



**Global Environmental  
Compliance & Sustainability**

October 15, 2015

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: RCRA Corrective Action Administrative Order on Consent (AOC)  
Progress Report 58, Third Quarter 2015  
GM CET – Bedford Facility, IND 006036099, Docket No. RCRA 05-2014-0011  
Bedford, Indiana

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Please find enclosed the Progress Report 58 (Third Quarter 2015) for the Resource Conservation and Recovery Act (RCRA) Corrective Action (CA) project at the GM Castings, Engines, and Transmissions (CET; formerly Powertrain) Bedford Facility (Facility) at 105 GM Drive Bedford, Indiana, and select surrounding properties (Site). This report is being submitted in accordance with the Administrative Order on Consent, effective August 4, 2014 (United States Environmental Protection Agency (U.S. EPA) Docket No. RCRA 05-2014-011).

The next RCRA quarterly progress report covering the fourth Quarter of 2015 will be submitted on or before January 15, 2015.

Should you have any questions regarding this document, please do not hesitate to contact me at (313) 510-4328.

Yours truly,

General Motors LLC

Cheryl R. Hiatt  
Project Manager

PG/jp/SS

Encl.

c.c.: See Attached Distribution List

***GM Bedford Distribution List***

Peter Ramanauskas	U.S. EPA, Region 5
Brad Stimple	U.S. EPA, OSCw
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## **Third Quarter 2015 Progress Report 58**

GM CET – Bedford Facility

105 GM Drive

Bedford, Indiana

EPA ID# IND006036099

AOC Docket No. RCRA-05-2014-0011

General Motors, LLC

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## 1. Introduction

This Progress Report is submitted by General Motors LLC (GM) in accordance with the GM Bedford Castings, Engines, Transmissions (CET) Facility Resource Conservation and Recovery Act (RCRA) Administrative Order on Consent (AOC – United States Environmental Protection Agency [U.S. EPA] Docket No. RCRA-05-2014-0011), executed on August 4, 2014. This report covers the period of the third calendar quarter of 2015 for the RCRA Corrective Action (CA) Project at the GM Castings, Engines, and Transmissions (CET; formerly Powertrain) – Bedford Facility (Facility) and select surrounding properties (Site), Bedford, Indiana.

Note that Conestoga-Rovers & Associates (CRA) became GHD effective July 1, 2015. GHD is referenced as CRA for events that occurred prior to July 1, 2015.

The next RCRA progress report covering the fourth quarter of 2015 will be submitted on or before January 15, 2016.

## 2. List of Completed Activities

The following activities took place and the following documents were prepared and distributed during this quarter:

- Results for samples collected from Spring 018 during the quarter are presented in Table 2.1. Sample results for the monthly sampling were previously emailed to U.S. EPA and IDEM as they became available. As of the end of September 2015 sampling, the 12-month rolling average concentration of PCBs in the Spring 018 discharge is 0.18 micrograms per liter ( $\mu\text{g/L}$ ). Regular monthly sampling was conducted on July 8, August 12 and September 9, 2015. The regular July 8, 2015 sample had a detectable concentration of PCBs  $\geq 0.3 \mu\text{g/L}$  (including a replicate and split duplicate), and a re-sampling event was conducted on July 13, 2015. The sample collected on July 13, was non-detect for PCB concentration. The regular August 12, 2015 sample also had a detectable concentration of PCBs  $\geq 0.3 \mu\text{g/L}$  (replicate and split duplicate samples had detectable concentrations  $< 0.3 \mu\text{g/L}$ ), and a re-sampling event occurred on August 18, 2015, with a PCB result of non-detect. No opportunistic samples (samples collected after in excess of 1" of rain within a calendar day) were collected during the Third Quarter 2015.
- The 300 gpm design capacity (Site Source Control [SSC]) and 2,000 gpm design capacity water treatment plants (WTPs) collected and treated 3,139,000 gallons of water this past quarter. An estimated 0.05 pounds of PCBs were removed during the third quarter of 2015 through collection and treatment of the groundwater, and an estimated 0.45 pounds of PCBs in the twelve months inclusive of July 2014. A summary of the volumes and sample results used for this calculation is provided in Table 2.2.

- Concrete filling of Pool #2 upstream of the confluence with Tributary 3 and Spring 018 is delayed pending the issuance of a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) AOC being prepared to allow GM LLC to conduct remaining creek work in the Spring 018 area. Following the execution of the AOC, the filling will be scheduled as the weather allows.
  - GM submitted a draft CERCLA AOC on August 27, 2015. The draft CERCLA AOC is currently under U.S. EPA review.
- The East Plant Area TSCA Vault Annual Monitoring Report for the Calendar Year 2014 was submitted on July 15, 2015.
- The third quarter 2015 Environmental Indicator (EI) CA750 monitoring of static groundwater levels was conducted on September 3, 2015.
- The Construction Certification Report for the West Plant Area Interim Measures (IMs) was submitted to the U.S. EPA and IDEM on November 12, 2014.
  - U.S. EPA emailed one comment on the response to comments on April 9, 2015.
  - GM submitted an emailed response to this comment on May 14, 2015.
  - GM is currently revising the West Plant Certification Report to incorporate the approved revisions.
- The Pilot Perimeter Groundwater Collection Trench Study (Pilot Trench) was submitted to the U.S. EPA and IDEM on December 2, 2014.
  - The Pilot Trench construction work was awarded to Severson Environmental Services (SES) on July 15, 2015.
  - SES mobilized to the site in August 2015 to begin site-works preparations, including construction of a temporary groundwater treatment plant (WTP) to handle the water collected from the trench during construction. Field work began on August 10, 2015.
  - The pad for temporary WTP components has been constructed and the major components of the WTP have been installed.
  - An access road from Parcel 205 has been constructed to allow construction equipment to enter the work area from GM Drive.
  - Construction of the rock trencher working platform has been initiated. Some additional rock removal will be necessary in the fourth quarter to allow for a uniform slope on the working platform.
- The AOI 8 Groundwater Source Collection System Interim Measure was submitted to the U.S. EPA and IDEM on December 31, 2014.
  - Approval of the plan with additional U.S. EPA Comments were received on July 1, 2015.
  - Responses will be submitted in the fourth quarter 2015.
- Formal monitoring of the East Plant, West Plant and Vault cover systems for the Third Quarter was completed on September 28, 2015.
  - Comments on the East Plant Cover System Report were received from U.S. EPA on July 17, 2015. GHD is currently preparing responses for GM to review.
  - The channel erosion damage in Transect ES9 was repaired on July 20, 2015.

