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Transmitted Via Email and FedEx

June 13, 2011

Mr. Matt Mortefolio, P.E.
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Remedial Bureau E
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New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, NY 12233-7017

Mr. Michael Infurna
USEPA Project Coordinator
Environmental Planning and Protection Division
United States Environmental Protection Agency, Region II
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: Operation, Maintenance and Monitoring Plan for the North Railroad Property
Phase 1 Interim Corrective Measures – Revision No. 1
RCRA Section 3008(h) Administrative Order on Consent
Docket No. II-RCRA-90-3008(h)-0209
FMC Corporation, Middleport, NY Facility
EPA ID No. NYD002126845

Dear Messrs. Mortefolio and Infurna:

FMC Corporation (FMC) is submitting the *Operation, Maintenance and Monitoring Plan for the North Railroad Property - Phase 1 Interim Corrective Measures – Revision No. 1* in accordance with the terms and conditions of the above-referenced AOC. As discussed below, the enclosed document is a revised version of the *Operation, Maintenance and Monitoring Plan for the North Railroad Property - Phase 1 Interim Corrective Measure* (dated May 2006, with Agencies-requested modification June 2006). The plan was conditionally approved by the New York State Department of Environmental Conservation (NYSDEC) and the United States Environmental Protection Agency (USEPA) (jointly, the Agencies), in consultation with the New York State Department of Health (NYSDOH), by letter to FMC dated June 14, 2006. FMC submitted modified pages 3-3, 3-4, 3-5 and Figure 3 by letter dated June 30, 2006, with the requested modifications in response to the Agencies' June 14, 2006 letter.

By letter to the Agencies dated August 23, 2010, FMC submitted a request to reduce the frequency of surface water sampling at locations 1 to 10 and 2A (11 locations total) in the Phase 1 ICM area from quarterly to annually. By letter dated February 23, 2011, the Agencies approved this request, with implementation of this revision beginning in the first calendar quarter 2011. In addition, the Agencies requested that FMC submit revised pages of the Operations, Maintenance and Monitoring Plan for review. FMC submitted an e-draft of revised pages (in redline/strikeout format) of the plan to the

Agencies by email dated April 4, 2011, and the Agencies approved the proposed revisions by email dated June 3, 2011. As requested in the June 3, 2011 approval, enclosed is a hard copy of the revised plan.

If you have questions or need additional information, please contact me.

Sincerely,

Brian M. McGinnis

Brian M. McGinnis
Remediation Project Engineer
(215) 299-6047

Enclosure

cc:

With enclosure:
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Operation, Maintenance and Monitoring Plan for the North Railroad Property Phase 1 Interim Corrective Measures

May 2006 (revised June 2006)

Revision No. 1 – June 2011

Operation, Maintenance, and Monitoring Plan for the North Railroad Property Phase 1 Interim Corrective Measures

Prepared for:
FMC Corporation

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Our Ref.:
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Date:
May 2006 (revised June 2006)
Revision No. 1 – June 2011

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1. Introduction

In June 2005, FMC Corporation (FMC) initiated Interim Corrective Measures (ICM) activities at the FMC-owned North Railroad Property (formerly owned by Conrail and acquired by FMC in May 2002), which is situated along the north side of the FMC Plant (or "Facility") in Middleport, New York. The ICM activities were performed in two separate phases. Phase 1 ICM construction activities were completed in the fall of 2005 within the portion of the North Railroad Property that was situated outside of the FMC Plant security fence prior to the start of the Phase 1 ICM activities (Phase 1 ICM Area). Phase 2 ICM construction activities were completed in 2008 within the grass-covered portion of the North Railroad Property located inside the FMC Plant security fence adjacent to the northwest corner of the FMC Plant (Phase 2 ICM Area). The Phase 2 ICM Area has also been referred to as the former Northwest Conrail Area (NWCA).

The Phase 1 ICM was performed under the terms and conditions of an Administrative Order on Consent (AOC), Docket No. II RCRA-90-3008(h)-0209, entered into by FMC, the New York State Department of Environmental Conservation (NYSDEC), and the United States Environmental Protection Agency (USEPA) (the latter two entities are referenced herein collectively as the "Agencies"), effective July 2, 1991. The Phase 1 ICM activities are described in the *Phase 1 Interim Corrective Measures (ICM) Work Plan for the North Railroad Property* (Phase 1 ICM Work Plan), which was conditionally approved by the Agencies in a June 27, 2005 letter to FMC. The final revisions to the work plan, incorporating the Agencies' comments in the June 27, 2005 letter, were submitted to the Agencies by FMC on August 4, 2005. The Phase 1 ICM construction activities began in June 2005 and were completed in September 2005. Completed ICM activities are discussed in the *Final Construction Report for the North Railroad Property Phase 1 Interim Corrective Measures,* which was submitted to the Agencies by FMC on January 10, 2006.

A plan titled *Operation, Maintenance, and Monitoring Plan for the North Railroad Property Phase 1 Interim Corrective Measures* (Phase 1 ICM O&M Plan), presenting a summary of post-construction inspection, maintenance, and monitoring activities, was prepared by FMC as specified in the approved Phase 1 ICM Work Plan and submitted to the Agencies in May 2006. By letter dated June 14, 2006, the Agencies granted conditional approval of the Phase 1 ICM O&M Plan, provided that FMC modify the plan as indicated in Enclosure No. 1 to the Agencies' approval letter. By letter dated June 30, 2006, FMC submitted modifications to the plan as requested by the Agencies.

Section 4.4 of the 2006 Phase 1 ICM O&M Plan specified that after one year of quarterly surface water monitoring events, FMC would review the analytical data and evaluate whether modification of the monitoring activities (e.g., frequency of events, scope of analyses) described in the plan was appropriate. Based on review of the results of eight quarterly events collected over a period of four years (July 2006 to June 2010), FMC identified proposed modifications to the monitoring activities. By letter dated August 23, 2010, FMC submitted a request to the Agencies to reduce the frequency of surface water sampling at Phase 1 ICM Area Locations 1 to 10 and 2A (11 locations total) from quarterly to annually. By letter dated February 23, 2011, the Agencies approved this request, with implementation of this revision beginning in the first calendar quarter of 2011. This revision is reflected in the remainder of this Phase 1 ICM O&M Plan.

This Phase 1 ICM O&M Plan covers activities that will be conducted to observe and maintain:

- the condition and integrity of access restrictions used to restrict public access to the Phase 1 ICM Area;
- the condition and integrity of the Phase 1 ICM surface covers and permanent erosion and sediment control features;
- the condition of the ditch (North Ditch) at the inlet to Culvert 105; and
- the condition of the Phase 1 ICM surface covers following railroad operation and maintenance activities that have the potential to damage or otherwise adversely impact the surface covers; and also
- monitor surface water quality entering and leaving the Phase 1 ICM area.

This Phase 1 ICM O&M Plan also summarizes actions that will be performed if Phase 1 ICM site access restrictions, surface covers, erosion and sediment control features, and/or the North Ditch at the inlet to Culvert 105 require repair or replacement.

The following sections of this Phase 1 ICM O&M Plan are organized as follows:

- **Section 2 – Summary of Phase 1 ICM Activities:** Provides a summary of completed Phase 1 ICM construction activities and a brief description of the permanent erosion and sediment control features installed as part of the Phase 1 ICM.

- **Section 3 – Post-Construction Inspection, Maintenance, and Monitoring Activities:** Provides a summary of the Phase 1 ICM post-construction inspection, maintenance, and monitoring activities that will be performed.

- **Section 4 – O&M Reporting Requirements:** Provides a summary of the documentation and reporting procedures that will be followed as part of the post-construction O&M.

In addition, a Post-ICM O&M Inspection Form (the Inspection Form) is included as Attachment A to this O&M Plan and provides a checklist for documenting the implementation of O&M activities. Copies of such documentation will be maintained in the Facility's records and will be provided to the Agencies, as described in Section 4.

2. Summary of Phase 1 ICM Activities

The Phase 1 ICM Area (or "Site") consists of approximately 6.3 acres of FMC-owned property that was situated outside the FMC Plant security fence prior to the completion of Phase 1 ICM work activities. The Phase 1 ICM Area is traversed by an active railroad track (the Railroad Track) operated by Falls Road Railroad Company (which is owned by Genesee Valley Transportation Company, Inc.) and by storm water drainage ditches on the north side (North Ditch) and the south side (South Ditches) of the railroad track. The Phase 1 ICM Area includes a concrete pad/platform portion of the former Northwest Conrail Area that was also situated outside of the FMC Plant security fence prior to the completion of Phase 1 ICM work activities. The Phase 1 ICM Area excludes an approximately 15-foot-wide buffer along the railroad main line and spurs (i.e., approximately 7.5 feet from the centerline on either side of the tracks). A Site location map is included as Figure 1, and the approximate limits of the Phase 1 ICM Area are shown on Figure 2.

The Remedial Action Objectives presented in the Agencies-approved Phase 1 ICM Work Plan were as follows:

- Minimize the potential for migration of Site-related constituents of concern (COCs) via erosion of soil/sediments and transport of suspended soil/sediments within surface water to off-Site areas (e.g., Culvert 105 storm sewer and Tributary One).

- Minimize the potential for human contact with impacted media present at the Site based on the current and reasonably expected future land use for commercial/ industrial purposes.

- Minimize the potential for exposure of wildlife to impacted media within the Site based on the current and reasonably expected future land use for commercial/ industrial purposes.

The ICM construction activities performed within the Phase 1 ICM Area are summarized as follows:

1. Soil and sediment were excavated from the North Ditch, South Ditches, and associated upland areas at the North Railroad Property, with the exception of the 15-foot-wide buffer along the railroad main line and spurs.

2. Excavated materials from the Phase 1 ICM Area were transported to and placed within the Eastern Surface Impoundment (ESI) Fill Area located within the eastern portion of the FMC Plant Site, or transported to an appropriate offsite disposal facility in accordance with applicable regulatory requirements. A soil surface cover was constructed over disturbed portions of the ESI Fill Area to reduce the potential

for human, animal, and surface water contact with excavated soil materials after completion of the excavation activities. The ESI Fill Area surface cover construction and final grading activities are described in the Scope of Work for Filling and Grading of the Eastern Surface Impoundment (ESI) Fill Area (BBL, Revision No. 2, June 2005), which was included as Appendix G to the Phase 1 ICM Work Plan.

3. Engineered surface covers (the surface covers) were constructed over the Phase 1 ICM Area, as described below, to minimize the potential for human contact with residual underlying media. Some excavation of soils/sediments was required to facilitate construction of the engineered surface covers.

4. An engineered surface cover was constructed over the portion of the Phase 1 ICM Area situated north of the tracks (referred to as a "Type II" surface cover) consisting of (from bottom to top): a geosynthetic clay liner (GCL), a 1-foot-thick layer of sand, a non-woven geotextile layer, and a 1-foot-thick layer of stone. The GCL component is intended to minimize the potential for upward migration of potentially impacted groundwater and infiltration of surface waters.

5. An engineered surface cover was constructed over the portion of the Phase 1 ICM Area situated south of the tracks (referred to as a "Type I" surface cover) consisting of (from bottom to top): a GCL, an 18-inch-thick layer of general fill, a non-woven geotextile layer, and a 6-inch-thick layer of stone.

