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FMC

FMC Corporation
Middleport, New York

Operable Unit 6 (OU6) Reach T1
Interim Corrective Measure (ICM)
Pre-Design Work Plan

May 2016

,

OU6 REACH T1 ICM PRE-DESIGN WORK PLAN

FMC Corporation

Middleport, New York

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ACRONYMS AND ABBREVIATIONS

Agencies	NYSDEC and USEPA
ASTM	American Society of Testing Materials
AOC	Administrative Order on Consent
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CMS	Corrective Measures Study
ELAP	Environmental Laboratory Accreditation Program
FMC	FMC Corporation
GPS	Global Positioning System
HASP	Health and Safety Plan
ICM	Interim Corrective Measure
MCIG	Middleport Community Input Group
mg/kg	milligrams per kilogram
NYCRR	Compilation of the Rules and Regulations of the State of New York
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SPDES	State Pollutant Discharge Elimination System
TCLP	Toxicity Characteristic Leaching Procedure
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

1 INTRODUCTION

FMC Corporation (FMC) owns and operates a pesticide formulating and packaging facility ("Facility") located in the Village of Middleport and the Town of Royalton, New York. Investigative, monitoring, and remedial activities have been implemented by FMC to address constituents in soil and other environmental media at the Facility and in off-site areas, under the terms and conditions of the Administrative Order on Consent (AOC), Docket No. II RCRA 90-3008(h)-0209, entered into by FMC, the United States Environmental Protection Agency (USEPA) and the New York State Department of Environmental Conservation (NYSDEC) (USEPA and NYSDEC are referred to herein jointly as "the Agencies"), effective July 2, 1991. The Facility and off-site areas are being addressed in a phased approach in which separate study areas and/or environmental media have been organized into eleven operable units (OUs).

On November 24, 2015, representatives from FMC, the Agencies, and the New York State Department of Health (NYSDOH) met to discuss the Agencies' October 21, 2015 letter inviting FMC to discuss implementation of an interim corrective measure (ICM), under Section VI.6(e) of the above-referenced AOC, for the off-site study area identified as Tributary One and Flood Plain South of Pearson/Stone Roads Study Area (Operable Unit 6 [OU6]). During the November 24th meeting, it was agreed that FMC would submit a proposed approach for an ICM of the upstream portion of OU6 between Francis Street and the Erie Canal – referred to as "Reach T1" (Figure 1). FMC's proposed approach for an ICM was submitted on January 22, 2016 and accepted by the Agencies on February 3, 2016.

The first task of the proposed approach is development and submittal of this Pre-Design Work Plan for review and approval by the Agencies. The identification, evaluation, design and/or selection of corrective measures technologies and alternatives must be based on site-specific information. Such information includes the character and structural nature of permanent site features, vertical and horizontal extent of constituents in soil and sediment, stream hydrology and morphology, regulatory requirements associated with disturbance to the stream and associated flood plain, and property-specific use requirements (i.e., businesses, railroad, Erie Canal, utilities, etc.). Accordingly, additional information and data are needed to evaluate possible ICMs for Reach T1. This Pre-Design Work Plan identifies the additional site-specific information and data to be collected.

2 TRIBUTARY ONE REACH T1 DESCRIPTION

A detailed description of Reach T1 and the remainder of OU6 is provided in the *RCRA Facility Investigation (RFI) Report Volume V – Tributary One and Flood Plain South of Pearson/Stone Roads* (RFI Volume V; Final June 2010) and in the draft *Corrective Measures Study Work Plan – Tributary One and Flood Plain South of Pearson/Stone Roads* (CMS Work Plan). A brief summary is provided herein.

2.1 Stream Characteristics

Reach T1 consists of the first approximately 1,600 feet of Tributary One and flood plain downstream of the Facility's historical (pre-1977) discharge outfall to Tributary One at the Francis Street bridge (Figure 2). Within Reach T1, the stream flows through residential, commercial, and public use properties, and beneath the Francis Street and Church Street bridges, an embankment for active railroad tracks (owned by Genesee Valley Transportation, Inc. and operated as Falls Road Railroad), and the Erie Canal aqueduct. The stream receives the following inputs: 1) stormwater runoff from these properties and other nearby properties and adjoining Village streets through both surface flow and culverts; 2) treated water from the Facility's current State Pollutant Discharge Elimination System (SPDES)-permitted outfall; and 3) overflow from the Erie Canal at the downstream end of Reach T1.

Based on information collected during the RFI in 2004 (Figure 3), within Reach T1 the stream ranges from approximately 13 to 23 feet in width and 6 to 12 inches in water depth at base flow. The stream banks are highly variable, ranging from less than one foot in height in low lying areas to more than 10 feet in areas with concrete abutments (e.g., railroad overpass). The stream bottom varies from bedrock or concrete with no sediment, to a few inches of sand and gravel over bedrock. The estimated 100-year flood zone, identified by the Federal Emergency Management Agency [FEMA], is shown on Figure 2 for Reach T1.

2.2 Constituents of Concern

As described in RFI Volume V, soil and sediment in OU6 were evaluated for constituents historically manufactured, formulated, handled, and/or used at the Facility. Arsenic was the constituent most frequently detected above background concentrations. Soil and sediment arsenic analytical data for Reach T1 include 680 samples collected from varying depths (predominantly less than 2 feet below grade surface) at 168 locations. Figures 4 through 6 show the prior sampling locations and soil/sediment arsenic concentrations, with the maximum concentration from any depth at each location color-coded by concentration range.

2.3 Properties

Reach T1 includes 26 properties, as shown on Figures 2 through 6. As identified in RFI Volume V, no further investigation or remediation is proposed for Properties BB8, BC5, BC7, BC8, BC10, or the upland portion of BC9.

3 PRE-DESIGN TASKS

Pre-Design tasks will include the following:

- Task 1: Community Participation
- Task 2: Inspection and Survey
- Task 3: Stream Characterization
- Task 4: Soil Sampling and Analysis
- Task 5: Regulatory Review
- Task 6: Reporting

3.1 Task 1: Community Participation

The objectives of community participation activities associated with the Reach T1 pre-design investigation are as follows:

- Inform the community and affected property owners/residents of the study activities,
- Assist the community and stakeholders in understanding the study scope of work, and
- Promote open communications with the community and affected property owners/residents regarding the project.

The minimum community participation activities for this project are identified in Table 1. Document repositories have been established to provide the public with convenient access to important project-related documents and information. The document repositories include both hard copy and electronic formats, and are identified in Table 2. The community and affected property owners can direct comments and questions to project personnel from FMC and/or the Agencies. Project contacts are provided in Table 3. A project related community mailing list has been developed for periodic distribution of fact sheets and/or updates regarding the status of the project, and includes at a minimum, the following:

- Owners and residents of properties within and adjacent to Reach T1;
- Village of Middleport and Town of Royalton officials;
- New York State and Niagara County officials;
- Royalton-Hartland Central School District administrator and school board members;
- Middleport Community Input Group chairperson;
- FMC Middleport Community Advisory Panel;
- FMC Middleport Plant personnel; and
- Any person who has requested to be on the mailing list.

The mailing list will be provided to the Agencies upon request.

3.2 Task 2: Inspection and Survey

Existing information regarding the location and construction of buildings, retaining walls, storm drains, culverts, buried and overhead utilities, bridges, railroad and Erie Canal structures, and other permanent structures/features will be obtained through inquiry of property owners, Digsafely New York, utility owners, and the Village of Middleport. Visual inspections of stream retaining walls and other structures/features will be conducted by a structural engineer to assess the feasibility of excavation adjacent to these structures/features. In select areas, geophysical locating methods (e.g., ground penetrating radar) will be used to identify the size and depth of buried utilities and potential obstructions (e.g., buried concrete foundations).

A detailed survey map will be prepared by a New York State (NYS) licensed surveyor to identify the above information, along with ancillary features (e.g., sheds, decks, stairways, driveways, fencing, etc.), trees (including approximate size), stream bank surface cover type (e.g., rock, grass) and slope gradient, sampling locations, property boundaries, and surface topography. The survey will use appropriate datum, identify a registered National Geodetic Survey benchmark, and measure elevation to the nearest 0.1 foot and at spacing sufficient to generate 0.5-foot contour intervals. The surface topography will be used to estimate soil removal volumes and for comparison to post-remediation surface elevations, and may be used in hydraulic modeling to demonstrate no adverse change to the FEMA-designated flood plain, if requested by government agencies.

3.3 Task 3: Stream Characterization

The RFI stream characterization information will be updated and supplemented as described below to support conceptual design of stream remediation and restoration.

- Bathymetric survey will be performed at eight (approximate 200-feet intervals) cross-stream transects and at grade breaks along the stream profile. Along each transect, water depth, pebble count, and sediment thickness (as measured by probing) will be recorded, and edge of water, ordinary high water mark, toe of bank, and top of bank will be surveyed.
- Stream velocities will be measured (using a hydraulic velocity meter) at four of the above transects. Along with the topographic and bathymetric survey information, the velocities measured during this event will be used to estimate stream flow under varying water depth conditions. This data will be used to aid in the design of stream bypass options during remediation and establishment of stable restoration surfaces following remediation.
- Stream bed and bank geomorphic conditions will be identified along the length of Reach T1. Where present, exposed bedrock outcrops, significant depositional and scoured features and riffle and pool complexes will be surveyed.
- Constructability reconnaissance will be performed to identify and evaluate potential locations for construction equipment access to the stream, equipment and materials staging, sediment/soil dewatering and stabilization, and sedimentation and erosion controls.
- Four representative (distributed through Reach T1) sediment and stream bank soil samples will be collected for laboratory analysis of the following geotechnical properties:

- Bulk density (ASTM D2937)
- Water content (ASTM D2216)
- Specific gravity (ASTM D854)
- Atterberg limits (ASTM D4318)
- Grain-size distribution (from Sieve Analysis, ASTM D422)
- Grain-size distribution for finer fraction (from Hydrometer Analysis, ASTM D1140)

The above results may be used to identify options to address special handling of sediment and saturated soil, as needed, during the design and construction phases of the ICM.