- Parcel 400 sampling plan was approved with modifications by the U.S. EPA.
  - Additional delineation drilling/sampling began July 1, 2015 and continued through July 15, 2015.
  - A TSCA Risk-Based Disposal Approval request under 40 CFR 760.61(C) will be completed following receipt of additional sampling results.
  - One location requires additional delineation, to be completed in the fourth quarter of 2015.
- Conference calls were held with U.S. EPA and IDEM on July 16 and 30, August 21, and September 3 and 17, 2015, to discuss items related to the project.
- With the resumption of daily construction activities related to the construction of a new groundwater treatment plant and construction of the Pilot Trench, on-Site construction meetings for the reporting period have been held informally daily and formally as needed. The pre-construction kick-off meeting for the Pilot Trench project was held on August 19, 2015. Construction meetings were held on September 9, 16, and 23.
- The RCRA/CERCLA Quarterly Progress Report #57, covering the second quarter of 2015, was submitted to the U.S. EPA and IDEM on July 13, 2015.
- The RCRA Facility Investigation (RFI) Report was submitted on September 30, 2015.

### 3. Summaries of all Problems and Planned Resolutions

- PCB detections (slightly above the 0.3 ug/l reporting limit) in the initial monthly sample were detected in July, and August of 2015. Periodic detections have been seen in previous years in late spring/summer time frame. The reasons for this are not known, but may be related to temperature increase during that time of year. The regular monthly sampling collected Wednesday, July 8, and Wednesday, August 12, each had detections of PCBs slightly above the action level of 0.3 µg/L which triggered resampling events for Monday, July 13, and Tuesday, August 18, respectively. The resampling events were both non-detect for PCBs.

Additional concrete sealing is planned for a swallet identified upgradient of Spring 018 in what is known as Pool 2. This work will be scheduled, weather pending, upon completion of the CERCLA AOC. It is thought that a further reduction in surface water infiltration to the epikarst supplying Spring 018 will provide further stabilization of the PCB detections at the spring. Monthly monitoring continues.

### 4. Summaries of all Changes Made in the Corrective Action (CA) During the Reporting Period

- Submission of the 2014 Vault Annual Report on July 15, 2015
- Submission of the RFI Report on September 30, 2015

## 5. Community Relations

The telephone number for public contact is 812-277-8956 (Katie Kamm, GHD, formerly Conestoga-Rovers & Associates [CRA]). Individual meetings can be arranged to discuss project progress with residents as requested.

A GHD representative visited residents along Bailey Scales Road to inform them of increased activity in the East Plant Area related to the construction of the Pilot Perimeter Groundwater Collection Trench System. The residents were informed that most truck activity would access the work areas from GM Drive.

The next neighborhood/public meeting and CLP meetings are tentatively scheduled for December 2015. Presentations for past meetings are posted on the GM website at:

[www.bedfordpowertraincorrectiveaction.com](http://www.bedfordpowertraincorrectiveaction.com)

The document repository continues to be located at the Bedford Public Library, with relevant project related documents available on compact disc (CD) in PDF format. Information will be updated periodically, as new documents become available. All data located in the Library repository can also be found on the aforementioned website.

## 6. Changes in Personnel During the Reporting Period

GHD oversight personnel for on-going maintenance operations (e.g., stormwater and SSC water treatment, wet wells, Vault sumps etc.) remain unchanged. Mobilization of additional staff for GHD and SES commenced in July 2015 to support the construction of the Pilot Trench and new groundwater treatment plant.

## 7. Projected Work for the Next Reporting Period

Work anticipated for the next reporting period includes:

- Continue evaluation of the Stormwater Pond dredging (Area of Interest [AOI] 10). Dredging anticipated to be conducted in 2016.
- Continue construction of the groundwater treatment plant and the Pilot Trench.
- Complete outstanding responses to comments on documentation and/or finalize reports for the following:
  - Vault Post-Closure Plan.
  - Vault Construction Certification Report.
  - Unsampled Areas Soil Sampling Work Plan.
  - Construction Certification Report for the West Plant Area IM.
  - AOI 8 Groundwater Source Collection System IM.
  - Downstream Parcels Removal Action Construction Certification Report.
  - East Plant Area Cover System Construction Certification Report.