6. The North and the South Ditches were reconstructed as part of the Phase 1 ICM. The reconstructed North Ditch currently drains to Culvert 105 and receives surface water runoff from properties abutting the North Railroad Property to the north and east (i.e., Falls Road Railroad tracks, Royalton-Hartland School, farm fields). Surface water runoff from wooded land and farm fields abutting the FMC Plant's eastern property boundary also drains to the reconstructed North Ditch via a new culvert installed under the Railroad Track on Falls Road Railroad property east of the Phase 1 ICM Area. The reconstructed ditches along the south side of the railroad tracks (or the South Ditches) receive surface water runoff from FMC-owned lands south of the Railroad Track and convey the runoff to the FMC Plant's stormwater collection and treatment systems. Precipitation that falls on the railroad tracks will continue to infiltrate into the track ballast material and either move laterally onto the Phase 1 ICM surface cover or infiltrate into the subgrade soils beneath the tracks.

7. Permanent erosion and sediment control and stormwater management features were constructed within and upstream of the reconstructed North Ditch and South Ditches to manage surface water runoff from the Site and surface water run-on from adjacent properties. These features include stone check dams, sediment filter strips, diversion swales, a v-notch swale, a vegetated swale, and culverts. The approximate locations of these features are shown on Figure 3.

8. A new Facility security fence was also installed by FMC in the fall of 2005 along the south side of the railroad tracks to restrict public access to the southern portion of the Phase 1 ICM Area.

9. Signs were posted around the perimeter of the northern portion of the Phase 1 ICM Area (i.e., that portion outside of the new Plant Site security fence) to deter public access to that area, as described in Section 3.2.1 of this O&M Plan.

Completed Phase 1 ICM activities are discussed in the *Final Construction Report for the North Railroad Property Phase 1 Interim Corrective Measures,* which was submitted to the Agencies by FMC on January 10, 2006.

In addition, during the 2007 Early Action remedial work conducted by FMC at the North Commercial/Industrial Area Wooded Parcel that abuts the Phase 1 ICM Area to the north, Culvert 105 was re-located further to the west on the Wooded Parcel, a new inlet to Culvert 105 was constructed and the North Ditch and associated cover were extended to the west to the new inlet. Details of these activities are discussed in the *2007 Early Action Construction Report*.

3. Post-Construction Inspection, Maintenance, and Monitoring Activities

3.1 General

This section of the Phase 1 ICM O&M Plan describes Phase 1 ICM post-construction inspection, maintenance, and monitoring activities that will be performed to maintain the condition and integrity of the Phase 1 ICM components (i.e., Site access restrictions, surface covers, permanent erosion and sediment control and stormwater management features, and the North Ditch and South Ditches), and to monitor surface water quality entering and leaving the Phase 1 ICM Area.

3.2 Post-Construction Inspection and Maintenance Activities

Unless otherwise noted below, post-ICM inspections will be conducted on a quarterly basis, but may be reduced to semi-annually if requested by FMC and approved by the Agencies. The purpose of post-construction inspection activities is to review the condition and integrity of Phase 1 ICM components. Unscheduled inspections of certain Phase 1 ICM components will also be performed on a more frequent basis immediately following significant storm events that have the potential to adversely impact those components. If maintenance or repairs are necessary, the work will be conducted as soon as practicable, and completed prior to the next inspection.

Personnel conducting inspection activities will complete the Inspection Form included as Attachment A to this Phase 1 ICM O&M Plan. The Inspection Form includes information necessary to review the condition of the Phase 1 ICM components, and will aid in determining whether maintenance activities are required. The Inspection Form provides an organized and consistent means of recording typical inspection information such as the date and time of inspection, personnel involved, visual observations, and photographs.

FMC will notify the NYSDEC Project Coordinator of field inspections and maintenance activities as described in the following subsections and in Section 4 (O&M Reporting Requirements). Specific features that will be inspected and maintained are described below.

3.2.1 Site Access Restrictions

Access to the Phase 1 ICM Area south of the railroad tracks is restricted by the Facility's security fence. Access to the area north of FMC's security fence is partially

restricted by a fence installed along the southern boundary of the school yard (See Figure 3).

In addition to the site security fencing, FMC posted signs that read “FMC Property, Call 735-3761, ext. 281 With Questions,” and “Caution, Unauthorized Personnel Keep Out.” Two signs were posted at the South Vernon Street entrance (western end of the Phase 1 ICM Area) and two at the eastern end of the Phase 1 ICM Area. Additional signs were posted along the northern boundary of the Phase 1 ICM area, approximately as shown on Figure 3. Where possible, signs were posted on FMC-owned fencing. Where FMC-owned fencing was not available, signs were staked into the ground, up to a maximum of 20 inches below ground surface to avoid potential damage to the underlying GCL if placed within the limits of the engineered surface cover. The signs and fencing will be inspected quarterly (this frequency may be reduced to semi-annually if requested by FMC and approved by the Agencies) to assess their condition and adequacy at restricting/deterring public access. Signage and fencing that has been removed or damaged, or that is badly worn will be replaced or repaired as soon as practicable, and completed prior to the next inspection. In addition, any vegetative growth that reduces the visibility of the signs will be noted by field personnel and removed, as appropriate.

3.2.2 Surface Covers

The Phase 1 ICM Area surface covers will be inspected on a quarterly basis, but this frequency may be reduced to semi-annually if requested by FMC and approved by the Agencies. The timing of two of the inspections of the Phase 1 ICM Area surface covers will be performed consistent with the timing of semi-annual inspections performed for the North Site Cover (i.e., spring and fall). Field personnel shall inspect surface covers for settlement that may result in surface water ponding, signs of erosion, slope failures, undesirable vegetation, and potential animal burrowing activity. Visible evidence of trees, shrubs, and/or other vegetation whose roots can potentially penetrate the surface cover, and protruding objects will also be identified during inspections. Any damage or deficiencies in the surface cover will be noted on the Inspection Form.

Upon review of the Inspection Form, it will be determined whether any portions of the surface covers require maintenance. As part of this review, any potential factors that may have led to the observed condition(s) will be noted and evaluated. If necessary, the design grades or conditions may be modified to reduce the need for future maintenance. Recommended maintenance/modification actions will be noted on the Inspection Form. Notice of any major modifications will be provided to the Agencies

before any such modifications are implemented. In no case shall such modifications result in a minimum surface cover thickness less than the design thickness identified in the Phase 1 ICM Work Plan. Furthermore, any such modifications shall be performed in such a manner as to maintain the integrity and performance of all other Phase 1 ICM components (e.g., erosion and sediment control features, stormwater management features, North Ditch, etc.), and the hydraulic and other conditions on adjacent properties. A detailed description of any maintenance activities performed on the surface covers will be provided to the Agencies in the next scheduled Quarterly Progress Report following completion of the activities.

3.2.3 Permanent Erosion and Sediment Control and Stormwater Management Features

The following permanent erosion and sediment control and stormwater management features will be inspected as part of Phase 1 ICM O&M activities:

- stone check dam at the west end of the North Ditch;
- sediment filter strips to the northeast and east of the Phase 1 ICM Area;
- east inlet swale to the Phase 1 ICM cover on the south side of the railroad tracks;
- Northwest Conrail Area diversion swale;
- North Ditch at the inlet to Culvert 105; and
- railroad culvert inlet/outlet protection.

The approximate locations of these features are shown on Figure 3; construction details for these features are included in the Construction Drawings provided as Appendix A to the Phase 1 ICM Work Plan.

Permanent erosion and sediment control and stormwater management features will be inspected on a quarterly basis, but may be reduced to semi-annually if requested by FMC and approved by the Agencies. Inspections will be conducted to assess the integrity and effectiveness of each feature. Field personnel shall inspect each erosion and sediment control and stormwater management feature for erosion, sediment accumulation, debris accumulation, condition of discharge structures and inlets, displacement of riprap, and condition of vegetation. Any damage to or conditions that could reduce the effectiveness of the permanent erosion and sediment control and stormwater management features will be noted on the Inspection Form. Any necessary repairs or maintenance will be conducted as soon as practicable, and completed prior to the next inspection. A description of any such repairs or maintenance will be provided on the same Inspection Form that identified the original need for such activities and/or in the next scheduled Quarterly Progress Report depending on the extent of the maintenance activities performed.

Repairs and maintenance will be performed as needed to restore the features to their intended design condition. Any accumulated debris will also be removed from these features and disposed of at an appropriate off-site disposal facility, in accordance with all applicable regulatory requirements. As part of the Inspection Form review process, any potential factors that may have led to the observed conditions will be noted and evaluated. If necessary, the design grades or conditions may be modified to reduce the need for future maintenance. Notice of any such proposed modifications will be provided to the Agencies before the modifications are implemented. A detailed description of any maintenance activities performed will be noted on the same Inspection Form that identified the original need for such maintenance activities and/or in the next scheduled Quarterly Progress Report depending on the extent of the maintenance activities performed.

Based on the intended purpose of the stone check dam and sediment filter strips (i.e., to reduce sediment migration), it is expected that sediment will accumulate on and/or near these structures. Therefore, it is anticipated that periodic removal of sediment will be required. Any accumulated debris will also be removed from these features and disposed of at an appropriate off-site disposal facility in accordance with all applicable regulatory requirements. FMC will review the condition and performance of the stone check dam and filter strips following each inspection, and will assess the need for repairs and/or modifications to these controls as needed to maintain performance.

Certain permanent erosion and sediment control and stormwater management features are located on non-FMC-owned properties adjacent to the North Railroad Property. Therefore, inspection activities as well as repair and maintenance activities (as necessary) will require coordination between FMC and adjacent property owners. If access permission is delayed such that an inspection does not occur within the scheduled timeframe identified in this Phase 1 ICM O&M Plan, FMC will inform the Agencies prior to the performance of remaining scheduled activities, and document the access status on the Inspection Form and in the next scheduled Quarterly Progress Report.

3.3 Surface Water Sampling

FMC will conduct annual surface water sampling to verify the effectiveness of the Phase 1 ICM in minimizing migration of Site-related COCs via erosion of soil/sediments and transport of suspended soil/sediment within surface water to off-Site areas and to assess the quality of surface water run-on to the North Ditch from adjacent properties. Surface water sampling is to be conducted during the first

calendar quarter of each year, if feasible. If surface water samples cannot be collected from each location (11 total) during the first calendar quarter, then the location(s) will be checked and a sample will be collected during the subsequent quarter (and thereafter, as needed) with the objective of obtaining a surface water sample from each location within the calendar year. Surface water sampling will be performed when there are sufficient quantities of surface water runoff available to obtain samples. Weather conditions (i.e., rainfall amounts, temperature, etc.) on the day of sampling and two days preceding sampling will be documented.

