LABELLA Associates, P.C.

Engineering
Architecture
Environmental
Planning

ENVIRONMENTAL MANAGEMENT PLAN

Port of Rochester
Marina Development Project

Location:

Port of Rochester
Rochester, New York 14612

Prepared For:

City of Rochester Division of Environmental Quality
30 Church Street
Room 300B
Rochester, New York 14614

LaBella Project No. 210660

March 2013

Relationships. Resources. Results.

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1.0 INTRODUCTION

From the mid to late 1800s to the mid 1920s, Charlotte Iron Works was an operational steel mill located on the western portion of the Port of Rochester Site. Foundry waste products, including foundry sand and slag, generated from the facility were used to expand the shoreline eastward toward the Genesee River and subsequently across the Port of Rochester Site. The location of the Port of Rochester Site is depicted on Figure 1. The Port of Rochester, inclusive of the River Street Realignment, will herein be referred to as "the Site".

Previously completed subsurface investigations conducted at the Port of Rochester Site have identified:

- Slag associated with former iron production; and,
- Mixed regulated fill materials including, but not limited to, ash, cinders, coal, unrecoverable quantities of slag, petroleum impacted soils and railroad ties.
- Building related historical infrastructure including, but not limited to, construction and demolition (C&D) debris, former floor slabs, footers and foundations.

During construction at the Port of Rochester Site, the presence of slag and the mixed fill materials described above that are present within the fill profile will require specific handling procedures, as detailed in this Environmental Management Plan (EMP). Contractors disturbing the subsurface at the Port of Rochester Site shall become familiar with the contents and provisions of this EMP and shall follow the procedures outlined in this EMP. A hard copy of the EMP shall be retained on-site during construction.

The mixed regulated fill materials described above are considered by the New York State Department of Environmental Conservation (NYSDEC) as regulated solid waste that cannot be treated as C&D solid waste, due to the nature of its origin as a solid waste derived from an industrial source. The NYSDEC has indicated during prior redevelopment activities at the Port of Rochester that the NYSDEC would not approve of the disposal of this material at C&D debris landfills. The NYSDEC indicated during previous Port of Rochester redevelopment activities that excavating the fill materials containing slag, coal, ash, cinders, railroad ballast, and C&D debris from industrial uses and placing these solid wastes into similar filled areas within the same site would be acceptable to the NYSDEC and in accordance with 6 NYCRR Part 360-1.7(b)(9). Alternatively, these materials must be disposed off-site at a NYSDEC Part 360 permitted landfill.

Given the anticipated quantities of regulated solid wastes projected to be generated as part the Marina Development Project, the City of Rochester submitted an application to the NYSDEC to secure a Beneficial Use Determination (BUD) for the reuse of specific for portions of this regulated solid waste. The final NYSDEC-approved BUD and the material handling requirements included in this EMP will allow the Marina Development Project to be completed without the financial burden of disposing all Regulated Solid Waste generated as part of the proposed project at a NYSDEC Part 360 Landfill.

2.0 OBJECTIVE

This EMP was developed to address environmental considerations associated with the completion of the proposed Port of Rochester Marina Development Project. The utilization of an EMP is intended to allow the City of Rochester to complete the project efficiently while maintaining compliance with all applicable Rules and Regulations. Under the EMP, both known and unknown areas of concern can be addressed during construction without significant delays to the project.

This EMP is intended to provide guidance regarding the excavation, characterization, handling and management of all excavated materials generated as part of the Project. Excavated materials may include but not be limited to:

- Existing surface treatments,
- Previously imported sub-base material,
- Reworked native soil,
- Mixed concentrations of regulated solid waste (including slag, cinders, ash, etc.),
- C&D wastes and historical infrastructure (including railroad ties, rail lines, abandoned utilities, etc.),
- In-place historical slabs, footers and foundations,
- Various concentrations of recoverable slag fills,
- Petroleum impacted soil, and/or
- Undisturbed native material.

LaBella Associates, P.C. (LaBella) will implement the EMP on behalf of the City of Rochester. LaBella will provide appropriately trained and experienced staff to be present on-site during earthwork activities that disturb or have the potential to disturb regulated solid wastes at the Site. LaBella's on-site staff shall be utilized as a resource by the selected Contractor(s) and the City of Rochester. LaBella will provide the necessary documentation and closure documents to memorialize the construction activities to the satisfaction of the regulatory agencies (i.e., NYSDEC). Section 13.0 identifies documentation to be developed throughout the project.

2.1 Applicability of Environmental Management Plan

This EMP applies to any Developer, Contractor, Subcontractor, Utility Contractor, and/or Municipal Agency that disturbs the subsurface at the Site. This EMP also governs activities associated with the off-site transportation and disposal of all waste streams generated as a result of the excavation activities completed for the Marina Development Project. In addition, this EMP outlines the requirements for material stockpiling and management at off-site locations.

2.2 Project Roles and Responsibilities (*Environmental Project Components*)

The roles and responsibilities for environmental oversight and management when regulated solid waste is disturbed during construction are outlined in the following table.

Company	Personnel/Title	Responsibilities
LaBella	Dennis E. Porter, CHMM Environmental Project Manager (585) 295-6245	Provide regulatory agency and City of Rochester interface. Provide guidance to field personnel throughout project. Provide monthly progress reports certifying compliance with this EMP and noting any deviations. Provide a final report documenting all excavation and waste disposal activities.
LaBella	Tom Marchetti (or alternate) Construction Manager/EIC (585) 451-6312 * Full Time On-Site *	Engineer in Charge responsible for Contractor compliance with the Port of Rochester Marina Development Project Bid Package. Approval of all Contractor installed work, payment applications and Community Public Relations.
LaBella	Seth Davis, M.S. Senior Environmental Analyst (*or alternate*) (585) 295-6659 * Full Time On-Site *	Daily discussion with Contractor and/or Construction Manager. Full time construction oversight during any ground intrusive activities to evaluate materials excavated, material processing, on-site placement of excavated material and/or the off-site shipment of any construction generated waste. Determine suitability of excavated material for processing and reuse under the NYSDEC-approved BUD. Provide guidance on the segregation, staging, and sampling of excavated materials, provide oversight of community air monitoring in accordance with the CAMP.
LaBella	Jonathan Geldard, E.I.T. (*or alternate*) (585) 295-6639 * Full Time On-Site *	Waste Shipment Tracking, Process Material Tracking, CAMP Monitoring, Excavation Dewatering Oversight, Off-Site Receiving Location Inspection, Daily Inspectors Report Summary, GIS Mapping, Quantity Calculations, Meeting Minutes & General Office Support.

Company	Personnel/Title	Responsibilities
LaBella	Dan Noll, P.E. Professional Engineer (585) 295-6611	Provide approval of all excavation dewatering means and methods proposed or implemented by the Contractor. Manage and approve all wastewater permitting and discharge. Manage and approve all dredging procedures, dredge material classification and/or characterization and pre-approve all proposed upland disposal locations.
Contractor	TBD	Excavate, segregate, and stage materials following the direction of LaBella, and alert LaBella in the event that unknown evidence of impairment is encountered. Implement the required project dewatering and compliance with the discharge criteria.
City of Rochester	Mark Gregor Port Manager (585) 428-5978	City of Rochester Port of Rochester Manager responsible for overall project design, development and construction.
City of Rochester	Joe Biondolillo Sr. Environmental Specialist (585) 428-6649	City of Rochester Environmental Project Manager responsible for EMP & BUD compliance, approval of all waste characterization sampling and waste profile approval. Approves all off-site material shipments, transportation schedules and volumes of processed materials received by other City of Rochester owned lands.
City of Rochester	Tim Hubbard Project Civil Engineer (585) 428-7154	City of Rochester Civil Design Engineer responsible for project compliance with City Design Standards.
NYSDEC	Dixon Rollins Environmental Engineer (585) 226-5468	Stormwater Pollution Prevention Plan (SWPPP) and Excavation groundwater discharge approvals.
NYSDEC	Gary Maslanka (585) 226-5414	Beneficial Use Determination (BUD)

3.0 SUPPORTING DOCUMENTS AND INFORMATION

This EMP utilizes data gathered from prior subsurface investigations and observations made during construction projects at the Port of Rochester Site. The reports utilized for reference are as follows:

- Phase I Environmental Site Assessment – Charlotte Port of Rochester, New York *by Galson dated April 1999*
- Geotechnical Site Characterization, Port of Rochester Harbor Improvement and Harbor Ferry Terminal *by Haley & Aldrich of New York dated January 22, 2001*
- Port of Rochester Harbor Improvement and Harbor Ferry Terminal - Phase II Environmental Site Assessment, Preliminary Site Characterization Report *by LaBella Associates, P.C. dated May 31, 2001*
- Phase III Environmental Site Assessment: Remediation Closure Report – NYSDEC Spill Number 990601 - Area #1 *by LaBella Associates, P.C. dated October 2002*
- Remedial Investigation Report *by LaBella Associates, P.C. dated March, 2007.*

In addition to the above reports prepared for the Port of Rochester, several miscellaneous environmental documents were generated by LaBella and the City of Rochester during construction of the Port of Rochester Harbor Improvement and Harbor Ferry Terminal Project. These documents specifically addressed New York State Department of Environmental Conservation (NYSDEC) Spill #990601. The documents are:

