008	35.9	13:11	0.01	Rain event	
9/6/2008	35.9	9:47	0.01		
9/7/2008				Sunday	
9/8/2008	35.9	14:13	0.01		
9/9/2008	35.9	11:32	0.01		
9/10/2008	35.9	10:42	0.01		
9/11/2008	35.9	14:23	0.01	Rain event	
9/12/2008	35.9	10:09	0.01	Rain event	
9/13/2008	35.9	9:02	0.01		
9/14/2008	35.9	15:09	0.01		
9/15/2008	35.9	8:29	0.01		
9/16/2008	35.9	11:09	0.01		
9/17/2008	35.9	11:02	0.01		
9/18/2008	35.9	18:18	0.01		
9/19/2008	35.9	17:48	0.01		
9/20/2008	35.9	10:36	0.01		
9/21/2008				Sunday	
9/22/2008	35.9	13:35	0.01		
9/23/2008	35.9	14:31	0.01		
9/24/2008	35.9	10:15	0.01		
9/25/2008	35.9	13:41	0.01		
9/26/2008	35.9	15:27	0.01		
9/27/2008	35.8	17:29	0.11		
9/28/2008	35.9	15:04	0.01		
9/29/2008	35.9	18:29	0.01		
9/30/2008	35.9	18:04	0.01		
10/1/2008	35.2		0.71	Vault clay placement (no pumping)	
10/2/2008	34.9		1.01	Vault clay placement (no pumping)	
10/3/2008	34.8		1.11	Vault clay placement (no pumping)	
10/4/2008	34.75		1.16	Vault clay placement (no pumping)	
10/5/2008	33.5		2.41	Vault clay placement (no pumping)	
10/6/2008	32.95		2.96	Vault clay placement (no pumping)	
10/7/2008	32.8		3.11	Vault clay grading (no pumping) - Rain event	
10/8/2008	32.5		3.41	Vault clay grading (no pumping) - Rain event	
10/9/2008	32.4	7:54	3.51	Vault clay grading (no pumping)	
10/10/2008	32.4		3.51	Vault clay grading (no pumping)	
10/11/2008	31.9		4.01	Vault liner placement	
10/12/2008	31.7		4.21	Sunday (no liner work)	
10/13/2008	31.6		4.31	Vault liner placement	
10/14/2008	31.45		4.46	Vault liner placement - Rain event	
10/15/2008	31.4		4.51	Vault geonet placement - Rain event	
10/16/2008	31.3		4.61	Vault geonet placement - Rain event	
10/17/2008	31.1		4.81	Vault geonet placement	
10/18/2008	31		4.91		
10/19/2008				Sunday	
10/20/2008	35.2	14:25	0.71	Pumping resumes	
10/21/2008	35.2		0.71		
10/22/2008	35.2		0.71		
10/23/2008	35.2		0.71		
10/24/2008	35.2		0.71	Rain event	
10/25/2008				Saturday, Off-Site	
10/26/2008	35.2		0.71		
10/27/2008	35.2		0.71		
10/28/2008	35.2		0.71		
10/29/2008	35.2		0.71		

TABLE C.3

2008 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (ft BTOS) start*	*Time (hh:mm)*	*Water Depth (feet AFOS)*	*Comments*	*Note*
10/30/2008	35.2		0.71		
10/31/2008	35.2		0.71		
11/1/2008	35.2		0.71		
11/2/2008	35.2		0.71		
11/3/2008	35.2		0.71		
11/4/2008	35.2		0.71		
11/5/2008	35.2		0.71		
11/6/2008	35.2		0.71	Rain event	
11/7/2008	35.2		0.71		
11/8/2008	35.2		0.71		
11/9/2008	35.2		0.71		
11/10/2008	35.2		0.71	McIntyre Installed new pumps	
11/11/2008	35.2	14:42	0.71	Rain event	
11/12/2008	35.2	15:14	0.71	Rain event	
11/13/2008	35.8	15:48	0.11	Rain event	
11/14/2008	35.6	15:04	0.31	Rain event	
11/15/2008	35.4	16:52	0.51	Rain event	
11/16/2008	35.2	13:22	0.71		
11/17/2008	35.0	15:31	0.91	Grading fill placement on north face (no pumping)	(5)
11/18/2008	34.4	15:42	1.51	Grading fill placement on north face (no pumping)	(5)
11/19/2008	33.9	14:21	2.01	Grading fill placement on north face (no pumping)	(5)
11/20/2008	33.2	13:29	2.71	Grading fill placement on north face (no pumping)	(5)
11/21/2008	31.8	13:43	4.11	Grading fill placement on north face (no pumping)	(5)
11/22/2008	31.4	15:34	4.51	Grading fill placement on north face (no pumping)	(5)
11/23/2008	31.0	15:39	4.91	Sunday - No Pumping	(5)
11/24/2008	30.7	14:46	5.21	Grading fill placement (no pumping) - Rain event	(5)
11/25/2008	30.1	17:17	5.81	No Pumping	(5)
11/26/2008	29.7		6.21	No Pumping	(5)
11/27/2008	29.4		6.51	No Pumping	(5)
11/28/2008	29.0		6.91	No Pumping	(5)
11/29/2008				Saturday, Off-Site	(2)
11/30/2008				Sunday, Rain event	(2)
12/1/2008	31	16:16	4.91	Pumped - Rain event	
12/2/2008	32	14:41	3.91	Pumped	
12/3/2008	34	16:21	1.91	Pumped - Rain event	
12/4/2008				ENTACT working grading fill	(6)
12/5/2008				ENTACT working grading fill	(6)
12/6/2008				ENTACT working grading fill - Rain event	(6)
12/7/2008				ENTACT working grading fill	(6)
12/8/2008				ENTACT working grading fill	(6)
12/9/2008				ENTACT working grading fill - Rain event	(6)
12/10/2008				ENTACT working grading fill - Rain event	(6)
12/11/2008				ENTACT working grading fill	(6)
12/12/2008				ENTACT working grading fill	(6)
12/13/2008				ENTACT working grading fill	(6)
12/14/2008				ENTACT working grading fill - Rain event	(6)
12/15/2008	31.5	17:15	4.41	ENTACT working grading fill - Rain event	(6)
12/16/2008	31.0	17:27	4.91	ENTACT working grading fill	(6)
12/17/2008	31.9	17:49	4.01	ENTACT working grading fill	(6)
12/18/2008	30.6	18:02	5.31	Electrical Malfunction as per SES	(7)
12/19/2008	29.4	17:15	6.51	Electrical Malfunction as per SES	(7)
12/20/2008				Saturday, Off-Site	(2)
12/21/2008				Sunday	(2)
12/22/2008	41.4	13:27	5.51	Installed 11' HDPE extension and 20' pump extension	
12/23/2008	41.3	9:15	5.61	Rain event	
12/24/2008	41.2	14:14	5.71	Rain event	
12/25/2008	41.2	17:02	5.71		
12/26/2008	41.2	20:40	5.71	Rain event	
12/27/2008				Saturday, Off-Site - Rain event	(2)
12/28/2008				Sunday - Rain event	(2)
12/29/2008	41.1	19:52	5.81	Tried pumping but line frozen	(8)
12/30/2008	41.1	15:22	5.81	Pumped for ten minutes and then line disconnected	
12/31/2008	41.4	13:20	5.51		

Note:
BTOS - Below top of sump
AFOS - Above floor of sump
(1) No water level measurement.
(2) Saturday/Sunday/Holiday - no water level measurement.
(3) Not pumped to accommodate pipe work.
(4) Not pumped to accommodate CRA sampling/testing.
(5) Not pumped.
(6) ENTACT working grading fill.
(7) Electrical malfunction as per SES.
(8) Not pumped due to frozen pumping lines.

TABLE C.4

2009 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

Top of sump (datum reference)	708.81
Bottom of sump (feet BTOS)	46.67
Diameter of sump (feet)	1.5

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gal.)*	*Original Sevenson Comments (additional CRA comments)*
1/1/2009						Holiday, no w/l measurement
1/2/2009	41.20	5.47	16:15			SES did not pump
1/3/2009	41.10	5.57	17:20			SES did not pump
1/4/2009	41.00	5.67	14:40			SES did not pump
1/5/2009	41.00	5.67	14:44			SES did not pump
1/6/2009	40.90	5.77	15:25			SES did not pump
1/7/2009	40.90	5.77	14:06			SES did not pump
1/8/2009	40.90	5.77	14:43			SES did not pump
1/9/2009	41.00	5.67	14:51			SES did not pump
1/10/2009	41.10	5.57	19:40			**pumped** (w/l prior to pumping)
1/11/2009	41.80	4.87	18:24	0.90	33	**pumped** (w/l prior to pumping)
1/12/2009	42.30	4.37	17:22	0.50	18	(w/l measured after previous day's pumping)
1/13/2009	41.90	4.77	17:40			SES did not pump
1/14/2009	41.70	4.97	16:56			SES did not pump
1/15/2009	41.60	5.07	18:05			SES did not pump
1/16/2009	41.45	5.22	13:14			SES did not pump
1/17/2009						Saturday, no w/l measurement
1/18/2009	41.20	5.47	14:51			SES did not pump
1/19/2009	41.20	5.47	16:30			SES did not pump
1/20/2009	41.10	5.57	17:20			SES did not pump
1/21/2009	41.00	5.67	17:35			SES did not pump
1/22/2009	41.00	5.67	17:10			SES did not pump
1/23/2009	40.90	5.77	15:40			SES did not pump
1/24/2009	41.10	5.57	14:46			SES did not pump
1/25/2009						Sunday, no w/l measurement
1/26/2009	41.00	5.67	16:25			SES did not pump
1/27/2009	41.00	5.67	14:40			SES did not pump
1/28/2009	41.00	5.67	13:20			SES did not pump
1/29/2009	40.90	5.77	12:15			tried to pump, line was frozen
1/30/2009	40.90	5.77	10:05			Frozen, could not pump
1/31/2009						Saturday, no w/l measurement
2/1/2009						Sunday, no w/l measurement
2/2/2009	41.00	5.67	10:22			Frozen, could not pump
2/3/2009	40.90	5.77	11:24			Frozen, could not pump
2/4/2009	40.90	5.77	9:52			Frozen, could not pump
2/5/2009	40.70	5.97	9:20			did not pump
2/6/2009	40.70	5.97	10:15			did not pump
2/7/2009	41.00	5.67	9:28			did not pump
2/8/2009	41.00	5.67	15:12			did not pump
2/9/200	40.90	5.77	15:55			did not pump
2/10/2009	41.00	5.67	14:50			did not pump
2/11/2009	41.00	5.67	13:20			did not pump
2/12/2009	41.00	5.67	18:04			did not pump
2/13/2009	41.00	5.67	13:20			did not pump
2/14/2009	41.00	5.67	15:15			did not pump
2/15/2009	40.90	5.77	14:25			did not pump
2/16/2009	40.90	5.77	15:56			did not pump
2/17/2009	40.90	5.77	13:45			did not pump
2/18/2009	40.80	5.87	17:48			did not pump
2/19/2009	40.80	5.87	17:04			did not pump
2/20/2009	40.80	5.87	17:40			did not pump
2/21/2009	40.80	5.87	18:05			did not pump
2/22/2009						Sunday, no w/l measurement
2/23/2009	40.60	6.07	17:35			did not pump
2/24/2009	41.20	5.47	14:40	0.60	22	did not pump
2/25/2009	41.40	5.27	13:10	0.20	7	did not pump
2/26/2009	41.70	4.97	10:25	0.30	11	did not pump
2/27/2009	41.90	4.77	17:37	0.20	7	did not pump
2/28/2009	41.30	5.37	14:24			**pumped** (previous four days?)

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Monitoring Location Information

Top of sump (datum reference)	708.81
Bottom of sump (feet BTOS)	46.67
Diameter of sump (feet)	1.5

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gal.)*	*Original Sevenson Comments (additional CRA comments)*
3/1/2009	41.20	5.47	13:30			
3/2/2009	41.00	5.67	18:06			
3/3/2009	41.00	5.67	17:42			
3/4/2009	41.00	5.67	17:56			**pumped 4 1/2 hrs** (no water removed?)
3/5/2009	41.60	5.07	17:52	0.60	22	**pumped 6 hrs**
3/6/2009	41.60	5.07	18:24			did not pump
3/7/2009	41.40	5.27	11:15			did not pump
3/8/2009						Sunday, no w/l measurement
3/9/2009	41.10	5.57	17:20			did not pump
3/10/2009	41.10	5.57	15:27			did not pump
3/11/2009	41.00	5.67	18:10			did not pump
3/12/2009	41.00	5.67	16:37			did not pump
3/13/2009	41.00	5.67	18:15			did not pump
3/14/2009	40.90	5.77	17:10			did not pump
3/15/2009	40.90	5.77	14:10			did not pump
3/16/2009	41.00	5.67	17:02	0.10	4	**pumped**
3/17/2009	41.00	5.67	16:54			did not pump
3/18/2009	41.00	5.67	16:20			did not pump
3/19/2009	41.00	5.67	9:27			did not pump
3/20/2009	40.90	5.77	12:36			did not pump
3/21/2009	40.90	5.77	11:10			did not pump
3/22/2009						Sunday, no w/l measurement
3/23/2009	40.90	5.77	16:10			did not pump
3/24/2009	41.20	5.47	17:23	0.30	11	**pumped**
3/25/2009	41.00	5.67	16:18			did not pump
3/26/2009	40.90	5.77	13:52			did not pump
3/27/2009	41.00	5.67	16:10			did not pump
3/28/2009						Saturday, no w/l measurement
3/29/2009	40.90	5.77	12:24			did not pump
3/30/2009	40.90	5.77	8:40			did not pump
3/31/2009	40.80	5.87	9:15			**pumped** (no water removed?)
4/1/2009	40.80	5.87	11:27			did not pump
4/2/2009	40.90	5.77	14:23			did not pump
4/3/2009	40.90	5.77	13:20			did not pump
4/4/2009	40.90	5.77	14:21			did not pump
4/5/2009						Sunday, no w/l measurement
4/6/2009	40.90	5.77	15:24			did not pump
4/7/2009	40.80	5.87	11:15			did not pump
4/8/2009	40.80	5.87	13:20			did not pump
4/9/2009	40.80	5.87	11:10			did not pump
4/10/2009	40.80	5.87	8:10			did not pump
4/11/2009	40.80	5.87	7:51			did not pump
4/12/2009						Sunday, no w/l measurement
4/13/2009	40.80	5.87	13:12			**pumped** (no water removed?)
4/14/2009	40.80	5.87	12:10			did not pump
4/15/2009	40.80	5.87	13:31			did not pump
4/16/2009	40.80	5.87	13:25			did not pump
4/17/2009	40.80	5.87	14:20			did not pump
4/18/2009						Saturday, no w/l measurement
4/19/2009	40.70	5.97	16:22			Sunday, no w/l measurement
4/20/2009	40.90	5.77	14:27			did not pump
4/21/2009	40.70	5.97	14:03			did not pump
4/22/2009	40.70	5.97	13:04			did not pump
4/23/2009	40.70	5.97	14:20			did not pump
4/24/2009	40.70	5.97	15:15			did not pump
4/25/2009	40.70	5.97	13:22			did not pump
4/26/2009						Sunday, no w/l measurement
4/27/2009	40.60	6.07	12:10			did not pump
4/28/2009	40.60	6.07	8:09			did not pump
4/29/2009	40.60	6.07	14:58			did not pump
4/30/2009	40.60	6.07	15:04			did not pump

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Monitoring Location Information

Top of sump (datum reference)	708.81
Bottom of sump (feet BTOS)	46.67
Diameter of sump (feet)	1.5

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gal.)*	*Original Sevenson Comments (additional CRA comments)*
5/1/2009	40.60	6.07	15:15			did not pump
5/2/2009						Saturday, no w/l measurement
5/3/2009	40.70	5.97	18:10			did not pump
5/4/2009	40.60	6.07	14:40			did not pump
5/5/2009	40.60	6.07	15:16			did not pump
5/6/2009	41.20	5.47	17:42	0.60	22	**pumped**
5/7/2009	41.10	5.57	14:24			did not pump
5/8/2009	41.10	5.57	18:15			did not pump
5/9/2009	41.00	5.67	14:27			did not pump
5/10/2009						Sunday, no w/l measurement
5/11/2009						*SES on alternating work weeks*
5/12/2009						*SES on alternating work weeks*
5/13/2009						*SES on alternating work weeks*
5/14/2009						*SES on alternating work weeks*
5/15/2009						*SES on alternating work weeks*
5/16/2009						Saturday, no w/l measurement
5/17/2009	40.70	5.97	14:46			did not pump
5/18/2009	40.70	5.97	12:10			did not pump
5/19/2009	40.60	6.07	14:14			did not pump
5/20/2009	40.60	6.07	13:42			did not pump
5/21/2009	40.60	6.07	12:08			did not pump
5/22/2009	40.60	6.07	14:52			did not pump
5/23/2009	40.60	6.07	14:01			did not pump
5/24/2009						Sunday, no w/l measurement
5/25/2009						Holiday, no w/l measurement
5/26/2009						*SES on alternating work weeks*
5/27/2009						*SES on alternating work weeks*
5/28/2009						*SES on alternating work weeks*
5/29/2009						*SES on alternating work weeks*
5/30/2009						Saturday, no w/l measurement
5/31/2009	40.60	6.07	11:08			did not pump
6/1/2009	40.80	5.87	14:34			did not pump
6/2/2009	40.80	5.87	12:42			did not pump
6/3/2009	40.60	6.07	11:27			did not pump
6/4/2009	40.60	6.07	13:22			did not pump
6/5/2009	40.50	6.17	14:10			did not pump
6/6/2009	40.60	6.07	14:43			did not pump
6/7/2009						Sunday, no w/l measurement
6/8/2009						(no data available)
6/9/2009	40.20	6.47	7:15			did not pump
6/10/2009	40.20	6.47	8:30			did not pump
6/11/2009	40.30	6.37	7:45			did not pump
6/12/2009	40.40	6.27	8:00			did not pump
6/13/2009						Saturday, no w/l measurement
6/14/2009						Sunday, no w/l measurement
6/15/2009	40.50	6.17	10:47			did not pump
6/16/2009	40.40	6.27	14:31			did not pump
6/17/2009	40.80	5.87	14:47	0.40	15	**pumped**
6/18/2009	40.60	6.07	13:15			did not pump
6/19/2009	40.60	6.07	14:25			did not pump
6/20/2009	40.50	6.17	13:40			did not pump
6/21/2009						Sunday, no w/l measurement
6/22/2009	40.30	6.37	8:15			did not pump
6/23/2009	40.30	6.37	7:00			did not pump
6/24/2009	40.30	6.37	6:30			did not pump
6/25/2009	40.40	6.27	7:30			did not pump
6/26/2009	40.30	6.37	6:15			did not pump
6/27/2009						Saturday, no w/l measurement
6/28/2009	40.50	6.17	14:20	0.20	7	did not pump (looks like pumping)
6/29/2009	40.50	6.17	13:52			did not pump
6/30/2009	40.50	6.17	10:57			did not pump

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Top of sump (datum reference)	708.81
Bottom of sump (feet BTOS)	46.67
Diameter of sump (feet)	1.5

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gal.)*	*Original Sevenson Comments (additional CRA comments)*
7/1/2009	40.50	6.17	16:38			did not pump
7/2/2009	40.40	6.27	14:29			did not pump
7/3/2009	40.40	6.27	14:03			did not pump
7/4/2009	40.40	6.27	13:04			did not pump
7/5/2009						Sunday, no w/l measurement
7/6/2009	40.20	6.47	8:00			did not pump
7/7/2009	40.20	6.47	7:30			did not pump
7/8/2009	40.20	6.47	7:30			did not pump
7/9/2009	40.10	6.57	6:15			did not pump
7/10/2009	40.10	6.57	7:15			did not pump
7/11/2009						Saturday, no w/l measurement
7/12/2009	40.40	6.27	10:52			did not pump
7/13/2009	40.40	6.27	13:40			did not pump
7/14/2009	40.40	6.27	12:06			did not pump
7/15/2009	40.50	6.17	13:40			did not pump
7/16/2009	40.50	6.17	14:04			did not pump
7/17/2009	40.50	6.17	11:24			did not pump
7/18/2009	40.50	6.17	13:55			did not pump
7/19/2009						Sunday, no w/l measurement
7/20/2009	40.50	6.17	15:02			did not pump
7/21/2009	40.50	6.17	14:00			did not pump
7/22/2009	40.40	6.27	8:15			did not pump
7/23/2009	40.10	6.57	7:45			did not pump
7/24/2009	40.10	6.57	8:00			did not pump
7/25/2009						Saturday, no w/l measurement
7/26/2009	40.40	6.27	14:07			did not pump
7/27/2009	40.40	6.27	13:04			did not pump
7/28/2009	40.50	6.17	16:08			did not pump
7/29/2009	40.40	6.27	13:17			did not pump
7/30/2009	40.40	6.27	13:40			did not pump
7/31/2009	40.50	6.17	10:20			did not pump
8/1/2009	40.50	6.17	14:20			did not pump
8/2/2009	40.50	6.17	13:08			did not pump
8/3/2009	40.50	6.17	11:15			did not pump
8/4/2009	40.50	6.17	12:50			did not pump
8/5/2009	40.40	6.27	14:01			did not pump
8/6/2009	40.40	6.27	15:04			did not pump
8/7/2009	40.40	6.27	14:47			did not pump
8/8/2009						Saturday, no w/l measurement
8/9/2009	40.40	6.27	15:02			did not pump
8/10/2009	40.60	6.07	13:57	0.20	7	**pumped**
8/11/2009	40.60	6.07	17:20			did not pump
8/12/2009	40.60	6.07	16:30			did not pump
8/13/2009	40.60	6.07	14:40			did not pump
8/14/2009	40.70	5.97	13:07			did not pump
8/15/2009	40.60	6.07	14:01			did not pump
8/16/2009	40.60	6.07	7:20			did not pump
8/17/2009	40.50	6.17	7:30			did not pump
8/18/2009	40.50	6.17	7:15			did not pump
8/19/2009	40.30	6.37	7:30			did not pump
8/20/2009	40.30	6.37	7:00			did not pump
8/21/2009	40.30	6.37	7:55			did not pump
8/22/2009						Saturday, no w/l measurement
8/23/2009	40.30	6.37	13:40			did not pump
8/24/2009	40.30	6.37	10:50			did not pump
8/25/2009	40.30	6.37	13:52			did not pump
8/26/2009	40.30	6.37	11:02			did not pump
8/27/2009	40.30	6.37	14:04			did not pump
8/28/2009	40.30	6.37	10:45			did not pump
8/29/2009	40.30	6.37	14:24			did not pump
8/30/2009	40.30	6.37	13:15			did not pump
8/31/2009						(no data available)

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Monitoring Location Information

Top of sump (datum reference)	708.81
Bottom of sump (feet BTOS)	46.67
Diameter of sump (feet)	1.5

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gal.)*	*Original Sevenson Comments (additional CRA comments)*
9/1/2009	40.30	6.37	7:30			did not pump
9/2/2009	40.30	6.37	7:10			did not pump
9/3/2009	40.20	6.47	7:30			did not pump
9/4/2009	40.30	6.37	8:00			did not pump
9/5/2009						Saturday, no w/l measurement
9/6/2009	40.30	6.37	10:24			did not pump
9/7/2009	40.30	6.37	11:34			did not pump
9/8/2009	40.30	6.37	10:40			did not pump
9/9/2009	40.30	6.37	13:15			did not pump
9/10/2009	40.30	6.37	14:07			did not pump
9/11/2009	40.30	6.37	14:40			did not pump
9/12/2009	40.30	6.37	13:11			did not pump
9/13/2009	40.40	6.27	14:30			did not pump
9/14/2009	40.40	6.27	14:09			did not pump
9/15/2009	40.40	6.27	11:30			did not pump
9/16/2009	40.40	6.27	16:41			did not pump
9/17/2009	40.40	6.27	16:58			did not pump
9/18/2009	40.30	6.37	13:56			did not pump
9/19/2009						Saturday, no w/l measurement
9/20/2009						Sunday, no w/l measurement
9/21/2009	40.30	6.37	1:58			did not pump
9/22/2009	40.30	6.37	14:24			did not pump
9/23/2009	40.40	6.27	17:27			did not pump
9/24/2009	40.30	6.37	13:08			did not pump
9/25/2009	40.30	6.37	17:04			did not pump
9/26/2009	40.30	6.37	13:58			did not pump
9/27/2009	40.30	6.37	16:07			did not pump
9/28/2009	40.30	6.37	16:24			did not pump
9/29/2009	40.30	6.37	14:24			did not pump
9/30/2009	40.30	6.37	13:12			did not pump
10/1/2009	40.30	6.37	14:06			did not pump
10/2/2009	40.30	6.37	14:24			did not pump
10/3/2009	40.30	6.37	11:39			did not pump
10/4/2009						Sunday, no w/l measurement
10/5/2009	40.30	6.37	15:15			did not pump
10/6/2009	40.30	6.37	14:10			did not pump
10/7/2009	40.30	6.37	13:25			did not pump
10/8/2009	40.30	6.37	10:15			did not pump
10/9/2009	40.30	6.37	14:37			did not pump
10/10/2009	40.30	6.37	9:20			did not pump
10/11/2009						Sunday, no w/l measurement
10/12/2009	40.30	6.37	16:40			did not pump
10/13/2009	40.30	6.37	14:01			did not pump
10/14/2009	40.30	6.37	10:15			did not pump
10/15/2009	40.30	6.37	9:21			did not pump
10/16/2009	40.30	6.37	11:28			did not pump
10/17/2009	40.30	6.37	14:16			did not pump
10/18/2009						Sunday, no w/l measurement
10/19/2009	40.80	5.87	10:15	0.50	18	**pumped**
10/20/2009	40.80	5.87	14:04			did not pump
10/21/2009	40.80	5.87	11:20			did not pump
10/22/2009	40.80	5.87	10:40			did not pump
10/23/2009	40.80	5.87	17:05			did not pump
10/24/2009	40.80	5.87	9:50			did not pump
10/25/2009						Sunday, no w/l measurement
10/26/2009	40.80	5.87	13:04			did not pump
10/27/2009	40.70	5.97	17:20			did not pump
10/28/2009	40.70	5.97	14:15			did not pump
10/29/2009	40.70	5.97	16:27			did not pump
10/30/2009	40.70	5.97	15:35			did not pump
10/31/2009						Saturday, no w/l measurement

TABLE C.4

2009 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

Top of sump (datum reference)	708.81
Bottom of sump (feet BTOS)	46.67
Diameter of sump (feet)	1.5

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gal.)*	*Original Sevenson Comments (additional CRA comments)*
11/1/2009						Sunday, no w/l measurement
11/2/2009	40.50	6.17	14:10			did not pump
11/3/2009	40.40	6.27	10:05			did not pump
11/4/2009	40.40	6.27	13:40			did not pump
11/5/2009	40.40	6.27	11:32			did not pump
11/6/2009	40.40	6.27	16:20			did not pump
11/7/2009	40.30	6.37	14:11			did not pump
11/8/2009						Sunday, no w/l measurement
11/9/2009	40.20	6.47	16:15			did not pump
11/10/2009	40.10	6.57	14:20			did not pump
11/11/2009	40.10	6.57	10:35			did not pump
11/12/2009	40.00	6.67	14:45			did not pump
11/13/2009	40.00	6.67	11:15			did not pump
11/14/2009	40.10	6.57	14:00			did not pump
11/15/2009	40.10	6.57	8:50			did not pump
11/16/2009	40.10	6.57	13:12			did not pump
11/17/2009	40.10	6.57	14:38			did not pump
11/18/2009	40.10	6.57	9:15			did not pump
11/19/2009	40.10	6.57	14:05			did not pump
11/20/2009						(no data available)
11/21/2009						Saturday, no w/l measurement
11/22/2009						Sunday, no w/l measurement
11/23/2009	40.10	6.57	15:42			did not pump
11/24/2009	40.10	6.57	14:50			did not pump
11/25/2009	40.10	6.57	9:20			did not pump
11/26/2009						Holiday, no w/l measurement
11/27/2009	40.10	6.57	13:27			did not pump
11/28/2009						Saturday, no w/l measurement
11/29/2009						Sunday, no w/l measurement
11/30/2009	40.10	6.57	10:37			did not pump
12/1/2009	41.10	5.57	13:12	1.00	37	**pump operational**
12/2/2009	41.10	5.57	10:26			did not pump
12/3/2009	41.10	5.57	14:15			did not pump
12/4/2009	41.10	5.57	11:49			did not pump
12/5/2009	41.10	5.57	15:28			did not pump
12/6/2009	41.10	5.57	11:42			did not pump
12/7/2009						*SES on alternating work weeks*
12/8/2009						*SES on alternating work weeks*
12/9/2009						*SES on alternating work weeks*
12/10/2009						*SES on alternating work weeks*
12/11/2009						*SES on alternating work weeks*
12/12/2009						Saturday, no w/l measurement
12/13/2009						Sunday, no w/l measurement
12/14/2009	40.10	6.57	12:23			did not pump
12/15/2009	40.10	6.57	14:14			
12/16/2009	40.10	6.57	10:08			
12/17/2009	40.10	6.57	16:06			
12/18/2009	40.10	6.57	11:01			
12/19/2009	40.10	6.57	10:21			
12/20/2009						Sunday, no w/l measurement
12/21/2009	40.10	6.57	8:07			
12/22/2009	40.10	6.57	9:15			
12/23/2009	40.10	6.57	11:30			
12/24/2009	40.10	6.57	8:14			
12/25/2009						Holiday, no w/l measurement
12/26/2009						Saturday, no w/l measurement
12/27/2009						Sunday, no w/l measurement
12/28/2009	40.10	6.57	11:10			
12/29/2009	40.10	6.57	14:25			
12/30/2009	40.10	6.57	10:17			
12/31/2009	40.10	6.57	9:14			
				6.60	**242**	**TOTAL**

Notes:
Permanent pump installed in the underdrain sump on November 10, 2008 is a 3 foot vertical submersible pump that needs 2 to 3 feet of water above the pump intake in order to operate properly; therefore, the water depth in the underdrain sump is expected to be maintained between 5 & 6 feet above bottom.

TABLE C.5

2010 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information	
Top of sump (datum reference)	708.81
Bottom of sump (feet BTOS)	46.67
Diameter of sump (feet)	1.5

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Comments*
1/1/2010	40.1	6.6	14:06	Sunny
1/2/2010				Saturday (no w/l measurement)
1/3/2010				Sunday (no w/l measurement)
1/4/2010	40.1	6.6	13:24	Sunny and Cold
1/5/2010	40.1	6.6	14:16	Cold
1/6/2010	40.1	6.6	13:06	Cold and Snow
1/7/2010	40.1	6.6	11:14	Cold and Snow
1/8/2010	40.1	6.6	10:37	
1/9/2010				Saturday (no w/l measurement)
1/10/2010				Sunday (no w/l measurement)
1/11/2010	40.1	6.6	14:47	Cold
1/12/2010	40.1	6.6	15:14	Cold
1/13/2010	40.1	6.6	13:30	Cold
1/14/2010	40.1	6.6	10:41	Warm
1/15/2010	40.1	6.6	9:18	Warm
1/16/2010	40.1	6.6	13:26	Warm
1/17/2010	40.1	6.6	11:35	Warm
1/18/2010				Holiday (no w/l measurement)
1/19/2010	40.0	6.7	10:15	Warm
1/20/2010	40.0	6.7	14:23	Rain
1/21/2010	40.1	6.6	13:07	Rain
1/22/2010	40.1	6.6	9:17	Clear (changed out meter)
1/23/2010	40.1	6.6	13:51	Clear
1/24/2010				Sunday (no w/l measurement)
1/25/2010	40.1	6.6	15:10	Snow
1/26/2010	40.1	6.6	13:44	Warm
1/27/2010	40.1	6.6	15:01	Warm
1/28/2010	40.1	6.6	14:16	Cold
1/29/2010	40.1	6.6	10:47	Cold
1/30/2010				Saturday (no w/l measurement)
1/31/2010				Sunday (no w/l measurement)
2/1/2010	40.1	6.6	12:05	
2/2/2010	40.1	6.6	12:01	
2/3/2010	40.1	6.6	14:27	
2/4/2010	40.1	6.6	13:14	
2/5/2010	40.1	6.6	15:02	
2/6/2010				Saturday (no w/l measurement)
2/7/2010				Sunday (no w/l measurement)
2/8/2010	40.1	6.6	10:41	
2/9/2010	40.1	6.6	13:50	
2/10/2010	40.1	6.6	9:27	
2/11/2010	40.1	6.6	15:09	
2/12/2010	40.1	6.6	12:05	
2/13/2010				Saturday (no w/l measurement)
2/14/2010				Sunday (no w/l measurement)
2/15/2010	40.1	6.6	11:19	Snow
2/16/2010	40.1	6.6	12:05	
2/17/2010	40.1	6.6	12:50	
2/18/2010	40.1	6.6	14:14	
2/19/2010	40.1	6.6	13:25	
2/20/2010				Saturday (no w/l measurement)
2/21/2010				Sunday (no w/l measurement)
2/22/2010	40.1	6.6	14:04	
2/23/2010	40.1	6.6	13:16	
2/24/2010	40.1	6.6	10:25	
2/25/2010	40.1	6.6	12:06	
2/26/2010	40.1	6.6	12:34	
2/27/2010				Saturday (no w/l measurement)
2/28/2010				Sunday (no w/l measurement)

TABLE C.5

2010 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Comments*
3/1/2010	40.1	6.6	13:21	
3/2/2010	40.1	6.6	14:42	
3/3/2010	40.1	6.6	12:15	
3/4/2010	40.1	6.6	14:08	
3/5/2010	40.1	6.6	10:30	
3/6/2010				Saturday (no w/l measurement)
3/7/2010				Sunday (no w/l measurement)
3/8/2010	40.1	6.6	12:08	
3/9/2010	40.1	6.6	12:25	
3/10/2010	40.1	6.6	13:14	
3/11/2010	40.1	6.6	9:27	
3/12/2010	40.1	6.6	12:05	
3/13/2010	40.1	6.6	9:52	
3/14/2010	40.1	6.6	8:24	
3/15/2010	40.1	6.6	12:07	
3/16/2010	40.1	6.6	15:28	
3/17/2010	40.1	6.6	12:31	
3/18/2010	40.1	6.6	13:50	
3/19/2010	40.1	6.6	14:27	
3/20/2010				Saturday (no w/l measurement)
3/21/2010				Sunday (no w/l measurement)
3/22/2010	40.1	6.6	15:16	
3/23/2010	40.1	6.6	12:09	
3/24/2010	40.1	6.6	13:24	
3/25/2010	40.1	6.6	10:15	
3/26/2010	40.1	6.6	14:28	
3/27/2010				Saturday (no w/l measurement)
3/28/2010				Sunday (no w/l measurement)
3/29/2010	40.1	6.6	15:10	
3/30/2010	40.1	6.6	12:20	
3/31/2010	40.1	6.6	17:06	
4/1/2010	40.1	6.6	14:36	Warm and windy
4/2/2010				Holiday (no w/l measurement)
4/3/2010	40.1	6.6	13:47	Warm and Rain
4/4/2010	40.1	6.6	10:24	Sunny
4/5/2010	40.0	6.7	15:15	Sunny
4/6/2010	40.1	6.6	14:07	Sunny
4/7/2010	40.1	6.6	9:18	Cloudy
4/8/2010	40.1	6.6	11:10	Rain
4/9/2010	40.1	6.6	15:41	Warm
4/10/2010				Saturday (no w/l measurement)
4/11/2010				Sunday (no w/l measurement)
4/12/2010	40.0	6.7	13:16	Warm
4/13/2010	40.1	6.6	15:20	Warm
4/14/2010	40.1	6.6	14:28	Hot
4/15/2010	40.1	6.6	13:10	Hot
4/16/2010	40.1	6.6	10:15	Rain
4/17/2010				Saturday (no w/l measurement)
4/18/2010	40.1	6.6	12:11	
4/19/2010	40.1	6.6	10:47	Hot
4/20/2010	40.1	6.6	9:25	Cool
4/21/2010	40.1	6.6	11:10	Warm
4/22/2010	40.1	6.6	12:15	Cloudy
4/23/2010	40.1	6.6	8:10	Cloudy
4/24/2010				Saturday (no w/l measurement)
4/25/2010				Sunday (no w/l measurement)
4/26/2010	40.1	6.6	11:06	Rain
4/27/2010	40.1	6.6	14:14	Rain
4/28/2010	40.1	6.6	14:40	Sunny
4/29/2010	40.1	6.6	10:15	Warm
4/30/2010	40.1	6.6	11:25	Warm

TABLE C.5

2010 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Comments*
5/1/2010	40.1	6.6	11:12	Cloudy
5/2/2010	40.1	6.6	9:02	Cloudy
5/3/2010	40.0	6.7	14:12	Sunny
5/4/2010	40.0	6.7	10:15	Sunny
5/5/2010	40.1	6.6	16:35	Sunny
5/6/2010	40.1	6.6	15:20	Sunny
5/7/2010	40.1	6.6	14:15	Sunny
5/8/2010	40.1	6.6	16:23	Cloudy
5/9/2010				Sunday (no w/l measurement)
5/10/2010	40.1	6.6	12:20	Cloudy
5/11/2010	40.1	6.6	10:50	Cloudy
5/12/2010	40.0	6.7	9:27	Rain
5/13/2010	40.0	6.7	13:25	Cloudy
5/14/2010	40.0	6.7	12:10	Sunny
5/15/2010	40.0	6.7	10:42	Sunny
5/16/2010				Sunday (no w/l measurement)
5/17/2010	40.1	6.6	14:10	Rain
5/18/2010	40.1	6.6	9:40	Cloudy - CRA tested system
5/19/2010	40.1	6.6	8:15	Cloudy
5/20/2010	40.1	6.6	10:25	Cloudy
5/21/2010	40.1	6.6	13:40	
5/22/2010				Saturday (no w/l measurement)
5/23/2010				Sunday (no w/l measurement)
5/24/2010	40.1	6.6	9:15	Warm
5/25/2010	40.1	6.6	10:20	Warm
5/26/2010	40.1	6.6	11:40	Hot
5/27/2010	40.1	6.6	9:50	Warm
5/28/2010	40.1	6.6	10:20	Hot
5/29/2010	40.1	6.6	8:30	Warm
5/30/2010				Saturday (no w/l measurement)
5/31/2010				Sunday (no w/l measurement)
6/1/2010	40.1	6.6	16:15	Hot
6/2/2010	40.1	6.6	14:35	Warm
6/3/2010	40.0	6.7	12:19	Cloudy, Windy
6/4/2010	40.1	6.6	15:02	Hot
6/5/2010	40.0	6.7	10:35	Cloudy, Windy
6/6/2010				Sunday (no w/l measurement)
6/7/2010	40.1	6.6	11:15	Warm
6/8/2010	40.1	6.6	13:04	Warm, Muggy
6/9/2010	40.1	6.6	9:27	Warm
6/10/2010	40.1	6.6	14:10	Hot
6/11/2010	40.1	6.6	15:40	Cloudy
6/12/2010	40.1	6.6	14:10	Warm
6/13/2010	40.1	6.6	13:52	Hot
6/14/2010	40.0	6.7	13:20	Warm
6/15/2010	40.0	6.7	15:40	Hot, Muggy
6/16/2010	40.1	6.6	17:10	Hot
6/17/2010	40.1	6.6	9:27	Hot, Muggy
6/18/2010	40.1	6.6	10:14	Warm
6/19/2010				Saturday (no w/l measurement)
6/20/2010				Sunday (no w/l measurement)
6/21/2010	40.0	6.7	14:10	Hot
6/22/2010	40.1	6.6	12:14	Hot
6/23/2010	40.1	6.6	10:35	Hot, Muggy
6/24/2010	40.1	6.6	12:18	Hot
6/25/2010	40.0	6.7	10:30	Hot
6/26/2010	40.1	6.6	14:30	Hot
6/27/2010				Sunday (no w/l measurement)
6/28/2010	40.1	6.6	12:15	Hot
6/29/2010	40.1	6.6	16:27	Warm
6/30/2010	40.1	6.6	15:18	Warm

TABLE C.5

2010 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Comments*
7/1/2010	40.1	6.6	14:15	
7/2/2010	40.1	6.6	12:50	Warm
7/3/2010				Saturday (no w/l measurement)
7/4/2010				Sunday (no w/l measurement)
7/5/2010				Holiday (no w/l measurement)
7/6/2010	40.1	6.6	12:51	
7/7/2010	40.1	6.6	16:26	Warm
7/8/2010	40.1	6.6	15:10	Hot
7/9/2010	40.1	6.6	17:26	
7/10/2010	40.1	6.6	16:38	Hot
7/11/2010				Sunday (no w/l measurement)
7/12/2010	40.1	6.6	16:36	Hot
7/13/2010	40.1	6.6	17:02	Warm
7/14/2010	40.1	6.6	15:10	Hot
7/15/2010	40.1	6.6	12:04	Hot
7/16/2010	40.1	6.6	14:15	Hot
7/17/2010	40.1	6.6	12:26	Hot
7/18/2010				Sunday (no w/l measurement)
7/19/2010	40.1	6.6	13:20	Warm
7/20/2010	40.1	6.6	11:35	Hot, cloudy
7/21/2010	40.1	6.6	14:19	Hot
7/22/2010	40.1	6.6	12:28	Hot
7/23/2010	40.1	6.6	17:57	Very Hot
7/24/2010	40.1	6.6	11:24	Hot
7/25/2010				Sunday (no w/l measurement)
7/26/2010	40.1	6.6	12:07	Hot
7/27/2010	40.1	6.6	12:40	Hot
7/28/2010	40.1	6.6	12:15	Warm
7/29/2010	40.1	6.6	12:25	Warm
7/30/2010	40.1	6.6	12:08	Hot
7/31/2010	40.1	6.6	13:15	Hot
8/1/2010				Sunday (no w/l measurement)
8/2/2010	40.1	6.6	12:04	Hot
8/3/2010	40.1	6.6	12:34	Hot
8/4/2010	40.1	6.6	12:27	Very Hot
8/5/2010	40.1	6.6	16:26	Warm
8/6/2010	40.1	6.6	16:08	Hot
8/7/2010	40.1	6.6	13:26	Hot
8/8/2010	40.1	6.6	14:24	Hot
8/9/2010	40.1	6.6	12:10	Hot
8/10/2010	40.1	6.6	12:42	Hot
8/11/2010	40.1	6.6	12:15	Warm
8/12/2010	40.1	6.6	12:27	Hot
8/13/2010	40.1	6.6	12:05	Very Warm
8/14/2010	40.1	6.6	11:57	Warm
8/15/2010				Sunday (no w/l measurement)
8/16/2010	40.1	6.6	13:34	Hot
8/17/2010	40.1	6.6	12:20	Hot
8/18/2010	40.1	6.6	12:00	Hot
8/19/2010	40.1	6.6	12:15	Warm
8/20/2010	40.1	6.6	12:25	Warm
8/21/2010	40.1	6.6	12:05	Warm and Rain
8/22/2010				Sunday (no w/l measurement)
8/23/2010	40.1	6.6	12:19	Warm
8/24/2010	40.1	6.6	10:28	Warm
8/25/2010	40.1	6.6	9:40	Warm
8/26/2010	40.1	6.6	9:10	Warm/Cool morning
8/27/2010	40.1	6.6	11:04	Warm
8/28/2010	40.1	6.6	12:16	Hot
8/29/2010				Sunday (no w/l measurement)
8/30/2010	40.1	6.6	13:19	Warm
8/31/2010	40.1	6.6	12:20	Hot

TABLE C.5

2010 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Comments*
9/1/2010	40.1	6.6	11:59	Hot
9/2/2010	40.1	6.6	12:20	Warm
9/3/2010	40.1	6.6	12:04	Warm, Windy
9/4/2010	40.1	6.6	13:15	Warm, Windy
9/5/2010	40.1	6.6	14:35	Windy
9/6/2010				Holiday (no w/l measurement)
9/7/2010	40.1	6.6	11:10	Cool, Windy
9/8/2010	40.1	6.6	13:04	Warm
9/9/2010	40.1	6.6	10:14	Cool, Cloudy
9/10/2010	40.1	6.6	11:25	Cloudy, Rain
9/11/2010	40.1	6.6	9:16	Cloudy, Cool, Rain
9/12/2010				Sunday (no w/l measurement)
9/13/2010	40.1	6.6	10:27	Warm
9/14/2010	40.1	6.6	11:00	Warm
9/15/2010	40.1	6.6	12:17	Warm
9/16/2010	40.1	6.6	14:50	Warm
9/17/2010	40.1	6.6	10:42	Warm
9/18/2010	40.1	6.6	12:48	Warm
9/19/2010				Sunday (no w/l measurement)
9/20/2010	40.1	6.6	12:15	Warm
9/21/2010	40.1	6.6	12:06	Warm
9/22/2010	40.1	6.6	12:10	Warm
9/23/2010	40.1	6.6	18:40	Warm
9/24/2010	40.1	6.6	19:00	Warm
9/25/2010	40.1	6.6	12:04	
9/26/2010				Sunday (no w/l measurement)
9/27/2010	40.1	6.6	12:02	Warm
9/28/2010	40.1	6.6	12:15	Warm
9/29/2010	40.1	6.6	12:04	Warm
9/30/2010	40.1	6.6	12:15	Warm
10/1/2010	40.1	6.6	12:00	Warm
10/2/2010	40.1	6.6	12:25	Rain
10/3/2010	40.1	6.6	10:10	Cool
10/4/2010	40.1	6.6	13:16	Cool
10/5/2010	40.1	6.6	14:04	Warm
10/6/2010	40.1	6.6	11:19	Warm
10/7/2010	40.1	6.6	10:40	Warm
10/8/2010	40.1	6.6	12:10	Warm
10/9/2010	40.1	6.6	10:17	Warm
10/10/2010				Sunday (no w/l measurement)
10/11/2010	40.0	6.7	12:14	Warm
10/12/2010	40.0	6.7	12:06	Warm
10/13/2010	40.1	6.6	12:30	Warm
10/14/2010	40.1	6.6	11:10	Warm
10/15/2010	40.1	6.6	10:14	Cool
10/16/2010				Saturday (no w/l measurement)
10/17/2010				Sunday (no w/l measurement)
10/18/2010	40.1	6.6	14:15	Warm
10/19/2010	40.1	6.6	9:20	Warm
10/20/2010	40.1	6.6	8:35	Cool
10/21/2010	40.1	6.6	9:00	Cool, Windy
10/22/2010	40.1	6.6	10:15	Cool
10/23/2010	40.1	6.6	11:30	Cool, Windy
10/24/2010				Saturday (no w/l measurement)
10/25/2010				Sunday (no w/l measurement)
10/26/2010	40.1	6.6	8:20	Cool, Windy
10/27/2010	40.1	6.6	11:10	Warm
10/28/2010	40.1	6.6	10:00	Cool
10/29/2010	40.1	6.6	9:14	Cool
10/30/2010	40.1	6.6	12:04	Warm
10/31/2010	40.1	6.6	10:00	Warm

TABLE C.5

2010 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Comments*
11/1/2010	40.1	6.6	11:06	Warm
11/2/2010	40.1	6.6	10:14	Warm
11/3/2010	40.1	6.6	9:41	Cool
11/4/2010	40.1	6.6	14:10	Warm
11/5/2010	40.1	6.6	11:15	Cool, Cloudy
11/6/2010	40.1	6.6	9:00	Cool
11/7/2010				Sunday (no w/l measurement)
11/8/2010	40.0	6.7	11:02	Cool
11/9/2010	40.0	6.7	10:15	Cool
11/10/2010	40.1	6.6	11:00	Warm
11/11/2010	40.1	6.6	9:40	Cool
11/12/2010	40.1	6.6	10:00	Cool
11/13/2010	40.1	6.6	11:20	Warm
11/14/2010	40.1	6.6	14:10	Warm
11/15/2010	40.1	6.6	13:24	Warm
11/16/2010	40.1	6.6	10:15	Rain
11/17/2010	40.1	6.6	11:20	Warm
11/18/2010	40.1	6.6	13:10	Cool
11/19/2010	40.1	6.6	14:25	Warm
11/20/2010	40.1	6.6	13:15	Warm
11/21/2010	40.1	6.6	10:15	Warm, Windy
11/22/2010	40.1	6.6	13:25	Warm, Windy
11/23/2010	40.1	6.6	14:14	Warm
11/24/2010	40.1	6.6	13:00	Cool
11/25/2010	40.1	6.6	9:10	Cool
11/26/2010				Holiday (no w/l measurement)
11/27/2010	40.1	6.6	11:30	Cool
11/28/2010	40.1	6.6	10:40	Warm
11/29/2010	40.1	6.6	11:09	Cool
11/30/2010	40.1	6.6	14:14	Cold
12/1/2010	40.1	6.6	11:09	
12/2/2010	40.1	6.6	14:14	
12/3/2010	40.1	6.6	10:25	
12/4/2010	40.1	6.6	9:04	
12/5/2010	40.1	6.6	13:15	
12/6/2010	40.1	6.6	11:05	
12/7/2010	40.1	6.6	12:14	
12/8/2010	40.1	6.6	10:26	
12/9/2010	40.1	6.6	11:10	
12/10/2010	40.1	6.6	8:15	
12/11/2010	40.1	6.6		Saturday (no w/l measurement)
12/12/2010	40.1	6.6		Sunday (no w/l measurement)
12/13/2010	40.1	6.6	9:25	
12/14/2010	40.1	6.6	13:45	
12/15/2010	40.1	6.6	8:20	
12/16/2010	40.1	6.6	11:09	
12/17/2010	40.1	6.6	14:15	
12/18/2010	40.1	6.6	10:41	
12/19/2010	40.1	6.6	11:12	
12/20/2010	40.1	6.6	9:20	
12/21/2010	40.1	6.6	10:40	
12/22/2010	40.1	6.6	8:55	
12/23/2010	40.1	6.6	10:41	
12/24/2010	40.1	6.6	13:10	
12/25/2010	40.1	6.6	9:04	
12/26/2010	40.1	6.6	11:20	
12/27/2010	40.1	6.6	10:05	
12/28/2010	40.1	6.6	9:14	
12/29/2010	40.1	6.6	8:36	
12/30/2010	40.1	6.6	10:22	
12/31/2010	40.1	6.6	9:04	

Notes:

w/l - Water Level

The permanent pump installed in the underdrain sump on November 10, 2008 is a 3 foot vertical submersible pump that needs 2 to 3 feet of water above the pump intake in order to operate properly. Therefore, in order to ensure the motor remains cool, the water depth in the underdrain sump is expected to be maintained 5 to 6 feet above bottom. The water level in the underdrain did not change and the pump was not operated for the duration indicating the groundwater level is the observed level.

TABLE C.6

2011 GUS PUMPING DATA
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EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 08/08/11	08/09/11 to 08/16/11	08/17/11 to 09/11/11	new depth from 09/12/11
Top of sump (datum reference)	708.81	719.61	730.41	738.21
Bottom of sump (feet BTOS)	46.67	57.47	68.27	76.07
Diameter of sump (feet)	1.5	1.5	1.5	1.5

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Comments*
1/1/2011				Saturday (no w/l measurements)
1/2/2011				Sunday (no w/l measurements)
1/3/2011	40.1	6.57	9:15	
1/4/2011	40.1	6.57	8:32	
1/5/2011	40.1	6.57	10:14	
1/6/2011	40.1	6.57	9:20	
1/7/2011	40.1	6.57	10:50	
1/8/2011	40.1	6.57	8:25	
1/9/2011	40.1	6.57	9:12	
1/10/2011	40.1	6.57	11:05	
1/11/2011	40.1	6.57	10:10	
1/12/2011	40.1	6.57	11:22	
1/13/2011	40.1	6.57	10:35	
1/14/2011	40.1	6.57	9:10	
1/15/2011	40.1	6.57	13:16	
1/16/2011				Sunday (no w/l measurements)
1/17/2011	40.1	6.57	8:09	
1/18/2011	40.1	6.57	9:25	
1/19/2011	40.1	6.57	10:15	
1/20/2011	40.1	6.57	11:04	
1/21/2011	40.1	6.57	9:15	
1/22/2011				Saturday (no w/l measurements)
1/23/2011	40.1	6.57	10:04	
1/24/2011	40.1	6.57	9:27	
1/25/2011	40.1	6.57	11:32	
1/26/2011	40.1	6.57	9:10	CRA Sampled
1/27/2011	40.1	6.57	8:40	
1/28/2011	40.1	6.57	10:22	
1/29/2011	40.1	6.57	11:05	
1/30/2011				Sunday (no w/l measurements)
1/31/2011	40.1	6.57	13:19	
2/1/2011	40.1	6.57	11:10	
2/2/2011	40.1	6.57	10:23	
2/3/2011	40.1	6.57	13:14	
2/4/2011	40.1	6.57	9:28	
2/5/2011	40.1	6.57	14:03	
2/6/2011				Sunday (no w/l measurements)
2/7/2011	40.1	6.57	10:20	
2/8/2011	40.1	6.57	11:33	
2/9/2011				
2/10/2011				
2/11/2011	40.1	6.57	13:17	
2/12/2011	40.1	6.57	10:49	
2/13/2011				Sunday (no w/l measurements)
2/14/2011	40.1	6.57	9:42	
2/15/2011	40.1	6.57	13:42	
2/16/2011	40.1	6.57	10:36	
2/17/2011	40.1	6.57	9:12	
2/18/2011	40.1	6.57	8:17	
2/19/2011	40.1	6.57	10:14	
2/20/2011				Sunday (no w/l measurements)
2/21/2011				Holiday (no w/l measurements)
2/22/2011				
2/23/2011	40.1	6.57	14:34	CRA Sampled
2/24/2011	40.1	6.57	13:37	
2/25/2011	40.1	6.57	11:14	
2/26/2011	40.1	6.57	16:29	
2/27/2011				Sunday (no w/l measurements)
2/28/2011	40.1	6.57	13:15	

TABLE C.6

2011 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Comments*
3/1/2011	40.1	6.57	13:04	
3/2/2011	40.1	6.57	13:26	
3/3/2011	40.1	6.57	9:31	
3/4/2011	40.1	6.57	10:44	
3/5/2011	40.1	6.57	9:20	
3/6/2011	40.1	6.57	11:00	
3/7/2011	40.1	6.57	14:38	
3/8/2011	40.1	6.57	9:10	
3/9/2011	40.1	6.57	9:27	CRA Sampled
3/10/2011	40.1	6.57	10:15	
3/11/2011	40.1	6.57	14:04	
3/12/2011	40.1	6.57	14:26	
3/13/2011				Sunday (no w/l measurements)
3/14/2011	40.1	6.57	11:02	
3/15/2011	40.0	6.67	9:15	
3/16/2011	40.1	6.57	10:20	
3/17/2011	40.1	6.57	9:34	
3/18/2011	40.1	6.57	8:10	
3/19/2011				Saturday (no w/l measurements)
3/20/2011				Sunday (no w/l measurements)
3/21/2011				
3/22/2011	40.1	6.57	9:10	
3/23/2011	40.1	6.57	11:05	
3/24/2011	40.1	6.57	10:15	
3/25/2011	40.1	6.57	8:24	
3/26/2011	40.1	6.57	11:00	
3/27/2011				Sunday (no w/l measurements)
3/28/2011	40.1	6.57	10:37	
3/29/2011	40.1	6.57	13:16	
3/30/2011	40.1	6.57	9:10	
3/31/2011	40.1	6.57	14:26	
4/1/2011	40.1	6.57	13:09	
4/2/2011	40.1	6.57	9:15	
4/3/2011	40.1	6.57	11:05	
4/4/2011	40.1	6.57	13:36	
4/5/2011	40.1	6.57	14:53	
4/6/2011	40.1	6.57	15:14	
4/7/2011	40.1	6.57	14:10	
4/8/2011	40.1	6.57	14:20	
4/9/2011				Saturday (no w/l measurements)
4/10/2011				Sunday (no w/l measurements)
4/11/2011	40.1	6.57	15:26	
4/12/2011	40.1	6.57	16:10	
4/13/2011	40.1	6.57	8:15	
4/14/2011	40.1	6.57	14:05	
4/15/2011	40.1	6.57	10:20	
4/16/2011				Saturday (no w/l measurements)
4/17/2011	40.1	6.57	9:20	
4/18/2011	40.1	6.57	9:46	
4/19/2011	40.1	6.57	13:09	
4/20/2011	40.1	6.57	11:12	CRA Sampled
4/21/2011	40.1	6.57	10:10	
4/22/2011	40.1	6.57	13:15	
4/23/2011	40.1	6.57	8:45	
4/24/2011	40.1	6.57	16:28	
4/25/2011	40.1	6.57	13:22	
4/26/2011	40.1	6.57	17:48	
4/27/2011	40.1	6.57	15:15	
4/28/2011	40.1	6.57	16:23	
4/29/2011	40.1	6.57	14:42	
4/30/2011	40.1	6.57	13:14	

TABLE C.6

2011 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Comments*
5/1/2011	40.1	6.57	9:28	
5/2/2011	40.1	6.57	12:51	
5/3/2011	40.1	6.57	13:20	
5/4/2011	40.1	6.57	13:44	
5/5/2011	40.1	6.57	14:04	
5/6/2011	40.1	6.57	9:15	
5/7/2011				Saturday (no w/l measurements)
5/8/2011				Sunday (no w/l measurements)
5/9/2011	40.1	6.57	11:16	
5/10/2011	40.1	6.57	10:35	
5/11/2011	40.1	6.57	14:00	CRA Sampled
5/12/2011	40.1	6.57	13:07	
5/13/2011	40.1	6.57	13:43	
5/14/2011	40.1	6.57	15:30	
5/15/2011	40.1	6.57	12:53	
5/16/2011	40.1	6.57	14:28	
5/17/2011	40.1	6.57	13:12	
5/18/2011	40.1	6.57	10:38	
5/19/2011	40.1	6.57	14:03	
5/20/2011	40.1	6.57	12:55	
5/21/2011	40.1	6.57	13:34	
5/22/2011				Sunday (no w/l measurements)
5/23/2011	40.1	6.57	13:15	
5/24/2011	40.1	6.57	11:30	
5/25/2011	40.1	6.57	10:40	
5/26/2011	40.1	6.57	13:26	
5/27/2011	40.1	6.57	12:55	
5/28/2011				Saturday (no w/l measurements)
5/29/2011	40.1	6.57	11:43	
5/30/2011				Holiday (no w/l measurements)
5/31/2011	40.1	6.57	12:55	
6/1/2011	40.1	6.57	10:15	
6/2/2011	40.1	6.57	13:24	
6/3/2011	40.1	6.57	14:03	
6/4/2011	40.1	6.57	13:45	
6/5/2011				Sunday (no w/l measurements)
6/6/2011	40.0	6.67	8:20	
6/7/2011	40.0	6.67	10:30	
6/8/2011	40.0	6.67	14:10	CRA Sampled
6/9/2011	40.0	6.67	13:15	
6/10/2011	40.0	6.67	11:26	
6/11/2011	40.0	6.67	9:37	
6/12/2011				Sunday (no w/l measurements)
6/13/2011	40.0	6.67	7:42	
6/14/2011	40.0	6.67	8:20	
6/15/2011	40.0	6.67	10:30	
6/16/2011	40.0	6.67	9:15	
6/17/2011	40.0	6.67	8:25	
6/18/2011	40.0	6.67	9:30	
6/19/2011				Sunday (no w/l measurements)
6/20/2011				
6/21/2011	40.0	6.67	8:10	
6/22/2011	40.0	6.67	8:30	
6/23/2011	40.0	6.67	10:28	
6/24/2011	40.0	6.67	12:56	
6/25/2011	40.0	6.67	9:00	
6/26/2011	40.0	6.67	10:16	
6/27/2011	40.0	6.67	10:52	
6/28/2011	40.0	6.67	9:20	
6/29/2011	40.0	6.67	8:10	
6/30/2011	40.0	6.67	9:03	

TABLE C.6

2011 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Comments*
7/1/2011	40.0	6.67	8:30	
7/2/2011				Saturday (no w/l measurements)
7/3/2011				Sunday (no w/l measurements)
7/4/2011				Holiday (no w/l measurements)
7/5/2011	40.0	6.67	8:05	
7/6/2011	40.1	6.57	10:20	
7/7/2011	40.1	6.57	9:13	
7/8/2011	40.1	6.57	13:15	
7/9/2011	40.1	6.57	10:37	
7/10/2011	40.1	6.57	9:10	
7/11/2011	40.0	6.67	9:56	
7/12/2011	40.1	6.57	13:28	
7/13/2011	40.1	6.57	11:10	
7/14/2011	40.1	6.57	9:24	
7/15/2011	40.1	6.57	13:10	
7/16/2011	40.1	6.57	10:17	
7/17/2011				Sunday (no w/l measurements)
7/18/2011	40.1	6.57	9:30	
7/19/2011	40.1	6.57	7:14	
7/20/2011	40.1	6.57	8:35	
7/21/2011	40.1	6.57	9:10	
7/22/2011	40.1	6.57	8:47	
7/23/2011				Saturday (no w/l measurements)
7/24/2011	40.1	6.57	8:07	
7/25/2011	40.1	6.57	8:32	
7/26/2011	40.1	6.57	9:15	
7/27/2011	40.0	6.67	11:19	CRA Sampled
7/28/2011	40.0	6.67	9:28	
7/29/2011	40.0	6.67	10:42	
7/30/2011	40.0	6.67	9:12	
7/31/2011				Sunday (no w/l measurements)
8/1/2011	40.1	6.57	14:34	
8/2/2011	40.1	6.57	9:14	
8/3/2011	40.1	6.57	8:37	
8/4/2011				
8/5/2011	40.1	6.57	13:20	
8/6/2011	40.1	6.57	9:27	
8/7/2011	40.0	6.67	10:00	
8/8/2011	40.1	6.57	9:00	Raised up 10.8 ft
8/9/2011	50.9	6.57	14:30	
8/10/2011	50.9	6.57	15:50	
8/11/2011	50.8	6.67	15:27	CRA Sampled
8/12/2011	50.7	6.77	16:54	
8/13/2011	50.7	6.77	11:20	
8/14/2011	50.7	6.77	8:17	
8/15/2011				
8/16/2011	50.7	6.77	8:02	
8/17/2011	61.7	6.57	11:10	Raised Up 10.8 ft
8/18/2011	61.7	6.57	9:07	
8/19/2011	61.7	6.57	13:54	
8/20/2011	61.7	6.57	7:20	
8/21/2011	61.7	6.57	10:15	
8/22/2011	61.5	6.77	14:20	
8/23/2011	61.5	6.77	13:04	
8/24/2011	61.5	6.77	11:12	
8/25/2011	61.5	6.77	10:40	
8/26/2011	61.5	6.77	9:17	
8/27/2011	61.5	6.77	11:32	
8/28/2011				Sunday (no w/l measurements)
8/29/2011	61.5	6.77	14:14	
8/30/2011	61.5	6.77	9:11	
8/31/2011	61.5	6.77	8:40	

TABLE C.6

2011 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Comments*
9/1/2011	61.5	6.77	8:15	
9/2/2011	61.5	6.77	9:37	
9/3/2011				Saturday (no w/l measurements)
9/4/2011	61.5	6.77	10:00	
9/5/2011				Holiday (no w/l measurements)
9/6/2011	61.5	6.77	14:26	
9/7/2011	61.5	6.77	13:35	
9/8/2011	61.5	6.77	9:10	
9/9/2011	61.5	6.77	10:46	
9/10/2011	61.5	6.77	8:35	
9/11/2011				Sunday (no w/l measurements)
9/12/2011	69.4	6.67	13:01	Raised up 7.75 ft
9/13/2011	69.4	6.67	9:24	
9/14/2011	69.4	6.67	13:42	
9/15/2011	69.4	6.67	8:19	
9/16/2011	69.4	6.67	9:20	
9/17/2011	69.4	6.67	10:04	
9/18/2011	69.4	6.67	9:00	
9/19/2011	69.3	6.77	13:15	
9/20/2011	69.3	6.77	11:25	
9/21/2011	69.3	6.77	13:07	
9/22/2011	69.3	6.77	9:09	
9/23/2011	69.4	6.67	10:34	
9/24/2011				Saturday (no w/l measurements)
9/25/2011				Sunday (no w/l measurements)
9/26/2011	69.2	6.87	13:30	
9/27/2011	69.2	6.87	9:45	CRA Sampled
9/28/2011	69.2	6.87	8:07	
9/29/2011	69.2	6.87	10:24	
9/30/2011	69.2	6.87	12:39	
10/1/2011	69.2	6.87	9:20	
10/2/2011	69.2	6.87	11:14	
10/3/2011	69.2	6.87	10:38	
10/4/2011	69.1	6.97	8:10	
10/5/2011	69.1	6.97	13:40	
10/6/2011	69.1	6.97	15:10	
10/7/2011	69.1	6.97	14:30	
10/8/2011	69.1	6.97	9:16	
10/9/2011				Sunday (no w/l measurements)
10/10/2011	69.1	6.97	10:05	
10/11/2011	69.1	6.97	8:27	
10/12/2011	69.1	6.97	11:03	
10/13/2011	69.1	6.97	9:10	
10/14/2011	69.1	6.97	8:14	
10/15/2011	69.1	6.97	13:35	
10/16/2011	69.1	6.97	10:20	
10/17/2011	69.1	6.97	9:00	
10/18/2011	69.1	6.97	7:.35	
10/19/2011	69.1	6.97	8:16	
10/20/2011	69.1	6.97	9:30	
10/21/2011	69.1	6.97	10:40	
10/22/2011				Saturday (no w/l measurements)
10/23/2011				Sunday (no w/l measurements)
10/24/2011	69.1	6.97	8:24	
10/25/2011	69.1	6.97	9:15	
10/26/2011	69.1	6.97	13:10	CRA Sampled
10/27/2011	69.1	6.97	10:07	
10/28/2011	69.1	6.97	11:17	
10/29/2011	69.1	6.97	9:28	
10/30/2011	69.1	6.97	13:45	
10/31/2011	69.1	6.97	13:07	

TABLE C.6

2011 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Comments*
11/1/2011	69.1	6.97	10:42	
11/2/2011	69.1	6.97	8:15	
11/3/2011	69.1	6.97	9:24	
11/4/2011	69.1	6.97	13:10	
11/5/2011	69.1	6.97	10:59	
11/6/2011				Sunday (no w/l measurements)
11/7/2011	69.1	6.97	11:28	
11/8/2011				Could not take measurement - instrument stuck in well
11/9/2011				Could not take measurement - instrument stuck in well
11/10/2011				Could not take measurement - instrument stuck in well
11/11/2011				Holiday (no w/l measurements)
11/12/2011				Saturday (no w/l measurements)
11/13/2011				Sunday (no w/l measurements)
11/14/2011				Could not take measurement - instrument stuck in well
11/15/2011				Could not take measurement - instrument stuck in well
11/16/2011				Could not take measurement - instrument stuck in well
11/17/2011				Could not take measurement - instrument stuck in well
11/18/2011				Could not take measurement - instrument stuck in well
11/19/2011				Saturday (no w/l measurements)
11/20/2011				Sunday (no w/l measurements)
11/21/2011				Could not take measurement - instrument stuck in well
11/22/2011				CRA Sampled. Could not take measurement - instrument stuck in well
11/23/2011				Could not take measurement - instrument stuck in well
11/24/2011				Holiday (no w/l measurements)
11/25/2011				Could not take measurement - instrument stuck in well
11/26/2011				Saturday (no w/l measurements)
11/27/2011				Sunday (no w/l measurements)
11/28/2011				Could not take measurement - instrument stuck in well
11/29/2011				Could not take measurement - instrument stuck in well
11/30/2011	69.1	6.97	13:28	
12/1/2011	69.1	6.97	12:10	
12/2/2011	69.1	6.97	15:47	
12/3/2011	69.1	6.97	11:39	
12/4/2011				Sunday (no w/l measurements)
12/5/2011	69.1	6.97	14:15	
12/6/2011	69.1	6.97	9:24	
12/7/2011	69.1	6.97	7:40	
12/8/2011	69.1	6.97	12:20	
12/9/2011	69.1	6.97	12:09	
12/10/2011	69.1	6.97	12:30	
12/11/2011	69.1	6.97	14:10	
12/12/2011	69.1	6.97	16:25	
12/13/2011	69.1	6.97	11:17	
12/14/2011	69.1	6.97	7:34	
12/15/2011	69.1	6.97	11:35	CRA Sampled
12/16/2011	69.1	6.97	16:40	
12/17/2011	69.1	6.97	14:24	
12/18/2011				Sunday (no w/l measurements)
12/19/2011	69.1	6.97	16:45	
12/20/2011	69.1	6.97	11:09	
12/21/2011	69.1	6.97	13:07	
12/22/2011	69.1	6.97	9:10	
12/23/2011	69.1	6.97	9:40	
12/24/2011				
12/25/2011	69.1	6.97	11:25	
12/26/2011				Holiday (no w/l measurements)
12/27/2011				
12/28/2011				
12/29/2011	69.1	6.97	13:30	
12/30/2011				
12/31/2011				Saturday (no w/l measurements)

Notes:

w/l - Water Level

The permanent pump installed in the underdrain sump on November 10, 2008 is a 3 foot vertical submersible pump that requires 2 to 3 feet of water above the pump intake (at the top of the pump) ; however, it was advised that 5 ft of water be maintained above the pump in order to operate properly. Therefore, in order to ensure the motor remains cool, the water depth in the underdrain sump is expected to rise to the 6 to 7 foot range prior to pumping.

TABLE C.7

2012 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 08/08/11	08/09/11 to 08/16/11	08/17/11 to 40797	new depth from 09/12/11
Top of sump (datum reference)	708.81	719.61	730.41	738.21
Bottom of sump (feet BTOS)	46.67	57.47	68.27	76.07
Diameter of sump (feet)	1.5	1.5	1.5	1.5

Date	*Time of Water Level Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Volume Pumped (gallons)*	*Comments*
1/1/12	--	--	--	--	
1/2/12	--	--	--	--	
1/3/12	12:07	*69.1*	7.0	--	Sunny, cool
1/4/12	12:25	69.1	7.0	--	Sunny, windy
1/5/12	9:40	69.1	7.0	--	Dunny, cool
1/6/12	8:26	69.1	7.0	--	Sunny
1/7/12	9:20	69.1	7.0	--	Sunny
1/8/12	11:10	69.1	7.0	--	Sunny, windy
1/9/12	8:20	69.1	7.0	--	Sunny
1/10/12	3:40	69.1	7.0	--	Sunny
1/11/12	1:25	69.1	7.0	--	Rain
1/12/12	1:55	69.1	7.0	--	Snow, cold
1/13/12	1:10	69.1	7.0	--	Snow, very cold wind
1/14/12	--	--	--	--	-
1/15/12	--	--	--	--	-
1/16/12	2:17	69.1	7.0	--	Sprinkles
1/17/12	1:29	69.0	7.1	--	Windy, cool, cloudy
1/18/12	8:30	69.0	7.1	--	Cool, little wind
1/19/12	2:19	69.0	7.1	--	Cool, little breeze, cloud cover
1/20/12	1:43	69.0	7.1	--	Cold, little wind
1/21/12	--	--	--	--	-
1/22/12	10:25	69.0	7.1	--	Cold
1/23/12	1:10	69.0	7.1	--	Cold, windy
1/24/12	2:00	69.1	7.0	--	Cold, cloud cover
1/25/12	2:45	69.1	7.0	--	Cold, cloud cover
1/26/12	9:20	69.1	7.0	--	Cold, rain
1/27/12	1:17	69.1	7.0	--	Cold
1/28/12	--	--	--	--	-
1/29/12	--	--	--	--	-
1/30/12	8:40	69.1	7.0	--	Cold
1/31/12	12:05	69.1	7.0	--	Cloud, warm
2/1/12	11:55	69.1	7.0	--	Very warm, little wind
2/2/12	12:10	69.1	7.0	--	Warm, nice
2/3/12	9:30	69.1	7.0	--	Warm
2/4/12	--	--	--	--	-
2/5/12	--	--	--	--	-
2/6/12	10:40	69.1	7.0	--	Warm
2/7/12	1:20	69.1	7.0	--	Warm
2/8/12	11:10	69.1	7.0	--	Cool, snow
2/9/12	1:50	69.1	7.0	--	Cold
2/10/12	11:25	69.1	7.0	--	Cold, snow
2/11/12	--	--	--	--	-
2/12/12	--	--	--	--	-
2/13/12	1:30	N/A	--	--	Unable to get a reading
2/14/12	1:30	N/A	--	--	Unable to get a reading
2/15/12	10:00	N/A	--	--	Unable to get a reading
2/16/12	10:45	N/A	--	--	Unable to get a reading
2/17/12	10:30	N/A	--	--	Unable to get a reading
2/18/12	--	--	--	--	-
2/19/12	--	--	--	--	-
2/20/12	11:45	N/A	--	--	Unable to get a reading
2/21/12	10:15	N/A	--	--	Unable to get a reading
2/22/12	9:35	N/A	--	--	Unable to get a reading
2/23/12	8:30	N/A	--	--	Unable to get a reading
2/24/12	7:30	N/A	--	--	Unable to get a reading
2/25/12	--	--	--	--	-
2/26/12	--	--	--	--	-
2/27/12	7:50	N/A	--	--	Unable to get a reading
2/28/12	7:30	N/A	--	--	Unable to get a reading

TABLE C.7

2012 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 08/08/11	08/09/11 to 08/16/11	08/17/11 to 40797	new depth from 09/12/11
Top of sump (datum reference)	708.81	719.61	730.41	738.21
Bottom of sump (feet BTOS)	46.67	57.47	68.27	76.07
Diameter of sump (feet)	1.5	1.5	1.5	1.5

Date	*Time of Water Level Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Volume Pumped (gallons)*	*Comments*
2/29/12	7:50	N/A	--	--	Unable to get a reading
3/1/12	7:15	N/A	--	--	Unable to check water level
3/2/12	7:15	N/A	--	--	CRA setting up pumps
3/3/12	--	--	--	64,100	-
3/4/12	--	--	--	79,515	-
3/5/12	7:45	N/A	--	19,035	CRA setting up pumps
3/6/12	7:30	N/A	--	0	CRA has pump automated
3/7/12	--	--	--	0	
3/8/12	--	--	--	24,305	
3/9/12	--	--	--	30,465	
3/10/12	--	--	--	9,350	
3/11/12	--	--	--	8,305	
3/12/12	--	--	--	2,885	
3/13/12	--	--	--	745	
3/14/12	--	--	--	20,445	
3/15/12	--	--	--	3,260	
3/16/12	--	--	--	0	
3/17/12	--	--	--	0	
3/18/12	--	--	--	0	
3/19/12	--	--	--	11,120	
3/20/12	--	--	--	9,565	
3/21/12	--	--	--	0	
3/22/12	--	--	--	0	
3/23/12	--	--	--	0	
3/24/12	--	--	--	0	
3/25/12	--	--	--	0	
3/26/12	--	--	--	0	
3/27/12	--	--	--	0	
3/28/12	--	--	--	21,350	
3/29/12	--	--	--	30,170	
3/30/12	--	--	--	25,120	
3/31/12	--	--	--	22,160	
4/1/12	--	--	--	10,365	
4/2/12	--	--	--	7,340	
4/3/12	--	--	--	7,175	
4/4/12	--	--	--	7,240	
4/5/12	--	--	--	6,990	
4/6/12	--	--	--	7,040	
4/7/12	--	--	--	6,915	
4/8/12	--	--	--	6,960	
4/9/12	--	--	--	6,750	
4/10/12	--	--	--	4,015	
4/11/12	--	--	--	3,075	
4/12/12	--	--	--	0	
4/13/12	--	--	--	0	
4/14/12	--	--	--	0	
4/15/12	--	--	--	0	
4/16/12	--	--	--	0	
4/17/12	--	--	--	0	
4/18/12	--	--	--	21,335	
4/19/12	--	--	--	16,930	
4/20/12	--	--	--	15,350	
4/21/12	--	--	--	13,790	
4/22/12	--	--	--	10,920	
4/23/12	--	--	--	9,215	
4/24/12	--	--	--	7,745	
4/25/12	--	--	--	7,295	
4/26/12	--	--	--	6,860	
4/27/12	--	--	--	6,385	

TABLE C.7

2012 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 08/08/11	08/09/11 to 08/16/11	08/17/11 to 40797	new depth from 09/12/11
Top of sump (datum reference)	708.81	719.61	730.41	738.21
Bottom of sump (feet BTOS)	46.67	57.47	68.27	76.07
Diameter of sump (feet)	1.5	1.5	1.5	1.5

Date	*Time of Water Level Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Volume Pumped (gallons)*	*Comments*
4/28/12	--	--	--	6,530	
4/29/12	--	--	--	6,355	
4/30/12	--	--	--	8,415	
5/1/12	--	--	--	2,370	
5/2/12	--	--	--	1,820	
5/3/12	--	--	--	2,830	
5/4/12	--	--	--	2,513	
5/5/12	--	--	--	2,115	
5/6/12	--	--	--	1,760	
5/7/12	--	--	--	995	
5/8/12	--	--	--	0	
5/9/12	--	--	--	0	
5/10/12	--	--	--	0	
5/11/12	--	--	--	0	
5/12/12	--	--	--	0	
5/13/12	--	--	--	0	
5/14/12	--	--	--	0	
5/15/12	--	--	--	0	
5/16/12	--	--	--	0	
5/17/12	--	--	--	0	
5/18/12	--	--	--	0	
5/19/12	--	--	--	0	
5/20/12	--	--	--	0	
5/21/12	--	--	--	0	
5/22/12	--	--	--	0	
5/23/12	--	--	--	0	
5/24/12	--	--	--	0	
5/25/12	--	--	--	0	
5/26/12	--	--	--	0	
5/27/12	--	--	--	0	
5/28/12	--	--	--	0	
5/29/12	--	--	--	--	
5/30/12	--	--	--	--	
5/31/12	14:00	71.4	4.7	--	
6/1/12	7:30	71.4	4.7	--	Started checking level per CRA
6/2/12	--	--	--	--	
6/3/12	--	--	--	--	
6/4/12	7:30	71.4	4.7	--	
6/5/12	7:30	71.4	4.7	--	
6/6/12	10:30	71.4	4.7	--	
6/7/12	7:30	71.4	4.7	--	
6/8/12	7:30	71.4	4.7	--	
6/9/12	--	--	--	--	
6/10/12	--	--	--	--	
6/11/12	7:30	71.3	4.8	--	
6/12/12	7:30	71.35	4.7	--	
6/13/12	7:30	71.3	4.8	--	
6/14/12	7:30	71.35	4.7	--	
6/15/12	7:30	71.3	4.8	--	
6/16/12	--	--	--	--	
6/17/12	--	--	--	--	
6/18/12	7:30	71.3	4.8	--	
6/19/12	7:30	71.3	4.8	--	
6/20/12	7:30	71.3	4.8	--	
6/21/12	7:30	71.3	4.8	--	
6/22/12	7:30	71.3	4.8	--	
6/23/12	--	--	--	--	
6/24/12	--	--	--	--	
6/25/12	7:30	71.3	4.8	--	

TABLE C.7

2012 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 08/08/11	08/09/11 to 08/16/11	08/17/11 to 40797	new depth from 09/12/11
Top of sump (datum reference)	708.81	719.61	730.41	738.21
Bottom of sump (feet BTOS)	46.67	57.47	68.27	76.07
Diameter of sump (feet)	1.5	1.5	1.5	1.5

Date	*Time of Water Level Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Volume Pumped (gallons)*	*Comments*
6/26/12	7:30	71.35	4.7	--	
6/27/12	7:30	71.3	4.8	--	
6/28/12	6:30	71.2	4.9	--	
6/29/12	6:30	71.2	4.9	--	
6/30/12	--	--	--	--	
7/1/12	--	--	--	--	
7/2/12	6:45	71.2	4.9	--	
7/3/12	6:30	71.3	4.8	--	
7/4/12	--	--	--	--	
7/5/12	--	--	--	--	
7/6/12	--	--	--	--	
7/7/12	--	--	--	--	
7/8/12	--	--	--	--	
7/9/12	6:30	71.2	4.9	--	
7/10/12	7:30	71.2	4.9	--	
7/11/12	7:30	71.2	4.9	--	
7/12/12	7:30	71.2	4.9	--	
7/13/12	7:30	71.2	4.9	--	
7/14/12	--	--	--	--	
7/15/12	--	--	--	--	
7/16/12	7:30	71.2	4.9	--	
7/17/12	7:30	71.2	4.9	--	
7/18/12	10:15	71.15	4.9	--	
7/19/12	7:30	71.15	4.9	--	
7/20/12	6:30	71.1	5.0	--	
7/21/12	--	--	--	--	
7/22/12	--	--	--	--	
7/23/12	6:30	71.15	4.9	--	
7/24/12	7:00	71.15	4.9	--	
7/25/12	6:30	71.15	4.9	--	
7/26/12	6:30	71.15	4.9	--	
7/27/12	7:00	71.15	4.9	--	
7/28/12	--	--	--	--	
7/29/12	--	--	--	--	
7/30/12	6:30	71.1	5.0	--	
7/31/12	6:30	71.1	5.0	--	
8/1/12	6:30	71.1	5.0	--	
8/2/12	7:00	71.1	5.0	--	
8/3/12	7:00	71.1	5.0	--	
8/4/12	--	--	--	--	
8/5/12	--	--	--	--	
8/6/12	7:30	71.1	5.0	--	
8/7/12	9:00	71.1	5.0	--	
8/8/12	10:15	71.0	5.1	--	
8/9/12	8:15	71.1	5.0	--	
8/10/12	7:30	71.1	5.0	--	
8/11/12	--	--	--	--	
8/12/12	--	--	--	--	
8/13/12	1:45	71.1	5.0	--	
8/14/12	8:00	71.1	5.0	--	
8/15/12	8:00	71.05	5.0	--	
8/16/12	8:00	71.05	5.0	--	
8/17/12	1:30	71.0	5.1	--	
8/18/12	--	--	--	--	
8/19/12	--	--	--	--	
8/20/12	8:00	71.0	5.1	--	
8/21/12	12:00	71.0	5.1	--	
8/22/12	7:30	71.0	5.1	--	
8/23/12	7:30	71.0	5.1	--	

TABLE C.7

2012 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 08/08/11	08/09/11 to 08/16/11	08/17/11 to 40797	new depth from 09/12/11
Top of sump (datum reference)	708.81	719.61	730.41	738.21
Bottom of sump (feet BTOS)	46.67	57.47	68.27	76.07
Diameter of sump (feet)	1.5	1.5	1.5	1.5

Date	*Time of Water Level Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Volume Pumped (gallons)*	*Comments*
8/24/12	7:30	71.0	5.1	--	
8/25/12	--	--	--	--	
8/26/12	--	--	--	--	
8/27/12	1:30	71.0	5.1	--	
8/28/12	7:30	71.0	5.1	--	
8/29/12	1:00	71.0	5.1	--	
8/30/12	11:00	71.0	5.1	--	
8/31/12	9:00	71.0	5.1	--	
9/1/12	--	--	--	--	
9/2/12	--	--	--	--	
9/3/12	9:30	71.0	5.1	--	
9/4/12	8:00	71.0	5.1	--	
9/5/12	7:30	71.0	5.1	--	
9/6/12	8:00	71.0	5.1	--	
9/7/12	7:30	71.0	5.1	--	
9/8/12	--	--	--	--	
9/9/12	--	--	--	--	
9/10/12	8:30	71.0	5.1	--	
9/11/12	7:45	71.0	5.1	--	
9/12/12	7:45	71.0	5.1	--	
9/13/12	8:00	71.0	5.1	--	
9/14/12	7:30	71.0	5.1	--	
9/15/12	--	--	--	--	
9/16/12	--	--	--	--	
9/17/12	8:00	71.0	5.1	--	
9/18/12	8:00	71.0	5.1	--	
9/19/12	7:45	71.0	5.1	--	
9/20/12	8:00	70.95	5.1	--	
9/21/12	7:45	71.0	5.1	--	
9/22/12	--	--	--	--	
9/23/12	--	--	--	--	
9/24/12	8:00	71.0	5.1	--	
9/25/12	8:00	71.0	5.1	--	
9/26/12	7:45	71.0	5.1	--	
9/27/12	8:00	70.95	5.1	--	
9/28/12	7:45	71.0	5.1	--	
9/29/12	--	--	--	--	
9/30/12	--	--	--	--	
10/1/12	9:00	70.9	5.2	--	
10/2/12	12:00	70.95	5.1	--	
10/3/12	8:00	70.95	5.1	--	
10/4/12	8:30	70.9	5.2	--	
10/5/12	8:15	70.9	5.2	--	
10/6/12	--	--	--	--	
10/7/12	--	--	--	--	
10/8/12	8:00	70.9	5.2	--	
10/9/12	8:30	70.9	5.2	--	
10/10/12	8:00	70.9	5.2	--	
10/11/12	3:00	70.9	5.2	--	
10/12/12	10:15	70.9	5.2	--	
10/13/12	--	--	--	--	
10/14/12	--	--	--	--	
10/15/12	8:00	70.9	5.2	--	
10/16/12	8:45	70.9	5.2	--	
10/17/12	8:00	70.9	5.2	--	
10/18/12	9:30	70.9	5.2	--	
10/19/12	8:30	70.9	5.2	--	
10/20/12	--	--	--	--	
10/21/12	--	--	--	--	

TABLE C.7

2012 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 08/08/11	08/09/11 to 08/16/11	08/17/11 to 40797	new depth from 09/12/11
Top of sump (datum reference)	708.81	719.61	730.41	738.21
Bottom of sump (feet BTOS)	46.67	57.47	68.27	76.07
Diameter of sump (feet)	1.5	1.5	1.5	1.5

Date	*Time of Water Level Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Volume Pumped (gallons)*	*Comments*
10/22/12	2:45	70.9	5.2	--	
10/23/12	8:15	70.9	5.2	--	
10/24/12	8:15	70.9	5.2	--	
10/25/12	8:00	70.85	5.2	--	
10/26/12	9:30	70.85	5.2	--	
10/27/12	--	--	--	--	
10/28/12	--	--	--	--	
10/29/12	9:00	70.85	5.2	--	
10/30/12	12:00	70.85	5.2	--	
10/31/12	8:15	70.85	5.2	--	
11/1/12	8:00	--	--	69,235	Unable to get level reading
11/2/12	8:00	--	--	29,100	Unable to get level reading
11/3/12	--	--	--	7,105	
11/4/12	--	--	--	6,545	
11/5/12	8:00	--	--	6,255	Unable to get level reading
11/6/12	8:00	75.1	1.0	6,060	Pump still running
11/7/12	8:00	75.1	1.0	5,780	Pump still running
11/8/12	8:00	75.1	1.0	5,805	Pump still running
11/9/12	8:00	75.1	1.0	5,655	Pump still running
11/10/12	--	--	--	5,575	
11/11/12	--	--	--	5,445	
11/12/12	2:30	75.1	1.0	5,415	Pump still running
11/13/12	1:30	75.1	1.0	5,595	Pump still running
11/14/12	12:00	75.1	1.0	3,345	Pump Off
11/15/12	1:45	74.3	1.8	0	
11/16/12	11:00	74.25	1.8	12,675	
11/17/12	--	--	--	5400 [(a)]	Estimated volume
11/18/12	--	--	--	5400 [(a)]	Estimated volume
11/19/12	2:33	75.1	1.0	5400 [(a)]	Pump Running; Estimated volume
11/20/12	9:43	75.1	1.0	5400 [(a)]	Pump Running; Estimated volume
11/21/12	1:55	75.1	1.0	3500 [(a)]	Pump Off; Estimated volume
11/22/12	1:33	74.3	1.8	--	Pump Off
11/23/12	1:27	74.25	1.8	--	Pump Off
11/24/12	--	--	--	--	
11/25/12	--	--	--	--	
11/26/12	1:30	73.3	2.8	--	Pump Off
11/27/12	1:00	73.1	3.0	--	
11/28/12	1:00	73.0	3.1	--	
11/29/12	11:30	72.9	3.2	--	
11/30/12	1:00	72.7	3.4	--	
12/1/12	--	--	--	--	
12/2/12	--	--	--	--	
12/3/12	12:30	72.4	3.7	--	
12/4/12	1:00	72.3	3.8	--	
12/5/12	4:30	72.2	3.9	--	
12/6/12	4:30	72.1	4.0	--	
12/7/12	12:30	72.0	4.1	--	
12/8/12	10:00	71.9	4.2	--	
12/9/12	--	--	--	--	
12/10/12	1:00	71.8	4.3	--	
12/11/12	2:30	71.7	4.4	--	
12/12/12	2:03	71.6	4.5	--	
12/13/12	11:30	71.5	4.6	--	
12/14/12	11:11	71.5	4.6	--	
12/15/12	--	--	--	--	
12/16/12	--	--	--	--	
12/17/12	10:10	71.4	4.7	--	
12/18/12	11:20	71.35	4.7	--	
12/19/12	8:52	71.35	4.7	--	

TABLE C.7

2012 GUS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 08/08/11	08/09/11 to 08/16/11	08/17/11 to 40797	new depth from 09/12/11
Top of sump (datum reference)	708.81	719.61	730.41	738.21
Bottom of sump (feet BTOS)	46.67	57.47	68.27	76.07
Diameter of sump (feet)	1.5	1.5	1.5	1.5

Date	*Time of Water Level Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Volume Pumped (gallons)*	*Comments*
12/20/12	3:23	71.35	4.7	--	
12/21/12	12:54	71.35	4.7	--	
12/22/12	--	--	--	--	
12/23/12	--	--	--	--	
12/24/12	10:46	71.35	4.7	--	
12/25/12	9:36	71.35	4.7	--	
12/26/12	10:46	71.35	4.7	--	
12/27/12	9:37	71.35	4.7	--	
12/28/12	11:30	71.35	4.7	--	
12/29/12	1:15	71.3	4.8	--	
12/30/12	2:30	71.3	4.8	--	
12/31/12	11:26	71.2	4.9	--	
	Minimum	69.0	1.0		
	Maximum	75.1	7.1		
	Mean	71.1	4.9		
	Total Volume Pumped (gallons)			811,978	

Notes: Data was compiled in accordance with prior annual reports.
No measurements were made most weekends or on holidays.
Manual level measurements were not taken in the GUS 3/6/2012 through 5/31/2012 after the initiation of the LCS and GUS automated pumping. Data were to be recorded at the SSC WTP however records were lost either due to electrical problems or system error.

* - [a] Volume was not recorded at the SSC WTP so volume estimated based on prior November 2012 daily pumping volumes in

APPENDIX D

LDS SUMP

D.1 SUMMARY OF LDS SUMP DAILY MONITORING LOGS

D.2 SUMMARY OF LDS SUMP SAMPLE RESULTS

D.3 LDS RESPONSE ACTION PLAN

APPENDIX D.1

SUMMARY OF LDS SUMP DAILY MONITORING LOGS

TABLE D.1.1

2006 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information	Aug. 30 - Dec. 31
Top of sump (datum reference)	0.0
Bottom of sump (feet BTOS)	37.40
Diameter of sump (feet)	6.0

Date	*Water Level (feet BTOS)* start	end	*Time (hh:mm)* start	end	*Water Depth (feet AFOS)* start	end	*Change in Water Depth (feet)*	*Duration of Pumping (hh:mm)*	*Volume Pumped [1] (cu. ft)*	*Volume Pumped [*] (gallons)*	*Flow Rate (gallons/min)*	*Comments*	*Note*
8/30/2006	25.6	36.3	8:00	19:40	11.8	1.1	-10.7	11:40	302.54	2,262.96	3.23		
8/31/2006	34.9	34.7	13:45	18:05	2.5	2.7	0.2	4:20				No volume calculated	(1)
9/1/2006	34.2	37.1	8:55	14:00	3.2	0.3	-2.9	5:05	82.00	613.33	2.01	Rain event	
9/2/2006	36.8	36.8	9:50	12:15	0.6	0.6	0.0	2:25	0.00	0.00			
9/3/2006	36.8	36.8	10:00	11:20	0.6	0.6	0.0	1:20	0.00	0.00			
9/4/2006	36.8	37.0	9:40	11:25	0.6	0.4	-0.2	1:45	5.65	42.30	0.40		
9/5/2006	36.9	36.9	14:15	14:15	0.5	0.5	0.0					No volume calculated	
9/6/2006	36.5	36.8	14:45	18:00	0.9	0.6	-0.3	3:15	8.48	63.45	0.33		
9/7/2006	35.9	37.1	14:15	19:10	1.5	0.3	-1.2	4:55	33.93	253.79	0.86		
9/8/2006	32.9	34.1	13:50	19:30	4.5	3.3	-1.2	5:40	33.93	253.79	0.75		(2)
9/9/2006	36.9	36.9	15:10	15:10	0.5	0.5	0.0	0:00	0.00	0.00			
9/10/2006	36.9	36.9	9:50	9:50	0.5	0.5	0.0	0:00	0.00	0.00		Rain event	
9/11/2006	37.1	37	11:00	18:30	0.3	0.4	0.1	7:30				No volume calculated, Rain event	(1)
9/12/2006	36.9	36.8	10:30	18:45	0.5	0.6	0.1	8:15				No volume calculated, Heavy rainfall event	(1)
9/13/2006	32.7	34.1	9:45	17:45	4.7	3.3	-1.4	8:00	39.58	296.09	0.62	Rain event	(2)
9/14/2006	36.0	37.2	8:40	19:30	1.4	0.2	-1.2	10:50	33.93	253.79	0.39		
9/15/2006	34.4	37.2	18:20	0:00	3	0.2	-2.8	5:40	79.17	592.18	1.74	Pumped to empty, Rain event	(3)
9/16/2006	33.9	37.2	8:38	14:30	3.5	0.2	-3.3	5:52	93.31	697.92	1.98		
9/17/2006	35.9	37.2	8:05	9:45	1.5	0.2	-1.3	1:40	36.76	274.94	2.75	Rain event	
9/18/2006	37.0	37.2	9:20	17:00	0.4	0.2	-0.2	7:40	5.65	42.30	0.09	Rain event	
9/19/2006	35.8	37.2	11:40	17:15	1.6	0.2	-1.4	5:35	39.58	296.09	0.88		(1)
9/20/2006	36.8	37.2	11:25	13:39	0.6	0.2	-0.4	2:14	11.31	84.60	0.63		
9/21/2006	36.8	37.2	16:00	17:10	0.6	0.2	-0.4	1:10	11.31	84.60	1.21		
9/22/2006	36.9	37.2	8:15	9:05	0.5	0.2	-0.3	0:50	8.48	63.45	1.27	Rain event	
9/23/2006	35.9	37.2	8:40	11:00	1.5	0.2	-1.3	2:20	36.76	274.94	1.96	Rain event	
9/24/2006	34.8	37.2	8:05	9:40	2.6	0.2	-2.4	1:35	67.86	507.58	5.34		
9/25/2006	36.1	37.2	15:42	17:22	1.3	0.2	-1.1	1:40	31.10	232.64	2.33		
9/26/2006	36.8	37.2	8:33	10:30	0.6	0.2	-0.4	1:57	11.31	84.60	0.72		
9/27/2006	36.9	37.2	8:21	8:50	0.5	0.2	-0.3	0:29	8.48	63.45	2.19	Rain event	
9/28/2006	37.0	37.2	10:03	10:33	0.4	0.2	-0.2	0:30	5.65	42.30	1.41	Rain event	
9/29/2006	36.9	37.2	1:20	14:08	0.5	0.2	-0.3	12:48	8.48	63.45	0.08	Rain event	
9/30/2006	36.9	37.2		13:44	0.5	0.2	-0.3		8.48	63.45			
10/1/2006	37.0	37.2	10:12	10:41	0.4	0.2	-0.2	0:29	5.65	42.30	1.46		
10/2/2006	37.0	37.2	8:52	9:15	0.4	0.2	-0.2	0:23	5.65	42.30	1.84		
10/3/2006	36.9	37.2	13:53	14:27	0.5	0.2	-0.3	0:34	8.48	63.45	1.87	Rain event	
10/4/2006	37.0	37.2	14:19	14:52	0.4	0.2	-0.2	0:33	5.65	42.30	1.28		
10/5/2006	36.9	37.2	10:53	11:16	0.5	0.2	-0.3	0:23	8.48	63.45	2.76		
10/6/2006	36.9	37.2	14:23	15:16	0.5	0.2	-0.3	0:53	8.48	63.45	1.20		
10/7/2006	37.0	37.2	13:25	13:47	0.4	0.2	-0.2	0:22	5.65	42.30	1.92		
10/8/2006	37.0	37.2	10:26	10:42	0.4	0.2	-0.2	0:16	5.65	42.30	2.64		
10/9/2006	37.1	37.2	13:15	13:30	0.35	0.2	-0.15	0:15	4.24	31.72	2.11		
10/10/2006	37.1	37.2	13:58	14:12	0.35	0.2	-0.15	0:14	4.24	31.72	2.27		
10/11/2006	37.2	37.2	14:15	14:25	0.2	0.2	0	0:10	0.00	0.00	0.00	Rain event	
10/12/2006	37.1	37.2	13:26	13:47	0.35	0.2	-0.15	0:21	4.24	31.72	1.51		
10/13/2006	37.2	37.2	10:07	10:24	0.2	0.2	0	0:17	0.00	0.00	0.00		
10/14/2006	37.1	37.2	10:17	10:32	0.3	0.2	-0.1	0:15	2.83	21.15	1.41		
10/15/2006	37.2	37.2	7:18	7:34	0.2	0.2	0	0:16	0.00	0.00	0.00		
10/16/2006	37.2	37.2	9:30	9:43	0.25	0.2	-0.05	0:13	1.41	10.57	0.81	Heavy rainfall event	
10/17/2006	34.2	37.2	13:57	17:54	3.2	0.2	-3	3:57	84.82	634.48	2.68	Rain event, Pumped to empty	
10/18/2006	35.7	37.2	13:50	15:15	1.7	0.2	-1.5	1:25	42.41	317.24	3.73		
10/19/2006	36.7	37.2	14:28	15:28	0.7	0.2	-0.5	1:00	14.14	105.75	1.76	Rain event	

TABLE D.1.1

2006 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (feet BTOS) start	Water Level (feet BTOS) end	Time (hh:mm) start	Time (hh:mm) end	Water Depth (feet AFOS) start	Water Depth (feet AFOS) end	Change in Water Depth (feet)	Duration of Pumping (hh:mm)	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
10/20/2006	36.4	37.2	13:26	14:40	1	0.2	-0.8	1:14	22.62	169.19	2.29		
10/21/2006	36.7	37.2	11:00	11:48	0.7	0.2	-0.5	0:48	14.14	105.75	2.20		
10/22/2006	36.9	37.2	9:36	10:51	0.5	0.2	-0.3	1:15	8.48	63.45	0.85		
10/23/2006	36.9	37.2	13:17	13:57	0.5	0.2	-0.3	0:40	8.48	63.45	1.59		
10/24/2006	36.9	37.2	14:29	14:49	0.5	0.2	-0.3	0:20	8.48	63.45	3.17		
10/25/2006	37.1	37.2	13:17	13:23	0.35	0.2	-0.15	0:06	4.24	31.72	5.29	Rain event	
10/26/2006	37.1	37.2	10:57	11:12	0.3	0.2	-0.1	0:15	2.83	21.15	1.41	Rain event	
10/27/2006												Rain event, pumped all day, no readings	(5)
10/28/2006	35.2	37.4	9:11	11:42	2.2	0	-2.2	2:31	62.20	465.28	3.08	Rain event, pumped to empty	
10/29/2006	36.3	37.4	10:03	10:53	1.1	0	-1.1	0:50	31.10	232.64	4.65		
10/30/2006	36.8	37.4	13:30	15:05	0.6	0	-0.6	1:35	16.96	126.90	1.34	Pumped to empty	
10/31/2006	36.9	37.4	13:59	14:30	0.5	0	-0.5	0:31	14.14	105.75	3.41	Rain event	
11/1/2006	36.9	37.4	13:18	13:44	0.5	0	-0.5	0:26	14.14	105.75	4.07	Rain event	
11/2/2006	36.9	37.4	13:38	14:00	0.5	0	-0.5	0:22	14.14	105.75	4.81		
11/3/2006	37.0	37.4	9:36	9:58	0.4	0	-0.4	0:22	11.31	84.60	3.85		
11/4/2006	37.0	37.4	13:14	13:35	0.4	0	-0.4	0:21	11.31	84.60	4.03		
11/5/2006	37.1	37.4	10:07	10:27	0.3	0	-0.3	0:20	8.48	63.45	3.17		
11/6/2006	37.1	37.4	14:47	15:07	0.35	0	-0.35	0:20	9.90	74.02	3.70	Rain event	
11/7/2006	36.9	37.4	13:20	13:46	0.5	0	-0.5	0:26	14.14	105.75	4.07	Rain event	
11/8/2006	33.5	37.4	13:20	16:55	3.9	0	-3.9	3:35	110.27	824.82	3.84	Pumped to empty	
11/9/2006	36.9	37.2	13:16	14:00	0.55	0.2	-0.35	0:44	9.90	74.02	1.68		
11/10/2006	36.8	37.4	14:57	15:40	0.6	0	-0.6	0:43	16.96	126.90	2.95		
11/11/2006	36.8	37.4	13:14	14:37	0.6	0	-0.6	1:23	16.96	126.90	1.53	Rain event	
11/12/2006												Pumped, No readings	(4)
11/13/2006	36.9	37.4	13:29	14:29	0.5	0	-0.5	1:00	14.14	105.75	1.76	Rain event	
11/14/2006	37.0	37.4	13:52	14:21	0.45	0	-0.45	0:29	12.72	95.17	3.28	Heavy rainfall event	
11/15/2006	36.5	37	7:59	8:20	0.9	0.4	-0.5	0:21	14.14	105.75	5.04	Rain event	
11/16/2006	34.3	37.4	8:50	10:20	3.1	0	-3.1	1:30	87.65	655.63	7.28	Pumped to empty	(5)
11/17/2006	36.1	37.4	13:33	15:20	1.35	0	-1.35	1:47	38.17	285.51	2.67		
11/18/2006	36.6	37.4	13:23	14:22	0.85	0	-0.85	0:59	24.03	179.77	3.05	Rain event	
11/19/2006									0.00	0.00		Sunday, not pumped	(4)
11/20/2006	36.9	37.4	13:19	14:02	0.5	0	-0.5	0:43	14.14	105.75	2.46		
11/21/2006	37.0	37.4	15:27	15:59	0.45	0	-0.45	0:32	12.72	95.17	2.97		
11/22/2006	36.9	37.4	10:23	10:42	0.55	0	-0.55	0:19	15.55	116.32	6.12		
11/23/2006									0.00	0.00		Not pumped	(4)
11/24/2006									0.00	0.00		Not pumped	(4)
11/25/2006									0.00	0.00		Not pumped	(4)
11/26/2006	36.9	37.4	10:16	10:47	0.55	0	-0.55	0:31	15.55	116.32	3.75		
11/27/2006	36.9	37.4	13:07	13:39	0.5	0	-0.5	0:32	14.14	105.75	3.30		
11/28/2006	36.9	37.4	16:26	16:51	0.55	0	-0.55	0:25	15.55	116.32	4.65		
11/29/2006	37.1	37.4	13:26	13:41	0.35	0	-0.35	0:15	9.90	74.02	4.93	Rain event	
11/30/2006	36.1	37.4	14:15	14:43	1.3	0	-1.3	0:28	36.76	274.94	9.82	Rain event	
12/1/2006	36.6	37.4	9:45	11:15	0.8	0	-0.8	1:30	22.62	169.19	1.88	Heavy rainfall event	
12/2/2006	36.1	37.4	10:02	11:05	1.3	0	-1.3	1:03	36.76	274.94	4.36		
12/3/2006												Not pumped	(4)
12/4/2006	35.5	37.4	13:30	15:27	1.9	0	-1.9	1:57	53.72	401.83	3.43		
12/5/2006	36.8	37.4	15:28	16:17	0.6	0	-0.6	0:49	16.96	126.90	2.59		
12/6/2006	36.8	37.4	16:31	17:24	0.6	0	-0.6	0:53	16.96	126.90	2.39		
12/7/2006	36.9	37.4	13:28	14:17	0.5	0	-0.5	0:49	14.14	105.75	2.16		
12/8/2006									0.00	0.00		Not pumped	(6)
12/9/2006	36.9	37.4	10:31	10:55	0.5	0	-0.5	0:24	14.14	105.75	4.41		
12/10/2006									0.00	0.00		Sunday, not pumped	(4)
12/11/2006	36.9	37.4	15:35	16:08	0.5	0	-0.5	0:33	14.14	105.75	3.20		
12/12/2006	36.9	37.4	13:15	13:45	0.5	0	-0.5	0:30	14.14	105.75	3.52	Rain event	
12/13/2006	35.2	37.4	14:32	15:57	2.2	0	-2.2	1:25	62.20	465.28	5.47		
12/14/2006	36.3	37.4	13:26	14:32	1.1	0	-1.1	1:06	31.10	232.64	3.52		
12/15/2006	36.8	37.4	13:25	14:15	0.6	0	-0.6	0:50	16.96	126.90	2.54		
12/16/2006	36.8	37.4	14:45	15:30	0.6	0	-0.6	0:45	16.96	126.90	2.82		

TABLE D.1.1

2006 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (feet BTOS) start	Water Level (feet BTOS) end	Time (hh:mm) start	Time (hh:mm) end	Water Depth (feet AFOS) start	Water Depth (feet AFOS) end	Change in Water Depth (feet)	Duration of Pumping (hh:mm)	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
12/17/2006									0.00	0.00		Sunday, not pumped	(4)
12/18/2006	36.8	37.4	9:23	10:13	0.6	0	-0.6	0:50	16.96	126.90	2.54	Leak in joints 4/5 repaired	
12/19/2006	37.0	37.4	16:35	17:05	0.4	0	-0.4	0:30	11.31	84.60	2.82		
12/20/2006	37.1	37.4	14:44	15:13	0.3	0	-0.3	0:29	8.48	63.45	2.19	Rain event	
12/21/2006	36.9	37.4	1:20	13:50	0.5	0	-0.5	12:30	14.14	105.75	0.14	Heavy rainfall event	
12/22/2006	35.6	37.4	9:20	11:35	1.8	0	-1.8	2:15	50.89	380.69	2.82	Rain event	
12/23/2006	35.7	37.4	18:30	19:45	1.7	0	-1.7	1:15	48.07	359.54	4.79		
12/24/2006									0.00	0.00		Sunday, not pumped	(4)
12/25/2006	35.1	37.4	13:45	15:03	2.3	0	-2.3	1:18	65.03	486.43	6.24	Rain event	
12/26/2006	35.3	37.4	9:00	11:17	2.1	0	-2.1	2:17	59.38	444.13	3.24	Rain event	
12/27/2006	35.9	37.4	18:15	19:30	1.5	0	-1.5	1:15	42.41	317.24	4.23		
12/28/2006	36.9	37.4	18:30	19:45	0.5	0	-0.5	1:15	14.14	105.75	1.41		
12/29/2006	37.2	37.4	13:00	13:30	0.2	0	-0.2	0:30	5.65	42.30	1.41		
12/30/2006	36.9	37.4	18:30	19:10	0.5	0	-0.5	0:40	14.14	105.75	2.64		
12/31/2006	35.1	37.4	7:00	10:00	2.3	0	-2.3	3:00	65.03	486.43	2.70	Rain event	
								Total	**2,718.58**	**20,334.96**			
								Average/day	**21.92**	**163.99**			

Note:
BTOS - Below top of sump
AFOS - Above floor of sump
(*) Volume pumped calculated based on storage volume of LDS
(1) No water was pumped on this date, however the water level rose slightly between the two observation times.
(2) Shutoff valves were misdirected and water from the underdrain system was inadvertently pumped into the LDS.
(3) Initial water level reading obtained late in the day such that pumping was performed the next morning.
(4) Sunday or holiday (no reading unless rain). Maximum 1 day without pumping unless currently raining or rain event has occurred in the previous 24 hours.
(5) Raining - system was operated throughout the day to accommodate pumping of the accumulating water.
(6) Contractor not on site, manhole pumped next day (12-09-06).
(7) Flushing of LDS began on 01-23-07. The sump is pumped empty (37.4 ft) in AM and then verified empty prior to leaving for the night. Flushing is being done during the day as per the Mannik & Smith report.
(8) Two rounds of flushing completed on 02-06-07. Pending analytical results, SES continues to pump LDMH empty daily.
(9) Readings not collected on this date because Contractor is overly busy (no rain occurred)

TABLE D.1.2

2007 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information	Jan. 1 - Aug. 7	Aug. 8 - Dec. 31
Top of sump (datum reference)	0.00	0
Bottom of sump (feet BTOS)	37.40	45.25
Diameter of sump (feet)	6	6

Date	*Water Level (BTOS)* start	end	*Time (hh:mm)* start	end	*Water Depth (BTOS)* start	end	*Change in Water Depth (feet)*	*Duration of Pumping (hh:mm)*	*Volume Pumped (1) (cu. ft)*	*Volume Pumped (*) (gallons)*	*Flow Rate (gallons/min)*	*Comments*	*Note*
1/1/2007												Rain event, Holiday, not pumped	(4)
1/2/2007	36.10	37.40	15:00	17:00	1.3	0.0	-1.3	2:00	36.76	274.94	2.29		
1/3/2007	36.80	37.40	13:14	14:57	0.6	0.0	-0.6	1:43	16.96	126.90	1.23	Rain event	
1/4/2007	37.00	37.40	8:00	17:00	0.4	0.0	-0.4	9:00	11.31	84.60	0.16	Rain event	
1/5/2007	36.90	37.40	8:13	15:30	0.5	0.0	-0.5	7:17	14.14	105.75	0.24	Heavy rainfall event	
1/6/2007	35.90	37.40	8:12	15:30	1.5	0.0	-1.5	7:18	42.41	317.24	0.72	Rain event	
1/7/2007	36.30	37.40	11:30	15:07	1.1	0.0	-1.1	3:37	31.10	232.64	1.07	Rain event	
1/8/2007	36.40	37.40	8:00	9:17	1	0.0	-1.0	1:17	28.27	211.49	2.75	Rain event	
1/9/2007	36.80	37.40	8:00	8:55	0.6	0.0	-0.6	0:55	16.96	126.90	2.31	Rain event	
1/10/2007	36.80	37.40	8:45	9:47	0.6	0.0	-0.6	1:02	16.96	126.90	2.05		
1/11/2007	36.90	37.40	7:45	16:00	0.5	0.0	-0.5	8:15	14.14	105.75	0.21		
1/12/2007	36.90	37.40	7:15	16:00	0.5	0.0	-0.5	8:45	14.14	105.75	0.20	Rain event	
1/13/2007									0.00	0.00		Rain event, Not pumped (Sunday)	(4)
1/14/2007	36.80	37.40	7:15	9:35	0.6	0.0	-0.6	2:20	16.96	126.90	0.91	Rain event	
1/15/2007	34.80	37.40	7:15	8:45	2.6	0.0	-2.6	1:30	73.51	549.88	6.11	Rain event	
1/16/2007	35.50	37.40	7:30	15:30	1.9	0.0	-1.9	8:00	53.72	401.83	0.84		
1/17/2007	36.70	37.40	7:41	16:00	0.7	0.0	-0.7	8:19	19.79	148.04	0.30		
1/18/2007	36.80	37.40	7:30	14:00	0.6	0.0	-0.6	6:30	16.96	126.90	0.33		
1/19/2007	36.90	37.40	8:15	15:30	0.5	0.0	-0.5	7:15	14.14	105.75	0.24		
1/20/2007	37.00	37.40	8:00	15:30	0.4	0.0	-0.4	7:30	11.31	84.60	0.19		
1/21/2007	36.90	37.40	10:00	11:30	0.5	0.0	-0.5	1:30	14.14	105.75	1.17	Rain event	
1/22/2007	36.90	37.40	8:30	11:30	0.5	0.0	-0.5	3:00	14.14	105.75	0.59		
1/23/2007	36.90	37.40	8:30		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water and pumped dry	(7)
1/24/2007	36.80	37.40	7:00		0.6	0.0	-0.6		16.96	126.90		Flushed with potable water and pumped dry	(7)
1/25/2007	36.20	37.40	7:30		1.2	0.0	-1.2		33.93	253.79		Flushed with potable water and pumped dry	(7)
1/26/2007	34.30	37.40	7:30		3.1	0.0	-3.1		87.65	655.63		Flushed with potable water and pumped dry	(7)
1/27/2007	36.40	37.40	7:36		1	0.0	-1.0		28.27	211.49		Flushed with potable water and pumped dry	(7)
1/28/2007									0.00	0.00		Sunday, Not pumped	(4)
1/29/2007	37.10	37.40	7:40		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water and pumped dry	(7)
1/30/2007	37.40	37.40	7:50		0	0.0	0.0		0.00	0.00		Flushed with potable water and pumped dry	(7)
1/31/2007	37.30	37.40	11:00		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water and pumped dry	(7)
2/1/2007	30.00	37.40	7:41		7.4	0.0	-7.4		209.23	1,565.04		Flushed with potable water and pumped dry	(7)
2/2/2007	37.20	37.40	8:11		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water and pumped dry	(7)
2/3/2007	27.70	37.40	8:04		9.7	0.0	-9.7		274.26	2,051.47		Flushed with potable water and pumped dry	(7)
2/4/2007									0.00	0.00		Sunday, Not pumped	(4)
2/5/2007	25.10	37.40	9:00		12.3	0.0	-12.3		347.77	2,601.35		Flushed with potable water and pumped dry	(7)
2/6/2007	35.90	37.40	13:00		1.5	0.0	-1.5		42.41	317.24		Flushed with potable water and pumped dry	(8)
2/7/2007	36.50	37.40	10:30		0.9	0.0	-0.9		25.45	190.34		Flushed with potable water/pumped dry, Rain event	(7)
2/8/2007	37.40	37.40	7:45		0	0.0	0.0		0.00	0.00		Flushed with potable water and pumped dry	(7)
2/9/2007	37.10	37.40	7:45		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water/pumped dry, Rain event	(7)
2/10/2007	37.20	37.40	7:30		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water and pumped dry	(7)
2/11/2007									0.00	0.00		Sunday, Not pumped	(4)
2/12/2007	37.00	37.40	7:30		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water/pumped dry, Rain event	(7)
2/13/2007	37.30	37.40	8:15		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water/pumped dry, Heavy rain	(7)
2/14/2007	35.70	37.40	8:45		1.7	0.0	-1.7		48.07	359.54		Flushed with potable water and pumped dry	(7)
2/15/2007	36.90	37.40	8:00		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water and pumped dry	(7)
2/16/2007	37.00	37.40	8:00		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water and pumped dry	(7)
2/17/2007	37.10	37.40	7:30		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water/pumped dry, Rain event	(7)
2/18/2007									0.00	0.00		Sunday, Not pumped. Rain event.	(4)
2/19/2007	37.00	37.40	7:30		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water/pumped dry, Rain event	(7)
2/20/2007	36.90	37.40	11:25		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water/pumped dry, Rain event	(7)

TABLE D.1.2

2007 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (BTOS) start	Water Level (BTOS) end	Time (hh:mm) start	Time (hh:mm) end	Water Depth (BTOS) start	Water Depth (BTOS) end	Change in Water Depth (feet)	Duration of Pumping (hh:mm)	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
2/21/2007	35.30	37.40	7:30		2.1	0.0	-2.1		59.38	444.13		Flushed with potable water and pumped dry	(7)
2/22/2007	36.70	37.40	7:30		0.7	0.0	-0.7		19.79	148.04		Flushed with potable water and pumped dry	(7)
2/23/2007	36.80	37.40	7:30		0.6	0.0	-0.6		16.96	126.90		Flushed with potable water and pumped dry	(7)
2/24/2007	37.10	37.40	10:00		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water/pumped dry, Heavy rain	(7)
2/25/2007	35.90	37.40	10:00		1.5	0.0	-1.5		42.41	317.24		Flushed with potable water/pumped dry, Rain event	(7)
2/26/2007	36.30	37.40	7:30		1.1	0.0	-1.1		31.10	232.64		Flushed with potable water and pumped dry	(7)
2/27/2007												Pumped dry, No reading	(9)
2/28/2007	36.90	37.40	7:30		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water and pumped dry	(7)
3/1/2007	36.90	37.40	7:30		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water/pumped dry, Rain event	(7)
3/2/2007	36.30	37.40	7:30		1.1	0.0	-1.1		31.10	232.64		Flushed with potable water and pumped dry	(7)
3/3/2007	36.80	37.40	7:30		0.6	0.0	-0.6		16.96	126.90		Flushed with potable water and pumped dry	(7)
3/4/2007	36.90	37.40	7:30		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water and pumped dry	(7)
3/5/2007	37.00	37.40	7:30		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water and pumped dry	(7)
3/6/2007	37.30	37.40	7:30		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water and pumped dry	(7)
3/7/2007	37.30	37.40	9:00		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water and pumped dry	(7)
3/8/2007	37.20	37.40	7:30		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water and pumped dry	(7)
3/9/2007	37.30	37.40	14:00		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water and pumped dry	(7)
3/10/2007	37.40	37.40	7:30		0	0.0	0.0		0.00	0.00		Flushed with potable water/pumped dry, Rain event	(7)
3/11/2007									0.00	0.00		Sunday, Not pumped	(4)
3/12/2007	37.10	37.40	7:30		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water and pumped dry	(7)
3/13/2007	37.40	37.40	7:30		0	0.0	0.0		0.00	0.00		Flushed with potable water and pumped dry	(7)
3/14/2007	37.40	37.40	7:30		0	0.0	0.0		0.00	0.00		Flushed with potable water and pumped dry	(7)
3/15/2007	37.30	37.40	9:00		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water/pumped dry, Rain event	(7)
3/16/2007									0.00			Pumped dry, No reading	(9)
3/17/2007	37.10	37.40	9:00		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water and pumped dry	(7)
3/18/2007									0.00	0.00		Sunday, Not pumped	(4)
3/19/2007	37.00	37.40	8:20		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water/pumped dry, Rain event	(7)
3/20/2007	36.90	37.40	7:30		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water and pumped dry	(7)
3/21/2007	36.80	37.40	1:20		0.6	0.0	-0.6		16.96	126.90		Flushed with potable water and pumped dry	(7)
3/22/2007	37.00	37.40	10:30		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water/pumped dry, Rain event	(7)
3/23/2007	36.80	37.40	10:30		0.6	0.0	-0.6		16.96	126.90		Flushed with potable water/pumped dry, Rain event	(7)
3/24/2007	36.90	37.40	7:30		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water and pumped dry	(7)
3/25/2007									0.00	0.00		Sunday, Not pumped	(4)
3/26/2007	36.80	37.40	8:30		0.6	0.0	-0.6		16.96	126.90		Flushed with potable water and pumped dry	(7)
3/27/2007	37.10	37.40	3:30		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water and pumped dry	(7)
3/28/2007	37.40	37.40	7:30		0	0.0	0.0		0.00	0.00		Flushed with potable water/pumped dry, Rain event	(7)
3/29/2007	36.90	37.40	8:30		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water/pumped dry, Rain event	(7)
3/30/2007	37.00	37.40	8:00		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water/pumped dry, Rain event	(7)
3/31/2007	36.90	37.40	8:30		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water/pumped dry, Rain event	(7)
4/1/2007									0.00	0.00		Sunday, Not pumped. Rain event.	(4)
4/2/2007	33.50	37.40	7:30		3.9	0.0	-3.9		110.27	824.82		Flushed with potable water and pumped dry	(7)
4/3/2007	36.80	37.40	7:30		0.6	0.0	-0.6		16.96	126.90		Flushed with potable water/pumped dry, Heavy rain	(7)
4/4/2007	36.00	37.40	8:30		1.4	0.0	-1.4		39.58	296.09		Flushed with potable water and pumped dry	(7)
4/5/2007	36.80	37.40	8:00		0.6	0.0	-0.6		16.96	126.90		Flushed with potable water and pumped dry	(7)
4/6/2007	36.90	37.40	8:00		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water and pumped dry	(7)
4/7/2007	37.10	37.40	7:30		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water and pumped dry	(7)
4/8/2007									0.00	0.00		Sunday, Not pumped	(4)
4/9/2007	37.00	37.40	7:30		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water and pumped dry	(7)
4/10/2007	37.30	37.40	7:30		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water and pumped dry	(7)
4/11/2007	36.90	37.40	7:30		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water/pumped dry, Rain event	(7)
4/12/2007	37.00	37.40	7:30		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water/pumped dry, Rain event	(7)
4/13/2007	36.90	37.40	8:50		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water and pumped dry	(7)
4/14/2007	36.90	37.40	8:00		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water/pumped dry, Rain event	(7)
4/15/2007									0.00	0.00		Sunday, Not pumped	(4)
4/16/2007	36.70	37.40	7:30		0.7	0.0	-0.7		19.79	148.04		Flushed with potable water and pumped dry	(7)
4/17/2007	37.00	37.40	7:30		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water and pumped dry	(7)
4/18/2007	37.00	37.40	7:30		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water and pumped dry	(7)
4/19/2007	37.00	37.40	7:30		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water and pumped dry	(7)
4/20/2007	37.20	37.40	7:30		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water and pumped dry	(7)

