



## MEMORANDUM

TO: Brad Stimple REF. NO.: 013968

FROM: Bill Steinmann/ja/584 DATE: April 6, 2009

CC: Peter Ramanauskas; Gerald O'Callaghan; Stacey  
DeLaReintrie; Dan Sparks; Jim Smith; Cheryl Hiatt; Ed  
Peterson; Jim McGuigan; Jeff Daniel; Katie Kamm; Stephen  
Song; Francis Ramacciotti

RE: **Site Source Control (SSC) Work Plan Addendum No. 7  
Proposed Termination of the SSC Sampling Program  
GM Powertrain Bedford Facility  
Bedford, Indiana**

### 1.0 INTRODUCTION

Conestoga-Rovers & Associates, Inc. (CRA) has prepared this Addendum No. 7 to the Site Source Control (SSC) Work Plan for the General Motors Corporation (GM) Powertrain Bedford Facility (Facility) located in Bedford, Indiana (U.S. EPA ID# IND006036099). This SSC Addendum No. 7 has been developed to present rationale for termination of the SSC Seep/Spring Monitoring Program (Monitoring Program), in accordance with the Administrative Order by Consent (AOC) (Docket Number V-W-'03-C-747, effective July 31, 2003).

### 1.1 BACKGROUND

The Monitoring Program was presented in the original SSC Work Plan (CRA, November 6, 2003) and Addendum No. 4 to the SSC Work Plan (CRA, June 22, 2005). The original list of seeps and springs for Phase I of the Monitoring Program (seeps and springs located along the creek system south of Broomsage Road) was presented in the original SSC Work Plan. Addendum No. 4 presented additional seeps and springs, which were newly discovered and Phase II seeps and springs (located north of Broomsage Road), which were added to the Monitoring Program.

Proposed modifications to the Monitoring Program were presented in Addendum No. 6 to the SSC Work Plan (CRA, September 6, 2007).

This SSC Addendum No. 7 presents the rationale for termination of the Monitoring Program, based on the results of sampling to date. Attachment A presents a table of sampling events conducted to date. Attachment B presents a data box figure for all of the sampling events included in the Monitoring Program to date.

**2.0 PROPOSED MONITORING PROGRAM MODIFICATIONS**

The SSC Work Plan (CRA, November 6, 2003) states that as new information becomes available, seeps/springs that do not contain detectable Polychlorinated Biphenyls (PCBs) (or PCBs at levels that would cause re-contamination of the creek) will be identified and proposed for removal from the Monitoring Program.

The following sections discuss the rationale for the proposed immediate end of all further routine quarterly sampling of seeps and springs from the Monitoring Program. Attachment C presents the 31 sampling locations that remain in the Monitoring Program, and the rationale for removal.

**2.1 SEEPS/SPRINGS COVERED DURING CREEK RESTORATION ACTIVITIES**

The following ten seep and spring locations were only noted after rain during the time that RA activities were occurring. These locations have subsequently been covered during creek restoration activities and a current seep and/or spring has not been observed since the completion of the creek restoration. Therefore, the following locations cannot be sampled, and are proposed to be removed from the Monitoring Program:

- 8-1A
- 8-3
- Spring 015-002
- Spring 015-004
- Spring 015-006
- Spring 015-007
- Spring 015-008
- Spring 022-002
- Spring 022-003
- Spring 386-001

Figure 2.1 presents the location of seeps/springs covered during creek restoration activities.

**2.2 SEEPS/SPRINGS EXCAVATED DURING CREEK RESTORATION ACTIVITIES**

The following two seep and spring locations were only noted after rain prior to the time that RA activities were conducted. These locations have subsequently been excavated during creek restoration activities and a current seep and/or spring has not been observed since the completion of the creek restoration. Therefore, the following locations no longer exhibit discharges and cannot be sampled, thus they are proposed to be removed from the Monitoring Program:

- Seep 5013A
- Seep 5013B

Figure 2.2 presents the location of seeps/springs excavated during creek restoration activities.

### **2.3 SEEPS/SPRINGS WITH NON DETECT RESULTS FOR FOUR CONSECUTIVE EVENTS**

The following five seep and spring locations have not exhibited detectable concentrations of PCBs through a minimum of four consecutive events of either high-flow or low-flow sampling. Therefore, the following locations are proposed to be removed from the Monitoring Program:

- Parcel 008 Sump
- Spring 021
- Spring 022-005
- Spring 022-006
- Spring 389-002

Figure 2.3 presents the location of seeps/spring with non detect results for four consecutive events.

### **2.4 SEEPS/SPRINGS DRY FOR MULTIPLE EVENTS**

The following 23 seep and spring locations have been dry multiple times and are proposed to be removed from the Monitoring Program:

- 8-1A
- 8-3
- Seep 002
- Seep 5013A
- Seep 5013B
- Spring 013-003
- Spring 015-002
- Spring 015-004
- Spring 015-006
- Spring 015-007
- Spring 015-008
- Spring 019-001
- Spring 020-002
- Spring 021-006
- Spring 021-007
- Spring 022-002
- Spring 022-003
- Spring 022-004

- Spring 028-003
- Spring 031-002
- Spring 386-001
- Spring 389-001
- Spring 1556

Figure 2.4 presents the location of seeps/springs that were dry for multiple events.