3.4 Task 4: Soil Sampling and Analysis

To supplement existing soil arsenic analytical data and further delineate the horizontal and vertical extent of arsenic in the stream banks and flood plain, soil samples are proposed at approximately 195 locations (shown on Figures 4 through 6). At each new location, samples will be collected from the 0- to 3-inch and 3- to 6-inch depth intervals and then on six-inch intervals to the proposed depth, as shown on Tables 4 through 6 (total approximately 988 samples).

Soil arsenic sampling and analysis will be conducted as follows:

- FMC will notify the Agencies at least 14 days prior to commencing field work, in accordance with Section XIV of the AOC.
- Proposed soil sampling locations will be surveyed, staked in the field, and recorded by a surveyor using a global positioning system (GPS) surveying unit or other appropriate surveying equipment to establish the horizontal and vertical coordinates.
- As with past soil sampling in OU6, soil samples will be collected and analyzed in accordance with the methods and procedures provided in the Sampling and Analysis Plan attached (as Appendix B) to the Tributary One South of Pearson/Stone Roads and Culvert 105 North of the Canal RFI/CMS Work Plan (October 2003). It is anticipated that samples will be collected either with hand tools or a track-mounted “Geoprobe” unit, depending on accessibility.
- Duplicate samples will be collected at a frequency of one per 20 field samples. Upon request of the Agencies, split samples will be provided to the Agencies.
- Sample analyses will be conducted by a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) certified laboratory qualified to perform the required analyses.
- Analytical results will be validated, and the final validated data will be submitted to the NYSDEC EQUIS database system.
- All field activities will be in conducted accordance with the health and safety provisions of the Occupational Safety and Health Administration (OSHA) Hazardous Waste Site Operations regulations (29 CFR 1910) and the site-specific health and safety plan (HASP).
- Although the soil sampling activities are not expected to result in dust or volatile organic compounds (VOCs) in ambient air beyond the work area, periodic monitoring of ambient air around the perimeter

of the work area for particulates and VOCs will be conducted using portable hand-held monitors as described in NYSDOH's Generic Community Air Monitoring Plan (CAMP) (2010).

Based on past remedial activities conducted at the Facility and off-site study areas, soils that would be excavated during an ICM are expected to be non-hazardous. For confirmatory purposes, four soil samples collected from previously sampled locations (T2E1, 0-6"; T5E3, 0-6"; T5E4, 12-18"; and T4, 0-6") exhibiting the highest total soil arsenic concentrations in each portion of Reach T1 will be analyzed for arsenic by the Toxicity Characteristic Leaching Procedure (TCLP). Additional waste characterization sampling and analysis may be conducted during the ICM design or construction phase, based on the requirements of the disposal facilities.

3.5 Task 5: Regulatory Review

Remediation within the stream (i.e., below the ordinary high water mark) will require a Nationwide Permit No. 38 under the Federal Clean Water Act from the NYSDEC and the United States Army Corps of Engineers (USACE). The permit is obtained through submittal of a joint permit application and a detailed design plan. It is anticipated that the permit application will be submitted for NYSDEC/USACE review at the 90 percent remedial design stage (to be prepared after Agencies' acceptance of a conceptual ICM Scope of Work). Activities within the flood plain will also be subject to NYSDEC requirements for flood plain disturbance and sedimentation and erosion control including, but not limited to, development of a Storm Water Pollution Prevention Plan (SWPPP).

As part of the pre-design activities, other potential state, county, or local permits that may be required for implementation of an ICM will be identified.

3.6 Task 6: Reporting

The findings of the pre-design field activities (Tasks 2 through 5) will be documented in a draft Pre-Design Report, which will include a proposed ICM Scope of Work for Reach T1. The proposed ICM Scope of Work will be based on the information and data collected during the Pre-Design activities, as well as prior existing information and data, and factors including, but not limited to, the following:

- Protectiveness of human health and the environment;
- Community acceptance (both on the whole and at the individual property level);
- Property-specific use requirements, including existing permanent structures/features (e.g., embankments, bridges, storm drains);
- Regulatory requirements associated with disturbance to the stream and associated flood plain;
- Effectiveness and constructability of remedial technologies;
- Stream dynamics and morphology; and
- Construction sequencing and scheduling.

4 SCHEDULE

Following approval of this Pre-Design Work Plan by the Agencies, FMC will commence with the community participation activities (Task 1) and seek signed access agreements from the subject property owners to grant FMC legal permission to perform the investigation field activities (Tasks 2 through 5). FMC will provide verbal notification to the Agencies at least 14 days prior to commencing field work, in accordance with Section XIV of the AOC.

Assuming receipt of the Agencies' approval of this Pre-Design Work Plan by June 10, 2016, the work will proceed based on the following preliminary schedule, subject to timely property access permission, favorable weather and field conditions, and subsequent Agencies' approval of the draft Pre-Design Report and ICM Scope of Work:

Start Date	Duration	Activity
June 10, 2016	4 Weeks	Community participation activities, meet with property owners and obtain access permission, pre-investigation preparation, notify Agencies of field work
July 8, 2016	4 Weeks	Inspections, utility clearance, staking of proposed sampling locations, begin survey and stream characterization
August 5, 2016	4 Weeks	Soil sample collection, complete survey and stream characterization
September 2, 2016	4 Weeks	Soil sample analysis, geotechnical analysis, and evaluation
September 30, 2016	4 Weeks	Validation of preliminary analytical data, review of investigation results
October 28, 2016	8 Weeks	Drafting of Pre-Design Report, including proposed ICM Scope of Work
December 23, 2016	n.a.	Submittal of draft Pre-Design Report, including ICM Scope of Work
January 2017	n.a.	Agencies' approval of Pre-Design Report and ICM Scope of Work
Spring 2017	n.a.	Submittal of draft ICM Work Plan

5 REFERENCES

ARCADIS. 2010. RCRA Facility Investigation Report Volume V – Tributary One and Flood Plain South of Pearson/Stone Roads. Final June.

ARCADIS. 2011. Corrective Measures Study Work Plan – Tributary One and Flood Plain South of Pearson/Stone Roads. Draft July.

Geomatrix Consultants and Conestoga-Rovers & Associates. 2003. Tributary One South of Pearson/Stone Roads and Culvert 105 North of the Canal RFI/CMS Work Plan. October.

USEPA, NYSDEC and FMC Corporation. 1991. Administrative Order on Consent [Docket No. II RCRA-90-3008(h)-0209] entered into by FMC, NYSDEC and USEPA, effective July 2, 1991.

TABLES

TABLE 1
COMMUNITY PARTICIPATION ACTIVITIES

OU6 REACH T1 PRE-DESIGN WORK PLAN
FMC CORPORATION – MIDDLEPORT, NEW YORK

Timing	Activity
After Agencies approval of the Pre-Design Work Plan and before start of field activities	1. Place approved work plan in the document repositories. 2. Prepare fact sheet to announce availability of the work plan and describe the upcoming field work for review and approval by the Agencies. 3. Provide approved fact sheet and information on property-specific work to owners/residents of affected study area properties, and request access permission to perform work. 4. Distribute fact sheet to the mailing list.
During implementation of the study	5. Notify study area property owners/residents at least one week in advance of work on their property. Note that following receipt of access permission, some property owners may allow notice of less than one week prior to the actual sampling date.
After Agencies approval completion of the study report	6. Place approved study report in the document repositories. 7. Prepare fact sheet to announce availability of the study report and describe the study results and proposed ICM Scope of Work for review and approval by the Agencies. 8. Provide study results fact sheet to study area property owners/residents. 9. Distribute study results fact sheet to mailing list.

TABLE 2
PROJECT DOCUMENT REPOSITORIES

OU6 REACH T1 PRE-DESIGN WORK PLAN
FMC CORPORATION – MIDDLEPORT, NEW YORK

Hard Copy Repositories
Royalton Hartland Community Library 9 South Vernon Street Middleport, NY 14105 *Phone:* (716) 735-3281 *Hours:* Mondays - Thursdays 11am-5pm & 7-8:30pm, Saturdays 11am-4pm, Fri. & Sun. closed *See more at:* http://royhartcommunitylibrary.com/
New York State Department of Environmental Conservation (NYSDEC) **Region 9 Office** 270 Michigan Ave. Buffalo NY 14203-2915 *Phone:* (716) 851-7220 *Email:* region9@dec.ny.gov *Hours:* Mondays - Fridays 8:30 am to 4:45 pm *See more at:* http://www.dec.ny.gov/about/619.html
FMC Community Office 8 South Vernon Street Middleport, NY 14105 *Phone:* (716) 735-9769 *Contact:* Jessica Heideman *Hours:* Mondays, Tuesdays and Thursdays 9 am – 2 pm or by appointment
Electronic Copy Repositories
• FMC Middleport Plant website: http://www.fmc-middleport.com/MiddleportPlant.aspx • NYSDEC FMC Middleport Facility: http://www.dec.ny.gov/chemical/54220.html • Middleport Community Input Group (MCIG) website: www.middleport-future.com

TABLE 3
PROJECT CONTACT LIST

OU6 REACH T1 PRE-DESIGN WORK PLAN
FMC CORPORATION – MIDDLEPORT, NEW YORK

<table>
<tr><th colspan="2">Contacts for Project Related Questions</th></tr>
<tr><td colspan="2">FMC</td></tr>
<tr><td>Jessica Heideman
FMC Community Liaison
FMC Community Office
8 South Vernon Street
Middleport, NY 14105

Phone: (716) 735-9769
Email: Jessica.Heideman@fmc.com</td><td>Shawn Tollin
Remediation Project Manager
FMC Corporation
2929 Walnut Street
Philadelphia, PA 19104