- Phase II Environmental Site Assessment: Underground Storage Tank Closure Report – Soil Sampling and Analysis: Port of Rochester Orphan Tank Discovered September 2003 *by LeCesse Construction*
- Underground Storage Tank Removal, Excavation Closure Sampling and Groundwater Sampling Report - North Warehouse, Port of Rochester; Rochester New York: Remediation Closure Report dated January 2003
- Memo - January 15, 2003, Vortex Excavation – Port of Rochester Parking Lot Improvements
- Memo - February 17, 2004, Groundwater Sample Results – Future Underground Storage Tank Excavation, Port of Rochester – Fast Ferry Terminal, Rochester, New York
- Memo – September 11, 2002, Questionable wastewater discharge relating to groundwater encountered and pumped at the South 24” sewer outfall trench; Beach Avenue and North Parking Lot Improvements Project – Port of Rochester, including a drawing showing approximate areas where these issues were addressed
- Letter from the City of Rochester to the NYSDEC dated May 6, 2004
- Letter from the NYSDEC to the City of Rochester dated June 14, 2004

Documents were submitted to the NYSDEC with a letter from the City of Rochester Division of Environmental Quality ("City DEQ") dated May 6, 2004, requesting No Further Remedial Action regarding the above listed issues and for closure of NYSDEC Spill #990601. The NYSDEC responded to the City DEQ in a letter dated June 14, 2004 and indicated the NYSDEC would not require further remedial work regarding Spill #990601. The NYSDEC issued a No Further Action letter regarding Spill #990601. It should be noted that this letter applies only to previously identified petroleum releases at the Port of Rochester; it does not apply to slag or other, non-petroleum regulated solid wastes.

These reports and miscellaneous environmental documents may be reviewed at the City of Rochester's Department of Environmental Services located at City Hall, Room 300B. These reports detail locations of impacted soil and groundwater and areas where man-made fill materials have been identified.

In addition, several additional project-specific Reports and Documents were utilized in the design of the Marina Development Project and the Site-Specific EMP. These documents are provided as a separately bound Appendix to the Full Bid Set. These documents include;

Predevelopment Subsurface Conditions Analysis Investigation Report (*LaBella – March 2009*)

LaBella was retained by the City of Rochester to conduct a Predevelopment Subsurface Conditions Analysis Investigation (PSCAI) of a parcel of land within the Port of Rochester complex located at 4700 Lake Avenue. The 4700 Lake Avenue parcel generally consists of an existing parking lot to the west of River Street, south of Corrigan Street, east of Lake Avenue, and north of Portside Drive. This area measures approximately 300 feet (east/west) by 600 feet (north/south). The realignment of River Street will require subsurface excavation within this area of the Site.

As part of the PSCAI, LaBella conducted an electromagnetic survey using a Geonics EM61 unit, a high-sensitivity, high-resolution, time domain electromagnetic (TDEM) metal detector that can detect both ferrous and nonferrous metallic objects to an approximate depth of 10 feet below ground surface (BGS). In order to investigate the significant magnetic anomalies observed in the geophysical data, an exploratory test pit investigation was performed at the 4700 Lake Avenue parcel. The test pit locations were selected based on the results of the geophysical survey, the 1892 and 1924 Sanborn Maps, and the results of previous investigations conducted at the 4700 Lake Avenue parcel. In addition, geotechnical and environmental soil borings were advanced in order to gain a more thorough understanding of the subsurface characteristics of the 4700 Lake Avenue parcel.

The PSCAI concluded that the presence of cinders, coals, ash and slag (regulated solid waste) on-site represents a development concern; however, proper planning and management of these materials can avoid delays in construction and provide developers the tools necessary to make informed decisions. It should also be noted that significant quantities of C&D fill are also located at the parcel generally west of the Regulated Solid Waste area.

Data Summary Package Port Marina Predevelopment Site Conditions Gap Investigation (*LaBella -September 2009*)

LaBella was retained by the City of Rochester to conduct a Predevelopment Site Conditions Gap Investigation (PSCGI) at the Port of Rochester. The project focused around assisting the City of Rochester with the design and implementation of this PSCGI, including petitioning the NYSDEC for approval of a site-specific BUD for the reuse of the slag excavated as part of the Marina Development Project.

LaBella's PSCGI field activities were conducted from June 22, 2009 through July 14, 2009. To investigate the data gaps identified in the assessment of available data, the PSCGI fieldwork included the advancement of thirty-four (34) soil borings and the installation of three (3) 2-inch diameter groundwater monitoring wells. To further evaluate subsurface conditions at the Site, composite samples were collected in the field from the soil borings. Three (3) sample types were collected and submitted for laboratory analysis. These sample types consisted of native soil, regulated fill materials, and slag materials. In addition, single-well, rising head tests were performed on each of the three (3) newly-installed groundwater monitoring wells and a previously-installed well to determine the in-place hydraulic conductivity of the unconsolidated geologic materials.

Cumulatively, this data and information was utilized by LaBella and the City to support the BUD Application.

Port of Rochester – Comprehensive Soil Boring Data Package

A significant amount of subsurface investigation has been completed across the Port of Rochester complex. To facilitate review of the available subsurface stratigraphy LaBella has created a Comprehensive Soil Boring Data Package that includes an Investigative Soil Boring & Test Pit Location Figure and copies of each soil boring or test pit log. Based on the voluminous nature of this Data Package the information is provided on Compact Disc only.

Pump Test Report (*LaBella – March 2013*)

LaBella was retained by the City of Rochester to conduct a Pump Test designed to evaluate the hydrologic recharge capacity of the Site's subsurface in the proposed marina footprint. This evaluation was designed to help determine logistics for dewatering excavation(s), to facilitate construction of the marina, and to determine where water pumped from the marina excavation(s) may be discharged based on analysis of groundwater samples collected during the test. Based on the analytical results of these samples, it may be permissible for water generated during the marina excavation(s) to be discharged to the municipal sewer system or the nearby Genesee River. Details regarding these dewatering requirements are provided in Section 6.0 of the EMP and in Specification No. S203.99.

This report is provided for informational purposes so that contractors disturbing the subsurface at the Port of Rochester Site have information regarding the general hydrogeological conditions at the Site.

Underground Utility Relocations - Geotechnical Evaluation (*Foundation Design – March 2013*)

The Underground Utility Relocations Report summarizes the Geotechnical Evaluation for the Port of Rochester underground utility relocation in association with the Marina Development Project. Specifically, this report addresses the installations of the new water main and sanitary sewer alignment. This evaluation was based on the review of topographic and geologic mapping; the National Resource Conservation Service (NRCS) mapping; old and new test boring, geo-probe, and test pit data; LaBella groundwater data (including groundwater levels and drawdown test results); laboratory testing of soil samples; and consultation with the design team.

Based on the aforementioned reports, approximately ten (10) test pits and fifty-one (51) soil borings have been completed within the footprint of the proposed marina, sanitary and water lines and River Street realignment. In addition, seven (7) groundwater monitoring wells have been installed within soil boreholes within this proposed project area.

4.0 REGULATORY LIMITS, REGULATIONS, AND GUIDANCE

Relevant standards and guidelines are summarized below. These include Federal hazardous waste regulations, various soil reference values promulgated by New York State agencies, New York State groundwater standards, and relevant regulations, standards, and guidelines. These documents and standards will be utilized to effectively implement the EMP.

4.1 Solid Waste Regulations

New York State's Solid Waste Management Regulations, Environmental Conservation Law 6 NYCRR Part 360 (Part 360) are the authority by which the State sets design standards and operational criteria for all solid waste management facilities. In accordance with 6 NYCRR Part 360-1.7(b)(9) and Part 360-1.15(a)(8) fill materials containing slag, ash, cinders, and C&D debris from industrial uses are considered by the NYSDEC to be a Regulated Solid Waste that cannot be treated as C&D solid waste, due to the nature of its origin as a solid waste derived from an industrial source. The NYSDEC will not approve of the disposal of this material at C&D debris landfills.

However, the NYSDEC allows for materials containing slag, coal, cinders, railroad ballast and ash to be relocated to other areas within the same site with preapproval from the applicable regional office of the NYSDEC in accordance with 6 NYCRR Part 360-1.7(b)(9). Alternatively, these materials can be disposed off-site in a New York State (NYS) Part 360 permitted landfill.

The proper management of these Regulated Solid Waste materials will be necessary during ground intrusive development activities at the Site. This Environmental Management Plan (EMP) will be used to guide the characterization and management of these Regulated Solid Waste materials.

4.2 Hazardous Waste Regulations

As defined by the United States Environmental Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA), waste (e.g., excavated soil or building materials) generated as part of the project can be classified as "hazardous waste" if the material meets the criteria for one of the Federal "listed wastes" or if the material possesses one of the following four (4) hazardous characteristics ("D" listed wastes): ignitibility, reactivity, corrosivity, or toxicity. The USEPA has developed standard tests to measure these four characteristics. The three physical characteristics (ignitibility, reactivity and corrosivity) are tested using numerical standards of measurement.

