MAY 4, 2004

SITE SOURCE CONTROL WORK PLAN ADDENDUM NO. 1

GM BEDFORD REMOVAL ACTION
BEDFORD, INDIANA

MAY 2004
REF. NO. 13968 (82)
This report is printed on recycled paper.

TABLE OF CONTENTS

LIST OF FIGURES
(Following Text)

LIST OF TABLES
(Following Text)

LIST OF APPENDICES

1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) has prepared this Addendum No. 1 to the Site Source Control (SSC) Work Plan (SSC Work Plan) (CRA, November 6, 2003) to present the details of the proposed collection system and restoration features to be installed on Parcels 3 and 205 located at the upstream end of Pleasant Run Watershed ("Bailey's Branch Creek") in Lawrence County, Indiana (Site). The SSC Work Plan was developed as part of the Removal Action activities related to the General Motors Corporation (GM) Powertrain Bedford Plant (Facility) located in Bedford, Indiana.

The Site Location Plan is presented as Figure 1.1. A photographic log is included as Appendix A.

1.1 GENERAL

This Addendum presents the details of the proposed collection system for potentially impacted groundwater and non-aqueous phase liquid (NAPL), if present, to be installed downstream of Outfall 002. Details of the proposed system, design, and construction are presented in the following Sections:

Section 2.0 – Problem Identification

- Explains the need for the collection system.

Section 3.0 – Collection System Overview

- Lists the collection system components.

Section 4.0 – Collection System Details

- Provides a more detailed description of the collection system and its construction.

Section 5.0 – Collection System Operation and Maintenance

- Provides information on the initial operation, long-term operation, and development of an Operation and Maintenance Manual for the collection system.

2.0 PROBLEM IDENTIFICATION

As part of the RCRA Corrective Action for the Facility, a program was completed in June 2002 for the identification, sampling and analysis of seeps and springs near the Facility. As part of that program, a spring located downstream of National Pollutant Discharge Elimination System (NPDES) Outfall 002, was identified to contain PCBs in a non-aqueous phase (NAPL) during a high flow event in May 2002. The NAPL emanating from this spring was controlled through the installation of a temporary collection sump to separate and collect dense non-aqueous phase liquid (DNAPL). It was anticipated that a permanent sump and collection system would be installed in this area to contain the seep following the soil and sediment removal phase of the implementation of the Upstream Parcels Removal Action (RA). The sampling locations for springs and seeps in the area of Parcel 3 and 25 are presented in Figure 2.1 and the analytical results for these samples can be found in Table 2.1.

During the implementation of the RA, portions of Parcels 3 and 205 within and immediately adjacent to the creek channel were excavated to the top of the bedrock. After removal of sediment and soil in the area adjacent to Outfall 002, the surface of the bedrock was cleaned to remove loose soil and oil staining from historic releases; however, further investigation identified NAPL and oily materials within the bedding planes of the near surface bedrock. This condition lessened significantly as the removal activities progressed down the creek onto Parcel 205. Several cores were advanced into the underlying rock that confirmed the presence of staining at shallow subsurface elevations on Parcel 3. The location of these corings is presented on Figure 2.2 and the core logs are included as Appendix B.

In addition to the corings, three trenches were also excavated into Parcel 3 and 205 between October 24 and December 5, 2003. These trenches were excavated to examine the nature of the underlying rock. In general, the trenches were advanced to a nominal elevation that was about four feet below the original creek invert elevation. The trenches were installed perpendicular to the creek channel and had overall lengths between 60 and 70 feet. The trenches were 'excavated' near the rock fractures, using a hydraulic hoe-ram. As the excavation advanced vertically, the rock became noticeably harder and required more mechanical effort to affect fractures to allow the rock removal. The bottoms of the trenches were kept at a constant elevation, resulting in cuts that varied in thickness from about 4 feet at the alignment of the original channel to over 15 feet at the northern ends.

During the trench excavation, groundwater was observed to be seeping out of rock walls and into the open trenches. Based on all of these observations, (highly fractured rock

that changes to more competent rock with depth, groundwater flow with NAPL) it was determined that a larger collection system was required than a series of individual shallow sumps as proposed in the SSC Work Plan.

3.0 COLLECTION SYSTEM OVERVIEW

The proposed revised collection system will include the following components:

- Removal of fractured rock to a relatively uniform level to ensure water which collects on the bedrock surface drains to the collection sumps;
- Installation of 3 collection trenches including collection sumps in 2 of the trenches;
- concrete barriers on the downstream side of two of the trenches faced with HDPE Liners attached to the upgradient side of the concrete;
- Gravel drainage layer and geotextile layer over entire excavation area;
- A network of drainage pipes to facilitate transport of collected water to the sumps;
- Vertical side-wall interceptor drainage nets;
- Surface water diversion pipe with surface water collection and drainage system;
- Sump pumps and associated piping in the two wet wells; and
- Soil backfill and restoration – as identified in the Upstream Parcels RA Work Plan.

In order to minimize the potential for erosion of the surface soil cover, and to minimize surface water infiltration into the underground collection system, the flow from Outfall 002 will be redirected into an underground pipe that will have both an inlet at the west side of Parcel 3 and an outlet structure near the east side of Parcel 205. Surface water will also be directed into this pipe through a series of catch basins. Groundwater will be directed to flow into perforated piping to more efficiently convey the groundwater to the next down gradient wet well. The collection piping will be laid within localized drainage channels directly on the rock. The entire bottom of the excavation will be covered with a drainage layer consisting of nominal foot thick layer of washed gravel or crushed stone that has a nominal size of 2 inches. Each perforated pipe will be brought into the wet wells individually. This will allow periodic monitoring of each section of the collection system. Water entering each drainage pipe will flow to a wet well from where it will be pumped back for treatment. Details of collection system components can be found in Section 4.0.

Given the fractured rock present at the elevations above the bottom of the collection system, and the more solid and the competent rock at the base of the collection trench, groundwater drainage and collection will be an efficient and effective method to contain any contaminated groundwater that may be present upgradient of and near the collection system. This system will be effective in preventing a release of contaminated groundwater to the surface drainage features. Furthermore, the collection and rerouting

of surface water will be effective in minimizing surface water infiltration into the collection system and protecting the integrity of the system from erosion.

Figures 3.1 through 3.5 present cross-sections of the creek. These figures indicate both the pre-excavation creek contours and the post-excavation contours, including the three collection trenches.

4.0 COLLECTION SYSTEM DETAILS

This section of the Work Plan provides details regarding the construction and installation of the proposed collection system. A construction report will be developed and submitted for the system following construction to document the as constructed details of the system. The following three sub-sections further describe the collection system.

4.1 OUTFALL 002 TO COLLECTION TRENCH 1

A trench with a relatively constant elevation of around 648 feet above mean sea level (ft amsl) (the up-gradient elevation of Collection Trench 1) has been excavated between Outfall 002 and Collection Trench 1, parallel to the original alignment of the creek. This trench will serve to collect the water that emanates from the bedrock near Outfall 002. A perforated drainage pipe will be installed on the bottom of this trench that will flow to the sump located at the south end of Collection Trench 1. A gravel drainage layer (approximately 1 foot thick) comprised of washed #2 stone will be placed over the entire excavated area. A geotextile fabric layer will be placed over the gravel layer to prevent washing of the backfill soil into the gravel. To collect smaller seeps from the sidewalls of the rock cuts, a vertical drainage net (used for foundation walls) will be installed along the sidewalls of the excavation, terminating into the gravel layer. The remaining excavation will then be backfilled with a low-permeability soil. A surface water collection system will be installed within the backfill to direct surface water through the restored area to prevent erosion and to minimize infiltration of surface water into the subsurface drainage system.

To prevent a bypass of collected groundwater past Collection Trench 1, a vertical barrier will be installed on the down gradient side of the trench. The barrier will consist of a concrete retaining wall extending approximately 2 feet above the up-gradient trench elevation. A low permeability barrier will be installed on the up-gradient face of the retaining wall. A drainage pipe will be installed at the base of Collection Trench 1 that will flow into the trench wet well (wet well 1). Any fractures in the downstream rock base of the trench will be filled with cement bentonite or other approved sealant.

4.2 COLLECTION TRENCH 1 TO COLLECTION TRENCH 2

As the cross slope is not as well defined over this length, two drain tile pipes will be installed along the sides of the excavated area. Similar to the first section, the entire

excavation base will have a coarse gravel layer, a geotextile barrier, vertical drainage nets along each side wall, and low permeability soil and common fill. A surface drainage system will be installed in the common fill.

Collection Trench 2 will be filled with gravel and will contain a drain tile pipe to collect and direct water to the center of the trench. The drainage pipes will be extended through a new trench running parallel to the creek to Collection Trench 3. Any fractures in the rock base of the trench will be filled with cement bentonite or other approved sealant.

4.3 COLLECTION TRENCH 2 TO COLLECTION TRENCH 3

As noted in Section 4.2, a defining channel has been excavated into the bedrock that running parallel to the creek channel, terminating in Collection Trench 3. A sump for wet well 2 has been excavated within Collection Trench 3. This sump has a base elevation approximately 6 feet below the upgradient rock surface. Collection Trench 3 will be constructed similar to Collection Trench 1, including a concrete retaining wall along the down gradient side and a drainage pipe along the base of the retaining wall. Any fractures in the rock base of the trench will be filled with cement bentonite or other approved sealant.

4.4 COLLECTION SYSTEM CONSTRUCTION DETAILS

The following steps have been taken for constructing the collection system:

1. Hoe-ram and excavated Collection Trench 3 and installed a temporary dam to prevent water from entering the trench during concrete construction;
2. Hoe-ram and excavated the trench parallel to the creek between Collection Trench 2 and Collection Trench 3; and
3. Hoe-ram and excavated the section of rock between Collection Trench 1 and Outfall 002.

The following steps will be taken for constructing the remainder of the collection system:

1. Install the two pre-cast concrete wet wells, pumps, controls, etc. in Collection Trench 1 and Collection Trench 3;

2. Install concrete barrier walls and membranes;
3. Install drainage perforated pipes, pipes and gravel drainage layers;
4. Install geotextile fabric and side wall drainage nets;
5. Place common fill;
6. Install surface water collection and drainage system; and
7. Seed and restore.

All of the drainage perforated pipes will have specific collection regions which will convey collected water via solid pipes into the wet wells. This will allow monitoring of the various drainage areas from within the wet wells. Water flow and quality will be checked as needed to monitor the groundwater interception effectiveness. Cleanouts will be installed as shown on Figures 4.1 through 4.3 to allow access for cleaning of all lines not directly accessible from a wet well. It is anticipated that cleaning of the gravity piping in the system will be completed on a quarterly basis initially, with the frequency reduced as appropriate based on observed sediment and biological matter accumulation rates.

The wet wells will be equipped with two submersible pumps that will pump the collected water to the Site wastewater treatment system. Initially, the two pumps will be operated manually, and flow rates monitored to allow selection of appropriately sized pumps for long-term operation. Operation and Maintenance of the system is further discussed in Section 5.0.

Figure 4.1 presents plan and profile views of the proposed collection trench. Collection Trench 1 and Trench 3 details are presented on Figures 4.2 and 4.3, respectively. A typical collection trench cross-section is presented on Figure 4.4.

The collection sumps are designed to act as DNAPL separators. Initially the collection rate of DNAPL will be monitored, and any collected DNAPL removed periodically. Once sufficient information is available to appropriately size a pump, a permanent DNAPL recovery pump will be installed. Should LNAPL be present, it would be collected with the water removed from the sumps and subsequently removed by an oil water separator prior to entering the Facility WWTP.

4.5 CONSTRUCTION QUALITY ASSURANACE TESTING

During the construction of the SSC system, quality assurance testing will be completed to ensure the quality of the overall installation. The following testing will be completed during the installation:

- Manufacturer's certificates and supplier test results will be reviewed for all materials including but not limited to pre-cast concrete manhole sections, concrete mix designs, pump characteristics, HDPE piping and liner materials, and aggregate testing;
- Concrete testing during placement including casting cylinders for confirmation of unconfined compressive strength and slump testing of the as placed concrete;
- Leak testing of HDPE forcemain; and
- Compaction monitoring to ensure fill materials are placed in a manner suitable for the use intended. This will include monitoring of compaction procedures for general fill to limit settlement and compaction testing of structural fill (e.g., pipe bedding materials).

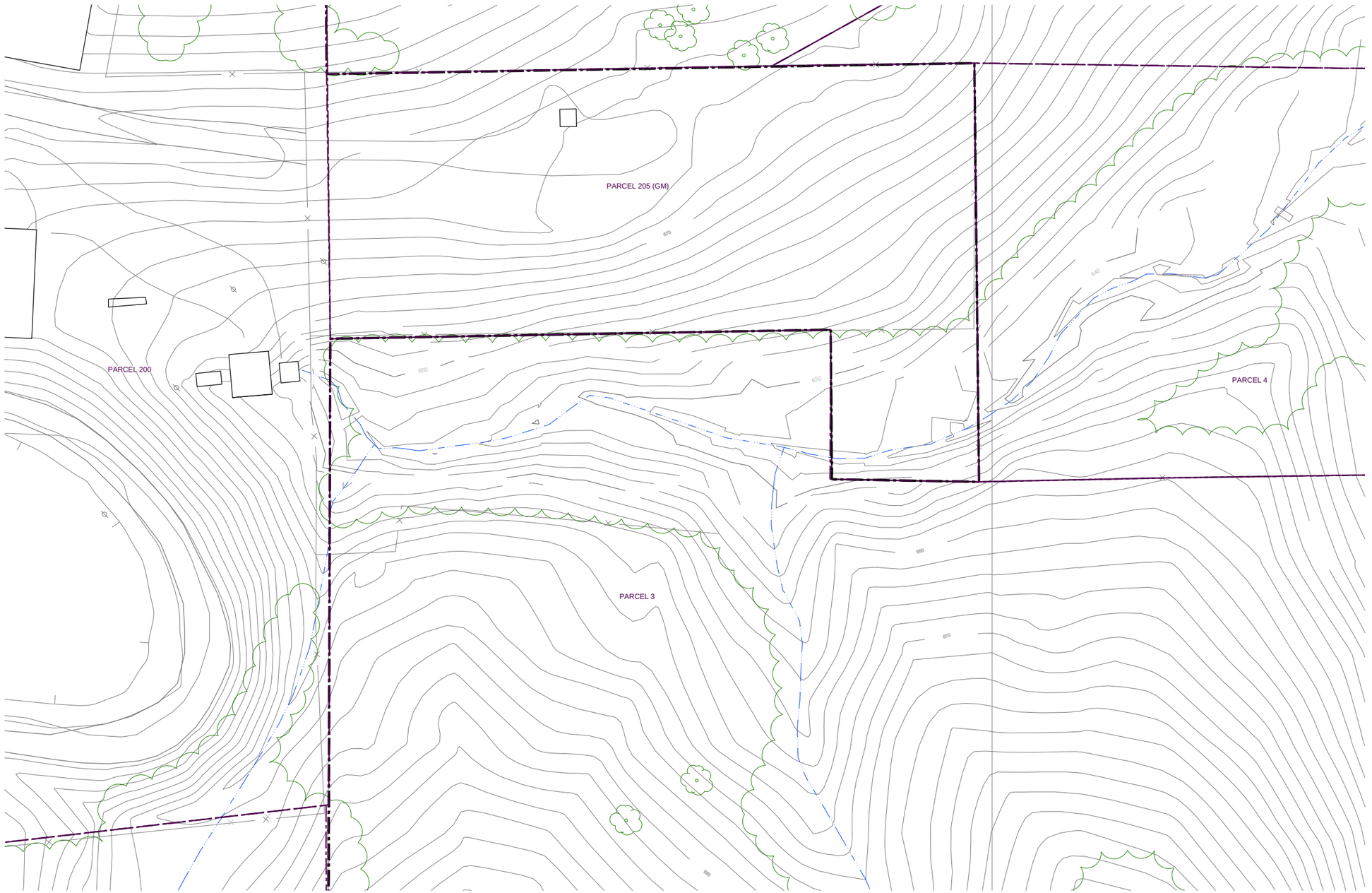
Following the completion of the installation of the collection system, a construction report will be prepared. The construction report will include all manufacturers information, test results, as-recorded drawings, schedule, and a photographic log.