Phone: (215) 299-6554
Email: Shawn.Tollin@fmc.com</td></tr>
<tr><td colspan="2">Agencies</td></tr>
<tr><td>Nathan Freeman
NYSDEC Project Coordinator
NYSDEC
Division of Environmental Remediation
625 Broadway, 12th floor
Albany, NY 12233-7016

Phone: (518) 402-9767
Email: nathan.freeman@dec.ny.gov</td><td>Michael Infurna
USEPA Project Coordinator
United States Environmental
Protection Agency (USEPA)
290 Broadway
New York, New York 10007-1866

Phone: (212) 637-4177
Email: Infurna.Michael@epa.gov</td></tr>
<tr><td colspan="2">Contact for Site-Related Health Questions</td></tr>
<tr><td colspan="2">Stephanie Selmer
Public Health Specialist
New York State Department of Health (NYSDOH)
Bureau of Environmental Exposure Investigation
Corning Tower, Room 1787
Albany, NY 12237

Phone: (518) 402-7860
Email: beei@health.state.ny.gov</td></tr>
</table>

TABLE 4
PROPOSED SAMPLING LOCATIONS - FRANCIS STREET TO RAILROAD

OU6 REACH T1 PRE-DESIGN WORK PLAN
FMC CORPORATION – MIDDLEPORT, NEW YORK

Sample Location	Depth Interval to be Sampled (inches below grade)							
	0-3	3-6	6-12	12-18	18-24	24-30	30-36	>36
T1.6E1	X	X	X	X	X			
T1.6W1	X	X	X	X	X	X		
T1.6W2	X	X	X	X	X			
T2E2	X	X	X	X	X			
T2E3	X	X	X	X	X			
T2W13	X	X	X	X	X			
T2W14	X	X	X	X	X			
T2W15	X	X	X	X	X			
T2.1E1	X	X	X	X	X			
T2.1W1	X	X	X	X	X	X		
T2.1W2	X	X	X	X				
T2.1W3	X	X	X	X				
T2.1W4	X	X	X	X				
BB1-4	X	X	X					
BB1-5	X	X	X					
BB1-6	X	X	X					
BB1-7	X	X	X					
BB1-8	X	X	X	X				
BB1-9	X	X	X	X				
BB1-10	X	X	X	X				
BB1-11	X	X	X	X				
BB1-12	X	X	X	X	X			
BB1-13	X	X	X	X	X			
BB2-4	X	X	X	X				
BB2-5	X	X	X	X				
BB2-6	X	X	X	X	X			
BB2-7	X	X	X	X	X			
BB3-1	X	X	X	X				
BB3-2	X	X	X	X				
BB3-3	X	X	X	X				
BB3-4	X	X	X	X	X			
BB4-1	X	X	X	X	X			
BB4-2	X	X	X	X				
BB4-3	X	X	X	X				
BB4-4	X	X	X	X				
BB4-5	X	X	X	X	X			
BB4-6	X	X	X	X	X			
BB4-7	X	X	X	X	X			
BB4-8	X	X	X	X	X			
BB4-9	X	X	X	X	X			
BB6-1	X	X	X					
BB6-2	X	X	X					
BB6-3	X	X	X	X	X			
BB6-4	X	X	X					

TABLE 4
PROPOSED SAMPLING LOCATIONS - FRANCIS STREET TO RAILROAD

OU6 REACH T1 PRE-DESIGN WORK PLAN
FMC CORPORATION – MIDDLEPORT, NEW YORK

Sample Location	Depth Interval to be Sampled (inches below grade)							
	0-3	3-6	6-12	12-18	18-24	24-30	30-36	>36
BB6-5	X	X	X					
BB6-6	X	X	X					
BB6-7	X	X	X	X	X			
BB6-8	X	X	X	X				
BB6-9	X	X	X	X				
BB6-10	X	X	X	X	X			
BB6-11	X	X	X	X				
BB6-12	X	X	X	X				
BB6-13	X	X	X	X				
BB6-14	X	X	X	X				
BB6-15	X	X	X	X	X			

Notes:
1. Refer to Figure 4 for sample locations.
2. Refer to Prior Arsenc Results table on Figure 4 for existing soil arsenic data.
3. Blank cell = no sampling proposed.

TABLE 5
PROPOSED SAMPLING LOCATIONS - RAILROAD TO CHURCH STREET

OU6 REACH T1 PRE-DESIGN WORK PLAN
FMC CORPORATION – MIDDLEPORT, NEW YORK

Sample Location	Depth Interval to be Sampled (inches below grade)							
	0-3	3-6	6-12	12-18	18-24	24-30	30-36	>36
T2.3E1	X	X	X	X	X			
T2.3E2	X	X	X	X				
T2.3W1	X	X	X	X	X	X		
T2.4E1	X	X	X	X	X			
T2.4E2	X	X	X	X				
T2.4W1	X	X	X	X	X	X		
T2.6E1	X	X	X	X				
T2.6E2	X	X	X	X				
T2.6W1	X	X	X	X	X	X		
T2.6W2	X	X	X	X	X			
T2.6W3	X	X	X	X	X			
T2.8E1	X	X	X	X	X			
T2.8E2	X	X	X	X	X			
T2.8E3	X	X	X	X	X			
T2.8E4	X	X	X	X	X			
T2.8W1	X	X	X	X	X	X		
T2.8W2	X	X	X	X	X	X		
T2.8W3	X	X	X	X	X	X		
T3.2E1	X	X	X	X	X			
T3.2E2	X	X	X	X	X			
T3.2E3	X	X	X	X	X			
T3.2W1	X	X	X	X	X	X		
T3.2W2	X	X	X	X	X	X		
T3.2W3	X	X	X	X	X			
T3.2W4	X	X	X	X	X			
T3.4E1	X	X	X	X	X			
T3.4E2	X	X	X	X	X			
T3.4E3	X	X	X	X	X			
T3.4E4	X	X	X	X				
T3.4W1	X	X	X	X	X			
T3.4W2	X	X	X	X	X			
T3.4W3	X	X	X	X				
T3.4W4	X	X	X	X				
T3.6E1	X	X	X	X	X	X	X	60 inches or refusal
T3.6E2	X	X	X	X	X	X	X	60 inches or refusal
T3.6E3	X	X	X	X	X	X	X	60 inches or refusal
T3.6E4	X	X	X	X				
T3.6E5	X	X	X	X				

TABLE 5
PROPOSED SAMPLING LOCATIONS - RAILROAD TO CHURCH STREET

OU6 REACH T1 PRE-DESIGN WORK PLAN
FMC CORPORATION – MIDDLEPORT, NEW YORK

Sample Location	Depth Interval to be Sampled (inches below grade)							
	0-3	3-6	6-12	12-18	18-24	24-30	30-36	>36
T3.6W1	X	X	X	X	X			
T3.6W2	X	X	X	X	X			
T3.6W3	X	X	X	X				
T4.4E1	X	X	X	X	X	X	X	60 inches or refusal
T4.4E2	X	X	X	X	X	X	X	60 inches or refusal
T4.4E3	X	X	X	X	X	X	X	60 inches or refusal
T4.4E4	X	X	X	X	X			
T4.4E5	X	X	X	X				
T4.4W1	X	X	X	X	X			
T4.4W2	X	X	X	X				
T4.6E1	X	X	X	X	X	X		
T4.6E2	X	X	X	X	X	X		
T4.6E3	X	X	X	X	X	X		
T4.6E4	X	X	X	X	X			
T4.6E5	X	X	X	X				
T4.6W1	X	X	X	X	X			
T5E5.5	X	X	X	X	X	X		
T5E8	X	X	X	X				
T5W1	X	X	X	X	X			
T5.2E1	X	X	X	X	X	X		
T5.2E2	X	X	X	X	X	X	X	
T5.2E3	X	X	X	X	X			
T5.2E4	X	X	X	X				
T6.2E1	X	X	X	X	X			
T6.2W1	X	X	X	X	X	X		
T6.2W2	X	X	X	X	X	X		
T6.2W3	X	X	X	X	X			
T6.4E1	X	X	X	X	X			
T6.4E2	X	X	X	X	X			
T6.4W1	X	X	X	X	X			
BC1-1	X	X	X	X	X	X	X	
BC1-2	X	X	X	X	X			
BC1-3	X	X	X	X	X			
BC1-4	X	X	X	X	X			
BC1-5	X	X	X	X	X	X	X	
BC1-6	X	X	X	X	X	X	X	
BC2-1	X	X	X	X	X			
BC2-2	X	X	X	X	X			
BC2-3	X	X	X	X	X	X	X	
BC3-1	X	X	X	X	X			
BC3-2	X	X	X	X	X	X	X	60 inches or refusal
BC6-1	X	X	X	X	X			
BC6-2	X	X	X	X	X			
BC6-3	X	X	X	X	X			

TABLE 5
PROPOSED SAMPLING LOCATIONS - RAILROAD TO CHURCH STREET

OU6 REACH T1 PRE-DESIGN WORK PLAN
FMC CORPORATION – MIDDLEPORT, NEW YORK

Sample Location	Depth Interval to be Sampled (inches below grade)							
	0-3	3-6	6-12	12-18	18-24	24-30	30-36	>36
BC12-1	X	X	X	X	X	X		
BC12-2	X	X	X	X	X	X		
BC12-3	X	X	X	X	X	X		
BC12-4	X	X	X	X				
BC13-1	X	X	X	X	X	X		
BC13-2	X	X	X	X				

Notes:
1. Refer to Figure 5 for sample locations.
2. Refer to Prior Arsenc Results table on Figure 5 for existing soil arsenic data.
3. Blank cell = no sampling proposed.