- Complete delineation of the remaining  $\geq 50$  mg/kg PCBs soil on Parcels 400, 430 and 431.
- Continue monitoring Spring 018 on a monthly basis.
- Submit the EI CA750 First Half 2015 Results Memorandum.
- Submission of the annual Cost Estimate by November 16, 2015, pursuant to Paragraph 48 of the RCRA AOC.
- Completion of the fourth quarter EI CA750 static groundwater levels and second half 2015 groundwater sampling.
- Finalization of the proposed CERCLA Administrative Order on Consent for Removal Action.

## 8. Copies of Daily Reports, Inspection Reports, Laboratory/Monitoring Data

Table 2.1 presents the quarterly results from Spring 018 sampling. Table 2.2 presents the estimated PCB mass removal for the site source control systems for the past 12 months.

Appendix A includes the field monitoring forms for the cover system inspections and a photograph log:

1. Some weeds or clover growth was noted at most Transects in the East Plant Area but not on the West Plant Area.
2. Bare patches were identified at a few Transects (EV4, EV6, EV7, EV8, EV9, ES2, ES4, ES9, and ES13). Seed had been hand sown at previously identified bare patches, however, due to the dry weather the seed does not appear to have taken.
3. The minor bare patches and clover/weed growth previously noted along various transects were not noted in the presence of erosional issues and will continue to be monitored. There was channel erosion damage identified in transect ES9 and this area was repaired in July.
4. A few new saplings were identified during the third quarter inspection and have been removed.
5. Numerous mole holes were identified on the west and north and east side of the east plant cover system (EV2, EV3, EV4, EV5, EV6, ES4, and ES6). GHD has contacted the liner companies and the moles do not burrow deep enough to damage the liner and so the vegetation will continue to be monitored, however, there is no immediate risk to the Cover.
6. There are some erosion ruts along the east side of GM Drive, outside the cover system area adjacent to power poles. This does not appear to be due to any on-Site RCRA activities, but could have an impact on the liner system in the ditch. Work will be conducted on power poles in this area and so any work in the area will not be addressed until after this work is completed.
7. Minor cracks are present along the seams in the asphalt cover system. The cracks do not extend the full depth of the asphalt thickness. SES is seeking a contractor that can meet GMs safety requirements to complete the asphalt repairs. Resealing of the asphalt will be completed when construction of the groundwater treatment plant and Pilot Trench are complete.

8. During the previous inspections it was noted that the velocity of the water coming from Detention Basin 1 (DB1) into DB2 has at times been strong enough to displace the riprap at the point the water enters the basin, exposing about a 5 foot length of the channel, including the underlying liner. Repair work was completed along the drainage channel in July, however some additional erosion persisted upstream of DB1. Additional erosion control measures for this area are being evaluated.
9. The Facility repaired two fire hydrants along the far west side of the paved West Plant cover system. The Facility's contractor excavated the soils surrounding the hydrant, repaired the hydrant, backfilled, and SES/O'Mara Paving made the necessary repairs to the asphalt. There are signs of differential settlement under the repaved area as the new asphalt has sunk slightly. SES will hire an asphalt contractor to look at this area for recommended repairs.

Additional packages of analytical data have been, and will continue to be submitted to U.S. EPA as the validated data becomes available.

Table 2.1

**Spring 018 Sampling Results - July/August/September 2015**  
**GM CET Bedford Facility**  
**Bedford, Indiana**

Area		P015	P015	P015	P015
Sample Location:		Spring 018C	Spring 018C	Spring 018C	Spring 018C
Sample Identification:		SW-015-070815-GS-40247	SW-015-070815-GS-40247~	SW-015-070815-GS-40248	SW-015-071315-GS-40249
Sample Date:		7/8/2015	7/8/2015	7/8/2015	7/13/2015
Sample Type:			Split Duplicate	Replicate	
	Units				
<b>PCBs</b>					
Aroclor-1016 (PCB-1016)	ug/L	0.19 U	0.19 U	0.19 U	0.20 U
Aroclor-1221 (PCB-1221)	ug/L	0.19 U	0.19 U	0.19 U	0.20 U
Aroclor-1232 (PCB-1232)	ug/L	0.19 U	0.19 U	0.19 U	0.20 U
Aroclor-1242 (PCB-1242)	ug/L	0.45 J	0.35	0.19 UJ	0.20 U
Aroclor-1248 (PCB-1248)	ug/L	0.19 UJ	0.19 U	0.30 J	0.20 U
Aroclor-1254 (PCB-1254)	ug/L	0.19 U	0.19 U	0.19 U	0.20 UJ
Aroclor-1260 (PCB-1260)	ug/L	0.19 U	0.19 U	0.19 U	0.20 UJ
Total PCBs	ug/L	0.45 J	0.35	0.3 J	ND
<b>Wet</b>					
Total suspended solids (TSS)	ug/L	11000	--	--	4000

## Notes:

U - Not detected at the associated reporting limit.

J - Estimated concentration.

UJ - Not detected; associated reporting limit is estimated.