## **2.5 HYDRAULIC EVALUATION OF PROPOSED SEEPS/SPRINGS FOR REDUCTION DUE TO HYDRAULIC CONNECTION**

The SSC Work Plan (CRA, November 6, 2003) states that seep and spring locations may be proposed to be removed from the Monitoring Program based on their potential to be hydraulically connected to a source of contamination. The hydraulic evaluation will include relevant available information obtained through the Resource Conservation and Recovery Act (RCRA) Corrective Action (CA) groundwater investigation as well as information gathered specifically for the Site. The evaluation may include the following:

- Assessment of surface water and groundwater flow directions.
- Assessment of the topography of the area to identify seep/springs which are not likely to be hydraulically connected to contaminated source areas due to relative elevation differences between the seep/springs and hydraulic barriers/discharge point.
- Evaluation of the geology of the area including geologic cross-sections showing the location of the seeps/springs in relation to sources of contamination, and evaluation of the locations and extent of weathered and fractured bedrock.
- Evaluation of potential loading, distance to the creek, and adsorptive capacity of the soils adjacent to the seep to assess the potential to recontaminate the creek following remediation.

The following seven seep and spring locations are proposed to be removed from the Monitoring Program:

- Spring 019-001: This spring is located on the east side of Bailey's Branch Creek. Based on the groundwater hydraulics and results of the dye testing in this area, this spring is believed to be fed from the east and is not expected to be impacted by the GM Plant, which is located west of the Creek. Flow has not been observed at this location.
- Spring 028-003: This spring is believed to be fed from the uplands to the east and has consistently been shown to not be impacted.
- Spring 031-002: This spring is located well outside of the surface water basin and groundwater basins that have been shown to be impacted from historic releases.
- Spring 216-001: This spring is generally inaccessible and is located along the rock face that was covered with shotcrete; a large deep pool of water is located immediately beneath this location, making it difficult, if not impossible, to access the spring. Two samples have been collected historically from this spring location (did not exist prior to the shotcrete); both were non-detect. The source of groundwater

for this location is the uplands to the west (north of the Plant property) where groundwater contamination has not been found.

- Spring 386-31791: This spring appears to be fed from uplands to the north of the Northern Tributary. The initial detection at this spring is believed to have been the result of entrained soil particulates within the sample that was collected during the time that Interim Measures (soil removal) activities were on-going in the area. Subsequent analyses from this spring have been non-detect for PCBs.
- Spring 1556: This spring is believed to be fed from the uplands to the south and is well beyond any known groundwater contamination. There was one historic estimated concentration reported from this location, however, it is believed that was due to floodplain soil impact (inadvertent introduction of floodplain soil into the sample during collection), rather than the groundwater source. Subsequent testing has been non-detect.
- Spring Well 1: This spring is located within the floodplain and appears to drain the uplands to the west of Parcel 22. There have been historic detections from this location. However, it is believed that all detections are a result of inadvertent introduction of soil particulates during sampling (the area around the spring was below the soil cleanup standard and, therefore, not excavated during cleanup activities at this parcel).

### **3.0 IDENTIFICATION OF ADDITIONAL SEEPS/SPRINGS SITE ACTIVITIES**

The existing program was implemented to identify, locate, and characterize additional seeps and/or springs at, or adjacent to the Site during the RA and is presented in the SSC Work Plan (CRA, November 6, 2003).

No additional seeps/springs have been identified since the publication of Addendum No. 6 to the SSC Work Plan (CRA, September 6, 2007).

### **4.0 REPORTING**

The results (tables and databox figures) for all sampling completed to date have been presented in separate data packages. .

### **5.0 SCHEDULE**

It is proposed that the Monitoring Program be terminated immediately.