Surface water samples will be collected in accordance with the procedures described in Section 3 of the revised *North Railroad Property Run-on Sampling and Analysis Plan* (SAP), dated April 12, 2005 (see Attachment B), at the following locations upstream and downstream of the remediated Phase 1 ICM Area in the order in which they appear in the listing below:

South Side Flow Path

1. Sampling Location #1 (downstream sampling location) – western end of the western section of the South Ditch (upstream of the swale outlet to the new diversion swale on the Northwest Conrail Area);

2. Sampling Location #2 (downstream sampling location) – the western end of the eastern section of the South Ditch (upstream of the swale outlet to the asphalt lined ditch on the Plant site);

3. Sampling Location #2A (downstream sampling location) – 440 feet upstream of the western end of the eastern section of the South Ditch (upstream of Location #2); and

4. Sampling Location #3 (upstream sampling location) – FMC swale on east side of the east truck crossing, prior to the South Ditch cover.

North Side Flow Path

1. Sampling Location #4 (downstream sampling location) – at the inlet to Culvert 105 in the North Ditch, downstream of the stone check dam;

2. Sampling Location #5 (upstream sampling location) – the storm water discharge pipe from beneath the south end of Alfred Street to the North Ditch;

3. Sampling Location #6 (upstream sampling location) – storm water discharge pipe from former school bus garage/parking lot to the North Ditch;

4. Sampling Location #7 (upstream sampling location) – Northeast Farm Field, upstream or within the Filter Strip (i.e., also identified as sample point NSW-1 in the SAP);

5. Sampling Location #8 (upstream sampling location) – outlet of the new RR Culvert (i.e., also identified as sample point NSW-2 in the SAP;

6. Sampling Location #9 (upstream sampling location) – inlet of the new RR Culvert (i.e., also identified as ample point SSW-3 in the SAP); and

7. Sampling Location #10 (upstream sampling location) – East Farm Field drainage ditch, upstream or within Filter Strip.

Figure 3 depicts the approximate locations of the surface water sampling locations. Reference is made to the field sampling notes from the first sampling event for each sampling location to identify the actual locations in the field. Surface water sampling shall be collected from the furthest downstream locations first and shall proceed to the upstream locations. At each sampling location, a surface water sample will be collected in accordance with the following protocols:

i) A new pair of disposable gloves will be used when collecting surface water grab samples at each location.

ii) The surface water samples will be collected directly into laboratory-supplied pre-cleaned container(s). Alternatively, surface water will be collected using a pre-cleaned dedicated or disposable container and poured into the laboratory-supplied container(s). Where sufficient water depth is present, the surface water will be collected near the bottom of the water column, where possible. All surface water samples will be collected at locations where water is flowing in the ditch.

iii) Surface water samples will not be filtered in the field. Field measurements of temperature, pH and turbidity shall be taken in each of the collected samples.

iv) Surface water samples will be analyzed for total and dissolved arsenic, total and dissolved lead, chlorinated pesticides, total ammonia (as nitrogen) and total hardness.

v) The sample container(s) will be labeled.

Attachment B, Table 1 to the revised SAP, presents a summary of the proposed sampling and analysis requirements. Samples will be analyzed in accordance with the

analytical methods and procedures and quality assurance/quality control requirements (QA/QC) described in the revised SAP.

Prior to collecting surface water samples, FMC will notify the Agencies' field representative by telephone. Split samples will be provided to the Agencies if requested. Surface water samples will be collected in the presence of an Agencies' field representative, unless the representative is unavailable and it is agreed by the Agencies that proceeding with the sampling is necessary based on, for example, weather/field conditions.

3.4 Establishment of Institutional Controls

Deed restrictions (an environmental easement) will be placed on the North Railroad Property (i.e., Phase 1 and Phase 2 ICM Areas) to restrict the future use of the area to industrial purposes only, and to identify permitted and restricted activities (e.g., railroad operation and maintenance activities) within the North Railroad Property. In addition, in a letter dated January 12, 2006, FMC requested that Falls Road Railroad Company provide FMC advanced written notice (at least six weeks in advance) of any necessary, planned maintenance activities on the railroad line. The advanced notice is requested so that FMC can assess any potential impacts the maintenance activities may have on the constructed components of the Phase 1 ICM, and to discuss Falls Road Railroad Company's planned railroad maintenance activities, including potential impacts to the Phase 1 ICM remedy, with the Agencies. The need for Falls Road Railroad Company to follow specific material handling and/or restoration procedures will be determined by FMC and the Agencies on a case-by-case basis to protect the condition and integrity of the Phase 1 ICM remedy.

4. O&M Reporting Requirements

4.1 General

This section describes the specific reporting and documentation requirements for post-ICM O&M activities associated with the Phase 1 ICM. To assist in preparing O&M documentation, an Inspection Form is included as Attachment A to this Phase 1 ICM O&M Plan. O&M documentation (i.e., the Inspection Form) will be submitted to the Agencies as part of the Quarterly Progress Reports currently prepared to summarize activities undertaken pursuant to the AOC for the FMC Plant Site. Copies of such documentation will be maintained in the Facility's records. Descriptions of reporting requirements for the post-ICM O&M activities are presented below.

4.2 O&M Quarterly Progress Reports

Reports for the FMC Plant Site will be prepared in accordance with Section VI (Paragraph 7a) of the AOC. O&M information presented in the Quarterly Progress Reports will include the following:

- a description of the observed conditions of the Phase 1 ICM components, and any maintenance activities conducted during the reporting period;
- the Inspection Form from each inspection conducted during the reporting period;
- a photographic log documenting observed and final conditions, as appropriate; and
- if sampling activities are performed, a description of the sampling activities, figures or maps depicting the sampling locations, analytical laboratory data (if received during the reporting period), data validation report (if completed during the reporting period), a summary and evaluation of the surface water data, and recommendations.

The Quarterly Progress Reports will continue to be prepared and submitted to the Agencies in accordance with the schedule provided in Section VI, Paragraph 7a of the AOC (i.e., within 45 days following the end of the quarter, as defined in the AOC).

4.3 Post-ICM O&M Review

Phase 1 ICM O&M activities will be reviewed by FMC on an annual basis to assess the need for any modifications to the scope and/or schedule for subsequent O&M activities. These reviews will include an assessment of the Phase 1 ICM design components to determine whether any modifications are required to maintain the

intended performance of the components. Notice of any such modifications will be provided to the Agencies prior to implementation, and the details of any such modifications will be discussed in the Quarterly Progress Reports. Additionally, as noted herein above, the status of certain O&M inspection, monitoring, and sampling events will be evaluated by FMC on an annual basis, and the frequency of these events may be reduced if requested by FMC and approved by the Agencies.

References

Agencies. 2005. Letter to Brian McGinnis, FMC Corporation, from Matt Mortefolio, NYSDEC and Michael Infurna, USEPA, providing conditional approval of the Phase 1 ICM Work Plan. Letter dated June 27, 2005.

Agencies. 2006. Letter to Brian McGinnis, FMC Corporation, from Matt Mortefolio, NYSDEC and Michael Infurna, USEPA, providing conditional approval of the Phase 1 ICM O&M Plan. Letter dated June 14, 2006.

Agencies. 2011. Letter to Brian McGinnis, FMC Corporation, from Matt Mortefolio, NYSDEC and Michael Infurna, USEPA, in response to FMC's request for modification to monitoring activities. Letter dated February 23, 2011.

ARCADIS. 2009. *2007 Early Action Construction Report*, dated February 2009. Prepared for FMC Corporation, Middleport, NY.

BBL. 2005. *Phase 1 Interim Corrective Measures (ICM) Work Plan for the North Railroad Property,* dated June 2005 (revised August 2005). Prepared for FMC Corporation, Middleport, NY.

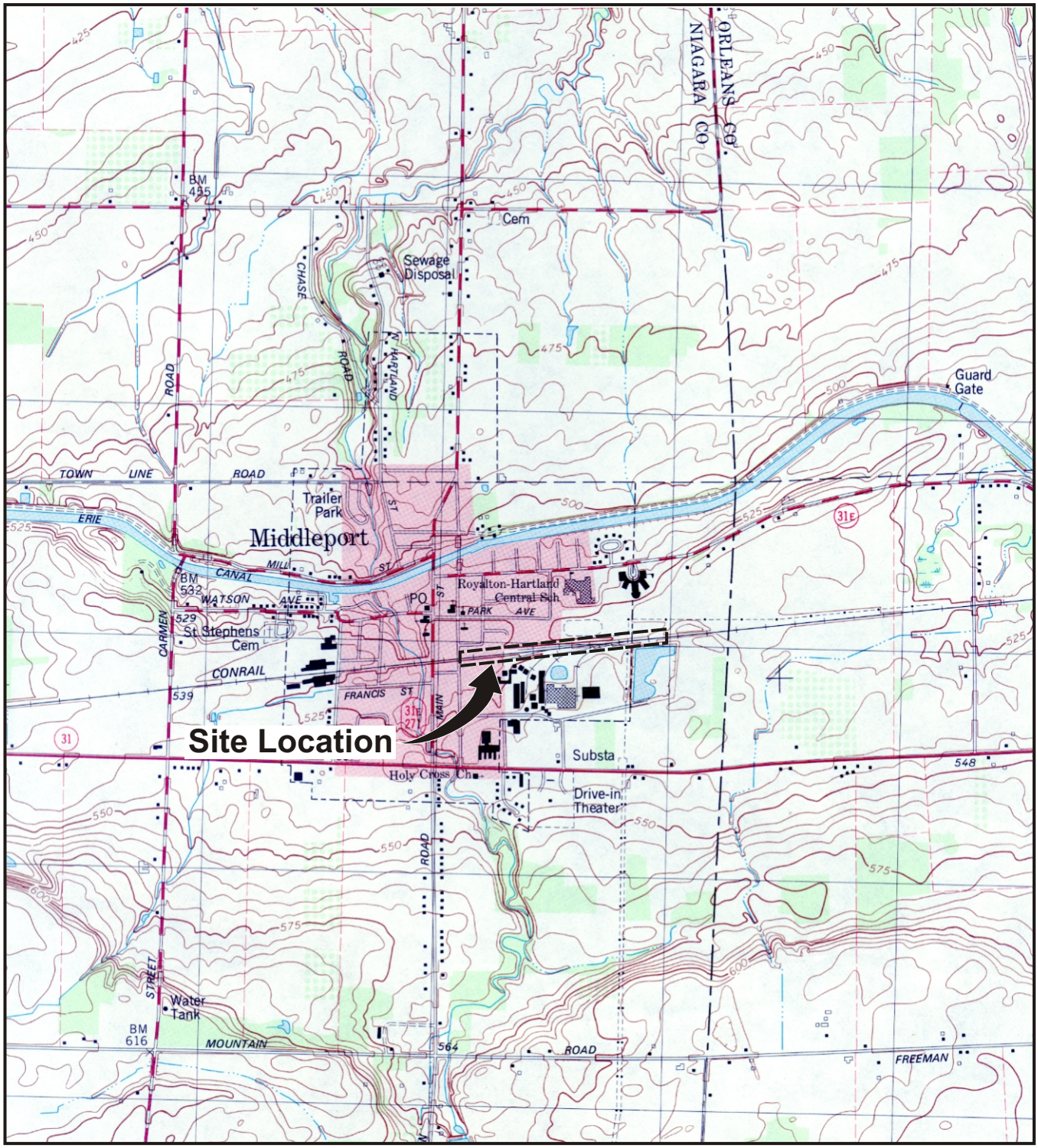
BBL. 2006a. *Final Construction Report for the North Railroad Property Phase 1 Interim Corrective Measures,* dated January 2006. Prepared for FMC Corporation, Middleport, NY.