Twelve month average as of September 15, 2015 - 0.18 µg/L PCBs



Table 2.1

Spring 018 Sampling Results - July/August/September 2015  
 GM CET Bedford Facility  
 Bedford, Indiana

P015 Spring 018C SW-015-071315-GS-40250 7/13/2015 Duplicate	P015 Spring 018C SW-015-081215-GS-40254 8/12/2015	P015 Spring 018C SW-015-081215-GS-40254~ 8/12/2015 Split Duplicate	P015 Spring 018C SW-015-081215-GS-40255 8/12/2015 Replicate	P015 Spring 018C SW-015-081815-GS-40256 8/18/2015	P015 Spring 018C SW-015-090915-GS-40259 09/09/2015
0.20 U	0.19 U	0.19 UJ	0.19 U	0.19 U	0.19 U
0.20 U	0.19 U	0.19 UJ	0.19 U	0.19 U	0.19 U
0.20 U	0.19 U	0.19 UJ	0.19 U	0.19 U	0.19 U
0.20 U	0.42 J	0.26 J	0.19 UJ	0.19 U	0.19 U
0.20 U	0.19 UJ	0.19 UJ	0.29 J	0.19 U	0.19 U
0.20 UJ	0.19 UJ	0.19 UJ	0.19 U	0.19 UJ	0.19 U
0.20 UJ	0.19 UJ	0.19 UJ	0.19 U	0.19 UJ	0.19 U
ND	0.42 J	0.26 J	0.29 J	ND	ND
3800	1000 U	--	--	1900	1800

Table 2.2

**300 gpm Design Capacity Water Treatment System PCB Mass Removal Estimate  
GM Bedford CET Facility  
Bedford, Indiana**

	<b>300 gpm Design Capacity System Treated Volume (gallon)</b>	<b>PCB Influent Concentration (µg/L)</b>	<b>Mass PCB Treated (pound)</b>
October 2014	1,359,936	4.9	0.056
November 2014	1,198,730	3.5	0.04
December 2014	2,340,508	1.6	0.031
January 2015	1,439,400	1	0.012
February 2015	464,672	7.8	0.030
March 2015	3,193,494	5.7	0.152
April 2015	2,510,870	2.3	0.048
May 2015	1,000,860	10	0.084
June 2015	1,603,546	3.3	0.044
July 2015	1,582,640	1.6	0.021
August 2015	1,026,256	1.3	0.011
September 2015	530,080	5.1	0.023
Total Estimated Volume of Water Treated, Third Quarter 2015 (gallons)			3,138,976
Total Estimated Mass of PCB Treated, Third Quarter 2015 (pounds)			0.05
Total Estimated Mass of PCB Treated, Since October 2014 (pounds)			0.55

# Appendix A

## Third Quarter 2015 Cover System Inspection: Field Logs, Transect Figures, and Photograph Log



Photo 1: EV1 Vault cover facing northwest



Photo 2: EV1 Vault cover (and East Plant Area cover beyond) facing east



**Cover System Inspection  
3<sup>rd</sup> Quarter 2015**





Photo 3: EV2 East Plant Area cover facing northwest



Photo 4: EV3 East Plant Area cover facing north



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 5: EV4 East Plant Area cover facing northeast



Photo 6: EV4 East Plant Area cover facing northeast across Pilot Trench alignment



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 7: EV5 East Plant Area cover facing northeast



Photo 8: EV5 East Plant Area cover facing northwest



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 9: EV6 East Plant Area cover facing east



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 10: EV6 erosion rut outside cap limit



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 11: EV6 East Plant Area cover facing southwest



Photo 12: EV7 East Plant Area cover facing north



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 13: EV8 East Plant Area cover (Parcel 205) facing north



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 14: EV9 East Plant Area cover facing south (removed tree growth at time of inspection)



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 15: EV9 East Plant Area cover facing south (at base of slope)



Photo 16: EV9 East Plant Area cover facing east



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 17: EV9 East Plant Area cover facing south



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 18: EV9 patchy vegetation



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 19: ES2 drainage swale facing north



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 20: ES3 channel facing south.



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 21: ES5 drainage swale facing west



Photo 22: ES5 drainage swale facing northeast



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 23: ES6 facing southeast



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 24: ES6 drainage swale facing west, channel erosion.



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 25: ES8 and ES10 facing north across detention basin 3



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 26: ES9 rip rap erosion at storm drain into detention basin #2 facing west



Photo 27: ES11 detention basin #5 facing north



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 28: ES13 detention basin 6 facing east



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 29: ES14 drainage swale facing east



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 30: EA2 crack near WWTP aeration basin facing north

**Cover System Inspection  
3<sup>rd</sup> Quarter 2015**





Photo 31: EA2 facing east, cracks in asphalt west of Parcel 205



## Cover System Inspection 3<sup>rd</sup> Quarter 2015





Photo 32: WV1 West Plant Area cover facing west



## Cover System Inspection 3<sup>rd</sup> Quarter 2015

**COVER SYSTEMS INSPECTION LOG  
CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM  
GM CET BEDFORD FACILITY  
BEDFORD, INDIANA**

Date of Inspection: 9-28-15 Weather: Sunny Clear  
 Inspector: G. Seng / M. Curtis Temperature: 80° F

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED		
<b>VEGETATED SOIL COVER SYSTEM</b>					
<u>Transect EV1</u>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK		weed growth	
	- EXPOSURE OF LINER	OK			
	- EROSION	OK			
	- LOCALIZED SETTLEMENT/SLUMPING	OK			
	- PONDING OF WATER/DRAINAGE	OK			
	- SIGNS OF BURROWING BY ANIMALS	OK			
	- ROOTING OF TREES	OK			
<u>Transect EV2</u>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK		Some clover growth	
	- EXPOSURE OF LINER	OK			
	- EROSION	OK			
	- LOCALIZED SETTLEMENT/SLUMPING	OK			
	- PONDING OF WATER/DRAINAGE	OK			
	- SIGNS OF BURROWING BY ANIMALS	✓		minimal moles	
	- ROOTING OF TREES	OK			