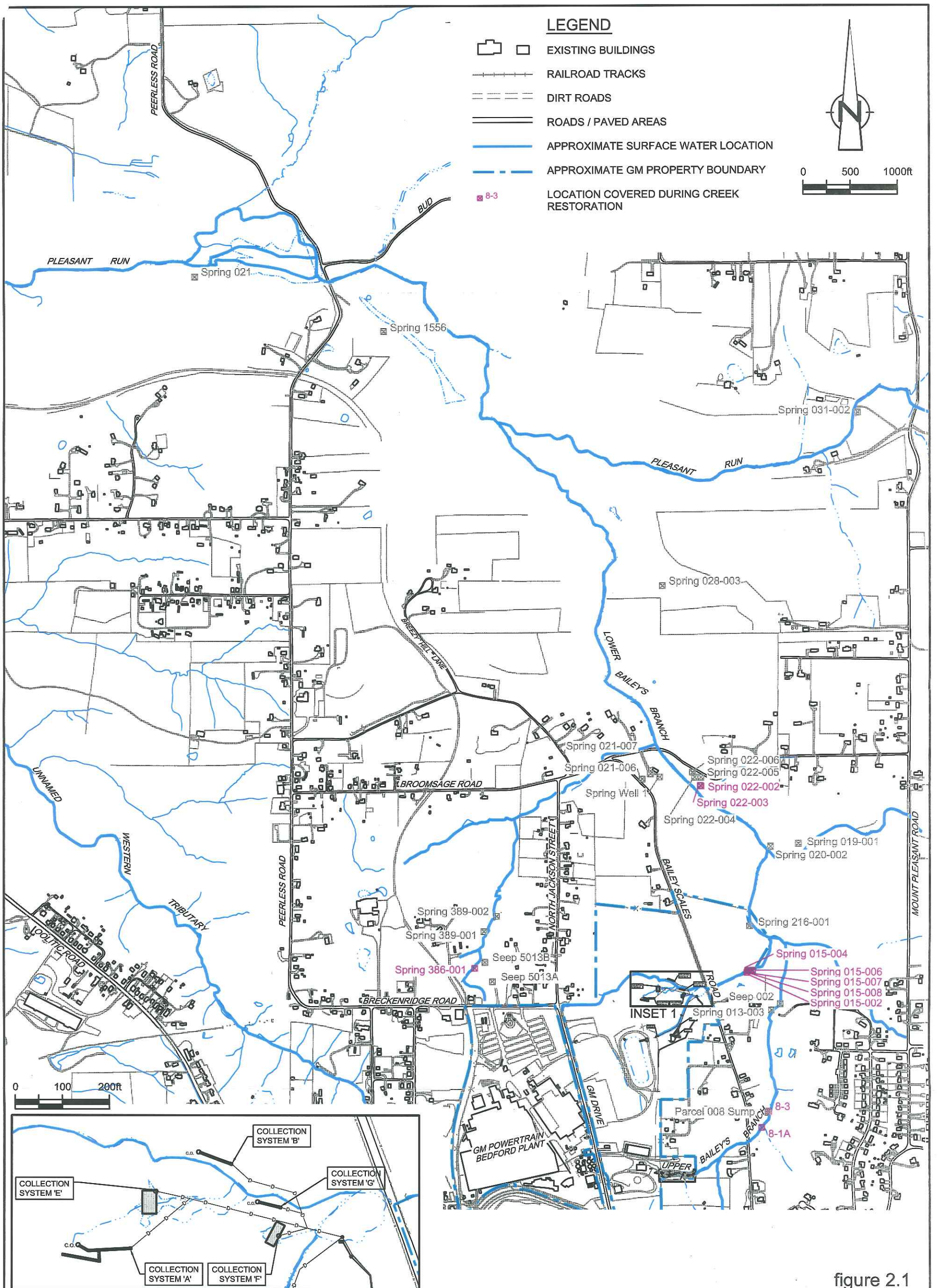


figure 2.1

**INSET 1 SEEPS/SPRINGS COVERED DURING CREEK RESTORATION ACTIVITIES**  
**SSC WORK PLAN ADDENDUM NO. 7**  
**GM POWERTRAIN BEDFORD FACILITY**  
*Bedford, Indiana*

SOURCE: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI. APRIL 2001 AND CRA SURVEYS 2002 TO 2005