BBL. 2006b. *Operation, Maintenance, and Monitoring Plan for the North Railroad Property Phase 1 Interim Corrective Measures,* dated May 2006 (revised June 2006). Prepared for FMC Corporation, Middleport, NY.

FMC Corporation. 2010. Letter to Matt Mortefolio, NYSDEC and Michael Infurna, USEPA from Brian McGinnis, FMC Corporation, requesting modification to monitoring activities. Letter dated August 23, 2010.

ARCADIS

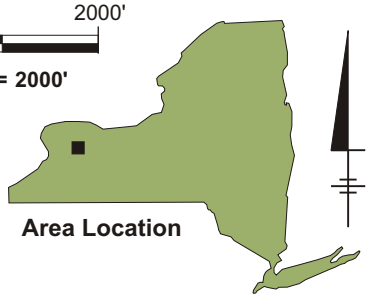
Figures



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., MEDINA, NY, 1980.

2000' 0 2000'

Approximate Scale: 1" = 2000'



FMC CORPORATION
MIDDLEPORT, NEW YORK

PHASE 1 ICM O&M PLAN

SITE LOCATION MAP

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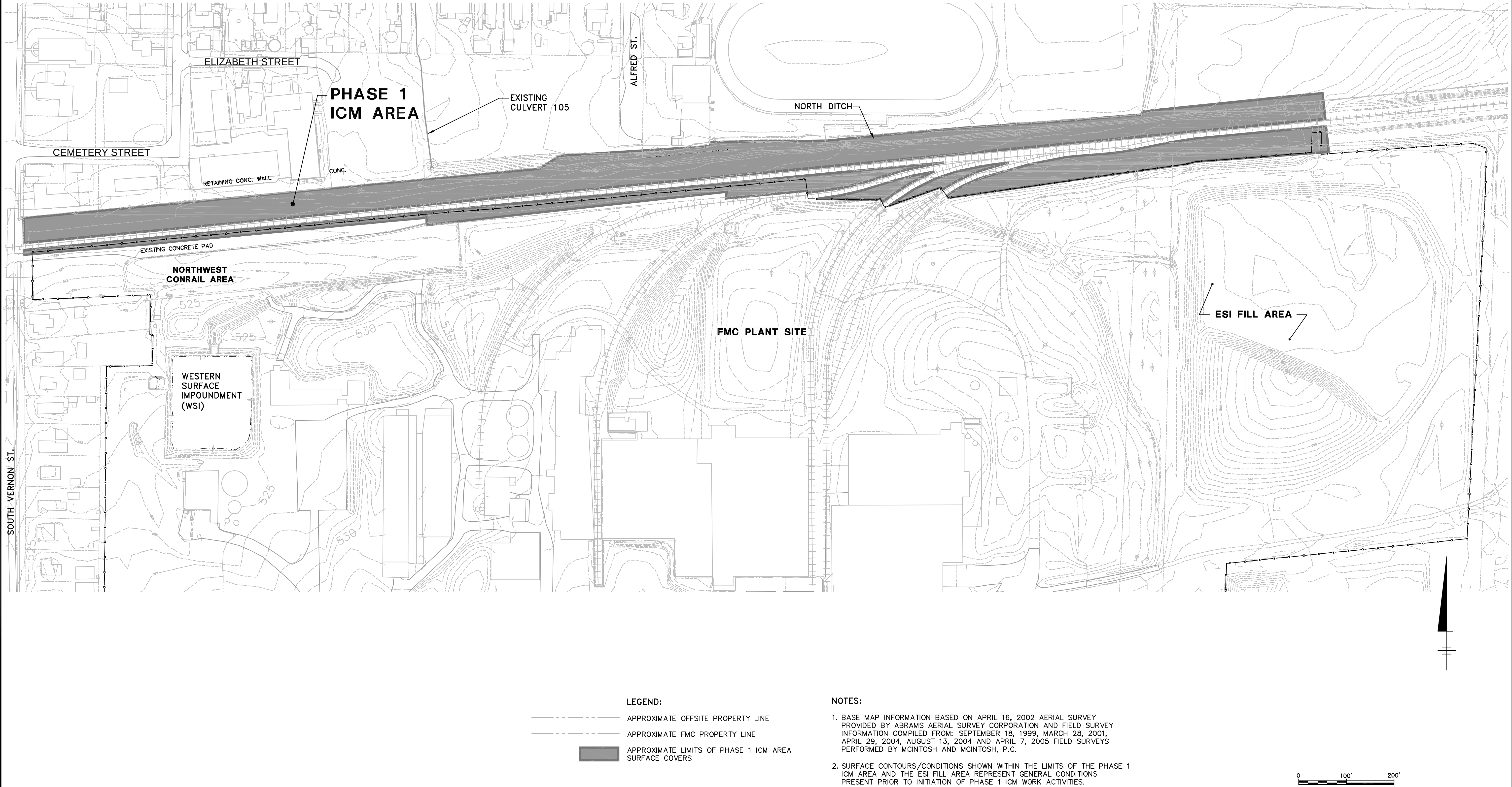
FIGURE 1

03/25/2011 SYRACUSE, NY-ENV/141-DJHOWES
B0037755/0010/00003/CDR/37755N01.CDR



LEGEND:

- APPROXIMATE OFFSITE PROPERTY LINE
- APPROXIMATE FMC PROPERTY LINE
- APPROXIMATE LIMITS OF PHASE 1 ICM AREA SURFACE COVERS

NOTES:

1. BASE MAP INFORMATION BASED ON APRIL 16, 2002 AERIAL SURVEY PROVIDED BY ABRAMS AERIAL SURVEY CORPORATION AND FIELD SURVEY INFORMATION COMPILED FROM: SEPTEMBER 18, 1999, MARCH 28, 2001, APRIL 29, 2004, AUGUST 13, 2004 AND APRIL 7, 2005 FIELD SURVEYS PERFORMED BY MCINTOSH AND MCINTOSH, P.C.

2. SURFACE CONTOURS/CONDITIONS SHOWN WITHIN THE LIMITS OF THE PHASE 1 ICM AREA AND THE ESI FILL AREA REPRESENT GENERAL CONDITIONS PRESENT PRIOR TO INITIATION OF PHASE 1 ICM WORK ACTIVITIES.

FMC CORPORATION
MIDDLEPORT, NEW YORK
PHASE 1 ICM O&M PLAN

APPROXIMATE LIMITS OF PHASE 1 ICM AREA

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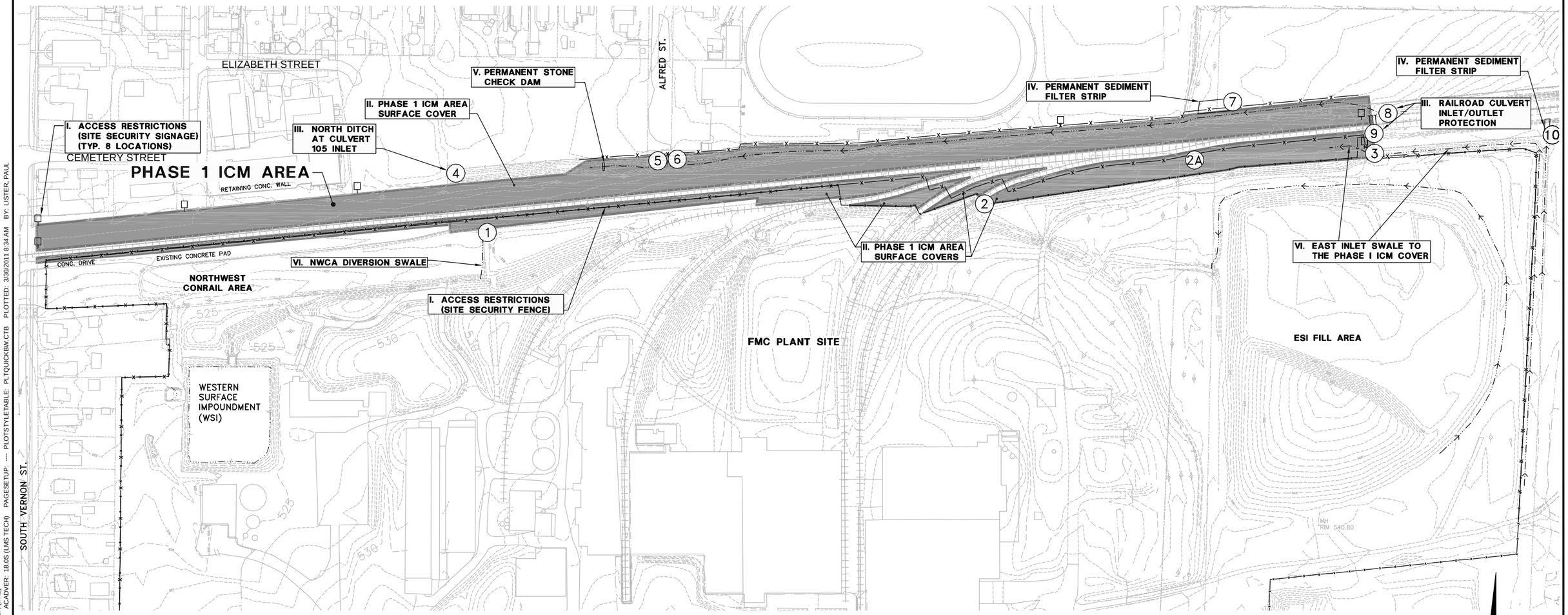
FIGURE
2



APPROXIMATE PHASE 1 ICM O&M SURFACE WATER SAMPLING LOCATIONS
(ADAPTED FROM PHASE 1 ICM O&M PLAN)

LOCATION ID#	LOCATION DESCRIPTION
1	WESTERN END OF THE WESTERN SECTION OF THE SOUTH DITCH, JUST PRIOR TO DISCHARGE TO THE NEW DIVERSION SWALE ON THE NORTHWEST CONRAIL AREA
2	WESTERN END OF THE EASTERN SECTION OF THE SOUTH DITCH, JUST PRIOR TO DISCHARGE TO THE ASPHALT-LINED DITCH ON THE PLANT SITE
2A	440 FEET UPSTREAM OF THE WESTERN END OF THE EASTERN SECTION OF THE SOUTH DITCH
3	FMC SWALE ON EAST SIDE OF THE EAST TRUCK CROSSING, PRIOR TO THE SOUTH DITCH COVER
4	INLET TO CULVERT 105 IN THE NORTH DITCH
5	STORM WATER PIPE DISCHARGE TO THE NORTH DITCH AT ALFRED STREET
6	STORM WATER DISCHARGE PIPE FROM SCHOOL BUS GARAGE/PARKING LOT TO THE NORTH DITCH
7	NORTHEAST FARM FIELD, UPSTREAM OR WITHIN THE FILTER STRIP
8	33 FEET UPSTREAM OF THE CONFLUENCE OF THE NEW RR CULVERT AND NORTH DITCH
9	INLET OF THE NEW RR CULVERT
10	EAST FARM FIELD DRAINAGE DITCH, UPSTREAM OR WITHIN THE FILTER STRIP

LEGEND:

- APPROXIMATE OFFSITE PROPERTY LINE
- APPROXIMATE FMC PROPERTY LINE
- APPROXIMATE LIMITS OF PHASE 1 ICM AREA SURFACE COVERS
- II. PHASE 1 ICM AREA SURFACE COVER — POST-ICM O&M SITE INSPECTION FORM ITEM AND ITEM NUMBER
- DRAINAGE FEATURE
- SITE SECURITY SIGNAGE
- (1) APPROXIMATE PHASE 1 ICM O&M SURFACE WATER SAMPLING LOCATION (SEE NOTE 3)
- APPROXIMATE LOCATION OF SECURITY FENCE

NOTES:

1. BASE MAP INFORMATION BASED ON APRIL 16, 2002 AERIAL SURVEY PROVIDED BY ABRAMS AERIAL SURVEY CORPORATION AND FIELD SURVEY INFORMATION COMPILED FROM: SEPTEMBER 18, 1999, MARCH 28, 2001, APRIL 29, 2004, AUGUST 13, 2004 AND APRIL 7, 2005 FIELD SURVEYS PERFORMED BY MCINTOSH AND MCINTOSH, P.C.
2. SURFACE CONTOURS/CONDITIONS SHOWN WITHIN THE LIMITS OF THE PHASE 1 ICM AREA AND THE ESI FILL AREA REPRESENT GENERAL CONDITIONS PRESENT PRIOR TO INITIATION OF PHASE 1 ICM WORK ACTIVITIES.
3. SITE PLAN SHOWS APPROXIMATE LOCATIONS OF PHASE 1 ICM COMPONENTS. ACTUAL LOCATIONS OF INDIVIDUAL COMPONENTS IN THE FIELD MAY VARY.
4. SEE SECTION 3.3 OF THE PHASE 1 ICM O&M PLAN FOR ADDITIONAL SAMPLING INFORMATION. NUMBER IN CIRCLE CORRESPONDS TO UPSTREAM/DOWNSTREAM SAMPLING LOCATION DESCRIPTION NUMBER PROVIDED IN PHASE 1 ICM O&M PLAN. ACTUAL SAMPLING LOCATIONS WERE DETERMINED IN THE FIELD, IN COORDINATION WITH THE AGENCIES' FIELD REPRESENTATIVE.

0 100' 200'
GRAPHIC SCALE

FMC CORPORATION
MIDDLEPORT, NEW YORK
PHASE 1 ICM O&M PLAN

PHASE 1 ICM O&M SITE PLAN

ARCADIS

FIGURE 3

CITY: SYRACUSE, NY DIV/GROUP: ENV/CADD DB: P. LISTER LD: P. LISTER PM: D. WRIGHT LYR:ON=*;OFF=REF,(FRZ)
G:\ENV\CAD\SYRACUSE\ACT\B003775\0001\00003\DWG\377558O4.DWG LAYOUT: 3 SAVED: 3/30/2011 8:33 AM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTQUICKBW.CTB PLOTTED: 3/30/2011 8:34 AM BY: LISTER, PAUL
XREFS: 37665X01 37665X02 IMAGES: PROJECTNAME: ----

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Attachments

Attachment A

Post-ICM O&M Inspection Form

Inspection Form

Phase 1 ICM O&M Plan

North Railroad Property
FMC Corporation - Middleport, New York

Inspector Name: ***Date/Time:***	***Weather:***	***Other Parties Present (and affiliation):***

I. Access Restrictions

Yes	*No*	*(If Yes, describe below, identify location on site map, and provide photo.)*
[ ]	[ ]	Are signs present at the locations specified?
[ ]	[ ]	Are the signs legible and in good condition?
[ ]	[ ]	Is security fencing in good condition?

Comments/Recommended Actions

II. Phase 1 ICM Area Surface Covers

Yes	*No*	*(If Yes, describe below, identify location on site map, and provide photo.)*
[ ]	[ ]	Is the stone layer disturbed so that the underlying geotextile fabric and sand/fill is exposed?
[ ]	[ ]	Are there any signs of erosion?
[ ]	[ ]	Are there any ponded areas?
[ ]	[ ]	Is there any evidence of slope failure?
[ ]	[ ]	Is there any evidence of burrowing animals?
[ ]	[ ]	Are there any trees, bushes, or other large vegetation growing on the cover area?
[ ]	[ ]	Is there any water flowing in the ditches? If yes, is the water clear or turbid? (describe below)
[ ]	[ ]	Is there any debris, accumulated sediments, or excessive vegetation present in the ditches?

Comments/Recommended Actions

III. North Ditch at Culvert 105 Inlet and Railroad Culvert Inlet/Outlet Protection

Yes	*No*	*(If Yes, describe below, identify location on site map, and provide photo.)*
[ ]	[ ]	Is there any sign of erosion?
[ ]	[ ]	Is there any debris, accumulated sediments, or excessive vegetation that may impede water flow?
[ ]	[ ]	Is there any damage to the inlets/outlets?
[ ]	[ ]	Is there ponded/standing water at the inlets/outlets?

Comments/Recommended Actions

IV. Sediment Filter Strips

Yes	*No*	*(If Yes, describe below, identify location on site map, and provide photo.)*
[ ]	[ ]	Is there any sign of erosion?
[ ]	[ ]	Is there sediment build up on or near the filter strips? If yes, please describe in space below.

Comments/Recommended Actions

Inspection Form

Phase 1 ICM O&M Plan

North Railroad Property
FMC Corporation - Middleport, New York

Inspector Name: ***Date/Time:***	***Weather:***	***Other Parties Present (and affiliation):***

V. Stone Check Dam

Yes	*No*	*(If Yes, describe below, identify location on site map, and provide photo.)*
[ ]	[ ]	Is the flow eroding soil underneath or around the structure?
[ ]	[ ]	Is the dam in good condition?
[ ]	[ ]	Is there sediment build up behind the dam? If yes, please describe in space below.

Comments/Recommended Actions

VI. NWCA Diversion Swale and East Inlet Swale to the Phase 1 ICM Cover

Yes	*No*	*(If Yes, describe below, identify location on site map, and provide photo.)*
[ ]	[ ]	Is there any sign of erosion?
[ ]	[ ]	Is there any debris, accumulated sediments, or excessive vegetation?
[ ]	[ ]	Is there any water flowing in the swales? If yes, is the water clear or turbid? (describe below)

Comments/Recommended Actions

Photographic Documentation

Instructions: Describe each photograph taken and mark the location and view direction on a site map.

Photo Number	***Location***	***Inspection Item Number and Photo Description***

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Attachment B

Revised *North Railroad Property Run-on Sampling and Analysis Plan* (dated April 12, 2005)

FMC Corporation

FMC Corporation
1735 Market Street
Philadelphia PA 19103

215.299.6000 phone
215.299.6947 fax

www.fmc.com

April 12, 2005

Via E-mail and
Certified Mail Return Receipt Requested

Mr. Matt Mortefolio, P.E.
NYSDEC Project Coordinator
Bureau of Solid Waste & Corrective Action
Division of Solid and Hazardous Waste Materials
NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
625 Broadway, 8th Floor
Albany, NY 12233-7255

Mr. Michael Infurna
USEPA Project Coordinator
Environmental Planning and Protection Division
UNITED STATES ENVIRONMENTAL PROTECTION
AGENCY, Region II
290 Broadway – 20th Floor
New York, NY 10007-1866

Re: RCRA Section 3008(h) Administrative Order on Consent
Docket No. II-RCRA-90-3008(h)-0209
FMC Corporation, Middleport, NY Facility
EPA I.D. No. NYD002126845
Submittal of North Railroad Property Run-on
Sampling and Analysis Plan

Dear Messrs. Mortefolio and Infurna:

By letter dated March 17, 2005, FMC submitted "*North Railroad Property Run-on Sampling and Analysis Plan*" (SAP) to the New York State Department of Environmental Conservation and United States Environmental Protection Agency (hereafter referred to as "the Agencies"). By letter dated March 31, 2005, the Agencies granted approval of the SAP subject to modifications identified in an attachment to the Agencies' March 31, 2005 letter and submittal of a revised SAP that incorporates the Agencies' modifications by April 7, 2005. During the April 6, 2005 technical group conference call, FMC requested and the Agencies agreed that a revised SAP would be submitted by April 12, 2005.

The SAP has been revised to incorporate the Agencies' March 31st modifications and to identify the actual sample locations selected in the field with the Agencies' field representative on April 11, 2005. The project schedule for performance of the sampling and analysis activities was revised and is included in the SAP. Requests for accession permission were issued to the affected property owners

FMC

on April 7, 2005. The revised SAP is enclosed. A copy of the enclosed SAP will be placed in the Middleport Free Library.

If there are any questions or if additional information is needed at this time, please contact me at the address above or (215) 299-6047.

Sincerely,

Brian M. McGinnis
Remediation Project Manager
(215) 299-6047

Enclosure

pc: J. Reidy, USEPA, NYC (w/o enclosure)
E. Dasatti, NYSDEC, Albany (w/o enclosure)
D. Radtke, NYSDEC, Albany
D. David, NYSDEC, Buffalo (w/o enclosure)
R. Loecy, NYSDEC, Buffalo
M. Hinton, NYSDEC, Buffalo
C. Bethony, NYSDOH, Troy
M. VanValkenburg, NYSDOH, Troy (w/o enclosure)
Mayor Julie Maedl, Village of Middleport
Daniel E. Seaman, Esq., Lockport office
Daniel J. Watts, NJIT
Senator George Maziarz, Lockport (w/o enclosure)
Assemblywoman Sandra Lee Wirth, West Seneca (w/o enclosure)
Congressman Tom Reynolds, Williamsville (w/o enclosure)

GEOMATRIX

NORTH RAILROAD PROPERTY RUN-ON SAMPLING AND ANALYSIS PLAN

FMC CORPORATION
Middleport, New York

Prepared by:

Geomatrix Consultants, Inc.
90B John Muir Drive, Suite 104
Amherst, New York 14228
(716) 565-0624

April 2005

Project No. 9937

Geomatrix Consultants

GEOMATRIX

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TABLES

FIGURES

NORTH RAILROAD PROPERTY RUN-ON SAMPLING AND ANALYSIS PLAN

FMC Corporation
Middleport, New York

1.0 INTRODUCTION

As described in a February 22, 2005 letter to the New York State Department of Environmental Conservation (NYSDEC) and the United States Environmental Protection Agency (USEPA) (referenced herein collectively as "Agencies"), FMC Corporation (FMC) has agreed to perform Interim Corrective Measures (ICMs) with respect to the FMC-owned North Railroad Property (NRR Site) at FMC's Middleport, NY facility. As part of the scope of work for the NRR Site ICMs, FMC intends to conduct a surface water sampling and analysis program for surface water run-on to the Northern Ditches (which is situated within the NRR Site) from properties adjacent to the eastern boundary of the FMC-owned North Railroad Property (See Figure 1). The objective of this program is better to characterize the quality of surface water run-on to the FMC-owned Northern Ditches and the background or upstream surface water conditions.

This Sampling and Analysis Plan (SAP) describes the proposed run-on sampling scope of work, presents the sample collection and analytical procedures to be used, describes the content of the final report, and presents a preliminary schedule for completion of the work.