TABLE D.1.2

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Date	Water Level (BTOS) start	Water Level (BTOS) end	Time (hh:mm) start	Time (hh:mm) end	Water Depth (BTOS) start	Water Depth (BTOS) end	Change in Water Depth (feet)	Duration of Pumping (hh:mm)	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
4/21/2007	37.20	37.40	8:01		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water and pumped dry	(7)
4/22/2007									0.00	0.00		Sunday, Not pumped	(4)
4/23/2007	37.10	37.40	7:30		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water/pumped dry, Rain event	(7)
4/24/2007	37.20	37.40	7:30		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water/pumped dry, Rain event	(7)
4/25/2007	37.30	37.40	7:30		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water/pumped dry, Rain event	(7)
4/26/2007	37.00	37.40	7:30		0.4	0.0	-0.4		11.31	84.60		Flushed with potable water/pumped dry, Rain event	(7)
4/27/2007	36.90	37.40	7:30		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water/pumped dry, Rain event	(7)
4/28/2007	37.10	37.40	7:30		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water and pumped dry	(7)
4/29/2007									0.00	0.00		Sunday, Not pumped	(4)
4/30/2007	36.90	37.40	7:40		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water and pumped dry	(7)
5/1/2007	37.20	37.40	7:30		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water and pumped dry	(7)
5/2/2007	37.30	37.40	7:30		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water/pumped dry, Rain event	(7)
5/3/2007	37.30	37.40	7:30		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water/pumped dry, Rain event	(7)
5/4/2007	37.30	37.40	7:30		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water/pumped dry, Rain event	(7)
5/5/2007									0.00	0.00		Saturday, Not pumped	(4)
5/6/2007									0.00	0.00		Sunday, Not pumped	(4)
5/7/2007	36.80	37.40	7:30		0.6	0.0	-0.6		16.96	126.90		Flushed with potable water and pumped dry	(7)
5/8/2007	37.20	37.40	7:30		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water and pumped dry	(7)
5/9/2007	37.30	37.40	7:30		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water and pumped dry	(7)
5/10/2007	37.30	37.40	7:30		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water and pumped dry	(7)
5/11/2007	37.40	37.40	7:30		0	0.0	0.0		0.00	0.00		Flushed with potable water and pumped dry	(7)
5/12/2007									0.00	0.00		Saturday, Not pumped	(4)
5/13/2007									0.00	0.00		Sunday, Not pumped	(4)
5/14/2007	37.10	37.40	7:40		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water and pumped dry	(7)
5/15/2007	37.30	37.40	7:30		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water/pumped dry, Rain event	(7)
5/16/2007	37.10	37.40	7:30		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water/pumped dry, Rain event	(7)
5/17/2007	37.30	37.40	8:30		0.1	0.0	-0.1		2.83	21.15		Flushed with potable water and pumped dry	(7)
5/18/2007	37.20	37.40	8:20		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water and pumped dry	(7)
5/19/2007									0.00	0.00		Saturday, Not pumped	(4)
5/20/2007									0.00	0.00		Sunday, Not pumped	(4)
5/21/2007	37.10	37.40	7:45		0.3	0.0	-0.3		8.48	63.45		Flushed with potable water and pumped dry	(7)
5/22/2007	37.35	37.40	7:30		0.05	0.0	0.0		1.41	10.57		Flushed with potable water and pumped dry	(7)
5/23/2007	37.20	37.40	7:40		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water and pumped dry	(7)
5/24/2007	37.05	37.40	7:20		0.35	0.0	-0.4		9.90	74.02		Flushed with potable water and pumped dry	(7)
5/25/2007									0.00	0.00		Holiday, not pumped	(4)
5/26/2007									0.00	0.00		Holiday, not pumped	(4)
5/27/2007									0.00	0.00		Holiday, not pumped, Rain event	(4)
5/28/2007									0.00	0.00		Holiday, not pumped, Rain event	(4)
5/29/2007	36.90	37.40	7:30		0.5	0.0	-0.5		14.14	105.75		Flushed with potable water and pumped dry	(7)
5/30/2007	37.20	37.40	15:20		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water and pumped dry	(7)
5/31/2007	37.25	37.40	11:20		0.15	0.0	-0.1		4.24	31.72		Flushed with potable water and pumped dry	(7)
6/1/2007	37.25	37.40	7:30		0.15	0.0	-0.1		4.24	31.72		Flushed with potable water/pumped dry, Rain event	(7)
6/2/2007	37.25	37.40	7:10		0.15	0.0	-0.1		4.24	31.72		Flushed with potable water and pumped dry	(7)
6/3/2007	37.20	37.40	7:40		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water and pumped dry	(7)
6/4/2007	37.20	37.40	7:35		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water/pumped dry, Rain event	(7)
6/5/2007	37.20	37.40	10:40		0.2	0.0	-0.2		5.65	42.30		Flushed with potable water/pumped dry, Rain event	(7)
6/6/2007												Not pumped	
6/7/2007	37.00	37.40	10:30	10:43	0.4	0.0	-0.4	0:13	11.31	84.60	6.51		
6/8/2007	37.30	37.40	7:52	7:57	0.1	0.0	-0.1	0:05	2.83	21.15	4.23	Rain event	
6/9/2007	37.05	37.40	7:15	7:28	0.35	0.0	-0.4	0:13	9.90	74.02	5.69		
6/10/2007	37.30		7:30		0.1				0.00	0.00		Not pumped	
6/11/2007	37.10	37.40	7:30	7:44	0.3	0.0	-0.3	0:14	8.48	63.45	4.53		
6/12/2007	37.25	37.40	7:20	7:32	0.15	0.0	-0.1	0:12	4.24	31.72	2.64		
6/13/2007	37.25	37.40	7:20	7:32	0.15	0.0	-0.1	0:12	4.24	31.72	2.64		
6/14/2007	37.25	37.40	8:05	8:16	0.15	0.0	-0.1	0:11	4.24	31.72	2.88		
6/15/2007	37.25	37.40	7:25	7:28	0.15	0.0	-0.1	0:03	4.24	31.72	10.57		
6/16/2007	37.25	37.40	7:30	7:43	0.15	0.0	-0.1	0:13	4.24	31.72	2.44		
6/17/2007									0.00	0.00		Sunday, Not pumped	(4)
6/18/2007	36.95	37.40	7:20	7:35	0.45	0.0	-0.4	0:15	12.72	95.17	6.34	Rain event	

TABLE D.1.2

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Date	Water Level (BTOS) start	Water Level (BTOS) end	Time (hh:mm) start	Time (hh:mm) end	Water Depth (BTOS) start	Water Depth (BTOS) end	Change in Water Depth (feet)	Duration of Pumping (hh:mm)	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
6/19/2007	37.10	37.40	8:20	8:20	0.3	0.0	-0.3	0:00	8.48	63.45		Rain event	
6/20/2007	37.15	37.40	13:08	13:16	0.25	0.0	-0.3	0:08	7.07	52.87	6.61		
6/21/2007	37.20	37.40	7:30	7:39	0.2	0.0	-0.2	0:09	5.65	42.30	4.70		
6/22/2007	37.20	37.40	10:00	10:10	0.2	0.0	-0.2	0:10	5.65	42.30	4.23	Rain event	
6/23/2007	37.25	37.40	7:00	7:13	0.15	0.0	-0.1	0:13	4.24	31.72	2.44	Rain event	
6/24/2007									0.00	0.00		Sunday, Not pumped	(4)
6/25/2007	36.90	37.40	7:30	7:43	0.5	0.0	-0.5	0:13	14.14	105.75	8.13	Rain event	
6/26/2007	36.90	37.40	8:12	8:25	0.5	0.0	-0.5	0:13	14.14	105.75	8.13	Rain event	
6/27/2007	37.00	37.40	9:30	9:41	0.4	0.0	-0.4	0:11	11.31	84.60	7.69	Rain event	
6/28/2007	37.10	37.40	8:30	8:42	0.3	0.0	-0.3	0:12	8.48	63.45	5.29	Rain event	
6/29/2007	37.10	37.40	7:22	7:28	0.3	0.0	-0.3	0:06	8.48	63.45	10.57	Rain event	
6/30/2007	37.00	37.40	8:06	8:13	0.4	0.0	-0.4	0:07	11.31	84.60	12.09		
7/1/2007									0.00	0.00		Sunday, Not pumped	(4)
7/2/2007	37.40	37.40	7:25	7:40	0	0.0	0.0	0:15	0.00	0.00	0.00		
7/3/2007	37.20	37.40	7:18	7:28	0.2	0.0	-0.2	0:10	5.65	42.30	4.23		
7/4/2007												Rain event	
7/5/2007	37.00	37.40	7:20	7:40	0.4	0.0	-0.4	0:20	11.31	84.60	4.23	Rain event	
7/6/2007	37.40	37.40	7:50	8:10	0	0.0	0.0	0:20	0.00	0.00	0.00		
7/7/2007	37.40	37.40	7:20	7:35	0	0.0	0.0	0:15	0.00	0.00	0.00		
7/8/2007									0.00	0.00		Sunday, Not pumped	(4)
7/9/2007	37.00	37.40	8:07	8:19	0.4	0.0	-0.4	0:12	11.31	84.60	7.05		
7/10/2007	37.25	37.40	7:20	7:32	0.15	0.0	-0.1	0:12	4.24	31.72	2.64	Rain event	
7/11/2007	37.25	37.40	7:26	7:31	0.15	0.0	-0.1	0:05	4.24	31.72	6.34	Rain event	
7/12/2007	37.20	37.40	10:01	10:07	0.2	0.0	-0.2	0:06	5.65	42.30	7.05		
7/13/2007	37.25	37.40	7:19	7:32	0.15	0.0	-0.1	0:13	4.24	31.72	2.44		
7/14/2007	37.25	37.40	7:40	7:48	0.15	0.0	-0.1	0:08	4.24	31.72	3.97		
7/15/2007									0.00	0.00		Sunday, Not pumped	(4)
7/16/2007	37.25		13:40		0.15				0.00	0.00		Not pumped	
7/17/2007	37.10		7:20		0.3				0.00	0.00		Heavy rainfall event, Not pumped	
7/18/2007	36.95	37.40	8:45	9:03	0.45	0.0	-0.4	0:18	12.72	95.17	5.29	Rain event	
7/19/2007	36.95	37.40	9:30	9:50	0.45	0.0	-0.4	0:20	12.72	95.17	4.76	Rain event	
7/20/2007	37.05	37.40	8:27	8:39	0.35	0.0	-0.4	0:12	9.90	74.02	6.17		
7/21/2007	37.25	37.40	8:20	8:35	0.15	0.0	-0.1	0:15	4.24	31.72	2.11		
7/22/2007									0.00	0.00		Sunday, Not pumped	(4)
7/23/2007	37.15	37.40	8:03	8:12	0.25	0.0	-0.3	0:09	7.07	52.87	5.87		
7/24/2007	37.30	37.40	7:29	7:38	0.1	0.0	-0.1	0:09	2.83	21.15	2.35		
7/25/2007	37.30	37.40	7:22	7:35	0.1	0.0	-0.1	0:13	2.83	21.15	1.63		
7/26/2007	37.30	37.40	7:31	7:42	0.1	0.0	-0.1	0:11	2.83	21.15	1.92		
7/27/2007	37.30	37.40	7:26	7:35	0.1	0.0	-0.1	0:09	2.83	21.15	2.35	Rain event	
7/28/2007	37.30	37.40	7:33	7:39	0.1	0.0	-0.1	0:06	2.83	21.15	3.52	Rain event	
7/29/2007									0.00	0.00		Sunday, Not pumped	
7/30/2007	37.10	37.40	7:30	7:43	0.3	0.0	-0.3	0:13	8.48	63.45	4.88		
7/31/2007													
8/1/2007	37.30	37.40	10:03	10:20	0.10	0.0	-0.1	0:17	2.83	21.15	1.24		
8/2/2007	37.30	37.40	9:00	9:09	0.10	0.0	-0.1	0:09	2.83	21.15	2.35		
8/3/2007	37.10	37.40	17:53	18:02	0.30	0.0	-0.3	0:09	8.48	63.45	7.05		
8/4/2007	37.30	37.40	9:55	10:05	0.10	0.0	-0.1	0:10	2.83	21.15	2.11	Rain event	
8/5/2007									0.00	0.00		Sunday, Not pumped, Rain event	(4)
8/6/2007	37.00		14:00		0.40				0.00	0.00		Not pumped	
8/7/2007	37.00		7:47		0.40				0.00	0.00		Not pumped	
8/8/2007									0.00	0.00		Not pumped	
8/9/2007									0.00	0.00		Not pumped	
8/10/2007									0.00	0.00		Not pumped	
8/11/2007									0.00	0.00		Not pumped	
8/12/2007									0.00	0.00		Not pumped	
8/13/2007									0.00	0.00		Not pumped	
8/14/2007	45.20	45.25	10:15	10:27	0.05	0.0	0.0	0:12	1.41	10.57	0.88		
8/15/2007	45.20	45.25	15:50	15:59	0.05	0.0	0.0	0:09	1.41	10.57	1.17		
8/16/2007	45.10	45.25	7:50	8:09	0.15	0.0	-0.1	0:19	4.24	31.72	1.67	Rain event	

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Date	Water Level (BTOS) start	Water Level (BTOS) end	Time (hh:mm) start	Time (hh:mm) end	Water Depth (BTOS) start	Water Depth (BTOS) end	Change in Water Depth (feet)	Duration of Pumping (hh:mm)	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
8/17/2007	45.25	45.25	7:30	7:40	0	0.0	0.0	0:10	0.00	0.00	0.00		
8/18/2007	45.20	45.25	9:42	9:54	0.05	0.0	0.0	0:12	1.41	10.57	0.88		
8/19/2007	45.20	45.25	8:45	8:50	0.05	0.0	0.0	0:05	1.41	10.57	2.11		
8/20/2007									0.00	0.00		Not pumped	
8/21/2007									0.00	0.00		Not pumped, Rain event	
8/22/2007									0.00	0.00		Not pumped	
8/23/2007	45.00	45.25	13:30	14:00	0.25	0.0	-0.3	0:30	7.07	52.87	1.76		
8/24/2007	45.25	45.25	7:55	8:06	0	0.0	0.0	0:11	0.00	0.00	0.00		
8/25/2007	45.25	45.25	8:34	8:46	0	0.0	0.0	0:12	0.00	0.00	0.00	Rain event	
8/26/2007									0.00	0.00		Sunday, Not pumped	(4)
8/27/2007	45.15	45.25	8:08	8:25	0.1	0.0	-0.1	0:17	2.83	21.15	1.24		
8/28/2007	45.25	45.25	14:44	15:13	0	0.0	0.0	0:29	0.00	0.00	0.00		
8/29/2007	45.20		8:42		0.05				0.00	0.00		Not pumped	
8/30/2007	45.10		13:03		0.15				0.00	0.00		Not pumped	
8/31/2007	45.20	45.25	8:13	8:22	0.05	0.0	0.0	0:09	1.41	10.57	1.17		
9/1/2007	45.20	45.25	7:44	7:55	0.05	0.0	0.0	0:11	1.41	10.57	0.96		
9/2/2007									0.00	0.00		Sunday, Not pumped	(4)
9/3/2007	45.20	45.25	8:00	8:10	0.05	0.0	0.0	0:10	1.41	10.57	1.06		
9/4/2007	45.20	45.25	13:15	13:24	0.05	0.0	0.0	0:09	1.41	10.57	1.17		
9/5/2007	45.20	45.25	7:45	7:53	0.05	0.0	0.0	0:08	1.41	10.57	1.32		
9/6/2007	45.20	45.25	2:28	2:41	0.05	0.0	0.0	0:13	1.41	10.57	0.81	Rain event	
9/7/2007	45.20	45.25	7:34	7:42	0.05	0.0	0.0	0:08	1.41	10.57	1.32	Rain event	
9/8/2007	45.20	45.25	7:14	7:22	0.05	0.0	0.0	0:08	1.41	10.57	1.32	Rain event	
9/9/2007									0.00	0.00		Sunday, Not pumped, Rain event	(4)
9/10/2007	45.15	45.25	7:42	7:52	0.1	0.0	-0.1	0:10	2.83	21.15	2.11		
9/11/2007	45.20	45.25	7:57	8:07	0.05	0.0	0.0	0:10	1.41	10.57	1.06		
9/12/2007	45.20	45.25	7:47	7:56	0.05	0.0	0.0	0:09	1.41	10.57	1.17		
9/13/2007	45.20		7:45		0.05		0.0		1.41	10.57		CRA advised SES to (temporarily) pump only when water level above 43.3 ft in order to observe the sump	(10)
9/14/2007	45.20		7:28		0.05				0.00	0.00		Not pumped	(10)
9/15/2007	45.20		8:09		0.05				0.00	0.00		Not pumped	(10)
9/16/2007									0.00	0.00		Sunday, Not pumped	(4)
9/17/2007	45.20		7:37		0.05				0.00	0.00		Not pumped	(10)
9/18/2007	45.25		7:29		0				0.00	0.00		Not pumped	(10)
9/19/2007	45.25		7:27		0				0.00	0.00		Not pumped	(10)
9/20/2007	45.25		8:25		0				0.00	0.00		Not pumped	(10)
9/21/2007	45.20		8:28		0.05				0.00	0.00		Not pumped	(10)
9/22/2007	44.90		9:34		0.35				0.00	0.00		Not pumped	(10)
9/23/2007									0.00	0.00		Sunday, Not pumped	(4)
9/24/2007	44.90		8:40		0.35				0.00	0.00		Not pumped due to GM Union Strike	(10)
9/25/2007									0.00	0.00		Not pumped, Rain event	(11)
9/26/2007	44.80	45.25	7:55	8:20	0.45	0.0	-0.45	0:25	12.72	95.17	3.81	Not pumped, Rain event	(10)
9/27/2007	45.10		7:05		0.15				0.00	0.00		Not pumped, Rain event	(10)
9/28/2007	45.10		9:45		0.15				0.00	0.00		Not pumped	(10)
9/29/2007									0.00	0.00		Saturday, Not pumped	(4)
9/30/2007									0.00	0.00		Sunday, Not pumped	(4)
10/1/2007	45.00		8:40		0.25				0.00	0.00		Not pumped	(10)
10/2/2007	45.00		16:44		0.25				0.00	0.00		Not pumped	(10)
10/3/2007	45.00		7:46		0.25				0.00	0.00		Not pumped	(10)
10/4/2007	45.00		10:46		0.25				0.00	0.00		Not pumped	(10)
10/5/2007	45.00		9:03		0.25				0.00	0.00		Not pumped, Rain event	(10)
10/6/2007	45.10		9:26		0.15				0.00	0.00		Not pumped	(10)
10/7/2007	44.95		7:36		0.3				0.00	0.00		Not pumped	(10)
10/8/2007	44.95		7:36		0.3				0.00	0.00		Not pumped	(10)
10/9/2007	44.95		9:16		0.3				0.00	0.00		Not pumped	(10)
10/10/2007	45.10		10:01		0.15				0.00	0.00		Not pumped	(10)
10/11/2007	44.90		13:21		0.35				0.00	0.00		Not pumped	(10)
10/12/2007	44.90		9:29		0.35				0.00	0.00		Not pumped	(10)
10/13/2007	44.90		19:15		0.35				0.00	0.00		Not pumped	(10)

TABLE D.1.2

2007 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (BTOS) start	Water Level (BTOS) end	Time (hh:mm) start	Time (hh:mm) end	Water Depth (BTOS) start	Water Depth (BTOS) end	Change in Water Depth (feet)	Duration of Pumping (hh:mm)	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
10/14/2007	44.90		20:05		0.35				0.00	0.00		Not pumped	(10)
10/15/2007	44.70		21:26		0.55				0.00	0.00		Not pumped	(10)
10/16/2007	44.70		20:22		0.55				0.00	0.00		Not pumped, Rain event	(10)
10/17/2007	44.80		22:05		0.45				0.00	0.00		Not pumped	(10)
10/18/2007	44.80		20:30		0.45				0.00	0.00		Not pumped, Heavy rainfall event	(10)
10/19/2007	44.50		20:36		0.75				0.00	0.00		Not pumped	(10)
10/20/2007									0.00	0.00		Saturday, Not pumped	(4)
10/21/2007									0.00	0.00		Sunday, Not pumped	(4)
10/22/2007	44.40		13:20		0.85				0.00	0.00		Not pumped, Rain event	(10)
10/23/2007	44.50		8:00		0.75				0.00	0.00		Not pumped, Rain event	(10)
10/24/2007	44.10		7:39		1.15				0.00	0.00		Not pumped, Rain event	(10)
10/25/2007	44.20		13:20		1.05				0.00	0.00		Not pumped, Rain event	(10)
10/26/2007	44.10		9:46		1.15				0.00	0.00		Not pumped, Rain event	(10)
10/27/2007									0.00	0.00		Saturday, Not pumped, Rain event	(4)
10/28/2007									0.00	0.00		Sunday, Not pumped	(4)
10/29/2007													
10/30/2007													
10/31/2007													
11/1/2007	43.80		11:12		1.45				0.00	0.00		Not pumped	(10)
11/2/2007									0.00	0.00		Not pumped	
11/3/2007									0.00	0.00		Not pumped	
11/4/2007									0.00	0.00		Not pumped	
11/5/2007									0.00	0.00		Not pumped	
11/6/2007									0.00	0.00		Not pumped	
11/7/2007									0.00	0.00		Not pumped	
11/8/2007									0.00	0.00		Not pumped	
11/9/2007									0.00	0.00		Not pumped	
11/10/2007									0.00	0.00		Not pumped	
11/11/2007									0.00	0.00		Sunday, Not pumped, Rain event	(4)
11/12/2007	43.00	45.25	13:24		2.25	0.0	-2.3		63.62	475.86			
11/13/2007									0.00	0.00		Not pumped, Rain event	
11/14/2007									0.00	0.00		Not pumped	
11/15/2007									0.00	0.00		Not pumped	
11/16/2007									0.00	0.00		Not pumped	
11/17/2007									0.00	0.00		Saturday, Not pumped	(4)
11/18/2007									0.00	0.00		Sunday, Not pumped	(4)
11/19/2007	43.60		10:05		1.65				0.00	0.00		Not pumped	(10)
11/20/2007	43.60		9:22		1.65				0.00	0.00		Not pumped	(10)
11/21/2007	43.60		10:07		1.65				0.00	0.00		Not pumped, Rain event	(10)
11/22/2007									0.00	0.00		Not pumped, Rain event	
11/23/2007	43.50		9:21		1.75				0.00	0.00		Not pumped	(10)
11/24/2007	43.50		20:12		1.75				0.00	0.00		Not pumped	(10)
11/25/2007									0.00	0.00		Sunday, Not pumped, Rain event	(4)
11/26/2007	42.70		21:28		2.55				0.00	0.00		Not pumped, Rain event	
11/27/2007	42.30		2:12		2.95				0.00	0.00			
11/28/2007	43.30	45.25	19:36		1.95	0.0			55.13	412.41		Pumped to empty. Assumed initial water level reading was 43.3 ft. BTOS	
11/29/2007	45.15		21:15		0.1				0.00	0.00		Not pumped	(10)
11/30/2007	45.15		21:50		0.1				0.00	0.00		Not pumped	(10)
12/1/2007									0.00	0.00		Saturday, not pumped	(4)
12/2/2007									0.00	0.00		Sunday, Not pumped, Rain event	(4)
12/3/2007	43.20	45.25	13:20	14:08	2.05	0.0	-2.1	0:48	57.96	433.56	9.03		
12/4/2007	45.00		7:35		0.25				0.00	0.00		Not pumped	(10)
12/5/2007									0.00	0.00		Not pumped, Rain event	
12/6/2007	44.80		10:00		0.45				0.00	0.00		Not pumped	(10)
12/7/2007									0.00	0.00		Not pumped, Rain event	
12/8/2007	44.50		10:10		0.75				0.00	0.00		Not pumped, Rain event	(10)
12/9/2007									0.00	0.00		Sunday, Not pumped, Heavy rainfall event	(4)
12/10/2007									0.00	0.00		Not pumped, Rain event	

TABLE D.1.2

2007 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (BTOS) start	Water Level (BTOS) end	Time (hh:mm) start	Time (hh:mm) end	Water Depth (BTOS) start	Water Depth (BTOS) end	Change in Water Depth (feet)	Duration of Pumping (hh:mm)	Volume Pumped (1) (cu. ft)	Volume Pumped (*) (gallons)	Flow Rate (gallons/min)	Comments	Note
12/11/2007	40.60	45.25	13:15	14:05	4.65	0.0	-4.7	0:50	131.48	983.44	19.67	Rain event	
12/12/2007	44.60		13:05		0.65				0.00	0.00		Not pumped, Rain event	(10)
12/13/2007									0.00	0.00		Not pumped, Rain event	
12/14/2007	42.70	45.25	8:30	9:20	2.55	0.0	-2.6	0:50	72.10	539.30	10.79		
12/15/2007	44.90		21:20		0.35				0.00	0.00		Not pumped, Rain event	(10)
12/16/2007									0.00	0.00		Sunday, Not pumped, Rain event	(4)
12/17/2007	44.70		1:45		0.55				0.00	0.00		Not pumped, Rain event	(10)
12/18/2007	42.70		23:00		2.55				0.00	0.00		Not pumped, Rain event	
12/19/2007	41.70		23:27		3.55				0.00	0.00		Not pumped	
12/20/2007	41.20		22:30		4.05				0.00	0.00		Not pumped, Rain event	
12/21/2007	41.00	45.25	21:20	22:25	4.25	0.0	-4.3	1:05	120.17	898.84	13.83		
12/22/2007	45.00		4:40		0.25							Volume not calculated, Rain event	(10)
12/23/2007									0.00	0.00		Sunday, Not pumped	(4)
12/24/2007	44.70		9:30		0.55				0.00	0.00		Not pumped	(10)
12/25/2007	44.40		13:40		0.85				0.00	0.00		Not pumped	(10)
12/26/2007	44.30		13:10		0.95				0.00	0.00		Not pumped, Rain event	(10)
12/27/2007	44.00		14:05		1.25				0.00	0.00		Not pumped, Rain event	(10)
12/28/2007	43.90		13:55		1.35				0.00	0.00		Not pumped, Rain event	(10)
12/29/2007	43.50		13:20		1.75				0.00	0.00		Not pumped	(10)
12/30/2007	42.90	45.25	1:10	2:00	2.35	0.0	-2.4	0:50	66.44	497.01	9.94		
12/31/2007	45.20		2:15		0.05				0.00	0.00		Not pumped, Rain event	(10)
								Total	**3,644.56**	**27,261.32**			
								Average/day	**9.99**	**74.69**			

Note:
BTOS - Below top of sump
AFOS - Above floor of sump
(*) Volume pumped calculated based on storage volume of LDS
(1) No water was pumped on this date, however the water level rose slightly between the two observation times.
(2) Shutoff valves were misdirected and water from the underdrain system was inadvertently pumped into the LDS.
(3) Initial water level reading obtained late in the day such that pumping was performed the next morning.
(4) Saturday, Sunday or holiday (no reading unless rain).
(5) Raining - system was operated throughout the day to accommodate pumping of the accumulating water.
(6) Contractor not on site, manhole pumped next day (12-09-06).
(7) Flushing of LDS began on 01-23-07. The sump is pumped empty (37.4 ft) in AM and then verified empty prior to leaving for the night. Flushing is being done during the day as per the Mannik & Smith report.
(8) Two rounds of flushing completed on 02-06-07. Pending analytical results, SES continues to pump LDMH empty daily.
(9) Readings not collected on this date because Contractor is overly busy (no rain occured)
(10) Contractor advised (by CRA) to pump only when water is level below 43.3, therefore not pumped.
(11) Not pumped due to GM Union strike.

TABLE D.1.3

2008 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information	Jan. 1 - Dec. 4	Dec. 5 - Dec. 31
Top of sump (datum reference)	0	0
Bottom of sump (feet BTOS)	45.25	51.25
Diameter of sump (feet)	6	6

Date	*Water Level (BTOS)* *start*	*end*	*Time (hh:mm)* *start*	*Water Depth (BTOS)* *start*	*end*	*Volume Pumped [1] (cu. ft)*	*Volume Pumped [1] (gallons)*	*Comments*	*Note*
1/1/2008	45.10			0.15				Not pumped	
1/2/2008	45.00			0.25				Not pumped	
1/3/2008	45.00			0.25				Not pumped	
1/4/2008	44.90			0.35				Not pumped	
1/5/2008	44.90			0.35				Not pumped, Rain event	
1/6/2008	44.85			0.40				Not pumped	
1/7/2008	44.80			0.45				Not pumped	
1/8/2008	44.70			0.55				Not pumped, Heavy rainfall event	
1/9/2008	43.40			1.85				Not pumped	
1/10/2008	42.90			2.35	0.3	57.96	433.56	Pumped(?), Rain event	
1/11/2008	44.90			0.35				Not pumped	
1/12/2008	44.80			0.45				Not pumped	
1/13/2008	44.00			1.25	0.6	18.38	137.47	Pumped(?), Rain event	
1/14/2008	44.60			0.65				Not pumped	
1/15/2008	44.50			0.75				Not pumped	
1/16/2008	44.30			0.95				Not pumped	
1/17/2008	44.20			1.05				Not pumped, Rain event	
1/18/2008	44.10			1.15				Not pumped	
1/19/2008								No Measurement -Water tape in for repairs	(1)
1/20/2008								No Measurement -Water tape in for repairs	(1)
1/21/2008								No Measurement -Water tape in for repairs	(1)
1/22/2008								No Measurement -Water tape in for repairs, Rain Event	(1)
1/23/2008								No Measurement -Water tape in for repairs	(1)
1/24/2008								No Measurement -Water tape in for repairs	(1)
1/25/2008								No Measurement -Water tape in for repairs	(1)
1/26/2008								No Measurement -Water tape in for repairs	(1)
1/27/2008								No Measurement -Water tape in for repairs	(1)
1/28/2008								No Measurement -Water tape in for repairs	(1)
1/29/2008								No Measurement -Water tape in for repairs, Rain Event	(1)
1/30/2008								No Measurement -Water tape in for repairs	(1)
1/31/2008								No Measurement -Water tape in for repairs	(1)
2/1/2008	43.30	47.6(?)	21:42	1.95	0	55.13	412.41	Pumped to empty, Assumed initial water depth to be 43.3 feet BTOS	
2/2/2008								Pumped, but not measured	(4)
2/3/2008								Pumped, but not measured	(4)
2/4/2008								Pumped, but not measured	(4)
2/5/2008								Pumped, but not measured, Heavy rainfall	(4)
2/6/2008								Pumped, but not measured, Rain event	(4)
2/7/2008								Pumped, but not measured	(4)
2/8/2008	44.90		13:20	0.35				Not pumped, Determining recharge rate	
2/9/2008	45.00		21:20	0.25				Not pumped, Determining recharge rate	(2)
2/10/2008	45.00		23:05	0.25				Not pumped, Determining recharge rate	(2)
2/11/2008	44.90		22:38	0.35				Not pumped, Determining recharge rate	(2)
2/12/2008	44.90		21:05	0.35				Not pumped, Determining recharge rate, Rain Event	(2)
2/13/2008	44.50		2:20	0.75				Not pumped, Determining recharge rate	(2)
2/14/2008	44.50		22:15	0.75				Not pumped, Determining recharge rate, Rain Event	(2)
2/15/2008	44.40		22:49	0.85				Not pumped, Determining recharge rate	(2)
2/16/2008	44.50		13:49	0.75				Not pumped, Determining recharge rate	(2)
2/17/2008	44.40		8:51	0.85				Not pumped, Determining recharge rate, Rain Event	(2)
2/18/2008	44.10		8:15	1.15				Not pumped, Determining recharge rate	(2)
2/19/2008	44.10		10:03	1.15				Not pumped, Determining recharge rate	(2)
2/20/2008	44.00		9:15	1.25				Not pumped, Determining recharge rate	(2)

TABLE D.1.3

2008 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (BTOS) start	Water Level (BTOS) end	Time (hh:mm) start	Water Depth (BTOS) start	Water Depth (BTOS) end	Volume Pumped [1] (cu. ft)	Volume Pumped [1] (gallons)	Comments	Note
1/1/2008	45.10			0.15				Not pumped	
2/21/2008	44.20		10:13	1.05				Not pumped, Determining recharge rate	(2)
2/22/2008	44.10		14:03	1.15				Not pumped, Determining recharge rate	(2)
2/23/2008	44.00		3:24	1.25				Not pumped, Determining recharge rate, Rain Event	(2)
2/24/2008	43.80		23:22	1.45				Not pumped, Determining recharge rate, Rain Event	(2)
2/25/2008	44.00		22:04	1.25				Not pumped, Determining recharge rate, Rain Event	(2)
2/26/2008	43.30		21:38	1.95				Not pumped, Determining recharge rate, Rain Event	(2)
2/27/2008	43.00		22:42	2.25				Not pumped, Determining recharge rate, Rain Event	(2)
2/28/2008	42.40		21:15	2.85				Not pumped, Determining recharge rate	(2)
2/29/2008	42.40		22:25	2.85				Not pumped, Determining recharge rate	(2)
3/1/2008	42.00		6:20	3.25				Not pumped, Determining recharge rate	
3/2/2008	41.50		10:15	3.75	0	106.03	793.10	Pumped with 2" pump for 65 min.	
3/3/2008	45.25		11:00	0.00				Not pumped, Determining recharge rate, Rain Event	
3/4/2008	45.00		13:27	0.25				Not pumped, Determining recharge rate, Rain Event	
3/5/2008	44.60		11:08	0.65				Not pumped, Determining recharge rate	
3/6/2008	44.10		13:31	1.15				Not pumped, Determining recharge rate	
3/7/2008	43.20		13:26	2.05	0.2	52.31	391.26	Pumped with 2" pump for 90 min.	
3/8/2008	45.00		9:27	0.25				Not pumped	
3/9/2008								Sunday, Not pumped	(3)
3/10/2008	44.80		14:47	0.45				Not pumped	
3/11/2008	44.20		11:48	1.05	0	29.69	222.07	Pumped with 2" pump for 40 min.	
3/12/2008	45.20		11:20	0.05				Not pumped	(5)
3/13/2008	45.10		14:45	0.15				Not pumped	(5)
3/14/2008	45.00		14:20	0.25				Not pumped. Rain event.	(5)
3/15/2008	45.20		13:42	0.05				Not pumped	(5)
3/16/2008								Sunday, Not pumped.	(3)
3/17/2008	45.10		14:05	0.15				Not pumped	(5)
3/18/2008	45.00		13:04	0.25				Not pumped. Rain event.	(5)
3/19/2008	43.50		13:10	1.75	0.1	46.65	348.96	Pumped with 2" pump for 90 minutes. Rain event	
3/20/2008	45.10		15:26	0.15				Not pumped	(5)
3/21/2008	44.80		14:30	0.45				Not pumped	(5)
3/22/2008								Saturday	(3)
3/23/2008	44.50		13:20	0.75	0	21.21	158.62	Pumped with 2" pump for 100 min. Rain event.	
3/24/2008	45.20		16:24	0.05				Not pumped	(5)
3/25/2008	45.20		9:48	0.05				Not pumped	(5)
3/26/2008	45.10		15:26	0.15				Not pumped. Rain event.	(5)
3/27/2008	45.00		16:14	0.25				Not pumped. Rain event.	(5)
3/28/2008	44.70		13:14	0.55				Not pumped - CRA testing. Rain event.	
3/29/2008	44.80		12:33	0.45	0	12.72	95.17	Pumped with 2" pump for 87 min.	
3/30/2008	45.20		9:32	0.05				Not pumped - Rain Event	(5)
3/31/2008	44.80		13:45	0.45	0	12.72	95.17	Pumped with 2" pump for 100 min. - Rain event.	
4/1/2008	45.20		23:21	0.05				Rain event	(5)
4/2/2008	45.05		14:00	0.20				Rain Event	(5)
4/3/2008	45.00		9:07	0.25				Rain event	(5)
4/4/2008	45.00		13:00	0.25				Pumped. Rain event.	
4/5/2008	44.70		9:02	0.55	0	15.55	116.32	Pumped	
4/6/2008	45.20		14:00	0.05					(5)
4/7/2008	45.10		15:31	0.15					(5)
4/8/2008	45.05		10:06	0.20					(5)
4/9/2008	45.00		13:40	0.25				Rain event	(5)
4/10/2008	45.00		11:20	0.25				Rain event	(5)
4/11/2008	44.90		10:06	0.35				Rain event	(5)
4/12/2008	44.90		13:28	0.35				Rain event	(5)
4/13/2008								Sunday. Rain event	(3)
4/14/2008	44.80		16:10	0.45	0	12.72	95.17	Pumped	
4/15/2008	45.20		16:29	0.05					(5)
4/16/2008	45.20		16:02	0.05					(5)
4/17/2008	45.20		15:22	0.05					(5)

TABLE D.1.3

2008 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (BTOS) start	Water Level (BTOS) end	Time (hh:mm) start	Water Depth (BTOS) start	Water Depth (BTOS) end	Volume Pumped [1] (cu. ft)	Volume Pumped [1] (gallons)	Comments	Note
1/1/2008	45.10			0.15				Not pumped	
4/18/2008	45.10		13:15	0.15					(5)
4/19/2008								Saturday. Rain event	(3)
4/20/2008	45.10		14:21	0.15					(5)
4/21/2008	45.05		16:15	0.20					(5)
4/22/2008	45.00		12:02	0.25					(5)
4/23/2008	45.00		13:15	0.25					(5)
4/24/2008	45.00		14:04	0.25				Rain event	(5)
4/25/2008	45.00		10:53	0.25					(5)
4/26/2008	45.00		14:00	0.25				Rain event	(5)
4/27/2008								Sunday	(3)
4/28/2008	44.90		16:01	0.35				Rain Event - CRA Sampled System	
4/29/2008	44.90		12:36	0.35				CRA Sampled System	
4/30/2008	44.80		14:34	0.45	0	12.72	95.17	Pumped	
5/1/2008	45.20		13:57	0.05					(5)
5/2/2008	45.20		11:05	0.05				Rain event	(5)
5/3/2008								Saturday. Rain event.	(3)
5/4/2008	45.00		13:20	0.25					(5)
5/5/2008	44.90		14:48	0.35					(5)
5/6/2008	44.80		12:40	0.45	0	12.72	95.17	Pumped	
5/7/2008	45.20		11:06	0.05				Rain event	(5)
5/8/2008	45.00		9:31	0.25				Rain event	(5)
5/9/2008	45.00		13:26	0.25				Rain event	(5)
5/10/2008								Saturday	(3)
5/11/2008	44.90		13:20	0.35				Rain event	(5)
5/12/2008	44.90		10:31	0.35					(5)
5/13/2008	44.80		10:01	0.45	0	12.72	95.17	Pumped	
5/14/2008	45.20		16:41	0.05				Rain event	(5)
5/15/2008	45.00		14:54	0.25				Rain event	(5)
5/16/2008	45.00		12:40	0.25					(5)
5/17/2008	44.70		13:20	0.55				Rain Event	
5/18/2008								Sunday	(3)
5/19/2008	45.20		14:06	0.05				Rain event	(5)
5/20/2008	45.10		12:40	0.15				Rain event	(5)
5/21/2008	45.10		14:04	0.15					(5)
5/22/2008	44.90		9:01	0.35					(5)
5/23/2008	44.90		9:21	0.35				Rain event	(5)
5/24/2008								Not pumped due to CRA test	
5/25/2008	44.90		13:52	0.35					
5/26/2008								Holiday. Rain event	(3)
5/27/2008	44.70		7:46	0.55				Rain event	
5/28/2008	44.70		16:09	0.55	0	15.55	116.32	Pumped(?)	
5/29/2008	45.20		15:17	0.05					(5)
5/30/2008	45.20		14:04	0.05					(5)
5/31/2008								Saturday	(3)
6/1/2008	45.10		13:20	0.15					(5)
6/2/2008	45.00		10:22	0.25					(5)
6/3/2008	45.00		10:38	0.25				Rain event	
6/4/2008	45.00		14:00	0.25				Rain event	(5)
6/5/2008	45.00		10:05	0.25					(5)
6/6/2008	44.90		12:15	0.35					(5)
6/7/2008	44.80		14:23	0.45	0	12.72	95.17	Pumped(?). Rain event	(5)
6/8/2008								Sunday	(3)
6/9/2008	45.20		12:42	0.05				Rain event	(5)
6/10/2008	45.10		9:12	0.15				Rain event	(5)
6/11/2008	45.10		10:48	0.15					(5)
6/12/2008	45.10		8:40	0.15					(5)
6/13/2008	45.10		16:40	0.15				Rain event	(5)

TABLE D.1.3

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BEDFORD, INDIANA

Date	Water Level (BTOS) start	Water Level (BTOS) end	Time (hh:mm) start	Water Depth (BTOS) start	Water Depth (BTOS) end	Volume Pumped [1] (cu. ft)	Volume Pumped [1] (gallons)	Comments	Note
1/1/2008	45.10			0.15				Not pumped	
6/14/2008								Saturday	(3)
6/15/2008	45.10		13:02	0.15					(5)
6/16/2008	45.00		16:46	0.25					(5)
6/17/2008	44.90		8:27	0.35					(5)
6/18/2008	44.90		13:15	0.35					(5)
6/19/2008	44.90		17:10	0.35				Rain event	(5)
6/20/2008	44.90		14:04	0.35					(5)
6/21/2008	44.90		13:10	0.35					(5)
6/22/2008								Sunday	(3)
6/23/2008	44.80		17:02	0.45					(5)
6/24/2008	44.80		17:15	0.45					(5)
6/25/2008	44.80		14:14	0.45	0	12.72	95.17	Pumped(?)	(5)
6/26/2008	45.20		10:22	0.05					(5)
6/27/2008	45.10		15:24	0.15				Rain event	(5)
6/28/2008								Saturday. Rain event	(3)
6/29/2008	45.10		10:59	0.15				Rain event	(5)
6/30/2008	45.10		17:10	0.15					(5)
7/1/2008	45.10		15:24	0.15					(5)
7/2/2008	45.10		11:52	0.15					(5)
7/3/2008	45.10		9:20	0.15				Rain event	(5)
7/4/2008	45.10		10:02	0.15				Rain event	(5)
7/5/2008	45.05		12:32	0.20					(5)
7/6/2008	45.05		10:10	0.20					(5)
7/7/2008	45.00		14:42	0.25				Rain event	(5)
7/8/2008	44.80		11:37	0.45	0.2	7.07	52.87	Pumped(?). Rain event	(5)
7/9/2008	45.02		10:07	0.23	0.1	3.68	27.49	Pumped(?). Rain event	(5)
7/10/2008	45.10		12:12	0.15					(5)
7/11/2008	45.10		14:20	0.15					(5)
7/12/2008	45.10		14:45	0.15				Rain event	(5)
7/13/2008	45.10		9:30	0.15					(5)
7/14/2008	45.10		14:20	0.15					(5)
7/15/2008	45.05		12:02	0.20					(5)
7/16/2008	45.05		9:08	0.20					(5)
7/17/2008	45.05		10:14	0.20					(5)
7/18/2008	45.00		12:41	0.25					(5)
7/19/2008								Saturday	(3)
7/20/2008	45.00		13:04	0.25				Rain event	(5)
7/21/2008	44.90		10:38	0.35					(5)
7/22/2008	44.90		10:20	0.35				Rain event	(5)
7/23/2008	44.90		12:23	0.35					(5)
7/24/2008	44.90		12:20	0.35					(5)
7/25/2008	44.80		15:22	0.45					(5)
7/26/2008	44.80		13:42	0.45					(5)
7/27/2008	NA		NA						
7/28/2008	44.80		12:18	0.45					(5)
7/29/2008	44.80		12:18	0.45					(5)
7/30/2008	44.70		12:15	0.55	0	15.55	116.32	Pumped(?). Rain event	
7/31/2008	45.20		13:08	0.05				Rain event	(5)
8/1/2008	45.20		9:15	0.05					(5)
8/2/2008								Saturday	(3)
8/3/2008	45.10		13:52	0.15					(5)
8/4/2008	45.10		11:18	0.15					(5)
8/5/2008	45.05		11:01	0.20				Rain event	(5)
8/6/2008	45.05		9:15	0.20				Rain event	(5)
8/7/2008	45.00		13:04	0.25					(5)
8/8/2008	44.90		13:32	0.35					(5)
8/9/2008	44.90		13:22	0.35					(5)

TABLE D.1.3

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Date	Water Level (BTOS) start	Water Level (BTOS) end	Time (hh:mm) start	Water Depth (BTOS) start	Water Depth (BTOS) end	Volume Pumped [1] (cu. ft)	Volume Pumped [1] (gallons)	Comments	Note
1/1/2008	45.10			0.15				Not pumped	
8/10/2008	44.80		16:21	0.45					(5)
8/11/2008	44.80		16:21	0.45	0	12.72	95.17	Pumped(?)	(5)
8/12/2008	45.20		11:17	0.05					(5)
8/13/2008	45.20		13:05	0.05					(5)
8/14/2008	45.20		9:13	0.05					(5)
8/15/2008	45.20		16:07	0.05					(5)
8/16/2008	45.20		13:53	0.05					(5)
8/17/2008	45.20		14:59	0.05					(5)
8/18/2008	45.15		11:24	0.10					(5)
8/19/2008	45.10		16:17	0.15					(5)
8/20/2008	45.10		13:34	0.15					(5)
8/21/2008	45.10		12:29	0.15					(5)
8/22/2008	45.10		17:31	0.15					(5)
8/23/2008	45.10		11:56	0.15					(5)
8/24/2008	45.10		14:55	0.15					(5)
8/25/2008	45.10		13:17	0.15					(5)
8/26/2008	45.00		16:38	0.25					(5)
8/27/2008	45.00		15:20	0.25				Rain event	(5)
8/28/2008	45.00		12:10	0.25				Rain event	(5)
8/29/2008	44.95		9:07	0.30					(5)
8/30/2008								Saturday	(3)
8/31/2008	44.90		14:06	0.35					(5)
9/1/2008	44.90		11:25	0.35					(5)
9/2/2008	44.90		8:21	0.35					(5)
9/3/2008	44.90		13:52	0.35					(5)
9/4/2008	44.90		14:39	0.35					(5)
9/5/2008	44.80		12:56	0.45	0	12.72	95.17	Pumped(?)	(5)
9/6/2008	45.20		9:35	0.05					(5)
9/7/2008								Sunday	(3)
9/8/2008	45.20		14:01	0.05					(5)
9/9/2008	45.20		11:20	0.05					(5)
9/10/2008	45.20		10:30	0.05					(5)
9/11/2008	45.20		14:10	0.05					(5)
9/12/2008	45.10		9:55	0.15					(5)
9/13/2008	45.10		8:45	0.15					(5)
9/14/2008	45.00		14:57	0.25					(5)
9/15/2008	45.00		8:20	0.25					(5)
9/16/2008	44.95		11:00	0.30					(5)
9/17/2008	44.95		10:47	0.30					(5)
9/18/2008	44.90		18:08	0.35					(5)
9/19/2008	44.90		17:35	0.35					(5)
9/20/2008	44.90		10:26	0.35					(5)
9/21/2008								Sunday	(3)
9/22/2008	44.90		13:24	0.35					(5)
9/23/2008	44.90		14:15	0.35					(5)
9/24/2008	44.80		10:01	0.45	0	12.72	95.17	Pumped(?)	(5)
9/25/2008	45.20		13:28	0.05					(5)
9/26/2008	45.20		15:14	0.05					(5)
9/27/2008	45.20		17:15	0.05					(5)
9/28/2008	45.20		14:53	0.05					(5)
9/29/2008	45.20		18:15	0.05					(5)
9/30/2008	45.20		17:40	0.05					(5)
10/1/2008	45.20			0.05					(5)
10/2/2008	45.20			0.05					(5)
10/3/2008	45.15			0.10					(5)
10/4/2008	45.10			0.15					(5)
10/5/2008	45.10			0.15					(5)

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Date	Water Level (BTOS) start	Water Level (BTOS) end	Time (hh:mm) start	Water Depth (BTOS) start	Water Depth (BTOS) end	Volume Pumped [1] (cu. ft)	Volume Pumped [1] (gallons)	Comments	Note
1/1/2008	45.10			0.15				Not pumped	
10/6/2008	45.05			0.20					(5)
10/7/2008	45.05			0.20				Rain event	(5)
10/8/2008	44.90			0.35				Rain event	(5)
10/9/2008	44.90		7:43	0.35					(5)
10/10/2008	44.85			0.40					(5)
10/11/2008	44.50			0.75					
10/12/2008	44.30			0.95					
10/13/2008	44.30			0.95					
10/14/2008	44.20			1.05				Rain event	
10/15/2008	44.20			1.05				Rain event	
10/16/2008	44.10			1.15				Rain event	
10/17/2008	43.50			1.75					
10/18/2008	43.50			1.75	0	49.48	370.11	Pumped(?)	
10/19/2008								Sunday	(3)
10/20/2008	45.20			0.05					(5)
10/21/2008	45.20			0.05					(5)
10/22/2008	45.10			0.15					(5)
10/23/2008	45.10			0.15					(5)
10/24/2008	45.10			0.15				Rain event	(5)
10/25/2008								Saturday	(3)
10/26/2008	45.00			0.25					(5)
10/27/2008	45.00			0.25					(5)
10/28/2008	45.00			0.25					(5)
10/29/2008	45.00			0.25					(5)
10/30/2008	44.90			0.35					(5)
10/31/2008	44.90			0.35					(5)
11/1/2008	44.90			0.35					(5)
11/2/2008	44.80			0.45					(5)
11/3/2008	44.80			0.45					(5)
11/4/2008	44.80			0.45					(5)
11/5/2008	44.80			0.45					(5)
11/6/2008	44.80			0.45				Rain event	(5)
11/7/2008	44.75			0.50					(5)
11/8/2008	44.70			0.55					
11/9/2008	44.60			0.65					
11/10/2008	44.60		15:30	0.65	0.25	11.31	84.60	Pumped(?)	
11/11/2008	45.00		14:26	0.25				Rain event	(5)
11/12/2008	45.00		15:08	0.25				Rain event	(5)
11/13/2008	45.00		15:34	0.25				Rain event	(5)
11/14/2008	45.00		14:46	0.25				Rain event	(5)
11/15/2008	45.00		16:41	0.25				Rain event	(5)
11/16/2008	44.90		13:06	0.35					(5)
11/17/2008	44.90		15:20	0.35					(5)
11/18/2008	44.80		15:30	0.45					(5)
11/19/2008	44.70		14:10	0.55					(5)
11/20/2008	44.60		13:15	0.65					
11/21/2008	43.20		13:31	2.05					
11/22/2008	43.00		15:20	2.25					
11/23/2008	42.90		15:25	2.35					
11/24/2008	42.70		14:36	2.55				Rain event	
11/25/2008	42.50		17:07	2.75					
11/26/2008	42.50			2.75					
11/27/2008	42.50			2.75					
11/28/2008	42.40			2.85	0.85	56.55	422.98	Pumped(?)	
11/29/2008								Saturday	(3)
11/30/2008								Sunday. Rain event.	(3)
12/1/2008	44.40			0.85	0.45	11.31	84.60	Pumped. Rain event.	

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Date	Water Level (BTOS) start	Water Level (BTOS) end	Time (hh:mm) start	Water Depth (BTOS) start	Water Depth (BTOS) end	Volume Pumped [1] (cu. ft)	Volume Pumped [1] (gallons)	Comments	Note
1/1/2008	45.10			0.15				Not pumped	
12/2/2008	44.80			0.45					
12/3/2008	44.70			0.55				Rain event	
12/4/2008								ENTACT working grading fill	(6)
12/5/2008								ENTACT working grading fill, and installed a 6' riser	
12/6/2008								ENTACT working grading fill. Rain event.	(6)
12/7/2008								ENTACT working grading fill	(6)
12/8/2008								ENTACT working grading fill	(6)
12/9/2008								ENTACT working grading fill. Rain event.	(6)
12/10/2008								ENTACT working grading fill. Rain event.	(6)
12/11/2008								ENTACT working grading fill	(6)
12/12/2008								ENTACT working grading fill	(6)
12/13/2008								ENTACT working grading fill	(6)
12/14/2008								ENTACT working grading fill. Rain event.	(6)
12/15/2008	50.02		17:27	1.23	0.2	29.12	217.84	Pumped. Rain event.	
12/16/2008	51.00		17:34	0.25				ENTACT working grading fill	
12/17/2008	51.00		17:41	0.25				ENTACT working grading fill	
12/18/2008	51.00		17:45	0.25				Electrical Malfunction as per SES. Rain event.	
12/19/2008	51.00		16:55	0.25				Electrical Malfunction as per SES	
12/20/2008								Saturday	(3)
12/21/2008								Sunday	(3)
12/22/2008	49.80		13:35	1.45	1.15	8.48	63.45	Pumped(?)	
12/23/2008	50.10		21:27	1.15				Rain event	
12/24/2008	49.90		14:21	1.35				Rain event	
12/25/2008	44.80		17:14	6.45	5.35	31.10	232.64	Pumped(?)	
12/26/2008	45.90		20:59	5.35	4.05	36.76	274.94	Pumped(?). Rain event.	
12/27/2008								Saturday. Rain event.	(3)
12/28/2008								Sunday. Rain event.	(3)
12/29/2008	47.20		20:07	4.05	2.20	52.31	391.26	Pumped(?)	
12/30/2008	49.05		15:35	2.20	0.05	60.79	454.71	Pumped(?)	
12/31/2008	51.20		13:29	0.05					
					Total	**931.92**	**6,970.78**		
					Average/day	**2.55**	**19.10**		

Note:
BTOS - Below top of sump
AFOS - Above floor of sump
(*) Volume pumped calculated based on storage volume of LDS
(1) No water level measurement, water tape being repaired
(2) SES had pump set at wrong level (43.3 feet BTOS) and was not pumping when required. Pump should have been set to pump at 6" of water (44.75 feet BTOS).
(3) Saturday, Sunday or holiday (no reading unless rain).
(4) Pumped but no water level reading taken.
(5) Not pumped, water is at an acceptable level (less than 0.6 ft of water in sump).
(6) No water level measurements due to ENTACT working grading fill.

TABLE D.1.4

2009 LDS PUMPING DATA
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Monitoring Location Information

Top of sump (datum reference)	719.94
Bottom of sump (feet BTOS)	51.8
Diameter of sump (feet)	6

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Original Sevenson Comments (additional CRA comments)*
1/1/2009						Holiday, no w/l measurement
1/2/2009	51.00	0.80	16:22			not pumped
1/3/2009	50.80	1.00	17:34			not pumped
1/4/2009	50.60	1.20	14:52			not pumped
1/5/2009	50.10	1.70	14:57			not pumped
1/6/2009	49.80	2.00	15:36			not pumped
1/7/2009	49.60	2.20	14:12			not pumped
1/8/2009	49.30	2.50	14:51			not pumped
1/9/2009	49.10	2.70	15:07			not pumped
1/10/2009	51.00	0.80	19:51	1.90	402	pump thawed out, **(pumped?)**
1/11/2009	51.10	0.70	18:33	0.10	21	not pumped (delayed response?)
1/12/2009	51.10	0.70	17:31			not pumped
1/13/2009	51.00	0.80	17:47			not pumped
1/14/2009	50.90	0.90	17:08			not pumped
1/15/2009	50.80	1.00	18:12			not pumped
1/16/2009	49.90	1.90	13:19			not pumped
1/17/2009						Saturday, no w/l measurement
1/18/2009	49.40	2.40	14:57			not pumped
1/19/2009	49.20	2.60	16:37			not pumped
1/20/2009	49.00	2.80	17:31			not pumped
1/21/2009	48.60	3.20	17:42			not pumped
1/22/2009	48.60	3.20	17:18			not pumped
1/23/2009	48.40	3.40	15:50			not pumped
1/24/2009	48.10	3.70	14:51			not pumped
1/25/2009						Sunday, no w/l measurement
1/26/2009	48.10	3.70	16:31			not pumped
1/27/2009	48.10	3.70	14:48			not pumped
1/28/2009	48.00	3.80	13:25			not pumped
1/29/2009	48.00	3.80	12:27			tried to pump line was frozen
1/30/2009	48.00	3.80	10:15			frozen
1/31/2009						Saturday, no w/l measurement
2/1/2009						Sunday, no w/l measurement
2/2/2009	47.20	4.60	10:34			frozen
2/3/2009	48.30	3.50	11:39	1.10	233	**pumped 3.5 hrs**
2/4/2009	48.20	3.60	10:14			frozen
2/5/2009	48.20	3.60	9:34			frozen
2/6/2009	48.10	3.70	10:31			frozen
2/7/2009	47.30	4.50	9:39			frozen
2/8/2009	47.30	4.50	15:35			not pumped
2/9/2009	47.10	4.70	16:15			not pumped
2/10/2009	47.00	4.80	15:15			not pumped
2/11/2009	47.00	4.80	13:40			not pumped
2/12/2009	47.00	4.80	18:22			not pumped
2/13/2009	47.00	4.80	13:47			not pumped
2/14/2009	47.00	4.80	15:34			not pumped
2/15/2009	46.90	4.90	14:39			not pumped
2/16/2009	46.60	5.20	16:15			not pumped
2/17/2009	46.60	5.20	14:03			not pumped
2/18/2009	46.60	5.20	18:02			not pumped
2/19/2009	46.60	5.20	17:18			not pumped
2/20/2009	46.60	5.20	18:08			not pumped
2/21/2009	46.60	5.20	18:27			not pumped
2/22/2009						Sunday, no w/l measurement
2/23/2009	46.40	5.40	17:57			not pumped
2/24/2009	46.40	5.40	15:00			not pumped
2/25/2009	46.20	5.60	13:34			not pumped
2/26/2009	46.00	5.80	10:47			not pumped
2/27/2009	46.00	5.80	17:52			not pumped
2/28/2009	51.10	0.70	14:31	5.10	1079	**pumped**

TABLE D.1.4

2009 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

Top of sump (datum reference)	719.94
Bottom of sump (feet BTOS)	51.8
Diameter of sump (feet)	6

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Original Sevenson Comments (additional CRA comments)*
3/1/2009	50.20	1.60	13:38			
3/2/2009	50.00	1.80	18:12			
3/3/2009	49.50	2.30	17:56			
3/4/2009	50.20	1.60	18:08	0.70	148	**pumped with 2" pump**
3/5/2009	51.00	0.80	18:04	0.80	169	**pumped with 2" pump**
3/6/2009	49.80	2.00	18:31			
3/7/2009	49.40	2.40	11:22			
3/8/2009						Sunday, no w/l measurement
3/9/2009	49.00	2.80	17:32			
3/10/2009	49.00	2.80	15:34			
3/11/2009	49.00	2.80	18:18			
3/12/2009	48.90	2.90	16:48			
3/13/2009	48.60	3.20	18:22			
3/14/2009	48.30	3.50	17:18			
3/15/2009	48.20	3.60	14:24			
3/16/2009	51.20	0.60	17:17	3.00	635	**pumped with 2" pump**
3/17/2009	51.20	0.60	17:08			
3/18/2009	51.00	0.80	16:27			
3/19/2009	51.00	0.80	9:31			
3/20/2009	50.60	1.20	12:43			
3/21/2009	50.40	1.40	11:21			
3/22/2009						Sunday, no w/l measurement
3/23/2009	49.90	1.90	16:17			
3/24/2009	51.20	0.60	17:31	1.30	275	**pumped with 2" pump**
3/25/2009	51.00	0.80	16:25			
3/26/2009	49.90	1.90	16:22			
3/27/2009	49.70	2.10	13:59			
3/28/2009						Saturday, no w/l measurement
3/29/2009	49.60	2.20	12:31			
3/30/2009	49.50	2.30	8:52			
3/31/2009	49.50	2.30	9:27			
4/1/2009	49.40	2.40	11:34			
4/2/2009	49.30	2.50	14:26			
4/3/2009	49.30	2.50	13:31			
4/4/2009	49.30	2.50	14:34			
4/5/2009						Sunday, no w/l measurement
4/6/2009	49.30	2.50	15:36			
4/7/2009	49.20	2.60	11:22			
4/8/2009	49.20	2.60	13:29			
4/9/2009	49.10	2.70	11:15			
4/10/2009	49.10	2.70	8:21			
4/11/2009	49.10	2.70	8:05			
4/12/2009						Sunday, no w/l measurement
4/13/2009	48.90	2.90	13:21			**pumped** (w/l prior to pumping)
4/14/2009	51.00	0.80	12:16	2.10	444	(w/l measured after previous day's pumping
4/15/2009	51.00	0.80	13:39			not pumped
4/16/2009	51.00	0.80	13:32			
4/17/2009	51.00	0.80	14:27			
4/18/2009						Saturday, no w/l measurement
4/19/2009	51.00	0.80	16:28			
4/20/2009	50.80	1.00	14:31			
4/21/2009	50.70	1.10	14:07			
4/22/2009	50.60	1.20	13:09			
4/23/2009	50.60	1.20	14:29			
4/24/2009	50.60	1.20	15:27			
4/25/2009	50.40	1.40	13:34			
4/26/2009						Sunday, no w/l measurement
4/27/2009	50.20	1.60	12:19			
4/28/2009	50.00	1.80	8:18			
4/29/2009	50.60	1.20	15:04	0.60	127	CRA tested (water removed for sampling)
4/30/2009	50.60	1.20	15:09			not pumped

TABLE D.1.4

2009 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

Top of sump (datum reference)	719.94
Bottom of sump (feet BTOS)	51.8
Diameter of sump (feet)	6

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Original Sevenson Comments (additional CRA comments)*
5/1/2009	50.40	1.40	15:23			
5/2/2009	50.00	1.80	6:14			
5/3/2009	49.80	2.00	14:46			
5/4/2009	49.80	2.00	14:46			
5/5/2009	49.70	2.10	15:24			
5/6/2009	51.30	0.50	17:51	1.60	338	**pumped**
5/7/2009	51.30	0.50	14:33			
5/8/2009	51.20	0.60	18:21			
5/9/2009	51.30	0.50	14:34			
5/10/2009						Sunday, no w/l measurement
5/11/2009						*SES on alternating work weeks*
5/12/2009						*SES on alternating work weeks*
5/13/2009						*SES on alternating work weeks*
5/14/2009						*SES on alternating work weeks*
5/15/2009						*SES on alternating work weeks*
5/16/2009						Saturday, no w/l measurement
5/17/2009	51.10	0.70	14:54			
5/18/2009	51.00	0.80	12:15			
5/19/2009	51.00	0.80	14:24			
5/20/2009	51.00	0.80	13:51			
5/21/2009	51.00	0.80	12:16			
5/22/2009	50.95	0.85	15:07			
5/23/2009	50.90	0.90	14:04			
5/24/2009						Sunday, no w/l measurement
5/25/2009						Holiday, no w/l measurement
5/26/2009						*SES on alternating work weeks*
5/27/2009						*SES on alternating work weeks*
5/28/2009						*SES on alternating work weeks*
5/29/2009						*SES on alternating work weeks*
5/30/2009						Saturday, no w/l measurement
5/31/2009	50.90	0.90	11:14			
6/1/2009	50.35	1.45	14:41			
6/2/2009	50.30	1.50	12:52			
6/3/2009	50.20	1.60	11:34			
6/4/2009	50.20	1.60	13:31			
6/5/2009	50.20	1.60	14:14			
6/6/2009	50.10	1.70	14:51			
6/7/2009						Sunday, no w/l measurement
6/8/2009						(no data available)
6/9/2009	49.80	2.00	7:30			
6/10/2009	49.80	2.00	8:45			
6/11/2009	49.80	2.00	8:00			
6/12/2009	49.80	2.00	8:15			
6/13/2009						Saturday, no w/l measurement
6/14/2009						Sunday, no w/l measurement
6/15/2009	49.80	2.00	10:55			
6/16/2009	49.80	2.00	14:44			
6/17/2009	51.20	0.60	14:51	1.40	296	**pumped**
6/18/2009	51.20	0.60	13:24			
6/19/2009	51.15	0.65	14:37			
6/20/2009	51.15	0.65	13:48			
6/21/2009						Sunday, no w/l measurement
6/22/2009	50.80	1.00	8:30			
6/23/2009	50.90	0.90	7:30			
6/24/2009	50.80	1.00	6:48			
6/25/2009	50.80	1.00	7:45			
6/26/2009	50.40	1.40	6:30			
6/27/2009						Saturday, no w/l measurement
6/28/2009	50.40	1.40	14:29			
6/29/2009	50.20	1.60	14:01			
6/30/2009	50.10	1.70	11:08			

TABLE D.1.4

2009 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

Top of sump (datum reference)	719.94
Bottom of sump (feet BTOS)	51.8
Diameter of sump (feet)	6

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Original Sevenson Comments (additional CRA comments)*
7/1/2009	50.00	1.80	16:45			
7/2/2009	50.00	1.80	14:37			
7/3/2009	50.00	1.80	14:11			
7/4/2009	49.90	1.90	13:12			
7/5/2009						Sunday, no w/l measurement
7/6/2009	49.40	2.40	8:15			
7/7/2009	49.30	2.50	7:45			
7/8/2009	49.40	2.40	7:45			
7/9/2009	49.30	2.50	6:30			
7/10/2009	49.30	2.50	7:30			
7/11/2009						Saturday, no w/l measurement
7/12/2009	49.30	2.50	11:04			
7/13/2009	49.20	2.60	13:52			
7/14/2009	51.10	0.70	12:14	1.90	402	**pumped**
7/15/2009	51.10	0.70	13:52			
7/16/2009	51.10	0.70	14:12			
7/17/2009	51.10	0.70	11:31			
7/18/2009	51.10	0.70	14:04			
7/19/2009						Sunday, no w/l measurement
7/20/2009	50.90	0.90	15:14			
7/21/2009	50.80	1.00	14:15			
7/22/2009	50.70	1.10	8:30			
7/23/2009	49.70	2.10	8:00			
7/24/2009	49.90	1.90	8:15			
7/25/2009						Saturday, no w/l measurement
7/26/2009	49.90	1.90	14:15			
7/27/2009	49.90	1.90	13:12			
7/28/2009	49.80	2.00	16:15			
7/29/2009	49.80	2.00	13:24			
7/30/2009	49.80	2.00	13:48			
7/31/2009	49.70	2.10	10:28			
8/1/2009	49.60	2.20	14:34			
8/2/2009	49.70	2.10	13:15			
8/3/2009	49.60	2.20	11:24			
8/4/2009	49.60	2.20	13:04			
8/5/2009	49.60	2.20	14:09			
8/6/2009	49.50	2.30	15:12			
8/7/2009	49.50	2.30	14:54			
8/8/2009						Saturday, no w/l measurement
8/9/2009	49.50	2.30	15:09			
8/10/2009	51.20	0.60	14:08	1.70	360	**pumped**
8/11/2009	51.20	0.60	17:37			
8/12/2009	51.20	0.60	16:39			
8/13/2009	51.20	0.60	14:51			
8/14/2009	51.10	0.70	13:15			
8/15/2009	51.10	0.70	14:09			
8/16/2009	50.50	1.30	7:35			
8/17/2009	50.30	1.50	7:45			
8/18/2009	50.00	1.80	7:30			
8/19/2009	49.90	1.90	7:45			
8/20/2009	49.80	2.00	7:15			
8/21/2009	49.60	2.20	8:10			
8/22/2009						Saturday, no w/l measurement
8/23/2009	49.50	2.30	13:52			
8/24/2009	49.50	2.30	11:04			**pumped** (w/l prior to pumping)
8/25/2009	51.10	0.70	13:59	1.60	338	(w/l measured after previous day's pumping
8/26/2009	51.10	0.70	11:11			
8/27/2009	51.20	0.60	14:10			
8/28/2009	51.10	0.70	10:58			
8/29/2009	51.10	0.70	14:31			
8/30/2009	51.10	0.70	13:27			
8/31/2009						(no data available)

TABLE D.1.4

2009 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

Top of sump (datum reference)	719.94
Bottom of sump (feet BTOS)	51.8
Diameter of sump (feet)	6

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Original Sevenson Comments (additional CRA comments)*
9/1/2009	49.70	2.10	7:45			
9/2/2009	49.70	2.10	7:25			
9/3/2009	49.80	2.00	7:45			
9/4/2009	49.80	2.00	8:15			
9/5/2009						Saturday, no w/l measurement
9/6/2009	49.90	1.90	10:38			
9/7/2009	49.70	2.10	11:48			
9/8/2009	49.60	2.20	10:57			
9/9/2009	49.50	2.30	13:27			
9/10/2009	49.40	2.40	14:15			
9/11/2009	49.50	2.30	14:57			
9/12/2009	49.50	2.30	13:18			
9/13/2009	49.40	2.40	14:41			
9/14/2009	49.40	2.40	14:14			
9/15/2009	49.40	2.40	11:46			
9/16/2009	49.20	2.60	16:51			**pumped** (w/l prior to pumping)
9/17/2009	51.20	0.60	17:06	2.00	423	(w/l measured after previous day's pumping
9/18/2009	51.20	0.60	14:05			
9/19/2009						Saturday, no w/l measurement
9/20/2009						Sunday, no w/l measurement
9/21/2009	50.60	1.20	14:06			
9/22/2009	50.40	1.40	14:31			
9/23/2009	50.30	1.50	17:34			
9/24/2009	50.30	1.50	13:20			
9/25/2009	49.90	1.90	17:12			
9/26/2009	49.90	1.90	14:06			
9/27/2009	49.80	2.00	16:15			
9/28/2009	49.80	2.00	16:37			
9/29/2009	49.70	2.10	14:31			
9/30/2009	49.70	2.10	13:18			
10/1/2009	49.70	2.10	14:14			
10/2/2009	49.70	2.10	14:31			
10/3/2009	49.70	2.10	11:46			
10/4/2009						Sunday, no w/l measurement
10/5/2009	49.50	2.30	15:27			
10/6/2009	49.50	2.30	14:18			
10/7/2009	49.50	2.30	13:32			
10/8/2009	49.40	2.40	10:27			
10/9/2009	49.40	2.40	14:45			
10/10/2009	49.40	2.40	9:29			
10/11/2009						Sunday, no w/l measurement
10/12/2009	49.40	2.40	16:52			
10/13/2009	49.40	2.40	14:09			
10/14/2009	49.30	2.50	10:27			
10/15/2009	49.30	2.50	9:31			
10/16/2009	49.30	2.50	11:35			
10/17/2009	49.30	2.50	14:28			
10/18/2009						Sunday, no w/l measurement
10/19/2009	51.20	0.60	10:27	1.90	402	**pumped**
10/20/2009	51.20	0.60	14:10			
10/21/2009	51.20	0.60	11:34			
10/22/2009	51.20	0.60	10:52			
10/23/2009			17:15			Installed new pump and control panel & took
10/24/2009	51.50	0.30	10:07			out CRA pump and returned it to CRA
10/25/2009						Sunday, no w/l measurement
10/26/2009	51.50	0.30	13:12			
10/27/2009	51.40	0.40	17:38			
10/28/2009	51.40	0.40	14:23			
10/29/2009	51.40	0.40	16:35			
10/30/2009	51.30	0.50	15:42			
10/31/2009						Saturday, no w/l measurement

TABLE D.1.4

2009 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

Top of sump (datum reference)	719.94
Bottom of sump (feet BTOS)	51.8
Diameter of sump (feet)	6

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Original Sevenson Comments (additional CRA comments)*
11/1/2009						Sunday, no w/l measurement
11/2/2009	50.80	1.00	14:21			
11/3/2009	50.70	1.10	10:20			
11/4/2009	50.60	1.20	13:52			
11/5/2009	50.50	1.30	11:45			
11/6/2009	50.40	1.40	16:28			
11/7/2009	50.40	1.40	14:19			
11/8/2009						Sunday, no w/l measurement
11/9/2009	50.40	1.40	9:24			
11/10/2009	50.30	1.50	14:28			
11/11/2009	50.30	1.50	10:47			
11/12/2009	50.20	1.60	14:53			
11/13/2009	50.20	1.60	11:24			
11/14/2009	50.10	1.70	14:11			
11/15/2009	50.10	1.70	8:59			
11/16/2009	50.10	1.70	13:21			
11/17/2009	50.10	1.70	14:46			
11/18/2009	50.10	1.70	9:24			
11/19/2009	50.10	1.70	14:12			
11/20/2009						(no data available)
11/21/2009						Saturday, no w/l measurement
11/22/2009						Sunday, no w/l measurement
11/23/2009	50.30	1.50	15:51			
11/24/2009	50.30	1.50	14:59			
11/25/2009	50.20	1.60	9:35			
11/26/2009	50.10	1.70	13:35			
11/27/2009						(no data available)
11/28/2009	50.10	1.70				
11/29/2009						Sunday, no w/l measurement
11/30/2009	49.20	2.60	10:42			**pumped** (w/l prior to pumping)
12/1/2009	51.00	0.80	13:19	1.80	381	(w/l measured after previous day's pumping
12/2/2009	51.00	0.80	10:35			
12/3/2009	50.90	0.90	14:27			
12/4/2009	50.90	0.90	11:58			
12/5/2009	50.90	0.90	15:35			
12/6/2009						Sunday, no w/l measurement
12/7/2009	50.80	1.00	11:51			
12/8/2009						*SES on alternating work weeks*
12/9/2009						*SES on alternating work weeks*
12/10/2009	not recorded		SES			*SES on alternating work weeks*
12/11/2009						*SES on alternating work weeks*
12/12/2009						Saturday, no w/l measurement
12/13/2009						Sunday, no w/l measurement
12/14/2009	51.60	0.20	11:31	0.80	169	
12/15/2009	51.20	0.60	14:27			
12/16/2009	51.20	0.60	10:14			
12/17/2009	51.20	0.60	16:13			
12/18/2009	51.10	0.70	11:09			
12/19/2009	51.10	0.70	10:29			
12/20/2009						Sunday, no w/l measurement
12/21/2009	51.10	0.70	8:19			
12/22/2009	51.10	0.70	9:24			
12/23/2009	51.10	0.70	11:41			
12/24/2009	51.00	0.80	8:20			
12/25/2009						Holiday, no w/l measurement
12/26/2009						Saturday, no w/l measurement
12/27/2009						Sunday, no w/l measurement
12/28/2009	51.00	0.80	11:23			
12/29/2009	51.00	0.80	14:37			
12/30/2009	51.00	0.80	10:25			
12/31/2009	51.00	0.80	9:22			
				31.40	**6,641**	**TOTAL**

TABLE D.1.5

2010 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until	9/21/10 to	new depth from
Top of sump (datum reference)	9/20/10	9/22/10	9/23/10
Bottom of sump (feet BTOS)	51.8	57.8	63.8
Diameter of sump (feet)	6	6	6

Date	*Water Level feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth feet (BTOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
1/1/2010	51.0	14:14	0.80			
1/2/2010						Saturday, no w/l measurement
1/3/2010						Sunday, no w/l measurement
1/4/2010	51.0	13:35	0.80			
1/5/2010	51.0	14:24	0.80			
1/6/2010	51.0	13:15	0.80			
1/7/2010	51.0	11:24	0.80			
1/8/2010	51.0	10:49	0.80			
1/9/2010	51.0	14:56	0.80			
1/10/2010						Saturday, no w/l measurement
1/11/2010						Sunday, no w/l measurement
1/12/2010	51.0	15:26	0.80			
1/13/2010	51.0	13:43	0.80			
1/14/2010	51.0	10:56	0.80			
1/15/2010	49.9	9:24	1.90	-1.10	-233	
1/16/2010	49.9	13:38	1.90			
1/17/2010	49.9	11:47	1.90			
1/18/2010						Holiday, no w/l measurement
1/19/2010	49.9	10:24	1.90			
1/20/2010	49.9	14:29	1.90			
1/21/2010	49.9	13:19	1.90			
1/22/2010	49.9	9:26	1.90			
1/23/2010	49.9	14:06	1.90			
1/24/2010						Sunday, no w/l measurement
1/25/2010	49.8	15:16	2.00			
1/26/2010	49.8	13:53	2.00			
1/27/2010	49.9	15:15	1.90			CRA tested
1/28/2010	49.9	14:24	1.90			
1/29/2010	49.9	10:54	1.90			
1/30/2010						Saturday, no w/l measurement
1/31/2010						Sunday, no w/l measurement
2/1/2010	49.9	12:16	1.90			
2/2/2010	49.9	12:11	1.90			
2/3/2010	49.9	14:35	1.90			
2/4/2010	49.9	13:26	1.90			
2/5/2010	49.8	15:17	2.00			
2/6/2010						Saturday, no w/l measurement
2/7/2010						Sunday, no w/l measurement
2/8/2010	49.8	10:56	2.00			
2/9/2010	49.8	14:04	2.00			
2/10/2010	49.8	9:35	2.00			
2/11/2010	49.8	15:21	2.00			
2/12/2010	49.8	12:12	2.00			
2/13/2010						Saturday, no w/l measurement
2/14/2010						Sunday, no w/l measurement
2/15/2010	49.8	11:28	2.00			
2/16/2010	49.7	12:15	2.10			
2/17/2010	49.7	13:09	2.10			
2/18/2010	49.7	14:06	2.10			
2/19/2010	49.7	13:38	2.10			

TABLE D.1.5

2010 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth feet (BTOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
2/20/2010						Saturday, no w/l measurement
2/21/2010						Sunday, no w/l measurement
2/22/2010	51.2	14:12	0.60	1.50	317	
2/23/2010	51.1	13:09	0.70			
2/24/2010	51.1	10:32	0.70			
2/25/2010	51.2	12:17	0.60			
2/26/2010	51.1	12:47	0.70			
2/27/2010						Saturday, no w/l measurement
2/28/2010						Sunday, no w/l measurement
3/1/2010	51.1	13:32	0.70			
3/2/2010	51.1	14:48	0.70			
3/3/2010	51.1	12:16	0.70			
3/4/2010	51.1	14:14	0.70			
3/5/2010	51.0	10:42	0.80			
3/6/2010						Saturday, no w/l measurement
3/7/2010						Sunday, no w/l measurement
3/8/2010	51.0	12:12	0.80			
3/9/2010	51.0	12:34	0.80			
3/10/2010	51.0	13:22	0.80			
3/11/2010	51.0	9:31	0.80			
3/12/2010	51.0	12:11	0.80			
3/13/2010	51.0	9:59	0.80			
3/14/2010	51.0	8:33	0.80			
3/15/2010	51.0	12:13	0.80			
3/16/2010	51.0	15:37	0.80			
3/17/2010	51.1	12:38	0.70			
3/18/2010	51.1	13:58	0.70			
3/19/2010	51.1	14:34	0.70			
3/20/2010						Saturday, no w/l measurement
3/21/2010						Sunday, no w/l measurement
3/22/2010	51.1	13:24	0.70			
3/23/2010	51.0	12:15	0.80			
3/24/2010	51.0	13:31	0.80			
3/25/2010	51.0	10:24	0.80			
3/26/2010	51.0	14:34	0.80			
3/27/2010						Saturday, no w/l measurement
3/28/2010						Sunday, no w/l measurement
3/29/2010	50.9	15:18	0.90			
3/30/2010	50.9	12:28	0.90			
3/31/2010	50.9	17:12	0.90			
4/1/2010	50.9	14:45	0.90			
4/2/2010						Holiday, no w/l measurement
4/3/2010	50.8	13:53	1.00			
4/4/2010	50.8	10:31	1.00			
4/5/2010	50.8	15:28	1.00			
4/6/2010	50.8	14:13	1.00			
4/7/2010	50.8	9:26	1.00			
4/8/2010	50.7	11:24	1.10			
4/9/2010	50.7	15:47	1.10			
4/10/2010						Saturday, no w/l measurement
4/11/2010						Sunday, no w/l measurement
4/12/2010	50.7	13:24	1.10			
4/13/2010	50.7	15:26	1.10			
4/14/2010	50.7	14:25	1.10			
4/15/2010	50.7	13:16	1.10			
4/16/2010	50.7	10:24	1.10			

TABLE D.1.5

2010 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth feet (BTOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
4/17/2010						Saturday, no w/l measurement
4/18/2010	50.8	12:19	1.00			
4/19/2010	50.8	10:53	1.00			
4/20/2010	50.8	9:34	1.00			
4/21/2010	50.8	11:19	1.00			
4/22/2010	50.8	12:21	1.00			
4/23/2010	50.9	8:17	0.90			
4/24/2010						Saturday, no w/l measurement
4/25/2010						Sunday, no w/l measurement
4/26/2010	50.8	11:15	1.00			
4/27/2010	50.8	14:21	1.00			
4/28/2010	50.8	14:48	1.00			
4/29/2010	50.8	10:27	1.00			
4/30/2010	50.8	11:34	1.00			
5/1/2010	50.8	11:21	1.00			
5/2/2010	50.8	9:10	1.00			
5/3/2010	50.7	14:09	1.10			
5/4/2010	50.7	10:21	1.10			
5/5/2010	51.1	16:42	0.70	0.40	85	
5/6/2010	51.1	15:28	0.70			
5/7/2010	51.1	14:21	0.70			
5/8/2010	51.1	16:32	0.70			
5/9/2010						Sunday, no w/l measurement
5/10/2010	51.1	12:31	0.70			
5/11/2010	51.0	11:02	0.80			
5/12/2010	50.9	9:35	0.90			
5/13/2010	50.9	13:32	0.90			
5/14/2010	50.9	12:18	0.90			
5/15/2010	50.9	10:56	0.90			
5/16/2010						Sunday, no w/l measurement
5/17/2010	50.8	14:17	1.00			
5/18/2010	50.8	9:55	1.00			
5/19/2010	50.9	8:22	0.90			
5/20/2010	50.9	10:34	0.90			
5/21/2010	50.9	13:55	0.90			
5/22/2010						Saturday, no w/l measurement
5/23/2010						Sunday, no w/l measurement
5/24/2010	50.7	9:27	1.10			
5/25/2010	50.7	10:31	1.10			
5/26/2010	50.7	11:55	1.10			
5/27/2010	50.7	10:07	1.10			
5/28/2010	50.6	10:29	1.20			
5/29/2010	50.6	8:35	1.20			
5/30/2010						Sunday, no w/l measurement
5/31/2010						Holiday, no w/l measurement
6/1/2010	50.6	16:27	1.20			
6/2/2010	50.7	14:41	1.10			
6/3/2010	50.7	12:26	1.10			
6/4/2010	50.7	15:10	1.10			
6/5/2010	50.6	10:42	1.20			
6/6/2010						Sunday, no w/l measurement
6/7/2010	51.2	11:27	0.60	0.60	127	
6/8/2010	51.2	13:09	0.60			
6/9/2010	51.2	9:34	0.60			
6/10/2010	51.1	14:17	0.70			
6/11/2010	51.1	15:48	0.70			

TABLE D.1.5

2010 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth feet (BTOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
6/12/2010	51.1	14:17	0.70			
6/13/2010	51.1	14:04	0.70			
6/14/2010	51.0	13:31	0.80			
6/15/2010	50.9	15:51	0.90			
6/16/2010	50.9	17:17	0.90			
6/17/2010	50.9	9:35	0.90			
6/18/2010	50.9	10:25	0.90			
6/19/2010						Saturday, no w/l measurement
6/20/2010						Sunday, no w/l measurement
6/21/2010	50.7	14:21	1.10			
6/22/2010	50.6	12:23	1.20			
6/23/2010	50.6	10:46	1.20			
6/24/2010	50.6	12:26	1.20			
6/25/2010						Inspecting monitors, SES negated to measure levels
6/26/2010	50.2	14:45	1.60	-0.40	-85	
6/27/2010						Sunday, no w/l measurement
6/28/2010	50.1	12:27	1.70			
6/29/2010	50.1	16:34	1.70			
6/30/2010	50.0	15:26	1.80			
7/1/2010	50.0	14:19	1.80			
7/2/2010	50.0	13:03	1.80			
7/3/2010						Saturday, no w/l measurement
7/4/2010						Sunday, no w/l measurement
7/5/2010						Holiday, no w/l measurement
7/6/2010	50.0	13:08	1.80			CRA tested
7/7/2010	50.0	16:31	1.80			
7/8/2010	50.0	15:16	1.80			
7/9/2010	50.0	17:34	1.80			
7/10/2010	50.0	16:46	1.80			
7/11/2010	50.0	16:46	1.80			
7/12/2010						
7/13/2010	50.0	17:10	1.80			
7/14/2010	50.0	15:19	1.80			
7/15/2010	50.0	12:10	1.80			
7/16/2010	50.0	14:27	1.80			
7/17/2010	50.0	12:34	1.80			
7/18/2010						Sunday, no w/l measurement
7/19/2010	50.0	13:31	1.80			
7/20/2010	50.0	11:46	1.80			
7/21/2010	50.0	14:26	1.80			
7/22/2010	50.0	12:34	1.80			
7/23/2010	50.0	18:05	1.80			
7/24/2010	50.0	11:35	1.80			
7/25/2010						Sunday, no w/l measurement
7/26/2010	50.0	12:13	1.80			
7/27/2010	50.0	12:53	1.80			
7/28/2010	50.0	12:23	1.80			
7/29/2010	49.9	12:34	1.90			
7/30/2010	49.9	12:15	1.90			
7/31/2010	49.9	13:26	1.90			
8/1/2010						Sunday, no w/l measurement
8/2/2010	49.8	12:17	2.00			
8/3/2010	49.8	12:41	2.00			
8/4/2010	49.8	12:31	2.00			
8/5/2010	49.8	16:34	2.00			

TABLE D.1.5

2010 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth feet (BTOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
8/6/2010	49.8	16:16	2.00			
8/7/2010	49.8	13:33	2.00			
8/8/2010	49.8	14:29	2.00			
8/9/2010	49.8	12:17	2.00			
8/10/2010	49.8	12:48	2.00			
8/11/2010	49.9	12:21	1.90			CRA sampled
8/12/2010	49.9	12:34	1.90			
8/13/2010	49.8	12:16	2.00			
8/14/2010	49.8	12:04	2.00			
8/15/2010						Sunday, no w/l measurement
8/16/2010	49.8	13:39	2.00			
8/17/2010	49.8	12:28	2.00			
8/18/2010	49.8	12:08	2.00			
8/19/2010	49.8	12:24	2.00			
8/20/2010	49.8	12:31	2.00			
8/21/2010	51.2	12:13	0.60	1.40	296	
8/22/2010						Sunday, no w/l measurement
8/23/2010	51.2	12:24	0.60			
8/24/2010	51.2	10:36	0.60			
8/25/2010	51.2	9:52	0.60			
8/26/2010	51.1	9:20	0.70			
8/27/2010	51.1	11:11	0.70			
8/28/2010	51.1	12:24	0.70			
8/29/2010						Sunday, no w/l measurement
8/30/2010	51.0	13:29	0.80			
8/31/2010	51.0	12:35	0.80			
9/1/2010	51.0	12:08	0.80			
9/2/2010	51.0	12:34	0.80			
9/3/2010	51.0	12:12	0.80			
9/4/2010	51.0	13:24	0.80			
9/5/2010	51.0	14:41	0.80			
9/6/2010						Holiday, no w/l measurement
9/7/2010	51.0	11:20	0.80			
9/8/2010	51.0	13:16	0.80			
9/9/2010	51.0	12:22	0.80			
9/10/2010	51.0	11:31	0.80			
9/11/2010	51.0	9:24	0.80			
9/12/2010						Sunday, no w/l measurement
9/13/2010	51.0	10:32	0.80			
9/14/2010	51.0	11:10	0.80			
9/15/2010	51.0	12:24	0.80			CRA sampled
9/16/2010	51.0	15:04	0.80			
9/17/2010	51.3	10:51	0.50	0.30	63	
9/18/2010	51.3	12:59	0.50			
9/19/2010						Sunday, no w/l measurement
9/20/2010	51.3	12:24	0.50			
9/21/2010	55.3	12:13	2.50			6 foot section added
9/22/2010	55.3	12:17	2.50			
9/23/2010	61.7	18:52	2.10			Additional 6 foot tile section added
9/24/2010	61.7	19:08	2.10			
9/25/2010	61.7	12:09	2.10			
9/26/2010						Sunday, no w/l measurement
9/27/2010	61.6	12:10	2.20			
9/28/2010	60.7	12:24	3.10	-0.90	-190	
9/29/2010	60.7	12:11	3.10			
9/30/2010	60.7	12:26	3.10			

TABLE D.1.5

2010 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth feet (BTOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
10/1/2010	60.7	12:10	3.10			
10/2/2010	60.7	12:34	3.10			
10/3/2010	60.7	10:17	3.10			
10/4/2010	60.6	13:24	3.20			
10/5/2010	60.1	14:17	3.70	-0.50	-106	
10/6/2010	60.1	11:24	3.70			
10/7/2010	60.1	10:52	3.70			
10/8/2010	60.1	12:16	3.70			
10/9/2010	60.0	10:24	3.80			
10/10/2010						Sunday, no w/l measurement
10/11/2010	60.0	12:20	3.80			
10/12/2010	60.0	12:12	3.80			
10/13/2010	60.0	12:36	3.80			
10/14/2010	60.0	11:24	3.80			
10/15/2010	60.0	12:20	3.80			
10/16/2010						Saturday, no w/l measurement
10/17/2010						Sunday, no w/l measurement
10/18/2010	59.8	14:24	4.00			
10/19/2010	59.8	9:36	4.00			
10/20/2010	59.8	8:42	4.00			
10/21/2010	59.8	9:14	4.00			
10/22/2010	59.8	10:27	4.00			
10/23/2010	59.8	11:39	4.00			
10/24/2010						Sunday, no w/l measurement
10/25/2010						
10/26/2010	59.8	8:32	4.00			
10/27/2010	59.8	11:21	4.00			
10/28/2010	59.8	10:10	4.00			
10/29/2010	59.8	9:30	4.00			
10/30/2010	59.8	12:15	4.00			
10/31/2010	59.7	10:12	4.10			
11/1/2010	59.7	11:14	4.10			
11/2/2010	59.7	10:22	4.10			
11/3/2010	59.7	9:50	4.10			
11/4/2010	59.7	14:17	4.10			
11/5/2010	59.7	11:24	4.10			
11/6/2010	59.7	9:20	4.10			
11/7/2010						Sunday, no w/l measurement
11/8/2010	59.7	11:10	4.10			
11/9/2010	59.7	10:22	4.10			
11/10/2010	59.6	11:09	4.20			
11/11/2010	59.6	9:52	4.20			
11/12/2010	59.6	10:12	4.20			
11/13/2010	59.6	11:31	4.20			
11/14/2010	59.6	14:18	4.20			
11/15/2010	59.6	13:35	4.20			
11/16/2010	59.6	10:24	4.20			
11/17/2010	59.6	11:32	4.20			
11/18/2010	59.6	13:17	4.20			
11/19/2010	59.6	14:34	4.20			
11/20/2010	59.6	13:26	4.20			
11/21/2010	59.6	10:24	4.20			
11/22/2010	59.6	13:33	4.20			
11/23/2010	59.6	14:20	4.20			
11/24/2010	59.6	13:09	4.20			
11/25/2010	59.6	9:22	4.20			
11/26/2010						Holiday, no w/l measurement
11/27/2010	59.6	11:37	4.20			
11/28/2010	59.6	10:55	4.20			Pumped for cleaning of well

TABLE D.1.5

2010 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth feet (BTOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
11/29/2010	63.3	11:18	0.50	3.70	783	
11/30/2010	63.3	14:20	0.50			
12/1/2010	63.3	11:18	0.50			
12/2/2010	63.3	14:20	0.50			
12/3/2010	63.3	10:34	0.50			
12/4/2010	63.3	9:12	0.50			
12/5/2010	63.3	13:26	0.50			
12/6/2010	63.3	11:17	0.50			
12/7/2010	63.3	12:22	0.50			
12/8/2010	63.3	10:35	0.50			
12/9/2010	63.3	11:24	0.50			
12/10/2010	63.3	8:27	0.50			
12/11/2010	63.3	not recorded	0.50			
12/12/2010	63.3	not recorded	0.50			
12/13/2010	63.3	9:37	0.50			
12/14/2010	63.3	13:57	0.50			
12/15/2010	63.3	8:32	0.50			
12/16/2010	63.3	11:17	0.50			
12/17/2010	63.3	14:21	0.50			
12/18/2010	63.3	10:56	0.50			
12/19/2010	63.3	11:25	0.50			
12/20/2010	63.3	9:34	0.50			
12/21/2010	63.3	10:51	0.50			
12/22/2010	63.3	9:04	0.50			
12/23/2010	63.3	10:48	0.50			
12/24/2010	63.3	13:17	0.50			
12/25/2010	63.3	9:11	0.50			
12/26/2010	63.2	11:29	0.60			
12/27/2010	63.2	10:16	0.60			
12/28/2010	63.2	9:23	0.60			
12/29/2010	63.2	8:49	0.60			
12/30/2010	63.2	10:35	0.60			
12/31/2010	63.2	9:11	0.60			

Notes:

w/l - Water Level

The water level was kept between 0.5 feet and 2 feet, except from October through November when liner work was being completed in the area and the pump and water lines were removed. The LDS was pumped down again on 11/28/2010 following completion of the liner work

TABLE D.1.6

2011 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 9/20/10	9/21/10 to 9/22/10	9/23/10 to 9/1/11	9/2/11 to 9/10/11	new depth from 9/11/11
Top of sump (datum reference)	51.80	57.80	63.80	67.82	741.14
Bottom of sump (feet BTOS)	51.80	57.80	63.80	67.82	73.00
Diameter of sump (feet)	6	6	6	6	6

Date	*Water Level feet (BTOS)*	*Water Depth feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
1/1/2011						Saturday (no w/l measurement)
1/2/2011						Sunday (no w/l measurement)
1/3/2011	63.2	0.60	9:22			
1/4/2011	63.2	0.60	8:40			
1/5/2011	63.2	0.60	10:20			
1/6/2011	63.2	0.60	9:31			
1/7/2011	63.2	0.60	11:05			
1/8/2011	63.2	0.60	8:31			
1/9/2011	63.2	0.60	9:19			
1/10/2011	63.2	0.60	11:08			
1/11/2011	63.2	0.60	10:24			
1/12/2011	63.2	0.60	11:25			
1/13/2011	63.2	0.60	10:43			
1/14/2011	63.2	0.60	9:24			
1/15/2011	63.2	0.60	13:27			
1/16/2011						Sunday (no w/l measurement)
1/17/2011	63.2	0.60	11:41			
1/18/2011	63.1	0.70	9:36			
1/19/2011	63.1	0.70	10:27			
1/20/2011	63.1	0.70	11:17			
1/21/2011	63.1	0.70	9:25			
1/22/2011						Saturday (no w/l measurement)
1/23/2011	63.1	0.70	10:15			
1/24/2011	63.1	0.70	9:39			
1/25/2011	63.0	0.80	11:47			
1/26/2011	63.0	0.80	9:17			CRA Sampled
1/27/2011	63.0	0.80	8:52			
1/28/2011	63.0	0.80	10:36			
1/29/2011	63.0	0.80	11:11			
1/30/2011						Sunday (no w/l measurement)
1/31/2011	63.0	0.80	13:27			
2/1/2011	63.0	0.80	11:17			
2/2/2011	63.0	0.80	10:35			
2/3/2011	63.0	0.80	13:27			
2/4/2011	62.9	0.90	6:27			
2/5/2011	62.9	0.90	14:10			
2/6/2011						Sunday (no w/l measurement)
2/7/2011	62.9	0.90	10:31			
2/8/2011	62.9	0.90	11:42			
2/9/2011						
2/10/2011						
2/11/2011	62.9	0.90	13:24			
2/12/2011	62.9	0.90	10:56			
2/13/2011						Sunday (no w/l measurement)
2/14/2011	62.9	0.90	9:55			
2/15/2011	62.9	0.90	13:30			
2/16/2011	62.8	1.00	10:44			
2/17/2011	62.8	1.00	9:19			
2/18/2011	62.8	1.00	8:32			
2/19/2011	62.8	1.00	10:26			
2/20/2011						Sunday (no w/l measurement)
2/21/2011						Holiday (no w/l measurements)
2/22/2011						
2/23/2011	62.7	1.10	14:40			CRA Sampled
2/24/2011	62.7	1.10	13:45			
2/25/2011	62.7	1.10	11:25			

TABLE D.1.6

2011 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level feet (BTOS)*	*Water Depth feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
2/26/2011	62.7	1.10	9:37			
2/27/2011						Sunday (no w/l measurement)
2/28/2011	62.6	1.20	13:22			
3/1/2011	62.6	1.20	13:12			
3/2/2011	62.6	1.20	13:34			
3/3/2011	62.6	1.20	9:45			
3/4/2011	62.6	1.20	10:51			
3/5/2011	62.5	1.30	9:31			
3/6/2011	62.5	1.30	11:12			
3/7/2011	62.5	1.30	14:43			
3/8/2011	62.5	1.30	9:17			
3/9/2011	62.5	1.30	9:34			CRA Sampled
3/10/2011	62.5	1.30	10:24			
3/11/2011	62.5	1.30	14:09			
3/12/2011	62.5	1.30	14:31			
3/13/2011						Sunday (no w/l measurement)
3/14/2011	62.5	1.30	11:12			
3/15/2011	62.5	1.30	9:26			
3/16/2011	62.5	1.30	10:34			
3/17/2011	62.5	1.30	9:42			
3/18/2011	62.5	1.30	8:24			
3/19/2011						Saturday (no w/l measurement)
3/20/2011						Sunday (no w/l measurement)
3/21/2011						
3/22/2011	62.4	1.40	9:21			
3/23/2011	62.4	1.40	11:15			
3/24/2011	62.4	1.40	10:27			
3/25/2011	62.4	1.40	8:35			
3/26/2011	62.4	1.40	11:16			
3/27/2011						Sunday (no w/l measurement)
3/28/2011	62.4	1.40	10:44			
3/29/2011	62.4	1.40	13:27			
3/30/2011	62.4	1.40	9:14			
3/31/2011	62.4	1.40	14:32			
4/1/2011	62.4	1.40	13:14			
4/2/2011	62.4	1.40	9:27			
4/3/2011	62.4	1.40	11:08			
4/4/2011	62.4	1.40	13:44			
4/5/2011	62.4	1.40	14:41			
4/6/2011	62.4	1.40	15:19			
4/7/2011	62.4	1.40	14:20			
4/8/2011	62.4	1.40	14:33			
4/9/2011						Saturday (no w/l measurement)
4/10/2011						Sunday (no w/l measurement)
4/11/2011	62.3	1.50	15:35			
4/12/2011	63.0	0.80	15:19	0.70	148.05	Pumped for 1.5 hours
4/13/2011	63.0	0.80	8:27			
4/14/2011	63.0	0.80	14:12			
4/15/2011	63.0	0.80	10:34			
4/16/2011						Saturday (no w/l measurement)
4/17/2011	63.0	0.80	9:28			
4/18/2011	62.9	0.90	9:59			
4/19/2011	62.9	0.90	13:14			
4/20/2011	62.9	0.90	11:20			CRA Sampled
4/21/2011	62.9	0.90	10:17			
4/22/2011	62.9	0.90	13:26			
4/23/2011	62.9	0.90	8:50			
4/24/2011	62.9	0.90	16:31			
4/25/2011	62.9	0.90	13:35			
4/26/2011	62.8	1.00	17:53			
4/27/2011	62.8	1.00	15:26			
4/28/2011	62.8	1.00	16:35			
4/29/2011	62.8	1.00	14:51			
4/30/2011	62.8	1.00	13:26			

TABLE D.1.6

2011 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level feet (BTOS)*	*Water Depth feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
5/1/2011	62.8	1.00	9:37			
5/2/2011	62.8	1.00	13:03			
5/3/2011	62.8	1.00	13:38			
5/4/2011	62.8	1.00	13:52			
5/5/2011	62.8	1.00	14:12			
5/6/2011	62.8	1.00	9:27			
5/7/2011						Saturday (no w/l measurement)
5/8/2011						Sunday (no w/l measurement)
5/9/2011	62.7	1.10	11:29			
5/10/2011	62.7	1.10	10:47			
5/11/2011	62.7	1.10	14:09			CRA Sampled
5/12/2011	62.7	1.10	13:16			
5/13/2011	62.7	1.10	13:54			
5/14/2011	62.7	1.10	15:48			
5/15/2011	62.7	1.10	13:04			
5/16/2011	63.2	0.60	14:35	0.50	105.75	Pumped
5/17/2011	63.2	0.60	13:20			
5/18/2011	63.2	0.60	10:47			
5/19/2011	63.2	0.60	14:11			
5/20/2011	63.2	0.60	13:06			
5/21/2011	63.2	0.60	13:42			
5/22/2011						Sunday (no w/l measurement)
5/23/2011	63.2	0.60	13:27			
5/24/2011	63.2	0.60	11:42			
5/25/2011	63.2	0.60	10:51			
5/26/2011	63.2	0.60	13:33			
5/27/2011	63.2	0.60	13:07			
5/28/2011						Saturday (no w/l measurement)
5/29/2011	63.2	0.60	11:56			
5/30/2011						Holiday (no w/l measurements)
5/31/2011	63.2	0.60	13:06			
6/1/2011	63.2	0.60	10:27			
6/2/2011	63.2	0.60	13:29			
6/3/2011	63.2	0.60	14:10			
6/4/2011	63.2	0.60	13:58			
6/5/2011						Sunday (no w/l measurement)
6/6/2011	63.1	0.70	8:33			
6/7/2011	63.1	0.70	10:39			
6/8/2011	63.1	0.70	14:24			CRA Sampled
6/9/2011	63.1	0.70	13:28			
6/10/2011	63.1	0.70	11:35			
6/11/2011	63.1	0.70	9:49			
6/12/2011						Sunday (no w/l measurement)
6/13/2011	63.1	0.70	7:51			
6/14/2011	63.0	0.80	8:35			
6/15/2011	63.0	0.80	10:41			
6/16/2011	63.0	0.80	9:27			
6/17/2011	63.0	0.80	8:36			
6/18/2011	63.0	0.80	9:42			
6/19/2011						Sunday (no w/l measurement)
6/20/2011						
6/21/2011	63.0	0.80	8:17			
6/22/2011	63.0	0.80	8:42			
6/23/2011	63.0	0.80	10:36			
6/24/2011	63.0	0.80	13:05			
6/25/2011	63.0	0.80	9:16			
6/26/2011	63.0	0.80	10:24			
6/27/2011	62.9	0.90	10:59			
6/28/2011	62.9	0.90	9:34			
6/29/2011	62.9	0.90	8:17			
6/30/2011	62.9	0.90	9:14			
7/1/2011	62.9	0.90	8:42			
7/2/2011						Saturday (no w/l measurement)
7/3/2011						Sunday (no w/l measurement)

TABLE D.1.6

2011 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level feet (BTOS)*	*Water Depth feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
7/4/2011						Holiday (no w/l measurements)
7/5/2011	62.9	0.90	8:16			
7/6/2011	62.9	0.90	10:27			
7/7/2011	62.9	0.90	9:22			
7/8/2011	62.9	0.90	13:26			
7/9/2011	62.8	1.00	10:42			
7/10/2011	62.8	1.00	9:24			
7/11/2011	62.8	1.00	10:09			
7/12/2011	62.8	1.00	13:34			
7/13/2011	62.8	1.00	11:17			
7/14/2011	62.8	1.00	9:34			
7/15/2011	62.8	1.00	13:14			
7/16/2011	62.9	0.90	10:27	0.10	21.15	Pumped 30 min for pump check
7/17/2011						Sunday (no w/l measurement)
7/18/2011	62.9	0.90	9:24			
7/19/2011	62.9	0.90	7:24			
7/20/2011	62.9	0.90	8:46			
7/21/2011	62.9	0.90	9:17			
7/22/2011	62.8	1.00	8:55			
7/23/2011						Saturday (no w/l measurement)
7/24/2011	62.8	1.00	8:17			
7/25/2011	62.8	1.00	8:46			
7/26/2011	62.8	1.00	9:28			
7/27/2011	62.8	1.00	11:26			CRA Sampled
7/28/2011	62.8	1.00	9:37			
7/29/2011	62.8	1.00	10:50			
7/30/2011	62.8	1.00	9:22			
7/31/2011						Sunday (no w/l measurement)
8/1/2011	62.7	1.10	14:43			
8/2/2011	62.7	1.10	9:21			
8/3/2011	62.7	1.10	8:49			
8/4/2011						
8/5/2011	62.7	1.10	13:27			
8/6/2011	62.7	1.10	9:34			
8/7/2011	62.7	1.10	10:17			
8/8/2011	62.7	1.10	9:14			
8/9/2011	62.7	1.10	14:39			
8/10/2011	62.7	1.10	16:07			
8/11/2011	62.6	1.20	15:38			CRA Sampled
8/12/2011	62.6	1.20	7:17			
8/13/2011	62.6	1.20	11:34			
8/14/2011						Sunday (no w/l measurement)
8/15/2011	62.6	1.20	8:10			
8/16/2011	62.6	1.20	7:48			
8/17/2011	62.6	1.20	11:19			
8/18/2011	62.6	1.20	9:15			
8/19/2011	62.6	1.20	14:06			
8/20/2011	62.6	1.20	7:34			
8/21/2011	62.6	1.20	10:26			
8/22/2011	62.6	1.20	14:31			
8/23/2011	62.6	1.20	13:12			
8/24/2011	62.6	1.20	11:26			
8/25/2011	62.6	1.20	10:47			
8/26/2011	62.6	1.20	9:26			
8/27/2011	62.6	1.20	11:46			
8/28/2011						Sunday (no w/l measurement)
8/29/2011	62.6	1.20	14:27			
8/30/2011	62.6	1.20	9:20			
8/31/2011	62.6	1.20	8:55			
9/1/2011	62.6	1.20	8:24			
9/2/2011	62.6	1.20	9:45			Raised 4' 1/4"
9/3/2011						Saturday (no w/l measurement)
9/4/2011	66.6	1.22	10:12			
9/5/2011						Holiday (no w/l measurements)

TABLE D.1.6

2011 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level feet (BTOS)*	*Water Depth feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
9/6/2011	66.5	1.32	14:35			
9/7/2011	66.5	1.32	13:46			
9/8/2011	66.5	1.32	9:24			
9/9/2011	66.5	1.32	10:58			
9/10/2011	66.5	1.32	8:47			raised approximately 5' 2" with Lid
9/11/2011						Sunday (no w/l measurement)
9/12/2011	71.7	1.30	13:10			
9/13/2011	71.7	1.30	9:32			
9/14/2011	71.7	1.30	13:51			
9/15/2011	71.7	1.30	8:27			
9/16/2011	71.7	1.30	9:29			
9/17/2011	71.7	1.30	10:12			
9/18/2011	71.7	1.30	9:08			
9/19/2011	71.7	1.30	13:28			
9/20/2011	71.6	1.40	11:37			
9/21/2011	71.6	1.40	13:12			
9/22/2011	71.6	1.40	9:16			
9/23/2011	71.5	1.50	10:45			
9/24/2011						Saturday (no w/l measurement)
9/25/2011						Sunday (no w/l measurement)
9/26/2011	71.3	1.70	13:46			
9/27/2011	71.3	1.70	9:53			CRA Sampled
9/28/2011	71.3	1.70	8:15			
9/29/2011	71.3	1.70	10:35			
9/30/2011	71.3	1.70	12:46			
10/1/2011	71.3	1.70	9:37			
10/2/2011	71.3	1.70	11:25			
10/3/2011	71.3	1.70	10:45			
10/4/2011	71.3	1.70	8:17			
10/5/2011	71.3	1.70	13:48			
10/6/2011	71.3	1.70	15:22			
10/7/2011	71.3	1.70	14:45			
10/8/2011	71.2	1.80	9:24			
10/9/2011						Sunday (no w/l measurement)
10/10/2011	71.2	1.80	10:12			
10/11/2011	71.2	1.80	8:34			
10/12/2011	71.2	1.80	11:12			
10/13/2011	71.1	1.90	9:17			
10/14/2011	71.1	1.90	8:20			
10/15/2011	71.1	1.90	13:44			
10/16/2011	71.1	1.90	10:26			
10/17/2011	71.1	1.90	9:08			
10/18/2011	71.1	1.90	7:44			
10/19/2011	71.0	2.00	8:23			
10/20/2011	71.0	2.00	9:36			
10/21/2011	71.0	2.00	10:52			
10/22/2011						Saturday (no w/l measurement)
10/23/2011						Sunday (no w/l measurement)
10/24/2011	71.0	2.00	8:29			
10/25/2011	71.0	2.00	9:23			
10/26/2011	71.0	2.00	13:17			CRA Sampled
10/27/2011	71.0	2.00	10:15			
10/28/2011	71.0	2.00	11:24			
10/29/2011	71.0	2.00	9:36			
10/30/2011	71.0	2.00	13:58			
10/31/2011	71.0	2.00	13:15			
11/1/2011	71.0	2.00	10:48			
11/2/2011	71.0	2.00	8:22			
11/3/2011	71.0	2.00	9:30			
11/4/2011	71.0	2.00	13:18			
11/5/2011	71.0	2.00	11:07			
11/6/2011						Sunday (no w/l measurement)
11/7/2011	71.0	2.00	11:39			
11/8/2011						Could not take measurement - instrument stuck in well
11/9/2011						Could not take measurement - instrument stuck in well

TABLE D.1.6

2011 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level feet (BTOS)*	*Water Depth feet (BTOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
11/10/2011						Could not take measurement - instrument stuck in well
11/11/2011						Holiday (no w/l measurements)
11/12/2011						Saturday (no w/l measurement)
11/13/2011						Sunday (no w/l measurement)
11/14/2011						Could not take measurement - instrument stuck in well
11/15/2011						Could not take measurement - instrument stuck in well
11/16/2011						Could not take measurement - instrument stuck in well
11/17/2011						Could not take measurement - instrument stuck in well
11/18/2011						Could not take measurement - instrument stuck in well
11/19/2011						Saturday (no w/l measurement)
11/20/2011						Sunday (no w/l measurement)
11/21/2011						Could not take measurement - instrument stuck in well
11/22/2011						CRA Sampled. Could not take measurement - instrument stuck in well
11/23/2011						Could not take measurement - instrument stuck in well
11/24/2011						Holiday (no w/l measurements)
11/25/2011						Could not take measurement - instrument stuck in well
11/26/2011						Saturday (no w/l measurement)
11/27/2011						Sunday (no w/l measurement)
11/28/2011						Could not take measurement - instrument stuck in well
11/29/2011						Could not take measurement - instrument stuck in well
11/30/2011	70.3	2.70	13:37			
12/1/2011	70.3	2.70	12:24			
12/2/2011	70.3	2.70	15:52			
12/3/2011	70.3	2.70	11:45			
12/4/2011						Sunday (no w/l measurement)
12/5/2011	70.2	2.80	14:24			
12/6/2011	70.2	2.80	9:31			
12/7/2011	70.2	2.80	7:47			
12/8/2011	70.2	2.80	12:28			
12/9/2011	70.2	2.80	12:16			
12/10/2011	70.2	2.80	12:36			
12/11/2011	70.2	2.80	14:16			
12/12/2011	70.2	2.80	16:38			
12/13/2011	70.2	2.80	11:21			
12/14/2011	70.2	2.80	7:42			
12/15/2011	70.2	2.80	11:44			CRA Sampled
12/16/2011	70.2	2.80	16:51			
12/17/2011	70.2	2.80	14:21			
12/18/2011						Sunday (no w/l measurement)
12/19/2011	70.2	2.80	16:56			
12/20/2011	70.2	2.80	11:56			
12/21/2011	70.1	2.90	13:12			
12/22/2011	70.1	2.90	9:17			
12/23/2011	70.1	2.90	9:48			
12/24/2011						Saturday (no w/l measurement)
12/25/2011	70.1	2.90	11:34			
12/26/2011						Holiday (no w/l measurements)
12/27/2011						
12/28/2011						
12/29/2011	70.1	2.90	13:38	2.00	423.01	
12/30/2011						
12/31/2011						Saturday (no w/l measurement)

Notes:
w/l - Water Level
The water level was kept between 0.5 feet and 2.0 feet, except from November through December when the measurement device became lodged in the sump and level measurements could not be taken. During this time period, ongoing construction work in the area prevented pumping from being conducted.