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



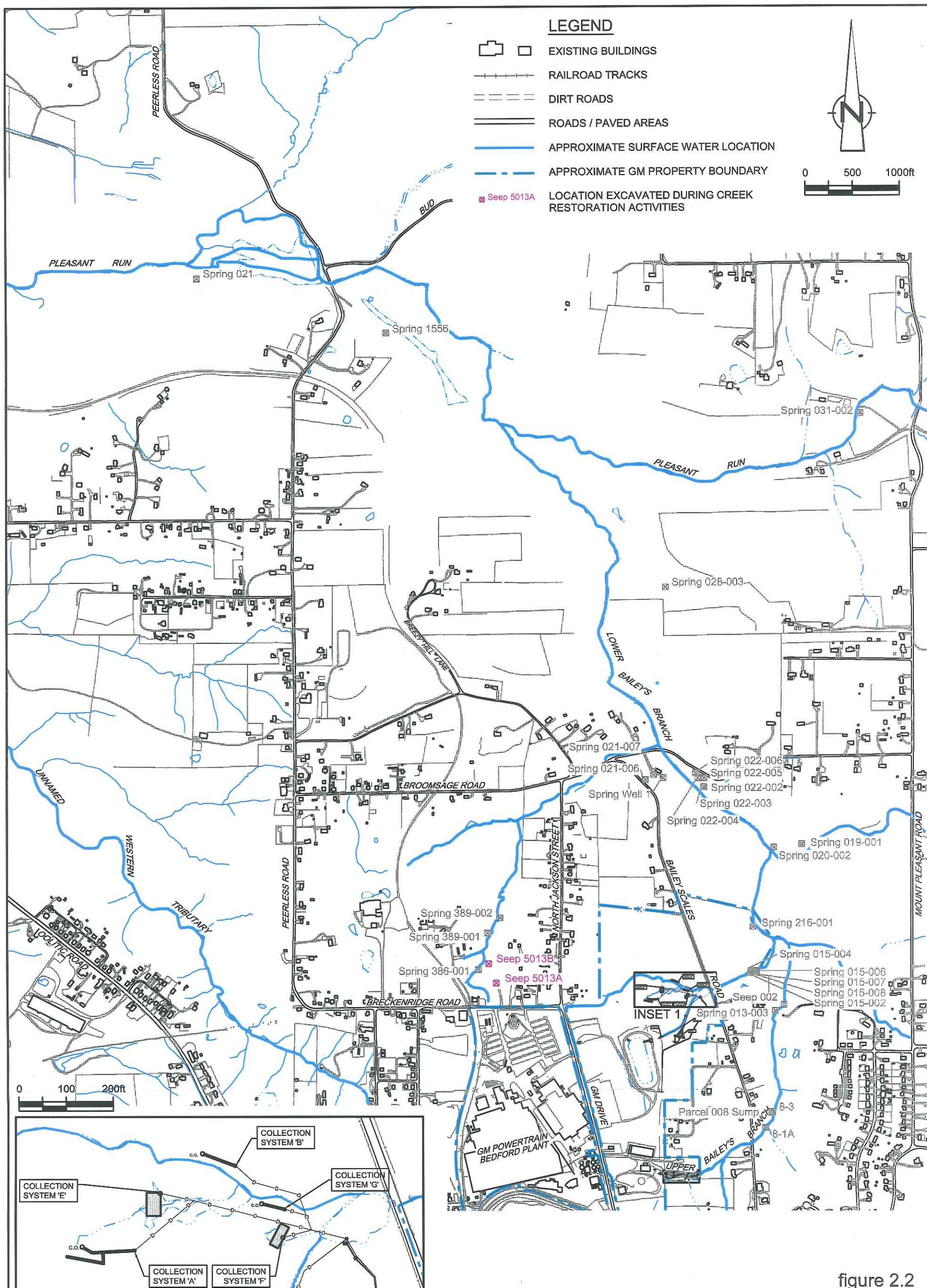


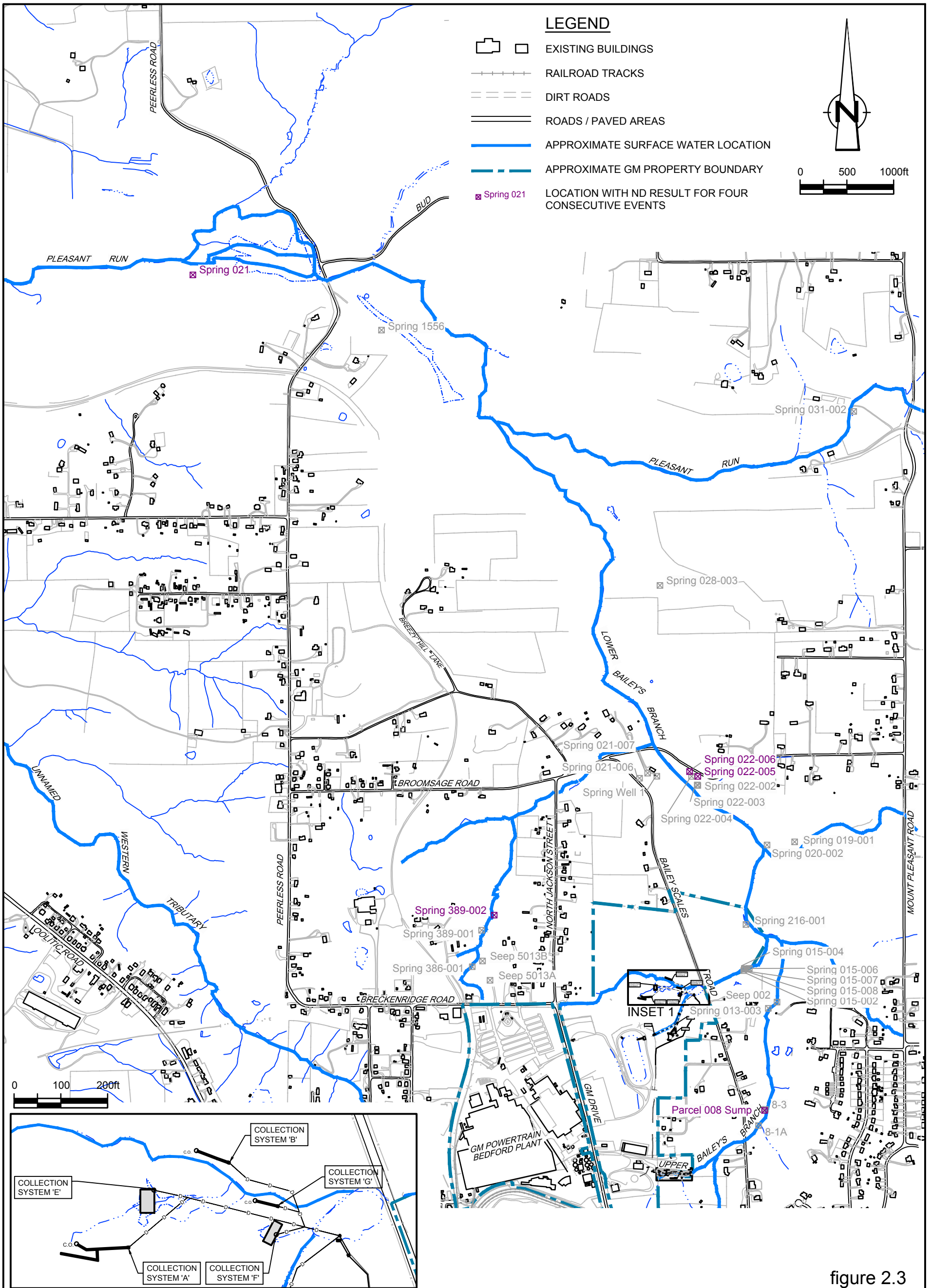
figure 2.2

**INSET 1 SEEPS/SPRINGS EXCAVATED DURING CREEK RESTORATION ACTIVITIES**  
**SSC WORK PLAN ADDENDUM NO. 7**  
**GM POWERTRAIN BEDFORD FACILITY**  
*Bedford, Indiana*

SOURCE: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI. APRIL 2001 AND CRA SURVEYS 2002 TO 2005