2.0 SAMPLING PROGRAM SCOPE OF WORK

The data generated from this field sampling program will be used to better characterize the quality of surface water run-on to the FMC-owned Northern Ditches and background and upstream surface water conditions. The data will be used to supplement historic surface water sample data previously collected from the Northern Ditches (i.e., as part of the 2002 Sampling Program). The historic surface water sampling data are presented in the report entitled *"Technical Report on Data Sufficiency for the North Railroad Property"*, dated August 2004 (or subsequent revisions).

Surface water samples will be collected from four selected locations during two separate occasions when there are sufficient quantities of surface water runoff present (i.e., flowing water from a spring melt and/or rain events at or over 0.15 inches). The two occasions will be at a minimum of 5 days apart. The approximate sample locations are shown on Figure 2. The sample locations will be situated east and upstream of FMC-owned properties. Two sample locations will be situated within the drainage ditch on the north side of the railroad tracks and two sample locations will be situated within the drainage ditch on the south side of the railroad tracks. The actual sample locations will be selected in the field with concurrence of the Agencies' field representative.

The samples will be analyzed for total and dissolved arsenic, total and dissolved lead, chlorinated pesticides, total ammonia (as nitrogen) and hardness. Table 1 presents a summary of the proposed sampling and analysis requirements.

2.1 ACCESS PERMISSION

Written access permission will be obtained from the owners of the affected properties, including Falls Road Railroad. Requests for access permission for sample collection will be sent out to property owners via certified mail, return receipt requested, in accordance with the terms and conditions of the Administrative Order on Consent (Docket No. II-RCRA-90-3008(h)-0209) entered into by FMC, NYSDEC and USEPA. In addition, FMC will make the following efforts to obtain access permission:

i) A follow-up letter requesting access permission will be sent and/or a telephone call will be made to property owners who have not responded within 2-3 weeks of the mailing of the initial request. Visits to local property owners who cannot be reached by telephone may also be made, if appropriate.

ii) The names of the property owners who cannot be contacted or who have refused access permission will be provided to the Agencies.

2.2 PRE-SAMPLING INSPECTION

Prior to sample collection, representatives from FMC and the Agencies will inspect the areas proposed for sampling, and will select and mark the four surface water sample locations. Property boundaries and the selected sample locations will be surveyed and marked.

2.3 SAMPLE COLLECTION

FMC will notify the Agencies' field representative by telephone prior to collecting the surface water samples. Split samples will be provided to the Agencies if requested. Surface water samples will be collected in the presence of an Agencies' field representative, unless, when notified, the representative is unavailable and it is agreed that proceeding with the sampling is necessary based on weather/field conditions. The surface water samples will be collected as described in Section 3.0. The samples will be analyzed for total and dissolved arsenic, total and dissolved lead, chlorinated pesticides, total ammonia (as nitrogen), and hardness as described in Section 4.0. The sample analysis will be performed based on an approximate 2-week turnaround time.

2.4 REPORTING

A final report will be provided to the Agencies to present the sample results. The report will contain the following information:

i) a description of the sampling activities performed;

ii) figure(s) or maps depicting sample locations;

iii) the data validation report;

iv) analytical laboratory data; and

v) a summary and evaluation of the surface water data.

3.0 SAMPLING PROCEDURES

All surface water sampling and analyses for this project will be performed in accordance with FMC's approved Data Collection Quality Assurance Plant (DCQAP) (September 1993) except as described in this Sampling and Analysis Plan (SAP).

This SAP presents project objectives, sample collection procedures, and project-specific quality assurance (QA) and quality control (QC) analytical requirements. All samples will be collected in accordance with the health and safety procedures described in FMC's *Health and Safety Plan* (Conestoga-Rovers & Associates, August 1991).

3.1 SAMPLING SUPPLIES

The sample container, preservative, and holding time requirements are identified in Table 2.

Sample containers, sample shipping containers (with necessary packing material and ice packs), and demonstrated analyte-free and deionized water for field sampling equipment (rinse) blanks will be provided to the laboratory.

3.2 FIELD SUPPLIES

QC of field sampling activities will involve collecting and analyzing the following samples:

i) field duplicate samples: one per 20 investigative samples, to be spread out over the sampling event;

ii) matrix spike/matrix spike duplicate (MS/MSD): one per 20 investigative samples and a minimum of one per analytical batch; and

iii) rinse blanks: one per 20 investigative samples (minimum of one per day), if dedicated or disposable sampling equipment is not used.

Field duplicate samples will be collected and used to assess the aggregate precision of sampling techniques and laboratory analysis, and will be submitted "blind" to the laboratory and analyzed for the appropriate parameters.

Rinse blanks will be used during the sampling programs to detect contamination introduced through sampling procedures and equipment, external field conditions, container preparation, or the analytical process. Rinse blanks will be collected in the field from deionized water

poured onto the sample collection devise following decontamination. Equipment rinse blanks will not be collected unless cleaning is performed on the equipment. The samples collected before and after cleaning and collection of the rinse blank will be recorded in the field log books.

3.3 EQUIPMENT DECONTAMINATION PROTOCOL

The primary purpose of these decontamination protocols is to prevent cross-contamination of specific sampling locations during the sample collection. Sampling equipment that will come in direct contact with surface water samples that will be chemically analyzed will be decontaminated as described below unless dedicated/disposable sampling equipment will be used.

A decontamination/equipment cleaning area will be located at the FMC Facility. Decontamination fluids will be collected in drums. All drums must be labeled, securely closed, and staged (when full) at a designated location at the FMC Facility until disposal at an appropriate disposal facility.

Non-dedicated small sampling equipment (i.e., knives, spoons, bowls, containers) that comes into contact with samples to be chemically analyzed shall be decontaminated prior to use in the field and between sample locations. Decontamination procedures are as follows:

i) wash and scrub with low phosphate detergent;
ii) tap water rinse;
iii) rinse with 10 percent nitric acid (HNO3) ultrapure solution (or 1 percent HNO3) ultrapure solution for carbon steel equipment;
iv) tap water rinse;
v) acetone rinse (if samples will be analyzed for organics);
vi) thorough rinse with deionized water (five times the volume of the solvent used);
vii) thorough rinse with deionized water;
viii) air dry for 15 minutes; and
ix) wrap in aluminum foil for transport.

Steps iii) and v) may be eliminated if the non-dedicated small sampling equipment does not come in direct contact with the samples (i.e. split spoons, shovels, trowels).

3.4 SURFACE WATER SAMPLING PROTOCOL

Surface water samples will be collected at the locations described in Section 2.0. Surface water samples shall be collected from the furthest downstream location and shall proceed to the upstream locations. At each sampling location, a surface water sample will be collected in accordance with the following protocols:

i) A new pair of disposal gloves will be used when collecting surface water grab samples at each location.

ii) The surface water samples will be collected directly into laboratory-supplied precleaned container(s). Alternatively, surface water will be collected using a pre-cleaned, dedicated or disposable container and poured into the laboratory-supplied container(s). Where sufficient water depth is present, the surface water will be collected near the bottom of the water column, where possible. All surface water samples will be collected at locations where water is flowing in the ditch.

iii) Surface water samples will not be filtered in the field. The temperature and pH of the surface water sample shall be recorded in the field for each sample location. The turbidity of the sample shall also be noted.

iv) Surface water samples shall be analyzed for total and dissolved arsenic, total and dissolved lead, chlorinated pesticides, total ammonia (as nitrogen), and total hardness.

v) The sample container(s) will be labeled and the sample location will be recorded by a New York State-licensed surveyor. Diagrams with measurement shall be included in the field book.

3.5 SAMPLE CONTAINERS AND HANDLING

All samples will be placed in appropriate sample containers supplied by the laboratory, labeled, and properly sealed. Table 2 identifies the requirements for the sample containers, preservation, packaging and holding times. The sample labels will include sample number, place of collection, date and time of collection, and analyses to be performed. Labels will be affixed to the sample jars to ensure that they will not come off when wet. Samples will be cushioned within the shipping coolers by the use of vermiculite and/or bubble pack. Samples will be kept cool by the use of plastic bags of ice or cooler packs.

The samples will be shipped by commercial courier to the selected project laboratory. Two seals comprised of Chain of Custody tape will be placed over the lid on the front and back of the cooler prior to shipment to secure the lid and provide evidence that the samples have not been tampered with during transportation to the laboratory.

3.5 CHAIN OF CUSTODY FORMS/SAMPLE DELIVERY

Chain of Custody forms will be completed for all samples collected to document that transfer of sample containers from time of sampling to the arrival of samples at the laboratory. All samples will be refrigerated using wet ice at 4°C (±2°C) and delivered to the analytical laboratory within 48 hours of collection. All samples will be delivered to the laboratory in person or by commercial courier. All samples will be maintained at 4°C (±2°C) by the laboratory.

The Chain of Custody record, completed at the time of sampling, will contain, but not be limited to, the sample number, date and time of sampling, and the name of the sampler. The Chain of Custody document will be signed, timed, and dated by the sampler when transferring the samples.

The Chain of Custody form will consist of four copies, which will be distributed to the receiving laboratory and the Contractor. The Contractor will retain one copy while the other three copies will be enclosed in a waterproof envelope within the cooler with the samples. The sample number of each sample shipped will be recorded on the form. The cooler will then be sealed properly for shipment and a custody seal attached. The laboratory, upon receiving the samples, will complete the three remaining copies. The laboratory will maintain one copy for their records. One copy will be returned to the Contractor upon receipt of the samples by the laboratory. One copy will be returned to the Contractor with the data deliverables package.

Upon receipt of the cooler at the laboratory, the shipping cooler custody seal will be inspected by the designated sample custodian. The condition of the cooler will be noted on the Chain of Custody form by the sample custodian. If the shipping cooler seal is intact, the sample containers will be accepted for analyses. The sample custodian will document the date and time of receipt of the container, and sign the form.

4.0 ANALYTICAL PROCEDURES AND LABORATORY QUALIFICATIONS

Analytical laboratory services must be provided by a qualified New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory experienced in the analyses of soil, sediment, and surface water samples using the methods specific herein.

Surface water samples collected for the laboratory analyses will be analyzed for the parameters listed in Table 1 using the analytical and extraction methods indicated. The targeted quantitation limits (TQLs) are presented in Table 3. The surface water criteria (NYSDEC Class D surface water standards) for chlorinated pesticides are set below analytical method detection limits.

Samples may be diluted if analytes of concern generate responses in excess of the linear response of the instrument. When matrix interferences are noted during sample analysis, actions will be taken by the laboratory to try to achieve the specified quantitation limits. The laboratory will re-extract, and/or use any of the cleanup techniques presented in the analytical methods to eliminate matrix interferences. In such cases, the laboratory QA/QC Officer will assure that the laboratory demonstrates good analytical practices and that such practices are documented in order to achieve the specified detection limits.

All sample results will be calculated using the specific procedures for target analyte quantitation as detailed in the appropriate analytical methods.

For GC determinations of specific analytes, the retention time (RT) of the unknown will be compared with that of a known standard. Since a true identification by GC is not possible, an analytical run for compound confirmation will be followed according to the specifications in the methods. Peaks must elute within daily retention time windows established for each indicator parameter to be declared a tentative or confirmed identification. Retention time windows are determined using the standard protocol defined in the method.

