



The Dow Chemical Company
Midland, MI 48674

March 4, 2016

967884

Ms. Mary Logan
Remediation Project Manager
U.S. Environmental Protection Agency, Region 5
77 West Jackson
Chicago, IL 60604

**Re: Tittabawassee River Floodplain 2015 Annual Report
Settlement Agreement No. V-W-15-C-018
The Tittabawassee River Eight-Year Floodplain
Dow Submittal Number: 2016.007**

Ms. Logan:

Attached please find the Tittabawassee River Floodplain 2015 Annual Report. The Annual Report was developed in accordance with Settlement Agreement No. V-W-15-C-018 (Floodplain AOC). Please let me know if you have any questions or concerns.

Sincerely,

A handwritten signature in black ink that reads "Todd Konechne".

Todd Konechne
The Dow Chemical Company
Project Coordinator

CC: Al Taylor, MDEQ
Diane Russell, U.S. EPA
Lisa Williams, U.S. Fish and Wildlife

TITTABAWASSEE RIVER FLOODPLAIN 2015 ANNUAL REPORT



PREPARED BY:
Tittabawassee and Saginaw River Team

Prepared for and Submitted by
The Dow Chemical Company

DATE: March 4, 2016

Dow Submittal Number: 2016.007

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1 Introduction

The Administrative Settlement Agreement and Order on Consent (AOC) for the Tittabawassee River/Saginaw River & Bay Site (Site) (USEPA 2010; Settlement Agreement No. V-W-10-C-942) and associated Statement of Work (SOW; Attachment A of AOC), effective January 21, 2010, set forth requirements for conducting evaluations of current conditions and assessments of response options to manage potential risks to human health and the environment at the Site. An AOC for removal action in the Tittabawassee River Eight-Year Floodplain (Floodplain AOC) (USEPA 2015; Settlement Agreement No. V-W-15-C-018), was made effective January 8, 2015, directing The Dow Chemical Company (Dow) to implement non-time-critical removal actions to address those areas of floodplain soil in the 8-year floodplain of the lower 21 miles of the Tittabawassee River contaminated with dioxins and furans above site-specific cleanup numbers.

Consistent with the requirements of Part 22b of the Floodplain AOC, this 2015 Floodplain annual progress report (annual report) has been prepared by Dow to document activities conducted pursuant to the Floodplain AOC during the previous year (i.e. 2015). This annual report provides details regarding implementation of the segment-specific work plan (and any supporting plans) for the reporting period, summarizes the cumulative Work under the General Design and Implementation Work Plan (GDIWP) since the effective date of the Floodplain AOC, and includes a good faith estimate of the cost of the Work to be performed in the 2016 calendar year.

2 Summary of Work Performed in 2015

This section provides a summary of evaluation, design, and field activities completed during 2015.

2.1 Development of Decision Rules

During January through June, 2015, Dow worked with the Agencies to develop a set of decision rules that would be used to evaluate each floodplain property and identify those that would need to be taken forward for remedial action. The decision rules and proposed evaluations were summarized in the GDIWP (Dow, 2015a). Evaluation and sampling work discussed in Sections 2.2 and 2.3 has been performed per these decision rules and was reviewed and approved by the Agencies; however, it is noted that the decision rule process is still under evaluation by USEPA.

2.2 Evaluation using Existing Data

Property screening and subsequent identification and evaluation of Decision Units (DUs) was performed for Segments 2 and 3 consistent with approaches summarized in the Segment 2-Specific Work Plan and Segment 3-Specific Work Plan (Dow 2016 and 2015b, respectively). Dow has also been working throughout 2015 to verify land use types for properties in Segments 2 and 3. The current status of the maintained residential land use verification process for Segments 2 and 3 is provided in Table 1.

Some initial evaluation has also been performed for Segment 4 properties and due to sampling crew availability, Dow decided to perform early sampling in some DUs. This early sampling effort is described in Section 2.3.3.

2.3 Field Sampling

2.3.1 Segment 2 Incremental Composite Sampling

Incremental Composite Sampling (ICS) was identified in the Segment 2-Specific Work Plan (Dow 2016) and performed in the following Segment 2 DUs during 2015 (sample collection dates are indicated in parentheses):

- S2_01_DU02 (August 20-21, 2015)
- S2_02_DU02 (August 12, 2015)
- S2_04-09_DU02 (August 27, 2015)
- S2_04-09_DU03 (August 27, 2015)
- S2_14_DU01 (August 27, 2015)
- S2_44_DU01 (August 13, 2015)
- S2_48_DU01 (August 13, 2015)

In addition, ICS was performed in S2_47_DU01 on October 23, 2015, however was not required by the Segment 2-Specific Work Plan.

A summary of properties/DUs sampled during 2015 is provided in the table, below:

Table 2: Summary of Segment 2 properties/DUs sampled during 2015

Total Number of DUs Evaluated	Total Number of Properties Evaluated	Number of DUs Identified for Sampling	Number of Maintained Residential DUs Sampled	Number of Other DUs Sampled	Total Number of DUs Sampled
74	46	7 (2 Maintained; 5 Other)	2	6	8

A summary of the Segment 2 sampling results is provided in the table below:

Table 3: Summary of Segment 2 sampling results

DU ID	Land Use	Estimated SWAC (ppt TEQ)	Composite Result (ppt TEQ)
S2_01_DU02	Other	3,557	2,200
S2_02_DU02 (data gap)	Other	85	232
S2_04-09_DU02	Other	1,906	1,080
S2_04-09_DU03	Other	1,852	1,460
S2_14_DU01 (data gap)	Other	98	59
S2_44_DU01	Maintained	1,140	752
S2_47_DU01	Other	892	828
S2_48_DU01	Maintained	735	608

2.3.2 Segment 3 Sampling

ICS was identified in the Segment 3-Specific Work Plan (Dow 2015b) and performed in the following Segment 3 DUs in 2015 (sample collection dates are indicated in parentheses):

- S3_005_DU01 (October 5, 2015)
- S3_005_DU02 (October 5, 2015)
- S3_006_DU01 (October 5, 2015)
- S3_012_DU01 (October 5, 2015)
- S3_039_DU01 (September 28, 2015)
- S3_040_DU01 (September 29, 2015)
- S3_042_DU01 (October 2, 2015)
- S3_044_DU01 (October 1, 2015)
- S3_047_DU01 (October 7, 2015)
- S3_049_DU01 (October 19, 2015)
- S3_062_DU01 (September 28, 2015)
- S3_063_DU01 (September 28, 2015)
- S3_064_DU01 (September 28, 2015)
- S3_071_DU01 (September 30, 2015)
- S3_072_DU01 (October 1, 2015)

- S3_072_DU02 (October 1, 2015)
- S3_073_DU01 (October 2, 2015)
- S3_077_DU01 (October 26, 2015)
- S3_078_DU01 (October 26, 2015)
- S3_081_DU01 (October 6, 2015)
- S3_081_DU02 (October 6, 2015)

A summary of properties/DUs sampled during 2015 is provided in the table, below:

Table 4: Summary of Segment 3 properties/DUs sampled during 2015

Total Number of DUs Evaluated	Total Number of Properties Evaluated	Number of DUs Identified for Sampling	Number of Maintained Residential DUs Sampled	Number of Other DUs Sampled	Total Number of DUs Sampled
133	101	25 (19 maintained; 6 other)	16	5	21

Remaining properties identified for sampling will be sampled in 2016, if access can be negotiated.

No Segment 3 sampling results were received in 2015

2.3.3 Segment 4 Sampling

ICS was performed in the following Segment 4 DUs in 2015 (sample collection dates are indicated in parentheses):

- S4_004_DU01 (October 27, 2015)
- S4_008_DU01 (October 29, 2015)
- S4_009_DU01 (November 11, 2015)
- S4_010_DU01 (November 11, 2015)
- S4_036_DU01 (October 29, 2015)
- S4_038_DU01 (October 29, 2015)
- S4_038_DU02 (October 29, 2015)
- S4_047_DU01 (November 4, 2015)
- S4_62-67_DU01 (November 3, 2015)
- S4_62-67_DU02 (November 3, 2015)
- S4_62-67_DU03 (November 3, 2015)
- S4_62-67_DU04 (November 9, 2015)
- S4_116_DU01 (November 4, 2015)
- S4_117_DU01 (November 12, 2015)
- S4_118_DU01 (October 29, 2015)
- S4_119_DU01 (October 29, 2015)
- S4_120_DU01 (October 27, 2015)
- S4_123_DU01 (November 4, 2015)

- S4_124_DU01 (October 27, 2015)
- S4_125_DU01 (October 27, 2015)
- S4_126_DU01 (November 19, 2015)
- S4_127_DU01 (October 27, 2015)
- S4_128_DU01 (November 12, 2015)
- S4_129_DU01 (November 11, 2015)
- S4_131_DU01 (November 19, 2015)

The above list represents only the portion of the DUs in Segment 4 that were identified for sampling in 2015. Additional evaluations will be completed for the remaining Segment 4 DUs in 2016.

A summary of properties/DUs sampled during 2015 is provided in the table, below:

Table 5: Summary of Segment 4 properties/DUs sampled during 2015

Total Number of DUs Evaluated	Total Number of Properties Evaluated	Number of DUs Identified for Sampling in 2015	Number of Maintained Residential DUs Sampled	Number of Other DUs Sampled	Total Number of DUs Sampled
171	126	25 (20 Maintained; 5 Other)	20	5	25

No Segment 4 sampling results were received in 2015

2.3.4 Replicate Sampling in Segments 2 through 4

Replicate ICS was performed and samples submitted for analysis for the following DUs in Segments 2 and 3 during 2015 (sample collection dates are indicated in parentheses):

- S2_10-13_DU15 (October 22, 2015)
- S2_48_DU01 (August 13, 2015)
- S3_004_DU01 (November 11, 2015)
- S3_005_DU01 (October 5, 2015)
- S3_042_DU01 (October 2, 2015)
- S3_060_DU01 (October 23, 2015)
- S3_072_DU01 (October 1, 2015)
- S3_077_DU01 (October 26, 2015)
- S3_078_DU01 (October 26, 2015)
- S3_081_DU02 (October 6, 2015)
- S3_82-86_DU04 (December 28, 2015)

A summary of DUs where replicate ICS was performed and samples submitted for analysis in 2015 is provided in the table below:

Table 6: Summary of 2015 Replicate Sampling

Number of Maintained Residential DUs Receiving Replicate Sampling	Number of Other DUs Receiving Replicate Sampling	Total Number of DUs Receiving Replicate Sampling
Segment 2		
1	1	2
Segment 3		
6	3	9

No sampling results from replicate samples were received in 2015

2.4 Segment 2 Implementation

Remedial actions were completed on two DUs in 2015; S2_44_DU01 and S2_48_DU01. Implementation was performed during September and October, 2015. Work is described in the 2015 Construction Completion Report (Appendix A).

3 Summary of Documents Submitted in 2015

The following provides a list of the documents that were submitted to the Agencies during 2015, consistent with the requirements of the Floodplain AOC:

- General Design and Implementation Work Plan
 - Draft submitted April 2015; Agency comments received May 2015.
 - Final submitted June 15, 2015; Agency approval with comments received October 27, 2015.
- Segment 2-Specific Work Plan
 - Draft Submitted June 15 2015; Agency comments received October 27 2015.
 - Revised sampling layouts submitted July 30 and August 12, 2015.
 - Final to be submitted in early 2016.
- Segment 2-Specific Quality Assurance Project Plan
 - Submitted August 7, 2015.
- Floodplain Construction Quality Assurance Plan
 - Submitted September 9, 2015.
- Floodplain Health and Safety Plan
 - Submitted September 10, 2015.
- Segment 2 Property-Specific Work Plan
 - Draft Submitted August 7 2015; Agency comments received October 28 2015.
 - Final Submitted December 4, 2015.
 - Segment 2 Property-Specific Work Plan Appendices:
 - S2_01_DU02; to be submitted in 2016¹.
 - S2_02_DU02; submitted October 26, 2015.
 - S2_04-09_DU02; submitted October 26, 2015.
 - S2_04-09_DU03; submitted October 26, 2015.
 - S2_14_DU01; submitted October 26, 2015.
 - S2_44_DU01; submitted September 9, 2015; Agency approval received September 14, 2015.
 - S2_48_DU01; submitted September 9, 2015; Agency approval received September 14, 2015.
- Segment 3-Specific Work Plan
 - Draft submitted August 7 2015; Agency comments received December 3, 2015.
 - Revised sampling layouts submitted September 25 and October 16, 2015.
 - Final to be submitted in early 2016.

¹ Final design appendix has not yet been submitted. Delineation sampling is planned to be performed on S2_01_DU02 prior to making a decision on remedial area. It is anticipated that this sampling will be performed in early 2016 following discussion with USEPA.

4 Summary of Cumulative Work Performed

A requirement of Part 22b of the Floodplain AOC includes a summary of the cumulative work performed as part of the GDIWP. Since the GDIWP was submitted in 2015, the majority of work performed is included as part of Sections 2 and 3 of this annual report. In subsequent years (i.e. 2016 annual report and beyond), this section will include a summary list of completed actions since submittal of the GDIWP in June 2015.

Table 7 provides an overall summary of the evaluations, sampling, and implementation completed to date in all floodplain segments.

5 Proposed Work for 2016

Work proposed to be completed in 2016 includes the following:

- Segment 2:
 - Final Submittal of Segment 2-Specific Work Plan
 - Completion of sample processing and analysis for properties that received replicate sampling
 - Delineation sampling and remedy decision for Dow property S2_01_DU02
 - Monitoring and maintenance for properties that received remedy in 2015
 - Final verification of maintained residential land use for 2 outstanding properties in the floodplain
- Segment 3:
 - Final Submittal of Segment 3-Specific Work Plan
 - Completion of sample processing and analysis for properties sampled in 2015
 - Sampling, processing, and analysis of remaining properties not completed in 2015
 - Final verification of maintained residential land use for outstanding properties in the floodplain
 - Submittal of Segment 3 Property-Specific Work Plan and property-specific design appendices
 - Remedy implementation at properties

- Segment 4:
 - Submittal of Segment 4-Specific Work Plan
 - Completion of sample processing and analysis for properties sampled in 2015
 - Sampling, processing, and analysis of remaining properties not completed in 2015
 - Start development of Segment 4 Property-Specific Work Plan

6 Proposed Schedule for Segments 2-7

A schedule is provided in Figure 1 summarizing the current status of proposed floodplain activities for all floodplain segments.

7 Good Faith Estimate of Cost for 2016

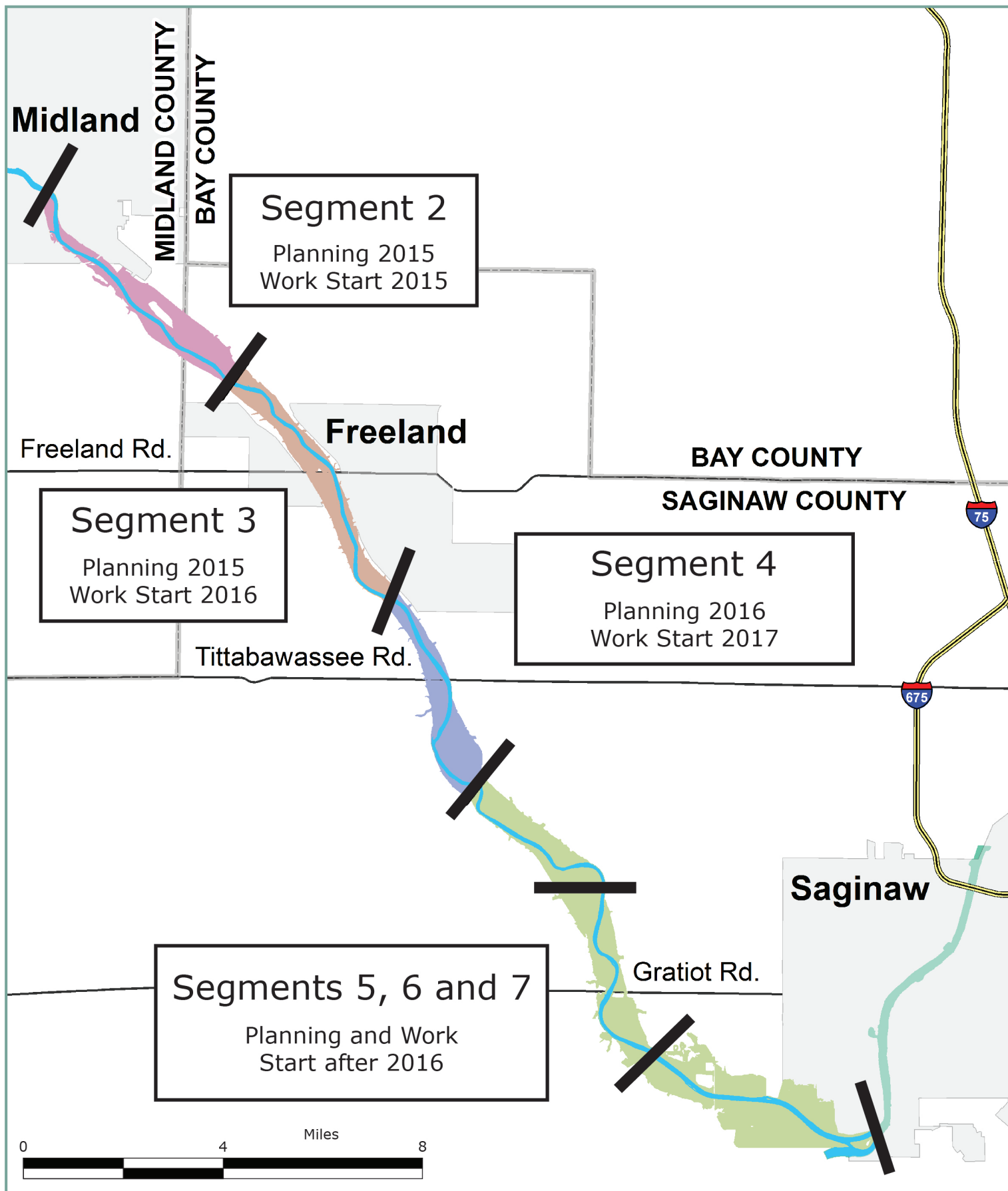
A good faith estimate of cost, as required by the Floodplain AOC, is provided below:

- Total cost to implement the Floodplain AOC in 2015: \$1,296,400
- Total projected cost to implement the Floodplain AOC in 2016: \$1,070,500

8 References

- ATS. 2010. *2010 Quality Assurance Project Plan (QAPP)*. The Tittabawassee River/Saginaw River and Saginaw Bay. Ann Arbor Technical Services, Inc. Ann Arbor, Michigan. March, 2010.
- Dow. 2016. *Tittabawassee River Floodplain Segment 2-Specific Work Plan Rev 1*. February 12, 2016.
- Dow. 2015a. *Tittabawassee River Floodplain General Design and Implementation Work Plan*. June 15, 2015.
- Dow. 2015b. *Tittabawassee River Floodplain Segment 3-Specific Work Plan Rev 0*. August 7, 2015.
- USEPA. 2010. Administrative Settlement Agreement and Order on Consent for Remedial Investigation, Feasibility Study and/or Engineering Evaluation and Cost Analysis, and Response Design. CERCLA Docket No. V-W-10-C-942. The Tittabawassee River/Saginaw River and Bay Site. Effective Date: January 21, 2010.
- USEPA. 2015. *Administrative Settlement Agreement and Order on Consent for Removal Action*. CERCLA Docket No. V-W-15-C-018. Tittabawassee River Eight-Year Floodplain of the Tittabawassee River, Saginaw River and Bay Site. Effective Date: January 8, 2015

Figures



Tables

Table 1 - Current Status of Maintained Residential Property Checks in Segments 2 and 3
Tittabawassee River Floodplain 2015 Floodplain Annual Report

Seg ID	Maint Res Land Use ID'ed from map review?	Discussion With Owner		Property Visit			Is Land use verification complete?	Is Follow Up Required With Owner?	Additional Notes
		Was property owner asked about Maint Res?	Did Owner Id Maint Res Area?	Has Dow Visited Parcel?	Was Maint Res Area Id'd During Visit?	Was Survey Conducted?			
Segment 2									
S2_01	No	Yes	No	Yes	No	No	Yes	No	Other land use area sampled
S2_02	No	No	N/A	Yes	No	No	Yes	No	Data gap property sampled
S2_03	No	No	N/A	Yes	No	No	Yes	No	Other land use area sampled (S2_04-09 DU02 and DU03)
S2_04	No	Yes	No	Yes	No	No	Yes	No	
S2_05	No	Yes	No	Yes	No	No	Yes	No	
S2_06	No	Yes	No	Yes	No	No	Yes	No	
S2_07	No	Yes	No	Yes	No	No	Yes	No	
S2_08	No	Yes	No	Yes	No	No	Yes	No	
S2_09	No	Yes	No	Yes	No	No	Yes	No	
S2_10	No	Yes	No	Yes	No	No	Yes	No	
S2_11	No	Yes	No	Yes	No	No	Yes	No	
S2_12	No	Yes	No	Yes	No	No	Yes	No	
S2_13	No	Yes	No	Yes	No	No	Yes	No	
S2_14	No	Yes	No	Yes	No	No	Yes	No	Data gap property sampled
S2_25	No	No	N/A	Yes	No	No	Yes	No	
S2_26	No	No	N/A	Yes	No	No	Yes	No	
S2_27	No	No	N/A	Yes	No	No	Yes	No	
S2_28	No	Yes	No	Yes	No	No	Yes	No	
S2_29	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	
S2_30	No	Yes	No	Yes	No	No	Yes	No	
S2_31	No	Yes	No	No	N/A	N/A	Yes	No	
S2_32	No	No	N/A	No	N/A	N/A	Yes	No	
S2_33	No	Yes	No	No	N/A	N/A	Yes	No	
S2_36	No	Yes	No	No	N/A	N/A	Yes	No	
S2_37	No	Yes	No	No	N/A	N/A	Yes	No	
S2_38	No	Yes	No	No	N/A	N/A	Yes	No	
S2_39	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	
S2_40	No	Yes	No	No	N/A	N/A	Yes	No	
S2_41	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	
S2_42	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S2_43	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S2_44	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained land use area sampled
S2_45	No	Yes	No	No	N/A	N/A	Yes	No	
S2_46	No	Yes	No	No	N/A	N/A	Yes	No	
S2_47	No	Yes	No	No	N/A	N/A	Yes	No	
S2_48	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained land use area sampled
S2_49	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S2_50	No	Yes	No	Yes	No	No	Yes	No	
S2_51	No	Yes	No	Yes	No	No	Yes	No	