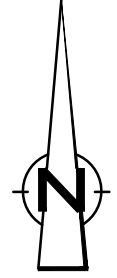
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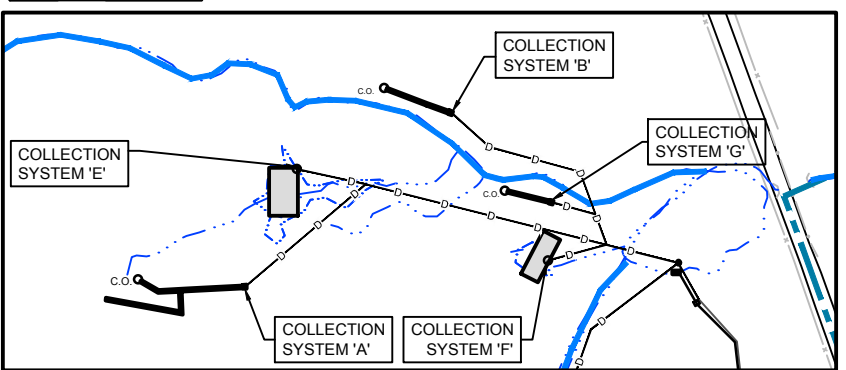
**LEGEND**

- EXISTING BUILDINGS
  - RAILROAD TRACKS
  - DIRT ROADS
  - ROADS / PAVED AREAS
  - APPROXIMATE SURFACE WATER LOCATION
  - APPROXIMATE GM PROPERTY BOUNDARY
  - Spring 021
- LOCATION WITH ND RESULT FOR FOUR CONSECUTIVE EVENTS



0 500 1000ft

0 100 200ft



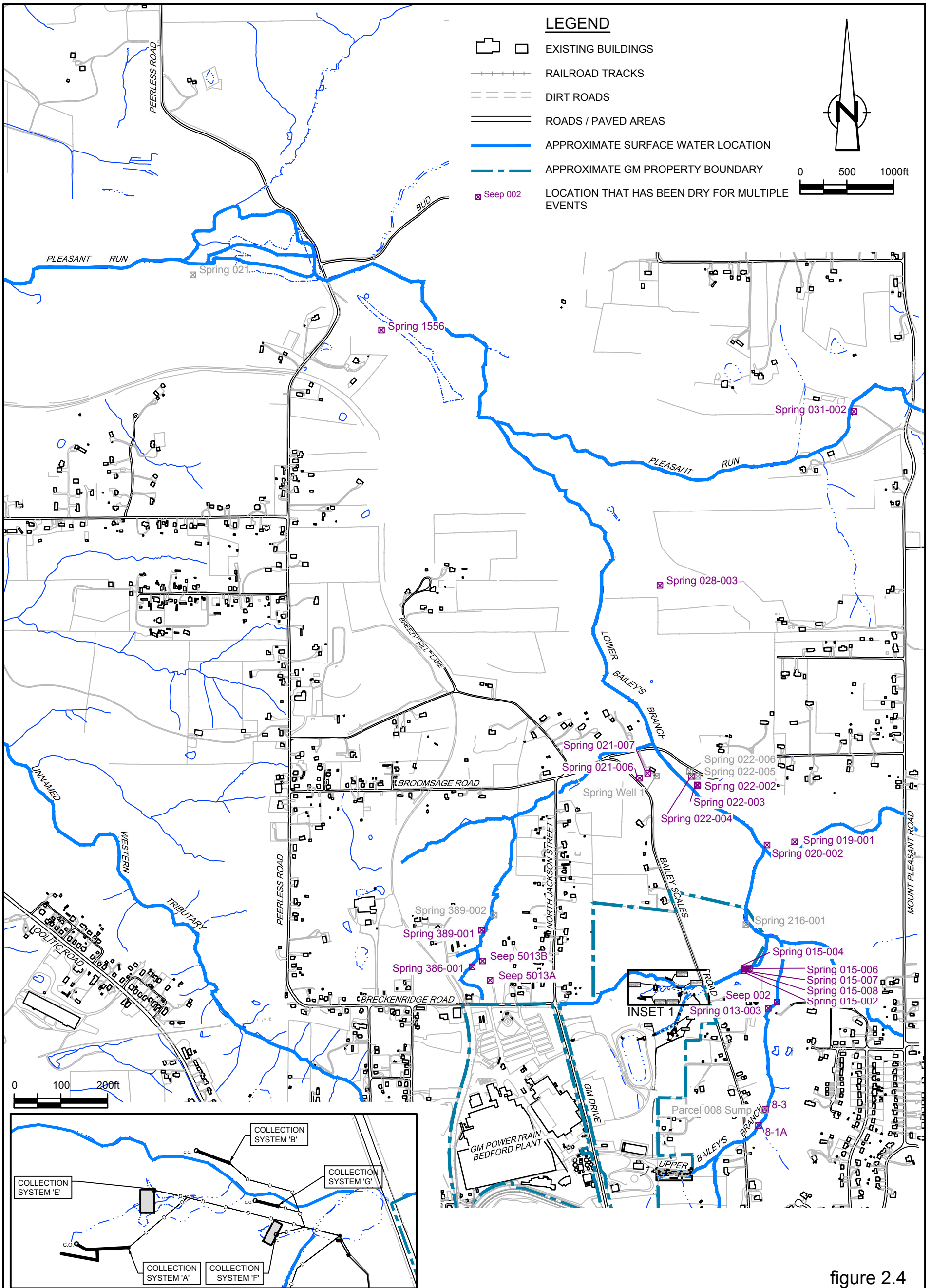
INSET 1

**SEEPS/SPRINGS WITH NON DETECT RESULTS FOR FOUR CONSECUTIVE EVENTS**  
 SSC WORK PLAN ADDENDUM NO. 7  
**GM POWERTRAIN BEDFORD FACILITY**  
*Bedford, Indiana*