5.0 LABORATORY QA/QC REQUIREMENTS

5.1 QC FOR LABORATORY ANALYSIS

Specific procedures related to internal laboratory QC samples (namely reagent blanks, MS/MSD, surrogates, and laboratory control samples) are described in the following subsections. Reanalysis due to outlying QA/QC results will be in accordance with the analytical methodology employed.

5.1.1 Blank Samples

A method blank will be analyzed by the laboratory at a frequency of one blank per 20 or less analyses. The method blank, an aliquot of analyte-free water or solvent, will be carried through the entire analytical procedures.

5.1.2 MS/MSD

An MS/MSD sample will be analyzed at a minimum frequency of 1 in 20 investigative samples. The analytical testing will be performed in accordance with the method specified in Table 1. The target quantitation limits are found on Table 3. Table 4 summarizes the control limits for the MS percent recoveries and the MS/MSD Relative Percent Difference (RPD) percent recoveries.

The sample chosen for MS analyses will be spiked with 50 micrograms per kilogram (mg/kg) of arsenic and lead. The acceptable MS recovery limits for arsenic and lead are 80 to 120 percent. The acceptable precision limits for laboratory duplicate analyses are zero to 20 Relative Percent Difference (RPD). Field duplicates will be assessed using a precision limit of zero to 50 RPD. In addition, interference check standards containing high levels of aluminum, iron, calcium, and magnesium will be analyzed in accordance with the method to verify the laboratory's inter-element and background correction factors.

MS/MSD recoveries and RPDs for chlorinated pesticides will be assessed based on control limits specified on Table 4. Field duplicates will be assessed using a precision limit of 0 to 50 RPD. The control limits for all other parameters will be as specified per the analytical methods.

5.1.3 Surrogate Analysis

Surrogates are organic compounds which are similar to the analytes of interest, but which are not normally found in environmental samples. Surrogates are added to samples to monitor the effect of the matrix on the accuracy of the analysis. Every blank, standard, and environmental

sample analyzed by GC for chlorinated pesticides, including MS/MSD samples, will be spiked with surrogate compounds prior to sample preparation.

The compounds that will be used as surrogates for chlorinated pesticides are tetrachloro-m-xylene and decachlorobiphenyl. The levels of recommended spiking are specified in the method. Surrogate spike recoveries will be compared to control limits of 30 to 150 percent.

Dilution of samples to bring the analyte concentration into the linear range of calibration may dilute the surrogates out of the quantitation limit; assessment of analytical quality in these cases will be based on the quality control demonstrated in the laboratory control samples and MS/MSD samples.

5.2 CALIBRATION PROCEDURES AND FREQUENCY

Calibration of instrumentation is required to ensure that the analytical system is operating correctly and functioning at the proper sensitivity to meet established reporting limits. Each instrument is calibrated with certified standard solutions and the linear range established for the analytical method. The frequency of calibration and the concentration of calibration standards are determined by the manufacturer's guidelines, the analytical method, or the requirements of special contracts.

A bound notebook will be kept with each instrument requiring calibration in which activities associated with QA monitoring and repairs will be recorded.

5.2.1 Inorganic Analyses

All method-specified calibration procedures will be performed and acceptance criteria will be met prior to sample analyses. Standard curves derived from data consisting of one reagent blank and a minimum of three concentrations (one reagent blank and one concentration for trace ICP) will be prepared for each inorganic analyte. A check standard containing 250 µg/L of arsenic and lead will be analyzed by trace ICP once initially after calibration and again every 20 samples. A criterion of 90 to 110 percent will be used to verify accuracy. Calibrations will be performed using either average response factors, or first-order linear regression (with a correlation coefficient requirement of 0.995). Higher order fits will not be allowed unless the laboratory can demonstrate that the instrument is working properly, and that the instrument response over the concentration range of interest is second-order.

Continuing calibration checks and calibration blank analyses must be performed at a minimum frequency of 10 percent or every two hours during an analysis run, whichever is more frequent,

and after the last analytical sample. Initial and calibration verification results must fall within the method control limits.

In addition, interference check standards containing high levels of aluminum, iron, calcium, and magnesium will be analyzed in accordance with the method to verify the laboratory's inter-element and background correction factors.

5.2.2 Organic Analyses

Quantification for samples that are analyzed by GC or GC/MS shall be performed as specified in the method. Standards containing the compounds of interest will be analyzed at various concentrations (minimum five levels) to establish the linear range of the detector, the limit of detection, and the retention time windows. All calibrations must be performed using either average response factors or first-order linear regression (with a correlation coefficient requirement of ≥ 0.995). Higher order fits will be allowed if permitted by the method and provided method criteria are met. The resulting calibration curves must meet all method-specified criteria prior to sample analyses.

The calibration curve or average response factor must be verified each day at a frequency specified in the appropriate analytical method. The response from the continuing calibration standard will be checked against the average response factors or calibration curve established during initiation calibration. If deviations in the standard response are greater than those allowed by the method protocols, then a new calibration curve must be prepared.

5.3 DATA VALIDATION

All analytical data will be reported by the laboratory with NYSDEC Analytical Services Protocol Category B deliverables and as described on Table 5. An electronic data deliverable (EDD) in EQuIS four-file format will also be required. The EDD will facilitate transfer of the data into the existing project database for the Site. A copy of the laboratory data package and/or the EDD will be provided to the Agencies upon request.

A chemist(s) that is not employed by the laboratory or by FMC will validate the data generated by the contract laboratory. The chemist(s) will be experienced in performing data validations and will be familiar with the analytical methods used. The applicable analytical methods and the following documents will be used to validate all data generated by the laboratory:

i) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA 540/R-99-008, October 1999; and

ii) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", EPA 540/R-94-013, February 1994.

6.0 SCHEDULE

The proposed project schedule is as follows:

Item	*Target Completion Date*
Agency Approval	March 31, 2005
Access Permission Acquisition	March 31- April 11, 2005
Pre-Sampling Inspection	week of April 11, 2005
Sample Collection	April 11 - April 25, 2005 (weather dependent)
Sample Analysis	April 11 – May 16, 2005
Final Report	June 7, 2005

This is a target schedule and may be changed based on weather conditions or other factors.

Preliminary data will be provided to the Agencies prior to submittal of the final report.

TABLE 1

FMC CORPORATION - MIDDLEPORT, NEW YORK
RUN-ON SURFACE WATER SAMPLING AND ANALYSIS PLAN

SAMPLING AND ANALYSIS SUMMARY

Sample Matrix	Analytical Parameter	Analytical Method[1]	Investigative Samples*	Field Duplicates**	Equipment Rinse Blanks***	MS/MSD
Surface Water	Total and Dissolved Arsenic and Lead	6010B[1][2][3]	10	2	1/Day	2/2
Surface Water	Total Ammonia (as Nitrogen)	EPA 350.3 [4]	10	2	1/Day	2/2
Surface Water	Hardness	130.1/130.2 [4]	10	2	1/Day	2/2
Surface Water	SSPL Chlorinated Pesticides [5]	3540C, 3541, or 3550/8081A	10	2	1/Day	2/2

Notes:

[1] Referenced from "Test Methods for Evaluating Solid Waste", USEPA SW-846, 3rd Eddition, 1986 with subsequent revisions.

[2] Analysis by trace ICP.

[3] The dissolved arsenic water samples will be filtered by the analytical laboratory doing the analysis by using a 0.45 micron filter prior to analysis for soluable metals.

[4] Referenced from "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983, with subsequent revisions.

[5] SSPL Chlorinated Pesticides - List from Site-Specific Parameter List, Table 6.1, RFI Work Plan (July 1993), which consists of aldrin, BHC (alpha, beta, delta, gamma), chlordane (alpha, gamma), DDD, DDE, DDT, dieldrin, endosulfan I, endosulfan II, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, heptachlor, heptachlor epoxide, methoxychlor, toxophene, and isodrin.

* Number of samples subject to change

** Field duplicates and MS/MSD sampling frequency based on one per 20 samples collected per event.

*** May be omitted if dedicated/disposable equipment is used.

TABLE 2

FMC CORPORATION - MIDDLEPORT, NEW YORK
RUN-ON SURFACE WATER SAMPLING AND ANALYSIS PLAN

SAMPLE CONTAINER, PRESERVATION, PACKAGING, AND HOLDING TIME REQUIREMENTS

Analysis	Sample Containers	Preservation	Maximum Holding Times (1)	Shipping Means	Packaging
Metals (total)	See Note (2)	Cool @ 4°C	180 days until analysis	Overnight Delivery	Bubble pack or equivalent
Metals (dissolved)	See Note (2)	Cool @ 4°C	180 days until analysis	Overnight Delivery	Bubble pack or equivalent
Hardness	See Note (2)	Cool @ 4°C HNO3 to pH <2	7 days until extraction 40 days from extraction until analysis	Overnight Delivery	Bubble pack or equivalent
Total Ammonia	See Note (2)	Cool @ 4°C H2SO4 to pH <2	28 days until analysis	Overnight Delivery	Bubble pack or equivalent
SSPL Chlorinated Pesticides	See Note (2)	Cool @ 4°C	7 days until extraction 40 days after extraction until analysis	Overnight Delivery	Bubble pack or equivalent

Notes:

(1) All holding times from sample collection to analysis, unless otherwise specified.

(2) Appropriate containers to be provided by the Contract Laboratory.

TABLE 3

FMC CORPORATION - MIDDLEPORT, NEW YORK
RUN-ON SURFACE WATER SAMPLING AND ANALYSIS PLAN

TARGETED QUANTITATION LIMITS

Total Metals	*Water Limit (ug/L)*
Arsenic	10
Lead	10
Miscellaneous	
Total Ammonia	10 (1)
Hardness	(1)
SSPL Chlorinated Pesticides	
Aldrin	0.05
alpha-BHC	0.05
beta-BHC	0.05
delta-BHC	0.05
gamma-BHC (lindane)	0.05
alpha-Chlordane	0.05
gamme-Chlordane	0.05
4,4'-DDD	0.10
4,4'-DDE	0.10
4,4'-DDT	0.10
Dieldrin	0.10
Endosulfan I	0.05
Endosulfan II	0.10
Endosulfan sulfate	0.10
Endrin	0.10
Endrin aldehyde	0.10
Endrin ketone	0.10
Heptachlor	0.10
Heptachlor epoxide	0.10
Methoxychlor	0.03 (1)
Toxaphene	1.5 (1)
Isodrin	0.10

Notes:

(1) Or as provided by the contract analytical laboratory.

SSPL Site-Specific Parameter List

TABLE 4

FMC CORPORATION - MIDDLEPORT, NEW YORK
RUN-ON SURFACE WATER SAMPLING AND ANALYSIS PLAN

MS/MSD QUALITY CONTROL LIMITS [1]

Compound	*Water*	
	% Recovery	*RPD*
Arsenic	80-120	35
Lead	80-120	35
Total Ammonia	80-120	35
gamma-BHC (Lindane)	56-123	15
Heptachlor	40-131	20
Aldrin	40-120	22
Dieldrin	52-126	18
Endrin	56-121	21
4,4'-DDT	38-127	27

Notes:

[1] The Agencies will be notified of any revised control limits after selection of the contract laboratory.