The fourth characteristic, toxicity, the one most frequently exceeded. The suspect material is tested using the Toxicity Characteristic Leaching Procedures (TCLP), which provides an estimate of the concentrations of contaminants that would leach into groundwater if the material were disposed of in an environmentally unsecured landfill. To assess whether materials are hazardous wastes, composite samples of the material are collected and submitted to a laboratory for analysis.

Composite samples are representative samples of the material that are collected from multiple locations. The samples are analyzed by the laboratory in accordance with USEPA test methods. If the results of the laboratory testing indicate that the physical or toxicity characteristics of the sample exceed the RCRA regulatory limits detailed in 40 CFR Part 261, the material is considered hazardous waste. It is not anticipated that RCRA hazardous wastes will be generated as part of the Marina Development Project.

4.3 Reference Values

Reference values to assess environmental impacts will include the following documents and regulations:

<u>Evaluation of Soil and Fills</u>

- NYSDEC Commissioner Policy (CP)-51: NYSDEC's Division of Environmental Remediation (DER) issued CP-51, "Soil Cleanup Guidance", in October 2010. CP-51 provides the framework and procedures for the selection of soil cleanup levels appropriate for each of the remedial programs in the NYSDEC's DER. CP-51 replaces TAGM #4046, the Petroleum Site Inactivation and Closure Memorandum, and Sections III and IV of Spill Technology and Remediation Series (STARS) Memo #1.
- NYSDEC DER-10: NYSDEC DER, Technical Guidance for Site Investigation and Remediation (dated May 2010) addresses guidance procedures applicable to site investigation and remediation activities. This document can be utilized to determine the appropriate sample frequency for excavation closure sampling and all Quality Control/Quality Assurance protocols set forth by the NYSDEC.

- 6NYCRR Part 375-6.8: Regulations set forth in this section are typically used for NYSDEC remedial program sites such as inactive hazardous waste disposal sites, brownfield, or environmental restoration sites. The regulatory values in this section can be used to assess unrestricted and restricted use soil cleanup objectives. The standards contained within Part 375 are the most current regulatory guidance available for use. However, the NYSDEC typically only utilizes this set of guidance for projects administered by the NYSDEC Hazardous Waste Group.

4.4 Groundwater Reference Values

Reference values to assess groundwater impacts are included in NYSDEC's Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1, *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, dated June 1998. Other reference values exist for drinking water and effluent standards for wastewater discharges to State water bodies. It is understood that stormwater management issues will be managed under a project-specific Stormwater Pollution Prevention Plan (SWPPP). Groundwater that is encountered during construction should be handled either under the requirements of the SWPPP or as detailed in Section 6.0 of this EMP.

4.5 New York State Guidance on Petroleum Storage Tanks

Removal of certain types of petroleum storage tanks is regulated by NYSDEC under 6 NYCRR Parts 612 to 614, which requires that tanks no longer in use be closed in place or removed. Tank decommissioning procedures are included in 6YNCRR Part 613.9(b). Contaminated soils surrounding the tanks (if present), separate phase product on the water table, or contaminants dissolved in the groundwater must be removed. If orphan underground storage tanks are discovered as part of this project, they shall be decommissioned in accordance with these regulations.

5.0 NYSDEC BENEFICIAL USE DETERMINATION (BUD)

As part of the planned Marina Development Project, the City of Rochester secured a case-specific BUD for the excavated and separated slag fill in accordance with NYSDEC Solid Waste Management Facility Regulations (6NYCRR Part 360).

LaBella completed numerous soil borings at the Site to determine among other things, the nature and extent of slag and other fill deposition on the Site. These soil borings were used to define the subsurface fill and native materials within the planned site excavation areas. This site-specific data was incorporated into the geographic information system (GIS) modeling. The GIS modeling and interpolation of the data provided the tool necessary to fully delineate the areal and vertical limits of slag layers, miscellaneous fills, reworked native and native material.

According to the review of comprehensive collection of site-specific subsurface investigation data, the deposits of slag consisted mainly of large chunks of varying diameter. Review of the boring logs indicates that the maximum size of the slag was approximately 2 inches however this sizing was limited by the 2-inch diameter of the split spoon. Larger size chunks are likely to be present as well as areas where the slag fills may be fused together. The thickness of the slag fill layer varies from zero to approximately 17 feet across the footprint of the Marina Development Project. These layers of

predominantly slag fills vary in thickness and depth. To successfully recover these slag fill layers the Site will have to be excavated in horizontal layers to minimize the comingling of non-slag regulated solid waste, reworked native soil and/or other fills. All excavated materials generated as part of the Marina Development Project shall be managed in accordance with this EMP and the Bid Documents.

To support the BUD Application, LaBella collected composite samples of slag from the recent soil borings completed at the Site. The samples were analyzed for semi-volatile organic compounds (SVOCs) and metals. No SVOCs were detected in the slag samples and all metals meet the NYSDEC Part 375 Soil Cleanup Objectives (SCOs) for the protection of groundwater and restricted residential use. The synthetic precipitation leaching procedure (SPLP) analysis was also completed to determine the leaching potential of the site slag. Very low concentrations of metals leached from the slag, thus making the material well-suited for surface or subsurface reuse.

5.1 Supporting Analytical Data for Slag and Mixed Fill Materials

Representative samples of slag and mixed fill materials were collected from within the proposed marina footprint area of the Port of Rochester Site and submitted for laboratory analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Target Analyte List (TAL) Metals including cyanide, and polychlorinated biphenyls (PCBs). Additionally, TCLP and SPLP were performed on select samples.

The following is a brief summary of the analytical results associated with samples of slag and mixed fill materials that were collected from within the proposed marina footprint area.

Laboratory analytical results are summarized in Tables 1 through 6, provided as attachments to this EMP. Pertinent soil boring logs are included in the Comprehensive Soil Boring Data Package, which is included as a separately bound report as part of the Bid Package.

VOCs

As presented in the attached Table 1, a total of fourteen (14) samples were collected from within the proposed marina footprint area and were submitted for laboratory analysis of VOCs. Four (4) of these samples contained mainly slag, while ten (10) samples contained a mixture of slag along with additional regulated fill materials. None of the samples submitted for laboratory analysis reported detections of VOCs found to be above the NYSDEC Part 375 Restricted Use Soil Cleanup Objectives for the Protection of Groundwater (SCOs for the Protection of Groundwater). Additionally, none of the fourteen (14) samples reported detections of VOCs at concentrations above the NYSDEC Part 375 Restricted Use Soil Cleanup Objectives for the Protection of Public Health – Restricted Residential Use (SCOs for the Protection of Public Health – Restricted Residential Use).

SVOCs

As presented in the attached Table 2, four (4) samples containing slag were collected from the Port of Rochester Site and submitted for laboratory analysis of SVOCs. Additionally, nine (9) other samples containing a mixture of slag and other regulated fill materials were collected from the Port of Rochester Site and submitted for laboratory analysis of SVOCs. None of these thirteen (13) samples

submitted for laboratory analysis reported detections of SVOCs above the NYSDEC Part 375 SCOs for the Protection of Groundwater. Additionally, none of the thirteen (13) samples reported detections of SVOCs at concentrations above the NYSDEC Part 375 SCOs for the Protection of Public Health – Restricted Residential Use.

Metals

As summarized in the attached Table 3, a total of thirty-four (34) samples were collected from the Port of Rochester Site and submitted for laboratory analysis of TAL Metals. Of these thirty-four (34) samples, fifteen (15) samples contained mainly slag while the remaining fourteen (14) samples contained a mixture of slag and other regulated fill materials. Metals (e.g., arsenic, barium, cadmium, and chromium) were detected at concentrations found to be above the SCOs for the Protection of Groundwater in twenty-six (26) of the thirty-four (34) samples submitted for laboratory analysis of TAL Metals. Metals were detected at concentrations above the SCOs for the Protection of Public Health – Restricted Residential Use in twenty-five (25) of the thirty-four (34) samples submitted for laboratory analysis of TAL Metals.

As presented in the attached Table 4, the TCLP and SPLP analytical results for select samples submitted for analysis of TAL Metals were compared to the TCLP Regulatory Limits and the NYSDEC Part 703 Groundwater Standards, respectively. The following sections present the results of the analyses:

- *TCLP*

  Seven (7) total samples were collected from the Port of Rochester Site and submitted for laboratory TCLP metals testing. Six (6) of these samples contained mainly slag while one (1) of these samples contained a mixture of slag and other regulated fill materials. None of the samples reported metals at concentrations found to be above the USEPA TCLP Regulatory Limits.

- *SPLP*

  Three (3) samples containing mainly slag were collected from the Port of Rochester Site and submitted for laboratory SPLP metals testing. None of the three (3) samples reported metals at concentrations found to exceed the NYSDEC Part 703 Groundwater Standards.

Based on the TCLP and SPLP laboratory analytical results, the slag located within the proposed marina footprint of the Port of Rochester Site appears to be a stable material that does not represent a concern for leaching of metals into groundwater.

Pesticides

As presented in the attached Table 5, three (3) samples containing mixed fill materials were collected from the Port of Rochester Site and submitted for laboratory analysis of pesticides. None of these three (3) samples reported pesticides at concentrations found to be above either the SCOs for the Protection of Groundwater and above the SCOs for the Protection of Public Health – Restricted Residential Use.