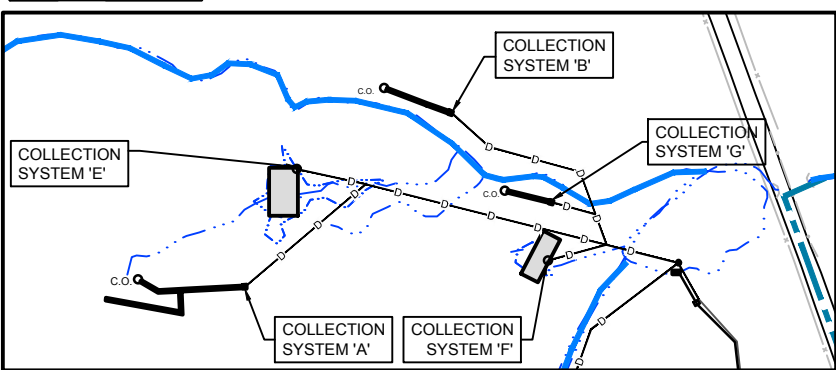
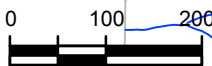
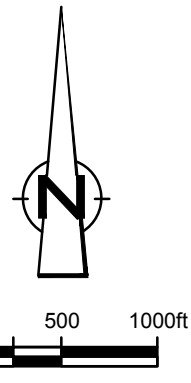
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**LEGEND**

- EXISTING BUILDINGS
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / PAVED AREAS
- APPROXIMATE SURFACE WATER LOCATION
- APPROXIMATE GM PROPERTY BOUNDARY
- LOCATION THAT HAS BEEN DRY FOR MULTIPLE EVENTS



INSET 1

SOURCE: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI. APRIL 2001 AND CRA SURVEYS 2002 TO 2005

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



figure 2.4  
**SEEPS/SPRINGS DRY FOR MULTIPLE EVENTS**  
**SSC WORK PLAN ADDENDUM NO. 7**  
**GM POWERTRAIN BEDFORD FACILITY**  
*Bedford, Indiana*

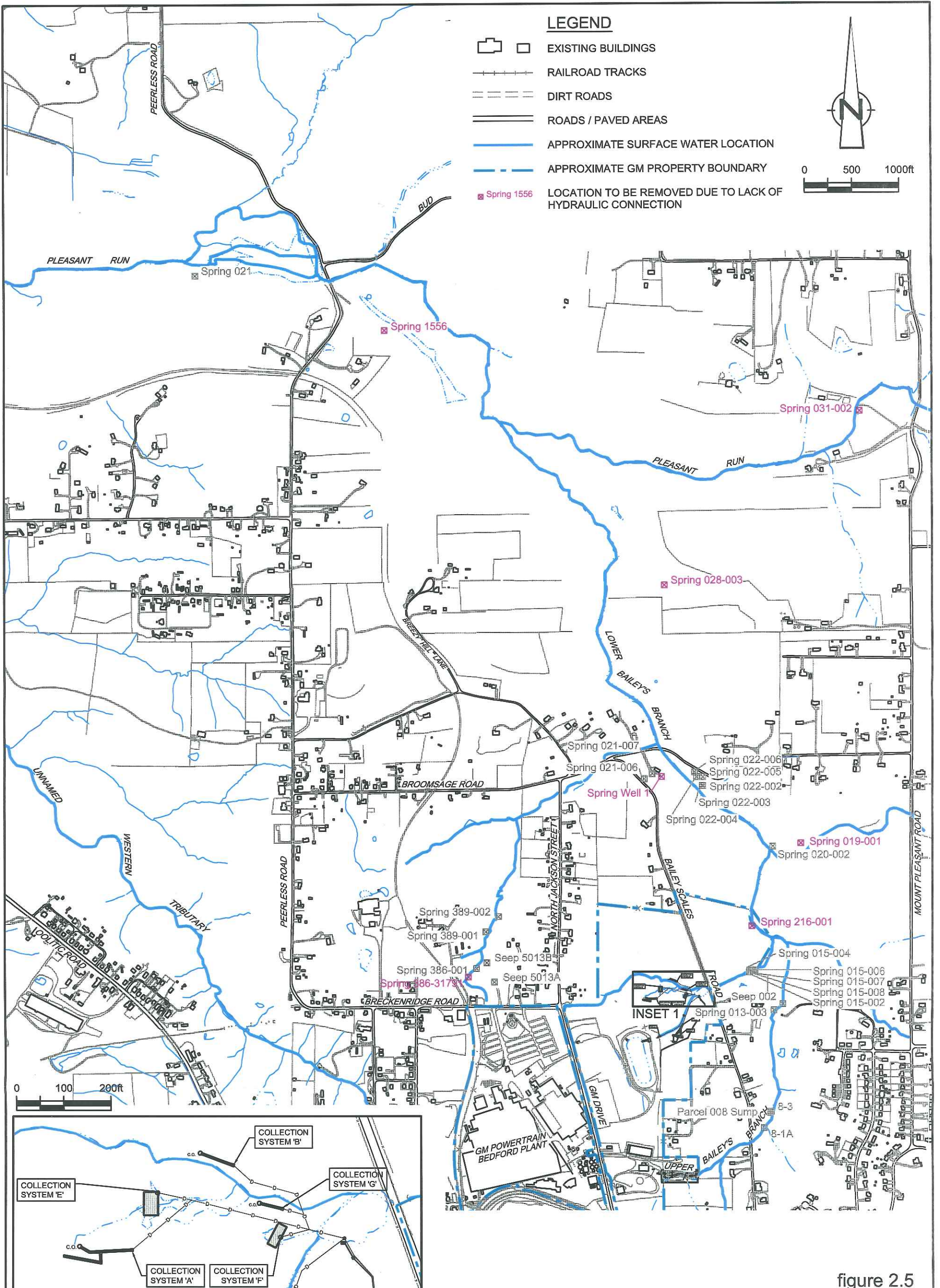


figure 2.5

**SEEPS/SPRINGS FOR REDUCTION DUE TO HYDRAULIC CONNECTION**  
**SSC WORK PLAN ADDENDUM NO. 7**  
**GM POWERTRAIN BEDFORD FACILITY**  
*Bedford, Indiana*