5.0 COLLECTION SYSTEM OPERATION AND MAINTENANCE

Following installation of the collection system, the system will be operated manually and flow rates monitored to determine appropriate pump sizing for the final pump sizing. Storm event flow rates were estimated by field personnel to be approximately 40 gallons per minute (gpm) including a surface water component which will be diverted through the storm sewer in the completed collection system. Initially, two pumps set on level switches, each sized to provide a minimum flow capacity of 40 gpm under the head conditions of the system, will be installed and flow rates and pumping times monitored. Additionally, DNAPL which accumulates in the separator will be monitored and collected manually, as necessary. Initially, the system will be inspected on a daily basis with DNAPL accumulation measured on a weekly basis, with the frequency reduced, if appropriate based on the observed DNAPL accumulation rates. Changes in the monitoring frequency will not be made without prior notification to U.S. EPA. This manual operation of the collection system is anticipated to continue for 1 to 2 months to allow the reaction of the system to storm events to be determined. This timeframe may be extended or shortened as appropriate based on the weather conditions encountered.

Once sufficient data has been obtained to properly size pumps for removing water from the system and pumping it to the Facility wastewater treatment plant, permanent pumps will be selected and installed. A permanent control system will also be installed to allow for remote monitoring and control of the system. The details of the control system will be provided to U.S. EPA for review prior to installation.

An operation and maintenance plan (O&M Plan) for the collection system will be prepared and submitted with the construction report for the collection system. The O&M Plan will include inspection frequencies, cleaning frequencies and methods for gravity piping and forcemains, sampling frequencies, maintenance requirements for pumps and controls, and waste handling procedures. The O&M Plan will be updated as appropriate following installation of the permanent pumps and control system. Monitoring of the zone of influence of the collection system will be completed as part of the RFI groundwater investigation and will not be included as part of the O&M Plan.



Nº	Revision	Date	Initial

LEGEND

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
- EXISTING BUILDINGS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / UNPAVED AREAS
- ROADS / PAVED AREAS
- APPROXIMATE PARCEL BOUNDARY
- APPROXIMATE GM PROPERTY BOUNDARY
- APPROXIMATE SURFACE WATER LOCATION

NOTE: PROPERTY BOUNDARY LOCATIONS APPROXIMATED FROM THE LAWRENCE COUNTY SURVEY PLATS. LOCATIONS MAY NOT ACCURATELY REPRESENT THE TRUE BOUNDARIES

SCALE VERIFICATION

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

Approved

DRAWING STATUS

Status	Date	Initial

GM POWERTRAIN BEDFORD PLANT
BEDFORD, INDIANA

SITE LOCATION

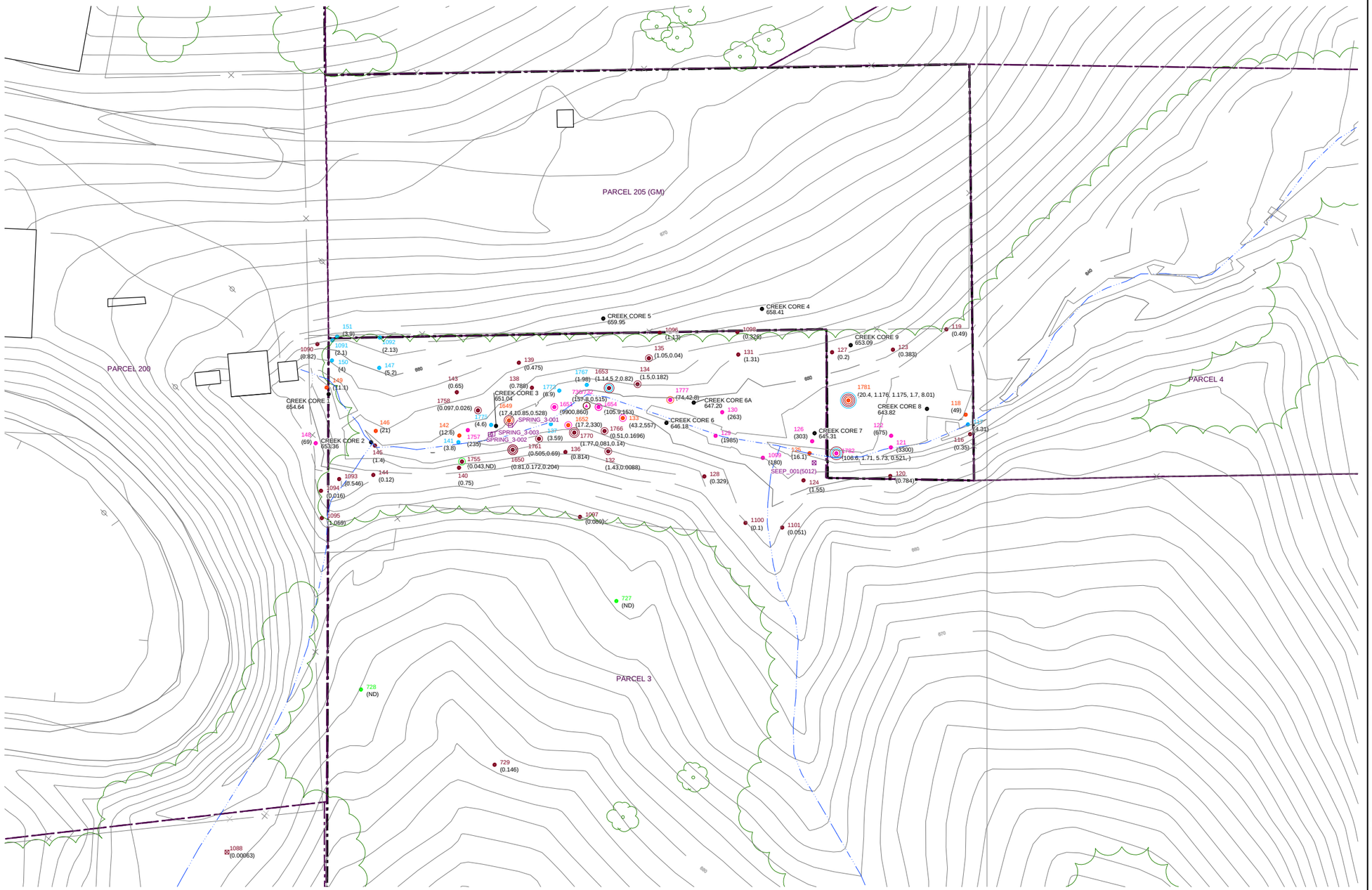
CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

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

Project Manager:	Reviewed By:	Date:	
B.S.	D.M.	DECEMBER 2003	
Scale: AS SHHOWN	Project Nº: 13968-00	Report Nº: 082	Drawing Nº: figure 1.1

13968-00(082)GN-WA001 FEB 18/2004



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- ROADS / PAVED AREAS
- APPROXIMATE PARCEL BOUNDARY
- APPROXIMATE GM PROPERTY BOUNDARY
- APPROXIMATE SURFACE WATER LOCATION
- 139 (263) — RED INDICATES SOIL SAMPLE RESULT EQUAL TO OR GREATER THAN 50 PPM (2002)
- 142 (12.6) — ORANGE INDICATES SOIL SAMPLE RESULT EQUAL TO OR GREATER 10 PPM ABD LESS THAN 50 PPM (2002)
- 141 (3.8) — BLUE INDICATES SOIL SAMPLE RESULT EQUAL TO OR GREATER THAN 1.8 PPM AND LESS THAN 10 PPM (2002)
- 140 (0.75) — BROWN INDICATES DETECTED SOIL SAMPLE RESULT LESS THAN 1.8 PPM (2002)
- 727 (ND) — GREEN INDICATES NO PCBs DETECTED AT SOIL SAMPLE LOCATION (2002)
- TOTAL AROCLORS AT SURFACE (PPM)
- 1649 (17.4,10.85,0.528) — TOTAL AROCLORS AT SECOND DEPTH (PPM)
- TOTAL AROCLORS AT THIRD DEPTH (PPM)
- COLOR CORRESPONDS TO CONCENTRATION AT SURFACE
- COLOR CORRESPONDS TO CONCENTRATION AT SECOND DEPTH
- COLOR CORRESPONDS TO CONCENTRATION AT THIRD DEPTH
- DENOTES SURFACE SAMPLE (0 - 0.33 feet BGS)
- DENOTES SURFACE SAMPLE (0 - 0.33 feet BGS) AND ONE SAMPLE AT DEPTH (0.33 - 2 feet BGS MAXIMUM)
- DENOTES SURFACE SAMPLE (0 - 0.33 feet BGS) AND TWO SAMPLES AT DEPTH (0.33 - 2 feet BGS MAXIMUM)
- ND — INDICATES NON-DETECT SAMPLE RESULT
- 653.09 — GROUND ELEVATION (ft AMSL)
- SEEP — SEEP SAMPLE LOCATION
- SPRING — LOCATION OF OBSERVED SPRING
- (5012) — HIGH FLOW SAMPLE LOCATION

NOTE: PROPERTY BOUNDARY LOCATIONS APPROXIMATED FROM THE LAWRENCE COUNTY SURVEY PLATS. LOCATIONS MAY NOT ACCURATELY REPRESENT THE TRUE BOUNDARIES

SCALE VERIFICATION

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Approved

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Status	Date	Initial

GM POWERTRAIN BEDFORD PLANT
BEDFORD, INDIANA

SOIL SAMPLE LOCATIONS

CONESTOGA-ROVERS & ASSOCIATES

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

Project Manager:	Reviewed By:	Date:	
B.S.	D.M.	DECEMBER 2003	
Scale: AS SHHOWN	Project Nº: 13968-00	Report Nº: 082	Drawing Nº: figure 2.1

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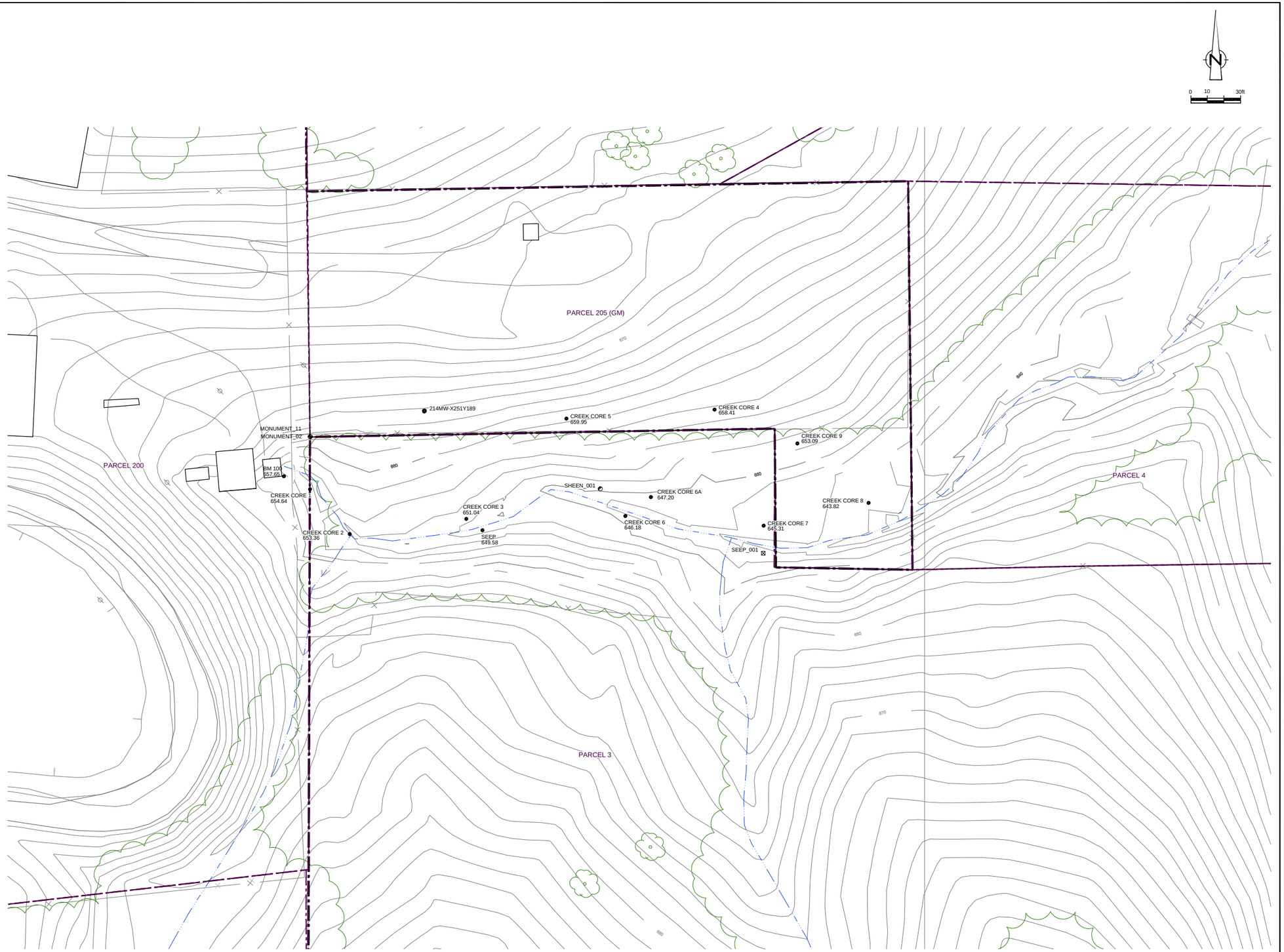