Table 1 - Current Status of Maintained Residential Property Checks in Segments 2 and 3
Tittabawassee River Floodplain 2015 Floodplain Annual Report

Seg ID	Maint Res Land Use ID'ed from map review?	Discussion With Owner		Property Visit			Is Land use verification complete?	Is Follow Up Required With Owner?	Additional Notes
		Was property owner asked about Maint Res?	Did Owner Id Maint Res Area?	Has Dow Visited Parcel?	Was Maint Res Area Id'd During Visit?	Was Survey Conducted?			
S2_52	No	Yes	No	Yes	No	No	Yes	No	
S2_53	No	Yes	No	Yes	No	No	Yes	No	
S2_54	No	Yes	No	No	N/A	N/A	Yes	No	
S2_55	No	Yes	No	No	N/A	N/A	Yes	No	
S2_56	No	Yes	No	Yes	No	No	Yes	No	
S2_57	No	Yes	No	Yes	No	No	Yes	No	
Segment 3									
S3_001	Yes	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_002	Yes	Yes	Yes	Yes	Yes	No	Yes	No	
S3_003	No	No	N/A	Yes	No	No	Yes	No	Public Entity
S3_004	No-Public Entity	No	N/A	Yes	No	No	Yes	No	Public Entity - Other land use area sampled
S3_005	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained and other land use areas sampled
S3_006	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained land use area sampled
S3_007	No	Yes	No	Yes	No	No	Yes	No	
S3_008	No	Yes	No	No	N/A	N/A	Yes	No	
S3_009	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained land use area not yet sampled
S3_011	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Maintained land use area not yet sampled
S3_012	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained land use area sampled
S3_013	No-Commercial	No	N/A	No	N/A	N/A	Yes	No	Commercial property
S3_014	No-Commercial	No	N/A	No	N/A	N/A	Yes	No	Commercial property
S3_015	No	Yes	No	Yes	No	No	Yes	No	
S3_016	No-Commercial	No	N/A	No	N/A	N/A	Yes	No	Commercial property
S3_017	No-Commercial	No	N/A	No	N/A	N/A	Yes	No	Commercial property
S3_018	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_020	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_021	No	Yes	No	No	N/A	N/A	Yes	No	
S3_022	No	Yes	No	No	N/A	N/A	Yes	No	
S3_023	No-Commercial	Yes	No	Yes	No	N/A	Yes	No	Commercial property
S3_024	No	Yes	Yes	Yes	Yes	No	Yes	No	
S3_025	No	Yes	No	No	N/A	N/A	Yes	No	
S3_026	No	Yes	No	No	N/A	N/A	Yes	No	
S3_027	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_037	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner

Table 1 - Current Status of Maintained Residential Property Checks in Segments 2 and 3
Tittabawassee River Floodplain 2015 Floodplain Annual Report

Seg ID	Maint Res Land Use ID'ed from map review?	Discussion With Owner		Property Visit			Is Land use verification complete?	Is Follow Up Required With Owner?	Additional Notes
		Was property owner asked about Maint Res?	Did Owner Id Maint Res Area?	Has Dow Visited Parcel?	Was Maint Res Area Id'd During Visit?	Was Survey Conducted?			
S3_038	Yes	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_039	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained land use area sampled
S3_040	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained land use area sampled
S3_041	No-Commercial	No	N/A	No	N/A	N/A	Yes	No	Commercial property
S3_042	Yes	No	N/A	Yes	Yes	No	Yes	No	Maintained land use area sampled
S3_043	No	Yes	No	No	N/A	No	Yes	No	
S3_044	No	Yes	No	Yes	No	N/A	Yes	No	Other land use area sampled
S3_045	No-Commercial	Yes	No	Yes	No	No	Yes	No	Commercial property
S3_046	No-Commercial	No	N/A	No	N/A	N/A	Yes	No	Commercial property
S3_047	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Maintained land use area sampled
S3_048	No-Commercial	Yes	No	No	N/A	N/A	Yes	No	Commercial property
S3_049	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained land use area sampled
S3_050	Yes	No	N/A	No	N/A	N/A	No	Yes	Maintained land use area not yet sampled. Dow in process of verification with owner
S3_051	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_052	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_053	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_054	No	Yes	No	No	N/A	N/A	Yes	No	
S3_055	No-Commercial	Yes	No	No	N/A	N/A	Yes	No	Commercial property
S3_056	No	Yes	No	No	N/A	N/A	Yes	No	
S3_057	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_059	No-Commercial	No	N/A	No	N/A	N/A	Yes	No	Commercial property Other land use area not yet sampled
S3_060	No	Yes	No	No	N/A	N/A	Yes	No	Other land use area sampled
S3_061	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_062	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained land use area sampled
S3_063	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Maintained land use area sampled
S3_064	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained land use area sampled
S3_065	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	
S3_071	No	No	N/A	Yes	No	N/A	Yes	No	Other land use area sampled
S3_072	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Maintained and other land use areas sampled
S3_073	No	Yes	No	Yes	No	N/A	Yes	No	Other land use area sampled
S3_074	No	Yes	No	Yes	No	N/A	Yes	No	
S3_075	No	No	No	Yes	No	N/A	Yes	No	
S3_077	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained land use area sampled

Table 1 - Current Status of Maintained Residential Property Checks in Segments 2 and 3
Tittabawassee River Floodplain 2015 Floodplain Annual Report

Seg ID	Maint Res Land Use ID'ed from map review?	Discussion With Owner		Property Visit			Is Land use verification complete?	Is Follow Up Required With Owner?	Additional Notes
		Was property owner asked about Maint Res?	Did Owner Id Maint Res Area?	Has Dow Visited Parcel?	Was Maint Res Area Id'd During Visit?	Was Survey Conducted?			
S3_078	Yes	No	N/A	Yes	Yes	Yes	Yes	No	Maintained land use area sampled
S3_079	No-Commercial	No	N/A	No	N/A	N/A	Yes	No	Commercial property
S3_081	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Maintained and other land use areas sampled
S3_082	No	Yes	No	Yes	No	N/A	Yes	No	
S3_083	No	Yes	No	Yes	No	N/A	Yes	No	
S3_084	No	Yes	No	Yes	No	N/A	Yes	No	
S3_085	No	Yes	No	Yes	No	N/A	Yes	No	
S3_086	No	Yes	No	Yes	No	N/A	Yes	No	
S3_087	No	Yes	No	Yes	No	N/A	Yes	No	
S3_089	No-Recreational	No	N/A	No	N/A	N/A	Yes	No	Recreational property
S3_090	No	Yes	No	No	N/A	N/A	Yes	No	
S3_091	No-Recreational	No	N/A	No	N/A	N/A	Yes	No	Recreational property
S3_092	No	Yes	No	No	N/A	N/A	Yes	No	
S3_095	No-Recreational	No	N/A	No	N/A	N/A	Yes	No	Recreational property
S3_098	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_110	No	Yes	No	Yes	No	N/A	Yes	No	
S3_111	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_118	No	Yes	No	Yes	No	N/A	Yes	No	
S3_121	Yes	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_122	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	
S3_123	No	Yes	No	No	N/A	N/A	Yes	No	
S3_124	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_126	No	Yes	No	Yes	No	No	Yes	No	
S3_127	No	Yes	No	No	N/A	No	Yes	No	
S3_128	No	Yes	No	No	N/A	No	Yes	No	
S3_129	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_130	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_131	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_132	No	Yes	No	No	N/A	N/A	Yes	No	
S3_133	No	Yes	No	No	N/A	N/A	Yes	No	
S3_134	No	Yes	No	No	N/A	N/A	Yes	No	Other land use area sampled

Table 1 - Current Status of Maintained Residential Property Checks in Segments 2 and 3
Tittabawassee River Floodplain 2015 Floodplain Annual Report

Seg ID	Maint Res Land Use ID'ed from map review?	Discussion With Owner		Property Visit			Is Land use verification complete?	Is Follow Up Required With Owner?	Additional Notes
		Was property owner asked about Maint Res?	Did Owner Id Maint Res Area?	Has Dow Visited Parcel?	Was Maint Res Area Id'd During Visit?	Was Survey Conducted?			
S3_135	No	No	N/A	No	N/A	N/A	Yes	No	High bank - all land within floodplain inaccessible
S3_136	No	No	N/A	No	N/A	N/A	Yes	No	High bank - all land within floodplain inaccessible
S3_137	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_143	No	No	N/A	No	N/A	N/A	Yes	No	High bank - all land within floodplain inaccessible
S3_144	No	No	N/A	No	N/A	N/A	Yes	No	High bank - all land within floodplain inaccessible
S3_145	No	No	N/A	No	N/A	N/A	No	Yes	Dow in process of verification with owner
S3_146	No	No	N/A	No	N/A	N/A	Yes	No	High bank - all land within floodplain inaccessible
S3_147	No	Yes	No	No	N/A	N/A	Yes	No	
S3_148	No	Yes	No	No	N/A	N/A	Yes	No	
S3_149	No	Yes	No	No	N/A	N/A	Yes	No	

- Notes:
1. Verification of property land use was only performed for properties that were not screened out due to concentration (i.e. maintained residential and/or other land use areas less than 90 ppt).
 2. Blue highlight indicates that property was identified for sampling.
 3. Green highlight indicates that land use verification activities are not yet complete at the property.

Table 7 - Summary of Cumulative Work Performed to Date

[illegible]

Appendix A
2015 Segment 2 Floodplain Completion Report

TITTABAWASSEE RIVER FLOODPLAIN 2015 SEGMENT 2 FLOODPLAIN COMPLETION REPORT



PREPARED BY:
Tittabawassee and Saginaw River Team

Prepared for and Submitted by
The Dow Chemical Company

DATE: March 4, 2016

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3 Implementation	1
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Figure 1	Site Plan
Figure 2	Segment 2 Implementation Schedule

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Table 1	Fill Analysis Results
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Attachments

Attachment 1	S2_44 Implementation Details
Attachment 2	S2_48 Implementation Details
Attachment 3	Construction Quality Assurance and Quality Control

Acronyms and Abbreviations

CQAP	construction quality assurance plan
GPS	global positioning system
NAD 83	North American Datum of 1983
NAVD 88	North American Vertical Datum of 1988
TEQ	toxicity equivalent quotient
TIN	triangulated irregular network

1 Introduction

In 2015, remedial actions were conducted in floodplain decision units (DUs) S2_44_DU01 and S2_48_DU01 in accordance with the Administrative Settlement Agreement and Order on Consent (AOC) for removal action in the Tittabawassee River Eight-Year Floodplain (USEPA 2015) and the Segment 2 Property-Specific Design Plan and supporting Design appendices (Dow 2015). Figure 1, Site Plan, shows the location of each of the DUs. Remedial actions included the removal and disposal of surficial floodplain soils and backfill to pre-existing grade. The removal actions are described in further detail below.

2 Remedial Technologies

Remedial technologies that were implemented as part of the S2_44_DU01 and S2_48_DU01 remedial actions are listed below.

- Soil removal and management

Prior to soil removal, the floodplain DUs were cleared of undesirable vegetation by use of mechanical brush hogs, as needed. Following this initial clearing stage, soil was then excavated from the remediation area, placed in trucks, and transported from the area for disposal or relocation in an approved, local landfill or other designated area.

- Backfill

Following soil removal and management, backfill consisting of approximately 12 inches of topsoil was placed to bring the elevation back to the approximate pre-existing grade, prior to seeding and planting. The topsoil material was then graded to accommodate site drainage patterns and the surface was mechanically finished to prepare the bed for seed or additional site features.

3 Implementation

Implementation details specific to the S2_44 and S2_48 remedial areas are provided in the property-specific attachments 1 and 2, respectfully. These attachments include summaries of pre-construction conditions and remedy completion along with site reestablishment details. The attachments also include photo logs documenting the implementation of the removal at each property and material tracking tables.

Erosion and sediment control practices were implemented during construction for each floodplain DU. A 36-inch high silt fence was installed into a 6-inch anchor trench within the work areas, as needed. Daily inspections were performed to verify the effectiveness of the silt fence. Any damages identified were repaired before work was allowed to continue. The silt fence was removed when vegetation began to establish.

Field conditions identified while implementing the remedial activities required that some of the work plan design details and horizontal limits be slightly modified. These modifications are discussed in Section 4.3.

The following contractors were selected to implement the remedies at the DUs:

- Servinski Sod Service was the primary contractor responsible for implementing the work, including temporary access, soil removal and management, backfill, seeding, and planting. Fisher Contracting assisted with these activities.
- Servinski Sod Service's sub-contractors, Kappen Tree Service and Pat's Gradall were responsible for tree trimming and tree removal activities and the hauling of soil removed from the remediation areas, respectively.

4 Construction Quality Assurance and Quality Control

This completion report summarizes the work completed during the Segment 2 floodplain implementation, according to the provisions of the S2_44_DU01 and S2_48_DU01 Design Plans (Dow 2015). During implementation, QA/QC measures were taken to demonstrate that the materials used met the required specifications and were installed per the specifications outlined in the Design Plans. This section summarizes the QA/QC measures that were implemented during construction.

4.1 Removal/Placement Verification

A property-specific design plan was developed for each area requiring remedy (S2_44_DU01 and S2_48_DU01; Dow 2015). The design plans included remedial boundaries and identified property-specific remedies (i.e. soil removal with backfill for both properties receiving remedy in 2015). Remedial limits presented in the design were compared with surveyed limits following completion of the work.

Prior to any soil removal and backfill, an elevation survey was conducted for each of the remedy areas utilizing survey equipment such as global positioning system (GPS) or Total Station. This survey was then used to verify that the required excavation depth was achieved across the remedial area and that subsequent backfill was placed to the appropriate pre-existing elevations.

Attachment 3 presents the coordinates and elevation information that was collected as part of the pre-excavation, post-excavation, and post-backfill surveys. Survey locations are presented in Figures 3a and 3b (for S2_44 and S2_48, respectively) and elevation data for each of the survey points are presented in Tables 3a (S2_44) and 3b (S2_48).

4.2 Material Verification

The following materials were included in the material verification program and specific verification activities are summarized for each material. Material suppliers provided test results

and/or certifications to verify that the delivered materials met the physical specifications as described in the Design Plans for S2_44_DU01 and S2_48_DU01.

4.2.1 Fill Materials

Fill materials were tested prior to use in the remediation areas. Fill material analysis results are provided in Table 1. The materials were verbally approved by the Agencies prior to use in the remedial areas.

4.2.2 Seed Mixes

The Contractor checked plant types and quantities upon delivery. A Dow representative oversaw the seeding and planting.

4.3 Modifications from Design

During implementation of the work, modifications were made to the original S2_44_DU01 and S2_48_DU01 designs (Dow 2015) due to unanticipated conditions encountered in the field. These modifications are outlined below.

4.3.1 S2_44

The area of remediation was reduced in size following additional discussions with the property owner, who identified that the area covered by logs within the proposed remedial footprint was not classified as maintained land use. The remedial area of approximately 0.9 acres defined in the original design plan was reduced to approximately 0.7 acres.

4.3.2 S2_48

The original design for S2_48 included backfill to existing grade with fill and topsoil material. Due to issues with flowing and standing water, a layer of natural stone was installed as part of the backfill in a low area of the property. Approximately 8 cy of stone was installed.

5 Construction Completion Schedule

Figure 2 provides the implementation schedule for activities completed in each of the remediated Segment 2 floodplain properties. Start and completion dates for each area are provided below:

- S2_44_DU01 September 18 through October 9, 2015
- S2_48_DU01 September 11 through October 1, 2015

6 Identification and Management of Threatened and Endangered Species

Baseline conditions surveys were performed prior to the start of implementation in each of the Segment 2 floodplain properties. Baseline conditions survey forms were included in the property-specific design plan (Dow 2015). No threatened or endangered species were identified during the baseline conditions surveys. Monitoring was also performed in each of the properties in the month following construction. Monitoring forms are provided as inserts in Attachments 1 and 2.

7 Identification and Management of Wetlands

Two wetland areas were identified on the S2_48 property as part of the baseline environmental assessment. The wetland area were defined in the S2_48 Design Plan and following excavation the areas were replanted with wetland-specific plants.

No wetland areas were identified prior to work on the S2_44 property.

8 Mitigation for Floodplain Filling

No net filling of the floodplain (i.e. filling above existing grade within the floodplain) was performed as part of the Segment 2 implementation activities in 2015.

9 Site Demobilization and Reestablishment

Demobilization of equipment from the sites were completed in stages with all equipment removed from S2_44 by October 9, 2015. Materials used to develop access roads and staging areas were either placed in the project surplus as recycled material or, in the case of miscellaneous debris (i.e. silt fence, fabric, general debris), were removed and disposed of at the City of Midland landfill. The temporary access roads were graded and stone material was placed to meet pre-construction conditions, while the staging areas were fine graded and hydroseeded to restore to vegetated site conditions. A portion of the gravel used to improve the access ramp at S2_48 was left in place per the owner's request.

10 Monitoring

As identified in the Segment 2 Property-Specific Work Plan (Dow 2016), monitoring was performed following completion of the work (prior to the end of the growing season).

Documentation from this first monitoring event is included in the property-specific attachments 1 and 2.

Inspections will continue at least once per year for a minimum of two years following this first growing season. The inspections will focus on overall vegetative health, vegetative coverage, tree health, and needed maintenance such as addressing erosion.

11 Certification of the Work

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



Todd Konechne

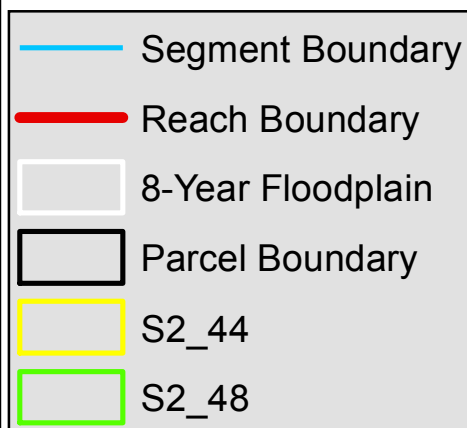
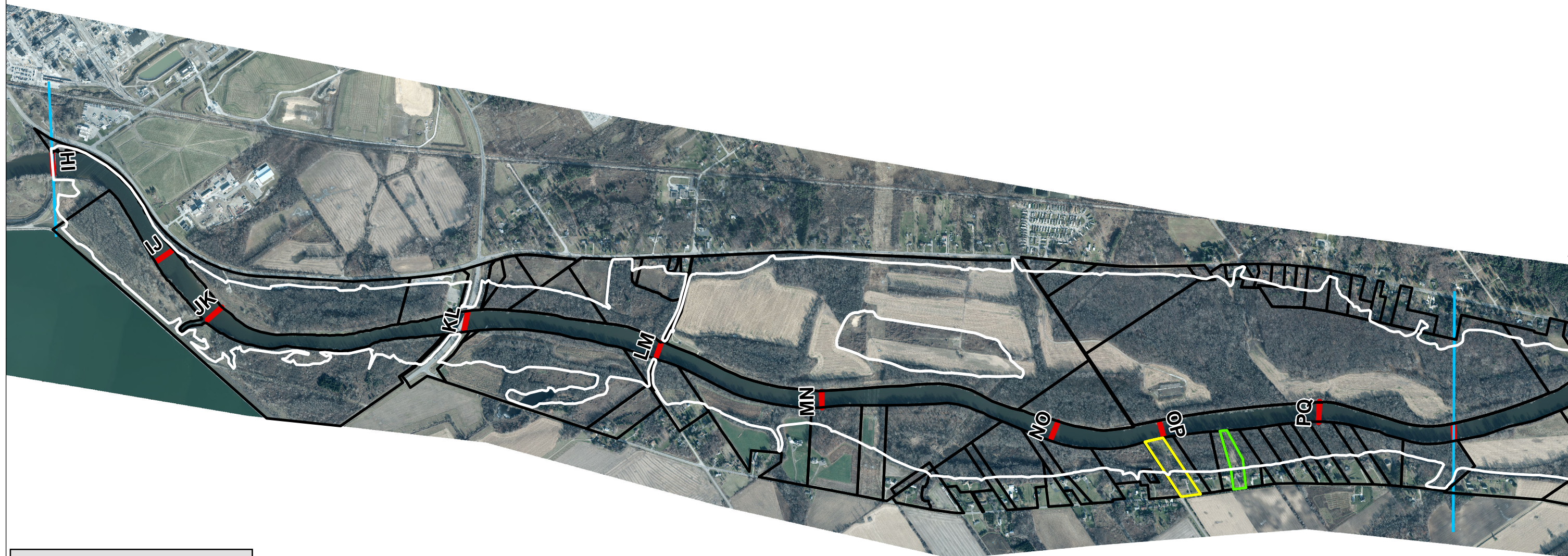
March 4, 2016

Date

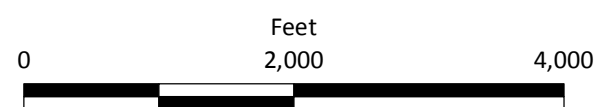
12 References

- Dow. 2015. *Tittabawassee River Floodplain Segment 2 Property-Specific Work Plan*. December 4, 2015. Appendices for S2_44 and S2_48 submitted September 9, 2015.
- Dow. 2016. *Tittabawassee River Floodplain Segment 2-Specific Work Plan*. February 11, 2016.
- USEPA. 2015. *Administrative Settlement Agreement and Order on Consent for Removal Action*. CERCLA Docket No. V-W-15-C-018. Tittabawassee River Eight-Year Floodplain of the Tittabawassee River, Saginaw River and Bay Site. Effective Date: January 8, 2015.