SOURCE: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI. APRIL 2001 AND CRA SURVEYS 2002 TO 2005

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ATTACHMENT A

SSC MONITORING PROGRAM SAMPLING EVENTS

ATTACHMENT A

SSC MONITORING PROGRAM SAMPLING EVENTS  
 SSC WORK PLAN ADDENDUM NO. 7  
 GM POWERTRAIN BEDFORD FACILITY  
 BEDFORD, INDIANA

Sampling Event	Sampling Start Date
<i>Second Quarter 2004</i>	
Low-Flow	May 12, 2004
High-Flow	June 1, 2004
<i>Third Quarter 2004</i>	
Low-Flow	August 13, 2004
High-Flow	October 20, 2004
<i>Fourth Quarter 2004</i>	
Low-Flow	October 7, 2004
High-Flow	January 10, 2004
<i>First Quarter 2005</i>	
Low-Flow	January 31, 2005
High-Flow	June 14, 2005
<i>Second Quarter 2005</i>	
Low-Flow	May 7, 2005
High-Flow	August 31, 2005
<i>Third Quarter 2005</i>	
Low-Flow	September 14, 2005
High-Flow	November 21, 2005
<i>Fourth Quarter 2005</i>	
Low-Flow	December 27, 2005
<i>2006 Sampling Events</i>	
March 2006 High-Flow	March 10, 2006
March 2006 Low-Flow	March 1, 2006
August 2006 High-Flow	August 30, 2006
September 2006 High-Flow	September 14, 2006
October 2006 High-Flow	October 19, 2006
<i>2007 Sampling Events</i>	
March 2007 Low-Flow	March 12, 2007
April 2007 Low-Flow	April 23, 2007
August 2007 Low-Flow	August 22, 2007
December 2007 Quarterly <sup>1</sup>	December 10, 2007
<i>2008 Sampling Events</i>	
January 2008 High-Flow	January 9, 2008
May 2008 High-Flow	May 12, 2008
September 2008 Low-Flow	September 23, 2008
December 2008 Quarterly <sup>1</sup>	December 29, 2008
<i>2009 Sampling Events</i>	
January 2009 Low-Flow	January 21, 2009

Note:

1 Quarterly sample was collected since criteria for a low/high flow event was not met.

ATTACHMENT A

SSC MONITORING PROGRAM SAMPLING EVENTS  
 SSC WORK PLAN ADDENDUM NO. 7  
 GM POWERTRAIN BEDFORD FACILITY  
 BEDFORD, INDIANA

Sampling Event	Sampling Start Date
<i>Second Quarter 2004</i>	
Low-Flow	May 12, 2004
High-Flow	June 1, 2004
<i>Third Quarter 2004</i>	
Low-Flow	August 13, 2004
High-Flow	October 20, 2004
<i>Fourth Quarter 2004</i>	
Low-Flow	October 7, 2004
High-Flow	January 10, 2004
<i>First Quarter 2005</i>	
Low-Flow	January 31, 2005
High-Flow	June 14, 2005
<i>Second Quarter 2005</i>	
Low-Flow	May 7, 2005
High-Flow	August 31, 2005
<i>Third Quarter 2005</i>	
Low-Flow	September 14, 2005
High-Flow	November 21, 2005
<i>Fourth Quarter 2005</i>	
Low-Flow	December 27, 2005
<i>2006 Sampling Events</i>	
March 2006 High-Flow	March 10, 2006
March 2006 Low-Flow	March 1, 2006
August 2006 High-Flow	August 30, 2006
September 2006 High-Flow	September 14, 2006
October 2006 High-Flow	October 19, 2006
<i>2007 Sampling Events</i>	
March 2007 Low-Flow	March 12, 2007
April 2007 Low-Flow	April 23, 2007
August 2007 Low-Flow	August 22, 2007
December 2007 Quarterly <sup>1</sup>	December 10, 2007
<i>2008 Sampling Events</i>	
January 2008 High-Flow	January 9, 2008
May 2008 High-Flow	May 12, 2008
September 2008 Low-Flow	September 23, 2008
December 2008 Quarterly <sup>1</sup>	December 29, 2008
<i>2009 Sampling Events</i>	
January 2009 Low-Flow	January 21, 2009

Note:

<sup>1</sup> Quarterly sample was collected since criteria for a low/high flow event was not met.