NO	Revision	Date	Initial

LEGEND

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
- EXISTING BUILDINGS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / UNPAVED AREAS
- ROADS / PAVED AREAS
- APPROXIMATE PARCEL BOUNDARY
- APPROXIMATE GM PROPERTY BOUNDARY
- APPROXIMATE SURFACE WATER LOCATION
- 653.09 GROUND ELEVATION (ft AMSL)

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GM POWERTRAIN BEDFORD PLANT
BEDFORD, INDIANA

CREEK CORE LOCATIONS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
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Project Manager:	Reviewed By:	Date:	
B.S.	D.M.	DECEMBER 2003	
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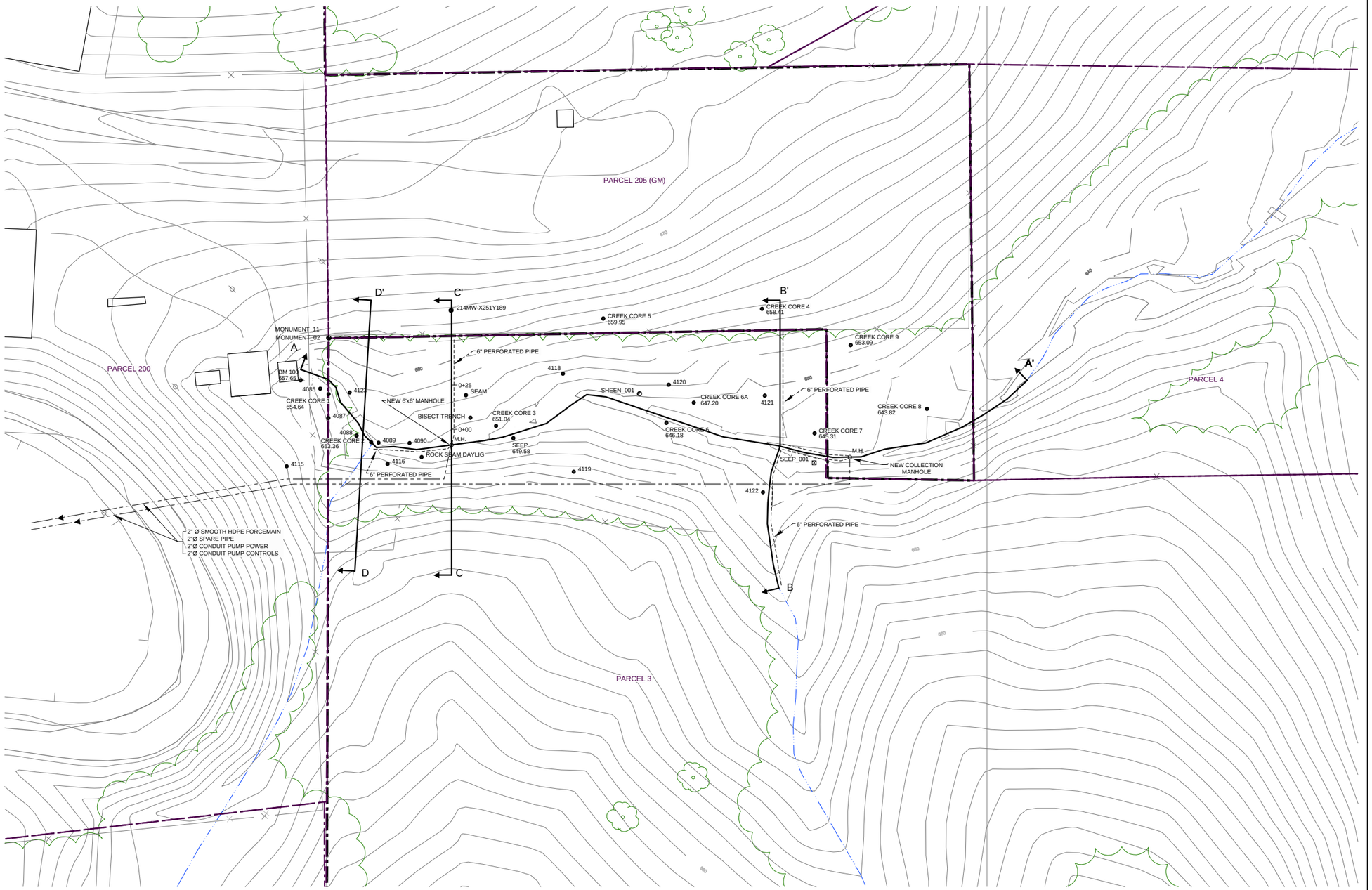

Nº	Revision	Date	Initial

LEGEND

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
- EXISTING BUILDINGS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / UNPAVED AREAS
- ROADS / PAVED AREAS
- APPROXIMATE PARCEL BOUNDARY
- APPROXIMATE GM PROPERTY BOUNDARY
- APPROXIMATE SURFACE WATER LOCATION
- 4119 — CONFIRMATION SAMPLE LOCATION (OCT 2003)
- 653.09 — GROUND ELEVATION (ft AMSL)
- A — CROSS-SECTION LOCATION

SCALE VERIFICATION

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

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Status	Date	Initial

GM POWERTRAIN BEDFORD PLANT
BEDFORD, INDIANA

CROSS-SECTION LOCATIONS

CONESTOGA-ROVERS & ASSOCIATES

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

Project Manager:	Reviewed By:	Date:	
B.S.	D.M.	DECEMBER 2003	
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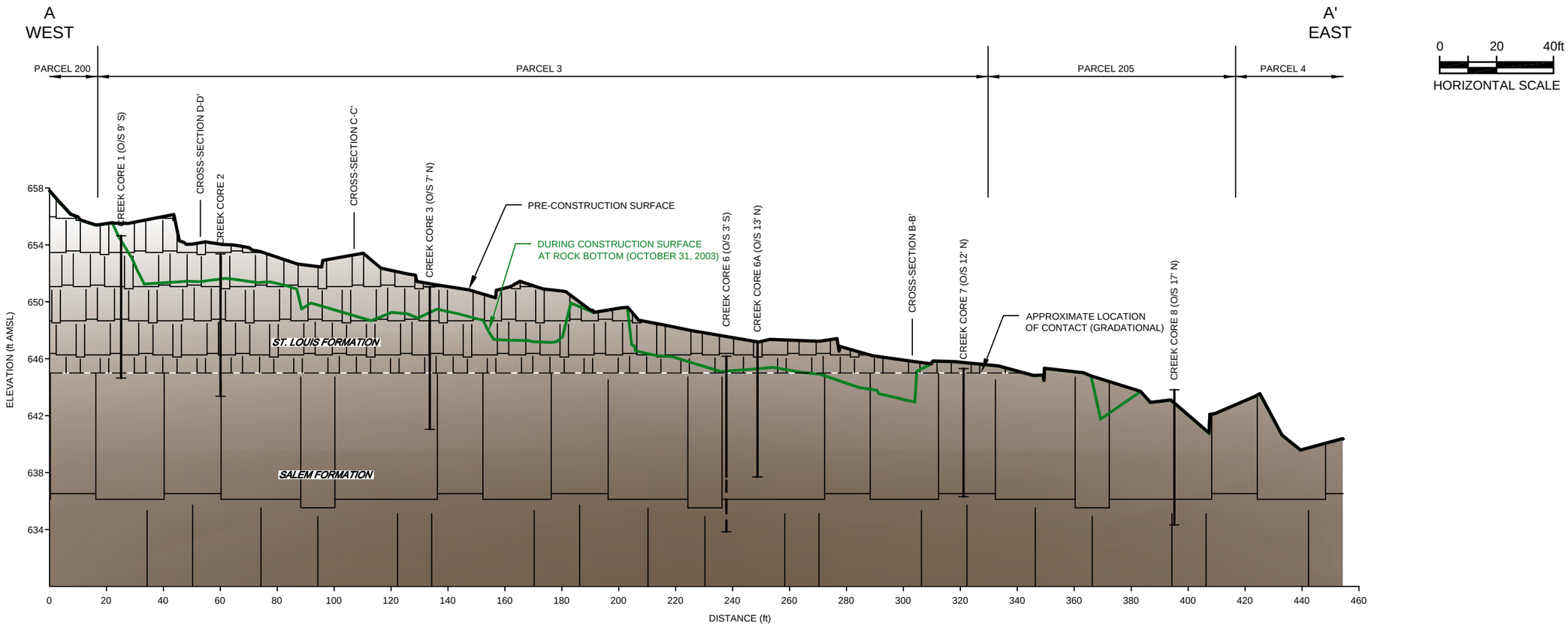

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figure 3.2

CROSS-SECTION A - A'
GM POWERTRAIN BEDFORD PLANT
Bedford, Indiana

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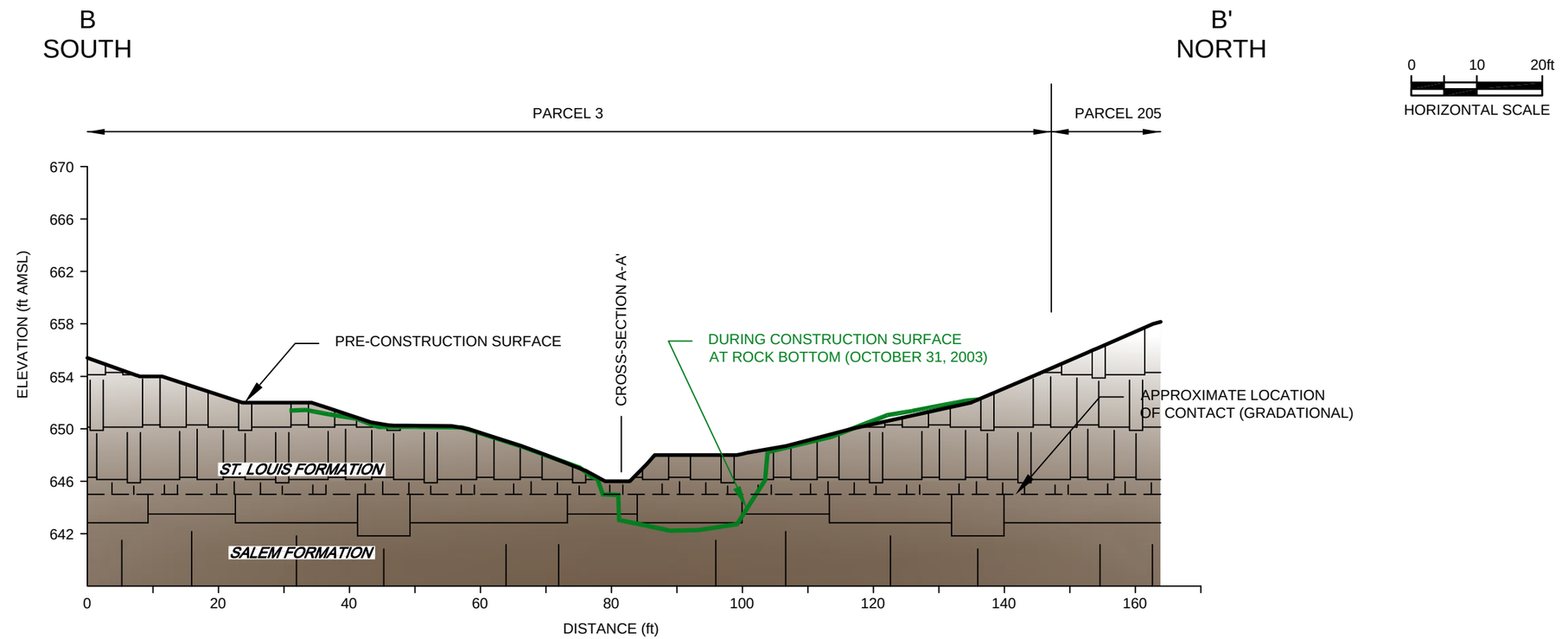