Figures



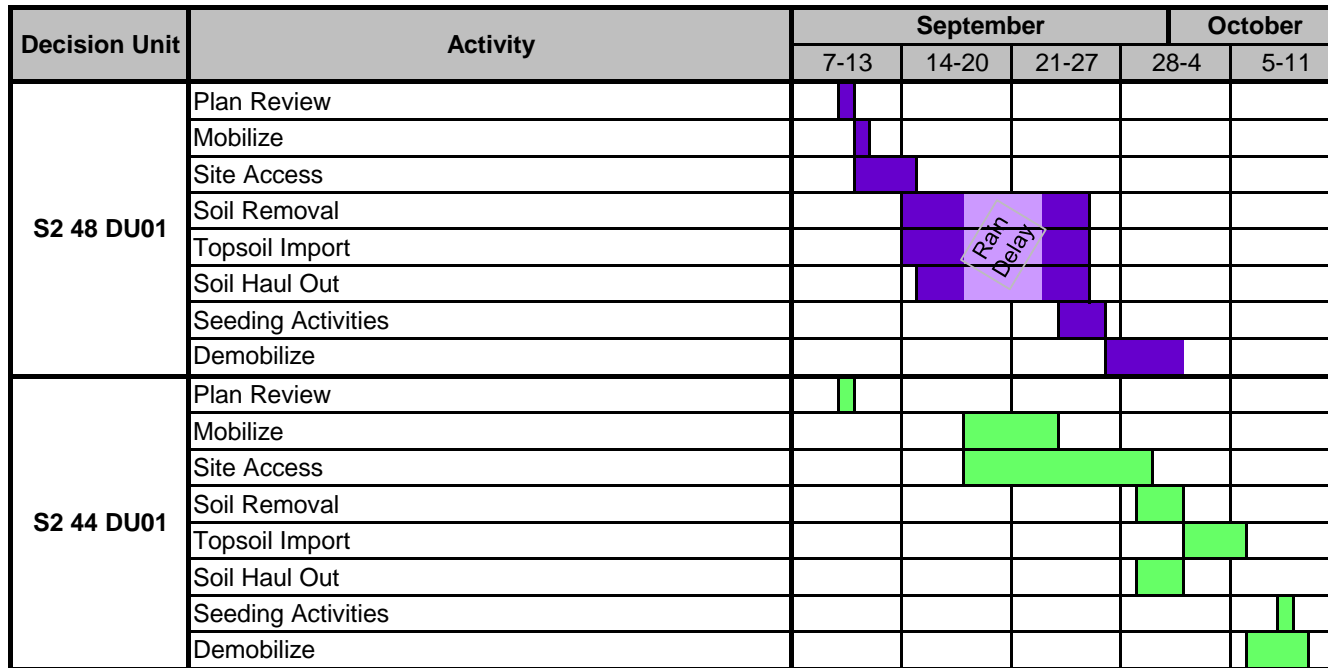
Aerial Imagery: 2014



Site Plan
2015 Segment 2 Floodplain Completion Report

Figure
1

Figure 2 - Segment 2 Implementation Schedule
Tittabawassee River Floodplain - 2015 Segment 2 Floodplain Completion Report



Tables

Table 1 - Fill Analysis Results
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Chemical	Unit	Pats MAC/ Three Mile	FISHER-M-81-100814
SVOCs			
1,2,4-Trichlorobenzene	(µg/Kg)	ND (50)	ND (50)
2,4,5-Trichlorophenol	(µg/Kg)	ND (150)	ND (150)
2,4,6-Trichlorophenol	(µg/Kg)	ND (150)	ND (150)
2,4-Dichlorophenol	(µg/Kg)	ND (150)	ND (150)
2,4-Dimethylphenol	(µg/Kg)	ND (150)	ND (150)
2,4-Dinitrophenol	(µg/Kg)	ND (330)	ND (330)
2,4-Dinitrotoluene	(µg/Kg)	ND (200)	ND (200)
2,6-Dinitrotoluene	(µg/Kg)	ND (200)	ND (200)
2-Chloronaphthalene	(µg/Kg)	ND (50)	ND (50)
2-Chlorophenol	(µg/Kg)	ND (50)	ND (50)
2-Methylnapthalene	(µg/Kg)	ND (6.7)	ND (6.7)
2-Methylphenol	(µg/Kg)	ND (200)	ND (200)
2-Nitroaniline	(µg/Kg)	ND (200)	ND (200)
2-Nitrophenol	(µg/Kg)	ND (50)	ND (50)
3,3'-Dichlorobenzidine	(µg/Kg)	ND (100)	ND (100)
3-Nitroaniline	(µg/Kg)	ND (200)	ND (200)
4,6-Dinitro-2-methylphenol	(µg/Kg)	ND (150)	ND (150)
4-Bromophenyl phenyl ether	(µg/Kg)	ND (50)	ND (50)
4-Chloro-3-methylphenol	(µg/Kg)	ND (150)	ND (150)
4-Chloroaniline	(µg/Kg)	ND (150)	ND (150)
4-Chlorophenyl phenyl ether	(µg/Kg)	ND (50)	ND (50)
4-Nitroaniline	(µg/Kg)	ND (200)	ND (200)
4-Nitrophenol	(µg/Kg)	ND (330)	ND (330)
Acenaphthene	(µg/Kg)	ND (6.7)	ND (6.7)
Acenaphthylene	(µg/Kg)	ND (6.7)	ND (6.7)
Anthracene	(µg/Kg)	ND (6.7)	ND (6.7)
Benzo(a)anthracene	(µg/Kg)	ND (6.7)	ND (6.7)
Benzo(a)pyrene	(µg/Kg)	ND (6.7)	6.7
Benzo(b)fluoranthene	(µg/Kg)	9.6	11
Benzo(g,h,i)perylene	(µg/Kg)	ND (6.7)	7.8
Benzo(k)fluoranthene	(µg/Kg)	ND (6.7)	ND (6.7)

Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Chemical	Unit	Pats MAC/ Three Mile	FISHER-M-81-100814
SVOCs (continued)			
Bis(2-chloroethoxy)methane	(µg/Kg)	ND (100)	ND (100)
Bis(2-chloroethyl)ether	(µg/Kg)	ND (100)	ND (100)
Bis(2-chloroisopropyl)ether	(µg/Kg)	ND (100)	ND (100)
Bis(2-ethylhexyl)phthalate	(µg/Kg)	ND (70)	ND (70)
Butyl benzyl phthalate	(µg/Kg)	ND (70)	ND (70)
Chrysene	(µg/Kg)	ND (6.7)	8.9
Dibenz[a,h]anthracene	(µg/Kg)	ND (6.7)	ND (6.7)
Dibenzofuran	(µg/Kg)	ND (50)	ND (50)
Diethyl phthalate	(µg/Kg)	ND (70)	ND (70)
Dimethyl phthalate	(µg/Kg)	ND (70)	ND (70)
Di-n-butyl phthalate	(µg/Kg)	ND (70)	ND (70)
Di-n-octyl phthalate	(µg/Kg)	ND (70)	ND (70)
Fluoranthene	(µg/Kg)	11	11
Fluorene	(µg/Kg)	ND (6.7)	ND (6.7)
Hexachlorobenzene	(µg/Kg)	ND (6.7)	ND (6.7)
Hexachlorobutadiene	(µg/Kg)	ND (50)	ND (50)
Hexachlorocyclopentadiene	(µg/Kg)	ND (330)	ND (330)
Hexachloroethane	(µg/Kg)	ND (50)	ND (50)
Indeno(1,2,3-cd) pyrene	(µg/Kg)	ND	6.7
Isophorone	(µg/Kg)	ND (50)	ND (50)
Naphthalene	(µg/Kg)	ND (6.7)	ND (6.7)
Nitrobenzene	(µg/Kg)	ND (100)	ND (100)
N-Nitrosodi-n-propylamine	(µg/Kg)	ND (50)	ND (50)
N-Nitrosodiphenylamine	(µg/Kg)	ND (50)	ND (50)
Pentachlorophenol	(µg/Kg)	ND (150)	ND (150)
Phenanthrene	(µg/Kg)	ND (6.7)	8.1
Phenol	(µg/Kg)	ND (50)	ND (50)
Pyrene	(µg/Kg)	9.1	10
Herbicides			
2,4,5-T	(µg/Kg)	ND (20)	ND (20)
2,4,5-TP (Silvex)	(µg/Kg)	ND (20)	ND (20)
2,4-D	(µg/Kg)	ND (80)	ND (80)

Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Chemical	Unit	Pats MAC/ Three Mile	FISHER-M-81-100814
Pesticides			
4,4'-DDD	(µg/Kg)	ND (1.7)	ND (1.7)
4,4'-DDE	(µg/Kg)	ND (1.7)	ND (1.7)
4,4'-DDT	(µg/Kg)	ND (1.7)	ND (1.7)
Aldrin	(µg/Kg)	ND (1.7)	ND (1.7)
alpha-BHC	(µg/Kg)	ND (1.7)	ND (1.7)
beta-BHC	(µg/Kg)	ND (1.7)	ND (1.7)
Chlordane, Technical	(µg/Kg)	ND (1.7)	ND (1.7)
delta-BHC	(µg/Kg)	ND (1.7)	ND (1.7)
Dieldrin	(µg/Kg)	ND (1.7)	ND (1.7)
Endosulfan I	(µg/Kg)	ND (1.7)	ND (1.7)
Endosulfan II	(µg/Kg)	ND (1.7)	ND (1.7)
Endosulfan sulfate	(µg/Kg)	ND (1.7)	ND (1.7)
Endrin	(µg/Kg)	ND (1.7)	ND (1.7)
Endrin aldehyde	(µg/Kg)	ND (1.7)	ND (1.7)
gamma-BHC (Lindane)	(µg/Kg)	ND (1.7)	ND (1.7)
Heptachlor	(µg/Kg)	ND (1.7)	ND (1.7)
Heptachlor epoxide	(µg/Kg)	ND (1.7)	ND (1.7)
Methoxychlor	(µg/Kg)	ND (3.3)	ND (3.3)
Toxaphene	(µg/Kg)	ND (67)	ND (67)
PCBs			
Aroclor-1016	(µg/Kg)	ND (33)	ND (33)
Aroclor-1221	(µg/Kg)	ND (33)	ND (33)
Aroclor-1232	(µg/Kg)	ND (33)	ND (33)
Aroclor-1242	(µg/Kg)	ND (33)	ND (33)
Aroclor-1248	(µg/Kg)	ND (33)	ND (33)
Aroclor-1254	(µg/Kg)	ND (33)	ND (33)
Aroclor-1260	(µg/Kg)	ND (33)	ND (33)
Dioxins/Furans			
WHO-TEC (0.5)	(µg/Kg)	3.44	3.29

Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Chemical	Unit	Pats MAC/ Three Mile	FISHER-M-81-100814
Metals			
Antimony	(µg/Kg)	ND (400)	ND (400)
Arsenic	(µg/Kg)	2,000	4,200
Barium	(µg/Kg)	59,000	92,000
Beryllium	(µg/Kg)	490	710
Cadmium	(µg/Kg)	240	220
Chromium (III)	(µg/Kg)	14,000	24,000
Cobalt	(µg/Kg)	4,000	6,300
Copper	(µg/Kg)	10,000	17,000
Lead	(µg/Kg)	8,400	12,000
Nickel	(µg/Kg)	11,000	22,000
Selenium	(µg/Kg)	1,000	2,100
Silver	(µg/Kg)	ND (200)	ND (200)
Thallium	(µg/Kg)	ND (400)	ND (400)
Tin	(µg/Kg)	ND (10,000)	ND (10,000)
Vanadium	(µg/Kg)	18,000	30,000
Zinc	(µg/Kg)	39,000	55,000
Mercury	(µg/Kg)	ND (100)	ND (100)
Cyanide	(µg/Kg)	ND (500)	ND (500)
Sulfide	(µg/Kg)	ND (30,000)	ND (30,000)

Notes:

ND: not detected (reporting limit in parentheses)

SVOC: semi-volatile organic compound

Attachment 1

S2_44 Implementation Details

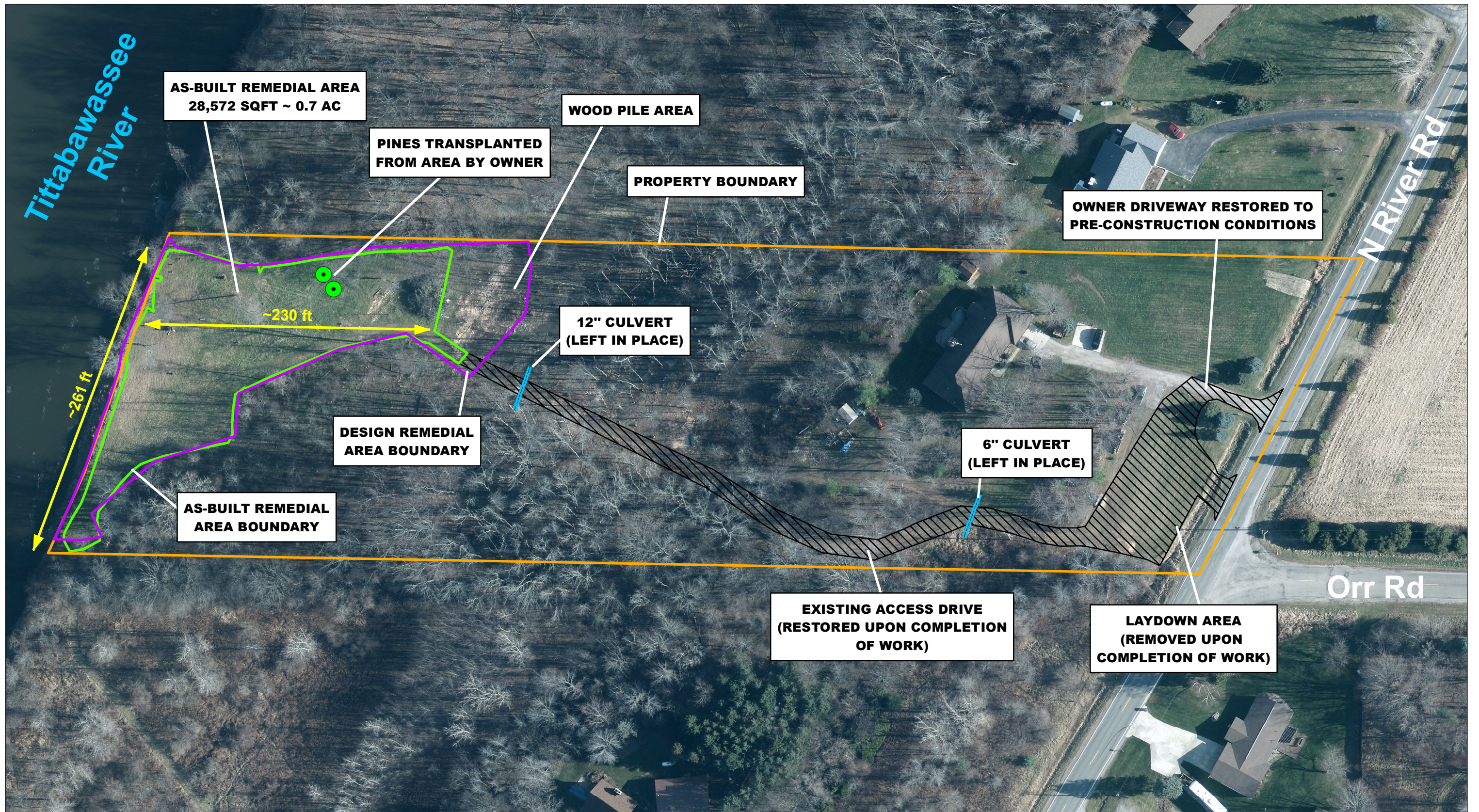
**Tittabawassee River Floodplain
Segment 2 Property Construction Implementation Details**

Property Details	
Decision Unit (DU) ID	S2_44_DU01
Land Use Type	Maintained
Decision Unit Remedial Area	Approximately 0.7 acres (see note in construction details, below)
Accompanying Plans/Documents	
Figures	Figure 1a: As-Built Site Plan
Tables	Table 1a: Material Removed Tracking Log Table 1b: Inventory of Materials Used
Inserts	Insert 1a: Photolog Insert 1b: Post-construction monitoring details
Property-Specific Pre-construction Details	
Description of Work	<ul style="list-style-type: none"> • Remedy: Removal of the upper 12 inches of soil from the identified ~0.7-acre remedial area. • Reestablishment: Backfill to grade and reseed.
Special Conditions	<ul style="list-style-type: none"> • Maintain or replace small storm sewer culverts in trail. • Remove 12" diameter box elder near river. • Improve existing trail along the west side of the property as needed for access/loading. • Log pile area not maintained. • Owner to remove pine trees prior to site preparation.
Construction Details	
Construction Dates	September 18, 2015 through October 9, 2015.
Details of Work Performed	<ul style="list-style-type: none"> • Mobilized to property on September 11, 2015. • Developed laydown area next to N River Road and temporary access across the property: <ul style="list-style-type: none"> – Improved access on west side of property, including tree trimming and added material. – Improved/added materials as necessary along existing access (see Figure 1a). • Prepared site for construction, including removal of trees <ul style="list-style-type: none"> – (1) 12 inch diameter box elder removed. • Removed upper 12 inches of material from the identified ~0.7-acre remedial area (see Figure 1a and changes identified below) and removed approximately 1,600 cubic yards off the property for relocation at Dow's Michigan Operations Facility. See Table 1a for material removal tracking log. • Backfilled with approximately 12 inches of fill material and topsoil to pre-excavation elevations (approximately 1,400 cubic yards – see Table 1b). • Performed seeding and planting consistent with plans provided in the Design Plan. • Site access conditions were restored to original or better condition as shown in Figure 1a.

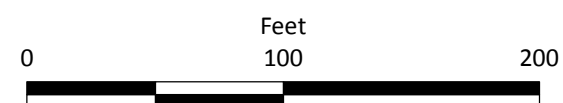
**Tittabawassee River Floodplain
Segment 2 Property Construction Implementation Details**

	<ul style="list-style-type: none"> • Demobilized from property on October 9, 2015. • A photolog is provided in Insert 1a that shows pre-construction, during construction, and post-construction conditions.
Describe any changes from the agreed remedy for the property	The remedial footprint was decreased in size from the original footprint that was identified in the work plan. This was due to the owner identifying an area within the proposed footprint that was not maintained (see Figure 1a). The resulting area of remediation was 0.7 acres.
Details of any unknown buried items uncovered during the excavation	Utility locations identified during design confirmed during excavation. No utilities were identified within the excavation area for S2_44; the only utilities were within the access route.
Details of any other unresolved issues	None
Post-Construction Details	
Date of post-construction monitoring	November 20, 2015. Refer to Insert 1b for details.