TABLE D.1.7

2012 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 9/20/10	9/21/10 to 9/22/10	9/23/10 to 9/1/11	9/2/11 to 9/10/11	new depth from 9/11/11
Top of sump (datum reference)	51.80	57.80	63.80	67.82	741.14
Bottom of sump (feet BTOS)	51.80	57.80	63.80	67.82	73.00
Diameter of sump (feet)	6	6	6	6	6

Date	*Time of Measurement (hh:mm)*	*Water Level feet (BTOS)*	*Water Depth feet (BTOS)*	*Water Depth After Pumping (feet)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
12/31/11	--	--	--	--	--	*423*	*Sump accumulation accounted for in 2011 that had not yet been pumped*
1/1/12	--	--	--	--	--	--	
1/2/12	--	--	--	--	--	--	
1/3/12	12:13	70.1	2.9	--	--	--	
1/4/12	12:34	70.1	2.9	--	--	--	
1/5/12	9:47	70.1	2.9	--	--	--	
1/6/12	8:34	70.0	3.0	--	--	--	
1/7/12	9:27	70.0	3.0	--	--	--	
1/8/12	11:16	70.0	3.0	--	--	--	
1/9/12	8:26	70.0	3.0	--	--	--	
1/10/12	3:47	70.0	3.0	--	--	--	
1/11/12	1:35	69.9	3.1	--	--	--	
1/12/12	2:07	69.9	3.1	--	--	--	
1/13/12	1:16	69.9	3.1	--	--	--	
1/14/12	--	--	--	--	--	--	-
1/15/12	--	--	--	--	--	--	-
1/16/12	2:24	69.9	3.1	--	--	--	
1/17/12	1:36	69.8	3.2	--	--	--	
1/18/12	8:37	69.8	3.2	--	--	--	
1/19/12	2:26	69.8	3.2	--	--	--	
1/20/12	1:49	69.8	3.2	--	--	--	
1/21/12	--	--	--	--	--	--	-
1/22/12	10:37	69.8	3.2	--	--	--	
1/23/12	1:15	69.8	3.2	--	--	--	
1/24/12	2:06	69.8	3.2	--	--	--	CRA sampled today
1/25/12	2:58	69.8	3.2	--	--	--	
1/26/12	9:36	69.8	3.2	--	--	--	
1/27/12	1:24	69.7	3.3	--	--	--	
1/28/12	--	--	--	--	--	--	-
1/29/12	--	--	--	--	--	--	-
1/30/12	8:51	69.7	3.3	--	--	--	
1/31/12	12:11	69.7	3.3	--	--	--	
2/1/12	12:02	69.7	3.3	--	--	--	
2/2/12	12:17	69.7	3.3	--	--	--	
2/3/12	9:42	69.7	3.3	--	--	--	
2/4/12	--	--	--	--	--	--	-
2/5/12	--	--	--	--	--	--	-
2/6/12	10:48	69.7	3.3	--	--	--	
2/7/12	1:34	69.7	3.3	72.50	-2.80	-592	Pumped 30 mins; Pump size 2"
2/8/12	11:17	70.0	3.0	72.50	-2.50	-529	Pumped 25 mins; Pump size 2"
2/9/12	2:07	71.6	1.4	72.50	-0.90	-190	Pumped 10 mins; pump size 2"
2/10/12	11:34	72.3	0.7	--	--	--	
2/11/12	--	--	--	--	--	--	-
2/12/12	--	--	--	--	--	--	-
2/13/12	1:30	71.6	1.4	--	--	--	
2/14/12	1:30	71.2	1.8	--	--	--	
2/15/12	10:00	71.0	2.0	--	--	--	
2/16/12	10:45	70.6	2.4	72.2	-1.60	-338	Pumped 12 mins; Pump size 2"
2/17/12	10:30	71.7	1.3	--	--	--	
2/18/12	--	--	--	--	--	--	-
2/19/12	--	--	--	--	--	--	-
2/20/12	11:45	70.7	2.3	72.3	-1.60	-338	Pumped for 16 mins; Pump size 2"
2/21/12	10:15	72.1	0.9	--	--	--	
2/22/12	9:30	71.9	1.1	--	--	--	
2/23/12	8:30	71.6	1.4	--	--	--	
2/24/12	7:30	71.4	1.6	--	--	--	
2/25/12	--	--	--	--	--	--	-
2/26/12	--	--	--	--	--	--	-
2/27/12	7:50	70.5	2.5	72.40	-1.90	-402	Pumped for 18 mins; Pump size 2"
2/28/12	7:30	72.2	0.8	--	--	--	
2/29/12	7:50	71.9	1.1	--	--	--	
3/1/12	7:15	71.6	1.4	--	--	--	36 degrees, sunny
3/2/12	7:15	71.3	1.7	--	--	--	43 degrees, sunny
3/3/12	--	--	--	--	--	--	-
3/4/12	--	--	--	--	--	--	-
3/5/12	7:43	70.8	2.2	--	--	--	
3/6/12	7:30	70.7	2.3	--	--	--	30 degrees, sunny
3/7/12	7:30	70.7	2.3	--	--	--	55 degrees, sunny, windy
3/8/12	9:45	70.6	2.4	--	--	--	55 degrees, rain; no pumping at CRA's request
3/9/12	7:30	70.5	2.5	--	--	--	37 degrees, sunny; no pumping at CRA's request

TABLE D.1.7

2012 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 9/20/10	9/21/10 to 9/22/10	9/23/10 to 9/1/11	9/2/11 to 9/10/11	new depth from 9/11/11
Top of sump (datum reference)	51.80	57.80	63.80	67.82	741.14
Bottom of sump (feet BTOS)	51.80	57.80	63.80	67.82	73.00
Diameter of sump (feet)	6	6	6	6	6

Date	*Time of Measurement (hh:mm)*	*Water Level feet (BTOS)*	*Water Depth feet (BTOS)*	*Water Depth After Pumping (feet)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
3/10/12	--	--	--	--	--	--	-
3/11/12	--	--	--	--	--	--	-
3/12/12	8:15	70.4	2.6	--	--	--	57 degrees, rain; no pumping at CRA's request
3/13/12	8:00	70.3	2.7	--	--	--	59 degrees, sunny; no pumping at CRA's request
3/14/12	8:00	70.3	2.7	--	--	--	46 degrees, sunny; no pumping at CRA's request
3/15/12	9:30	70.3	2.7	--	--	--	64 degrees, cloudy; no punmping at CRA's request
3/16/12	8:14	70.2	2.8	71.50	-1.30	-275	54 degrees, cloudy; CRA requested level
3/17/12	--	--	--	--	--	--	
3/18/12	--	--	--	--	--	--	
3/19/12	7:45	71.0	2.0	--	--	--	61 degrees, cloudy
3/20/12	9:30	71.0	2.0	--	--	--	64 degrees, sunny
3/21/12	7:30	70.9	2.1	--	--	--	63 degrees, sunny
3/22/12	7:30	70.8	2.2	--	--	--	63 degrees, cloudy
3/23/12	8:30	70.8	2.2	--	--	--	63 degrees, rain
3/24/12	--	--	--	--	--	--	-
3/25/12	--	--	--	--	--	--	-
3/26/12	8:15	70.6	2.4	--	--	--	63 degrees, sunny
3/27/12	7:30	70.5	2.5	--	--	--	39 degrees, cloudy
3/28/12	9:30	70.5	2.5	--	--	--	64 degrees, sunny
3/29/12	9:00	70.5	2.5	--	--	--	46 degrees, sunny
3/30/12	8:00	70.5	2.5	--	--	--	51 degrees, sunny
3/31/12	--	--	--	--	--	--	-
4/1/12	--	--	--	--	--	--	-
4/2/12	12:00	70.4	2.6	--	--	--	
4/3/12	12:00	70.3	2.7	--	--	--	
4/4/12	8:30	70.3	2.7	--	--	--	
4/5/12	9:00	70.3	2.7	--	--	--	
4/6/12	--	--	--	--	--	--	-
4/7/12	--	--	--	--	--	--	-
4/8/12	--	--	--	--	--	--	-
4/9/12	1:00	70.75	2.3	--	--	--	
4/10/12	10:00	70.75	2.3	--	--	--	
4/11/12	10:00	70.75	2.3	--	--	--	
4/12/12	10:00	70.75	2.3	--	--	--	
4/13/12	10:00	70.45	2.6	70.75	-0.30	-63	Pumped; Pump size 2"
4/14/12	--	--	--	--	--	--	-
4/15/12	--	--	--	--	--	--	-
4/16/12	12:00	70.75	2.3	--	--	--	
4/17/12	10:00	70.6	2.4	--	--	--	
4/18/12	10:00	70.5	2.5	--	--	--	
4/19/12	9:30	70.4	2.6	--	--	--	
4/20/12	9:30	70.3	2.7	--	--	--	
4/21/12	--	--	--	--	--	--	-
4/22/12	--	--	--	--	--	--	-
4/23/12	8:00	70.3	2.7	--	--	--	
4/24/12	1:45	70.1	2.9	71.75	-1.65	-349	Pumped into leachate collections
4/25/12	10:30	71.4	1.6	--	--	--	
4/26/12	10:00	71.3	1.7	--	--	--	
4/27/12	8:00	71.3	1.7	--	--	--	
4/28/12	--	--	--	--	--	--	-
4/29/12	--	--	--	--	--	--	-
4/30/12	7:30	71.2	1.8	--	--	--	
5/1/12	7:30	71.2	1.8	--	--	--	
5/2/12	8:00	71.2	1.8	--	--	--	
5/3/12	7:30	71.1	1.9	--	--	--	
5/4/12	7:30	71.1	1.9	--	--	--	
5/5/12	--	--	--	--	--	--	-
5/6/12	--	--	--	--	--	--	-
5/7/12	8:30	71.0	2.0	--	--	--	
5/8/12	9:00	71.0	2.0	--	--	--	
5/9/12	8:30	70.9	2.1	--	--	--	
5/10/12	8:00	70.9	2.1	--	--	--	
5/11/12	8:00	70.9	2.1	--	--	--	
5/12/12	--	--	--	--	--	--	
5/13/12	--	--	--	--	--	--	
5/14/12	10:00	70.8	2.2	--	--	--	
5/15/12	8:00	70.8	2.2	--	--	--	
5/16/12	7:30	70.75	2.3	--	--	--	
5/17/12	10:00	70.75	2.3	--	--	--	
5/18/12	7:30	70.7	2.3	--	--	--	

TABLE D.1.7

2012 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 9/20/10	9/21/10 to 9/22/10	9/23/10 to 9/1/11	9/2/11 to 9/10/11	new depth from 9/11/11
Top of sump (datum reference)	51.80	57.80	63.80	67.82	741.14
Bottom of sump (feet BTOS)	51.80	57.80	63.80	67.82	73.00
Diameter of sump (feet)	6	6	6	6	6

Date	*Time of Measurement (hh:mm)*	*Water Level feet (BTOS)*	*Water Depth feet (BTOS)*	*Water Depth After Pumping (feet)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
5/19/12	--	--	--	--	--	--	
5/20/12	--	--	--	--	--	--	
5/21/12	12:00	70.7	2.3	--	--	--	
5/22/12	7:30	70.6	2.4	--	--	--	
5/23/12	7:30	70.6	2.4	--	--	--	
5/24/12	7:30	70.6	2.4	--	--	--	
5/25/12	11:10	70.5	2.5	--	-1.50	-317	Pumped; Pump size 2"
5/26/12	--	--	--	--	--	--	
5/27/12	--	--	--	--	--	--	
5/28/12	--	--	--	--	--	--	
5/29/12	8:00	72.0	1.0	--	--	--	
5/30/12	7:30	71.95	1.1	--	--	--	
5/31/12	7:30	71.9	1.1	--	--	--	
6/1/12	7:30	71.85	1.2	--	--	--	
6/2/12	--	--	--	--	--	--	
6/3/12	--	--	--	--	--	--	
6/4/12	7:30	71.8	1.2	--	--	--	
6/5/12	7:30	71.75	1.3	--	--	--	
6/6/12	10:30	71.75	1.3	--	--	--	
6/7/12	7:30	71.7	1.3	--	--	--	
6/8/12	7:30	71.7	1.3	--	--	--	
6/9/12	--	--	--	--	--	--	
6/10/12	--	--	--	--	--	--	
6/11/12	7:30	71.6	1.4	--	--	--	
6/12/12	7:30	71.6	1.4	--	--	--	
6/13/12	7:30	71.6	1.4	--	--	--	
6/14/12	7:30	71.55	1.5	--	--	--	
6/15/12	7:30	71.5	1.5	--	--	--	
6/16/12	--	--	--	--	--	--	
6/17/12	--	--	--	--	--	--	
6/18/12	7:30	71.45	1.6	--	--	--	
6/19/12	7:30	71.4	1.6	--	--	--	
6/20/12	7:30	71.4	1.6	--	--	--	
6/21/12	7:30	71.35	1.7	--	--	--	
6/22/12	7:30	71.35	1.7	--	--	--	
6/23/12	--	--	--	--	--	--	
6/24/12	--	--	--	--	--	--	
6/25/12	7:30	71.4	1.6	--	--	--	
6/26/12	7:30	71.35	1.7	--	--	--	
6/27/12	7:30	71.35	1.7	--	--	--	
6/28/12	6:30	71.35	1.7	--	--	--	
6/29/12	6:30	71.35	1.7	--	--	--	
6/30/12	--	--	--	--	--	--	
7/1/12	--	--	--	--	--	--	
7/2/12	6:45	71.35	1.7	--	--	--	
7/3/12	6:30	71.35	1.7	--	--	--	
7/4/12	--	--	--	--	--	--	
7/5/12	--	--	--	--	--	--	
7/6/12	--	--	--	--	--	--	
7/7/12	--	--	--	--	--	--	
7/8/12	--	--	--	--	--	--	
7/9/12	6:30	71.2	1.8	--	--	--	
7/10/12	7:30	71.2	1.8	--	--	--	
7/11/12	7:30	71.3	1.7	--	--	--	
7/12/12	7:30	71.3	1.7	--	--	--	
7/13/12	7:30	71.3	1.7	--	--	--	
7/14/12	--	--	--	--	--	--	
7/15/12	--	--	--	--	--	--	
7/16/12	7:30	71.3	1.7	--	--	--	
7/17/12	7:30	71.3	1.7	--	--	--	
7/18/12	10:15	71.3	1.7	--	--	--	
7/19/12	7:30	71.25	1.8	--	--	--	
7/20/12	6:30	71.2	1.8	--	--	--	
7/21/12	--	--	--	--	--	--	
7/22/12	--	--	--	--	--	--	
7/23/12	6:30	71.15	1.8	--	--	--	
7/24/12	7:00	71.15	1.8	--	--	--	
7/25/12	6:30	71.15	1.8	--	--	--	
7/26/12	6:30	71.15	1.8	--	--	--	
7/27/12	7:00	71.10	1.9	--	--	--	

TABLE D.1.7

2012 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 9/20/10	9/21/10 to 9/22/10	9/23/10 to 9/1/11	9/2/11 to 9/10/11	new depth from 9/11/11
Top of sump (datum reference)	51.80	57.80	63.80	67.82	741.14
Bottom of sump (feet BTOS)	51.80	57.80	63.80	67.82	73.00
Diameter of sump (feet)	6	6	6	6	6

Date	*Time of Measurement (hh:mm)*	*Water Level feet (BTOS)*	*Water Depth feet (BTOS)*	*Water Depth After Pumping (feet)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
7/28/12	--	--	--	--	--	--	
7/29/12	--	--	--	--	--	--	
7/30/12	6:30	71.05	2.0	--	--	--	
7/31/12	6:30	71.05	2.0	--	--	--	
8/1/12	6:30	71.05	2.0	--	--	--	
8/2/12	7:00	71.0	2.0	--	--	--	
8/3/12	7:00	71.0	2.0	--	--	--	
8/4/12	--	--	--	--	--	--	
8/5/12	--	--	--	--	--	--	
8/6/12	7:30	70.95	2.1	--	--	--	
8/7/12	9:00	70.95	2.1	--	--	--	
8/8/12	10:15	71.0	2.0	--	--	--	
8/9/12	8:15	70.9	2.1	--	--	--	
8/10/12	7:30	70.85	2.2	--	--	--	
8/11/12	--	--	--	--	--	--	
8/12/12	--	--	--	--	--	--	
8/13/12	1:45	70.8	2.2	--	--	--	
8/14/12	8:00	70.8	2.2	--	--	--	
8/15/12	8:00	70.8	2.2	--	--	--	
8/16/12	8:00	70.8	2.2	--	--	--	
8/17/12	1:30	70.75	2.3	--	--	--	
8/18/12	--	--	--	--	--	--	
8/19/12	--	--	--	--	--	--	
8/20/12	8:00	70.7	2.3	--	--	--	
8/21/12	12:00	70.7	2.3	--	--	--	
8/22/12	7:30	70.7	2.3	--	--	--	
8/23/12	7:30	70.7	2.3	--	--	--	
8/24/12	7:30	70.65	2.3	--	--	--	
8/25/12	--	--	--	--	--	--	
8/26/12	--	--	--	--	--	--	
8/27/12	1:30	70.6	2.4	--	--	--	
8/28/12	7:30	70.6	2.4	--	--	--	
8/29/12	1:20	70.6	2.4	72.20	-1.60	-338	Pumped into leachate collections
8/30/12	11:00	72.0	1.0	--	--	--	
8/31/12	9:00	71.8	1.2	--	--	--	
9/1/12	--	--	--	--	--	--	
9/2/12	--	--	--	--	--	--	
9/3/12	9:30	71.7	1.3	--	--	--	
9/4/12	8:00	71.7	1.3	--	--	--	
9/5/12	7:30	71.7	1.3	--	--	--	
9/6/12	8:00	71.6	1.4	--	--	--	
9/7/12	7:30	71.6	1.4	--	--	--	
9/8/12	--	--	--	--	--	--	
9/9/12	--	--	--	--	--	--	
9/10/12	8:30	71.55	1.5	--	--	--	
9/11/12	7:45	71.55	1.5	--	--	--	
9/12/12	7:45	71.55	1.5	--	--	--	
9/13/12	8:00	71.55	1.5	--	--	--	
9/14/12	7:30	71.55	1.5	--	--	--	
9/15/12	--	--	--	--	--	--	
9/16/12	--	--	--	--	--	--	
9/17/12	8:00	71.5	1.5	--	--	--	
9/18/12	8:00	71.5	1.5	--	--	--	
9/19/12	7:45	71.45	1.6	--	--	--	
9/20/12	8:00	71.4	1.6	--	--	--	
9/21/12	7:45	71.4	1.6	--	--	--	
9/22/12	--	--	--	--	--	--	
9/23/12	--	--	--	--	--	--	
9/24/12	8:00	71.4	1.6	--	--	--	
9/25/12	1:00	71.35	1.7	--	--	--	
9/26/12	12:00	71.35	1.7	--	--	--	
9/27/12	8:30	71.35	1.7	--	--	--	
9/28/12	2:45	71.3	1.7	--	--	--	
9/29/12	--	--	--	--	--	--	
9/30/12	--	--	--	--	--	--	
10/1/12	9:00	71.3	1.7	--	--	--	
10/2/12	12:00	71.25	1.8	--	--	--	
10/3/12	8:00	71.2	1.8	--	--	--	
10/4/12	8:30	71.2	1.8	--	--	--	
10/5/12	8:15	71.2	1.8	--	--	--	

TABLE D.1.7

2012 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
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Monitoring Location Information

	depth until 9/20/10	9/21/10 to 9/22/10	9/23/10 to 9/1/11	9/2/11 to 9/10/11	new depth from 9/11/11
Top of sump (datum reference)	51.80	57.80	63.80	67.82	741.14
Bottom of sump (feet BTOS)	51.80	57.80	63.80	67.82	73.00
Diameter of sump (feet)	6	6	6	6	6

Date	*Time of Measurement (hh:mm)*	*Water Level feet (BTOS)*	*Water Depth feet (BTOS)*	*Water Depth After Pumping (feet)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
10/6/12	--	--	--	--	--	--	
10/7/12	--	--	--	--	--	--	
10/8/12	8:00	71.15	1.8	--	--	--	
10/9/12	8:30	71.15	1.8	--	--	--	
10/10/12	8:00	71.15	1.8	--	--	--	
10/11/12	3:00	71.1	1.9	--	--	--	
10/12/12	10:15	71.1	1.9	--	--	--	
10/13/12	--	--	--	--	--	--	
10/14/12	--	--	--	--	--	--	
10/15/12	8:00	71.1	1.9	--	--	--	
10/16/12	8:45	71.05	2.0	--	--	--	
10/17/12	8:00	71.05	2.0	--	--	--	
10/18/12	9:30	71.0	2.0	--	--	--	
10/19/12	8:30	71.0	2.0	--	--	--	
10/20/12	--	--	--	--	--	--	
10/21/12	--	--	--	--	--	--	
10/22/12	2:45	71.0	2.0	--	--	--	
10/23/12	8:15	71.0	2.0	--	--	--	
10/24/12	8:15	70.95	2.1	--	--	--	
10/25/12	8:00	70.95	2.1	--	--	--	
10/26/12	9:30	70.95	2.1	--	--	--	
10/27/12	--	--	--	--	--	--	
10/28/12	--	--	--	--	--	--	
10/29/12	9:00	70.95	2.1	--	--	--	
10/30/12	12:00	70.9	2.1	--	--	--	
10/31/12	8:15	70.9	2.1	--	--	--	
11/1/12	8:00	70.9	2.1	--	--	--	
11/2/12	8:00	70.9	2.1	--	--	--	
11/3/12	--	--	--	--	--	--	
11/4/12	--	--	--	--	--	--	
11/5/12	8:00	70.85	2.2	--	--	--	
11/6/12	8:00	70.85	2.2	--	--	--	
11/7/12	8:00	70.85	2.2	--	--	--	
11/8/12	8:00	70.85	2.2	--	--	--	
11/9/12	8:00	70.8	2.2	--	--	--	
11/10/12	--	--	--	--	--	--	
11/11/12	--	--	--	--	--	--	
11/12/12	2:30	70.8	2.2	--	--	--	
11/13/12	1:30	70.8	2.2	--	--	--	
11/14/12	12:00	70.8	2.2	--	--	--	
11/15/12	1:45	70.8	2.2	--	--	--	
11/16/12	10:48	70.75	2.3	--	--	--	
11/17/12	--	--	--	--	--	--	
11/18/12	--	--	--	--	--	--	
11/19/12	2:28	70.7	2.3	--	--	--	
11/20/12	9:38	70.7	2.3	--	--	--	
11/21/12	1:51	70.7	2.3	--	--	--	
11/22/12	1:30	70.7	2.3	--	--	--	
11/23/12	1:23	70.7	2.3	--	--	--	
11/24/12	--	--	--	--	--	--	
11/25/12	--	--	--	--	--	--	
11/26/12	1:30	70.65	2.3	--	--	--	
11/27/12	1:00	70.65	2.3	--	--	--	
11/28/12	1:00	70.65	2.3	--	--	--	
11/29/12	11:30	70.65	2.3	--	--	--	
11/30/12	1:00	70.65	2.3	--	--	--	
12/1/12	--	--	--	--	--	--	
12/2/12	--	--	--	--	--	--	
12/3/12	12:30	70.65	2.3	--	--	--	
12/4/12	1:00	70.65	2.3	--	--	--	
12/5/12	4:30	70.65	2.3	--	--	--	
12/6/12	4:30	70.6	2.4	--	--	--	
12/7/12	12:30	70.55	2.5	--	--	--	
12/8/12	10:00	70.5	2.5	72.20	-1.70	-360	Pumped into leachate collections
12/9/12	--	--	--	--	--	--	
12/10/12	1:00	71.9	1.1	--	--	--	
12/11/12	2:30	71.8	1.2	--	--	--	
12/12/12	1:59	71.75	1.3	--	--	--	
12/13/12	11:26	71.7	1.3	--	--	--	
12/14/12	11:06	71.7	1.3	--	--	--	

TABLE D.1.7

2012 LDS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until 9/20/10	9/21/10 to 9/22/10	9/23/10 to 9/1/11	9/2/11 to 9/10/11	new depth from 9/11/11
Top of sump (datum reference)	51.80	57.80	63.80	67.82	741.14
Bottom of sump (feet BTOS)	51.80	57.80	63.80	67.82	73.00
Diameter of sump (feet)	6	6	6	6	6

Date	*Time of Measurement (hh:mm)*	*Water Level feet (BTOS)*	*Water Depth feet (BTOS)*	*Water Depth After Pumping (feet)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
12/15/12	--	--	--	--	--	--	
12/16/12	--	--	--	--	--	--	
12/17/12	10:06	71.65	1.3	--	--	--	
12/18/12	11:17	71.6	1.4	--	--	--	
12/19/12	8:50	71.6	1.4	--	--	--	
12/20/12	9:27	71.6	1.4	--	--	--	
12/21/12	12:58	71.6	1.4	--	--	--	
12/22/12	--	--	--	--	--	--	
12/23/12	--	--	--	--	--	--	
12/24/12	10:43	71.55	1.5	--	--	--	
12/25/12	9:43	71.55	1.5	--	--	--	
12/26/12	10:43	71.55	1.5	--	--	--	
12/27/12	9:34	71.5	1.5	--	--	--	
12/28/12	11:25	71.5	1.5	--	--	--	
12/29/12	1:10	71.5	1.5	--	--	--	
12/30/12	2:35	71.5	1.5	--	--	--	
12/31/12	11:23	71.4	1.6	--	-0.5	-106	Sump accumulation since final 2012 pumping on 12/8/2012
	Minimum	69.7	0.7				
	Maximum	72.3	3.3				
	Mean	70.9	2.1				
	Pumping Events				13		
	Total Volume Pumped (gallons)					-3,775	

Note: Data was compiled in accordance with prior annual reports.
No measurements were made most weekends or on holidays.

APPENDIX D.2

SUMMARY OF LDS SUMP SAMPLE RESULTS

TABLE D.2

LEAK DETECTION SYSTEM MONITORING ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area		*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location		*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*
Sample Identification		*WL-AOI7-083006-TP-21363*	*WL-AOI7-091306-MD-21379*	*WL-AOI7-092806-AH-21414*	*WL-AOI7-101706-AH-21561*	*WL-AOI7-110906-MD-21638*	*WL-AOI7-122006-MD-21660*	*WL-AOI7-011807-MD-21749*	*WL-AOI7-022107-AH-21816*	*WL-AOI7-032007-MD-21860*	*WL-AOI7-041207-AH-31012*	*WL-AOI7-050907-AH-31076*	*WL-AOI7-062007-AH-31113*	*WL-AOI7-073107-AH-31160*	*WL-AOI7-083007-AH-31231*
Sample Date		*8/30/2006*	*9/13/2006*	*9/28/2006*	*10/17/2006*	*11/9/2006*	*12/20/2006*	*1/18/2007*	*2/21/2007*	*3/20/2007*	*4/12/2007*	*5/9/2007*	*6/20/2007*	*7/31/2007*	*8/30/2007*
	Units														
PCBs															
Aroclor-1016 (PCB-1016)	ug/L	10 U	0.20 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U
Aroclor-1221 (PCB-1221)	ug/L	10 U	0.20 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U
Aroclor-1232 (PCB-1232)	ug/L	10 U	0.20 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U
Aroclor-1242 (PCB-1242)	ug/L	10 U	3.8	1.0 U	2.5	0.20 U	3.3	3.8	0.52	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	8.6
Aroclor-1248 (PCB-1248)	ug/L	40	0.20 U	1.0 U	0.20 U	2.4	0.20 U	0.20 U	0.20 U	0.20 U	0.38	0.31	1.0	0.16 J	1.0 U
Aroclor-1254 (PCB-1254)	ug/L	10 U	0.20 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U
Aroclor-1260 (PCB-1260)	ug/L	10 U	0.20 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.37	0.20 U	1.0 U
Total PCBs	ug/L	40	3.8	0	2.5	2.4	3.3	3.8	0.52	0	0.38	0.31	1.37	0.16 J	8.6
Field Parameters															
Conductivity Field	mS/cm	0.894	1.604	--	0.055	--	--	--	--	--	--	--	--	--	--
pH Field	s.u.	8.18	6.86	--	6.6	--	--	--	--	--	--	--	--	--	--

Notes:
ND - Non-detect
U - Not present at or above the associated value.
J - Estimated concentration.
R - Rejected

TABLE D.2

LEAK DETECTION SYSTEM MONITORING ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area		*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location		*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*
Sample Identification		*WL-AOI7-092407-AH-31254*	*WL-AOI7-102407-AH-31304*	*WL-AOI7-111507-AH-31390*	*WL-AOI7-122007-JN-31510*	*WL-AOI7-013008-AH-31659*	*WL-AOI7-022708-CH-31675*	*WL-AOI7-022708-CH-31676*	*WL-AOI7-032808-CH-31713*	*WL-AOI7-042908-MB-27611*	*WL-AOI7-052708-MB-31840*	*WL-AOI7-062408-MB-27729*	*WL-AOI7-072908-MB-31982*	*WL-AOI7-082508-MB-37007*	*WL-AOI7-091508-MB-37009*
Sample Date		*9/24/2007*	*10/24/2007*	*11/15/2007*	*12/20/2007*	*1/30/2008*	*2/27/2008*	*2/27/2008*	*3/28/2008*	*4/29/2008*	*5/27/2008*	*6/24/2008*	*7/29/2008*	*8/25/2008*	*9/15/2008*
	Units														
PCBs															
Aroclor-1016 (PCB-1016)	ug/L	1.0 U	0.20 U	0.20 U	2.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	2.0 U	0.20 U
Aroclor-1221 (PCB-1221)	ug/L	1.0 U	0.20 U	0.20 U	2.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	2.0 U	0.20 U
Aroclor-1232 (PCB-1232)	ug/L	1.0 U	0.20 U	0.20 U	2.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	2.0 U	0.20 U
Aroclor-1242 (PCB-1242)	ug/L	4.7	0.20 U	3.8	16	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.31	0.20 U	8.3	11	0.20 U
Aroclor-1248 (PCB-1248)	ug/L	1.0 U	0.20 U	0.20 U	2.0 U	0.47	0.23	0.13 J	0.20 U	0.20 U	0.20 U	0.14 J	1.0 U	2.0 U	0.61
Aroclor-1254 (PCB-1254)	ug/L	1.0 U	0.20 U	0.20 U	2.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	2.0 U	0.20 U
Aroclor-1260 (PCB-1260)	ug/L	1.0 U	0.20 U	0.20 U	2.5	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	2.4	0.20 U
Total PCBs	ug/L	4.7	0	3.8	18.5	0.47	0.23	0.13 J	0	0	0.31	0.14 J	8.3	13.4 J	0.61
Field Parameters															
Conductivity Field	mS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH Field	s.u.	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
ND - Non-detect
U - Not present at or above the associated value.
J - Estimated concentration.
R - Rejected

TABLE D.2

LEAK DETECTION SYSTEM MONITORING ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area		*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location		*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*
Sample Identification		*WL-AOI7-102108-MB-37049*	*WL-AOI7-111808-MB-37080*	*WL-AOI7-121608-MB-37173*	*WL-AOI7-012209-JN-37188*	*WL-AOI7-021309-JN-37190*	*WL-AOI7-032609-JN-39025*	*WL-AOI7-042909-JN-39056*	*WL-AOI7-052209-JN-39076*	*WL-AOI7-062409-JN-39101*	*WL-AOI7-072909-JN-39130*	*WL-AOI7-072909-JN-39131*	*WL-AOI7-082509-JN-39155*	*WL-AOI7-092809-JN-39180*	*WL-AOI7-092809-JN-39181*	*WL-AOI7-102609-JN-39205*
Sample Date		*10/21/2008*	*11/18/2008*	*12/16/2008*	*1/22/2009*	*2/13/2009*	*3/26/2009*	*4/29/2009*	*5/22/2009*	*6/24/2009*	*7/29/2009*	*7/29/2009 Duplicate*	*8/25/2009*	*9/28/2009*	*9/28/2009 Duplicate*	*10/26/2009*
	Units															
PCBs																
Aroclor-1016 (PCB-1016)	ug/L	0.20 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1221 (PCB-1221)	ug/L	0.20 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1232 (PCB-1232)	ug/L	0.20 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1242 (PCB-1242)	ug/L	0.20 U	5.7	8.0	0.20 U	0.20 U	0.20 U	4.1	5.5	11	31	22	40	43	5.8	2.4
Aroclor-1248 (PCB-1248)	ug/L	0.20 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1254 (PCB-1254)	ug/L	0.20 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1260 (PCB-1260)	ug/L	0.20 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.1	0.20 U	0.20 U	0.20 U
Total PCBs	ug/L	0	5.7	8	0	0	0	4.1	5.5	11	31	22	41.1	43	5.8	2.4
Field Parameters																
Conductivity Field	mS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH Field	s.u.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
ND - Non-detect
U - Not present at or above the associated value.
J - Estimated concentration.
R - Rejected

TABLE D.2

LEAK DETECTION SYSTEM MONITORING ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area		*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location		*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*
Sample Identification		*WL-AOI7-112309-JN-39230*	*WL-AOI7-112309-JN-39231*	*WL-AOI7-121509-KK-39257*	*WL-AOI7-012710-GS-39290*	*WL-AOI7-012710-GS-39291*	*WL-AOI7-022510-GS-39293*	*WL-AOI7-031710-GS-39337*	*WL-AOI7-042210-GS-39365*	*WL-AOI7-051810-GS-39384*	*WL-AOI7-061610-GS-39400*	*WL-AOI7-061610-GS-39401*	*WL-AOI7-070710-SM-39428*	*WL-AOI7-081110-GS-39450*	*WL-AOI7-091510-SM-39469*
Sample Date		*11/23/2009*	*11/23/2009*	*12/15/2009*	*1/27/2010*	*1/27/2010*	*2/25/2010*	*2/25/2010*	*4/22/2010*	*5/18/2010*	*6/16/2010*	*6/16/2010*	*7/7/2010*	*8/11/2010*	*9/15/2010*
			Duplicate			*Duplicate*						*Duplicate*			
	Units														
PCBs															
Aroclor-1016 (PCB-1016)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1221 (PCB-1221)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1232 (PCB-1232)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1242 (PCB-1242)	ug/L	2.2	0.92	0.20 U	0.20 U	0.16 J	0.74	2.4	2.2	0.52	2.3	0.72	0.76	0.20 U	0.32
Aroclor-1248 (PCB-1248)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1254 (PCB-1254)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1260 (PCB-1260)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Total PCBs	ug/L	2.2	0.92	0	ND	0.16 J	0.74	2.4	2.2	0.52	2.3	0.72	0.76	ND	0.32
Field Parameters															
Conductivity Field	mS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH Field	s.u.	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
ND - Non-detect
U - Not present at or above the associated value.
J - Estimated concentration.
R - Rejected

TABLE D.2

LEAK DETECTION SYSTEM MONITORING ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area		*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location		*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*
Sample Identification		*WL-AOI7-101310-SM-39489*	*WL-AOI7-111710-SM-39515*	*WL-AOI7-121510-GS-39528*	*WL-AOI7-012611-GS-39559*	*WL-AOI7-022311-GS-39576*	*WL-AOI7-030911-GS-39588*	*WL-AOI7-042011-SM-39606*	*WL-AOI7-051111-SM-39623*	*WL-AOI7-060811-GS-39645*	*WL-AOI7-072711-GS-39674*	*WL-AOI7-081111-GS-39687*	*WL-AOI7-092711-GS-39713*	*WL-AOI7-102611-GS-39737*	*WL-AOI7-112211-GS-39756*
Sample Date		*10/13/2010*	*11/17/2010*	*12/15/2010*	*1/26/2011*	*2/23/2011*	*3/9/2011*	*4/20/2011*	*5/11/2011*	*6/8/2011*	*7/27/2011*	*8/11/2011*	*9/27/2011*	*10/26/2011*	*11/22/2011*
	Units														
PCBs															
Aroclor-1016 (PCB-1016)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U	0.20 U	0.95 U	0.20 U	0.20 U	0.20 U
Aroclor-1221 (PCB-1221)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U	0.20 U	0.95 U	0.20 U	0.20 U	0.20 U
Aroclor-1232 (PCB-1232)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U	0.20 U	0.95 U	0.20 U	0.20 U	0.20 U
Aroclor-1242 (PCB-1242)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.98	3.6	0.20 U	0.31	0.20 U	3.6	0.20 U	0.20 U	0.20 U
Aroclor-1248 (PCB-1248)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U	0.24	0.95 U	0.20 U	0.20 U	0.20 U
Aroclor-1254 (PCB-1254)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U	0.20 U	0.95 U	0.20 U	0.20 U	0.20 U
Aroclor-1260 (PCB-1260)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U	0.20 U	0.95 U	0.20 U	0.20 U	0.20 U
Total PCBs	ug/L	ND	ND	ND	ND	ND	0.98	3.6	ND	0.31	0.24	3.6	ND	ND	ND
Field Parameters															
Conductivity Field	mS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH Field	s.u.	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
ND - Non-detect
U - Not present at or above the associated value.
J - Estimated concentration.
R - Rejected

TABLE D.2

LEAK DETECTION SYSTEM MONITORING ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area		*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location		*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*
Sample Identification		*WL-AOI7-121511-GS-39765*	*WL-AOI7-012412-GS-39797*	*WL-AOI7-022212-GS-39817*	*WL-AOI7-032812-GS-39836*	*WL-AOI7-042412-GS-39846*	*WL-AOI7-052212-GS-39854*	*WL-AOI7-062612-GS-39865*	*WL-AOI7-071012-GS-39866*	*WL-AOI7-082112-GS-39879*	*WL-AOI7-092612-GS-39889*	*WL-AOI7-102912-GS-39910*	*WL-AOI7-102912-GS-39911*	*WL-AOI7-112012-GS-39914*	*WL-AOI7-121112-GS-39923*
Sample Date		*12/15/2011*	*1/24/2012*	*2/22/2012*	*3/28/2012*	*4/24/2012*	*5/22/2012*	*6/26/2012*	*7/10/2012*	*8/21/2012*	*9/26/2012*	*10/29/2012*	*10/29/2012 Duplicate*	*11/20/2012*	*12/11/2012*
	Units														
PCBs															
Aroclor-1016 (PCB-1016)	ug/L	0.20 U	0.20 U	3.8 U	9.5 U	0.21 U	0.19 U	1.0 U	1.1 U	9.5 U	0.95 U	0.19 U	0.19 U	R	0.20 U
Aroclor-1221 (PCB-1221)	ug/L	0.20 U	0.20 U	3.8 U	9.5 U	0.21 U	0.19 U	1.0 U	1.1 U	9.5 U	0.95 U	0.19 U	0.19 U	R	0.20 U
Aroclor-1232 (PCB-1232)	ug/L	0.20 U	0.20 U	3.8 U	9.5 U	0.21 U	0.19 U	1.0 U	1.1 U	9.5 U	0.95 U	0.19 U	0.19 U	R	0.20 U
Aroclor-1242 (PCB-1242)	ug/L	0.20 U	0.20 U	30	54	1.5	0.19 U	5.1	4.1	45	5.2	1.7	3.1	0.55 J	1.7
Aroclor-1248 (PCB-1248)	ug/L	0.20 U	0.20 U	3.8 U	9.5 U	0.21 U	3.0	1.0 U	1.1 U	9.5 U	0.95 U	0.19 U	0.19 U	R	0.20 U
Aroclor-1254 (PCB-1254)	ug/L	0.20 U	0.20 U	7.4	4.8 J	0.21 U	0.19 U	1.0 U	1.1 U	14	0.95 U	0.19 U	0.19 U	0.057 J	0.20 U
Aroclor-1260 (PCB-1260)	ug/L	0.20 U	0.20 U	3.8 U	9.5 U	0.063 J	0.21	1.0 U	0.28 J	9.5 U	0.23 J	0.12 J	0.22	R	0.060 J
Total PCBs	ug/L	ND	ND	37.4	58.8 J	1.563 J	3.21	5.1	4.38 J	59	5.43 J	1.82 J	3.32	0.607 J	1.76 J
Field Parameters															
Conductivity Field	mS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH Field	s.u.	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
ND - Non-detect
U - Not present at or above the associated value.
J - Estimated concentration.
R - Rejected

TABLE D.2

LEAK DETECTION SYSTEM MONITORING ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area		*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location		*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*	*EPA LDS*
Sample Identification		*WL-AOI7-012412-GS-39797*	*WL-AOI7-022212-GS-39817*	*WL-AOI7-032812-GS-39836*	*WL-AOI7-042412-GS-39846*	*WL-AOI7-052212-GS-39854*	*WL-AOI7-062612-GS-39865*	*WL-AOI7-071012-GS-39866*	*WL-AOI7-082112-GS-39879*	*WL-AOI7-092612-GS-39889*	*WL-AOI7-102912-GS-39910*	*WL-AOI7-102912-GS-39911*	*WL-AOI7-112012-GS-39914*	*WL-AOI7-121112-GS-39923*
Sample Date		*1/24/2012*	*2/22/2012*	*3/28/2012*	*4/24/2012*	*5/22/2012*	*6/26/2012*	*7/10/2012*	*8/21/2012*	*9/26/2012*	*10/29/2012*	*10/29/2012 Duplicate*	*11/20/2012*	*12/11/2012*
	Units													
PCBs														
Aroclor-1016 (PCB-1016)	ug/L	0.20 U	3.8 U	9.5 U	0.21 U	0.19 U	1.0 U	1.1 U	9.5 U	0.95 U	0.19 U	0.19 U	R	0.20 U
Aroclor-1221 (PCB-1221)	ug/L	0.20 U	3.8 U	9.5 U	0.21 U	0.19 U	1.0 U	1.1 U	9.5 U	0.95 U	0.19 U	0.19 U	R	0.20 U
Aroclor-1232 (PCB-1232)	ug/L	0.20 U	3.8 U	9.5 U	0.21 U	0.19 U	1.0 U	1.1 U	9.5 U	0.95 U	0.19 U	0.19 U	R	0.20 U
Aroclor-1242 (PCB-1242)	ug/L	0.20 U	30	54	1.5	0.19 U	5.1	4.1	45	5.2	1.7	3.1	0.55 J	1.7
Aroclor-1248 (PCB-1248)	ug/L	0.20 U	3.8 U	9.5 U	0.21 U	3.0	1.0 U	1.1 U	9.5 U	0.95 U	0.19 U	0.19 U	R	0.20 U
Aroclor-1254 (PCB-1254)	ug/L	0.20 U	7.4	4.8 J	0.21 U	0.19 U	1.0 U	1.1 U	14	0.95 U	0.19 U	0.19 U	0.057 J	0.20 U
Aroclor-1260 (PCB-1260)	ug/L	0.20 U	3.8 U	9.5 U	0.063 J	0.21	1.0 U	0.28 J	9.5 U	0.23 J	0.12 J	0.22	R	0.060 J
Total PCBs	ug/L	ND	37.4	58.8 J	1.563 J	3.21	5.1	4.38 J	59	5.43 J	1.82 J	3.32	0.607 J	1.76 J
Field Parameters														
Conductivity Field	mS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--
pH Field	s.u.	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
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APPENDIX D.3

LDS RESPONSE ACTION PLAN

SECTION D.3.1

LDS RESPONSE ACTION PLAN

The Mannik & Smith Group, Inc.
2365 Haggerty Road South • Canton, MI 48188 • Tel 734 397 3100 • Fax 734 397 3131
www.manniksmithgroup.com

October 20, 2006

Mr. Jim Pazderski
Sevenson Environmental Services, Inc.
2749 Lockport Road
Niagra Falls, NY 14302

RE: General Motors Corporation Powertrain Group
Bedford, IN Facility TSCA Vault
Leachate Detection System Response Action Plan

Dear Mr. Pazderski:

Per your request, please find attached the Leachate Detection System (LDS) Response Action Plan (RAP) the Mannik & Smith Group, Inc. (MSG) has prepared for the TSCA Vault located at General Motors (GM) Corporation's Bedford, Indiana facility. The RAP has been prepared to address the inadvertent discharge into the LDS. It is our understanding that during a maintenance operation, PCB-impacted shallow ground water from the vault's underdrain system was inadvertently allowed to backflow via an 8-inch diameter pipe line into the LDS 6-foot diameter, concrete manhole and mix with water in the LDS.

We have incorporated comments from GM and their consultant, Conestoga, Rovers and Associates, Inc. (CRA) and are providing the document to you for submittal to the United States Environmental Protection Agency (U.S. EPA). If you have any questions regarding this subject matter, please contact us at (734) 397-3100.

Sincerely,

Frank J. Biehl, P.E.
Project Manager

John S. Browning III, P.E.
Senior Vice-President

Attachments

S:\Projects\Projects P-T\S191B2\ADMINISTRATION\EMAIL\RAP Comments\FINAL.RAP.Comments.102006\LDSRAP final.102006.doc

Leachate Detection System Response Action Plan

I. Introduction

General Motors Corporation (GM) is undertaking Resource Conservation and Recovery Act (RCRA) Corrective Action at the GM Powertrain – Bedford Facility (Site) in Bedford, Lawrence County, Indiana under a Performance Based Agreement with U.S Environmental Protection Agency (U.S. EPA) Region V, signed on March 20, 2001 and amended October 1, 2002. This RCRA Corrective Action work includes construction of an on-Site vault to contain TSCA soils at the Site. The vault area is approximately 4 acres and has been designed to include a double composite liner system, including a leachate collection system (LCS), a leachate detection system (LDS), and an underdrain system. The LCS and LDS each incorporate a 6-foot diameter, concrete manhole for operational and maintenance purposes, as depicted in Figure 1, "Generalized Vault Cross Section". The LCS and LDS manholes are approximately fourteen (14) feet apart from each other.

Sevenson Environmental Services (SES) has been providing to GM construction services for the construction of the vault and maintenance services during its operation at the Site.

II. Situation

During a maintenance operation, PCB-impacted shallow ground water from the vault's underdrain system was inadvertently allowed to backflow via an 8-inch diameter pipe line into the LDS 6-foot diameter, concrete manhole and mix with water in the LDS. A schematic of this piping and valving arrangement is presented in Figure 2, "Schematic-Vault Discharge Pipes". This water has been removed from the LDS and a sample collected. Based on results from the sampling, this mixture of water inadvertently introduced into the LDS was impacted with PCBs at a concentration of 3.9 micrograms per liter (µg/L) (based on one sample). The Mannik & Smith Group, Inc. (MSG), on behalf of SES, has prepared this LDS Response Action Plan (RAP) to remove impacts to the LDS and rehabilitate the LDS so that it can be reliably used to detect leakage from the LCS in the future.

This RAP includes the following:

- a review and documentation of historical precedence;
- the approach SES and MSG plan to implement including characterization of LCS water (i.e. leachate), LDS water and ground water, flushing of the LDS manhole, and decontamination of the LDS manhole both before and after flushing;
- a detailed description of SES and MSG's plan to review, evaluate and report the data collected;
- a discussion of potential long term considerations; and
- within Appendix A, a conservative determination of the amount of water discharged into the LDS.

III. Precedence

MSG is aware of inadvertent discharges to LDS systems which have occurred at RCRA-hazardous waste landfills. In our experience these events are handled as part of routine maintenance with minimal fanfare. Clean out and maintenance of LCS and LDS sumps, including that associated with inadvertent discharges, is a routine part of landfill operation. The clean out and maintenance steps typically used for these routine operations have been incorporated within this RAP.

IV. Approach

SES and MSG are recommending a RAP approach that has been used at other sites where the LDS has been impacted due to a discharge into the LDS either directly (inadvertently via a LDS manhole or pipe) or indirectly (i.e. through a leak in the LCS). This approach includes a downhole inspection of the LDS

manhole through the use of a remote camera system (both before flushing and after LDS decontamination), cleaning of the manhole both before and after flushing, characterization of fluids, flushing multiple times, and decontamination.

Based on visual observations (of turbidity, color, etc.) made of the removed water we may consider the sealing of the lower section (i.e. bottom 5 to 6 feet) of the LDS manhole to prevent residual PCBs in the concrete from getting back into the LDS water after cleaning. However, given the low levels of impact and the short duration of impact this step may not be required.

Finally, the pumping configuration which resulted in the backflow of ground water into the LDS has been separated from the LCS and underdrain system to prevent future backflows from occurring.

A. Characterization of Leachate, LDS Water, and Ground Water

In MSG's experience, it is common to establish baseline water impacts associated with LCS and LDS sumps and monitor changes over time. This type of effort facilitates evaluation of and confidence in system integrity and maximizes understanding of the system. At a landfill facility, it is expected that LDS sump water will be impacted. Characterization samples of LCS leachate, upgradient ground water, underdrain ground water, and the LDS manhole water will be collected and analyzed for common indicator compounds to assess the quality of water/leachate and the potential origin, nature and degree of impacts (if any). Where possible, historical data will also be reviewed to identify historical discharge volumes, concentrations and trends in the water/leachate quality data.

A relatively simple and reliable method to evaluate potential leachate impact to ground water is to compare general chemistry and concentrations of metals in the leachate and underdrain ground water as these constituents may be significantly different.

The most common inorganic anions (in decreasing percentage) are bicarbonate, sulfate, and chloride. The most common inorganic cations in ground water (in decreasing percentage) are calcium, magnesium, sodium, and potassium.

Therefore, MSG proposes to collect samples of the leachate, upgradient ground water, underdrain ground water, the LDS water, and the remedial flushing water for analysis of the ions and anions listed above using the appropriate USEPA Solid Waste (SW)-846 Methods. Samples will be collected in a manner that will match the way they will be collected in the future. The leachate sample will be collected from the LCS. The background ground water samples will be collected from upgradient monitoring wells. The LDS water sample will be collected from the LDS manhole. The remedial flushing water will be sampled prior to its introduction into the LDS manhole. Potable municipal-supplied water will be used for the remedial flushing water. In addition to the ions and anions listed above, the samples will be analyzed for PCBs. The ion and anion concentrations will then be plotted to evaluate to differentiate their composition and origin (if possible).

In order to evaluate the effectiveness of the recommended remediation and provide data to support future assessment of potential leakage into the LDS from either the ground water or the leachate, MSG will collect the source characterization samples prior to removing the PCB-impacted water from the LDS manhole and after the remedial flushing has been completed.

B. LDS Flushing

Water collected in the LDS manhole is being monitored daily and continually removed as it accumulates. However, to insure the removal of any remaining impacted water from the LDS manhole, the following procedures will be conducted as outlined below:

Measure the static depth to water inside LDS manhole from the north edge of the manhole rim using a properly decontaminated electronic water level meter to the nearest 0.01 feet. Record the date and time of each water level measurement.

Place clean (non-PCB containing) submersible pump equipped with a clean hose of sufficient length within the LDS manhole. Obtain equipment rinse blank prior to placement of pump into LDS manhole. Remove the minimum equivalent of one pore volume (specific yield) of water from the LDS manhole (see Appendix A for the LDS water volume calculations).

To enhance the removal of any suspended sediment, any existing water should be removed as rapidly as possible using a clean (non-PCB containing) submersible pump equipped with a clean laboratory safe hose of sufficient length. Based on dimensions shown on the as-built drawings and a reported head of 4.6 feet (i.e. 4'7") measured from the bottom of the inside of the LDS manhole (at elevation 668.5), we have conservatively estimated the total volume of impacted ground water placed within the LDS manhole to be 9,032 gallons. Extracted water should be sampled to establish baseline water quality data at the beginning, middle, and near the end of the pumping period. During the pumping period, the flow rate, the pump start and end time, and sample times should be recorded. In conjunction with these steps, the LDS manhole will be cleaned both before and after flushing.

All samples, equipment blanks, field blanks, trip blanks and duplicate samples should be analyzed for PCBs using USEPA Method Reference Number 608. Samples will be collected with properly labeled and preserved laboratory supplied containers, recorded under strict chain-of-custody, and placed in an ice-packed cooler pending transport and submittal to a qualified laboratory for analysis of PCBs, metals, and the common cations and anions listed above. Samples will also be analyzed in the field for pH, temperature, conductivity and turbidity.

One sample will be filtered using a 0.45 µm filter to remove suspended sediments and one unfiltered sample from each time period will be analyzed. This is because PCBs are hydrophobic and more readily adsorb to suspended sediment. This will provide information of the chemical state of the water in the LDS with the data used to support future assessment of potential leakage into the LDS.

C. LDS Decontamination

The LDS manhole decontamination effort will consist of two subtasks, a clean water "surge" and removal effort and a confirmation sampling effort. The clean water surge and removal effort will consist of the following:

- To prevent sediment moving out of the LDS manhole area and surrounding gravel pack, clean water should be added to the leak detection manhole/vault at increments with progressively greater volumes, with each increment followed by the equilibration of the added water over a two hour period and followed in turn by the rapid removal of the water. If the water being removed has low turbidity, the water addition rate may be increased to promote re-suspension of sediment. MSG proposes that clean water volumes be introduced and removed at increments of 200 gallons up to 1,000 gallons and 1,000 gallons up to one pore volume or until the equivalent of one foot of head is measured within the manhole (per CFR 40 Parts 264 and 265). Remove purge water (which may be more than one pore volume or less) and properly dispose of the purge water.

- Repeat this process up to six additional times.

- Repeat this process up to three additional times utilizing a rapid addition and removal of the water for each flushing.

The confirmation sampling effort will consist of the following:

- After each volume of water is removed, representative confirmation samples will be obtained from the LDS manhole via sampling procedures that will match the way samples will be collected in the future.

- Verification samples will be analyzed for PCBs using USEPA Method 608. For each round of sampling, one sample will be filtered via 0.45 µm to remove suspended sediments and one unfiltered sample will be analyzed. This is because PCBs, which are hydrophobic, more readily adsorb to suspended sediment. This will provide information of the chemical state of the water in the LDS.

- Once the sample results indicate that the PCBs have been purged from the LDS, additional samples will be collected weekly for four weeks, quarterly for 1 year and semi-annually for the second year and analyzed for PCBs. If PCBs are detected in any of the follow-up samples, this RAP will be modified to perform additional activities to remediate the LDS.

V. Potential Long Term Concerns

The primary purpose of an LDS sump is to monitor water quantity, not quality. At a landfill facility, it is expected that the LDS sump water will be impacted. Water quality is monitored solely to detect any significant changes or events as a proactive effort to manage the facility. It is not expected that water quantity would fluctuate significantly. This protocol demonstrates that the purpose of the LDS is not compromised.

The greatest potential long term concern is that the effectiveness of the LDS to identify an exceedance of the vault's defined action leak rate may have been compromised due to inadvertent discharge into the LDS. This is primarily due to the concern that the water introduced into the system is impacted and that the resultant water impacts can not be effectively removed from the LDS. This may lead to PCB detections in the LDS which do not represent PCB leakage through the primary liner. Evaluation of these concerns, which can be done by identifying the potential sources of water within the LDS is not addressed since the focus of this plan is to address the flushing and decontamination of the LDS.

VI. Data Review, Evaluation and Reporting

After completion of Sections IV.A through IV.C field activities, MSG will prepare an LDS Status Verification Report. The LDS Status Verification Report will summarize the removal and cleaning activities performed at the site; sampling procedures; the analytical results from sampling activities, including comparisons to the appropriate cleanup criteria (non-detectable with defined minimum detection limits); and recommendations for further activities (if appropriate).

The LDS Status Verification Report will include the following items:

- Description of activities completed as described in Sections IV.A through IV.C.
- A description of the methodologies used during water sample collection and laboratory analytical testing.
- A table summarizing the chemical testing parameters, analytical testing methods and chemical concentrations for samples collected. Laboratory analytical data and QA/QC data will be included as Appendices in the report.
- A description of methods used for statistical analysis of samples (if required).

- A discussion summarizing the results of statistical analysis of chemical constituents for samples collected at the site.
- A summary of findings and conclusions and any recommendations relative to the work implemented.
- All data developed during the characterization of the LDS.
- A description of the nature and extent of any remaining impact, including:
    1. Specific impact concentrations and the distribution of impact.
    2. Pathways of impact migration.

MSG will submit two (2) complete copies each of the Draft LDS Status Verification Report, which will include all of the items above, to GM, CRA and SES. After incorporating comments, MSG will submit four (4) copies of the final LDS Status Verification Report to GM, with two copies each provided to CRA and SES. Final reports will be submitted to U.S. EPA by GM.

APPENDIX A

VOLUME OF WATER IN LDS
THE MANNIK & SMITH GROUP, INC.

CALCULATION PACKAGE	
PROJECT NO.: S191B2	
PROJECT NAME: GM Powertrain Bedford, IN Landfill	
CALCULATED BY: Frank Biehl	**DATE:** 09/21, rev 9/25/06
CHECKED BY:	**DATE:**
SUBJECT: Volume of water in LDS	

CONTENTS

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I. INTRODUCTION

Turbid, PCB impacted water from the vault's underdrain system was inadvertently allowed to backflow via an 8-inch discharge line into the leak detection system (LDS) 6-foot diameter concrete manhole. Based on results from sampling this water is impacted with PCBs at a concentration of 3.9 micrograms per liter.

This calculation package is being provided as part of the Response Action Plan (RAP) and consists of a conservative determination of the volume of water discharged into the LDS.

II. REFERENCES

1. Four electronic mail messages, each dated September 21, 2006, from Jim Pazderski of SES to John Browning of MSG with various attachments (containing drawings and material specifications of/for the GM Powertrain Bedford, IN vault).

III. APPROACH

Use landfill drawing references provided to calculate the volume of water introduced into the LDS. Use conservative assumptions to assist in volume determination. Volume of water in LDS will be conservatively based on a water level of 673.1 (668.5 + 4'7" or 4.6) measured in LDS 6-foot diameter concrete manhole (as confirmed by J. Daniel (CRA) e-mail dated 9/25/06) upon discovery of the water within the manhole.

Conservatively assume:

1. Measured maximum water level of 673.1 is based on static conditions.
2. Volume of void space in geonet is not reduced due to overburden pressure.
3. Water in LDS not adsorbed by clay in primary compacted clay liner.
4. Volume of water consists of volume in LDS manhole, volume in LDS gravel-filled sump and volume in LDS geonet (up to elevation 673.1).
5. Bottom of LDS sump is flat.
6. Although sump is round, assume it is rectangular for estimation purposes (alternatively for more accurate determination of volume, use drawings in lieu of PDF files with triangulation modeling to determine actual volumes instead of conservative estimate).
7. Gravel porosity is 0.35.
8. Area of vault up to elevation 673.1 (maximum water level recorded).
9. Geonet porosity is 0.90.

IV. CALCULATION & RESULTS

<u>Volume of Water in LDS Manhole</u>

Volume of water in LDS manhole = (Height of water)(area of manhole)
Volume in LDS manhole = (673.1 – 668.5*)([(pi)(6 feet)^2]/4) (7.48 gallons/1 ft^3) = **972.82 gallons**

* 668.5 foot elevation is LDS low point in sump manhole as identified by J. Daniel (CRA) email dated 9/25/06.

<u>Volume of Water in Sump</u>

Volume of water in Sump = (volume of sump*)(porosity of gravel) – (total volume of LDS manhole within sump)

* Use CRA Dwg. No. C-11 with Sheet 1 of 1 from Bledsoe, Riggert & Guerrettaz (BRG) titled "As-built Top and Toe of Structural Clay, dated March 24, 2006" to determine volume of sump. From drawing top of sump is at elevation 669.5 and total width of sump from Section D on CRA Sheet No. C-11 is 18 feet. From BRG drawing, conservative total length of sump at elevation 669.5 is 90 feet. Conservatively assume bottom of sump is flat

Sump volume = (1/2)(4 ft width)(2 ft height)(90 ft length) + (1/2)(8 ft width)(2 ft height)(90 ft. length) + (6 ft width)(2 ft height)(90 ft length) = 2,160 ft^3 = 16,156.8 gallons

Total volume of LDS manhole within sump = (2 ft height)([(pi)(6 feet)^2]/4) (7.48 gallons/1 ft^3) = 422.75 gallons

Volume of water in Sump = (16,156.8 gallons)(0.35) – (422.75 gallons) = **5,232.13 gallons**

Volume of Water in Geonet

Volume of water in geonet = (area of vault up to elevation 673.1)(thickness of geonet)(porosity of geonet)

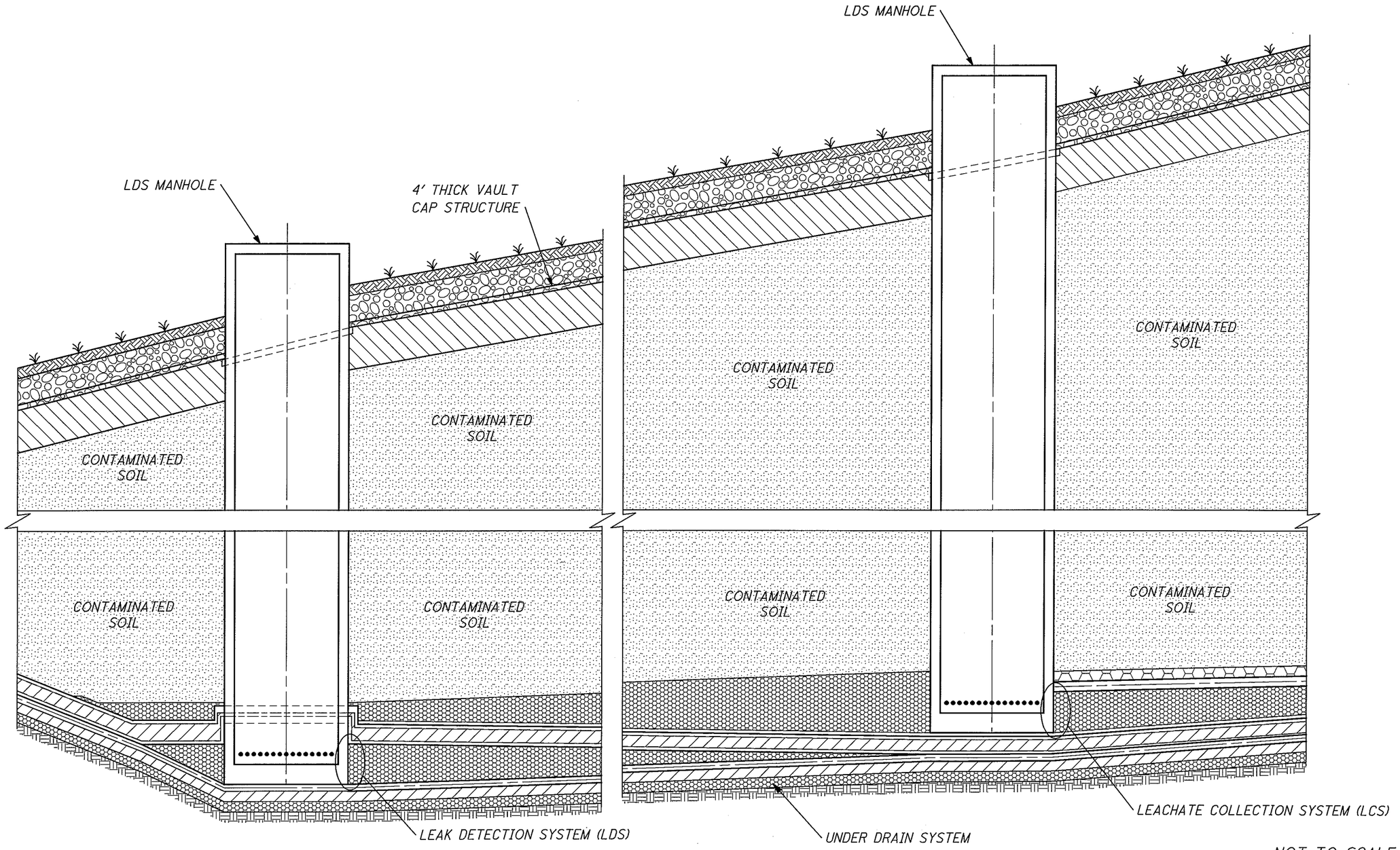
From BRG drawing, conservative area of vault up to elevation 673.1 is (1/2*)(240feet)(140 feet) = 16,800 ft^2* from BRG drawing, area at 673.1 feet is angular

From SKAPS Industries specifications for geocomposite, geonet thickness is 300 mils or 0.3 inches = 0.025 feet

Porosity for geonet is not identified in specification sheet. Conservatively assume a porosity of 0.90.

Volume of water in geonet = (16,800 ft)(0.025 feet)(0.90) = 378 ft^3 = **2,827.44 gallons**

Total volume of water potentially discharged to LDS = 972.82 gallons + 5,232.13 gallons + 2,827.44 gallons = 9,032.39 gallons



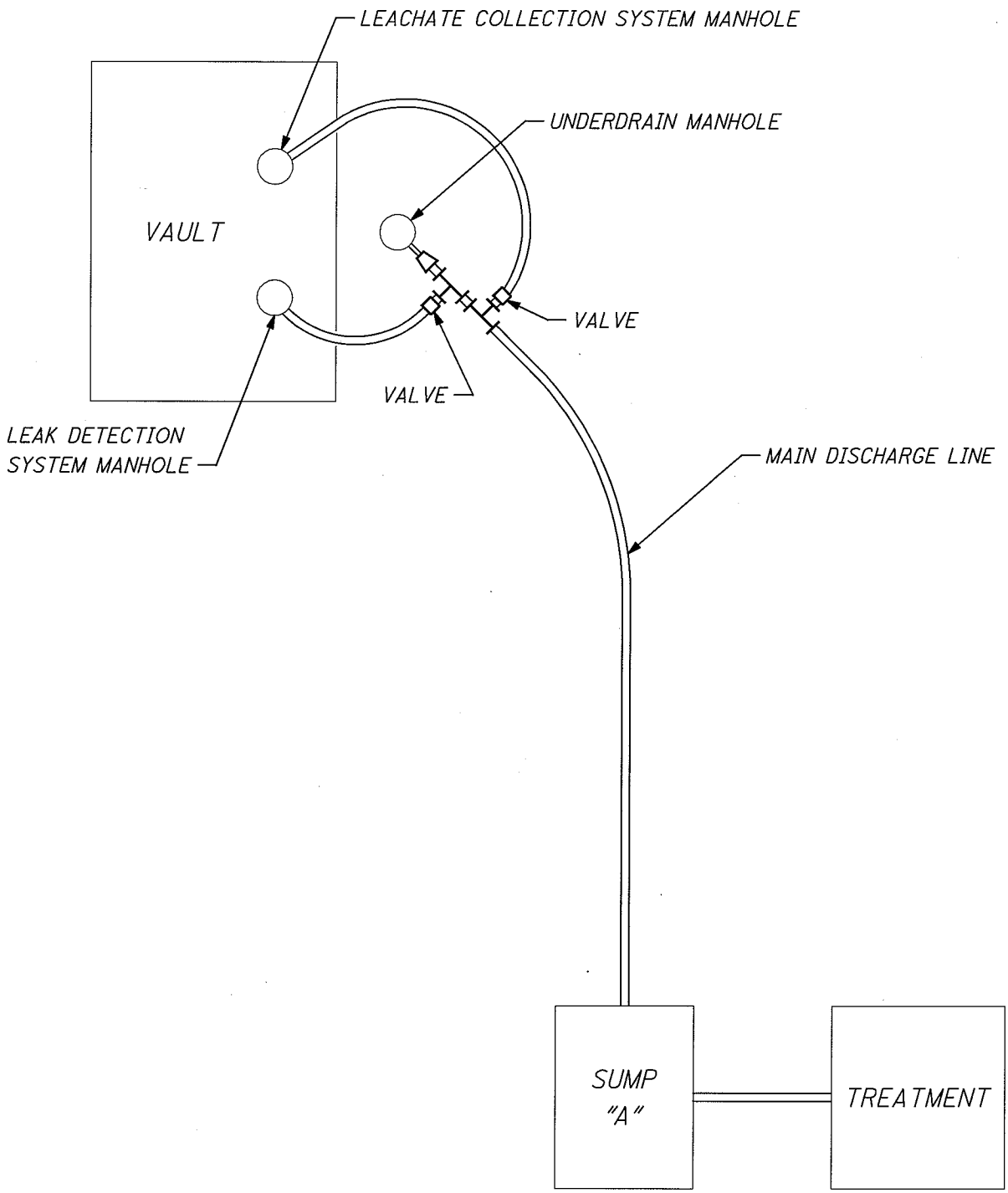
NOT TO SCALE

The Mannik & Smith Group, Inc.
Civil Engineering, Surveying and Environmental Consulting

FIGURE 1
GENERALIZED VAULT CROSS SECTION
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

DATE	DRAWN BY	DESIGNED BY	PROJECT NO.
10/06	JLH	JLH	S191B2

S:\Projects\Projects P-T\S191B2\CAD\S191B2_Fig 1.dgn 10/6/2006 5:55:28 PM



NOT TO SCALE

The Mannik & Smith Group, Inc.
Civil Engineering, Surveying and Environmental Consulting

FIGURE 2
SCHEMATIC-VAULT DISCHARGE PIPES
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

DATE	DRAWN BY	DESIGNED BY	PROJECT NO.
10/06	JLH	JLH	S191B2

S:\Projects\Projects P-T\S191B2\CAD\S191B2_Fig 2.dgn 10/6/2006 , 6:45:17 PM

SECTION D.3.2

RESPONSE TO U.S. EPA COMMENTS RECEIVED NOVEMBER 13, 2006

Worldwide Facilities Group
Remediation Team

February 15, 2007 Reference No. 013968

Mr. Peter Ramanauskas
Project Manager for IND 0060306099
Waste, Pesticide and Toxins Division
U.S. EPA Region 5
77 West Jackson Blvd. (DW-8J)
Chicago, IL 60604-3590

Dear Mr. Ramanauskas:

Re: GM Powertrain – Bedford Facility, IND 006036099
Response to U.S. EPA Comments Received November 13, 2006
on the Draft LDS Response Action Plan
GM Powertrain Group, Bedford Indiana Facility
Bedford, Indiana

Please find attached Responses to Comments received via email from Mr. Peter Ramanauskas of the United States Environmental Protection Agency (U.S. EPA) on November 13, 2006.

Should you have any questions regarding this document, please do not hesitate to contact me at (248) 753-5799.

Yours truly,

General Motors Corporation

Cheryl R. Hiatt
Project Manager

JD/cnb/84
Encl.

c.c.: See Attached Distribution List

•2000 Centerpoint Pkwy •Mail Code 483-520-190 • Pontiac, MI 48341-3147 • FAX (248) 753-5829

GM Bedford Distribution List

		copy sent (y/n)
Peter Ramanauskas (2)	U.S. EPA, Region 5	Yes
Brad Stimple	U.S. EPA, OSC	Yes
Stacey DeLaReintrie	T&N Associates	Yes
John Bassett	Earth Tech	Yes
Gerald O'Callaghan (5)	IDEM Management	Yes
Cheryl Hiatt/Ed Peterson	GM WFG Remediation	Yes
James McGuigan	CRA Project Manager	Yes
Jeff Daniel	CRA Design Engineer	Yes
Katie Kamm	CRA Resident Engineer	Yes
Rick Hoekstra	CRA Design Engineer	Yes
Terri Stewart	CRA Oversight Engineer	Yes
Jim Pazderski (2)	Sevenson Environmental Services	Yes

CONESTOGA-ROVERS & ASSOCIATES

651 Colby Drive, Waterloo, Ontario, Canada N2V 1C2
Telephone: (519) 884-0510 Fax: (519) 884-0525
www.CRAworld.com

MEMORANDUM

TO:	Cheryl Hiatt, GM	REF. NO.:	013968
FROM:	Jeff Daniel/cnb/428	DATE:	February 15, 2007
CC:	Jim McGuigan, Rick Hoekstra, Katie Kamm		
RE:	**GM Powertrain – Bedford Facility, IND 006036099 Response to U.S. EPA Comments Received November 13, 2006 on the Draft LDS Response Action Plan GM Powertrain Group, Bedford Indiana Facility Bedford, Indiana**		

Conestoga-Rovers & Associates, Inc. (CRA) has prepared the following Responses to Comments received via email from Mr. Peter Ramanauskas of the United States Environmental Protection Agency (U.S. EPA) on November 13, 2006. The Mannik & Smith Group (MSG), which is providing consultation services to Sevenson Environmental Services (SES) on this matter, was provided a copy of these comments and has assisted with these responses.

1.0 RESPONSE TO U.S. EPA COMMENTS

1. U.S. EPA Comment

Referring to Section III, what are some similar examples MSG is aware of where this has occurred? Who were U.S. EPA Regional/State contacts for those landfills?

Response

As noted in the LDS RAP, clean out of the LDS (just as in clean out of the Leachate Collection System (LCS)) is handled as part of routine maintenance. These tasks are typically addressed in a landfill's approved Operations and Maintenance (O & M) Plan. Discharges to the LDS, whether inadvertent or expected, are handled by the landfill's operating staff. MSG's contacts with various sites including those in Ohio and Michigan are with the landfill company's site or regional engineer rather than agency personnel.

2. U.S. EPA Comment

Provide a drawing of the new vault sump-pumping configuration.

REGISTERED COMPANY FOR ISO 9001 ENGINEERING DESIGN

Response

An updated profile view of the pumping configuration details is attached as Attachment A.

3. U.S. EPA Comment

Section IV.A. mentions ions and anion concentrations will be plotted to differentiate groundwater composition. Will this be accomplished via Piper diagrams?

Response

Yes, Piper diagrams would be utilized.

4. U.S. EPA Comment

The first sentence of Section IV.B. states water in the LDS manhole is monitored daily and continually removed as it accumulates. To date, how much water has been observed accumulating/ infiltrating the LDS layer (sump average daily flow rate)?

Response

A table summarizing the sump average daily flow rates is included as Attachment B.

5. U.S. EPA Comment

Referring to Section IV.C (confirmation sampling), what is meant by "representative confirmation samples?"

Response

Confirmation samples will be collected utilizing the pumping equipment normally utilized for extraction of accumulated water in this system. This approach will provide a sample representative of the water that will be extracted.

6. U.S. EPA Comment

Referring to Section VI, what are the "defined minimum detection limits" and what lab is being utilized for analysis?

Response

The detection limits are those defined in the approved Quality Assurance Project Plan (QAPP). Severn Trent Laboratories (STL) will be used for the analyses.

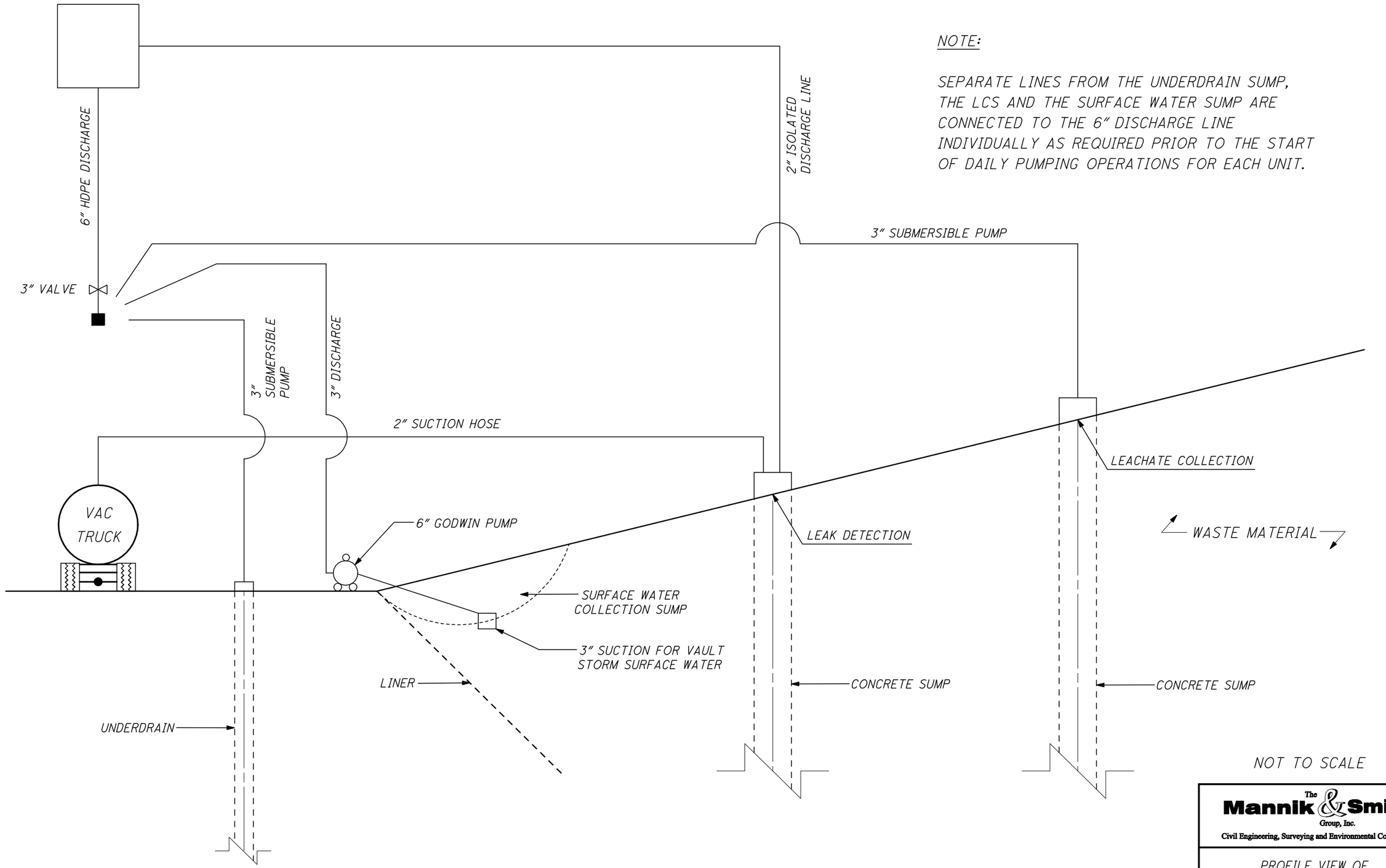
ATTACHMENT A

PROFILE VIEW OF PUMPING CONFIGURATION
THE MANNIK AND SMITH GROUP, INC

COLLECTION SYSTEM A

NOTE:

SEPARATE LINES FROM THE UNDERDRAIN SUMP, THE LCS AND THE SURFACE WATER SUMP ARE CONNECTED TO THE 6" DISCHARGE LINE INDIVIDUALLY AS REQUIRED PRIOR TO THE START OF DAILY PUMPING OPERATIONS FOR EACH UNIT.



NOT TO SCALE

The Mannik & Smith Group, Inc.
Civil Engineering, Surveying and Environmental Consulting

PROFILE VIEW OF PUMPING CONFIGURATION

DATE	DRAWN BY	DESIGNED BY	PROJECT NO.
11/14	CJB	FJB	S191B2

11/15/2006 11:20:36 AM

S:\Projects\Projects P-T\S191B2\CAD\S191B2_Fig 3.dgn

ATTACHMENT B

LEAK DETECTION SYSTEM MANHOLE MONITORING LOG

TABLE B.1

LEAK DETECTION SYSTEM MANHOLE MONITORING LOG
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

DATE	*WATER LEVEL (ft below top of riser) (prior to pumping)*	*WATER DEPTH (ft)*	*VOLUME REMOVED (gallons)*
8/30/2006	25.6	11.8	2262.0
8/31/2006	34.9	2.5	-42.3
9/1/2006	34.2	3.2	613.1
9/2/2006	36.8	0.6	0.0
9/3/2006	36.8	0.6	0.0
9/4/2006	36.8	0.6	42.3
9/5/2006	36.9	0.5	0.0
9/6/2006	36.5	0.9	63.4
9/7/2006	35.9	1.5	253.7
9/8/2006[1]	32.9	4.5	253.7
9/9/2006	36.9	0.5	0.0
9/10/2006	36.9	0.5	0.0
9/11/2006	37.1	0.3	-21.1
9/12/2006	36.9	0.5	-21.1
9/13/2006[1]	32.7	4.7	296.0
9/14/2006	36.0	1.4	253.7
9/15/2006	34.4	3.0	(2)
9/16/2006	33.9	3.5	613.1
9/17/2006	35.9	1.5	253.7
9/18/2006	37.0	0.4	63.4
9/19/2006	35.8	1.6	-105.7
9/20/2006	36.8	0.6	105.7
9/21/2006	36.8	0.6	105.7
9/22/2006	36.9	0.5	105.7
9/23/2006	35.9	1.5	317.1
9/24/2006	34.8	2.6	549.6
9/25/2006	36.1	1.3	253.7
9/26/2006	36.8	0.6	126.8
9/27/2006	36.9	0.5	105.7
9/28/2006	37.0	0.4	84.6
9/29/2006	36.9	0.5	105.7
9/30/2006	36.9	0.5	105.7
10/1/2006	37.0	0.4	84.6
10/2/2006	37.0	0.4	84.6
10/3/2006	36.9	0.5	105.7
10/4/2006	37.0	0.4	84.6
10/5/2006	36.9	0.5	105.7
10/6/2006	36.9	0.5	105.7
10/7/2006	37.0	0.4	84.6
10/8/2006	37.0	0.4	84.6
10/9/2006	37.1	0.4	74.0
10/10/2006	37.1	0.4	74.0
10/11/2006	37.2	0.2	42.3
10/12/2006	37.1	0.4	74.0

TABLE B.1

LEAK DETECTION SYSTEM MANHOLE MONITORING LOG
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

DATE	*WATER LEVEL (ft below top of riser) (prior to pumping)*	*WATER DEPTH (ft)*	*VOLUME REMOVED (gallons)*
10/13/2006	37.2	0.2	42.3
10/14/2006	37.1	0.3	63.4
10/15/2006	37.2	0.2	42.3
10/16/2006	37.2	0.3	52.8
10/17/2006	34.2	3.2	-
10/18/2006	35.7	1.7	359.4
10/19/2006	36.7	0.7	148.0
10/20/2006	36.4	1.0	211.4
10/21/2006	36.7	0.7	148.0
10/22/2006	36.9	0.5	105.7
10/23/2006	36.9	0.5	105.7
10/24/2006	36.9	0.5	105.7
10/25/2006	37.1	0.4	74.0
10/26/2006	37.1	0.3	63.4
10/27/2006	-	-	-
10/28/2006	35.2	2.2	-
10/29/2006	36.3	1.1	232.5
10/30/2006	36.8	0.6	-
10/31/2006	36.9	0.5	105.7
11/1/2006	36.9	0.5	105.7
11/2/2006	36.9	0.5	105.7
11/3/2006	37.0	0.4	84.6
11/4/2006	37.0	0.4	84.6
11/5/2006	37.1	0.3	63.4
11/6/2006	37.1	0.4	74.0
11/7/2006	36.9	0.5	105.7
11/8/2006	33.5	3.9	-
11/9/2006	36.9	0.5	74.0
11/10/2006	36.8	0.6	126.8
11/11/2006	36.8	0.6	126.8
11/12/2006	(3)	(3)	(3)
11/13/2006	36.9	0.5	105.7
11/14/2006	37.0	0.4	95.1
11/15/2006	36.5	0.9	105.7
11/16/2006	34.3	3.1	(4)
11/17/2006	36.1	1.4	285.4
11/18/2006	36.6	0.9	179.7
11/19/2006	(3)	(3)	(3)
11/20/2006	36.9	0.5	105.7
11/21/2006	37.0	0.4	95.1
11/22/2006	36.9	0.5	116.3
11/23/2006	(3)	(3)	(3)

TABLE B.1

LEAK DETECTION SYSTEM MANHOLE MONITORING LOG
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

DATE	*WATER LEVEL (ft below top of riser) (prior to pumping)*	*WATER DEPTH (ft)*	*VOLUME REMOVED (gallons)*
11/24/2006	36.9	0.5	116.3
11/25/2006	(3)	(3)	(3)
11/26/2006	36.9	0.5	116.3
11/27/2006	36.9	0.5	105.7
11/28/2006	36.9	0.5	116.3
11/29/2006	37.1	0.4	74.0
11/30/2006	36.1	1.3	274.8
12/1/2006	36.6	0.8	169.1
12/2/2006	36.1	1.3	274.8
12/3/2006	(3)	(3)	(3)
12/4/2006	35.5	1.9	401.7
12/5/2006	36.8	0.6	126.8
12/6/2006	36.8	0.6	126.8
12/7/2006	36.9	0.5	105.7
12/8/2006	(5)	(5)	(5)
12/9/2006	36.9	0.5	105.7
12/10/2006	(3)	(3)	(3)
12/11/2006	36.9	0.5	105.7
12/12/2006	36.9	0.5	105.7
12/13/2006[6]	35.2	2.2	465.1
12/14/2006[6]	36.3	1.1	232.5
12/15/2006	36.8	0.6	126.8
12/16/2006	36.8	0.6	126.8
12/17/2006	(3)	(3)	(3)
12/18/2006	36.8	0.6	126.8
12/19/2006	37.0	0.4	84.6
12/20/2006	37.1	0.3	63.4
12/21/2006	36.9	0.5	105.7
12/22/2006[6]	35.6	1.8	380.5
12/23/2006[6]	35.7	1.7	359.4
12/24/2006	(3)	(3)	(3)
12/25/2006[6]	35.1	2.3	486.2
12/26/2006[6]	35.3	2.1	443.9
12/27/2006	35.9	1.5	317.1
12/28/2006	36.9	0.5	105.7
12/29/2006	37.2	0.2	42.3
12/30/2006	36.9	0.5	105.7
12/31/2006	35.1	2.3	486.2
1/1/2007	(3)	(3)	(3)
1/2/2007	36.1	1.3	274.8
1/3/2007	36.8	0.6	126.8
1/4/2007	37.0	0.4	84.6

TABLE B.1

LEAK DETECTION SYSTEM MANHOLE
MONITORING LOG
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

DATE	*WATER LEVEL (ft below top of riser) (prior to pumping)*	*WATER DEPTH (ft)*	*VOLUME REMOVED (gallons)*
1/5/2007	36.9	0.5	105.7
1/6/2007	35.9	1.5	317.1
1/7/2007	36.3	1.1	232.5
1/8/2007	36.4	1.0	211.4
1/9/2007	36.8	0.6	126.8
1/10/2007	36.8	0.6	126.8
1/11/2007	36.9	0.5	105.7
1/12/2007	36.9	0.5	105.7
1/13/2007	-	-	-
1/14/2007	36.8	0.6	126.8
1/15/2007	34.8	2.6	549.6
1/16/2007(7)	35.5	1.9	401.7
1/17/2007	36.7	0.7	148.0
1/18/2007	36.8	0.6	126.8
1/19/2007	36.9	0.5	105.7
1/20/2007	37.0	0.4	84.6
1/21/2007	36.9	0.5	105.7
1/22/2007	36.9	0.5	105.7

Notes:
The LDS manhole is 37.4 ft deep, with a diameter of 6.0 ft.
(1) Shutoff valves were misdirected and inadvertently pumped water intothe LDS from the underdrain.

(2) First reading obtained late, not enough time to pump for next reading.
(3) Sunday or holiday (no reading unless rain). Max 1-day without pumping unless curretnly raining or has occurred in the last 24 hours.
(4) Raining - no reading as system was turned on/off throughout day to accommodate pumping of the leachate and surface waters.
(5) Contractor off site, will be pumped on 12-09-06.
(6) Rain event caused rise in Leak Detection sump.
(7) Heavy Rain
(8) Flushing of LDS began on 01-23-07. The sump is pumped in AM to empty 37.4 ft, and verified empty prior to leaving for the night. Flushing is being done during the day as per the Mannik & Smith report.

SECTION D.3.3

RESPONSE TO U.S. EPA COMMENTS RECEIVED FEBRUARY 21, 2007

Gould, Michelle (Shelly)

From: Hoekstra, Rick
Sent: Friday, April 20, 2007 11:38 AM
To: Kelly, Mary
Cc: Filing
Subject: FW: Bedford (#13968) Responses to Comments on the Vault Leak Detection System
Attachments: 013968Ramanauskas-88.doc; 013968Memo-456(final).doc; Memo 428 Tables (LDS).xls

---

From: Hoekstra, Rick
Sent: Wednesday, April 18, 2007 3:51 PM
To: 'Ramanauskas.Peter@epamail.epa.gov'; 'Stimple.Brad@epamail.epa.gov'; 'stacey.delareintrie@ttemi.com'; 'john.bassett@earthtech.com'; 'GOCALLAG@idem.in.gov'
Cc: 'Cheryl Hiatt'; 'Ed Peterson'; McGuigan, Jim; Daniel, Jeff; Kamm, Katie; Stewart, Terri; Filing
Subject: Bedford (#13968) Responses to Comments on the Vault Leak Detection System

Peter et al:

Attached please find Response to U.S. EPA Comments received on February 21, 2006 regarding the Vault Leak Detection System. In addition, I have provided an additional explanation of the current status of the leak detection system repairs, specifically the completion of the repairs to the leaking joints and the more recent clay berm reconstruction. Hard copies of this response document will follow.

C. R. (Rick) Hoekstra, P.Eng.
Conestoga-Rovers & Associates
651 Colby Dr., Waterloo, Ont., N2V-1C2
Main Switchboard: (519) 884-0510
Auto Switchboard: (519) 884-7780 x6212
Cell: (519) 588-5143 Fax: (519) 884-5256
email to: rhoekstra@CRAworld.com
web: http://www.CRAworld.com





Worldwide Facilities Group
Remediation Team

April 18, 2007 Reference No. 013968

Mr. Peter Ramanauskas
Project Manager for IND 0060306099
Waste, Pesticide and Toxins Division
U.S. EPA Region 5
77 West Jackson Blvd. (DW-8J)
Chicago, IL 60604-3590

Dear Mr. Ramanauskas:

Re: GM Powertrain – Bedford Facility, IND 006036099
Response to U.S. EPA Comments Received February 21, 2007
Regarding Vault Leak Detection System
GM Powertrain Group, Bedford Indiana Facility
Bedford, Indiana

Please find attached Responses to Comments received via email from Mr. Peter Ramanauskas of the United States Environmental Protection Agency (U.S. EPA) on February 21, 2007.

Should you have any questions regarding this document, please do not hesitate to contact me at (248) 753-5799.

Yours truly,

General Motors Corporation

Cheryl R. Hiatt
Project Manager

JD/cnb/88
Encl.

c.c.: See Attached Distribution List

•2000 Centerpoint Pkwy •Mail Code 483-520-190 • Pontiac, MI 48341-3147 • FAX (248) 753-5829

GM Bedford Distribution List

		copy sent (y/n)
Peter Ramanauskas (2)	U.S. EPA, Region 5	Yes
Brad Stimple	U.S. EPA, OSC	Yes
Stacey DeLaReintrie	T&N Associates	Yes
John Bassett	Earth Tech	Yes
Gerald O'Callaghan (5)	IDEM Management	Yes
Cheryl Hiatt/Ed Peterson	GM WFG Remediation	Yes
James McGuigan	CRA Project Manager	Yes
Jeff Daniel	CRA Design Engineer	Yes
Katie Kamm	CRA Resident Engineer	Yes
Rick Hoekstra	CRA Design Engineer	Yes
Terri Stewart	CRA Oversight Engineer	Yes

CONESTOGA-ROVERS & ASSOCIATES

651 Colby Drive, Waterloo, Ontario, Canada N2V 1C2
Telephone: (519) 884-0510 Fax: (519) 884-0525
www.CRAworld.com

MEMORANDUM

TO:	Cheryl Hiatt/Ed Peterson, GM	REF. NO.:	013968
FROM:	Jeff Daniel/Rick Hoekstra/cnb/456	DATE:	April 18, 2007
CC:	Jim McGuigan, Katie Kamm		
RE:	**GM Powertrain – Bedford Facility, IND 006036099** **Response to U.S. EPA Comments Received January 21, 2007** **Regarding Vault Leak Detection System** **GM Powertrain Group, Bedford Indiana Facility** **Bedford, Indiana**		

Conestoga-Rovers & Associates, Inc. (CRA) has prepared the following Responses to Comments received via email from Mr. Peter Ramanauskas of the United States Environmental Protection Agency (U.S. EPA) on February 21, 2007.

1.0 RESPONSE TO U.S. EPA COMMENTS

U.S. EPA Comment

A follow up question on the vault Leak Detection System response to comments, Attachment B. The daily volume of water removed from the LDS layer seems consistently high, typically in excess of 100 gallons. There appears to be large fluctuations of infiltration as well, independent of weather events. For example, on 1/15/07, 549.6 gallons were removed (no-rain), 1/16 (rain) saw 401.7 gallons, and 1/17 (no-rain) saw 148 gallons. What is your explanation of this? This long after the isolation of the LDS layer between two clay liners, we would expect that we would see the drainage of water bound up in the clay drop off and the LDS maintain a very low amount of water infiltration. Also, the table shows some negative values of water removed (8/31: -42.3, 9/11: -21.1, 9/19: -105.7) which I assume are errors?

Response

The daily volume of water removed from the LDS manhole typically appears to be between 100 and 200 gallons, which represents 6 to 12 inches of water accumulating in the manhole over the previous 24 hours. These typical volumes are not excessive considering that the leak detection layer has yet to completely dry out following initial construction, the inadvertent introduction of sump water by the Contractor, and the manhole joint leakage that was occurring during the past four to five months of operation.

The large fluctuations in infiltration (elevated water levels) are not independent of weather events. The example given (1/15/07 through 1/17/07) was completely the result of a significant rain event

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over the previous 3 to 4 days. Between 1/12/07 (6:30 a.m.) and 1/15/07 (11:15 a.m.), 2.63 inches of rain was recorded at the East Plant Area weather station. There was obviously a delay between the commencement of the rain event and the increase in infiltration volume removed from the manhole, but the events appear connected. The same situation results on 2/14/07 (1.40 in. of rain on previous 2 days), 2/21/07 (0.30 in. on previous day), 2/25 and 2/26/07 (1.22 in. on previous 2 days), 3/02/07 (0.49 in. on previous day), 4/02/07 (1.32 in. on previous 3 days), and 4/04/07 (1.01 in. on previous day).

The increasing water levels observed in the LDS manhole in the first half of January 2007, as well as the previous few months, were determined to be caused by leaking joints in the manhole itself. As a result, the contractor was requested to repair all the leaking joints until the LDS manhole could be maintained in a dry condition. The final joint repairs were not completed until January 20, 2007, so the volume of water removed from the manhole on the dates referred to (1/15/07 through 1/17/07) were associated with both the consolidation of the clay layer as well as leakage through the joints. The heavy rains between 1/12/07 and 1/15/07 would have infiltrated through the waste materials in the vault and continued to enter the manhole through the leaking joints at that time. Obviously, as the water infiltrated through the joints and fell to the bottom of the manhole, this water would not have allowed the clay around the base of the manhole to dry up.

The data presented on August 31, 2006, September 11, 2006, September 12, 2006, and September 19, 2006 shows the volume of water removed from the manhole to be calculated as a negative value. On each of these four days, no pumping of water was performed at the LDS manhole (for a variety of reasons), however infiltration from previous precipitation caused a slight increase in the water level through the day. For example on August 31, 2006 the initial water level in the manhole was 34.9 feet below top of riser (at 13:45 hours), while the final water level had increased to 34.7 feet below top of riser (at 18:05 hours). Subsequent pumping removed the accumulated water. Finally, it should be noted that the negative volume reported for September 19, 2006 resulted from a lack of pumping due to equipment malfunction but continuing infiltration which was removed during subsequent pumping.

2.0 ADDITIONAL MEASURES IMPLEMENTED TO ADDRESS INFILTRATION

Further to the above discussion regarding repairing of the leaking joints in the LDS manhole, EPA should be aware of some additional measures implemented to address the continuing infiltration observed at the LDS manhole. From the attached table (updated from the previous submission), it can be seen that there were still some large fluctuations in the removed water volumes after the joint repairs were completed on January 20, 2007. From January 23, 2007 through February 6, 2007, the contractor was performing flushing operations associated with the Mannick and Smith work plan such that the large volumes of water were the result of injected clean water (and not infiltration of precipitation).

Following completion of the Mannick and Smith work plan, infiltration was again noted in the LDS manhole although there were no corresponding observations of leaking joints. Larger volumes of removed water were reported on 2/25 and 2/26/07, 3/02/07, 4/02/07,and 4/04/07 (as discussed above), each of these corresponding to previous rain events. As a result, other sources of infiltrating surface waters were investigated and it was observed that there was ponding of surface water on the top of the perimeter clay berms on both the north and east sides of the vault. It appears that the clay

placed between the two anchor trenches for the primary and secondary liner systems either had an irregular surface or had slightly eroded in some areas, causing localized ponding. This berm will be eventually be regraded and shaped as part of the installation of the final cover. The eventual vault cover system (liner and clay) will connect with the current clay berm and cover over the anchor trenches. Because of the berm erosion, the geocomposite drainage net for the leak detection layer was exposed in several locations and the ponded surface water on the berm had access, via the geonet, to the leak detection layer within the bottom liner of the vault. It was observed that this ponded water disappeared shortly after each rain event.

As a result, it was decided to enhance the existing perimeter berms for the vault by placing and compacting additional clay over the observed ponded areas. This serves to both keep surface water off the top of the clay berms by directing any water away from the berms and cover the areas of the exposed geonet such that surface water no longer has access to this drainage material. (It should be noted upon completion of filling of the vault and construction of the vault cover system, the clay berm will become integral to the containment system for the vault and the geonet would no longer be near the ground surface).

Following completion of the clay berm reconstruction on April 6, 2007, two significant rain events took place on 4/11/07 (0.79 in.) and 4/14/07 (0.57 in.). There were no observations of increased infiltration within the LDS manhole (i.e., increased water levels in excess of 6 inches over 24 hours) or significant water volumes removed following these two rain events. From the attached table, it can be seen that the volume of water removed has stabilized since April 5, 2007. As a result of this and previous repairs, it appears that the past infiltration problems have been addressed. The water levels and water volumes removed will continue to be monitored to confirm there is no additional leakage occurring within the vault bottom liner system.

TABLE 1

LEAK DETECTION SYSTEM MANHOLE MONITORING LOG
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

DATE	*WATER LEVEL (ft below top of riser) (prior to pumping)*	*WATER DEPTH (ft)*	*WATER LEVEL (ft below top of riser) (after pumping)*	*VOLUME REMOVED (gallons)*
8/30/2006	25.6	11.8	36.3	2262.0
8/31/2006	34.9	2.5	34.7	-42.3[1]
SEPTEMBER 2006				
9/1/2006	34.2	3.2	37.1	613.1
9/2/2006	36.8	0.6	36.8	0.0
9/3/2006	36.8	0.6	36.8	0.0
9/4/2006	36.8	0.6	37.0	42.3
9/5/2006	36.9	0.5	36.9	0.0
9/6/2006	36.5	0.9	36.8	63.4
9/7/2006	35.9	1.5	37.1	253.7
9/8/2006[2]	32.9	4.5	34.1	253.7
9/9/2006	36.9	0.5	36.9	0.0
9/10/2006	36.9	0.5	36.9	0.0
9/11/2006	37.1	0.3	37.0	-21.1[1]
9/12/2006	36.9	0.5	36.8	-21.1[1]
9/13/2006[2]	32.7	4.7	34.1	296.0
9/14/2006	36.0	1.4	37.2	253.7
9/15/2006	34.4	3.0		0.0[3]
9/16/2006	33.9	3.5	36.8	613.1
9/17/2006	35.9	1.5	37.1	253.7
9/18/2006	37.0	0.4	37.3	63.4
9/19/2006	35.8	1.6	35.3	-105.7[1]
9/20/2006	36.8	0.6	37.3	105.7
9/21/2006	36.8	0.6	37.3	105.7
9/22/2006	36.9	0.5	37.4	105.7
9/23/2006	35.9	1.5	37.4	317.1
9/24/2006	34.8	2.6	37.4	549.6
9/25/2006	36.1	1.3	37.3	253.7
9/26/2006	36.8	0.6	37.4	126.8
9/27/2006	36.9	0.5	37.4	105.7
9/28/2006	37.0	0.4	37.4	84.6
9/29/2006	36.9	0.5	37.4	105.7
9/30/2006	36.9	0.5	37.4	105.7
OCTOBER 2006				
10/1/2006	37.0	0.4	37.4	84.6
10/2/2006	37.0	0.4	37.4	84.6
10/3/2006	36.9	0.5	37.4	105.7
10/4/2006	37.0	0.4	37.4	84.6
10/5/2006	36.9	0.5	37.4	105.7
10/6/2006	36.9	0.5	37.4	105.7
10/7/2006	37.0	0.4	37.4	84.6
10/8/2006	37.0	0.4	37.4	84.6

TABLE 1

LEAK DETECTION SYSTEM MANHOLE MONITORING LOG
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

DATE	*WATER LEVEL (ft below top of riser) (prior to pumping)*	*WATER DEPTH (ft)*	*WATER LEVEL (ft below top of riser) (after pumping)*	*VOLUME REMOVED (gallons)*
10/9/2006	37.1	0.4	37.4	74.0
10/10/2006	37.1	0.4	37.4	74.0
10/11/2006	37.2	0.2	37.4	42.3
10/12/2006	37.1	0.4	37.4	74.0
10/13/2006	37.2	0.2	37.4	42.3
10/14/2006	37.1	0.3	37.4	63.4
10/15/2006	37.2	0.2	37.4	42.3
10/16/2006	37.2	0.3	37.4	52.8
10/17/2006	34.2	3.2	37.4	676.5
10/18/2006	35.7	1.7	37.4	359.4
10/19/2006	36.7	0.7	37.4	148.0
10/20/2006	36.4	1.0	37.4	211.4
10/21/2006	36.7	0.7	37.4	148.0
10/22/2006	36.9	0.5	37.4	105.7
10/23/2006	36.9	0.5	37.4	105.7
10/24/2006	36.9	0.5	37.4	105.7
10/25/2006	37.1	0.4	37.4	74.0
10/26/2006	37.1	0.3	37.4	63.4
10/27/2006	(5)	(5)	(5)	(5)
10/28/2006	35.2	2.2	37.4	465.1
10/29/2006	36.3	1.1	37.4	232.5
10/30/2006	36.8	0.6	37.4	126.8
10/31/2006	36.9	0.5	37.4	105.7
NOVEMBER 2006				
11/1/2006	36.9	0.5	37.4	105.7
11/2/2006	36.9	0.5	37.4	105.7
11/3/2006	37.0	0.4	37.4	84.6
11/4/2006	37.0	0.4	37.4	84.6
11/5/2006	37.1	0.3	37.4	63.4
11/6/2006	37.1	0.4	37.4	74.0
11/7/2006	36.9	0.5	37.4	105.7
11/8/2006	33.5	3.9	37.4	824.5
11/9/2006	36.9	0.5	37.2	74.0
11/10/2006	36.8	0.6	37.4	126.8
11/11/2006	36.8	0.6	37.4	126.8
11/12/2006		(4)	(4)	(4)
11/13/2006	36.9	0.5	37.4	105.7
11/14/2006	37.0	0.4	37.4	95.1
11/15/2006	36.5	0.9	37.0	105.7
11/16/2006	34.3	3.1	37.4	655.3[(5)]
11/17/2006	36.1	1.4	37.4	285.4
11/18/2006	36.6	0.9	37.4	179.7
11/19/2006	(4)	(4)	(4)	(4)

TABLE 1

LEAK DETECTION SYSTEM MANHOLE MONITORING LOG
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

DATE	*WATER LEVEL (ft below top of riser) (prior to pumping)*	*WATER DEPTH (ft)*	*WATER LEVEL (ft below top of riser) (after pumping)*	*VOLUME REMOVED (gallons)*
11/20/2006	36.9	0.5	37.4	105.7
11/21/2006	37.0	0.4	37.4	95.1
11/22/2006	36.9	0.5	37.4	116.3
11/23/2006	(4)	(4)	(4)	(4)
11/24/2006	36.9	0.5	37.4	116.3
11/25/2006	(4)	(4)	(4)	(4)
11/26/2006	36.9	0.5	37.4	116.3
11/27/2006	36.9	0.5	37.4	105.7
11/28/2006	36.9	0.5	37.4	116.3
11/29/2006	37.1	0.4	37.4	74.0
11/30/2006	36.1	1.3	37.4	274.8
DECEMBER 2006				
12/1/2006	36.6	0.8	37.4	169.1
12/2/2006	36.1	1.3	37.4	274.8
12/3/2006	(4)	(4)	(4)	(4)
12/4/2006	35.5	1.9	37.4	401.7
12/5/2006	36.8	0.6	37.4	126.8
12/6/2006	36.8	0.6	37.4	126.8
12/7/2006	36.9	0.5	37.4	105.7
12/8/2006	(6)	(6)	(6)	(6)
12/9/2006	36.9	0.5	37.4	105.7
12/10/2006	(4)	(4)	(4)	(4)
12/11/2006	36.9	0.5	37.4	105.7
12/12/2006	36.9	0.5	37.4	105.7
12/13/2006	35.2	2.2	37.4	465.1
12/14/2006	36.3	1.1	37.4	232.5
12/15/2006	36.8	0.6	37.4	126.8
12/16/2006	36.8	0.6	37.4	126.8
12/17/2006	(4)	(4)	(4)	(4)
12/18/2006	36.8	0.6	37.4	126.8
12/19/2006	37.0	0.4	37.4	84.6
12/20/2006	37.1	0.3	37.4	63.4
12/21/2006	36.9	0.5	37.4	105.7
12/22/2006	35.6	1.8	37.4	380.5
12/23/2006	35.7	1.7	37.4	359.4
12/24/2006	(4)	(4)	(4)	(4)
12/25/2006	35.1	2.3	37.4	486.2
12/26/2006	35.3	2.1	37.4	443.9
12/27/2006	35.9	1.5	37.4	317.1
12/28/2006	36.9	0.5	37.4	105.7
12/29/2006	37.2	0.2	37.4	42.3
12/30/2006	36.9	0.5	37.4	105.7
12/31/2006	35.1	2.3	37.4	486.2

TABLE 1

LEAK DETECTION SYSTEM MANHOLE MONITORING LOG
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

DATE	*WATER LEVEL (ft below top of riser) (prior to pumping)*	*WATER DEPTH (ft)*	*WATER LEVEL (ft below top of riser) (after pumping)*	*VOLUME REMOVED (gallons)*
JANUARY 2007				
1/1/2007	(4)	(4)	(4)	(4)
1/2/2007	36.1	1.3	37.4	274.8
1/3/2007	36.8	0.6	37.4	126.8
1/4/2007	37.0	0.4	37.4	84.6
1/5/2007	36.9	0.5	37.4	105.7
1/6/2007	35.9	1.5	37.4	317.1
1/7/2007	36.3	1.1	37.4	232.5
1/8/2007	36.4	1.0	37.4	211.4
1/9/2007	36.8	0.6	37.4	126.8
1/10/2007	36.8	0.6	37.4	126.8
1/11/2007	36.9	0.5	37.4	105.7
1/12/2007	36.9	0.5	37.4	105.7
1/13/2007	(4)	(4)	(4)	(4)
1/14/2007	36.8	0.6	37.4	126.8
1/15/2007	34.8	2.6	37.4	549.6
1/16/2007	35.5	1.9	37.4	401.7
1/17/2007	36.7	0.7	37.4	148.0
1/18/2007	36.8	0.6	37.4	126.8
1/19/2007	36.9	0.5	37.4	105.7
1/20/2007	37.0	0.4	37.4	84.6
1/21/2007	36.9	0.5	37.4	105.7
1/22/2007	36.9	0.5	37.4	105.7
1/23/2007[7]	36.9	0.5	37.4	105.7
1/24/2007	36.8	0.6	37.4	126.8
1/25/2007	36.2	1.2	37.4	253.7
1/26/2007	34.3	3.1	37.4	655.3
1/27/2007	36.4	1.0	37.4	211.4
1/28/2007	(4)	(4)	(4)	(4)
1/29/2007	37.1	0.3	37.4	63.4
1/30/2007	37.4	0.0	37.4	0.0
1/31/2007	37.3	0.1	37.4	21.1
FEBRUARY 2007				
2/1/2007	30.0	7.4	37.4	1564.4
2/2/2007	37.2	0.2	37.4	42.3
2/3/2007	27.7	9.7	37.4	2050.6
2/4/2007	(4)	(4)	(4)	(4)
2/5/2007	25.1	12.3	37.4	2600.2
2/6/2007[8]	35.9	1.5	37.4	317.1
2/7/2007	36.5	0.9	37.4	190.3
2/8/2007	37.4	0.0	37.4	0.0
2/9/2007	37.1	0.3	37.4	63.4

TABLE 1

LEAK DETECTION SYSTEM MANHOLE MONITORING LOG
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

DATE	*WATER LEVEL (ft below top of riser) (prior to pumping)*	*WATER DEPTH (ft)*	*WATER LEVEL (ft below top of riser) (after pumping)*	*VOLUME REMOVED (gallons)*
2/10/2007	37.2	0.2	37.4	42.3
2/11/2007	(4)	(4)	(4)	(4)
2/12/2007	37.0	0.4	37.4	84.6
2/13/2007	37.3	0.1	37.4	21.1
2/14/2007	35.7	1.7	37.4	359.4
2/15/2007	36.9	0.5	37.4	105.7
2/16/2007	37.0	0.4	37.4	84.6
2/17/2007	37.1	0.3	37.4	63.4
2/18/2007	(4)	(4)	(4)	(4)
2/19/2007	37.0	0.4	37.4	84.6
2/20/2007	36.9	0.5	37.4	105.7
2/21/2007	35.3	2.1	37.4	443.9
2/22/2007	36.7	0.7	37.4	148.0
2/23/2007	36.8	0.6	37.4	126.8
2/24/2007	37.1	0.3	37.4	63.4
2/25/2007	35.9	1.5	37.4	317.1
2/26/2007	36.3	1.1	37.4	232.5
2/27/2007	(9)	(9)	(9)	(9)
2/28/2007	36.9	0.5	37.4	105.7
MARCH 2007				
3/1/2007	36.9	0.5	37.4	105.7
3/2/2007	36.3	1.1	37.4	232.5
3/3/2007	36.8	0.6	37.4	126.8
3/4/2007	36.9	0.5	37.4	105.7
3/5/2007	37.0	0.4	37.4	84.6
3/6/2007	37.3	0.1	37.4	21.1
3/7/2007	37.3	0.1	37.4	21.1
3/8/2007	37.2	0.2	37.4	42.3
3/9/2007	37.3	0.1	37.4	21.1
3/10/2007	37.4	0.0	37.4	0.0
3/11/2007	(4)	(4)	(4)	(4)
3/12/2007	37.1	0.3	37.4	63.4
3/13/2007	37.4	0.0	37.4	0.0
3/14/2007	37.4	0.0	37.4	0.0
3/15/2007	37.3	0.1	37.4	21.1
3/16/2007	(9)	(9)	(9)	(9)
3/17/2007	37.1	0.3	37.4	63.4
3/18/2007	(4)	(4)	(4)	(4)
3/19/2007	37.0	0.4	37.4	84.6
3/20/2007	36.9	0.5	37.4	105.7
3/21/2007	36.8	0.6	37.4	126.8
3/22/2007	37.0	0.4	37.4	84.6
3/23/2007	36.8	0.6	37.4	126.8

TABLE 1

LEAK DETECTION SYSTEM MANHOLE MONITORING LOG
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

DATE	*WATER LEVEL (ft below top of riser) (prior to pumping)*	*WATER DEPTH (ft)*	*WATER LEVEL (ft below top of riser) (after pumping)*	*VOLUME REMOVED (gallons)*
3/24/2007	36.9	0.5	37.4	105.7
3/25/2007	(4)	(4)	(4)	(4)
3/26/2007	36.8	0.6	37.4	126.8
3/27/2007	37.1	0.3	37.4	63.4
3/28/2007	37.4	0.0	37.4	0.0
3/29/2007	36.9	0.5	37.4	105.7
3/30/2007	37.0	0.4	37.4	84.6
3/31/2007	36.9	0.5	37.4	105.7
APRIL 2007				
4/1/2007	(4)	(4)	(4)	(4)
4/2/2007	33.5	3.9	37.4	824.5
4/3/2007	36.8	0.6	37.4	126.8
4/4/2007	36.0	1.4	37.4	296.0
4/5/2007	36.8	0.6	37.4	126.8
4/6/2007	36.9	0.5	37.4	105.7
4/7/2007	37.1	0.3	37.4	63.4
4/8/2007	(4)	(4)	(4)	(4)
4/9/2007	37.0	0.4	37.4	84.6
4/10/2007	37.3	0.1	37.4	21.1
4/11/2007	36.9	0.5	37.4	105.7
4/12/2007	37.0	0.4	37.4	84.6
4/13/2007	36.9	0.5	37.4	105.7
4/14/2007	36.9	0.5	37.4	105.7
4/15/2007	(4)	(4)	(4)	(4)
4/16/2007	36.7	0.7	37.4	148.0

Notes:
The LDS manhole is 37.4 ft deep, with a diameter of 6.0 ft.
(1) No water was pumped on this date, however the water level rose slightly between the two observation times.
(2) Shutoff valves were misdirected and water from the underdrain system was inadvertently pumped into the LDS.
(3) Initial water level reading obtained late in the day such that pumping was performed the next morning.
(4) Sunday or holiday (no reading unless rain). Maximum 1 day without pumping unless currently raining or rain event has occurred in the previous 24 hours.
(5) Raining - system was operated throughout the day to accommodate pumping of the accumulating water.
(6) Contractor not on site, manhole pumped next day (12-09-06).
(7) Flushing of LDS began on 01-23-07. The sump is pumped empty (37.4 ft) in AM and then verified empty prior to leaving for the night. Flushing is being done during the day as per the Mannik & Smith report.
(8) Two rounds of flushing completed on 02-06-07. Pending analytical results, SES continues to pump LDMH empty daily.
(9) Readings not collected on this date because Contractor is overly busy (no rain occured)

SECTION D.3.4

RAP IMPLEMENTATION AND MONITORING REPORT

RAP Implementation and Monitoring Report

General Motor Corporation
Powertrain Plant
Bedford, Ohio

May 29, 2008

Prepared for:

Sevenson Environmental Services, Inc.
2749 Lockport Road
Niagara Falls, NY 14305

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1.0 SITE BACKGROUND

General Motors Corporation (GM) is undertaking Resource Conservation and Recovery Act (RCRA) Corrective Action at the GM Powertrain – Bedford Facility (Site) in Bedford, Lawrence County, Indiana under a Performance Based Agreement with U.S. Environmental Protection Agency (USEPA) Region V, signed on March 20, 2001 and amended October 1, 2002. This RCRA corrective action work includes the design and construction of an on-site vault to contain Toxic Substances Control Act (TSCA) soils at the Site. The design of the vault was performed by Conestoga-Rovers and Associates (CRA). The vault area is approximately four (4) acres and was designed to include a double composite liner system, including a leachate collection system (LCS), a leachate detection system (LDS), and an underdrain system. The LCS and LDS each incorporate a 6-foot diameter, concrete manhole for operational and maintenance purposes. The LCS and LDS manholes are approximately fourteen (14) feet apart from each other. Sevenson Environmental Services (SES) has been providing construction services to GM for the construction of the vault and maintenance services during its operation at the Site.

During a maintenance operation, polychlorinated biphenyl (PCB)-impacted ground water from the vault's underdrain system was inadvertently allowed to backflow via an 8-inch diameter pipeline into the LDS 6-foot diameter, concrete manhole and mix with water in the LDS. This water was removed from the LDS and a sample collected. Based on results from the sampling, this mixture of water inadvertently introduced into the LDS was impacted with PCBs at a concentration of 3.9 micrograms per liter (µg/L). The Mannik & Smith Group, Inc. (MSG), on behalf of SES, prepared a LDS Response Action Plan (RAP) to remove impacts to the LDS and rehabilitate the LDS so that it can be reliably used to detect leakage from the LCS in the future.

2.0 SCOPE OF WORK

SES and MSG recommended a RAP approach that has been used at other sites where the LDS has been impacted due to a discharge into the LDS either directly (inadvertently via a LDS manhole or pipe) or indirectly (i.e. through a leak in the LCS). This approach included the following:

- Initial characterization of fluids
- Cleaning of the manhole
- Manhole flushing (as needed)
- Manhole decontamination

2.1 Initial Characterization Samples

Initial characterization samples of the leachate, underdrain ground water, the LDS water, and the remedial flushing water were collected for analysis of PCBs and the most common cations and anions using the appropriate USEPA Solid Waste (SW)-846 Methods. The most common inorganic anions (in decreasing percentage) are bicarbonate, sulfate, and chloride. The most common inorganic cations in ground water (in decreasing percentage) are calcium, magnesium, sodium, and potassium.

On January 23, 2007, prior to the LDS decontamination activities, SES collected initial characterization samples from the LDS, LCS, underdrain and remedial flushing (potable) water for analysis of PCBs and the ions listed above. Samples were collected using a QED Sample Probe Pump (3/4-inch diameter). The parts of the pump that contact the water and the tubing are disposable, therefore rinse equipment blanks were not required. Two equipment rinse blanks were collected (on January 23 and January 24, 2007) to determine if the equipment could be

decontaminated. After January 24, 2007, it was decided discarding all of the disposable equipment between samples was more effective. All samples were collected using low-flow techniques. The LDS water sample (GM-INTLDS-12307) included filtered and unfiltered samples for PCB analysis.

No PCBs were detected in the LDS samples (filtered and unfiltered) or the remedial flushing water (*Table 1, Water Sample Analytical Results*). Aroclor 1254 was detected in the LCS sample (0.207 µg/L). The underdrain sample contained Aroclor 1242 (9.95 µg/L), Aroclor 1254 (0.519 µg/L), and Aroclor 1260 (0.154 µg/L).

2.2 LDS Manhole Cleaning

The cleaning of the LDS manhole was conducted prior to the initiation of the RAP. The LDS manhole cleaning reportedly consisted of removal of water from the manhole as it accumulated, followed by washing of the manhole interior.

2.3 LDS Decontamination

The LDS manhole decontamination effort consisted of two subtasks, a clean water "surge" and removal (together equaling one flush) followed by confirmation sampling after designated flushes. The clean water flush consisted of the following:

- Clean water was added to the leak detection manhole/vault at increments with progressively greater volumes (to prevent sediment moving out of the LDS manhole area and surrounding gravel pack), followed by the rapid removal of the water. The clean water volumes were introduced and removed at increments of 200 gallons up to 1,000 gallons and 1,000 gallons up to 9,000 gallons (approximately one pore volume). The flushing dates, volumes, and times are summarized in *Table 2, LDS Decontamination Flushing*. The purge water was removed and properly disposed.

- This process was repeated one additional time.

The confirmation sampling consisted of the following:

- A representative confirmation sample from the LDS was obtained after the 200-gallon flush, the 5,000-gallon flush, and the 9,000-gallon flush. The samples were collected from the LDS manhole using the sampling procedures described above so that all samples (including future samples) will be collected in a similar manner, thereby allowing direct comparisons.

- The samples were analyzed for PCBs using USEPA Method 608. For each round of sampling, one sample filtered using a 0.45 µm filter to remove suspended sediments and one unfiltered sample were analyzed. This is because PCBs, which are hydrophobic, more readily adsorb to suspended sediment. The filtered sample allows assessment of the quality of the water alone.

- Additional water samples were collected from the LDS manhole at one, two, three, and four weeks after the second round of decontamination. The samples were collected from the LDS manhole using the sampling procedures described above. The samples were analyzed for PCBs using USEPA Method 608.

The LDS was sampled on July 17, 2007, December 22, 2007, January 30, 2008, and February 27, 2008 to further assess impact trends. A field blank was also collected on each of these dates. The samples were analyzed for PCBs using USEPA Method 608.

3.0 ASSESSMENT OF FIELD AND SAMPLING ACTIVITIES

The assessment of field activities includes how well the actual field activities corresponded with those proposed in the RAP, including sampling methodologies, flushing methodologies, LDS decontamination, and equipment decontamination.

3.1 Field Sampling Methodologies

The samples were collected using low-flow (minimal drawdown) sampling techniques. The field parameters collected during the sampling included conductivity, pH, temperature, flow rate, and water level. Sampling was conducted after the parameters stabilized within the appropriate limits.

One sample (GM-INTLCS 012307) was collected when the conductivity difference was 4.6 percent instead of the required three percent (3%) over the previous three measurements. The other parameters had stabilized within the requirements of the RAP. Available data indicate the remaining samples were collected after all the field parameters had stabilized over three readings.

3.2 LDS Cleaning Methodology

As stated above, the accumulated water was removed from the LDS prior to the initiation of the RAP. The LDS manhole was cleaned prior to the initiation of the RAP.

3.3 LDS Decontamination

As stated above, the LDS decontamination consisted of two flushing events.

3.3.1 First Vault Flushing Event

During the first vault flushing event (January 23 through 25, 2007), water was introduced and removed in 200-gallon increments to 1,000 gallons (200, 400, 600, 800, and 1,000 gallons), and then in 1,000-gallon increments to 9,000 gallons. Water was pumped into the manhole and then removed. Equilibration consisted of allowing the water level to stabilize. Samples were collected from the LCS after the 200-gallon, 5,000-gallon, and 9,000-gallon surges were removed. The LCS and underdrain were sampled on January 25, 2007, during the initial portion of the 6,000-gallon surge.

Aroclor 1242 (3.24 µg/L) and Aroclor 1260 (0.324 µg/l) were detected in the sample collected after the 200-gallon surge (GM-LDS200-012307). No PCBs were detected in the sample collected after the 5,000-gallon surge (GM-LDS5000-012407). Aroclor 1242 (1.12 µg/L) was detected in the sample collected after the 9,000-gallon surge (GM-LDS9000-012707). The sample results are summarized in Table 1.

The LCS sample (GM-LCSFLUSH1-012507) contained Aroclor 1242 at 3.24 µg/L and the underdrain sample (GM-UDFLUSH1-012507) contained Aroclor 1242 at 35.1 µg/L.

3.3.2 Second Vault Flushing Event

During the second vault flushing event (January 29 through February 5, 2007), the same water introduction increments were followed. However, the introduced water was allowed to equilibrate between one and two hours before it was removed from the manhole. The water removal times varied due to weather conditions that caused freezing of equipment. The LCS and underdrain were sampled on February 1, 2007, during the initial portion of the 6,000-gallon surge.

Aroclor 1242 (2.88 µg/L) and Aroclor 1260 (0.245 µg/l) were detected in the sample collected after the 200-gallon surge (GM-LDS200-012907). No PCBs were detected in the sample collected after the 5,000-gallon surge (GM-LDS5000-012407). Aroclor 1242 (0.608 µg/L) was detected in the sample collected after the 9,000-gallon surge (GM-LDS9000-020507). The sample results are summarized in Table 1.

The LCS sample (GM-LCS-02012007) was non-detect for PCBs and the underdrain sample (GM-UD-02012007) contained Aroclor 1242 at 39.9 µg/L.