TABLE 6
PROPOSED SAMPLING LOCATIONS - CHURCH STREET TO ERIE CANAL

OU6 REACH T1 PRE-DESIGN WORK PLAN
FMC CORPORATION – MIDDLEPORT, NEW YORK

Sample Location	Depth Interval to be Sampled (inches below grade)							
	0-3	3-6	6-12	12-18	18-24	24-30	30-36	>36
Proposed Sampling Locations								
T6.6E1	X	X	X	X	X	X		
T6.6E2	X	X	X	X	X			
T6.6E3	X	X	X	X				
T6.6W1	X	X	X	X	X			
T6.8E1	X	X	X	X	X	X		
T6.8E2	X	X	X	X	X	X		
T6.8E3	X	X	X	X				
T6.8W1	X	X	X	X	X	X		
T6.8W2	X	X	X	X	X			
T7E9	X	X	X	X				
T7W5	X	X	X	X	X			
T7.2E1	X	X	X	X	X	X		
T7.2E2	X	X	X	X	X	X		
T7.2E3	X	X	X	X				
T7.2E4	X	X	X	X				
T7.2E5	X	X	X	X				
T7.2W1	X	X	X	X	X	X		
T7.2W2	X	X	X	X	X	X		
T7.2W3	X	X	X	X	X	X		
T7.4E1	X	X	X	X	X			
T7.4E2	X	X	X	X	X			
T7.4W1	X	X	X	X	X	X		
T7.4W2	X	X	X	X	X			
T7.4W3	X	X	X	X	X			
T7.6E1	X	X	X	X	X			
T7.6E2	X	X	X	X	X			
T7.6E3	X	X	X	X				
T7.6E4	X	X	X	X				
T7.6W1	X	X	X	X	X	X		
T7.6W2	X	X	X	X	X			
T8W5	X	X	X	X	X			
T8.2E1	X	X	X	X	X			
T8.2E2	X	X	X	X				
T8.2E3	X	X	X	X				
T8.2W1	X	X	X	X	X	X		
T8.2W2	X	X	X	X	X			
T8.4E1	X	X	X	X	X			
T8.4E2	X	X	X	X				
T8.4E3	X	X	X	X				
T8.4W1	X	X	X	X	X	X		
T8.4W2	X	X	X	X	X			
T8.6E1	X	X	X	X	X			
T8.6E2	X	X	X	X				
T8.6W1	X	X	X	X	X	X		

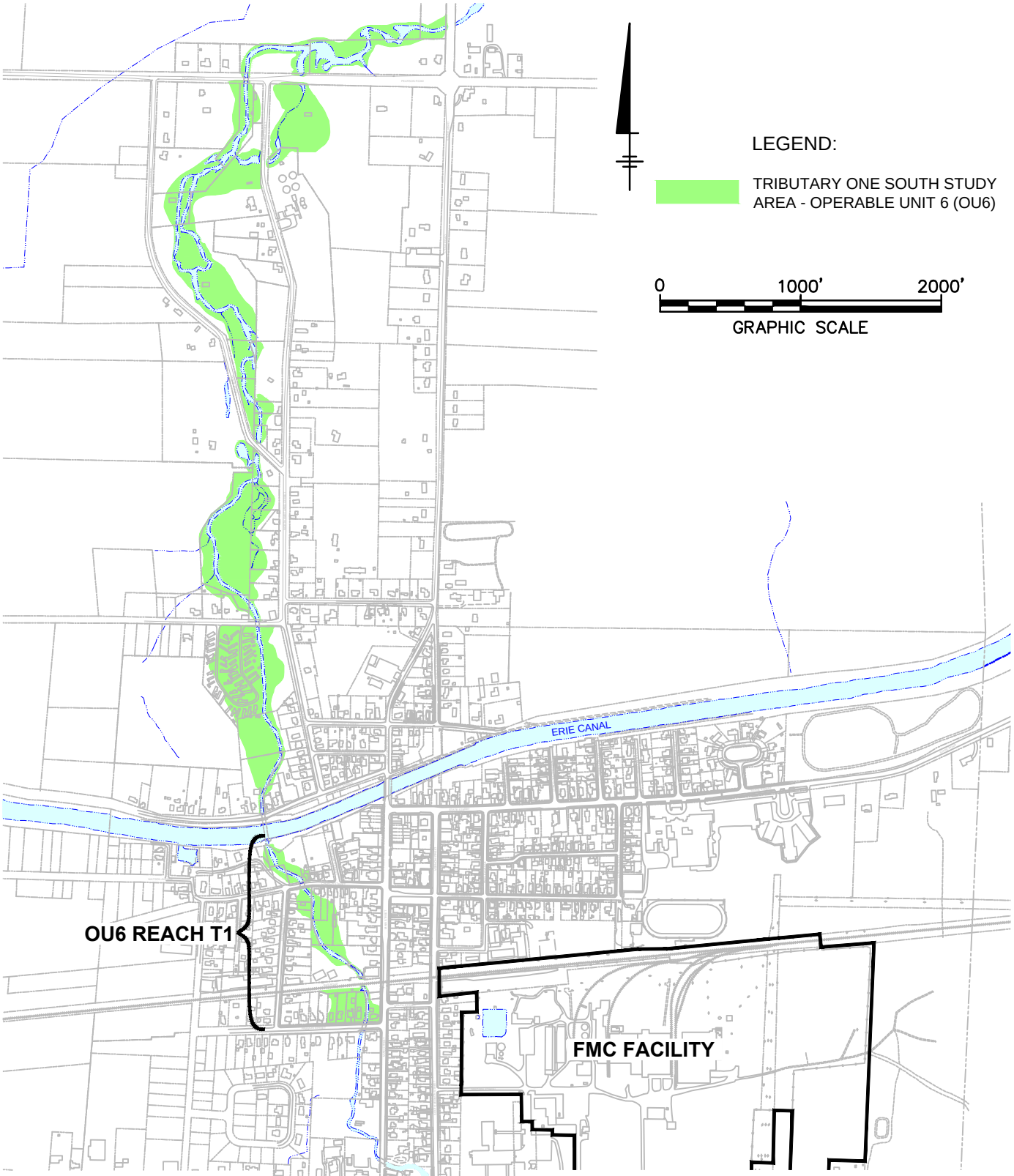
TABLE 6
PROPOSED SAMPLING LOCATIONS - CHURCH STREET TO ERIE CANAL

OU6 REACH T1 PRE-DESIGN WORK PLAN
FMC CORPORATION – MIDDLEPORT, NEW YORK

Sample Location	Depth Interval to be Sampled (inches below grade)							
	0-3	3-6	6-12	12-18	18-24	24-30	30-36	>36
Proposed Sampling Locations								
BD2-1	X	X	X	X	X			
BD2-2	X	X	X	X	X			
BD2-3	X	X	X	X	X			
BD2-4	X	X	X	X				
BD2-5	X	X	X	X	X	X		
BD2-6	X	X	X	X	X	X		
Prior Sampling Locations								
T8W1					X	X		
T8W2					X	X		

Notes:
1. Refer to Figure 6 for sample locations.
2. Refer to Prior Arsenc Results table on Figure 6 for existing soil arsenic data.
3. Blank cell = no sampling proposed.

FIGURES



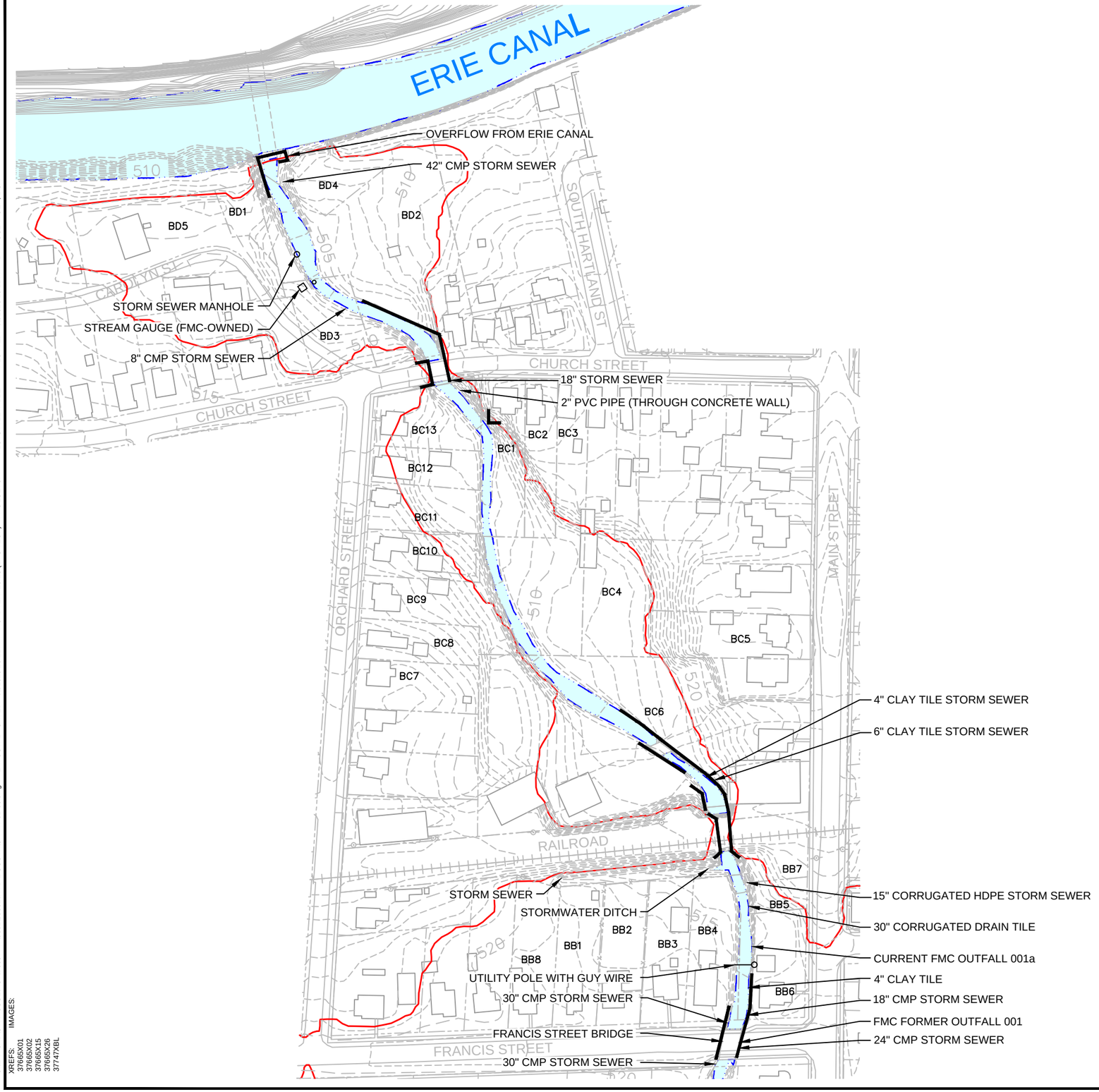
FMC CORPORATION - MIDDLEPORT, NEW YORK

OU6 REACH T1 ICM
PRE-DESIGN WORK PLAN

LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1



LEGEND:

- APPROXIMATE FEMA 100-YEAR FLOODPLAIN BOUNDARY
- BB6 PROPERTY ID
- RETAINING WALL

NOTES:

1. BASE MAP FROM RCRA FACILITY INVESTIGATION (RFI) REPORT VOLUME V (JUNE 2010).
2. ADDITIONAL SURVEY INFORMATION PROVIDED BY McINTOSH AND McINTOSH, INC. SURVEYORS, WITH A HORIZONTAL DATUM OF NAD27 AND A VERTICAL DATUM OF NGVD29.
3. ALL LOCATIONS AND PROPERTY BOUNDARIES SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION.
4. FLOODPLAIN BOUNDARIES APPROXIMATED USING FEMA FLOOD INSURANCE RATE MAPS 36063C0276E AND 36063C0278E (EFFECTIVE DATE: SEPTEMBER 17, 2010).
5. IDENTIFICATION OF DISCHARGES TO TRIBUTARY ONE BASED ON FIELD SURVEYS PERFORMED IN MARCH 2004 AND VILLAGE OF MIDDLEPORT STORM SEWER DRAWINGS DATED MAY 7, 1975.
6. HDPE = HIGH DENSITY POLYETHYLENE
   CMP = CORRUGATED METAL PIPE
   PVC = POLYVINYL CHLORIDE

0 160' 320'

GRAPHIC SCALE

FMC CORPORATION - MIDDLEPORT, NEW YORK
OU6 REACH T1 ICM
PRE-DESIGN WORK PLAN

FEATURES OF OU6 REACH T1

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

CITY: SYRACUSE, NY DIV/GROUP: EBC-IM/DV DB: L.POSENAUER PM/TM: D.WRIGHT TR: R. SMITH LYR:(Opt)ON=*;OFF=*REF*
C:\ENVCAD\SYRACUSE\ACTIB\003774\700\200001\TRIB-1-SOUTH\37747P02-06.dwg LAYOUT: 2 SAVED: 4/1/2016 10:12 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 4/1/2016 10:22 AM BY: POSENAUER, LISA
XREFS:
IMAGES:
37665X01
37665X02
37665X15
37665X26
37747XBL

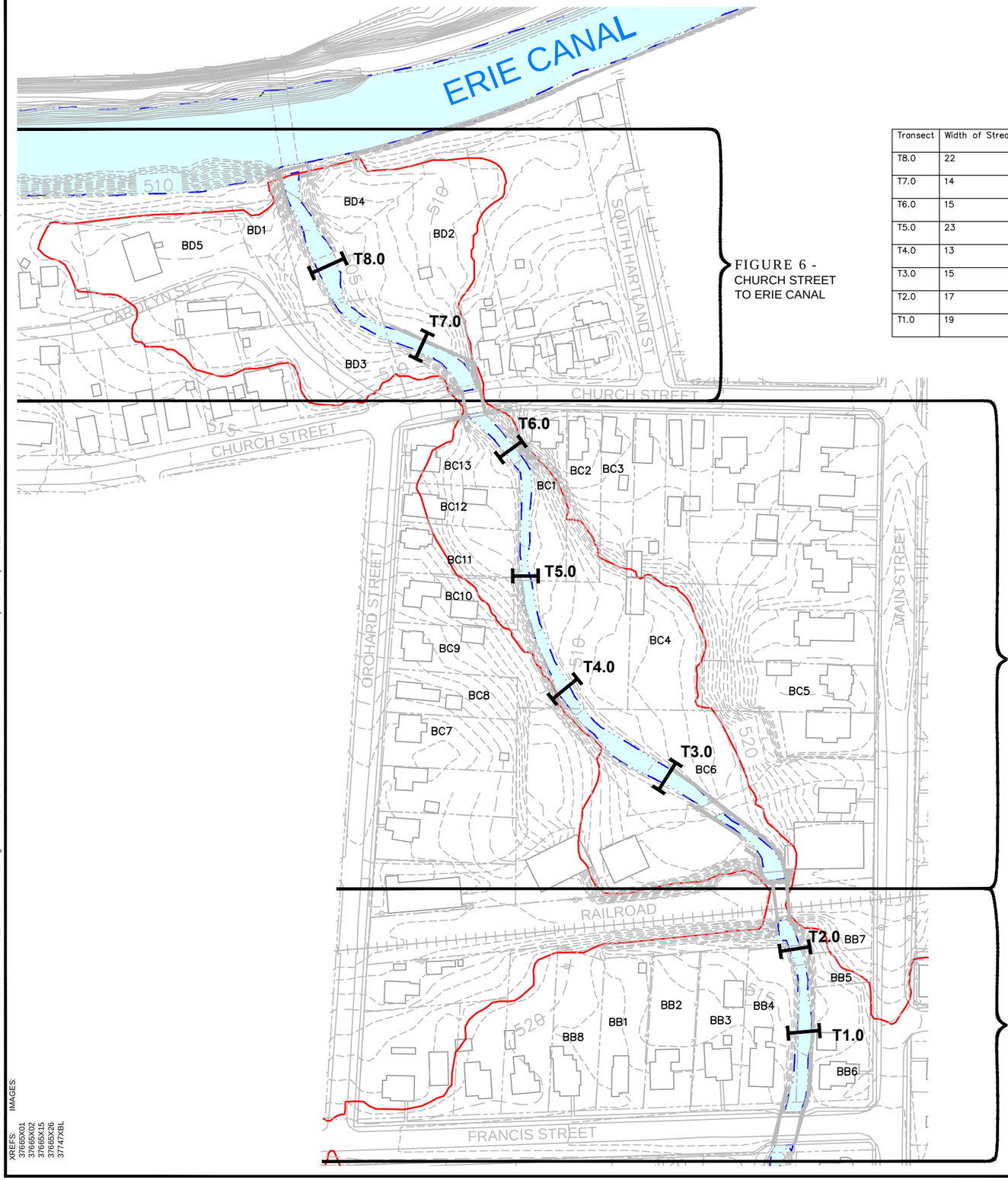


FIGURE 6 - CHURCH STREET TO ERIE CANAL

FIGURE 5 - RAILROAD TO CHURCH STREET

FIGURE 4 - FRANCIS STREET TO RAILROAD

Transect	Width of Stream (ft)	Stream Sediment Depth (feet) and Description (March 2004)		
		25% Width of Stream	50% Width of Stream	75% Width of Stream
T8.0	22	0.2	0	0.3
		Sand and gravel over bedrock	None – bedrock	Sand, gravel, cobble over bedrock
T7.0	14	0	0	0
		No sediment – manmade bottom	No sediment – manmade bottom	No sediment – manmade bottom
T6.0	15	0	0	0.1
		None – cobble over bedrock	None – bedrock	Sand and cobble over bedrock
T5.0	23	0	0.3	0.2
		None – bedrock	Sand and gravel over bedrock	Sand and gravel over bedrock
T4.0	13	0	0	0.1
		None – bedrock	None – bedrock	Sand and gravel over rock
T3.0	15	0	0	0
		None – bedrock	None – bedrock	None – bedrock
T2.0	17	0	0	0
		Trace gravel over bedrock	Trace gravel over bedrock	None – bedrock
T1.0	19	0.1	0.1	0
		Gravel and sand	Gravel and sand	None – cobble

LEGEND:

- APPROXIMATE FEMA 100-YEAR FLOODPLAIN BOUNDARY
- BB6 PROPERTY ID
- T1.0 2004 SAMPLING TRANSECTS

NOTES:

1. BASE MAP FROM RCRA FACILITY INVESTIGATION (RFI) REPORT VOLUME V (JUNE 2010).
2. ADDITIONAL SURVEY INFORMATION PROVIDED BY McINTOSH AND McINTOSH, INC. SURVEYORS, WITH A HORIZONTAL DATUM OF NAD27 AND A VERTICAL DATUM OF NGVD29.
3. ALL LOCATIONS AND PROPERTY BOUNDARIES SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION.
4. FLOODPLAIN BOUNDARIES APPROXIMATED USING FEMA FLOOD INSURANCE RATE MAPS 36063C0276E AND 36063C0278E (EFFECTIVE DATE: SEPTEMBER 17, 2010).
5. LOCATIONS OF STREAM CHARACTERIZATION SURVEY TRANSECTS ARE APPROXIMATE AND WILL BE ADJUSTED BASED ON EXISTING CONDITIONS.