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figure 3.3

CROSS-SECTION B - B'
GM POWERTRAIN BEDFORD PLANT
Bedford, Indiana

C
SOUTH

C'
NORTH

0 10 20ft
HORIZONTAL SCALE

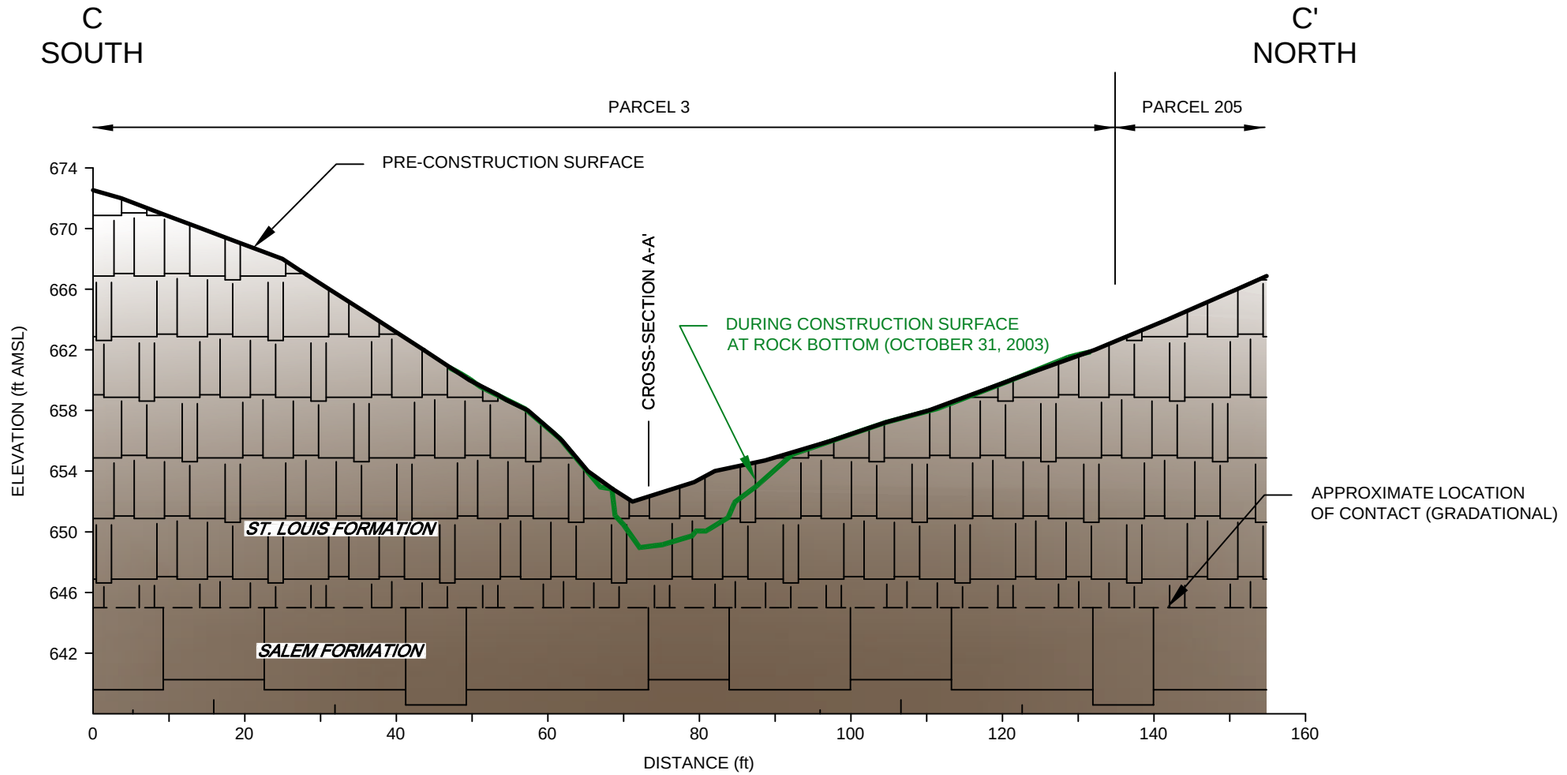

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figure 3.4

CROSS-SECTION C - C'
GM POWERTRAIN BEDFORD PLANT
Bedford, Indiana

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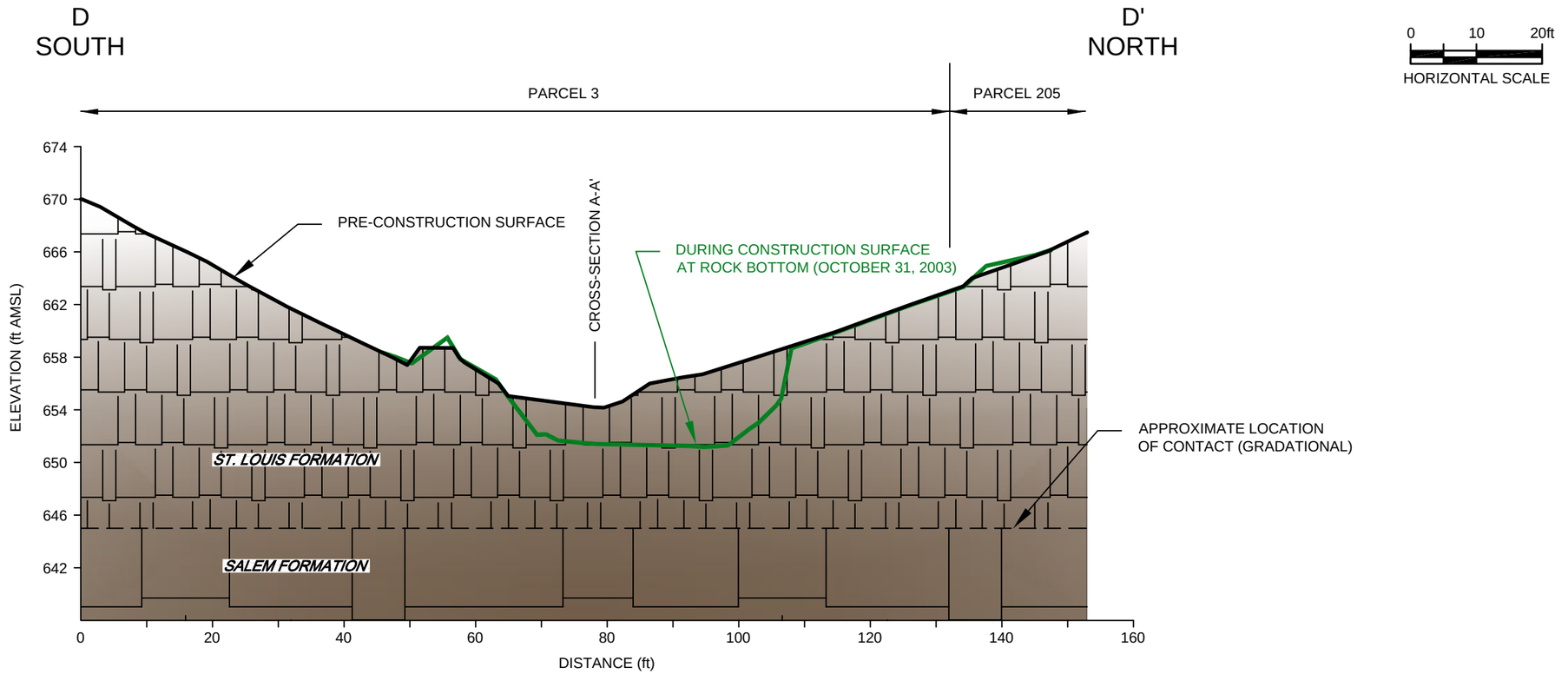

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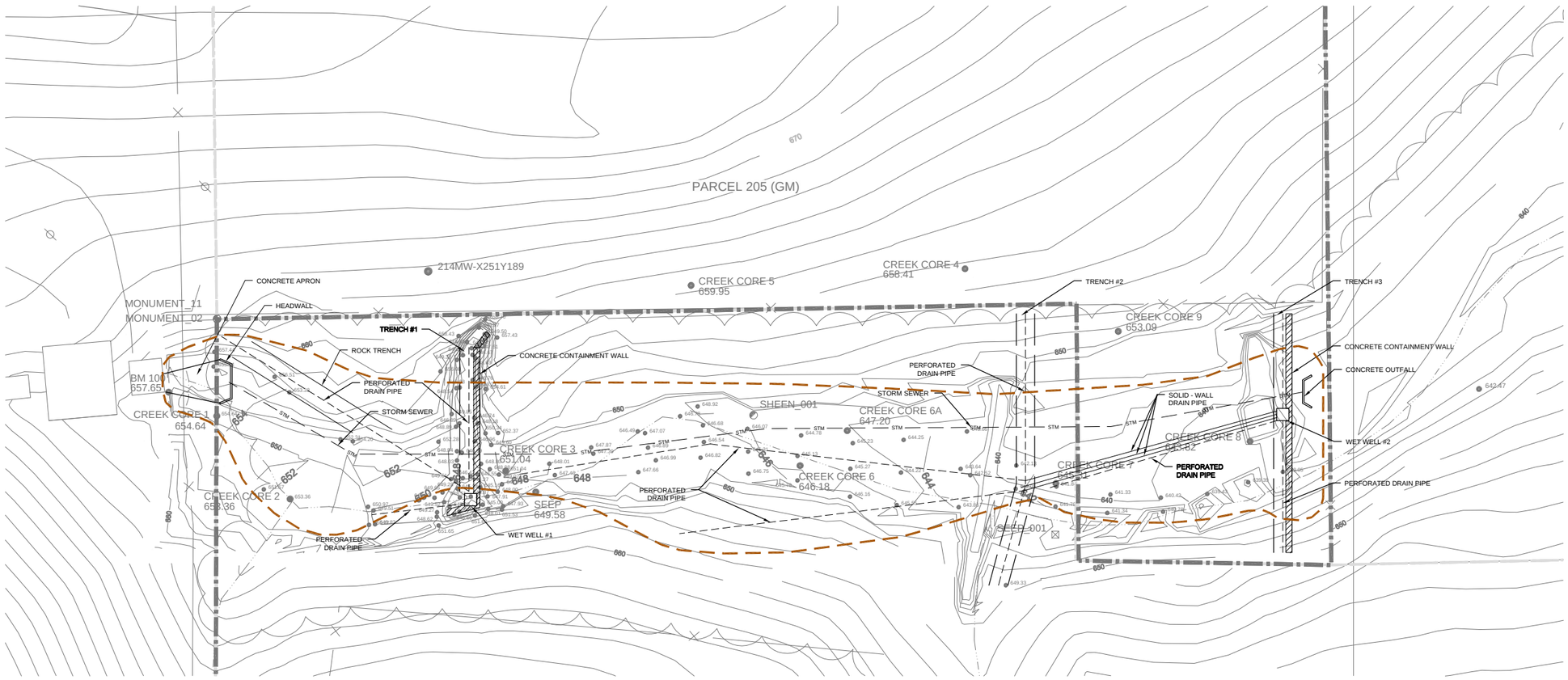
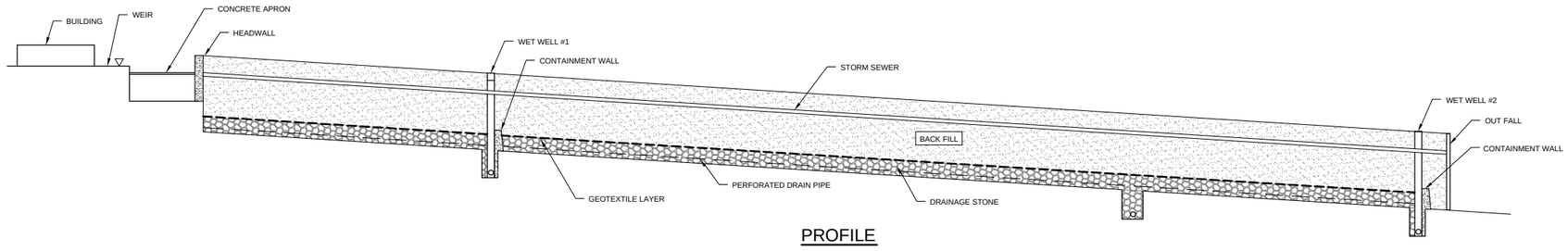
figure 3.5

CROSS-SECTION D - D'
GM POWERTRAIN BEDFORD PLANT
Bedford, Indiana



PLAN VIEW



PROFILE

No.	Revision	Date	Initial

LEGEND

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
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- DIRT ROADS
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- ROADS / PAVED AREAS
- APPROXIMATE PARCEL BOUNDARY
- APPROXIMATE GM PROPERTY BOUNDARY
- APPROXIMATE SURFACE WATER LOCATION
- GROUND ELEVATION (ft AMSL)
- SURVEY POINT - NOVEMBER 19, 2003
- CONTOURS CREATED FROM POINTS (NOVEMBER 19, 2003)
- PERFORATED DRAIN PIPE
- SOLID - WALL DRAIN PIPE
- STORM SEWER
- CONCRETE CONTAINMENT WALL
- APPROXIMATE LIMIT OF ROCK REMOVAL

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SCALE VERIFICATION

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GM POWERTRAIN BEDFORD PLANT
BEDFORD, INDIANA

COLLECTION TRENCH ALIGNMENT

CONESTOGA-ROVERS & ASSOCIATES

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

Project Manager:	Reviewed By:	Date:	
J.D.	D.M.	DECEMBER 2003	
Scale: AS SHOWN	Project No.: 13968-00	Report No.: 082	Drawing No.: figure 4.1

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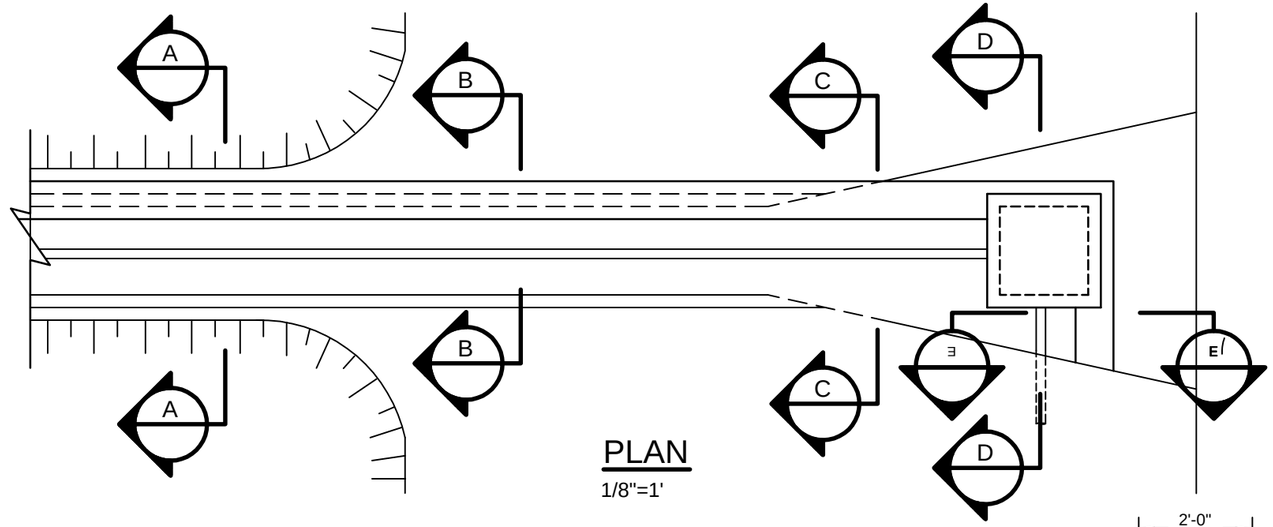
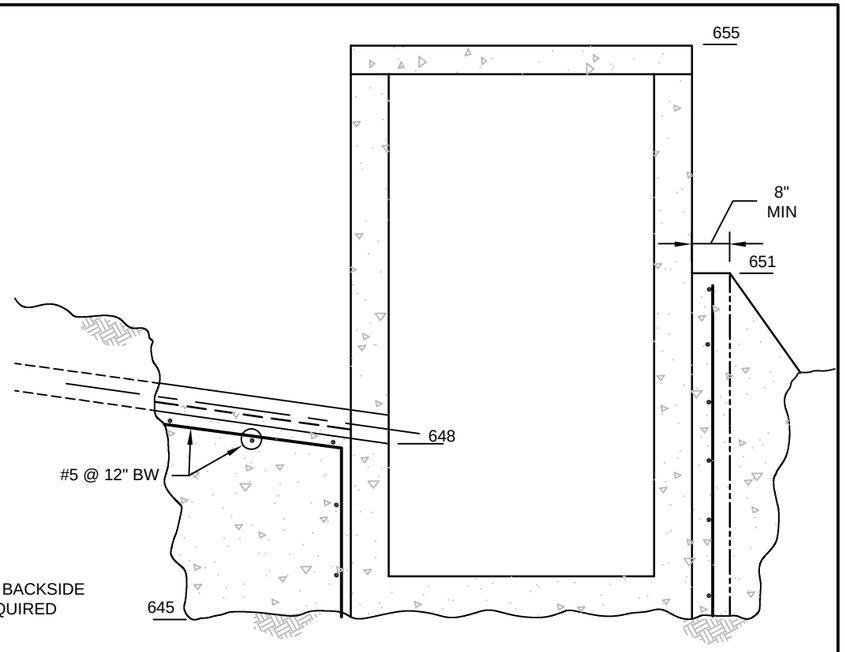
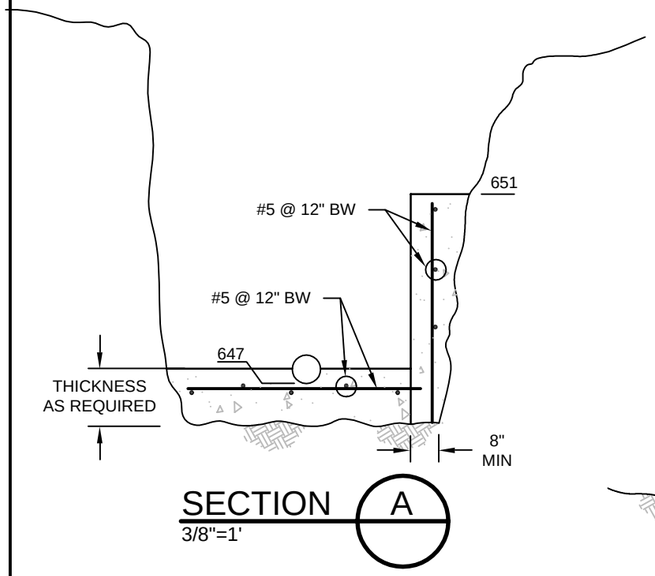