3.3.3 Weekly Confirmation Sampling

The laboratory analytical reports for the samples collected at one, two, and three weeks after the vault decontamination flushing have been received. The first sample (LDS-WEEK 1) contained Aroclor 1242 at 1.06 µg/L. The second week's samples (LDS-WEEK 2 and LDS-WEEK 2 DUP) contained Aroclor 1242 (1.56 µg/L and 2.38 µg/L, respectively) and Aroclor 1260 (0.151 µg/L and 0.165 µg/L, respectively). The third week's sample (LDS WEEK 3) contained Aroclor 1242 at 0.404 µg/L. The fourth week's samples (LDS WEEK 4 and LDS DP) contained Aroclor 1242 at 0.488 µg/L and 0.382 µg/L, respectively.

3.3.4 Additional LDS Confirmation Sampling

The laboratory analytical reports for the samples collected on July 17, 2007, December 22, 2007, January 30, 2008, and February 27, 2008 have been received. All four samples were non-detect for PCBs. The associated field blanks were also non-detect for PCBs.

3.3.5 Assessment

The presence of Aroclors 1242 (and Aroclor 1260 in LDS-WEEK 2) in the weekly confirmation samples indicates that either the original PCB impact had not been removed from the LDS or that additional impact was occurring from another source (e.g., one common scenario that has occurred in similarly designed double composite landfill liner systems is the leakage into the LDS geonet via an open anchor trench system still under construction). The Week 3 and Week 4 results indicate the PCB concentration may have temporarily stabilized. The lack of detected PCBs in the additional LDS confirmation samples indicates the PCB impact has been removed from the LDS.

The initial underdrain sample contained Aroclors 1242, 1254, and 1260. Subsequent underdrain samples contained Aroclor 1242. All of the Aroclor 1242 detections in the underdrain were at higher concentrations than any of the LDS samples. The LCS samples have contained Aroclor 1242 (GM-LCSFLUSH1-012507) and Aroclor 1254 (GM-INTLCS-012307).

Aroclor 1242 has the highest concentrations in the LCS and underdrain samples and was the Aroclor most persistent in the LDS samples. Because the LDS weekly samples had Aroclor 1242 concentrations below the impacted ground water that back-flowed into the LDS, the underdrain samples, and the LCS sample, the specific Aroclor does not identify the source. The general chemistry results indicate the LDS flushing water is similar to the potable water, but with slightly higher concentrations. The underdrain and LCS sample general chemistry results were either similar to the potable water or much higher. Plots of the percentages of the analytes were not useful in resolving between the potential sources of impact.

The anion and cation analytical results were plotted on Pipe trilinear diagrams to assess the potential sources of the LDS water. The results were inconclusive because the LDS water samples consistently plotted between the potable water samples and the water samples from the other potential sources.

3.4 QA/QC Samples

QA/QC samples included rinse blanks, field blanks, and duplicate samples.

3.4.1 Equipment Decontamination

Two (2) equipment rinse blanks were collected and analyzed for PCBs, the selected ions, and turbidity during the first LDS decontamination event. One equipment rinse blank (GM-RB-012307) was collected on January 23, 2007 after the initial LDS, LCS, and underdrain samples were collected and before the 200-gallon LDS flush sample (GM-LDS200-012307). Aroclor 1242 was detected in GM-RB-012307 at 0.539 µg/L. The sample collected immediately after the equipment rinse blank (GM-LDS200-012307) contained Aroclor 1242 at 3.24 µg/L and Aroclor 1260 at 0.324 µg/L. While residual Aroclor 1242 may have influenced the analytical result of GM-LDS200-012307, the presence of Aroclor 1260 and the higher concentration of Aroclor 1242 indicate that PCBs were present in the LDS water after the 200-gallon flush on January 23, 2007.

The analytical results for the second equipment rinse blank (GM-RB-012407) and samples (GM-LDS5000-012407 and GM-DUP1-012407) collected on January 24, 2007, were non-detect for PCBs and ions.

Equipment rinse blanks were not collected after January 24, 2007 because the sampling equipment was disposed of between samples.

3.4.2 Field Blanks

Field blanks were collected on each day that samples were collected. No PCBs were detected in the field blanks.

3.4.3 Duplicate Samples

To date, SES has collected and received analytical results for 24 samples, not counting QA/QC samples. SES has collected four (4) duplicate samples. The ratio of duplicate samples is approximately 17 percent. The USEPA recommends a ratio of 10 percent. Therefore, the number of duplicate samples is satisfactory.

The analytical results of the duplicate samples are close to the original sample results, except for LDS-WEEK 2 DUP and LDS DP (the duplicate for Week 4). For the Week 2 samples, the duplicate sample results for Aroclor 1242 was approximately 50 percent higher the original sample result (2.38 µg/L and 1.56 µg/L, respectively). However, the absolute difference between the samples (0.82 µg/L) is low. For the Week 4 samples, the duplicate sample result was 21 percent lower than the original. However, the absolute difference between the samples (0.106 µg/L) is low.

4.0 CONCLUSIONS

The following conclusions can be made from the available information:

1. The PCB impact to the LDS has been reduced below the method reporting limits. The initial impact was 3.9 µg/L, whereas the most recent LDS sample was non-detect for PCBs.

2. Two rounds of decontamination flushing were performed. PCB concentrations in the LDS were reduced to between 0.382 and 0.488 µg/L. Processes operating within the LDS since the weekly sampling appear to have removed the remainder of the PCB impact.

3. The RAP required that up to seven rounds of decontamination be performed allowing the water to equilibrate over a two hour period before rapidly removing the water. The first decontamination round did not include the equilibration period. The second decontamination round included equilibration periods of one to two hours.

4. One rinse blank (GM-RB-012307) contained Aroclor 1242 at 0.539 µg/L. The sample collected after the rinse blank (GM-LDS200-012307) contained Aroclor 1242 at 3.24 µg/L and Aroclor 1260 at 0.324 µg/L. The higher concentration of Aroclor 1242 and presence of Aroclor 1260 in the sample indicate that while the sampling equipment may have influence the result, the presence of PCBs in the sample is real. Subsequent QA/QC samples were non-detect for PCBs.

5. The source of the impact present in the March 3, 2007 sample (LDS WEEK 4) cannot be identified with the available information. Based on the Aroclors involved and the general chemistry, the LDS impact could have been residual from the backflow, from the leachate, flow into the LDS geonet via an open anchor trench and/or from the underdrain.

TABLES

TABLE 1

WATER SAMPLE ANALYTICAL RESULTS

GENERAL MOTORS POWERTRAIN - BEDFORD
BEDFORD, INDIANA

Parameters	Units	Sample ID	Leak Detection System														
			GM-INTLDS-012307	GM-INTLDS-012307 FILTERED	GM-LDS200-012307	GM-LDS5000-012407	GM-DUP1-012407	GM-LDS5000-012407 FILTERED	GM-DUP1-012407 FILTERED	GM-LDS9000-012707	GM-LDS200-012907	GM LDS 5000 02012007	GM LDS DUP1 02012007	GM-LDS-9000	LDS-WEEK 1	LDS-WEEK 2	LDS-WEEK 2 DUP	LDS Week 3
		Sample Date	23-Jan-07	23-Jan-07	23-Jan-07	24-Jan-07	24-Jan-07	24-Jan-07	24-Jan-07	27-Jan-07	29-Jan-07	1-Feb-07	1-Feb-07	5-Feb-07	12-Feb-07	20-Feb-07	20-Feb-07	26-Feb-07
Polychlorintated Biphenyls (PCBs)																		
Aroclor 1016	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ug/L		ND	ND	**3.24**	ND	ND	ND	ND	**1.12**	**2.68**	ND	ND	**0.608**	**1.06**	**1.56**	**2.38**	**0.404**
Aroclor 1248	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	ug/L		ND	ND	**0.324**	ND	ND	ND	ND	ND	**0.245**	ND	ND	ND	ND	**0.151**	**0.165**	ND
General Chemistry																		
Calcium	mg/L		**92.5**	NA	**54.6**	**55.6**	**55**	NA	NA	**84.3**	**58.6**	**89.4**	**90.6**	**142**	**192**	NA	NA	NA
Potassium	mg/L		**6.03**	NA	**6.66**	**3.28**	**3.16**	NA	NA	**2.92**	**3.94**	**2.48**	**2.52**	**2.35**	**2.67**	NA	NA	NA
Magnesium	mg/L		**15**	NA	**11.3**	**10.1**	**9.99**	NA	NA	**16.6**	**15.9**	**17.4**	**17.4**	**25.2**	**32.5**	NA	NA	NA
Sodium	mg/L		**29.8**	NA	**13.7**	**9.75**	**9.49**	NA	NA	**20.6**	**10.0**	**17.6**	**17.5**	**37**	**52.1**	NA	NA	NA
Chloride	mg/L		**121**	NA	**17.6**	**129**	**131**	NA	NA	**24.9**	**24.9**	**28.4**	**32**	**60.4**	**58.8**	NA	NA	NA
Bicarbonate Alkalinity	mg/L as $CaCO_3$		**215**	NA	**332**	**37.3**	**37.1**	NA	NA	**221**	**171**	**247**	**212**	**330**	**432**	NA	NA	NA
Sulfate as SO_4	mg/L		**91**	NA	**44.1**	**18.5**	**19.6**	NA	NA	**56.7**	**22.3**	**69.1**	**59.6**	**120**	**164**	NA	NA	NA
Physical Parameters																		
Turbidity	NTU		**1.45**		**0.69**	**0.22**	**0.25**	NA	NA	**0.14**	**0.78**	**0.38**	**0.15**	**0.2**	**0.17**	NA	NA	NA

Notes:
Bold indicates a result above the method reporting limit (RL).
Yellow shading indicates a PCB results above the method RL.

TABLE 1

WATER SAMPLE ANALYTICAL RESULTS

GENERAL MOTORS POWERTRAIN - BEDFORD
BEDFORD, INDIANA

Parameters	Units	Sample ID	Leak Detection System						Leachate Collection System			Underdrain System			Potable Water		
			LDS WEEK 4	LDS DP	LDS 8 071707	LDS-8 122207	LDS-8	LDS-8 8-27-08	GM-INTLCS-012307	GM-LCSFLUSH1-012507	GM LCS 02012007	GM-INTUD-012307	GM-UDFLUSH1-012507	GM UD 02012007	GM-WT-012307	GM-WTFLUSH1-012507	GM-WT 02012007
		Sample Date	6-Mar-07	6-Mar-07	17-Jul-07	22-Dec-07	30-Jan-08	27-Feb-08	23-Jan-07	25-Jan-07	1-Feb-07	23-Jan-07	25-Jan-07	1-Feb-07	23-Jan-07	25-Jan-07	1-Feb-07
Polychlorinated Biphenyls (PCBs)																	
Aroclor 1016	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ug/L		0.483	0.382	ND	ND	ND	ND	ND	3.24	ND	0.85	35.1	89.9	ND	ND	ND
Aroclor 1248	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	ug/L		ND	ND	ND	ND	ND	ND	0.207	ND	ND	0.515	ND	ND	ND	ND	ND
Aroclor 1260	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.154	ND	ND	ND	ND	ND
General Chemistry																	
Calcium	mg/L		NA	NA	NA	NA	NA	NA	444	532	413	385	313	349	33.3	45.6	70.2
Potassium	mg/L		NA	NA	NA	NA	NA	NA	7.63	7.74	7.72	5.95	2.41	2.59	3.87	3.21	2.85
Magnesium	mg/L		NA	NA	NA	NA	NA	NA	53.6	54.6	40.9	50.5	44.2	44.5	9.34	12	18.3
Sodium	mg/L		NA	NA	NA	NA	NA	NA	130	138	119	111	70.9	74.6	4.27	5.64	10.1
Chloride	mg/L		NA	NA	NA	NA	NA	NA	135	160	121	114	107	128	21.3	21.3	24.8
Bicarbonate Alkalinity	mg/L as $CaCO_3$		NA	NA	NA	NA	NA	NA	204	170	228	292	356	356	93	127	195
Sulfate as SO_4	mg/L		NA	NA	NA	NA	NA	NA	1180	1180	864	721	430	554	11.4	15.7	24.7
Physical Parameters																	
Turbidity	NTU		NA	NA	NA	NA	NA	NA	0.88	0.2	0.15	0.22	0.16	0.18	0.54	0.26	0.08

Notes:
Bold indicates a result above the method reporting limit (RL).
Yellow shading indicates a PCB results above the method RL.

TABLE 1

WATER SAMPLE ANALYTICAL RESULTS

GENERAL MOTORS POWERTRAIN - BEDFORD
BEDFORD, INDIANA

Parameters	Units	Sample ID	Quality Assurance/Quality Control Samples															
			GM-FB-012307	GM-FB-012407	GM-FB-012507	GM-FB-012707	GM-FB-012807	GM-FB-02012007	GM-FB-0205-07	GMFB	GM-FB 022007	GM FB 022807	FM FB 030807	GM FB 071707	GM FB 122207	GM FB	GM FB	GM-RB-012307	GM-RB-012407
		Sample Date	23-Jan-07	24-Jan-07	25-Jan-07	27-Jan-07	29-Jan-07	1-Feb-07	5-Feb-07	12-Feb-07	20-Feb-07	26-Feb-07	8-Mar-07	17-Jul-07	22-Dec-07	30-Jan-08	27-Feb-08	23-Jan-07	24-Jan-07
Polychlorintated Biphonyls (PCBs)																			
Aroclor 1016	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.539	ND
Aroclor 1248	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
General Chemistry																			
Calcium	mg/L		ND	ND	ND	0.071	0.108	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND	ND
Potassium	mg/L		ND	ND	ND	ND	ND	ND	ND	0.185	NA	NA	NA	NA	NA	NA	NA	ND	ND
Magnesium	mg/L		ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND	ND
Sodium	mg/L		ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND	ND
Chloride	mg/L		ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND	ND
Bicarbonate Alkalinity	mg/L as $CaCO_3$		ND	1	ND	NO	ND	ND	ND	NO	NA	NA	NA	NA	NA	NA	NA	ND	ND
Sulfate as SO_4	mg/L		ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND	ND
Physical Parameters																			
Turbidity	NTU		0.24	0.03	0.07	0.15	0.14	0.08	0.08	0.08	NA	NA	NA	NA	NA	NA	NA	0.18	0.3

Notes:
Bold indicates a result above the method reporting limit (RL).
Yellow shading indicates a PCB results above the method RL.

TABLE 2

LDS DECONTAMINATION FLUSHING

FLUSH 1				
Date	Gallons	Start Time	End Time	Comments
1/23/2007	200	1215	1315	
	400	1350	1430	
	600	1435	1510	
	800	1515	1605	
	1,000	1610	1650	
	2,000	1655	1745	
1/24/2007	3,000	0830	1105	
	4,000	1120	1355	
	5,000	1400	1815	
1/25/2007	6,000	0819	1328	
	7,000	1330	1955	Completed removal 1/26/07 0735 to 0827
1/26/2007	8,000	0830	2000	
1/27/2007	9,000	0820	2000	

FLUSH 2						
Date	Gallons	Fill		Removal		Comments
		Start Time	End Time	Start Time	End Time	
1/29/2007	200	0817	0819	1025	1051	
	400	1054	1103	1313	1405	
	600	1408	1414	1437	1536	
	800	1537	1548	1607	1900	
1/30/2007	1,000	0809	0820	0915	1013	
	2,000	1015	1040	1145	1300	
	3,000	1315	1403	1512	1640	
1/31/2007	4,000	0819	0845	0945	1425	
	5,000	1430	1600	0740	1340	Removed on 2/1/07
2/1/2007	6,000	1342	1545	1700	2100	
2/2/2007	7,000	0825	1053	1300	1610	
	8,000	1615	1830			Fill completed 2/3/07
2/3/2007	8,000	0830	0900	1100	1454	
	9,000	1500	1705	0808	1510	Removed on 2/5/07

SECTION D.3.5

WORK PLAN FOR REPAIR OF LDS MANHOLE JOINTS

Work Plan for Repair of Leak Detection System Manhole Joints at the GM Bedford Project in Bedford, Indiana

The following work plan will describe the approach that Sevenson will utilize to repair a leaking manhole joint that was discovered in the sump for the leak detection system that had been installed in the vault at the GM Bedford Site in Bedford, Indiana. The results of an inspection by Dan Dalporto, Sevenson's Superintendent, determined that the third joint from the top of the manhole had an active leak which allowed the water to cascade down to the lower joints where it provided the appearance of multiple leaks. As Sevenson does not believe there to be multiple leaks at this time, the active leak in the joint third from the top will be repaired and then the unit will be reinspected to determine if any other additional repair work needs to be performed.

Confined Space Entry

Prior to any work taking place within the manhole, Sevenson's Safety Officer will perform air monitoring as required and set up the vault for a confined space entry. Once the appropriate level of protection has been determined and a proper retrieval system is in place, workers will be authorized to initiate preparation of the manhole for repair.

Site Preparation

Upon receipt of an approved confined space entry permit, Sevenson's personnel will install scaffolding within the manhole to provide a safe work platform that can be used during the course of the repairs to install the holes, clean the holes, inject the sealant, and to seal the injection holes with hydraulic cement upon completion of the repair.

Installation of Access Holes

Once the scaffolding has been set up and secured, Sevenson will proceed with the installation of the access holes that will allow for the introduction of the joint sealant material. The holes will be 3/8" diameter and installed at locations of 3,6,9 and 12 oclock on the affected joint. The holes will be drilled to a depth that allows access to the joint between the exterior and interior manhole lips as this is the target area for the repair. Sevenson's laborer will preset the drill depth as required prior to drilling the holes to ensure that he does not penetrate the outer lip of the manhole joint. Once the holes are completed they will be cleaned and flushed to remove any residual concrete dust prior to proceeding with the repair.

To prohibit the joint sealant from flowing back out of the access hole during installation, a plastic drive in packer will be installed in the hole and fitted with a Zerk fitting. The Zerk fitting is a one way valve that will allow for material to be introduced into the joint and prevent backflow at the same time. To ensure that the required amount of material is introduced into the joint to make a competent seal, the access holes on either side of the hole that is being used as the injection port will be visually inspected to verify that the sealant has made its way around the manhole as anticipated. If the sealant is not noted in the adjacent holes, additional holes will be drilled between the initial holes as required so the process can be repeated until a positive seal is visually confirmed.

Once a satisfactory seal has been obtained, the packer fittings will be removed and hydraulic cement will be used to repair the access holes.

Product Data

Attached to this document is product data from de neef Construction Chemicals, Inc., which includes the following:

- Technical Information Sheet for Hydro Active Sealfoam NF
- Technical Information Sheet for Installation Accessories
- Material Safety Data Sheet for Hydro Active Sealfoam NF

de neef®
CONSTRUCTION CHEMICALS, INC.

Regional Manager
913-390-5246
Cell 303-885-2223
KKBLATZ@deneef.com

TECHNICAL INFORMATION
URETHANES

PRODUCT NAME

HYDRO ACTIVE® Sealfoam NF

Hydrophilic polyurethane resin

MANUFACTURER

De Neef Construction Chemicals, Inc.
5610 Brystone Drive
Houston, TX 77041
1(800) 732-0166

PRODUCT DESCRIPTION

HYDRO ACTIVE® Sealfoam NF is a nonflammable hydrophilic polyurethane resin designed to form a flexible gasket or plug in joints and cracks in concrete. In its uncured form, **HYDRO ACTIVE® Sealfoam NF** is a pale yellow liquid. When it comes into contact with water, the grout expands quickly and cures to a tough, flexible, adhesive, closed-cell foam that is essentially unaffected by mildly corrosive environments.

APPROPRIATE APPLICATIONS

- Sealing leaks through concrete cracks and joints.
- Saturating oakum rope or backer rod to seal joints by the gasket method.
- Potable water tanks and storage

ADVANTAGES

- Contains no volatile solvents
- Non-flammable
- Free Foam expansion 4 times its liquid volume
- Single component
- High elongation creates tight seal in moving cracks
- NSF 61 Potable water approved

TYPICAL PROPERTIES

Uncured		
Solids	83%	ASTM D 2369 B
Viscosity	650-800 cps	ASTM D 2196 A
Color	Pale yellow	
Density	8.7 – 9.2 lbs/gal	ASTM D 3574-95
Flashpoint °F	225	ASTM D 92
Corrosiveness	Non-corrosive	
Reaction time 1:1 with water	20 sec @ 68° F	
Cured		
Tensile Strength	380 psi	ASTM D 3574 - 95
Elongation	400%	ASTM D 3574 - 95
Bonding Strength	250-300 psi	
Shrinkage	< 10%	ASTM D 1042
Toxicity	Non-toxic	

The data shown above reflects typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown above may result.

PACKAGING

- 55 gallon metal drum sealed under dry nitrogen.
- 5 gal metal pail sealed under dry nitrogen.
- Cartridges: 10.5 oz/ea.
- Side-by-Side Cartridge: 2 x 10.5 oz.

LIMITATIONS

Low temperatures will significantly affect viscosity. If site temperatures are extremely low, heat bands or heated water baths may be used on the pails before and during installation to maintain the product's temperature. Avoid splashing water into open containers, as the material is water activated. Avoid exceeding 90°F when warming.

CAUTION – pH NOTICE. Water used to activate HYDRO ACTIVE® Grouts must be in a range of pH 3 –10 for optimum foam quality.

SURFACE PREPARATION

Refer to De Neef Surface Preparation Guidelines for more details.

INSTALLATION PROCEDURES

Prior to installation the material should be agitated by vigorously shaking the 5-gallon pail or by mixing with a jiffy mixer or bung mixer. During injection the grout will follow the path of least resistance. When the material has stopped migrating, it will continue to expand against the confines of the crack/joint and compress within itself, forming a very dense, closed cell material, stopping the leak. For application procedures in extreme temperatures or specific environments or equipment recommendations call the De Neef Technical Service Department.

STORAGE & HANDLING

Store in dry area using original resealable containers.

PRECAUTIONS

Always use protective clothing, gloves and goggles consistent with OSHA regulations during use. Avoid eye and skin contact. Do not ingest. Refer to Material Safety Data Sheet for detailed safety precautions.

SAFETY INFORMATION

In the event of an EMERGENCY call: CHEM-TREC 800-424-9300.

WARRANTY INFORMATION

De Neef Construction Chemicals, Inc. products are warranted under the policy set forth under the WARRANTY section of the De Neef Construction Chemicals Inc., product catalog. Warranty information can also be obtained via the De Neef Construction Chemicals Inc. website at www.deneef.com, or by calling 713-896-0123 or toll free at 1-800-732-0166.

Rev. 07/2006

ANSI/NSF 61
DRINKING WATER SYSTEM COMPNENTS
3N76

"HYDRO ACTIVE® SEALFOAM NF OR HYDRO ACTIVE® MULTIGEL NF"
MAXIMUM SURFACE AREA TO VOLUME RATIO
6CM²/L AT 23°C

5610 Brystone Dr. Houston, TX 77041•Tel: 800-732-0166•Fax: 713-849-3340•www.deneef.com

de neef®
CONSTRUCTION CHEMICALS, INC.

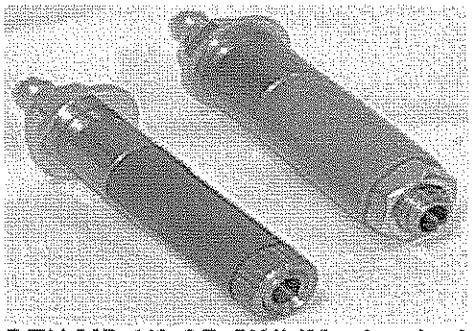
TECHNICAL INFORMATION
ACCESSORIES

PRODUCT NAME

Injection Ports

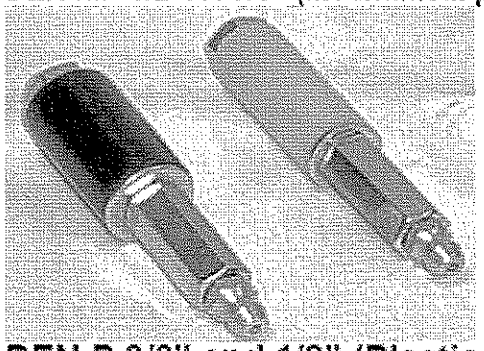
A simple & reliable method of injection
Specifically designed to accommodate jobsite conditions
Capable of handling polyurethanes and epoxy resins
Uses common hydraulic lubrication fittings
Available in bags of 100

DEN HP 1/2" OR 5/8" X 3" (High Pressure Packers)



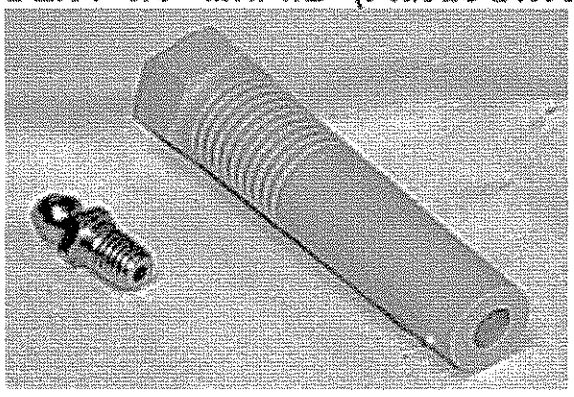
- 7/32" inside diameter for increased flow
- Zerk fittings
- Steel construction allows for higher pressures
- Reusable
- 4" extensions available

DEN MP 1/2 OR 5/8" (Mechanical packers)



- Eliminates check valve
- Lowers required injection pressure
- Recommended zerk coupler – alemite 6304C

DEN P 3/8" and 1/2" (Plastic Drive In Packers)



- 3/8" drill bit
- Use hammer to seat
- Zerk fittings included

5610 Brystone Dr., Houston, TX 77041•Tel: 800-732-0166•Fax: 713-849-3340•www.deneef.com

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Hydro Active Sealfoam NF

MANUFACTURER: *de neef* Construction Chemicals Inc.
ADDRESS: 5610 Brystone Drive
Houston, TX 77095
PHONE: (800) 732-0166 (7am-5pm CST Weekdays)
FAX: (713) 849-3340
WEBSITE: www.deneef.com

EMERGENCY PHONE: CHEMTREC (800) 424-9300 (Anytime)

SECTION 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

APPEARANCE AND ODOR:
Amber colored liquid with a slightly sweet odor.

REACTIVE:
Product will polymerize when exposed to water.

POTENTIAL HEALTH EFFECTS

EYES:
Contact with eyes may cause product to polymerize.

SKIN:
Contact with skin may cause product to polymerize and cause mild to moderate skin irritation.

INGESTION:
Polymerization of this product in airway could cause suffocation. Ingestion of this product is harmful and maybe fatal.

INHALATION:
Under normal conditions of use, inhalation of this product is unlikely.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT:

Name	CAS NO.	% VOL
Polyether Polyol	9082-00-2	30% - 60%
Polyether Polyol	9003-11-6	10% - 30%
2-4 Toluene Diisocynate	26471-62-5	10% - 30%
Diethylene Glycol Mono-Ethy Ether Acetate	112-15-2	10% - 30%
Polyalkyleneoxidemethyl-Siloxane Copolymer	Trade Secret	1% - 5%
H_3PO_4	7664-38-2	0.1% - 1%

SECTION 4: FIRST AID MEASURES

EYES:
Immediately flush eyes gently with water for at least 15 minutes, while holding open upper and lower lids. Immediately seek medical attention.

SKIN:
Remove contaminated clothing. Blot or brush the product away, prior to washing the exposed area with water. The cured product on the skin is rarely a cause of irritation (If it does, seek medical attention). The process of trying to remove the cured product may cause irritation.

INGESTION:
SEEK IMMEDIATE MEDICAL ATTENTION! DELAYED TREATMENT MAY RESULT IN FATALITY. Do Not Induce Vomiting. Rinse mouth out with water. Aspiration of material into the lungs due to vomiting can cause chemical pneumonitis which can be fatal.

INHALATION:
Under normal conditions of use, inhalation of this product is unlikely. If product mist is inhaled, remove affected person immediately to fresh air. Seek medical attention immediately if symptoms develop.

SECTION 5: FIRE-FIGHTING MEASURES

FLASH POINT & METHOD USED:
COC 392˚F (200˚C)

EXTINGUISHING MEDIA:
Dry Chemical, CO_2, Foam or Water Fog

SPECIAL FIRE FIGHTING PROCEDURES:
Do not scatter material with high pressure water streams.

HAZARDOUS DECOMPOSITION PRODUCTS:
Fire or intense heat will decompose the product into CO_2, CO, Hydrogen Cyanide, Oxides of Nitrogen, Isocynates, Isocyanic, and dense black smoke.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES:
Where exposure level is known, wear approved respirator suitable for the level of exposure. If exposure level is unknown, wear approved, positive pressure, self-contained respirator. In addition to the protective clothing in section 8, wear impermeable boots.

CLEAN-UP PROCEDURES:
Remove sources of ignition. Stop and contain / dam the spill. Absorb spill with inert material (vermiculite / diatomaceous earth). Shovel material into appropriate container for disposal.

SECTION 7: HANDLING AND STORAGE

HANDLING:
Avoid skin and eye contact. Wash thoroughly after handling. Keep product away from heat and open flame.

STORAGE:
Keep in manufacturer's sealed nitrogen packed pail. Maintain storage temperatures between 65˚F to 86˚F (18˚C to 30˚C).

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
Normal room ventilation is usually adequate under normal use.

RESPIRATORY PROTECTION:
Under normal conditions of use, respiratory equipment is not required.

EYE PROTECTION:
Safety goggles or face shield

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (Continued)

SKIN PROTECTION:
Use gloves; wear protective clothing to prevent skin contact. In cured form, the product is difficult to remove from skin and hair.

WORK HYGIENIC PRACTICES:
Use good hygiene practices when handling this material including changing and laundering of work clothes after use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Amber

ODOR: Slightly sweet odor

PHYSICAL STATE: Liquid

Solubility (H_2O): None

SECTION 10: STABILITY AND REACTIVITY

STABILITY:
Contact with moisture or temperatures above 350° F (177° C) will cause polymerization.

CONDITIONS TO AVOID (STABILITY):

INCOMPATIBILITY (MATERIAL TO AVOID):
Water, Amines, Strong Bases, Alcohols, Copper Alloys, Liquid Chlorine

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:
Fire or intense heat will decompose the product into aridic and or toxic smoke and fumes.

HAZARDOUS POLYMERIZATION:
During normal polymerization CO_2 is produced.

SECTION 11: TOXICOLOGICAL INFORMATION

CARCINOGENICITY:
IARC: Group 3 (not classifiable as to its carcinogenicity in humans)
EPA: Group D

LD50: >5,800 mg/kg Oral (rat) 2-4 Toluene Diisocynate

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION:
Does not Bioaccumulate (All Ingredients)
Polyether Polyol 9082-00-2: 70% Biodegrade in 28days

Immiscible with water, but will react with water to produce an inert non-biodegradable solid.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of per local, state and federal guidelines as required by your specific local. This product in its cured foam state is inert and non-toxic.

SECTION 14: TRANSPORT INFORMATION

Follow all applicable shipping regulations. Contact *de neef* Construction Chemicals Inc. for any further information.

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

Ingredient	TSCA	CERCLA	SARA 302	SARA 313
Polyether Polyol CAS 9082-00-2	Yes	None	No	No
Polyether Polyol CAS 9003-11-6	Yes	None	No	No
2-4 Toluene Diisocynate	Yes	None	No	No
Diethylene Glycol Mono-Ethy Ether Acetate	Yes	None	No	No
Polyalkyleneoxidemethyl-Siloxane Copolymer	Yes	None	No	No
H_3PO_4	Yes	5000lbs	No	Yes

SECTION 15: REGULATORY INFORMATION (Continued)

WHMIS:
All components are listed on the CEPA Domestic Substances List (DSL)

Ingredient Disclosure List (IDL), the following components are on the list:

Polyether Polyol	9082-00-2
Polyether Polyol	9003-11-6
2-4 Toluene Diisocynate	26471-62-5
H_3PO_4	7664-38-2

NFPA HAZARD CLASSIFICATION:
HEALTH: 2 FLAMMABILITY: 1 REACTIVITY: 1

SECTION 16: OTHER INFORMATION

PREPARATION INFORMATION:
November 14, 2006
This MSDS is on a three year review cycle. If the date on this sheet is older than three years please contact *de neef* Construction Chemicals Inc. for an updated MSDS.

DISCLAIMER:
All information appearing herein is based on manufacturer and/ or recognized technical sources. While the information is believed accurate *de neef* Construction Chemicals Inc. makes no representations as to the accuracy or sufficiency of the information.

APPENDIX E

LCS SUMP

E.1 SUMMARY OF LCS SUMP DAILY MONITORING LOGS

E.2 SUMMARY OF LCS SUMP SAMPLE RESULTS

APPENDIX E.1

SUMMARY OF LCS SUMP DAILY MONITORING LOGS

TABLE E.1.1

2006 LCS PUMPING
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information	Aug. 30 - Dec. 31
Top of sump (datum reference)	0
Bottom of sump (feet BTOS)	37.4
Diameter of sump (feet)	6

Date	*Water Level (feet BTOS)* *start*	*end*	*Time (hh:mm)* *start*	*end*	*Water Depth (feet AFOS)* *start*	*end*	*Change in Water Depth (feet)*	*Duration of Pumping (hh:mm)*	*Volume Pumped [1] (cu. ft)*	*Volume Pumped [*] (gallons)*	*Flow Rate (gallons/min)*	*Comments*	*Note*
8/30/2006	36.4	36.2	8:00	19:40	1.0	1.2	0.2	11:40			0.00	Volume not calculated (water level rose)	(1)
8/31/2006	36.2	36.8	13:45	18:05	1.2	0.6	-0.6	4:20	16.96	126.90	0.49		
9/1/2006	36.8	36.7	8:55	14:00	0.6	0.7	0.1	5:05			0.00	Volume not calculated (water level rose), rain event	(1)
9/2/2006	36.5	36.9	9:50	12:15	0.9	0.5	-0.4	2:25	11.31	84.60	0.58		
9/3/2006	36.5	36.8	10:00	11:20	0.9	0.6	-0.3	1:20	8.48	63.45	0.79		
9/4/2006	36.8	36.8	9:40	11:25	0.6	0.6	0.0	1:45	0.00	0.00	0.00		
9/5/2006	36.7		14:10		0.7							Not pumped	(2)
9/6/2006	36.6	36.7	14:45	18:00	0.8	0.7	-0.1	3:15	2.83	21.15	0.11		
9/7/2006	36.4	36.9	14:15	20:15	1.0	0.5	-0.5	6:00	14.14	105.75	0.29		
9/8/2006	36.7	36.8	13:50	19:30	0.7	0.6	-0.1	5:40	2.83	21.15	0.06		
9/9/2006	36.8	36.8	15:10		0.6	0.6	0.0					Not pumped/water level acceptable	(3)
9/10/2006	36.8	36.8	9:50		0.6	0.6	0.0					Not pumped/water level acceptable, Rain event	(3)
9/11/2006	36.5	36.9	11:00	18:30	0.9	0.5	-0.4	7:30	11.31	84.60	0.19	Rain event	
9/12/2006	34.6	36.2	10:30	18:45	2.8	1.2	-1.6	8:15	45.24	338.39	0.68	Heavy rainfall event	
9/13/2006	30.2	30.1	9:45	17:45	7.2	7.3	0.1	8:00			0.00	Volume not calculated (water level rose), Rain event	(4)
9/14/2006	30.1	30.1	8:40	19:30	7.3	7.3	0.0	10:50			0.00	Volume not calculated (water level steady)	(4)
9/15/2006	31.5	37.4	18:20		5.9	0.0	-5.9		166.82	1,247.80		Pumped through the night to empty, Rain event	(2), (4)
9/16/2006	24.4	37	8:30	14:30	13.0	0.4	-12.6	6:00	356.26	2,664.80	7.40		
9/17/2006	36.2	36.8	8:05	9:45	1.2	0.6	-0.6	1:40	16.96	126.90	1.27	Rain event	
9/18/2006	36.5	36.9	9:20	17:00	0.9	0.5	-0.4	7:40	11.31	84.60	0.18	Rain event	
9/19/2006	35.5	35.5	11:40	17:15	1.9	1.9	0.0	5:35	0.00	0.00	0.00		
9/20/2006	35.1	36.9	13:45	17:06	2.3	0.5	-1.8	3:21	50.89	380.69	1.89		
9/21/2006	36.4	36.8	17:14	18:20	1.0	0.6	-0.4	1:06	11.31	84.60	1.28		
9/22/2006	36.5	36.9	9:18	9:47	0.9	0.5	-0.4	0:29	11.31	84.60	2.92	Rain event	
9/23/2006	35.6	37.1	11:05	0:44	1.8	0.3	-1.5	13:39	42.41	317.24	0.39	Rain event	
9/24/2006	33.8	37.4	9:42	18:10	3.6	0.0	-3.6	8:28	101.79	761.37	1.50		
9/25/2006	36.9	37.2	14:25	15:35	0.5	0.2	-0.3	1:10	8.48	63.45	0.91		
9/26/2006	36.8	37.4	11:10	14:20	0.6	0.0	-0.6	3:10	16.96	126.90	0.67		
9/27/2006	36.8	37.3	8:14	8:54	0.6	0.1	-0.5	0:40	14.14	105.75	2.64	Rain event	
9/28/2006	36.8	37.3	10:36	11:57	0.6	0.1	-0.5	1:21	14.14	105.75	1.31	Rain event	
9/29/2006	36.7	37.3	1:24	13:58	0.7	0.1	-0.6	12:34	16.96	126.90	0.17	Rain event	
9/30/2006	36.8	37.3	13:09	13:37	0.6	0.1	-0.5	0:28	14.14	105.75	3.78		
10/1/2006	36.8	37.3	10:13	10:38	0.6	0.1	-0.5	0:25	14.14	105.75	4.23		
10/2/2006	36.8	37.3	8:54	9:17	0.6	0.1	-0.5	0:23	14.14	105.75	4.60		
10/3/2006	36.2	37.4	13:57	16:00	1.2	0.0	-1.2	2:03	33.93	253.79	2.06	Pumped to empty, Rain event	(6)
10/4/2006	36.8	37.3	14:02	14:58	0.6	0.1	-0.5	0:56	14.14	105.75	1.89		
10/5/2006	36.7	37.4	10:54	14:29	0.7	0.0	-0.7	3:35	19.79	148.04	0.69	Pumped to empty	(6)
10/6/2006	36.9	37.3	14:07	15:17	0.5	0.1	-0.4	1:10	11.31	84.60	1.21		
10/7/2006	36.8	37.3	13:21	13:45	0.6	0.1	-0.5	0:24	14.14	105.75	4.41		
10/8/2006	36.7	37.3	10:23	22:45	0.7	0.1	-0.6	12:22	16.96	126.90	0.17		
10/9/2006	36.8	37.2	13:13	13:32	0.6	0.2	-0.4	0:19	11.31	84.60	4.45		
10/10/2006	36.7	37.3	13:56	14:19	0.7	0.1	-0.6	0:23	16.96	126.90	5.52		
10/11/2006	36.8	37.3	14:12	14:40	0.6	0.1	-0.5	0:28	14.14	105.75	3.78	Rain event	
10/12/2006	36.8	37.3	13:25	14:02	0.6	0.1	-0.5	0:37	14.14	105.75	2.86		
10/13/2006	36.8	37.3	9:53	10:16	0.6	0.1	-0.5	0:23	14.14	105.75	4.60		
10/14/2006	36.8	37.3	10:19	10:36	0.6	0.1	-0.5	0:17	14.14	105.75	6.22		
10/15/2006	36.8	37.3	7:21	7:44	0.6	0.1	-0.5	0:23	14.14	105.75	4.60		
10/16/2006	36.7	37.2	9:22	9:46	0.7	0.2	-0.5	0:24	14.14	105.75	4.41	Heavy rainfall event	
10/17/2006	32.7	37.4	13:55	0:00	4.7	0.0	-4.7	10:05	132.89	994.01	1.64	Rain event, Pumped to empty	(6)
10/18/2006	33.6	37.4	9:17	14:18	3.8	0.0	-3.8	5:01	107.44	803.67	2.67	Pumped to empty	(6)

TABLE E.1.1

2006 LCS PUMPING
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (feet BTOS) start	end	Time (hh:mm) start	end	Water Depth (feet AFOS) start	end	Change in Water Depth (feet)	Duration of Pumping (hh:mm)	Volume Pumped [1] (cu. ft)	Volume Pumped [*] (gallons)	Flow Rate (gallons/min)	Comments	Note
10/19/2006	36.3	37.2	14:24	15:30	1.1	0.2	-0.9	1:06	25.45	190.34	2.88	Rain event, Pumped to empty	
10/20/2006	35.8	37.3	13:25	15:00	1.6	0.1	-1.5	1:35	42.41	317.24	3.34		
10/21/2006	36.3	37.4	10:56	13:03	1.1	0.0	-1.1	2:07	31.10	232.64	1.83	Pumped to empty	(6)
10/22/2006	36.8	37.3	10:12	10:53	0.6	0.1	-0.5	0:41	14.14	105.75	2.58		
10/23/2006	36.7	37.3	13:15	14:04	0.7	0.1	-0.6	0:49	16.96	126.90	2.59		
10/24/2006	36.6	37.2	15:29	15:58	0.8	0.2	-0.6	0:29	16.96	126.90	4.38		
10/25/2006	36.8	37.2	13:15	13:40	0.6	0.2	-0.4	0:25	11.31	84.60	3.38	Rain event	
10/26/2006	35.2	37.4	7:22	10:55	2.2	0.0	-2.2	3:33	62.20	465.28	2.18	Rain event, Pumped to empty	(6)
10/27/2006												Rain event, Pumped all day, No readings	(4)
10/28/2006	35.3	37.4	9:13	13:14	2.1	0.0	-2.1	4:01	59.38	444.13	1.84	Rain event, Pumped to empty	(6)
10/29/2006	36.6	37.2	10:00	11:03	0.8	0.2	-0.6	1:03	16.96	126.90	2.01		
10/30/2006	34.7	37.4	13:30	16:00	2.7	0.0	-2.7	2:30	76.34	571.03	3.81	Pumped to empty	(6)
10/31/2006	36.6	37.3	14:04	14:30	0.8	0.1	-0.7	0:26	19.79	148.04	5.69	Rain event	
11/1/2006	36.9	37.3	13:19	13:42	0.5	0.1	-0.4	0:23	11.31	84.60	3.68	Rain event	
11/2/2006	36.8	37.3	13:40	14:09	0.6	0.1	-0.5	0:29	14.14	105.75	3.65		
11/3/2006	36.6	37.3	9:30	10:37	0.8	0.1	-0.7	1:07	19.79	148.04	2.21		
11/4/2006	36.7	37.3	13:13	13:33	0.7	0.1	-0.6	0:20	16.96	126.90	6.34		
11/5/2006	36.7	37.3	10:02	10:28	0.7	0.1	-0.6	0:26	16.96	126.90	4.88		
11/6/2006	34.6	37.3	15:10	15:06	2.8	0.1	-2.7		76.34	571.03		Rain event	
11/7/2006	36.4	37.3	13:15	13:50	1.0	0.1	-0.9	0:35	25.45	190.34	5.44	Rain event	
11/8/2006	35.5	37.4	13:12	23:00	1.9	0.0	-1.9	9:48	53.72	401.83	0.68	Pumped to empty	(6)
11/9/2006	36.8	37.3	13:14	13:43	0.6	0.1	-0.5	0:29	14.14	105.75	3.65		
11/10/2006	36.7	37.3	14:07	15:00	0.7	0.1	-0.6	0:53	16.96	126.90	2.39		
11/11/2006	36.6	37.3	13:37	14:35	0.8	0.1	-0.7	0:58	19.79	148.04	2.55	Rain event	
11/12/2006												Sunday, Pumped but no readings	(5)
11/13/2006	36.7	37.4	13:25	17:58	0.7	0.0	-0.7	4:33	19.79	148.04	0.54	Rain event, Pumped to empty	(6)
11/14/2006	36.85	37.4	13:50	17:02	0.55	0.0	-0.55	3:12	15.55	116.32	0.61	Heavy rainfall event, Pumped to empty	(6)
11/15/2006	36.2	37.4	7:32	17:30	1.2	0.0	-1.2	9:58	33.93	253.79	0.42	Rain event, Pumped to empty	(6)
11/16/2006	32.5	37.4	8:40	17:18	4.9	0.0	-4.9	8:38	138.54	1,036.31	2.00	Pumped to empty	(6)
11/17/2006	36.3	37.3	13:35	15:35	1.1	0.1	-1.0	2:00	28.27	211.49	1.76		
11/18/2006	36.7	37.2	13:25	14:25	0.7	0.2	-0.5	1:00	14.14	105.75	1.76	Rain event	
11/19/2006									0.00	0.00		Sunday, Not pumped	(5)
11/20/2006	36.7	37.4	13:21	14:00	0.7	0	-0.7	0:39	19.79	148.04	3.80		
11/21/2006	36.75	37.3	15:39	18:20	0.65	0.1	-0.55	2:41	15.55	116.32	0.72		
11/22/2006	36.9	37.3	10:22	19:20	0.5	0.1	-0.4	8:58	11.31	84.60	0.16		
11/23/2006									0.00	0.00		Holiday, Not pumped	(5)
11/24/2006	36.8	37.3	10:15	10:49	0.6	0.1	-0.5	0:34	14.14	105.75	3.11		
11/25/2006									0.00	0.00		Holiday, Not pumped	(5)
11/26/2006	36.7	37.3	10:14	10:46	0.7	0.1	-0.6	0:32	16.96	126.90	3.97		
11/27/2006	36.9	37.3	13:05	13:37	0.5	0.1	-0.4	0:32	11.31	84.60	2.64		
11/28/2006	36.85	37.3	16:26	17:00	0.55	0.1	-0.45	0:34	12.72	95.17	2.80		
11/29/2006	36.8	37.3	13:16	13:42	0.6	0.1	-0.5	0:26	14.14	105.75	4.07	Rain event	
11/30/2006	36.7	37.1	11:00	14:12	0.7	0.3	-0.4	3:12	11.31	84.60	0.44	Heavy rainfall event	
12/1/2006	35.2	37.4	9:02		2.2	0	-2.2		62.20	465.28		Rain event, Assumed pumped to empty	(6)
12/2/2006	36.4	37.2	10:00	11:07	1.0	0.2	-0.8	1:07	22.62	169.19	2.53		
12/3/2006													
12/4/2006	36.4	37.3	14:10	17:43	1.0	0.1	-0.9	3:33	25.45	190.34	0.89		
12/5/2006	36.2	37.3	15:30	16:27	1.2	0.1	-1.1	0:57	31.10	232.64	4.08		
12/6/2006	36.9	37.3	16:28	17:02	0.5	0.1	-0.4	0:34	11.31	84.60	2.49		
12/7/2006	36.9	37.3	13:28	14:17	0.5	0.1	-0.4	0:49	11.31	84.60	1.73		
12/8/2006												SES offsite, Not pumped	(7)
12/9/2006	36.6	37.3	9:04	10:30	0.8	0.1	-0.7	1:26	19.79	148.04	1.72		
12/10/2006												Sunday, Not pumped	(5)
12/11/2006	36.8	37.3	15:37	5:30	0.6	0.1	-0.5		14.14	105.75			
12/12/2006	36.2	37.3	14:23	7:30	1.2	0.1	-1.1		31.10	232.64		Rain event	
12/13/2006	36.9	37.3	14:35	16:10	0.5	0.1	-0.4	1:35	11.31	84.60	0.89		
12/14/2006	36.4	37.3	13:29	17:45	1.0	0.1	-0.9	4:16	25.45	190.34	0.74		
12/15/2006	36.7				0.7							Not pumped	

TABLE E.1.1

2006 LCS PUMPING
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)* *start*	*end*	*Time (hh:mm)* *start*	*end*	*Water Depth (feet AFOS)* *start*	*end*	*Change in Water Depth (feet)*	*Duration of Pumping (hh:mm)*	*Volume Pumped [1] (cu. ft)*	*Volume Pumped [*] (gallons)*	*Flow Rate (gallons/min)*	*Comments*	*Note*
12/16/2006	36.8				0.6							Not pumped	
12/17/2006												Sunday, Not pumped	(5)
12/18/2006	36.4	37.05	14:55	16:15	1.0	0.35	-0.65	1:20	18.38	137.47	1.72	Meter installed, Meter reading = 000062 cu. ft	
12/19/2006		36.9		13:30		0.5			13.00	97.24		Meter reading = 000075 cu. ft	
12/20/2006		36.7		13:10		0.7			25.00	187.00		Rain event, Meter reading = 000100 cu. ft	
12/21/2006		36.8		11:15		0.6			105.00	785.40		Heavy rainfall event, Meter reading = 000205 cu. ft	
12/22/2006		37.3		9:00		0.1			562.00	4,203.76		Rain event, meter reading = 000767 cu. ft	
12/23/2006		36.7		19:15		0.7			150.00	1,122.00		Pumped, Meter not read	
12/24/2006												Sunday, Not pumped	(5)
12/25/2006		36.3		15:00		1.1			300.00	2,244.00		Rain event, Pumped, Meter not read	
12/26/2006				9:05					150.00	1,122.00		Rain event, Meter reading = 001367 cu. ft	
12/27/2006		36.8		19:30		0.6			72.00	538.56		Meter reading = 001439 cu. ft	
12/28/2006		36.9		19:43		0.5			30.00	224.40		Meter reading = 001469 cu. ft	
12/29/2006		36.9		13:30		0.5			19.00	142.12		Meter reading = 001488 cu. ft	
12/30/2006		36.8		19:10		0.6			21.00	157.08		Meter reading = 001509 cu. ft	
12/31/2006		36.1		10:00		1.3			167.30	1,251.40		Rain event, Pumped, Meter not read	
								Total	**4,413.46**	**33,012.67**			
								Average/day	**35.59**	**266.23**			

Notes:
BTOS - Below top of sump
AFOS - Above floor of sump
(*) Volume pumped prior to meter installation on Dec. 18, 2006 are calculated based on elevation change and storage volume of the LCS
(1) No water was pumped on this date, however, the water level rose slightly between the two observation times.
(2) Not pumped, Contractor repairing pumping equipment
(3) Not pumped, water is at an acceptable level.
(4) System was operated throughout the day to accommodate pumping of the accumulating water.
(5) Sunday or holiday (no reading unless rain). Maximum one day without pumping unless currently raining or rained in the previous 24 hour period.
(6) Raining, sump pumped to empty.
(7) Contractor not on Site, manhole pumped next day.

TABLE E.1.2

2007 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information	Jan. 1 - Aug. 7	Aug.8 - Dec. 31
Top of sump (datum reference)	0	0
Bottom of sump (feet BTOS)	42.8	52.67
Diameter of sump (feet)	6	6

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time (hh:mm) start*	*end*	*Duration of Pumping h*	*m*	*Meter (cu. ft) start*	*Volume Pumped (cu. ft)*	*Volume Pumped (gallons)*	*Flow Rate (gallons/min)*	*Comments*	*Note*
1/1/2007											Rain event, Holiday, Meter not read	(5)
1/2/2007	36.9	5.9	15:30	15:30	48	0	2011	335	2,505.8	0.87		
1/3/2007	36.9	5.9	14:57	14:57	23	27	2030	19	142.1	0.10	Rain event	
1/4/2007	36.9	5.9	17:00	17:00	26	3	2050	20	149.6	0.10	Rain event	
1/5/2007	36.8	6	15:30	15:30	22	30	2646	596	4,458.1	3.30	Heavy rainfall event	
1/6/2007	36.8	6	15:30	15:30	24	0	2841	195	1,458.6	1.01	Rain event	
1/7/2007	36.9	5.9	15:14	15:14	23	44	2902	61	456.3	0.32	Rain event	
1/8/2007	36	6.8	17:00	17:00	25	46	3024	122	912.6	0.59	Rain event	
1/9/2007	36.8	6	17:00	17:00	24	0	3052	28	209.4	0.15	Rain event	
1/10/2007	36.8	6	17:15	17:15	24	15	3081	29	216.9	0.15		
1/11/2007	42.1	0.7	7:15	23:59	14	0	3105	24	179.5	0.21		
1/12/2007	42.1	0.7	7:15	23:59	24	0	3105			0.00	Pump failed (clogged with silt), Rain event, Not pumped	
1/13/2007	39.3	3.5	7:02	23:59	23	47	3105			0.00	Pump being repaired/pumped with 2" pump, Rain	
1/14/2007	37.9	4.9	7:00	23:59	23	58	3105			0.00	Pump being repaired/pumped with 2" pump, Rain	(2)
1/15/2007	34.5	8.3	19:15	23:59	36	15	3105			0.00	Pump being repaired/pumped with 2" pump, Rain	(4)
1/16/2007	32.9	9.9	7:30	23:59	12	15	0			0.00	Pump being repaired/pumped with 2" pump	(2)
1/17/2007	41.2	1.6	7:30	23:59	24	0	220	220	1,645.6	1.14	Pump being repaired, Not pumped, Meter reset to "0"	
1/18/2007	42.1	0.7	7:30	23:59	24	0	990	770	5,759.6	4.00	Meter repaired, Obtaining one meter reading per day	
1/19/2007	42.7	0.1	8:15	23:59	24	45	990	17	126.9	0.09		
1/20/2007	42.2	0.6	8:00	23:59	23	45	1020	30	224.4	0.16		
1/21/2007											Rain event	(5)
1/22/2007	41.8	1	10:00	23:59	50	0	1030	10	74.8	0.02		
1/23/2007	42.1	0.7	8:30	23:59	22	30	1170	140	1,047.2	0.78		
1/24/2007	42.1	0.7	7:00	23:59	22	30	1180	10	74.8	0.06		
1/25/2007	41.9	0.9	7:30	23:59	24	30	1190	10	74.8	0.05		
1/26/2007	42.1	0.7	7:30	23:59	24	0	1250	60	448.8	0.31		
1/27/2007	42.2	0.6	7:36	23:59	24	6	1280	30	224.4	0.16		
1/28/2007											Sunday, Meter not read	(5)
1/29/2007	42.1	0.7	7:50	23:59	48	50	1300	20	149.6	0.05		
1/30/2007	41.8	1	7:50	23:59	24	0	1300			0.00	No pumping from Jan. 29 - Jan. 30	
1/31/2007	42.1	0.7	15:30	23:59	31	40	1397	97	725.6	0.38		
2/1/2007	42.2	0.6	7:41	23:59	16	11	1427	30	224.4	0.23		
2/2/2007	42.3	0.5	8:11	23:59	24	30	1458	31	231.9	0.16		
2/3/2007	42.2	0.6	8:04	23:59	23	53				0.00		
2/4/2007											Sunday, Meter not read	(5)
2/5/2007	39.9	2.9	8:04	23:59	48	4	1483	25	187.0	0.06		
2/6/2007	42.4	0.4	13:00	23:59	28	56	1551	68	508.6	0.29		
2/7/2007											Rain event	
2/8/2007	42	0.8	7:45	23:59	42	45	1551	0	0.0	0.00		
2/9/2007	41.9	0.9	7:41	23:59	23	56	1551	0	0.0	0.00	Rain event	
2/10/2007	42.3	0.5	7:30	23:59	23	49	1612	61	456.3	0.32		
2/11/2007								0	0.0		Sunday, Meter not read	(5)
2/12/2007	42.1	0.7	7:30	23:59	48	30	1612	0	0.0	0.00	Rain event	
2/13/2007	41.8	1	8:15	23:59	24	45	1640	28	209.4	0.14	Heavy rain/sleet	
2/14/2007	41.3	1.5	8:45	23:59	24	30	1769	129	964.9	0.66		
2/15/2007	42.2	0.6	8:00	23:59	23	15	1903	134	1,002.3	0.72		
2/16/2007	42.3	0.5	8:00	23:59	24	0	1927	24	179.5	0.12		
2/17/2007	42.1	0.7	7:30	23:59	23	30	1927	0	0.0	0.00	Rain event	
2/18/2007											Sunday, Meter not read, Rain event	(5)
2/19/2007	42.1	0.7	7:30	23:59	48	30	1954	27	202.0	0.07	Rain event	

TABLE E.1.2

2007 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (feet BTOS)	Water Depth (feet AFOS)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping h	Duration of Pumping m	Meter (cu. ft) start	Volume Pumped (cu. ft)	Volume Pumped (gallons)	Flow Rate (gallons/min)	Comments	Note
2/20/2007	42.2	0.6	11:25	23:59	27	55	1980	26	194.5	0.12	Rain event	
2/21/2007	40.1	2.7	7:30	23:59	20	5	1980	0	0.0	0.00		
2/22/2007	42.7	0.1	7:30	23:59	24	0	2354	374	2,797.5	1.94		
2/23/2007	41.9	0.9	7:30	23:59	24	0	2354	0	0.0	0.00		
2/24/2007	42.1	0.7	10:00	23:59	26	30	2482	128	957.4	0.60	Heavy rainfall event	
2/25/2007	39.7	3.1	7:30	23:59	20	90	2546	64	478.7	0.37	Field notes say 2456 cu. ft. Correct reading believed to be 2546 cu. ft., Rain event.	
2/26/2007	42.7	0.1	7:30	23:59	24	0	2968	422	3,156.6	2.19		
2/27/2007								53	396.4		Pumped, No meter reading	
2/28/2007	42.1	0.7	7:30	23:59	48	30	3074	53	396.4	0.14		
3/1/2007	42.1	0.7	7:30	23:59	24	0	3123	49	366.5	0.25	Rain event	
3/2/2007	42.7	0.1	7:30	23:59	24	0	3314	191	1,428.7	0.99		
3/3/2007	39.9	2.9	7:30	23:59	24	0	3374	60	448.8	0.31		
3/4/2007	42.1	0.7	7:30	23:59	24	0	3427	53	396.4	0.28		
3/5/2007	42.2	0.6	7:30	23:59	24	0	3460	33	246.8	0.17		
3/6/2007	42.3	0.5	7:30	23:59	24	0	3493	33	246.8	0.17		
3/7/2007	42.3	0.5	9:00	23:59	25	30	3512	19	142.1	0.09		
3/8/2007	42.3	0.5	7:30	23:59	22	30	3529	17	127.2	0.09		
3/9/2007	42.2	0.6	14:00	23:59	31	-30	3535	6	44.9	0.02		
3/10/2007	42.3	0.5	7:30	23:59	17	30	3557	22	164.6	0.16	Rain event	
3/11/2007											Sunday, Meter not read	(5)
3/12/2007	42.2	0.6	7:30	23:59	48	30	3574	17	127.2	0.04		
3/13/2007	42.2	0.6	7:30	23:59	24	0	3588	14	104.7	0.07		
3/14/2007	42.2	0.6	7:30	23:59	24	0	3588	0	0.0	0.00	Rain event	
3/15/2007	42.0	0.8	9:00	23:59	25	30	3597	9	67.3	0.04	Field notes say meter reading is 3577 cu. ft. Correct reading believed to be 3597 cu. ft. Rain event.	
3/16/2007								39	288.0		Pumped, no meter reading	
3/17/2007	42.3	0.5	9:10	23:59	48	10	3674	39	288.0	0.10		
3/18/2007											Sunday, Meter not read	(5)
3/19/2007	42.2	0.6	8:20	23:59	47	20	3679	5	37.4	0.01	Rain event	
3/20/2007	42.0	0.8	7:30	23:59	23	10	3704	25	187.0	0.13		
3/21/2007	42.5	0.3	13:20	23:59	29	50	3778	74	553.5	0.31		
3/22/2007	42.5	0.3	10:30	23:59	21	10	3794	16	119.7	0.09	Rain event	
3/23/2007	42.6	0.2	10:30	23:59	24	0	3825	31	231.9	0.16	Rain event	
3/24/2007	42.6	0.2	7:30	23:59	21	0	3842	17	127.2	0.10		
3/25/2007											Sunday, Meter not read	
3/26/2007	42.6	0.2	8:30	23:59	25	0	3869	27	202.0	0.13		
3/27/2007	42.6	0.2	15:30	23:59	31	0	3884	15	112.2	0.06		
3/28/2007	42.7	0.1	7:30	23:59	16	0	3892	8	59.8	0.06	Rain event	
3/29/2007	42.6	0.2	8:30	23:59	25	0	3921	29	216.9	0.14	Rain event	
3/30/2007	42.7	0.1	8:00	23:59	23	30	3942	21	157.1	0.11	Rain event	
3/31/2007	42.7	0.1	8:30	23:59	24	30	3964	22	164.6	0.11	Rain event	
4/1/2007											Sunday, Meter not read, Rain event	(5)
4/2/2007	38.4	4.4	7:30	23:59	47	30	4009	45	336.6	0.12		
4/3/2007	42.7	0.1	7:30	23:59	24	0	4465	456	3,410.9	2.37	Heavy rainfall event	
4/4/2007	42.6	0.2	8:30	23:59	25	0	4715	250	1,870.0	1.25		
4/5/2007	42.6	0.2	8:00	23:59	23	30	4782	67	501.2	0.36		
4/6/2007	42.6	0.2	8:00	23:59	24	0	4862	80	598.4	0.42		
4/7/2007	42.6	0.2	7:30	23:59	23	30	4864	2	15.0	0.01	Field notes say meter reading is 4834 cu. ft. Correct reading believed to be 4864 cu. ft.	
4/8/2007											Sunday, Meter not read	(5)
4/9/2007	42.6	0.2	7:30	23:59	48	30	4868	4	29.9	0.01		
4/10/2007	42.7	0.1	7:30	23:59	24	0	4886	18	134.6	0.09		
4/11/2007	42.7	0.1	7:30	23:59	24	0	4906	20	149.6	0.10	Rain event	
4/12/2007	42.6	0.2	7:30	23:59	24	0	5072	166	1,241.7	0.86	Rain event	
4/13/2007	42.6	0.2	8:30	23:59	25	0	5108	36	269.3	0.18		
4/14/2007	42.7	0.1	8:00	23:59	23	30	5164	56	418.9	0.30	Rain event	
4/15/2007											Sunday, Meter not read	(5)

TABLE E.1.2

2007 LCS PUMPING DATA
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GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (feet BTOS)	Water Depth (feet AFOS)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping h	Duration of Pumping m	Meter (cu. ft) start	Volume Pumped (cu. ft)	Volume Pumped (gallons)	Flow Rate (gallons/min)	Comments	Note
4/16/2007	42.5	0.3	7:30	23:59	47	30	5392	228	1,705.4	0.60		
4/17/2007	42.7	0.1	7:30	23:59	24	0	5428	36	269.3	0.19		
4/18/2007	42.6	0.2	7:30	23:59	24	0	5449	21	157.1	0.11		
4/19/2007	42.6	0.2	7:30	23:59	24	0	5466	17	127.2	0.09		
4/20/2007	42.6	0.2	7:30	23:59	24	0	5480	14	104.7	0.07		
4/21/2007	42.5	0.3	8:15	23:59	24	45	5494	14	104.7	0.07		
4/22/2007											Sunday, Meter not read	(5)
4/23/2007	42.7	0.1	7:30	23:59	47	30	5514	20	149.6	0.05	Rain event	
4/24/2007	42.6	0.2	7:30	23:59	24	0	5518	4	29.9	0.02	Rain event	
4/25/2007	42.5	0.3	7:30	23:59	24	0	5565	47	351.6	0.24	Rain event	
4/26/2007	42.7	0.1	7:30	23:59	24	0	5713	148	1,107.0	0.77	Rain event	
4/27/2007	42.6	0.2	7:30	23:59	24	0	5876	163	1,219.2	0.85	Rain event	
4/28/2007	42.7	0.1	7:45	23:59	24	15	5928	52	389.0	0.27		
4/29/2007											Sunday, Meter not read	(5)
4/30/2007	42.5	0.3	7:40	23:59	48	40	5975	47	351.6	0.12		
5/1/2007	42.7	0.1	7:30	23:59	23	50	5990	15	112.2	0.08		
5/2/2007	42.7	0.1	7:30	23:59	24	0	6002	12	89.8	0.06	Rain event	
5/3/2007	42.7	0.1	7:30	23:59	24	0	6032	30	224.4	0.16	Rain event	
5/4/2007	42.7	0.1	7:32	23:59	24	2	6073	41	306.7	0.21	Rain event	
5/5/2007											Saturday, Meter not read	(5)
5/6/2007											Sunday, Meter not read	(5)
5/7/2007	41.9	0.9	7:30	23:59	71	58	6117	44	329.1	0.08		
5/8/2007	42.1	0.7	7:30	23:59	24	0	6151	34	254.3	0.18		
5/9/2007	42.0	0.8	7:30	23:59	24	0	6151	0	0.0	0.00		
5/10/2007	42.0	0.8	7:30	23:59	24	0	6182	31	231.9	0.16		
5/11/2007	42.1	0.7	7:45	23:59	24	15	6210	28	209.4	0.14		
5/12/2007											Saturday, Meter not read	(5)
5/13/2007											Sunday, Meter not read	(5)
5/14/2007	42.0	0.8	7:45	23:59	72	0	6238	28	209.4	0.05		
5/15/2007	42.2	0.6	7:30	23:59	23	45	6266	28	209.4	0.15	Rain event	
5/16/2007	42.1	0.7	7:30	23:59	24	0	6291	25	187.0	0.13	Rain event	
5/17/2007	42.2	0.6	8:30	23:59	25	0	6321	30	224.4	0.15		
5/18/2007	42.0	0.8	8:30	23:59	24	0	6321			0.00		
5/19/2007											Saturday, Meter not read	(5)
5/20/2007											Sunday, Meter not read	(5)
5/21/2007	42.5	0.3	7:50	23:59	71	20	6350	29	216.9	0.05		
5/22/2007	42.0	0.8	7:40	23:59	23	50	6350	0	0.0	0.00		
5/23/2007	42.25	0.55	7:45	23:59	24	5	6358	8	59.8	0.04		
5/24/2007	42.1	0.7	7:25	23:59	23	40	6377	19	142.1	0.10		
5/25/2007											Holiday, Meter not read	(5)
5/26/2007											Saturday, Meter not read	(5)
5/27/2007											Sunday, Meter not read, Rain event	(5)
5/28/2007											Holiday, Meter not read, Rain event	(5)
5/29/2007	42.1	0.7	7:40	23:59	120	15	6405	28	209.4	0.03		
5/30/2007	42.0	0.8	15:25	23:59	31	45	6405	0	0.0	0.00		
5/31/2007	42.0	0.8	11:25	23:59	20	0	6405	0	0.0	0.00		
6/1/2007	41.95	0.85	7:40	23:59	20	15	6405	0	0.0	0.00	Rain event	
6/2/2007	42.1	0.7	7:15	23:59	23	35	6432	27	202.0	0.14		
6/3/2007	42.1	0.7	7:55	23:59	24	40	6432	0	0.0	0.00		
6/4/2007	42.0	0.8	7:40	23:59	23	45	6432	0	0.0	0.00	Rain event	
6/5/2007	42.15	0.65	10:45	23:59	27	5	6457	25	187.0	0.12	Rain event	
6/6/2007												
6/7/2007	42.05	0.75	10:35	23:59	47	50	6457	0	0.0	0.00		
6/8/2007	42.0	0.8	8:17	23:59	21	42	6457	0	0.0	0.00	Rain event	
6/9/2007	42.00	0.8	7:18	23:59	23	1	6457	0	0.0	0.00		
6/10/2007	42.0	0.8	7:40	23:59	24	22	6457	0	0.0	0.00		
6/11/2007	42.1	0.7	7:35	23:59	23	55	6484	27	202.0	0.14		
6/12/2007	42.1	0.7	7:25	23:59	23	50	6484	0	0.0	0.00		

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Date	Water Level (feet BTOS)	Water Depth (feet AFOS)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping h	Duration of Pumping m	Meter (cu. ft) start	Volume Pumped (cu. ft)	Volume Pumped (gallons)	Flow Rate (gallons/min)	Comments	Note
6/13/2007	42.05	0.75	7:23	23:59	23	58	6484	0	0.0	0.00		
6/14/2007	42	0.8	8:09	23:59	24	46	6484	0	0.0	0.00		
6/15/2007	42	0.8	7:26	23:59	23	17	6484	0	0.0	0.00		
6/16/2007	42.15	0.65	7:36	23:59	24	10	6511	27	202.0	0.14		
6/17/2007											Sunday, Meter not read	(5)
6/18/2007	42.1	0.7	7:25	23:59	47	49	6511	0	0.0	0.00	Rain event	
6/19/2007	42.05	0.75	8:23	23:59	24	58	6511	0	0.0	0.00	Rain event	
6/20/2007	42.0	0.8	13:10	23:59	28	47	6511	0	0.0	0.00		
6/21/2007	42.0	0.8	7:34	23:59	18	24	6511	0	0.0	0.00		
6/22/2007	42.0	0.8	9:36	23:59	26	2	6538	27	202.0	0.13	Rain event	
6/23/2007	42	0.8	7:12	23:59	21	36	6538	0	0.0	0.00	Rain event	
6/24/2007											Sunday, Meter not read, Rain event	(5)
6/25/2007	42.0	0.8	7:34	23:59	48	22	6689	151	1,129.5	0.39	Rain event	
6/26/2007	42.0	0.8	8:18	23:59	24	44	6717	28	209.4	0.14	Rain event	
6/27/2007	42.1	0.7	13:09	23:59	28	51	6745	28	209.4	0.12	Rain event	
6/28/2007	42.1	0.7	8:35	23:59	19	26	6745	0	0.0	0.00	Rain event, Not pumped	
6/29/2007	42.1	0.7	7:28	23:59	22	53	6772	27	202.0	0.15	Rain event	
6/30/2007	42.1	0.7	8:12	23:59	24	44	6799	27	202.0	0.14		
7/1/2007											Sunday, Meter not read	
7/2/2007	42.0	0.8	7:40	23:59	47	28	6827	28	209.4	0.07		
7/3/2007	42.0	0.8	7:50	23:59	24	10	6827	0	0.0	0.00		
7/4/2007	42.0	0.8	7:27	23:59	23	37	6854	27	202.0	0.14	Rain event	
7/5/2007	42.1	0.7	7:33	23:59	23	66	6854	0	0.0	0.00	Rain event	
7/6/2007	42.1	0.7	7:20	23:59	23	47	6854	0	0.0	0.00		
7/7/2007											Saturday, Meter not read	(5)
7/8/2007											Sunday, Meter not read	(5)
7/9/2007	42.1	0.7	8:07	23:59	72	47	6880	26	194.5	0.04		
7/10/2007	42.05	0.75	7:23	23:59	23	16	6880	0	0.0	0.00	Rain event	
7/11/2007	42.25	0.55	7:30	23:59	24	7	6903	23	172.0	0.12	Rain event	
7/12/2007	42.05	0.75	10:06	23:59	26	36	6903	0	0.0	0.00		
7/13/2007	42.15	0.65	7:21	23:59	21	15	6929	26	194.5	0.15		
7/14/2007	42.1	0.7	7:45	23:59	24	24	6929	0	0.0	0.00		|
7/15/2007											Sunday, Meter not read	(5)
7/16/2007	42.1	0.7	13:45	23:59	54	0	6929	0	0.0	0.00		
7/17/2007	41.8	1	7:25	23:59	17	40	6940	11	82.3	0.08	Heavy rainfall event	
7/18/2007	42.15	0.65	8:50	23:59	25	25	7065	125	935.0	0.61	Rain event	
7/19/2007	41.9	0.9	9:34	23:59	24	44	7135	70	523.6	0.35	Rain event	
7/20/2007	42.0	0.8	8:31	23:59	22	57	7162	27	202.0	0.15		
7/21/2007	42.0	0.8	8:31	23:59	24	0	7162	0	0.0	0.00		
7/22/2007											Sunday, Meter not read	(5)
7/23/2007	42.2	0.6	8:05	23:59	47	34	7217	55	411.4	0.14		
7/24/2007	42.1	0.7	7:31	23:59	23	26	7217	0	0.0	0.00		
7/25/2007	42.05	0.75	7:26	23:59	23	55	7217	0	0.0	0.00		
7/26/2007	42.2	0.6	7:34	23:59	24	8	7242	25	187.0	0.13		
7/27/2007	42.1	0.7	7:29	23:59	23	55	7242	0	0.0	0.00	Rain event	
7/28/2007	42.05	0.75	7:36	23:59	24	7	7270	28	209.4	0.14	Rain event	
7/29/2007											Sunday, Meter not read	(5)
7/30/2007	42.0	0.8	7:33	23:59	47	57	7296	26	194.5	0.07		
7/31/2007								0	0.0			
8/1/2007	42.00	0.80	10:07	23:59	50	34	7321	25	187.0	0.06		
8/2/2007	42.00	0.80	9:05	23:59	22	58	7321	0	0.0	0.00		
8/3/2007	42.0	0.80	17:57	23:59	32	52	7321	0	0.0	0.00		
8/4/2007	42.00	0.80	10:02	23:59	16	5	7321	0	0.0	0.00	Rain event	
8/5/2007											Sunday, Meter not read, Rain event	(5)
8/6/2007	42.00	0.80	14:04	23:59	52	2	7386	65	486.2	0.16		
8/7/2007	42.0	0.80	7:50	23:59	17	46	7386	0	0.0	0.00		
8/8/2007											Pump removed (no pumping) to place additional risers	(8)
8/9/2007											Pump removed (no pumping) to place additional risers	(8)

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Date	Water Level (feet BTOS)	Water Depth (feet AFOS)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping h	Duration of Pumping m	Meter (cu. ft) start	Volume Pumped (cu. ft)	Volume Pumped (gallons)	Flow Rate (gallons/min)	Comments	Note
8/10/2007											Pump removed (no pumping) to place additional risers	(8)
8/11/2007											Pump removed (no pumping) to place additional risers	(8)
8/12/2007											Pump removed (no pumping) to place additional risers	(8)
8/13/2007											Pump removed (no pumping) to place additional risers	(8)
8/14/2007	51.6	1.07	10:20	23:59	170	30	7386			0.00	Pump removed (no pumping) to place additional risers	(8)
8/15/2007	51.8	0.87	15:55	23:59	29	35	7424	38	284.2	0.16		
8/16/2007	51.8	0.87	7:53	23:59	15	58	7425	1	7.5	0.01	Rain event	
8/17/2007	51.1	1.57	9:27	23:59	25	34	7463	38	284.2	0.19		
8/18/2007	52.05	0.62	9:48	23:59	24	21	7463	0	0.0	0.00		
8/19/2007	52.05	0.62	9:20	23:59	23	32	7463	0	0.0	0.00		
8/20/2007											No pumping from Aug. 20 - Aug. 22	
8/21/2007											No pumping from Aug. 20 - Aug. 22, Rain event	
8/22/2007											No pumping from Aug. 20 - Aug. 22	
8/23/2007	51.8	0.87	13:35	23:59	100	15	7464	1	7.5	0.00		
8/24/2007	51.85	0.82	8:00	23:59	18	25	7465	1	7.5	0.01		
8/25/2007	51.8	0.87	8:39	23:59	24	39	7465	0	0.0	0.00	Rain event	
8/26/2007											Sunday, Meter not read	(5)
8/27/2007	51.8	0.87	8:04	23:59	47	25	7471	6	44.9	0.02		
8/28/2007	52.6	0.07	14:47	23:59	30	43	7568	97	725.6	0.39		
8/29/2007	52.35	0.32	8:45	23:59	17	58	7579	11	82.3	0.08		
8/30/2007	52.2	0.47	13:06	23:59	28	21	7579	0	0.0	0.00	No pumping from Aug. 29 - Aug. 31	
8/31/2007	52.1	0.57	8:18	23:59	19	12	7579	0	0.0	0.00	No pumping on Aug. 30th, therefore no change in meter reading on Aug. 31 morning	
9/1/2007	52.50	0.17	7:49	23:59	23	31	7607	28	209.4	0.15		
9/2/2007											Sunday, Meter not read	(5)
9/3/2007	52.50	0.17	8:09	23:59	48	20	7617	10	74.8	0.03		
9/4/2007	52.55	0.12	13:20	23:59	29	11	7630	13	97.2	0.06		
9/5/2007	52.60	0.07	0:00	23:59	10	40	7645	15	112.2	0.18		
9/6/2007	52.50	0.17	14:31	23:59	38	31	7665	20	149.6	0.06	Rain event	
9/7/2007	52.60	0.07	7:36	23:59	17	5	7670	5	37.4	0.04	Rain event	
9/8/2007	52.50	0.17	0:00	23:59	16	24	7698	28	209.4	0.21	Rain event	
9/9/2007											Sunday, Meter not read, Rain event	(5)
9/10/2007	52.45	0.22	7:45	23:59	55	45	7770	72	538.6	0.16		
9/11/2007	52.55	0.12	8:01	23:59	24	16	7779	9	67.3	0.05		
9/12/2007	52.55	0.12	7:50	23:59	23	49	7786	7	52.4	0.04		
9/13/2007	52.55	0.12	7:48	23:59	23	58	7792	6	44.9	0.03		
9/14/2007	52.45	0.22	7:30	23:59	23	42	7800	8	59.8	0.04		
9/15/2007	52.55	0.12	8:19	23:59	24	49	7811	11	82.3	0.06		
9/16/2007											Sunday, Meter not read	
9/17/2007	52.45	0.22	7:39	23:59	47	20	7822	11	82.3	0.03		
9/18/2007	52.45	0.22	7:31	23:59	23	52	7827	5	37.4	0.03		
9/19/2007	52.55	0.12	7:32	23:59	24	1	7832	5	37.4	0.03		
9/20/2007	52.45	0.22	8:30	23:59	24	58	7839	7	52.4	0.03		
9/21/2007	52.50	0.17	8:30	23:59	24	0	7844	5	37.4	0.03	Pump turned off at 8:33 am for CRA test	
9/22/2007	52.25	0.42	9:38	23:59	25	8	7844				Not pumped	
9/23/2007											Sunday, Meter not read	
9/24/2007	52.25	0.42	9:50	23:59	48	12	7844				Not pumped due to GM union strike	
9/25/2007											Not pumped, Rain event	
9/26/2007	52.20	0.47	8:10	23:59	46	20	7844				Not pumped, Rain event	
9/27/2007	52.20	0.47	7:20	23:59	23	10	7913	69	516.1	0.37	Rain event	
9/28/2007	51.40	1.27	9:45	23:59	26	25	7921	8	59.8	0.04		
9/29/2007											Saturday, Meter not read	(5)
9/30/2007											Sunday, Meter not read	(5)
10/1/2007	51.15	1.52	8:43	23:59	70	58	8059	138	1,032.2	0.24		
10/2/2007	52.50	0.17	16:44	23:59	32	1	8076	17	127.2	0.07		
10/3/2007	52.60	0.07	7:49	23:59	15	5	8083	7	52.4	0.06		
10/4/2007	52.40	0.27	10:51	23:59	27	2	8090	7	52.4	0.03		
10/5/2007	52.40	0.27	9:09	23:59	22	18	8111	21	157.1	0.12	Rain event	

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Date	Water Level (feet BTOS)	Water Depth (feet AFOS)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping h	Duration of Pumping m	Meter (cu. ft) start	Volume Pumped (cu. ft)	Volume Pumped (gallons)	Flow Rate (gallons/min)	Comments	Note
10/6/2007	52.30	0.37	9:29	23:59	24	20	8126	15	112.2	0.08		
10/7/2007											Sunday, Meter not read	(5)
10/8/2007	52.45	0.22	7:38	23:59	31	38	8141	15	112.2	0.06		
10/9/2007	52.50	0.17	9:19	23:59	25	41	8148	7	52.4	0.03		
10/10/2007	52.30	0.37	10:04	23:59	24	45	8153	5	37.4	0.03		
10/11/2007	52.35	0.32	13:24	23:59	27	20	8159	6	44.9	0.03		
10/12/2007	52.40	0.27	9:34	23:59	20	10	8163	4	29.9	0.02		
10/13/2007	52.50	0.17	19:18	23:59	33	44	8169	6	44.9	0.02		
10/14/2007	52.50	0.17	20:11	23:59	24	53	8173	4	29.9	0.02		
10/15/2007	52.40	0.27	21:31	23:59	25	20	8177	4	29.9	0.02		
10/16/2007	52.30	0.37	20:25	23:59	22	54	8182	5	37.4	0.03	Rain event	
10/17/2007	52.50	0.17	22:09	23:59	25	44	8184	2	15.0	0.01		
10/18/2007	52.40	0.27	20:34	23:59	22	25	8232	48	359.0	0.27	Heavy rainfall event	
10/19/2007	52.40	0.27	20:41	23:59	24	7	8260	28	209.4	0.14		
10/20/2007											Saturday, Meter not read	(5)
10/21/2007											Sunday, Meter not read	(5)
10/22/2007	52.40	0.27	13:27	23:59	64	46	8289	29	216.9	0.06	Rain event	
10/23/2007	52.50	0.17	8:04	23:59	18	37	8323	34	254.3	0.23	Rain event	
10/24/2007	52.40	0.27	7:42	23:59	23	38	8437	114	852.7	0.60	Rain event	
10/25/2007	52.10	0.57	13:24	23:59	29	42	8459	22	164.6	0.09	Rain event	
10/26/2007	52.20	0.47	9:49	23:59	20	25	8471	12	89.8	0.07	Rain event	
10/27/2007											Saturday, Meter not read, Rain event	(5)
10/28/2007											Sunday, Meter not read	(5)
10/29/2007												
10/30/2007												
10/31/2007												
11/1/2007	52.50	0.17	11:15	23:59	145	26	8529	58	433.8	0.05		
11/2/2007					24	0	8539	10	74.8		No meter reading, Assumed 24 hours	
11/3/2007					24	0	8547	8	59.8		No meter reading, Assumed 24 hours	
11/4/2007					24	0	8557	10	74.8		No meter reading, Assumed 24 hours	
11/5/2007					24	0	8568	11	82.3		No meter reading, Assumed 24 hours	
11/6/2007					24	0	8583	15	112.2		No meter reading, Assumed 24 hours	
11/7/2007					24	0	8592	9	67.3		No meter reading, Assumed 24 hours	
11/8/2007					24	0	8599	7	52.4		No meter reading, Assumed 24 hours	
11/9/2007					24	0	8603	4	29.9		No meter reading, Assumed 24 hours	
11/10/2007					24	0	8605	2	15.0		No meter reading, Assumed 24 hours	
11/11/2007											Sunday, Meter not read, Rain event	(5)
11/12/2007	52.10	0.57	13:27	23:59	266	12	8620	15	112.2	0.01	No meter reading, Assumed 24 hours	
11/13/2007					24	0	8627	7	52.4		No meter reading, Assumed 24 hours, Rain event	
11/14/2007					24	0	8635	8	59.8		No meter reading, Assumed 24 hours	
11/15/2007					24	0	8635	0	0.0		No meter reading, Assumed 24 hours	
11/16/2007					24	0	8635	0	0.0		No meter reading, Assumed 24 hours	
11/17/2007					24	0	8648	13	97.2		No meter reading, Assumed 24 hours	
11/18/2007											Sunday, Meter not read	(5)
11/19/2007	52.20	0.47	10:10	23:59	164	43	8665	17	127.2	0.01		
11/20/2007	52.20	0.47	9:27	23:59	22	77	8665	0	0.0	0.00		
11/21/2007	52.20	0.47	10:12	23:59	24	45	8665	0	0.0	0.00	Rain event	
11/22/2007											Not pumped, Rain event	
11/23/2007	52.10	0.57	9:32	23:59	47	20	8665	0	0.0	0.00		
11/24/2007	52.10	0.57	20:21	23:59	34	49	8665	0	0.0	0.00		
11/25/2007											Sunday, Meter not read, Rain event	(5)
11/26/2007	51.10	1.57	21:32	23:59	49	11	8665	0	0.0	0.00	Rain event	
11/27/2007	50.60	2.07	2:20	23:59	4	48	8665	0	0.0	0.00		
11/28/2007	50.50	2.17	19:44	23:59	41	24	8872	207	1,548.4	0.62		
11/29/2007	52.40	0.27	21:19	23:59	25	35	8886	14	104.7	0.07		
11/30/2007	52.35	0.32	21:57	23:59	24	38	8897	11	82.3	0.06		
12/1/2007											Saturday, Meter not read	(5)
12/2/2007											Sunday, Meter not read, Rain event	(5)

TABLE E.1.2

2007 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (feet BTOS)	Water Depth (feet AFOS)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping h	Duration of Pumping m	Meter (cu. ft) start	Volume Pumped (cu. ft)	Volume Pumped (gallons)	Flow Rate (gallons/min)	Comments	Note
12/3/2007	52.20	0.47	13:25	23:59	63	28	9008	111	830.3	0.22		
12/4/2007	52.30	0.37	7:38	23:59	18	13	9023	15	112.2	0.10		
12/5/2007											Not pumped, Rain event	
12/6/2007	52.20	0.47	10:00	23:59	50	22	9054	31	231.9	0.08		
12/7/2007											Rain event	
12/8/2007	52.20	0.47	10:20	23:59	48	20	9096	42	314.2	0.11	Rain event	
12/9/2007											Sunday, Meter not read, Heavy rainfall event	(5)
12/10/2007											Not pumped, Rain event	
12/11/2007	52.40	0.27	13:25	23:59	75	5	9328	232	1,735.4	0.39	Rain event	
12/12/2007	52.20	0.47	13:15	23:59	23	50	9434	106	792.9	0.55	Rain event	
12/13/2007								0	0.0		Rain event	
12/14/2007	52.30	0.37	8:40	23:59	43	25	9566	132	987.4	0.38		
12/15/2007	52.40	0.27	21:35	23:59	36	55	9694	128	957.4	0.43	Rain event	
12/16/2007											Sunday, Meter not read, Rain event	(5)
12/17/2007	52.40	0.27	2:00	23:59	28	25	9828	134	1,002.3	0.59	Rain event	
12/18/2007	52.30	0.37	23:15	23:59	45	15	9855	27	202.0	0.07	Rain event	
12/19/2007	51.60	1.07	23:34	23:59	24	19	9855	0	0.0	0.00		
12/20/2007	51.30	1.37	22:42	23:59	23	8	9855	0	0.0	0.00	Rain event	
12/21/2007	50.90	1.77	21:40	23:59	22	58	9855	0	0.0	0.00		
12/22/2007	52.40	0.27	4:50	23:59	7	10	9998	143	1,069.6	2.49	Rain event	
12/23/2007											Sunday, Meter not read, Rain event	(5)
12/24/2007	52.30	0.37	9:42	23:59	52	52	10277	279	2,086.9	0.66		
12/25/2007	52.10	0.57	13:50	23:59	28	8	10303	26	194.5	0.12		
12/26/2007	52.20	0.47	13:15	23:59	23	25	10321	18	134.6	0.10	Rain event	
12/27/2007	52.20	0.47	14:10	23:59	24	55	10336	15	112.2	0.08	Rain event	
12/28/2007	52.30	0.37	14:04	23:59	23	54	10352	16	119.7	0.08	Rain event	
12/29/2007	52.20	0.47	13:27	23:59	23	23	10390	38	284.2	0.20		
12/30/2007	52.30	0.37	1:17	23:59	11	50	10418	28	209.4	0.29		
12/31/2007	52.20	0.47	2:23	23:59	25	6	10434	16	119.7		Rain event	
							Total	**11,880**	**88,862.1**			
							Average/day	**32.5**	**244.1**			

Notes:
BTOS - Below top of sump
AFOS - Above floor of sump
(1) No water was pumped on this date, however, the water level rose slightly between the two observation times.
(2) Not pumped, Contractor repairing pumping equipment
(3) Not pumped, water is at an acceptable level.
(4) System was operated throughout the day to accommodate pumping of the accumulating water.
(5) Sunday or holiday (no reading unless rain). Maximum one day without pumping unless currently raining or rained in the previous 24 hour period.
(6) Raining, sump pumped to empty.
(7) Contractor not on Site, manhole pumped next day.
(8) No pumping to accommodate placement of additional risers

TABLE E.1.3

2008 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information	Jan. 1 to Dec. 4	Dec. 5 to Dec. 31
Top of sump (datum reference)	0	0.00
Bottom of sump (feet BTOS)	52.8	58.67
Diameter of sump (feet)	6	6

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time (hh:mm) start*	*end*	*Duration of Pumping h*	*m*	*Meter (cu. ft)*	*Volume Pumped (cu. ft)*	*Volume Pumped (gallons)*	*Flow Rate (gallons/min)*	*Comments*	*Note*
1/1/2008	52.20	0.60	1:34	23:59	23	11	10450	16	119.7	0.09		
1/2/2008	52.20	0.60	2:13	23:59	24	39	10481	31	231.9	0.16		
1/3/2008	52.20	0.60	1:12	23:59	22	59	10544	63	471.2	0.34		
1/4/2008	52.30	0.50	2:47	23:59	25	35	10647	103	770.4	0.50		
1/5/2008	52.20	0.60	6:04	23:59	27	17	10652	5	37.4	0.02	Rain event	
1/6/2008	52.20	0.60	13:38	23:59	31	34	10679	27	202.0	0.11		
1/7/2008	52.30	0.50	11:06	23:59	21	28	10695	16	119.7	0.09		
1/8/2008	52.30	0.50	11:29	23:59	24	23	10710	15	112.2	0.08	Heavy rainfall event	
1/9/2008	52.30	0.50	10:42	23:59	23	13	10879	169	1,264.1	0.91		
1/10/2008	52.30	0.50	13:59	23:59	27	17	10925	46	344.1	0.21	Rain event	
1/11/2008	52.20	0.60	14:39	23:59	24	40	10978	53	396.4	0.27		
1/12/2008	52.30	0.50	0:59	23:59	10	20	11002	24	179.5	0.29		
1/13/2008	52.30	0.50	1:19	23:59	24	20	11021	19	142.1	0.10	Rain event	
1/14/2008	52.20	0.60	1:36	23:59	24	17	11042	21	157.1	0.11		
1/15/2008	52.30	0.50	2:19	23:59	24	43	11068	26	194.5	0.13		
1/16/2008	52.20	0.60	1:39	23:59	23	20	11082	14	104.7	0.07		
1/17/2008	52.30	0.50	1:14	23:59	23	35	11126	44	329.1	0.23	Rain event	
1/18/2008	52.30	0.50	2:56	23:59	25	42	11195	69	516.1	0.33		
1/19/2008			5:52	23:59	26	56	11195	0	0.0	0.00	No water level reading	(1)
1/20/2008			13:24	23:59	31	32	11199	4	29.9	0.02	No water level reading	(1)
1/21/2008			14:10	23:59	24	46	11233	34	254.3	0.17	No water level reading	(1)
1/22/2008			10:45	23:59	20	35	11233	0	0.0	0.00	No water level reading, Rain event	(1)
1/23/2008			14:00	23:59	27	15	11242	9	67.3	0.04	No water level reading	(1)
1/24/2008			11:00	23:59	21	0	11254	12	89.8	0.07	No water level reading	(1)
1/25/2008			9:34	23:59	22	34	11262	8	59.8	0.04	No water level reading	(1)
1/26/2008			21:17	23:59	35	43	11281	19	142.1	0.07	No water level reading	(1)
1/27/2008			21:19	23:59	24	2	11296	15	112.2	0.08	No water level reading	(1)
1/28/2008			22:36	23:59	25	17	11357	61	456.3	0.30	No water level reading	(1)
1/29/2008							11389	32	239.4		No water level reading, Rain event	(1)
1/30/2008							11433	44	329.1		No water level reading	(1)
1/31/2008								17.5	130.9		No water level or meter reading. Volume estimated based on 35 cu. ft pumped between meter readings on Jan. 30 and Feb. 1.	(1), (2)
2/1/2008			21:53	23:59	95	17	11468	17.5	130.9	0.02	No water level or meter reading. Volume estimated based on 35 cu. ft pumped between meter readings on Jan. 30 and Feb. 1.	(1), (2)
2/2/2008											Sunday, Meter not read	(3)
2/3/2008			13:12	23:59	39	19	11494	26	194.5	0.08	No water level reading	(1)
2/4/2008							11524	30	224.4		No water level reading	(1)
2/5/2008							11605	81	605.9		No water level reading, Heavy rainfall event	(1)
2/6/2008							11860	255	1,907.4		No water level reading, Rain event	(1)
2/7/2008								68	508.6		Volume estimated based on 136 cu. ft pumped between meter readings on Feb. 6 and Feb. 8.	(4)
2/8/2008	52.30	0.50	13:33	23:59	120	21	11996	68	508.6	0.07	Volume estimated based on 136 cu. ft pumped between meter readings on Feb. 6 and Feb. 8.	(4)
2/9/2008	52.20	0.60	21:27	23:59	31	54	12039	43	321.6	0.17		
2/10/2008	52.30	0.50	23:15	23:59	25	48	12052	13	97.2	0.06		
2/11/2008	52.20	0.60	22:46	23:59	23	31	12067	15	112.2	0.08		
2/12/2008	52.20	0.60	21:17	23:59	22	31	12083	16	119.7	0.09	Rain event	
2/13/2008	52.20	0.60	2:38	23:59	5	21	12108	25	187.0	0.58		
2/14/2008	52.30	0.50	22:21	23:59	43	43	12127	19	142.1	0.05	Rain event	

TABLE E.1.3

2008 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (feet BTOS)	Water Depth (feet AFOS)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping h	Duration of Pumping m	Meter (cu. ft)	Volume Pumped (cu. ft)	Volume Pumped (gallons)	Flow Rate (gallons/min)	Comments	Note
2/15/2008	52.20	0.60	22:57	23:59	24	36	12158	31	231.9	0.16		
2/16/2008	52.20	0.60	13:53	23:59	14	56	12226	68	508.6	0.57		
2/17/2008	52.10	0.70	9:04	23:59	19	11	12272	46	344.1	0.30	Rain event	
2/18/2008	52.20	0.60	8:28	23:59	23	24	12307	35	261.8	0.19		
2/19/2008	52.10	0.70	10:03	23:59	25	35	12322	15	112.2	0.07		
2/20/2008	52.20	0.60	9:22	23:59	23	19	12336	14	104.7	0.07		
2/21/2008	52.20	0.60	10:27	23:59	25	5	12348	12	89.8	0.06		
2/22/2008	52.20	0.60	14:14	23:59	27	47	12367	19	142.1	0.09		
2/23/2008	52.20	0.60	3:32	23:59	13	18	12384	17	127.2	0.16	Rain event	
2/24/2008	52.20	0.60	23:34	23:59	44	2	12417	33	246.8	0.09	Rain event	
2/25/2008	52.30	0.50	22:12	23:59	22	38	12464	47	351.6	0.26	Rain event	
2/26/2008	52.20	0.60	21:47	23:59	23	35	12525	61	456.3	0.32	Rain event	
2/27/2008	52.10	0.70	22:55	23:59	25	8	12566	41	306.7	0.20	Rain event	
2/28/2008	52.20	0.60	21:27	23:59	22	32	12595	29	216.9	0.16		
2/29/2008	52.10	0.70	10:32	23:59	13	5	12644	49	366.5	0.47		
3/1/2008	52.20	0.60	6:30	23:59	19	58	12678	34	254.3	0.21		
3/2/2008	52.10	0.70	10:27	23:59	27	57	12714	36	269.3	0.16		
3/3/2008	52.20	0.60	23:15	23:59	36	48	12763	49	366.5	0.17	Rain event	
3/4/2008	52.10	0.70	13:34	23:59	14	19	12911	148	1,107.0	1.29	Rain event	
3/5/2008	52.20	0.60	11:17	23:59	21	43	12998	87	650.8	0.50		
3/6/2008	52.20	0.60	13:37	23:59	26	20	13046	48	359.0	0.23		
3/7/2008	52.20	0.60	13:33	23:59	23	56	13078	32	239.4	0.17		
3/8/2008	52.20	0.60	9:34	23:59	20	1	13099	21	157.1	0.13		
3/9/2008				23:59							Sunday, Meter not read.	(3)
3/10/2008	52.20	0.60	15:00	23:59	53	26	13115	16	119.7	0.04		
3/11/2008	52.20	0.60	11:56	23:59	20	56	13254	139	1,039.7	0.83		
3/12/2008	52.20	0.60	11:33	23:59	23	37	13286	32	239.4	0.17		
3/13/2008	52.20	0.60	14:51	23:59	27	18	13314	28	209.4	0.13		
3/14/2008	52.20	0.60	14:32	23:59	23	41	13334	20	149.6	0.11	Rain event	
3/15/2008	52.25	0.55	13:49	23:59	23	17	13355	21	157.1	0.11		
3/16/2008				23:59							Sunday, Meter not read.	(3)
3/17/2008	52.20	0.60	14:14	23:59	48	25	13378	23	172.0	0.06		
3/18/2008	52.20	0.60	13:09	23:59	22	55	13460	82	613.4	0.45	Heavy rainfall event	
3/19/2008	48.80	4.00	13:18	23:59	24	9	13702	242	1,810.2	1.25	Heavy rainfall event	
3/20/2008	52.20	0.60	15:34	23:59	26	16	13987	285	2,131.8	1.35		
3/21/2008	52.20	0.60	14:42	23:59	23	8	14049	62	463.8	0.33		
3/22/2008											Saturday, Meter not read.	(3)
3/23/2008	52.20	0.60	13:28	23:59	46	46	14102	53	396.4	0.14	Rain event	
3/24/2008	52.20	0.60	16:32		27	4	14123	21	157.1	0.10		
3/25/2008	52.20	0.60	9:57		17	25	14135	12	89.8	0.09		
3/26/2008	52.15	0.65	15:34		29	37	14153	18	134.6	0.08	Rain event	
3/27/2008	52.20	0.60	16:27		24	53	14223	70	523.6	0.35	Rain event	
3/28/2008	52.20	0.60	13:21		20	54	14301	78	583.4	0.47	Rain event	
3/29/2008	52.20	0.60	12:43		23	22	14384	83	620.8	0.44		
3/30/2008	52.10	0.70	9:41		20	58	14407	23	172.0	0.14	Rain event	
3/31/2008	52.20	0.60	13:57	23:59	28	16	14469	62	463.8	0.27	Rain event	
4/1/2008	52.20	0.60	11:35		21	38	14514	45	336.6	0.26	Rain event	
4/2/2008	52.10	0.70	14:11		27	-24	14524	10	74.8	0.05	Rain event	
4/3/2008	52.00	0.80	9:14		19	3	14524				Pump off pipe work - Rain event	(5)
4/4/2008	52.20	0.60	13:12		27	58	14620	96	718.1	0.43	Rain event	
4/5/2008	52.10	0.70	9:07		20	-5	14642	22	164.6	0.14		
4/6/2008	52.20	0.60	15:11		30	4	14668	26	194.5	0.11	Pump off pipe work	(5)
4/7/2008	52.20	0.60	15:31		24	20	14668				Pump off pipe work	(5)
4/8/2008	52.00	0.80	10:09		18	38	14668				Pump off pipe work	(5)
4/9/2008	51.80	1.00	13:48		27	39	14668				Pump turned back on at 2:10 PM - Rain event	
4/10/2008	52.20	0.60	11:33		21	45	15222	554	4,143.9	3.18	Rain event	
4/11/2008	52.20	0.60	10:17		22	44	15264	42	314.2	0.23	Rain event	

TABLE E.1.3

2008 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (feet BTOS)	Water Depth (feet AFOS)	Time (hh:mm) start	end	Duration of Pumping h	m	Meter (cu. ft)	Volume Pumped (cu. ft)	Volume Pumped (gallons)	Flow Rate (gallons/min)	Comments	Note
4/12/2008	52.25	0.55	13:35		27	18	15284	20	149.6	0.09	Rain event	
4/13/2008							0				Sunday, Meter not read. Rain event.	(3)
4/14/2008	52.20	0.60	16:18		50	43	15316	32	239.4	0.08		
4/15/2008	52.20	0.60	16:37		24	19	15331	15	112.2	0.08		
4/16/2008	52.20	0.60	15:31		23	-6	15343	12	89.8	0.07		
4/17/2008	52.20	0.60	16:09		24	38	15361	18	134.6	0.09		
4/18/2008	52.10	0.70	13:26		21	17	15384	23	172.0	0.13		
4/19/2008							0				Saturday, Meter not read. Rain event.	(3)
4/20/2008	52.20	0.60	14:30		49	4	15414	30	224.4	0.08		
4/21/2008	52.20	0.60	16:23		25	53	15426	12	89.8	0.06		
4/22/2008	52.20	0.60	12:12		19	49	15435	9	67.3	0.06		
4/23/2008	52.20	0.60	13:27		25	15	15459	24	179.5	0.12		
4/24/2008	52.20	0.60	14:12		24	45	15472	13	97.2	0.07	Rain event	
4/25/2008	52.20	0.60	10:59		20	47	15485	13	97.2	0.08		
4/26/2008	52.15	0.65	14:09		27	10	15510	25	187.0	0.11	Rain event	
4/27/2008							0				Sunday, Meter not read.	(3)
4/28/2008	52.10	0.70	16:12		50	3	15553	43	321.6	0.11	Off for CRA testing - Rain event	(6)
4/29/2008	52.20	0.60	12:44		20	32	15565	12	89.8	0.07		
4/30/2008	52.20	0.60	14:47									(7)
5/1/2008	52.20	0.60	14:05		49	21	15587	22	164.6	0.06		(7)
5/2/2008	52.20	0.60	11:14		21	9	15595	8	59.8	0.05	Rain event	
5/3/2008							0				Saturday, Meter not read.	(3)
5/4/2008	52.20	0.60	13:34		50	20	15629	34	254.3	0.08		
5/5/2008	52.20	0.60	14:58		25	24	15639	10	74.8	0.05		
5/6/2008	52.20	0.60	12:47		21	49	15652	13	97.2	0.07		
5/7/2008	52.20	0.60	11:16		22	29	15743	91	680.7	0.50	Rain event	
5/8/2008	52.20	0.60	9:38		22	22	15827	84	628.3	0.47	Rain event	
5/9/2008	52.20	0.60	13:34		27	56	15905	78	583.4	0.35	Rain event	
5/10/2008							0				Saturday, Meter not read. Rain event.	(3)
5/11/2008	52.20	0.60	13:29		47	55	15960	55	411.4	0.14	Rain event	
5/12/2008	52.20	0.60	10:42		21	13	16020	60	448.8	0.35		
5/13/2008	52.20	0.60	10:12		23	30	16038	18	134.6	0.10		
5/14/2008	52.20	0.60	16:49		30	37	16117	79	590.9	0.32	Rain event	
5/15/2008	52.20	0.60	15:00		22	11	16135	18	134.6	0.10	Rain event	
5/16/2008	52.20	0.60	12:48		21	48	16174	39	291.7	0.22		
5/17/2008	52.20	0.60	13:28		24	40	16228	54	403.9	0.27	Rain event	
5/18/2008							0				Sunday, Meter not read.	(3)
5/19/2008	52.20	0.60	14:12		48	44	16265	37	276.8	0.09	Rain event	
5/20/2008	52.20	0.60	13:47		23	35	16282	17	127.2	0.09	Rain event	
5/21/2008	52.20	0.60	14:08		24	21	16295	13	97.2	0.07		
5/22/2008	52.20	0.60	9:07		18	59	16308	13	97.2	0.09		
5/23/2008	52.20	0.60	9:29		24	22	16323	15	112.2	0.08	Rain event	
5/24/2008							0				Saturday, Meter not read.	(3)
5/25/2008	52.20	0.60	13:58		52	29	16358	35	261.8	0.08		
5/26/2008							0				Holiday, Meter not read. Rain event.	(3)
5/27/2008	52.20	0.60	7:49		41	51	16385	27	202.0	0.08	Rain event	
5/28/2008	52.20	0.60	16:13		32	24	16500	115	860.2	0.44		
5/29/2008	52.20	0.60	15:21		23	8	16521	21	157.1	0.11		
5/30/2008	52.20	0.60	14:09		22	48	16544	23	172.0	0.13		
5/31/2008	52.20	0.60					0				Saturday, Meter not read.	(3)
6/1/2008	52.20	0.60	13:28		47	19	16562	18	134.6	0.05		
6/2/2008	52.20	0.60	10:29		21	1	16583	21	157.1	0.12		
6/3/2008	52.20	0.60	10:49		24	20	16594	11	82.3	0.06	Rain event	
6/4/2008	52.20	0.60	14:08		27	19	16612	18	134.6	0.08	Rain event	
6/5/2008	52.20	0.60	0:00		9	52	16623	11	82.3	0.14		
6/6/2008	52.20	0.60	12:19		36	19	16651	28	209.4	0.10		
6/7/2008	52.20	0.60	14:31		26	12	16709	58	433.8	0.28	Rain event	

TABLE E.1.3

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Date	Water Level (feet BTOS)	Water Depth (feet AFOS)	Time (hh:mm) start	end	Duration of Pumping h	m	Meter (cu. ft)	Volume Pumped (cu. ft)	Volume Pumped (gallons)	Flow Rate (gallons/min)	Comments	Note
6/8/2008							0				Sunday, Meter not read.	(3)
6/9/2008	52.20	0.60	12:48		46	17	16741	32	239.4	0.09	Rain event	
6/10/2008	52.20	0.60	9:19		20	31	16756	15	112.2	0.09	Rain event	
6/11/2008	52.20	0.60	10:52		25	33	16764	8	59.8	0.04		
6/12/2008	52.20	0.60	8:49		21	57	16778	14	104.7	0.08		
6/13/2008	52.20	0.60	16:58		32	9	16807	29	216.9	0.11	Rain event	
6/14/2008							0				Saturday, Meter not read.	(3)
6/15/2008	52.20	0.60	13:07		44	9	16824	17	127.2	0.05		
6/16/2008	52.25	0.55	16:51		27	44	16842	18	134.6	0.08		
6/17/2008	52.30	0.50	8:34		15	43	16854	12	89.8	0.10		
6/18/2008	52.20	0.60	13:21		28	47	16876	22	164.6	0.10		
6/19/2008	52.20	0.60	17:51		28	30	16883	7	52.4	0.03	Rain event	
6/20/2008	52.20	0.60	14:12		20	21	16892	9	67.3	0.06		
6/21/2008	52.20	0.60	13:17		23	5	16903	11	82.3	0.06		
6/22/2008							0				Sunday, Meter not read.	(3)
6/23/2008	52.20	0.60	17:16		51	59	16913	10	74.8	0.02		
6/24/2008	52.20	0.60	17:23		24	7	16938	25	187.0	0.13		
6/25/2008	52.20	0.60	14:23		21	0	16948	10	74.8	0.06		
6/26/2008	52.20	0.60	10:29		20	6	16957	9	67.3	0.06		
6/27/2008	52.20	0.60	15:31		29	2	16978	21	157.1	0.09	Rain event	
6/28/2008							0				Saturday, Meter not read. Rain event.	(3)
6/29/2008	52.20	0.60	11:09		43	38	17014	36	269.3	0.10	Rain event	
6/30/2008	52.20	0.60	0:00		12	51	17027	13	97.2	0.13		
7/1/2008	52.20	0.60	15:31		39	31					Meter not read	(8)
7/2/2008	52.20	0.60	11:57		20	26					Meter not read	(8)
7/3/2008	52.20	0.60	9:27		21	30					Meter not read. Rain event.	(8)
7/4/2008	52.20	0.60	10:09		24	42					Meter not read. Rain event.	(8)
7/5/2008	52.20	0.60	12:38		26	29					Meter not read	(8)
7/6/2008	52.20	0.60	10:14		21	36					Meter not read	(8)
7/7/2008	52.20	0.60	14:49		28	35					Meter not read. Rain event.	(8)
7/8/2008	52.20	0.60	11:42		20	53					Meter not read. Rain event.	(8)
7/9/2008	52.20	0.60	10:16		22	34					Meter not read. Rain event.	(8)
7/10/2008	52.20	0.60	12:19		26	3					Meter not read	(8)
7/11/2008	52.20	0.60	14:29		26	10					Meter not read	(8)
7/12/2008	52.30	0.50	14:53		24	24					Meter not read. Rain event.	(8)
7/13/2008	52.20	0.60	9:37		18	44					Meter not read.	(8)
7/14/2008	52.20	0.60	14:26		28	49					Meter not read	(8)
7/15/2008	52.20	0.60	12:06		21	40					Meter not read	(8)
7/16/2008	52.20	0.60	9:17		21	11					Meter not read	(8)
7/17/2008	52.20	0.60	10:21		25	4					Meter not read	(8)
7/18/2008	52.30	0.50	12:48		26	27					Meter not read	(8)
7/19/2008											Meter not read	(3)
7/20/2008	52.20	0.60	13:09		48	21					Meter not read. Rain event.	(8)
7/21/2008	52.20	0.60	10:47		21	38					Meter not read	(8)
7/22/2008	52.30	0.50	10:27		23	40					Meter not read. Rain event.	(8)
7/23/2008	52.30	0.50	12:28		26	1					Meter not read	(8)
7/24/2008	52.30	0.50	12:14		23	46					Meter not read	(8)
7/25/2008	52.30	0.50	15:27		27	13					Meter not read	(8)
7/26/2008	52.30	0.50	13:51		22	24					Meter not read	(8)
7/27/2008											Meter not read	(3)
7/28/2008	52.30	0.50	12:26		46	35					Meter not read.	(8)
7/29/2008	52.30	0.50	12:22		23	56					Meter not read	(8)
7/30/2008	52.30	0.50	9:15		20	53					Meter not read. Rain event.	(8)
7/31/2008	52.30	0.50	13:14		27	59					Meter not read. Rain event.	(8)
8/1/2008											Meter not read.	(8)
8/2/2008	52.30	0.50	13:14		48	0	17412	385	2,879.8	0.06	Total volume between meter readings on 6/30 and 8/02.	(8)
8/3/2008	52.30	0.50	13:59		24	45	17435	23	172.0	0.12		

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Date	Water Level (feet BTOS)	Water Depth (feet AFOS)	Time (hh:mm) start	end	Duration of Pumping h	m	Meter (cu. ft)	Volume Pumped (cu. ft)	Volume Pumped (gallons)	Flow Rate (gallons/min)	Comments	Note
8/4/2008	52.30	0.50	11:24		21	25	17441	6	44.9	0.03		
8/5/2008	52.30	0.50	11:17		23	53	17449	8	59.8	0.04	Rain event	
8/6/2008	52.30	0.50	9:19		22	2	17454	5	37.4	0.03	Rain event	
8/7/2008	52.30	0.50	13:11		27	52	17461	7	52.4	0.03		
8/8/2008	52.30	0.50	13:36		24	25	17503	42	314.2	0.21		
8/9/2008	52.30	0.50	13:28		23	52	17512	9	67.3	0.05		
8/10/2008							0				Sunday, Meter not read.	(3)
8/11/2008	52.30	0.50	16:27		50	59	17528	16	119.7	0.04		
8/12/2008	52.30	0.50	11:21		18	54	17534	6	44.9	0.04		
8/13/2008	52.30	0.50	13:12		25	51	17537	3	22.4	0.01		
8/14/2008	52.30	0.50	9:20		20	8	17546	9	67.3	0.06		
8/15/2008	52.30	0.50	16:15		30	55	17557	11	82.3	0.04		
8/16/2008	52.30	0.50	13:58		21	43	17563	6	44.9	0.03		
8/17/2008	52.30	0.50	15:07		25	9	17568	5	37.4	0.02		
8/18/2008	52.30	0.50	11:34		20	27	17574	6	44.9	0.04		
8/19/2008	52.30	0.50	16:21		28	47	17583	9	67.3	0.04		
8/20/2008	52.30	0.50	13:39		21	18	17591	8	59.8	0.05		
8/21/2008	52.70	0.10	12:35		22	56	17598	7	52.4	0.04		
8/22/2008	52.70	0.10	17:38		29	3	17605	7	52.4	0.03		
8/23/2008	52.30	0.50	12:03		18	25	17609	4	29.9	0.03		
8/24/2008	52.30	0.50	15:00		26	57	17615	6	44.9	0.03		
8/25/2008	52.30	0.50	13:23		22	23	17621	6	44.9	0.03		
8/26/2008	52.30	0.50	16:42		27	19	17626	5	37.4	0.02		
8/27/2008	52.30	0.50	15:28		22	46	17631	5	37.4	0.03	Rain event	
8/28/2008	52.30	0.50	12:16		20	48	17635	4	29.9	0.02	Rain event	
8/29/2008	52.30	0.50	9:12		20	56	17639	4	29.9	0.02		
8/30/2008							0				Saturday, Meter not read.	(3)
8/31/2008	52.30	0.50	14:11		52	59	17648	9	67.3	0.02		
9/1/2008	52.30	0.50	11:31		21	20	17656	8	59.8	0.05		
9/2/2008	52.30	0.50	8:26		20	55	17668	12	89.8	0.07		
9/3/2008	52.30	0.50	13:58		29	32	17670	2	15.0	0.01		
9/4/2008	52.30	0.50	14:44		24	46	17684	14	104.7	0.07		
9/5/2008	52.30	0.50	13:06		22	22	17693	9	67.3	0.05		
9/6/2008	52.30	0.50	9:42		20	36	17708	15	112.2	0.09		
9/7/2008							0				Sunday, Meter not read	(3)
9/8/2008	52.30	0.50	14:08		52	26	17712	4	29.9	0.01		
9/9/2008	52.30	0.50	11:27		21	19	17716	4	29.9	0.02		
9/10/2008	52.30	0.50	10:38		23	11	17721	5	37.4	0.03		
9/11/2008	52.30	0.50	14:16		27	38	17727	6	44.9	0.03		
9/12/2008	52.30	0.50	10:04		19	48	17734	7	52.4	0.04		
9/13/2008	52.30	0.50	8:55		22	51	17742.5	8.5	63.6	0.05		
9/14/2008	52.30	0.50	15:04		30	9	17748	5.5	41.1	0.02		
9/15/2008	52.30	0.50	8:24		17	20	17806	58	433.8	0.42		
9/16/2008	52.30	0.50	11:05		26	41	17815	9	67.3	0.04		
9/17/2008	52.30	0.50	10:54		23	49	17825	10	74.8	0.05		
9/18/2008	52.30	0.50	18:12		31	18	17836	11	82.3	0.04		
9/19/2008	52.30	0.50	17:43		23	31	17842	6	44.9	0.03		
9/20/2008	52.30	0.50	10:31		16	48	17849	7	52.4	0.05		
9/21/2008							0				Sunday, Meter not read.	(3)
9/22/2008	52.30	0.50	13:29		50	58	17862	13	97.2	0.03		
9/23/2008	52.30	0.50	14:27		24	58	17866	4	29.9	0.02		
9/24/2008	52.30	0.50	10:09		19	42	17871	5	37.4	0.03		
9/25/2008	52.30	0.50	13:35		27	26	17875	4	29.9	0.02		
9/26/2008	52.30	0.50	15:22		25	47	17882	7	52.4	0.03		
9/27/2008	52.30	0.50	17:21		25	59	17888	6	44.9	0.03		
9/28/2008	52.30	0.50	14:59		21	38	17894	6	44.9	0.03		
9/29/2008	52.30	0.50	18:23		27	24	17901	7	52.4	0.03		

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Date	Water Level (feet BTOS)	Water Depth (feet AFOS)	Time (hh:mm) start	end	Duration of Pumping h	m	Meter (cu. ft)	Volume Pumped (cu. ft)	Volume Pumped (gallons)	Flow Rate (gallons/min)	Comments	Note
9/30/2008	52.30	0.50									Meter not read.	(9)
10/1/2008	52.20	0.60									Meter not read	(9)
10/2/2008	52.15	0.65									Meter not read	(9)
10/3/2008	52.10	0.70									Meter not read	(9)
10/4/2008	52.00	0.80									Meter not read	(9)
10/5/2008	51.95	0.85									Meter not read	(9)
10/6/2008	51.80	1.00									Meter not read	(9)
10/7/2008	51.60	1.20									Meter not read. Rain event.	(9)
10/8/2008	51.40	1.40									Meter not read. Rain event.	(9)
10/9/2008	51.40	1.40									Meter not read	(9)
10/10/2008	51.20	1.60									Meter not read	(9)
10/11/2008	51.20	1.60									Meter not read	(9)
10/12/2008	51.10	1.70									Meter not read	(9)
10/13/2008	51.10	1.70									Meter not read	(9)
10/14/2008	51.00	1.80									Meter not read. Rain event.	(9)
10/15/2008	49.90	2.90									Meter not read. Rain event.	(9)
10/16/2008	49.90	2.90									Meter not read. Rain event.	(9)
10/17/2008	49.90	2.90									Meter not read	(9)
10/18/2008	49.90	2.90									Meter not read	(9)
10/19/2008											Meter not read	
10/20/2008	52.20	0.60	14:15		499	52	18045	144	1,077.1	0.04	Total volume between meter readings on 9/29 and 10/20	(9)
10/21/2008	52.20	0.60									Meter not read	(10)
10/22/2008	52.10	0.70									Meter not read	(10)
10/23/2008	52.10	0.70									Meter not read	(10)
10/24/2008	52.00	0.80									Meter not read. Rain event.	(10)
10/25/2008											Meter not read	
10/26/2008	51.90	0.90									Meter not read	(10)
10/27/2008	51.80	1.00									Meter not read	(10)
10/28/2008	51.80	1.00									Meter not read	(10)
10/29/2008	51.70	1.10									Meter not read	(10)
10/30/2008	51.70	1.10									Meter not read	(10)
10/31/2008	51.60	1.20									Meter not read	(10)
11/1/2008	51.60	1.20									Meter not read	(10)
11/2/2008	51.60	1.20									Meter not read	(10)
11/3/2008	51.40	1.40									Meter not read	(10)
11/4/2008	51.40	1.40									Meter not read	(10)
11/5/2008	51.40	1.40									Meter not read	(10)
11/6/2008	51.30	1.50									Meter not read. Rain event.	(10)
11/7/2008	51.30	1.50									Meter not read.	(10)
11/8/2008	51.20	1.60									Meter not read	(10)
11/9/2008	51.20	1.60									Meter not read	(10)
11/10/2008	51.10	1.70	15:45		504	90	18146	101	755.5	0.02	McIntyre Installed new pumps. Total volume between meter readings on 10/21 and 11/10.	(10)
11/11/2008	52.20	0.60	14:31		22	46	18157	11	82.3	0.06	Rain event	
11/12/2008	52.20	0.60	15:11		24	40	18168	11	82.3	0.06	Rain event	
11/13/2008	52.20	0.60	15:41		24	30	18178	10	74.8	0.05	Rain event	
11/14/2008	52.10	0.70	14:51		23	10	18178				Rain event	
11/15/2008	52.10	0.70	16:48		25	57	18178				Rain event	
11/16/2008	52.00	0.80	13:14		20	26	18178					
11/17/2008	52.00	0.80	15:27		26	13	18178					
11/18/2008	52.00	0.80	15:37		24	10	18178					
11/19/2008	52.00	0.80	14:16		22	39	18178					
11/20/2008	52.00	0.80	13:21		23	5						
11/21/2008	51.90	0.90	13:37		24	16						
11/22/2008	51.90	0.90	15:29		25	52						
11/23/2008	51.70	1.10	15:34		24	5						
11/24/2008	51.60	1.20	14:41		23	7					Rain event	

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GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	Water Level (feet BTOS)	Water Depth (feet AFOS)	Time (hh:mm) start	Time (hh:mm) end	Duration of Pumping h	Duration of Pumping m	Meter (cu. ft)	Volume Pumped (cu. ft)	Volume Pumped (gallons)	Flow Rate (gallons/min)	Comments	Note
11/25/2008	51.60	1.20	17:12		26	31						
11/26/2008	51.50	1.30										
11/27/2008	51.50	1.30										
11/28/2008	51.40	1.40										
11/29/2008											Saturday, Meter not read.	(3)
11/30/2008											Sunday, Meter not read. Rain event.	(3)
12/1/2008	51.60	1.20	16:09		142	57					Rain event	
12/2/2008	51.40	1.40	14:32		22	23						
12/3/2008	51.20	1.60	16:10		25	38					Rain event	
12/4/2008											ENTACT working grading fill.	(11)
12/5/2008											ENTACT installed 6' riser to the top of the sump.	(11)
12/6/2008											ENTACT working grading fill. Rain event.	(11)
12/7/2008											ENTACT working grading fill	(11)
12/8/2008											ENTACT working grading fill	(11)
12/9/2008											ENTACT working grading fill. Rain event.	(11)
12/10/2008											ENTACT working grading fill. Rain event.	(11)
12/11/2008											ENTACT working grading fill	(11)
12/12/2008											ENTACT working grading fill	(11)
12/13/2008											ENTACT working grading fill	(11)
12/14/2008											ENTACT working grading fill. Rain event.	(11)
12/15/2008	56.40	2.27	17:36		289	26					ENTACT working grading fill. Rain event.	(11)
12/16/2008	56.30	2.37	17:43		24	7					ENTACT working grading fill	(11)
12/17/2008	56.10	2.57	17:49		24	6					ENTACT working grading fill	(11)
12/18/2008	56.00	2.67	17:50		24	1					Electrical Malfunction as per SES	(12)
12/19/2008	55.90	2.77	17:05		23	15					Electrical Malfunction as per SES	(12)
12/20/2008	-		-								Saturday, Meter not read.	(3)
12/21/2008	-		-								Sunday, Meter not read.	(3)
12/22/2008	55.20	3.47									No meter reading	(1)
12/23/2008	55.60	3.07									No meter reading. Rain event.	(1)
12/24/2008	55.50	3.17									No meter reading. Rain event.	(1)
12/25/2008	55.40	3.27									No meter reading	(1)
12/26/2008	54.20	4.47									No meter reading. Rain event.	(1)
12/27/2008	-										Saturday, Meter not read. Rain event.	(3)
12/28/2008	-										Sunday, Meter not read. Rain event.	(3)
12/29/2008	54.60	4.07									No meter reading	(1)
12/30/2008	54.80	3.87									No meter reading	(1)
12/31/2008	54.70	3.97									No meter reading	(1)
							Total	**7,744.0**	**57,925.1**			(1)
							Average/day (thru Nov. 13)	**24.35**	**182.2**			

Notes:
BTOS - Below top of sump
AFOS - Above floor of sump
cu. ft - cubic feet
(1) No water level measurement/meter reading obtained.
(2) Volume estimated based on 35 cu. ft pumped between meter readings on January 30 and February 1.
(3) Saturday/Sunday/Holiday, no meter reading or water level measurements.
(4) Volume estimated based on 136 cu. ft pumped between meter readings on February 6 and February 8.
(5) Not pumped. Pump turned off to accommodate pipe work.
(6) Not pumped. Pump turned off to accommodate CRA sampling/testing.
(7) Volume estimated based on 220 cu. ft pumped between meter readings on April 29 and May 1.
(8) No pumping to accommodate placement of additional risers
(9) Volume estimated based on 1,440 cu. ft pumped between meter readings on September 29 and October 20.
(10) Volume estimated based on 1,010 cu. ft pumped between meter readings on October 21 and November 11.
(11) ENTACT working grading fill.
(12) Electrical malfunction as per SES.