Figures



Aerial Imagery: 2014



S2_44 As-Built Site Plan
2015 Segment 2 Floodplain Completion Report

Figure
1a

Tables

Table 1a - S2 44 Material Removed Tracking Log
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Description	Quantity (CY)	Cumulative Quantity (CY)	Material Recipient	Transporter
1	9/30/2015	Floodplain Soil	15	15	Dow Michigan Ops.	Pats Gradall
2	9/30/2015	Floodplain Soil	15	30	Dow Michigan Ops.	Pats Gradall
3	9/30/2015	Floodplain Soil	15	45	Dow Michigan Ops.	Pats Gradall
4	9/30/2015	Floodplain Soil	15	60	Dow Michigan Ops.	Pats Gradall
5	9/30/2015	Floodplain Soil	15	75	Dow Michigan Ops.	Pats Gradall
6	9/30/2015	Floodplain Soil	15	90	Dow Michigan Ops.	Pats Gradall
7	9/30/2015	Floodplain Soil	15	105	Dow Michigan Ops.	Pats Gradall
8	9/30/2015	Floodplain Soil	15	120	Dow Michigan Ops.	Pats Gradall
9	9/30/2015	Floodplain Soil	15	135	Dow Michigan Ops.	Pats Gradall
10	9/30/2015	Floodplain Soil	15	150	Dow Michigan Ops.	Pats Gradall
11	9/30/2015	Floodplain Soil	15	165	Dow Michigan Ops.	Pats Gradall
12	9/30/2015	Floodplain Soil	15	180	Dow Michigan Ops.	Pats Gradall
13	9/30/2015	Floodplain Soil	15	195	Dow Michigan Ops.	Pats Gradall
14	9/30/2015	Floodplain Soil	15	210	Dow Michigan Ops.	Pats Gradall
15	9/30/2015	Floodplain Soil	15	225	Dow Michigan Ops.	Pats Gradall
16	9/30/2015	Floodplain Soil	15	240	Dow Michigan Ops.	Pats Gradall
17	9/30/2015	Floodplain Soil	15	255	Dow Michigan Ops.	Pats Gradall
18	9/30/2015	Floodplain Soil	15	270	Dow Michigan Ops.	Pats Gradall
19	9/30/2015	Floodplain Soil	15	285	Dow Michigan Ops.	Pats Gradall
20	9/30/2015	Floodplain Soil	15	300	Dow Michigan Ops.	Pats Gradall
21	9/30/2015	Floodplain Soil	15	315	Dow Michigan Ops.	Pats Gradall
22	9/30/2015	Floodplain Soil	15	330	Dow Michigan Ops.	Pats Gradall
23	9/30/2015	Floodplain Soil	15	345	Dow Michigan Ops.	Pats Gradall
24	9/30/2015	Floodplain Soil	15	360	Dow Michigan Ops.	Pats Gradall
25	9/30/2015	Floodplain Soil	15	375	Dow Michigan Ops.	Pats Gradall
26	9/30/2015	Floodplain Soil	15	390	Dow Michigan Ops.	Pats Gradall
27	9/30/2015	Floodplain Soil	15	405	Dow Michigan Ops.	Pats Gradall
28	9/30/2015	Floodplain Soil	15	420	Dow Michigan Ops.	Pats Gradall
29	9/30/2015	Floodplain Soil	15	435	Dow Michigan Ops.	Pats Gradall
30	9/30/2015	Floodplain Soil	15	450	Dow Michigan Ops.	Pats Gradall
31	9/30/2015	Floodplain Soil	15	465	Dow Michigan Ops.	Pats Gradall
32	9/30/2015	Floodplain Soil	15	480	Dow Michigan Ops.	Pats Gradall
33	9/30/2015	Floodplain Soil	15	495	Dow Michigan Ops.	Pats Gradall
34	9/30/2015	Floodplain Soil	15	510	Dow Michigan Ops.	Pats Gradall
35	9/30/2015	Floodplain Soil	15	525	Dow Michigan Ops.	Pats Gradall
36	9/30/2015	Floodplain Soil	15	540	Dow Michigan Ops.	Pats Gradall
37	9/30/2015	Floodplain Soil	15	555	Dow Michigan Ops.	Pats Gradall
38	9/30/2015	Floodplain Soil	15	570	Dow Michigan Ops.	Pats Gradall
39	9/30/2015	Floodplain Soil	15	585	Dow Michigan Ops.	Pats Gradall
40	9/30/2015	Floodplain Soil	15	600	Dow Michigan Ops.	Pats Gradall
41	9/30/2015	Floodplain Soil	15	615	Dow Michigan Ops.	Pats Gradall
42	9/30/2015	Floodplain Soil	15	630	Dow Michigan Ops.	Pats Gradall
43	9/30/2015	Floodplain Soil	15	645	Dow Michigan Ops.	Pats Gradall
44	9/30/2015	Floodplain Soil	15	660	Dow Michigan Ops.	Pats Gradall
45	9/30/2015	Floodplain Soil	15	675	Dow Michigan Ops.	Pats Gradall
46	9/30/2015	Floodplain Soil	15	690	Dow Michigan Ops.	Pats Gradall
47	9/30/2015	Floodplain Soil	15	705	Dow Michigan Ops.	Pats Gradall

Table 1a - S2 44 Material Removed Tracking Log
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Description	Quantity (CY)	Cumulative Quantity (CY)	Material Recipient	Transporter
48	9/30/2015	Floodplain Soil	15	720	Dow Michigan Ops.	Pats Gradall
49	9/30/2015	Floodplain Soil	15	735	Dow Michigan Ops.	Pats Gradall
50	9/30/2015	Floodplain Soil	15	750	Dow Michigan Ops.	Pats Gradall
51	9/30/2015	Floodplain Soil	15	765	Dow Michigan Ops.	Pats Gradall
52	9/30/2015	Floodplain Soil	15	780	Dow Michigan Ops.	Pats Gradall
53	9/30/2015	Floodplain Soil	15	795	Dow Michigan Ops.	Pats Gradall
54	9/30/2015	Floodplain Soil	15	810	Dow Michigan Ops.	Pats Gradall
55	9/30/2015	Floodplain Soil	15	825	Dow Michigan Ops.	Pats Gradall
56	9/30/2015	Floodplain Soil	15	840	Dow Michigan Ops.	Pats Gradall
57	9/30/2015	Floodplain Soil	15	855	Dow Michigan Ops.	Pats Gradall
58	9/30/2015	Floodplain Soil	15	870	Dow Michigan Ops.	Pats Gradall
59	9/30/2015	Floodplain Soil	15	885	Dow Michigan Ops.	Pats Gradall
60	9/30/2015	Floodplain Soil	15	900	Dow Michigan Ops.	Pats Gradall
61	10/1/2015	Floodplain Soil	15	915	Dow Michigan Ops.	Pats Gradall
62	10/1/2015	Floodplain Soil	15	930	Dow Michigan Ops.	Pats Gradall
63	10/1/2015	Floodplain Soil	15	945	Dow Michigan Ops.	Pats Gradall
64	10/1/2015	Floodplain Soil	15	960	Dow Michigan Ops.	Pats Gradall
65	10/1/2015	Floodplain Soil	15	975	Dow Michigan Ops.	Pats Gradall
66	10/1/2015	Floodplain Soil	15	990	Dow Michigan Ops.	Pats Gradall
67	10/1/2015	Floodplain Soil	15	1,005	Dow Michigan Ops.	Pats Gradall
68	10/1/2015	Floodplain Soil	15	1,020	Dow Michigan Ops.	Pats Gradall
69	10/1/2015	Floodplain Soil	15	1,035	Dow Michigan Ops.	Pats Gradall
70	10/1/2015	Floodplain Soil	15	1,050	Dow Michigan Ops.	Pats Gradall
71	10/1/2015	Floodplain Soil	15	1,065	Dow Michigan Ops.	Pats Gradall
72	10/1/2015	Floodplain Soil	15	1,080	Dow Michigan Ops.	Pats Gradall
73	10/1/2015	Floodplain Soil	15	1,095	Dow Michigan Ops.	Pats Gradall
74	10/1/2015	Floodplain Soil	15	1,110	Dow Michigan Ops.	Pats Gradall
75	10/1/2015	Floodplain Soil	15	1,125	Dow Michigan Ops.	Pats Gradall
76	10/1/2015	Floodplain Soil	15	1,140	Dow Michigan Ops.	Pats Gradall
77	10/1/2015	Floodplain Soil	15	1,155	Dow Michigan Ops.	Pats Gradall
78	10/1/2015	Floodplain Soil	15	1,170	Dow Michigan Ops.	Pats Gradall
79	10/1/2015	Floodplain Soil	15	1,185	Dow Michigan Ops.	Pats Gradall
80	10/1/2015	Floodplain Soil	15	1,200	Dow Michigan Ops.	Pats Gradall
81	10/1/2015	Floodplain Soil	15	1,215	Dow Michigan Ops.	Pats Gradall
82	10/1/2015	Floodplain Soil	15	1,230	Dow Michigan Ops.	Pats Gradall
83	10/1/2015	Floodplain Soil	15	1,245	Dow Michigan Ops.	Pats Gradall
84	10/1/2015	Floodplain Soil	15	1,260	Dow Michigan Ops.	Pats Gradall
85	10/1/2015	Floodplain Soil	15	1,275	Dow Michigan Ops.	Pats Gradall
86	10/1/2015	Floodplain Soil	15	1,290	Dow Michigan Ops.	Pats Gradall
87	10/1/2015	Floodplain Soil	15	1,305	Dow Michigan Ops.	Pats Gradall
88	10/1/2015	Floodplain Soil	15	1,320	Dow Michigan Ops.	Pats Gradall
89	10/1/2015	Floodplain Soil	15	1,335	Dow Michigan Ops.	Pats Gradall
90	10/1/2015	Floodplain Soil	15	1,350	Dow Michigan Ops.	Pats Gradall
91	10/1/2015	Floodplain Soil	15	1,365	Dow Michigan Ops.	Pats Gradall
92	10/1/2015	Floodplain Soil	15	1,380	Dow Michigan Ops.	Pats Gradall
93	10/1/2015	Floodplain Soil	15	1,395	Dow Michigan Ops.	Pats Gradall
94	10/1/2015	Floodplain Soil	15	1,410	Dow Michigan Ops.	Pats Gradall
95	10/1/2015	Floodplain Soil	15	1,425	Dow Michigan Ops.	Pats Gradall

Table 1a - S2 44 Material Removed Tracking Log
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Description	Quantity (CY)	Cumulative Quantity (CY)	Material Recipient	Transporter
96	10/1/2015	Floodplain Soil	15	1,440	Dow Michigan Ops.	Pats Gradall
97	10/1/2015	Floodplain Soil	15	1,455	Dow Michigan Ops.	Pats Gradall
98	10/1/2015	Floodplain Soil	15	1,470	Dow Michigan Ops.	Pats Gradall
99	10/1/2015	Floodplain Soil	15	1,485	Dow Michigan Ops.	Pats Gradall
100	10/1/2015	Floodplain Soil	15	1,500	Dow Michigan Ops.	Pats Gradall
101	10/1/2015	Floodplain Soil	15	1,515	Dow Michigan Ops.	Pats Gradall
102	10/1/2015	Floodplain Soil	15	1,530	Dow Michigan Ops.	Pats Gradall
103	10/1/2015	Floodplain Soil	15	1,545	Dow Michigan Ops.	Pats Gradall
104	10/1/2015	Floodplain Soil	15	1,560	Dow Michigan Ops.	Pats Gradall
105	10/1/2015	Floodplain Soil	15	1,575	Dow Michigan Ops.	Pats Gradall
106	10/1/2015	Floodplain Soil	15	1,590	Dow Michigan Ops.	Pats Gradall
107	10/1/2015	Floodplain Soil	15	1,605	Dow Michigan Ops.	Pats Gradall
108	10/1/2015	Laydown Area Material ¹	15	1,620	Dow Michigan Ops.	Pats Gradall
109	10/1/2015	Laydown Area Material ¹	15	1,635	Dow Michigan Ops.	Pats Gradall
110	10/1/2015	Laydown Area Material ¹	15	1,650	Dow Michigan Ops.	Pats Gradall
111	10/8/2015	Laydown Area Material ¹	15	1,665	Dow Michigan Ops.	Pats Gradall
112	10/8/2015	Laydown Area Material ¹	15	1,680	Dow Michigan Ops.	Pats Gradall
113	10/8/2015	Laydown Area Material ¹	15	1,695	Dow Michigan Ops.	Pats Gradall
114	10/8/2015	Laydown Area Material ¹	15	1,710	Dow Michigan Ops.	Pats Gradall
115	10/8/2015	Laydown Area Material ¹	15	1,725	Project Surplus	Pats Gradeall
116	10/8/2015	Laydown Area Material ¹	15	1,740	Project Surplus	Pats Gradeall
117	10/8/15	Laydown Area Material ¹	15	1,755	Project Surplus	Pats Gradeall
118	10/9/2015	Miscellaneous Project Debris ¹	5	1,760	City of Midland Landfill ²	Pats Gradall

Total Material Removed From within the 100 Year Floodplain (CY)

1,605

Total Material Removed From outside 100 Year Floodplain (CY)

155

Notes:

1. Laydown area materials and miscellaneous project debris (gravel, woodchips, etc.) removed from outside the 100-year floodplain.
2. Material removed to City of Midland Landfill under Manifest Number MIA0001650093.

Table 1b - S2 44 Inventory of Materials Used
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Material Description	Quantity (CY)	Cumulative Quantity (CY)	Material Source	Material Recipient	Transporter
1	9/18/2015	Gravel ¹	15	15	Project Surplus	Laydown Area	Pats Gradall
2	9/18/2015	Gravel ¹	15	30	Project Surplus	Laydown Area	Pats Gradall
3	9/18/2015	Gravel ¹	15	45	Project Surplus	Laydown Area	Pats Gradall
4	9/18/2015	Gravel ¹	15	60	Fisher Sand & Gravel	Laydown Area	Pats Gradall
5	9/18/2015	Gravel ¹	15	75	Fisher Sand & Gravel	Laydown Area	Pats Gradall
6	9/18/2015	Gravel ¹	15	90	Fisher Sand & Gravel	Laydown Area	Pats Gradall
7	9/26/2015	Wood Chips ¹	15	105	Project Surplus	Laydown Area	Pats Gradall
8	9/26/2015	Wood Chips ¹	15	120	Project Surplus	Laydown Area	Pats Gradall
9	9/26/2015	Wood Chips ¹	15	135	Project Surplus	Laydown Area	Pats Gradall
10	9/29/2015	Wood Chips ¹	15	150	Project Surplus	Laydown Area	Pats Gradall
11	9/29/2015	Wood Chips ¹	15	165	Project Surplus	Laydown Area	Pats Gradall
12	9/29/2015	Wood Chips ¹	15	180	Project Surplus	Laydown Area	Pats Gradall
13	9/29/2015	Wood Chips ¹	15	195	Project Surplus	Laydown Area	Pats Gradall
14	9/29/2015	Sand	15	210	Pats Gradall	Access Drive	Pats Gradall
15	10/1/2015	Wood Chips ²	15	225	Project Surplus	Access Drive	Pats Gradall
16	10/1/2015	Wood Chips ²	15	240	Project Surplus	Access Drive	Pats Gradall
17	10/2/2015	Topsoil	15	255	Pats MAC / 3 Mile	Floodplain	Pats Gradall
18	10/2/2015	Topsoil	15	270	Pats MAC / 3 Mile	Floodplain	Pats Gradall
19	10/2/2015	Topsoil	15	285	Pats MAC / 3 Mile	Floodplain	Pats Gradall
20	10/2/2015	Topsoil	15	300	Pats MAC / 3 Mile	Floodplain	Pats Gradall
21	10/2/2015	Topsoil	15	315	Pats MAC / 3 Mile	Floodplain	Pats Gradall
22	10/2/2015	Topsoil	15	330	Pats MAC / 3 Mile	Floodplain	Pats Gradall
23	10/2/2015	Topsoil	15	345	Pats MAC / 3 Mile	Floodplain	Pats Gradall
24	10/2/2015	Topsoil	15	360	Pats MAC / 3 Mile	Floodplain	Pats Gradall
25	10/2/2015	Topsoil	15	375	Pats MAC / 3 Mile	Floodplain	Pats Gradall
26	10/2/2015	Topsoil	15	390	Pats MAC / 3 Mile	Floodplain	Pats Gradall
27	10/2/2015	Topsoil	15	405	Pats MAC / 3 Mile	Floodplain	Pats Gradall
28	10/2/2015	Topsoil	15	420	Pats MAC / 3 Mile	Floodplain	Pats Gradall
29	10/2/2015	Topsoil	15	435	Pats MAC / 3 Mile	Floodplain	Pats Gradall
30	10/2/2015	Topsoil	15	450	Pats MAC / 3 Mile	Floodplain	Pats Gradall
31	10/2/2015	Topsoil	15	465	Pats MAC / 3 Mile	Floodplain	Pats Gradall
32	10/2/2015	Topsoil	15	480	Pats MAC / 3 Mile	Floodplain	Pats Gradall
33	10/2/2015	Topsoil	15	495	Pats MAC / 3 Mile	Floodplain	Pats Gradall
34	10/2/2015	Topsoil	15	510	Pats MAC / 3 Mile	Floodplain	Pats Gradall
35	10/2/2015	Topsoil	15	525	Pats MAC / 3 Mile	Floodplain	Pats Gradall
36	10/2/2015	Topsoil	15	540	Pats MAC / 3 Mile	Floodplain	Pats Gradall
37	10/2/2015	Topsoil	15	555	Pats MAC / 3 Mile	Floodplain	Pats Gradall
38	10/2/2015	Topsoil	15	570	Pats MAC / 3 Mile	Floodplain	Pats Gradall
39	10/2/2015	Topsoil	15	585	Pats MAC / 3 Mile	Floodplain	Pats Gradall
40	10/2/2015	Topsoil	15	600	Pats MAC / 3 Mile	Floodplain	Pats Gradall
41	10/2/2015	Topsoil	15	615	Pats MAC / 3 Mile	Floodplain	Pats Gradall
42	10/2/2015	Topsoil	15	630	Pats MAC / 3 Mile	Floodplain	Pats Gradall
43	10/2/2015	Topsoil	15	645	Pats MAC / 3 Mile	Floodplain	Pats Gradall
44	10/2/2015	Topsoil	15	660	Pats MAC / 3 Mile	Floodplain	Pats Gradall
45	10/2/2015	Topsoil	15	675	Pats MAC / 3 Mile	Floodplain	Pats Gradall
46	10/2/2015	Topsoil	15	690	Pats MAC / 3 Mile	Floodplain	Pats Gradall
47	10/2/2015	Topsoil	15	705	Pats MAC / 3 Mile	Floodplain	Pats Gradall
48	10/2/2015	Topsoil	15	720	Pats MAC / 3 Mile	Floodplain	Pats Gradall
49	10/2/2015	Topsoil	15	735	Pats MAC / 3 Mile	Floodplain	Pats Gradall
50	10/2/2015	Topsoil	15	750	Pats MAC / 3 Mile	Floodplain	Pats Gradall
51	10/2/2015	Topsoil	15	765	Pats MAC / 3 Mile	Floodplain	Pats Gradall
52	10/2/2015	Topsoil	15	780	Pats MAC / 3 Mile	Floodplain	Pats Gradall
53	10/2/2015	Topsoil	15	795	Pats MAC / 3 Mile	Floodplain	Pats Gradall
54	10/2/2015	Topsoil	15	810	Pats MAC / 3 Mile	Floodplain	Pats Gradall
55	10/2/2015	Topsoil	15	825	Pats MAC / 3 Mile	Floodplain	Pats Gradall