PCBs

As presented in the attached Table 6, two (2) samples containing mixed fill materials were collected from the Port of Rochester Site and submitted for laboratory analysis of PCBs. PCBs were not detected above the reported laboratory method detection limits (MDLs) in either of the two (2) samples submitted for analysis.

5.2 BUD Material Processing Requirements

All operations associated with the handling, storage and processing of the excavated slag-containing materials shall be completed at the Port of Rochester Marina Site. No off-site processing will be allowed under this Contract.

The processing shall consist of the on-site grinding, crushing, and mixing of excavated slag-containing and other excavated materials. The Contractor shall provide labor and equipment capable of processing excavated materials and producing a product meeting the graduation requirements of one of the NYSDOT Items outlined below. Following processing, the yielded product will be transported the City of Rochester BUD Material Storage Site, used on-site as embankment or fill, or disposed of at a NYSDEC Part 360 permitted landfill at the direction of the City's on-site representative.

The Contractor shall submit for review a Material Processing Plan that outlines the approach to completing the procedures and requirements outlined in the EMP. The Plan shall, at a minimum, indicate the Contractor's proposed processing location, equipment to be used, vehicular routing, sequencing of operations consistent with the overall project schedule and compliance with the EMP.

As part of the NYSDEC approval, all material targeted for reuse under the BUD will be required to meet specific parameters. The slag product generated by the Marina Development Project shall meet the specification requirements as defined in the New York State Department of Transportation (NYSDOT) Standard Specifications, as updated through September 6, 2012. To meet these requirements some level of processing may be necessary to achieve gradations specified under certain items. The NYSDOT specification and description for the products that shall be produced from the excavated slag-containing material include;

203.03 Embankment In Place
In general, and mineral (inorganic) soil, blasted or broken rock and similar materials of natural or man-made (i.e. recycled) origin, including mixtures thereof that are substantially free of shale or other soft, poor durability particles are considered suitable materials.

203.21 Select Structural Fill
Material consisting of rock, stone, slag, cobbles, or gravel substantially free of shale or other soft, poor durability particles.

304.15 Subbase Course, Optional Type
Types 1, 3 and 4 Subbase materials may consist of approved Blast Furnace Slag, Stone, Sand, and Gravel or blends of these materials. For Type 2, materials consisting of approved Blast Furnace Slag or of Stone which is the product of crushing or blasting ledge rock, or a Blend of Blast Furnace Slag and Stone.

Note: See NYSDOT Standard Specification for Gradiation Requirements.

5.3 Transportation and Stockpiling of Post Processed Material

In accordance with the NYSDEC-approved BUD, once the slag containing material has been processed into one of the pre-approved NYSDOT Material Types as outlined above, the resulting product will no longer be considered a Regulated Solid Waste by the NYSDEC. As such, the post-processed material stockpiles shall be transported from the Site to 1655 Lexington Avenue in the City of Rochester where the material will be staged for future use by the City of Rochester. The location of the 1655 Lexington Avenue parcel in relation to the Port of Rochester is depicted on Figure 2.

5.4 Supporting BUD Information

In addition to the formal BUD Application, the City of Rochester has provided several clarification letters to the NYSDEC regarding the re-use of the slag-based product generated as part of the project. These letters are also included in Appendix 1.

As part of the NYSDEC requirements for approval of the BUD, the NYSDEC requested that a Solid Waste Control Plan (SWCP) be created to define the proposed handling procedures for other materials excavated while exposing the recoverable slag. The SWCP developed in support of the BUD Application was intended to provide guidance regarding the excavation of only those materials required to be handled to access the recoverable slag. This excavation is only a sub-set of the entire Port of Rochester Marina excavation. This EMP is designed to cover all excavation completed at the Port of Rochester. As such, the SWCP submitted as part of the BUD Application is superseded by this EMP.

A copy of the BUD Application, including the original SWCP and supporting information, is included as Appendix 1

6.0 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

MARINA DEVELOPMENT SITE
PORT OF ROCHESTER

The EMP is intended to guide the excavation, handling, transportation, off-site stockpiling and disposal of materials excavated during construction at the Port of Rochester Site. Recoverable slag may be processed in accordance with the NYSDEC-approved BUD (i.e., to meet the requirements for reuse as select fill consistent with NYSDOT specifications). This section of the EMP details the approach and the classification system that will be used to field screen, segregate, process, transport and stockpile or dispose of excavated materials.

The Contractor acknowledges that the City of Rochester will have an Environmental Project Monitor on-site to inspect and monitor the excavation, processing, transportation and management of all excavation spoils and off-site stockpiles. In the event there is uncertainty or a difference of opinion as to the proper classification of excavated materials, the Environmental Project Monitor or the City DEQ shall determine the classification.

The Contractor shall minimize the comingling of different classifications of excavated materials and, in avoiding comingling of different classifications of fills, excavations may require removal of material in one (1) to two (2) foot lifts.

6.1 Context and Key Issues

Regulated Solid Waste and contaminated materials that exist in different media such as structures, utilities, soil, soil gas, and/or groundwater can present health risks to workers, the public, and the environment during construction and/or operation, if not properly managed. The Contractor will need to manage these materials in accordance with the applicable Rules and Regulations and clearly understand the waste characterization and disposal process so as not to compromise construction/operation schedules, budgets and long-term liability for the City of Rochester. Even if no contaminated materials are discovered, appropriate due diligence must be exercised so that the proper documentation can be secured to eliminate any long-term liability for the City of Rochester, the project and/or the Site.

On-site media within the Site are known to have been impacted by historic uses and operations conducted at the Site. This includes the use of industrial wastes as general fill across the Site. Potential sources of contamination include petroleum and hazardous substances such as volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs), fuel oils, solvents, metals, suspect asbestos containing materials, and/or historic fill.

6.2 Field-Screening Methods

Visual, olfactory and instrument-based [i.e., photoionization detector (PID)] soil screening will be performed by a qualified environmental professional during all excavations at the Site. In addition, soil screening may also include a Flame Ionization Detector (FID) or a Landtech GEM 2000 landfill gas meter (or equivalent) to evaluate for methane gases in the event that apparent organic layers are identified in the sub-surface soils or when excavating in proximity to sewers. Soil screening will be performed during all soil disturbance and/or removal work performed during development, and when evidence of impairment is encountered by the Contractor. The Contractor will be responsible to alert LaBella if evidence of impairment or the presence of regulated solid waste is encountered in areas where it is not anticipated. A LaBella Environmental Project Monitor will aid in the classification and management of all excavated material.

Excavated materials will be segregated based upon previous environmental data and in-field soil screening results into material that complies with the material classification system as described in sub-section 6.3 through 6.5 below.

6.3 Specification Numbers and EMP Material Classifications

Based on the nature of the project the earthwork related activities have been divided into several specific specification numbers for payment. Note that the specification numbers will be utilized to track pay items. Material handling requirements will be based on the cumulative information contained within this EMP and the detailed description provided in each special specification.

Specification & EMP Classifications

SPEC NUMBER		MATERIAL DESCRIPTION	UNIT	EMP SOIL/FILL CLASSIFICATION
S	203.02	Unclassified Excavation, Transportation and Disposal Off Site as Clean Fill	CY	Class 4
S	203.021	Unclassified Excavation of Recoverable Slag Layer, Transportation and off-site Stockpiling at City BUD Material Storage Site (*direct load*)	CY	Class 1
S	203.022	Unclassified Excavation, Transportation and Off-Site Disposal of Regulated Materials at a NYSDEC Part 360 Landfill	Ton	Class 3
S	203.023	Unclassified Excavation of Recoverable Slag Layer and Transportation to On-Site Processing Location	CY	Class 1
S	203.051	On-Site Processing and Management, Transportation and Off-Site Stockpiling of Slag based product to the City BUD Material Storage Site.	CY	Class 2
S	203.052	On-Site Processing and Management, Transportation and Off-Site Disposal of Regulated Materials at a NYSDEC Part 360 Landfill	Ton	Class 3
S	203.053	On-Site Processing, Stockpiling and On-Site Placement (*of slag based product*)	CY	Class 2
S	203.95	Processing of Petroleum Impacted Groundwater	GAL	NA
S	203.96	On Site Handling of Petroleum Impacted Soils, Transportation and Off-Site Disposal at a NYSDEC Part 360 Landfill	Ton	Class 3
S	203.99	Project Dewatering	LS	NA
S	206.02	Trench and Culvert Excavation (*and off-site disposal as clean fill*)	CY	Class 4
S	206.021	Trench and Culvert Excavation of Recoverable Slag Layer, Transportation and off-site Stockpiling at City BUD Material Storage	CY	Class 1
S	206.022	Trench and Culvert Excavation, Transportation and Off-Site Disposal of Regulated Materials at a NYSDEC Part 360 Landfill	Ton	Class 3
S	206.023	Trench and Culvert Excavation - Haul to On-Site Processing Location	CY	Class 1

Quantities associated with each of the specification numbers will be tracked in the field by the City of Rochester's Construction Management Team. The Contractor's unit price bid shall cover all costs of processing, stockpiling, on-site transport, and all costs related to transporting the material off-site and unloading it at its final destination. The Contractor is not to include any allowance for tipping fees at the City Bud Material Storage Site or a NYSDEC Part 360 Landfill. The City will pay all such costs

directly and outside of this contract. All costs related to the disposal of clean fill are to be included under this item.