0 160' 320'

GRAPHIC SCALE

FMC CORPORATION - MIDDLEPORT, NEW YORK
OU6 REACH T1 ICM
PRE-DESIGN WORK PLAN

REACH T1 STREAM CHARACTERIZATION

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

CITY: SYRACUSE, NY DIV/GROUP: EBC-IM/DV DB: L.POSENAUER PM/TM: D.WRIGHT TR: R. SMITH LYR:(Opt)ON=*;OFF=*REF*
C:\ENVCAD\SYRACUSE\ACTIVE\B003774\7000\200001\TRIB-1-SOUTH\3774P02-06.dwg LAYOUT: 3 SAVED: 4/1/2016 10:12 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 4/1/2016 10:23 AM BY: POSENAUER, LISA
XREFS:
IMAGES:
3766X01
3766X02
3766X15
3766X26
3774XBL

PRIOR ARSENIC RESULTS (mg/kg)							
Sample ID	Matrix	0–3"	3–6"	6–12"	12–18"	18–24"	>24"
T1E1	Soil	33.2	34.8	33	15	19.6	
T1E2	Soil	50.2	64.5	43.8	9.8	8	
T1E3	Soil	26.2	87.3	33.2	8.8	5.5	
T1E4	Soil	50.3	51.5	5.4	2.1	1.5	
T1E5	Soil	24.5	26.1	34.3	5.4	5.9	7.6 (24–28)
T1W1	Soil	14.6	58.1	186	7.2	6.7	
T1W2	Soil	34	31.3	10.6	7.3	5.5	
T1W3	Soil	25.1	26	11.4	8.7	3.7	
T1W4	Soil	22.3	23.4	18.6			
T2E1	Soil	1680	479	467			
T2S	Sediment	157					
T2W1	Soil	281	917	79.1	15.3	27.9	
T2W2	Soil	64.3	53.9	54.3	14.8	4.6	
T2W3	Soil	57.2	37.6	32.6	3.6	3.5	
T2W4	Soil	20.9	25.3	25.6	5.9	4.6	
T2W5	Soil	27.5	27.1	18.7	7.5	1.1	
T2W6	Soil	9.7	7.1	25.7	69.8		
T2W7	Soil	7.4					
T2W8	Soil	4.6					
T2W9	Soil	11.5					
T2W10	Soil	18.3	17.8	8.9	5.7	2.8	
T2W11	Soil	19.9	25.7	34.3	28.1	2	
T2W12	Soil	16.7	19.8	31.8	24.6	7.3	
BB1–1	Soil	18.9	24.8	15	4.7	9.4	
BB1–2	Soil	16.9	16.6	24.8	18	8.7	
BB1–3	Soil	9.6	7.6	6	2.9	2.4	

PRIOR ARSENIC RESULTS (mg/kg)							
Sample ID	Matrix	0–3"	3–6"	6–12"	12–18"	18–24"	>24"
BB2–1	Soil	20.2	33.2	18	5.7	4.3	
BB2–2	Soil	6.2	8	5.2	7.1	22.4	
BB2–3	Soil	4.9	5.6	10.1	7.7	8.8	
BB8–1	Soil	17.9	19.8	14.7	5.9	10.6	
BB8–2	Soil	8.3	15.8	11.4	5.3	6.4	
BB8–3	Soil	13.8	18.9	9.4	4.6	4.8	
BB8–4	Soil	13.8	10.9	7.2	2.9	2.3	
TSLSB1	Soil	28.1	31.8	24.6	8.5		
TSLSB2	Soil	4.3	4.4	11.3	6.7		
TSLSB3	Soil	20.6	17.2	9	3.5		
TSMSB1	Soil	25.1	35.8	15.9	4.1		
TSMSB2	Soil	31.3	26.6	7.6	4.2		
TSMSB3	Soil	17.8	18.4	15.4	4.3		
TSNSB1	Soil	28.8	27.3	13.9	7.3 (12–14)		
TSNSB2	Soil	5	8.7	8.6	2.8		
TSOSB1	Soil	10.6	12.5	8.8	8	8.4	
TSPSB1	Soil	12.3	16.6	9	12.5		
DOHSS15	Soil	74					
DOHSS16	Soil	18					
DOHSS17	Soil	73					
S8	Soil	59.1					
WSS18	Soil	28.5					
SD3	Sediment	134					
T3	Soil	235					

NOTES:

1. SAMPLE DEPTHS ARE PRESENTED IN INCHES.
2. ARSENIC CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (MG/KG), EQUIVALENT TO PARTS–PER–MILLION (PPM).

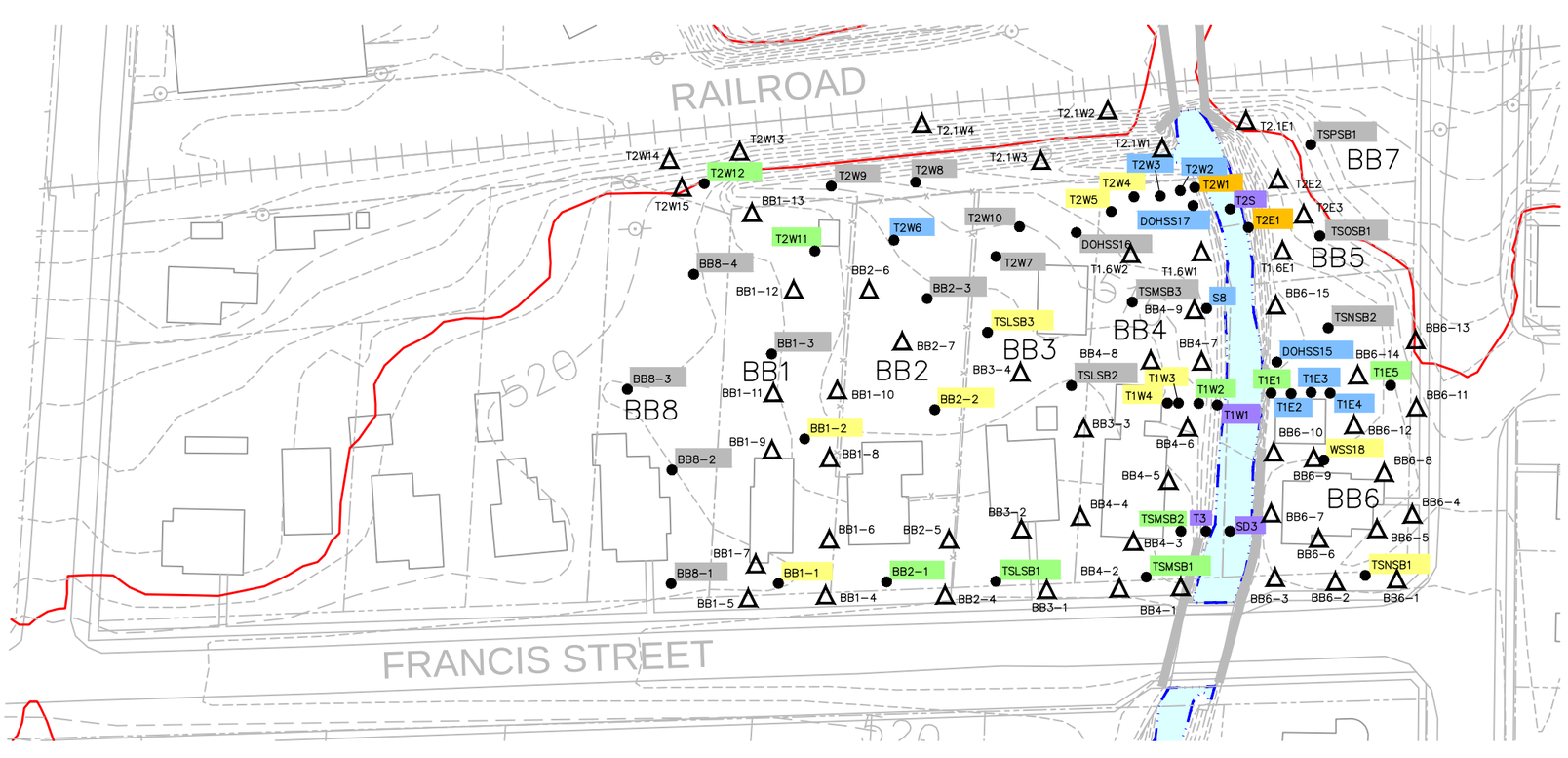


FIGURE INDEX:

LEGEND:

- T10.2W3 — PROPOSED SOIL SAMPLING LOCATION
- T3E1 — PRIOR SAMPLING LOCATION
- APPROXIMATE FEMA 100–YEAR FLOODPLAIN BOUNDARY
- BB6 — PROPERTY ID
- RETAINING WALL

ARSENIC SAMPLE CONCENTRATIONS:

- > 500 mg/kg
- 250 – 500 mg/kg
- 100 – 250 mg/kg
- 50 – 100 mg/kg
- 40 – 50 mg/kg
- 30 – 40 mg/kg
- 20 – 30 mg/kg
- < 20 mg/kg

NOTES:

1. BASE MAP FROM RCRA FACILITY INVESTIGATION (RFI) REPORT VOLUME V (JUNE 2010).
2. ADDITIONAL SURVEY INFORMATION PROVIDED BY McINTOSH AND McINTOSH, INC. SURVEYORS, WITH A HORIZONTAL DATUM OF NAD27 AND A VERTICAL DATUM OF NGVD29.
3. ALL LOCATIONS AND PROPERTY BOUNDARIES SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION.
4. FLOODPLAIN BOUNDARIES APPROXIMATED USING FEMA FLOOD INSURANCE RATE MAPS 36063C0276E AND 36063C0278E (EFFECTIVE DATE: SEPTEMBER 17, 2010).
5. COLOR LABEL AT EACH SAMPLE LOCATION ON FIGURE REPRESENTS THE MAXIMUM CONCENTRATION AT ANY DEPTH INTERVAL SHOWN IN TABLE.
6. SEE TABLE 4 FOR PROPOSED SAMPLING DEPTHS.