TABLE E.1.4

2009 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information	
Top of sump (datum reference)	729.83
Bottom of sump (feet BTOS)	58.8
Diameter of sump (feet)	6

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gal.)*	*Original Sevenson Comments (additional CRA comments)*
1/1/2009						Holiday, no w/l measurement
1/2/2009	54.70	4.10	16:35			SES did not pump
1/3/2009	54.70	4.10	17:41			SES did not pump
1/4/2009	54.60	4.20	15:04			SES did not pump
1/5/2009	54.50	4.30	15:08			SES did not pump
1/6/2009	54.70	4.10	15:42			SES did not pump
1/7/2009	54.90	3.90	14:16			SES did not pump
1/8/2009	54.40	4.40	15:05			SES did not pump
1/9/2009	54.40	4.40	15:23			SES did not pump
1/10/2009	54.20	4.60	20:05			**pumped** (no water removed?)
1/11/2009	54.20	4.60	18:34			not pumped
1/12/2009	54.20	4.60	17:43			not pumped
1/13/2009	54.20	4.60	17:50			not pumped
1/14/2009	54.20	4.60	17:15			not pumped
1/15/2009	54.00	4.80	18:18			not pumped
1/16/2009	54.00	4.80	13:27			not pumped
1/17/2009						Saturday, no w/l measurement.
1/18/2009	54.00	4.80	15:05			not pumped
1/19/2009	54.00	4.80	16:42			not pumped
1/20/2009	53.90	4.90	17:43			not pumped
1/21/2009	53.90	4.90	17:47			not pumped
1/22/2009	53.90	4.90	17:24			not pumped
1/23/2009	53.80	5.00	16:00			not pumped
1/24/2009	53.80	5.00	14:58			not pumped
1/25/2009						Sunday, no w/l measurement
1/26/2009	53.60	5.20	16:39			not pumped
1/27/2009	53.60	5.20	14:54			tried to pump line was frozen
1/28/2009	53.40	5.40	13:31			not pumped, line frozen
1/29/2009	53.40	5.40	12:34			not pumped, line frozen
1/30/2009	53.40	5.40	10:27			not pumped, line frozen
1/31/2009						Saturday, no w/l measurement.
2/1/2009						Sunday, no w/l measurement
2/2/2009	54.70	4.10	10:27	1.30	275	frozen (apparently pumped?)
2/3/2009	54.40	4.40	11:31			frozen
2/4/2009	54.40	4.40	10:07			frozen
2/5/2009	54.40	4.40	9:29			frozen
2/6/2009	54.30	4.50	10:27			did not pump
2/7/2009	54.10	4.70	15:21			did not pump
2/8/2009	53.50	5.30	9:34			did not pump
2/9/2009	53.70	5.10	16:05			did not pump
2/10/2009	53.50	5.30	15:08			did not pump
2/11/2009	53.50	5.30	13:30			did not pump
2/12/2009	53.50	5.30	18:15			did not pump
2/13/2009	53.50	5.30	13:35			did not pump
2/14/2009	53.30	5.50	15:27			did not pump
2/15/2009	53.30	5.50	14:34			did not pump
2/16/2009	52.60	6.20	16:08			did not pump
2/17/2009	52.60	6.20	13:52			did not pump
2/18/2009	52.40	6.40	17:53			did not pump
2/19/2009	52.40	6.40	17:10			did not pump
2/20/2009	52.40	6.40	17:52			did not pump
2/21/2009	52.40	6.40	18:15			did not pump
2/22/2009						Sunday, no w/l measurement
2/23/2009	52.20	6.60	17:48			did not pump
2/24/2009	52.20	6.60	14:50			did not pump
2/25/2009	52.20	6.60	13:22			did not pump
2/26/2009	52.10	6.70	10:34			did not pump
2/27/2009	52.10	6.70	17:43			did not pump
2/28/2009	51.10	7.70	14:47			**pumped** (w/l prior to pumping)

TABLE E.1.4

2009 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gal.)*	*Original Sevenson Comments (additional CRA comments)*
3/1/2009	52.90	5.90	11:17	1.80	381	(w/l measured after previous day's pumping
3/2/2009	52.90	5.90	18:14			
3/3/2009	52.80	6.00	18:07			
3/4/2009	53.40	5.40	18:12	0.60	127	**pumped**
3/5/2009	56.00	2.80	18:21	2.60	550	**pumped**
3/6/2009	56.00	2.80	18:47			
3/7/2009	56.00	2.80	11:36			**pumped** (no water removed?)
3/8/2009						Sunday, no w/l measurement
3/9/2009	55.80	3.00	17:46			not pumped
3/10/2009	55.80	3.00	15:42			not pumped
3/11/2009	55.60	3.20	18:27			not pumped
3/12/2009	55.60	3.20	17:07			not pumped
3/13/2009	55.50	3.30	18:35			not pumped
3/14/2009	55.40	3.40	17:26			not pumped
3/15/2009	55.40	3.40	14:35			not pumped
3/16/2009	56.00	2.80	17:25	0.60	127	**pumped**
3/17/2009	56.00	2.80	17:13			not pumped
3/18/2009	56.00	2.80	16:35			not pumped
3/19/2009	55.90	2.90	9:44			not pumped
3/20/2009	55.80	3.00	12:50			not pumped
3/21/2009	55.70	3.10	11:34			not pumped
3/22/2009						Sunday, no w/l measurement
3/23/2009	55.50	3.30	16:24			not pumped
3/24/2009	56.20	2.60	17:44	0.70	148	**pumped**
3/25/2009	56.20	2.60	16:31			not pumped
3/26/2009	56.10	2.70	16:34			not pumped
3/27/2009	56.10	2.70	14:06			not pumped
3/28/2009						Saturday, no w/l measurement
3/29/2009	56.00	2.80	12:42			not pumped
3/30/2009	56.00	2.80	9:06			not pumped
3/31/2009	56.00	2.80	9:31			pumped (no water removed?)
4/1/2009	56.00	2.80	11:46			not pumped
4/2/2009	56.00	2.80	14:31			not pumped
4/3/2009	56.00	2.80	13:38			not pumped
4/4/2009	55.90	2.90	14:42			not pumped
4/5/2009						Sunday, no w/l measurement
4/6/2009	55.90	2.90	15:42			not pumped
4/7/2009	55.80	3.00	11:34			not pumped
4/8/2009	55.60	3.20	13:34			not pumped
4/9/2009	55.60	3.20	11:21			not pumped
4/10/2009	55.50	3.30	8:34			not pumped
4/11/2009	55.40	3.40	8:15			not pumped
4/12/2009						Sunday, no w/l measurement
4/13/2009	55.80	3.00	13:24	0.40	85	**pumped 4 hrs**
4/14/2009	56.00	2.80	12:22	0.20	42	not pumped (delayed response?)
4/15/2009	56.00	2.80	13:47			not pumped
4/16/2009	56.00	2.80	13:34			not pumped
4/17/2009	56.00	2.80	14:35			not pumped
4/18/2009						Saturday, no w/l measurement
4/19/2009	56.00	2.80	16:34			not pumped
4/20/2009	55.80	3.00	14:35			not pumped
4/21/2009	55.80	3.00	14:10			not pumped
4/22/2009	55.80	3.00	13:12			not pumped
4/23/2009	55.80	3.00	15:34			not pumped
4/24/2009	55.80	3.00	15:35			not pumped
4/25/2009	55.60	3.20	13:49			not pumped
4/26/2009						Sunday not pumped
4/27/2009	55.50	3.30	12:27			not pumped
4/28/2009	55.30 (?)	3.50	8:27			not pumped
4/29/2009	55.60 (?)	3.20	15:10			not pumped
4/30/2009	55.50	3.30	15:21			not pumped

TABLE E.1.4

2009 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gal.)*	*Original Sevenson Comments (additional CRA comments)*
5/1/2009	55.40	3.40	15:32			not pumped
5/2/2009						Saturday, no w/l measurement
5/3/2009	55.50	3.30	6:21			
5/4/2009	55.20	3.60	14:58			
5/5/2009	55.10	3.70	15:31			
5/6/2009	56.80	2.00	18:04	1.70	360	**pumped**
5/7/2009	56.80	2.00	14:41			
5/8/2009	56.80	2.00	18:29			
5/9/2009	56.70	2.10	14:41			
5/10/2009						Sunday, no w/l measurement
5/11/2009						*SES on alternating work weeks*
5/12/2009						*SES on alternating work weeks*
5/13/2009						*SES on alternating work weeks*
5/14/2009						*SES on alternating work weeks*
5/15/2009						*SES on alternating work weeks*
5/16/2009						Saturday, no w/l measurement
5/17/2009	56.60	2.20	15:06			
5/18/2009	56.60	2.20	12:21			
5/19/2009	56.60	2.20	14:31			
5/20/2009	56.60	2.20	14:03			
5/21/2009	56.50	2.30	12:24			
5/22/2009	56.50	2.30	15:12			
5/23/2009	56.50	2.30	14:14			
5/24/2009						Sunday, no w/l measurement
5/25/2009						Holiday, no w/l measurement
5/26/2009						*SES on alternating work weeks*
5/27/2009						*SES on alternating work weeks*
5/28/2009						*SES on alternating work weeks*
5/29/2009						*SES on alternating work weeks*
5/30/2009	56.20	2.60	11:22			
5/31/2009						Sunday, no w/l measurement
6/1/2009	56.10	2.70	14:49			not pumped
6/2/2009	56.10	2.70	13:04			not pumped
6/3/2009	56.20	2.60	11:38			not pumped
6/4/2009	56.00	2.80	13:45			not pumped
6/5/2009	56.00	2.80	14:20			not pumped
6/6/2009	56.00	2.80	15:05			not pumped
6/7/2009						Sunday, no w/l measurement
6/8/2009						(no data available)
6/9/2009	55.80	3.00	7:45			not pumped
6/10/2009	55.60	3.20	9:00			not pumped
6/11/2009	55.60	3.20	8:15			not pumped
6/12/2009	55.70	3.10	8:30			not pumped
6/13/2009						Saturday, no w/l measurement
6/14/2009						Sunday, no w/l measurement
6/15/2009	55.70	3.10	11:07			not pumped
6/16/2009	55.60	3.20	14:52			not pumped
6/17/2009	56.20	2.60	15:02	0.60	127	**pumped**
6/18/2009	56.20	2.60	13:29			not pumped
6/19/2009	56.10	2.70	14:42			not pumped
6/20/2009	56.10	2.70	13:55			not pumped
6/21/2009						Sunday, no w/l measurement
6/22/2009	55.80	3.00	8:45			not pumped
6/23/2009	55.80	3.00	7:45			not pumped
6/24/2009	55.80	3.00	7:00			not pumped
6/25/2009	55.70	3.10	8:00			not pumped
6/26/2009	55.60	3.20	6:45			not pumped
6/27/2009						Saturday, no w/l measurement
6/28/2009	56.20	2.60	14:34	0.60	127	not pumped (water removed?)
6/29/2009	56.00	2.80	14:11			not pumped
6/30/2009	55.90	2.90	11:17			not pumped

TABLE E.1.4

2009 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gal.)*	*Original Sevenson Comments (additional CRA comments)*
7/1/2009	55.90	2.90	16:57			not pumped
7/2/2009	55.80	3.00	14:44			not pumped
7/3/2009	55.60	3.20	14:24			not pumped
7/4/2009	55.70	3.10	13:19			not pumped
7/5/2009						Sunday, no w/l measurement
7/6/2009	55.80	3.00	8:30			not pumped
7/7/2009	55.80	3.00	8:00			not pumped
7/8/2009	55.70	3.10	8:00			not pumped
7/9/2009	55.70	3.10	6:45			not pumped
7/10/2009	55.80	3.00	8:00			not pumped
7/11/2009						Saturday, no w/l measurement
7/12/2009	55.70	3.10	11:12			not pumped
7/13/2009	55.60	3.20	14:01			not pumped
7/14/2009	56.60	2.20	12:21	1.00	212	not pumped (water removed?)
7/15/2009	56.00	2.80	14:02			not pumped
7/16/2009	56.00	2.80	14:19			not pumped
7/17/2009	56.10	2.70	11:39			not pumped
7/18/2009	56.10	2.70	14:13			not pumped
7/19/2009						Sunday, no w/l measurement
7/20/2009	56.00	2.80	15:20			not pumped
7/21/2009	56.10	2.70	14:30			not pumped
7/22/2009	56.10	2.70	8:45			not pumped
7/23/2009	55.80	3.00	8:15			not pumped
7/24/2009	55.60	3.20	8:30			not pumped
7/25/2009						Saturday, no w/l measurement
7/26/2009	55.80	3.00	14:20			not pumped
7/27/2009	55.80	3.00	13:20			not pumped
7/28/2009	55.70	3.10	16:22			not pumped
7/29/2009	55.60	3.20	13:35			not pumped
7/30/2009	55.70	3.10	13:57			not pumped
7/31/2009	55.60	3.20	10:37			not pumped
8/1/2009	55.50	3.30	14:40			not pumped
8/2/2009	55.60	3.20	13:21			not pumped
8/3/2009	55.60	3.20	11:31			not pumped
8/4/2009	55.50	3.30	13:15			not pumped
8/5/2009	55.60	3.20	14:15			not pumped
8/6/2009	55.50	3.30	15:22			not pumped
8/7/2009	55.50	3.30	15:04			not pumped
8/8/2009						Saturday, no w/l measurement
8/9/2009	55.50	3.30	15:15			not pumped
8/10/2009	56.20	2.60	14:15	0.70	148	**pumped**
8/11/2009	56.20	2.60	17;44			not pumped
8/12/2009	56.20	2.60	16:47			not pumped
8/13/2009	56.10	2.70	15:04			not pumped
8/14/2009	56.10	2.70	13:25			not pumped
8/15/2009	56.10	2.70	14:16			not pumped
8/16/2009	55.70	3.10	7:50			not pumped
8/17/2009	55.60	3.20	8:00			not pumped
8/18/2009	55.50	3.30	7:45			not pumped
8/19/2009	55.50	3.30	8:00			not pumped
8/20/2009	55.40	3.40	7:30			not pumped
8/21/2009	55.30	3.50	8:25			not pumped
8/22/2009						Saturday, no w/l measurement
8/23/2009	55.20	3.60	14:06			not pumped
8/24/2009	55.20	3.60	11:12			**pumped** (w/l prior to pumping)
8/25/2009	55.80	3.00	14:07	0.60	127	(w/l measured after previous day's pumping
8/26/2009	55.70	3.10	11:25			not pumped
8/27/2009	55.60	3.20	14:18			not pumped
8/28/2009	55.60	3.20	11:07			not pumped
8/29/2009	55.60	3.20	14:43			not pumped
8/30/2009	55.70	3.10	13:34			not pumped
8/31/2009						(no data available)

TABLE E.1.4

2009 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gal.)*	*Original Sevenson Comments (additional CRA comments)*
9/1/2009	55.40	3.40	8:00			not pumped
9/2/2009	55.40	3.40	7:40			not pumped
9/3/2009	55.40	3.40	8:00			not pumped
9/4/2009	55.40	3.40	8:30			not pumped
9/5/2009						Saturday, no w/l measurement
9/6/2009	55.40	3.40	10:47			not pumped
9/7/2009	55.40	3.40	11:55			not pumped
9/8/2009	55.40	3.40	11:06			not pumped
9/9/2009	55.40	3.40	13:34			not pumped
9/10/2009	55.40	3.40	14:25			not pumped
9/11/2009	55.40	3.40	15:08			not pumped
9/12/2009	55.40	3.40	13:25			not pumped
9/13/2009	55.30	3.50	14:48			not pumped
9/14/2009	55.30	3.50	14:21			not pumped
9/15/2009	55.30	3.50	11:51			not pumped
9/16/2009	55.40	3.40	17:06			not pumped
9/17/2009	55.40	3.40	17:13			not pumped
9/18/2009	55.40	3.40	14:14			not pumped
9/19/2009						Saturday, no w/l measurement
9/20/2009						Sunday, no w/l measurement
9/21/2009	55.20	3.60	14:14			not pumped
9/22/2009	55.10	3.70	14:38			not pumped
9/23/2009	55.10	3.70	17:45			not pumped
9/24/2009	55.00	3.80	13:31			not pumped
9/25/2009	54.90	3.90	17:19			not pumped
9/26/2009	54.90	3.90	14:14			not pumped
9/27/2009	54.80	4.00	16:23			not pumped
9/28/2009	54.70	4.10	16:45			not pumped
9/29/2009	54.70	4.10	14:46			not pumped
9/30/2009	54.70	4.10	13:25			not pumped
10/1/2009	54.70	4.10	14:20			not pumped
10/2/2009	54.70	4.10	14:44			not pumped
10/3/2009	54.60	4.20	11:52			not pumped
10/4/2009						Sunday, no w/l measurement
10/5/2009	54.60	4.20	15:32			not pumped
10/6/2009	54.60	4.20	14:25			not pumped
10/7/2009	54.60	4.20	13:39			not pumped
10/8/2009	54.60	4.20	10:36			not pumped
10/9/2009	54.50	4.30	14:57			not pumped
10/10/2009	54.50	4.30	9:37			not pumped
10/11/2009	54.50	4.30	17:03			not pumped
10/12/2009	54.40	4.40	14:17			not pumped
10/13/2009	54.40	4.40	10:34			not pumped
10/14/2009	54.40	4.40	9:28			not pumped
10/15/2009	54.40	4.40	11:43			not pumped
10/16/2009	54.40	4.40	14:37			not pumped
10/17/2009						Saturday, no w/l measurement
10/18/2009	56.20	2.60	10:35	1.80	381	**pumped**
10/19/2009						(no data available)
10/20/2009	56.20	2.60	14:16			not pumped
10/21/2009	56.10	2.70	11:45			not pumped
10/22/2009	56.10	2.70	11:08			not pumped
10/23/2009	56.10	2.70	17:24			not pumped
10/24/2009	56.10	2.70	10:20			not pumped
10/25/2009						Sunday, no w/l measurement
10/26/2009	56.10	2.70	13:19			not pumped
10/27/2009	56.10	2.70	17:45			not pumped
10/28/2009	56.10	2.70	14:29			not pumped
10/29/2009	56.10	2.70	16:42			not pumped
10/30/2009	55.80	3.00	15:57			not pumped
10/31/2009						Saturday, no w/l measurement

TABLE E.1.4

2009 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Water Level Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gal.)*	*Original Sevenson Comments (additional CRA comments)*
11/1/2009						Sunday, no w/l measurement
11/2/2009	55.60	3.20	14:31			not pumped
11/3/2009	55.40	3.40	10:35			not pumped
11/4/2009	55.30	3.50	14:04			not pumped
11/5/2009	55.30	3.50	11:52			not pumped
11/6/2009	55.30	3.50	16:37			not pumped
11/7/2009	55.20	3.60	14:26			not pumped
11/8/2009						Sunday, no w/l measurement
11/9/2009	55.10	3.70	9:37			not pumped
11/10/2009	55.00	3.80	14:34			not pumped
11/11/2009	55.00	3.80	10:54			not pumped
11/12/2009	55.00	3.80	15:04			not pumped
11/13/2009	55.00	3.80	11:38			not pumped
11/14/2009	55.00	3.80	14:24			not pumped
11/15/2009	55.00	3.80	9:07			not pumped
11/16/2009	55.00	3.80	13:29			not pumped
11/17/2009	55.00	3.80	14:54			not pumped
11/18/2009	55.00	3.80	9:31			not pumped
11/19/2009	55.00	3.80	14:20			not pumped
11/20/2009						(no data available)
11/21/2009						Saturday, no w/l measurement
11/22/2009						Sunday, no w/l measurement
11/23/2009	54.80	4.00	15:59			not pumped
11/24/2009	54.80	4.00	15:07			not pumped
11/25/2009	54.80	4.00	9:46			not pumped
11/26/2009						Holiday, no w/l measurement
11/27/2009	54.80	4.00	13:41			not pumped
11/28/2009						Saturday, no w/l measurement
11/29/2009						Sunday, no w/l measurement
11/30/2009	54.40	4.40	10:51			**pumped** (w/l prior to pumping)
12/1/2009	54.90	3.90	13:34	0.50	106	(w/l measured after previous day's pumping
12/2/2009	54.90	3.90	10:43			
12/3/2009	54.80	4.00	14:39			
12/4/2009	54.80	4.00	12:06			
12/5/2009	54.80	4.00	15:42			
12/6/2009	54.80	4.00	11:58			
12/7/2009						*SES on alternating work weeks*
12/8/2009						*SES on alternating work weeks*
12/9/2009						*SES on alternating work weeks*
12/10/2009						*SES on alternating work weeks*
12/11/2009						*SES on alternating work weeks*
12/12/2009						Saturday, no w/l measurement
12/13/2009						Sunday, no w/l measurement
12/14/2009	54.70	4.10	11:40			
12/15/2009	54.70	4.10	14:34			
12/16/2009	54.70	4.10	10:22			
12/17/2009	54.70	4.10	16:27			
12/18/2009	54.50	4.30	11:16			
12/19/2009	54.50	4.30	10:36			
12/20/2009						Sunday, no w/l measurement
12/21/2009	54.40	4.40	8:28			
12/22/2009	54.40	4.40	9:32			
12/23/2009	54.40	4.40	11:49			
12/24/2009	54.30	4.50	8:29			
12/25/2009						Holiday, no w/l measurement
12/26/2009						Saturday, no w/l measurement
12/27/2009						Sunday, no w/l measurement
12/28/2009	54.30	4.50	11:39			
12/29/2009	54.30	4.50	14:41			
12/30/2009	54.30	4.50	10:34			
12/31/2009	54.30	4.50	9:31			
				15.70	**3,321**	**TOTAL**

Notes:
A permanent pump was installed in the LCS manhole on November 10, 2008 (however, pump was operated manually throughout 2009).

TABLE E.1.5

2010 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	depth until	new depth from
Top of sump (datum reference)	9/23/10	9/24/10
Bottom of sump (feet BTOS)	58.67	64.67
Diameter of sump (feet)	6	6

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
1/1/2010	54.2	4.47	14:28			Sunny
1/2/2010						Saturday (no w/l measurement)
1/3/2010						Sunday (no w/l measurement)
1/4/2010	54.2	4.47	13:41			Sunny and Cold
1/5/2010	54.1	4.57	14:35			Cold
1/6/2010	54.1	4.57	13:24			Cold and Snow
1/7/2010	54.1	4.57	11:31			Cold and Snow
1/8/2010	54.1	4.57	10:58			
1/9/2010						Saturday (no w/l measurement)
1/10/2010						Sunday (no w/l measurement)
1/11/2010	54.1	4.57	15:09			Cold
1/12/2010	54.1	4.57	15:38			Cold
1/13/2010	54.1	4.57	13:55			Cold
1/14/2010	54.0	4.67	11:09			Warm
1/15/2010	54.0	4.67	9:32			Warm
1/16/2010	54.0	4.67	13:46			Warm
1/17/2010	54.0	4.67	11:59			Warm
1/18/2010						Holiday (no w/l measurement)
1/19/2010	54.0	4.67	10:32			Warm
1/20/2010	54.0	4.67	14:35			Rain
1/21/2010	54.0	4.67	13:27			Rain
1/22/2010	54.0	4.67	9:34			Clear
1/23/2010						Saturday (no w/l measurement)
1/24/2010	54.0	4.67	14:15			Clear
1/25/2010	54.0	4.67	15:27			Snow
1/26/2010	54.0	4.67	14:06			Warm
1/27/2010	54.0	4.67	15:24			Warm
1/28/2010	54.0	4.67	14:31			Cold
1/29/2010	54.0	4.67	11:05			Cold
1/30/2010						Saturday (no w/l measurement)
1/31/2010						Sunday (no w/l measurement)
2/1/2010	54.0	4.67	12:22			
2/2/2010	53.9	4.77	12:16			
2/3/2010	53.8	4.87	14:47			
2/4/2010	53.8	4.87	13:32			
2/5/2010	53.6	5.07	15:26			
2/6/2010						Saturday (no w/l measurement)
2/7/2010						Sunday (no w/l measurement)
2/8/2010	53.5	5.17	11:10			
2/9/2010	53.5	5.17	14:20			
2/10/2010	53.5	5.17	9:48			
2/11/2010	53.5	5.17	15:35			
2/12/2010	53.5	5.17	12:19			
2/13/2010						Saturday (no w/l measurement)
2/14/2010						Sunday (no w/l measurement)
2/15/2010	53.4	5.27	11:42			Snow
2/16/2010	53.3	5.37	12:27			
2/17/2010	53.3	5.37	13:20			
2/18/2010	53.3	5.37	13:57			
2/19/2010	53.3	5.37	13:42			

TABLE E.1.5

2010 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
2/20/2010						Saturday (no w/l measurement)
2/21/2010						Sunday (no w/l measurement)
2/22/2010	54.6	4.07	14:21	1.30	275	(1)
2/23/2010	54.5	4.17	13:04			
2/24/2010	54.5	4.17	10:39			
2/25/2010	54.6	4.07	12:24			
2/26/2010	54.5	4.17	12:51			
2/27/2010						Saturday (no w/l measurement)
2/28/2010						Sunday (no w/l measurement)
3/1/2010	54.4	4.27	13:39			
3/2/2010	54.4	4.27	15:06			
3/3/2010	54.3	4.37	12:24			
3/4/2010	54.3	4.37	14:20			
3/5/2010	54.3	4.37	10:51			
3/6/2010						Saturday (no w/l measurement)
3/7/2010						Sunday (no w/l measurement)
3/8/2010	54.3	4.37	12:19			
3/9/2010	54.2	4.47	12:42			
3/10/2010	54.2	4.47	13:35			
3/11/2010	54.2	4.47	9:43			
3/12/2010	54.2	4.47	12:20			
3/13/2010	54.1	4.57	10:07			
3/14/2010	54.1	4.57	8:40			
3/15/2010	54.1	4.57	12:19			
3/16/2010	54.1	4.57	15:48			
3/17/2010	54.1	4.57	12:45			
3/18/2010	54.1	4.57	14:07			
3/19/2010	54.1	4.57	14:41			
3/20/2010						Saturday (no w/l measurement)
3/21/2010						Sunday (no w/l measurement)
3/22/2010	54.0	4.67	15:34			
3/23/2010	54.0	4.67	12:22			
3/24/2010	54.0	4.67	13:37			
3/25/2010	54.0	4.67	10:36			
3/26/2010	54.0	4.67	14:39			
3/27/2010						Saturday (no w/l measurement)
3/28/2010						Sunday (no w/l measurement)
3/29/2010	53.9	4.77	15:24			
3/30/2010	53.9	4.77	12:35			
3/31/2010	53.9	4.77	17:19			
4/1/2010	53.9	4.77	14:53			Warm and windy (CRA tested pump)
4/2/2010						Holiday (no w/l measurement)
4/3/2010	53.9	4.77	13:59			Warm and Rain
4/4/2010	53.8	4.87	10:37			Sunny
4/5/2010	53.8	4.87	15:32			Sunny
4/6/2010	53.8	4.87	14:19			Sunny
4/7/2010	53.8	4.87	9:35			Cloudy
4/8/2010	53.7	4.97	11:31			Rain
4/9/2010	53.7	4.97	15:55			Warm
4/10/2010						Saturday (no w/l measurement)
4/11/2010						Sunday (no w/l measurement)
4/12/2010	53.6	5.07	13:31			Warm
4/13/2010	53.6	5.07	15:37			Warm
4/14/2010	53.6	5.07	14:43			Hot
4/15/2010	53.6	5.07	13:23			Hot

TABLE E.1.5

2010 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
4/16/2010	53.6	5.07	10:29			Rain
4/17/2010						Saturday (no w/l measurement)
4/18/2010	53.6	5.07	12:27			
4/19/2010	53.6	5.07	11:03			Hot
4/20/2010	53.6	5.07	9:41			Cool
4/21/2010	53.6	5.07	11:27			Warm
4/22/2010	53.6	5.07	12:29			Cloudy (CRA tested pump)
4/23/2010	53.7	4.97	8:27			Cloudy
4/24/2010						Saturday (no w/l measurement)
4/25/2010						Sunday (no w/l measurement)
4/26/2010	53.6	5.07	11:22			Rain
4/27/2010	53.6	5.07	14:34			Rain
4/28/2010	53.6	5.07	14:55			Sunny
4/29/2010	53.6	5.07	10:34			Warm
4/30/2010	53.6	5.07	11:41			Warm
5/1/2010	53.5	5.17	11:34			
5/2/2010	53.4	5.27	9:17			
5/3/2010	53.3	5.37	14:25			
5/4/2010	53.3	5.37	10:28			
5/5/2010	56.2	2.47	16:49	2.90	613	
5/6/2010	56.2	2.47	15:34			
5/7/2010	56.2	2.47	14:35			
5/8/2010	56.1	2.57	16:39			
5/9/2010						Sunday, no w/l measurement
5/10/2010	56.1	2.57	12:40			
5/11/2010	56.0	2.67	11:10			
5/12/2010	55.8	2.87	10:47			
5/13/2010	55.8	2.87	13:38			
5/14/2010	55.8	2.87	14:25			
5/15/2010	55.8	2.87	11:07			
5/16/2010						Sunday, no w/l measurement
5/17/2010	55.6	3.07	15:21			
5/18/2010	55.6	3.07	10:04			CRA tested
5/19/2010	55.7	2.97	8:31			
5/20/2010	55.7	2.97	10:41			
5/21/2010	55.7	2.97	14:04			
5/22/2010						Saturday, no w/l measurement
5/23/2010						Sunday, no w/l measurement
5/24/2010	55.4	3.27	9:34			
5/25/2010	55.4	3.27	10:39			
5/26/2010	55.4	3.27	12:10			
5/27/2010	55.3	3.37	10:12			
5/28/2010	55.3	3.37	10:37			
5/29/2010	55.3	3.37	8:41			
5/30/2010						Sunday, no w/l measurement
5/31/2010						Holiday, no w/l measurement
6/1/2010	55.3	3.37	16:35			
6/2/2010	55.3	3.37	14:48			
6/3/2010	55.2	3.47	12:34			
6/4/2010	55.2	3.47	15:16			
6/5/2010	55.1	3.57	10:49			
6/6/2010						Sunday, no w/l measurement
6/7/2010	56.8	1.87	11:38	1.70	360	
6/8/2010	56.7	1.97	13:13			
6/9/2010	56.7	1.97	9:41			

TABLE E.1.5

2010 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
6/10/2010	56.7	1.97	14:26			
6/11/2010	56.6	2.07	15:55			
6/12/2010	56.6	2.07	14:26			
6/13/2010	56.6	2.07	14:09			
6/14/2010	56.4	2.27	13:42			
6/15/2010	56.3	2.37	16:01			
6/16/2010	56.4	2.27	17:24			CRA sampled
6/17/2010	56.3	2.37	9:41			
6/18/2010	56.3	2.37	10:33			
6/19/2010						Saturday, no w/l measurement
6/20/2010						Sunday, no w/l measurement
6/21/2010	56.1	2.57	14:34			
6/22/2010	56.0	2.67	12:29			
6/23/2010	56.0	2.67	10:53			
6/24/2010	56.0	2.67	12:34			
6/25/2010						Inspecting monitors, no levels measured
6/26/2010	53.8	4.87	14:56	-2.20	-465	(1)
6/27/2010						Sunday, no w/l measurement
6/28/2010	53.7	4.97	12:33			
6/29/2010	53.7	4.97	16:46			
6/30/2010	53.6	5.07	15:33			
7/1/2010	54.2	4.47	14:23	0.60	127	
7/2/2010	54.2	4.47	13:09			
7/3/2010						Saturday, no w/l measurement
7/4/2010						Sunday, no w/l measurement
7/5/2010						Holiday, no w/l measurement
7/6/2010	54.1	4.57	13:15			CRA tested
7/7/2010	54.1	4.57	16:42			
7/8/2010	54.0	4.67	15:23			
7/9/2010	53.9	4.77	17:41			
7/10/2010	53.8	4.87	16:51			
7/11/2010						Sunday, no w/l measurement
7/12/2010	53.8	4.87	16:49			
7/13/2010	53.8	4.87	17:19			
7/14/2010	53.8	4.87	15:26			
7/15/2010	53.8	4.87	12:16			
7/16/2010	53.7	4.97	14:36			
7/17/2010	53.7	4.97	12:41			
7/18/2010						Sunday, no w/l measurement
7/19/2010	53.7	4.97	13:39			
7/20/2010	53.6	5.07	11:53			
7/21/2010	53.6	5.07	14:37			
7/22/2010	53.6	5.07	12:45			
7/23/2010	53.6	5.07	18:17			
7/24/2010	53.6	5.07	11:43			
7/25/2010						Sunday, no w/l measurement
7/26/2010	53.6	5.07	12:19			
7/27/2010	53.6	5.07	13:05			
7/28/2010	53.5	5.17	12:31			
7/29/2010	53.4	5.27	12:40			
7/30/2010	53.4	5.27	12:21			
7/31/2010	53.4	5.27	13:34			
8/1/2010						Sunday, no w/l measurement
8/2/2010	53.2	5.47	12:21			
8/3/2010	53.2	5.47	12:49			

TABLE E.1.5

2010 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
8/4/2010	53.2	5.47	12:42			
8/5/2010	53.2	5.47	16:43			
8/6/2010	53.2	5.47	16:22			
8/7/2010	53.2	5.47	13:41			
8/8/2010	53.2	5.47	14:33			
8/9/2010	53.2	5.47	12:24			
8/10/2010	53.2	5.47	12:57			
8/11/2010	53.2	5.47	12:38			CRA sampled
8/12/2010	53.2	5.47	12:40			
8/13/2010	53.2	5.47	12:19			
8/14/2010	53.2	5.47	12:11			
8/15/2010						Sunday, no w/l measurement
8/16/2010	53.2	5.47	13:44			
8/17/2010	53.1	5.57	12:35			
8/18/2010	53.1	5.57	12:17			
8/19/2010	53.1	5.57	12:31			
8/20/2010	53.1	5.57	12:40			
8/21/2010	56.8	1.87	12:25	3.70	783	
8/22/2010						Sunday, no w/l measurement
8/23/2010	56.8	1.87	12:31			
8/24/2010	56.7	1.97	10:43			
8/25/2010	56.7	1.97	10:04			
8/26/2010	56.7	1.97	9:27			
8/27/2010	56.7	1.97	11:19			
8/28/2010	56.6	2.07	12:33			
8/29/2010						Sunday, no w/l measurement
8/30/2010	56.6	2.07	13:35			
8/31/2010	56.6	2.07	12:42			
9/1/2010	56.6	2.07	12:13			
9/2/2010	56.6	2.07	12:42			
9/3/2010	56.6	2.07	12:19			
9/4/2010	56.6	2.07	13:30			
9/5/2010	56.6	2.07	14:49			
9/6/2010						Holiday, no w/l measurement
9/7/2010	56.6	2.07	11:29			
9/8/2010	56.6	2.07	13:22			
9/9/2010	56.5	2.17	10:29			
9/10/2010	56.5	2.17	11:34			
9/11/2010	56.4	2.27	9:36			
9/12/2010						Sunday, no w/l measurement
9/13/2010	56.4	2.27	10:39			
9/14/2010	56.4	2.27	11:17			
9/15/2010	56.5	2.17	12:29			CRA sampled
9/16/2010	56.5	2.17	15:12			Pumped for 2 hours. Commence placement of creek soil fill in AOI-15 from Area G
9/17/2010	54.2	4.47	11:04	-2.3	-486	Pump equipment disconnected during placement of creek soil in the area. Water drained from lines.
9/18/2010	54.2	4.47	13:06			
9/19/2010						Sunday, no w/l measurement
9/20/2010	54.1	4.57	12:29			
9/21/2010	54.1	4.57	12:20			
9/22/2010	54.1	4.57	12:24			
9/23/2010	54.1	4.57	12:30			
9/24/2010	60.0	4.67	19:04			

TABLE E.1.5

2010 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
9/25/2010	60.0	4.67	19:15			
9/26/2010	60.0	4.67	12:17			
9/27/2010						
9/28/2010	59.9	4.77	12:31			
9/29/2010	59.9	4.77	12:20			
9/30/2010	59.9	4.77	12:35			
10/1/2010	59.9	4.77	12:18			
10/2/2010	59.9	4.77	12:44			
10/3/2010	59.9	4.77	10:24			
10/4/2010	59.7	4.97	13:32			
10/5/2010	59.6	5.11	14:23			
10/6/2010	59.6	5.07	11:36			
10/7/2010	59.6	5.07	11:04			
10/8/2010	59.5	5.17	12:24			
10/9/2010	59.5	5.17	10:29			
10/10/2010						Sunday, no w/l measurement
10/11/2010	59.4	5.27	12:27			
10/12/2010	59.4	5.27	12:21			
10/13/2010	59.4	5.27	12:44			
10/14/2010	59.4	5.27	11:33			
10/15/2010	59.3	5.37	10:28			
10/16/2010						Saturday, no w/l measurement
10/17/2010						Sunday, no w/l measurement
10/18/2010	59.3	5.37	14:33			
10/19/2010	59.3	5.37	9:45			
10/20/2010	59.3	5.37	8:49			
10/21/2010	59.3	5.37	9:22			
10/22/2010	59.2	5.47	10:31			
10/23/2010	59.2	5.47	11:44			
10/24/2010						Sunday, no w/l measurement
10/25/2010						
10/26/2010	59.1	5.57	8:45			
10/27/2010	59.1	5.57	11:34			
10/28/2010	59.1	5.57	10:16			
10/29/2010	59.0	5.67	9:39			
10/30/2010	59.0	5.67	12:22			
10/31/2010	59.0	5.67	10:21			
11/1/2010	59.0	5.67	11:21			
11/2/2010	59.0	5.67	10:30			
11/3/2010	59.0	5.67	9:58			
11/4/2010	59.0	5.67	14:24			
11/5/2010	59.0	5.67	11:32			
11/6/2010	59.0	5.67	9:31			
11/7/2010						Sunday, no w/l measurement
11/8/2010	59.0	5.67	11:17			
11/9/2010	59.0	5.67	10:30			
11/10/2010	58.9	5.77	11:15			
11/11/2010	59.0	5.67	10:04			
11/12/2010	59.0	5.67	10:20			
11/13/2010	59.0	5.67	11:40			
11/14/2010	59.0	5.67	14:26			
11/15/2010	59.0	5.67	13:44			
11/16/2010	58.9	5.77	10:37			
11/17/2010	58.9	5.77	11:44			
11/18/2010	58.9	5.77	13:22			
11/19/2010	58.8	5.87	14:41			
11/20/2010	58.8	5.87	13:34			
11/21/2010	58.8	5.87	10:30			

TABLE E.1.5

2010 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
11/22/2010	58.8	5.87	13:40			
11/23/2010	59.9	4.77	14:31	1.10	233	Cleaning of Well
11/24/2010	59.9	4.77	13:17			
11/25/2010	59.9	4.77	9:30			
11/26/2010						Holiday, no w/l measurement
11/27/2010	59.9	4.77	11:44			
11/28/2010	59.9	4.77	11:03			Cleaning of Well
11/29/2010	60.2	4.47	11:27	0.30	63	
11/30/2010	60.2	4.47	14:30			
12/1/2010	60.2	4.47	11:25			
12/2/2010	60.2	4.47	14:26			
12/3/2010	60.2	4.47	10:41			
12/4/2010	60.2	4.47	9:22			
12/5/2010	60.2	4.47	13:35			
12/6/2010	60.2	4.47	11:24			
12/7/2010	60.2	4.47	12:35			
12/8/2010	60.2	4.47	10:49			
12/9/2010	60.2	4.47	11:35			
12/10/2010	60.2	4.47	8:39			
12/11/2010	60.2	4.47				
12/12/2010	60.2	4.47				
12/13/2010	60.2	4.47	9:45			
12/14/2010	60.2	4.47	14:09			
12/15/2010	60.2	4.47	8:43			
12/16/2010	60.2	4.47	11:26			
12/17/2010	60.2	4.47	14:30			
12/18/2010	60.2	4.47	11:09			
12/19/2010	60.2	4.47	11:34			
12/20/2010	60.2	4.47	9:40			
12/21/2010	60.2	4.47	11:05			
12/22/2010	60.0	4.67	9:12			
12/23/2010	60.2	4.47	10:57			
12/24/2010	60.2	4.47	13:24			
12/25/2010	60.2	4.47	9:27			
12/26/2010	60.2	4.47	11:38			
12/27/2010	60.1	4.57	10:29			
12/28/2010	60.1	4.57	9:37			
12/29/2010	60.1	4.57	8:56			
12/30/2010	60.1	4.57	11:43			
12/31/2010	60.1	4.57	9:22			

Notes:
w/l - Water Level
Water level was kept between 2 feet and 5.5 feet, so pump was manually operated appropriately.

TABLE E.1.6

2011 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	new depth from 9/24/10	new depth from 9/10/11
Top of sump (datum reference)	735.67	740.83
Bottom of sump (feet BTOS)	64.67	69.83
Diameter of sump (feet)	6	6

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
1/1/2011						Saturday (no w/l measurement)
1/2/2011						Sunday (no w/l measurement)
1/3/2011	60.1	4.57	9:34			
1/4/2011	60.1	4.57	8:48			
1/5/2011	60.1	4.57	10:26			
1/6/2011	60.1	4.57	9:38			
1/7/2011	60.1	4.57	11:16			
1/8/2011	60.0	4.67	8:45			
1/9/2011	60.0	4.67	9:26			
1/10/2011	60.0	4.67	11:25			
1/11/2011	60.0	4.67	10:35			
1/12/2011	60.0	4.67	11:44			
1/13/2011	60.0	4.67	10:57			
1/14/2011	60.0	4.67	9:37			
1/15/2011	60.0	4.67	13:34			
1/16/2011						Sunday (no w/l measurement)
1/17/2011	60.0	4.67	11:56			
1/18/2011	59.8	4.87	9:47			
1/19/2011	59.8	4.87	10:32			
1/20/2011	59.8	4.87	11:25			
1/21/2011	59.8	4.87	9:37			
1/22/2011						Saturday (no w/l measurement)
1/23/2011	59.8	4.87	10:24			
1/24/2011	59.8	4.87	9:48			
1/25/2011	59.7	4.97	11:55			
1/26/2011	59.7	4.97	9:24			CRA Tested
1/27/2011	59.7	4.97	9:05			
1/28/2011	59.7	4.97	10:47			
1/29/2011	59.7	4.97	11:19			
1/30/2011						Sunday (no w/l measurement)
1/31/2011	59.7	4.97	13:33			
2/1/2011	59.7	4.97	11:24			
2/2/2011	59.6	5.07	10:47			
2/3/2011	59.5	5.17	13:38			
2/4/2011	59.5	5.17	9:45			
2/5/2011	59.5	5.17	14:17			
2/6/2011						Sunday (no w/l measurement)
2/7/2011	59.5	5.17	10:39			
2/8/2011	59.5	5.17	11:49			
2/9/2011						
2/10/2011						
2/11/2011	59.5	5.17	13:30			
2/12/2011	59.5	5.17	11:09			
2/13/2011						Sunday (no w/l measurement)
2/14/2011	59.5	5.17	10:08			
2/15/2011	59.5	5.17	13:44			
2/16/2011	59.4	5.27	10:51			
2/17/2011	59.4	5.27	9:25			
2/18/2011	59.4	5.27	8:30			
2/19/2011	59.4	5.27	10:34			
2/20/2011						Sunday (no w/l measurement)
2/21/2011						Holiday
2/22/2011						
2/23/2011	59.4	5.27	14:47			CRA Sampled

TABLE E.1.6

2011 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
2/24/2011	59.4	5.27	13:54			
2/25/2011	59.4	5.27	11:32			
2/26/2011	59.4	5.27	9:43			
2/27/2011						Sunday (no w/l measurement)
2/28/2011	59.4	5.27	13:28			
3/1/2011	59.4	5.27	13:18			
3/2/2011	59.4	5.27	13:44			
3/3/2011	59.4	5.27	9:53			
3/4/2011	59.3	5.37	11:05			
3/5/2011	59.3	5.37	9:38			
3/6/2011	59.3	5.37	11:17			
3/7/2011	59.3	5.37	14:51			
3/8/2011	59.3	5.37	9:25			
3/9/2011	59.3	5.37	9:41			CRA Sampled
3/10/2011	59.3	5.37	10:33			
3/11/2011	59.3	5.37	14:17			
3/12/2011	59.3	5.37	14:40			
3/13/2011						Sunday (no w/l measurement)
3/14/2011	59.3	5.37	11:25			
3/15/2011	59.2	5.47	9:37			
3/16/2011	59.2	5.47	10:41			
3/17/2011	59.2	5.47	9:56			
3/18/2011	59.2	5.47	8:35			
3/19/2011						Saturday (no w/l measurement)
3/20/2011						Sunday (no w/l measurement)
3/21/2011						
3/22/2011	59.2	5.47	9:29			
3/23/2011	59.2	5.47	11:26			
3/24/2011	59.2	5.47	10:39			
3/25/2011	59.2	5.47	8:49			
3/26/2011	59.2	5.47	11:22			
3/27/2011						Sunday (no w/l measurement)
3/28/2011	59.2	5.47	10:54			
3/29/2011	59.2	5.47	13:32			
3/30/2011	59.2	5.47	9:23			
3/31/2011	59.2	5.47	14:47			
4/1/2011	59.2	5.47	13:26			
4/2/2011	59.2	5.47	9:34			
4/3/2011	59.2	5.47	11:19			
4/4/2011	59.1	5.57	13:53			
4/5/2011	59.1	5.57	14:48			
4/6/2011	59.1	5.57	15:25			
4/7/2011	59.1	5.57	14:28			
4/8/2011	59.1	5.57	14:39			
4/9/2011						Saturday (no w/l measurement)
4/10/2011						Sunday (no w/l measurement)
4/11/2011	59.1	5.57	14:42			
4/12/2011	59.2	5.47	16:31	0.10	21.15	Pumped for 20 minutes as an equipment check
4/13/2011	59.2	5.47	8:39			
4/14/2011	59.2	5.47	14:21			
4/15/2011	59.2	5.47	10:47			
4/16/2011						Saturday (no w/l measurement)
4/17/2011	59.2	5.47	9:35			
4/18/2011	59.1	5.57	10:08			
4/19/2011	59.1	5.57	13:22			
4/20/2011	59.1	5.57	11:29			
4/21/2011	59.0	5.67	10:26			
4/22/2011	59.0	5.67	13:34			
4/23/2011	59.0	5.67	9:06			

TABLE E.1.6

2011 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
4/24/2011	59.0	5.67	16:47			
4/25/2011	59.0	5.67	13:45			
4/26/2011	59.0	5.67	18:07			
4/27/2011	59.0	5.67	15:38			
4/28/2011	59.0	5.67	16:43			
4/29/2011	59.0	5.67	15:08			
4/30/2011	59.0	5.67	13:35			
5/1/2011	59.0	5.67	9:44			
5/2/2011	59.0	5.67	13:13			
5/3/2011	59.0	5.67	13:14			
5/4/2011	59.0	5.67	14:07			
5/5/2011	59.0	5.67	14:25			
5/6/2011	59.0	5.67	9:34			
5/7/2011						Saturday (no w/l measurement)
5/8/2011						Sunday (no w/l measurement)
5/9/2011	58.9	5.77	11:37			
5/10/2011	58.9	5.77	10:55			
5/11/2011	58.9	5.77	14:21			CRA Sampled
5/12/2011	58.9	5.77	13:25			
5/13/2011	58.9	5.77	14:02			
5/14/2011	58.9	5.77	15:59			
5/15/2011	58.9	5.77	13:15			
5/16/2011	58.8	5.87	14:47			
5/17/2011	58.8	5.87	13:31			
5/18/2011	58.8	5.87	10:52			
5/19/2011	58.8	5.87	14:19			
5/20/2011	58.8	5.87	13:13			
5/21/2011	58.8	5.87	13:49			
5/22/2011						Sunday (no w/l measurement)
5/23/2011	58.8	5.87	13:35			
5/24/2011	58.8	5.87	11:50			
5/25/2011	58.8	5.87	11:04			
5/26/2011	58.8	5.87	13:47			
5/27/2011	58.7	5.97	13:19			
5/28/2011						Saturday (no w/l measurement)
5/29/2011	58.7	5.97	12:04			
5/30/2011						Holiday
5/31/2011	58.7	5.97	13:13			
6/1/2011	58.7	5.97	10:39			
6/2/2011	58.7	5.97	13:36			
6/3/2011	58.7	5.97	14:19			
6/4/2011	58.7	5.97	14:05			
6/5/2011						Sunday (no w/l measurement)
6/6/2011	58.6	6.07	8:41			
6/7/2011	58.6	6.07	10:47			
6/8/2011	58.6	6.07	14:36			
6/9/2011	58.6	6.07	13:35			
6/10/2011	58.6	6.07	11:42			
6/11/2011	58.6	6.07	9:55			
6/12/2011						Sunday (no w/l measurement)
6/13/2011	58.6	6.07	8:04			
6/14/2011	58.6	6.07	8:47			
6/15/2011	58.6	6.07	10:50			
6/16/2011	58.6	6.07	9:34			
6/17/2011	58.6	6.07	8:42			
6/18/2011	58.6	6.07	9:49			
6/19/2011						Sunday (no w/l measurement)
6/20/2011						
6/21/2011	58.6	6.07	8:28			

TABLE E.1.6

2011 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
6/22/2011	58.6	6.07	8:54			
6/23/2011	58.6	6.07	10:44			
6/24/2011	58.6	6.07	13:15			
6/25/2011	58.6	6.07	9:25			
6/26/2011	58.5	6.17	10:32			
6/27/2011	58.5	6.17	11:10			
6/28/2011	58.5	6.17	9:43			
6/29/2011	58.5	6.17	8:26			
6/30/2011	58.4	6.27	9:24			
7/1/2011	58.4	6.27	8:55			
7/2/2011						Saturday (no w/l measurement)
7/3/2011						Sunday (no w/l measurement)
7/4/2011						Holiday
7/5/2011	58.3	6.37	8:22			
7/6/2011	58.3	6.37	10:35			
7/7/2011	58.3	6.37	9:31			
7/8/2011	58.3	6.37	13:34			
7/9/2011	58.3	6.37	10:57			
7/10/2011	58.3	6.37	9:32			
7/11/2011	58.3	6.37	10:16			
7/12/2011	58.3	6.37	13:45			
7/13/2011	58.3	6.37	11:35			
7/14/2011	58.3	6.37	9:48			
7/15/2011	58.3	6.37	13:21			
7/16/2011	58.4	6.27	10:35	0.10	21.15	Pumped for 50 minutes as an equipment check
7/17/2011						Sunday (no w/l measurement)
7/18/2011	58.4	6.27	9:53			
7/19/2011	58.4	6.27	7:35			
7/20/2011	58.4	6.27	8:35			
7/21/2011	58.4	6.27	8:53			
7/22/2011	58.3	6.37	9:24			
7/23/2011						Saturday (no w/l measurement)
7/24/2011	58.3	6.37	8:25			
7/25/2011	58.3	6.37	8:57			
7/26/2011	58.3	6.37	9:36			
7/27/2011	58.2	6.47	11:41			
7/28/2011	58.2	6.47	9:44			
7/29/2011	58.2	6.47	11:05			
7/30/2011	58.2	6.47	9:31			
7/31/2011						Sunday (no w/l measurement)
8/1/2011	58.2	6.47	14:55			
8/2/2011	58.2	6.47	9:46			
8/3/2011	58.2	6.47	8:58			
8/4/2011						
8/5/2011	58.2	6.47	13:40			
8/6/2011	58.2	6.47	9:41			
8/7/2011	58.2	6.47	10:22			
8/8/2011	58.2	6.47	9:20			
8/9/2011	58.2	6.47	14:45			
8/10/2011	58.2	6.47	16:12			
8/11/2011	58.2	6.47	15:43			
8/12/2011	58.1	6.57	7:10			CRA Sampled
8/13/2011	58.1	6.57	11:39			
8/14/2011						Sunday (no w/l measurement)
8/15/2011	58.0	6.67	8:02			
8/16/2011	58.0	6.67	7:41			
8/17/2011	58.0	6.67	11:28			
8/18/2011	58.0	6.67	9:27			
8/19/2011	58.0	6.67	14:12			
8/20/2011	58.0	6.67	7:39			

TABLE E.1.6

2011 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
8/21/2011	58.0	6.67	10:34			
8/22/2011	58.0	6.67	14:36			
8/23/2011	58.0	6.67	13:19			
8/24/2011	58.0	6.67	11:34			
8/25/2011	58.0	6.67	10:54			
8/26/2011	58.0	6.67	9:34			
8/27/2011	58.0	6.67	11:55			
8/28/2011						Sunday (no w/l measurement)
8/29/2011	58.0	6.67	13:31			
8/30/2011	58.0	6.67	9:28			
8/31/2011	58.0	6.67	9:04			
9/1/2011	58.0	6.67	8:29			
9/2/2011	58.0	6.67	9:53			
9/3/2011						Saturday (no w/l measurement)
9/4/2011	58.0	6.67	10:20			
9/5/2011						Holiday
9/6/2011	58.0	6.67	14:44			
9/7/2011	58.0	6.67	13:53			
9/8/2011	58.0	6.67	9:31			
9/9/2011	58.0	6.67	11:07			
9/10/2011	58.0	6.67	8:59			Raised up approximately 5' 1" with Lid, Saturday
9/11/2011						Sunday (no w/l measurement)
9/12/2011	63.1	6.73	13:17			
9/13/2011	63.1	6.73	9:38			
9/14/2011	63.1	6.73	14:04			
9/15/2011	63.1	6.73	8:34			
9/16/2011	63.1	6.73	9:39			
9/17/2011	63.1	6.73	10:29			
9/18/2011	63.1	6.73	9:17			
9/19/2011	63.1	6.73	13:39			
9/20/2011	63.1	6.73	11:44			
9/21/2011	63.0	6.83	13:21			
9/22/2011	63.0	6.83	9:27			
9/23/2011	63.0	6.83	10:53			
9/24/2011						Saturday (no w/l measurement)
9/25/2011						Sunday (no w/l measurement)
9/26/2011	62.7	7.13	13:50			
9/27/2011	62.7	7.13	10:05			
9/28/2011	62.7	7.13	8:28			
9/29/2011	62.7	7.13	10:45			
9/30/2011	62.7	7.13	12:53			
10/1/2011	62.7	7.13	7:45			
10/2/2011	62.7	7.13	11:33			
10/3/2011	62.7	7.13	10:52			
10/4/2011	62.7	7.13	8:24			
10/5/2011	62.7	7.13	13:59			
10/6/2011	62.7	7.13	15:28			
10/7/2011	62.6	7.23	14:51			
10/8/2011	62.6	7.23	9:32			
10/9/2011						Sunday (no w/l measurement)
10/10/2011	62.6	7.23	10:19			
10/11/2011	62.5	7.33	8:47			
10/12/2011	62.5	7.33	11:21			
10/13/2011	62.4	7.43	9:24			
10/14/2011	62.4	7.43	8:28			
10/15/2011	62.4	7.43	13:51			
10/16/2011	62.4	7.43	10:34			
10/17/2011	62.4	7.43	9:23			
10/18/2011	62.4	7.43	7:51			
10/19/2011	62.3	7.53	8:29			

TABLE E.1.6

2011 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
10/20/2011	62.3	7.53	9:42			
10/21/2011	62.3	7.53	11:04			
10/22/2011						Saturday (no w/l measurement)
10/23/2011						Sunday (no w/l measurement)
10/24/2011	62.2	7.63	8:33			
10/25/2011	62.2	7.63	9:36			
10/26/2011	62.2	7.63	13:24			
10/27/2011	62.2	7.63	10:21			
10/28/2011	62.2	7.63	11:28			
10/29/2011	62.2	7.63	9:44			
10/30/2011	62.2	7.63	14:06			
10/31/2011	62.2	7.63	13:21			
11/1/2011	62.2	7.63	10:57			
11/2/2011	62.2	7.63	8:30			
11/3/2011	62.2	7.63	9:38			
11/4/2011	62.2	7.63	13:26			
11/5/2011	62.2	7.63	11:13			
11/6/2011						Sunday (no w/l measurement)
11/7/2011	62.2	7.63	11:47			
11/8/2011						Could not take measurement - instrument stuck in well
11/9/2011						Could not take measurement - instrument stuck in well
11/10/2011						Could not take measurement - instrument stuck in well
11/11/2011						Holiday
11/12/2011						Saturday (no w/l measurement)
11/13/2011						Sunday (no w/l measurement)
11/14/2011						Could not take measurement - instrument stuck in well
11/15/2011						Could not take measurement - instrument stuck in well
11/16/2011						Could not take measurement - instrument stuck in well
11/17/2011						Could not take measurement - instrument stuck in well
11/18/2011						Could not take measurement - instrument stuck in well
11/19/2011						Saturday (no w/l measurement)
11/20/2011						Sunday (no w/l measurement)
11/21/2011						Could not take measurement - instrument stuck in well
11/22/2011						Could not take measurement - instrument stuck in well
11/23/2011						Could not take measurement - instrument stuck in well
11/24/2011						Holiday
11/25/2011						Could not take measurement - instrument stuck in well
11/26/2011						Saturday (no w/l measurement)
11/27/2011						Sunday (no w/l measurement)
11/28/2011						Could not take measurement - instrument stuck in well
11/29/2011						Could not take measurement - instrument stuck in well
11/30/2011	61.5	8.33	13:41			
12/1/2011	61.5	8.33	12:31			
12/2/2011	61.5	8.33	15:58			
12/3/2011	61.5	8.33	11:52			
12/4/2011						Sunday (no w/l measurement)
12/5/2011	61.4	8.43	14:30			
12/6/2011	61.4	8.43	9:38			
12/7/2011	61.4	8.43	7:55			
12/8/2011	61.4	8.43	12:34			
12/9/2011	61.4	8.43	12:20			
12/10/2011	61.4	8.43	12:40			
12/11/2011	61.4	8.43	14:25			
12/12/2011	61.4	8.43	16:43			
12/13/2011	61.4	8.43	11:32			
12/14/2011	61.4	8.43	7:48			
12/15/2011	61.4	8.43	11:52			
12/16/2011	61.4	8.43	17:01			
12/17/2011	61.4	8.43	14:35			
12/18/2011						Sunday (no w/l measurement)
12/19/2011	61.4	8.43	17:07			
12/20/2011	61.4	8.43	11:23			
12/21/2011	61.3	8.53	13:18			
12/22/2011	61.3	8.53	9:25			
12/23/2011	61.3	8.53	9:57			

TABLE E.1.6

2011 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Time of Measurement (hh:mm)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
12/24/2011						Saturday (no w/l measurement)
12/25/2011	61.3	8.53	11:44			
12/26/2011						Holiday
12/27/2011						
12/28/2011						
12/29/2011	61.3	8.53	13:47	3.96	837.56	
12/30/2011						
12/31/2011						Saturday (no w/l measurement)

Notes:
w/l - Water Level
Permanent pumps were permanently installed in the LCS sump in November 2008; however, they are not yet connected to the forcemain due to ongoing construction within the East Plant Area. Therefore, the LCS pumps are manually operated, as required, to keep water levels within the target operating range (2 to 3 ft of water) required to keep the pump motors submerged (in order to prevent overheating) and to keep the number of pump cycles per hour within the acceptable range (in order to prevent overuse of the pump).

TABLE E.1.7

2012 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	new depth from 9/24/10	new depth from 9/10/11
Top of sump (datum reference)	735.67	740.83
Bottom of sump (feet BTOS)	64.67	69.83
Diameter of sump (feet)	6	6

Date	*Time of Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
12/31/11	--	--	--	--	*478*	*Sump accumulation accounted for in 2011 that had not yet been pumped*
1/1/12	--	--	--	--	--	
1/2/12	--	--	--	--	--	
1/3/12	12:20	61.3	8.5	--	--	
1/4/12	12:40	61.2	8.6	--	--	
1/5/12	9:55	61.2	8.6	--	--	
1/6/12	8:42	61.2	8.6	--	--	
1/7/12	9:34	61.2	8.6	--	--	
1/8/12	11:21	61.2	8.6	--	--	
1/9/12	8:37	61.2	8.6	--	--	
1/10/12	3:55	61.2	8.6	--	--	
1/11/12	1:43	61.2	8.6	--	--	
1/12/12	2:12	61.1	8.7	--	--	
1/13/12	1:25	61.1	8.7	--	--	
1/14/12	--	--	--	--	--	
1/15/12	--	--	--	--	--	
1/16/12	2:37	61.0	8.8	--	--	
1/17/12	1:43	61.0	8.8	--	--	
1/18/12	8:42	61.0	8.8	--	--	
1/19/12	2:35	61.0	8.8	--	--	
1/20/12	1:57	61.0	8.8	--	--	
1/21/12	--	--	--	--	--	
1/22/12	10:44	61.0	8.8	--	--	
1/23/12	1:23	61.0	8.8	--	--	
1/24/12	2:11	61.0	8.8	--	--	
1/25/12	3:07	61.0	8.8	--	--	
1/26/12	9:44	61.0	8.8	--	--	
1/27/12	1:31	61.0	8.8	--	--	
1/28/12	--	--	--	--	--	
1/29/12	--	--	--	--	--	
1/30/12	9:04	61.0	8.8	--	--	
1/31/12	--	--	--	--	--	
2/1/12	12:10	61.0	8.8	--	--	
2/2/12	12:24	61.0	8.8	--	--	
2/3/12	9:49	61.0	8.8	--	--	
2/4/12	--	--	--	--	--	
2/5/12	--	--	--	--	--	
2/6/12	11:06	61.0	8.8	--	--	Cannot get accurate reading due to work platforms into well catching on
2/7/12	1:45	61.0	8.8	--	-592 [a]	Received water from leak detection
2/8/12	11:24	61.0	8.8	--	-529 [a]	Received water from leak detection
2/9/12	2:14	61.0	8.8	--	-190 [a]	Received water from leak detection
2/10/12	11:41	61.0	8.8	--	--	
2/11/12	--	--	--	--	--	
2/12/12	--	--	--	--	--	
2/13/12	1:30	60.0	9.8	--	--	
2/14/12	1:30	60.0	9.8	--	--	
2/15/12	10:00	60.0	9.8	--	--	
2/16/12	10:45	60.0	9.8	--	-338 [a]	Received water from leak detection
2/17/12	10:30	60.0	9.8	--	--	
2/18/12	--	--	--	--	--	
2/19/12	--	--	--	--	--	
2/20/12	11:45	59.9	9.9	--	-338 [a]	Received water from leak detection
2/21/12	10:15	59.8	10.0	--	--	
2/22/12	9:35	59.8	10.0	--	--	
2/23/12	8:30	59.8	10.0	--	--	
2/24/12	7:30	59.8	10.0	--	--	
2/25/12	--	--	--	--	--	
2/26/12	--	--	--	--	--	
2/27/12	7:50	59.7	10.1	--	-402 [a]	Received water from leak detection
2/28/12	7:30	59.7	10.1	--	--	
2/29/12	7:50	59.7	10.1	--	--	
3/1/12	7:15	59.7	10.1	--	--	CRA setting up pumps
3/2/12	7:15	60.0	9.8	-0.3 [b]	--	CRA setting up pumps
3/3/12	--	--	--	--	--	
3/4/12	--	--	--	--	--	
3/5/12	7:45	61.2	8.6	-1.2 [b]	--	CRA setting up pumps
3/6/12	7:30	61.2	8.6	--	--	CRA has pump automated
3/7/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/8/12	--	--	--	--	--	Automated pumping, no manual measurements taken

TABLE E.1.7

2012 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	new depth from 9/24/10	new depth from 9/10/11
Top of sump (datum reference)	735.67	740.83
Bottom of sump (feet BTOS)	64.67	69.83
Diameter of sump (feet)	6	6

Date	*Time of Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
3/9/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/10/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/11/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/12/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/13/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/14/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/15/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/16/12	--	--	--	--	-275 [a]	Automated pumping, no manual measurements taken
3/17/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/18/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/19/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/20/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/21/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/22/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/23/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/24/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/25/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/26/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/27/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/28/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/29/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/30/12	--	--	--	--	--	Automated pumping, no manual measurements taken
3/31/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/1/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/2/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/3/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/4/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/5/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/6/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/7/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/8/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/9/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/10/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/11/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/12/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/13/12	--	--	--	--	-63 [a]	Automated pumping, Received water from leak detection
4/14/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/15/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/16/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/17/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/18/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/19/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/20/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/21/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/22/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/23/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/24/12	--	--	--	--	-349 [a]	Automated pumping, Received water from leak detection
4/25/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/26/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/27/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/28/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/29/12	--	--	--	--	--	Automated pumping, no manual measurements taken
4/30/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/1/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/2/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/3/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/4/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/5/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/6/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/7/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/8/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/9/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/10/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/11/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/12/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/13/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/14/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/15/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/16/12	--	--	--	--	--	Automated pumping, no manual measurements taken

TABLE E.1.7

2012 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	new depth from 9/24/10	new depth from 9/10/11
Top of sump (datum reference)	735.67	740.83
Bottom of sump (feet BTOS)	64.67	69.83
Diameter of sump (feet)	6	6

Date	*Time of Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
5/17/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/18/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/19/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/20/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/21/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/22/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/23/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/24/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/25/12	--	--	--	--	-317 [a]	Automated pumping, Received water from leak detection
5/26/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/27/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/28/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/29/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/30/12	--	--	--	--	--	Automated pumping, no manual measurements taken
5/31/12	--	--	--	--	--	Automated pumping, no manual measurements taken
6/1/12	11:30	67.4	2.4	-6 [c]	-1354 [c]	Started checking levels manually, as per CRA request
6/2/12	--	--	--	--	--	
6/3/12	--	--	--	--	--	
6/4/12	7:30	67.3	2.5	--	--	
6/5/12	7:30	67.3	2.5	--	--	
6/6/12	10:30	67.3	2.5	--	--	
6/7/12	7:30	67.3	2.5	--	--	
6/8/12	7:30	67.3	2.5	--	--	
6/9/12	--	--	--	--	--	
6/10/12	--	--	--	--	--	
6/11/12	7:30	67.2	2.6	--	--	
6/12/12	7:30	67.2	2.6	--	--	
6/13/12	7:30	67.2	2.6	--	--	
6/14/12	7:30	67.2	2.6	--	--	
6/15/12	7:30	67.2	2.6	--	--	
6/16/12	--	--	--	--	--	
6/17/12	--	--	--	--	--	
6/18/12	7:30	67.1	2.7	--	--	
6/19/12	7:30	67.1	2.7	--	--	
6/20/12	7:30	67.1	2.7	--	--	
6/21/12	7:30	67.1	2.7	--	--	
6/22/12	7:30	69.6	0.2	-2.5	-529	Pumped manually
6/23/12	--	--	--	--	--	
6/24/12	--	--	--	--	--	
6/25/12	7:30	69.3	0.5	--	--	
6/26/12	7:30	69.35	0.5	--	--	
6/27/12	7:30	69.35	0.5	--	--	
6/28/12	6:30	69.3	0.5	--	--	
6/29/12	6:30	69.3	0.5	--	--	
6/30/12	--	--	--	--	--	
7/1/12	--	--	--	--	--	
7/2/12	6:45	69.25	0.6	--	--	
7/3/12	6:30	69.25	0.6	--	--	
7/4/12	--	--	--	--	--	
7/5/12	--	--	--	--	--	
7/6/12	--	--	--	--	--	
7/7/12	--	--	--	--	--	
7/8/12	--	--	--	--	--	
7/9/12	6:30	69.2	0.6	--	--	
7/10/12	7:30	69.2	0.6	--	--	
7/11/12	7:30	69.2	0.6	--	--	
7/12/12	7:30	69.15	0.7	--	--	
7/13/12	7:30	69.2	0.6	--	--	
7/14/12	--	--	--	--	--	
7/15/12	--	--	--	--	--	
7/16/12	7:30	69.1	0.7	--	--	
7/17/12	7:30	69.1	0.7	--	--	
7/18/12	10:15	69.1	0.7	--	--	
7/19/12	7:30	69.1	0.7	--	--	
7/20/12	6:30	69.1	0.7	--	--	
7/21/12	--	--	--	--	--	
7/22/12	--	--	--	--	--	
7/23/12	6:30	69.1	0.7	--	--	

TABLE E.1.7

2012 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	new depth from 9/24/10	new depth from 9/10/11
Top of sump (datum reference)	735.67	740.83
Bottom of sump (feet BTOS)	64.67	69.83
Diameter of sump (feet)	6	6

Date	*Time of Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
7/24/12	7:00	69.1	0.7	--	--	
7/25/12	6:30	69.0	0.8	--	--	
7/26/12	6:30	69.0	0.8	--	--	
7/27/12	7:00	69.0	0.8	--	--	
7/28/12	--	--	--	--	--	
7/29/12	--	--	--	--	--	
7/30/12	6:30	69.0	0.8	--	--	
7/31/12	6:30	68.95	0.9	--	--	
8/1/12	6:30	68.95	0.9	--	--	
8/2/12	7:00	68.95	0.9	--	--	
8/3/12	7:00	68.90	0.9	--	--	
8/4/12	--	--	--	--	--	
8/5/12	--	--	--	--	--	
8/6/12	7:30	68.90	0.9	--	--	
8/7/12	9:00	68.90	0.9	--	--	
8/8/12	10:15	68.85	1.0	--	--	
8/9/12	8:15	68.85	1.0	--	--	
8/10/12	7:30	68.85	1.0	--	--	
8/11/12	--	--	--	--	--	
8/12/12	--	--	--	--	--	
8/13/12	1:45	68.8	1.0	--	--	
8/14/12	8:00	68.8	1.0	--	--	
8/15/12	8:00	68.8	1.0	--	--	
8/16/12	8:00	68.8	1.0	--	--	
8/17/12	1:30	68.8	1.0	--	--	
8/18/12	--	--	--	--	--	
8/19/12	--	--	--	--	--	
8/20/12	8:00	68.7	1.1	--	--	
8/21/12	12:00	68.7	1.1	--	--	
8/22/12	7:30	68.7	1.1	--	--	
8/23/12	7:30	68.7	1.1	--	--	
8/24/12	7:30	68.6	1.2	--	--	
8/25/12	--	--	--	--	--	
8/26/12	--	--	--	--	--	
8/27/12	1:30	68.6	1.2	--	--	
8/28/12	7:30	68.6	1.2	--	--	
8/29/12	1:00	68.6	1.2	--	-338 [a]	Received water from leak detection
8/30/12	11:00	68.6	1.2	--	--	
8/31/12	9:00	68.6	1.2	--	--	
9/1/12	--	--	--	--	--	
9/2/12	--	--	--	--	--	
9/3/12	9:30	68.5	1.3	--	--	
9/4/12	8:00	68.5	1.3	--	--	
9/5/12	7:30	68.5	1.3	--	--	
9/6/12	8:00	68.5	1.3	--	--	
9/7/12	7:30	68.5	1.3	--	--	
9/8/12	--	--	--	--	--	
9/9/12	--	--	--	--	--	
9/10/12	8:30	68.4	1.4	--	--	
9/11/12	7:45	68.45	1.4	--	--	
9/12/12	7:45	68.45	1.4	--	--	
9/13/12	8:00	68.4	1.4	--	--	
9/14/12	7:30	68.4	1.4	--	--	
9/15/12	--	--	--	--	--	
9/16/12	--	--	--	--	--	
9/17/12	8:00	68.35	1.5	--	--	
9/18/12	8:00	68.35	1.5	--	--	
9/19/12	7:45	68.35	1.5	--	--	
9/20/12	8:00	68.3	1.5	--	--	
9/21/12	7:45	68.35	1.5	--	--	
9/22/12	--	--	--	--	--	
9/23/12	--	--	--	--	--	
9/24/12	8:00	68.35	1.5	--	--	
9/25/12	1:00	68.3	1.5	--	--	
9/26/12	12:00	68.3	1.5	--	--	
9/27/12	8:30	68.25	1.6	--	--	
9/28/12	2:45	68.25	1.6	--	--	
9/29/12	--	--	--	--	--	
9/30/12	--	--	--	--	--	

TABLE E.1.7

2012 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	new depth from 9/24/10	new depth from 9/10/11
Top of sump (datum reference)	735.67	740.83
Bottom of sump (feet BTOS)	64.67	69.83
Diameter of sump (feet)	6	6

Date	*Time of Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
10/1/12	9:00	68.25	1.6	--	--	
10/2/12	12:00	68.25	1.6	--	--	
10/3/12	8:00	68.2	1.6	--	--	
10/4/12	8:30	68.2	1.6	--	--	
10/5/12	8:15	68.15	1.7	--	--	
10/6/12	--	--	--	--	--	
10/7/12	--	--	--	--	--	
10/8/12	8:00	68.1	1.7	--	--	
10/9/12	8:30	68.1	1.7	--	--	
10/10/12	8:00	68.1	1.7	--	--	
10/11/12	3:00	68.1	1.7	--	--	
10/12/12	10:15	68.1	1.7	--	--	
10/13/12	--	--	--	--	--	
10/14/12	--	--	--	--	--	
10/15/12	8:00	68.1	1.7	--	--	
10/16/12	8:45	68.0	1.8	--	--	
10/17/12	8:00	68.0	1.8	--	--	
10/18/12	9:30	68.0	1.8	--	--	
10/19/12	8:30	68.0	1.8	--	--	
10/20/12	--	--	--	--	--	
10/21/12	--	--	--	--	--	
10/22/12	2:45	68.0	1.8	--	--	
10/23/12	8:15	68.0	1.8	--	--	
10/24/12	8:15	67.95	1.9	--	--	
10/25/12	8:00	67.95	1.9	--	--	
10/26/12	9:30	67.95	1.9	--	--	
10/27/12	--	--	--	--	--	
10/28/12	--	--	--	--	--	
10/29/12	9:00	67.95	1.9	--	--	
10/30/12	12:00	67.9	1.9	--	--	
10/31/12	8:15	67.9	1.9	--	--	
11/1/12	8:00	67.9	1.9	--	--	
11/2/12	8:00	67.9	1.9	--	--	
11/3/12	--	--	--	--	--	
11/4/12	--	--	--	--	--	
11/5/12	8:00	67.85	2.0	--	--	
11/6/12	8:00	67.8	2.0	--	--	
11/7/12	8:00	67.8	2.0	--	--	
11/8/12	8:00	67.8	2.0	--	--	
11/9/12	8:00	67.8	2.0	--	--	
11/10/12	--	--	--	--	--	
11/11/12	--	--	--	--	--	
11/12/12	2:30	67.8	2.0	--	--	
11/13/12	1:30	67.8	2.0	--	--	
11/14/12	12:00	67.7	2.1	--	--	
11/15/12	1:45	67.7	2.1	--	--	
11/16/12	10:43	67.4	2.4	--	--	
11/17/12	--	--	--	--	--	
11/18/12	--	--	--	--	--	
11/19/12	2:24	67.65	2.2	--	--	
11/20/12	9:36	67.65	2.2	--	--	
11/21/12	1:45	67.6	2.2	--	--	
11/22/12	1:27	67.6	2.2	--	--	
11/23/12	1:21	67.6	2.2	--	--	
11/24/12	--	--	--	--	--	
11/25/12	--	--	--	--	--	
11/26/12	1:30	67.65	2.2	--	--	
11/27/12	1:00	67.65	2.2	--	--	
11/28/12	1:10	67.65	2.2	--	--	
11/29/12	11:30	67.6	2.2	--	--	
11/30/12	1:00	67.6	2.2	--	--	
12/1/12	--	--	--	--	--	
12/2/12	--	--	--	--	--	
12/3/12	12:30	67.6	2.2	--	--	
12/4/12	1:00	67.6	2.2	--	--	
12/5/12	4:30	67.6	2.2	--	--	
12/6/12	4:30	67.6	2.2	--	--	
12/7/12	12:30	67.6	2.2	--	--	
12/8/12	10:00	67.5	2.3	--	-360 [a]	Received water from leak detection

TABLE E.1.7

2012 LCS PUMPING DATA
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Monitoring Location Information

	new depth from 9/24/10	new depth from 9/10/11
Top of sump (datum reference)	735.67	740.83
Bottom of sump (feet BTOS)	64.67	69.83
Diameter of sump (feet)	6	6

Date	*Time of Measurement (hh:mm)*	*Water Level (feet BTOS)*	*Water Depth (feet AFOS)*	*Water Depth Removed (feet)*	*Volume Removed (gallons)*	*Comments*
12/9/12	--	--	--	--	--	
12/10/12	1:00	67.5	2.3	--	--	
12/11/12	2:30	67.45	2.4	--	--	
12/12/12	1:56	67.4	2.4	--	--	
12/13/12	11:24	67.4	2.4	--	--	
12/14/12	11:04	67.35	2.5	--	--	
12/15/12	--	--	--	--	--	
12/16/12	--	--	--	--	--	
12/17/12	10:04	67.3	2.5	--	--	
12/18/12	11:15	67.3	2.5	--	--	
12/19/12	8:48	67.3	2.5	--	--	
12/20/12	9:25	67.3	2.5	--	--	
12/21/12	12:56	67.3	2.5	--	--	
12/22/12	--	--	--	--	--	
12/23/12	--	--	--	--	--	
12/24/12	10:40	67.3	2.6	--	--	
12/25/12	9:30	67.3	2.6	--	--	
12/26/12	10:40	67.3	2.6	--	--	
12/27/12	9:30	67.3	2.6	--	--	
12/28/12	11:22	67.3	2.6	--	--	
12/29/12	1:05	67.2	2.6	--	--	
12/30/12	2:25	67.2	2.6	--	--	
12/31/12	11:20	67.2	2.6	-2.4 [(d)]	-508 [(d)]	Sump accumulation since final 2012 pumping on 6/12/2012
	Minimum	59.7	0.2			
	Maximum	69.6	10.1			
	Mean	66.4	3.5			
	Pumping Events			5		Number of pumping events may not account for automated pumping
	Net Volume in the LCS (gallons)				-6,005	
	Total Volume Originating in the LDS (gallons)				3,775	
	Total Volume Originating in the LCS (gallons)				-2,230	

Notes: Data was compiled in accordance with prior annual reports.
No measurements were made most weekends or on holidays.
Manual level measurements were not taken in the LCS 3/6/2012 through 5/31/2012 after the initiation of the LCS and GUS automated pumping. Data were to be recorded at the SSC WTP however records were lost either due to electrical problems or system error.
[(a)] Assumed that water pumped from LDS into LCS will be removed when LCS pump is started
[(b)] Assumed that level reduction is accounted for by LDS pumping volumes added 2/7/2012 through 2/27/2012
[(c)] Change in level and volume removed calculations compared to 8.8 ft depth observed prior to addition of LDS water starting on 2/7/2012
[(d)] Assumed that water pumped from LDS into LCS on 8/27/2012 and 12/8/2012 did not appreciably change the water level in the sump.

APPENDIX E.2

SUMMARY OF LCS SUMP SAMPLE RESULTS

TABLE E.2

LEACHATE COLLECTION SYSTEM MONITORING ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area		*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location		*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*
Sample Identification		*WL-AOI7-083006-TP-21362*	*WL-AOI7-092806-AH-21415*	*WL-AOI7-101706-AH-21562*	*WL-AOI7-110906-MD-21637*	*WL-AOI7-122006-MD-21661*	*WL-AOI7-011807-MD-21748*	*WL-AOI7-022107-AH-21815*	*WL-AOI7-032007-MD-21861*	*WL-AOI7-041207-AH-31013*	*WL-AOI7-050907-AH-31077*	*WL-AOI7-062007-AH-31114*	*WL-AOI7-073107-AH-31161*	*WL-AOI7-083007-AH-31232*
Sample Date		*8/30/2006*	*9/28/2006*	*10/17/2006*	*11/9/2006*	*12/20/2006*	*1/18/2007*	*2/21/2007*	*3/20/2007*	*4/12/2007*	*5/9/2007*	*6/20/2007*	*7/31/2007*	*8/30/2007*
	Units													
PCBs														
Aroclor-1016 (PCB-1016)	ug/L	20 U	40 U	0.20 U	20 U	10 U	8.0 U	0.20 U	1.0 U	0.20 U	1.0 U	2.0 U	1.0 U	1.0 U
Aroclor-1221 (PCB-1221)	ug/L	20 U	40 U	0.20 U	20 U	10 U	8.0 U	0.20 U	1.0 U	0.20 U	1.0 U	2.0 U	1.0 U	1.0 U
Aroclor-1232 (PCB-1232)	ug/L	20 U	40 U	0.20 U	20 U	10 U	8.0 U	0.20 U	1.0 U	0.20 U	1.0 U	2.0 U	1.0 U	1.0 U
Aroclor-1242 (PCB-1242)	ug/L	180	40 U	0.85	20 U	10 U	83	0.49	1.0 U	0.20 U	1.0 U	2.0 U	1.0 U	6.0
Aroclor-1248 (PCB-1248)	ug/L	20 U	590	0.20 U	250	93	8.0 U	0.20 U	22	2.2	16	24	16	1.0 U
Aroclor-1254 (PCB-1254)	ug/L	20 U	40 U	0.20 U	20 U	10 U	8.0 U	0.20 U	1.0 U	0.20 U	1.0 U	2.0 U	1.0 U	1.0 U
Aroclor-1260 (PCB-1260)	ug/L	20 U	40 U	0.20 U	20 U	10 U	8.0 U	0.20 U	1.0 U	0.20 U	1.2	2.0 U	1.1	1.0 U
Total PCBs	ug/L	180	590	0.85	250	93	83	0.49	22	2.2	17.2	24	17.1	6
Volatile Organic Compounds														
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chloroethyl vinyl ether	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl Bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl Chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane (CFC-11)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Field Parameters														
Conductivity Field	mS/cm	1.805	0.155	--	0.088	1.43	--	--	--	--	--	--	0.015	--
pH Field	s.u.	8.2	6.53	--	6.82	6.93	--	--	--	--	--	--	7.34	--

Notes:
U - Not present at or above the associated value.
J - Estimated concentration.

TestAmerica - Lab Qualifiers:
J - Laboratory qualified as an estimated value.
* - LCS (laboratory control spike) or LCSD (Duplicate) exceeds the control limits
E - Result exceeded calibration range.

TABLE E.2

LEACHATE COLLECTION SYSTEM MONITORING ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area		*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location		*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*
Sample Identification		*WL-AOI7-092407-AH-31255*	*WL-AOI7-102407-AH-31305*	*WL-AOI7-111507-AH-31391*	*WL-AOI7-122007-JN-31511*	*WL-AOI7-013008-AH-31660*	*WL-AOI7-022708-CH-31677*	*WL-AOI7-032808-CH-31714*	*WL-AOI7-042908-MB-27612*	*WL-AOI7-052708-MB-31841*	*WL-AOI7-062408-MB-27730*	*WL-AOI7-072908-MB-31983*	*WL-AOI7-082508-MB-37008*	*WL-AOI7-091508-MB-37010*
Sample Date		*9/24/2007*	*10/24/2007*	*11/15/2007*	*12/21/2007*	*1/30/2008*	*2/27/2008*	*3/28/2008*	*4/29/2008*	*5/27/2008*	*6/24/2008*	*7/29/2008*	*8/25/2008*	*9/15/2008*
	Units													
PCBs														
Aroclor-1016 (PCB-1016)	ug/L	1.0 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.20 U
Aroclor-1221 (PCB-1221)	ug/L	1.0 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.20 U
Aroclor-1232 (PCB-1232)	ug/L	1.0 U	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.20 U
Aroclor-1242 (PCB-1242)	ug/L	1.0 U	9.0	0.81	2.7	0.99	1.0	0.40 U	0.20 U	0.69	0.20 U	0.20 U	3.4	2.2
Aroclor-1248 (PCB-1248)	ug/L	11	1.0 U	0.20 U	0.20 U	0.20 U	0.20 U	4.9	0.20 U	0.20 U	1.1	2.0	0.40 U	0.20 U
Aroclor-1254 (PCB-1254)	ug/L	1.0 U	1.0 U	0.20 U	0.20 U	0.20 U	0.30	0.40 U	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.20 U
Aroclor-1260 (PCB-1260)	ug/L	1.0 U	0.80 J	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.20 U	0.20 U	0.20 U	0.20 U	0.95	0.20 U
Total PCBs	ug/L	11	9.8 J	0.81	2.7	0.99	1.3	4.9	0	0.69	1.1	2	4.35	2.2
Volatile Organic Compounds														
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chloroethyl vinyl ether	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl Bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl Chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane (CFC-11)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Field Parameters														
Conductivity Field	mS/cm	1.111	--	--	--	--	--	--	--	--	--	--	--	--
pH Field	s.u.	7.28	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
U - Not present at or above the associated value.
J - Estimated concentration.

TestAmerica - Lab Qualifiers:
J - Laboratory qualified as an estimated value.
* - LCS (laboratory control spike) or LCSD (Duplicate) exceeds the control limits
E - Result exceeded calibration range.

TABLE E.2

LEACHATE COLLECTION SYSTEM MONITORING ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area		*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location		*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*
Sample Identification		*WL-AOI7-102108-MB-37050*	*WL-AOI7-111808-MB-37081*	*WL-AOI7-121608-MB-37174*	*WL-AOI7-012209-JN-37189*	*WL-AOI7-021309-JN-37191*	*WL-AOI7-032609-JN-39026*	*WL-AOI7-042909-JN-39057*	*WL-AOI7-052209-JN-39077*	*WL-AOI7-062409-JN-39102*	*WL-AOI7-072909-JN-39132*	*WL-AOI7-082509-JN-39156*	*WL-AOI7-092809-JN-39182*	*WL-AOI7-102609-JN-39206*
Sample Date		*10/21/2008*	*11/18/2008*	*12/16/2008*	*1/22/2009*	*2/13/2009*	*3/26/2009*	*4/29/2009*	*5/22/2009*	*6/24/2009*	*7/29/2009*	*8/25/2009*	*9/28/2009*	*10/26/2009*
	Units													
PCBs														
Aroclor-1016 (PCB-1016)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1221 (PCB-1221)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1232 (PCB-1232)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1242 (PCB-1242)	ug/L	0.38	0.20 U	0.20 U	0.88	0.20 U	0.20 U	2.0	0.20 U	1.1	0.47	0.50	0.64	0.36
Aroclor-1248 (PCB-1248)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1254 (PCB-1254)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1260 (PCB-1260)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Total PCBs	ug/L	0.38	0	0	0.88	0	0	2	0	1.1	0.47	0.50	0.64	0.36
Volatile Organic Compounds														
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.17 J	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.38 J	1.0 U
2-Chloroethyl vinyl ether	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.18 J	1.0 U	0.13 J	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl Bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl Chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.25 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.22 J B	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.29 J	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane (CFC-11)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.55 J	1.0 U
Field Parameters														
Conductivity Field	mS/cm	--	--	--	--	--	2.595	2.455	2.384	2.165	2.276	2.535	2.604	2.229
pH Field	s.u.	--	--	--	--	--	6.17	6.75	6.63	6.79	6.64	6.46	6.88	6.61

Notes:
U - Not present at or above the associated value.
J - Estimated concentration.

TestAmerica - Lab Qualifiers:
J - Laboratory qualified as an estimated value.
* - LCS (laboratory control spike) or LCSD (Duplicate) exceeds the control limits
E - Result exceeded calibration range.

TABLE E.2

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CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area		*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location		*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*
Sample Identification		*WL-AOI7-112309-JN-39229*	*WL-AOI7-121509-KK-39258*	*WL-AOI7-012710-GS-39289*	*WL-AOI7-022510-GS-39292*	*WL-AOI7-031710-GS-39336*	*WL-AOI7-042210-GS-39364*	*WL-AOI7-051810-GS-39383*	*WL-AOI7-061610-GS-39399*	*WL-AOI7-070710-SM-39427*	*WL-AOI7-081110-GS-39449*	*WL-AOI7-091510-SM-39468*	*WL-AOI7-101310-SM-39488*	*WL-AOI7-111710-SM-39514*
Sample Date		*11/23/2009*	*12/15/2009*	*1/27/2010*	*2/25/2010*	*3/17/2010*	*4/22/2010*	*5/18/2010*	*6/16/2010*	*7/7/2010*	*8/11/2010*	*9/13/2010*	*10/13/2010*	*11/17/2010*
	Units													
PCBs														
Aroclor-1016 (PCB-1016)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1221 (PCB-1221)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1232 (PCB-1232)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1242 (PCB-1242)	ug/L	0.42	0.20 U	0.20 U	0.38	0.20 U	0.55	0.55	0.20 U	0.20 U	0.20 U	0.22	0.20 U	0.20 U
Aroclor-1248 (PCB-1248)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1254 (PCB-1254)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Aroclor-1260 (PCB-1260)	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Total PCBs	ug/L	0.42	0	ND	0.38	ND	0.55	0.55	ND	ND	ND	0.22	ND	ND
Volatile Organic Compounds														
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chloroethyl vinyl ether	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl Bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl Chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.20 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	0.18 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane (CFC-11)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	0.38 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Field Parameters														
Conductivity Field	mS/cm	2.497	2.724	1.78	1.922	1.987	2.667	1.979	2.23	2.434	2.612	2.184	2.147	2.575
pH Field	s.u.	6.92	7	7	6.99	6.41	7.04	6.32	6.6	6.41	6.94	6.63	7.26	6.38

Notes:
U - Not present at or above the associated value.
J - Estimated concentration.

TestAmerica - Lab Qualifiers:
J - Laboratory qualified as an estimated value.
* - LCS (laboratory control spike) or LCSD (Duplicate) exceeds the control limits
E - Result exceeded calibration range.

TABLE E.2

LEACHATE COLLECTION SYSTEM MONITORING ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area			*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location			*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*
Sample Identification			*WL-AOI7-121510-GS-39527*	*WL-AOI7-012611-GS-39558*	*WL-AOI7-022311-GS-39575*	*WL-AOI7-030911-GS-39587*	*WL-AOI7-042011-SM-39605*	*WL-AOI7-051111-SM-39622*	*WL-AOI7-060811-GS-39644*	*WL-AOI7-072711-GS-39673*	*WL-AOI7-081111-GS-39686*	*WL-AOI7-092711-GS-39712*	*WL-AOI7-102611-GS-39736*	*WL-AOI7-112211-GS-39755*	*WL-AOI7-121511-GS-39764*
Sample Date			*12/15/2010*	*1/26/2011*	*2/23/2011*	*3/9/2011*	*4/20/2011*	*5/11/2011*	*6/8/2011*	*7/27/2011*	*8/11/2011*	*9/27/2011*	*10/26/2011*	*11/22/2011*	*12/15/2011*
	Units														
PCBs															
Aroclor-1016 (PCB-1016)	ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U	1.9 U	0.19 U	0.20 U	0.20 U	0.19 U	0.19 U
Aroclor-1221 (PCB-1221)	ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U	1.9 U	0.19 U	0.20 U	0.20 U	0.19 U	0.19 U
Aroclor-1232 (PCB-1232)	ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U	1.9 U	0.19 U	0.20 U	0.20 U	0.19 U	0.19 U
Aroclor-1242 (PCB-1242)	ug/L		0.20 U	0.47	0.20 U	0.50	1.7	0.42	0.19 U	27 E	0.14 J	0.29	0.33	0.19 U	0.19 U
Aroclor-1248 (PCB-1248)	ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U	1.9 U	0.19 U	0.20 U	0.20 U	0.19 U	0.19 U
Aroclor-1254 (PCB-1254)	ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.13 J	0.20 U	0.19 U	1.9 U	0.19 U	0.047 J	0.20 U	0.19 U	0.19 U
Aroclor-1260 (PCB-1260)	ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U	1.9 U	0.19 U	0.20 U	0.20 U	0.19 U	0.19 U
Total PCBs	ug/L		ND	0.47	ND	0.5	1.83 J	0.42	ND	27 E	0.14 J	0.337 J	0.33	ND	ND
Volatile Organic Compounds															
1,1,1-Trichloroethane	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U *	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	--		--	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	--		1.0 U	0.14 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	--		1.0 U	0.30 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chloroethyl vinyl ether	ug/L	--		2.0 U	2.0 U	2.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl Bromide)	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl Chloride)	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	--		--	--	--	1.0 U	1.0 U	--	--	--	--	--	--	--
Trichlorofluoromethane (CFC-11)	ug/L	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U *	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	--		0.30 J	0.50 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Field Parameters															
Conductivity Field	mS/cm	1.501		2.572	2.111	2.229	1.424	833	0.985	--	--	--	--	--	--
pH Field	s.u.	7.16		7.05	7.23	6.65	7.55	7.7	8.34	--	--	--	--	--	--

Notes:
U - Not present at or above the associated value.
J - Estimated concentration.

TestAmerica - Lab Qualifiers:
J - Laboratory qualified as an estimated value.
* - LCS (laboratory control spike) or LCSD (Duplicate) exceeds the control limits
E - Result exceeded calibration range.

TABLE E.2

LEACHATE COLLECTION SYSTEM MONITORING ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area		*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*	*A007*
Sample Location		*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*	*EPA LCS*
Sample Identification		*WL-AOI7-012412-GS-39796*	*WL-AOI7-022212-GS-39816*	*WL-AOI7-032812-GS-39835*	*WL-AOI7-042412-GS-39845*	*WL-AOI7-052212-GS-39853*	*WL-AOI7-062612-GS-39864*	*WL-AOI7-071012-GS-39867*	*WL-AOI7-082112-GS-39878*	*WL-AOI7-092612-GS-39888*	*WL-AOI7-102912-GS-39909*	*WL-AOI7-112012-GS-39913*	*WL-AOI7-121112-GS-39922*
Sample Date		*1/24/2012*	*2/22/2012*	*3/28/2012*	*4/24/2012*	*5/22/2012*	*6/26/2012*	*7/10/2012*	*8/21/2012*	*9/26/2012*	*10/29/2012*	*11/20/2012*	*12/11/2012*
	Units												
PCBs													
Aroclor-1016 (PCB-1016)	ug/L												
Aroclor-1221 (PCB-1221)	ug/L	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.98 U	0.95 U	3.8 U	0.97 U	1.9 U	0.20 U	0.20 U
Aroclor-1232 (PCB-1232)	ug/L	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.98 U	0.95 U	3.8 U	0.97 U	1.9 U	0.20 U	0.20 U
Aroclor-1242 (PCB-1242)	ug/L	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.98 U	0.95 U	3.8 U	0.97 U	1.9 U	0.20 U	0.20 U
Aroclor-1248 (PCB-1248)	ug/L	0.19 U	0.20 U	1.4	2.5	0.19 U	6.3	4.2	12	5.5	11	0.89	1.2
Aroclor-1254 (PCB-1254)	ug/L	0.19 U	0.20 U	0.19 U	0.19 U	2.3	0.98 U	0.95 U	3.8 U	0.97 U	1.9 U	0.20 U	0.20 U
Aroclor-1260 (PCB-1260)	ug/L	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.98 U	0.95 U	3.3 J	0.97 U	1.9 U	0.10 J	0.16 J
Total PCBs	ug/L	0.19 U	0.20 U	0.19 U	0.27	0.12 J	0.98 U	0.95 U	3.8 U	0.40 J	1.0 J	0.20 U	0.20 U
		ND	ND	1.4	2.77	2.42 J	6.3	4.2	15.3 J	5.9 J	12 J	0.99 J	1.36 J
Volatile Organic Compounds													
1,1,1-Trichloroethane	ug/L												
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U*	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chloroethyl vinyl ether	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	0.14 J	1.0 U
Benzene	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	-	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	0.15 J	0.13 J
Bromoform	ug/L	1.0 U	1.0 U*	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl Bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U
Chloromethane (Methyl Chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	0.34 J	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	-	-	-
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	1.0 U	1.0 U	1.0 U*	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Field Parameters													
Conductivity Field	mS/cm	-	-	-	-	-	-	-	-	-	2.638	2.205	2.901
pH Field	s.u.	-	-	-	-	-	-	-	-	-	6.87	6.47	6.88

Notes:
U - Not present at or above the associated value.
J - Estimated concentration.

TestAmerica - Lab Qualifiers:
J - Laboratory qualified as an estimated value.
* - LCS (laboratory control spike) or LCSD (Duplicate) exceeds the control limits
E - Result exceeded calibration range.

APPENDIX F

AIR MONITORING RESULTS FOR TSPs AND PCBs

TABLE F.1.1

GROUP 9A TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
03-Jan-06						
	STATION 1B	TSP-12	1235	0.87	0.0428	**
	STATION 14	TSP-11	1355	0.93	0.0278	**
	STATION 14	TSP-5	1532	1.05	0.0275	**
	STATION 23	TSP-3	1188	0.76	0.0552	**
04-Jan-06						
	STATION 1B	TSP-12	1154	0.78	0.4498	UPWIND
	STATION 14	TSP-11	1546	1.09	0.0171	2
	STATION 14	TSP-5	1192	0.84	0.0237	3
	STATION 23	TSP-3	240	*	*	*
05-Jan-06						
	STATION 1B	TSP-12	1246	0.89	0.2774	UPWIND
	STATION 14	TSP-11	1587	1.12	0.0112	2
	STATION 14	TSP-5	1175	0.83	0.0167	4
	STATION 23	TSP-3	885	0.73	0.1154	25
06-Jan-06						
	STATION 1B	TSP-12	1609	0.9	0.1278	**
	STATION 14	TSP-11	1833	1.05	0.0198	**
	STATION 14	TSP-5	1605	0.92	0.0292	**
	STATION 23	TSP-3	1327	0.77	0.067	**
09-Jan-06						
	STATION 1B	TSP-12	1190	0.83	0.2781	UPWIND
	STATION 14	TSP-11	1483	0.96	0.0165	4
	STATION 14	TSP-5	1436	0.93	0.043	9
	STATION 23	TSP-3	1133	0.73	0.1179	25
10-Jan-06						
	STATION 1B	TSP-12	1451	0.91	0.0377	99
	STATION 14	TSP-11	1180	1.1	0.014	37
	STATION 14	TSP-5	1349	0.96	0.0222	58
	STATION 23	TSP-3	1243	0.9	0.0228	UPWIND
11-Jan-06						
	STATION 1B	TSP-12	1338	0.88	0.27	**
	STATION 14	TSP-11	1769	1.22	0.0119	**
	STATION 14	TSP-5	1360	0.94	0.0074	**
	STATION 23	TSP-3	1250	0.88	0.0154	**
12-Jan-06						
	STATION 1B	TSP-12	1256	0.85	0.1471	277 (1)
	STATION 14	TSP-11	1930	1.13	0.0212	40
	STATION 23	TSP-3	1257	0.74	0.0318	UPWIND
16-Jan-06						
	STATION 1B	TSP-12	1224	0.82	0.3813	542 (1)
	STATION 14	TSP-11	1500	1.12	0.0312	44
	STATION 14	TSP-5	1190	0.89	0.0396	56
	STATION 22A	TSP-9	1327	0.87	0.0546	78
	STATION 23	TSP-3	992	0.75	0.0421	UPWIND
18-Jan-06						
	STATION 1B	TSP-12	1123	0.79	0.0482	80
	STATION 14	TSP-11	1401	1.05	0.0151	25
	STATION 14	TSP-5	1189	0.89	0.0251	42
	STATION 22A	TSP-9	1301	0.92	0.036	UPWIND
	STATION 23	TSP-3	952	0.76	0.0403	67

TABLE F.1.1

GROUP 9A TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
19-Jan-06						
	STATION 1B	TSP-12	1127	0.85	0.2935	**
	STATION 14	TSP-11	1900	1.29	0.0319	**
	STATION 14	TSP-5	1386	0.94	0.0306	**
	STATION 22A	TSP-9	99	*	*	*
	STATION 23	TSP-3	1348	0.88	0.0231	**
23-Jan-06						
	STATION 1B	TSP-12	1073	0.76	0.1895	186 (1)
	STATION 14	TSP-5	1485	0.93	0.0363	36
	STATION 22A	TSP-9	1359	0.99	0.0609	UPWIND
	STATION 23	TSP-3	1281	0.8	0.0623	61
24-Jan-06						
	STATION 1B	TSP-12	1324	0.86	0.115	UPWIND
	STATION 14	TSP-11	1877	1.42	0.0152	8
	STATION 14	TSP-5	1255	0.92	0.0292	15
	STATION 22A	TSP-9	1728	1.13	0.0546	28
	STATION 23	TSP-3	1006	0.77	0.188	98
25-Jan-06						
	STATION 1B	TSP-12	1211	0.92	0.192	UPWIND
	STATION 14	TSP-11	2052	1.34	0.0178	6
	STATION 14	TSP-5	1453	0.95	0.0339	11
	STATION 22A	TSP-9	20	*	*	*
	STATION 23	TSP-3	1201	0.78	0.1024	32
26-Jan-06						
	STATION 1B	TSP-12	1547	1	0.205	352 (1)
	STATION 14	TSP-11	1806	1.37	0.0356	61
	STATION 14	TSP-5	1252	0.95	0.0431	74
	STATION 22A	TSP-9	1400	1	0.1552	266 (2)
	STATION 23	TSP-3	1105	0.85	0.0349	UPWIND
27-Jan-06						
	STATION 1B	TSP-12	1552	0.97	0.2986	724 (1)
	STATION 14	TSP-11	2390	1.36	0.0226	55
	STATION 22A	TSP-9	1528	0.98	0.1054	256 (2)
	STATION 23	TSP-3	1528	0.88	0.0247	UPWIND
30-Jan-06						
	STATION 1B	TSP-12	1308	0.88	0.1466	UPWIND
	STATION 14	TSP-11	1975	1.32	0.0113	5
	STATION 14	TSP-5	1435	0.96	0.0089	4
	STATION 22A	TSP-9	1557	1.08	0.0288	12
	STATION 23	TSP-3	1255	0.85	0.0338	14
31-Jan-06						
	STATION 1B	TSP-12	1216	0.85	0.2583	267 (1)
	STATION 14	TSP-11	1257	0.9	0.0267	28
	STATION 14	TSP-5	1299	0.93	0.0315	33
	STATION 22A	TSP-9	1531	1.09	0.0301	31
	STATION 23	TSP-3	883	0.63	0.0579	UPWIND
01-Feb-06						
	STATION 1B	TSP-12	1293	0.78	0.2733 J	199 (1)
	STATION 14	TSP-11	1406	0.79	0.0552 J	40
	STATION 14	TSP-5	1587	0.89	0.0652 J	47
	STATION 22A	TSP-9	1490	0.91	0.0823 J	UPWIND
	STATION 23	TSP-3	1101	0.63	0.0646 J	47

TABLE F.1.1

GROUP 9A TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
02-Feb-06						
	STATION 1B	TSP-12	1221	0.85	0.0465	57
	STATION 14	TSP-11	1018	0.68	0.039	UPWIND
	STATION 14	TSP-5	1357	0.91	0.0486	UPWIND
	STATION 22A	TSP-9	1446	1.05	0.0391	48
	STATION 23	TSP-3	712	0.48	0.0969	119 (3)
03-Feb-06						
	STATION 1B	TSP-12	991	0.85	0.2324	212 (1)
	STATION 14	TSP-11	944	0.82	0.0268	24
	STATION 14	TSP-5	1050	0.91	0.0249	23
	STATION 22A	TSP-9	1113	0.98	0.0657	UPWIND
	STATION 23	TSP-3	697	0.6	0.1106	101 (3)
06-Feb-06						
	STATION 1B	TSP-12	1296	0.98	0.2555	299 (1)
	STATION 14	TSP-11	1420	0.92	0.0182	21
	STATION 14	TSP-5	1543	1	0.0197	23
	STATION 22A	TSP-9	1420	1.11	0.0511	UPWIND
	STATION 23	TSP-3	980	0.64	0.0862	101 (3)
07-Feb-06						
	STATION 1B	TSP-12	1416	0.95	0.4869	**
	STATION 14	TSP-11	1240	0.92	0.0285	**
	STATION 14	TSP-5	1414	1.05	0.0187	**
	STATION 22A	TSP-9	249	*	*	*
	STATION 23	TSP-3	856	0.68	0.0871	**
08-Feb-06						
	STATION 1B	TSP-12	1422	0.91	0.4157	780 (1)
	STATION 14	TSP-11	1399	0.93	0.0264	UPWIND
	STATION 14	TSP-5	1522	1.01	0.0319	UPWIND
	STATION 22A	TSP-9	1697	1.11	0.082	154 (2)
	STATION 23	TSP-3	1094	0.74	0.1228	231 (3)
09-Feb-06						
	STATION 1B	TSP-12	1267	0.96	0.6111	834 (1)
	STATION 14	TSP-11	1321	0.89	0.0412	56
	STATION 14	TSP-5	1497	1.01	0.0069	9
	STATION 22A	TSP-9	1481	1.16	0.0531	72
	STATION 23	TSP-3	1238	0.81	0.0439	UPWIND
10-Feb-06						
	STATION 1B	TSP-12	1429	0.9	0.7528	571 (1)
	STATION 14	TSP-11	1409	0.88	0.0598	45
	STATION 22A	TSP-9	1372	0.88	0.0916	70
	STATION 23	TSP-3	1209	0.78	0.0789	UPWIND
13-Feb-06						
	STATION 1B	TSP-12	1243	0.78	0.4156	282 (1)
	STATION 14	TSP-11	1198	0.8	0.1008	69
	STATION 22A	TSP-9	1183	0.75	0.0881	UPWIND
	STATION 23	TSP-3	1133	0.78	0.0769	52
14-Feb-06						
	STATION 1B	TSP-12	1069	0.85	0.3394	198 (1)
	STATION 14	TSP-11	1210	0.85	0.0845	49
	STATION 22A	TSP-9	1074	0.87	0.1027	UPWIND
	STATION 23	TSP-3	1021	0.71	0.0623	36

TABLE F.1.1

GROUP 9A TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
15-Feb-06						
	STATION 1B	TSP-12	1190	0.79	0.3083	398 (1)
	STATION 14	TSP-11	1271	0.84	0.0591	76
	STATION 22A	TSP-9	1275	0.86	0.0464	UPWIND
	STATION 23	TSP-3	967	0.65	0.0477	62
16-Feb-06						
	STATION 1B	TSP-12	567	0.42	0.3231	272 (1)
	STATION 14	TSP-11	1180	0.85	0.0329	28
	STATION 22A	TSP-9	1100	0.83	0.0712	UPWIND
	STATION 23	TSP-3	780	0.57	0.0641	54
17-Feb-06						
	STATION 1B	TSP-12	1472	0.97	0.0594	229 (1)
	STATION 14	TSP-11	1468	0.9	0.0155	UPWIND
	STATION 22A	TSP-9	770	*	*	*
	STATION 23	TSP-3	1181	0.72	0.0491	190 (3)
20-Feb-06						
	STATION 1B	TSP-12	1258	0.88	0.3696	307 (1)
	STATION 14	TSP-11	1261	0.85	0.0379	32
	STATION 22A	TSP-9	1246	0.9	0.072	UPWIND
	STATION 23	TSP-3	1088	0.76	0.0524	44
21-Feb-06						
	STATION 1B	TSP-12	1263	0.84	0.4133	236 (1)
	STATION 14	TSP-11	1228	0.87	0.044	25
	STATION 22A	TSP-9	1141	0.84	0.1048	UPWIND
	STATION 23	TSP-3	1064	0.84	0.0613	35
22-Feb-06						
	STATION 1B	TSP-12	1160	0.79	0.0891	108 (1)
	STATION 14	TSP-11	1291	0.87	0.0381	46
	STATION 22A	TSP-9	1252	0.87	0.0495	UPWIND
	STATION 23	TSP-3	982	0.68	0.0702	85
23-Feb-06						
	STATION 1B	TSP-12	1170	0.81	0.2163	UPWIND
	STATION 14	TSP-11	1922	1.32	0.0249	7
	STATION 14	TSP-5	1498	1.03	0.0314	9
	STATION 22A	TSP-9	1159	0.82	0.0893	25
	STATION 23	TSP-3	1040	0.7	0.1481	41
24-Feb-06						
	STATION 1B	TSP-12	1370	0.83	0.4251	367 (1)
	STATION 14	TSP-11	2282	1.33	0.0236	20
	STATION 14	TSP-5	1749	1.02	0.0272	24
	STATION 23	TSP-3	1187	0.7	0.0693	UPWIND
27-Feb-06						
	STATION 1B	TSP-12	1109	0.72	0.592	445 (1)
	STATION 14	TSP-11	1838	1.3	0.055	41
	STATION 14	TSP-5	1355	0.96	0.0788	59
	STATION 22A	TSP-9	1290	1.03	0.0797	UPWIND
	STATION 23	TSP-3	1033	0.74	0.1065	80
28-Feb-06						
	STATION 1B	TSP-12	1064	0.77	0.5979	657 (1)
	STATION 14	TSP-11	1966	1.33	0.0473	UPWIND
	STATION 14	TSP-5	1499	1.01	0.0545	UPWIND
	STATION 22A	TSP-9	1407	1.04	0.0602	66
	STATION 23	TSP-3	1007	0.69	0.0757	83

TABLE F.1.1

GROUP 9A TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
01-Mar-06						
	STATION 1B	TSP-12	1096	0.77	0.3757	**
	STATION 14	TSP-11	1860	1.29	0.059	**
	STATION 14	TSP-5	1453	1.01	0.081	**
	STATION 22A	TSP-9	628	0.56	0.1962	**
	STATION 23	TSP-3	178	*	*	*
02-Mar-06						
	STATION 1B	TSP-12	1022	0.67	0.1907	UPWIND
	STATION 14	TSP-11	1985	1.34	0.0248	8
	STATION 14	TSP-5	1583	1.07	0.0249	8
	STATION 22A	TSP-9	1413	0.94	0.0973	31
	STATION 23	TSP-3	238	0.17	0.5172	162 (4)
03-Mar-06						
	STATION 1B	TSP-12	1318	0.86	0.145	369 (1)
	STATION 14	TSP-11	2065	1.37	0.0152	UPWIND
	STATION 14	TSP-5	1661	1.1	0.0235	UPWIND
	STATION 22A	TSP-9	1405	0.94	0.0814	207 (2)
	STATION 23	TSP-3	407	0.27	0.1678	428 (4)
06-Mar-06						
	STATION 1B	TSP-12	1377	0.96	0.0727	146 (1)
	STATION 14	TSP-11	1460	1	0.0314	UPWIND
	STATION 14	TSP-5	1256	0.86	0.0299	UPWIND
	STATION 22A	TSP-9	1077	0.83	0.0538	108 (2)
	STATION 23	TSP-3	287	0.2	0.2366	474 (4)
07-Mar-06						
	STATION 1B	TSP-12	1495	0.95	0.2447	167 (1)
	STATION 14	TSP-11	1530	1.04	0.031	21
	STATION 14	TSP-5	1351	0.92	0.0415	28
	STATION 22A	TSP-9	1359	0.88	0.0702	48
	STATION 23	TSP-3	401	0.28	0.088	UPWIND
14-Mar-06						
	STATION 1B	TSP-12	1371	0.95	0.16	231 (1)
	STATION 14	TSP-11	1442	1	0.0149	21
	STATION 14	TSP-5	1225	0.85	0.0082	12
	STATION 22A	TSP-9	1158	0.82	0.0415	UPWIND
	STATION 23	TSP-3	408	0.29	0.0904	130 (4)
15-Mar-06						
	STATION 1B	TSP-12	1369	0.94	0.3362	UPWIND
	STATION 14	TSP-11	1493	1.04	0.0141	3
	STATION 14	TSP-5	1211	0.84	0.0267	5
	STATION 22A	TSP-9	1356	0.94	0.0344	6
	STATION 23	TSP-3	198	0.14	0.2308	41
16-Mar-06						
	STATION 1B	TSP-12	743	*	*	*
	STATION 14	TSP-11	1429	1.03	0.0334	UPWIND
	STATION 14	TSP-5	1468	1.06	0.0428	UPWIND
	STATION 22A	TSP-9	1244	0.91	0.0865	121 (2)
	STATION 23	TSP-3	361	0.26	0.1795	251 (4)

TABLE F.1.1

GROUP 9A TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
17-Mar-06						
	STATION 1B	TSP-12	2	*	*	*
	STATION 14	TSP-11	1630	1.05	0.0177	UPWIND
	STATION 14	TSP-5	1696	1.09	0.0162	UPWIND
	STATION 22A	TSP-9	392	*	*	*
	STATION 23	TSP-3	413	0.27	0.0625	231 (4)
20-Mar-06						
	STATION 1B	TSP-12	22	*	*	*
	STATION 14	TSP-11	1403	0.99	0.0599 J	UPWIND
	STATION 14	TSP-5	1473	1.04	0.0668 J	UPWIND
	STATION 22A	TSP-9	1030	0.78	0.0713 J	64
	STATION 23	TSP-3	717	0.52	0.0596 J	53
23-Mar-06						
	STATION 1B	TSP-12	19	*	*	*
	STATION 14	TSP-11	1596	0.96	0.0374	19
	STATION 14	TSP-5	1777	1.07	0.0294	15
	STATION 22A	TSP-9	1317	0.83	0.1172	UPWIND
	STATION 23	TSP-3	1210	0.73	0.0569	29
27-Mar-06						
	STATION 1B	TSP-12	21	*	*	*
	STATION 14	TSP-11	910	0.61	0.0518	**
	STATION 14	TSP-5	1508	1.01	0.0284	**
	STATION 22A	TSP-9	1115	0.84	0.0587	**
	STATION 23	TSP-3	390	*	*	*
28-Mar-06						
	STATION 1B	TSP-12	29	*	*	*
	STATION 14	TSP-11	970	0.66	0.0289	**
	STATION 14	TSP-5	1587	1.08	0.0306	**
	STATION 22A	TSP-9	67	*	*	*
	STATION 23	TSP-3	845	0.58	0.0505	**
29-Mar-06						
	STATION 1B	TSP-12	1131	0.96	0.1832	175 (1)
	STATION 14	TSP-11	988	0.68	0.0378	36
	STATION 22A	TSP-9	1184	0.83	0.072	69
	STATION 23	TSP-3	722	0.51	0.0627	UPWIND
30-Mar-06						
	STATION 1B	TSP-12	1298	0.95	0.3169	597 (1)
	STATION 14	TSP-11	856	0.6	0.0915	172 (5)
	STATION 22A	TSP-9	1208	0.91	0.0934	176 (2)
	STATION 23	TSP-3	807	0.57	0.0318	UPWIND
10-Apr-06						
	STATION 1B	TSP-12	1213	1.16	0.2031	437 (6)
	STATION 14	TSP-11	1213	0.85	0.0198	43
	STATION 14	TSP-5	1512	1.06	0.0205	44
	STATION 22A	TSP-9	1318	0.91	0.0725	156 (2)
	STATION 23	TSP-3	1088	0.78	0.0278	UPWIND
11-Apr-06						
	STATION 1B	TSP-12	1427	1.11	0.1041	79
	STATION 14	TSP-11	1243	0.85	0.078	59
	STATION 14	TSP-5	1462	1	0.0721	55
	STATION 22A	TSP-9	1241	0.89	0.1459	111 (2)
	STATION 23	TSP-3	980	0.68	0.0788	UPWIND

TABLE F.1.1

GROUP 9A TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
12-Apr-06						
	STATION 1B	TSP-12	1631	1.11	0.0993	38
	STATION 14	TSP-11	1238	0.83	0.0817	32
	STATION 14	TSP-5	1520	1.02	0.0742	29
	STATION 22A	TSP-9	1303	0.89	0.155	UPWIND
	STATION 23	TSP-3	1028	0.7	0.1146	44
13-Apr-06						
	STATION 1B	TSP-12	1339	0.92	0.1083	58
	STATION 14	TSP-11	1125	0.84	0.0501	27
	STATION 14	TSP-5	1327	0.99	0.0589	31
	STATION 22A	TSP-9	1265	0.89	0.1121	UPWIND
	STATION 23	TSP-3	800	0.63	0.0895	48
20-Apr-06						
	STATION 1B	TSP-12	1568	1.07	0.0552	32
	STATION 14	TSP-11	1253	0.82	0.0472	28
	STATION 14	TSP-5	1465	0.96	0.0496	29
	STATION 22A	TSP-9	1083	0.87	0.0636	37
	STATION 23	TSP-3	766	0.51	0.1018	UPWIND
28-Apr-06						
	STATION 1B	TSP-12	1765	1.09	0.0669	80
	STATION 14	TSP-11	1315	0.78	0.0556	67
	STATION 22A	TSP-9	1413	0.89	0.1175	141 (7)
	STATION 23	TSP-3	1320	0.79	0.0498	UPWIND
01-May-06						
	STATION 1B	TSP-12	1250	0.86	0.104	150 (8)
	STATION 14	TSP-11	1146	0.79	0.0242	35
	STATION 14	TSP-5	1462	1.01	0.0205	30
	STATION 23	TSP-3	993	0.69	0.0415	UPWIND
02-May-06						
	STATION 1B	TSP-12	1749	1.17	0.0933	37
	STATION 14	TSP-11	1216	0.82	0.0248	10
	STATION 14	TSP-5	1527	1.03	0.0372	15
	STATION 22B	TSP-9	1391	0.93	0.152	UPWIND
	STATION 23	TSP-3	915	0.64	0.0664	26
03-May-06						
	STATION 1B	TSP-12	1003	0.7	0.1631	45
	STATION 14	TSP-11	1369	0.94	0.0446	12
	STATION 14	TSP-5	1486	1.02	0.038	10
	STATION 22B	TSP-9	1444	1	0.2174	UPWIND
	STATION 23	TSP-3	950	0.67	0.076	21
04-May-06						
	STATION 1B	TSP-12	884	0.66	0.0939	UPWIND
	STATION 14	TSP-11	1280	0.91	0.0323	21
	STATION 14	TSP-5	1324	0.94	0.0441	28
	STATION 22B	TSP-9	1296	0.94	0.0857	55
	STATION 23	TSP-3	910	0.63	0.0999	64
05-May-06						
	STATION 1B	TSP-12	1205	0.76	0.0519	UPWIND
	STATION 14	TSP-11	1420	0.89	0.0585	67
	STATION 14	TSP-5	1467	0.92	0.0596	69
	STATION 22B	TSP-9	1558	0.97	0.0829	96
	STATION 23	TSP-3	923	0.58	0.1225	141 (5)

TABLE F.1.1

GROUP 9A TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
09-May-06						
	STATION 1B	TSP-12	NR	NR	NR	NR
	STATION 29	TSP-8	1231	0.92	0.0546	**
	STATION 30	TSP-1	929	0.73	0.0679	**
10-May-06						
	STATION 1B	TSP-12	NR	NR	NR	NR
	STATION 29	TSP-8	1403	0.95	0.0202	**
	STATION 30	TSP-1	1093	0.76	0.0212	**
12-May-06						
	STATION 1B	TSP-12	784	0.57	0.0452	81
	STATION 14	TSP-11	1318	0.89	0.0177	32
	STATION 14	TSP-5	1407	0.95	0.0185	33
	STATION 22B	TSP-9	1485	0.89	0.0334	UPWIND
	STATION 23	TSP-3	1217	0.72	0.0368	66
	STATION 29	TSP-8	1657	0.95	0.0293	53
	STATION 30	TSP-1	1193	0.7	0.0331	59
	STATION 31	TSP-16	1772	1.41	0.0146	26
13-May-06						
	STATION 1B	TSP-12	565	*	*	*
	STATION 31	TSP-16	883	*	*	*
15-May-06						
	STATION 31	TSP-16	1893	1.35	0.018	**
16-May-06						
	STATION 1B	TSP-12	914	0.59	0.1741	**
17-May-06						
	STATION 1B	TSP-12	796	0.57	0.1129	**
18-May-06						
	STATION 1B	TSP-12	791	0.59	0.0877	**

Notes:

* Results not reported due to machine malfunction.