6.4 EMP Material Classifications

This section details the classification system that will be used to field screen and segregate excavated materials during recovery of the slag layer.

During the excavation activities, soils and other materials from the excavations will be continuously visually assessed for the presence of slag, mixed fill materials, and soils exhibiting staining, odors, or elevated PID readings (i.e., greater than 25 parts per million), which are collectively referred to as "evidence of impairment."

Four (4) classes of materials are expected to be generated by the activities associated with the proposed excavation. Each of these four (4) classes of material will be managed and handled in a manner dictated by the evidence of environmental impairment, visual observations during excavation, or the existing analytical data. These four (4) classes of material are described in the table below.

Materials Handling Descriptions

Class of Material	Spec Item Number	Physical Description & Reuse Requirements
Class 1	**S203.023** **S206.023**	<u>Unclassified Excavation of Recoverable Slag Layer and Hauling to On-Site Processing Location</u> Excavation and transportation to the on-site processing location of Recoverable Slag Layer suitable for Processing and Beneficial Reuse during future City of Rochester controlled Projects under the NYSDEC-approved BUD. Predominately slag excavated with very minor quantities of mixed fill materials to be processed in accordance with the NYSDEC-approved BUD, included as Appendix 1. *Note:* Material processing, management, off-site transportation and off-site stockpiling are covered under specification Item No. 203.051 below

Class of Material	Spec Item Number	Physical Description & Reuse Requirements
	S203.021 **S206.021**	<u>Unclassified Excavation of Recoverable Slag Layer, Transportation and Stockpiling off-site at City BUD Material Storage Site (*direct load*)</u> Recoverable Slag Layer Approved for **DIRECT LOADING** and transportation to the off-site City controlled stockpiling location. This material shall be suitable for processing and Beneficial Reuse during future City of Rochester controlled Projects under the NYSDEC-approved BUD. Predominately slag excavated with very minor quantities of mixed fill materials to be processed in accordance with the NYSDEC-approved BUD, included as Appendix 1. All Material generated under Specification Item Nos. S203.021 and S206.021 shall meet the requirements of a Pre-Approved NYSDOT Specification Item Number. Determination regarding which NYSDOT Item number the post-processed slag based product satisfies will be determined by the City of Rochester's Construction Management Team.
Class 2	**S203.053**	<u>On-Site Processing, Stockpiling and On-Site Placement of Post-Processed Slag based product</u>. A small quantity of post-processed slag based product may be reused on site with formal LaBella approval. All Post-Processed Slag Product not reused on-site shall be transported off-site to a pre-determined City Controlled parcel for stockpiling (i.e., Item 203.051). Post-Processed Slag will no longer be considered a Regulated Solid Waste.
	S203.051	<u>On-Site Processing and Management, Transportation and Off-Site Stockpiling of Slag based product to the City BUD Material Storage Site.</u> All Post-Processed Slag Product not reused on-site (i.e. Item S203.053) shall be transported off-site to a pre-determined City Controlled parcel for stockpiling. Contractor will be required to consolidate off-site material storage piles per the requirements of the City of Rochester. All Material generated under Specification Item No. S203.051 shall meet the requirements of one of the Pre-Approved NYSDOT Specification Item Numbers. Determination regarding which NYSDOT Item number the post-processed slag based product satisfies will be determined by the City of Rochester's Construction Management Team.

Class of Material	Spec Item Number	Physical Description & Reuse Requirements
Class 3	**S203.022** **S206.022**	<u>Unclassified Excavation, Transportation and Off-Site Disposal of Regulated Materials at a NYSDEC Part 360 Landfill.</u> Regulated solid wastes (cinders, coals, coal, ash, railroad ties, petroleum impacted soils, and all other regulated solid waste) determined to be unsuitable for processing into a BUD Approved Slag-Based Product. All such material shall be managed on-site as regulated solid waste in accordance with all applicable Rules and Regulations. All materials shall be transported via NYSDEC Part 364 Permitted trucks for off-site disposal at a NYSDEC Part 360 permitted landfill. *Note:* Landfill Tipping Fees will be paid directly by the City of Rochester.
	S203.052	<u>On-Site Processing and Management, Transportation and Off-Site Disposal of Regulated Materials at a NYSDEC Part 360 Landfill</u> Material generated from the processing of excavated material that is determined to be unsuitable for reuse under the NYSDEC-approved BUD. Since this material originated as a Regulated Solid Waste (and therefore the by-product) contains such materials the resulting product is not suitable for disposal off-site as Clean Fill (i.e., as Class 4 Material). As such, this material shall be transported via NYSDEC Part 364 Permitted trucks for off-site disposal at a NYSDEC Part 360 permitted landfill. *Note:* Landfill Tipping Fees will be paid directly by the City of Rochester.
	S203.96	<u>On-Site Handling of Petroleum Impacted Soils, Transportation and Off-Site Disposal at a NYSDEC Part 360 Landfill.</u> Petroleum Impacted Soil: All petroleum impacted soil with waste characterization analytical results above the NYSDEC Unrestricted Use SCOs shall be disposed of off-site at a NYSDEC Part 360 permitted landfill. No on-site reuse or disposal of petroleum impacted soil will be allowed. *Note:* Landfill Tipping Fees will be paid directly by the City of Rochester.

Class of Material	Spec Item Number	Physical Description & Reuse Requirements
Class 4	**S203.02** **S206.02**	Unclassified Excavation and Disposal Off Site as Clean Fill. Surface Treatments such as asphalt, concrete, granite curbing shall be removed and recycled or disposed of at the Contractor's discretion. Topsoil, reworked native and undisturbed native material shall be re-used on-site or is to be removed from the Port of Rochester Site as clean fill. Non-impacted demolition material including any wood, metal scrap, drainage piping, masonry (e.g. concrete, block, bricks) which are determined to be physically unacceptable for re-use shall be separately stockpiled for off-site disposal or recycling. *Note:* All off-site disposal locations must be pre-approved by the City of Rochester and LaBella. Any deviation from the pre-approved Class 4 disposal site list during construction shall require additional City of Rochester and LaBella approval.

Based on the "Materials Handling Descriptions" presented above, a variety of materials are anticipated to be encountered during the excavation of the marina basin. As such, the following section adds additional details regarding the handling methods and procedures for the processing and destination of each distinct material that is expected to be encountered during the excavation process.

6.5 EMP Material Classification Details

Class 1: Recoverable Slag Layer Approved for Processing, Transportation and Stockpiling Off-Site under the NYSDEC-approved BUD.

Specification Item Numbers: 203.021, 203.023, 206.021 and 206.023

Slag layers are present throughout the Port of Rochester Site. Site-specific boring locations and cross-section transects are depicted on Figure 3. Cross sections of the fill layers are depicted on Figures 4 through 6. Recoverable slag can be characterized by fill layers that contain predominantly slag fills with less than 20% of mixed fines or non-slag material.

Generally, beneath the topsoil or pavement, a layer of mixed fill materials is underlain by the recoverable slag layer targeted for excavation and processing. The presence of slag can be visually identified during excavation. Typically slag can visually be identified in size ranging from approximately 1 inch to 10 inches in diameter. The depth of current ground surface elevation to the slag layers varies over the Port of Rochester Site. Photographs taken of the slag waste during previous subsurface investigation work at the Port of Rochester Site are included in Appendix 2. These photographs feature blue slag as it is likely that blue slag will be the predominant slag recovered from the proposed marina basin.

The recovered slag with minor amounts of mixed fill will then be processed as outlined in the NYSDEC-approved BUD and Specifications. The resulting processed slag will be free of significant quantities of mixed fill materials and, in accordance with the NYSDEC-approved BUD, will then be considered a non-regulated material. Some of this material may be re-used on-site. All post-process material not utilized on-site shall be transported to a City of Rochester controlled parcel for stockpiling until a use can be determined for this material.

If questions arise during identification of the solid waste, the City DEQ or the Environmental Project Monitor shall make the final determination for the classification on how the spoils generated during the construction activities at the Port of Rochester Site will be managed. In addition, LaBella will make the final determination regarding which excavated materials qualify for processing under the NYSDEC-approved BUD.

Class 2: Post-Processed Slag based Product to be re-used on-site under the NYSDEC Part 360 Exemption or to be temporarily staged off-site on a City-owned parcel for future re-use in accordance with the NYSDEC-approved BUD.

Specification Item Numbers: 203.051 and 206.053

The processed slag will generally be free of significant quantities of mixed fill materials and, in accordance with the NYSDEC-approved BUD, will then be considered a non-regulated material by the NYSDEC. This material will be transported to a City of Rochester controlled parcel (i.e., 1655 Lexington Avenue) for stockpiling until a use can be determined for this material.

Material Processing

To facilitate the processing of the slag, an approximately 2.5-acre portion of the Site will be used for: storage of the raw material; processing of the slag including, crushing, screening and possibly magnetic separation of iron as required for the intended beneficial use; and temporary staging of the reusable processed slag product(s). Careful planning, observation and field control of excavation of the slag layer is critical to both maximize slag recovery as well as minimizing the cost and amount of mechanical processing of the excavated raw slag fill. Staging locations shall be delineated on the Design Drawings or will be approved in the field by LaBella.