ATTACHMENT B

ANALYTICAL DATA IDENTIFIED SEEP/SPRING LOCATIONS  
(THIS IS A 2 X 3 DATA BOX FIGURE)

ATTACHMENT C

CURRENT MONITORING PROGRAM STATUS

ATTACHMENT C  
 RATIONALE FOR REMOVAL OF SAMPLING LOCATIONS  
 SSC WORK PLAN ADDENDUM NO. 7  
 GM POWERTRAIN BEDFORD FACILITY  
 BEDFORD, INDIANA

**MONITORING PROGRAM SUMMARY**

131	Historical number of springs in program (total sampling locations; including SSC Systems and surface water locations)
88	Number of springs <b>removed</b> under SSC Work Plan Addendum No. 6
20	Covered by restoration and no flow
7	No detections for 4 low-flow and 4 high flow events
7	Excavated spring in the Spring 018 Area*
28	Springs collected in SSC Systems
15	Dry locations (no samples)
11	SSC Systems no longer accessible (still active)
31	Number of <b>current springs</b> in Monitoring Program as of April 2009
1	Spring 018C* (collected, but not counted above and not in program)
9	SSC Systems currently being sampled (excluding Spring 018C)
2	Number of surface water locations added during CA750

**CURRENT PROGRAM**

Location ID	Parcel No.	No. of Attempts	No. of NDs	No. Times Dry	No. Times NS	No. of Detections	Range of Detections (ug/L)	Rationale for Removal
8-1A	008	13	0	12	0	1	0.42(T)	<b>Dry/Covered</b> (dry 12 events; covered by restoration last 4 events)
8-3	008	25	1	19	0	5	ND - 0.69(T)	<b>Dry/Covered</b> (dry 19 events; covered by restoration last 4 events)
Parcel 008 Sump	008	11	8	3	0	0	-	<b>Non-Detect for four Consecutive Events</b>
Seep 002	013	27	6	20	0	1	ND - 0.32(T)	<b>Dry</b> (dry for 20 events)
Spring 013-003	013	22	6	16	0	0	-	<b>Dry</b> (dry for 16 events)
Spring 015-002	015	23	5	18	0	0	-	<b>Dry/Covered</b> (dry 18 events; covered by restoration last 4 events)
Spring 015-004	015	22	3	19	0	0	-	<b>Dry/Covered</b> (dry 19 events; covered by restoration last 4 events)
Spring 015-006	015	22	2	17	1 (submerged)	2	ND - 0.14(T)	<b>Dry/Covered</b> (dry 17 events; covered by restoration)
Spring 015-007	015	8	0	5	2 (submerged)	1	0.077(T)	<b>Dry/Covered</b> (dry 5 events; covered by restoration last 2 events)
Spring 015-008	015	8	1	7	0	0	-	<b>Dry/Covered</b> (dry 7 events; covered by restoration)
Spring 019-001	019	9	0	9	0	0	-	<b>Dry</b> (No flow); <b>Hydraulic Connection</b>
Spring 020-002	020	25	14	9	0	2	ND - 0.75(T)	<b>Dry</b> (dry for 9 events)
Spring 021-006	021	12	0	12	0	0	-	<b>Dry</b> (No flow)
Spring 021-007	021	12	2	10	0	0	-	<b>Dry</b> (dry for 10 events)
Spring Well 1	021	27	18	5	0	6	ND - 0.13(T)	<b>Hydraulic Connection</b>
Spring 022-002	022	12	2	9	1 (submerged)	0	-	<b>Dry/Covered</b> (dry 9 events; covered by restoration last 3 events)
Spring 022-003	022	12	2	9	1 (submerged)	0	-	<b>Dry/Covered</b> (dry 9 events; covered by restoration last 3 events)
Spring 022-004	022	12	7	4	1 (frozen)	0	-	<b>Dry</b> (dry 4 events)
Spring 022-005	022	12	6	6	0	0	-	<b>Non-Detect for four Consecutive Events</b>
Spring 022-006	022	11	5	6	0	0	-	<b>Non-Detect for four Consecutive Events</b>
Spring 028-003	028	12	5	6	1 (frozen)	0	-	<b>Dry</b> (dry for 6 events); <b>Hydraulic Connection</b>
Spring 031-002	031	12	0	9	3 (submerged)	0	-	<b>Dry</b> (dry for 9 events); <b>Hydraulic Connection</b>
Spring 1556	036	20	5	13	1 (frozen)	1	ND - 0.11(T); 0.12(D)	<b>Dry</b> (dry for 13 events); <b>Hydraulic Connection</b>
Spring 021	038	27	14	9	3 (submerged)	1	ND - 0.089(T); 1.8(D)	<b>Non-Detect for four Consecutive Events</b>
Spring 216-001	216	15	2	1	12 (3 submerged; 9 unsafe)	0	-	<b>Hydraulic Connection</b>
Seep 5013A	386	22	0	21	0	1	0.35(T)	<b>Dry/Excavated</b> (dry 21 events; excavated)
Seep 5013B	386	27	1	23	0	3	ND - 6.05(T)	<b>Dry/Excavated</b> (dry 23 events; excavated)
Spring 386-001	386	20	0	12	8 (submerged)	0	-	<b>Dry/Covered</b> (dry 12 events; covered by restoration last 4 events)
Spring 386-31791	386	3	2	1	0	0	-	<b>Hydraulic Connection</b>
Spring 389-001	389	12	1	11	0	0	-	<b>Dry</b> (dry 11 events)
Spring 389-002	389	12	10	2	0	0	-	<b>Non-Detect for four Consecutive Events</b>

**Notes:**

ND - Non Detect

NS - Not Sampled

(T) - Total PCBs

(D) - Dissolved PCBs

"/" - separates the parent and duplicate results

\* - Spring 018C was removed from the quarterly sampling program and is sampled monthly