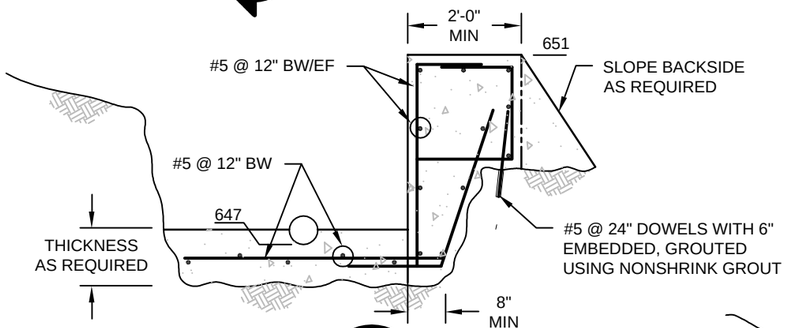
PLAN
1/8"=1'



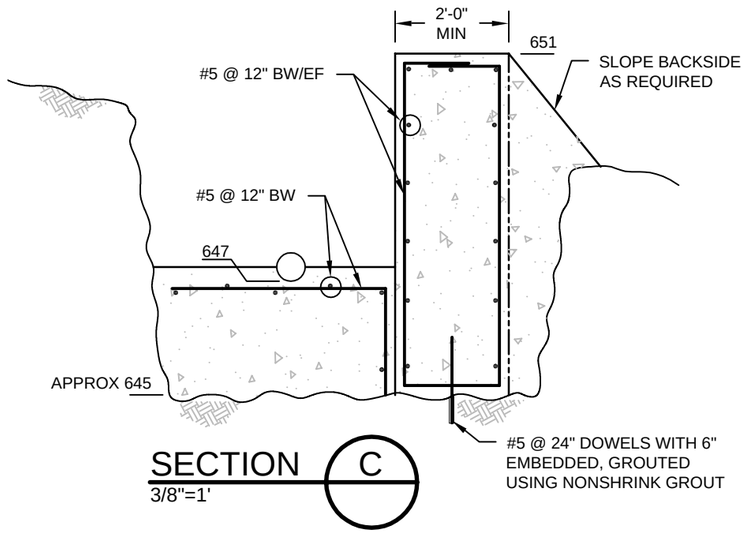
SECTION D
3/8"=1'



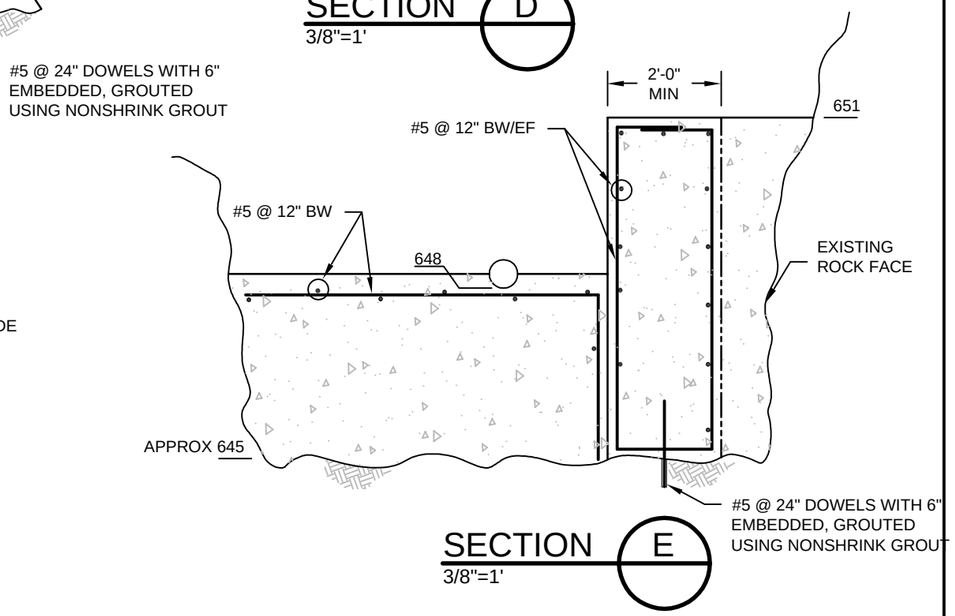
SECTION A
3/8"=1'



SECTION B
3/8"=1'



SECTION C
3/8"=1'



SECTION E
3/8"=1'

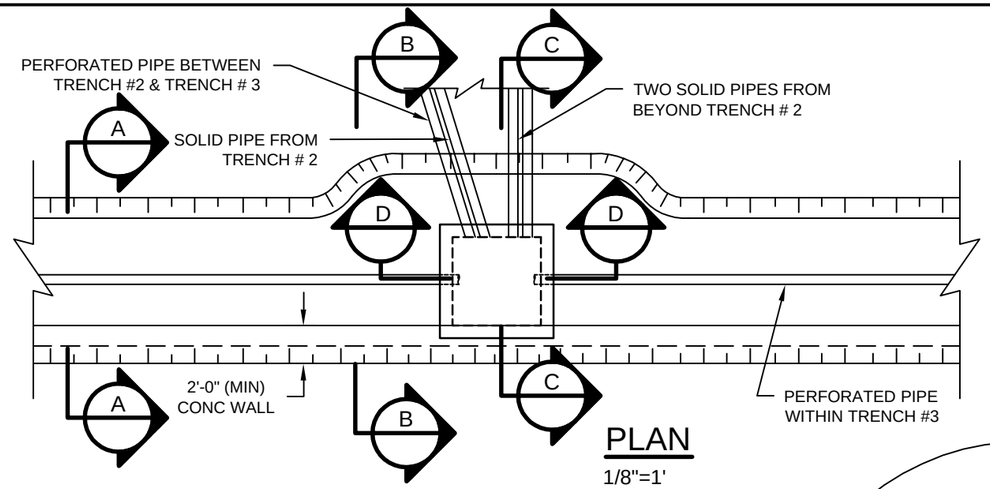
LEGEND

— - — - —	MAY PROVIDE FORMING AS REQUIRED
BW/EF	BOTH WAY AND EACH FACE

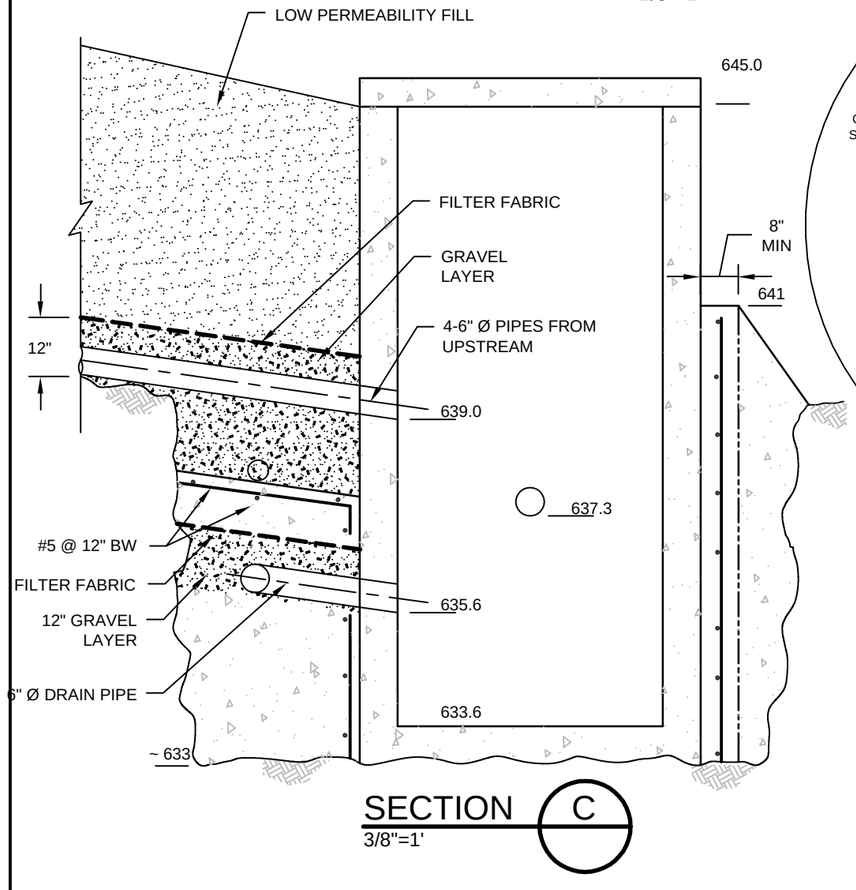
figure 4.2

PLAN AND SECTIONS-TRENCH #1
PROPOSED CONCRETE CONTAINMENT WALL
GM POWERTRAIN BEDFORD PLANT
Bedford, Indiana

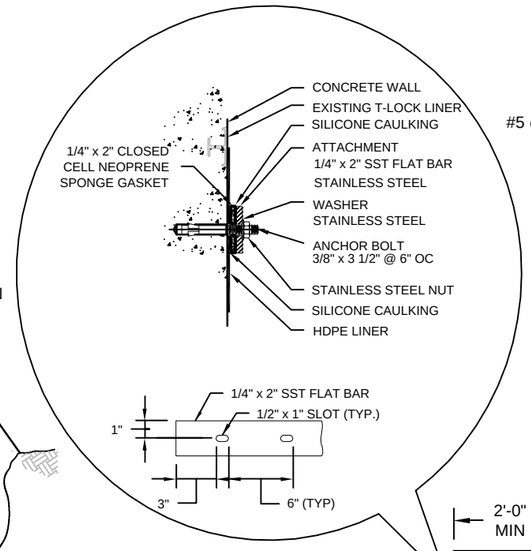
13968-00(082)GN-WA008 FEB 18/2004

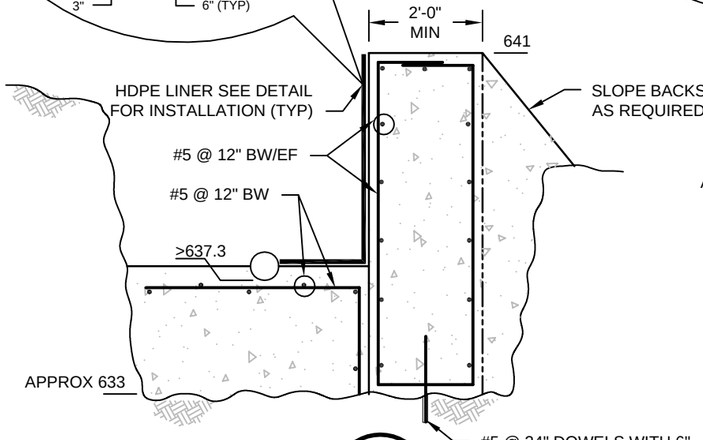


PLAN
1/8"=1'

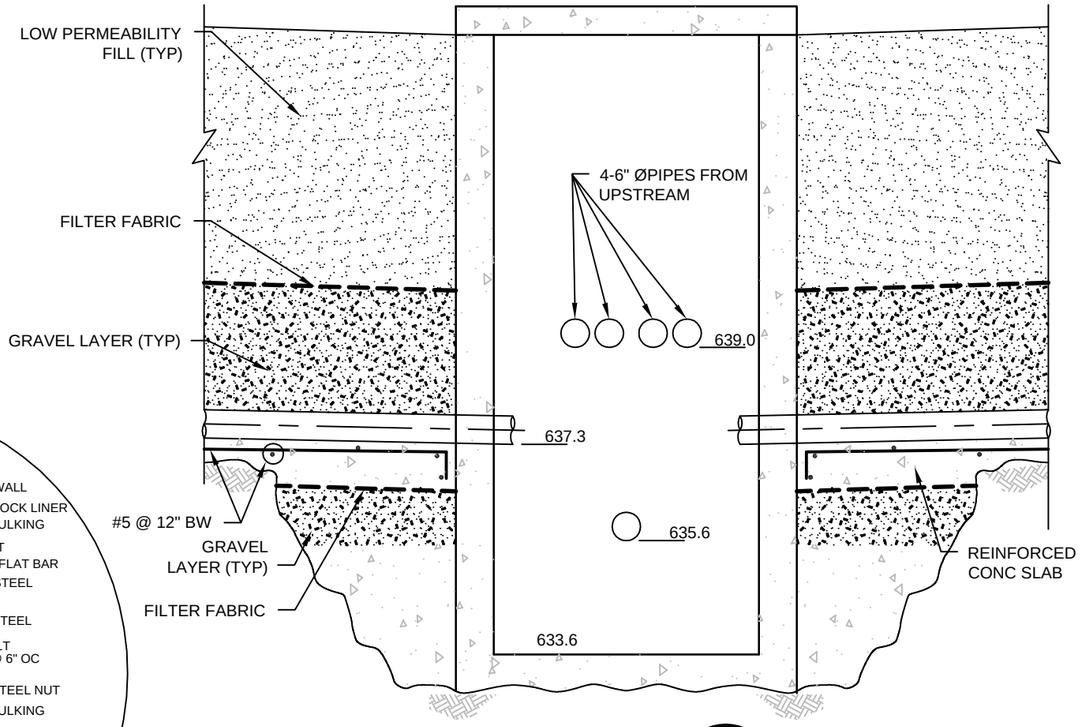


SECTION C
3/8"=1'