TABLE D.1

COVER SYSTEMS INSPECTION LOG  
CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM  
GM CET BEDFORD FACILITY  
BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	DATE AND NATURE OF ACTIONS COMPLETED	
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
<b>VEGETATED SOIL COVER SYSTEM (CONTINUED)</b>						
	<b>Transect EV3</b>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK			
		- EXPOSURE OF LINER	OK			
		- EROSION	OK			
		- LOCALIZED SETTLEMENT/SLUMPING	OK			
		- PONDING OF WATER/DRAINAGE	OK			
		- SIGNS OF BURROWING BY ANIMALS	✓		mole	
		- ROOTING OF TREES	OK			
	<b>Transect EV4</b>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK		weed growth some bare spots	
		- EXPOSURE OF LINER	OK			
		- EROSION	OK			
		- LOCALIZED SETTLEMENT/SLUMPING	OK			
		- PONDING OF WATER/DRAINAGE	OK			
		- SIGNS OF BURROWING BY ANIMALS	✓		mole	
		- ROOTING OF TREES	OK			
	<b>Transect EV5</b>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK		weed and few small trees	trees removed
		- EXPOSURE OF LINER	OK			
		- EROSION	OK			
		- LOCALIZED SETTLEMENT/SLUMPING	OK			
		- PONDING OF WATER/DRAINAGE	OK			
		- SIGNS OF BURROWING BY ANIMALS	✓		mole	
		- ROOTING OF TREES	✓		small trees	trees removed



COVER SYSTEMS INSPECTION LOG  
 CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM  
 GM CET BEDFORD FACILITY  
 BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED		
<b>VEGETATED SOIL COVER SYSTEM (CONTINUED)</b>					
<u>Transect EV6</u>	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK		Bare spots weed growth	
	- EXPOSURE OF LINER	OK			
	- EROSION	OK			
	- LOCALIZED SETTLEMENT/SLUMPING	OK			
	- PONDING OF WATER/DRAINAGE	OK			
	- SIGNS OF BURROWING BY ANIMALS	✓		moles	
	- ROOTING OF TREES	✓		small trees	cut trees
<u>Transect EV7</u>	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK		weed growth	
	- EXPOSURE OF LINER	OK			
	- EROSION	OK			
	- LOCALIZED SETTLEMENT/SLUMPING				
	- PONDING OF WATER/DRAINAGE				
	- SIGNS OF BURROWING BY ANIMALS				
	- ROOTING OF TREES				
<u>Transect EV8</u>	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	✓		weed growth bare spot	
	- EXPOSURE OF LINER	OK			
	- EROSION	OK			
	- LOCALIZED SETTLEMENT/SLUMPING	OK			
	- PONDING OF WATER/DRAINAGE	OK			
	- SIGNS OF BURROWING BY ANIMALS	OK			
	- ROOTING OF TREES	OK			

Erosion along GM Drive power poles, access from substation

COVER SYSTEMS INSPECTION LOG  
 CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM  
 GM CET BEDFORD FACILITY  
 BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED		
<b>VEGETATED SOIL COVER SYSTEM (CONTINUED)</b>					
<u>Transect EV9</u>	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	✓		bare spots weeds	
	- EXPOSURE OF LINER	OK			
	- EROSION	OK			
	- LOCALIZED SETTLEMENT/SLUMPING	OK			
	- PONDING OF WATER/DRAINAGE	OK			
	- SIGNS OF BURROWING BY ANIMALS	OK			
	- ROOTING OF TREES	✓		Small trees	trees removed
<u>Transect WV1</u>	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK			
	- EXPOSURE OF LINER	OK			
	- EROSION	OK			
	- LOCALIZED SETTLEMENT/SLUMPING	OK			
	- PONDING OF WATER/DRAINAGE	OK			
	- SIGNS OF BURROWING BY ANIMALS	OK			
	- ROOTING OF TREES	OK			



COVER SYSTEMS INSPECTION LOG  
 CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM  
 GM CET BEDFORD FACILITY  
 BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED		
<b>HARD SURFACE COVER SYSTEMS</b>					
<u>Transect EA1</u>	- QUALITY OF ASPHALT COVER	OK			
	- PRESENCE OF CRACKING OR DISCOLORATION	OK			
<u>Transect EA2</u>	- QUALITY OF ASPHALT COVER	OK			
	- PRESENCE OF CRACKING OR DISCOLORATION	✓	Some cracks		to be sealed
<u>Transect WA1</u>	- QUALITY OF ASPHALT COVER	OK			
	- PRESENCE OF CRACKING OR DISCOLORATION	✓	Some cracks		to be sealed
<b>ACCESS ROAD</b>					
<u>ACCESS ROAD</u>	- EROSION	OK			
	- OBSTRUCTIONS/DEBRIS	OK			
	- POTHOLES	OK			
	- DAMAGE CAUSED BY VEHICULAR TRAFFIC	OK			