** UPWIND machine did not run, therefore percent (%) allowable not calculable.

J The associated value is an estimated quantity.

(1) Exceedance primarily attributed to project and Zipp traffic in Zipp parking lot.

(2) Exceedance primarily attributed to relocating clean soil stockpile adjacent to East Parking Lot.

(3) Exceedance primarily attributed to filling Grading Area 2.

(4) No dust generating activities conducted in the vicinity of the air monitoring station STATION 14

(5) No work conducted in the vicinity of the air monitoring station.

(6) Exceedance primarily attributed to gravel and soil placement for construction of Grading Area 4 (the former Zipp lot).

(7) Exceedance primarily attributed to excavating and stockpiling < 50 ppm material in the East Parking lot.

(8) Exceedance primarily attributed to truck traffic along GM Drive.

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
19-May-06						
	STATION 1B	TSP-12	954	0.58	0.0869	**
	STATION 22B	TSP-9	1437	0.87	0.0711	**
	STATION 23	TSP-3	954	0.61	0.0611	**
	STATION 29	TSP-8	1509	0.89	0.0528	**
	STATION 30	TSP-1	87	*	*	*
	STATION 31	TSP-16	1428	1.31	0.0401	**
22-May-06						
	STATION 1B	TSP-12	927	0.61	0.0548	49
	STATION 14	TSP-11	1256	0.9	0.0589	UPWIND
	STATION 14	TSP-5	1268	0.91	0.0676	UPWIND
	STATION 22B	TSP-9	1339	0.89	0.0624	55
	STATION 23	TSP-3	776	0.56	0.0684	61
	STATION 29	TSP-8	1418	0.9	0.0461	41
	STATION 30	TSP-1	987	0.73	0.0428	38
	STATION 31	TSP-16	1812	1.2	0.0413	37
23-May-06						
	STATION 1B	TSP-12	935	0.68	0.0718	67
	STATION 14	TSP-11	1389	0.92	0.0551	51
	STATION 14	TSP-5	1402	0.93	0.0524	49
	STATION 22B	TSP-9	1279	0.93	0.0686 J	64
	STATION 23	TSP-3	974	0.66	0.0496 J	46
	STATION 29	TSP-8	1295	0.96	0.0643 J	UPWIND
	STATION 30	TSP-1	1135	0.76	0.08	75
	STATION 31	TSP-16	1863	1.34	0.0691	64
24-May-06						
	STATION 1B	TSP-12	1780	1.14	0.1049	126 (1)
	STATION 14	TSP-11	1237	0.9	0.0721	87
	STATION 14	TSP-5	1334	0.97	0.0643	77
	STATION 22B	TSP-9	2110	1.38	0.0499	UPWIND
	STATION 23	TSP-3	960	0.71	0.0608	73
	STATION 29	TSP-8	1511	0.93	0.0719	86
	STATION 30	TSP-1	1034	0.73	0.0734	88
	STATION 31	TSP-16	1940	1.26	0.042	50
25-May-06						
	STATION 1B	TSP-12	1410	1.1	0.0799	83
	STATION 14	TSP-11	1193	0.87	0.0581	60
	STATION 14	TSP-5	1315	0.96	0.0637	66
	STATION 22B	TSP-9	1560	1.29	0.0576	UPWIND
	STATION 23	TSP-3	843	0.62	0.0706	73
	STATION 29	TSP-8	1230	0.94	0.0711	74
	STATION 30	TSP-1	968	0.71	0.0799	83
	STATION 31	TSP-16	416	*	*	*
30-May-06						
	STATION 1B	TSP-12	1588	1.08	0.0773	44
	STATION 14	TSP-11	1380	0.95	0.0638	36
	STATION 14	TSP-5	1454	1	0.0587	34
	STATION 22B	TSP-9	2084	1.33	0.0436	25
	STATION 23	TSP-3	851	0.59	0.0766	44
	STATION 29	TSP-8	1328	0.9	0.1047	UPWIND
	STATION 30	TSP-1	1017	0.69	0.0572	33
	STATION 31	TSP-16	1242	0.84	0.074	42
31-May-06						
	STATION 1B	TSP-12	1615	1.12	0.0695	34
	STATION 14	TSP-11	1441	0.97	0.0713	35
	STATION 14	TSP-5	1411	0.95	0.0629	31
	STATION 22B	TSP-9	1852	1.37	0.0454	22
	STATION 23	TSP-3	728	0.5	0.1059	52
	STATION 29	TSP-8	1370	0.94	0.1214	UPWIND
	STATION 30	TSP-1	1066	0.72	0.0655	32
	STATION 31	TSP-16	1191	0.82	0.0765	38

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
01-Jun-06						
	STATION 1B	TSP-12	1596	1.11	0.0493	42
	STATION 14	TSP-11	1358	0.97	0.0644	UPWIND
	STATION 14	TSP-5	1329	0.95	0.0709	UPWIND
	STATION 22B	TSP-9	1939	1.36	0.0464	39
	STATION 23	TSP-3	707	0.5	0.1184	100 (2)
	STATION 29	TSP-8	1199	0.82	0.1261	107 (3)
	STATION 30	TSP-1	1140	0.81	0.0611	52
	STATION 31	TSP-16	1280	0.9	0.0406	34
02-Jun-06						
	STATION 1B	TSP-12	1647	1.11	0.0326	32
	STATION 14	TSP-11	1440	0.98	0.0572	UPWIND
	STATION 14	TSP-5	1380	0.94	0.0609	UPWIND
	STATION 22B	TSP-9	1956	1.34	0.0451	44
	STATION 23	TSP-3	895	0.61	0.0555	55
	STATION 29	TSP-8	1284	0.84	0.0379	37
	STATION 30	TSP-1	1270	0.86	0.0404	40
	STATION 31	TSP-16	1350	0.91	0.0376	37
05-Jun-06						
	STATION 1B	TSP-12	1566	1.08	0.0321	35
	STATION 14	TSP-11	1362	0.93	0.0566	UPWIND
	STATION 14	TSP-5	1405	0.96	0.0547	UPWIND
	STATION 22B	TSP-9	2018	1.38	0.0538	59
	STATION 23	TSP-3	1282	0.89	0.0333	36
	STATION 29	TSP-8	956	0.65	0.0521	57
	STATION 30	TSP-1	1089	0.74	0.0667	73
	STATION 31	TSP-16	1355	0.93	0.0637	70
06-Jun-06						
	STATION 1B	TSP-12	1617	1.08	0.1007	84
	STATION 14	TSP-11	1546	1.01	0.0752	63
	STATION 14	TSP-5	1454	0.95	0.0803	67
	STATION 22B	TSP-9	1994	1.36	0.0699	59
	STATION 23	TSP-3	1006	0.67	0.0678	57
	STATION 29	TSP-8	1244	0.86	0.0714	UPWIND
	STATION 30	TSP-1	1192	0.85	0.0868	73
	STATION 31	TSP-16	1216	0.86	0.0799	67
07-Jun-06						
	STATION 1B	TSP-12	1523	1.11	0.0486	71
	STATION 14	TSP-11	1334	0.96	0.041	60
	STATION 14	TSP-5	1293	0.93	0.0444	65
	STATION 22B	TSP-9	1916	1.35	0.0501	74
	STATION 23	TSP-3	830	0.61	0.0752	110 (4)
	STATION 29	TSP-8	1152	0.78	0.0408	UPWIND
	STATION 30	TSP-1	1249	0.82	0.0484	71
	STATION 31	TSP-16	467	*	*	*
08-Jun-06						
	STATION 1B	TSP-12	1302	0.89	0.047	54
	STATION 14	TSP-11	1322	0.97	0.0578	UPWIND
	STATION 14	TSP-5	1343	0.98	0.0517	UPWIND
	STATION 22B	TSP-9	1382	0.95	0.0517	60
	STATION 23	TSP-3	891	0.67	0.0569	66
	STATION 29	TSP-8	1363	0.87	0.0426	49
	STATION 30	TSP-1	513	*	*	*
	STATION 31	TSP-16	1210	0.82	0.095	110 (4)
09-Jun-06						
	STATION 1B	TSP-12	1171	0.84	0.0681	59
	STATION 14	TSP-11	1373	0.97	0.0597	UPWIND
	STATION 14	TSP-5	1279	0.91	0.069	UPWIND
	STATION 22B	TSP-9	1293	0.93	0.0681	59
	STATION 23	TSP-3	1154	0.83	0.0378	33
	STATION 29	TSP-8	1224	0.86	0.0391	34
	STATION 30	TSP-1	1145	0.81	0.0561	49
	STATION 31	TSP-16	1288	0.92	0.0638	55

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
10-Jun-06						
	STATION 1B	TSP-12	522	*	*	*
	STATION 14	TSP-11	583	*	*	*
	STATION 14	TSP-5	572	*	*	*
	STATION 22B	TSP-9	501	*	*	*
	STATION 23	TSP-3	362	*	*	*
	STATION 29	TSP-8	468	*	*	*
	STATION 30	TSP-1	292	*	*	*
	STATION 31	TSP-16	509	*	*	*
12-Jun-06						
	STATION 1B	TSP-12	1337	0.81	0.0462	67
	STATION 14	TSP-11	1494	1.02	0.0386	UPWIND
	STATION 14	TSP-5	1377	0.94	0.0415	UPWIND
	STATION 22B	TSP-9	1379	0.89	0.0616	89
	STATION 23	TSP-3	1168	0.67	0.0566	82
	STATION 29	TSP-8	1218	0.71	0.0345	50
	STATION 30	TSP-1	4	*	*	*
	STATION 31	TSP-16	1254	0.81	0.0949	137 (4)
13-Jun-06						
	STATION 1B	TSP-12	1042	0.84	0.0647	91
	STATION 14	TSP-11	1397	0.92	0.0278	UPWIND
	STATION 14	TSP-5	1426	0.94	0.0426	UPWIND
	STATION 22B	TSP-9	1278	0.94	0.0738	104 (4)
	STATION 23	TSP-3	919	0.74	0.0631	89
	STATION 29	TSP-8	981	0.84	0.0382	54
	STATION 30	TSP-1	957	0.86	0.0404	57
	STATION 31	TSP-16	1221	0.88	0.1496	210 (4)
14-Jun-06						
	STATION 1B	TSP-12	1110	0.84	0.0841	85
	STATION 14	TSP-11	1210	0.89	0.0534	UPWIND
	STATION 14	TSP-5	1249	0.92	0.0589	UPWIND
	STATION 22B	TSP-9	1238	0.92	0.1083	110 (4)
	STATION 23	TSP-3	803	0.6	0.074	75
	STATION 29	TSP-8	1352	0.92	0.0564	57
	STATION 30	TSP-1	1155	0.82	0.0624	63
	STATION 31	TSP-16	1157	0.86	0.0978	99
15-Jun-06						
	STATION 1B	TSP-12	1313	0.89	0.2136	168 (5)
	STATION 14	TSP-11	1298	0.9	0.0994	78
	STATION 14	TSP-5	1314	0.91	0.1002	79
	STATION 22B	TSP-9	1411	0.92	0.079	62
	STATION 23	TSP-3	286	*	*	*
	STATION 29	TSP-8	1348	0.92	0.0763	UPWIND
	STATION 30	TSP-1	1160	0.81	0.0734	58
	STATION 31	TSP-16	1184	0.81	0.1497	117 (4)
16-Jun-06						
	STATION 1B	TSP-12	1175	0.84	0.2638	304 (5)
	STATION 14	TSP-11	1276	0.9	0.0731	84
	STATION 14	TSP-5	1318	0.93	0.0774	89
	STATION 22B	TSP-9	1236	0.92	0.0725	84
	STATION 23	TSP-3	13	*	*	*
	STATION 29	TSP-8	1318	0.92	0.0519	UPWIND
	STATION 30	TSP-1	1153	0.81	0.0709	82
	STATION 31	TSP-16	1139	0.81	0.1169	135 (4)
17-Jun-06						
	STATION 1B	TSP-12	1359	0.83	0.177	169 (5)
	STATION 14	TSP-11	1431	0.91	0.0348	33
	STATION 14	TSP-5	1430	0.91	0.0518	50
	STATION 22B	TSP-9	1490	0.91	0.0626	UPWIND
	STATION 29	TSP-8	1525	0.91	0.056	54
	STATION 30	TSP-1	1286	0.81	0.0868	83
	STATION 31	TSP-16	1311	0.8	0.0629	60

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
19-Jun-06						
	STATION 1B	TSP-12	1114	0.8	0.123	121 [5]
	STATION 14	TSP-11	1194	0.84	0.0456	45
	STATION 14	TSP-5	1222	0.86	0.0459	45
	STATION 22B	TSP-9	1331	0.95	0.0609	UPWIND
	STATION 23	TSP-3	1256	0.92	0.0498	49
	STATION 29	TSP-8	1250	0.88	0.055	54
	STATION 30	TSP-1	1097	0.77	0.0549	54
	STATION 31	TSP-16	1218	0.87	0.0491	48
20-Jun-06						
	STATION 14	TSP-11	1283	0.88	0.0536	38
	STATION 14	TSP-5	1293	0.89	0.0561	40
	STATION 22B	TSP-9	1621	0.96	0.0835	UPWIND
	STATION 23	TSP-3	1343	0.96	0.0572	41
	STATION 29	TSP-8	1323	0.91	0.0661	47
	STATION 30	TSP-1	1176	0.8	0.0571	41
	STATION 31	TSP-16	1182	0.82	0.062	44
21-Jun-06						
	STATION 1C	TSP-12	742	0.66	0.1716	122 [5]
	STATION 14	TSP-11	1248	0.88	0.0772	55
	STATION 14	TSP-5	1278	0.9	0.0864	62
	STATION 22B	TSP-9	1342	0.97	0.084	UPWIND
	STATION 23	TSP-3	1340	0.95	0.0726	52
	STATION 29	TSP-8	1486	0.9	0.123	88
	STATION 30	TSP-1	1158	0.8	0.0959	68
	STATION 31	TSP-16	1158	0.79	0.0129	9
22-Jun-06						
	STATION 1C	TSP-12	1154	0.81	0.0939	91
	STATION 14	TSP-11	1335	0.93	0.0553	54
	STATION 14	TSP-5	1278	0.89	0.0667	65
	STATION 22B	TSP-9	1435	0.96	0.0617	UPWIND
	STATION 23	TSP-3	1309	0.93	0.0731	71
	STATION 29	TSP-8	1376	0.91	0.062	60
	STATION 30	TSP-1	1174	0.81	0.0575	56
	STATION 31	TSP-16	1120	0.78	0.0646	63
23-Jun-06						
	STATION 1C	TSP-12	1249	0.91	0.0392	57
	STATION 14	TSP-11	1395	0.97	0.0338	UPWIND
	STATION 14	TSP-5	1392	0.97	0.0409	UPWIND
	STATION 22B	TSP-9	1151	0.97	0.0602	88
	STATION 23	TSP-3	586	*	*	*
	STATION 29	TSP-8	1048	0.9	0.0344	50
	STATION 30	TSP-1	1260	0.87	0.0209	31
	STATION 31	TSP-16	1120	0.82	0.0739	108 [4]
24-Jun-06						
	STATION 1C	TSP-12	1093	0.77	0.0554	55
	STATION 14	TSP-11	1272	0.87	0.0616	UPWIND
	STATION 14	TSP-5	1362	0.93	0.0599	UPWIND
	STATION 22B	TSP-9	1361	0.97	0.0699	70
	STATION 23	TSP-3	0	*	*	*
	STATION 29	TSP-8	1297	0.9	0.0465	46
	STATION 30	TSP-1	1238	0.86	0.0426	43
	STATION 31	TSP-16	1274	0.89	0.0827	83
26-Jun-06						
	STATION 1C	TSP-12	1044	0.78	0.0839	87
	STATION 14	TSP-11	1243	0.85	0.0507	52
	STATION 14	TSP-5	1256	0.86	0.0515	53
	STATION 22B	TSP-9	1302	0.93	0.0624	65
	STATION 29	TSP-8	1131	0.86	0.0579	UPWIND
	STATION 30	TSP-1	1223	0.83	0.038	39
	STATION 31	TSP-16	1159	0.86	0.0728	75

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
27-Jun-06						
	STATION 1C	TSP-12	1192	0.83	0.1694	163 (5)
	STATION 14	TSP-11	1332	0.92	0.0572	55
	STATION 14	TSP-5	1332	0.92	0.0589	57
	STATION 22B	TSP-9	1350	0.97	0.1087	105 (6)
	STATION 29	TSP-8	1358	0.94	0.0703	68
	STATION 30	TSP-1	1226	0.86	0.0484	47
	STATION 31	TSP-16	1199	0.83	0.0622	UPWIND
28-Jun-06						
	STATION 1C	TSP-12	1189	0.83	0.1779	118 (5)
	STATION 14	TSP-11	1357	0.92	0.0474	31
	STATION 14	TSP-5	1355	0.92	0.0496	33
	STATION 22B	TSP-9	1402	0.97	0.0904	UPWIND
	STATION 23	TSP-3	1110	0.92	0.0803	53
	STATION 29	TSP-8	1259	0.87	0.0901	60
	STATION 30	TSP-1	1265	0.86	0.045	30
	STATION 31	TSP-16	1194	0.83	0.0614	41
29-Jun-06						
	STATION 1C	TSP-12	1191	0.83	0.1082	107 (5)
	STATION 14	TSP-11	1406	0.92	0.0546	UPWIND
	STATION 14	TSP-5	1377	0.9	0.0606	UPWIND
	STATION 22B	TSP-9	1319	0.91	0.1029	102 (4)
	STATION 23	TSP-3	1283	0.92	0.0686	68
	STATION 29	TSP-8	1392	0.96	0.0545	54
	STATION 30	TSP-1	1258	0.87	0.0417	41
	STATION 31	TSP-16	1198	0.85	0.0908	90
30-Jun-06						
	STATION 1C	TSP-12	1500	0.88	0.1177	82
	STATION 14	TSP-11	1332	0.9	0.0637	45
	STATION 14	TSP-5	1363	0.92	0.0643	45
	STATION 22B	TSP-9	1541	0.91	0.0857	UPWIND
	STATION 23	TSP-3	1437	0.92	0.0588	41
	STATION 29	TSP-8	1581	0.9	0.0662	46
	STATION 30	TSP-1	1359	0.87	0.0699	49
	STATION 31	TSP-16	1405	0.83	0.0806	56
03-Jul-06						
	STATION 1C	TSP-12	1293	0.8	0.1259	93
	STATION 14	TSP-11	1799	0.97	0.0565	42
	STATION 14	TSP-5	1663	0.96	0.0384	28
	STATION 22B	TSP-9	1392	0.87	0.0815	UPWIND
	STATION 23	TSP-3	1721	1	0.0679	50
	STATION 29	TSP-8	1407	0.85	0.0828	61
	STATION 30	TSP-1	3	*	*	*
	STATION 31	TSP-16	1314	0.82	0.0744	55
05-Jul-06						
	STATION 1C	TSP-12	919	0.72	0.069	82
	STATION 14	TSP-11	1565	1.08	0.0231	UPWIND
	STATION 14	TSP-5	1290	0.89	0.0505	UPWIND
	STATION 22B	TSP-9	1137	0.88	0.0898	106
	STATION 23	TSP-3	1507	1.06	0.05	59
	STATION 29	TSP-8	1264	0.91	0.0305	36
	STATION 30	TSP-1	4	*	*	*
	STATION 31	TSP-16	1106	0.85	0.0841	100 (4)
06-Jul-06						
	STATION 1C	TSP-12	1241	0.81	0.0493	61
	STATION 14	TSP-11	1623	1.09	0.0404	UPWIND
	STATION 14	TSP-5	1448	0.97	0.0484	UPWIND
	STATION 22B	TSP-9	1437	0.92	0.0869	108 (4)
	STATION 23	TSP-3	1554	1.07	0.0244	30
	STATION 29	TSP-8	1384	0.96	0.0516	64
	STATION 30	TSP-1	1248	0.96	0.027	33
	STATION 31	TSP-16	1231	0.84	0.1094	135 (4)

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
07-Jul-06						
	STATION 1C	TSP-12	1040	0.8	0.0312	41
	STATION 14	TSP-11	1550	1.09	0.0344	UPWIND
	STATION 14	TSP-5	1294	0.91	0.0457	UPWIND
	STATION 22B	TSP-9	1252	0.92	0.16	210 (4)
	STATION 23	TSP-3	1458	1.02	0.0396	52
	STATION 29	TSP-8	1341	0.97	0.0257	34
	STATION 30	TSP-1	1165	0.82	0.0489	64
	STATION 31	TSP-16	1154	0.89	0.0764	100 (4)
08-Jul-06						
	STATION 1C	TSP-12	1256	0.8	0.1763 J	239 (4)
	STATION 14	TSP-11	1763	1.15	0.04 J	54
	STATION 14	TSP-5	1424	0.93	0.0581 J	79
	STATION 22B	TSP-9	1427	0.95	0.0672 J	91
	STATION 23	TSP-3	1391	0.95	0.0597 J	81
	STATION 29	TSP-8	1456	0.95	0.0442 J	UPWIND
	STATION 30	TSP-1	1228	0.81	0.0628 J	85
	STATION 31	TSP-16	1316	0.83	0.1065 J	144 (4)
10-Jul-06						
	STATION 1C	TSP-12	997	0.7	0.1099	86
	STATION 14	TSP-11	1366	0.95	0.0592	46
	STATION 14	TSP-5	1324	0.92	0.0514	40
	STATION 22B	TSP-9	1227	0.86	0.0769	UPWIND
	STATION 23	TSP-3	1174	0.84	0.0575	45
	STATION 29	TSP-8	1283	0.89	0.0627	49
	STATION 30	TSP-1	1098	0.77	0.0805	63
	STATION 31	TSP-16	1174	0.82	0.0721	56
17-Jul-06						
	STATION 1C	TSP-12	1088	0.75	0.0867	62
	STATION 14	TSP-11	1401	0.97	0.0594	42
	STATION 14	TSP-5	1312	0.91	0.0607	43
	STATION 22B	TSP-9	1237	0.86	0.084	UPWIND
	STATION 23	TSP-3	1196	0.83	0.0735	52
	STATION 29	TSP-8	1269	0.87	0.0735	52
	STATION 30	TSP-1	17	*	*	*
	STATION 31	TSP-16	1205	0.82	0.0841	60
18-Jul-06						
	STATION 1C	TSP-12	1106	0.78	0.0023	**
	STATION 14	TSP-11	436	*	*	*
	STATION 14	TSP-5	457	*	*	*
	STATION 22B	TSP-9	1130	0.8	0.1603	**
	STATION 23	TSP-3	1365	0.98	0.076	**
	STATION 29	TSP-8	1292	0.9	0.0685	**
	STATION 30	TSP-1	792	0.78	0.09	**
	STATION 31	TSP-16	1150	0.8	0.1131	**
19-Jul-06						
	STATION 14	TSP-11	1436	0.97	0.0841	58
	STATION 22B	TSP-9	1240	0.85	0.105	73
	STATION 23	TSP-3	1389	0.96	0.0896	62
	STATION 29	TSP-8	1335	0.9	0.0866	UPWIND
	STATION 30	TSP-1	1174	0.8	0.0958	66
	STATION 31	TSP-16	1178	0.8	0.153	106 (4)
20-Jul-06						
	STATION 1C	TSP-12	1178	0.8	0.0789	66
	STATION 14	TSP-11	1194	0.86	0.0729	61
	STATION 14	TSP-5	1291	0.93	0.0649	54
	STATION 22B	TSP-9	1267	0.83	0.0997	83
	STATION 23	TSP-3	1064	0.79	0.0914	76
	STATION 29	TSP-8	1442	0.92	0.0716	UPWIND
	STATION 30	TSP-1	1109	0.8	0.0814	68
	STATION 31	TSP-16	1134	0.78	0.0802	67

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
21-Jul-06						
	STATION 1C	TSP-12	1124	0.83	0.052	60
	STATION 14	TSP-11	1182	0.86	0.057	UPWIND
	STATION 14	TSP-5	1304	0.95	0.0518	UPWIND
	STATION 22B	TSP-9	1164	0.86	0.0519	60
	STATION 23	TSP-3				
	STATION 29	TSP-8	1238	0.9	0.0536	62
	STATION 30	TSP-1	1094	0.8	0.0512	59
	STATION 31	TSP-16	1259	0.93	0.0237	27
22-Jul-06						
	STATION 1C	TSP-12	1662	0.95	0.0278	82
	STATION 14	TSP-11	1411	0.83	0.0322	UPWIND
	STATION 14	TSP-5	1634	0.96	0.0204	UPWIND
	STATION 22B	TSP-9				
	STATION 23	TSP-3				
	STATION 29	TSP-8	1582	0.91	0.0273	80
	STATION 30	TSP-1	1408	0.81	0.0276	81
	STATION 31	TSP-16	1518	0.86	0.0295	87
24-Jul-06						
	STATION 1C	TSP-12	1125	0.84	0.0421	39
	STATION 14	TSP-11	1108	0.87	0.0562	52
	STATION 14	TSP-5	1172	0.92	0.0529	49
	STATION 22B	TSP-9	1073	0.79	0.077	72
	STATION 23	TSP-3				
	STATION 29	TSP-8	1314	0.95	0.0644	UPWIND
	STATION 30	TSP-1	1132	0.92	0.0107	10
	STATION 31	TSP-16	1138	0.85	0.0773	72
25-Jul-06	STATION 14					
	STATION 1C	TSP-12	1289	0.88	0.0874	45
	STATION 14	TSP-11	1312	0.86	0.0723	37
	STATION 14	TSP-5	1324	0.95	0.0725	37
	STATION 22B	TSP-9	1235	0.84	0.1161	UPWIND
	STATION 23	TSP-3	1067	0.79	0.0991	51
	STATION 29	TSP-8	1428	0.96	0.0884	46
	STATION 30	TSP-1	1268	0.92	0.0677	35
	STATION 31	TSP-16	1251	0.85	0.0845	44
26-Jul-06						
	STATION 1C	TSP-12	1291	0.87	0.0787	50
	STATION 14	TSP-11	1300	0.88	0.0771	49
	STATION 14	TSP-5	1383	0.93	0.0645	41
	STATION 22B	TSP-9	1241	0.82	0.0943	UPWIND
	STATION 23	TSP-3	1108	0.78	0.0702	45
	STATION 29	TSP-8	1452	0.94	*	*
	STATION 30	TSP-1	1348	0.91	0.1115	71
	STATION 31	TSP-16	1228	0.82	0.082	52
28-Jul-06						
	STATION 1C	TSP-12	1057	0.75	0.0702	46
	STATION 14	TSP-11	1223	0.84	0.0459	30
	STATION 14	TSP-5	1371	0.94	0.0441	29
	STATION 22B	TSP-9	495	0.35	0.0923	UPWIND
	STATION 23	TSP-3	1186	0.83	0.0617	40
	STATION 29	TSP-8	1063	0.74	0.0685	44
	STATION 30	TSP-1	1282	0.89	0.0542	35
	STATION 31	TSP-16	1177	0.83	0.039	25
29-Jul-06						
	STATION 1C	TSP-12	1276	0.88	0.0614	40
	STATION 14	TSP-11	1226	0.84	0.0662	43
	STATION 14	TSP-5	1477	1.01	0.0538	35
	STATION 22B	TSP-9	1187	0.81	0.093	UPWIND
	STATION 23	TSP-3	1150	0.81	0.0863	56
	STATION 29	TSP-8	1144	0.77	0.0853	55
	STATION 30	TSP-1	1357	0.94	0.0629	40
	STATION 31	TSP-16	1143	0.78	0.073	47

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
31-Jul-06						
	STATION 1C	TSP-12	1218	0.88	0.0632	53
	STATION 14	TSP-11	1363	0.98	0.0836	71
	STATION 14	TSP-5	1739	1.25	ND	*
	STATION 22B	TSP-9	1320	0.94	0.0735	62
	STATION 23	TSP-3	1195	0.88	0.0837	71
	STATION 29	TSP-8	1172	0.82	0.0708	UPWIND
	STATION 30	TSP-1	1271	0.92	0.0488	41
	STATION 31	TSP-16	1255	0.9	0.059	50
01-Aug-06						
	STATION 1C	TSP-12	1342	0.92	0.0537	36
	STATION 14	TSP-11	1504	1.02	0.0592	40
	STATION 14	TSP-5	1824	1.24	0.0471	32
	STATION 22B	TSP-9	1329	0.92	0.0895	UPWIND
	STATION 23	TSP-3	1189	0.84	0.0732	49
	STATION 29	TSP-8	1192	0.8	0.0956	64
	STATION 30	TSP-1	1307	0.9	0.0765	51
	STATION 31	TSP-16	1147	0.78	0.0802	54
02-Aug-06						
	STATION 1C	TSP-12	1269	0.88	0.0749	55
	STATION 14	TSP-11	1501	1.02	0.0546	40
	STATION 14	TSP-5	1812	1.23	0.0375	27
	STATION 22B	TSP-9	1393	0.94	0.0818	UPWIND
	STATION 23	TSP-3	1214	0.84	0.0774	57
	STATION 29	TSP-8	1039	0.71	0.0982	72
	STATION 30	TSP-1	1292	0.9	0.0766	56
	STATION 31	TSP-16	1177	0.81	0.0663	49
03-Aug-06						
	STATION 1C	TSP-12	1143	0.79	0.0744	40
	STATION 14	TSP-11	1489	1.02	0.0564	30
	STATION 14	TSP-5	1793	1.23	0.048	26
	STATION 22B	TSP-9	1227	0.85	0.1108	UPWIND
	STATION 23	TSP-3	1375	0.95	0.0916	50
	STATION 29	TSP-8	1116	0.77	0.1918	104 (6)
	STATION 30	TSP-1	1117	0.78	0.0734	40
	STATION 31	TSP-16	1052	0.77	0.0846	46
04-Aug-06						
	STATION 1C	TSP-12	1269	0.89	0.0244	83
	STATION 14	TSP-11	1321	1.03	0.0341 J	UPWIND
	STATION 14	TSP-5	1590	1.24	0.0176 J	UPWIND
	STATION 22B	TSP-9	1326	0.91	0.0762	259 (4)
	STATION 23	TSP-3	1243	0.87	0.0378	129 (2)
	STATION 29	TSP-8	1192	0.81	0.0394	134 (6)
	STATION 30	TSP-1	1167	0.84	0.0171	58
	STATION 31	TSP-16	1146	0.8	0.0672	229 (4)
05-Aug-06						
	STATION 1C	TSP-12	1432	0.88	0.0377	98
	STATION 14	TSP-11	1632	1.03	0.0423 J	UPWIND
	STATION 14	TSP-5	1950	1.23	0.0231 J	UPWIND
	STATION 22B	TSP-9	1595	0.96	0.0571	148 (4)
	STATION 23	TSP-3	1301	0.83	0.0523	136 (2)
	STATION 29	TSP-8	1180	0.7	0.061	158 (6)
	STATION 30	TSP-1	1305	0.82	0.0743	193 (7)
	STATION 31	TSP-16	1262	0.77	0.1577	409 (4)

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
07-Aug-06						
	STATION 1C	TSP-12	1250	0.86	0.064	106 (4)
	STATION 14	TSP-11	1430	0.99	0.0552	UPWIND
	STATION 14	TSP-5	1747	1.21	0.0361	UPWIND
	STATION 22B	TSP-9	1353	0.91	0.0739	123 (4)
	STATION 23	TSP-3	1217	0.86	0.0871	144 (2)
	STATION 29	TSP-8	990	0.66	0.1253	208 (6)
	STATION 30	TSP-1	1045	0.72	0.0612	102 (7)
	STATION 31	TSP-16	1180	0.8	0.072	119 (4)
08-Aug-06						
	STATION 1C	TSP-12	886	0.74	0.0429	85
	STATION 14	TSP-11	1213	1.01	0.0322	UPWIND
	STATION 14	TSP-5	1429	1.19	0.0301	UPWIND
	STATION 22B	TSP-9	1074	0.89	0.0615	122 (4)
	STATION 23	TSP-3	773	0.71	0.0414	82
	STATION 29	TSP-8	770	0.63	0.0429	85
	STATION 30	TSP-1	908	0.76	0.0385	77
	STATION 31	TSP-16	1042	0.87	0.0345	69
10-Aug-06						
	STATION 1C	TSP-12	1126	0.8	0.0533	80
	STATION 14	TSP-11	1329	0.96	0.0346	UPWIND
	STATION 14	TSP-5	1302	0.94	0.0399	UPWIND
	STATION 22B	TSP-9	1365	1.03	0.0498	75
	STATION 23	TSP-3	1175	0.86	0.0451	68
	STATION 29	TSP-8	899	0.67	0.0356	53
	STATION 30	TSP-1	1132	0.82	0.0362	54
	STATION 31	TSP-16	1089	0.81	0.0505	76
11-Aug-06						
	STATION 1C	TSP-12	1405	1.01	0.0413	53
	STATION 14	TSP-11	1377	0.95	0.0552	UPWIND
	STATION 14	TSP-5	1392	0.96	0.0467	UPWIND
	STATION 22B	TSP-9	1456	1.01	0.0446	57
	STATION 23	TSP-3	1176	0.83	0.0595	76
	STATION 29	TSP-8	932	0.64	0.0515	66
	STATION 30	TSP-1	1178	0.82	0.034	44
	STATION 31	TSP-16	1239	0.86	0.0428	55
12-Aug-06						
	STATION 1C	TSP-12	1800	1.02	0.0167	49
	STATION 14	TSP-11	1634	0.96	0.0386 J	UPWIND
	STATION 14	TSP-5	1699	1	0.0206 J	UPWIND
	STATION 22B	TSP-9	1690	0.98	0.0396	115 (4)
	STATION 23	TSP-3	769	0.46	0.0598	174 (2)
	STATION 29	TSP-8	1236	0.71	0.021	61
	STATION 30	TSP-1	1401	0.83	0.0457	133 (8)
	STATION 31	TSP-16	1499	0.88	0.042	122 (4)
14-Aug-06						
	STATION 1C	TSP-12	1026	0.73	0.0507	63
	STATION 14	TSP-11	1184	0.84	0.0524	65
	STATION 14	TSP-5	1197	0.85	0.0618	77
	STATION 22B	TSP-9	1355	0.97	0.048	UPWIND
	STATION 23	TSP-3	1100	0.79	0.07	87
	STATION 29	TSP-8	1075	0.76	0.0558	70
	STATION 30	TSP-1	1175	0.84	0.0494	62
	STATION 31	TSP-16	175	*	*	*

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
15-Aug-06						
	STATION 1C	TSP-12	1010	0.71	0.0307	17
	STATION 14	TSP-11	1378	0.96	0.0356 J	UPWIND
	STATION 14	TSP-5	1432	1	0.1068 J	UPWIND
	STATION 22B	TSP-9	1464	1.02	0.0546	31
	STATION 23	TSP-3	1139	0.81	0.0536	30
	STATION 29	TSP-8	1412	0.98	0.0191	11
	STATION 30	TSP-1	1255	0.88	0.0582	33
	STATION 31	TSP-16	325	*	*	*
16-Aug-06						
	STATION 1C	TSP-12	874	0.65	0.0629	173 (4)
	STATION 14	TSP-11	1363	0.96	0.0455 J	UPWIND
	STATION 14	TSP-5	1420	1	0.0218 J	UPWIND
	STATION 22B	TSP-9	1366	1.02	0.0483	133 (1)
	STATION 23	TSP-3	1142	0.82	0.042	115 (2)
	STATION 29	TSP-8	1260	0.86	0.0317	87
	STATION 30	TSP-1	1251	0.89	0.1143	314 (8)
	STATION 31	TSP-16	1069	0.89	0.0393	108 (4)
17-Aug-06						
	STATION 1C	TSP-12	467	*	*	*
	STATION 14	TSP-11	1369	0.95	0.0628	87
	STATION 14	TSP-5	1340	0.93	0.0672	93
	STATION 22B	TSP-9	711	*	*	*
	STATION 23	TSP-3	1105	0.79	0.0561	77
	STATION 29	TSP-8	1221	0.85	0.0434	UPWIND
	STATION 30	TSP-1	1250	0.88	0.2256	311 (8)
	STATION 31	TSP-16	4	*	*	*
18-Aug-06						
	STATION 1C	TSP-12	435	*	*	*
	STATION 14	TSP-11	1334	0.95	0.0652	76
	STATION 14	TSP-5	1307	0.93	0.065	76
	STATION 22B	TSP-9	688	*	*	*
	STATION 23	TSP-3	940	0.67	0.0617	72
	STATION 29	TSP-8	1287	0.85	0.0513	UPWIND
	STATION 30	TSP-1	1211	0.87	0.1387	162 (8)
	STATION 31	TSP-16	638	*	*	*
19-Aug-06						
	STATION 1C	TSP-12	353	*	*	*
	STATION 14	TSP-11	1309	0.95	0.0481	UPWIND
	STATION 14	TSP-5	1309	0.95	0.0466	UPWIND
	STATION 22B	TSP-9	671	*	*	*
	STATION 23	TSP-3	1139	0.82	0.0781	100 (2)
	STATION 29	TSP-8	1013	0.75	0.0731	94
	STATION 30	TSP-1	1137	0.84	0.0607	78
	STATION 31	TSP-16	573	*	*	*
21-Aug-06						
	STATION 1C	TSP-12	756	0.5	0.0807	95
	STATION 14	TSP-11	1381	0.94	0.0587	UPWIND
	STATION 14	TSP-5	1428	0.97	0.0511	UPWIND
	STATION 22B	TSP-9	1536	1	0.0658	77
	STATION 23	TSP-3	1165	0.82	0.0609	71
	STATION 29	TSP-8	1045	0.77	0.0498	58
	STATION 30	TSP-1	1209	0.83	0.1803	211 (8)
	STATION 31	TSP-16	1292	0.84	0.0906	106 (4)

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
22-Aug-06						
	STATION 1C	TSP-12	817	0.58	0.0661	56
	STATION 14	TSP-11	1249	0.89	0.0633	UPWIND
	STATION 14	TSP-5	1304	0.93	0.0713	UPWIND
	STATION 22B	TSP-9	959	0.68	0.1397	117 (4)
	STATION 23	TSP-3	1144	0.83	0.0778	65
	STATION 29	TSP-8	1179	0.83	0.056	47
	STATION 30	TSP-1	1226	0.89	0.4307	362 (8)
	STATION 31	TSP-16	1176	0.84	0.0969	81
23-Aug-06						
	STATION 1C	TSP-12	859	0.57	0.1234	120 (4)
	STATION 14	TSP-11	1291	0.88	0.0883	UPWIND
	STATION 14	TSP-5	1366	0.93	0.0615	UPWIND
	STATION 22B	TSP-9	1088	0.76	0.1232	120 (4)
	STATION 23	TSP-3	1077	0.74	0.0854	83
	STATION 29	TSP-8	965	0.67	0.1098	107 (6)
	STATION 30	TSP-1	1222	0.85	0.563	548 (8)
	STATION 31	TSP-16	1271	0.92	0.0732	71
24-Aug-06						
	STATION 1C	TSP-12	781	0.57	0.1293	81
	STATION 14	TSP-11	1269	0.88	0.2025	127 (9)
	STATION 14	TSP-5	1312	0.91	0.1974	124 (9)
	STATION 22B	TSP-9	1064	0.73	0.1081	68
	STATION 23	TSP-3	1182	0.86	0.1007	63
	STATION 29	TSP-8	922	0.63	0.0954	UPWIND
	STATION 30	TSP-1	1240	0.88	1.1726	736 (8)
	STATION 31	TSP-16	1285	0.93	0.0607	38
25-Aug-06						
	STATION 1C	TSP-12	710	0.5	0.1366	86
	STATION 14	TSP-11	1300	0.87	0.1362	86
	STATION 14	TSP-5	1359	0.91	0.1332	84
	STATION 22B	TSP-9	1163	0.81	0.08	50
	STATION 23	TSP-3	1192	0.81	0.0864	54
	STATION 29	TSP-8	840	0.58	0.0952	UPWIND
	STATION 30	TSP-1	1131	0.77	0.3165	199 (8)
	STATION 31	TSP-16	1221	0.85	0.0975	61
26-Aug-06						
	STATION 1C	TSP-12	826	0.47	0.115	99
	STATION 14	TSP-11	1475	0.88	0.0827	71
	STATION 14	TSP-5	1526	0.91	0.0826	71
	STATION 22B	TSP-9	1324	0.75	0.0702	61
	STATION 23	TSP-3	1392	0.84	0.0589	51
	STATION 29	TSP-8	1053	0.59	0.0693	UPWIND
	STATION 30	TSP-1	1299	0.78	0.2071	179 (8)
	STATION 31	TSP-16	1465	0.83	0.0526	45
29-Aug-06						
	STATION 1C	TSP-12	898	0.64	0.0468	UPWIND
	STATION 14	TSP-11	1184	0.84	0.0312	40
	STATION 14	TSP-5	1228	0.87	0.0228	29
	STATION 22B	TSP-9	1129	0.8	0.0399	51
	STATION 23	TSP-3	1097	0.8	0.0693	89
	STATION 29	TSP-8	742	0.52	0.0404	52
	STATION 30	TSP-1	1065	0.76	0.0122	16
	STATION 31	TSP-16	1198	0.86	0.0242	31

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
30-Aug-06						
	STATION 1C	TSP-12	867	0.6	0.0358	40
	STATION 14	TSP-11	1259	0.86	0.0477	UPWIND
	STATION 14	TSP-5	1317	0.9	0.0532	UPWIND
	STATION 22B	TSP-9	1179	0.8	0.0696	78
	STATION 23	TSP-3	1206	0.86	0.0531	60
	STATION 29	TSP-8	833	0.56	0.0348	39
	STATION 30	TSP-1	1147	0.79	0.0227	26
	STATION 31	TSP-16	1150	0.78	0.0557	63
31-Aug-06						
	STATION 1C	TSP-12	879	0.58	0.0387	39
	STATION 14	TSP-11	1286	0.89	0.0638	UPWIND
	STATION 14	TSP-5	1328	0.92	0.0595	UPWIND
	STATION 22B	TSP-9	1217	0.8	0.0863	87
	STATION 23	TSP-3	1316	0.88	0.0608	61
	STATION 29	TSP-8	936	0.61	0.0449	45
	STATION 30	TSP-1	1118	0.79	0.0331	33
	STATION 31	TSP-16	1351	0.9	0.0326	33
05-Sep-06						
	STATION 1C	TSP-12	696	0.49	0.0618	89
	STATION 14	TSP-11	1243	0.85	0.0418	UPWIND
	STATION 14	TSP-5	1257	0.86	0.0414	UPWIND
	STATION 22B	TSP-9	1119	0.78	0.092	133 [4]
	STATION 23	TSP-3	1258	0.88	0.0612	89
	STATION 29	TSP-8	847	0.58	0.0626	91
	STATION 30	TSP-1	1146	0.8	0.0279	40
	STATION 31	TSP-16	1216	0.85	0.0461	67
06-Sep-06						
	STATION 1C	TSP-12	714	0.49	0.049	76
	STATION 14	TSP-11	1317	0.91	0.0342	UPWIND
	STATION 14	TSP-5	1344	0.93	0.0387	UPWIND
	STATION 22B	TSP-9	1273	0.87	0.0542	84
	STATION 23	TSP-3	1067	0.75	0.0459	71
	STATION 29	TSP-8	801	0.54	0.0699	108 [6]
	STATION 30	TSP-1	1162	0.8	0.031	48
	STATION 31	TSP-16	1158	0.79	0.0389	60
07-Sep-06						
	STATION 1C	TSP-12	1183	0.84	0.0617	49
	STATION 14	TSP-11	1286	0.91	0.0505	40
	STATION 14	TSP-5	1285	0.91	0.0475	38
	STATION 22B	TSP-9	1094	0.77	0.0868	69
	STATION 23	TSP-3	1077	0.77	0.052	42
	STATION 29	TSP-8	813	0.57	0.075	UPWIND
	STATION 30	TSP-1	1123	0.8	0.0481	38
	STATION 31	TSP-16	1130	0.79	0.0894	71
08-Sep-06						
	STATION 1C	TSP-12	1183	0.84	0.0617	49
	STATION 14	TSP-5	1286	0.91	0.0505	40
	STATION 14	TSP-5	1285	0.91	0.0475	38
	STATION 22B	TSP-9	1094	0.77	0.0868	69
	STATION 23	TSP-3	1077	0.77	0.052	42
	STATION 29	TSP-8	813	0.57	0.075	UPWIND
	STATION 30	TSP-1	1123	0.8	0.0481	38
	STATION 31	TSP-16	1130	0.79	0.0894	71
09-Sep-06						
	STATION 1C	TSP-12	1187	0.7	0.0556	56
	STATION 14	TSP-11	1642	0.97	0.0445	UPWIND
	STATION 14	TSP-5	1573	0.93	0.0598	UPWIND
	STATION 22B	TSP-9	1220	0.71	0.1	100 [4]
	STATION 23	TSP-3	1599	0.96	0.0588	59
	STATION 29	TSP-8	1293	0.75	0.0688	69
	STATION 30	TSP-1	1422	0.85	0.0506	51
	STATION 31	TSP-16	1265	0.79	0.0798	80

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
11-Sep-06						
	STATION 1C	TSP-12	931	0.65	0.043	72
	STATION 14	TSP-11	1072	0.76	0.0401	67
	STATION 14	TSP-5	1281	0.9	0.0367	61
	STATION 22B	TSP-9	995	0.7	0.0492	82
	STATION 23	TSP-3	1324	0.94	0.0393	66
	STATION 29	TSP-8	1060	0.74	0.0358	UPWIND
	STATION 30	TSP-1	1087	0.77	0.0386	65
	STATION 31	TSP-16	1122	0.79	0.0437	73
14-Sep-06						
	STATION 1C	TSP-12	1035	0.73	0.029	55
	STATION 14	TSP-11	1201	0.83	0.0233	UPWIND
	STATION 14	TSP-5	1201	0.83	0.0316	UPWIND
	STATION 22B	TSP-9	1040	0.72	0.0481	91
	STATION 23	TSP-3	1315	0.92	0.0471	89
	STATION 29	TSP-8	1119	0.77	0.0268	51
	STATION 30	TSP-1	1136	0.8	0.0238	45
	STATION 31	TSP-16	1218	0.85	0.0361	68
15-Sep-06						
	STATION 1C	TSP-12	1582	1	0.0265	41
	STATION 14	TSP-11	1292	0.88	0.0356	UPWIND
	STATION 14	TSP-5	1366	0.93	0.0388	UPWIND
	STATION 22B	TSP-9	1133	0.73	0.0565	87
	STATION 23	TSP-3	1431	0.99	0.037	57
	STATION 29	TSP-8	1250	0.8	0.0376	58
	STATION 30	TSP-1	1207	0.83	0.034	52
	STATION 31	TSP-16	1188	0.77	0.0648	100 (4)
16-Sep-06						
	STATION 1C	TSP-12	1523	1	0.0361	59
	STATION 14	TSP-11	902	0.88	0.0421	69
	STATION 14	TSP-5	951	0.93	0.0389	64
	STATION 22B	TSP-9	1179	0.73	0.0492	80
	STATION 23	TSP-3	1517	0.96	0.0369	60
	STATION 29	TSP-8	1284	0.77	0.0366	UPWIND
	STATION 30	TSP-1	1293	0.82	0.0472	77
	STATION 31	TSP-16	1364	0.85	0.0315	52
18-Sep-06						
	STATION 1C	TSP-12	856	0.62	0.0479	81
	STATION 14	TSP-11	1110	0.93	0.0162	27
	STATION 14	TSP-5	1364	0.94	0.0117	20
	STATION 22B	TSP-9	958	0.69	0.0355	UPWIND
	STATION 23	TSP-3	1096	0.93	0.0411	69
	STATION 29	TSP-8	1208	0.85	0.0116	20
	STATION 30	TSP-1	1140	0.77	0.014	24
	STATION 31	TSP-16	1114	0.77	0.0189	32
19-Sep-06						
	STATION 1C	TSP-12	1394	0.98	0.0882	UPWIND
	STATION 14	TSP-11	1329	0.96	0.0105 J	7
	STATION 14	TSP-5	1315	0.95	0.0259 J	18
	STATION 22B	TSP-9	1063	0.74	0.079	54
	STATION 23	TSP-3	1300	0.9	0.0685	47
	STATION 29	TSP-8	1150	0.78	0.0435	30
	STATION 30	TSP-1	1184	0.85	0.0211	14
	STATION 31	TSP-16	1207	0.84	0.0331	22
20-Sep-06						
	STATION 1C	TSP-12	1246	0.87	0.0257	UPWIND
	STATION 14	TSP-11	1384	0.95	0.0202	47
	STATION 14	TSP-5	1383	0.95	0.0145	34
	STATION 22B	TSP-9	1100	0.77	0.0582	136
	STATION 23	TSP-3	1144	0.8	0.0149	35
	STATION 29	TSP-8	1227	0.83	0.0171	40
	STATION 30	TSP-1	1288	0.89	0.0093	22
	STATION 31	TSP-16	1268	0.88	0.0386	90

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
21-Sep-06						
	STATION 1C	TSP-12	1142	0.79	0.0403	94
	STATION 14	TSP-11	1413	0.99	0.0354	83
	STATION 14	TSP-11	1341	0.94	0.038	89
	STATION 22B	TSP-9	1108	0.79	0.0.97	93
	STATION 23	TSP-3	1055	0.75	0.0237	55
	STATION 29	TSP-8	1134	0.79	0.0256	UPWIND
	STATION 30	TSP-1	1181	0.84	0.0415	97
	STATION 31	TSP-16	1224	0.84	0.0449	105 (4)
25-Sep-06						
	STATION 1C	TSP-12	1116	0.78	0.1057	144 (4)
	STATION 14	TSP-11	1381	0.97	0.0268	37
	STATION 14	TSP-11	1266	0.89	0.034	46
	STATION 22B	TSP-9	1087	0.77	0.0736	100
	STATION 23	TSP-3	930	0.68	0.0301	41
	STATION 29	TSP-8	1117	0.78	0.0439	UPWIND
	STATION 30	TSP-1	1319	0.93	0.0258	35
	STATION 31	TSP-16	1279	0.91	0.0461	63
26-Sep-06						
	STATION 1C	TSP-12	1157	0.81	0.083	72
	STATION 14	TSP-11	1386	0.98	0.0339	30
	STATION 14	TSP-5	1276	0.9	0.0392	34
	STATION 22B	TSP-9	1178	0.83	0.0688	UPWIND
	STATION 23	TSP-3	964	0.69	0.0207	18
	STATION 29	TSP-8	1172	0.82	0.0427	37
	STATION 30	TSP-1	1298	0.92	0.0401	35
	STATION 31	TSP-16	1198	0.84	0.0409	36
27-Sep-06						
	STATION 1C	TSP-12	1274	0.89	0.062	39
	STATION 14	TSP-11	1436	1	0.0404	26
	STATION 14	TSP-5	1334	0.93	0.048	31
	STATION 22B	TSP-9	1178	0.82	0.0942	UPWIND
	STATION 23	TSP-3	1033	0.73	0.0339	22
	STATION 29	TSP-8	1202	0.83	0.0632	40
	STATION 30	TSP-1	1286	0.91	0.0435	28
	STATION 31	TSP-16	1278	0.89	0.0266	17
28-Sep-06						
	STATION 1C	TSP-12	1451	0.97	0.0296	73
	STATION 14	TSP-11	1516	1.01	0.0178	UPWIND
	STATION 14	TSP-5	1364	0.91	0.0242	UPWIND
	STATION 22B	TSP-9	1227	0.83	0.0823	204 (4)
	STATION 23	TSP-3	1047	0.7	0.0334	83
	STATION 29	TSP-8	1189	0.81	0.0177	44
	STATION 30	TSP-1	1399	0.94	0.0129	32
	STATION 31	TSP-16	1305	0.87	0.0322	80
29-Sep-06						
	STATION 1C	TSP-12	959	0.68	0.0719	91
	STATION 14	TSP-11	1404	0.99	0.0264	33
	STATION 14	TSP-5	1318	0.93	0.0288	36
	STATION 22B	TSP-9	1199	0.85	0.0475	UPWIND
	STATION 23	TSP-3	918	0.66	0.0251	32
	STATION 29	TSP-8	1232	0.86	0.0325	41
	STATION 30	TSP-1	1323	0.94	0.0325	41
	STATION 31	TSP-16	1171	0.84	0.029	37
30-Sep-06						
	STATION 1C	TSP-12	1614	1.02	0.0316	39
	STATION 14	TSP-11	1569	0.98	0.0312	39
	STATION 14	TSP-5	1539	0.96	0.0221	27
	STATION 22B	TSP-9	1345	0.83	0.0483	UPWIND
	STATION 23	TSP-3	1095	0.7	0.032	40
	STATION 29	TSP-8	1343	0.81	0.0454	56
	STATION 30	TSP-1	1486	0.93	0.033	41
	STATION 31	TSP-16	1444	0.9	0.0263	33

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
02-Oct-06						
	STATION 1C	TSP-12	1380	0.91	0.058	51
	STATION 14	TSP-11	1193	0.85	0.0427	38
	STATION 14	TSP-5	1390	0.99	0.046	41
	STATION 22B	TSP-9	1183	0.79	0.0676	UPWIND
	STATION 23	TSP-3	1407	0.98	0.0327	29
	STATION 29	TSP-8	1206	0.8	0.0539	48
	STATION 30	TSP-1	1176	0.85	0.0655	58
	STATION 31	TSP-16	1258	0.84	0.0437	39
04-Oct-06						
	STATION 1C	TSP-12	1257	0.89	0.0811	51
	STATION 14	TSP-11	1275	0.91	0.0541	34
	STATION 14	TSP-5	1344	0.96	0.0506	32
	STATION 22B	TSP-9	1167	0.82	0.096	UPWIND
	STATION 23	TSP-3	1144	0.82	0.0682	43
	STATION 29	TSP-8	1130	0.79	0.0912	57
	STATION 30	TSP-1	1179	0.84	0.056	35
	STATION 31	TSP-16	1177	0.83	0.0527	33
05-Oct-06						
	STATION 1C	TSP-12	1238	0.9	0.0147	40
	STATION 14	TSP-11	1579	1.06	0.0266	UPWIND
	STATION 14	TSP-5	1561	1.05	0.0218	UPWIND
	STATION 22B	TSP-9	1238	0.85	0.0759	208 [(4)]
	STATION 23	TSP-3	1451	1.01	0.0262	72
	STATION 29	TSP-8	1452	0.97	0.0145	40
	STATION 30	TSP-1	1405	0.96	0.0128	35
	STATION 31	TSP-16	1375	0.95	0.0182	50
06-Oct-06						
	STATION 1C	TSP-12	1075	0.76	0.0372	72
	STATION 14	TSP-11	1499	1.1	0.02	UPWIND
	STATION 14	TSP-5	1361	1	0.0309	UPWIND
	STATION 22B	TSP-9	1837	1.33	0.0523	101 [(4)]
	STATION 23	TSP-3	1328	0.98	0.0392	76
	STATION 29	TSP-8	1144	0.82	0.035	68
	STATION 30	TSP-1	1189	0.88	0.0219	42
	STATION 31	TSP-16	1304	0.93	0.0299	58
07-Oct-06						
	STATION 1C	TSP-12	1377	0.78	0.0414	71
	STATION 14	TSP-11	1819	1.02	0.0231	UPWIND
	STATION 14	TSP-5	1748	1.01	0.0349	UPWIND
	STATION 22B	TSP-9	2279	1.31	0.0351	60
	STATION 23	TSP-3	1640	0.95	0.0402	69
	STATION 29	TSP-8	1483	0.84	0.0243	42
	STATION 30	TSP-1	1559	0.9	0.0276	47
	STATION 31	TSP-16	1595	0.91	0.0401	69
09-Oct-06						
	STATION 1C	TSP-12	967	0.68	0.1148	142 [(4)]
	STATION 14	TSP-11	1373	0.94	0.0393	UPWIND
	STATION 14	TSP-5	1405	0.96	0.0484	UPWIND
	STATION 22B	TSP-9	1777	1.23	0.0557	69
	STATION 23	TSP-3	1312	0.92	0.0488	60
	STATION 29	TSP-8	1200	0.82	0.04	49
	STATION 30	TSP-1	1122	0.78	0.0597	74
	STATION 31	TSP-16	1191	0.83	0.0915	113 [(4)]

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
10-Oct-06						
	STATION 1C	TSP-12	1157	0.79	0.1288	123 [4]
	STATION 14	TSP-11	1476	0.99	0.0562	54
	STATION 14	TSP-5	1490	1	0.0611	58
	STATION 22B	TSP-9	1901	1.28	0.0626	UPWIND
	STATION 23	TSP-3	1367	0.94	0.0649	53
	STATION 29	TSP-8	1221	0.81	0.0647	62
	STATION 30	TSP-1	1207	0.82	0.0953	91
	STATION 31	TSP-16	1217	0.82	0.1487	142 [4]
11-Oct-06						
	STATION 1C	TSP-12	2573	1.82	0.0163	32
	STATION 14	TSP-11	1373	0.95	0.016	32
	STATION 14	TSP-5	1417	0.98	0.0289	57
	STATION 22B	TSP-9	1858	1.3	0.0301	UPWIND
	STATION 23	TSP-3	1447	0.99	0.0415	83
	STATION 29	TSP-8	1213	0.83	0.0528	105 [6]
	STATION 30	TSP-1	1219	0.85	0.0328	65
	STATION 31	TSP-16	1221	0.84	0.0262	52
12-Oct-06						
	STATION 1C	TSP-12	1100	0.79	0.0855	122 [4]
	STATION 14	TSP-11	1114	0.76	0.0377	54
	STATION 14	TSP-5	1378	0.94	0.0377	54
	STATION 22B	TSP-9	1914	1.33	0.0418	UPWIND
	STATION 23	TSP-3	1420	1.02	0.0444	64
	STATION 29	TSP-8	1240	0.85	0.0597	86
	STATION 30	TSP-1	1281	0.88	0.0414	59
	STATION 31	TSP-16	1341	0.95	0.035	50
13-Oct-06						
	STATION 1C	TSP-12	1155	0.81	0.0788	106 [4]
	STATION 14	TSP-11	1129	0.76	0.0523	70
	STATION 14	TSP-5	1381	0.93	0.0319	43
	STATION 22B	TSP-9	1967	1.34	0.0447	UPWIND
	STATION 23	TSP-3	1655	1.15	0.035	47
	STATION 29	TSP-8	1365	0.91	0.637	85
	STATION 30	TSP-1	1285	0.88	0.0475	64
	STATION 31	TSP-16	1311	0.91	0.0397	53
14-Oct-06						
	STATION 1C	TSP-12	1000	0.69	0.085	99
	STATION 14	TSP-11	1066	0.77	0.0432	50
	STATION 14	TSP-5	1313	0.95	0.016	19
	STATION 22B	TSP-9	1223	0.85	0.0515	UPWIND
	STATION 23	TSP-3	1417	1.01	0.055	64
	STATION 30	TSP-1	1227	0.89	0.0367	43
	STATION 31	TSP-16	2091	1.46	0.0225	26
16-Oct-06						
	STATION 1C	TSP-12	997	0.69	0.0221	95
	STATION 14	TSP-11	988	0.67	0.0152	65
	STATION 14	TSP-5	1327	0.9	0.0151	65
	STATION 22B	TSP-9	1190	0.81	0.0202	87
	STATION 23	TSP-3	1576	1.08	0.0197	85
	STATION 29	TSP-8	1083	0.81	0.0139	UPWIND
	STATION 30	TSP-1	1212	0.81	0.019	82
	STATION 31	TSP-16	2019	1.38	0.0139	60
17-Oct-06						
	STATION 1C	TSP-12	1024	0.73	0.0283	35
	STATION 14	TSP-11	892	0.65	0.0314	39
	STATION 14	TSP-5	1276	0.93	0.0157	19
	STATION 22B	TSP-9	1179	0.82	0.0483	UPWIND
	STATION 23	TSP-3	1529	1.07	0.0281	35
	STATION 29	TSP-8	1178	0.82	0.0314	39
	STATION 30	TSP-1	1201	0.84	0.0241	30
	STATION 31	TSP-16	1890	1.32	0.0159	20

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
18-Oct-06						
	STATION 1C	TSP-12	1442	0.99	0.0347	71
	STATION 14	TSP-11	999	0.68	0.043	88
	STATION 14	TSP-5	1325	0.9	0.0506	103 (9)
	STATION 22B	TSP-9	1224	0.83	0.0539	110 (4)
	STATION 23	TSP-3	1255	0.87	0.0478	98
	STATION 29	TSP-8	1299	0.88	0.0293	UPWIND
	STATION 30	TSP-1	1225	0.84	0.0245	50
	STATION 31	TSP-16	2007	1.36	0.0284	58
19-Oct-06						
	STATION 1C	TSP-12	1276	0.91	0.0133	UPWIND
	STATION 14	TSP-11	1081	0.76	0.013	59
	STATION 14	TSP-5	1306	0.92	0.0107	48
	STATION 22B	TSP-9	1234	0.87	0.0308	139 (4)
	STATION 23	TSP-3	1257	0.9	0.0772	348 (2)
	STATION 29	TSP-8	1164	0.82	0.0189	85
	STATION 30	TSP-1	1220	0.88	0.0066	30
	STATION 31	TSP-16	1922	1.39	0.013	59
20-Oct-06						
	STATION 1C	TSP-12	1523	1.03	0.0525	95
	STATION 14	TSP-11	1051	0.69	0.0533	96
	STATION 14	TSP-5	1449	0.95	0.0317	57
	STATION 22B	TSP-9	1260	0.86	0.0548	99
	STATION 23	TSP-3	1670	1.12	0.0347	63
	STATION 29	TSP-8	1268	0.84	0.0331	UPWIND
	STATION 30	TSP-1	1496	0.94	0.0154	28
	STATION 31	TSP-16	2081	1.43	0.0226	41
21-Oct-06						
	STATION 1C	TSP-12	1648	1.02	0.0231	60
	STATION 14	TSP-11	1074	0.69	0.0419	109 (9)
	STATION 14	TSP-5	1461	0.94	0.0226	59
	STATION 22B	TSP-9	1308	0.82	0.026	67
	STATION 23	TSP-3	1457	0.95	0.0213	55
	STATION 29	TSP-8	1300	0.83	0.0231	UPWIND
	STATION 30	TSP-1	1310	0.89	0.0153	10
	STATION 31	TSP-16	637	0.4	0.0581	151 (4)
23-Oct-06						
	STATION 1C	TSP-12	1347	0.94	0.0505	UPWIND
	STATION 14	TSP-11	1032	0.7	0.0281	33
	STATION 14	TSP-5	1358	0.92	0.0258	31
	STATION 22B	TSP-9	1944	1.34	0.0448	53
	STATION 23	TSP-3	1329	0.92	0.0813	96
	STATION 29	TSP-8	1293	0.88	0.0526	62
	STATION 30	TSP-1	1230	0.84	0.0244	29
	STATION 31	TSP-16	2029	1.41	0.0217	26
24-Oct-06						
	STATION 1C	TSP-12	1504	1.07	0.0485	UPWIND
	STATION 14	TSP-11	1121	0.78	0.0473	58
	STATION 14	TSP-5	1322	0.92	0.0439	54
	STATION 22B	TSP-9	1963	1.37	0.0438	54
	STATION 23	TSP-3	1308	0.93	0.0497	61
	STATION 29	TSP-8	1294	0.9	0.0325	40
	STATION 30	TSP-1	1252	0.88	0.0184	23
	STATION 31	TSP-16	1997	1.41	0.031	38

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
25-Oct-06						
	STATION 1C	TSP-12	1589	1.08	0.056	158 (4)
	STATION 14	TSP-11	826	0.72	0.0593	167 (9)
	STATION 14	TSP-5	1359	0.93	0.0589	166 (9)
	STATION 22B	TSP-9	1979	1.32	0.0273	77
	STATION 23	TSP-3	1344	0.93	0.0417	118 (2)
	STATION 29	TSP-8	1275	0.87	0.0212	UPWIND
	STATION 30	TSP-1	1297	0.91	0.037	105 (7)
	STATION 31	TSP-16	1229	0.85	0.0773	218 (4)
26-Oct-06						
	STATION 1C	TSP-12	1235	0.88	0.0162	46
	STATION 14	TSP-11	1029	0.71	0.0175	50
	STATION 14	TSP-5	1364	0.94	0.0177	34
	STATION 22B	TSP-9	1890	1.35	0.0111	32
	STATION 23	TSP-3	1293	0.92	0.0209	UPWIND
	STATION 29	TSP-8	1316	0.91	0.0129	37
	STATION 30	TSP-1	1157	0.79	0.0121	35
	STATION 31	TSP-16	1179	0.83	0.0399	114 (4)
27-Oct-06						
	STATION 1C	TSP-12	1556	1.08	*	*
	STATION 22B	TSP-9	1870	1.29	0.0176	77
	STATION 23	TSP-3	1365	0.93	0.0418	183 (2)
	STATION 29	TSP-8	1089	0.73	0.0064	28
	STATION 30	TSP-1	1166	0.77	0.0137	UPWIND
	STATION 31	TSP-16	1195	0.82	0.0502	219 (4)
28-Oct-06						
	STATION 1C	TSP-12	981	0.66	0.0683	124 (4)
	STATION 14	TSP-11	841	0.6	0.0309	56
	STATION 14	TSP-5	1301	0.93	0.0085	15
	STATION 22B	TSP-9	1211	0.82	0.033	UPWIND
	STATION 23	TSP-3	1309	0.91	0.0474	86
	STATION 29	TSP-8	1124	0.76	0.0383	69
	STATION 30	TSP-1	1119	0.81	0.0223	40
	STATION 31	TSP-16	1204	0.81	0.0249	45
30-Oct-06						
	STATION 1C	TSP-12	794	0.56	0.1096	194 (4)
	STATION 14	TSP-11	900	0.62	0.0833	148 (9)
	STATION 14	TSP-5	1262	0.87	0.0507	90
	STATION 22B	TSP-9	1153	0.81	0.0338	UPWIND
	STATION 23	TSP-3	6	*	*	*
	STATION 29	TSP-8	1040	0.71	0.0654	116 (6)
	STATION 30	TSP-1	860	0.71	0.1419	251 (7)
	STATION 31	TSP-16	1216	0.86	0.0452	80
31-Oct-06						
	STATION 1C	TSP-12	985	0.69	0.0538	122 (4)
	STATION 14	TSP-11	870	0.73	0.0264	UPWIND
	STATION 14	TSP-5	1097	0.92	*	UPWIND
	STATION 22B	TSP-9	1227	0.85	0.0424	96
	STATION 23	TSP-3	15	*	*	*
	STATION 29	TSP-8	1137	0.77	0.0255	58
	STATION 30	TSP-1	0	*	*	*
	STATION 31	TSP-16	1192	0.83	0.0445	101 (4)
01-Nov-06						
	STATION 1C	TSP-12	1048	0.72	0.0821	UPWIND
	STATION 14	TSP-11	1094	0.76	0.0201	15
	STATION 14	TSP-5	1351	0.94	0.0355	26
	STATION 22B	TSP-9	1214	0.84	0.0857	63
	STATION 23	TSP-3	4	*	*	*
	STATION 29	TSP-8	1196	0.82	0.0192	14
	STATION 30	TSP-1	0	*	*	*
	STATION 31	TSP-16	1293	0.9	0.0565	41

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
02-Nov-06						
	STATION 1C	TSP-12	1089	0.77	0.0716	58
	STATION 14	TSP-11	1154	0.8	0.0485	40
	STATION 14	TSP-5	1410	0.98	0.0142	12
	STATION 22B	TSP-9	1210	0.85	0.0983	80
	STATION 23	TSP-3	11	*	*	*
	STATION 29	TSP-8	1129	0.78	0.0735	UPWIND
	STATION 30	TSP-1	0	*	*	*
	STATION 31	TSP-16	1352	0.95	0.0422	34
03-Nov-06						
	STATION 1C	TSP-12	1072	0.73	0.1054	146 (4)
	STATION 14	TSP-11	669	*	*	*
	STATION 14	TSP-5	868	*	*	*
	STATION 22B	TSP-9	1297	0.85	0.0933	130 (4)
	STATION 23	TSP-3	33	*	*	*
	STATION 29	TSP-8	1299	0.84	0.0431	UPWIND
	STATION 30	TSP-1	0	*	*	*
	STATION 31	TSP-16	1342	0.91	0.0544	76
04-Nov-06						
	STATION 1C	TSP-12	1196	0.73	0.0385	56
	STATION 14	TSP-11	1013	0.73	0.0602	88
	STATION 14	TSP-5	1536	0.99	0.0475	69
	STATION 22B	TSP-9	1347	0.84	0.046	67
	STATION 23	TSP-3	1468	1.09	0.0334	49
	STATION 29	TSP-8	1267	0.78	0.041	UPWIND
	STATION 30	TSP-1	0	*	*	*
	STATION 31	TSP-16	1429	0.89	0.0301	44
06-Nov-06						
	STATION 1C	TSP-12	1034	0.76	0.028	35
	STATION 14	TSP-11	449	0.3	0.0735	92
	STATION 14	TSP-5	1301	0.87	0.0323	40
	STATION 22B	TSP-9	953	0.7	0.0325	40
	STATION 23	TSP-3	1296	0.97	0.027	34
	STATION 29	TSP-8	1122	0.82	0.0481	UPWIND
	STATION 30	TSP-1	1	*	*	*
	STATION 31	TSP-16	1111	0.81	0.063	78
07-Nov-06						
	STATION 1C	TSP-12	884	0.62	0.0192	79
	STATION 14	TSP-11	323	0.22	0.031	UPWIND
	STATION 14	TSP-5	1378	0.94	0.0145	UPWIND
	STATION 22B	TSP-9	1221	0.84	0.0156	64
	STATION 23	TSP-3	1434	0.99	0.0502	207 (2)
	STATION 29	TSP-8	1267	0.86	0.0237	98
	STATION 30	TSP-1	30	*	*	*
	STATION 31	TSP-16	1123	0.79	0.0169	70
08-Nov-06						
	STATION 1C	TSP-12	1007	0.71	0.0536	24
	STATION 14	TSP-11	327	0.24	0.1193	54
	STATION 14	TSP-5	1239	0.91	0.0484	22
	STATION 22B	TSP-9	1179	0.8	0.1332	UPWIND
	STATION 23	TSP-3	1414	0.98	0.0474	21
	STATION 29	TSP-8	1295	0.86	0.0595	27
	STATION 30	TSP-1	2	*	*	*
	STATION 31	TSP-16	604	0.39	0.1026	46
09-Nov-06						
	STATION 1C	TSP-12	877	0.61	0.2178	84
	STATION 14	TSP-11	321	0.21	0.2181	84
	STATION 14	TSP-5	1416	0.93	0.077	30
	STATION 22B	TSP-9	931	0.66	0.1547	UPWIND
	STATION 23	TSP-3	1366	0.98	0.0454	18
	STATION 29	TSP-8	1195	0.83	0.0728	28
	STATION 30	TSP-1	779	0.65	0.086	33
	STATION 31	TSP-16	1054	0.78	0.0806	31

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
10-Nov-06						
	STATION 1C	TSP-12	1234	0.88	0.0632	65
	STATION 14	TSP-11	511	0.35	0.0294	30
	STATION 14	TSP-5	1340	0.92	0.0396	41
	STATION 22B	TSP-9	1104	0.77	0.058	UPWIND
	STATION 23	TSP-3	1188	0.84	0.021	22
	STATION 29	TSP-8	1253	0.86	0.0519	54
	STATION 30	TSP-1	1157	0.76	0.0458	47
	STATION 31	TSP-16	1127	0.79	0.0417	43
11-Nov-06						
	STATION 1C	TSP-12	1068	0.68	0.0225	UPWIND
	STATION 14	TSP-11	430	0.27	0.0326	87
	STATION 14	TSP-5	1543	0.97	0.0175	47
	STATION 22B	TSP-9	1243	0.78	0.0306	81
	STATION 23	TSP-3	1471	0.94	0.07	186 [2]
	STATION 29	TSP-8	1417	0.87	0.0141	38
	STATION 30	TSP-1	1408	0.87	0.0107	28
	STATION 31	TSP-16	1267	0.83	0.0213	57
12-Nov-06						
	STATION 1C	TSP-12	1143	0.9	0.0131	36
	STATION 14	TSP-11	614	0.47	0.0212	59
	STATION 14	TSP-5	1343	1.03	0.0067	19
	STATION 22B	TSP-9	1029	0.79	0.0301	83
	STATION 23	TSP-3	1342	1.05	0.0216	UPWIND
	STATION 29	TSP-8	1532	1.15	0.0137	38
	STATION 30	TSP-1	949	0.84	0.0169	47
	STATION 31	TSP-16	1149	0.88	0.0235	65
13-Nov-06						
	STATION 1C	TSP-12	922	0.64	0.0564	114 [4]
	STATION 14	TSP-11	421	0.29	0.0926	187 [9]
	STATION 14	TSP-5	1191	0.82	0.0285	57
	STATION 22B	TSP-9	1146	0.79	0.0672	135 [4]
	STATION 23	TSP-3	1355	0.95	0.0266	54
	STATION 29	TSP-8	1380	0.93	0.0297	UPWIND
	STATION 30	TSP-1	1241	0.84	0.0363	73
	STATION 31	TSP-16	1313	0.91	0.0213	43
14-Nov-06						
	STATION 1C	TSP-12	946	0.65	0.0349	71
	STATION 14	TSP-11	749	0.51	0.0401	82
	STATION 14	TSP-5	1396	0.95	0.0279	57
	STATION 22B	TSP-9	1141	0.79	0.028	57
	STATION 23	TSP-3	1327	0.92	0.0294	UPWIND
	STATION 29	TSP-8	1302	0.89	0.0177	36
	STATION 30	TSP-1	1193	0.81	0.031	63
	STATION 31	TSP-16	1153	0.8	0.0399	81
15-Nov-06						
	STATION 1C	TSP-12	901	0.64	0.0078	23
	STATION 14	TSP-11	584	0.42	0.0325	UPWIND
	STATION 14	TSP-5	1305	0.94	0.0199	UPWIND
	STATION 22B	TSP-9	863	0.61	0.0394	119 [4]
	STATION 23	TSP-3	1237	0.88	0.021	63
	STATION 29	TSP-8	1317	0.91	0.0068	20
	STATION 30	TSP-1	1013	0.7	0.0118	36
	STATION 31	TSP-16	1077	0.76	0.013	39

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
17-Nov-06						
	STATION 1C	TSP-12	1055	0.68	0.0626	65
	STATION 14	TSP-11	665	0.47	0.0391	40
	STATION 14	TSP-5	1198	0.85	0.0401	41
	STATION 22B	TSP-9	1223	0.79	0.0581	UPWIND
	STATION 23	TSP-3	1259	0.89	0.0381	39
	STATION 29	TSP-8	1389	0.92	0.0374	39
	STATION 30	TSP-1	694	0.47	0.0029	3
	STATION 31	TSP-16	1297	0.86	0.0463	48
18-Nov-06						
	STATION 1C	TSP-12	1248	0.8	0.0304	UPWIND
	STATION 14	TSP-11	866	0.5	0.0381	75
	STATION 14	TSP-5	1663	0.96	0.0294	58
	STATION 22B	TSP-9	1324	0.84	0.0559	110 [4]
	STATION 23	TSP-3	1364	0.81	0.1048	206 [2]
	STATION 29	TSP-8	1615	0.96	0.0415	82
	STATION 30	TSP-1	1448	0.83	ND	0
	STATION 31	TSP-16	1386	0.86	0	74
19-Nov-06						
	STATION 1C	TSP-12	852	0.73	0.0129	UPWIND
	STATION 14	TSP-11	567	0.48	0.0053	25
	STATION 14	TSP-5	1144	0.97	0.0131	61
	STATION 22B	TSP-9	998	0.85	0.0331	154 [4]
	STATION 23	TSP-3	1027	0.88	0.0721	335 [2]
	STATION 29	TSP-8	1340	1.12	0.0067	31
	STATION 30	TSP-1	955	0.79	ND	0
	STATION 31	TSP-16	998	0.85	0.009	42
20-Nov-06						
	STATION 1C	TSP-12	1116	0.74	0.0753	112 [4]
	STATION 14	TSP-11	719	0.51	0.0445	UPWIND
	STATION 14	TSP-5	1420	1.01	0.0401	UPWIND
	STATION 22B	TSP-9	1517	1	0.0659	98
	STATION 23	TSP-3	1263	0.92	0.0428	64
	STATION 29	TSP-8	1806	1.17	0.0227	34
	STATION 30	TSP-1	1201	0.84	0.0183	27
	STATION 31	TSP-16	1288	0.85	0.0497	74
21-Nov-06						
	STATION 1C	TSP-12	818	0.61	0.0795	203 [4]
	STATION 14	TSP-11	827	0.56	0.029	74
	STATION 14	TSP-5	1492	1.01	0.0328	84
	STATION 22B	TSP-9	1358	1.02	0.0449	115 [4]
	STATION 23	TSP-3	1368	0.92	0.0329	84
	STATION 29	TSP-8	1624	1.2	0.0234	UPWIND
	STATION 30	TSP-1	1261	0.84	0.023	59
	STATION 31	TSP-16	1191	0.89	0.0277	71
27-Nov-06						
	STATION 1C	TSP-12	1122	0.81	0.0588	40
	STATION 14	TSP-11	632	0.45	0.0601	41
	STATION 14	TSP-5	1291	0.92	0.0356	24
	STATION 22B	TSP-9	1201	0.86	0.0883	UPWIND
	STATION 23	TSP-3	1125	0.83	0.032	22
	STATION 29	TSP-8	1313	0.92	0.0579	39
	STATION 30	TSP-1	1180	0.82	0.0297	20
	STATION 31	TSP-16	1166	0.84	0.048	33

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
28-Nov-06						
	STATION 1C	TSP-12	867	0.61	0.0657	57
	STATION 14	TSP-11	610	0.43	0.0656	57
	STATION 14	TSP-5	1344	0.95	0.558	49
	STATION 22B	TSP-9	1281	0.9	0.0687	UPWIND
	STATION 23	TSP-3	1376	0.92	0.048	42
	STATION 29	TSP-8	1425	0.98	0.0604	53
	STATION 30	TSP-1	1162	0.8	0.0532	46
	STATION 31	TSP-16	1096	0.77	0.0721	63
29-Nov-06						
	STATION 1C	TSP-12	1157	0.8	0.0441	73
	STATION 14	TSP-11	558	0.38	0.0394	65
	STATION 14	TSP-5	1336	0.91	0.0337	56
	STATION 22B	TSP-9	1679	1.16	0.0363	UPWIND
	STATION 23	TSP-3	1177	0.89	0.0263	43
	STATION 29	TSP-8	1441	0.97	0.0354	58
	STATION 30	TSP-1	1211	0.81	0.0124	20
	STATION 31	TSP-16	1132	0.78	0.0451	74
30-Nov-06						
	STATION 1C	TSP-12	118	0.79	0.0009	3
	STATION 14	TSP-11	676	0.48	0.0074	UPWIND
	STATION 14	TSP-5	1352	0.96	0.017	UPWIND
	STATION 22B	TSP-9	1338	0.95	0.0254	89
	STATION 23	TSP-3	1272	0.94	0.0179	61
	STATION 29	TSP-8	1430	0.99	0.0063	22
	STATION 30	TSP-1	1179	0.82	0.0042	15
	STATION 31	TSP-16	1203	0.85	0.0333	117 (4)
04-Dec-06						
	STATION 1C	TSP-12	1203	0.88	0.0466	72
	STATION 14	TSP-11	657	0.54	0.0244	38
	STATION 14	TSP-5	1156	0.95	0.032	49
	STATION 22B	TSP-9	1517	1.28	0.0389	UPWIND
	STATION 23	TSP-3	1146	0.96	0.0314	48
	STATION 29	TSP-8	1442	1.08	0.0437	67
	STATION 30	TSP-1	1043	0.84	0.0374	58
	STATION 31	TSP-16	1181	0.87	ND	0
05-Dec-06						
	STATION 1C	TSP-12	1275	0.89	0.0588	106 (4)
	STATION 14	TSP-11	794	0.55	0.0302	55
	STATION 14	TSP-5	1412	0.98	0.0432	78
	STATION 22B	TSP-9	1844	1.28	0.0331	UPWIND
	STATION 23	TSP-3	1407	0.98	0.0419	76
	STATION 29	TSP-8	1709	1.18	0.0878	159 (6)
	STATION 30	TSP-1	1226	0.84	0.0065	12
	STATION 31	TSP-16	1	*	*	*
06-Dec-06						
	STATION 1C	TSP-12	1218	0.85	0.0911	127 (4)
	STATION 14	TSP-11	768	0.54	0.0221	31
	STATION 14	TSP-5	1395	0.98	0.0301	42
	STATION 22B	TSP-9	1669	1.16	0.0431	UPWIND
	STATION 23	TSP-3	1361	0.97	0.0149	58
	STATION 29	TSP-8	1548	1.06	0.0885	123 (6)
	STATION 30	TSP-1	1731	1.19	0.0243	34
	STATION 31	TSP-16	1063	0.74	0.0198	28

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
07-Dec-06						
	STATION 1C	TSP-12	1163	0.81	0.0258	UPWIND
	STATION 14	TSP-11	985	0.68	0.0142	33
	STATION 14	TSP-5	1462	1.01	0.0144	33
	STATION 22B	TSP-9	1903	1.32	0.031	72
	STATION 23	TSP-3	1370	1	0.0336	78
	STATION 29	TSP-8	1583	1.09	0.0815	189
	STATION 30	TSP-1	1844	1.25	0.0452	35
	STATION 31	TSP-16	1252	0.87	0.0168	39
11-Dec-06						
	STATION 1C	TSP-12	1078	0.77	0.0566	73
	STATION 14	TSP-11	784	0.57	0.0408	52
	STATION 14	TSP-5	1291	0.94	0.0318	41
	STATION 22B	TSP-9	1687	1.2	0.0279	6
	STATION 23	TSP-3	1258	0.95	0.0374	48
	STATION 29	TSP-8	1481	1.04	0.0466	UPWIND
	STATION 30	TSP-1	1553	1.13	0.0322	41
	STATION 31	TSP-16	1035	0.74	0.0261	34
13-Dec-06						
	STATION 1C	TSP-12	1576	1.1	0.0393	32
	STATION 14	TSP-11	1015	0.71	0.0217	18
	STATION 14	TSP-5	1358	0.95	0.0162	13
	STATION 22B	TSP-9	1053	0.73	0.0731	UPWIND
	STATION 23	TSP-3	8	*	*	*
	STATION 29	TSP-8	1800	1.22	0.0344	28
	STATION 30	TSP-1	1732	1.17	0.0242	20
	STATION 31	TSP-16	542	0.38	0.0775	63
14-Dec-06						
	STATION 1C	TSP-12	962	0.67	0.0738	91
	STATION 14	TSP-11	769	0.52	0.026	32
	STATION 14	TSP-5	1418	0.96	0.0162	20
	STATION 22B	TSP-9	1768	1.21	0.0486	UPWIND
	STATION 23	TSP-3	1364	0.94	0.0279	34
	STATION 29	TSP-8	1576	1.05	0.0438	54
	STATION 30	TSP-1	1742	1.15	0.0218	27
	STATION 31	TSP-16	1004	0.68	0.0508	63
15-Dec-06						
	STATION 1C	TSP-12	1138	0.8	0.1459	520 [4]
	STATION 14	TSP-11	785	0.55	0.0191	68
	STATION 14	TSP-5	1355	0.95	0.0185	66
	STATION 22B	TSP-9	1560	1.1	0.0365	130 [10]
	STATION 23	TSP-3	1355	0.96	0.0185	66
	STATION 29	TSP-8	1632	1.12	0.0263	94
	STATION 30	TSP-1	976	*	*	*
	STATION 31	TSP-16	1010	0.71	0.0168	UPWIND
16-Dec-06						
	STATION 1C	TSP-12	1324	0.79	0.0793	202 [4]
	STATION 14	TSP-11	1040	0.63	0.0154	39
	STATION 14	TSP-5	1583	96	0.0202	51
	STATION 22B	TSP-9	2082	1.25	0.0235	UPWIND
	STATION 23	TSP-3	1577	0.96	0.026	66
	STATION 29	TSP-8	1838	1.08	0.0511	130 [6]
	STATION 30	TSP-1	0	*	*	*
	STATION 31	TSP-16	1204	0.72	0.0291	74

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
18-Dec-06						
	STATION 1C	TSP-12	1084	0.81	0.1734	237 [4]
	STATION 14	TSP-11	646	0.54	0.0557	UPWIND
	STATION 14	TSP-5	1207	1.01	0.0439	UPWIND
	STATION 22B	TSP-9	1454	1.06	0.0715	98
	STATION 23	TSP-3	1419	1.05	0.0451	62
	STATION 29	TSP-8	1510	1.08	0.0364	50
	STATION 30	TSP-1	1316	1.19	0.0182	25
	STATION 31	TSP-16	873	0.64	0.0641	87
19-Dec-06						
	STATION 1C	TSP-12	1176	0.82	0.1769	196 [4]
	STATION 14	TSP-11	720	0.52	0.0708	UPWIND
	STATION 14	TSP-5	1423	1.03	0.0541	UPWIND
	STATION 22B	TSP-9	1693	1.19	0.0526	58
	STATION 23	TSP-3	1492	1.04	0.0442	49
	STATION 29	TSP-8	1598	1.1	0.0394	44
	STATION 30	TSP-1	1804	1.23	0.0227	25
	STATION 31	TSP-16	1232	0.86	0.0584	65
20-Dec-06						
	STATION 1C	TSP-12	1232	0.83	0.043	99
	STATION 14	TSP-11	657	0.45	0.0472	109 [9]
	STATION 14	TSP-5	1459	1	0.0336	77
	STATION 22B	TSP-9	1315	0.9	0.0221	51
	STATION 23	TSP-3	1462	1.01	0.026	UPWIND
	STATION 29	TSP-8	1649	1.11	0.0243	56
	STATION 30	TSP-1	1817	1.21	0.0143	33
	STATION 31	TSP-16	1220	0.83	0.0279	64
02-Jan-07						
	STATION 1C	TSP-12	1202	0.85	0.0824	78
	STATION 14	TSP-11	657	0.48	0.0518	49
	STATION 14	TSP-5	1384	1.01	0.039	37
	STATION 22B	TSP-9	1074	0.76	0.0633	UPWIND
	STATION 23	TSP-3	1454	1.06	0.0309	29
	STATION 29	TSP-8	1385	0.97	0.031	29
	STATION 30	TSP-1	1350	0.96	0.0274	26
	STATION 31	TSP-16	1197	0.85	0.0317	30
03-Jan-07						
	STATION 1C	TSP-12	1309	0.87	0.0733	44
	STATION 14	TSP-11	627	0.66	0.043	26
	STATION 14	TSP-5	1411	0.94	0.0336	20
	STATION 22B	TSP-9	0	0.64	0.0988	UPWIND
	STATION 23	TSP-3	1406	1.14	0.031	19
	STATION 29	TSP-8	1386	1.12	0.0381	23
	STATION 30	TSP-1	1015	0.75	0.0264	16
	STATION 31	TSP-16	1029	0.35	0.0968	59
04-Jan-07						
	STATION 1C	TSP-12	1174	0.81	ND	**
	STATION 14	TSP-11	627	0.44	0.0207	**
	STATION 14	TSP-5	1411	0.99	0.0177	*
	STATION 22B	TSP-9	0	*	*	**
	STATION 23	TSP-3	1406	0.98	0.0199	**
	STATION 29	TSP-8	1386	0.94	0.0267	**
	STATION 30	TSP-1	1015	0.89	0.0148	**
	STATION 31	TSP-16	1029	0.71	0.033	**
05-Jan-07						
	STATION 1C	TSP-12	1202	0.83	0.0125	**
	STATION 14	TSP-11	661	0.45	0.0121	**
	STATION 14	TSP-5	1454	0.99	0.0117	**
	STATION 22B	TSP-9	0	*	*	*
	STATION 23	TSP-3	1360	0.94	0.0199	**
	STATION 29	TSP-8	1392	0.94	0.018	**
	STATION 30	TSP-1	1366	0.91	0.0124	**
	STATION 31	TSP-16	1090	0.75	0.0092	**

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
06-Jan-07						
	STATION 1C	TSP-12	1370	0.83	0.715	UPWIND
	STATION 14	TSP-11	414	0.4	0.0169	14
	STATION 14	TSP-5	1043	1.01	0.0163	14
	STATION 22B	TSP-9	0	*	*	*
	STATION 23	TSP-3	1637	1.01	0.0305	26
	STATION 29	TSP-8	1555	0.93	0.0116	10
	STATION 30	TSP-1	1686	1.01	0.0249	21
	STATION 31	TSP-16	1303	0.79	0.0215	18
08-Jan-07						
	STATION 1C	TSP-12	1240	0.95	0.1347	149 (4)
	STATION 14	TSP-11	445	0.38	0.0225 J	27
	STATION 14	TSP-5	1169	1	0.006 J	7
	STATION 22B	TSP-9	759	0.71	0.054	UPWIND
	STATION 23	TSP-3	1136	0.98	0.029	32
	STATION 29	TSP-8	1245	0.93	0.0177	20
	STATION 30	TSP-1	1029	0.86	0.0224	25
	STATION 31	TSP-16	793	0.61	0.0277	31
09-Jan-07						
	STATION 1C	TSP-12	1344	0.97	0.0885	UPWIND
	STATION 14	TSP-11	547	0.37	0.0146 J	10
	STATION 14	TSP-5	1537	1.04	0.0059 J	4
	STATION 22B	TSP-9	513	*	*	*
	STATION 23	TSP-3	1471	1.01	0.0612	41
	STATION 29	TSP-8	1492	1.01	0.0282	19
	STATION 30	TSP-1	1696	1.12	0.0088	6
	STATION 31	TSP-16	1150	0.81	0.0261	18
10-Jan-07						
	STATION 1C	TSP-12	1517	1.05	0.0679	71
	STATION 14	TSP-11	587	0.41	0.0375 J	39
	STATION 14	TSP-5	1502	1.05	0.0093 J	10
	STATION 22B	TSP-9	1103	0.77	0.0571	UPWIND
	STATION 23	TSP-3	1386	0.98	0.0303	32
	STATION 29	TSP-8	1488	1.01	0.041	43
	STATION 30	TSP-1	1480	1.01	0.0189	20
	STATION 31	TSP-16	1141	0.8	0.0359	38
11-Jan-07						
	STATION 1C	TSP-12	1436	0.99	0.0689	56
	STATION 14	TSP-11	1366	0.95	0.0425	35
	STATION 14	TSP-5	1423	0.99	0.0281	23
	STATION 22B	TSP-9	1105	0.78	0.0733	UPWIND
	STATION 23	TSP-3	1389	0.98	0.0252	21
	STATION 29	TSP-8	1340	0.92	0.1575	129 (6)
	STATION 30	TSP-1	1546	1.04	0.0336	27
	STATION 31	TSP-16	1129	0.78	0.0425	35
12-Jan-07						
	STATION 1C	TSP-12	1611	1.03	0.0168	33
	STATION 14	TSP-11	1352	0.93	0.0207	40
	STATION 14	TSP-5	1378	0.95	0.0174	34
	STATION 22B	TSP-9	1170	0.77	0.0308	UPWIND
	STATION 23	TSP-3	1444	0.97	0.0235	46
	STATION 29	TSP-8	1471	0.95	0.0231	45
	STATION 30	TSP-1	1549	1.05	0.0161	31
	STATION 31	TSP-16	1218	0.79	0.0213	41
17-Jan-07						
	STATION 1C	TSP-12	1093	0.79	0.0942	129 (4)
	STATION 14	TSP-11	1250	0.88	0.0416	57
	STATION 14	TSP-5	1406	0.99	0.0363	50
	STATION 22B	TSP-9	1009	0.74	0.535	73
	STATION 23	TSP-3	1377	0.9	0.0211	29
	STATION 29	TSP-8	572	0.4	0.0437	UPWIND

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
18-Jan-07						
	STATION 1C	TSP-12	1425	0.99	0.2028	204 [4]
	STATION 14	TSP-11	1420	0.98	0.204	20
	STATION 14	TSP-5	1463	1.01	0.287	29
	STATION 22B	TSP-9	1174	0.81	0.0596	UPWIND
	STATION 23	TSP-3	1343	0.96	0.035	35
	STATION 29	TSP-8	611	0.4	0.1129	113 [6]
19-Jan-07						
	STATION 1C	TSP-12	1406	1	0.1579	187 [4]
	STATION 14	TSP-11	1490	0.99	0.0215	25
	STATION 14	TSP-5	1549	1.03	0.0297	35
	STATION 22B	TSP-9	1166	0.84	0.0506	UPWIND
	STATION 23	TSP-3	1478	0.98	0.0271	32
	STATION 29	TSP-8	631	0.44	0.0634	75
20-Jan-07						
	STATION 1C	TSP-12	1713	1.05	0.0234	82
	STATION 14	TSP-11	1583	0.98	0.0379	133 [9]
	STATION 14	TSP-5	1662	1.03	0.0229	80
	STATION 22B	TSP-9	1377	0.86	0.0182	64
	STATION 23	TSP-3	1524	0.95	0.0171	UPWIND
	STATION 29	TSP-8	677	0.41	0.0325	114 [6]
22-Jan-07						
	STATION 1C	TSP-12	1424	0.99	0.1952	UPWIND
	STATION 14	TSP-11	1225	0.86	0.0286	9
	STATION 14	TSP-5	1338	0.94	0.0232	7
	STATION 22B	TSP-9	1056	0.74	0.1108	34
	STATION 23	TSP-3	1322	0.93	0.0477	15
	STATION 29	TSP-8	557	0.38	0.0772	24
23-Jan-07						
	STATION 1C	TSP-12	1392	0.99	0.4411	303 [4]
	STATION 14	TSP-11	1131	0.8	0.0407	28
	STATION 14	TSP-5	1356	0.96	0.0294	20
	STATION 22B	TSP-9	1136	0.81	0.0871	UPWIND
	STATION 23	TSP-3	1312	0.94	0.0366	25
	STATION 29	TSP-8	573	0.4	0.0925	64
24-Jan-07						
	STATION 1C	TSP-12	1525	1.05	0.1672	UPWIND
	STATION 14	TSP-11	1406	0.97	0.0306	11
	STATION 14	TSP-5	1390	0.96	0.0252	9
	STATION 22B	TSP-9	784	0.54	0.2283	82
	STATION 23	TSP-3	1474	1.02	0.0678	24
	STATION 29	TSP-8	653	0.44	0.0796	29
25-Jan-07						
	STATION 1C	TSP-12	1575	1.07	0.1035	UPWIND
	STATION 14	TSP-11	1414	0.98	U	*
	STATION 14	TSP-5	1543	1.07	U	*
	STATION 22B	TSP-9	1199	0.83	0.0817	47
	STATION 23	TSP-3	1364	0.95	U	*
	STATION 29	TSP-8	665	0.45	U	*
26-Jan-07						
	STATION 1C	TSP-12	1524	1.03	0.1076	99
	STATION 14	TSP-11	1427	0.96	0.0364	33
	STATION 14	TSP-5	1484	1	0.0283	26
	STATION 22B	TSP-9	1194	0.76	0.0653	UPWIND
	STATION 23	TSP-3	1375	0.93	0.0378	35
	STATION 29	TSP-8	635	0.41	0.1717	157 [6]

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
27-Jan-07						
	STATION 1C	TSP-12	1485	0.96	0.0559	UPWIND
	STATION 14	TSP-11	1374	0.86	0.0087	9
	STATION 14	TSP-5	1630	1.02	0.0092	10
	STATION 22B	TSP-9	1281	0.83	0.0445	48
	STATION 23	TSP-3	1508	0.93	0.0398	43
	STATION 29	TSP-8	665	0.42	0.0722	77
29-Jan-07						
	STATION 1C	TSP-12	1424	1	0.0618	48
	STATION 14	TSP-11	1377	96	0.0458 J	36
	STATION 14	TSP-5	1433	1	0.0258 J	20
	STATION 22B	TSP-9	1039	0.73	0.077	UPWIND
	STATION 23	TSP-3	1316	0.93	0.0729	57
	STATION 29	TSP-8	510	0.36	0.3922	305 (6)
30-Jan-07						
	STATION 1C	TSP-12	1705	1.09	0.0616	UPWIND
	STATION 14	TSP-11	1403	0.99	0.0306	30
	STATION 14	TSP-5	1489	1.05	0.0269	26
	STATION 22B	TSP-9	1215	0.82	0.0642	62
	STATION 23	TSP-3	1423	0.98	0.0021	2
	STATION 29	TSP-8	776	0.52	0.0902	88
31-Jan-07						
	STATION 1C	TSP-12	1058	0.89	0.0454	61
	STATION 14	TSP-11	1911	1.31	0.0314 J	42
	STATION 14	TSP-5	1166	0.8	0.0583 J	78
	STATION 22B	TSP-9	1094	0.78	0.0448	UPWIND
	STATION 29	TSP-8	594	0.42	0.202	270 (6)
01-Feb-07						
	STATION 1C	TSP-12	1289	0.84	0.0264	58
	STATION 14	TSP-11	1824	1.3	0.0104 J	23
	STATION 14	TSP-5	1093	0.78	0.032 J	70
	STATION 22B	TSP-9	1723	1.21	0.0273	UPWIND
	STATION 29	TSP-8	628	0.44	0.051	112 (6)
02-Feb-07						
	STATION 1C	TSP-12	1173	0.86	0.1338	132 (4)
	STATION 14	TSP-11	1883	1.34	0.0154 J	15
	STATION 14	TSP-5	1122	0.8	0.0267 J	26
	STATION 22B	TSP-9	1206	0.88	0.0605	UPWIND
	STATION 29	TSP-8	1147	0.82	0.0253	25
03-Feb-07						
	STATION 1C	TSP-12	1517	0.91	0.0297	UPWIND
	STATION 14	TSP-11	2107	1.21	0.0104	21
	STATION 14	TSP-5	1409	0.81	0.0163	33
	STATION 22B	TSP-9	1553	0.92	0.0303	61
	STATION 29	TSP-8	1342	0.78	0.0656	132 (6)
08-Feb-07						
	STATION 1C	TSP-12	1046	0.74	0.0784	UPWIND
	STATION 14	TSP-11	1546	1.09	0.0045	3
	STATION 14	TSP-5	1091	0.77	0.0073	6
	STATION 22B	TSP-9	1323	0.93	0.0907	69
	STATION 23	TSP-3	20	*	*	*
	STATION 29	TSP-8	1094	0.76	0.0402	31
09-Feb-07						
	STATION 1C	TSP-12	1371	0.89	0.0766	UPWIND
	STATION 14	TSP-11	2027	1.33	0.0163	13
	STATION 14	TSP-5	1233	0.81	0.0138	11
	STATION 22B	TSP-9	1346	0.87	0.0632	49
	STATION 23	TSP-3	5	*	*	*
	STATION 29	TSP-8	1244	0.78	0.0394	31

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
12-Feb-07						
	STATION 1C	TSP-12	1095	0.75	0.0219	27
	STATION 14	TSP-11	1699	1.24	0.0377	UPWIND
	STATION 14	TSP-5	999	0.73	0.048	UPWIND
	STATION 22B	TSP-9	698	*	*	*
	STATION 23	TSP-3	6	*	*	*
	STATION 29	TSP-8	1138	0.77	0.029	36
15-Feb-07						
	STATION 1C	TSP-12	1260	0.81	0.01667	UPWIND
	STATION 14	TSP-11	1890	1.29	0.0095 J	3
	STATION 14	TSP-5	1171	0.8	0.0162 J	6
	STATION 22B	TSP-9	1366	0.88	0.0937	34
	STATION 23	TSP-3	1330	0.88	0.0474	17
	STATION 29	TSP-8	1245	0.79	0.0273	10
16-Feb-07						
	STATION 1C	TSP-12	1241	0.87	0.1039	136 (4)
	STATION 14	TSP-11	2021	1.31	0.0104 J	14
	STATION 14	TSP-5	1234	0.8	0.0324 J	43
	STATION 22B	TSP-9	1273	0.91	0.0456	UPWIND
	STATION 23	TSP-3	1210	0.91	0.0182	24
	STATION 29	TSP-8	1234	0.82	0.0243	32
19-Feb-07						
	STATION 1C	TSP-12	1092	0.77	0.0989	91
	STATION 14	TSP-11	1148	0.82	0.0375	34
	STATION 14	TSP-5	1204	0.86	0.0291	27
	STATION 22B	TSP-9	1075	0.77	0.0651	UPWIND
	STATION 23	TSP-3	0	*	*	*
	STATION 29	TSP-8	990	0.69	0.0586	54
20-Feb-07						
	STATION 1C	TSP-12	1235	0.87	0.0065	12
	STATION 14	TSP-11	1194	0.85	0.0243	UPWIND
	STATION 14	TSP-5	1208	0.86	0.0323	UPWIND
	STATION 23	TSP-3	0	*	*	*
	STATION 29	TSP-8	1107	0.77	0.0316	59
21-Feb-07						
	STATION 1C	TSP-12	1254	0.88	0.0742	37
	STATION 14	TSP-11	1287	0.9	0.0319	16
	STATION 14	TSP-5	1243	0.87	0.0354	17
	STATION 22B	TSP-9	1172	0.83	0.1212	UPWIND
	STATION 29	TSP-8	1033	0.72	0.0629	31
22-Feb-07						
	STATION 1C	TSP-12	1195	0.83	0.1172	UPWIND
	STATION 14	TSP-11	1146	0.8	0.0201	10
	STATION 14	TSP-5	1290	0.9	0.0279	14
	STATION 22B	TSP-9	1266	0.88	0.1343	67
	STATION 29	TSP-8	1074	0.74	0.0503	26
23-Feb-07						
	STATION 1C	TSP-12	1192	0.82	0.0126	15
	STATION 14	TSP-11	954	0.64	0.0849 J	UPWIND
	STATION 14	TSP-5	1355	0.91	0.0177 J	UPWIND
	STATION 22B	TSP-9	1290	0.89	0.0302	35
	STATION 29	TSP-8	1205	0.82	0.0141	16

TABLE F.1.2

GROUP 9B TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*

Notes:

* Results not reported due to machine malfunction.

** UPWIND machine did not run, therefore percent (%) allowable not calculable.

J The associated value is an estimated quantity.

ND Not detected.

U Analyte not present at or above the associated value.

(1) Exceedance primarily attributed to > 50 ppm material placement into the vault and East Plant excavation.

(2) No work conducted in the vicinity of the air monitoring station.

(3) Exceedance primarily attributed to truck traffic along haul roads.

(4) Exceedance primarily attributed to truck traffic along public roads and plant traffic in parking lot.

(5) Exceedance primarily attributed to excavation and/or stockpiling activities in former Zipp parking lot.

(6) Exceedance primarily attributed to project along the WTP haul road and excavation activities in Excavation Plan II.

(7) Exceedance primarily attributed to > 50 ppm soil excavation in Excavation Plan I.

(8) Exceedance primarily attributed to sediment pond construction.

(9) Exceedance primarily attributed to contractor activities in the laydown area.

(10) Exceedance primarily attributed to excavation activities for 48-inch sewer installation.

TABLE F.1.3

GROUP 14 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
29-Jan-07						
	STATION 22B	TSP-9	1039	0.73	0.077	12
	STATION 29	TSP-8	510	0.36	0.3922	UPWIND
	STATION 34	TSP-16	937	0.81	0.683	10
	STATION 35	TSP-16	1067	0.8	0.0609	9
30-Jan-07						
	STATION 22B	TSP-9	1215	0.82	0.0642	UPWIND
	STATION 29	TSP-8	776	0.52	0.0902	84
	STATION 34	TSP-16	1228	0.83	0.066	62
	STATION 35	TSP-16	1332	0.9	0.0526	49
31-Jan-07						
	STATION 22B	TSP-9	1094	0.78	0.0448	59
	STATION 29	TSP-8	594	0.42	0.202	265
	STATION 34	TSP-16	1162	0.83	0.0456	UPWIND
	STATION 35	TSP-16	1357	0.97	0.0251	33
01-Feb-07						
	STATION 22B	TSP-9	1723	1.21	0.0273	56
	STATION 29	TSP-8	628	0.44	0.051	105
	STATION 34	TSP-16	1069	0.76	0.029	UPWIND
	STATION 35	TSP-16	1380	0.98	0.0167	35
02-Feb-07						
	STATION 22B	TSP-9	1206	0.88	0.0605	79
	STATION 29	TSP-8	1147	0.82	0.0253	33
	STATION 34	TSP-16	1042	0.75	0.0461	UPWIND
	STATION 35	TSP-16	1384	1	0.0246	32
08-Feb-07						
	STATION 22B	TSP-9	1323	0.93	0.0907	UPWIND
	STATION 29	TSP-8	1094	0.76	0.0402	27
	STATION 34	TSP-16	1205	0.84	0.1635	108
	STATION 35	TSP-16	1360	0.97	0.0243	16
09-Feb-07						
	STATION 22B	TSP-9	1346	0.87	0.0632	UPWIND
	STATION 29	TSP-8	1244	0.78	0.0394	37
	STATION 34	TSP-16	1403	0.92	0.0627	59
	STATION 35	TSP-16	1424	0.96	0.033	31
10-Feb-07						
	STATION 22B	TSP-9	1481	0.93	0.0344	65
	STATION 29	TSP-8	1323	0.91	0.0317	UPWIND
	STATION 34	TSP-16	1481	0.93	0.0378	71
	STATION 35	TSP-16	1527	0.96	0.0242	46
12-Feb-07						
	STATION 22B	TSP-9	698	*	*	*
	STATION 29	TSP-8	1138	0.77	0.029	UPWIND
	STATION 34	TSP-16	1131	0.78	0.0637	133 (1)
	STATION 35	TSP-16	1208	0.84	0.0281	59
15-Feb-07						
	STATION 22B	TSP-9	1366	0.88	0.0937	UPWIND
	STATION 29	TSP-8	1245	0.79	0.0273	17
	STATION 34	TSP-16	1486	0.98	0.033	21
	STATION 35	TSP-16	1819	1.2	0.0165	11
16-Feb-07						
	STATION 22B	TSP-9	1273	0.91	0.0456	76
	STATION 29	TSP-8	1234	0.82	0.0243	41
	STATION 34	TSP-16	1309	0.88	0.0359	UPWIND
	STATION 35	TSP-16	1214	0.81	0.0321	55

TABLE F.1.3

GROUP 14 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
17-Feb-07						
	STATION 22B	TSP-9	1218	0.84	0.0255	UPWIND
	STATION 29	TSP-8	1115	0.76	0.0341	80
	STATION 34	TSP-16	1187	0.82	0.0185	43
	STATION 35	TSP-16	1386	0.96	0.0137	32
19-Feb-07						
	STATION 22B	TSP-9	1075	0.77	0.0651	105
	STATION 29	TSP-8	990	0.69	0.0586	95
	STATION 34	TSP-16	808	0.77	0.0582	UPWIND
	STATION 35	TSP-16	1172	0.83	0.0324	52
20-Feb-07						
	STATION 22B	TSP-9				
	STATION 29	TSP-8	1107	0.77	0.0316	UPWIND
	STATION 34	TSP-16	1209	0.86	405	76
	STATION 35	TSP-16	1219	0.86	0.0172	32
21-Feb-07						
	STATION 22B	TSP-9	1172	0.83	0.1212	UPWIND
	STATION 29	TSP-8	1033	0.72	0.0629	31
	STATION 34	TSP-16	1378	0.97	0.0247	12
	STATION 35	TSP-16	1423	1	0.0379	19
22-Feb-07						
	STATION 22B	TSP-9	1266	0.88	0.1343	UPWIND
	STATION 29	TSP-8	1074	0.74	0.0503	22
	STATION 34	TSP-16	1642	1.13	0.0438	20
	STATION 35	TSP-16	1205	0.84	0.0357	16
27-Feb-07						
	STATION 22B	TSP-9	1369	0.93	0.0745	175
	STATION 29	TSP-8	1130	0.74	ND (0.009)	UPWIND
	STATION 34	TSP-16	1336	0.91	0.0704	165 (1)
	STATION 35	TSP-16	1280	0.87	0.0344	81
28-Feb-07						
	STATION 22B	TSP-9	1247	0.88	0.012	28
	STATION 29	TSP-8	995	0.7	ND (0.001)	UPWIND
	STATION 34	TSP-16	1044	0.73	0.045	106 (1)
	STATION 35	TSP-16	1203	0.84	0.0175	41
02-Mar-07						
	STATION 22B	TSP-9	1113	0.79	ND (0.0009)	0
	STATION 29	TSP-8	0	*	*	*
	STATION 34	TSP-16	1427	1.02	0.0098	UPWIND
	STATION 35	TSP-16	1078	0.77	0.0575	351 (1)
03-Mar-07						
	STATION 34	TSP-16	1110	0.82	0.0144	UPWIND
	STATION 35	TSP-16	1388	1.01	0.013	54
04-Mar-07						
	STATION 34	TSP-16	1399	0.8	0.0322	UPWIND
	STATION 35	TSP-16	1348	0.83	0.0549	102 (1)
05-Mar-07						
	STATION 22B	TSP-9	1195	0.86	0.0577	39
	STATION 29	TSP-8	1036	0.75	0.0985	67
	STATION 34	TSP-16	1029	0.8	0.0709	48
	STATION 35	TSP-16	992	0.72	0.0877	UPWIND

TABLE F.1.3

GROUP 14 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
06-Mar-07						
	STATION 22B	TSP-9	1409	0.97	0.1121	96
	STATION 29	TSP-8	1132	0.8	0.0698	UPWIND
	STATION 34	TSP-16	1103	0.8	0.0707	61
	STATION 35	TSP-16	1258	0.89	0.0326	28
07-Mar-07						
	STATION 22B	TSP-9	1219	0.91	0.0558	33
	STATION 29	TSP-8	1017	0.74	0.1003	UPWIND
	STATION 34	TSP-16	1142	0.79	0.1427	85
	STATION 35	TSP-16	1003	0.71	0.1037	62
08-Mar-07						
	STATION 22B	TSP-9	1419	0.94	0.0817	61
	STATION 29	TSP-8	1077	0.73	0.0808	UPWIND
	STATION 34	TSP-16	1204	0.81	0.064	47
	STATION 35	TSP-16	1132	0.76	0.0133	10
12-Mar-07						
	STATION 22B	TSP-9	1302	0.88	0.1275	35
	STATION 29	TSP-8	1133	0.75	0.2154	UPWIND
	STATION 34	TSP-16	1532	0.99	0.0698	19
	STATION 35	TSP-16	330	0.22	ND(0.003)	NR
13-Mar-07						
	STATION 22B	TSP-9	1292	0.9	0.106	119 (1)
	STATION 29	TSP-8	898	0.66	0.1993	223 (1)
	STATION 34	TSP-16	1308	0.95	0.0535	UPWIND
	STATION 35	TSP-16	781	0.57	0.1601	179 (1)
14-Mar-07						
	STATION 22B	TSP-9	1213	0.89	0.0511	77
	STATION 29	TSP-8	944	0.66	0.0922	139 (1)
	STATION 34	TSP-16	1414	0.99	0.0396	UPWIND
	STATION 35	TSP-16	809	0.56	0.0569	86
15-Mar-07						
	STATION 22B	TSP-9	1380	0.94	0.0225	34
	STATION 29	TSP-8	NR	NR	NR	NR
	STATION 34	TSP-16	1435	1.02	0.023	35
	STATION 35	TSP-16	994	0.69	0.0362	55
16-Mar-07						
	STATION 22B	TSP-9	598	*	*	*
	STATION 29	TSP-8	1063	0.77	0.0508	UPWIND
	STATION 34	TSP-16	1442	1.03	0.0409	48
	STATION 35	TSP-16	925	0.66	0.0541	64
17-Mar-07						
	STATION 29	TSP-8	1343	0.8	0.0663	UPWIND
	STATION 34	TSP-16	1777	1.04	0.0242	22
	STATION 35	TSP-16	1095	0.64	0.0329	30
19-Mar-07						
	STATION 22B	TSP-9	1315	0.91	0.0304	27
	STATION 29	TSP-8	1098	0.76	0.0528	47
	STATION 34	TSP-16	1592	0.98	0.0666	UPWIND
	STATION 35	TSP-16	913	0.62	0.0416	37
20-Mar-07						
	STATION 22B	TSP-9	1301	0.92	ND(0.0008)	0
	STATION 29	TSP-8	1074	0.76	0.054	UPWIND
	STATION 34	TSP-16	1052	0.83	0.0437	48
	STATION 35	TSP-16	875	0.61	0.0743	82

TABLE F.1.3

GROUP 14 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
21-Mar-07						
	STATION 22B	TSP-9	2	*	*	*
	STATION 29	TSP-8	1037	0.73	0.2334	148 (1)
	STATION 34	TSP-16	1072	0.76	0.0942	UPWIND
	STATION 35	TSP-16	871	0.61	0.1515	96
29-Mar-07						
	STATION 22B	TSP-9	2	*	*	*
	STATION 29	TSP-8	2421	1.7	0.0231	UPWIND
	STATION 34	TSP-16	2004	1.39	0.0734	190 (1)
	STATION 35	TSP-16	877	0.6	0.0547	142 (1)
30-Mar-07						
	STATION 22B	TSP-9	1	*	*	*
	STATION 29	TSP-8	1110	0.77	0.0405	23
	STATION 34	TSP-16	1154	0.78	0.1049	UPWIND
	STATION 35	TSP-16	868	0.59	0.053	30

Notes:

Air monitoring at Group 14 conducted during installation of 48-inch sewer line for Plant Operations.

* Results not reported due to machine malfunction.

ND Not detected.