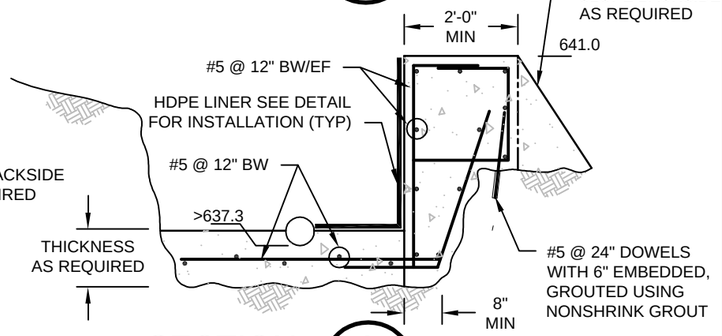




SECTION B
3/8"=1'



SECTION D
3/8"=1'



SECTION A
3/8"=1'

LEGEND

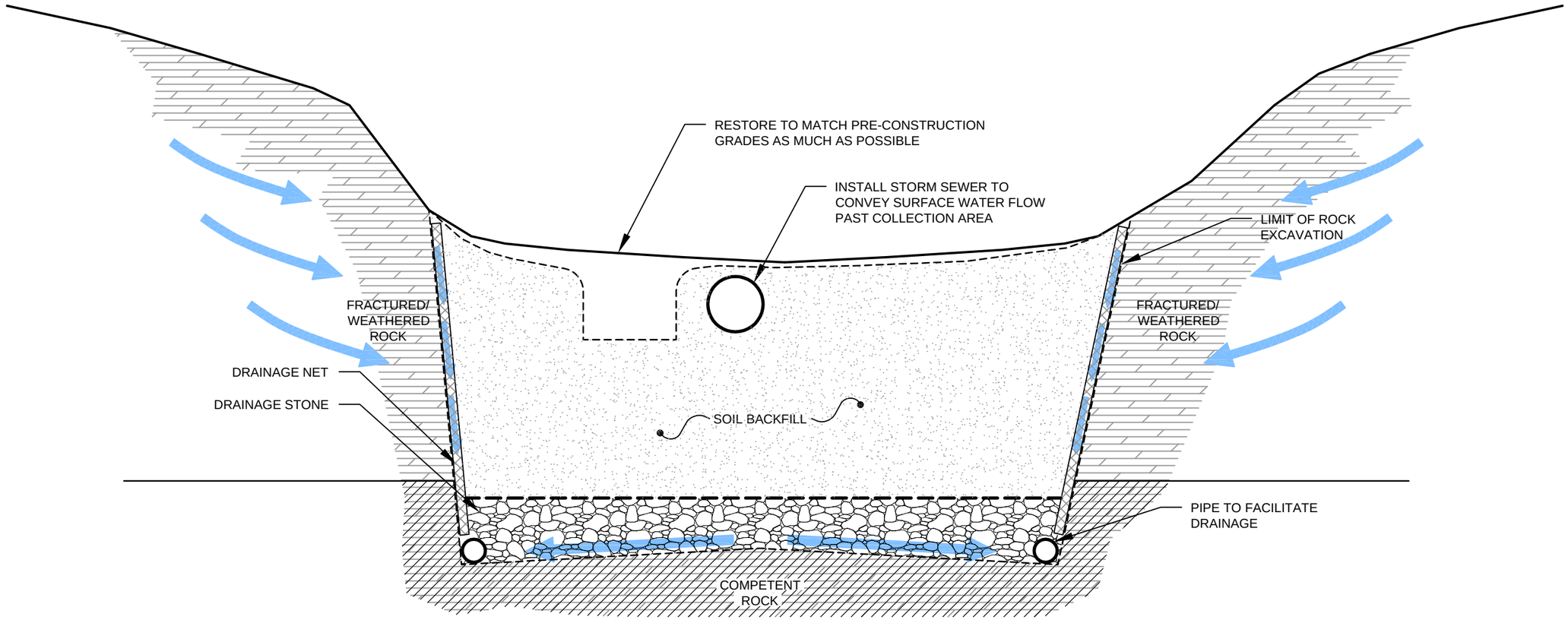
MAY PROVIDE FORMING AS REQUIRED

BW/EF BOTH WAY AND EACH FACE

figure 4.3

PLAN AND SECTIONS-TRENCH #3
PROPOSED CONCRETE CONTAINMENT WALL
GM POWERTRAIN BEDFORD PLANT
Bedford, Indiana

13968-00(082)GN-WA010 APR 13/2004



N.T.S.

figure 4.4

TYPICAL TRENCH CROSS-SECTION
GM POWERTRAIN BEDFORD PLANT
Bedford, Indiana

TABLE 2.1

ANALYTICAL RESULTS SUMMARY
SPRING/SEEP SAMPLES - PCB ANALYSIS
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Type:		*Spring*	*Spring*	*Spring*	*Spring*	*Spring*	*Spring*
Sample Location:		*Spring_004 (5046)*	*Spring_009 (5048)*	*Spring_018 (5047)*	*SPRING_028-001*	*SPRING_028-002*	*SPRING_40-001 (5053)*
Sample ID:		*SW-052202-JW-5046*	*SW-052202-JW-5048*	*SW-052202-JW-5047*	*SW-28-040302-JW-001*	*SW-28-040302-JW-002*	*SW-052302-JW-5053*
Sample Date:		*5/22/2002*	*5/22/2002*	*5/22/2002*	*4/3/2002*	*4/3/2002*	*5/23/2002*
Sample Depth:							
Parameter	*Unit*						
PCBs (Unfiltered Sample)							
Aroclor-1016 (PCB-1016)	µg/L	ND (0.2) UJ	ND (0.2) UJ	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.2)
Aroclor-1221 (PCB-1221)	µg/L	ND (0.2) UJ	ND (0.2) UJ	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.2)
Aroclor-1232 (PCB-1232)	µg/L	ND (0.4) UJ	ND (0.4) UJ	ND (0.4)	ND (0.40)	ND (0.40)	ND (0.4)
Aroclor-1242 (PCB-1242)	µg/L	ND (0.2) UJ	ND (0.2) UJ	1.2	ND (0.20)	ND (0.20)	ND (0.2)
Aroclor-1248 (PCB-1248)	µg/L	ND (0.2) UJ	ND (0.2) UJ	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.2)
Aroclor-1254 (PCB-1254)	µg/L	ND (0.2) UJ	ND (0.2) UJ	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.2)
Aroclor-1260 (PCB-1260)	µg/L	ND (0.2) UJ	ND (0.2) UJ	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.2)
Sum of Detected PCBs (ND=0)	µg/L	0	0	1.2	0	0	0
PCBs (Filtered Sample)							
Aroclor-1016 (PCB-1016), dissolved	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.2)
Aroclor-1221 (PCB-1221), dissolved	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.2)
Aroclor-1232 (PCB-1232), dissolved	µg/L	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.40)	ND (0.40)	ND (0.4)
Aroclor-1242 (PCB-1242), dissolved	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.2)
Aroclor-1248 (PCB-1248), dissolved	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.2)
Aroclor-1254 (PCB-1254), dissolved	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.2)
Aroclor-1260 (PCB-1260), dissolved	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.2)
Sum of Detected PCBs (ND=0)	µg/L	0	0	0	0	0	0

TABLE 2.1

ANALYTICAL RESULTS SUMMARY
SPRING/SEEP SAMPLES - PCB ANALYSIS
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Type:		*Spring*	*Spring*	*Spring*	*Spring*	*Spring*	*Spring*
Sample Location:		*SPRING_40-001 (5053)*	*SPRING_40-001 (5053)*	*SPRING_40-002 (5054)*	*SPRING_40-002 (5054)*	*SPRING_40-003 (5052)*	*SPRING_40-003 (5052)*
Sample ID:		*GW-40-022702-LM-001*	*GW-40-022702-LM-001A*	*GW-40-022702-LM-002*	*SW-052302-JW-5054*	*GW-40-022702-LM-003*	*SW-052302-JW-5052*
Sample Date:		*2/27/2002*	*2/27/2002*	*2/27/2002*	*5/23/2002*	*2/27/2002*	*5/23/2002*
Sample Depth:							
			Duplicate				
Parameter	*Unit*						
PCBs (Unfiltered Sample)							
Aroclor-1016 (PCB-1016)	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Aroclor-1221 (PCB-1221)	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Aroclor-1232 (PCB-1232)	µg/L	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)
Aroclor-1242 (PCB-1242)	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Aroclor-1248 (PCB-1248)	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Aroclor-1254 (PCB-1254)	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Aroclor-1260 (PCB-1260)	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Sum of Detected PCBs (ND=0)	µg/L	0	0	0	0	0	0
PCBs (Filtered Sample)							
Aroclor-1016 (PCB-1016), dissolved	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Aroclor-1221 (PCB-1221), dissolved	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Aroclor-1232 (PCB-1232), dissolved	µg/L	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)
Aroclor-1242 (PCB-1242), dissolved	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Aroclor-1248 (PCB-1248), dissolved	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Aroclor-1254 (PCB-1254), dissolved	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Aroclor-1260 (PCB-1260), dissolved	µg/L	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Sum of Detected PCBs (ND=0)	µg/L	0	0	0	0	0	0

TABLE 2.1

ANALYTICAL RESULTS SUMMARY
SPRING/SEEP SAMPLES - PCB ANALYSIS
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Type:		*Spring*	*Spring*	*Spring*	*Spring*	*Spring*
Sample Location:		*SPRING_734 (5051)*	*SPRING_734 (5051)*	*Spring_910 (5014/5015)*	*Spring_910 (5014/5015)*	*SPRING_1452/1453 (5034)*
Sample ID:		*GW-00-020102-JW-734*	*SW-052302-JW-5051*	*SW-052902-GS-5014*	*SW-052902-GS-5015*	*SW-00-031902-JW-1453*
Sample Date:		*2/1/2002*	*5/23/2002*	*5/29/2002*	*5/29/2002*	*3/19/2002*
Sample Depth:						
					Duplicate	
Parameter	*Unit*					
PCBs (Unfiltered Sample)						
Aroclor-1016 (PCB-1016)	µg/L	ND (0.2)	ND (0.2)	ND (0.20) UJ	ND (0.20) UJ	ND (0.20)
Aroclor-1221 (PCB-1221)	µg/L	ND (0.2)	ND (0.2)	ND (0.20) UJ	ND (0.20) UJ	ND (0.20)
Aroclor-1232 (PCB-1232)	µg/L	ND (0.4)	ND (0.4)	ND (0.40) UJ	ND (0.40) UJ	ND (0.40)
Aroclor-1242 (PCB-1242)	µg/L	ND (0.2)	ND (0.2)	ND (0.20) UJ	ND (0.20) UJ	ND (0.20)
Aroclor-1248 (PCB-1248)	µg/L	ND (0.2)	ND (0.2)	ND (0.20) UJ	ND (0.20) UJ	ND (0.20)
Aroclor-1254 (PCB-1254)	µg/L	ND (0.2)	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.20)
Aroclor-1260 (PCB-1260)	µg/L	ND (0.2)	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.20)
Sum of Detected PCBs (ND=0)	µg/L	0	0	0	0	0
PCBs (Filtered Sample)						
Aroclor-1016 (PCB-1016), dissolved	µg/L	-	ND (0.2)	ND (0.20) UJ	ND (0.20) UJ	ND (0.20)
Aroclor-1221 (PCB-1221), dissolved	µg/L	-	ND (0.2)	ND (0.20) UJ	ND (0.20) UJ	ND (0.20)
Aroclor-1232 (PCB-1232), dissolved	µg/L	-	ND (0.4)	ND (0.40) UJ	ND (0.40) UJ	ND (0.40)
Aroclor-1242 (PCB-1242), dissolved	µg/L	-	ND (0.2)	ND (0.20) UJ	ND (0.20) UJ	ND (0.20)
Aroclor-1248 (PCB-1248), dissolved	µg/L	-	ND (0.2)	ND (0.20) UJ	ND (0.20) UJ	ND (0.20)
Aroclor-1254 (PCB-1254), dissolved	µg/L	-	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.20)
Aroclor-1260 (PCB-1260), dissolved	µg/L	-	ND (0.2)	ND (0.20)	ND (0.20)	ND (0.20)
Sum of Detected PCBs (ND=0)	µg/L	N/A	0	0	0	0

TABLE 2.1

ANALYTICAL RESULTS SUMMARY
SPRING/SEEP SAMPLES - PCB ANALYSIS
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Type:		*Spring*	*Spring*	*Spring*	*Spring*	*Spring*
Sample Location:		*SPRING_1452/1453 (5034)*	*SPRING_1459 (5032)*	*SPRING_1459 (5032)*	*SPRING_1459 (5032)*	*SPRING_1459 (5032)*
Sample ID:		*SW-052002-JW-5034*	*SW-00-032102-LM-1459*	*SW-00-032102-LM-1459A*	*SW-051702-JW-5032*	*SW-051702-JW-5032A*
Sample Date:		*5/20/2002*	*3/21/2002*	*3/21/2002*	*5/17/2002*	*5/17/2002*
Sample Depth:						
				Duplicate		*Duplicate*
Parameter	*Unit*					
PCBs (Unfiltered Sample)						
Aroclor-1016 (PCB-1016)	µg/L	ND (0.2) UJ	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1221 (PCB-1221)	µg/L	ND (0.2) UJ	ND (0.20)	ND (0.20)	ND (0.2) UJ	ND (0.2) UJ
Aroclor-1232 (PCB-1232)	µg/L	ND (0.4) UJ	ND (0.40)	ND (0.40)	ND (0.4)	ND (0.4)
Aroclor-1242 (PCB-1242)	µg/L	ND (0.2) UJ	ND (0.20)	ND (0.20)	ND (0.2) UJ	ND (0.2) UJ
Aroclor-1248 (PCB-1248)	µg/L	ND (0.2) UJ	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1254 (PCB-1254)	µg/L	ND (0.2) UJ	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1260 (PCB-1260)	µg/L	ND (0.2) UJ	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Sum of Detected PCBs (ND=0)	µg/L	0	0	0	0	0
PCBs (Filtered Sample)						
Aroclor-1016 (PCB-1016), dissolved	µg/L	ND (0.2)	ND (0.20) UJ	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1221 (PCB-1221), dissolved	µg/L	ND (0.2)	ND (0.20) UJ	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1232 (PCB-1232), dissolved	µg/L	ND (0.4)	ND (0.40) UJ	ND (0.40)	ND (0.4)	ND (0.4)
Aroclor-1242 (PCB-1242), dissolved	µg/L	ND (0.2)	ND (0.20) UJ	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1248 (PCB-1248), dissolved	µg/L	ND (0.2)	ND (0.20) UJ	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1254 (PCB-1254), dissolved	µg/L	ND (0.2)	ND (0.20) UJ	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1260 (PCB-1260), dissolved	µg/L	ND (0.2)	ND (0.20) UJ	ND (0.20)	ND (0.2)	ND (0.2)
Sum of Detected PCBs (ND=0)	µg/L	0	0	0	0	0