RPD = Relative Percent Difference

TABLE 5

FMC CORPORATION - MIDDLEPORT, NEW YORK
RUN-ON SURFACE WATER SAMPLING AND ANALYSIS PLAN

LABORATORY REPORTING DELIVERABLES
NYSDEC ASP CATEGORY B DATA PACKAGE

The NYSDEC ASP Category B data package includes, but may not be limited to, the following:

A. A detailed report narrative summarizing the contents and results (1) (2).

B. Chain of Custody Documentation

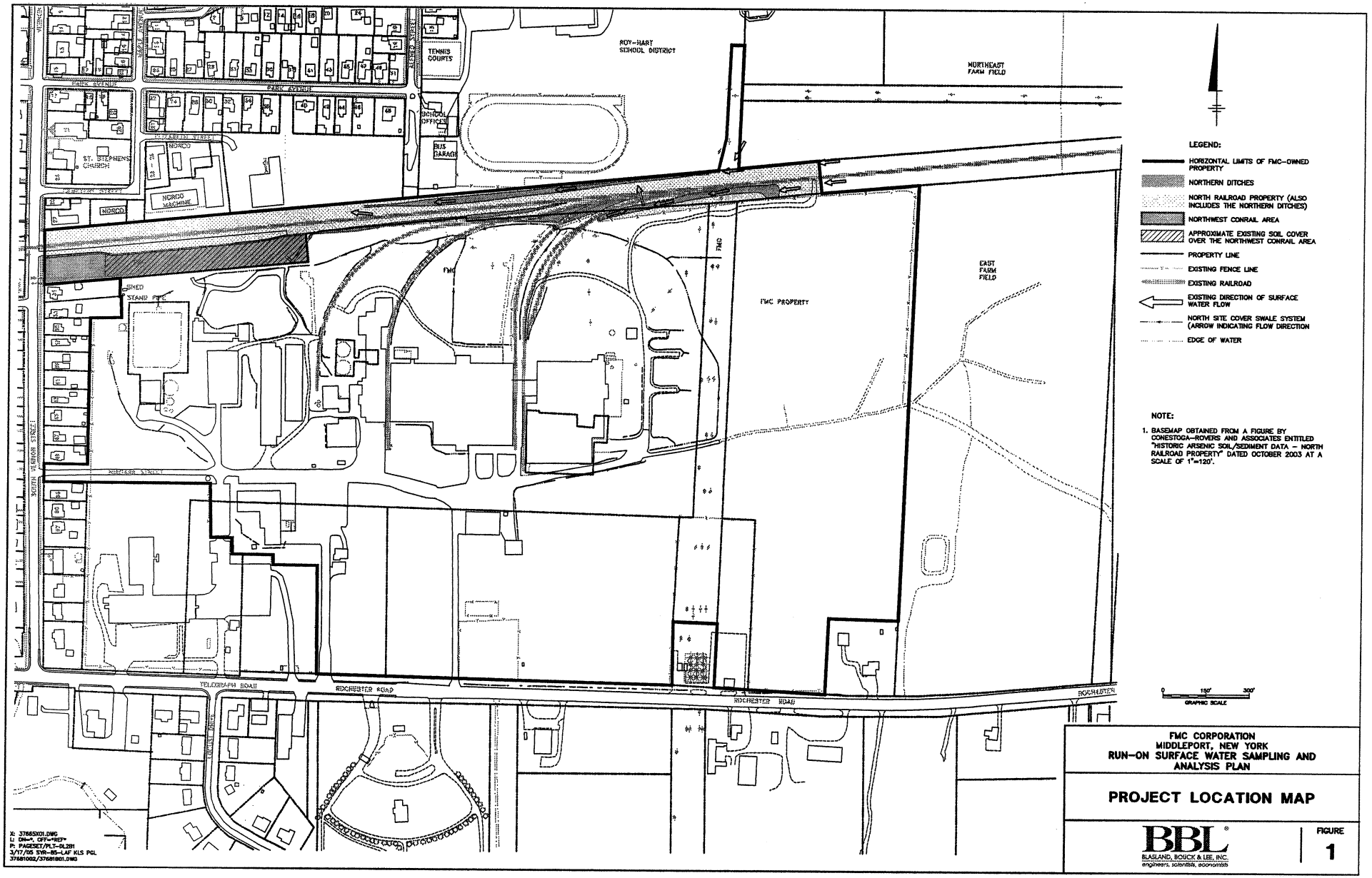
C. Sample Information
- i) date collected
- ii) date extracted or digested
- iii) date analyzed
- iv) analytical method and reference

D. Data (including all raw data and CLP-like summary forms)
- i) samples
- ii) laboratory duplicates (3)
- iii) method blanks
- iv) spikes; spike duplicates (3) (4)
- v) surrogate recoveries (3)
- vi) internal standard recoveries
- vii) calibration (initial and continuing)
- viii) any other applicable QC data (e.g., serial dilutions, interference check standards, post digest spikes)

E. Miscellaneous
- i) method detection limits and/or instrument detection limits
- ii) percent solids (where applicable)
- iii) run logs
- iv) standard preparation logs
- v) sample preparation logs

All sample data and its corresponding QA/QC data shall be maintained accessible either in hard copy or electronic format.

Notes:
(1) This is a summary only.
(2) Any quality control outliers must be addressed and corrective action taken must be specified.
(3) Laboratory must specify applicable control limits for all quality control sample results.
(4) A blank spike must be prepared and analyzed with each sample batch.
ASP Analytical Services Protocol



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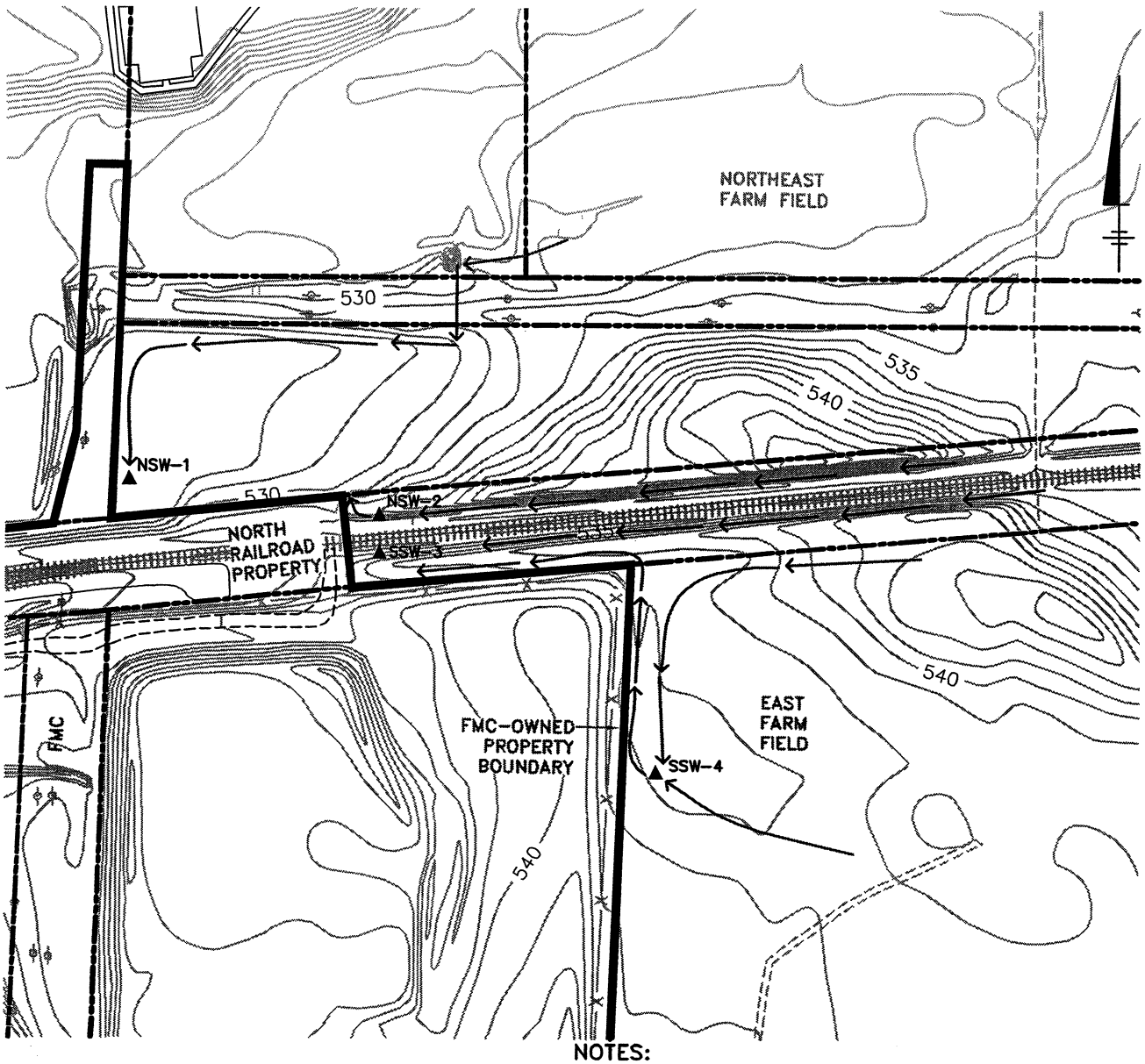
L: DN=*, OFF=*REF*
P: PAGESET/PLT-DL291
3/17/05 SYR-RS-LAF XLS PGL
37681002/37681801.DWG

FMC CORPORATION
MIDDLEPORT, NEW YORK
RUN-ON SURFACE WATER SAMPLING AND ANALYSIS PLAN

PROJECT LOCATION MAP

BBL
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

FIGURE
1



LEGEND:

- PROPERTY LINE
- EXISTING PLANT FENCE LINE
- EXISTING RAILROAD
- EXISTING EDGE OF GRAVEL
- ▲ APPROXIMATE SURFACE WATER SAMPLE LOCATION
- SURFACE WATER FLOW FROM RAILROAD PROPERTY
- SURFACE WATER FLOW FROM FARM FIELDS

NOTES:

1. BASEMAP OBTAINED FROM A FIGURE BY CONESTOGA-ROVERS AND ASSOCIATES ENTITLED "HISTORIC ARSENIC SOIL/SEDIMENT DATA – NORTH RAILROAD PROPERTY" DATED OCTOBER 2003 AT A SCALE OF 1"=120'.
2. ALL LOCATIONS ARE APPROXIMATE.

0 200' 400'

GRAPHIC SCALE

FMC CORPORATION
MIDDLEPORT, NEW YORK

RUN-ON SURFACE WATER SAMPLING AND ANALYSIS PLAN

PROPOSED SURFACE WATER SAMPLE LOCATIONS

BBL® BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

FIGURE 2

X: 37665X01, X02.DWG
L: ON=*, OFF=*REF*, |EX_ROAD_PAVED, EX_SUBLINE, |SHD-BLDG, |100-YR-FLOOD-NEW, |SWAMP
P: PAGESET/SYR-AP1
4/12/05 SYR-85-LAF, PGL
37681002/37681B02.DWG