(1) Exceedance may be due to particles in the air from the GM water treatment plant Lime Silo.

TABLE F.1.4

GROUP 16 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
15-May-08						
	STATION 22C	TSP-9	1139	0.84	0.0211	**
	STATION 29B	TSP-6	58	*	*	*
	STATION 40	TSP-5	1371	0.95	0.0168	**
	STATION 41	TSP-11	1256	0.87	0.0255	**
18-May-08						
	STATION 22C	TSP-9	1375	0.89	0.0836	UPWIND
	STATION 40	TSP-5	1529	0.98	0.0373	27
	STATION 41	TSP-11	1477	0.94	0.0548	39
	STATION 42	TSP-8	1110	0.86	0.0505	36
19-May-08						
	STATION 29B	TSP-6	364	*	*	*
20-May-08						
	STATION 22C	TSP-9	1138	0.76	0.1722	UPWIND
	STATION 29B	TSP-6	634	*	*	*
	STATION 40	TSP-5	1311	0.88	0.042	15
	STATION 41	TSP-11	1302	0.86	0.0845	29
	STATION 42	TSP-8	645	0.68	0.062	22
21-May-08						
	STATION 22C	TSP-9	1302	0.92	0.2373	UPWIND
	STATION 29B	TSP-6	557	*	*	*
	STATION 40	TSP-5	1377	0.98	0.0392	10
	STATION 41	TSP-11	1299	0.9	0.1139	29
	STATION 42	TSP-8	1028	0.79	0.0457	12
22-May-08						
	STATION 22C	TSP-9	1462	0.89	0.2127	UPWIND
	STATION 29B	TSP-6	725	*	*	*
	STATION 40	TSP-5	1576	0.97	0.0438	12
	STATION 41	TSP-11	1512	0.92	0.1396	39
	STATION 42	TSP-8	1063	0.76	0.0574	16
27-May-08						
	STATION 22C	TSP-9	1271	0.87	0.0425	58
	STATION 29B	TSP-6	866	0.83	0.0439	UPWIND
	STATION 40	TSP-5	1359	0.94	0.0361	49
	STATION 41	TSP-11	1313	0.9	0.0533	73
	STATION 42	TSP-8	1004	0.7	0.0378	52
28-May-08						
	STATION 22C	TSP-9	952	0.66	0.1397	126 (1)
	STATION 29B	TSP-6	1232	0.88	0.0666	UPWIND
	STATION 40	TSP-5	1415	0.99	0.0261	23
	STATION 41	TSP-11	1404	0.96	0.0456	41
	STATION 42	TSP-8	1233	0.83	0.0219	20
29-May-08						
	STATION 22C	TSP-9	216	*	*	*
	STATION 29B	TSP-6	1198	0.88	0.1194	154 (1)
	STATION 40	TSP-5	1354	0.97	0.0465	UPWIND
	STATION 41	TSP-11	6	*	*	*
	STATION 42	TSP-8	1108	0.77	0.0388	50
30-May-08						
	STATION 22C	TSP-9	1315	0.82	0.0654	84
	STATION 29B	TSP-6	1337	0.83	0.2139	275 (1)
	STATION 40	TSP-5	1534	0.95	0.06	77
	STATION 41	TSP-11	0	*	*	*
	STATION 42	TSP-8	1087	0.69	0.0773	100 (1)

TABLE F.1.4

GROUP 16 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
2-Jun-08						
	STATION 22C	TSP-9	1192	0.78	0.1158	138 (1)
	STATION 29B	TSP-6	1180	0.79	0.1492	178 (1)
	STATION 40	TSP-5	1314	0.87	0.0502	UPWIND
	STATION 41	TSP-11	14	*	*	*
	STATION 42	TSP-8	1066	0.72	0.0441	53
5-Jun-08						
	STATION 22C	TSP-9	506	*	*	*
	STATION 29B	TSP-6	277	*	*	*
	STATION 40	TSP-5	1418	0.91	0.0564	UPWIND
	STATION 41	TSP-11	1349	0.85	0.0148	16
	STATION 42	TSP-8	1142	0.73	0.0438	47
18-Aug-08						
	STATION 22C	TSP-9	NR	NR	NR	NR
	STATION 29B	TSP-6	NR	NR	NR	NR
	STATION 40	TSP-5	1483	1.05	0.0128	**
	STATION 41	TSP-11	NR	NR	NR	NR
	STATION 42	TSP-8	1024	0.78	0.0361	**
19-Aug-08						
	STATION 22C	TSP-9	1078	0.83	0.1503	186 (2)
	STATION 29B	TSP-6	1179	0.82	0.0483	UPWIND
	STATION 40	TSP-5	1275	0.96	0.0376	47
	STATION 41	TSP-11	NR	NR	NR	NR
	STATION 42	TSP-8	696	0.54	0.0259	32
20-Aug-08						
	STATION 22C	TSP-9	1202	0.85	0.1556	96
	STATION 29B	TSP-6	1106	0.79	0.0651	40
	STATION 40	TSP-5	1372	0.96	0.0583	36
	STATION 41	TSP-11	NR	NR	NR	NR
	STATION 42	TSP-8	493	0.35	0.0974	UPWIND
21-Aug-08						
	STATION 22C	TSP-9	1146	0.83	0.1143	96
	STATION 29B	TSP-6	1085	0.79	0.082	69
	STATION 40	TSP-5	1350	0.96	0.0711	UPWIND
	STATION 41	TSP-11	NR	NR	NR	NR
	STATION 42	TSP-8	508	0.37	0.1122	94
22-Aug-08						
	STATION 22C	TSP-9	1245	0.83	0.1189	124 (2)
	STATION 29B	TSP-6	1069	0.79	0.1001	105 (2)
	STATION 40	TSP-5	1519	0.96	0.0573	UPWIND
	STATION 41	TSP-11	1440	0.94	0.0875	91
	STATION 42	TSP-8	479	0.32	0.1628	170 (2)
23-Aug-08						
	STATION 22C	TSP-9	1356	0.86	0.0855	57
	STATION 29B	TSP-6	1176	0.75	0.0893	UPWIND
	STATION 40	TSP-5	1428	0.95	0.0588	39
	STATION 41	TSP-11	1180	0.76	0.0754	51
	STATION 42	TSP-8	416	0.27	0.4928	330 (2)

TABLE F.1.4

GROUP 16 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
26-Aug-08						
	STATION 22C	TSP-9	1040	0.76	0.101	121 (2)
	STATION 29B	TSP-6	1082	0.79	0.0499	UPWIND
	STATION 40	TSP-5	1259	0.9	0.0492	59
	STATION 41	TSP-11	1250	0.9	0.1216	146 (2)
	STATION 42	TSP-8	383	0.28	0.1044	125 (2)
27-Aug-08						
	STATION 22C	TSP-9	1171	0.83	0.0615	105 (2)
	STATION 29B	TSP-6	1108	0.79	0.0352	UPWIND
	STATION 40	TSP-5	1378	0.96	0.0283	48
	STATION 41	TSP-11	1280	0.9	0.1031	175 (2)
	STATION 42	TSP-8	465	0.33	0.0581	99
28-Aug-08						
	STATION 22C	TSP-9	NR	NR	NR	NR
	STATION 29B	TSP-6	1168	0.79	0.1293	81
	STATION 40	TSP-5	1427	0.95	0.096	UPWIND
	STATION 41	TSP-11	1316	0.89	0.2097	131 (2)
	STATION 42	TSP-8	447	0.3	0.6331	395 (2)
3-Sep-08						
	STATION 22C	TSP-9	1300	0.86	0.0923	UPWIND
	STATION 29B	TSP-6	1096	0.75	0.0721	47
	STATION 40	TSP-5	1556	0.99	0.0296	19
	STATION 41	TSP-11	1389	0.94	0.0842	55
	STATION 42	TSP-8	532	0.36	0.094	61
4-Sep-08						
	STATION 22C	TSP-9	898	0.67	0.0813	101 (2)
	STATION 29B	TSP-6	1068	0.79	0.0496	62
	STATION 40	TSP-5	1355	0.94	0.048	UPWIND
	STATION 41	TSP-11	1191	0.83	0.0688	86
	STATION 42	TSP-8	471	0.35	0.0955	119 (2)
5-Sep-08						
	STATION 22C	TSP-9	913	0.66	0.0723	UPWIND
	STATION 29B	TSP-6	1145	0.82	0.0306	25
	STATION 40	TSP-5	1248	0.95	0.0288	24
	STATION 41	TSP-11	1175	0.87	0.0732	61
	STATION 42	TSP-8	500	0.36	0.048	40
6-Sep-08						
	STATION 22C	TSP-9	1047	0.68	0.0468	UPWIND
	STATION 29B	TSP-6	1293	0.84	0.0278	36
	STATION 40	TSP-5	1478	0.97	0.025	32
	STATION 41	TSP-11	1350	0.91	0.0652	83
	STATION 42	TSP-8	508	0.33	0.0591	76
8-Sep-08						
	STATION 22C	TSP-9	858	0.59	0.1166	194 (2)
	STATION 29B	TSP-6	1230	0.88	0.0325	54
	STATION 40	TSP-5	1503	0.99	0.0359	UPWIND
	STATION 41	TSP-11	1322	0.86	0.1059	177 (2)
	STATION 42	TSP-8	301	0.21	0.1163	194 (2)

TABLE F.1.4

GROUP 16 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
9-Sep-08						
	STATION 22C	TSP-9	705	0.52	0.1801	425 (2)
	STATION 29B	TSP-6	1142	0.81	0.0254	UPWIND
	STATION 40	TSP-5	1198	0.88	0.0184	43
	STATION 41	TSP-11	1119	0.86	0.0929	219 (2)
	STATION 42	TSP-8	415	0.3	0.0506	119 (2)
10-Sep-08						
	STATION 22C	TSP-9	712	0.49	0.1264	247 (2)
	STATION 29B	TSP-6	1177	0.85	0.0306	UPWIND
	STATION 40	TSP-5	1453	1	0.0289	57
	STATION 41	TSP-11	1398	0.97	0.0923	181 (2)
	STATION 42	TSP-8	527	0.37	0.1366	267 (2)
11-Sep-08						
	STATION 22C	TSP-9	657	0.48	0.1157	203 (2)
	STATION 29B	TSP-6	1235	0.9	0.0356	63
	STATION 40	TSP-5	1380	1.01	0.0341	UPWIND
	STATION 41	TSP-11	2111	1.63	0.0393	69
	STATION 42	TSP-8	616	0.45	0.1461	257 (2)
13-Sep-08						
	STATION 22C	TSP-9	584	0.42	0.0856	106 (2)
	STATION 29B	TSP-6	1166	0.78	0.0729	90
	STATION 40	TSP-5	1450	0.94	0.0483	UPWIND
	STATION 41	TSP-11	1282	0.84	0.0663	82
	STATION 42	TSP-8	415	0.27	0.2096	260 (2)
15-Sep-08						
	STATION 22C	TSP-9	966	0.74	0.0932	UPWIND
	STATION 29B	TSP-6	1055	0.81	0.0275	18
	STATION 40	TSP-5	1272	0.98	0.0197	13
	STATION 41	TSP-11	1121	0.86	0.1383	89
	STATION 42	TSP-8	274	0.21	0.0584	38
16-Sep-08						
	STATION 22C	TSP-9	838	0.58	0.2828	UPWIND
	STATION 29B	TSP-6	1179	0.83	0.0382	8
	STATION 40	TSP-5	1502	1.02	0.0286	6
	STATION 41	TSP-11	1372	0.93	0.1297	27
	STATION 42	TSP-8	573	0.4	0.0471	10
17-Sep-08						
	STATION 22C	TSP-9	777	0.56	0.1454	UPWIND
	STATION 29B	TSP-6	1120	0.81	0.0348	14
	STATION 40	TSP-5	1280	0.92	0.0266	11
	STATION 41	TSP-11	1238	0.88	0.1494	62
	STATION 42	TSP-8	414	0.3	0.058	24
18-Sep-08						
	STATION 22C	TSP-9	693	0.49	0.0909	UPWIND
	STATION 29B	TSP-6	1158	0.83	0.0406	27
	STATION 40	TSP-5	1485	1.02	0.029	19
	STATION 41	TSP-11	1305	0.9	0.1341	88
	STATION 42	TSP-8	603	0.43	0.0431	28

TABLE F.1.4

GROUP 16 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
19-Sep-08						
	STATION 22C	TSP-9	846	0.53	0.0946	62
	STATION 29B	TSP-6	281	*	*	*
	STATION 40	TSP-5	1604	1.01	0.0424	28
	STATION 41	TSP-11	1219	0.85	0.1198	79
	STATION 42	TSP-8	NR	NR	NR	NR
22-Sep-08						
	STATION 22C	TSP-9	925	0.71	0.0886	58
	STATION 29B	TSP-6	49	*	*	*
	STATION 40	TSP-5	1375	1.01	0.0458	30
	STATION 41	TSP-11	1224	0.9	0.1168	77
	STATION 42	TSP-8	53	0.04	ND(0.0189)	UPWIND
23-Sep-08						
	STATION 22C	TSP-9	943	0.67	0.1018	82
	STATION 29B	TSP-6	697	*	*	*
	STATION 40	TSP-5	1351	0.95	0.1488	120 (2)
	STATION 41	TSP-11	1210	0.87	0.0479	39
	STATION 42	TSP-8	498	0.36	0.0743	UPWIND
24-Sep-08						
	STATION 22C	TSP-9	1084	0.76	0.2251	181 (2)
	STATION 29B	TSP-6	NR	NR	NR	NR
	STATION 40	TSP-5	1507	1.04	0.0411	33
	STATION 41	TSP-11	590	*	*	*
	STATION 42	TSP-8	953	0.67	0.0199	16
25-Sep-08						
	STATION 22C	TSP-9	1170	0.76	0.3085	UPWIND
	STATION 29B	TSP-6	NR	NR	NR	NR
	STATION 40	TSP-5	1658	1.04	0.035	7
	STATION 41	TSP-11	1267	0.9	0.1586	31
	STATION 42	TSP-8	939	0.6	0.0202	4
26-Sep-08						
	STATION 22C	TSP-9	1087	0.82	0.4609	UPWIND
	STATION 29B	TSP-6	NR	NR	NR	NR
	STATION 40	TSP-5	1357	1.01	0.0383	5
	STATION 41	TSP-11	1349	0.91	0.2113	27
	STATION 42	TSP-8	680	0.52	0.0338	4
27-Sep-08						
	STATION 22C	TSP-9	1491	0.87	0.1583	21
	STATION 41	TSP-11	1059	0.83	0.0538	7
	STATION 42	TSP-8	741	0.44	0.0378	5
29-Sep-08						
	STATION 22C	TSP-9	859	0.62	0.1665	UPWIND
	STATION 29B	TSP-6	1102	0.8	0.108	39
	STATION 40	TSP-5	1316	0.93	0.0555	20
	STATION 41	TSP-11	1196	0.91	0.0769	28
	STATION 42	TSP-8	525	0.38	0.1848	66
30-Sep-08						
	STATION 22C	TSP-9	1012	0.74	0.1532	UPWIND
	STATION 29B	TSP-6	1212	0.89	0.0479	19
	STATION 40	TSP-5	1387	1	0.0389	15
	STATION 41	TSP-11	1343	0.97	0.0678	27
	STATION 42	TSP-8	505	0.37	0.0832	33

TABLE F.1.4

GROUP 16 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
01-Oct-08						
	STATION 22C	TSP-9	995	0.68	0.393	UPWIND
	STATION 29B	TSP-6	1249	0.87	0.0985	15
	STATION 40	TSP-5	1509	1.01	0.0404	6
	STATION 41	TSP-11	761	*	*	*
	STATION 42	TSP-8	629	0.43	0.0843	13
02-Oct-08						
	STATION 22C	TSP-9	799	0.59	0.2165	60
	STATION 29B	TSP-6	1169	0.86	0.0659	18
	STATION 40	TSP-5	1261	1.01	0.0404	11
	STATION 41	TSP-11	56	*	*	*
	STATION 42	TSP-8	546	0.4	0.0696	19
03-Oct-08						
	STATION 22C	TSP-9	650	0.48	0.3585	560 (2)
	STATION 29B	TSP-6	1173	0.87	0.0682	107 (2)
	STATION 40	TSP-5	1304	0.96	0.0383	UPWIND
	STATION 41	TSP-11	648	0.58	0.1867	292 (2)
	STATION 42	TSP-8	542	0.4	0.1015	159 (2)
04-Oct-08						
	STATION 22C	TSP-9	987	0.61	0.306	326 (2)
	STATION 29B	TSP-6	1369	0.86	0.0562	UPWIND
	STATION 40	TSP-5	1483	0.92	0.0371	40
	STATION 41	TSP-11	1281	0.8	0.1023	109 (2)
	STATION 42	TSP-8	691	0.43	0.0622	66
06-Oct-08						
	STATION 22C	TSP-9	762	0.54	0.3911	330 (2)
	STATION 29B	TSP-6	1212	0.86	0.052	44
	STATION 40	TSP-5	1299	0.89	0.0354	30
	STATION 41	TSP-11	1089	0.75	0.169	143 (2)
	STATION 42	TSP-8	606	0.43	0.071	UPWIND
07-Oct-08						
	STATION 22C	TSP-9	631	0.45	0.1506	309 (2)
	STATION 29B	TSP-6	1192	0.85	0.0378	78
	STATION 40	TSP-5	1337	0.9	0.0292	UPWIND
	STATION 41	TSP-11	1148	0.78	0.0409	84
	STATION 42	TSP-8	519	0.37	0.0617	127 (2)

Notes:

* Results not reported due to machine malfunction.

** UPWIND machine did not run, therefore percent allowable not calculable.

J Estimated result. Results if less than the reporting limit.

ND Not detected.

(1) Exceedance due to TSP unit downwind of generator and increased particulate from exhaust.

(2) Exceedance due to increased work activities and less than average rainfall.

TABLE F.1.5

GROUP 17 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
25-Jul-08						
	STATION 1C	TSP-12	628	0.45	0.1736	271 (1)
	STATION 31A	TSP-1	1235	0.87	0.0421	66
	STATION 43	TSP-18	4	*	*	*
	STATION 44	TSP-19	990	0.88	0.0384	UPWIND
26-Jul-08						
	STATION 1C	TSP-12	777	0.47	0.1248	505 (1)
	STATION 31A	TSP-1	1751	1.04	0.0148	UPWIND
	STATION 43	TSP-18	2	*	*	*
	STATION 44	TSP-19	1441	0.87	0.0354	143 (1)
27-Jul-08						
	STATION 1C	TSP-12	495	0.4	0.1273	173 (1)
	STATION 31A	TSP-1	2	*	*	*
	STATION 44	TSP-19	1068	0.87	0.044	UPWIND
06-Aug-08						
	STATION 1C	TSP-12	341	0.23	0.217	354 (2)
	STATION 31A	TSP-1	982	0.64	0.0367	UPWIND
	STATION 43	TSP-18	1287	0.88	0.0412	67
	STATION 44	TSP-19	1237	0.83	0.0372	61
07-Aug-08						
	STATION 1C	TSP-12	754	0.55	0.0557	219 (2)
	STATION 31A	TSP-1	1119	0.79	0.0152	UPWIND
	STATION 43	TSP-18	1207	0.91	0.0323	127 (2)
	STATION 44	TSP-19	1209	0.88	0.0314	124 (2)
08-Aug-08						
	STATION 1C	TSP-12	820	0.56	0.0439	UPWIND
	STATION 31A	TSP-1	1290	0.85	0.0217	30
	STATION 43	TSP-18	1366	0.92	0.0439	60
	STATION 44	TSP-19	1272	0.88	0.0401	55
11-Aug-08						
	STATION 1C	TSP-12	694	0.49	0.0418	UPWIND
	STATION 31A	TSP-1	1254	0.87	0.0255	37
	STATION 43	TSP-18	1280	0.89	0.0469	67
	STATION 44	TSP-19	1117	0.79	0.043	62
12-Aug-08						
	STATION 1C	TSP-12	780	0.55	0.0436	UPWIND
	STATION 31A	TSP-1	1273	0.87	0.0346	48
	STATION 43	TSP-18	1289	0.9	0.0652	90
	STATION 44	TSP-19	1250	0.88	0.0496	68
13-Aug-08						
	STATION 1C	TSP-12	794	0.54	0.1108	UPWIND
	STATION 31A	TSP-1	1276	0.86	0.0611	33
	STATION 43	TSP-18	1249	0.89	0.0689	37
	STATION 44	TSP-19	1271	0.88	0.1101	60
14-Aug-08						
	STATION 1C	TSP-12	781	0.55	0.0883	UPWIND
	STATION 31A	TSP-1	1159	0.79	0.0362	25
	STATION 43	TSP-18	1298	0.9	0.0578	39
	STATION 44	TSP-19	1249	0.88	0.0616	42
15-Aug-08						
	STATION 1C	TSP-12	400	0.28	0.095	UPWIND
	STATION 31A	TSP-1	1334	0.9	0.0352	22
	STATION 43	TSP-18	1300	0.9	0.0615	39
	STATION 44	TSP-19	1266	0.89	0.0379	24

TABLE F.1.5

GROUP 17 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
16-Aug-08						
	STATION 31A	TSP-1	1429	0.92	0.0168	**
	STATION 43	TSP-18	1398	0.9	0.0222	**
17-Aug-08						
	STATION 43	TSP-18	1230	0.92	0.061	**
18-Aug-08						
	STATION 1C	TSP-12	816	0.55	0.136	102 (2)
	STATION 31A	TSP-1	1225	0.77	0.08	UPWIND
	STATION 43	TSP-18	1389	0.91	0.0504	38
	STATION 44	TSP-19	1290	0.85	0.1155	86
19-Aug-08						
	STATION 1C	TSP-12	755	0.55	0.0848	UPWIND
	STATION 31A	TSP-1	1262	0.91	0.0365	26
	STATION 43	TSP-18	1256	0.9	0.1529	108 (2)
	STATION 44	TSP-19	1206	0.88	0.0846	60
20-Aug-08						
	STATION 1C	TSP-12	784	0.55	0.0867	50
	STATION 31A	TSP-1	1212	0.83	0.0619	36
	STATION 43	TSP-18	1286	0.89	0.2449	141 (2)
	STATION 44	TSP-19	1258	0.88	0.1041	UPWIND
21-Aug-08						
	STATION 1C	TSP-12	773	0.55	0.1501	100 (2)
	STATION 31A	TSP-1	1195	0.83	0.0803	54
	STATION 43	TSP-18	1262	0.89	0.1165	78
	STATION 44	TSP-19	1237	0.88	0.0897	UPWIND
22-Aug-08						
	STATION 1C	TSP-12	806	0.54	0.1253	95
	STATION 31A	TSP-1	1273	0.88	0.0668	51
	STATION 43	TSP-18	1318	0.91	0.0926	70
	STATION 44	TSP-19	1283	0.88	0.0787	UPWIND
23-Aug-08						
	STATION 1C	TSP-12	636	0.4	0.1352	UPWIND
	STATION 31A	TSP-1	1305	0.78	0.0559	25
	STATION 43	TSP-18	1483	0.9	0.0627	28
	STATION 44	TSP-19	1337	0.84	0.0651	29
25-Aug-08						
	STATION 1C	TSP-12	478	0.34	0.0941	UPWIND
	STATION 31A	TSP-1	1163	0.79	0.0447	28
	STATION 43	TSP-18	785	0.55	0.2892	184 (2)
	STATION 44	TSP-19	1221	0.85	0.0868	55
26-Aug-08						
	STATION 1C	TSP-12	568	0.41	0.0915	UPWIND
	STATION 31A	TSP-1	1457	1.03	0.0295	19
	STATION 43	TSP-18	1226	0.88	0.1599	105 (2)
	STATION 44	TSP-19	1191	0.86	0.0999	65
27-Aug-08						
	STATION 1C	TSP-12	649	0.44	0.0863	UPWIND
	STATION 31A	TSP-1	1426	0.96	0.0309	21
	STATION 43	TSP-18	1290	0.9	0.1419	98
	STATION 44	TSP-19	1269	0.88	0.0678	47

TABLE F.1.5

GROUP 17 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
05-Sep-08						
	STATION 1C	TSP-12	291	0.21	0.2612	271 (2)
	STATION 31A	TSP-1	728	0.49	0.0577	UPWIND
	STATION 43	TSP-18	1292	0.89	0.031	32
	STATION 44	TSP-19	1175	0.82	0.063	65
06-Sep-08						
	STATION 1C	TSP-12	883	0.56	0.06	UPWIND
	STATION 31A	TSP-1	1453	0.89	0.0323	32
	STATION 43	TSP-18	316	*	*	*
	STATION 44	TSP-19	1335	0.85	0.0637	64
08-Sep-08						
	STATION 1C	TSP-12	701	0.49	0.1241	112 (2)
	STATION 31A	TSP-1	1321	0.92	0.0409	37
	STATION 43	TSP-18	809	0.56	0.0853	77
	STATION 44	TSP-19	1195	0.83	0.0661	UPWIND
09-Sep-08						
	STATION 1C	TSP-12	625	0.44	0.0496	**
	STATION 31A	TSP-1	1323	0.89	0.0302	**
10-Sep-08						
	STATION 1C	TSP-12	710	0.5	0.1014	UPWIND
	STATION 31A	TSP-1	1300	0.91	0.0677	40
	STATION 43	TSP-18	1283	0.89	0.2369	140 (2)
	STATION 44	TSP-19	1232	0.86	0.0633	37
11-Sep-08						
	STATION 31A	TSP-1	1181	0.8	0.0593	49
	STATION 43	TSP-18	1375	0.95	0.1505	125 (2)
	STATION 44	TSP-19	1193	0.84	0.0721	UPWIND
13-Sep-08						
	STATION 1C	TSP-12	743	0.46	0.1642	135 (2)
	STATION 31A	TSP-1	1377	0.84	0.0661	54
	STATION 43	TSP-18	1404	0.88	0.057	47
	STATION 44	TSP-19	1193	0.78	0.0729	UPWIND
15-Sep-08						
	STATION 1C	TSP-12	179	0.13	0.1397	UPWIND
	STATION 31A	TSP-1	1262	0.86	0.0254	11
	STATION 43	TSP-18	893	0.62	0.047	20
	STATION 44	TSP-19	1098	0.8	0.0474	20
16-Sep-08						
	STATION 1C	TSP-12	114	0.08	0.4561	UPWIND
	STATION 31A	TSP-1	1262	0.86	0.0404	5
	STATION 43	TSP-18	955	0.66	0.0429	6
	STATION 44	TSP-19	1282	0.9	0.0468	6
17-Sep-08						
	STATION 1C	TSP-12	116	0.08	0.3621	UPWIND
	STATION 31A	TSP-1	1221	0.81	0.0663	11
	STATION 43	TSP-18	947	0.64	0.0781	13
	STATION 44	TSP-19	1225	0.85	0.0776	13
18-Sep-08						
	STATION 1C	TSP-12	638	0.46	0.0611	UPWIND
	STATION 31A	TSP-1	1153	0.81	0.0659	65
	STATION 43	TSP-18	1081	0.77	0.0916	90
	STATION 44	TSP-19	1243	0.89	0.0732	72

TABLE F.1.5

GROUP 17 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
19-Sep-08						
	STATION 1C	TSP-12	248	0.15	0.2661	183 (2)
	STATION 31A	TSP-1	1191	0.78	0.0714	49
	STATION 43	TSP-18	1065	0.63	0.1221	84
	STATION 44	TSP-19	1469	0.89	0.0871	UPWIND
22-Sep-08						
	STATION 1C	TSP-12	108	0.08	1.213	475 (2)
	STATION 31A	TSP-1	888	0.64	0.1554	61
	STATION 43	TSP-18	830	0.61	0.2458	96
	STATION 44	TSP-19	1040	0.77	0.1529	UPWIND
23-Sep-08						
	STATION 1C	TSP-12	113	0.08	0.6283	295 (2)
	STATION 31A	TSP-1	1155	0.81	0.1342	63
	STATION 43	TSP-18	932	0.66	0.22	103 (2)
	STATION 44	TSP-19	1223	0.86	0.1276	UPWIND
24-Sep-08						
	STATION 1C	TSP-12	218	0.15	0.4817	UPWIND
	STATION 31A	TSP-1	1148	0.78	0.1098	14
	STATION 43	TSP-18	960	0.66	0.1948	24
	STATION 44	TSP-19	1249	0.86	0.0921	11
25-Sep-08						
	STATION 1C	TSP-12	381	0.27	0.0787	UPWIND
	STATION 31A	TSP-1	1111	0.76	0.063	48
	STATION 43	TSP-18	897	0.63	0.1483	113 (2)
	STATION 44	TSP-19	1248	0.88	0.1066	81
26-Sep-08						
	STATION 1C	TSP-12	426	0.28	0.0657	UPWIND
	STATION 31A	TSP-1	1056	0.68	0.1032	94
	STATION 44	TSP-19	1350	0.89	0.1044	95
27-Sep-08						
	STATION 1C	TSP-12	473	0.27	0.0423	UPWIND
	STATION 31A	TSP-1	1399	0.78	0.0357	51
	STATION 43	TSP-18	0	*	*	*
	STATION 44	TSP-19	1450	0.83	0.0524	74
29-Sep-08						
	STATION 1C	TSP-12	593	0.42	0.1383	323 (2)
	STATION 31A	TSP-1	1171	0.81	0.0256	UPWIND
	STATION 43	TSP-18	1114	0.8	0.0673	157 (2)
	STATION 44	TSP-19	1415	1.02	0.0021	5
30-Sep-08						
	STATION 1C	TSP-12	182	*	*	*
	STATION 31A	TSP-1	1235	0.85	0.0186	UPWIND
	STATION 43	TSP-18	1146	0.82	0.041	132 (2)
	STATION 44	TSP-19	1193	0.86	0.0151	49
01-Oct-08						
	STATION 1C	TSP-12	654	0.44	0.0061	12
	STATION 31A	TSP-1	1221	0.8	0.0311	UPWIND
	STATION 43	TSP-18	1252	0.84	0.028	54
	STATION 44	TSP-19	1325	0.89	0.0226	44

TABLE F.1.5

GROUP 17 TSP AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Location*	*Unit ID*	*Total Volume m3*	*Average Flow m3/min*	*TSP Concentration mg/m3*	*Percent Allowable %*
02-Oct-08						
	STATION 1C	TSP-12	608	0.45	0.0049	9
	STATION 31A	TSP-1	1195	0.86	0.0176	34
	STATION 43	TSP-18	1179	0.86	0.0416	80
	STATION 44	TSP-19	1227	0.89	0.031	UPWIND
03-Oct-08						
	STATION 1C	TSP-12	939	0.67	0.2087	403 [(2)]
	STATION 31A	TSP-1	1227	0.83	0.0473	91
	STATION 43	TSP-18	1221	0.84	0.0827	160 [(2)]
	STATION 44	TSP-19	0	*	*	*
05-Oct-08						
	STATION 43	TSP-18	312	*	*	*

Notes:

* Results not reported due to machine malfunction.

** UPWIND machine did not run, therefore, percent allowable not calculable.

(1) Exceedance attributed to increased work activities.

(2) Exceedance attributed to increased work activities and less than average rainfall.

TABLE F.2.1

STATION 1B PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
15-Jun-05	PUF-7	308	6.3	0.0205	2
16-Jun-05	PUF-7	345	14.0	0.0406	4
17-Jun-05	PUF-7	385	8.3	0.0216	2
20-Jun-05	PUF-7	343	56.0	0.1633	16
21-Jun-05	PUF-7	376	12.0	0.0319	3
22-Jun-05	PUF-7	361	93.0	0.2576	26
29-Jun-05	PUF-7	411	76.0	0.1849	18
06-Jul-05	PUF-7	314	38.0	0.121	12
13-Jul-05	PUF-7	379	33.0	0.0871 J	9
20-Jul-05	PUF-7	355	20.0	0.0563 J	6
28-Jul-05	PUF-7	348	25.0	0.0718	7
03-Aug-05	PUF-7	365	37.0	0.1014	10
10-Aug-05	PUF-7	337	27.0	0.0801 J	8
17-Aug-05	PUF-7	343	93.0	0.2711	27
02-Nov-05	PUF-7	292	68.0	0.2329	23
09-Nov-05	PUF-7	398	2.0	0.005	0
30-Nov-05	PUF-7	407	11.0	0.027	3
07-Dec-05	PUF-7	373	3.6	0.0097 J	1
21-Dec-05	PUF-7	425	5.1	0.012	1
04-Jan-06	PUF-7	399	2.9	0.0073	1
12-Jan-06	PUF-7	428	24.0	0.0561	6
18-Jan-06	PUF-7	412	6.2	0.015	2
25-Jan-06	PUF-7	355	3.0	0.0085	1
01-Feb-06	PUF-7	364	8.1	0.0223	2
07-Feb-06	PUF-7	357	1.2	0.0034	0
13-Feb-06	PUF-7	414	1.6	0.0039 J	0
20-Feb-06	PUF-7	371	2.2	0.0059	1
27-Feb-06	PUF-7	369	7.8	0.0211	2
06-Mar-06	PUF-7	330	3.4	0.0103	1
15-Mar-06	PUF-7	349	14.0	0.0401 J	4
20-Mar-06	PUF-7	5	*	*	*
29-Mar-06	PUF-7	306	18.0	0.0588	6
10-Apr-06	PUF-7	242	75.0	0.3099	31
11-Apr-06	PUF-7	282	34.0	0.1206	12
20-Apr-06	PUF-16	247	34.0	0.1377	14
01-May-06	PUF-16	247	88.0	0.3563	36
03-May-06	PUF-16	401	520.0	1.2968	130 (1)
12-May-06	PUF-16	347	30.0	0.0865	9
13-May-06	PUF-16	233	*	*	*
16-May-06	PUF-16	448	14.0	0.0312	3
17-May-06	PUF-16	404	7.4	0.0183	2
18-May-06	PUF-16	375	7.7	0.0205	2
19-May-06	PUF-16	410	25.0	0.061	6
22-May-06	PUF-16	410	25.0	0.061	6
23-May-06	PUF-16	343	71.0	0.207	21
24-May-06	PUF-16	421	370.0	0.8789	88
25-May-06	PUF-16	401	170.0	0.4239	42
30-May-06	PUF-16	440	380.0	0.8636	86
31-May-06	PUF-16	418	130.0	0.311	31
01-Jun-06	PUF-16	431	110.0	0.2552	26
02-Jun-06	PUF-16	444	47.0	0.1059	11

TABLE F.2.1

STATION 1B PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
05-Jun-06	PUF-16	435	38.0	0.0874	9
06-Jun-06	PUF-16	434	750.0	1.7281	173 (2)
07-Jun-06	PUF-16	411	460.0	1.1192	112 (2)
08-Jun-06	PUF-16	411	110.0	0.2676	27
09-Jun-06	PUF-16	403	53.0	0.1315	13
10-Jun-06	PUF-16	166	*	*	*
12-Jun-06	PUF-16	508	28.0	0.0551	6
14-Jun-06	PUF-16	370	58.0	0.1568	16
15-Jun-06	PUF-16	412	750.0	1.8204	182 (2)
16-Jun-06	PUF-16	390	1300.0	3.3333 J	333 (2)
17-Jun-06	PUF-16	474	557.0	1.7511 J	175 (2)
19-Jun-06	PUF-16	417	300.0	0.7194	72

Notes:

* Results not reported due to machine malfunction.

J Estimated result. Results if less than the reporting limit.

ND Not detected.

(1) Exceedance primarily attributed to stockpile activities at the Zipp Parking Lot

(2) Exceedance primarily attributed to >50 ppm material placement into the vault and East Plant Excavation

TABLE F.2.2

STATION 1C PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
21-Jun-06	PUF-16	168	11.0	0.0655	7
22-Jun-06	PUF-16	214	56.0	0.2617	26
23-Jun-06	PUF-16	205	18.0	0.0878	9
24-Jun-06	PUF-16	213	18.0	0.0845	8
26-Jun-06	PUF-16	200	65.0	0.325	32
27-Jun-06	PUF-16	215	18.0	0.0837	8
28-Jun-06	PUF-16	229	56.0	0.2445	24
29-Jun-06	PUF-16	215	52.0	0.2419	24
30-Jun-06	PUF-16	512	240.0	0.4688	47
3-Jul-06	PUF-16	468	6.4	0.0137 J	1
5-Jul-08	PUF-16	369	7.2	0.0195	2
6-Jul-08	PUF-16	475	10.0	0.0211	2
7-Jul-08	PUF-16	403	14.0	0.0347	3
8-Jul-06	PUF-16	470	120.0	0.2553 J	26
10-Jul-06	PUF-16	427	350.0	0.8197	82
17-Jul-06	PUF-16	421	380.0	0.9026	90
18-Jul-06	PUF-16	409	56.0	0.1369	14
19-Jul-06	PUF-16	435	550.0	1.2644	126 (1)
20-Jul-06	PUF-16	425	220.0	0.5176	52
21-Jul-06	PUF-16	391	140.0	0.3581	36
22-Jul-06	PUF-16	525	26.0	0.0495	5
24-Jul-06	PUF-16	386	65.0	0.1684	17
25-Jul-06	PUF-16	424	560.0	1.3208	132 (1)
26-Jul-06	PUF-16	445	42.0	0.0944	9
28-Jul-06	PUF-16	421	59.0	0.1401	14
29-Jul-06	PUF-16	435	210.0	0.4828	48
31-Jul-06	PUF-16	373	520.0	1.3941	139 (1)
1-Aug-06	PUF-16	452	360.0	0.7965	80
2-Aug-06	PUF-16	432	15.0	0.0347	3
3-Aug-06	PUF-16	448	14.0	0.0312	3
4-Aug-06	PUF-16	427	20.0	0.0468	5
5-Aug-06	PUF-16	505	37.0	0.0733	7
7-Aug-06	PUF-16	436	24.0	0.055	6
8-Aug-06	PUF-16	356	73.0	0.2051	21
9-Aug-06	PUF-16	432	140.0	0.3241	32
10-Aug-06	PUF-16	422	91.0	0.2156	22
11-Aug-06	PUF-16	431	19.0	0.0441	4
12-Aug-06	PUF-16	514	26.0	0.0506	5
14-Aug-06	PUF-16	435	15.0	0.0345	3
15-Aug-06	PUF-16	440	14.0	0.0318	3
16-Aug-06	PUF-16	430	18.0	0.0419	4
17-Aug-06 - AM setup	PUF-16	215	60.0	0.2791	28(†)
17-Aug-06 - PM setup	PUF-16	221	25.0	0.1131	11(†)
18-Aug-06 - AM setup	PUF-16	204	8.6	0.0422	4(†)
18-Aug-06 - PM setup	PUF-16	232	140.0	0.6034	60(†)
19-Aug-06 - AM setup	PUF-16	196	8.7	0.0444	4(†)
19-Aug-06 - PM setup	PUF-16	217	23.0	0.106	11(†)
21-Aug-06	PUF-16	487	36.0	0.0739	7
22-Aug-06	PUF-16	464	18.0	0.0388	4
23-Aug-06	PUF-16	467	69.0	0.1478	15
24-Aug-06	PUF-16	423	150.0	0.3546	35
25-Aug-06	PUF-16	426	220.0	0.5164 J	52
26-Aug-06	PUF-16	524	220.0	0.4198	42
29-Aug-06	PUF-16	418	12.0	0.0287	3
30-Aug-06	PUF-16	450	29.0	0.0644	6
31-Aug-06	PUF-16	467	5.2	0.0111	1
5-Sep-06	PUF-16	412	11.0	0.0267	3
6-Sep-06	PUF-16	422	45.0	0.1066	11

TABLE F.2.2

STATION 1C PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
7-Sep-06	PUF-16	450	110.0	0.2444	24
8-Sep-06	PUF-16	492	110.0	0.2236	22
9-Sep-06	PUF-16	543	110.0	0.2026	20
11-Sep-06	PUF-16	499	380.0	0.7615	76
14-Sep-06	PUF-16	481	23.0	0.0478	5
15-Sep-06	PUF-16	538	120.0	0.223	22
16-Sep-06	PUF-16	487	340.0	0.6982	70
18-Sep-06	PUF-16	454	7.9	0.0174	2
19-Sep-06	PUF-16	469	4.4	0.0094	1
20-Sep-06	PUF-16	470	21.0	0.0447	4
21-Sep-06	PUF-16	477	180.0	0.3774	38
25-Sep-06	PUF-16	472	16.0	0.0339	3
26-Sep-06	PUF-16	485	180.0	0.3711	37
27-Sep-06	PUF-16	441	14.0	0.0317	3
28-Sep-06	PUF-16	495	13.0	0.0263	3
29-Sep-06	PUF-16	465	72.0	0.1548	15
30-Sep-06	PUF-16	538	11.0	0.0204	2
2-Oct-06	PUF-16	500	140.0	0.28	28
4-Oct-06	PUF-16	436	12.0	0.0275	3
5-Oct-06	PUF-16	443	2.6	0.0059	1
6-Oct-06	PUF-16	422	10.0	0.0237	2
7-Oct-06	PUF-16	529	27.0	0.051	5
9-Oct-06	PUF-16	412	87.0	0.2112	21
10-Oct-06	PUF-16	439	170.0	0.3872	39
11-Oct-06	PUF-16	411	3.9	0.0095	1
12-Oct-06	PUF-16	410	1.5	0.0037	0
13-Oct-06	PUF-16	455	1.5	0.0033	0
14-Oct-06	PUF-16	449	11.0	0.0245	2
16-Oct-06	PUF-16	447	110.0	0.2461	25
17-Oct-06	PUF-16	421	45.0	0.1069	11
18-Oct-06	PUF-16	466	200.0	0.4292	43
19-Oct-06	PUF-16	447	2.4	0.0054	1
20-Oct-06	PUF-16	476	37.0	0.0777	8
21-Oct-06	PUF-16	511	91.0	0.1781	18
23-Oct-06	PUF-16	466	1.5	0.0032	0
24-Oct-06	PUF-16	463	8.6	0.0186	2
25-Oct-06	PUF-16	498	74.0	0.1486	15
26-Oct-06	PUF-16	450	99.0	0.22	22
27-Oct-06	PUF-16	460	13.0	0.0283	3
28-Oct-06	PUF-16	475	2.3	0.0048	0
30-Oct-06	PUF-16	436	12.0	0.0275	3
31-Oct-06	PUF-16	456	3.8	0.0083	1
1-Nov-06	PUF-16	449	1.2	0.0027	0
2-Nov-06	PUF-16	484	5.3	0.011	1
3-Nov-06	PUF-16	483	28.0	0.058	6
4-Nov-06	PUF-16	524	89.0	0.1698	17
6-Nov-06	PUF-16	449	96.0	0.2138	21
7-Nov-06	PUF-16	470	68.0	0.1447	14
8-Nov-06	PUF-16	468	78.0	0.1667	17
9-Nov-06	PUF-16	474	130.0	0.2743	27
10-Nov-06	PUF-16	462	49.0	0.1061	11
11-Nov-06	PUF-16	548	1.7	0.0031	0
12-Nov-06	PUF-16	456	32.0	0.0702	7
13-Nov-06	PUF-16	487	38.0	0.078	8
14-Nov-06	PUF-16	480	72.0	0.15	15
15-Nov-06	PUF-16	437	5.7	0.013	1
17-Nov-06	PUF-16	512	36.0	0.0703	7
18-Nov-06	PUF-16	452	2.1	0.0046	0

TABLE F.2.2

STATION 1C PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
19-Nov-06	PUF-16	338	1.0	0.003	0
20-Nov-06	PUF-16	467	32.0	0.0685	7
21-Nov-06	PUF-16	387	65.0	0.168	17
27-Nov-06	PUF-16	442	150.0	0.3394	34
28-Nov-06	PUF-16	454	150.0	0.3304	33
29-Nov-06	PUF-16	477	140.0	0.2935	29
30-Nov-06	PUF-16	439	4.1	0.0093	1
4-Dec-06	PUF-16	464	0.6	0.0012	0
5-Dec-06	PUF-16	444	27.0	0.0608	6
6-Dec-06	PUF-16	458	1.2	0.0026	0
7-Dec-06	PUF-16	488	0.0	ND(0.001)	0
11-Dec-06	PUF-16	433	160.0	0.3695	37
13-Dec-06	PUF-16	456	7.4	0.0162	2
14-Dec-06	PUF-16	433	5.5	0.0127	1
15-Dec-06	PUF-16	438	25.0	0.0571	6
16-Dec-06	PUF-16	485	59.0	0.1216	12
18-Dec-06	PUF-16	422	3.0	0.0071	1
19-Dec-06	PUF-16	430	27.0	0.0628	6
20-Dec-06	PUF-16	455	35.0	0.0769	8
2-Jan-07	PUF-16	395	39.0	0.0987	10
3-Jan-07	PUF-16	444	17.0	0.0383	4
4-Jan-07	PUF-16	463	38.0	0.0821	8
5-Jan-07	PUF-16	435	23.0	0.0529	5
6-Jan-07	PUF-16	527	9.6	0.0182	2
8-Jan-07	PUF-16	388	0.9	0.0023	0
9-Jan-07	PUF-16	425	0.0	ND(0.0012)	0
10-Jan-07	PUF-16	448	19.0	0.0424	4
11-Jan-07	PUF-16	434	6.0	0.0138	1
12-Jan-07	PUF-16	469	9.7	0.0207	2
17-Jan-07	PUF-16	428	25.0	0.0584	6
26-Jan-07	PUF-16	468	1.3	0.0028	0
29-Jan-07	PUF-16	455	0.7	0.0016	0
31-Jan-07	PUF-16	355	0.8	0.0022	0
16-Feb-07	PUF-16	382	1.2	0.0031	0
19-Feb-07	PUF-16	397	1.2	0.003	0
21-Feb-07	PUF-16	384	19.0	0.0495	5
7-May-07	PUF-16	412	110.0	0.267	27
21-May-07	PUF-16	440	20.0	0.0455	5
30-May-07	PUF-16	438	61.0	0.1393	14
18-Jun-07	PUF-16	423	90.0	0.2128	21
26-Jun-07	PUF-16	421	41.0	0.0974	10
9-Jul-07	PUF-16	373	44.0	0.118	12
16-Jul-07	PUF-16	359	24.0	0.0669	7
5-Sep-07	PUF-16	379	52.0	0.1372	14
11-Sep-07	PUF-16	432	5.6	0.013	1
18-Sep-07	PUF-16	442	48.0	0.1086	11
24-Sep-07	PUF-16	447	38.0	0.085	8
1-Oct-07	PUF-16	452	43.0	0.0951	10
15-Oct-07	PUF-16	454	36.0	0.0793	8
15-Nov-07	PUF-16	444	1.2	0.0027	0
26-Feb-08	PUF-16	455	0.0	ND(0.0011)	0
5-Mar-08	PUF-16	455	3.4	0.0075	1
20-Mar-08	PUF-16	440	7.8	0.0177	2
26-Mar-08	PUF-16	428	6.0	0.014	1
3-Apr-08	PUF-16	471	6.4	0.0136	1
24-Apr-08	PUF-16	452	44.0	0.0973	10
1-May-08	PUF-16	414	5.0	0.0121	1
6-May-08	PUF-16	423	7.0	0.0165	2

TABLE F.2.2

STATION 1C PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
4-Jun-08	PUF-16	401	29.0	0.0723 J	7
12-Jun-08	PUF-16	411	56.0	0.1363	14
06-Aug-08	PUF-16	459	3.1	0.0068	1
07-Aug-08	PUF-16	438	2.4	0.0055	1
08-Aug-08	PUF-16	454	6.1	0.0134	1
11-Aug-08	PUF-16	438	3.8	0.0087	1
12-Aug-08	PUF-16	439	5	0.0114	1
13-Aug-08	PUF-16	443	4.8	0.0108	1
14-Aug-08	PUF-16	454	3.6	0.0079	1
15-Aug-08	PUF-16	443	3	0.0068	1
18-Aug-08	PUF-16	488	5.4	0.0111	1
19-Aug-08	PUF-16	425	5.7	0.0134	1
20-Aug-08	PUF-16	441	4.8	0.0109	1
21-Aug-08	PUF-16	435	30	0.069	7
22-Aug-08	PUF-16	460	14	0.0304	3
23-Aug-08	PUF-16	478	6	0.0126	1
25-Aug-08	PUF-16	421	1.3	0.0031	0
26-Aug-08	PUF-16	406	1.5	0.0037	0
27-Aug-08	PUF-16	442	9.9	0.0224	2
05-Sep-08	PUF-16	476	1.2	0.0025	0
06-Sep-08	PUF-16	392	6.3	0.0161	2
08-Sep-08	PUF-16	456	14	0.0307	3
10-Sep-08	PUF-16	468	18	0.0385	4
11-Sep-08	PUF-16	442	24	0.0543	5
13-Sep-08	PUF-16	516	7.2	0.014	1
16-Sep-08	PUF-16	453	3.2	0.0071	1
17-Sep-08	PUF-16	461	5.5	0.0119	1
18-Sep-08	PUF-16	457	6.7	0.0147	1
19-Sep-08	PUF-16	527	18	0.0342	3
22-Sep-08	PUF-16	432	15	0.0347	3
23-Sep-08	PUF-16	439	15	0.0342	3
24-Sep-08	PUF-16	449	18	0.0401	4
25-Sep-08	PUF-16	450	3.4	0.0076	1
26-Sep-08	PUF-16	485	2.4	0.0049	0
27-Sep-08	PUF-16	559	9.7	0.0174	2
29-Sep-08	PUF-16	437	4.1	0.0094	1
30-Sep-08	PUF-16	124	*	*	*
1-Oct-08	PUF-16	476	1.8	0.0038	0
2-Oct-08	PUF-16	432	2.4	0.0056	1
3-Oct-08	PUF-16	406	4.8	0.0118	1

Notes:

*	Results not reported due to machine malfunction
J	Estimated result. Results if less than the reporting limit.
NR	No result because machine was not setup
(†)	Result is based on a sampling time of 12 hours
(1)	Exceedance primarily attributed to >50 ppm soil placement into the vault.

TABLE F.2.3

STATION 14 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
01-Oct-04	PUF-12	282	6.1	0.0216	2
02-Oct-04	PUF-12	372	1.9	0.0051	1
04-Oct-04	PUF-12	391	1.5	0.0038	0
05-Oct-04	PUF-12	408	7.0	0.0172	2
06-Oct-04	PUF-12	351	11.0	0.0313	3
07-Oct-04	PUF-12	312	9.0	0.0288	3
08-Oct-04	PUF-12	444	17.0	0.0383	4
11-Oct-04	PUF-12	384	2.0	0.0052	1
12-Oct-04	PUF-12	368	4.0	0.0109	1
13-Oct-04	PUF-12	407	1.3	0.0032	0
14-Oct-04	PUF-12	355	1.0	0.0028 J	0
21-Oct-04	PUF-12	422	0.0	ND(0.0284)	--
26-Oct-04	PUF-12	403	3.8	0.0094	1
27-Oct-04	PUF-12	390	1.3	0.0033	0
28-Oct-04	PUF-12	391	7.1	0.0182	2
29-Oct-04	PUF-12	519	8.9	0.0171	2
01-Nov-04	PUF-12	307	5.0	0.0163	2
02-Nov-04	PUF-12	272	0.7	0.0025 J	0
03-Nov-04	PUF-12	380	0.9	0.0024	0
04-Nov-04	PUF-12	392	0.0	--	--
05-Nov-04	PUF-12	540	2.8	0.0052	1
08-Nov-04	PUF-12	449	7.3	0.0163	2
09-Nov-04	PUF-12	315	5.9	0.0187	2
09-Nov-04	PUF-4	292	5.8	0.0199	2
10-Nov-04	PUF-12	387	5.7	0.0147	1
10-Nov-04	PUF-4	387	5.5	0.0142	1
11-Nov-04	PUF-12	339	1.2	0.0035	0
11-Nov-04	PUF-4	339	0.8	0.0025	0
12-Nov-04	PUF-12	496	0.6	0.0012 J	0
12-Nov-04	PUF-4	496	0.7	0.0014 J	0
15-Nov-04	PUF-12	410	13.0	0.0317	3
15-Nov-04	PUF-4	407	13.0	0.0319	3
16-Nov-04	PUF-12	392	14.0	0.0357	4
16-Nov-04	PUF-4	408	14.0	0.0343	3
19-Nov-04	PUF-12	451	5.5	0.0122	1
19-Nov-04	PUF-4	468	5.7	0.0122	1
06-Dec-04	PUF-12	370	8.3	0.0224	2
06-Dec-04	PUF-4	370	4.0	0.0108	1
13-Dec-04	PUF-12	404	0.0	ND(0.0019)	--
13-Dec-04	PUF-4	404	0.0	ND(0.0019)	--
04-Jan-05	PUF-12	391	2.6	0.0066	1
04-Jan-05	PUF-4	405	2.7	0.0067	1
18-Jan-05	PUF-12	431	1.2	0.0028	0
18-Jan-05	PUF-4	416	0.8	0.0019	0
31-Jan-05	PUF-12	424	7.2	0.017	2
08-Feb-05	PUF-12	402	1.1	0.0027	0
16-Feb-05	PUF-12	413	0.0	ND(0.0018)	--
22-Feb-05	PUF-12	429	0.0	ND(0.0017)	--
02-Mar-05	PUF-12	350	1.5	0.0043	0
16-Mar-05	PUF-12	412	6.0	0.0146	1
24-Mar-05	PUF-12	395	3.1	0.0078	1
13-Apr-05	PUF-12	353	2.7	0.0076	1
25-May-05	PUF-12	340	13.0	0.0382	4

TABLE F.2.3

STATION 14 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
25-May-05	PUF-4	243	16.0	0.0658	7
01-Jun-05	PUF-12	319	3.8	0.0119	1
01-Jun-05	PUF-4	235	4.3	0.0183	2
09-Jun-05	PUF-12	328	14.0	0.0427	4
09-Jun-05	PUF-4	228	19.0	0.0833	8
15-Jun-05	PUF-12	306	2.5	0.0082	1
15-Jun-05	PUF-4	236	2.8	0.0119	1
16-Jun-05	PUF-12	224	3.9	0.0174	2
16-Jun-05	PUF-4	171	5.1	0.0298	3
17-Jun-05	PUF-12	312	3.6	0.0115	1
17-Jun-05	PUF-4	237	3.6	0.0152	2
20-Jun-05	PUF-12	318	15.0	0.0472	5
20-Jun-05	PUF-4	249	16.0	0.0643	6
21-Jun-05	PUF-12	277	7.2	0.026	3
21-Jun-05	PUF-4	316	7.3	0.0231	2
22-Jun-05	PUF-12	311	14.0	0.045	4
22-Jun-05	PUF-4	354	14.0	0.0395	4
29-Jun-05	PUF-12	325	21.0	0.0646	6
06-Jul-05	PUF-12	304	7.7	0.0253	3
13-Jul-05	PUF-12	300	2.8	0.0093	1
13-Jul-05	PUF-4	342	3.0	0.0088	1
20-Jul-05	PUF-12	320	14.0	0.0438	4
20-Jul-05	PUF-4	334	17.0	0.0509	5
28-Jul-05	PUF-12	165	1.9	0.0115	1
28-Jul-05	PUF-4	180	1.5	0.0083	1
03-Aug-05	PUF-12	319	19.0	0.0596	6
03-Aug-05	PUF-4	348	22.0	0.0632	6
10-Aug-05	PUF-12	307	12.0	0.0391	4
10-Aug-05	PUF-4	321	13.0	0.0405	4
17-Aug-05	PUF-12	0	0.0	ND()	
17-Aug-05	PUF-4	1	0.0	ND(0.75)	--
24-Aug-05	PUF-12	150	1.0	0.0067	1
24-Aug-05	PUF-4	131	1.1	0.0084	1
01-Sep-05	PUF-12	2	0.0	ND(0.375)	--
01-Sep-05	PUF-4	2	0.0	ND(0.375)	--
08-Sep-05	PUF-12	238	32.0	0.1345	13
08-Sep-05	PUF-4	216	29.0	0.1343	13
14-Sep-05	PUF-12	3	0.0	ND(0.25)	--
14-Sep-05	PUF-4	2	0.0	ND(0.375)	--
12-Oct-05	PUF-12	387	21.0	0.0543	5
12-Oct-05	PUF-4	318	22.0	0.0692	7
26-Oct-05	PUF-12	371	8.9	0.024	2
26-Oct-05	PUF-4	314	8.5	0.0271	3
02-Nov-05	PUF-12	323	17.0	0.0526	5
02-Nov-05	PUF-4	308	15.0	0.0487	5
09-Nov-05	PUF-12	364	0.8	0.0021	0
09-Nov-05	PUF-4	320	0.7	0.0023	0
30-Nov-05	PUF-12	332	2.0	0.006	1
30-Nov-05	PUF-4	293	2.2	0.0075	1
07-Dec-05	PUF-12	409	0.9	0.0023 J	0
07-Dec-05	PUF-4	366	0.8	0.0021 J	0
21-Dec-05	PUF-12	450	2.7	0.006	1
21-Dec-05	PUF-4	434	2.6	0.006	1

TABLE F.2.3

STATION 14 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
04-Jan-06	PUF-12	397	0.0	ND(0.0019)	--
04-Jan-06	PUF-4	411	0.0	ND(0.0018)	--
12-Jan-06	PUF-12	481	5.5	0.0114	1
12-Jan-06	PUF-4	531	5.3	0.01 J	1
18-Jan-06	PUF-12	368	1.0	0.0027	0
18-Jan-06	PUF-4	420	1.0	0.0023	0
25-Jan-06	PUF-12	448	2.4	0.0054	1
25-Jan-06	PUF-4	418	2.9	0.0069	1
01-Feb-06	PUF-12	469	12.0	0.0256	3
01-Feb-06	PUF-4	466	13.0	0.0279	3
07-Feb-06	PUF-12	353	0.8	0.0022	0
07-Feb-06	PUF-4	367	1.0	0.0026	0
13-Feb-06	PUF-12	379	5.5	0.0145	1
13-Feb-06	PUF-4	452	6.4	0.0142	1
20-Feb-06	PUF-12	421	1.7	0.004	0
27-Feb-06	PUF-12	360	6.6	0.0183	2
27-Feb-06	PUF-4	402	6.1	0.0152	2
06-Mar-06	PUF-12	341	2.0	0.0059	1
06-Mar-06	PUF-4	399	2.3	0.0058 J	1
15-Mar-06	PUF-12	395	4.7	0.0119 J	1
15-Mar-06	PUF-4	381	4.7	0.0123 J	1
20-Mar-06	PUF-12	415	2.5	0.006	1
20-Mar-06	PUF-4	401	0.0	ND(0.0019)	--
29-Mar-06	PUF-12	411	5.0	0.0122	1
29-Mar-06	PUF-4	396	5.2	0.0131	1
10-Apr-06	PUF-12	406	4.6	0.0113	1
10-Apr-06	PUF-4	349	4.3	0.0123	1
11-Apr-06	PUF-12	429	11.0	0.0256	3
11-Apr-06	PUF-4	0			
02-May-06	PUF-12	466	14.0	0.03	3
02-May-06	PUF-4	453	13.0	0.0287	3
03-May-06	PUF-12	129	15.0	0.1163	12
03-May-06	PUF-4	429	34.0	0.0793	8
19-May-06	PUF-12	267	4.5	0.0169	2
19-May-06	PUF-4	454	4.5	0.0099	1
22-May-06	PUF-12	207	3.9	0.0188	2
22-May-06	PUF-4	386	3.9	0.0101	1
23-May-06	PUF-12	188	5.8	0.0309	3
23-May-06	PUF-4	433	6.3	0.0145	1
24-May-06	PUF-12	204	9.7	0.0475	5
24-May-06	PUF-4	340	9.2	0.0271	3
25-May-06	PUF-12	217	24.0	0.1106	11
25-May-06	PUF-4	393	23.0	0.0585	6
30-May-06	PUF-12	231	15.0	0.0649	6
30-May-06	PUF-4	419	14.0	0.0334	3
31-May-06	PUF-12	236	8.1	0.0343	3
31-May-06	PUF-4	427	7.5	0.0176	2
01-Jun-06	PUF-12	222	8.8	0.0396	4
01-Jun-06	PUF-4	402	9.7	0.0241 J	2
02-Jun-06	PUF-12	423	11.0	0.026	3
02-Jun-06	PUF-4	396	11.0	0.0278	3
05-Jun-06	PUF-12	422	9.3	0.022 J	2
05-Jun-06	PUF-4	436	9.1	0.0209 J	2

TABLE F.2.3

STATION 14 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
06-Jun-06	PUF-12	441	20.0	0.0454 J	5
06-Jun-06	PUF-4	426	19.0	0.0446 J	4
07-Jun-06	PUF-12	339	12.0	0.0354	4
07-Jun-06	PUF-4	0			
08-Jun-06	PUF-12	385	14.0	0.0364	4
08-Jun-06	PUF-4	379	18.0	0.0475	5
09-Jun-06	PUF-12	407	6.0	0.0147	1
09-Jun-06	PUF-4	377	6.2	0.0164	2
10-Jun-06	PUF-12	403	2.6	0.0065 J	1
10-Jun-06	PUF-4	378	0.7	0.0018 J	0
12-Jun-06	PUF-12	435	3.3	0.0076	1
14-Jun-06	PUF-12	392	8.5	0.0217	2
14-Jun-06	PUF-4	417	8.9	0.0213	2
15-Jun-06	PUF-12	387	7.2	0.0186	2
15-Jun-06	PUF-4	417	6.0	0.0144	1
16-Jun-06	PUF-12	368	12.0	0.0326 J	3
16-Jun-06	PUF-4	424	13.0	0.0307 J	3
17-Jun-06	PUF-12	406	33.0	0.0813 J	8
17-Jun-06	PUF-4	468	32.0	0.0684 J	7
19-Jun-06	PUF-12	367	11.0	0.03	3
19-Jun-06	PUF-4	423	12.0	0.0284	3
20-Jun-06	PUF-12	374	330.0	0.8824 J	88
20-Jun-06	PUF-4	417	19.0	0.0456 J	5
21-Jun-06	PUF-12	369	72.0	0.1951	20
21-Jun-06	PUF-4	412	71.0	0.1723	17
22-Jun-06	PUF-12	371	9.7	0.0261	3
22-Jun-06	PUF-4	428	9.5	0.0222	2
23-Jun-06	PUF-12	367	6.0	0.0163	2
23-Jun-06	PUF-4	425	5.9	0.0139	1
24-Jun-06	PUF-4	435	6.7	0.0154	2
26-Jun-06	PUF-12	432	8.3	0.0192	2
26-Jun-06	PUF-4	424	7.9	0.0186	2
27-Jun-06	PUF-12	426	7.1	0.0167	2
27-Jun-06	PUF-4	397	7.4	0.0186	2
28-Jun-06	PUF-12	435	8.3	0.0191	2
28-Jun-06	PUF-4	404	8.8	0.0218	2
29-Jun-06	PUF-12	451	7.5	0.0166	2
29-Jun-06	PUF-4	421	7.3	0.0173	2
30-Jun-06	PUF-12	437	11.0	0.0252	3
30-Jun-06	PUF-4	407	11.0	0.027	3
03-Jul-06	PUF-12	426	31.0	0.0728	7
03-Jul-06	PUF-4	477	31.0	0.065	6
05-Jul-06	PUF-12	271	1.9	0.007	1
05-Jul-06	PUF-4	428	3.2	0.0075	1
06-Jul-06	PUF-12	208	2.4	0.0115	1
06-Jul-06	PUF-4	431	3.9	0.009	1
07-Jul-06	PUF-12	353	4.8	0.0136	1
07-Jul-06	PUF-4	420	4.2	0.01	1
08-Jul-06	PUF-12	467	5.3	0.0113 J	1
08-Jul-06	PUF-4	437	6.1	0.014 J	1
10-Jul-06	PUF-12	436	45.0	0.1032	10
10-Jul-06	PUF-4	379	46.0	0.1214	12
17-Jul-06	PUF-12	430	22.0	0.0512	5

TABLE F.2.3

STATION 14 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
17-Jul-06	PUF-4	401	24.0	0.0599	6
18-Jul-06	PUF-12	407	8.9	0.0219	2
18-Jul-06	PUF-4	379	11.0	0.029	3
19-Jul-06	PUF-12	421	10.0	0.0238	2
19-Jul-06	PUF-4	392	12.0	0.0306	3
20-Jul-06	PUF-12	399	18.0	0.0451	5
20-Jul-06	PUF-4	371	19.0	0.0512	5
21-Jul-06	PUF-12	393	15.0	0.0382	4
21-Jul-06	PUF-4	366	15.0	0.041	4
22-Jul-06	PUF-12	507	5.5	0.0108	1
22-Jul-06	PUF-4	473	5.8	0.0123	1
24-Jul-06	PUF-12	364	20.0	0.0549	5
24-Jul-06	PUF-4	351	19.0	0.0541	5
25-Jul-06	PUF-12	415	28.0	0.0675	7
25-Jul-06	PUF-4	372	29.0	0.078	8
26-Jul-06	PUF-12	421	180.0	0.4276	43
26-Jul-06	PUF-4	422	180.0	0.4265	43
28-Jul-06	PUF-12	431	48.0	0.1114	11
28-Jul-06	PUF-4	418	50.0	0.1196	12
29-Jul-06	PUF-12	433	24.0	0.0554	6
29-Jul-06	PUF-4	417	24.0	0.0576	6
31-Jul-06	PUF-12	412	36.0	0.0874	9
31-Jul-06	PUF-4	384	44.0	0.1146	11
01-Aug-06	PUF-12	450	53.0	0.1178	12
01-Aug-06	PUF-4	421	61.0	0.1449	14
02-Aug-06	PUF-12	466	120.0	0.2575	26
02-Aug-06	PUF-4	436	130.0	0.2982	30
03-Aug-06	PUF-12	429	14.0	0.0326	3
03-Aug-06	PUF-4	429	14.0	0.0326	3
04-Aug-06	PUF-12	430	9.3	0.0216	2
04-Aug-06	PUF-4	387	8.2	0.0212	2
05-Aug-06	PUF-12	489	22.0	0.045 J	4
05-Aug-06	PUF-4	458	47.6	0.1004 J	10
07-Aug-06	PUF-12	462	9.3	0.0201	2
07-Aug-06	PUF-4	462	9.9	0.0214	2
08-Aug-06	PUF-12	382	10.0	0.0262	3
08-Aug-06	PUF-4	359	9.3	0.0259	3
09-Aug-06	PUF-12	452	20.0	0.0442	4
09-Aug-06	PUF-4	424	19.0	0.0448	4
10-Aug-06	PUF-12	426	19.0	0.0446	4
10-Aug-06	PUF-4	427	18.0	0.0422	4
11-Aug-06	PUF-12	460	5.5	0.012	1
11-Aug-06	PUF-4	446	5.0	0.0112	1
12-Aug-06	PUF-12	523	6.7	0.0128	1
12-Aug-06	PUF-4	506	6.2	0.0123	1
14-Aug-06	PUF-12	411	12.0	0.0292	3
14-Aug-06	PUF-4	418	8.6	0.0206	2
15-Aug-06	PUF-4	425	8.1	0.0191	2
16-Aug-06	PUF-12	359	7.0	0.0195	2
16-Aug-06	PUF-4	333	6.2	0.0186	2
17-Aug-06	PUF-12	412	11.0	0.267 J	27
17-Aug-06	PUF-4	412	1.3	0.0032 J	0
18-Aug-06	PUF-12	426	14.0	0.0329	3

TABLE F.2.3

STATION 14 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
18-Aug-06	PUF-4	413	12.0	0.0291	3
19-Aug-06	PUF-12	383	8.8	0.023	2
19-Aug-06	PUF-4	396	9.3	0.0235	2
21-Aug-06	PUF-12	440	7.2	0.0164	2
21-Aug-06	PUF-4	426	6.5	0.0153	2
22-Aug-06	PUF-12	418	8.3	0.0199	2
22-Aug-06	PUF-4	416	8.9	0.0214	2
23-Aug-06	PUF-12	450	16.0	0.0356	4
23-Aug-06	PUF-4	449	16.0	0.0356	4
24-Aug-06	PUF-12	443	13.0	0.0293	3
24-Aug-06	PUF-4	414	13.0	0.0314	3
25-Aug-06	PUF-12	457	25.0	0.0547	5
25-Aug-06	PUF-4	427	23.0	0.0539	5
26-Aug-06	PUF-12	515	14.0	0.0272	3
26-Aug-06	PUF-4	465	12.0	0.0258	3
29-Aug-06	PUF-12	432	3.9	0.009	1
29-Aug-06	PUF-4	419	3.8	0.0091	1
30-Aug-06	PUF-12	448	3.4	0.0076	1
30-Aug-06	PUF-4	404	3.4	0.0084	1
31-Aug-06	PUF-12	449	1.6	0.0036 J	0
31-Aug-06	PUF-4	376	0.6	0.0016 J	0
05-Sep-06	PUF-12	420	4.1	0.0098	1
06-Sep-06	PUF-12	416	9.8	0.0236	2
06-Sep-06	PUF-4	347	9.3	0.0268	3
07-Sep-06	PUF-12	406	9.0	0.0222	2
07-Sep-06	PUF-4	397	8.8	0.0222	2
08-Sep-06	PUF-12	434	18.0	0.0415	4
08-Sep-06	PUF-4	449	17.0	0.0379	4
09-Sep-06	PUF-12	468	17.0	0.0363	4
09-Sep-06	PUF-4	502	15.0	0.0299 J	3
11-Sep-06	PUF-12	424	14.0	0.033	3
11-Sep-06	PUF-4	427	16.0	0.0375	4
14-Sep-06	PUF-12	442	7.8	0.0176	2
14-Sep-06	PUF-4	455	11.0	0.0242	2
15-Sep-06	PUF-12	435	8.8	0.0202	2
15-Sep-06	PUF-4	404	8.7	0.0215	2
16-Sep-06	PUF-12	454	10.0	0.022	2
16-Sep-06	PUF-4	485	11.0	0.0227	2
18-Sep-06	PUF-12	429	3.0	0.007	1
18-Sep-06	PUF-4	458	2.9	0.0063	1
19-Sep-06	PUF-12	429	1.0	0.0023	0
19-Sep-06	PUF-4	442	1.0	0.0023	0
20-Sep-06	PUF-12	432	3.4	0.0079	1
20-Sep-06	PUF-4	462	3.7	0.008	1
21-Sep-06	PUF-12	424	2.3	0.0054	1
21-Sep-06	PUF-4	436	2.2	0.005	0
25-Sep-06	PUF-12	424	8.8	0.0208	2
25-Sep-06	PUF-4	437	9.2	0.0211	2
26-Sep-06	PUF-12	419	15.0	0.0358	4
26-Sep-06	PUF-4	434	15.0	0.0346	3
27-Sep-06	PUF-12	425	28.0	0.0659	7
27-Sep-06	PUF-4	411	26.0	0.0633	6
28-Sep-06	PUF-12	460	3.8	0.0083	1

TABLE F.2.3

STATION 14 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
28-Sep-06	PUF-4	459	3.8	0.0083	1
29-Sep-06	PUF-12	420	18.0	0.0429	4
29-Sep-06	PUF-4	433	17.0	0.0393	4
30-Sep-06	PUF-12	475	17.0	0.0358	4
30-Sep-06	PUF-4	490	18.0	0.0367	4
02-Oct-06	PUF-12	403	25.0	0.062	6
02-Oct-06	PUF-4	431	23.0	0.0534	5
04-Oct-06	PUF-12	418	26.0	0.0622	6
04-Oct-06	PUF-4	432	24.0	0.0556	6
05-Oct-06	PUF-12	456	1.4	0.0031	0
05-Oct-06	PUF-4	456	1.6	0.0035	0
06-Oct-06	PUF-12	418	2.9	0.0069	1
06-Oct-06	PUF-4	417	3.1	0.0074	1
07-Oct-06	PUF-12	495	7.5	0.0152	2
07-Oct-06	PUF-4	444	7.1	0.016	2
09-Oct-06	PUF-12	401	20.0	0.0499	5
09-Oct-06	PUF-4	371	17.0	0.0458	5
10-Oct-06	PUF-12	408	34.0	0.0833	8
10-Oct-06	PUF-4	365	30.0	0.0822	8
11-Oct-06	PUF-12	398	22.0	0.0553	6
11-Oct-06	PUF-4	341	22.0	0.0645	6
12-Oct-06	PUF-12	403	5.0	0.0124	1
12-Oct-06	PUF-4	375	5.9	0.0157	2
13-Oct-06	PUF-12	410	4.0	0.0098	1
13-Oct-06	PUF-4	366	4.1	0.0112	1
14-Oct-06	PUF-12	381	3.5	0.0092	1
14-Oct-06	PUF-4	340	3.6	0.0106	1
16-Oct-06	PUF-12	404	12.0	0.0297	3
16-Oct-06	PUF-4	347	11.0	0.0317	3
17-Oct-06	PUF-12	411	7.5	0.0182	2
17-Oct-06	PUF-4	341	7.8	0.0229	2
18-Oct-06	PUF-12	478	12.0	0.0251	3
18-Oct-06	PUF-4	363	11.0	0.0303	3
19-Oct-06	PUF-12	463	0.6	0.0013	0
19-Oct-06	PUF-4	336	0.0	ND(0.0015)	--
20-Oct-06	PUF-12	495	5.4	0.0109	1
20-Oct-06	PUF-4	375	5.1	0.0136	1
21-Oct-06	PUF-12	505	7.2	0.0143	1
21-Oct-06	PUF-4	399	7.0	0.0175	2
23-Oct-06	PUF-12	495	0.0	ND(0.001)	--
23-Oct-06	PUF-4	393	0.0	ND(0.0013)	--
24-Oct-06	PUF-12	478	6.0	0.0126	1
24-Oct-06	PUF-4	379	6.4	0.0169	2
25-Oct-06	PUF-12	473	15.0	0.0317	3
25-Oct-06	PUF-4	372	17.0	0.0457	5
26-Oct-06	PUF-12	455	7.2	0.0158	2
26-Oct-06	PUF-4	370	8.0	0.0216	2
27-Oct-06	PUF-12	466	4.4	0.0094	1
27-Oct-06	PUF-4	335	4.3	0.0128	1
28-Oct-06	PUF-12	288	1.2	0.0042	0
28-Oct-06	PUF-4	358	1.2	0.0034	0
30-Oct-06	PUF-12	286	50.0	0.1748	17
30-Oct-06	PUF-4	373	49.0	0.1314	13

TABLE F.2.3

STATION 14 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
31-Oct-06	PUF-12	291	4.0	0.0137	1
31-Oct-06	PUF-4	391	3.3	0.0084	1
01-Nov-06	PUF-12	299	0.8	0.0027	0
01-Nov-06	PUF-4	384	0.7	0.0018	0
02-Nov-06	PUF-12	299	4.5	0.0151	2
02-Nov-06	PUF-4	384	4.7	0.0122	1
03-Nov-06	PUF-12	315	6.2	0.0197	2
03-Nov-06	PUF-4	419	7.1	0.0169	2
04-Nov-06	PUF-12	307	7.0	0.0228	2
04-Nov-06	PUF-4	444	6.7	0.0151	2
06-Nov-06	PUF-12	298	8.5	0.0285	3
06-Nov-06	PUF-4	416	9.6	0.0231	2
07-Nov-06	PUF-12	290	5.0	0.0172	2
07-Nov-06	PUF-4	405	5.5	0.0136	1
08-Nov-06	PUF-12	269	15.0	0.0558	6
08-Nov-06	PUF-4	389	16.0	0.0411	4
09-Nov-06	PUF-12	299	79.0	0.2642	26
09-Nov-06	PUF-4	419	77.0	0.1838	18
10-Nov-06	PUF-12	474	38.0	0.0802	8
10-Nov-06	PUF-4	458	38.0	0.083	8
11-Nov-06	PUF-12	515	0.9	0.0017	0
11-Nov-06	PUF-4	499	0.6	0.0012	0
12-Nov-06	PUF-12	436	2.5	0.0057	1
12-Nov-06	PUF-4	410	2.6	0.0063	1
13-Nov-06	PUF-12	471	7.1	0.0151	2
13-Nov-06	PUF-4	457	7.5	0.0164	2
14-Nov-06	PUF-12	433	3.2	0.0074	1
14-Nov-06	PUF-4	434	3.3	0.0076	1
15-Nov-06	PUF-12	244	0.9	0.0037	0
15-Nov-06	PUF-4	196	0.6	0.0031	0
17-Nov-06	PUF-12	446	5.1	0.0114	1
17-Nov-06	PUF-4	417	5.2	0.0125	1
18-Nov-06	PUF-12	511	0.8	0.0016	0
18-Nov-06	PUF-4	513	0.7	0.0014	0
19-Nov-06	PUF-12	361	0.0	ND(0.0014)	--
19-Nov-06	PUF-4	359	0.5	0.0014	0
20-Nov-06	PUF-12	429	7.3	0.017	2
20-Nov-06	PUF-4	414	7.1	0.0171	2
21-Nov-06	PUF-12	413	8.3	0.0201	2
21-Nov-06	PUF-4	421	7.9	0.0188	2
27-Nov-06	PUF-12	445	39.0	0.0876	9
27-Nov-06	PUF-4	374	32.0	0.0856	9
28-Nov-06	PUF-12	448	62.0	0.1384	14
28-Nov-06	PUF-4	390	49.0	0.1256	13
29-Nov-06	PUF-12	465	73.0	0.157 J	16
29-Nov-06	PUF-4	376	2.9	0.0077 J	1
30-Nov-06	PUF-12	431	5.8	0.0135	1
30-Nov-06	PUF-4	384	4.9	0.0128	1
04-Dec-06	PUF-12	386	4.8	0.0124	1
04-Dec-06	PUF-4	372	4.9	0.0132	1
05-Dec-06	PUF-12	458	13.0	0.0284	3
05-Dec-06	PUF-4	442	12.0	0.0271	3
06-Dec-06	PUF-12	452	3.9	0.0086	1

TABLE F.2.3

STATION 14 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
06-Dec-06	PUF-4	451	3.2	0.0071	1
07-Dec-06	PUF-12	471	0.0	ND(0.0011)	--
07-Dec-06	PUF-4	429	0.0	ND(0.0012)	--
11-Dec-06	PUF-12	427	6.5	0.0152	2
11-Dec-06	PUF-4	383	5.5	0.0144	1
13-Dec-06	PUF-12	397	53.0	0.1335	13
13-Dec-06	PUF-4	424	55.0	0.1297	13
14-Dec-06	PUF-12	397	43.0	0.1083	11
14-Dec-06	PUF-4	440	41.0	0.0932	9
15-Dec-06	PUF-12	396	5.7	0.0144	1
15-Dec-06	PUF-4	424	5.3	0.0125	1
16-Dec-06	PUF-12	444	49.0	0.1104	11
16-Dec-06	PUF-4	507	46.0	0.0907	9
18-Dec-06	PUF-12	308	2.1	0.0068	1
18-Dec-06	PUF-4	368	1.9	0.0052	1
19-Dec-06	PUF-12	402	5.5	0.0137	1
19-Dec-06	PUF-4	444	5.5	0.0124	1
20-Dec-06	PUF-12	408	5.9	0.0145	1
20-Dec-06	PUF-4	467	5.1	0.0109	1
02-Jan-07	PUF-12	383	9.6	0.0251	3
02-Jan-07	PUF-4	423	9.2	0.0217	2
03-Jan-07	PUF-12	409	22.0	0.0538	5
03-Jan-07	PUF-4	465	20.0	0.043	4
04-Jan-07	PUF-12	424	31.0	0.0731	7
04-Jan-07	PUF-4	410	28.0	0.0683	7
05-Jan-07	PUF-12	422	9.7	0.023	2
05-Jan-07	PUF-4	422	10.0	0.0237	2
06-Jan-07	PUF-12	487	--	-- U	--
06-Jan-07	PUF-4	469	--	-- U	--
08-Jan-07	PUF-12	349	5.4	0.0155	2
08-Jan-07	PUF-4	348	4.7	0.0135	1
09-Jan-07	PUF-12	455	0.7	0.0015	0
09-Jan-07	PUF-4	426	0.6	0.0014	0
10-Jan-07	PUF-12	427	2.9	0.0068	1
10-Jan-07	PUF-4	426	2.5	0.0059	1
11-Jan-07	PUF-12	431	37.0	0.0858	9
11-Jan-07	PUF-4	416	33.0	0.0793	8
12-Jan-07	PUF-12	433	47.0	0.1085	11
12-Jan-07	PUF-4	403	41.0	0.1017	10

Notes:

*	Results not reported due to machine malfunction.
J	Estimated result. Results if less than the reporting limit.
ND	Not detected.

TABLE F.2.4

STATION 22B PCB AIR ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
3-May-06	PUF-3	130	4.1	0.0315	3
19-May-06	PUF-3	148	22.0	0.1486	15
22-May-06	PUF-3	135	34.0	0.2519	25
23-May-06	PUF-3	124	10.0	0.0806	8
24-May-06	PUF-3	137	12.0	0.0876	9
25-May-06	PUF-3	108	5.9	0.0546	5
30-May-06	PUF-3	141	5.1	0.0362	4
31-May-06	PUF-3	121	29.0	0.2397	24
1-Jun-06	PUF-3	129	41.0	0.3178	32
2-Jun-06	PUF-3	131	120.0	0.916	92
5-Jun-06	PUF-3	146	39.0	0.2671	27
6-Jun-06	PUF-3	132	8.2	0.0621	6
7-Jun-06	PUF-3	128	24.0	0.1875	19
8-Jun-06	PUF-3	131	95.0	0.7252	73
9-Jun-06	PUF-3	125	99.0	0.792	79
10-Jun-06	PUF-3	50	*	*	*
12-Jun-06	PUF-3	139	170.0	1.223	122 (1)
14-Jun-06	PUF-3	107	250.0	2.3364	234 (1)
15-Jun-06	PUF-3	122	13.0	0.1066	11
16-Jun-06	PUF-3	121	15.0	0.124 J	12
17-Jun-06	PUF-3	131	6.5	0.0496 J	5
19-Jun-06	PUF-3	126	21.0	0.1667	17
20-Jun-06	PUF-3	135	34.0	0.2519	25
21-Jun-06	PUF-18	344	7.6	0.0221	2
22-Jun-06	PUF-18	358	170.0	0.4749	47
23-Jun-06	PUF-18	296	310.0	1.0473	105 (1)
24-Jun-06	PUF-18	350	320.0	0.9143	91
26-Jun-06	PUF-18	364	100.0	0.2747	27
27-Jun-06	PUF-18	348	17.0	0.0489	5
28-Jun-06	PUF-18	361	200.0	0.554	55
29-Jun-06	PUF-18	362	190.0	0.5249	52
30-Jun-06	PUF-18	424	20.0	0.0472	5
3-Jul-06	PUF-18	384	10.0	0.026	3
5-Jul-06	PUF-18	336	430.0	1.2798	128 (2)
6-Jul-06	PUF-18	405	650.0	1.6049	160 (2)
7-Jul-06	PUF-18	340	420.0	1.2353	124 (2)
8-Jul-06	PUF-18	360	63.0	0.175 J	18
10-Jul-06	PUF-18	356	8.8	0.0247	2
17-Jul-06	PUF-18	359	280.0	0.7799	78
18-Jul-06	PUF-18	339	730.0	2.1534	215 (2)
19-Jul-06	PUF-18	350	300.0	0.8571	86
20-Jul-06	PUF-18	381	220.0	0.5774	58
21-Jul-06	PUF-18	338	270.0	0.7988	80
22-Jul-06	PUF-18	448	670.0	1.4955	150 (2)
24-Jul-06	PUF-18	352	93.0	0.2642	26
25-Jul-06	PUF-18	382	21.0	0.055	6
26-Jul-06	PUF-18	378	8.9	0.0235 J	2
28-Jul-06	PUF-18	354	5.2	0.0147	1
29-Jul-06	PUF-18	352	27.0	0.0767	8
31-Jul-06	PUF-18	281	16.0	0.0569	6
1-Aug-06	PUF-18	304	16.0	0.0526	5
2-Aug-06	PUF-18	310	7.9	0.0255	3
3-Aug-06	PUF-18	288	250.0	0.8681 J	87
4-Aug-06	PUF-18	306	790.0	2.5817 J	258 (3)
5-Aug-06	PUF-18	349	400.0	1.1461	115 (3)
7-Aug-06	PUF-18	312	460.0	1.4744 J	147 (3)

TABLE F.2.4

STATION 22B PCB AIR ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
8-Aug-06	PUF-18	266	300.0	1.1278	113 (3)
9-Aug-06	PUF-18	389	190.0	0.4884	49
10-Aug-06	PUF-18	344	180.0	0.5233	52
11-Aug-06	PUF-18	360	320.0	0.8889 J	89
12-Aug-06	PUF-18	448	390.0	0.8705	87
14-Aug-06	PUF-18	363	170.0	0.4683	47
15-Aug-06	PUF-18	373	390.0	1.0456 J	105 (3)
16-Aug-06	PUF-18	348	280.0	0.8046 J	80
17-Aug-06	PUF-18	186	63.0	0.3387	34
17-Aug-06	PUF-18	180	41.0	0.2278	23
18-Aug-06	PUF-18	184	180.0	0.9783	98
18-Aug-06	PUF-18	199	27.0	0.1357	14
19-Aug-06	PUF-18	182	340.0	1.8681 J	187 (3)
19-Aug-06	PUF-18	173	15.0	0.0867	9
21-Aug-06	PUF-18	384	280.0	0.7292 J	73
22-Aug-06	PUF-18	380	270.0	0.7105 J	71
23-Aug-06	PUF-18	386	170.0	0.4404 J	44
24-Aug-06	PUF-18	378	110.0	0.291 J	29
25-Aug-06	PUF-18	358	48.0	0.1341	13
26-Aug-06	PUF-18	442	46.0	0.1041	10
29-Aug-06	PUF-18	365	100.0	0.274	27
30-Aug-06	PUF-18	383	190.0	0.4961	50
31-Aug-06	PUF-18	395	210.0	0.5316	53
5-Sep-06	PUF-18	387	300.0	0.7752 J	78
6-Sep-06	PUF-18	410	210.0	0.5122 J	51
7-Sep-06	PUF-18	369	150.0	0.4065 J	41
8-Sep-06	PUF-18	404	210.0	0.5198	52
9-Sep-06	PUF-18	464	260.0	0.5603	56
11-Sep-06	PUF-18	391	37.0	0.0946	9
14-Sep-06	PUF-18	392	200.0	0.5102	51
15-Sep-06	PUF-18	418	140.0	0.3349 J	33
16-Sep-06	PUF-18	439	68.0	0.1549	15
18-Sep-06	PUF-18	388	13.0	0.0335	3
19-Sep-06	PUF-18	402	2.8	0.007	1
20-Sep-06	PUF-18	414	74.0	0.1787	18
21-Sep-06	PUF-18	406	18.0	0.0443	4
25-Sep-06	PUF-18	409	21.0	0.0513	5
26-Sep-06	PUF-18	380	9.9	0.0261	3
27-Sep-06	PUF-18	416	21.0	0.0505	5
28-Sep-06	PUF-18	427	41.0	0.096	10
29-Sep-06	PUF-18	410	5.0	0.0122	1
30-Sep-06	PUF-18	453	15.0	0.0331	3
2-Oct-06	PUF-18	435	36.0	0.0828	8
4-Oct-06	PUF-18	398	57.0	0.1432	14
5-Oct-06	PUF-18	407	110.0	0.2703	27
6-Oct-06	PUF-18	400	82.0	0.205	20
7-Oct-06	PUF-18	487	76.0	0.1561	16
9-Oct-06	PUF-18	418	73.0	0.1746	17
10-Oct-06	PUF-18	415	15.0	0.0361	4
11-Oct-06	PUF-18	400	2.9	0.0072	1
12-Oct-06	PUF-18	345	2.6	0.0075	1
13-Oct-06	PUF-18	353	2.6	0.0074	1
14-Oct-06	PUF-18	355	9.1	0.0256	3
16-Oct-06	PUF-18	352	3.7	0.0105	1
17-Oct-06	PUF-18	316	4.5	0.0142	1

TABLE F.2.4

STATION 22B PCB AIR ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
18-Oct-06	PUF-18	355	16.0	0.0451	5
19-Oct-06	PUF-18	352	13.0	0.0369	4
20-Oct-06	PUF-18	338	3.1	0.0092	1
21-Oct-06	PUF-18	381	5.3	0.0139	1
23-Oct-06	PUF-18	377	0.9	0.0024	0
24-Oct-06	PUF-18	357	9.9	0.0277	3
25-Oct-06	PUF-18	370	4.2	0.0114	1
26-Oct-06	PUF-18	336	1.1	0.0033	0
27-Oct-06	PUF-18	376	21.0	0.0559	6
28-Oct-06	PUF-18	398	2.3	0.0058	1
30-Oct-06	PUF-18	370	2.6	0.007	1
31-Oct-06	PUF-18	375	16.0	0.0427	4
1-Nov-06	PUF-18	419	5.9	0.0141	1
2-Nov-06	PUF-18	412	9.3	0.0226	2
3-Nov-06	PUF-18	441	4.6	0.0104	1
4-Nov-06	PUF-18	480	3.0	0.0062	1
6-Nov-06	PUF-18	394	6.6	0.0168	2
7-Nov-06	PUF-18	421	27.0	0.0641	6
8-Nov-06	PUF-18	442	7.7	0.0174	2
9-Nov-06	PUF-18	424	29.0	0.0684	7
10-Nov-06	PUF-18	428	3.3	0.0077	1
11-Nov-06	PUF-18	478	5.3	0.0111	1
12-Nov-06	PUF-18	382	12.0	0.0314	3
13-Nov-06	PUF-18	450	15.0	0.0333	3
14-Nov-06	PUF-18	433	12.0	0.0277	3
15-Nov-06	PUF-18	410	12.0	0.0293	3
17-Nov-06	PUF-18	463	16.0	0.0346	3
18-Nov-06	PUF-18	440	6.2	0.0141	1
19-Nov-06	PUF-18	328	4.8	0.0146	1
20-Nov-06	PUF-18	439	25.0	0.0569	6
21-Nov-06	PUF-18	373	15.0	0.0402	4
27-Nov-06	PUF-18	390	3.0	0.0077	1
28-Nov-06	PUF-18	412	6.4	0.0155	2
29-Nov-06	PUF-18	405	4.0	0.0099	1
30-Nov-06	PUF-18	380	35.0	0.0921	9
4-Dec-06	PUF-18	310	0.7	0.0022	0
5-Dec-06	PUF-18	270	1.1	0.0041	0
6-Dec-06	PUF-18	360	1.7	0.0047	0
7-Dec-06	PUF-18	375	2.3	0.0061	1
11-Dec-06	PUF-18	365	8.5	0.0233	2
13-Dec-06	PUF-18	359	1.8	0.005	0
14-Dec-06	PUF-18	336	*	*	*
15-Dec-06	PUF-18	326	23.0	0.0706	7
16-Dec-06	PUF-18	399	4.0	0.01	1
18-Dec-06	PUF-18	399	36.0	0.0902	9
19-Dec-06	PUF-18	411	67.0	0.163	16
20-Dec-06	PUF-18	379	42.0	0.1108	11
2-Jan-07	PUF-18	395	6.7	0.017	2
3-Jan-07	PUF-18	390	6.1	0.0156	2
4-Jan-07	PUF-18	376	6.5	0.0173	2
5-Jan-07	PUF-18	375	4.8	0.0128	1
6-Jan-07	PUF-18	441	9.7	0.022	2
8-Jan-07	PUF-18	287	0.6	0.0021	0
9-Jan-07	PUF-18	406	1.1	0.0027	0
10-Jan-07	PUF-18	386	9.0	0.0233	2

TABLE F.2.4

STATION 22B PCB AIR ANALYTICAL RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
11-Jan-07	PUF-18	354	3.0	0.0085	1
12-Jan-07	PUF-18	379	10.0	0.0264	3
29-Jan-07	PUF-18	398	0.78	0.002	0
30-Jan-07	PUF-18	429	2	0.0047	0
31-Jan-07	PUF-18	406	3.8	0.0094	1
01-Feb-07	PUF-18	399	1.5	0.0038	0
02-Feb-07	PUF-18	411	0	ND(0.0012)	0
08-Feb-07	PUF-18	426	0	ND(0.0012)	0
09-Feb-07	PUF-18	463	0	ND(0.0011)	0
10-Feb-07	PUF-18	461	15	0.0325	3
12-Feb-07	PUF-18	238	*	*	*
15-Feb-07	PUF-18	465	0	ND(0.0011)	0
16-Feb-07	PUF-18	420	2.6	0.0062	1
17-Feb-07	PUF-18	420	0	ND(0.0012)	0
19-Feb-07	PUF-18	434	1.9	0.0044	0
20-Feb-07	PUF-18	380	29	0.0763	8
21-Feb-07	PUF-18	395	32	0.081	8
22-Feb-07	PUF-18	413	14	0.0339	3
23-Feb-07	PUF-18	420	55	0.131	13
27-Feb-07	PUF-18	426	489	421	323 (4)
28-Feb-07	PUF-18	410	110	0.2683	27
02-Mar-07	PUF-18	408	8.2	0.0201	2
03-Mar-07	PUF-18	393	0.7	0.0018	0
04-Mar-07	PUF-18	439	0.82	0.0019	0
05-Mar-07	PUF-18	375	5.5	0.0147	1
06-Mar-07	PUF-18	406	45	0.1108	11
07-Mar-07	PUF-18	375	10	0.0267	3
08-Mar-07	PUF-18	407	56	0.1376	14
12-Mar-07	PUF-18	399	11	0.0276	3
13-Mar-07	PUF-18	373	6	0.0161	2
14-Mar-07	PUF-18	367	22	0.0599	6
15-Mar-07	PUF-18	410	7.2	0.0176	2
16-Mar-07	PUF-18	176	*	*	*
19-Mar-07	PUF-18	389	42	0.108	11
20-Mar-07	PUF-18	381	260	0.6824	68
21-Mar-07	PUF-18	6	*	*	*
29-Mar-07	PUF-18	400	560	1.4 J	140 (4)
30-Mar-07	PUF-18	0	*	*	*
09-Apr-07	PUF-18	365	45	0.1233	12
11-Jun-07	PUF-18	397	160	0.403	40
02-Jul-07	PUF-18	382	300	0.7853	79

Notes:

* Results not reported due to machine malfunction.

J Estimated result. Results if less than the reporting limit.

ND Not detected.

(1) Exceedance primarily attributed to East Plant Excavation and high pressure spray from water truck.

(2) Exceedance primarily attributed to >50 ppm soil excavation in Excavation Plan II

(3) Exceedance primarily attributed to >50 ppm soil placement into the vault.

(4) Exceedance attributed to moving material in AOI 8 near the air monitoring station.

TABLE F.2.5

STATION 22C PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
20-May-08	PUF-18	389	25	0.0643	6
22-May-08	PUF-18	410	38	0.0927	9
27-May-08	PUF-18	394	33	0.0838	8
29-May-08	PUF-18	63	*	*	*
30-May-08	PUF-18	424	2.6	0.0061	1
2-Jun-08	PUF-18	397	9.9	0.0249	2
18-Aug-08	PUF-18	316	38	0.1203	12
20-Aug-08	PUF-18	325	18	0.0554	6
21-Aug-08	PUF-18	317	22	0.0694	7
22-Aug-08	PUF-18	338	50	0.1479	15
23-Aug-08	PUF-18	365	73	0.2	20
27-Aug-08	PUF-18	324	53	0.1636	16
28-Aug-08	PUF-18	330	22	0.0667	7
2-Sep-08	PUF-18	348	52	0.1494	15
4-Sep-08	PUF-18	306	13	0.0425	4
5-Sep-08	PUF-18	316	80	0.2532	25
6-Sep-08	PUF-18	369	64	0.1734	17
8-Sep-08	PUF-18	349	76	0.2178	22
10-Sep-08	PUF-18	347	20	0.0576	6
11-Sep-08	PUF-18	314	21	0.0669	7
13-Sep-08	PUF-18	319	4	0.0125	1
22-Sep-08	PUF-18	312	32	0.1026	10
23-Sep-08	PUF-18	338	44	0.1302	13
24-Sep-08	PUF-18	342	70	0.2047	20
25-Sep-08	PUF-18	369	50	0.1355	14
26-Sep-08	PUF-18	310	55	0.1774	18
27-Sep-08	PUF-18	410	36	0.0878	9
29-Sep-08	PUF-18	318	4.7	0.0148	1
30-Sep-08	PUF-18	328	2.4	0.0073	1
1-Oct-08	PUF-18	336	6.5	0.0193	2
2-Oct-08	PUF-18	325	2.5	0.0077	1
3-Oct-08	PUF-18	298	5.5	0.0185	2
4-Oct-08	PUF-18	356	8.3	0.0233	2
6-Oct-08	PUF-18	325	4.4	0.0135	1
7-Oct-08	PUF-18	322	5.7	0.0177	2

Notes:

* Results not reported due to machine malfunction.

TABLE F.2.6

STATION 23 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*tal Volu* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
15-Jun-05	PUF-2	253	5.4	0.0213	2
16-Jun-05	PUF-2	207	3.9	0.0188	2
17-Jun-05	PUF-2	365	7.1	0.0195	2
21-Jun-05	PUF-2	265	8.1	0.0306 J	3
22-Jun-05	PUF-2	343	9.1	0.0265	3
29-Jun-05	PUF-2	325	14.0	0.0431 J	4
06-Jul-05	PUF-2	335	7.2	0.0215	2
13-Jul-05	PUF-2	364	2.9	0.008	1
20-Jul-05	PUF-2	82	*	*	*
28-Jul-05	PUF-2	350	7.1	0.0203	2
03-Aug-05	PUF-2	364	7.3	0.0201	2
10-Aug-05	PUF-2	346	7.9	0.0228	2
17-Aug-05	PUF-2	371	6.1	0.0164 J	2
24-Aug-05	PUF-2	372	13.0	0.0349	3
01-Sep-05	PUF-2	381	31.0	0.0814	8
08-Sep-05	PUF-2	184	*	*	*
14-Sep-05	PUF-2	364	42.0	0.1154	12
12-Oct-05	PUF-2	362	18.0	0.0497	5
26-Oct-05	PUF-2	358	21.0	0.0587	6
02-Nov-05	PUF-2	279	19.0	0.0681	7
09-Nov-05	PUF-2	349	74.0	0.212	21
30-Nov-05	PUF-2	336	11.0	0.0327	3
07-Dec-05	PUF-2	425	8.1	0.0191 J	2
21-Dec-05	PUF-2	396	4.9	0.0124	1
04-Jan-06	PUF-2	84	*	*	*
12-Jan-06	PUF-2	408	3.3	0.0081	1
18-Jan-06	PUF-2	346	1.9	0.0055	1
25-Jan-06	PUF-2	384	25.0	0.0651	7
01-Feb-06	PUF-2	453	15.0	0.0331	3
07-Feb-06	PUF-2	327	22.0	0.0673	7
13-Feb-06	PUF-2	391	3.8	0.0097 J	1
20-Feb-06	PUF-2	415	3.2	0.0077	1
27-Feb-06	PUF-2	376	8.4	0.0223	2
06-Mar-06	PUF-2	358	7.4	0.0207 J	2
15-Mar-06	PUF-2	367	14.0	0.0381 J	4
20-Mar-06	PUF-2	387	0.0	ND(0.0019)	0
29-Mar-06	PUF-2	354	5.9	0.0167	2
10-Apr-06	PUF-2	335	6.0	0.0179	2
11-Apr-06	PUF-2	373	4.2	0.0113	1
03-May-06	PUF-2	368	14.0	0.038	4
19-May-06	PUF-2	422	24.0	0.0569	6
22-May-06	PUF-2	346	15.0	0.0434 J	4
23-May-06	PUF-2	396	12.0	0.0303	3
24-May-06	PUF-2	324	6.1	0.0188	2
25-May-06	PUF-2	288	9.9	0.0344	3
30-May-06	PUF-2	389	13.0	0.0334	3
31-May-06	PUF-2	378	19.0	0.0503	5
01-Jun-06	PUF-2	381	28.0	0.0735	7
02-Jun-06	PUF-2	381	26.0	0.0682	7
05-Jun-06	PUF-2	389	13.0	0.0334	3
06-Jun-06	PUF-2	375	13.0	0.0347	3
07-Jun-06	PUF-2	340	46.0	0.1353	14
08-Jun-06	PUF-2	305	21.0	0.0689	7
09-Jun-06	PUF-2	319	10.0	0.0313	3
10-Jun-06	PUF-2	142	*	*	*
12-Jun-06	PUF-2	435	23.0	0.0529	5

TABLE F.2.6

STATION 23 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volu* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
14-Jun-06	PUF-2	321	47.0	0.1464	15
15-Jun-06	PUF-2	137	*	*	*
16-Jun-06	PUF-2	3	*	*	*
17-Jun-06	PUF-2	394	11.0	0.0279 J	3
19-Jun-06	PUF-2	327	40.0	0.1223	12
20-Jun-06	PUF-2	363	14.0	0.0386	4
21-Jun-06	PUF-2	369	30.0	0.0813	8
22-Jun-06	PUF-2	366	50.0	0.1366	14
23-Jun-06	PUF-2	157	*	*	*
24-Jun-06	PUF-2	417	8.2	0.0197	2
28-Jun-06	PUF-2	316	100.0	0.3165	32
29-Jun-06	PUF-2	335	23.0	0.0687	7
30-Jun-06	PUF-2	374	17.0	0.0455	5
03-Jul-06	PUF-2	412	65.0	0.1578	16
05-Jul-06	PUF-2	369	15.0	0.0407	4
06-Jul-06	PUF-2	348	9.9	0.0284	3
07-Jul-06	PUF-2	376	11.0	0.0293	3
08-Jul-06	PUF-2	366	5.7	0.0156 J	2
10-Jul-06	PUF-2	335	40.0	0.1194	12
17-Jul-06	PUF-2	345	49.0	0.142	14
18-Jul-06	PUF-2	264	19.0	0.072	7
19-Jul-06	PUF-2	274	8.2	0.0299	3
20-Jul-06	PUF-2	255	27.0	0.1059	11
21-Jul-06	PUF-2	277	71.0	0.2563	26
22-Jul-06	PUF-2	357	55.0	0.1541	15
24-Jul-06	PUF-2	262	120.0	0.458	46
25-Jul-06	PUF-2	256	91.0	0.3555	36
26-Jul-06	PUF-2	259	33.0	0.1274	13
28-Jul-06	PUF-2	271	82.0	0.3026	30
29-Jul-06	PUF-2	270	97.0	0.3593	36
31-Jul-06	PUF-2	299	70.0	0.2341	23
01-Aug-06	PUF-2	325	160.0	0.4923	49
02-Aug-06	PUF-2	347	160.0	0.4611	46
03-Aug-06	PUF-2	332	190.0	0.5723	57
04-Aug-06	PUF-2	329	21.0	0.0638	6
05-Aug-06	PUF-2	360	20.0	0.0556	6
07-Aug-06	PUF-2	340	82.0	0.2412	24
08-Aug-06	PUF-2	261	25.0	0.0958	10
09-Aug-06	PUF-2	365	34.0	0.0932	9
10-Aug-06	PUF-2	327	26.0	0.0795	8
11-Aug-06	PUF-2	340	9.6	0.0282	3
12-Aug-06	PUF-2	401	11.0	0.0274	3
14-Aug-06	PUF-2	334	82.0	0.2455	25
15-Aug-06	PUF-2	337	20.0	0.0593	6
16-Aug-06	PUF-2	334	15.0	0.0449	4
17-Aug-06	PUF-2	335	15.0	0.0448	4
18-Aug-06	PUF-2	336	31.0	0.0923	9
19-Aug-06	PUF-2	333	68.0	0.2042	20
21-Aug-06	PUF-2	369	13.0	0.0352	4
22-Aug-06	PUF-2	358	20.0	0.0559	6
23-Aug-06	PUF-2	364	14.0	0.0385	4
24-Aug-06	PUF-2	330	6.3	0.0191	2
25-Aug-06	PUF-2	353	16.0	0.0453	5
26-Aug-06	PUF-2	397	35.0	0.0882	9
29-Aug-06	PUF-2	342	48.0	0.1404	14

TABLE F.2.6

STATION 23 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volu* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
30-Aug-06	PUF-2	327	14.0	0.0428	4
31-Aug-06	PUF-2	358	11.0	0.0307	3
05-Sep-06	PUF-2	356	17.0	0.0478	5
06-Sep-06	PUF-2	358	19.0	0.0531	5
07-Sep-06	PUF-2	347	9.9	0.0285	3
08-Sep-06	PUF-2	367	12.0	0.0327	3
09-Sep-06	PUF-2	432	17.0	0.0394	4
11-Sep-06	PUF-2	367	8.2	0.0223	2
14-Sep-06	PUF-2	399	41.0	0.1028	10
15-Sep-06	PUF-2	375	12.0	0.032	3
16-Sep-06	PUF-2	426	5.7	0.0134	1
18-Sep-06	PUF-2	354	27.0	0.0763	8
19-Sep-06	PUF-2	331	38.0	0.1148	11
20-Sep-06	PUF-2	343	16.0	0.0466	5
21-Sep-06	PUF-2	338	4.5	0.0133	1
25-Sep-06	PUF-2	342	26.0	0.076	8
26-Sep-06	PUF-2	335	9.9	0.0296	3
27-Sep-06	PUF-2	325	30.0	0.0923	9
28-Sep-06	PUF-2	343	26.0	0.0758	8
29-Sep-06	PUF-2	306	9.9	0.0324	3
30-Sep-06	PUF-2	360	12.0	0.0333	3
02-Oct-06	PUF-2	373	5.9	0.0158	2
04-Oct-06	PUF-2	378	25.0	0.0661	7
05-Oct-06	PUF-2	385	2.6	0.0068	1
06-Oct-06	PUF-2	366	6.1	0.0167	2
07-Oct-06	PUF-2	431	8.3	0.0193	2
09-Oct-06	PUF-2	370	20.0	0.0541	5
10-Oct-06	PUF-2	363	7.8	0.0215	2
11-Oct-06	PUF-2	350	23.0	0.0657	7
12-Oct-06	PUF-2	361	13.0	0.036	4
13-Oct-06	PUF-2	345	11.0	0.0319	3
14-Oct-06	PUF-2	335	17.0	0.0507	5
16-Oct-06	PUF-2	349	3.8	0.0109	1
17-Oct-06	PUF-2	314	30.0	0.0955	10
18-Oct-06	PUF-2	331	26.0	0.0785	8
19-Oct-06	PUF-2	321	11.0	0.0343	3
20-Oct-06	PUF-2	327	9.5	0.0291	3
21-Oct-06	PUF-2	413	9.3	0.0225	2
23-Oct-06	PUF-2	332	11.0	0.0331	3
24-Oct-06	PUF-2	379	11.0	0.029	3
25-Oct-06	PUF-2	389	2.8	0.0072	1
26-Oct-06	PUF-2	379	2.2	0.0058	1
27-Oct-06	PUF-2	381	8.6	0.0226	2
28-Oct-06	PUF-2	373	25.0	0.067	7
30-Oct-06	PUF-2	1	*	*	*
31-Oct-06	PUF-2	4	*	*	*
01-Nov-06	PUF-2	0	*	*	*
02-Nov-06	PUF-2	2	*	*	*
03-Nov-06	PUF-2	11	*	*	*
04-Nov-06	PUF-2	377	3.0	0.008	1
06-Nov-06	PUF-2	374	3.4	0.0091	1
07-Nov-06	PUF-2	391	21.0	0.0537	5
08-Nov-06	PUF-2	357	12.0	0.0336	3
09-Nov-06	PUF-2	362	39.0	0.1077	11
10-Nov-06	PUF-2	397	10.0	0.0252	3

TABLE F.2.6

STATION 23 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volu* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
11-Nov-06	PUF-2	405	13.0	0.0321	3
12-Nov-06	PUF-2	353	1.9	0.0054	1
13-Nov-06	PUF-2	328	7.4	0.0226	2
14-Nov-06	PUF-2	316	2.3	0.0073	1
15-Nov-06	PUF-2	309	2.0	0.0065	1
17-Nov-06	PUF-2	340	5.4	0.0159	2
18-Nov-06	PUF-2	389	26.0	0.0668 J	7
19-Nov-06	PUF-2	244	12.0	0.0492	5
20-Nov-06	PUF-2	316	18.0	0.057	6
21-Nov-06	PUF-2	327	13.0	0.0398	4
27-Nov-06	PUF-2	284	2.5	0.0088	1
28-Nov-06	PUF-2	323	4.4	0.0136	1
29-Nov-06	PUF-2	348	4.5	0.0129	1
30-Nov-06	PUF-2	308	9.5	0.0308	3
04-Dec-06	PUF-2	302	4.3	0.0142	1
05-Dec-06	PUF-2	344	2.3	0.0067	1
06-Dec-06	PUF-2	322	13.0	0.0404	4
07-Dec-06	PUF-2	342	3.9	0.0114	1
11-Dec-06	PUF-2	326	3.7	0.0113	1
13-Dec-06	PUF-2	1	*	*	*
14-Dec-06	PUF-2	316	6.3	0.0199	2
15-Dec-06	PUF-2	324	23.0	0.071	7
16-Dec-06	PUF-2	362	9.2	0.0254	3
18-Dec-06	PUF-2	310	11.0	0.0355	4
19-Dec-06	PUF-2	315	5.5	0.0175	2
20-Dec-06	PUF-2	318	3.3	0.0104	1
02-Jan-07	PUF-2	301	2.0	0.0066	1
03-Jan-07	PUF-2	315	2.5	0.0079	1
04-Jan-07	PUF-2	315	3.2	0.0102	1
05-Jan-07	PUF-2	318	7.6	0.0239	2
06-Jan-07	PUF-2	356	10.0	0.0281	3
08-Jan-07	PUF-2	266	3.7	0.0139	1
09-Jan-07	PUF-2	334	6.6	0.0198	2
10-Jan-07	PUF-2	382	1.4	0.0037	0
11-Jan-07	PUF-2	368	1.9	0.0052	1
12-Jan-07	PUF-2	387	9.2	0.0238	2
18-Jan-07	PUF-2	389	5.8	0.0149	1
19-Jan-07	PUF-2	409	6.8	0.0166	2
22-Jan-07	PUF-2	384	9.6	0.025	2
23-Jan-07	PUF-2	376	4.2	0.0112	1
27-Jan-07	PUF-2	439	7.8	0.0178	2
30-Jan-07	PUF-2	436	2.6	0.006	1
01-Feb-07	PUF-2	392	2.9	0.0074	1
02-Feb-07	PUF-2	401	2.2	0.0055	1
03-Feb-07	PUF-2	36	*	*	*
15-Feb-07	PUF-2	423	1.6	0.0038	0
26-Feb-07	PUF-2	351	5.9	0.0168	2

Notes:

*	Results not reported due to machine malfunction.
J	Estimated result. Results if less than the reporting limit.
ND	Not detected.

TABLE F.2.7

STATION 23B PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
7-Aug-07	PUF-2	362	37.0	0.1022	10
20-Aug-07	PUF-2	393	54.0	0.1374	14
29-Aug-07	PUF-2	408	28.0	0.0686	7
8-Oct-07	PUF-2	345	19.0	0.0551	6
21-Feb-08	PUF-2	440	0.0	ND(0.0011)	0
12-Mar-08	PUF-2	451	16.0	0.0355	4
2-Jun-08	PUF-2	397	9.9	0.0249	2
25-Jun-08	PUF-2	439	17.0	0.0387	4
2-Jul-08	PUF-2	444	6.9	0.0155	2
29-Sep-08	PUF-2	422	15.0	0.0355	4
6-Oct-08	PUF-2	421	1.4	0.0033	0

Notes:
ND Not detected.

TABLE F.2.8

STATION 29 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
09-May-06	PUF-5	361	5.2	0.0144	1
10-May-06	PUF-5	398	36.0	0.0905	9
19-May-06	PUF-5	474	25.0	0.0527	5
22-May-06	PUF-5	425	13.0	0.0306	3
23-May-06	PUF-5	377	11.0	0.0292	3
24-May-06	PUF-5	455	20.0	0.044	4
25-May-06	PUF-5	364	27.0	0.0742	7
30-May-06	PUF-5	412	23.0	0.0558	6
31-May-06	PUF-5	393	28.0	0.0712	7
01-Jun-06	PUF-5	394	47.0	0.1193	12
02-Jun-06	PUF-5	412	39.0	0.0947	9
05-Jun-06	PUF-5	411	15.0	0.0365	4
06-Jun-06	PUF-5	390	11.0	0.0282	3
07-Jun-06	PUF-5	369	72.0	0.1951	20
08-Jun-06	PUF-5	423	35.0	0.0827	8
09-Jun-06	PUF-5	383	8.4	0.0219	2
10-Jun-06	PUF-5	157	*	*	*
12-Jun-06	PUF-5	480	22.0	0.0458	5
14-Jun-06	PUF-5	350	210.0	0.6	60
15-Jun-06	PUF-5	351	12.0	0.0342	3
16-Jun-06	PUF-5	315	24.0	0.0762 J	8
17-Jun-06	PUF-5	402	19.0	0.0473 J	5
19-Jun-06	PUF-5	340	28.0	0.0824	8
20-Jun-06	PUF-5	349	68.0	0.1948	19
21-Jun-06	PUF-5	396	24.0	0.0606	6
22-Jun-06	PUF-5	363	49.0	0.135	14
23-Jun-06	PUF-5	314	27.0	0.086	9
24-Jun-06	PUF-5	388	32.0	0.0825	8
26-Jun-06	PUF-5	367	68.0	0.1853	19
27-Jun-06	PUF-5	389	180.0	0.4627	46
28-Jun-06	PUF-5	390	65.0	0.1667	17
29-Jun-06	PUF-5	391	160.0	0.4092	41
30-Jun-06	PUF-5	457	23.0	0.0503	5
03-Jul-06	PUF-5	446	51.0	0.1143	11
05-Jul-06	PUF-5	389	14.0	0.036	4
06-Jul-06	PUF-5	345	35.0	0.1014	10
07-Jul-06	PUF-5	373	60.0	0.1609	16
08-Jul-06	PUF-5	414	17.0	0.0411 J	4
10-Jul-06	PUF-5	389	32.0	0.0823	8
17-Jul-06	PUF-5	393	85.0	0.2163	22
18-Jul-06	PUF-5	373	37.0	0.0992	10
19-Jul-06	PUF-5	385	69.0	0.1792	18
20-Jul-06	PUF-5	407	170.0	0.4177	42
21-Jul-06	PUF-5	371	570.0	1.5364	154 (1)
22-Jul-06	PUF-5	469	530.0	1.1301	113 (1)
24-Jul-06	PUF-5	372	240.0	0.6452	65
25-Jul-06	PUF-5	400	160.0	0.4	40
26-Jul-06	PUF-5	431	30.0	0.0696	7
28-Jul-06	PUF-5	402	17.0	0.0423	4
29-Jul-06	PUF-5	401	340.0	0.8479	85
31-Jul-06	PUF-5	381	31.0	0.0814	8
01-Aug-06	PUF-5	446	66.0	0.148	15
02-Aug-06	PUF-5	423	36.0	0.0851	9
03-Aug-06	PUF-5	409	460.0	1.1247	112 (1)
04-Aug-06	PUF-5	441	36.0	0.0816	8
05-Aug-06	PUF-5	506	17.0	0.0336	3

TABLE F.2.8

STATION 29 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
07-Aug-06	PUF-5	435	250.0	0.5747	57
08-Aug-06	PUF-5	366	110.0	0.3005	30
09-Aug-06	PUF-5	432	130.0	0.3009	30
10-Aug-06	PUF-5	375	120.0	0.32	32
11-Aug-06	PUF-5	408	18.0	0.0441	4
12-Aug-06	PUF-5	504	42.0	0.0833	8
14-Aug-06	PUF-5	409	200.0	0.489	49
15-Aug-06	PUF-5	417	42.0	0.1007	10
16-Aug-06	PUF-5	424	36.0	0.0849	8
17-Aug-06	PUF-5	416	14.0	0.0337	3
18-Aug-06	PUF-5	439	85.0	0.1936	19
19-Aug-06	PUF-5	392	140.0	0.3571	36
21-Aug-06	PUF-5	435	29.0	0.0667	7
22-Aug-06	PUF-5	426	38.0	0.0892	9
23-Aug-06	PUF-5	417	46.0	0.1103	11
24-Aug-06	PUF-5	424	20.0	0.0472	5
25-Aug-06	PUF-5	405	18.0	0.0444	4
26-Aug-06	PUF-5	499	72.0	0.1443	14
29-Aug-06	PUF-5	413	270.0	0.6538	65
30-Aug-06	PUF-5	430	70.0	0.1628	16
31-Aug-06	PUF-5	445	16.0	0.036	4
05-Sep-06	PUF-5	452	84.0	0.1858	19
06-Sep-06	PUF-5	430	96.0	0.2233	22
07-Sep-06	PUF-5	414	26.0	0.0628	6
08-Sep-06	PUF-5	456	45.0	0.0987	10
09-Sep-06	PUF-5	499	80.0	0.1603	16
11-Sep-06	PUF-5	415	27.0	0.0651	7
14-Sep-06	PUF-5	466	120.0	0.2575	26
15-Sep-06	PUF-5	452	36.0	0.0796	8
16-Sep-06	PUF-5	466	12.0	0.0258	3
18-Sep-06	PUF-5	383	54.0	0.141	14
19-Sep-06	PUF-5	441	130.0	0.2948	29
20-Sep-06	PUF-5	458	50.0	0.1092	11
21-Sep-06	PUF-5	448	6.7	0.015	2
25-Sep-06	PUF-5	443	31.0	0.07	7
26-Sep-06	PUF-5	428	13.0	0.0304	3
27-Sep-06	PUF-5	406	80.0	0.197	20
28-Sep-06	PUF-5	454	76.0	0.1674	17
29-Sep-06	PUF-5	443	13.0	0.0293	3
30-Sep-06	PUF-5	497	18.0	0.0362	4
02-Oct-06	PUF-5	467	18.0	0.0385	4
04-Oct-06	PUF-5	428	25.0	0.0584	6
05-Oct-06	PUF-5	463	4.7	0.0102	1
06-Oct-06	PUF-5	432	7.5	0.0174	2
07-Oct-06	PUF-5	530	36.0	0.0679	7
09-Oct-06	PUF-5	437	50.0	0.1144	11
10-Oct-06	PUF-5	436	13.0	0.0298	3
11-Oct-06	PUF-5	424	39.0	0.092	9
12-Oct-06	PUF-5	437	9.5	0.0217	2
13-Oct-06	PUF-5	450	10.0	0.0222	2
14-Oct-06	PUF-5	449	21.0	0.0468	5
16-Oct-06	PUF-5	410	4.2	0.0102	1
17-Oct-06	PUF-5	402	24.0	0.0597	6
18-Oct-06	PUF-5	413	58.0	0.1404	14
19-Oct-06	PUF-5	411	46.0	0.1119	11

TABLE F.2.8

STATION 29 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
20-Oct-06	PUF-5	440	13.0	0.0295	3
21-Oct-06	PUF-5	476	12.0	0.0252	3
23-Oct-06	PUF-5	508	32.0	0.063	6
24-Oct-06	PUF-5	445	27.0	0.0607	6
25-Oct-06	PUF-5	454	4.1	0.009	1
26-Oct-06	PUF-5	434	2.6	0.006	1
27-Oct-06	PUF-5	443	25.0	0.0564	6
28-Oct-06	PUF-5	443	67.0	0.1512	15
30-Oct-06	PUF-5	425	7.7	0.0181	2
31-Oct-06	PUF-5	442	32.0	0.0724	7
01-Nov-06	PUF-5	379	24.0	0.0633	6
02-Nov-06	PUF-5	376	27.0	0.0718	7
03-Nov-06	PUF-5	402	14.0	0.0348	3
04-Nov-06	PUF-5	438	3.9	0.0089	1
06-Nov-06	PUF-5	370	4.0	0.0108	1
07-Nov-06	PUF-5	384	74.0	0.1927	19
08-Nov-06	PUF-5	390	26.0	0.0667	7
09-Nov-06	PUF-5	389	66.0	0.1697	17
10-Nov-06	PUF-5	378	16.0	0.0423	4
11-Nov-06	PUF-5	518	46.0	0.0888	9
12-Nov-06	PUF-5	426	2.6	0.0061	1
13-Nov-06	PUF-5	474	18.0	0.038	4
14-Nov-06	PUF-5	453	2.5	0.0055	1
15-Nov-06	PUF-5	434	4.2	0.0097	1
17-Nov-06	PUF-5	481	21.0	0.0437	4
18-Nov-06	PUF-5	487	49.0	0.1006	10
19-Nov-06	PUF-5	359	23.0	0.0641	6
20-Nov-06	PUF-5	462	39.0	0.0844	8
21-Nov-06	PUF-5	406	17.0	0.0419	4
27-Nov-06	PUF-5	414	4.5	0.0109	1
28-Nov-06	PUF-5	436	7.1	0.0163	2
29-Nov-06	PUF-5	420	7.5	0.0179	2
30-Nov-06	PUF-5	418	15.0	0.0359	4
04-Dec-06	PUF-5	413	4.3	0.0104	1
05-Dec-06	PUF-5	434	5.6	0.0129	1
06-Dec-06	PUF-5	438	10.0	0.0228	2
07-Dec-06	PUF-5	483	9.7	0.0201	2
11-Dec-06	PUF-5	430	2.9	0.0067	1
13-Dec-06	PUF-5	455	8.9	0.0196	2
14-Dec-06	PUF-5	421	13.0	0.0309	3
15-Dec-06	PUF-5	408	15.0	0.0368	4
16-Dec-06	PUF-5	476	11.0	0.0231	2
18-Dec-06	PUF-5	419	17.0	0.0406	4
19-Dec-06	PUF-5	450	15.0	0.0333	3
20-Dec-06	PUF-5	430	3.0	0.007	1
02-Jan-07	PUF-5	442	6.1	0.0138	1
03-Jan-07	PUF-5	425	4.4	0.0104	1
04-Jan-07	PUF-5	427	4.5	0.0105	1
05-Jan-07	PUF-5	429	7.6	0.0177	2
06-Jan-07	PUF-5	501	17.0	0.0339	3
08-Jan-07	PUF-5	401	7.1	0.0177	2
09-Jan-07	PUF-5	458	9.7	0.0212	2
10-Jan-07	PUF-5	441	1.8	0.0041	0
11-Jan-07	PUF-5	422	3.0	0.0071	1
12-Jan-07	PUF-5	448	13.0	0.029	3

TABLE F.2.8

STATION 29 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
24-Jan-07	PUF-5	445	18.0	0.0404	4
25-Jan-07	PUF-5	471	10.0	0.0212	2
29-Jan-07	PUF-5	464	6.1	0.0131	1
30-Jan-07	PUF-5	491	3.8	0.0077	1
31-Jan-07	PUF-5	438	3.7	0.0084	1
01-Feb-07	PUF-5	456	6.7	0.0147	1
02-Feb-07	PUF-5	448	2.1	0.0047	0
08-Feb-07	PUF-5	475	3.6	0.0076	1
09-Feb-07	PUF-5	510	3.5	0.0069	1
10-Feb-07	PUF-5	521	5.5	0.0106	1
12-Feb-07	PUF-5	458	1.8	0.0039	0
15-Feb-07	PUF-5	500	5	0.01	1
16-Feb-07	PUF-5	466	4.4	0.0094	1
17-Feb-07	PUF-5	469	2.4	0.0051	1
19-Feb-07	PUF-5	445	7.6	0.0171	2
20-Feb-07	PUF-5	431	38	0.0882	9
21-Feb-07	PUF-5	435	17	0.0391	4
22-Feb-07	PUF-5	453	28	0.0618	6
27-Feb-07	PUF-5	26	19	25	33
28-Feb-07	PUF-5	459	2.9	0.0063	1
02-Mar-07	PUF-5	429	17	0.0396	4
03-Mar-07	PUF-5	394	0	ND(0.0013)	0
04-Mar-07	PUF-5	471	15	0.0318	3
05-Mar-07	PUF-5	388	14	0.0361	4
06-Mar-07	PUF-5	393	3.4	0.0087	1
07-Mar-07	PUF-5	401	3.8	0.0095	1
08-Mar-07	PUF-5	413	6.7	0.0162	2
12-Mar-07	PUF-5	423	40	0.0946	9
13-Mar-07	PUF-5	382	78	0.2042	20
14-Mar-07	PUF-5	386	52	0.1347	13
15-Mar-07	PUF-5	418	2.1	0.005	0
16-Mar-07	PUF-5	400	12	0.03	3
17-Mar-07	PUF-5	487	18	0.037	4
19-Mar-07	PUF-5	405	37	0.0914	9
20-Mar-07	PUF-5	380	4.4	0.0116	1
21-Mar-07	PUF-5	381	31	0.0814	8
29-Mar-07	PUF-5	370	10	0.027	3
30-Mar-07	PUF-5	389	16	0.0411	4

Notes:

* Results not reported due to machine malfunction.