Table 1b - S2 44 Inventory of Materials Used
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Material Description	Quantity (CY)	Cumulative Quantity (CY)	Material Source	Material Recipient	Transporter
56	10/2/2015	Topsoil	15	840	Pats MAC / 3 Mile	Floodplain	Pats Gradall
57	10/2/2015	Topsoil	15	855	Pats MAC / 3 Mile	Floodplain	Pats Gradall
58	10/2/2015	Topsoil	15	870	Pats MAC / 3 Mile	Floodplain	Pats Gradall
59	10/2/2015	Topsoil	15	885	Pats MAC / 3 Mile	Floodplain	Pats Gradall
60	10/2/2015	Topsoil	15	900	Pats MAC / 3 Mile	Floodplain	Pats Gradall
61	10/2/2015	Topsoil	15	915	Pats MAC / 3 Mile	Floodplain	Pats Gradall
62	10/2/2015	Topsoil	15	930	Pats MAC / 3 Mile	Floodplain	Pats Gradall
63	10/2/2015	Topsoil	15	945	Pats MAC / 3 Mile	Floodplain	Pats Gradall
64	10/2/2015	Topsoil	15	960	Pats MAC / 3 Mile	Floodplain	Pats Gradall
65	10/2/2015	Topsoil	15	975	Pats MAC / 3 Mile	Floodplain	Pats Gradall
66	10/2/2015	Topsoil	15	990	Pats MAC / 3 Mile	Floodplain	Pats Gradall
67	10/2/2015	Topsoil	15	1,005	Pats MAC / 3 Mile	Floodplain	Pats Gradall
68	10/2/2015	Topsoil	15	1,020	Pats MAC / 3 Mile	Floodplain	Pats Gradall
69	10/2/2015	Topsoil	15	1,035	Pats MAC / 3 Mile	Floodplain	Pats Gradall
70	10/2/2015	Topsoil	15	1,050	Pats MAC / 3 Mile	Floodplain	Pats Gradall
71	10/2/2015	Topsoil	15	1,065	Pats MAC / 3 Mile	Floodplain	Pats Gradall
72	10/2/2015	Topsoil	15	1,080	Pats MAC / 3 Mile	Floodplain	Pats Gradall
73	10/2/2015	Topsoil	15	1,095	Pats MAC / 3 Mile	Floodplain	Pats Gradall
74	10/2/2015	Topsoil	15	1,110	Pats MAC / 3 Mile	Floodplain	Pats Gradall
75	10/2/2015	Topsoil	15	1,125	Pats MAC / 3 Mile	Floodplain	Pats Gradall
76	10/2/2015	Topsoil	15	1,140	Pats MAC / 3 Mile	Floodplain	Pats Gradall
77	10/2/2015	Topsoil	15	1,155	Pats MAC / 3 Mile	Floodplain	Pats Gradall
78	10/2/2015	Topsoil	15	1,170	Pats MAC / 3 Mile	Floodplain	Pats Gradall
79	10/2/2015	Topsoil	15	1,185	Pats MAC / 3 Mile	Floodplain	Pats Gradall
80	10/2/2015	Topsoil	15	1,200	Pats MAC / 3 Mile	Floodplain	Pats Gradall
81	10/2/2015	Topsoil	15	1,215	Pats MAC / 3 Mile	Floodplain	Pats Gradall
82	10/2/2015	Topsoil	15	1,230	Pats MAC / 3 Mile	Floodplain	Pats Gradall
83	10/2/2015	Topsoil	15	1,245	Pats MAC / 3 Mile	Floodplain	Pats Gradall
84	10/2/2015	Topsoil	15	1,260	Pats MAC / 3 Mile	Floodplain	Pats Gradall
85	10/2/2015	Topsoil	15	1,275	Pats MAC / 3 Mile	Floodplain	Pats Gradall
86	10/2/2015	Topsoil	15	1,290	Pats MAC / 3 Mile	Floodplain	Pats Gradall
87	10/2/2015	Topsoil	15	1,305	Pats MAC / 3 Mile	Floodplain	Pats Gradall
88	10/2/2015	Topsoil	15	1,320	Pats MAC / 3 Mile	Floodplain	Pats Gradall
89	10/2/2015	Topsoil	15	1,335	Pats MAC / 3 Mile	Floodplain	Pats Gradall
90	10/2/2015	Topsoil	15	1,350	Pats MAC / 3 Mile	Floodplain	Pats Gradall
91	10/2/2015	Topsoil	15	1,365	Pats MAC / 3 Mile	Floodplain	Pats Gradall
92	10/2/2015	Topsoil	15	1,380	Pats MAC / 3 Mile	Floodplain	Pats Gradall
93	10/2/2015	Topsoil	15	1,395	Pats MAC / 3 Mile	Floodplain	Pats Gradall
94	10/2/2015	Topsoil	15	1,410	Pats MAC / 3 Mile	Floodplain	Pats Gradall
95	10/2/2015	Topsoil	15	1,425	Pats MAC / 3 Mile	Floodplain	Pats Gradall
96	10/2/2015	Topsoil	15	1,440	Pats MAC / 3 Mile	Floodplain	Pats Gradall
97	10/2/2015	Topsoil	15	1,455	Pats MAC / 3 Mile	Floodplain	Pats Gradall
98	10/2/2015	Topsoil	15	1,470	Pats MAC / 3 Mile	Floodplain	Pats Gradall
99	10/2/2015	Topsoil	15	1,485	Pats MAC / 3 Mile	Floodplain	Pats Gradall
100	10/2/2015	Topsoil	15	1,500	Pats MAC / 3 Mile	Floodplain	Pats Gradall
101	10/2/2015	Topsoil	15	1,515	Pats MAC / 3 Mile	Floodplain	Pats Gradall
102	10/2/2015	Topsoil	15	1,530	Pats MAC / 3 Mile	Floodplain	Pats Gradall
103	10/2/2015	Topsoil	15	1,545	Pats MAC / 3 Mile	Floodplain	Pats Gradall
104	10/2/2015	Topsoil	15	1,560	Pats MAC / 3 Mile	Floodplain	Pats Gradall
105	10/2/2015	Topsoil	15	1,575	Pats MAC / 3 Mile	Floodplain	Pats Gradall
106	10/2/2015	Topsoil	15	1,590	Pats MAC / 3 Mile	Floodplain	Pats Gradall
107	10/2/2015	Topsoil	15	1,605	Pats MAC / 3 Mile	Floodplain	Pats Gradall
108	10/2/2015	Topsoil	15	1,620	Pats MAC / 3 Mile	Floodplain	Pats Gradall
109	10/2/2015	Topsoil ¹	15	1,635	Pats MAC / 3 Mile	Laydown Area	Pats Gradall
110	10/2/2015	Topsoil ¹	15	1,650	Pats MAC / 3 Mile	Laydown Area	Pats Gradall
111	10/2/2015	Topsoil ¹	15	1,665	Pats MAC / 3 Mile	Laydown Area	Pats Gradall
112	10/2/2015	Topsoil ¹	15	1,680	Pats MAC / 3 Mile	Laydown Area	Pats Gradall

Table 1b - S2 44 Inventory of Materials Used
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Material Description	Quantity (CY)	Cumulative Quantity (CY)	Material Source	Material Recipient	Transporter
113	10/6/2015	Sand	15	1,695	Pats Gradall	Access Drive Restoration	Pats Gradall
114	10/6/2015	Sand	15	1,710	Pats Gradall	Access Drive Restoration	Pats Gradall
115	10/6/2015	Sand	15	1,725	Pats Gradall	Access Drive Restoration	Pats Gradall
116	10/6/2015	Gravel ³	15	1,725	Laydown Area	Access Drive Restoration	Pats Gradall
117	10/6/2015	Sand	15	1,740	Pats Gradall	Access Drive Restoration	Pats Gradall
118	10/7/2015	Gravel ³	15	1,740	Laydown Area	Access Drive Restoration	Pats Gradall
119	10/7/2015	Gravel ³	15	1,740	Laydown Area	Access Drive Restoration	Pats Gradall
120	10/7/2015	Gravel	15	1,755	Fisher Sand & Gravel	Access Drive Restoration	Pats Gradall
121	10/7/2015	Gravel ¹	15	1,770	Fisher Sand & Gravel	Access Drive Restoration	Pats Gradall
122	10/8/2015	Gravel ¹	15	1,785	Fisher Sand & Gravel	Owner Driveway	Pats Gradall

Total Volume of Permanent Fill Placed within the 100 Year Floodplain (CY)	1,515
Total Volume of Temporary Fill placed within the 100 Year Floodplain (CY)	30
Total Material Placed outside 100 Year Floodplain (CY)	240

Notes:

1. Material placed in area outside the 100 year floodplain.
2. A portion of the woodchips were used as temporary roadway material in the floodplain and were included in the removal of floodplain material.
3. Material relocated from laydown area to access drive to support restoration.

Insert 1a

Photolog

PHOTOGRAPHIC LOG

Site Location: **S2_44**

Photo No.
1

Date:
09/03/15

Direction Photo Taken:

East

Description:

Wood pile area on
southeast side of site



Photo No.
2

Date:
09/04/15

Direction Photo Taken:

North

Description:

Preconstruction
conditions of remedial
area



PHOTOGRAPHIC LOG

Site Location: **S2_44**

Photo No.
3

Date:
09/25/15

Direction Photo Taken:

West

Description:

Temporary material staging area being constructed adjacent to River Road



Photo No.
4

Date:
09/29/15

Direction Photo Taken:

North

Description:

Crew removing soil from remedial area



PHOTOGRAPHIC LOG

Site Location: **S2_44**

Photo No.
5

Date:
09/30/15

Direction Photo Taken:

South

Description:

Crew loading and transporting soil



Photo No.
6

Date:
09/29/15

Direction Photo Taken:

North

Description:

Soil removed from floodplain being offloaded at material staging area



PHOTOGRAPHIC LOG

Site Location: **S2_44**

Photo No.
7

Date:
09/30/15

Direction Photo Taken:

Northwest

Description:

Soil being placed into
truck for disposal



Photo No.
8

Date:
10/02/15

Direction Photo Taken:

West

Description:

Topsoil being staged in
material staging area



PHOTOGRAPHIC LOG

Site Location: **S2_44**

Photo No.
9

Date:
10/02/15

Direction Photo Taken:

North

Description:

Topsoil being offloaded
within remedial area



Photo No.
10

Date:
10/08/15

Direction Photo Taken:

South

Description:

Crew applying hydro-
seed slurry



PHOTOGRAPHIC LOG

Site Location: **S2_44**

Photo No.
11

Date:
10/08/15

Direction Photo Taken:

North

Description:

Material staging area
restored prior to seeding



Photo No.
12

Date:
10/20/15

Direction Photo Taken:

North

Description:

Post construction
monitoring



Insert 1b

Post-construction monitoring details

Monitoring and Maintenance Field Form

Tittabawassee River Floodplain Project

Property Information

Decision Unit ID S2_44_DU01

Description of Monitoring Activities Performed

Overall Vegetation Health and Coverage

80-90% coverage of new lawn

Tree Health (trees that existed pre-construction and newly planted trees)

No ill effects showing for pre-existing trees

No new trees were planted on this site

Erosion Control Issues

None

Other Issues

None

Description of Required Maintenance Activities

Make additional observations in the Spring and additional seeding may be required due to sparse growth observed during the fall monitoring event.

Access road is currently being used by the homeowner for tree removal

Field Representative Carie A. Lefevre

Date 11/20/2015

Monitoring and Maintenance Field Form

Tittabawassee River Floodplain Project

Property Information

Decision Unit ID S2_44_DU01

Photos Taken During Monitoring Activities

See attached photolog

Post Construction

PHOTOGRAPHIC LOG


Client Name: The Dow Chemical Company		Site Location: S2_44_DU01	Project No. TR Floodplain
Photo No. 1	Date: 11-20-2015		
Direction Photo Taken: East			
Description: Access Road/was pre-existing			

Photo No. 2	Date:	
Direction Photo Taken: East		
Description Newly seeded maintained area of floodplain		

Post Construction

PHOTOGRAPHIC LOG


Client Name: The Dow Chemical Company		Site Location: S2_44_DU01	Project No. TR Floodplain
Photo No. 3	Date: 11-20-2015		
Direction Photo Taken: West			
Description: Access road/pre-existing			

Photo No. 4	Date: 11-22-2015	
Direction Photo Taken: West		
Description: Newly seeded maintained areas in floodplain		

Post Construction

PHOTOGRAPHIC LOG


Client Name: The Dow Chemical Company		Site Location: S2_44_DU01	Project No. TR Floodplain
Photo No. 5	Date: 11-20-2015		
Direction Photo Taken: North			
Description: Sparse area of newly seeded lawn			

Photo No. 6	Date: 11-20-2015	
Direction Photo Taken: West		
Description: Newly seeded lawn in floodplain		

Post Construction

PHOTOGRAPHIC LOG


Client Name: The Dow Chemical Company		Site Location: S2_44_DU01	Project No. TR Floodplain
Photo No. 7	Date: 11-20-2015		
Direction Photo Taken: North			
Description: Newly seeded maintained area in floodplain			

Photo No. 8	Date: 11-20-2015	
Direction Photo Taken: South		
Description: Newly seeded maintained area in floodplain		

Post Construction

PHOTOGRAPHIC LOG

Client Name: The Dow Chemical Company		Site Location: S2_44_DU01	Project No. TR Floodplain
Photo No. 9	Date: 11-20-2015	 <p>2015.11.20 12:06</p>	
Direction Photo Taken: East			
Description: Newly seeded maintained area in floodplain			

Photo No. 10	Date: 11-20-2015	 <p>2015.11.20 12:00</p>
Direction Photo Taken: East		
Description: Access road, which was pre-existing		

Attachment 2

S2_48 Implementation Details

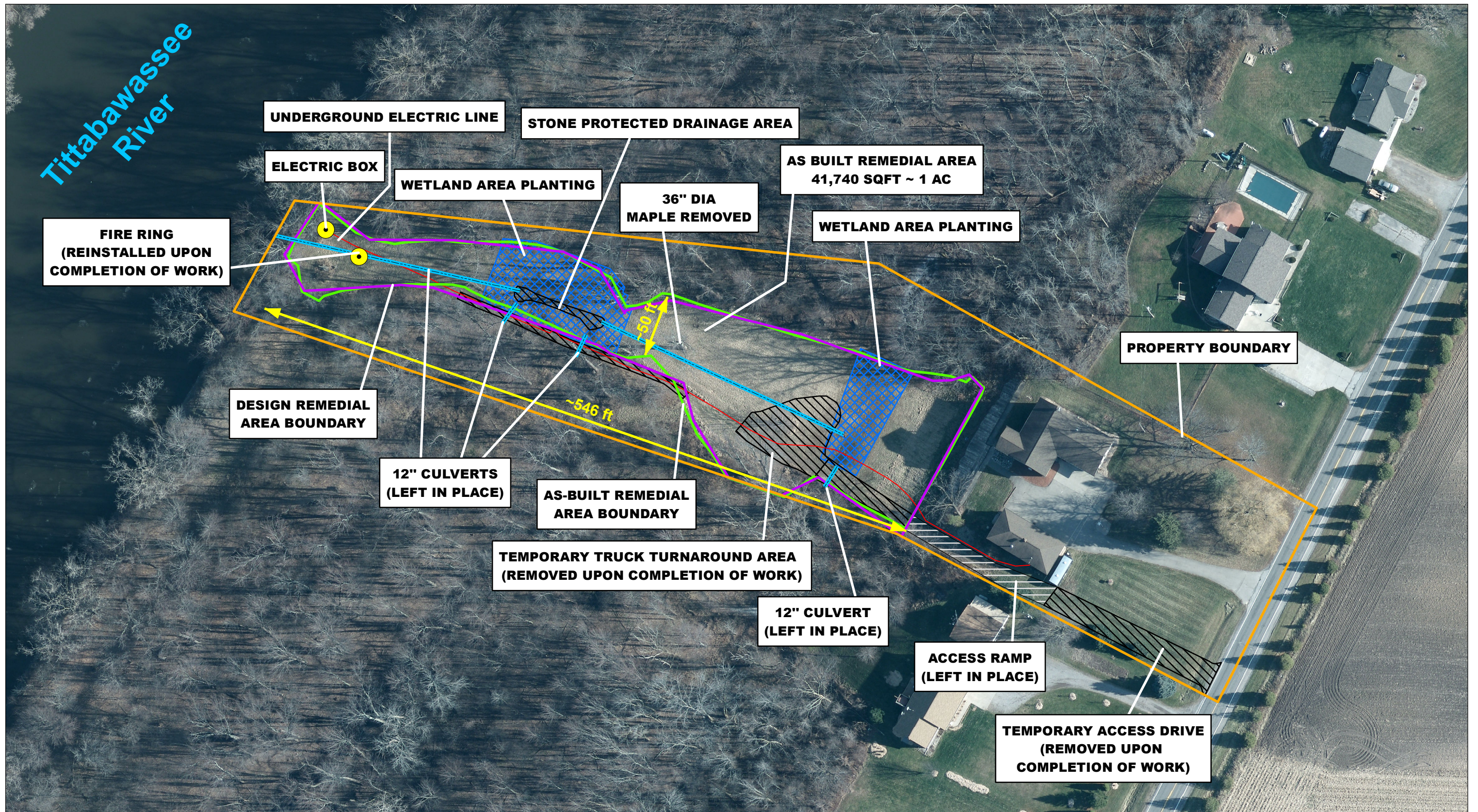
**Tittabawassee River Floodplain
Segment 2 Property Construction Implementation Details**

Property Details	
Decision Unit (DU) ID	S2_48_DU01
Land Use Type	Maintained
Decision Unit Remedial Area	Approximately 1 acre
Accompanying Plans/Documents	
Figures	Figure 2a: As-Built Site Plan
Tables	Table 2a: Material Removed Tracking Log Table 2b: Inventory of Materials Used
Inserts	Insert 2a: Photolog Insert 2b: Post-construction monitoring details
Property-Specific Pre-construction Details	
Description of Work	<ul style="list-style-type: none"> • Remedy: Removal of the upper 12 inches of soil from the identified ~1-acre remedial area. • Reestablishment: Backfill to grade and reseed.
Special Conditions	<ul style="list-style-type: none"> • Maintain/return power to pre-existing location. • Remove 36" diameter maple in center of yard. • Improve existing ramp along garage. • Remove concrete table (do not replace).
Construction Details	
Construction Dates	September 11, 2015 through October 1, 2015.
Details of Work Performed	<ul style="list-style-type: none"> • Mobilized to property on September 11, 2015. • Developed temporary access across the property: <ul style="list-style-type: none"> – Improved access on west side of garage, including tree trimming and added crushed aggregate. – Used existing trail across yard where available and added crushed aggregate as necessary. • Cleared area, including removal of trees and concrete table <ul style="list-style-type: none"> – One 36" diameter maple removed. • Removed upper 12 inches of material from the identified ~1-acre remedial area (see Figure 2a) and removed approximately 2,100 cubic yards off the property for relocation at Dow's Michigan Operations Facility. See Table 2a for material removal tracking log. • Backfilled to pre-excavation elevations with fill material and topsoil (approximately 2,000 cubic yards – see Table 2b). Where necessary, stone was also used to provide erosion protection. • Performed seeding and planting consistent with plans provided in the Design Plan. • Reinstalled electrical service and fire ring as shown on Figure 2a. • Some access improvements were left in place as shown in Figure 2a. • Demobilized from property on October 1, 2015. • A photolog is provided in Insert 2a that shows pre-construction, during construction, and post-construction conditions.

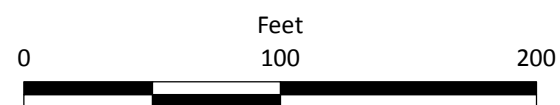
**Tittabawassee River Floodplain
Segment 2 Property Construction Implementation Details**

Describe any changes from the agreed remedy for the property	Installed natural stone to provide erosion protection in a low area of the property as shown in Figure 2a.
Details of any unknown buried items uncovered during the excavation	Utility lines identified during design confirmed during excavation. Existing power line reinstalled following construction.
Details of any other unresolved issues	None
Post-Construction Details	
Date of post-construction monitoring	November 20, 2015. Refer to Insert 2b for details.

Figures



Aerial Imagery: 2014



S2_48 As-Built Site Plan
2015 Segment 2 Floodplain Completion Report

Figure
2a

Tables

Table 2a - S2 48 Material Removed Tracking Log
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Description	Quantity (CY)	Cumulative Quantity (CY)	Material Recipient	Transporter
1	9/15/2015	Floodplain Soil	12	12	Dow Michigan Ops.	Pats Gradall
2	9/15/2015	Floodplain Soil	12	24	Dow Michigan Ops.	Pats Gradall
3	9/15/2015	Floodplain Soil	12	36	Dow Michigan Ops.	Pats Gradall
4	9/15/2015	Floodplain Soil	12	48	Dow Michigan Ops.	Pats Gradall
5	9/15/2015	Floodplain Soil	15	63	Dow Michigan Ops.	Pats Gradall
6	9/15/2015	Floodplain Soil	15	78	Dow Michigan Ops.	Pats Gradall
7	9/15/2015	Floodplain Soil	15	93	Dow Michigan Ops.	Pats Gradall
8	9/15/2015	Floodplain Soil	15	108	Dow Michigan Ops.	Pats Gradall
9	9/15/2015	Floodplain Soil	15	123	Dow Michigan Ops.	Pats Gradall
10	9/15/2015	Floodplain Soil	15	138	Dow Michigan Ops.	Pats Gradall
11	9/15/2015	Floodplain Soil	15	153	Dow Michigan Ops.	Pats Gradall
12	9/15/2015	Floodplain Soil	15	168	Dow Michigan Ops.	Pats Gradall
13	9/15/2015	Floodplain Soil	15	183	Dow Michigan Ops.	Pats Gradall
14	9/15/2015	Floodplain Soil	15	198	Dow Michigan Ops.	Pats Gradall
15	9/15/2015	Floodplain Soil	15	213	Dow Michigan Ops.	Pats Gradall
16	9/15/2015	Floodplain Soil	15	228	Dow Michigan Ops.	Pats Gradall
17	9/15/2015	Floodplain Soil	15	243	Dow Michigan Ops.	Pats Gradall
18	9/15/2015	Floodplain Soil	15	258	Dow Michigan Ops.	Pats Gradall
19	9/15/2015	Floodplain Soil	15	273	Dow Michigan Ops.	Pats Gradall
20	9/15/2015	Floodplain Soil	15	288	Dow Michigan Ops.	Pats Gradall
21	9/15/2015	Floodplain Soil	15	303	Dow Michigan Ops.	Pats Gradall
22	9/15/2015	Floodplain Soil	15	318	Dow Michigan Ops.	Pats Gradall
23	9/15/2015	Floodplain Soil	15	333	Dow Michigan Ops.	Pats Gradall
24	9/15/2015	Floodplain Soil	15	348	Dow Michigan Ops.	Pats Gradall
25	9/15/2015	Floodplain Soil	15	363	Dow Michigan Ops.	Pats Gradall
26	9/15/2015	Floodplain Soil	15	378	Dow Michigan Ops.	Pats Gradall
27	9/15/2015	Floodplain Soil	15	393	Dow Michigan Ops.	Pats Gradall
28	9/15/2015	Floodplain Soil	15	408	Dow Michigan Ops.	Pats Gradall
29	9/15/2015	Floodplain Soil	15	423	Dow Michigan Ops.	Pats Gradall
30	9/15/2015	Floodplain Soil	15	438	Dow Michigan Ops.	Pats Gradall
31	9/15/2015	Floodplain Soil	15	453	Dow Michigan Ops.	Pats Gradall
32	9/15/2015	Floodplain Soil	15	468	Dow Michigan Ops.	Pats Gradall
33	9/15/2015	Floodplain Soil	15	483	Dow Michigan Ops.	Pats Gradall
34	9/15/2015	Floodplain Soil	15	498	Dow Michigan Ops.	Pats Gradall
35	9/15/2015	Floodplain Soil	15	513	Dow Michigan Ops.	Pats Gradall
36	9/15/2015	Floodplain Soil	15	528	Dow Michigan Ops.	Pats Gradall
37	9/15/2015	Floodplain Soil	15	543	Dow Michigan Ops.	Pats Gradall
38	9/15/2015	Floodplain Soil	15	558	Dow Michigan Ops.	Pats Gradall
39	9/15/2015	Floodplain Soil	15	573	Dow Michigan Ops.	Pats Gradall
40	9/15/2015	Floodplain Soil	15	588	Dow Michigan Ops.	Pats Gradall
41	9/15/2015	Floodplain Soil	15	603	Dow Michigan Ops.	Pats Gradall
42	9/15/2015	Floodplain Soil	15	618	Dow Michigan Ops.	Pats Gradall
43	9/15/2015	Floodplain Soil	15	633	Dow Michigan Ops.	Pats Gradall
44	9/15/2015	Floodplain Soil	15	648	Dow Michigan Ops.	Pats Gradall
45	9/16/2015	Floodplain Soil	15	663	Dow Michigan Ops.	Pats Gradall
46	9/16/2015	Floodplain Soil	15	678	Dow Michigan Ops.	Pats Gradall
47	9/16/2015	Floodplain Soil	15	693	Dow Michigan Ops.	Pats Gradall
48	9/16/2015	Floodplain Soil	15	708	Dow Michigan Ops.	Pats Gradall