0 80' 160'

GRAPHIC SCALE

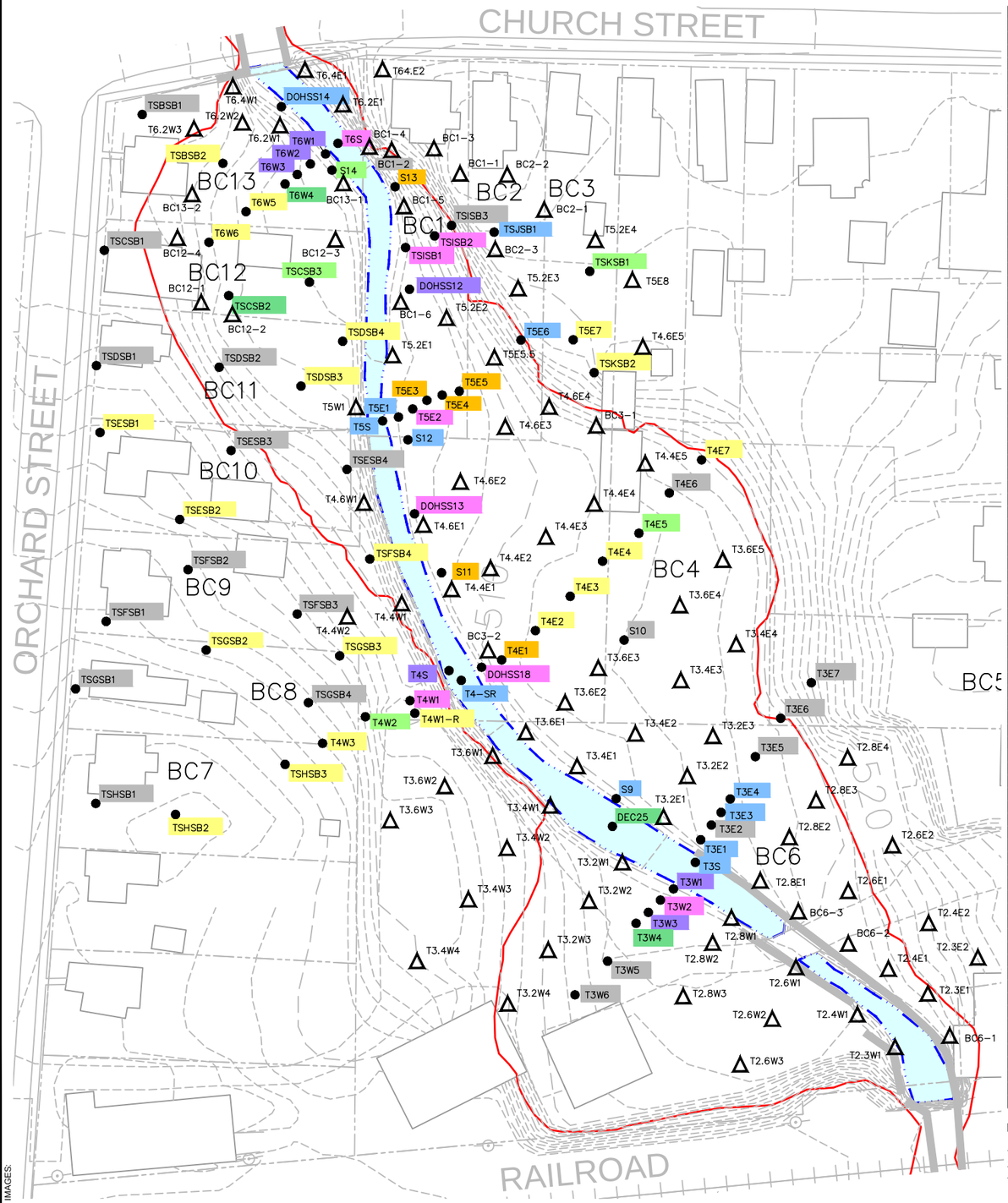
FMC CORPORATION - MIDDLEPORT, NEW YORK
OU6 REACH T1 ICM
PRE-DESIGN WORK PLAN

FRANCIS STREET TO RAILROAD PRIOR AND PROPOSED SAMPLING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 4

CITY: SYRACUSE, NY DIV/GROUP: EBC-IM/DV DB/LD: L.ROSENAUER PM/TM: D.WRIGHT TR: R. SMITH LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\B0037747\0002\0000\01TRIB-1-SOUTH\37747P02-06.dwg LAYOUT: 4 SAVED: 5/23/2016 3:40 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: --- PLOTTED: 5/23/2016 4:01 PM BY: POSENAUER, LISA
XREFS:
IMAGES:
37665X01
37665X02
37665X15
37663X26
37747XBL

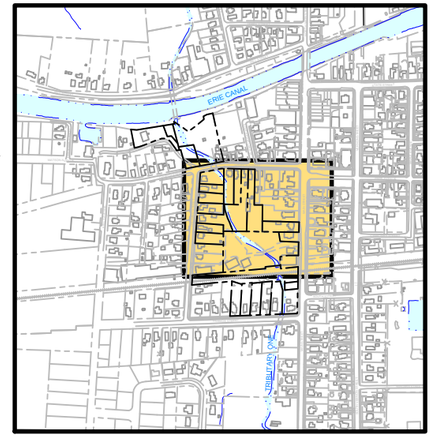


PRIOR ARSENIC RESULTS (mg/kg)							
Sample ID	Matrix	0–3"	3–6"	6–12"	12–18"	18–24"	>24"
T3E1	Soil	40.7	31.3	53.1			
T3E2	Soil	5	4.3	7.7	9.6	2.1	
T3E3	Soil	53.5	5.6	4.9	6.6	4.4	
T3E4	Soil	12.9	50.1	37.2	37.3	6.9	
T3E5	Soil	17	15.7	7.1	6.9	9.9	5.4 (24–30)
T3E6	Soil	9.8	12.3	12	4.5	3.1	2.7 (24–30)
T3E7	Soil	7.5	9.9	16.1	15.6	14.7	9.7 (24–30)
T3S	Sediment	75.1					
T3W1	Soil	63.1	62.6	23.5	234		
T3W2	Soil	21.4	80.1	293	478	92	
T3W3	Soil	11.6	8.2	54.2	87.7	102	
T3W4	Soil	5.6	5	15.7	46.2	47.9	
T3W5	Soil	3.6	10.9	17.1	7.9	3.3	2.8 (24–30)
T3W6	Soil	3.8	3.6	1.6	2.8	2.1	2.5 (24–30)
T4E1	Soil	461	582	418	169	120 (18–21)	288 (48–54), REFUSAL (66)
T4E2	Soil	23	14.3	1.9	1.1	1.7	2.5 (24–30)
T4E3	Soil	27.6	13.6	17.4	5	4.7	2.2 (24–30)
T4E4	Soil	27.5	18	4.3	1.4	1.6 (18–20)	
T4E5	Soil	35.4	15.6	10.9	5.8	2.5	1.1 (24–26)
T4E6	Soil	11.6	6.7	11.4	7.5		
T4E7	Soil	12	21.8	15.9	9.6	6.9	4.3 (24–30)
T4–S	Sediment	106					
T4–SR	Sediment	89.8					
T4W1	Soil	28.5	381	4.4	2.5	2.3	1.7 (24–30)
T4W1–R	Soil	19.7	20.1	6.3	1.9	1.4	1.6
T4W2	Soil	18.1	20.2	32.3	27.1	10.9	3.2 (24–30)
T4W3	Soil	23.7	21.1	7.2	7.4	4.9	6.1 (24–30)
T5E1	Soil	63.4	84.2				
T5E2	Soil	57.1	81.2	311			
T5E3	Soil	384	914	349	116		
T5E4	Soil	387	665	838	1050		
T5E5	Soil	293	571	345	22.5	22.8	3.8 (24–30)
T5E6	Soil	45.5	57.7	41.8	4.8		
T5E7	Soil	20.2	24.2	10.1	3.3	3.4	3.7 (24–30)
T5S	Sediment	83.3					
T6S	Sediment	251					
T6W1	Soil	76.6	119	238	88.2	144	
T6W2	Soil	149	174	199	23.3	19.7	
T6W3	Soil	89.3	116	149			
T6W4	Soil	25.5	39.4	41.6	5.6	5.4	
T6W5	Soil	23.6	11.9	21.3	4.3	8.4	6.4 (24–30)
T6W6	Soil	12.9	15.5	21.5	4.4	2.9	3.1 (24–26)
TSBSB1	Soil	10	15	11.4	3.9		
TSBSB2	Soil	11.7	13.2	24.7	13.9		
TSCSB1	Soil	8.8	8.9	11.2	6.4		
TSCSB2	Soil	24.7	48.4	48.4	31.2	20.7	11.1 (24–30), 9.1 (30–36)
TSCSB3	Soil	35.6	32.5	19.9	7.4		
TSDSB1	Soil	4.6	12.3	12.6	4.5		
TSDSB2	Soil	5.2	5.3	4.1	1.9		
TSDSB3	Soil	16.6	21.3	15	5.2		
TSDSB4	Soil	21.2	22.8	14.2	6.5		
TSESB1	Soil	15.5	20.7	7.5	2.7		
TSESB2	Soil	17.5	21.9	9.7	3.9		
TSESB3	Soil	11.9	12.7	11.2	4.5		
TSESB4	Soil	10.4	10.2	7.7	3.8		
TSFSB1	Soil	13.1	13.6	6.3	4		
TSFSB2	Soil	16.1	17.4	8.8	6.4		
TSFSB3	Soil	16.2	17.1	11.6	2.9		
TSFSB4	Soil	21.2	16.8	4.1			
TSGSB1	Soil	16.6	17.6	9.1	7.1		
TSGSB2	Soil	26.3	26	16.6	7.1		
TSGSB3	Soil	20.4	19.5	6.2	3.2		
TSGSB4	Soil	2.4	2.2	2.5	2.8		
TSHSB1	Soil	10.1	13.8	8.7	6.3		
TSHSB2	Soil	10.5	22.8	20.2	3.4		
TSHSB3	Soil	21.1	22.7	16.1	3.7		
TSISB1	Soil	61.8	157	249	280		
TSISB2	Soil	141	282	160	62.5	152	47.9 (24–30), REFUSAL (56)
TSISB3	Soil	15.2	16.7	14.8			
TSJSB1	Soil	53.8	51.6	11.4	4.3		
TSKSB1	Soil	29.8	32.4	19.5	8.8		
TSKSB2	Soil	16.3	25.1	9.9	3.4		
DEC–25	Sediment	45.6 (0–6)					
DOHSS12	Soil	180					
DOHSS13	Soil	380					
DOHSS14	Soil	66					
DOHSS18	Soil	260					
S9	Soil	88					
S10	Soil	ND					
S11	Soil	562					
S12	Soil	51.1					
S13 (1990)	Soil	675					
S13 (1993)	Soil	579			592 (12–18)		
S14	Soil	35.3					

NOTES:

1. SAMPLE DEPTHS ARE PRESENTED IN INCHES.
2. ND = NOT DETECTED.
3. ARSENIC CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (MG/KG), EQUIVALENT TO PARTS-PER-MILLION (PPM).