TABLE D.1

COVER SYSTEMS INSPECTION LOG  
 CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM  
 GM CET BEDFORD FACILITY  
 BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	DATE AND NATURE OF ACTIONS COMPLETED	
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
<b>SWALE/DRAINAGE DITCHES</b>						
	<b>Transect ES1</b>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK			
		- EROSION	OK			
		- OBSTRUCTIONS	OK			
		- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
		- SIGNS OF BURROWING BY ANIMALS	OK			
		- ROOTING OF TREES	OK			
	<b>Transect ES2</b>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK		weed growth small bare spots	
		- EROSION	OK			
		- OBSTRUCTIONS	OK			
		- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
		- SIGNS OF BURROWING BY ANIMALS	OK			
		- ROOTING OF TREES	OK			
	<b>Transect ES3</b>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK			
		- EROSION	OK			
		- OBSTRUCTIONS	OK			
		- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
		- SIGNS OF BURROWING BY ANIMALS	OK			
		- ROOTING OF TREES	OK			



TABLE D.1

COVER SYSTEMS INSPECTION LOG  
 CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM  
 GM CET BEDFORD FACILITY  
 BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED		
<b>SWALE/DRAINAGE DITCHES (CONTINUED)</b>					
<u>Transect ES4</u>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK		weed growth bird spots	
	- EROSION	OK			
	- OBSTRUCTIONS	OK			
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
	- SIGNS OF BURROWING BY ANIMALS	✓		moles	
	- ROOTING OF TREES				
<u>Transect ES5</u>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK			
	- EROSION	OK			
	- OBSTRUCTIONS	OK			
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
	- SIGNS OF BURROWING BY ANIMALS	OK			
	- ROOTING OF TREES	OK		small trees	trees removed
<u>Transect ES6</u>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK			
	- EROSION	OK			
	- OBSTRUCTIONS	OK			
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
	- SIGNS OF BURROWING BY ANIMALS	✓		moles	
	- ROOTING OF TREES	OK			

COVER SYSTEMS INSPECTION LOG  
 CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM  
 GM CET BEDFORD FACILITY  
 BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED		
<b>SWALE/DRAINAGE DITCHES (CONTINUED)</b>					
<u>Transect ES7</u>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	OK		weeds	
	- EROSION	OK			
	- OBSTRUCTIONS	OK			
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
	- SIGNS OF BURROWING BY ANIMALS	OK			
	- ROOTING OF TREES	OK			
<u>Transect ES8</u>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	✓		weeds	
	- EROSION	OK			
	- OBSTRUCTIONS	OK			
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
	- SIGNS OF BURROWING BY ANIMALS	OK			
	- ROOTING OF TREES	OK			
<u>Transect ES9</u>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	✓		weeds bare spots	
	- EROSION	OK			
	- OBSTRUCTIONS	OK			
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
	- SIGNS OF BURROWING BY ANIMALS	OK			
	- ROOTING OF TREES	OK			



TABLE D.1

COVER SYSTEMS INSPECTION LOG  
 CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM  
 GM CET BEDFORD FACILITY  
 BEDFORD, INDIANA

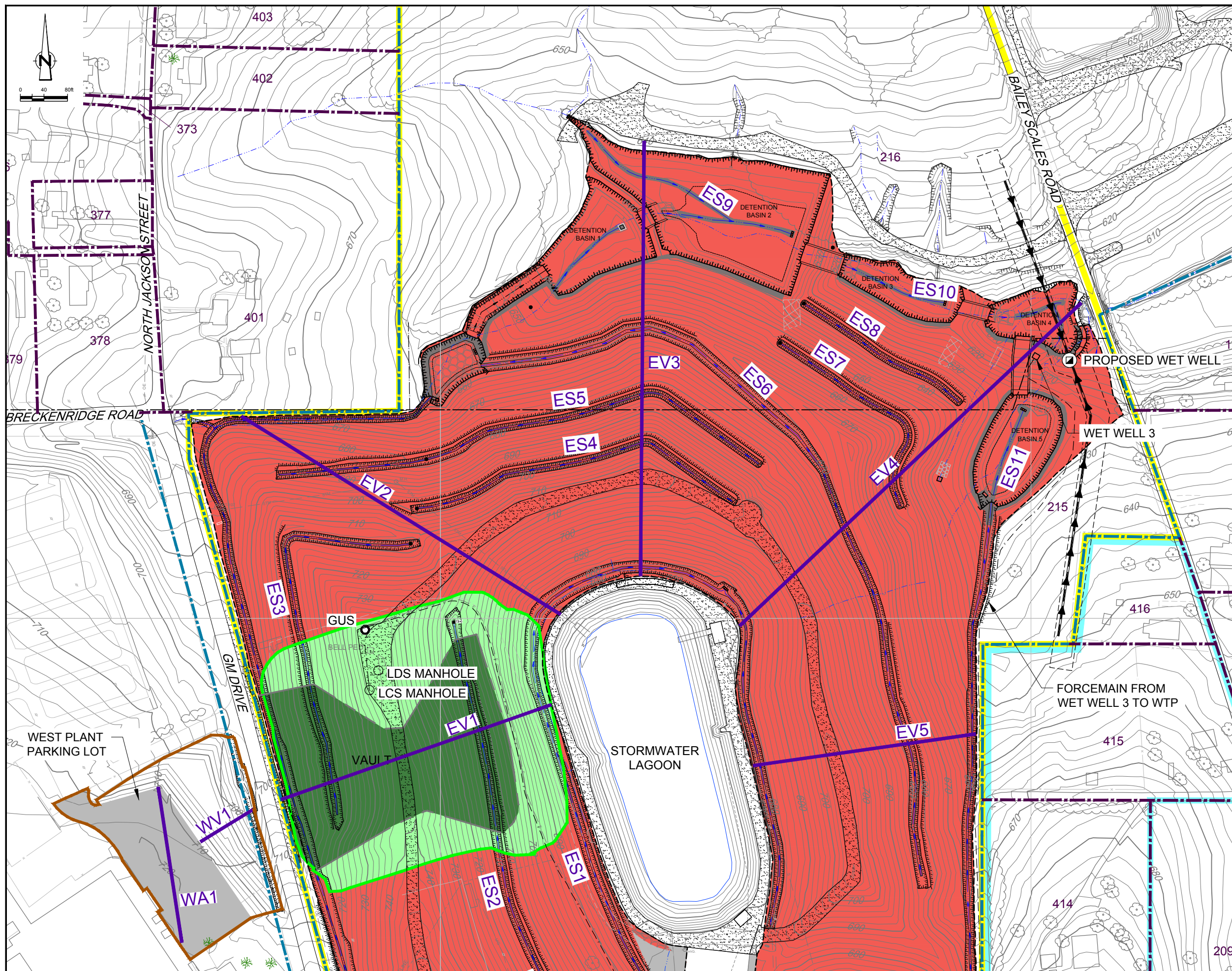
ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED		
<b>SWALE/DRAINAGE DITCHES (CONTINUED)</b>					
<b>Transect ES10</b>	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	✓		weeds	
	- EROSION	OK			
	- OBSTRUCTIONS	OK			
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
	- SIGNS OF BURROWING BY ANIMALS	OK			
	- ROOTING OF TREES	OK			
<b>Transect ES11</b>	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	✓		weeds	
	- EROSION	OK			
	- OBSTRUCTIONS	OK			
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
	- SIGNS OF BURROWING BY ANIMALS	OK			
	- ROOTING OF TREES				
<b>Transect ES12</b>	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	✓		weeds	
	- EROSION	OK			
	- OBSTRUCTIONS	OK			
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
	- SIGNS OF BURROWING BY ANIMALS	OK			
	- ROOTING OF TREES	OK			