Table 2a - S2 48 Material Removed Tracking Log
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Description	Quantity (CY)	Cumulative Quantity (CY)	Material Recipient	Transporter
49	9/16/2015	Floodplain Soil	15	723	Dow Michigan Ops.	Pats Gradall
50	9/16/2015	Floodplain Soil	15	738	Dow Michigan Ops.	Pats Gradall
51	9/16/2015	Floodplain Soil	15	753	Dow Michigan Ops.	Pats Gradall
52	9/16/2015	Floodplain Soil	15	768	Dow Michigan Ops.	Pats Gradall
53	9/16/2015	Floodplain Soil	15	783	Dow Michigan Ops.	Pats Gradall
54	9/16/2015	Floodplain Soil	15	798	Dow Michigan Ops.	Pats Gradall
55	9/16/2015	Floodplain Soil	15	813	Dow Michigan Ops.	Pats Gradall
56	9/16/2015	Floodplain Soil	15	828	Dow Michigan Ops.	Pats Gradall
57	9/16/2015	Floodplain Soil	15	843	Dow Michigan Ops.	Pats Gradall
58	9/16/2015	Floodplain Soil	15	858	Dow Michigan Ops.	Pats Gradall
59	9/16/2015	Floodplain Soil	15	873	Dow Michigan Ops.	Pats Gradall
60	9/16/2015	Floodplain Soil	15	888	Dow Michigan Ops.	Pats Gradall
61	9/16/2015	Floodplain Soil	15	903	Dow Michigan Ops.	Pats Gradall
62	9/16/2015	Floodplain Soil	15	918	Dow Michigan Ops.	Pats Gradall
63	9/16/2015	Floodplain Soil	15	933	Dow Michigan Ops.	Pats Gradall
64	9/16/2015	Floodplain Soil	15	948	Dow Michigan Ops.	Pats Gradall
65	9/16/2015	Floodplain Soil	15	963	Dow Michigan Ops.	Pats Gradall
66	9/16/2015	Floodplain Soil	15	978	Dow Michigan Ops.	Pats Gradall
67	9/16/2015	Floodplain Soil	15	993	Dow Michigan Ops.	Pats Gradall
68	9/16/2015	Floodplain Soil	15	1,008	Dow Michigan Ops.	Pats Gradall
69	9/16/2015	Floodplain Soil	15	1,023	Dow Michigan Ops.	Pats Gradall
70	9/16/2015	Floodplain Soil	15	1,038	Dow Michigan Ops.	Pats Gradall
71	9/16/2015	Floodplain Soil	15	1,053	Dow Michigan Ops.	Pats Gradall
72	9/16/2015	Floodplain Soil	15	1,068	Dow Michigan Ops.	Pats Gradall
73	9/16/2015	Floodplain Soil	15	1,083	Dow Michigan Ops.	Pats Gradall
74	9/16/2015	Floodplain Soil	15	1,098	Dow Michigan Ops.	Pats Gradall
75	9/16/2015	Floodplain Soil	15	1,113	Dow Michigan Ops.	Pats Gradall
76	9/16/2015	Floodplain Soil	15	1,128	Dow Michigan Ops.	Pats Gradall
77	9/16/2015	Floodplain Soil	15	1,143	Dow Michigan Ops.	Pats Gradall
78	9/16/2015	Floodplain Soil	15	1,158	Dow Michigan Ops.	Pats Gradall
79	9/16/2015	Floodplain Soil	15	1,173	Dow Michigan Ops.	Pats Gradall
80	9/16/2015	Floodplain Soil	15	1,188	Dow Michigan Ops.	Pats Gradall
81	9/16/2015	Floodplain Soil	15	1,203	Dow Michigan Ops.	Pats Gradall
82	9/16/2015	Floodplain Soil	15	1,218	Dow Michigan Ops.	Pats Gradall
83	9/16/2015	Floodplain Soil	15	1,233	Dow Michigan Ops.	Pats Gradall
84	9/16/2015	Floodplain Soil	15	1,248	Dow Michigan Ops.	Pats Gradall
85	9/16/2015	Floodplain Soil	15	1,263	Dow Michigan Ops.	Pats Gradall
86	9/16/2015	Floodplain Soil	15	1,278	Dow Michigan Ops.	Pats Gradall
87	9/16/2015	Floodplain Soil	15	1,293	Dow Michigan Ops.	Pats Gradall
88	9/16/2015	Floodplain Soil	15	1,308	Dow Michigan Ops.	Pats Gradall
89	9/16/2015	Floodplain Soil	15	1,323	Dow Michigan Ops.	Pats Gradall
90	9/16/2015	Floodplain Soil	15	1,338	Dow Michigan Ops.	Pats Gradall
91	9/16/2015	Floodplain Soil	15	1,353	Dow Michigan Ops.	Pats Gradall
92	9/16/2015	Floodplain Soil	15	1,368	Dow Michigan Ops.	Pats Gradall
93	9/16/2015	Floodplain Soil	15	1,383	Dow Michigan Ops.	Pats Gradall
94	9/16/2015	Floodplain Soil	15	1,398	Dow Michigan Ops.	Pats Gradall
95	9/16/2015	Floodplain Soil	15	1,413	Dow Michigan Ops.	Pats Gradall
96	9/16/2015	Floodplain Soil	15	1,428	Dow Michigan Ops.	Pats Gradall

Table 2a - S2 48 Material Removed Tracking Log
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Description	Quantity (CY)	Cumulative Quantity (CY)	Material Recipient	Transporter
97	9/16/2015	Floodplain Soil	15	1,443	Dow Michigan Ops.	Pats Gradall
98	9/16/2015	Floodplain Soil	15	1,458	Dow Michigan Ops.	Pats Gradall
99	9/16/2015	Floodplain Soil	15	1,473	Dow Michigan Ops.	Pats Gradall
100	9/16/2015	Floodplain Soil	15	1,488	Dow Michigan Ops.	Pats Gradall
101	9/16/2015	Floodplain Soil	15	1,503	Dow Michigan Ops.	Pats Gradall
102	9/16/2015	Floodplain Soil	15	1,518	Dow Michigan Ops.	Pats Gradall
103	9/16/2015	Floodplain Soil	15	1,533	Dow Michigan Ops.	Pats Gradall
104	9/17/2015	Floodplain Soil	15	1,548	Dow Michigan Ops.	Pats Gradall
105	9/17/2015	Floodplain Soil	15	1,563	Dow Michigan Ops.	Pats Gradall
106	9/17/2015	Floodplain Soil	15	1,578	Dow Michigan Ops.	Pats Gradall
107	9/17/2015	Floodplain Soil	15	1,593	Dow Michigan Ops.	Pats Gradall
108	9/17/2015	Floodplain Soil	15	1,608	Dow Michigan Ops.	Pats Gradall
109	9/17/2015	Floodplain Soil	15	1,623	Dow Michigan Ops.	Pats Gradall
110	9/17/2015	Floodplain Soil	15	1,638	Dow Michigan Ops.	Pats Gradall
111	9/17/2015	Floodplain Soil	15	1,653	Dow Michigan Ops.	Pats Gradall
112	9/17/2015	Floodplain Soil	15	1,668	Dow Michigan Ops.	Pats Gradall
113	9/17/2015	Floodplain Soil	15	1,683	Dow Michigan Ops.	Pats Gradall
114	9/17/2015	Floodplain Soil	15	1,698	Dow Michigan Ops.	Pats Gradall
115	9/17/2015	Floodplain Soil	15	1,713	Dow Michigan Ops.	Pats Gradall
116	9/17/2015	Floodplain Soil	15	1,728	Dow Michigan Ops.	Pats Gradall
117	9/17/2015	Floodplain Soil	15	1,743	Dow Michigan Ops.	Pats Gradall
118	9/17/2015	Floodplain Soil	15	1,758	Dow Michigan Ops.	Pats Gradall
119	9/17/2015	Floodplain Soil	15	1,773	Dow Michigan Ops.	Pats Gradall
120	9/17/2015	Floodplain Soil	15	1,788	Dow Michigan Ops.	Pats Gradall
121	9/17/2015	Floodplain Soil	15	1,803	Dow Michigan Ops.	Pats Gradall
122	9/17/2015	Floodplain Soil	15	1,818	Dow Michigan Ops.	Pats Gradall
123	9/17/2015	Floodplain Soil	15	1,833	Dow Michigan Ops.	Pats Gradall
124	9/17/2015	Floodplain Soil	15	1,848	Dow Michigan Ops.	Pats Gradall
125	9/17/2015	Floodplain Soil	15	1,863	Dow Michigan Ops.	Pats Gradall
126	9/17/2015	Floodplain Soil	15	1,878	Dow Michigan Ops.	Pats Gradall
127	9/17/2015	Floodplain Soil	15	1,893	Dow Michigan Ops.	Pats Gradall
128	9/25/2015	Floodplain Soil	15	1,908	Dow Michigan Ops.	Pats Gradall
129	9/25/2015	Floodplain Soil	15	1,923	Dow Michigan Ops.	Pats Gradall
130	9/25/2015	Floodplain Soil	15	1,938	Dow Michigan Ops.	Pats Gradall
131	9/25/2015	Floodplain Soil	15	1,953	Dow Michigan Ops.	Pats Gradall
132	9/25/2015	Floodplain Soil	15	1,968	Dow Michigan Ops.	Pats Gradall
133	9/25/2015	Floodplain Soil	15	1,983	Dow Michigan Ops.	Pats Gradall
134	9/25/2015	Floodplain Soil	15	1,998	Dow Michigan Ops.	Pats Gradall
135	9/25/2015	Floodplain Soil	15	2,013	Dow Michigan Ops.	Pats Gradall
136	9/25/2015	Floodplain Soil	15	2,028	Dow Michigan Ops.	Pats Gradall
137	9/25/2015	Floodplain Soil	15	2,043	Dow Michigan Ops.	Pats Gradall
138	9/25/2015	Floodplain Soil	15	2,058	Dow Michigan Ops.	Pats Gradall
139	9/25/2015	Floodplain Soil	18	2,076	Dow Michigan Ops.	Pats Gradall
140	9/29/2015	Miscellaneous Project Debris ¹	10	2,086	City of Midland Landfill ²	Pats Gradall
141	9/28/2015	Recycled Gravel from Access ¹	15	2,101	Project Surplus	Pats Gradall

Table 2a - S2_48 Material Removed Tracking Log
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Description	Quantity (CY)	Cumulative Quantity (CY)	Material Recipient	Transporter
142	9/28/2015	Recycled Gravel from Access ¹	15	2,116	Project Surplus	Pats Gradall
143	9/29/2015	Recycled Gravel from Access ¹	15	2,131	Project Surplus	Pats Gradall
144	9/29/2015	Recycled Gravel from Access ¹	15	2,146	Project Surplus	Pats Gradall

Total Material Removed From within the 100 Year Floodplain (CY)

2,076

Total Material Removed From outside 100 Year Floodplain (CY)

70

Note:

1. Miscellaneous project debris (gravel, woodchips, etc.) and recycled gravel removed from outside the 100-year floodplain.
2. Material removed to City of Midland Landfill under Manifest Number MIA0001650092.

Table 2b - S2 48 Inventory of Materials Used
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Material Description	Quantity (CY)	Cumulative Quantity (CY)	Material Source	Material Recipient	Transporter
1	9/11/2015	Gravel ¹	15	15	Fisher Sand & Gravel	Access Drive	Pats Gradall
2	9/11/2015	Gravel ¹	15	30	Fisher Sand & Gravel	Access Drive	Pats Gradall
3	9/11/2015	Gravel ¹	15	45	Fisher Sand & Gravel	Access Drive	Pats Gradall
4	9/14/2015	Topsoil	12	57	Fisher M-81	Floodplain	Pats Gradall
5	9/14/2015	Topsoil	12	69	Fisher M-81	Floodplain	Pats Gradall
6	9/14/2015	Topsoil	12	81	Fisher M-81	Floodplain	Pats Gradall
7	9/14/2015	Topsoil	12	93	Fisher M-81	Floodplain	Pats Gradall
8	9/14/2015	Topsoil	12	105	Fisher M-81	Floodplain	Pats Gradall
9	9/14/2015	Topsoil	12	117	Fisher M-81	Floodplain	Pats Gradall
10	9/14/2015	Topsoil	12	129	Fisher M-81	Floodplain	Pats Gradall
11	9/14/2015	Topsoil	12	141	Fisher M-81	Floodplain	Pats Gradall
12	9/14/2015	Topsoil	12	153	Fisher M-81	Floodplain	Pats Gradall
13	9/14/2015	Gravel ¹	15	168	Fisher Sand & Gravel	Access Drive	Pats Gradall
14	9/14/2015	Gravel ¹	15	183	Fisher Sand & Gravel	Access Drive	Pats Gradall
15	9/14/2015	Gravel ¹	15	198	Fisher Sand & Gravel	Access Drive	Pats Gradall
16	9/14/2015	Gravel ¹	15	213	Fisher Sand & Gravel	Access Drive	Pats Gradall
17	9/14/2015	Wood Chips ²	12	225	Project Surplus	Laydown Area	Pats Gradall
18	9/14/2015	Wood Chips ²	12	237	Project Surplus	Laydown Area	Pats Gradall
19	9/14/2015	Wood Chips ²	12	249	Project Surplus	Laydown Area	Pats Gradall
20	9/14/2015	Wood Chips ²	12	261	Project Surplus	Laydown Area	Pats Gradall
21	9/14/2015	Wood Chips ²	12	273	Project Surplus	Laydown Area	Pats Gradall
22	9/15/2015	Wood Chips ²	12	285	Project Surplus	Laydown Area	Pats Gradall
23	9/15/2015	Wood Chips ²	12	297	Project Surplus	Laydown Area	Pats Gradall
24	9/15/2015	Gravel ¹	15	312	Fisher Sand & Gravel	Ramp	Pats Gradall
25	9/15/2015	Wood Chips ²	12	324	Project Surplus	Laydown Area	Pats Gradall
26	9/16/2015	Gravel ¹	15	339	Fisher Sand & Gravel	Ramp	Pats Gradall
27	9/17/2015	Topsoil	15	354	Pats MAC / 3 Mile	Floodplain	Pats Gradall
28	9/17/2015	Topsoil	15	369	Pats MAC / 3 Mile	Floodplain	Pats Gradall
29	9/17/2015	Topsoil	15	384	Pats MAC / 3 Mile	Floodplain	Pats Gradall
30	9/17/2015	Topsoil	15	399	Pats MAC / 3 Mile	Floodplain	Pats Gradall
31	9/17/2015	Topsoil	15	414	Pats MAC / 3 Mile	Floodplain	Pats Gradall
32	9/17/2015	Topsoil	15	429	Pats MAC / 3 Mile	Floodplain	Pats Gradall
33	9/17/2015	Topsoil	15	444	Pats MAC / 3 Mile	Floodplain	Pats Gradall
34	9/17/2015	Topsoil	15	459	Pats MAC / 3 Mile	Floodplain	Pats Gradall
35	9/17/2015	Topsoil	15	474	Pats MAC / 3 Mile	Floodplain	Pats Gradall
36	9/17/2015	Topsoil	15	489	Pats MAC / 3 Mile	Floodplain	Pats Gradall
37	9/17/2015	Topsoil	15	504	Pats MAC / 3 Mile	Floodplain	Pats Gradall
38	9/17/2015	Topsoil	15	519	Pats MAC / 3 Mile	Floodplain	Pats Gradall
39	9/17/2015	Wood Chips ²	15	534	Project Surplus	Laydown Area	Pats Gradall
40	9/22/2015	Topsoil	12	546	Fisher M-81	Floodplain	Pats Gradall
41	9/22/2015	Topsoil	12	558	Fisher M-81	Floodplain	Pats Gradall
42	9/22/2015	Topsoil	12	570	Fisher M-81	Floodplain	Pats Gradall
43	9/22/2015	Topsoil	12	582	Fisher M-81	Floodplain	Pats Gradall
44	9/22/2015	Topsoil	12	594	Pats MAC / 3 Mile	Floodplain	Pats Gradall
45	9/22/2015	Topsoil	12	606	Pats MAC / 3 Mile	Floodplain	Pats Gradall

Table 2b - S2 48 Inventory of Materials Used
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Material Description	Quantity (CY)	Cumulative Quantity (CY)	Material Source	Material Recipient	Transporter
46	9/22/2015	Topsoil	12	618	Pats MAC / 3 Mile	Floodplain	Pats Gradall
47	9/22/2015	Topsoil	12	630	Pats MAC / 3 Mile	Floodplain	Pats Gradall
48	9/22/2015	Topsoil	12	642	Pats MAC / 3 Mile	Floodplain	Pats Gradall
49	9/22/2015	Topsoil	12	654	Fisher M-81	Floodplain	Pats Gradall
50	9/22/2015	Topsoil	12	666	Fisher M-81	Floodplain	Pats Gradall
51	9/22/2015	Topsoil	12	678	Fisher M-81	Floodplain	Pats Gradall
52	9/22/2015	Topsoil	12	690	Fisher M-81	Floodplain	Pats Gradall
53	9/22/2015	Topsoil	12	702	Fisher M-81	Floodplain	Pats Gradall
54	9/22/2015	Topsoil	12	714	Fisher M-81	Floodplain	Pats Gradall
55	9/22/2015	Topsoil	12	726	Pats MAC / 3 Mile	Floodplain	Pats Gradall
56	9/22/2015	Topsoil	12	738	Pats MAC / 3 Mile	Floodplain	Pats Gradall
57	9/22/2015	Topsoil	12	750	Pats MAC / 3 Mile	Floodplain	Pats Gradall
58	9/22/2015	Topsoil	12	762	Pats MAC / 3 Mile	Floodplain	Pats Gradall
59	9/22/2015	Topsoil	12	774	Pats MAC / 3 Mile	Floodplain	Pats Gradall
60	9/22/2015	Topsoil	12	786	Pats MAC / 3 Mile	Floodplain	Pats Gradall
61	9/22/2015	Topsoil	12	798	Fisher M-81	Floodplain	Pats Gradall
62	9/22/2015	Topsoil	12	810	Pats MAC / 3 Mile	Floodplain	Pats Gradall
63	9/22/2015	Topsoil	12	822	Fisher M-81	Floodplain	Pats Gradall
64	9/22/2015	Topsoil	12	834	Fisher M-81	Floodplain	Pats Gradall
65	9/22/2015	Topsoil	12	846	Fisher M-81	Floodplain	Pats Gradall
66	9/22/2015	Topsoil	12	858	Fisher M-81	Floodplain	Pats Gradall
67	9/22/2015	Topsoil	12	870	Fisher M-81	Floodplain	Pats Gradall
68	9/22/2015	Topsoil	12	882	Fisher M-81	Floodplain	Pats Gradall
69	9/22/2015	Topsoil	12	894	Pats MAC / 3 Mile	Floodplain	Pats Gradall
70	9/22/2015	Topsoil	12	906	Pats MAC / 3 Mile	Floodplain	Pats Gradall
71	9/22/2015	Topsoil	12	918	Pats MAC / 3 Mile	Floodplain	Pats Gradall
72	9/22/2015	Topsoil	12	930	Pats MAC / 3 Mile	Floodplain	Pats Gradall
73	9/22/2015	Topsoil	12	942	Pats MAC / 3 Mile	Floodplain	Pats Gradall
74	9/22/2015	Topsoil	12	954	Pats MAC / 3 Mile	Floodplain	Pats Gradall
75	9/22/2015	Oversized Stone	8	962	Fisher Sand & Gravel	Drainage Ditch	Pats Gradall
76	9/23/2015	Topsoil	12	974	Fisher M-81	Floodplain	Pats Gradall
77	9/23/2015	Topsoil	12	986	Pats MAC / 3 Mile	Floodplain	Pats Gradall
78	9/23/2015	Topsoil	12	998	Pats MAC / 3 Mile	Floodplain	Pats Gradall
79	9/23/2015	Topsoil	12	1,010	Pats MAC / 3 Mile	Floodplain	Pats Gradall
80	9/23/2015	Topsoil	12	1,022	Pats MAC / 3 Mile	Floodplain	Pats Gradall
81	9/23/2015	Topsoil	12	1,034	Pats MAC / 3 Mile	Floodplain	Pats Gradall
82	9/23/2015	Topsoil	12	1,046	Pats MAC / 3 Mile	Floodplain	Pats Gradall
83	9/23/2015	Topsoil	12	1,058	Pats MAC / 3 Mile	Floodplain	Pats Gradall
84	9/23/2015	Topsoil	12	1,070	Pats MAC / 3 Mile	Floodplain	Pats Gradall
85	9/23/2015	Topsoil	12	1,082	Pats MAC / 3 Mile	Floodplain	Pats Gradall
86	9/23/2015	Topsoil	12	1,094	Pats MAC / 3 Mile	Floodplain	Pats Gradall
87	9/23/2015	Topsoil	12	1,106	Pats MAC / 3 Mile	Floodplain	Pats Gradall
88	9/23/2015	Topsoil	12	1,118	Pats MAC / 3 Mile	Floodplain	Pats Gradall
89	9/23/2015	Topsoil	12	1,130	Pats MAC / 3 Mile	Floodplain	Pats Gradall
90	9/23/2015	Topsoil	12	1,142	Pats MAC / 3 Mile	Floodplain	Pats Gradall
91	9/23/2015	Topsoil	12	1,154	Pats MAC / 3 Mile	Floodplain	Pats Gradall
92	9/23/2015	Topsoil	12	1,166	Pats MAC / 3 Mile	Floodplain	Pats Gradall
93	9/23/2015	Topsoil	12	1,178	Pats MAC / 3 Mile	Floodplain	Pats Gradall