Material Excavation and On-Site Management

During site excavation, overburden materials will be handled and disposed off-site in accordance with contract documents to be developed for the Marina Development Project. When the excavation reaches the recoverable slag layer, the in-place slag fill material will be excavated and transported to the slag processing area of the Site where the slag containing fills will be processed. The raw unprocessed slag as excavated and until separated from other mixed fill materials shall be managed as a regulated solid waste in accordance with all applicable regulations. Nominal quantities of mixed fill materials separated from the slag during processing shall also be managed as a regulated solid waste in accordance with the EMP. The separated and processed slag product, subject to the NYSDEC-approved BUD, is not considered a regulated solid waste and therefore not subject to further controls under the NYSDEC Part 360 regulations.

Proposed Analytical Sampling of BUD Product

In order to ensure a consistent quality of the iron slag for beneficial use, one representative composite sample will be analyzed for each 10,000 tons of processed slag. The composite sample will consist of at least five grab samples collected by the Environmental Project Monitor. Each sample will consist of random aliquots taken from the lower, middle and upper sections of the working face of the excavation area or from the stockpile. Approximately equal volumes of each grab sample will be thoroughly manually mixed in the field or laboratory with a pre-cleaned stainless steel spoon in a pre-cleaned stainless steel or pre-cleaned plastic bowl to form the composite sample. Proper chain-of - custody procedures will be followed.

Each sample will be analyzed by a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified analytical laboratory for USEPA RCRA Metals using USEPA methods 6010 and 7471. If the analytical results exceed the NYSDEC "Protection of Groundwater" values, SPLP extraction will be performed on split samples. Additional contingency sampling and analysis may be required if the analytical data shows significantly different concentrations than the initial sampling. All data will be summarized and submitted to the NYSDEC.

Off-Site Transportation and Stockpiling

The slag based product produced in accordance with the NYSDEC-approved BUD shall be transported to the 1655 Lexington Avenue parcel and stockpiled in accordance with the Contract Documents. Contract requirements specific to the 1655 Lexington Avenue parcel are provided in Section 7.0.

Class 3: Regulated solid wastes (cinders, coals, coal, ash, railroad ties, abandoned utilities, C&D debris, petroleum impacted soils, and all other miscellaneous debris) disposed of off-site at a NYSDEC Part 360 permitted landfill.

Specification Item Numbers: 203.022, 203.052, 0203.96 and 206.022

Various mixed fill materials including, but not limited to, cinders, coals, ash, C&D debris, small quantities of slag intermixed with these fill materials, as well as other miscellaneous debris considered to be regulated solid wastes are anticipated to be encountered within the marina excavation. These mixed fill materials are inclusive of petroleum impacted soils. These mixed fill materials are generally located beneath the asphalt or topsoil layer and extend several feet beneath the ground surface. Typically these mixed fill materials are underlain by the slag layer targeted for mining.

Petroleum Impacted Subsurface Media are known to be located at the Port of Rochester Site. Petroleum Impacted Subsurface Media can be identified by the media exhibiting a petroleum-like odor, gray to black staining, and elevated readings of total VOCs on a PID. Groundwater impacted by petroleum may exhibit a petroleum odor or sheen. If questions arise during identification of Petroleum Impacted Media, the City DEQ or the Environmental Project Monitor will make the final determination regarding the classification of the material and how the spoils generated during the construction activities at the Port of Rochester Site will be managed.

In accordance with NYSDEC Part 360-1.7(b)(4)(iii), all regulated solid wastes that remain after processing or are not suitable for processing via the NYSDEC-approved BUD and contain concentrations of VOCs or SVOCs above the Soil Cleanup Levels outlined in the NYSDEC's *Final Commissioner Policy Soil Cleanup Guidance* document (CP-51, dated October 21, 2010) or those materials that are considered Regulated Solid waste based on their origin as waste from historical industrial processes (i.e., no analytical sampling is required) will be removed from the Port of Rochester Site within 60 days of staging and will be disposed of off-site at a NYSDEC Part 360 permitted landfill and will not be considered for re-use on-site.

Class 4: Clean fill (topsoil, undisturbed native soil, asphalt, concrete sidewalks, etc.) to be re-used on-site or to be removed from the Port of Rochester Site as clean fill.

Specification Item Numbers: 203.02 and 206.02

Surface treatments and materials that are excavated from the marina basin that are visually observed to be generally free of slag, mixed fill materials or petroleum impacted material and do not display evidence of impairment will be considered to be "clean fill". This includes earthen material free from regulated solid waste. This material will likely be encountered both above and below the manmade fills placed across the Site.

In addition, non-impacted demolition material including any wood, metal scrap, drainage piping, masonry (e.g. concrete, block, bricks) which are determined to be physically unacceptable for re-use shall be separately stockpiled for off-site disposal or recycling.

If demolition materials are determined to be impacted with petroleum such that the material cannot be cleaned to the satisfaction of LaBella the material shall be staged on and covered with a minimum of one layer of 6-mil polyethylene sheeting pending waste characterization by LaBella. The Contractor shall secure the sheeting and maintain such stockpiles' integrity to the satisfaction of LaBella. Stockpiling locations shall be approved by LaBella. Impacted demolition and solid waste material will be disposed off-site disposal at a permitted NYSDEC Part 360 Permitted landfill.

Cleaning of impacted demolition material shall be by physical methods such as scraping, shaking, brushing, etc. Should the Contractor utilize methods which generate liquid waste streams or if liquid waste streams (e.g. oily water, pipes or sumps filled with sludge) are present that require removal, the Contractor is responsible for proper containerization and disposal of each waste stream. The Contractor shall segregate each waste stream to the satisfaction of LaBella. Once impacted demolition and solid waste material is determined to be clean to the satisfaction of LaBella, the material can be managed in accordance with the EMP.

As noted in the Introduction, the Port of Rochester has a diverse history of development. In the mid to late 1800`s, a steel mill (Charlotte Iron Works) was constructed on the northwest portion of the Site. By 1924, the Corrigan-McKinney Steel Company was operating within the area west of the current River Street alignment. Infrastructure at that time included blast furnaces associated with the steel production, a possible coal storage area, and several rail spurs. The steel mill operations were terminated in the mid 1920's, and the buildings were subsequently demolished. It should be noted that this may not have been the only foundry historically present at the Site.

It is expected that historical infrastructure (i.e. historical slabs, foundations, railroad tracks and/or ties, etc.) may be present within the proposed redevelopment footprint. If encountered, this historical infrastructure will require removal, proper handling, management and off-site disposal in accordance with all applicable regulations. To help facilitate the bidders' understanding of the Site's history, LaBella has included Figure 7, 8 and 9 within the EMP to depict how the 1912, 1924, and 1950 infrastructure relates to the proposed redevelopment.

In addition, copies of the following Sanborn Maps are included in Appendix 3. All bidders shall evaluate this information for potential construction conflicts. The removal of any discovered historical infrastructure shall be included in the base bid specification items.

Sanborn Mapping included as Appendix 3

Map Year	Map ID	Note
1892	286 - Rochester, NY	Beach Ave.
1892	287 - Rochester, NY	Charlotte, NY
1912	5 - Charlotte, NY	April 1912
1912	8 - Charlotte, NY	April 1912
1912	7 - Charlotte, NY	Original Stamp lists Apr. 1911
1924	632 - Rochester, NY Vol. 6	McKinney Steel Company
1924	634 - Rochester, NY Vol. 6	Lighthouse Street
1950	634 - Rochester, NY Vol. 6	Lighthouse Street
1950	632 - Rochester, NY Vol. 6	City Municipal Dock Terminal BLDG.
1967	632 - Rochester, NY Vol. 6	City Municipal Dock Terminal BLDG.
1967	634 - Rochester, NY Vol. 6	Lighthouse Street

6.6 Groundwater Management Plan

General Site Dewatering

Groundwater will be encountered at the Site. At least 30 days prior to commencing work at the Site, the Contractor shall prepare and submit a Groundwater Handling and Disposal Plan to the Environmental Project Monitor for review and acceptance. This plan should account for the planned discharge to two separate locations; Monroe County Pure Waters (MCPW) and the Genesee River. Initially, pending County approval, water will be discharged to the MCPW sanitary collection system. Following stabilization, as determined by the Environmental Project Monitor, the discharge can be directed to the Genesee River. In addition to the discharge locations mentioned, the plan must include the handling of impacted groundwater which is not suitable for discharge to these locations. The plan should include the following information:

1) Identification of and information on the proposed treatment/disposal facilities to include: Facility name, address, and contact person. First preference for disposal facility shall be a local Publicly Owned Treatment Works (POTW) It is anticipated that MCPW sewers can be used;

2) Information on any intended on-site treatment/filtration; any required permits and/or approvals must be obtained;

3) If transportation off-site is necessary, the identification of and information regarding the proposed waste transporter to include: Name, address, telephone number, contact person, and USEPA and NYS Transportation ID number; and

4) Name, address, and telephone number of the NYSDOH ELAP certified laboratory proposed for analysis of any water samples.