TABLE 2.1

ANALYTICAL RESULTS SUMMARY
SPRING/SEEP SAMPLES - PCB ANALYSIS
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Type:		*Spring*	*Spring*	*Spring*	*Spring*	*Spring*	*Spring*
Sample Location:		*SPRING_1468 (5049)*	*SPRING_1468 (5049)*	*SPRING_1469 (5050)*	*SPRING_1469 (5050)*	*SPRING_1469 (5050)*	*1547 (5057)*
Sample ID:		*SW-27-032102-JW-1468*	*SW-052302-JW-5049*	*SW-27-032102-JW-1469*	*SW-052302-JW-5050*	*SW-052302-JW-5050A*	*SW-36-032702-JW-1547*
Sample Date:		*3/21/2002*	*5/23/2002*	*3/21/2002*	*5/23/2002*	*5/23/2002*	*3/27/2002*
Sample Depth:							
						Duplicate	
Parameter	*Unit*						
PCBs (Unfiltered Sample)							
Aroclor-1016 (PCB-1016)	µg/L	ND (0.20)	ND (0.2)	ND (0.20)	ND (0.2)	ND (0.2)	ND (0.20)
Aroclor-1221 (PCB-1221)	µg/L	ND (0.20)	ND (0.2)	ND (0.20)	ND (0.2)	ND (0.2)	ND (0.20)
Aroclor-1232 (PCB-1232)	µg/L	ND (0.40)	ND (0.4)	ND (0.40)	ND (0.4)	ND (0.4)	ND (0.40)
Aroclor-1242 (PCB-1242)	µg/L	ND (0.20)	ND (0.2)	ND (0.20)	ND (0.2)	ND (0.2)	ND (0.20)
Aroclor-1248 (PCB-1248)	µg/L	ND (0.20)	ND (0.2)	1.0	ND (0.2)	ND (0.2)	ND (0.20)
Aroclor-1254 (PCB-1254)	µg/L	ND (0.20) UJ	ND (0.2)	ND (0.20)	ND (0.2)	ND (0.2)	ND (0.20)
Aroclor-1260 (PCB-1260)	µg/L	ND (0.20) UJ	ND (0.2)	ND (0.20)	ND (0.2)	ND (0.2)	ND (0.20)
Sum of Detected PCBs (ND=0)	µg/L	0	0	1	0	0	0
PCBs (Filtered Sample)							
Aroclor-1016 (PCB-1016), dissolved	µg/L	ND (0.20)	ND (0.2)	ND (0.20)	ND (0.2)	ND (0.2)	ND (0.20)
Aroclor-1221 (PCB-1221), dissolved	µg/L	ND (0.20)	ND (0.2)	ND (0.20)	ND (0.2)	ND (0.2)	ND (0.20)
Aroclor-1232 (PCB-1232), dissolved	µg/L	ND (0.40)	ND (0.4)	ND (0.40)	ND (0.4)	ND (0.4)	ND (0.40)
Aroclor-1242 (PCB-1242), dissolved	µg/L	ND (0.20)	ND (0.2)	ND (0.20)	ND (0.2)	ND (0.2)	ND (0.20)
Aroclor-1248 (PCB-1248), dissolved	µg/L	ND (0.20)	ND (0.2)	ND (0.20)	ND (0.2)	ND (0.2)	ND (0.20)
Aroclor-1254 (PCB-1254), dissolved	µg/L	ND (0.20)	ND (0.2)	ND (0.20)	ND (0.2)	ND (0.2)	ND (0.20)
Aroclor-1260 (PCB-1260), dissolved	µg/L	ND (0.20)	ND (0.2)	ND (0.20)	ND (0.2)	ND (0.2)	ND (0.20)
Sum of Detected PCBs (ND=0)	µg/L	0	0	0	0	0	0

TABLE 2.1

ANALYTICAL RESULTS SUMMARY
SPRING/SEEP SAMPLES - PCB ANALYSIS
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Type:		*Spring*	*Spring*	*Spring*	*Spring*	*Spring*	*Spring*
Sample Location:		*1547 (5057)*	*1549*	*SPRING_1556 (5058)*	*SPRING_1556A*	*SPRING_1556 (5058)*	*SPRING_1572*
Sample ID:		*SW-052802-GS-5057*	*SW-36-032702-JW-1549*	*SW-36-032702-JW-1556*	*SW-36-032702-JW-1556A*	*SW-052802-GS-5058*	*SW-31-040202-JW-1572*
Sample Date:		*5/28/2002*	*3/27/2002*	*3/27/2002*	*3/27/2002*	*5/28/2002*	*4/2/2002*
Sample Depth:							
Parameter	*Unit*						
PCBs (Unfiltered Sample)							
Aroclor-1016 (PCB-1016)	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Aroclor-1221 (PCB-1221)	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Aroclor-1232 (PCB-1232)	µg/L	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Aroclor-1242 (PCB-1242)	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Aroclor-1248 (PCB-1248)	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Aroclor-1254 (PCB-1254)	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Aroclor-1260 (PCB-1260)	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Sum of Detected PCBs (ND=0)	µg/L	0	0	0	0	0	0
PCBs (Filtered Sample)							
Aroclor-1016 (PCB-1016), dissolved	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Aroclor-1221 (PCB-1221), dissolved	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Aroclor-1232 (PCB-1232), dissolved	µg/L	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Aroclor-1242 (PCB-1242), dissolved	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Aroclor-1248 (PCB-1248), dissolved	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Aroclor-1254 (PCB-1254), dissolved	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Aroclor-1260 (PCB-1260), dissolved	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Sum of Detected PCBs (ND=0)	µg/L	0	0	0	0	0	0

TABLE 2.1

ANALYTICAL RESULTS SUMMARY
SPRING/SEEP SAMPLES - PCB ANALYSIS
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Type:		*Spring*	*Spring*	*Spring*	*Spring*	*Spring*
Sample Location:		*1590 (5059)*	*1590 (5059)*	*5055*	*Spring East of Storm Pond*	*Spring East of Storm Pond-2*
Sample ID:		*SW-03-040302-JW-1590*	*SW-052802-GS-5059*	*SW-052802-GS-5055*	*GW-00-031202-JW-004*	*GW-00-031202-JW-003*
Sample Date:		*4/3/2002*	*5/28/2002*	*5/28/2002*	*3/12/2002*	*3/12/2002*
Sample Depth:						
Parameter	*Unit*					
PCBs (Unfiltered Sample)						
Aroclor-1016 (PCB-1016)	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1221 (PCB-1221)	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1232 (PCB-1232)	µg/L	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.4)	ND (0.4)
Aroclor-1242 (PCB-1242)	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1248 (PCB-1248)	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1254 (PCB-1254)	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1260 (PCB-1260)	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Sum of Detected PCBs (ND=0)	µg/L	0	0	0	0	0
PCBs (Filtered Sample)						
Aroclor-1016 (PCB-1016), dissolved	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1221 (PCB-1221), dissolved	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1232 (PCB-1232), dissolved	µg/L	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.4)	ND (0.4)
Aroclor-1242 (PCB-1242), dissolved	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1248 (PCB-1248), dissolved	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1254 (PCB-1254), dissolved	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Aroclor-1260 (PCB-1260), dissolved	µg/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.2)	ND (0.2)
Sum of Detected PCBs (ND=0)	µg/L	0	0	0	0	0

TABLE 2.1

ANALYTICAL RESULTS SUMMARY
SPRING/SEEP SAMPLES - PCB ANALYSIS
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Type:		*Spring*	*Seep*	*Seep*	*Seep*	*Seep*	*Seep*
Sample Location:		*SPRING WELL1*	*Seep_001 (5012)*	*Eastern Seep Area 01*	*Eastern Seep Area 02*	*Eastern Seep Area 02*	*5013*
Sample ID:		*GW-22-010902-LM-001*	*SW-051702-SK-5012*	*GW-00-031102-GS-001*	*GW-00-031102-GS-002*	*GW-00-031102-GS-002A*	*SW-052902-JW-5013*
Sample Date:		*1/9/2002*	*5/17/2002*	*3/11/2002*	*3/11/2002*	*3/11/2002*	*5/29/2002*
Sample Depth:							
						Duplicate	
Parameter	*Unit*						
PCBs (Unfiltered Sample)							
Aroclor-1016 (PCB-1016)	µg/L	ND (0.2)	R	ND (2)	ND (20)	ND (10)	ND (0.2)
Aroclor-1221 (PCB-1221)	µg/L	ND (0.2)	R	ND (2)	ND (20)	ND (10)	ND (0.2)
Aroclor-1232 (PCB-1232)	µg/L	ND (0.4)	R	ND (4)	ND (40)	ND (20)	ND (0.4)
Aroclor-1242 (PCB-1242)	µg/L	ND (0.2)	R	22	180	100	ND (0.2)
Aroclor-1248 (PCB-1248)	µg/L	ND (0.2)	R	ND (2)	ND (20)	ND (10)	0.4
Aroclor-1254 (PCB-1254)	µg/L	ND (0.2)	R	ND (2)	ND (20)	ND (10)	ND (0.2)
Aroclor-1260 (PCB-1260)	µg/L	ND (0.2)	R	ND (2)	ND (20)	ND (10)	0.11 J
Sum of Detected PCBs (ND=0)	µg/L	0	N/A	22	180	100	0.51 J
PCBs (Filtered Sample)							
Aroclor-1016 (PCB-1016), dissolved	µg/L	-	ND (0.2) UJ	ND (0.2) UJ	ND (1)	ND (4)	ND (0.2) UJ
Aroclor-1221 (PCB-1221), dissolved	µg/L	-	ND (0.2) UJ	ND (0.2) UJ	10 J	51	ND (0.2) UJ
Aroclor-1232 (PCB-1232), dissolved	µg/L	-	ND (0.4) UJ	ND (0.4) UJ	ND (2)	ND (8)	ND (0.4) UJ
Aroclor-1242 (PCB-1242), dissolved	µg/L	-	ND (0.2) UJ	ND (0.2) UJ	ND (1)	ND (4)	ND (0.2) UJ
Aroclor-1248 (PCB-1248), dissolved	µg/L	-	ND (0.2) UJ	ND (0.2) UJ	ND (1)	ND (4)	ND (0.2) UJ
Aroclor-1254 (PCB-1254), dissolved	µg/L	-	ND (0.2) UJ	ND (0.2) UJ	ND (1)	ND (4)	ND (0.2) UJ
Aroclor-1260 (PCB-1260), dissolved	µg/L	-	ND (0.2) UJ	ND (0.2) UJ	ND (1)	ND (4)	ND (0.2) UJ
Sum of Detected PCBs (ND=0)	µg/L	N/A	0	0	10 J	51	0

TABLE 2.1

ANALYTICAL RESULTS SUMMARY
SPRING/SEEP SAMPLES - PCB ANALYSIS
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Type:		*Seep*	*Seep*	*Seep*	*Seep*	*Seep*	*Seep*
Sample Location:		*SW-X216Y274*	*SW-X216Y274*	*SW-X243Y232*	*SW-X243Y232*	*SW-X256Y260*	*SW-X256Y260*
Sample ID:		*SW-031502-JW-1428*	*SW-052102-JW-5042*	*SW-031502-JW-1426*	*SW-052102-JW-5041*	*SW-031502-JW-1427*	*SW-031502-JW-1427A*
Sample Date:		*3/15/2002*	*5/21/2002*	*3/15/2002*	*5/21/2002*	*3/15/2002*	*3/15/2002*
Sample Depth:							*Duplicate*
Parameter	*Unit*						
PCBs (Unfiltered Sample)							
Aroclor-1016 (PCB-1016)	µg/L	ND (0.20) UJ	ND (1) UJ	ND (2.0)	ND (1)	ND (0.40)	ND (0.40)
Aroclor-1221 (PCB-1221)	µg/L	ND (0.20) UJ	ND (1) UJ	ND (2.0)	ND (1)	ND (0.40)	ND (0.40)
Aroclor-1232 (PCB-1232)	µg/L	ND (0.40) UJ	ND (1) UJ	ND (4.0)	ND (2)	ND (0.80)	ND (0.80)
Aroclor-1242 (PCB-1242)	µg/L	ND (0.20) UJ	ND (1) UJ	22	12	3.8	4.6
Aroclor-1248 (PCB-1248)	µg/L	2.4 J	4.6 J	ND (2.0)	ND (1)	ND (0.40)	ND (0.40)
Aroclor-1254 (PCB-1254)	µg/L	ND (0.20) UJ	ND (1) UJ	ND (2.0)	ND (1)	ND (0.40)	ND (0.40)
Aroclor-1260 (PCB-1260)	µg/L	ND (0.20) UJ	ND (1) UJ	ND (2.0)	ND (1)	ND (0.40)	ND (0.40)
Sum of Detected PCBs (ND=0)	µg/L	2.4 J	4.6 J	22	12	3.8	4.6
PCBs (Filtered Sample)							
Aroclor-1016 (PCB-1016), dissolved	µg/L	ND (0.20)	ND (0.2)	ND (1.0)	ND (0.2)	ND (0.20)	ND (0.20)
Aroclor-1221 (PCB-1221), dissolved	µg/L	ND (0.20)	ND (0.2)	ND (1.0)	ND (0.2)	ND (0.20)	ND (0.20)
Aroclor-1232 (PCB-1232), dissolved	µg/L	ND (0.40)	ND (0.4)	ND (2.0)	ND (0.4)	ND (0.40)	ND (0.40)
Aroclor-1242 (PCB-1242), dissolved	µg/L	ND (0.20)	ND (0.2)	13	ND (0.2)	ND (0.20)	ND (0.20)
Aroclor-1248 (PCB-1248), dissolved	µg/L	ND (0.20)	ND (0.2)	ND (1.0)	ND (0.2)	ND (0.20)	ND (0.20)
Aroclor-1254 (PCB-1254), dissolved	µg/L	ND (0.20)	ND (0.2)	ND (1.0)	ND (0.2)	ND (0.20)	ND (0.20)
Aroclor-1260 (PCB-1260), dissolved	µg/L	ND (0.20)	ND (0.2)	ND (1.0)	ND (0.2)	ND (0.20)	ND (0.20)
Sum of Detected PCBs (ND=0)	µg/L	0	0	13	0	0	0