Table 2b - S2 48 Inventory of Materials Used
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Material Description	Quantity (CY)	Cumulative Quantity (CY)	Material Source	Material Recipient	Transporter
94	9/23/2015	Topsoil	12	1,190	Pats MAC / 3 Mile	Floodplain	Pats Gradall
95	9/23/2015	Topsoil	12	1,202	Pats MAC / 3 Mile	Floodplain	Pats Gradall
96	9/23/2015	Topsoil	12	1,214	Pats MAC / 3 Mile	Floodplain	Pats Gradall
97	9/23/2015	Topsoil	12	1,226	Pats MAC / 3 Mile	Floodplain	Pats Gradall
98	9/23/2015	Topsoil	12	1,238	Pats MAC / 3 Mile	Floodplain	Pats Gradall
99	9/23/2015	Topsoil	12	1,250	Pats MAC / 3 Mile	Floodplain	Pats Gradall
100	9/23/2015	Topsoil	12	1,262	Pats MAC / 3 Mile	Floodplain	Pats Gradall
101	9/23/2015	Topsoil	12	1,274	Pats MAC / 3 Mile	Floodplain	Pats Gradall
102	9/23/2015	Topsoil	12	1,286	Pats MAC / 3 Mile	Floodplain	Pats Gradall
103	9/23/2015	Topsoil	12	1,298	Pats MAC / 3 Mile	Floodplain	Pats Gradall
104	9/23/2015	Topsoil	12	1,310	Pats MAC / 3 Mile	Floodplain	Pats Gradall
105	9/23/2015	Topsoil	12	1,322	Pats MAC / 3 Mile	Floodplain	Pats Gradall
106	9/23/2015	Topsoil	12	1,334	Pats MAC / 3 Mile	Floodplain	Pats Gradall
107	9/23/2015	Topsoil	12	1,346	Pats MAC / 3 Mile	Floodplain	Pats Gradall
108	9/23/2015	Topsoil	12	1,358	Pats MAC / 3 Mile	Floodplain	Pats Gradall
109	9/23/2015	Topsoil	12	1,370	Pats MAC / 3 Mile	Floodplain	Pats Gradall
110	9/23/2015	Topsoil	12	1,382	Pats MAC / 3 Mile	Floodplain	Pats Gradall
111	9/23/2015	Topsoil	12	1,394	Pats MAC / 3 Mile	Floodplain	Pats Gradall
112	9/23/2015	Topsoil	12	1,406	Pats MAC / 3 Mile	Floodplain	Pats Gradall
113	9/23/2015	Topsoil	12	1,418	Pats MAC / 3 Mile	Floodplain	Pats Gradall
114	9/23/2015	Topsoil	12	1,430	Pats MAC / 3 Mile	Floodplain	Pats Gradall
115	9/23/2015	Topsoil	12	1,442	Pats MAC / 3 Mile	Floodplain	Pats Gradall
116	9/23/2015	Topsoil	12	1,454	Pats MAC / 3 Mile	Floodplain	Pats Gradall
117	9/23/2015	Topsoil	12	1,466	Pats MAC / 3 Mile	Floodplain	Pats Gradall
118	9/23/2015	Topsoil	12	1,478	Pats MAC / 3 Mile	Floodplain	Pats Gradall
119	9/23/2015	Topsoil	12	1,490	Pats MAC / 3 Mile	Floodplain	Pats Gradall
120	9/23/2015	Topsoil	12	1,502	Pats MAC / 3 Mile	Floodplain	Pats Gradall
121	9/23/2015	Topsoil	12	1,514	Pats MAC / 3 Mile	Floodplain	Pats Gradall
122	9/23/2015	Topsoil	12	1,526	Pats MAC / 3 Mile	Floodplain	Pats Gradall
123	9/23/2015	Topsoil	12	1,538	Pats MAC / 3 Mile	Floodplain	Pats Gradall
124	9/23/2015	Compost	15	1,553	City of Midland	Wetland area	Pats Gradall
125	9/23/2015	Wood Chips ²	15	1,568	Fisher Sand & Gravel	Laydown Area	Pats Gradall
126	9/23/2015	Gravel ¹	15	1,583	Fisher Sand & Gravel	Ramp	Pats Gradall
127	9/23/2015	Compost	15	1,598	City of Midland	Wetland area	Pats Gradall
128	9/23/2015	Compost	15	1,613	City of Midland	Wetland area	Pats Gradall
129	9/23/2015	Compost	15	1,628	City of Midland	Wetland area	Pats Gradall
130	9/24/2015	Topsoil	12	1,640	Pats MAC / 3 Mile	Floodplain	Pats Gradall
131	9/24/2015	Topsoil	12	1,652	Pats MAC / 3 Mile	Floodplain	Pats Gradall
132	9/24/2015	Topsoil	12	1,664	Pats MAC / 3 Mile	Floodplain	Pats Gradall
133	9/24/2015	Topsoil	12	1,676	Pats MAC / 3 Mile	Floodplain	Pats Gradall
134	9/24/2015	Topsoil	12	1,688	Pats MAC / 3 Mile	Floodplain	Pats Gradall
135	9/24/2015	Topsoil	12	1,700	Pats MAC / 3 Mile	Floodplain	Pats Gradall
136	9/24/2015	Topsoil	12	1,712	Pats MAC / 3 Mile	Floodplain	Pats Gradall
137	9/24/2015	Topsoil	12	1,724	Pats MAC / 3 Mile	Floodplain	Pats Gradall
138	9/24/2015	Topsoil	12	1,736	Pats MAC / 3 Mile	Floodplain	Pats Gradall
139	9/24/2015	Topsoil	12	1,748	Pats MAC / 3 Mile	Floodplain	Pats Gradall
140	9/24/2015	Topsoil	12	1,760	Pats MAC / 3 Mile	Floodplain	Pats Gradall
141	9/24/2015	Topsoil	12	1,772	Pats MAC / 3 Mile	Floodplain	Pats Gradall

Table 2b - S2 48 Inventory of Materials Used
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Material Description	Quantity (CY)	Cumulative Quantity (CY)	Material Source	Material Recipient	Transporter
142	9/24/2015	Topsoil	12	1,784	Pats MAC / 3 Mile	Floodplain	Pats Gradall
143	9/24/2015	Topsoil	12	1,796	Pats MAC / 3 Mile	Floodplain	Pats Gradall
144	9/24/2015	Topsoil	12	1,808	Fisher M-81	Floodplain	Pats Gradall
145	9/24/2015	Topsoil	12	1,820	Fisher M-81	Floodplain	Pats Gradall
146	9/24/2015	Topsoil	12	1,832	Pats MAC / 3 Mile	Floodplain	Pats Gradall
147	9/24/2015	Topsoil	12	1,844	Fisher M-81	Floodplain	Pats Gradall
148	9/24/2015	Topsoil	12	1,856	Fisher M-81	Floodplain	Pats Gradall
149	9/24/2015	Topsoil	12	1,868	Pats MAC / 3 Mile	Floodplain	Pats Gradall
150	9/24/2015	Topsoil	12	1,880	Pats MAC / 3 Mile	Floodplain	Pats Gradall
151	9/24/2015	Topsoil	12	1,892	Pats MAC / 3 Mile	Floodplain	Pats Gradall
152	9/24/2015	Topsoil	12	1,904	Pats MAC / 3 Mile	Floodplain	Pats Gradall
153	9/24/2015	Topsoil	12	1,916	Pats MAC / 3 Mile	Floodplain	Pats Gradall
154	9/24/2015	Topsoil	12	1,928	Pats MAC / 3 Mile	Floodplain	Pats Gradall
155	9/24/2015	Topsoil	12	1,940	Pats MAC / 3 Mile	Floodplain	Pats Gradall
156	9/24/2015	Topsoil	12	1,952	Pats MAC / 3 Mile	Floodplain	Pats Gradall
157	9/24/2015	Topsoil	12	1,964	Pats MAC / 3 Mile	Floodplain	Pats Gradall
158	9/24/2015	Topsoil	12	1,976	Pats MAC / 3 Mile	Floodplain	Pats Gradall
159	9/24/2015	Topsoil	12	1,988	Pats MAC / 3 Mile	Floodplain	Pats Gradall
160	9/24/2015	Topsoil	12	2,000	Fisher M-81	Floodplain	Pats Gradall
161	9/24/2015	Topsoil	12	2,012	Fisher M-81	Floodplain	Pats Gradall
162	9/24/2015	Topsoil	12	2,024	Pats MAC / 3 Mile	Floodplain	Pats Gradall
163	9/24/2015	Topsoil	12	2,036	Fisher M-81	Floodplain	Pats Gradall
164	9/24/2015	Topsoil	12	2,048	Fisher M-81	Floodplain	Pats Gradall
165	9/24/2015	Topsoil	12	2,060	Fisher M-81	Floodplain	Pats Gradall
166	9/24/2015	Topsoil	12	2,072	Pats MAC / 3 Mile	Floodplain	Pats Gradall
167	9/24/2015	Topsoil	12	2,084	Pats MAC / 3 Mile	Floodplain	Pats Gradall
168	9/24/2015	Topsoil	12	2,096	Pats MAC / 3 Mile	Floodplain	Pats Gradall
169	9/24/2015	Topsoil	12	2,108	Pats MAC / 3 Mile	Floodplain	Pats Gradall
170	9/24/2015	Topsoil	12	2,120	Pats MAC / 3 Mile	Floodplain	Pats Gradall
171	9/24/2015	Topsoil	12	2,132	Pats MAC / 3 Mile	Floodplain	Pats Gradall
172	9/24/2015	Topsoil	12	2,144	Pats MAC / 3 Mile	Floodplain	Pats Gradall
173	9/24/2015	Topsoil	12	2,156	Pats MAC / 3 Mile	Floodplain	Pats Gradall
174	9/24/2015	Topsoil	12	2,168	Pats MAC / 3 Mile	Floodplain	Pats Gradall
175	9/24/2015	Topsoil	12	2,180	Pats MAC / 3 Mile	Floodplain	Pats Gradall
176	9/24/2015	Topsoil	12	2,192	Fisher M-81	Floodplain	Pats Gradall
177	9/24/2015	Topsoil	12	2,204	Pats MAC / 3 Mile	Floodplain	Pats Gradall
178	9/24/2015	Gravel	15	2,219	Fisher Sand & Gravel	Walking Path	Pats Gradall
179	9/25/2015	Topsoil	12	2,231	Pats MAC / 3 Mile	Floodplain	Pats Gradall
180	9/25/2015	Topsoil	12	2,243	Pats MAC / 3 Mile	Floodplain	Pats Gradall
181	9/25/2015	Topsoil	12	2,255	Pats MAC / 3 Mile	Floodplain	Pats Gradall
182	9/25/2015	Topsoil	12	2,267	Pats MAC / 3 Mile	Floodplain	Pats Gradall
183	9/25/2015	Topsoil	12	2,279	Pats MAC / 3 Mile	Floodplain	Pats Gradall
184	9/25/2015	Compost	15	2,294	City of Midland	Wetland area	Pats Gradall
185	9/25/2015	Compost	15	2,309	City of Midland	Wetland area	Pats Gradall
186	9/26/2015	Topsoil	12	2,321	Pats MAC / 3 Mile	Floodplain	Pats Gradall

Table 2b - S2 48 Inventory of Materials Used
Titabawassee River Floodplain 2015 Segment 2 Floodplain Completion Report

Load	Date	Material Description	Quantity (CY)	Cumulative Quantity (CY)	Material Source	Material Recipient	Transporter
187	9/26/2015	Topsoil ¹	15	2,336	Pats MAC / 3 Mile	Ramp Bank Garage	Pats Gradall
188	9/26/2015	Topsoil ¹	15	2,351	Pats MAC / 3 Mile	Ramp Bank Garage	Pats Gradall
189	9/26/2015	Topsoil ¹	15	2,366	Pats MAC / 3 Mile	Ramp Bank Garage	Pats Gradall
190	9/26/2015	Oversized Stone ¹	15	2,381	Fisher Sand & Gravel	Ramp Bank Garage	Pats Gradall
191	9/28/2015	Topsoil ¹	15	2,396	Pats MAC / 3 Mile	Lawn repair	Pats Gradall
192	9/28/2015	Topsoil ¹	15	2,411	Pats MAC / 3 Mile	Lawn repair	Pats Gradall
193	9/29/2015	Topsoil ¹	5	2,416	Pats MAC / 3 Mile	Lawn repair	Pats Gradall

Total Volume of Permanent Fill Placed within the 100 Year Floodplain (CY)	2,045
Total Volume of Temporary Fill placed within the 100 Year Floodplain (CY)	126
Total Material Placed outside 100 Year Floodplain (CY)	245

Notes:

1. Material placed in area outside the 100 year floodplain.
2. A portion of the woodchips were used as temporary roadway material in the floodplain and were included in the removal of floodplain material.

Insert 2a

Photolog

PHOTOGRAPHIC LOG

Site Location: **S2_48**

Photo No.
1

Date:
09/04/15

Direction Photo Taken:

East

Description:

Preconstruction conditions
of site.



Photo No.
2

Date:
09/11/15

Direction Photo Taken:

West

Description:

Temporary site access
being constructed at
River Road.



PHOTOGRAPHIC LOG

Site Location: **S2_48**

Photo No.
3

Date:
09/14/15

Direction Photo Taken:

East

Description:

Site access improvements being performed along existing ramp.

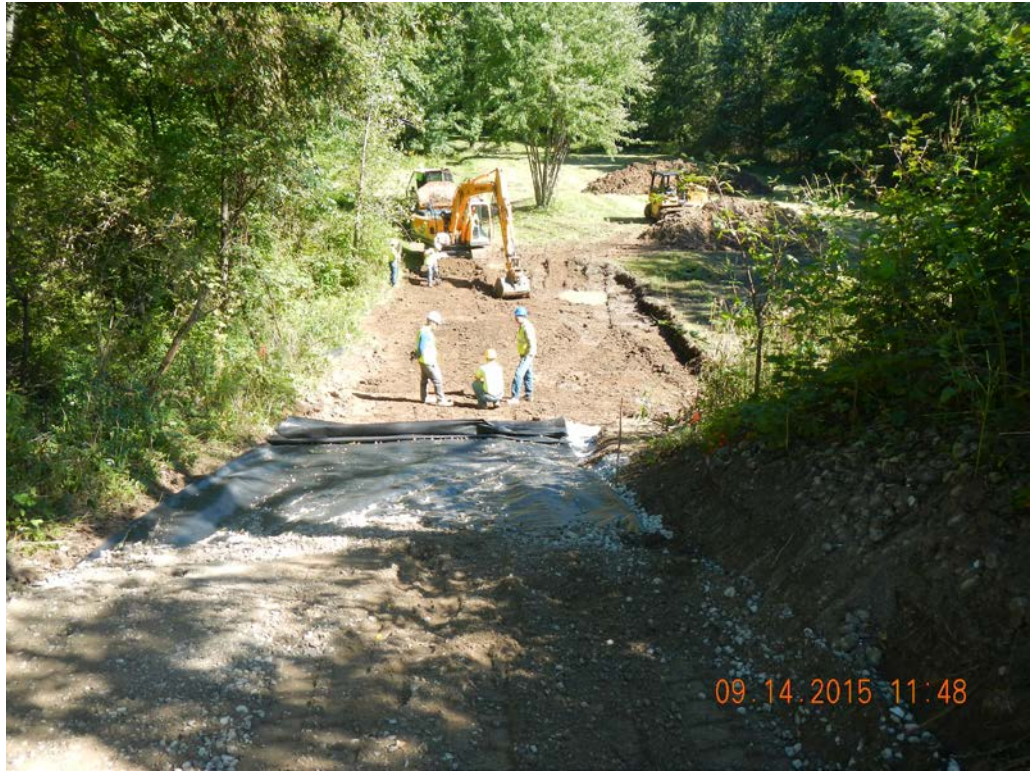


Photo No.
4

Date:
09/14/15

Direction Photo Taken:

West

Description:

QA/QC activities being performed near SW portion of remedial area.



PHOTOGRAPHIC LOG

Site Location: **S2_48**

Photo No.
5

Date:
09/16/15

Direction Photo Taken:

East

Description:

Soil removal and transport activities being performed



Photo No.
6

Date:
09/24/15

Direction Photo Taken:

East

Description:

Crew placing & grading topsoil



PHOTOGRAPHIC LOG

Site Location: **S2_48**

Photo No.

7

Date:

09/28/15

Direction Photo Taken:

East

Description:

Remedial activities
complete



Photo No.

8

Date:

11/20/15

Direction Photo Taken:

East

Description:

Post construction
monitoring event



Insert 2b

Post-construction monitoring details

Monitoring and Maintenance Field Form

Tittabawassee River Floodplain Project

Property Information

Decision Unit ID S2_48_DU01

Description of Monitoring Activities Performed

Overall Vegetation Health and Coverage

100% vegetative cover, did not observe any weeds or nutrient issues at this time

100% vegetative cover on access road

Tree Health (trees that existed pre-construction and newly planted trees)

No ill effects showing for pre-existing trees

No new trees were planted on this site

Erosion Control Issues

None

Other Issues

Area B, the second of the wetlands might need some additional seeding in the spring

Description of Required Maintenance Activities

None at this time; will re-evaluate the need to re-seed Area B, wetland, in the spring.