The Contractor shall continuously maintain the groundwater level at or slightly below the elevation of all working areas until all Work requiring dewatering is installed and approved by the Owner's Representative. Dewatering activities will be conducted in accordance with NYSDEC and Monroe County Pure Water regulations. Additionally, on-site guidance will be provided by an Environmental Project Monitor.

The Contractor shall initially pump each dewatering point to a holding tank (e.g., frac tank). Samples will be collected from holding tank to determine the proper discharge location for the water. Depending on the condition of the water, the water shall be discharged under permit to the MCPW municipal sewer system, pending County approval, or to the Genesee River. Dewatering points may require separate discharge locations (i.e., one or more dewatering points to the Genesee River and/or one or more dewatering points to the MCPW Sanitary Sewer). In the event the water is discharged to the MCPW, the Contractor will be limited on the pumping rate based on the authorized MCPW Permit. The Contractor shall provide flow meters on each dewatering point and provide flow rates and track total volumes pumped to the City and Environmental Project Monitor upon request

During discharge of dewatering points to the MCPW sewer system, the Contract shall adhere to all requirements identified in the MCPW Sewer Use Permit. During discharge of developed dewatering points to the Genesee River, the Contractor shall implement at a minimum the following Best Management Practices (BMPs):

1. The Contractor shall provide all necessary containers to retain the water for at least one hour prior to discharge to aid in settling of solids and removal of any floating particles/materials.

2. The Contractor shall provide a container with three chambers or at least three containers in series that promote water to flow in the following manner:
    a. out the top of the first chamber (or container)
    b. out the bottom of the second chamber (or container)
    c. out the top of the third chamber (or container).

3. Alternatively, the Contractor can provide adequate filtration to reduce solids and to remove potential low-level petroleum impacts (e.g., sheen). In the event that filtration is utilized, the Contractor shall provide all necessary equipment, materials and labor to install and maintain the filtration equipment throughout the project.

4. The current stormwater system utilized at the Port of Rochester includes two (2) Vortechnics Stormwater Treatment Systems. The Vortechnics Stormwater Treatment Systems provides some treatment for solids removal and removal of oils. The Contractor shall utilize these systems for discharge of water to the Genesee River unless an alternate location is approved by the City and the Environmental Project Monitor.

The Contractor shall not perform dewatering directly from the excavation unless approved by the Owner and the Environmental Project Manager. Waters pumped directly from excavations cannot be pumped directly to the MCPW sanitary system or the Genesee River without pre-treatment to remove solids and reduce turbidity to a level acceptable for discharge, which may require additional settling time. At a minimum open excavation dewatering will include the removal of all solids and reduction turbidity to an acceptable level for discharge.

Impacted Groundwater Dewatering

If impacted groundwater (e.g., excavation water exhibiting petroleum or chemical odors and/or a sheen) is encountered during completion of the project, then Contractors shall follow the groundwater handling and disposal procedures in this section of the EMP. Implementation of the handling and disposal procedures outlined in this section of the EMP will be initiated subsequent to the discovery of impacted groundwater in any excavation within the Project Area.

No Impacted Groundwater shall be discharged or physically removed from the Port of Rochester Site without express written permission from the City of Rochester. In addition, it should be noted that the discharge of excavation water with constituents above the NYS Part 703 Groundwater Standards to the ground surface or a surface water body would be a violation of the NYSDEC's General Permit for Stormwater Discharges.

If petroleum-impacted groundwater is observed and such water requires removal from the excavation, then at least one (1) ±20,000-gallon, tractor-trailer type "frac" tank will be mobilized to the Project Area and placed as close to the excavation and a sanitary sewer manhole as feasible. The Contractor will be required to supply the appropriate number and size of pumps to dewater the excavation as needed. The Contractor will be required to utilized best management practices to minimize sediments during pumping.

The Impacted Groundwater will be pumped as needed into the frac tank and staged on-site pending:

- discharge under a site-specific MCPW Discharge Permit; or
- proper transport for off-site disposal.

The Environmental Project Monitor shall perform all required waste characterization sampling and analysis. If the water is determined by MCPW to be suitable for discharge to the sanitary sewer system, the Contractor shall be responsible for obtaining all permits and approvals for such discharge.

If treatment of the containerized waters is deemed necessary, then the Contractor shall submit a proposed work plan outlining the proposed ground water treatment system to the Environmental Project Monitor. If the work plan is approved by the Environmental Project Monitor, then the

Contractor shall run an initial pilot test to verify treatment system efficiency. A treated effluent sample will be collected by the Environmental Project Monitor and analyzed within 48 hours. Sample results will be submitted to MCPW for review and approval to discharge. The Contractor shall be responsible for operation and maintenance of the groundwater treatment system.

If MCPW discharge criteria cannot be met with on-site treatment methods, then transportation and proper off-site disposal of the excavation waters would be needed. In the event that off-site transportation of impacted water is necessary, a valid NYSDEC Part 364 Waste Transporter Permit shall be required. The Contractor shall be responsible for obtaining all permits and approvals for such discharge.

Impacted Groundwater will not be discharged to the Genesee River.

6.7 Waste Stream Tracking

The Environmental Project Monitor will track the off-site disposal of each waste stream on an appropriate spread sheet tracking log to allow for accurate material quantification. An example of a Material Tracking spread sheet is included in Appendix 4.

6.8 Unanticipated Environmental Issues

This EMP includes procedures and protocols to manage known and anticipated subsurface environmental impacts within the Project Area. The Environmental Project Monitor shall be consulted for details on the handling of any previously unanticipated materials discovered within the Project Area.

6.9 Community Air Monitoring Plan (CAMP)

Particulate and ambient air monitoring and the availability of dust suppression measures have been required by the NYSDEC during construction activities that disturb regulated solid wastes, petroleum-impacted soil, or impacted groundwater. Please note that based on the location of the construction area there are several sensitive receptors associated with the project. These include but are not limited to the following;

- Port of Rochester Terminal Building;
- North Parking Lots
- Adjacent Public Streets and Right of Ways;
- Monroe County Boat Launch;
- Monroe County Parks Department.

LaBella shall perform the particulate and ambient air monitoring during all site activities that have the potential to create dust or VOC emissions. The CAMP will be implemented in accordance with the requirements of the NYSDOH Generic Community Air Monitoring plan included as Appendix 1A in the NYSDEC DER-10 guidance document. However, please note that a Site-Specific CAMP has been created for the Port of Rochester parcel. A copy of this plan is included in Appendix 5.

The CAMP will be implemented during intrusive work that will disturb slag, regulated solid wastes, petroleum-impacted soil, or general site-wide dust. The CAMP may not be implemented during general earthwork activities that do not disturb such materials. The Contractor will be required to implement dust and VOC suppression measures as directed by LaBella that may include the following methods:

- Apply water on haul roads.
- Wetting equipment and excavation faces.
- Restricting vehicle speeds to 10 mph.
- Hauling material in properly taped containers.
- Spraying water in buckets during excavation and dumping.
- Reducing excavation size and/or number of excavations.

The Contractor shall have an onsite designated water truck or other dust suppression system. The Contractor shall obtain any necessary permits for hydrant usage, etc.

7.0 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

1655 LEXINGTON AVENUE
SLAG BASED PRODUCT STOCKPILE SITE

7.1 Post Processed Material Receiving Facility – 1655 Lexington Avenue

Post-processed BUD material shall be relocated and stockpiled on the 1655 Lexington Avenue located in the City of Rochester. The 1655 Lexington Avenue parcel is part of the Former Emerson Street Landfill (FESL). A site plan for the 1655 Lexington Avenue parcel is included as Figure 10.

Landfill History:

The FESL was operated by the City from the early 1930s to 1971 as a landfill. The landfill was used to dispose of ash derived from the incineration of municipal waste at the City's incinerators. Ash fill and C&D debris were the primary waste materials placed in the landfill. Landfilling began south of Emerson Street and gradually expanded northward and eastward to include areas between Emerson Street and Lexington Avenue and east of Colfax Street and south of Emerson Street. Fires due to incomplete incineration and open burning of refuse reportedly occurred in the late 1960s and early 1970s due to operational problems with the incinerators. Fill during this time frame was reportedly being placed north of Emerson Street (i.e., within the Edison Tech Site). In May of 1971 the City's incinerators were shut down; however un-incinerated municipal refuse continued to be placed north of Emerson Street until August of 1971. In August 1971, refuse disposal was ceased at FESL and disposal shifted to a different county landfill. In 1971 the landfill was officially closed and a contract for the closure of the eastern half of the landfill specified 2 feet of cover material (preferred to be a sandy loam) to be placed and compacted to 30% in 1 foot lifts. In September 1971 a contract was awarded for the closure of the western portion of the landfill.