FIGURE INDEX:



LEGEND:

- T10.2W3 — PROPOSED SOIL SAMPLING LOCATION
- T3E1 — PRIOR SAMPLING LOCATION
- APPROXIMATE FEMA 100-YEAR FLOODPLAIN BOUNDARY
- BB6 — PROPERTY ID
- RETAINING WALL

ARSENIC SAMPLE CONCENTRATIONS:

- > 500 mg/kg
- 250 – 500 mg/kg
- 100 – 250 mg/kg
- 50 – 100 mg/kg
- 40 – 50 mg/kg
- 30 – 40 mg/kg
- 20 – 30 mg/kg
- < 20 mg/kg

NOTES:

1. BASE MAP FROM RCRA FACILITY INVESTIGATION (RFI) REPORT VOLUME V (JUNE 2010).
2. ADDITIONAL SURVEY INFORMATION PROVIDED BY McINTOSH AND McINTOSH, INC. SURVEYORS, WITH A HORIZONTAL DATUM OF NAD27 AND A VERTICAL DATUM OF NGVD29.
3. ALL LOCATIONS AND PROPERTY BOUNDARIES SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION.
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5. COLOR LABEL AT EACH SAMPLE LOCATION ON FIGURE REPRESENTS THE MAXIMUM CONCENTRATION AT ANY DEPTH INTERVAL SHOWN IN TABLE.
6. SEE TABLE 5 FOR PROPOSED SAMPLING DEPTHS.

0 80' 160'

GRAPHIC SCALE

FMC CORPORATION - MIDDLEPORT, NEW YORK
OU6 REACH T1 ICM
PRE-DESIGN WORK PLAN

RAILROAD TO CHURCH STREET PRIOR AND PROPOSED SAMPLING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 5

CITY: SYRACUSE, NY DIV/GROUP: EBC-IM/DV DB/LD: L.POSENAUER PM/TM: D.WRIGHT TR: R. SMITH LYR:(Opt)ON=*;OFF=*REF* PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 5/23/2016 3:40 PM BY: POSENAUER, LISA
G:\ENVCAD\SYRACUSE\ACTIB\037747\00020000\TRIB-1-SOUTH\37747P02-06.dwg LAYOUT: 5 SAVED: 4/1/2016 10:12 AM ACADVER: 19.1S (LMS TECH)
XREFS: IMAGES:
37665X01
37665X02
37665X15
37665X26
37747XBL

PRIOR ARSENIC RESULTS (mg/kg)							
Sample ID	Matrix	0–3"	3–6"	6–12"	12–18"	18–24"	>24"
T7E1	Soil	76.7	95.4	56.3	110	175	
T7E2	Soil	194	289	49.8	124	5.1	
T7E3	Soil	149	156	125	106	35.6	
T7E4	Soil	132	158	54.5	9	1.7	
T7E5	Soil	19.8	16.8	7.1	6.8	4.8	5.2 (24–30)
T7E6	Soil	20.5	17	9.9	4.6	4.2	1.3 (24–30)
T7E7	Soil	2.2	23.1	5.2	7.5	5.1	2.5 (24–30)
T7E8	Soil	28.4	25.1	5.3	3	2.6	3.6 (24–30)
T7S	Sediment	83.4					
T7W1	Soil	30.5	34.6	17.1	80.3	30.1	
T7W2	Soil	35.6	14.1	25.8	118	63.7	
T7W3	Soil	45.6	40.5	33.3	9.3	48.1	
T7W4	Soil	22.2	32.9	32.7	24.1	19	18.1 (24–29)
T8E1	Soil	105	134	7.4	4	4.2	
T8E2	Soil		15.7	5.1	5.1		
T8E3	Soil	229	95.2	11.1	4.1	4	
T8E4	Soil	58.8	6.1	4.7	3.1		
T8E5	Soil	8.7	5.1	5.2	3.5	2.1	4.6 (24–30)
T8E6	Soil	9.8	7.2	4.5	3	4.7	6.2 (24–30)
T8E7	Soil	11.2	12	11.4	3.2	2.8	3.2 (24–30)
T8E8	Soil	13	13.7	9.9	5.1	4.2	2.3 (24–30)
T8S	Sediment	95.8					
T8W1	Soil	15.7	12.1	11	5.8	490	
T8W2	Soil	10.9	15.8	12.6	10.3	7.9	
T8W3	Soil	22.8	25.6	21.3	10.5		
T8W4	Soil	26.1	27.3	22.1	ND	8.2	
TSASB1	Soil	10.3	13.8	8.9	3		
TSASB2	Soil	28.3	19	9.5	4.2		
TSASB3	Soil	71.3	66.8	60.5	20.1		
TSASB4	Soil	14	14.8	15.5	3.4		
TSASB5	Soil	17.5	21.1	10.1	3.9		
DOHSS11	Soil	300					
S15	Soil	9.4					
SD4	Sediment	333					
T4	Soil	636		170	14.1		5.1 (24–48), 2.2 (48–60), 1.7 (60–72), 2.1 (72–75)

NOTES:
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3. ARSENIC CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (MG/KG), EQUIVALENT TO PARTS-PER-MILLION (PPM).

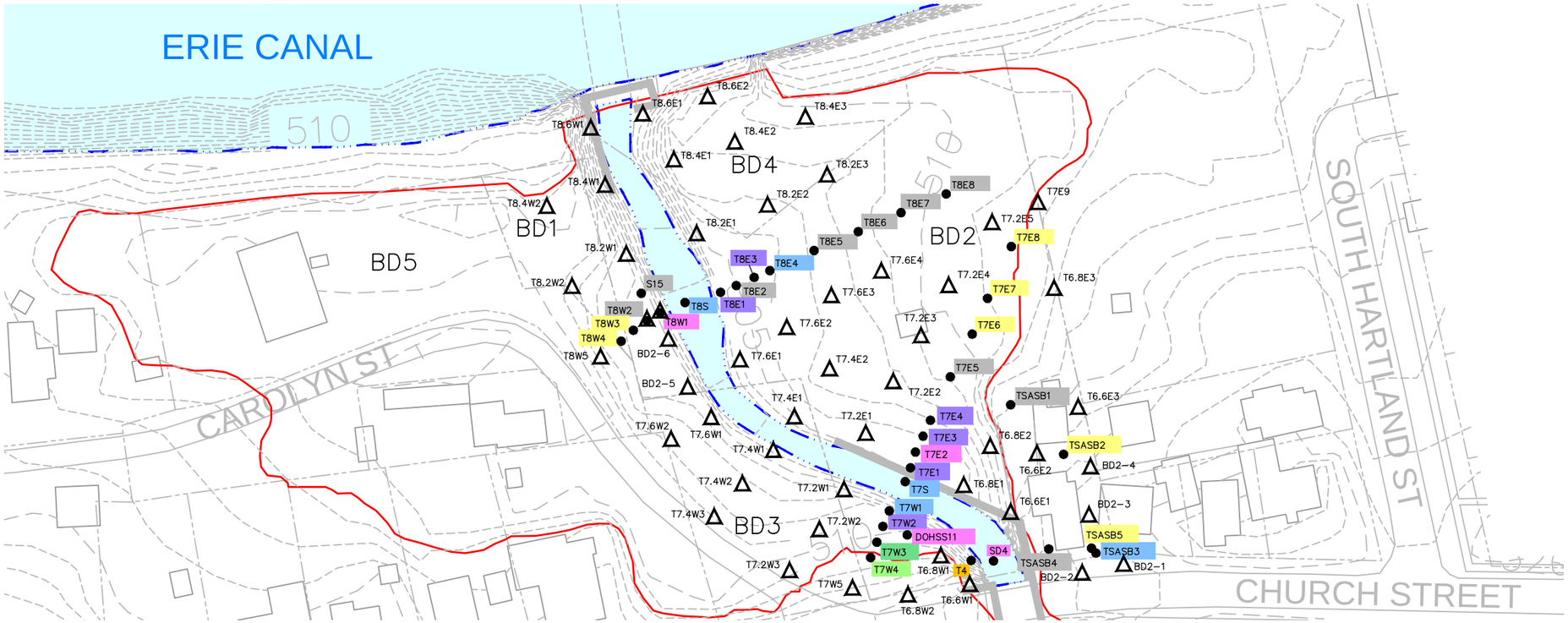
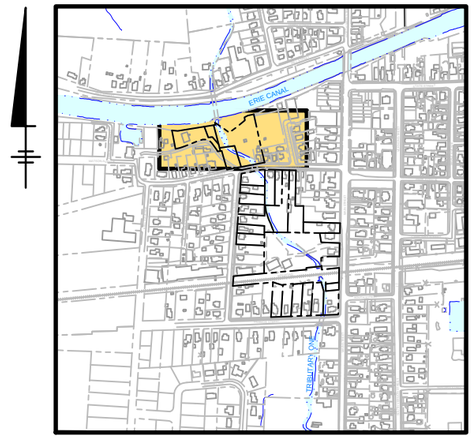


FIGURE INDEX:



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0 80' 160'

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OU6 REACH T1 ICM
PRE-DESIGN WORK PLAN

CHURCH STREET TO ERIE CANAL PRIOR AND PROPOSED SAMPLING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 6

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