J Estimated result. Results if less than the reporting limit.

ND Not detected.

(1) Exceedance primarily attributed to >50 ppm soil Excavation Plan II

TABLE F.2.9

STATION 29B PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
20-May-08	PUF-5	224	*	*	*
22-May-08	PUF-5	210	*	*	*
27-May-08	PUF-5	306	5.6	0.0183	2
29-May-08	PUF-5	381	10	0.0262	3
30-May-08	PUF-5	435	27	0.0621	6
2-Jun-08	PUF-5	373	14	0.0375	4
17-Jun-08	PUF-5	349	9.9	0.0284	3
19-Aug-08	PUF-5	360	4.6	0.0128	1
20-Aug-08	PUF-5	336	2.5	0.0074	1
21-Aug-08	PUF-5	330	6.7	0.0203	2
22-Aug-08	PUF-5	338	5.1	0.0151	2
23-Aug-08	PUF-5	393	15	0.0382	4
26-Aug-08	PUF-5	342	2.1	0.0061	1
27-Aug-08	PUF-5	336	4.6	0.0137	1
28-Aug-08	PUF-5	355	15	0.0423	4
2-Sep-08	PUF-5	381	6.2	0.0163	2
3-Sep-08	PUF-5	364	7	0.0192	2
4-Sep-08	PUF-5	340	6	0.0176	2
5-Sep-08	PUF-5	347	23	0.0663	7
6-Sep-08	PUF-5	400	12	0.03	3
8-Sep-08	PUF-5	363	6.9	0.019	2
9-Sep-08	PUF-5	366	2.9	0.0079	1
10-Sep-08	PUF-5	359	2.2	0.0061	1
11-Sep-08	PUF-5	342	3.8	0.0111	1
13-Sep-08	PUF-5	388	5.8	0.0149	1
15-Sep-08	PUF-5	351	3.7	0.0105	1
16-Sep-08	PUF-5	369	4.5	0.0122	1
17-Sep-08	PUF-5	359	2.9	0.0081	1
18-Sep-08	PUF-5	361	1.8	0.005	0
19-Sep-08	PUF-5	80	*	*	*
22-Sep-08	PUF-5	15	*	*	*
23-Sep-08	PUF-5	185	*	*	*
29-Sep-08	PUF-5	344	12	0.0349	3
30-Sep-08	PUF-5	327	8.2	0.0251	3
1-Oct-08	PUF-5	358	4.8	0.0134	1
2-Oct-08	PUF-5	340	3.5	0.0103	1
3-Oct-08	PUF-5	337	4.4	0.0131	1
4-Oct-08	PUF-5	398	1.7	0.0043	0
6-Oct-08	PUF-5	366	1.2	0.0033	0
7-Oct-08	PUF-5	350	2.2	0.0063	1

Notes:

* Results not reported due to machine malfunction.

TABLE F.2.10

STATION 30 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
9-May-06	PUF-17	369	16.0	0.0434	4
10-May-06	PUF-17	416	9.5	0.0228	2
19-May-06	PUF-17	39	*	*	*
22-May-06	PUF-17	365	4.6	0.0126	1
23-May-06	PUF-17	417	7.9	0.0189	2
24-May-06	PUF-17	367	25.0	0.0681	7
25-May-06	PUF-17	394	43.0	0.1091	11
30-May-06	PUF-17	442	25.0	0.0566	6
31-May-06	PUF-17	429	8.6	0.02	2
1-Jun-06	PUF-17	407	14.0	0.0344	3
2-Jun-06	PUF-17	413	12.0	0.0291	3
5-Jun-06	PUF-17	441	9.8	0.0222	2
6-Jun-06	PUF-17	378	56.0	0.1481	15
7-Jun-06	PUF-17	411	33.0	0.0803	8
8-Jun-06	PUF-17	162	*	*	*
9-Jun-06	PUF-17	407	7.2	0.0177	2
10-Jun-06	PUF-17	98	*	*	*
12-Jun-06	PUF-17	1	*	*	*
14-Jun-06	PUF-17	394	13.0	0.033	3
15-Jun-06	PUF-17	400	12.0	0.03	3
16-Jun-06	PUF-17	398	24.0	0.0603 J	6
17-Jun-06	PUF-17	444	140.0	0.3153 J	32
19-Jun-06	PUF-17	413	33.0	0.0799	8
20-Jun-06	PUF-17	411	78.0	0.1898	19
21-Jun-06	PUF-17	390	89.0	0.2282	23
22-Jun-06	PUF-17	420	17.0	0.0405	4
23-Jun-06	PUF-17	405	9.2	0.0227	2
24-Jun-06	PUF-17	406	11.0	0.0271	3
26-Jun-06	PUF-17	412	13.0	0.0316	3
27-Jun-06	PUF-17	398	12.0	0.0302	3
28-Jun-06	PUF-17	411	17.0	0.0414	4
29-Jun-06	PUF-17	404	12.0	0.0297	3
30-Jun-06	PUF-17	421	37.0	0.0879	9
3-Jul-06	PUF-17	1	*	*	*
5-Jul-06	PUF-17	0	*	*	*
6-Jul-06	PUF-17	362	8.9	0.0246	2
7-Jul-06	PUF-17	298	8.3	0.0279	3
8-Jul-06	PUF-17	303	8.8	0.029 J	3
10-Jul-06	PUF-17	385	130.0	0.3377	34
17-Jul-06	PUF-17	6	*	*	*
18-Jul-06	PUF-17	274	11.0	0.0401	4
19-Jul-06	PUF-17	381	30.0	0.0787	8
20-Jul-06	PUF-17	359	56.0	0.156	16
21-Jul-06	PUF-17	355	59.0	0.1662	17
22-Jul-06	PUF-17	451	11.0	0.0244	2
24-Jul-06	PUF-17	331	31.0	0.0937	9
25-Jul-06	PUF-17	358	180.0	0.5028	50
26-Jul-06	PUF-17	385	420.0	1.0909	109 (1)
28-Jul-06	PUF-17	389	110.0	0.2828	28
29-Jul-06	PUF-17	375	70.0	0.1867	19
31-Jul-06	PUF-17	386	120.0	0.3109	31
1-Aug-06	PUF-17	421	170.0	0.4038	40
2-Aug-06	PUF-17	402	290.0	0.7214	72
3-Aug-06	PUF-17	443	32.0	0.0722	7
4-Aug-06	PUF-17	403	21.0	0.0521	5
5-Aug-06	PUF-17	477	26.0	0.0545	5
7-Aug-06	PUF-17	421	23.0	0.0546	5
8-Aug-06	PUF-17	334	19.0	0.0569	6
9-Aug-06	PUF-17	395	59.0	0.1494	15
10-Aug-06	PUF-17	373	36.0	0.0965	10
11-Aug-06	PUF-17	402	17.0	0.0423	4
12-Aug-06	PUF-17	472	24.0	0.0508	5
14-Aug-06	PUF-17	391	29.0	0.0742	7
15-Aug-06	PUF-17	399	32.0	0.0802	8

TABLE F.2.10

STATION 30 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
16-Aug-06	PUF-17	393	31.0	0.0789	8
17-Aug-06	PUF-17	397	57.0	0.1436	14
18-Aug-06	PUF-17	389	25.0	0.0643	6
19-Aug-06	PUF-17	365	23.0	0.063	6
21-Aug-06	PUF-17	423	23.0	0.0544	5
22-Aug-06	PUF-17	399	25.0	0.0627	6
23-Aug-06	PUF-17	417	30.0	0.0719	7
24-Aug-06	PUF-17	380	34.0	0.0895	9
25-Aug-06	PUF-17	396	62.0	0.1566	16
26-Aug-06	PUF-17	433	96.0	0.2217	22
29-Aug-06	PUF-17	406	7.2	0.0177	2
30-Aug-06	PUF-17	392	7.5	0.0191	2
31-Aug-06	PUF-17	382	3.3	0.0086	1
5-Sep-06	PUF-17	415	15.0	0.0361	4
6-Sep-06	PUF-17	406	26.0	0.064	6
7-Sep-06	PUF-17	393	24.0	0.0611	6
8-Sep-06	PUF-17	430	36.0	0.0837	8
9-Sep-06	PUF-17	0	*	*	*
11-Sep-06	PUF-17	423	42.0	0.0993	10
14-Sep-06	PUF-17	442	38.0	0.086	9
15-Sep-06	PUF-17	413	34.0	0.0823	8
16-Sep-06	PUF-17	457	62.0	0.1357	14
18-Sep-06	PUF-17	358	4.7	0.0131	1
19-Sep-06	PUF-17	403	2.2	0.0055	1
20-Sep-06	PUF-17	433	12.0	0.0277	3
21-Sep-06	PUF-17	407	10.0	0.0246	2
25-Sep-06	PUF-17	424	26.0	0.0613	6
26-Sep-06	PUF-17	424	66.0	0.1557	16
27-Sep-06	PUF-17	413	61.0	0.1477	15
28-Sep-06	PUF-17	442	11.0	0.0249	2
29-Sep-06	PUF-17	408	34.0	0.0833	8
30-Sep-06	PUF-17	463	23.0	0.0497	5
2-Oct-06	PUF-17	403	99.0	0.2457	25
4-Oct-06	PUF-17	416	77.0	0.1851	19
5-Oct-06	PUF-17	423	13.0	0.0307	3
6-Oct-06	PUF-17	391	25.0	0.0639	6
7-Oct-06	PUF-17	484	34.0	0.0702	7
9-Oct-06	PUF-17	416	49.0	0.1178	12
10-Oct-06	PUF-17	398	99.0	0.2487	25
11-Oct-06	PUF-17	386	29.0	0.0751	8
12-Oct-06	PUF-17	410	11.0	0.0268	3
13-Oct-06	PUF-17	405	2.7	0.0067	1
14-Oct-06	PUF-17	385	13.0	0.0338	3
16-Oct-06	PUF-17	408	27.0	0.0662	7
17-Oct-06	PUF-17	372	15.0	0.0403	4
18-Oct-06	PUF-17	393	28.0	0.0712	7
19-Oct-06	PUF-17	387	1.3	0.0034	0
20-Oct-06	PUF-17	461	17.0	0.0369	4
21-Oct-06	PUF-17	412	17.0	0.0413	4
23-Oct-06	PUF-17	438	0.5	0.0011	0
24-Oct-06	PUF-17	426	8.8	0.0207	2
25-Oct-06	PUF-17	438	6.1	0.0139	1
26-Oct-06	PUF-17	424	5.6	0.0132	1
27-Oct-06	PUF-17	424	2.7	0.0064	1
28-Oct-06	PUF-17	386	1.1	0.0028	0
30-Oct-06	PUF-17	371	61.0	0.1644	16
31-Oct-06	PUF-17	126	*	*	*
1-Nov-06	PUF-17	43	*	*	*
2-Nov-06	PUF-17	423	5.0	0.0118	1
3-Nov-06	PUF-17	466	9.0	0.0193	2
4-Nov-06	PUF-17	386	22.0	0.057	6
4-Nov-06	PUF-17	358	22.0	0.0615	6
6-Nov-06	PUF-17	385	16.0	0.0416	4
6-Nov-06	PUF-17	415	16.0	0.0386	4

TABLE F.2.10

STATION 30 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
7-Nov-06	PUF-17	83	*	*	*
7-Nov-06	PUF-17	93	*	*	*
8-Nov-06	PUF-17	0	*	*	*
8-Nov-06	PUF-17	0	*	*	*
9-Nov-06	PUF-17	347	64.0	0.1844	18
9-Nov-06	PUF-17	323	64.0	0.1981	20
10-Nov-06	PUF-17	426	74.0	0.1737	17
10-Nov-06	PUF-17	380	74.0	0.1947	19
11-Nov-06	PUF-17	452	1.3	0.0029	0
11-Nov-06	PUF-17	484	1.3	0.0027	0
12-Nov-06	PUF-17	338	3.6	0.0107	1
12-Nov-06	PUF-17	316	3.6	0.0114	1
13-Nov-06	PUF-17	442	11.0	0.0249	2
13-Nov-06	PUF-17	398	11.0	0.0276	3
14-Nov-06	PUF-17	411	8.0	0.0195	2
14-Nov-06	PUF-17	367	8.0	0.0218	2
15-Nov-06	PUF-17	404	2.3	0.0057	1
15-Nov-06	PUF-17	361	2.3	0.0064	1
17-Nov-06	PUF-17	476	11.0	0.0231	2
18-Nov-06	PUF-17	505	1.7	0.0034	0
19-Nov-06	PUF-17	364	0.8	0.0022	0
20-Nov-06	PUF-17	429	9.0	0.021	2
21-Nov-06	PUF-17	435	22.0	0.0506	5
27-Nov-06	PUF-17	416	120.0	0.2885 J	29
28-Nov-06	PUF-17	421	110.0	0.2613	26
29-Nov-06	PUF-17	434	140.0	0.3226	32
30-Nov-06	PUF-17	420	7.4	0.0176	2
4-Dec-06	PUF-17	372	4.9	0.0132	1
5-Dec-06	PUF-17	438	23.0	0.0525	5
6-Dec-06	PUF-17	407	2.2	0.0054	1
7-Dec-06	PUF-17	443	*	*	*
11-Dec-06	PUF-17	380	34.0	0.0895	9
13-Dec-06	PUF-17	385	41.0	0.1065	11
14-Dec-06	PUF-17	378	40.0	0.1058	11
15-Dec-06	PUF-17	218	*	*	*
16-Dec-06	PUF-17	495	63.0	0.1273	13
18-Dec-06	PUF-17	351	3.0	0.0085	1
19-Dec-06	PUF-17	410	6.0	0.0146	1
20-Dec-06	PUF-17	391	160.0	0.4092 J	41
2-Jan-07	PUF-17	407	30.0	0.0737	7
3-Jan-07	PUF-17	371	27.0	0.0728	7
4-Jan-07	PUF-17	319	38.0	0.1191	12
5-Jan-07	PUF-17	419	12.0	0.0286	3
6-Jan-07	PUF-17	485	0.0	0	0
8-Jan-07	PUF-17	381	3.9	0.0102	1
9-Jan-07	PUF-17	404	0.6	0.0015	0
10-Jan-07	PUF-17	425	12.0	0.0282	3
11-Jan-07	PUF-17	416	32.0	0.0769	8
12-Jan-07	PUF-17	401	41.0	0.1022	10

Notes:

* Results not reported due to machine malfunction.

J Estimated result. Results if less than the reporting limit.

ND Not detected.

(1) Exceedance primarily attributed to >50 ppm soil excavation in Excavation Plan II

TABLE F.2.11

STATION 31 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* *ug/m^3*	*Percent Allowable* *%*
12-May-06	PUF-6	289	4.0	0.01	1
13-May-06	PUF-6	178	*	*	*
15-May-06	PUF-6	392	0.0	ND(0.0019)	0
19-May-06	PUF-6	327	11.0	0.0336	3
22-May-06	PUF-6	308	47.0	0.1526	15
23-May-06	PUF-6	375	240.0	0.64	64
24-May-06	PUF-6	431	38.0	0.0882	9
25-May-06	PUF-6	96	*	*	*
30-May-06	PUF-6	399	190.0	0.4762	48
31-May-06	PUF-6	377	90.0	0.2387	24
1-Jun-06	PUF-6	383	53.0	0.1384	14
2-Jun-06	PUF-6	385	500.0	1.2987	130 (1)
5-Jun-06	PUF-6	392	510.0	1.301	130 (1)
6-Jun-06	PUF-6	339	87.0	0.2566	26
7-Jun-06	PUF-6	137	*	*	*
8-Jun-06	PUF-6	382	490.0	1.2827	128 (1)
9-Jun-06	PUF-6	363	280.0	0.7713	77
10-Jun-06	PUF-6	148	*	*	*
12-Jun-06	PUF-6	417	230.0	0.5516	55
14-Jun-06	PUF-6	348	430.0	1.2356	124 (1)
15-Jun-06	PUF-6	379	630.0	1.6623	166 (1)
16-Jun-06	PUF-6	365	1200.0	3.2877 J	329 (1)
17-Jun-06	PUF-6	360	76.0	0.2111 J	21
19-Jun-06	PUF-6	363	200.0	0.551	55
20-Jun-06	PUF-6	360	130.0	0.3611	36
21-Jun-06	PUF-6	352	6.0	0.017	2
22-Jun-06	PUF-6	373	67.0	0.1796	18
23-Jun-06	PUF-6	338	190.0	0.5621	56
24-Jun-06	PUF-6	372	370.0	0.9946	99
26-Jun-06	PUF-6	363	190.0	0.5234	52
27-Jun-06	PUF-6	375	34.0	0.0907	9
28-Jun-06	PUF-6	360	130.0	0.3611	36
29-Jun-06	PUF-6	362	360.0	0.9945	99
30-Jun-06	PUF-6	435	220.0	0.5057	51
3-Jul-06	PUF-6	416	4.7	0.0113	1
5-Jul-06	PUF-6	363	27.0	0.0744	7
6-Jul-06	PUF-6	395	320.0	0.8101	81
7-Jul-06	PUF-6	337	480.0	1.4243	142 (2)
8-Jul-06	PUF-6	396	430.0	1.0859 J	109 (2)
10-Jul-06	PUF-6	372	170.0	0.457	46
17-Jul-06	PUF-6	366	450.0	1.2295	123 (2)
18-Jul-06	PUF-6	342	330.0	0.9649	96
19-Jul-06	PUF-6	353	750.0	2.1246	212 (2)
20-Jul-06	PUF-6	348	430.0	1.2356	124 (2)
21-Jul-06	PUF-6	324	170.0	0.5247	52
22-Jul-06	PUF-6	405	75.0	0.1852	19
24-Jul-06	PUF-6	347	660.0	1.902	190 (2)
25-Jul-06	PUF-6	352	83.0	0.2358	24
26-Jul-06	PUF-6	374	8.4	0.0225 J	2
27-Jul-06	PUF-6	1	*	*	*
28-Jul-06	PUF-6	382	7.7	0.0202	2
29-Jul-06	PUF-6	381	260.0	0.6824	68
31-Jul-06	PUF-6	344	170.0	0.4942	49
1-Aug-06	PUF-6	411	32.0	0.0779	8
2-Aug-06	PUF-6	392	6.6	0.0168	2
3-Aug-06	PUF-6	368	5.9	0.016	2
4-Aug-06	PUF-6	429	170.0	0.3963	40
5-Aug-06	PUF-6	492	1000.0	2.0325	203 (2)
7-Aug-06	PUF-6	399	68.0	0.1704	17

TABLE F.2.11

STATION 31 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* *ug/m^3*	*Percent Allowable* *%*
8-Aug-06	PUF-6	323	430.0	1.3313 J	133 [2]
9-Aug-06	PUF-6	409	380.0	0.9291	93
10-Aug-06	PUF-6	349	110.0	0.3152	32
11-Aug-06	PUF-6	374	220.0	0.5882	59
12-Aug-06	PUF-6	408	220.0	0.5392	54
14-Aug-06	PUF-6	52	*	*	*
8/15/2006	PUF-6	121	*	*	*
16-Aug-06	PUF-6	288	6.4	0.0222	2
17-Aug-06	PUF-6	1	*	*	*
17-Aug-06	PUF-6	72	*	*	*
18-Aug-06	PUF-6	208	270.0	1.2981	130 [2]
18-Aug-06	PUF-6	150	16.0	0.1067	11
19-Aug-06	PUF-6	191	49.0	0.2565	26
19-Aug-06	PUF-6	179	20.0	0.1117	11
21-Aug-06	PUF-6	430	110.0	0.2558	26
22-Aug-06	PUF-6	378	140.0	0.3704 J	37
23-Aug-06	PUF-6	373	240.0	0.6434	64
24-Aug-06	PUF-6	359	210.0	0.585 J	58
25-Aug-06	PUF-6	374	250.0	0.6684 J	67
26-Aug-06	PUF-6	441	66.0	0.1497	15
29-Aug-06	PUF-6	362	6.4	0.0177	2
30-Aug-06	PUF-6	383	73.0	0.1906	19
31-Aug-06	PUF-6	375	32.0	0.0853	9
5-Sep-06	PUF-6	400	12.0	0.03	3
6-Sep-06	PUF-6	381	300.0	0.7874 J	79
7-Sep-06	PUF-6	389	340.0	0.874 J	87
8-Sep-06	PUF-6	395	570.0	1.443 J	144 [3]
9-Sep-06	PUF-6	464	680.0	1.4655	147 [3]
11-Sep-06	PUF-6	386	210.0	0.544	54
14-Sep-06	PUF-6	414	83.0	0.2005	20
15-Sep-06	PUF-6	431	590.0	1.3689 J	137 [3]
16-Sep-06	PUF-6	433	180.0	0.4157	42
18-Sep-06	PUF-6	401	2.8	0.007	1
19-Sep-06	PUF-6	416	1.7	0.0041	0
20-Sep-06	PUF-6	403	66.0	0.1638	16
21-Sep-06	PUF-6	408	230.0	0.5637	56
25-Sep-06	PUF-6	393	55.0	0.1399	14
26-Sep-06	PUF-6	399	11.0	0.0276	3
27-Sep-06	PUF-6	416	8.7	0.0209	2
28-Sep-06	PUF-6	419	28.0	0.0668	7
29-Sep-06	PUF-6	390	5.9	0.0151	2
30-Sep-06	PUF-6	433	4.8	0.0111	1
2-Oct-06	PUF-6	420	32.0	0.0762	8
4-Oct-06	PUF-6	410	9.9	0.0241	2
5-Oct-06	PUF-6	375	3.5	0.0093	1
6-Oct-06	PUF-6	378	49.0	0.1296	13
7-Oct-06	PUF-6	454	160.0	0.3524	35
9-Oct-06	PUF-6	387	300.0	0.7752	78
10-Oct-06	PUF-6	370	24.0	0.0649	6
11-Oct-06	PUF-6	364	1.3	0.0036	0
12-Oct-06	PUF-6	285	0.8	0.0028	0
13-Oct-06	PUF-6	373	0.9	0.0024	0
14-Oct-06	PUF-6	186	48.0	0.2581	26
16-Oct-06	PUF-6	190	49.0	0.2579	26
17-Oct-06	PUF-6	200	9.8	0.049	5
18-Oct-06	PUF-6	207	98.0	0.4734	47
19-Oct-06	PUF-6	184	1.4	0.0076	1
20-Oct-06	PUF-6	218	4.0	0.0183	2
21-Oct-06	PUF-6	223	37.0	0.1659	17

TABLE F.2.11

STATION 31 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* *ug/*m^3	*Percent Allowable* *%*
23-Oct-06	PUF-6	215	0.0	ND(0.0023)	0
24-Oct-06	PUF-6	199	40.0	0.201	20
25-Oct-06	PUF-6	404	120.0	0.297	30
26-Oct-06	PUF-6	406	39.0	0.0961	10
27-Oct-06	PUF-6	392	84.0	0.2143	21
28-Oct-06	PUF-6	401	1.1	0.0027	0
30-Oct-06	PUF-6	383	3.2	0.0084	1
31-Oct-06	PUF-6	386	4.0	0.0104	1
1-Nov-06	PUF-6	403	0.6	0.0015	0
2-Nov-06	PUF-6	398	16.0	0.0402	4
3-Nov-06	PUF-6	427	38.0	0.089	9
4-Nov-06	PUF-6	433	11.0	0.0254	3
6-Nov-06	PUF-6	425	200.0	0.4706 J	47
7-Nov-06	PUF-6	426	26.0	0.061	6
8-Nov-06	PUF-6	433	11.0	0.0254	3
9-Nov-06	PUF-6	391	180.0	0.4604 J	46
10-Nov-06	PUF-6	414	8.3	0.02	2
11-Nov-06	PUF-6	459	4.9	0.0107	1
12-Nov-06	PUF-6	391	110.0	0.2813 J	28
13-Nov-06	PUF-6	431	54.0	0.1253	13
14-Nov-06	PUF-6	431	190.0	0.4408 J	44
15-Nov-06	PUF-6	425	63.0	0.1482	15
17-Nov-06	PUF-6	423	79.0	0.1868	19
18-Nov-06	PUF-6	450	2.8	0.0062	1
19-Nov-06	PUF-6	328	0.7	0.0021	0
20-Nov-06	PUF-6	454	49.0	0.1079	11
21-Nov-06	PUF-6	387	83.0	0.2145	21
27-Nov-06	PUF-6	388	7.9	0.0204	2
28-Nov-06	PUF-6	398	14.0	0.0352	4
29-Nov-06	PUF-6	405	5.2	0.0128	1
30-Nov-06	PUF-6	396	9.8	0.0247	2
4-Dec-06	PUF-6	406	0.0	ND(0.0012)	0
5-Dec-06	PUF-6	406	3.4	0.0084	1
6-Dec-06	PUF-6	359	0.0	ND(0.0014)	0
7-Dec-06	PUF-6	388	0.0	ND(0.0013)	0
11-Dec-06	PUF-6	360	37.0	0.1028	10
13-Dec-06	PUF-6	371	1.6	0.0043	0
14-Dec-06	PUF-6	0	*	*	*
15-Dec-06	PUF-6	366	48.0	0.1311	13
16-Dec-06	PUF-6	434	5.4	0.0124	1
18-Dec-06	PUF-6	382	1.5	0.0039	0
19-Dec-06	PUF-6	415	58.0	0.1398	14
20-Dec-06	PUF-6	411	7.6	0.0185	2
2-Jan-07	PUF-6	408	14.0	0.0343	3
3-Jan-07	PUF-6	387	5.6	0.0145	1
4-Jan-07	PUF-6	376	5.6	0.0149	1
5-Jan-07	PUF-6	377	6.8	0.018	2
6-Jan-07	PUF-6	461	22.0	0.0477	5
8-Jan-07	PUF-6	377	0.6	0.0016	0
9-Jan-07	PUF-6	397	0.0	ND(0.0013)	0
10-Jan-07	PUF-6	399	1.3	0.0033	0
11-Jan-07	PUF-6	390	1.6	0.0041	0
12-Jan-07	PUF-6	385	3.2	0.0083	1
20-Jan-07	PUF-6	476	33.0	0.0693	7
27-Mar-07	PUF-6	387	91.0	0.2351 J	24
24-Apr-07	PUF-6	407	76.0	0.1867	19
7-Dec-07	PUF-6	426	3.2	0.0075	1
13-Dec-07	PUF-6	449	0.0	ND(0.0011)	0
19-Dec-07	PUF-6	447	7.3	0.0163	2

TABLE F.2.11

STATION 31 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
3-Jan-08	PUF-6	460	1.1	0.0024	0
10-Jan-08	PUF-6	443	16	0.0361	4
16-Jan-08	PUF-6	444	2.6	0.0059	1
14-Feb-08	PUF-6	436	0.8	0.0018	0
9-Apr-08	PUF-6	354	0	ND(0.0014)	0
15-May-08	PUF-6	392	16	0.0408	4
28-May-08	PUF-6	375	3.9	0.0104	1

Notes:

*	Results not reported due to machine malfunction.
J	Estimated result. Results if less than the reporting limit.
ND	Not detected.
(1)	Exceedance primarily attributed to >50 ppm material placement into the vault and East Plant Excavation
(2)	Exceedance primarily attributed to >50 ppm soil excavation into the vault
(3)	Exceedance primarily attributed to >50 ppm soil excavation in Excavation Plan I

TABLE F.2.12

STATION 31A PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
27-Jul-08	PUF-6	1	*	*	*
03-Aug-08	PUF-6	0	*	*	*
06-Aug-08	PUF-6	484	2	0.0041	0
07-Aug-08	PUF-6	425	1.7	0.004	0
08-Aug-08	PUF-6	455	1	0.0022	0
11-Aug-08	PUF-6	445	4.9	0.011	1
12-Aug-08	PUF-6	480	3.4	0.0071	1
13-Aug-08	PUF-6	463	5.2	0.0112	1
14-Aug-08	PUF-6	454	4	0.0088	1
15-Aug-08	PUF-6	475	2.8	0.0059	1
16-Aug-08	PUF-6	471	2.5	0.0053 J	1
17-Aug-08	PUF-6	446	3.9	0.0087	1
18-Aug-08	PUF-6	510	7	0.0137	1
19-Aug-08	PUF-6	429	5.6	0.0131	1
20-Aug-08	PUF-6	438	17	0.0388	4
21-Aug-08	PUF-6	446	16	0.0359	4
22-Aug-08	PUF-6	439	7.1	0.0162	2
23-Aug-08	PUF-6	500	3.4	0.0068	1
25-Aug-08	PUF-6	441	5.7	0.0129	1
26-Aug-08	PUF-6	424	3.6	0.0085	1
27-Aug-08	PUF-6	443	13	0.0293	3
05-Sep-08	PUF-6	472	1.9	0.004	0
06-Sep-08	PUF-6	522	9.3	0.0178	2
08-Sep-08	PUF-6	459	6.3	0.0137	1
10-Sep-08	PUF-6	457	14	0.0306	3
11-Sep-08	PUF-6	470	18	0.0383	4
13-Sep-08	PUF-6	524	4.7	0.009	1
22-Sep-08	PUF-6	368	20	0.0543	5
23-Sep-08	PUF-6	370	14	0.0378	4
24-Sep-08	PUF-6	382	17	0.0445	4
25-Sep-08	PUF-6	408	2.4	0.0059	1
26-Sep-08	PUF-6	411	1.5	0.0036	0
27-Sep-08	PUF-6	492	16	0.0325	3
29-Sep-08	PUF-6	390	1.9	0.0049	0
30-Sep-08	PUF-6	0	*	*	*
1-Oct-08	PUF-6	488	0.8	0.0016	0
2-Oct-08	PUF-6	444	0.5	0.0011	0
3-Oct-08	PUF-6	473	4.7	0.0099	1

Notes:

*	Results not reported due to machine malfunction.
J	Estimated result. Results if less than the reporting limit.
ND	Not detected.
(1)	Exceedance primarily attributed to >50 ppm material placement into the vault and East Plant Excavation
(2)	Exceedance primarily attributed to >50 ppm soil excavation into the vault
(3)	Exceedance primarily attributed to >50 ppm soil excavation in Excavation Plan I

TABLE F.2.13

STATION 34 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume m3*	*Total PCB Mass ug*	*PCB Concentration ug/m3*	*Percent Allowable %*
29-Jan-07	PUF-17	358	0.0	ND(0.0014)	0
30-Jan-07	PUF-17	451	0.0	ND(0.0011)	0
31-Jan-07	PUF-17	435	0.0	ND(0.0011)	0
01-Feb-07	PUF-17	421	1.8	0.0043	0
02-Feb-07	PUF-17	416	0.0	ND(0.0012)	0
08-Feb-07	PUF-17	507	3.7	0.0073	1
09-Feb-07	PUF-17	472	5.8	0.0123	1
10-Feb-07	PUF-17	477	9.8	0.0205	2
12-Feb-07	PUF-17	421	3.4	0.0081	1
15-Feb-07	PUF-17	500	4.5	0.009	1
16-Feb-07	PUF-17	442	0.0	ND(0.0011)	0
17-Feb-07	PUF-17	448	4.0	0.0089	1
19-Feb-07	PUF-17	408	0.6	0.0015	0
20-Feb-07	PUF-17	393	57.0	0.145 J	14
21-Feb-07	PUF-17	398	19.0	0.0477	5
22-Feb-07	PUF-17	407	11.0	0.027	3
27-Feb-07	PUF-17	0.061	0.0	0.0594	0.1022
28-Feb-07	PUF-17	390	5.0	0.0128	1
02-Mar-07	PUF-17	405	1.7	0.0042	0
03-Mar-07	PUF-17	406	0.0	ND(0.0012)	0
05-Mar-07	PUF-17	364	23.0	0.0632	6
06-Mar-07	PUF-17	413	19.0	0.046	5
07-Mar-07	PUF-17	419	57.0	0.136	14
08-Mar-07	PUF-17	431	23.0	0.0534	5
12-Mar-07	PUF-17	452	3.2	0.0071	1
13-Mar-07	PUF-17	385	0.0	ND(0.0013)	0
14-Mar-07	PUF-17	0	*	*	*
15-Mar-07	PUF-17	414	22.0	0.0531	5
16-Mar-07	PUF-17	434	75.0	0.1728 J	17
17-Mar-07	PUF-17	363	51.0	0.1405	14
19-Mar-07	PUF-17	524	45.0	0.0859	9
20-Mar-07	PUF-17	332	16.0	0.0482	5
21-Mar-07	PUF-17	395	1.5	0.0038	0
29-Mar-07	PUF-17	374	85.0	0.2273 J	23
30-Mar-07	PUF-17	428	87.0	0.2033	20

Notes:

Air monitoring at Group 14 conducted during installation of 48-inch sewer line for Plant operations.

* Results not reported due to machine malfunction.

ND Not detected.

J Estimated result. Results if less than the reporting limit.

TABLE F.2.14

STATION 35 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume*	*Total PCB Mass*	*PCB Concentration*	*Percent Allowable*
		m3	*ug*	*ug/m3*	*%*
29-Jan-07	PUF-12	289	7.3	0.0253	3
30-Jan-07	PUF-12	370	12.0	0.0324	3
31-Jan-07	PUF-12	349	2.6	0.0074	1
01-Feb-07	PUF-12	338	4.8	0.0142	1
02-Feb-07	PUF-12	318	2.1	0.0066	1
08-Feb-07	PUF-12	350	6.5	0.0186	2
09-Feb-07	PUF-12	356	12.0	0.0337	3
10-Feb-07	PUF-12	365	11.0	0.0301	3
12-Feb-07	PUF-12	319	3.1	0.0097	1
15-Feb-07	PUF-12	363	15.0	0.0413	4
16-Feb-07	PUF-12	340	3.3	0.0097	1
17-Feb-07	PUF-12	331	13.0	0.0393	4
19-Feb-07	PUF-12	310	3.3	0.0106	1
20-Feb-07	PUF-12	313	34.0	0.1086	11
21-Feb-07	PUF-12	353	54.0	0.153	15
22-Feb-07	PUF-12	334	58.0	0.1737	17
27-Feb-07	PUF-12	323	33.0	0.1022	10
28-Feb-07	PUF-12	315	6.3	0.02	2
02-Mar-07	PUF-12	321	15.0	0.0467	5
03-Mar-07	PUF-12	311	24.0	0.0772	8
04-Mar-07	PUF-12	326	19.0	0.0583	6
05-Mar-07	PUF-12	314	34.0	0.1083	11
06-Mar-07	PUF-12	325	7.8	0.024	2
07-Mar-07	PUF-12	466	14.0	0.03	3
08-Mar-07	PUF-12	476	30.0	0.063	6
12-Mar-07	PUF-12	490	33.0	0.0673	7
13-Mar-07	PUF-12	438	19.0	0.0434	4
14-Mar-07	PUF-12	462	28.0	0.0606	6
15-Mar-07	PUF-12	446	7.0	0.0157	2
16-Mar-07	PUF-12	448	45.0	0.1004	10
17-Mar-07	PUF-12	547	98.0	0.1792	18
19-Mar-07	PUF-12	442	54.0	0.1222	12
20-Mar-07	PUF-12	429	11.0	0.0256	3
21-Mar-07	PUF-12	428	12.0	0.028	3
29-Mar-07	PUF-12	405	18.0	0.0444	4
30-Mar-07	PUF-12	427	48.0	0.1124	11

TABLE F.2.15

STATION 40 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
15-May-08	PUF-22	461	2.9	0.0063	1
18-May-08	PUF-22	498	3.2	0.0064	1
20-May-08	PUF-22	476	9.9	0.0208	2
22-May-08	PUF-22	520	9.6	0.0185	2
27-May-08	PUF-22	462	8	0.0173	2
29-May-08	PUF-22	446	2.3	0.0052	1
30-May-08	PUF-22	497	4.4	0.0089	1
02-Jun-08	PUF-22	468	4.5	0.0096	1
18-Aug-08	PUF-22	436	8	0.0183	2
19-Aug-08	PUF-22	398	2.1	0.0053	1
20-Aug-08	PUF-22	414	0.6	0.0014	0
21-Aug-08	PUF-22	421	1.5	0.0036	0
22-Aug-08	PUF-22	0	*	*	*
23-Aug-08	PUF-22	0	*	*	*
26-Aug-08	PUF-22	407	1.7	0.0042	0
27-Aug-08	PUF-22	415	6.4	0.0154	2
28-Aug-08	PUF-22	436	4.3	0.0099	1
02-Sep-08	PUF-22	0	*	*	*
04-Sep-08	PUF-22	451	8.2	0.0182	2
05-Sep-08	PUF-22	406	28	0.069	7
06-Sep-08	PUF-22	471	14	0.0297	3
08-Sep-08	PUF-22	470	11	0.0234	2
09-Sep-08	PUF-22	421	3.8	0.009	1
10-Sep-08	PUF-22	450	6.4	0.0142	1
11-Sep-08	PUF-22	423	2.4	0.0057	1
13-Sep-08	PUF-22	493	2.6	0.0053	1
19-Sep-08	PUF-22	476	7.5	0.0158	2
22-Sep-08	PUF-22	407	6.8	0.0167	2
23-Sep-08	PUF-22	384	17	0.0443	4
24-Sep-08	PUF-22	434	12	0.0276	3
25-Sep-08	PUF-22	461	6.9	0.015	2
26-Sep-08	PUF-22	389	19	0.0488	5
27-Sep-08	PUF-22	473	13	0.0275	3
29-Sep-08	PUF-22	410	25	0.061	6
30-Sep-08	PUF-22	402	51	0.1269	13
01-Oct-08	PUF-22	433	21	0.0485	5
02-Oct-08	PUF-22	350	1.1	0.0031	0
03-Oct-08	PUF-22	328	6.3	0.0192	2
04-Oct-08	PUF-22	435	6.2	0.0143	1
06-Oct-08	PUF-22	409	1	0.0024	0
07-Oct-08	PUF-22	416	0.8	0.0019	0

Notes:

* Results not reported due to machine malfunction.

TABLE F.2.16

STATION 41 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
15-May-08	PUF-23	418	5.9	0.0141	1
18-May-08	PUF-23	454	1.9	0.0042	0
20-May-08	PUF-23	439	3.6	0.0082	1
22-May-08	PUF-23	459	16	0.0349	3
27-May-08	PUF-23	423	19	0.0449	4
29-May-08	PUF-23	2	*	*	*
30-May-08	PUF-23	0	*	*	*
02-Jun-08	PUF-23	4	*	*	*
18-Aug-08	PUF-23	386	12	0.0311	3
19-Aug-08	PUF-23	350	16	0.0457	5
20-Aug-08	PUF-23	377	11	0.0292	3
21-Aug-08	PUF-23	384	4.1	0.0107	1
22-Aug-08	PUF-23	391	9	0.023	2
23-Aug-08	PUF-23	385	29	0.0753	8
26-Aug-08	PUF-23	361	23	0.0637	6
27-Aug-08	PUF-23	369	26	0.0705	7
28-Aug-08	PUF-23	370	3.4	0.0092	1
02-Sep-08	PUF-23	399	20	0.0501	5
03-Sep-08	PUF-23	383	8.5	0.0222	2
04-Sep-08	PUF-23	370	1	0.0027	0
08-Sep-08	PUF-23	414	17	0.0411	4
09-Sep-08	PUF-23	351	16	0.0456	5
10-Sep-08	PUF-23	388	30	0.0773	8
11-Sep-08	PUF-23	311	9.2	0.0296	3
13-Sep-08	PUF-23	427	2.6	0.0061	1
15-Sep-08	PUF-23	364	9.4	0.0258	3
16-Sep-08	PUF-23	398	21	0.0528	5
17-Sep-08	PUF-23	351	22	0.0627	6
18-Sep-08	PUF-23	377	18	0.0477	5
19-Sep-08	PUF-23	372	18	0.0484	5
22-Sep-08	PUF-23	340	0	ND(0.0015)	--
23-Sep-08	PUF-23	318	31	0.0975	10
24-Sep-08	PUF-23	133	*	*	*
26-Sep-08	PUF-23	385	33	0.0857	9
27-Sep-08	PUF-23	359	27	0.0752	8
29-Sep-08	PUF-23	328	3.7	0.0113	1
30-Sep-08	PUF-23	346	1.7	0.0049	0
01-Oct-08	PUF-23	202	*	*	*
02-Oct-08	PUF-23	18	*	*	*
03-Oct-08	PUF-23	302	5.6	0.0185	2
04-Oct-08	PUF-23	400	14	0.035	4
06-Oct-08	PUF-23	362	20	0.0552	6
07-Oct-08	PUF-23	368	1.7	0.0046	0

Notes:
* Results not reported due to machine malfunction.
ND Not detected.

TABLE F.2.17

STATION 42 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
18-May-08	PUF-12	529	10	0.0189	2
20-May-08	PUF-12	488	16	0.0328	3
22-May-08	PUF-12	551	5.5	0.01	1
27-May-08	PUF-12	489	9.5	0.0194	2
29-May-08	PUF-12	458	8.5	0.0186	2
30-May-08	PUF-12	514	16	0.0311	3
02-Jun-08	PUF-12	450	8.8	0.0196	2
18-Aug-08	PUF-12	360	6.4	0.0178	2
19-Aug-08	PUF-12	334	5.8	0.0174	2
20-Aug-08	PUF-12	380	1.3	0.0034	0
21-Aug-08	PUF-12	384	4.4	0.0115	1
22-Aug-08	PUF-12	403	7.5	0.0186	2
23-Aug-08	PUF-12	411	9.6	0.0234	2
26-Aug-08	PUF-12	370	2.2	0.0059	1
27-Aug-08	PUF-12	380	5.6	0.0147	1
28-Aug-08	PUF-12	402	6.5	0.0162	2
02-Sep-08	PUF-12	432	7.6	0.0176	2
03-Sep-08	PUF-12	412	4.7	0.0114	1
04-Sep-08	PUF-12	374	4.8	0.0128	1
05-Sep-08	PUF-12	388	21	0.0541	5
06-Sep-08	PUF-12	430	12	0.0279	3
08-Sep-08	PUF-12	415	13	0.0313	3
09-Sep-08	PUF-12	386	3.3	0.0085	1
10-Sep-08	PUF-12	412	3.6	0.0087	1
11-Sep-08	PUF-12	381	6.5	0.0171	2
13-Sep-08	PUF-12	430	11	0.0256	3
15-Sep-08	PUF-12	390	6.4	0.0164	2
16-Sep-08	PUF-12	415	5.2	0.0125	1
17-Sep-08	PUF-12	400	69	0.1725	17
18-Sep-08	PUF-12	392	4.6	0.0117	1
19-Sep-08	PUF-12	494	11	0.0223	2
22-Sep-08	PUF-12	382	7.6	0.0199	2
23-Sep-08	PUF-12	401	6.6	0.0165	2
24-Sep-08	PUF-12	398	10	0.0251	3
25-Sep-08	PUF-12	436	8.1	0.0186	2
26-Sep-08	PUF-12	364	15	0.0412	4
27-Sep-08	PUF-12	487	9.4	0.0193	2
29-Sep-08	PUF-12	387	45	0.1163	12
30-Sep-08	PUF-12	395	2.4	0.0061	1
01-Oct-08	PUF-12	409	7	0.0171	2
02-Oct-08	PUF-12	382	9.6	0.0251	3
03-Oct-08	PUF-12	379	14	0.0369	4
04-Oct-08	PUF-12	449	3.6	0.008	1
06-Oct-08	PUF-12	409	3	0.0073	1
07-Oct-08	PUF-12	406	7.6	0.0187	2

TABLE F.2.18

STATION 43 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
25-Jul-08	PUF-4	1	*	*	*
26-Jul-08	PUF-4	1	*	*	*
6-Aug-08	PUF-4	391	1.5	0.0038	0
7-Aug-08	PUF-4	374	0.7	0.0019 J	0
8-Aug-08	PUF-4	381	24	0.063	6
11-Aug-08	PUF-4	387	14	0.0362	4
12-Aug-08	PUF-4	386	11	0.0285	3
13-Aug-08	PUF-4	382	14	0.0366	4
14-Aug-08	PUF-4	403	8.5	0.0211	2
15-Aug-08	PUF-4	405	8.4	0.0207	2
16-Aug-08	PUF-4	449	14	0.0312	3
17-Aug-08	PUF-4	389	18	0.0463	5
18-Aug-08	PUF-4	443	19	0.0429	4
19-Aug-08	PUF-4	362	17	0.047	5
20-Aug-08	PUF-4	405	34	0.084	8
21-Aug-08	PUF-4	382	42	0.1099	11
22-Aug-08	PUF-4	390	36	0.0923	9
25-Aug-08	PUF-4	385	21	0.0545	5
26-Aug-08	PUF-4	348	19	0.0546	5
27-Aug-08	PUF-4	344	30	0.0872	9
05-Sep-08	PUF-4	434	0.9	0.0021	0
06-Sep-08	PUF-4	168	*	*	*
08-Sep-08	PUF-4	418	15	0.0359	4
10-Sep-08	PUF-4	417	32	0.0767	8
11-Sep-08	PUF-4	404	110	0.2723	27
13-Sep-08	PUF-4	462	19	0.0411	4
22-Sep-08	PUF-4	394	290	0.736	74
23-Sep-08	PUF-4	410	830	2.0244	202 (1)
24-Sep-08	PUF-4	420	740	1.7619	176 (1)
25-Sep-08	PUF-4	441	120	0.2721	27
26-Sep-08	PUF-4	494	160	0.3239	32
27-Sep-08	PUF-4	467	160	0.3426	34
29-Sep-08	PUF-4	403	9.2	0.0228	2
30-Sep-08	PUF-4	405	100	0.2469	25
1-Oct-08	PUF-4	417	2.5	0.006	1
2-Oct-08	PUF-4	411	2.5	0.0061	1
3-Oct-08	PUF-4	450	43	0.0956	10
5-Oct-08	PUF-4	117	*	*	*

Notes:

*	Result not reported due to machine malfunction.
J	Estimated results. Results if less than the reporting limit.
(1)	Exceedeence due to increased work activities and less than average rainfall.

TABLE F.2.19

STATION 44 PCB AIR MONITORING RESULTS
CONSTRUCTION CERTIFICATION REPORT
EAST PLANT AREA VAULT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Date	*Unit ID*	*Total Volume* m^3	*Total PCB Mass* *ug*	*PCB Concentration* ug/m^3	*Percent Allowable* *%*
25-Jul-08	PUF-17	337	18	0.0534	5
26-Jul-08	PUF-17	480	4.1	0.0085	1
27-Jul-08	PUF-17	355	3.5	0.0099 J	1
6-Aug-08	PUF-17	462	4	0.0087	1
7-Aug-08	PUF-17	398	4.8	0.0121	1
8-Aug-08	PUF-17	433	29	0.067	7
11-Aug-08	PUF-17	424	13	0.0307	3
12-Aug-08	PUF-17	425	7.9	0.0186	2
13-Aug-08	PUF-17	419	23	0.0549	5
14-Aug-08	PUF-17	441	16	0.0363	4
15-Aug-08	PUF-17	426	13	0.0305	3
18-Aug-08	PUF-17	469	33	0.0704	7
19-Aug-08	PUF-17	411	17	0.0414	4
20-Aug-08	PUF-17	414	24	0.058	6
21-Aug-08	PUF-17	421	34	0.0808	8
22-Aug-08	PUF-17	437	30	0.0686	7
23-Aug-08	PUF-17	458	20	0.0437	4
25-Aug-08	PUF-17	416	6.3	0.0151	2
26-Aug-08	PUF-17	402	12	0.0299	3
27-Aug-08	PUF-17	418	31	0.0742	7
05-Sep-08	PUF-17	400	22	0.055	6
06-Sep-08	PUF-17	470	32	0.0681	7
08-Sep-08	PUF-17	460	31	0.0674	7
10-Sep-08	PUF-17	443	15	0.0339	3
11-Sep-08	PUF-17	439	24	0.0547	5
13-Sep-08	PUF-17	489	6.2	0.0127	1
15-Sep-08	PUF-17	439	37	0.0843	8
16-Sep-08	PUF-17	441	67	0.1519	15
17-Sep-08	PUF-17	445	5	0.0112	1
18-Sep-08	PUF-17	433	97	0.224	22
19-Sep-08	PUF-17	527	66	0.1252	13
22-Sep-08	PUF-17	418	21	0.0502	5
23-Sep-08	PUF-17	441	70	0.1587	16
24-Sep-08	PUF-17	435	97	0.223	22
25-Sep-08	PUF-17	452	73	0.1615	16
26-Sep-08	PUF-17	469	210	0.4478	45
27-Sep-08	PUF-17	523	160	0.3059	31
29-Sep-08	PUF-17	443	180	0.4063	41
30-Sep-08	PUF-17	443	42	0.0948	9
1-Oct-08	PUF-17	476	110	0.2311	23
2-Oct-08	PUF-17	427	25	0.0585	6
3-Oct-08	PUF-17	412	44	0.1068	11

Notes:
J Estimated result. Results if less than the reporting limit.

APPENDIX G

BEDFORD PLANT VAULT PUBLIC NOTICE

Agencies Seek Public Comments On Cleanup at GM Bedford Plant

U. S. Environmental Protection Agency and Indiana Department of Environmental Management are seeking public comments on proposed work at the GM Bedford East Plant Area for the control of environmental concerns at the plant site (U.S. EPA ID# IND 006 036 099). GM has proposed a series of steps both agencies feel are sufficient to become permanent.

Comments must be submitted no later than July 14, 2005.

Highlights of the proposed plan include:

*Adding institutional controls: land will be used for industry only;
*Removing dirt with more than 50 parts per million polychlorinated biphenyls (PCBs).
*Building a landfill vault area to contain materials with more than 50 ppm PCBs.
*Installing a cover system over the landfill area to prevent water seeping.
*Constructing ground water systems to reclaim oil from bedrock and collect water for treatment.
*Using soils of less than 50 ppm PCBs taken from work off the plant site as backfill and grading material on the plant site.

Detailed information about the plans can be found in a document called an Interim Measure Alternatives Review Report – East Plant Area GM Powertrain, Bedford, IN:

Bedford Public Library 1323 K Street	Information Center GM Powertrain Lobby Bedford, IN (866) 223-0856 (Appointment only)	IDEM 100 N. Senate Ave. Indianapolis, IN (317) 233-1522

Or at the U.S. EPA address in Chicago listed below.

The document is also available on the internet at:

www.bedfordpowertraincorrectiveaction.com/docrepository

Written comments should be directed no later than July 14, 2005 to:
Peter Ramanauskas
U. S. EPA
77 W. Jackson Blvd. (DW-8J)
Chicago, IL 60604
Or via the internet at: www.epa.gov/region5/sites/gmbedford/comments.htm

Any interested person may request a public meeting or hearing. The request must be in writing and state the nature of the issues to be raised. The Administrator shall hold a public meeting or hearing whenever he finds, on the basis of requests, a significant degree of public interest. Written requests should be directed to Peter Ramanauskas of the U.S. EPA at the above address.

Agencies Seek Public Comments On Cleanup at GM Bedford Plant

U.S. Environmental Protection Agency and Indiana Department of Environmental Management are seeking public comments on proposed work at the GM Bedford East Plant Area for the control of environmental concerns at the plant site (U.S. EPA ID# IND 006 036 099). GM has proposed a series of steps both agencies feel are sufficient to become permanent.

Comments must be submitted no later than July 14, 2005.

Highlights of the proposed plan include:

*Adding institutional controls: land will be used for industry only;

*Removing dirt with more than 50 parts per million polychlorinated biphenyls (PCBs).

*Building a landfill vault area to contain materials with more than 50 ppm PCBs.

*Installing a cover system over the landfill area to prevent water seeping.

*Constructing ground water systems to reclaim oil from bedrock and collect water for treatment.

*Using soils of less than 50 ppm PCBs taken from work off the plant site as backfill and grading material on the plant site.

Detailed information about the plans can be found in a document called an Interim Measure Alternatives Review Report — East Plant Area GM Powertrain, Bedford, IN:

Bedford Public Library, 1323 K Street; Information Center, GM Powertrain Lobby, Bedford, IN (866) 223-0856 (Appointment only); IDEM, 100 N. Senate Ave., Indianapolis, IN (317) 233-1522.

Or at the U.S. EPA address in Chicago listed below.

The document is also available on the internet at: www.bedfordpowertraincorrectiveaction.com/docrepository.

Written comments should be directed no later than July 14, 2005 to:

Peter Ramanauskas, U.S. EPA, 77 W. Jackson Blvd. (DW-8J), Chicago, IL 60604.

Or via the internet at: www.epa.gov/region5/sites/gmbedford/comments.htm.

Any interested person may request a public meeting or hearing. The request must be in writing and state the nature of the issues to be raised. The Administrator shall hold a public meeting or hearing whenever he finds, on the basis of requests, a significant degree of public interest. Written requests should be directed to Peter Ramanauskas of the U.S. EPA at the above address.

31-m 1tc

Form Prescribed by State Board Of Accounts — General Form No. 99P (Revised 1987)

Lawrence County
(Governmental Unit)
County, Indiana

To: Times Mail
Bedford, In 47421
Dr.

PUBLISHER'S CLAIM

LINE COUNT

Display Matter (Must not exceed two actual lines, neither of which shall total more than four solid lines of type in which the body of the advertisement is set) — number of equivalent lines .....

Head — number of lines .....

Body — number of lines .....

Total — number of lines .....

Total number of lines in notice 82

COMPUTATION OF CHARGES

82 lines 1 columns wide equals 82 equivalent lines

at 81 cents per line ..... $ 66.42

Additional charge for notices containing rule or tabular work

(50 percent of above amount) .....

Charge for extra proofs of publication ($1.00 for each proof in excess of two) .....

TOTAL AMOUNT OF CLAIM 66.42

DATA FOR COMPUTING COST

Width of single column 2 1/4 ems

Number of insertions 1

Size of type 8 point

Pursuant to the provisions and penalties of Chapter 155, Acts 1953,

I hereby certify that the foregoing account is just and correct, that the amount claimed is legally due after allowing all just credits, and that no part of the same has been paid.

Date: May 31, 2005

Title: Linda Burge, Clerk

Agencies Seek Public Comments On Cleanup at GM Bedford Plant

U.S. Environmental Protection Agency and Indiana Department of Environmental Management are seeking public comments on proposed work at the GM Bedford East Plant Area for the control of environmental concerns at the plant site (U.S. EPA ID# IND 006 036 099). GM has proposed a series of steps both agencies feel are sufficient to become permanent.

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Written comments should be directed no later than July 14, 2005 to:

Peter Ramanauskas, U.S. EPA, 77 W. Jackson Blvd. (DW-8J), Chicago, IL 60604.

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Any interested person may request a public meeting or hearing. The request must be in writing and state the nature of the issues to be raised. The Administrator shall hold a public meeting or hearing whenever he finds, on the basis of requests, a significant degree of public interest. Written requests should be directed to Peter Ramanauskas of the U.S. EPA at the above address.

31-m 1tc

PUBLISHER'S AFFIDAVIT

State of Indiana)
) ss:
Lawrence County)

Personally appeared before me, a notary public in and for said county and state, the undersigned L. Burge who, being duly sworn, says that she is clerk of the The Times-Mail newspaper of general circulation printed and published in the English language in the (city) of Bedford in state and county aforesaid, and that the printed matter attached hereto is a true copy, which was duly published in said newspaper for 1 time, the dates of publication being as follows:

May 31, 2005

Linda Burge

Subscribed and sworn to before me this 31st day of May 20 05

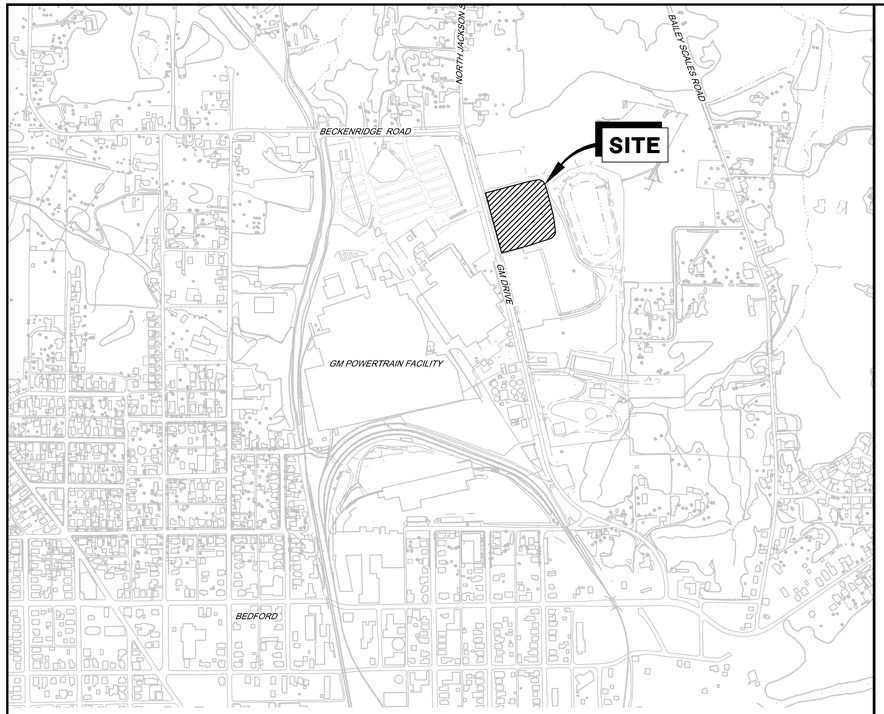
Karen E. Pace
Notary Public

My commission expires:

Karen E. Pace
Notary Public, State of Indiana
Lawrence County
My Commission Expires 03/01/2007

DRAWINGS

DRAWINGS



KEY MAP

DRAWING INDEX

DWG. No.	REV. No.	DATE	TITLE
C-01	0	JULY 2012	TOP OF EXPOSED BEDROCK SURFACE (FOLLOWING SOIL EXCAVATION)
C-02	0	JULY 2012	INSTALLED OIL SEEP COLLECTION AND UNDERDRAIN SYSTEM
C-03	0	JULY 2012	GRAVEL UNDERDRAIN SYSTEM TOP OF STONE CONTOURS
C-04	0	JULY 2012	CONTAINMENT CELL BASE PLAN TOP OF CLAY CONTOURS
C-05	0	JULY 2012	SECONDARY GEOSYNTHETIC CLAY LINER PANEL LAYOUT
C-06	0	JULY 2012	SECONDARY 60-MIL LLDPE GEOMEMBRANE PANEL LAYOUT
C-07	0	JULY 2012	SECONDARY DRAINAGE GEOCOMPOSITE PANEL LAYOUT
C-08	0	JULY 2012	TOP OF SECONDARY CLAY LINER CONTOURS
C-09	0	JULY 2012	PRIMARY GEOSYNTHETIC CLAY LINER PANEL LAYOUT
C-10	0	JULY 2012	PRIMARY 60-MIL HDPE GEOMEMBRANE PANEL LAYOUT
C-11	0	JULY 2012	PRIMARY DRAINAGE GEOCOMPOSITE PANEL LAYOUT (LEACHATE COLLECTION SYSTEM)
C-12	0	JULY 2012	TOP OF LEACHATE COLLECTION SYSTEM (DRAINAGE STONE) CONTOURS
C-13	0	JULY 2012	FINAL COVER SYSTEM - TOP OF SUBGRADE CONTOURS
C-14	0	JULY 2012	FINAL COVER SYSTEM - TOP OF CLAY CONTOURS
C-15	0	JULY 2012	FINAL COVER SYSTEM 60-MIL HDPE GEOMEMBRANE PANEL LAYOUT
C-16	0	JULY 2012	FINAL COVER SYSTEM - FINAL SURFACE CONTOURS
C-17	0	JULY 2012	CROSS-SECTIONS A, B AND BOTTOM LINER/COVER SYSTEM DETAILS
C-18	0	JULY 2012	LEACHATE COLLECTION / LEAK DETECTION MANHOLES (SECTION C)

RECORD DRAWINGS
JULY 2012

EAST PLANT AREA VAULT
CONSTRUCTION CERTIFICATION REPORT

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

CONESTOGA-ROVERS & ASSOCIATES



Nº	Revision	Date	Initial

LEGEND

- EXISTING BUILDINGS
- EXISTING CONTOURS
- EXISTING ROADS / PAVED AREAS
- EXISTING ROADS / GRAVEL AREAS
- EXISTING FENCE
- EXISTING GUARDRAIL
- EXISTING STORM SEWER
- EXISTING OVERHEAD POWER LINE
- EXISTING MANHOLE
- EXISTING UTILITY POLES
- SURFACE WATER LOCATION
- GM PROPERTY BOUNDARY
- EXISTING BOREHOLE, TEST PIT, WELL OR SAMPLE LOCATION

RECORD DRAWINGS

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, BASED ON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, CRA CAN NOT AND DOES NOT WARRANT ITS ACCURACY AND/OR COMPLETENESS, AND THUS SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED HEREIN AS A RESULT. THOSE RELYING ON THIS RECORD DRAWING ARE ADVISED TO OBTAIN VERIFICATION OF ITS ACCURACY AND/OR COMPLETENESS BEFORE USING IT FOR ANY PURPOSE.

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

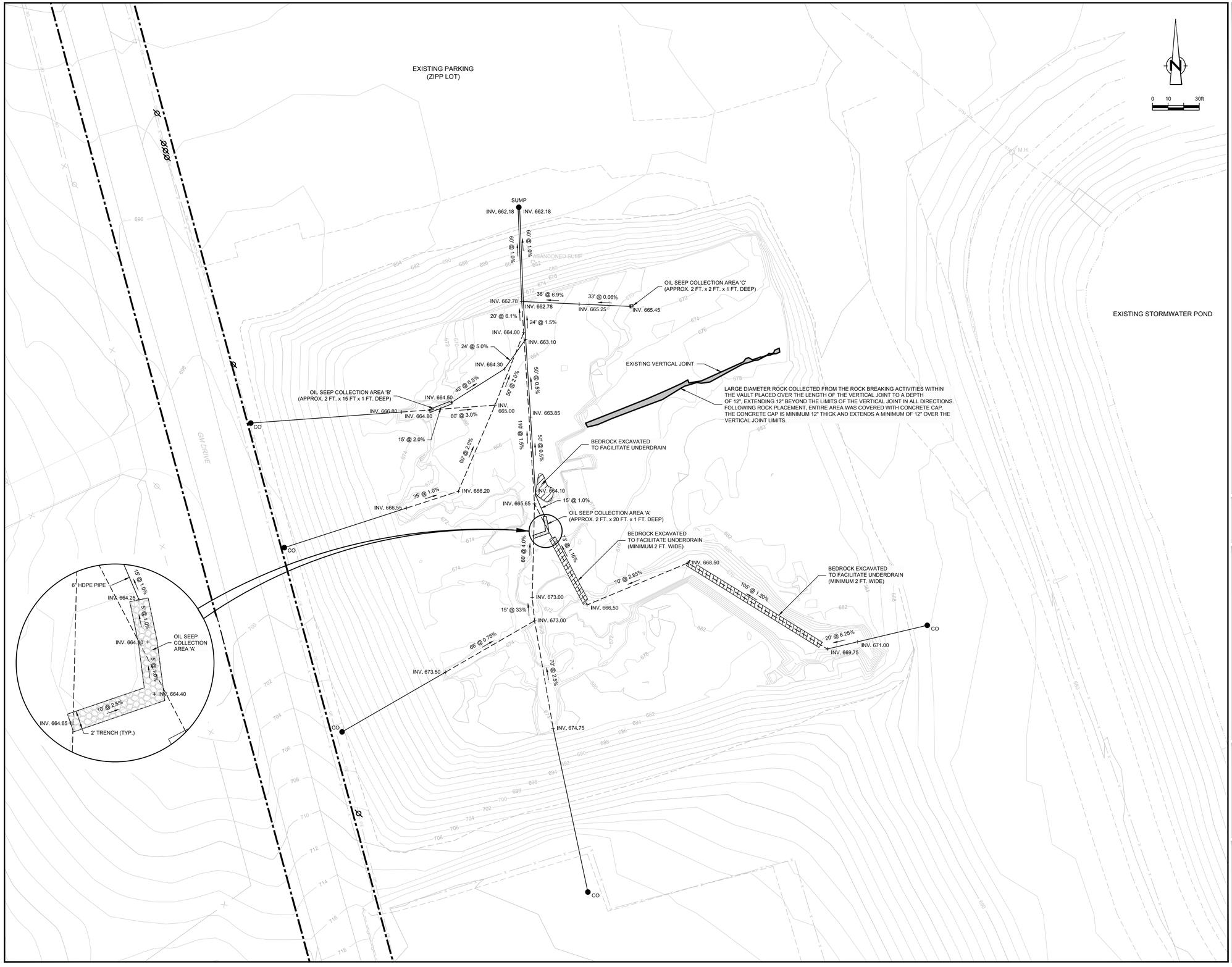
TOP OF EXPOSED BEDROCK SURFACE (FOLLOWING SOIL EXCAVATION)

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project Nº: 13968-00	Report Nº: 289	Drawing Nº: C-01

13968-00(289)CI-WA001 DEC 24/2013



Nº	Revision	Date	Initial

LEGEND

- SURFACE WATER LOCATION
- 6" PERFORATED HDPE PIPE (UNDERDRAIN)
- 6" SOLID WALL HDPE PIPE
- CO — CLEANOUT

RECORD DRAWINGS

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SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

INSTALLED OIL SEEP COLLECTION AND UNDERDRAIN SYSTEM

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI. APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project Nº: 13968-00	Report Nº: 289	Drawing Nº: C-02

13968-00(289)CI-WA009 DEC 24/2013



No	Revision	Date	Initial

LEGEND

- SURFACE WATER LOCATION
- 680 TOP OF STONE CONTOUR
- AREA OF STONE
- CO CLEANOUT

RECORD DRAWINGS

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, BASED ON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, CRA CAN NOT AND DOES NOT WARRANT ITS ACCURACY AND/OR COMPLETENESS, AND THUS SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED HEREIN AS A RESULT. THOSE RELYING ON THIS RECORD DRAWING ARE ADVISED TO OBTAIN VERIFICATION OF ITS ACCURACY AND/OR COMPLETENESS BEFORE USING IT FOR ANY PURPOSE.

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

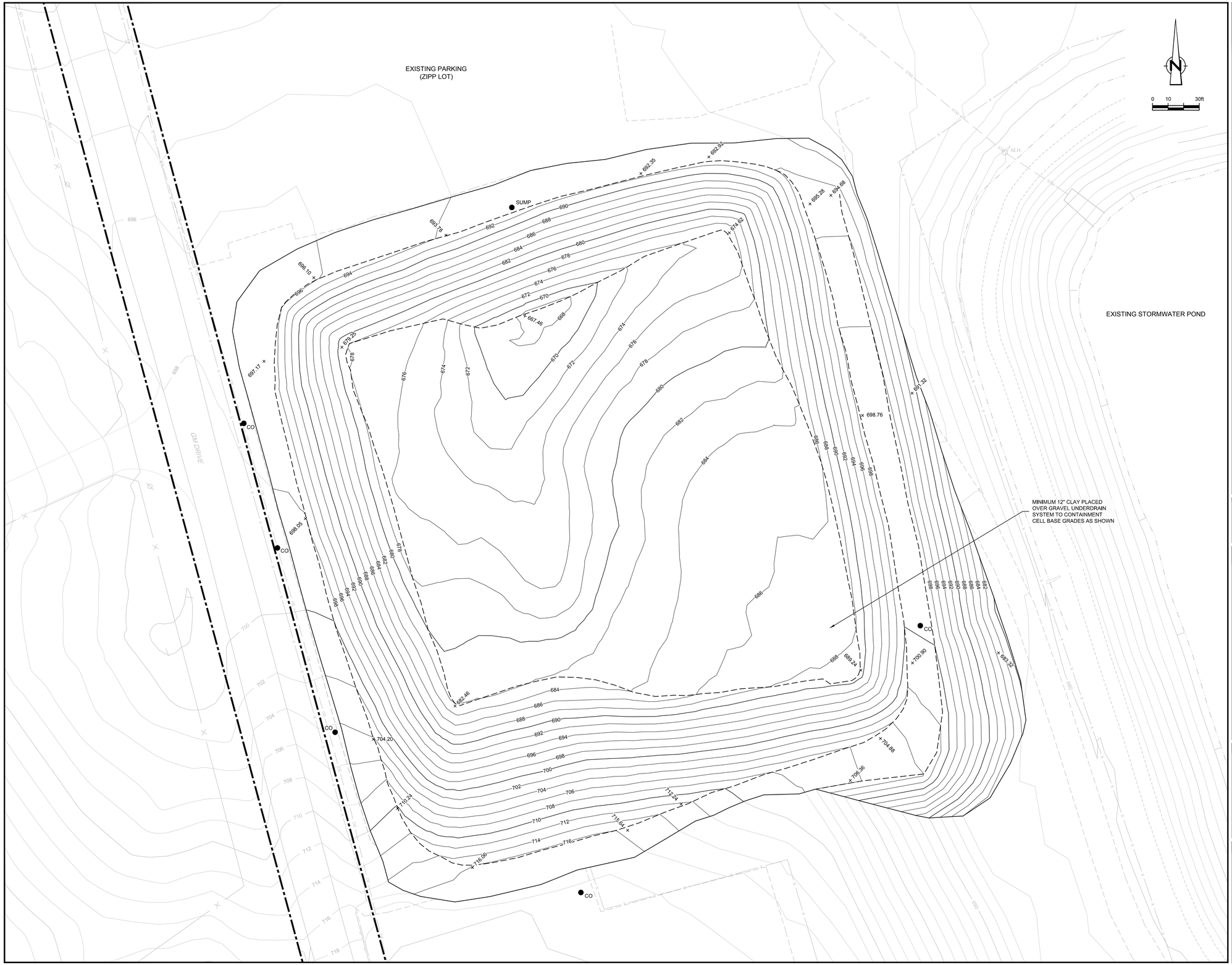
GRAVEL UNDERDRAIN SYSTEM
TOP OF STONE CONTOURS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project No: 13968-00	Report No: 289	Drawing No: C-03

13968-00(289)CI-WA011 DEC 24/2013



Nº	Revision	Date	Initial

LEGEND

- GM PROPERTY BOUNDARY
- 700 BASE CONTOURS
- × 690 SPOT ELEVATION
- ● CO CLEANOUT

RECORD DRAWINGS

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SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

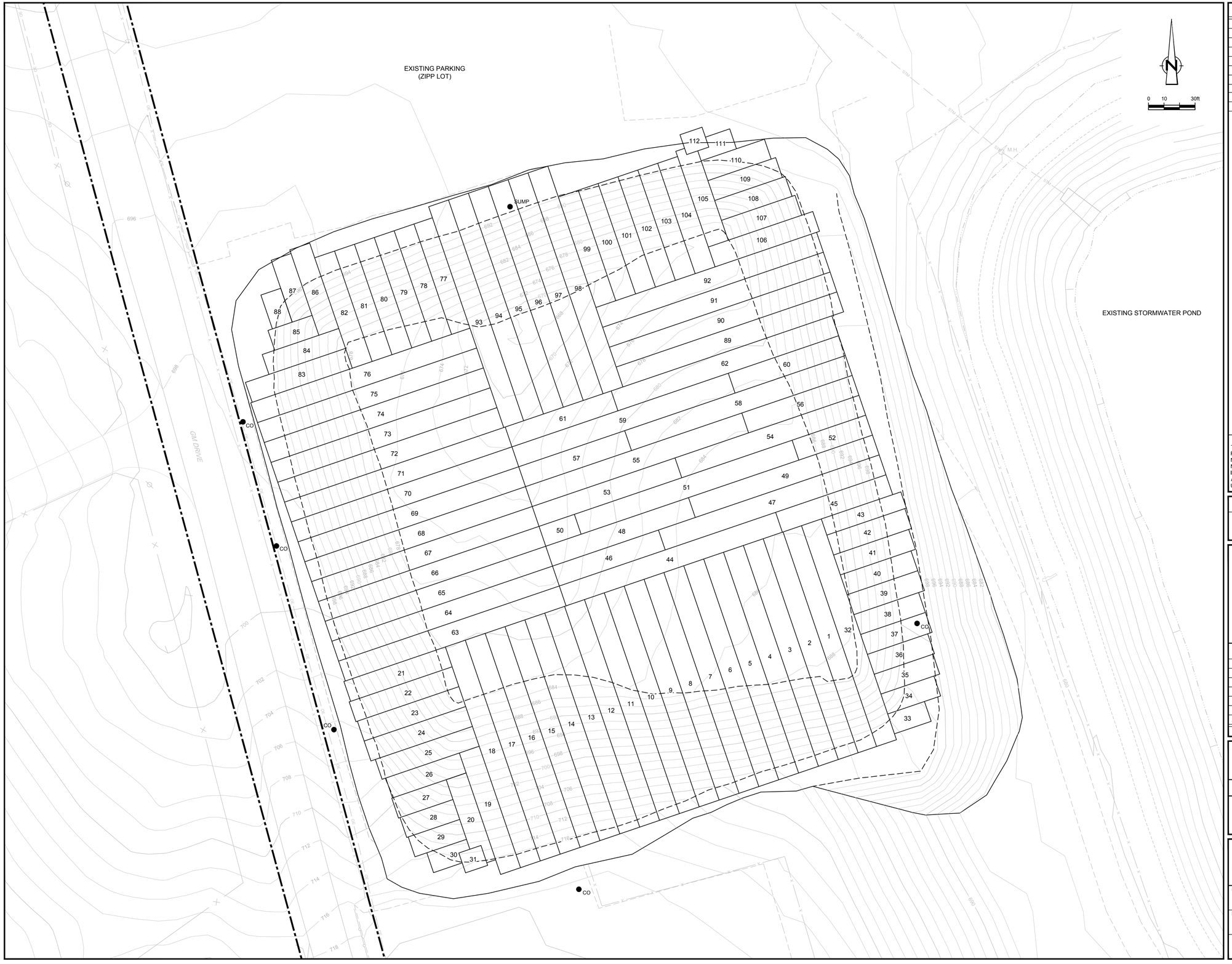
EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

CONTAINMENT CELL BASE PLAN
TOP OF CLAY CONTOURS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project Nº: 13968-00	Report Nº: 289	Drawing Nº: C-04



No	Revision	Date	Initial

LEGEND

GM PROPERTY BOUNDARY

CO CLEANOUT

RECORD DRAWINGS

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SCALE VERIFICATION

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Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

SECONDARY GEOSYNTHETIC CLAY LINER PANEL LAYOUT

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale:	Project No:	Report No:	Drawing No:
1" = 30'	13968-00	289	C-05

13968-00(289)CI-WA022 DEC 24/2013



Nº	Revision	Date	Initial
1	ADDED LINER CONSTRUCTION REPAIRS	OCT. 11, 2012	CRH

LEGEND

- GM PROPERTY BOUNDARY
- CO — CLEANOUT
- DS6 R12 — DESTRUCT SAMPLE AND REPAIR LOCATION
- + R56 — LINER REPAIR LOCATION

RECORD DRAWINGS

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SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

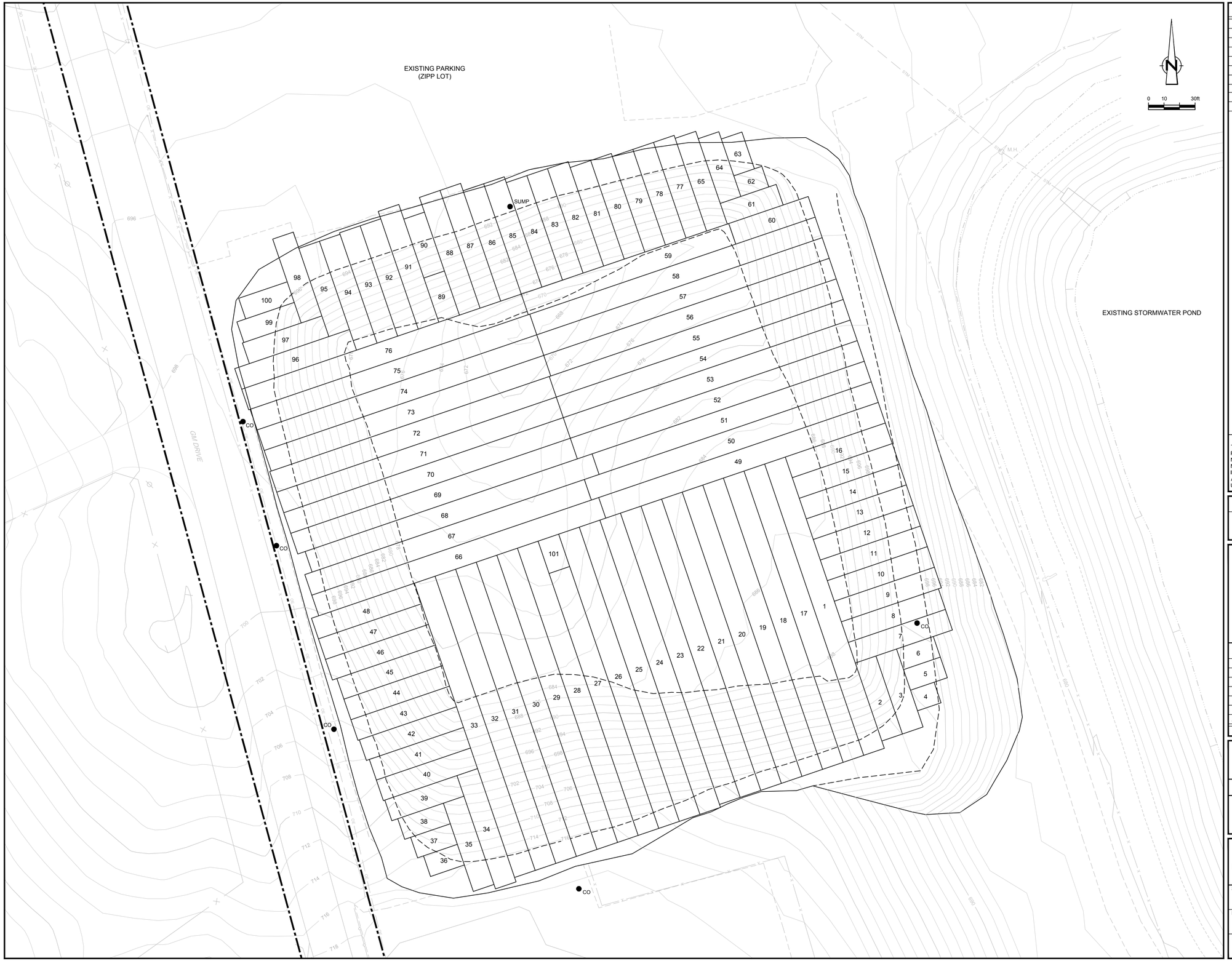
SECONDARY 60-MIL LLDPE GEOMEMBRANE PANEL LAYOUT

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project Nº: 13968-00	Report Nº: 289	Drawing Nº: C-06

13968-00(289)CI-WA023 DEC 24/2013



No	Revision	Date	Initial

LEGEND

GM PROPERTY BOUNDARY

CO CLEANOUT

RECORD DRAWINGS

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SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

SECONDARY DRAINAGE GEOCOMPOSITE PANEL LAYOUT (LEAK DETECTION SYSTEM)

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project No: 13968-00	Report No: 289	Drawing No: C-07

13968-00(289)CI-WA024 DEC 24/2013



NO	Revision	Date	Initial

LEGEND

GM PROPERTY BOUNDARY	
700	CONTOURS
	SUMP
CO	CLEANOUT
× 690	SPOT ELEVATION

RECORD DRAWINGS

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SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial
AS RECORDED	JULY 2012	CRH

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

TOP OF SECONDARY CLAY LINER CONTOURS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED APRIL 21 2006.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project Nº: 13968-00	Report Nº: 289	Drawing Nº: C-08

13968-00(289)CI-WA015 DEC 24/2013



No	Revision	Date	Initial

LEGEND

GM PROPERTY BOUNDARY

CO CLEANOUT

RECORD DRAWINGS

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, BASED ON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, CRA CAN NOT AND DOES NOT WARRANT ITS ACCURACY AND/OR COMPLETENESS, AND THUS SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED HEREIN AS A RESULT, THOSE RELYING ON THIS RECORD DRAWING ARE ADVISED TO OBTAIN VERIFICATION OF ITS ACCURACY AND/OR COMPLETENESS BEFORE USING IT FOR ANY PURPOSE.

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

PRIMARY GEOSYNTHETIC CLAY LINER PANEL LAYOUT

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project No: 13968-00	Report No: 289	Drawing No: C-09

13968-00(289)CI-WA025 DEC 24/2013



Nº	Revision	Date	Initial
1	ADDED LINER CONSTRUCTION REPAIRS	OCT. 11, 2012	CRH

LEGEND

GM PROPERTY BOUNDARY	
CO	CLEANOUT
DS6 R12	DESTRUCT SAMPLE AND REPAIR LOCATION
+ R56	LINER REPAIR LOCATION

RECORD DRAWINGS

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SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

PRIMARY 60-MIL HDPE GEOMEMBRANE PANEL LAYOUT

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project Nº: 13968-00	Report Nº: 289	Drawing Nº: C-10

13968-00(289)CI-WA026 DEC 24/2013



No	Revision	Date	Initial

LEGEND

GM PROPERTY BOUNDARY

CO CLEANOUT

RECORD DRAWINGS

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SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

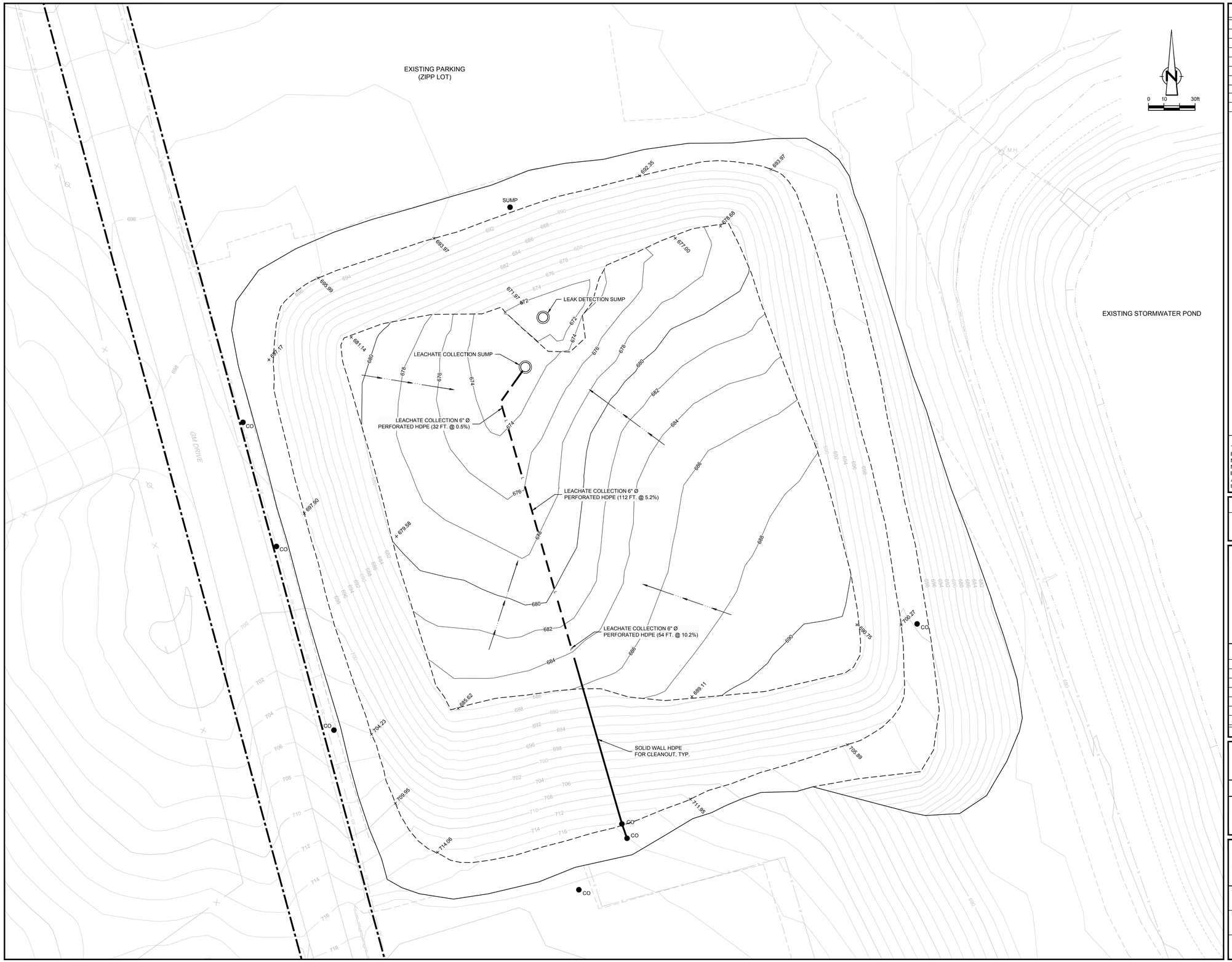
PRIMARY DRAINAGE GEOCOMPOSITE PANEL LAYOUT (LEACHATE COLLECTION SYSTEM)

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project No: 13968-00	Report No: 289	Drawing No: C-11

13968-00(289)CI-WA027 DEC 24/2013



Nº	Revision	Date	Initial

LEGEND

- GM PROPERTY BOUNDARY
- 700 CONTOURS
- SUMP
- CO CLEANOUT
- × 690 SPOT ELEVATION

RECORD DRAWINGS

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, BASED ON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, CRA CAN NOT AND DOES NOT WARRANT ITS ACCURACY AND/OR COMPLETENESS, AND THUS SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED HEREIN AS A RESULT, THOSE RELYING ON THIS RECORD DRAWING ARE ADVISED TO OBTAIN VERIFICATION OF ITS ACCURACY AND/OR COMPLETENESS BEFORE USING IT FOR ANY PURPOSE.

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

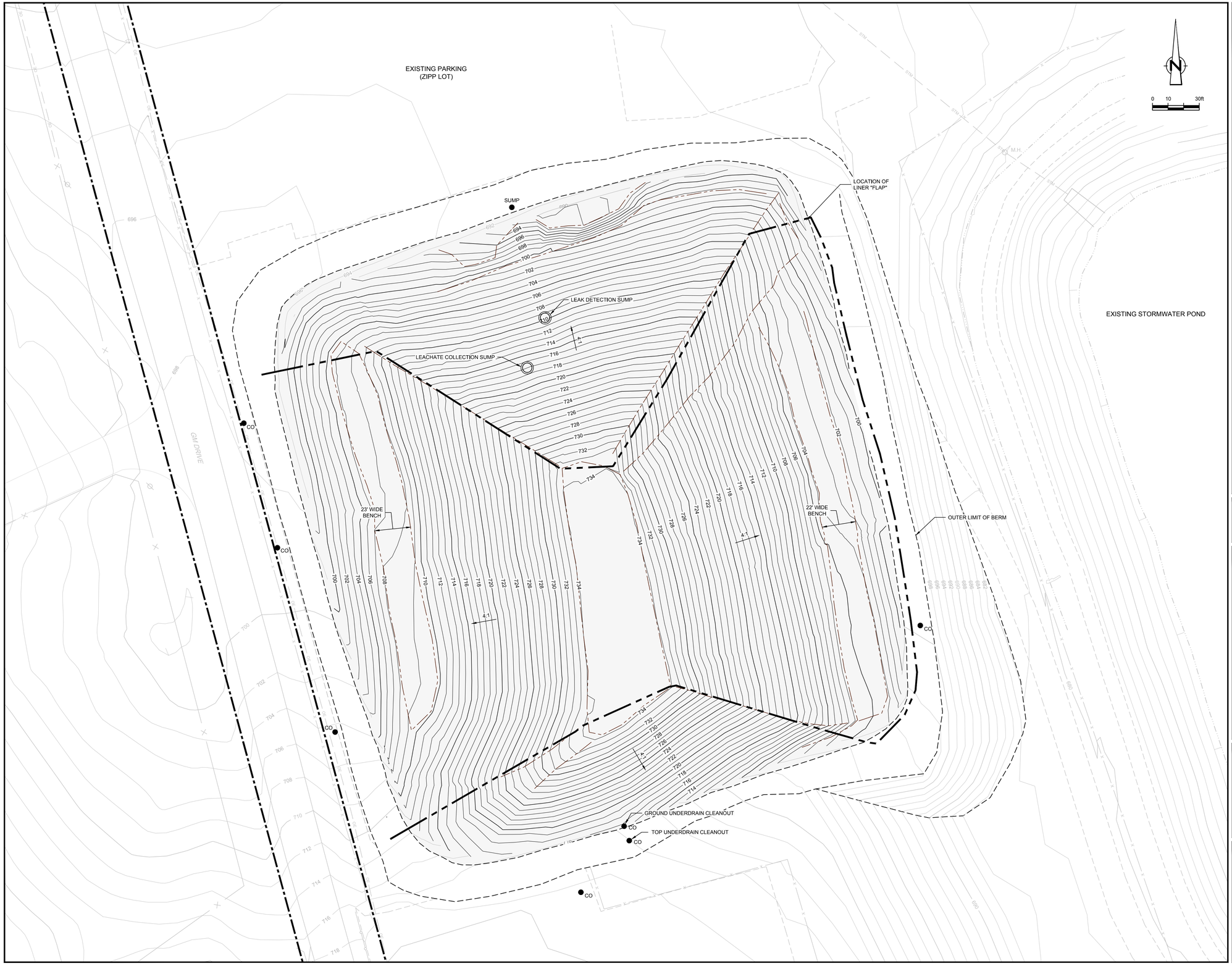
TOP OF LEACHATE COLLECTION SYSTEM (DRAINAGE STONE) CONTOURS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED JUNE 8 2006.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project Nº: 13968-00	Report Nº: 289	Drawing Nº: C-12

13968-00(289)CI-WA003 DEC 24/2013



Nº	Revision	Date	Initial

LEGEND

- GM PROPERTY BOUNDARY
- SUMP
- CO — CLEANOUT
- × 690 — SPOT ELEVATION
- LOCATION OF LINER FLAP
- TOP OF CLAY BERM
- EXTENT OF VAULT CAP
- 700 — TOP OF SUBGRADE CONTOUR

RECORD DRAWINGS

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, BASED ON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, CRA CAN NOT AND DOES NOT WARRANT ITS ACCURACY AND/OR COMPLETENESS, AND THUS SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED HEREIN AS A RESULT, THOSE RELYING ON THIS RECORD DRAWING ARE ADVISED TO OBTAIN VERIFICATION OF ITS ACCURACY AND/OR COMPLETENESS BEFORE USING IT FOR ANY PURPOSE.

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial
AS RECORDED	JULY 2012	CRH

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

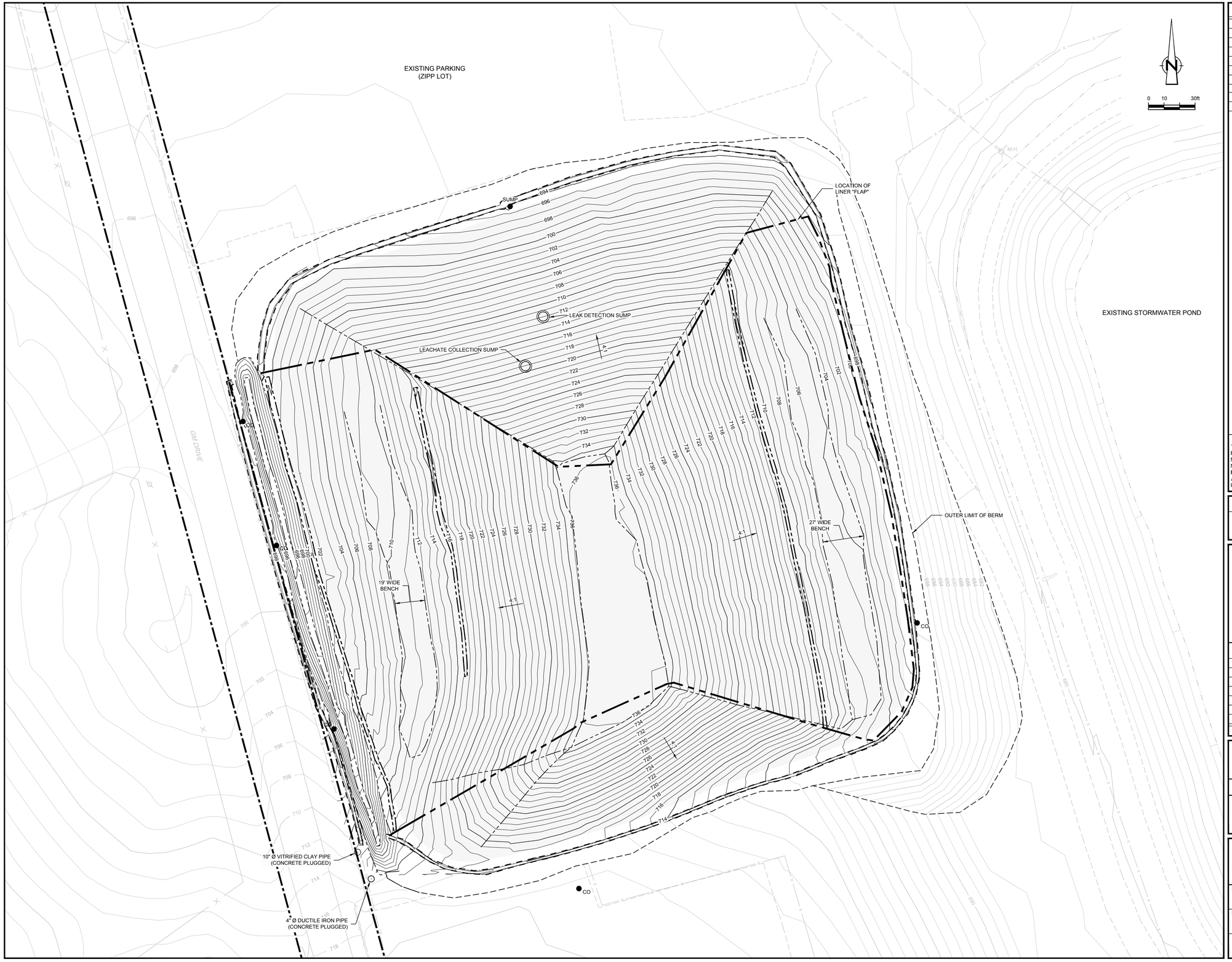
FINAL COVER SYSTEM
TOP OF SUBGRADE CONTOURS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED OCTOBER 9 2008.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project Nº: 13968-00	Report Nº: 289	Drawing Nº: C-13

13968-00(289)CI-WA017 DEC 24/2013



No	Revision	Date	Initial

LEGEND

- GM PROPERTY BOUNDARY
- SUMP
- CO — CLEANOUT
- × 690 — SPOT ELEVATION
- AS RECORDED LINER KEY
- LOCATION OF LINER FLAP
- PERFORATED PIPE TRENCH
- TOP OF CLAY BERM
- EXTENT OF VAULT CAP
- 720 — TOP OF CLAY CONTOUR

RECORD DRAWINGS

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, BASED ON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, CRA CAN NOT AND DOES NOT WARRANT ITS ACCURACY AND/OR COMPLETENESS, AND THUS SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED HEREIN AS A RESULT, THOSE RELYING ON THIS RECORD DRAWING ARE ADVISED TO OBTAIN VERIFICATION OF ITS ACCURACY AND/OR COMPLETENESS BEFORE USING IT FOR ANY PURPOSE.

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial
AS RECORDED	JULY 2012	CRH

GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

FINAL COVER SYSTEM
TOP OF CLAY CONTOURS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project No: 13968-00	Report No: 289	Drawing No: C-14

13968-00(289)CI-WA019 DEC 24/2013



Nº	Revision	Date	Initial

LEGEND

- GM PROPERTY BOUNDARY
- SUMP
- CO — CLEANOUT
- AS RECORDED LINER KEY
- LOCATION OF LINER FLAP
- PERFORATED PIPE TRENCH
- TOP OF CLAY BERM
- EXTENT OF VAULT CAP
- DS18 R70 — DESTRUCT SAMPLE AND REPAIR LOCATION
- + R56 — LINER REPAIR LOCATION

RECORD DRAWINGS

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SCALE VERIFICATION

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Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

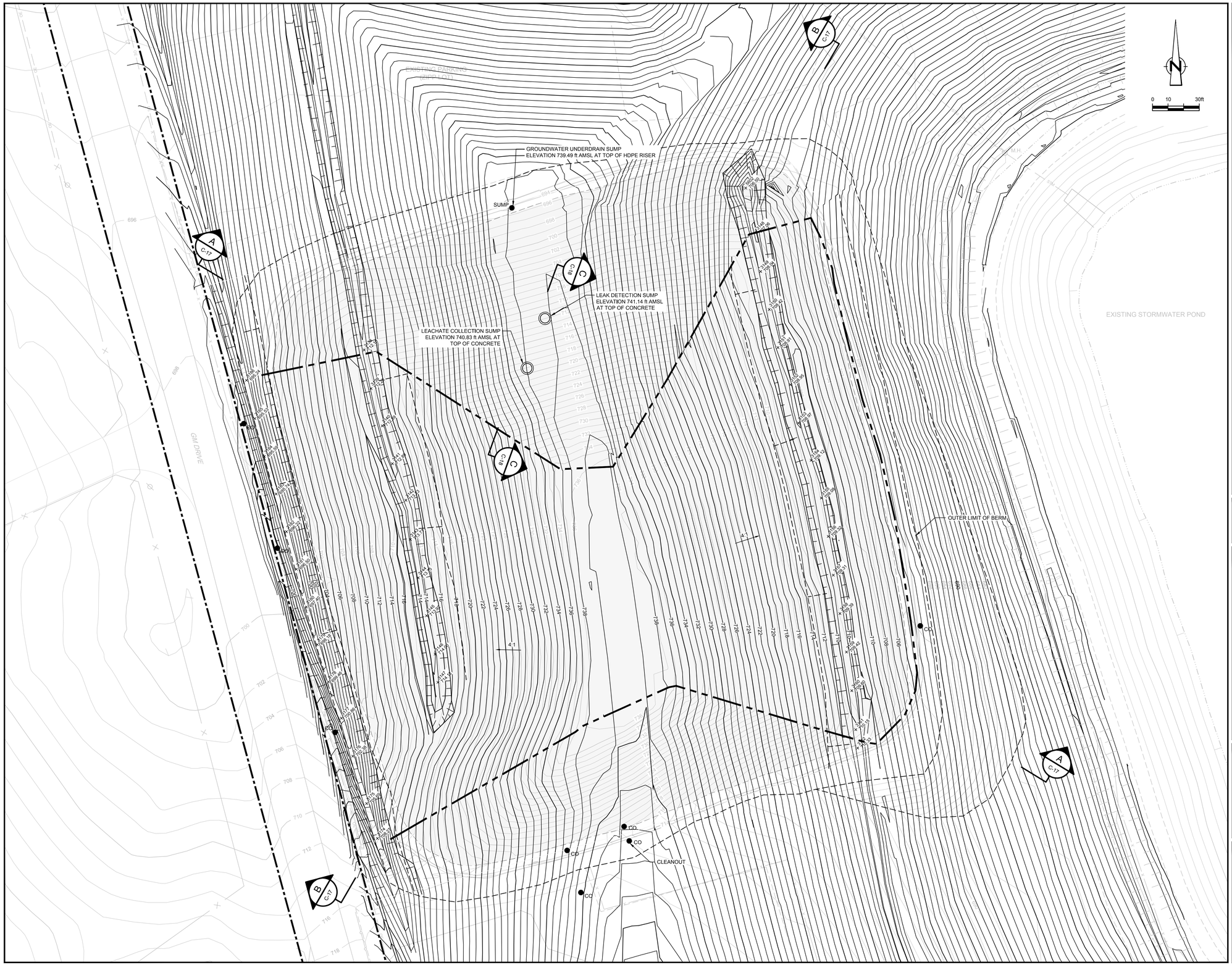
FINAL COVER SYSTEM 60-MIL HDPE GEOMEMBRANE PLAN LAYOUT

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project Nº: 13968-00	Report Nº: 289	Drawing Nº: C-15

13968-00(289)CI-WA020 DEC 24/2013



No	Revision	Date	Initial

LEGEND

- GM PROPERTY BOUNDARY
- SUMP
- CO — CLEANOUT
- × 690 — SPOT ELEVATION
- LOCATION OF LINER FLAP
- 3160 / 708.75 — FINAL GRADE SPOT ELEVATIONS
- EXTENT OF VAULT CAP
- DRAINAGE PIPE
- TOP OF CLAY BERM
- 698 — FINAL CONTOUR

RECORD DRAWINGS

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, BASED ON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, CRA CAN NOT AND DOES NOT WARRANT ITS ACCURACY AND/OR COMPLETENESS, AND THUS SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED HEREIN AS A RESULT, THOSE RELYING ON THIS RECORD DRAWING ARE ADVISED TO OBTAIN VERIFICATION OF ITS ACCURACY AND/OR COMPLETENESS BEFORE USING IT FOR ANY PURPOSE.

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial
AS RECORDED	JULY 2012	CRH

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

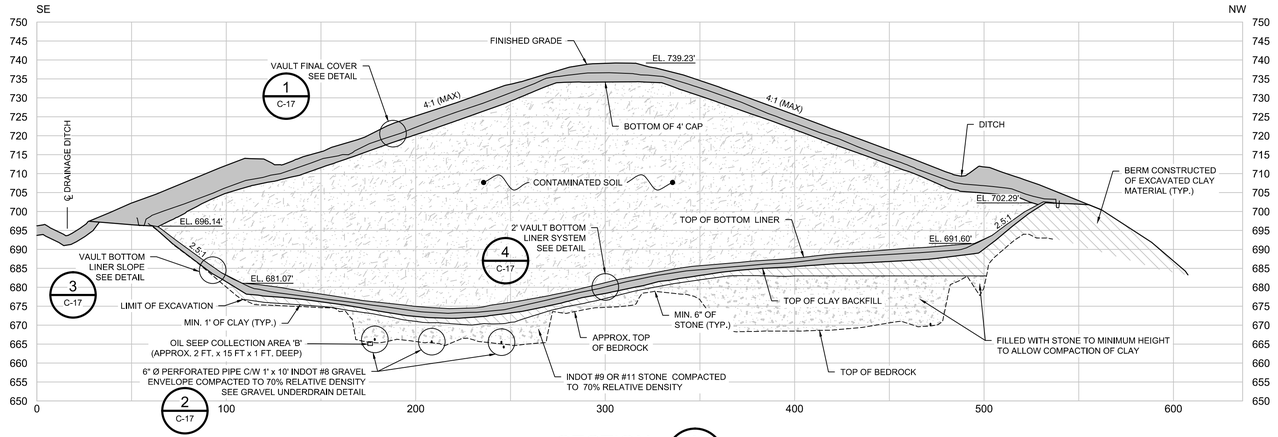
FINAL COVER SYSTEM
FINAL SURFACE CONTOURS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI. APRIL 2001
AND CRA SURVEY DATED MARCH 8 2005.

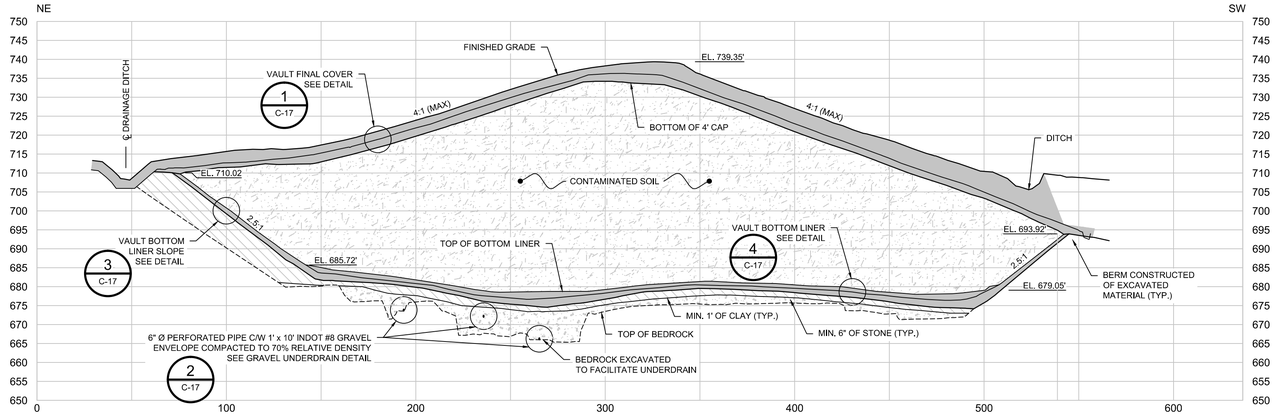
Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: 1" = 30'	Project No: 13968-00	Report No: 289	Drawing No: C-16

13968-00(289)CI-WA004 DEC 24/2013



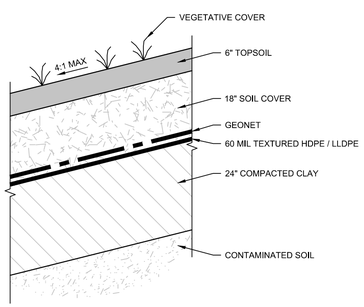
SECTION A (C-16)

HOR. 1" = 40'
VER. 1" = 20



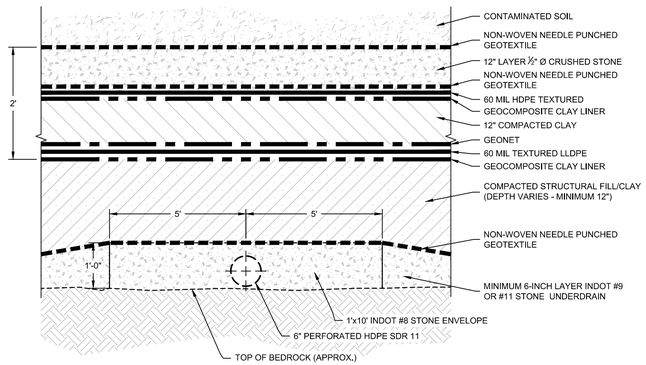
SECTION B (C-16)

HOR. 1" = 40'
VER. 1" = 20



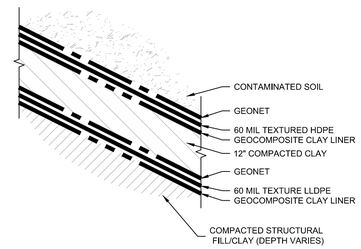
DETAIL 1 (C-17) VAULT FINAL COVER

NTS



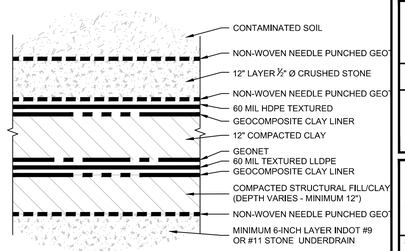
DETAIL 2 (C-17) VAULT BOTTOM LINER AND GRAVEL UNDERDRAIN

NTS



DETAIL 3 (C-17) VAULT BOTTOM LINER SLOPE

NTS



DETAIL 4 (C-17) EAST PLANT COVE

NTS

№	Revision	Date	Initial

RECORD DRAWINGS

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SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

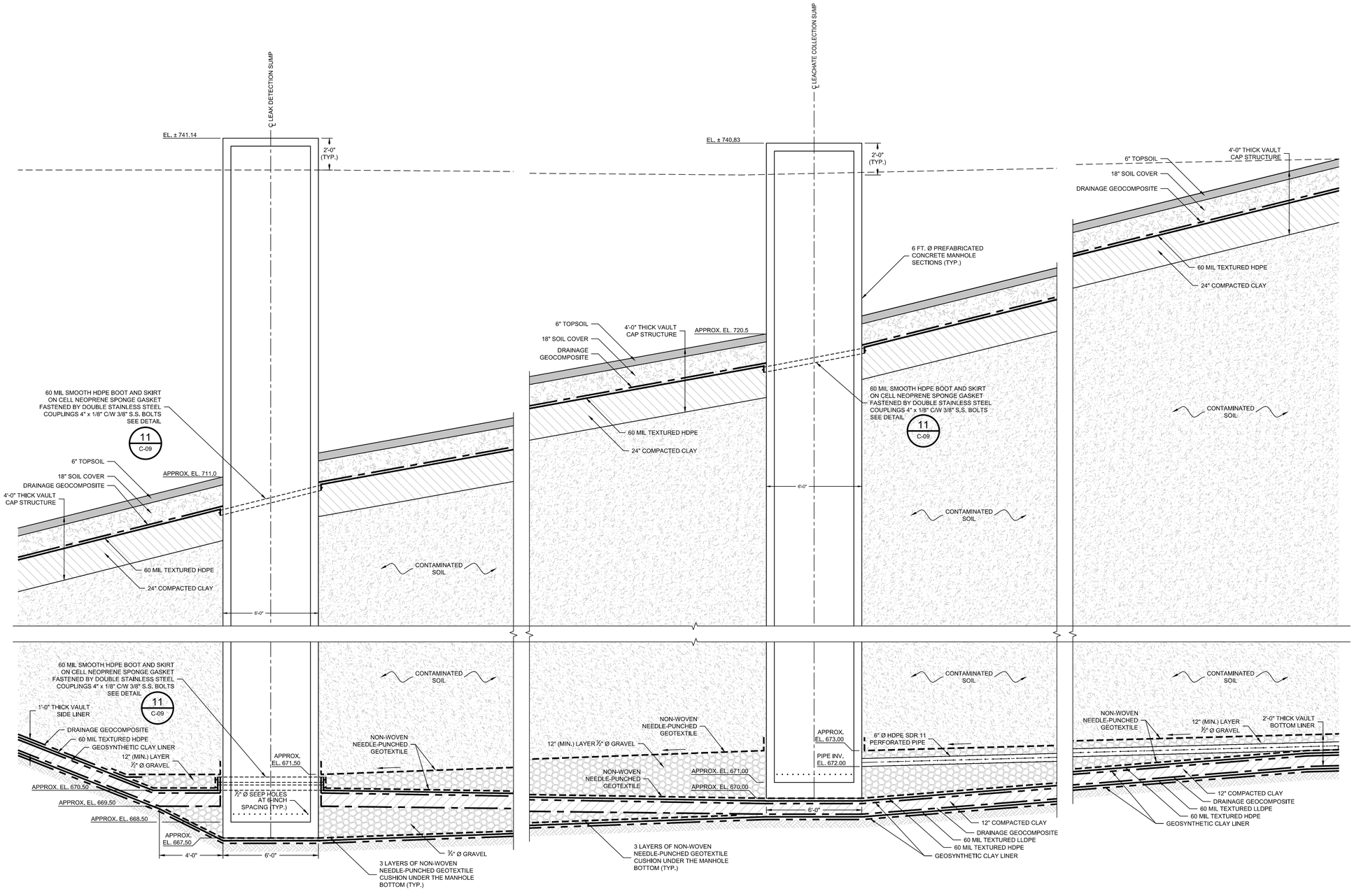
CROSS SECTIONS A, B AND BOTTOM LINER/COVER SYSTEM DETAILS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager:	Reviewed By:	Date:	
J.M.	C.R.H.	JULY 2012	
Scale: AS SHOWN	Project №: 13968-00	Report №: 289	Drawing №: C-17

13968-00(289)CI-WA005 DEC 24/2013



SECTION C
NTS
C-16

Nº	Revision	Date	Initial

RECORD DRAWINGS

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, BASED ON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, CRA CAN NOT AND DOES NOT WARRANT ITS ACCURACY AND/OR COMPLETENESS, AND THUS SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED HEREIN AS A RESULT, THOSE RELYING ON THIS RECORD DRAWING ARE ADVISED TO OBTAIN VERIFICATION OF ITS ACCURACY AND/OR COMPLETENESS BEFORE USING IT FOR ANY PURPOSE.

SCALE VERIFICATION

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Approved

DRAWING STATUS		
AS RECORDED	JULY 2012	CRH
Status	Date	Initial

GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

EAST PLANT AREA VAULT CONSTRUCTION CERTIFICATION REPORT

LEACHATE COLLECTION/ LEAK DETECTION MANHOLES (SECTION C)

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager:	Reviewed By:	Date:	
J.M.	C,R,H.	JULY 2012	
Scale: AS SHOWN	Project Nº: 13968-00	Report Nº: 289	Drawing Nº: C-18

13968-00(289)CI-WA014 DEC 24/2013