TABLE D.1

**COVER SYSTEMS INSPECTION LOG  
CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM  
GM CET BEDFORD FACILITY  
BEDFORD, INDIANA**

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	DATE AND NATURE OF ACTIONS COMPLETED	
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
<b>SWALE/DRAINAGE DITCHES (CONTINUED)</b>						
	<u>Transect ES13</u>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	✓		weeds Bare spots	
		- EROSION	OK			
		- OBSTRUCTIONS	OK			
		- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
		- SIGNS OF BURROWING BY ANIMALS				
		- ROOTING OF TREES				
	<u>Transect ES13</u>	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	✓		weeds	
		- EROSION	OK			
		- OBSTRUCTIONS	OK			
		- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	OK			
		- SIGNS OF BURROWING BY ANIMALS	OK			
		- ROOTING OF TREES	OK			





**LEGEND**

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
- EXISTING BUILDINGS
- EXISTING FENCE LINE
- EXISTING RAILROAD TRACKS
- EXISTING DIRT ROADS
- EXISTING ROADS / PAVED AREAS
- EXISTING ELECTRICAL POWER LINE
- EXISTING FORCEMAIN TO TREATMENT FACILITY
- EXISTING OVERHEAD ELECTRICAL POWER LINE
- APPROXIMATE SURFACE WATER LOCATION
- APPROXIMATE GM PROPERTY BOUNDARY
- APPROXIMATE PROPERTY BOUNDARY
- EXISTING STORM SEWER
- WEST PLANT COVER LIMIT
- VAULT LIMIT
- EAST PLANT COVER LIMIT
- DRAINAGE DITCH
- ASPHALT PAVEMENT AREA
- LOW FLOW CHANNEL
- EAST PLANT AREA
- GM LLC OWNED RESIDENTIAL
- EAST PLANT COVER SYSTEM
- FINAL VAULT COVER SYSTEM AT SURFACE
- FINAL VAULT COVER SYSTEM BURIED BY EAST PLANT AREA COVER SYSTEM
- GRAVEL BED
- PAVED COVER SURFACE
- PROPOSED PILOT TRENCH
- VAULT GROUNDWATER UNDERDRAIN SYSTEM SUMP
- LEAK DETECTION SYSTEM SUMP
- LEACHATE COLLECTION SYSTEM SUMP
- TRANSECT