Field Representative Carie A. Lefevre

Date 11/20/2016

Monitoring and Maintenance Field Form

Tittabawassee River Floodplain Project

Property Information

Decision Unit ID S2_48_DU01


Photos Taken During Monitoring Activities

See attached photolog

Post Construction

PHOTOGRAPHIC LOG

Client Name: The Dow Chemical Company		Site Location: S2_48_DU01	Project No. TR Floodplain
Photo No. 1	Date: 11-20-2015		
Direction Photo Taken: Ground			
Description: Newly seeded lawn in maintained area of the floodplain			

Photo No. 2	Date: 11-20-2015	
Direction Photo Taken: East		
Description: Newly seeded area of maintained area in the floodplain		

Post Construction

PHOTOGRAPHIC LOG



Client Name: The Dow Chemical Company		Site Location: S2_48_DU01	Project No. TR Floodplain
Photo No. 3	Date: 11-20-2015		
Direction Photo Taken: East			
Description: Newly seeded maintained area in floodplain			

Photo No. 4	Date: 11-20-2015	
Direction Photo Taken: West		
Description: Access road was pre-existing, newly seeded maintained area of floodplain		

Post Construction

PHOTOGRAPHIC LOG

Client Name: The Dow Chemical Company		Site Location: S2_48_DU01	Project No. TR Floodplain
Photo No. 5	Date: 11-20-2015	 <p>2015.11.20.11.46</p>	
Direction Photo Taken: East			
Description: Access road/pre-existing and newly seeded lawn in maintained area in floodplain			

Photo No. 6	Date: 11-20-2015	 <p>2015.11.20.11.46</p>
Direction Photo Taken: South/East		
Description: Area B wetland swale area plus newly seeded maintained area in floodplain		

Post Construction

PHOTOGRAPHIC LOG


Client Name: The Dow Chemical Company		Site Location: S2_48_DU01	Project No. TR Floodplain
Photo No. 7	Date: 11-20-2015		
Direction Photo Taken: South			
Description: Area B swale in maintained area in the floodplain			

Photo No. 8	Date: 11-20-2015	
Direction Photo Taken: South		
Description: Area B swale in maintained area in the floodplain		

Post Construction

PHOTOGRAPHIC LOG


Client Name: The Dow Chemical Company		Site Location: S2_48_DU01	Project No. TR Floodplain
Photo No. 9	Date: 11-20-2015		
Direction Photo Taken: West			
Description: Access from road newly seeded			

Photo No. 10	Date: 11-20-2015	
Direction Photo Taken: East		
Description: Newly seeded maintained area in the floodplain with new fire pit area		

Post Construction

PHOTOGRAPHIC LOG

Client Name: The Dow Chemical Company		Site Location: S2_48_DU01	Project No. TR Floodplain
Photo No. 11	Date: 11-20-2015		
Direction Photo Taken: Ground			
Description: New fire pit			

Photo No. 12	Date: 11-20-2015	
Direction Photo Taken: West		
Description: New fire pit and newly seeded lawn in floodplain		

Post Construction

PHOTOGRAPHIC LOG



Client Name: The Dow Chemical Company		Site Location: S2_48_DU01	Project No. TR Floodplain
Photo No. 13	Date: 11-20-2015		
Direction Photo Taken: West			
Description: Access to road re-seeded out of floodplain			

Photo No. 14	Date: 11-20-2015	
Direction Photo Taken: West		
Description: Access to road re-seeded out of floodplain		

Post Construction

PHOTOGRAPHIC LOG

Client Name: The Dow Chemical Company		Site Location: S2_48_DU01	Project No. TR Floodplain
Photo No. 15	Date: 11-20-2015		
Direction Photo Taken: East			
Description: Access road post seeding			

Photo No. 16	Date: 11-20-2015	
Direction Photo Taken: East		
Description: Access road/was pre-existing		

Post Construction

PHOTOGRAPHIC LOG



Client Name: The Dow Chemical Company		Site Location: S2_48_DU01	Project No. TR Floodplain
Photo No. 17	Date: 11-20-2016		
Direction Photo Taken: East			
Description: Overview of access road and newly seeded maintained area in floodplain			

Photo No. 18	Date: 11-20-2016	
Direction Photo Taken: South		
Description: Limit of 8 year floodplain newly seeded area in floodplain		

Attachment 3

Construction Quality Assurance and Quality Control

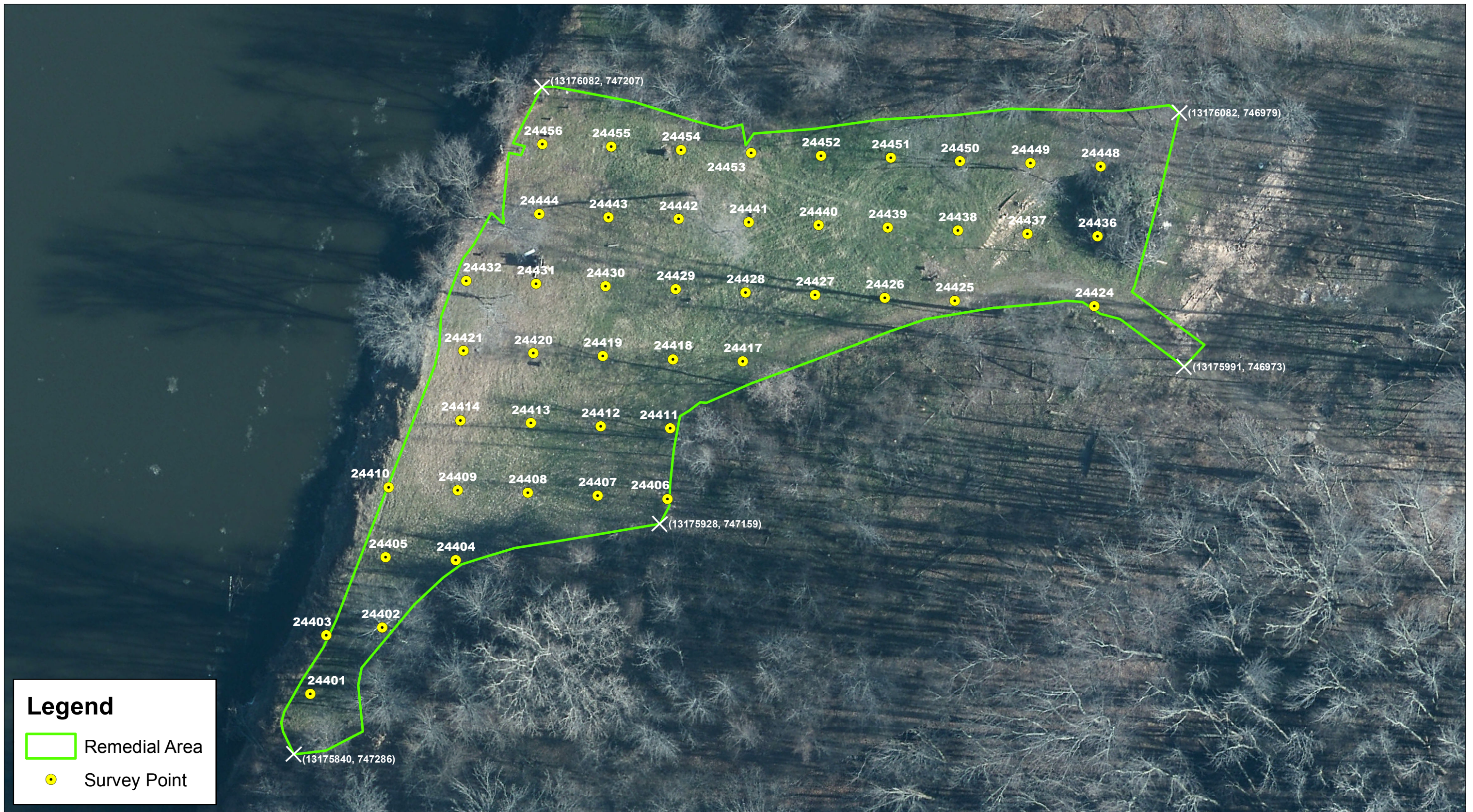
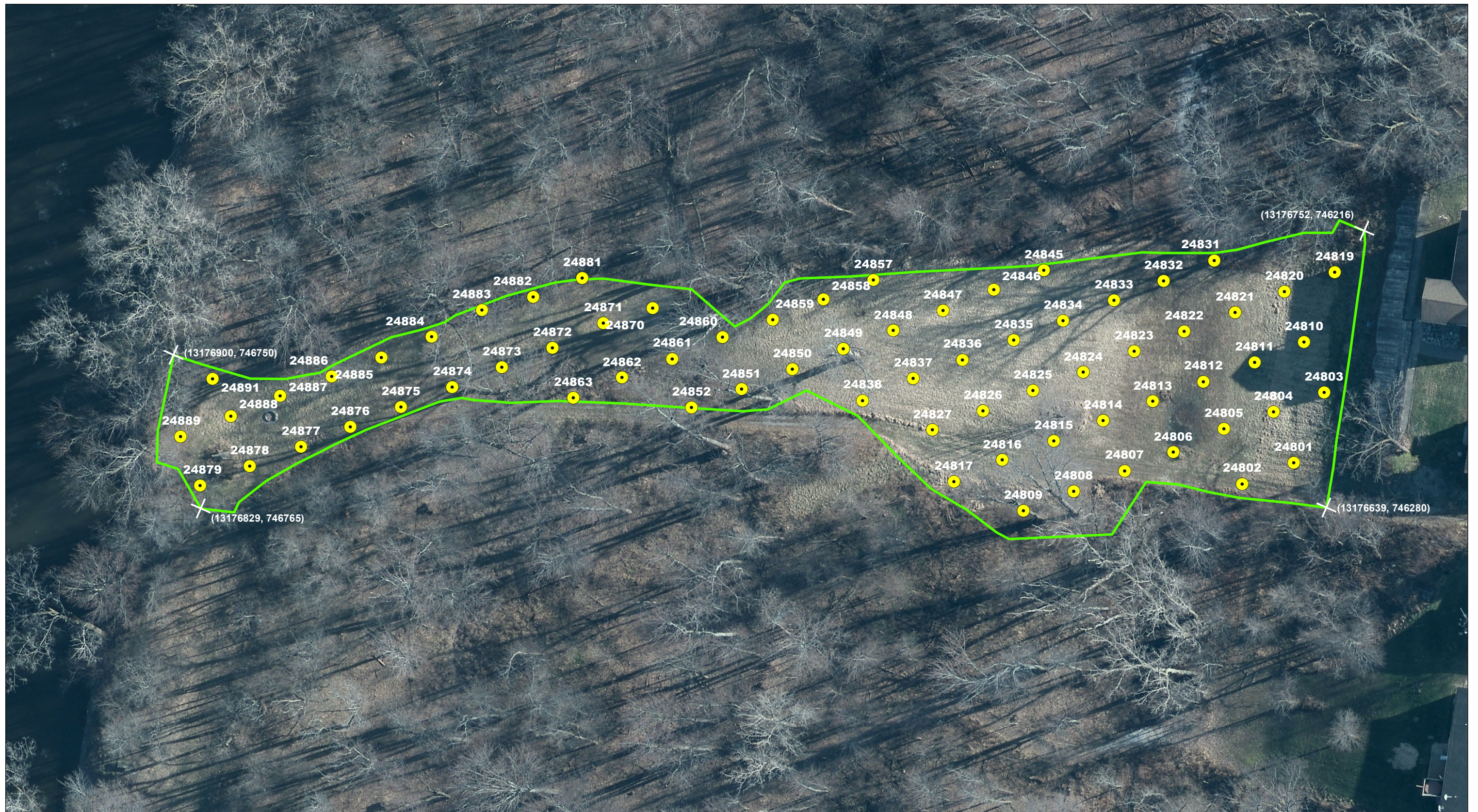


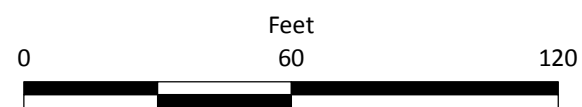
Figure
3a

Table 3a - Construction Quality Assurance / Quality Control Survey Data for Decision Unit S2_44_DU01
Titabawassee River Floodplain 2015 Completion Report

Baseline Survey Data				Soil Removal Survey Data			Soil Fill Survey Data		
Point ID	Northing	Easting	Pre-construction Elevation (ft)	Surveyed Elevation (ft)	Material Removal Depth (ft)	Comments	Surveyed Elevation (ft)	Material Thickness (Ft)	Comments
24401	747281.45	13175861.77	598.06	596.99	-1.07		598.03	1.03	
24402	747256.66	13175886.61	598.11	596.95	-1.16		597.98	1.03	
24403	747276.53	13175883.03	598.47	597.42	-1.05		598.49	1.07	
24404	747231.36	13175911.70	597.87	596.71	-1.16		597.70	0.98	
24405	747256.40	13175911.73	598.07	596.95	-1.12		597.94	0.99	
24406	747156.47	13175936.72	597.42	596.41	-1.01		597.48	1.07	
24407	747181.50	13175936.88	597.28	596.08	-1.20		597.26	1.18	
24408	747206.58	13175936.89	597.76	596.26	-1.50		597.31	1.05	
24409	747231.66	13175936.70	597.82	596.37	-1.45		597.40	1.02	
24410	747256.34	13175936.83	598.15	597.17	-0.98		598.21	1.04	
24411	747156.48	13175961.88	596.88	595.73	-1.15		596.80	1.08	
24412	747181.43	13175961.68	597.17	595.93	-1.24		597.00	1.08	
24413	747206.47	13175961.76	597.53	596.09	-1.44		597.27	1.18	
24414	747231.61	13175961.83	597.79	596.67	-1.13		597.63	0.97	
24417	747131.50	13175986.88	596.35	595.33	-1.02		596.66	1.33	
24418	747156.49	13175986.76	596.81	595.80	-1.01		596.89	1.08	
24419	747181.64	13175986.90	597.34	596.29	-1.05		597.28	0.99	
24420	747206.49	13175986.78	597.60	596.57	-1.03		597.55	0.98	
24421	747231.54	13175986.73	597.85	596.85	-1.00		597.92	1.07	
24424	747006.43	13176011.86	596.61	595.55	-1.06		596.57	1.03	
24425	747056.49	13176011.69	596.07	595.06	-1.02		596.11	1.06	
24426	747081.54	13176011.73	596.25	595.24	-1.02		596.30	1.06	
24427	747106.51	13176011.70	596.58	595.53	-1.05		596.60	1.07	
24428	747131.52	13176011.65	596.88	595.77	-1.12		596.87	1.10	
24429	747156.50	13176011.89	597.57	596.13	-1.43		597.13	0.99	
24430	747181.58	13176011.79	597.76	596.57	-1.20		597.54	0.97	
24431	747206.54	13176011.70	598.05	596.84	-1.20		597.91	1.07	
24432	747231.52	13176011.79	598.17	597.16	-1.01		598.22	1.06	
24436	747006.35	13176036.83	596.32	595.29	-1.03		596.52	1.23	
24437	747031.46	13176036.77	596.54	595.53	-1.01		596.64	1.11	
24438	747056.46	13176036.91	596.83	595.32	-1.50		596.59	1.27	
24439	747081.59	13176036.91	597.44	596.04	-1.40		596.99	0.95	
24440	747106.32	13176036.73	597.71	596.32	-1.39		597.26	0.94	
24441	747131.40	13176036.87	597.97	596.55	-1.43		597.53	0.98	
24442	747156.53	13176036.92	598.06	597.12	-0.94	Tree Roots	597.70	0.58	
24443	747181.57	13176036.66	598.18	596.94	-1.24		597.92	0.98	
24444	747206.44	13176036.74	598.40	597.19	-1.21		598.21	1.02	
24448	747006.25	13176061.75	597.04	595.64	-1.40		596.71	1.07	
24449	747031.42	13176061.96	596.78	596.21	-0.58	Tree Roots	596.98	0.77	
24450	747056.62	13176061.68	596.98	595.62	-1.36		596.71	1.10	
24451	747081.43	13176061.97	597.19	595.98	-1.22		597.04	1.07	
24452	747106.40	13176061.61	597.66	596.48	-1.18		597.58	1.10	
24453	747131.42	13176061.79	598.13	597.58	-0.55	Tree Roots	597.82	0.25	
24454	747156.57	13176061.77	597.91	596.89	-1.02		597.90	1.01	
24455	747181.65	13176061.94	598.10	597.02	-1.08		598.12	1.10	
24456	747206.32	13176061.81	598.44	597.42	-1.02		598.51	1.09	



NOTE: *COORDINATES ARE IN NAD 1983, MICHIGAN ZONE SOUTH,
INTERNATIONAL FEET
ALL ELEVATIONS ARE NGVD 1988 (GEOID 03)



S2_48 Survey Grid QC Points
Segment 2 Floodplain Cleanup Tittabawassee River 2015

Figure
3b

Table 3b - Construction Quality Assurance / Quality Control Survey Data for Decision Unit S2_48_DU01
Titabawassee River Floodplain 2015 Completion Report

Baseline Survey Data				Soil Removal Survey Data			Soil Fill Survey Data		
Point ID	Northing	Easting	Pre-construction Elevation (ft)	Surveyed Elevation (ft)	Material Removal Depth (ft)	Comments	Surveyed Elevation (ft)	Material Thickness (Ft)	Comments
24801	746285.93	13176663.71	597.6	596.23	-1.35		597.86	1.63	
24802	746311.70	13176663.29	594.9	593.19	-1.74		594.63	1.44	
24803	746260.91	13176688.79	599.7	598.24	-1.44		599.67	1.43	
24804	746285.91	13176688.95	595.2	593.72	-1.46		594.93	1.21	
24805	746310.21	13176690.06	593.2	591.71	-1.45		592.75	1.04	
24806	746336.08	13176688.50	592.9	591.72	-1.13		592.95	1.23	
24807	746360.19	13176688.78	593.1	592.11	-0.99		593.39	1.28	
24808	746385.58	13176688.55	593.3	592.94	-0.39	Tree Roots	593.73	0.79	Tree Roots
24809	746410.51	13176688.70	594.1	593.53	-0.53	Tree Roots	594.38	0.85	Tree Roots
24810	746260.98	13176713.87	596.3	595.05	-1.22		596.52	1.47	
24811	746285.75	13176713.52	593.7	592.30	-1.39		593.37	1.07	
24812	746311.04	13176713.98	592.5	591.10	-1.39		592.20	1.10	
24813	746336.29	13176713.90	593.1	591.50	-1.63		592.85	1.35	
24814	746360.85	13176714.02	593.4	592.93	-0.49	Tree Roots	593.66	0.73	Tree Roots
24815	746385.51	13176713.70	593.9	593.45	-0.41	Tree Roots	594.72	1.27	
24816	746411.04	13176714.14	594.2	593.16	-1.03		594.41	1.25	
24817	746435.58	13176713.11	595.3	593.80	-1.48		594.88	1.08	
24819	746235.96	13176738.77	599.2	598.06	-1.17		599.31	1.25	
24820	746260.85	13176738.94	594.5	592.92	-1.59		594.41	1.49	
24821	746285.72	13176738.35	593.1	591.31	-1.78		592.33	1.02	
24822	746310.86	13176738.84	592.3	590.84	-1.47		591.93	1.09	
24823	746335.69	13176738.65	593.4	592.32	-1.11		593.58	1.26	
24824	746361.27	13176738.27	594.9	593.80	-1.06		595.00	1.20	
24825	746386.00	13176738.96	595.3	594.24	-1.05		595.21	0.97	
24826	746410.97	13176738.66	595.2	594.18	-1.03		595.24	1.06	
24827	746436.07	13176738.93	594.9	593.87	-1.05		594.96	1.09	
24831	746285.91	13176764.26	592.1	591.06	-1.06		592.13	1.07	
24832	746311.08	13176763.93	592.5	591.38	-1.16		592.37	0.99	
24833	746335.78	13176764.05	593.8	592.59	-1.20		593.65	1.06	
24834	746361.17	13176763.89	595.3	594.27	-1.05		595.29	1.02	
24835	746385.80	13176763.89	595.8	594.46	-1.32		595.48	1.02	
24836	746411.10	13176764.09	596.2	594.59	-1.57		595.62	1.03	
24837	746435.52	13176764.37	596.6	594.87	-1.70		595.83	0.96	
24838	746461.04	13176763.55	597.0	594.75	-2.27	Reshaped	595.75	1.00	
24845	746360.98	13176788.97	595.2	593.84	-1.37		594.92	1.08	
24846	746385.82	13176789.01	595.9	594.54	-1.35		595.73	1.19	
24847	746411.15	13176788.70	596.6	594.99	-1.58		596.19	1.20	
24848	746435.99	13176788.30	597.1	595.57	-1.52		596.65	1.08	
24849	746460.60	13176789.06	597.5	596.18	-1.31		596.71	0.53	Shaped for Drainage
24850	746486.05	13176788.89	596.3	595.24	-1.02		596.36	1.12	
24851	746511.40	13176788.78	594.3	593.33	-0.99		594.49	1.16	
24852	746536.03	13176789.48	593.4	592.42	-0.98		593.55	1.13	
24857	746435.94	13176813.56	597.5	595.96	-1.56		597.02	1.06	
24858	746460.90	13176813.64	597.2	595.78	-1.42		596.78	1.00	
24859	746486.06	13176813.51	596.0	595.13	-0.84	Tree Roots	595.63	0.50	Tree Roots
24860	746510.65	13176814.52	593.4	592.66	-0.79	Tree Roots	593.73	1.07	
24861	746535.99	13176813.64	591.1	590.08	-0.98		591.12	1.04	
24862	746560.90	13176814.12	590.9	589.83	-1.06		590.82	0.99	
24863	746585.23	13176813.73	593.6	592.00	-1.63		593.84	1.84	Gravel Path
24870	746535.90	13176838.79	592.1	591.08	-1.05		592.08	1.00	
24871	746559.70	13176840.75	590.7	589.39	-1.31		590.66	1.27	
24872	746585.86	13176838.70	590.8	589.80	-1.03		590.87	1.07	
24873	746610.85	13176838.93	593.0	591.88	-1.12		593.02	1.14	
24874	746635.60	13176838.79	595.1	594.25	-0.83	Tree Roots	595.08	0.83	Tree Roots
24875	746661.14	13176838.83	596.5	594.79	-1.67		596.22	1.43	
24876	746686.22	13176838.84	597.2	595.82	-1.37		596.90	1.08	
24877	746710.84	13176838.70	597.3	595.91	-1.36		597.08	1.17	
24878	746736.23	13176839.05	597.0	595.73	-1.25		596.75	1.02	
24879	746761.01	13176838.94	597.2	595.88	-1.35		597.28	1.40	
24881	746561.12	13176863.77	591.1	589.70	-1.37		591.12	1.42	
24882	746585.48	13176863.86	592.1	591.07	-1.04		592.14	1.07	
24883	746609.74	13176867.01	594.8	593.76	-1.06		594.86	1.10	
24884	746635.91	13176863.85	596.8	596.21	-0.59	Tree Roots	597.20	0.99	
24885	746661.04	13176863.53	597.2	595.72	-1.47		597.03	1.31	
24886	746685.77	13176863.76	597.7	596.59	-1.07		597.68	1.09	
24887	746711.15	13176864.13	597.4	596.17	-1.23		597.21	1.04	
24888	746735.85	13176863.83	598.1	596.46	-1.60		597.48	1.02	
24889	746761.05	13176863.54	598.6	597.36	-1.29		598.12	0.76	Shaped for Drainage
24891	746737.42	13176882.90	598.4	596.99	-1.37		597.86	0.87	