APPENDIX A

PHOTOGRAPHIC LOG

Photo 1 - Pre-Excavation

Photo 2 - Exposed Rock

figure 1

SITE PHOTOGFRAPHS
GM POWERTRAIN BEDFORD PLANT
Bedford, Indiana

CRA

Photo 3 - Stained Rock

Photo 4 - Final Excavation Limits

figure 2

SITE PHOTOGFRAPHS
GM POWERTRAIN BEDFORD PLANT
Bedford, Indiana

CRA

Photo 5 - Collection Trench 1

Photo 6- Rock removal immediately downstream of Outfall 002, looking toward Trench 1

figure 3

SITE PHOTOGFRAPHS
GM POWERTRAIN BEDFORD PLANT
Bedford, Indiana

CRA

Photo 7 - Collection Trench 3

figure 4

SITE PHOTOGFRAPHS
GM POWERTRAIN BEDFORD PLANT
Bedford, Indiana

CRA

APPENDIX B

CREEK CORE LOGS

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

DRAFT

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA
DRILLING CONTRACTOR: RDNP

HOLE DESIGNATION: CREEK CORE 1
DATE COMPLETED: 16 October 2003
DRILLING METHOD: HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	GROUND SURFACE	654.6				
0	Fractured rock, black staining, oxidized (yellow/orange), poor recovery, clay partings					
		653.0				
2	LIMESTONE (ST. LOUIS FORMATION), calcite, micritic limestone, medium grained, thin bedded, light gray to gray					
	- styloite at 2.3ft BGS					
4	- vertical fracture with clay parting at 2.4ft BGS					
	- vertical fracture with clay parting at 2.7ft BGS					
	- 2-inch fractured rock (vertical and horizontal) at 2.8ft BGS					
6	- light gray, open styloite at 3.0ft BGS					
	- light gray, open styloite at 3.6ft BGS					
8	- 1.7 foot void, water lose at 4.2ft BGS					
	- open styloite at 6.2ft BGS					
	- dark gray at 6.7ft BGS					
10	- open styloite at 7.1ft BGS		BENTONITE SEAL	1	73	62
	- horizontal fracture at 8.5ft BGS					
	- open styloite at 8.7ft BGS					
12	- styloite at 8.8ft BGS	644.6				
	END OF BOREHOLE @ 10.0ft BGS					
14						
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

BEDROCK LOG 13968.GPJ CRA_CORP.GDT 9/3/04

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

DRAFT

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA
DRILLING CONTRACTOR: RDNP

HOLE DESIGNATION: CREEK CORE 2
DATE COMPLETED: 17 October 2003
DRILLING METHOD: HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	GROUND SURFACE	653.4				
0	LIMESTONE (ST. LOUIS FORMATION), top 3-inches slight black staining in horizontal fracture, micritic limestone, calcite, thin bedded, fine grained, macro fossils, tan - horizontal fracture, light gray at 1.6ft BGS - horizontal fracture, clay parting at 2.7ft BGS - styloite at 2.9ft BGS - open styloite at 3.1ft BGS - open styloite at 6.0ft BGS - dark gray, interbedded shale at 6.1ft BGS		BENTONITE SEAL	1	98	84
10	END OF BOREHOLE @ 10.0ft BGS	643.4				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

BEDROCK LOG 13968.GPJ CRA_CORP.GDT 9/3/04

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

DRAFT

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA
DRILLING CONTRACTOR: RDNP

HOLE DESIGNATION: CREEK CORE 3
DATE COMPLETED: 17 October 2003
DRILLING METHOD: HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	GROUND SURFACE	651.0				
0	LIMESTONE (ST. LOUIS FORMATION), top 2-inches fractured with very faint black staining, thin bedded, medium grained, macro fossils, calcite, tan/gray - horizontal fracture at 0.9ft BGS - 2-inches of fractured rock at 1.1ft BGS - horizontal fracture at 1.7ft BGS - horizontal fracture, gray at 1.8ft BGS - open styloite at 2.7ft BGS - styloite at 5.2ft BGS - 1-inch open styloite at 5.7ft BGS - styloite at 7.9ft BGS		BENTONITE SEAL	1	98	95
10	END OF BOREHOLE @ 10.0ft BGS	641.0				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

BEDROCK LOG 13968.GPJ CRA_CORP.GDT 9/3/04

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

DRAFT

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA
DRILLING CONTRACTOR: RDNP

HOLE DESIGNATION: CREEK CORE 4
DATE COMPLETED: 21 October 2003
DRILLING METHOD: 4 1/4-INCH HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
4	LIMESTONE (ST. LOUIS FORMATION), medium to coarse grained, porous, tan/gray, fossils, calcite - horizontal fracture at 3.9ft BGS - horizontal fracture at 4.3ft BGS - horizontal fracture at 5.2ft BGS - horizontal fracture at 5.5ft BGS - horizontal fracture, clay parting at 6.3ft BGS - horizontal fracture, clay parting at 6.4ft BGS - styloite at 6.7ft BGS - open styloite at 7.1ft BGS - gray, abundance of fossils (bryozoans, etc...) at 7.4ft BGS - horizontal fracture at 8.1ft BGS - horizontal fracture at 9.2ft BGS - 5-inch void, clay parting at 10.5ft BGS - styloite at 10.8ft BGS - open styloite, light gray, fine grained at 11.3ft BGS - 2-inch broken rock between styloite at 12.4ft BGS - open styloite at 14.8ft BGS - styloite at 14.9ft BGS - 9-inch section of styloites throughout at 15.6ft BGS - open styloite at 17.1ft BGS - dark gray at 17.8ft BGS	654.9	CEMENT / BENTONITE GROUT	1	89	84
20	LIMESTONE (SALEM FORMATION), coarse grained, fossils, thick bedding, grannular - 6-inch of "honeycomb" section, porous, fine grained at 21.5ft BGS - gray at 21.7ft BGS - styloite at 24.0ft BGS	638.5		2	98	98
26	END OF BOREHOLE @ 26.5ft BGS	631.9		3	100	100
28						
30						
32						
34						
36						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

BEDROCK LOG 13968.GPJ CRA_CORP.GDT 9/3/04

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

DRAFT

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA
DRILLING CONTRACTOR: RDNP

HOLE DESIGNATION: CREEK CORE 5
DATE COMPLETED: 22 October 2003
DRILLING METHOD: 4 1/4-INCH HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	GROUND SURFACE	660.0				
	CL-CLAY, some silt, firm, low plasticity, strong brown, moist	658.5				
2	LIMESTONE (ST. LOUIS FORMATION), fine grained, thin bedded, gray, micritic, calcite, 1-foot of fractured rock, weathered, occassional clay parting, porous - horizontal fracture, clay parting at 3.1ft BGS - horizontal fracture at 4.0ft BGS					
4						
6	- near vertical fracture, iron staining at 4.3ft BGS - horizontal fracture at 4.6ft BGS - horizontal fracture at 5.5ft BGS			1	100	84
8	- open styloite at 6.4ft BGS - open styloite at 6.5ft BGS					
10	- styloite at 6.8ft BGS - open styloite at 7.3ft BGS - horizontal fracture at 9.0ft BGS - horizontal fracture, clay parting at 10.3ft BGS					
12	- horizontal fracture at 11.6ft BGS - styloite at 11.9ft BGS - styloite at 12.3ft BGS		CEMENT / BENTONITE GROUT			
14						
16	- horizontal fracture at 16.3ft BGS - open styloite at 16.7ft BGS - open styloite at 17.6ft BGS			2	100	100
18	LIMESTONE (SALEM FORMATION), grannular, medium to coarse grained, thick bedding	642.0				
20						
22	- styloite at 23.0ft BGS					
24	- open styloite at 24.3ft BGS			3	100	100
26	- styloite at 26.2ft BGS					
	END OF BOREHOLE @ 26.5ft BGS	633.5				
28						
30						
32						
34						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

BEDROCK LOG 13968.GPJ CRA_CORP.GDT 9/3/04

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

DRAFT

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA
DRILLING CONTRACTOR: RDNP

HOLE DESIGNATION: CREEK CORE 6A
DATE COMPLETED: 23 October 2003
DRILLING METHOD: HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	GROUND SURFACE	647.2				
2	LIMESTONE (SALEM FORMATION), 5-inches of fractured rock, tan, fine grained, horizontal fractures, thin bedded, clay partings - horizontal fracture, clay parting at 0.8ft BGS - horizontal fracture, clay parting at 1.2ft BGS - 1.5-inch near vertical fracture at 1.7ft BGS - open styloite at 2.0ft BGS - 2-inch near vertical fracture at 2.4ft BGS - open styloite, oxidized, iron staining, gray at 2.8ft BGS - styloite at 3.5ft BGS - open styloite at 4.5ft BGS - horizontal fracture at 6.4ft BGS - open styloite, 1-foot void, had dark water return at 6.7ft BGS - open styloite at 7.7ft BGS	637.7	CEMENT / BENTONITE GROUT	1	84	64
4						
6				2	90	84
8						
10	END OF BOREHOLE @ 9.5ft BGS					
12						
14						
16						
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22						
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26						
28						
30						
32						
34						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

BEDROCK LOG 13968.GPJ CRA_CORP.GDT 9/3/04

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

DRAFT

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA
DRILLING CONTRACTOR: RDNP

HOLE DESIGNATION: CREEK CORE 7
DATE COMPLETED: 23 October 2003
DRILLING METHOD: 4 1/4-INCH HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	GROUND SURFACE	645.3					
0	CL-CLAY, some silt, firm, low plasticity, tan, moist						
4	END OF OVERBURDEN HOLE @ 4.0ft BGS						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 13968.GPJ CRA_CORP.GDT 9/3/04

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

DRAFT

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA
DRILLING CONTRACTOR: RDNP

HOLE DESIGNATION: CREEK CORE 7
DATE COMPLETED: 23 October 2003
DRILLING METHOD: 4 1/4-INCH HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
4	LIMESTONE (SALEM FORMATION),top 2-inch horizontal fracture, thin bedded, calcite, tan - horizontal fracture, clay parting at 4.4ft BGS - styloite at 6.5ft BGS - styloite at 7.3ft BGS - open styloite at 7.8ft BGS	641.3	CEMENT / BENTONITE GROUT	1	100	100
8	END OF BOREHOLE @ 9.0ft BGS	636.3				
10						
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28						
30						
32						
34						
36						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

BEDROCK LOG 13968.GPJ CRA_CORP.GDT 9/3/04

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

DRAFT

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA
DRILLING CONTRACTOR: RDNP

HOLE DESIGNATION: CREEK CORE 8
DATE COMPLETED: 23 October 2003
DRILLING METHOD: 4 1/4-INCH HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
4	- during coring black water and sheen noted for approximately 6-inches, horizontal fracture, clay parting at 4.7ft BGS	639.3	CEMENT / BENTONITE GROUT			
6	LIMESTONE (SALEM FORMATION), grannular, medium grained, thin bedded, tan/gray			1	100	100
8	- open styloite at 6.8ft BGS - styloite at 7.3ft BGS					
	- open styloite at 8.3ft BGS	634.3				
10	END OF BOREHOLE @ 9.5ft BGS					
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28						
30						
32						
34						
36						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

BEDROCK LOG 13968.GPJ CRA_CORP.GDT 9/3/04

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

DRAFT

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA
DRILLING CONTRACTOR: RDNP

HOLE DESIGNATION: CREEK CORE 8
DATE COMPLETED: 23 October 2003
DRILLING METHOD: 4 1/4-INCH HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
4	- during coring black water and sheen noted for approximately 6-inches, horizontal fracture, clay parting at 4.7ft BGS	639.3	CEMENT / BENTONITE GROUT			
6	LIMESTONE (SALEM FORMATION), grannular, medium grained, thin bedded, tan/gray			1	100	100
8	- open styloite at 6.8ft BGS - styloite at 7.3ft BGS					
10	- open styloite at 8.3ft BGS	634.3				
12	END OF BOREHOLE @ 9.5ft BGS					
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16						
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28						
30						
32						
34						
36						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

DRAFT

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA
DRILLING CONTRACTOR: RDNP

HOLE DESIGNATION: CREEK CORE 9
DATE COMPLETED: 23 October 2003
DRILLING METHOD: 4 1/4-INCH HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	GROUND SURFACE	653.1				
	CL-CLAY, silt, low plasticity, brown/tan, moist					
	LIMESTONE (ST. LOUIS FORMATION), thin bedded, fine grained, tan/gray, 1.3 foot of horizontal fractures with clay parting	651.6				
	- horizontal fracture with clay parting at 3.4ft BGS			1	98	60
	- horizontal fracture with clay parting at 4.4ft BGS					
	- 4-inches of horizontal fractures with clay partings at 4.8ft BGS					
	- 4-inches of horizontal fractures with clay partings at 5.3ft BGS					
	- half-inch clay parting at 6.0ft BGS					
	- horizontal fracture at 7.4ft BGS			2	100	100
	- open styloite at 10.1ft BGS		CEMENT / BENTONITE GROUT			
	- styloite at 11.7ft BGS					
	- 1-inch near vertical at 12.4ft BGS					
	- brown water discharge at 13.0ft BGS					
	- 1-foot near vertical fracture at 13.2ft BGS					
	- styloite at 13.6ft BGS					
	- styloite at 15.2ft BGS					
	- open styloite at 15.5ft BGS	637.1		3	100	100
	LIMESTONE (SALEM FORMATION), fossils, grannular, thick bedded, medium grained, tan/gray					
	- open styloite at 17.0ft BGS					
	- open styloite at 20.8ft BGS	632.1				
	END OF BOREHOLE @ 21.0ft BGS					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

BEDROCK LOG 13968.GPJ CRA_CORP.GDT 9/3/04