**TRANSECT LABELING**

- E EAST PLANT COVER
- V VEGETATIVE COVER
- A ASPHALT COVER
- W WEST PLANT COVER
- S SWALE

**SCALE VERIFICATION**

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

**GM CET BEDFORD FACILITY  
BEDFORD, INDIANA**

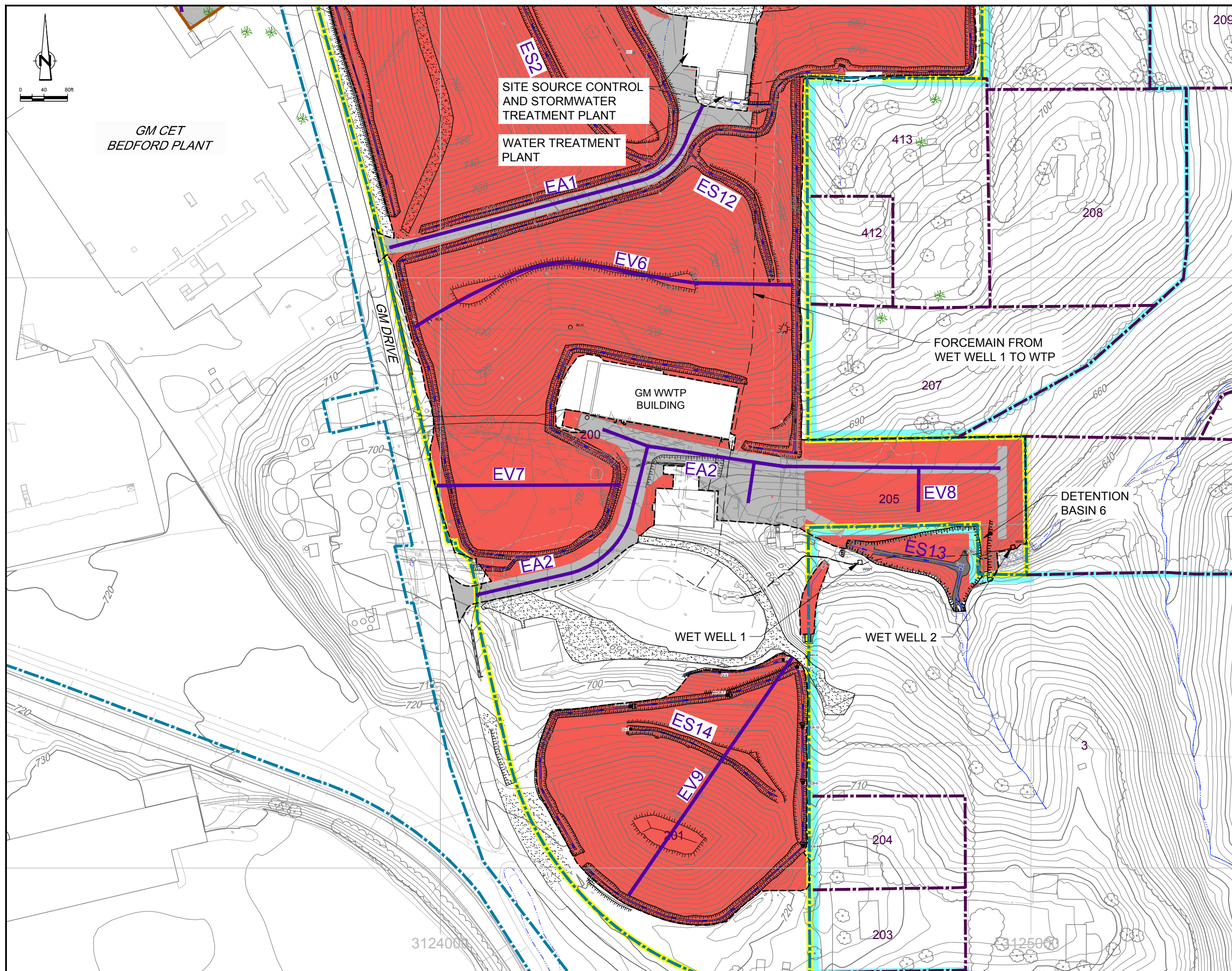
INTERIM OPERATIONS, MAINTENANCE AND MONITORING PLAN  
EAST PLANT COVER SYSTEM  
EAST PLANT COVER SYSTEM INSPECTIONS  
NORTHERN SECTION AND WEST PLANT  
COVER SYSTEM INSPECTIONS



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

Project Manager: J.M.	Reviewed By: P.G.	Date: FEBRUARY 2015
Scale: 1:80	Project N <sup>o</sup> : 13968-00	Report N <sup>o</sup> : 350 Drawing N <sup>o</sup> : figure D.1





**LEGEND**

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
- EXISTING BUILDINGS
- EXISTING FENCE LINE
- EXISTING RAILROAD TRACKS
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- WEST PLANT COVER LIMIT
- VAULT LIMIT
- EAST PLANT COVER LIMIT
- DRAINAGE DITCH
- ASPHALT PAVEMENT AREA
- LOW FLOW CHANNEL
- EAST PLANT AREA
- GM LLC OWNED RESIDENTIAL
- EAST PLANT COVER SYSTEM
- FINAL VAULT COVER SYSTEM AT SURFACE
- FINAL VAULT COVER SYSTEM BURIED BY EAST PLANT AREA COVER SYSTEM
- GRAVEL BED
- PAVED COVER SURFACE
- PROPOSED PILOT TRENCH
- VAULT GROUNDWATER UNDERDRAIN SYSTEM SUMP
- LEAK DETECTION SYSTEM SUMP
- LEACHATE COLLECTION SYSTEM SUMP
- TRANSECT

**TRANSECT LABELING**

- E EAST PLANT COVER
- V VEGETATIVE COVER
- A ASPHALT COVER
- W WEST PLANT COVER
- S SWALE

**SCALE VERIFICATION**

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

**GM CET BEDFORD FACILITY  
BEDFORD, INDIANA**

INTERIM OPERATIONS, MAINTENANCE AND MONITORING PLAN  
EAST PLANT COVER SYSTEM

**EAST PLANT COVER SYSTEM INSPECTIONS  
SOUTHERN SECTION**

**CRA CONESTOGA-ROVERS & ASSOCIATES**

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

Project Manager: J.M.	Reviewed By: P.G.	Date: FEBRUARY 2015
Scale: 1:80	Project N°: 13968-00	Report N°: 350
		Drawing N°: figure D.2

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