Landfill Wastes:

The general types of wastes encountered in investigations at the FESL site include the following:

- Municipal Incinerator Ash - generally consisting of ash, cinders, charred refuse, glass and metal slag. Most ash observed in site investigations appears to be fly ash and bottom ash (clinker) from the municipal solid waste incinerators. This generally consists of soil and rock fill with traces of plastic, metal, wood, concrete, bricks, tiles, and asphalt. C&D debris observed in past investigations generally fits the definition of construction demolition debris contained in NYSDEC's Part 360. Construction demolition debris fill is common in areas adjacent to current and former roadways onsite, and particularly in the lobe of fill south of Emerson Street and east of Colfax Street.
- Soil and Municipal Refuse - This material generally consists of silty sand cover material and disposed, un-incinerated municipal refuse.
- Low-activity Radioactive Waste - This material generally consisted of a sludge-like waste material associated with glass lenses. The sludge was found to contain low levels of radioactive thorium. This material was primarily encountered in a relatively small area in the southwest portion of the FESL and was not associated with incinerator ash and refuse fills. This material was removed by Sevenson Environmental Services on behalf of the City of Rochester.

Landfill Cover System:

The majority of the existing landfill has a soil cover. Cover ranges in thickness from 0 feet up to approximately 6 feet. Cover materials generally consist of topsoil with grass, gravel, asphalt, or glacial till-derived sandy silt.

NYSDEC Inactive Hazardous Waste Disposal Site Listing:

A portion of the Former Emerson Street Landfill (FESL), including the 1655 Lexington Avenue parcel, is listed as a NYSDEC Class 3 Inactive Hazardous Waste Disposal Site (IHWDS), Site #828023, while the remaining parcels within the FESL have been de-listed. A "3" classification indicates a site "at which hazardous waste does not presently constitute a threat to the environment." Investigations have been completed since the 1980s and as recently as 2012. These studies have been performed in the past by NYSDEC and the City of Rochester to characterize the type, nature, extent, and impact resulting from waste contained in the FESL. A Soil Vapor Intrusion Assessment Report (SVI Report) dated June 2011 by LaBella included a comprehensive review of previous testing data and data collected in 2010-2011. This assessment indicated the majority of waste contained in the FESL is non-hazardous municipal incinerator ash and un-incinerated municipal refuse (north of Emerson Street).

The approximate limits of fill materials are well defined. In addition to the fill materials, a groundwater plume of chlorinated volatile organic compounds (CVOCs) that may be attributable to the FESL, or potentially due to post landfilling operations, is also present within the FESL and predominantly located at the 1655 Lexington Avenue parcel.

Site Disturbance:

Due to the environmental history of the property, any waste-fill generated during site disturbances requires special consideration and management. NYSDEC regulations regarding management of solid waste are contained in 6 NYCRR Part 360. A provision has been included in Part 360 that allows for non-hazardous solid waste to be properly managed and replaced within the confines of an inactive solid waste landfill with NYSDEC approval (see Part 360-1.7(b)(9)). Proper management requires that care be taken in planning, monitoring and testing excavated waste-fill material to confirm non-hazardous nature of the excavated materials and allow proper replacement onsite (within the confines of the landfill). The City of Rochester's *Guidance for Waste Fill Management During Site Development, Former Emerson Street Landfill* (H&A of New York, 1997) for the FESL was used as a basis for this site-specific soils management plan, and is included as Attachment 1 to this document.

The Contractor is required to manage all on-site activities in such a way that no penetration of the existing landfill cap will occur. Therefore, it is not anticipated that any landfill materials will require management as part of this Contract.

7.2 Employee Training Requirements

As noted above, the 1655 Lexington Avenue Parcel is a listed NYSDEC IHWDS. As such all Contractor employees, to included but not be limited to, operators, laborers, superintendants, surveyors, etc. are **REQUIRED** to have completed the **OSHA 40 Hour HAZWOPER - 29 CFR 1910.120 (e) General Site Personnel Training.**

Note: Truck drivers that are only delivering post-processed slag based product to the 1655 Lexington Avenue parcel are not required to have the OSHA 40-hour HAZWOPER Training. However, all truck drivers will be required to remain in their vehicle during delivery. The Contractor shall provide properly trained laborers to assist the truck drivers prepare to departure from the 1655 Lexington Avenue parcel (i.e. clean the spreader plate, roll-back and secure tarps, latch tailgates, etc.). Alternatively, any truck driver that retains the OSHA 40 Hour HAZWOPER Training may exit the vehicle.

7.3 Community Air Monitoring Plan (CAMP)

Particulate and ambient air monitoring and the availability of dust suppression measures have been required by the NYSDEC during all construction activities completed on a NYSDEC IHWDS. Please note that based on the location of the construction area there are several sensitive receptors associated with the project. These include but are not limited to the following;

- Edison Tech School and Athletic Fields;
- Adjacent Public Streets and Right of Ways;
- Adjacent Private Businesses.

LaBella shall perform the particulate and ambient air monitoring during all site activities that have the potential to create dust emissions. This includes the delivery of slag-based product and/or stockpiling or otherwise manipulating the material stockpile, etc. The CAMP will be implemented in accordance with the requirements of the NYSDOH Generic Community Air Monitoring plan included as

Appendix 1A in the NYSDEC DER-10 guidance document. However, please note that a project specific CAMP has been created for the 1655 Lexington Avenue parcel. A copy of this CAMP is included in Appendix 6.

The Contractor will be required to implement dust suppression measures as directed by LaBella that may include the following methods:

- Apply water on haul roads.
- Wetting equipment and fill material.
- Restricting vehicle speeds to 10 mph.
- Hauling material in properly taped containers.

The Contractor shall have an on-site designated water truck or other dust suppression system. The Contractor shall obtain any necessary permits for hydrant usage, etc.

8.0 EMP ROLES AND RESPONSIBILITIES

LaBella:

The responsibilities of LaBella and the Environmental Project Monitor with regard to this EMP are as follows:

- Working with the Contractors and the City DEQ to pre-determine off-site disposal locations.
- Working with the Contractors and the City DEQ to determine on-site re-location areas of regulated solid wastes.
- Work with the Contractors to monitor excavations for evidence of environmental impairment and the classification of excavated material.
- Work with the City DEQ to characterize and approve off-site disposal of regulated solid wastes and/or petroleum-impacted material.
- Direct the Contractors as to proper staging, covering, and containment of regulated solid wastes and/or petroleum-impacted material. Staging locations of will be delineated on the Design Drawings or will be approved in the field by LaBella.
- Sampling, analysis, and any additional waste stream profiling as required by a receiving NYS Part 360 permitted landfill.
- Implementation of the Health and Safety Plan (HASP) for LaBella personnel at the Port of Rochester Site. Contractors and other personnel working at the site are responsible for their own HASP (see Section 9.0).
- Implementation of the CAMP for the Port of Rochester Site during the disturbance or handling of any slag, regulated solid wastes, petroleum-impacted media, or when unknown impacts are encountered (see Section 6.0).
- Implementation of the CAMP for the 1655 Lexington Avenue parcel during the handling of any slag based product or general site activity (see Section 7.0).

Contractor:

The Contractor shall provide all labor, equipment, and materials necessary to perform the following work items specified in this EMP, including but not limited to:

- Coordination of utilities clearance.
- Segregation of slag, regulated solid wastes, and petroleum-impacted media from non-impacted media.
- Dewatering of excavations, and proper handling and of all removed wastewaters and discharge/disposal of said waters.
- Implementation of dust suppression measures as determined by LaBella or the City.
- Loading, containerizing, and transportation of impacted media from the excavation area to on-site or off-site staging or disposal locations.
- The Contractor shall not remove any material from the project site without approval from LaBella.
- The Contractor shall be responsible for providing all necessary and legally required training for its workers, including but not limited to OSHA 40-hour HAZWOPER training and respirator fit testing.
- The Contractor shall attend a meeting with the City and LaBella to discuss concerns or questions regarding the EMP. The Contractor shall coordinate the meeting.
- The Contractor shall coordinate the planned staging of materials with LaBella. Specific areas shall be designated for the staging of each material classification, so as to allow for a smooth work flow and minimize exposure routes to the public and the environment. Staging locations will be delineated on the Design Drawings or will be approved in the field by LaBella.
- During the activities that involve subsurface intrusive work, the Contractor shall notify LaBella. LaBella shall visually characterize and assess the excavated materials. The Contractor shall rely on the judgment of LaBella and manage the excavated materials accordingly.
- The Contractor is solely responsible for the means, methods, techniques, sequences and procedures for all activities under the direct control of Contractor.
- The Contractor shall perform all work under this contract in accordance with all local, state and federal laws, regulations, and requirements including but not limited to New York State Department of Environmental Conservation, United States Environmental Protection Agency, United States Department of Transportation, and Occupational Safety and Health Administration.

9.0 HEALTH AND SAFETY PLAN (HASP)

This EMP contains a site-specific HASP for the Port of Rochester developed by LaBella. This HASP is designated for LaBella personnel only. A copy of this HASP is included in Appendix 7.

The LaBella HASP is included as an example. The Contactor(s) disturbing the subsurface at the Port of Rochester will need to develop and rely on their own HASP to manage health and safety issues associated with potential exposure to site contaminants of concern and any other potential issues.

10.0 DECONTAMINATION OF EQUIPMENT

All equipment used at the Site that comes in contact with slag, regulated solid wastes, or petroleum-impacted soil will require decontamination using clean water to wash off soil and water residue from construction activities. The Contractor shall construct a temporary decontamination pad that will be used to decontaminate the earthwork related equipment.

The decontamination pad shall be constructed of two (2) layers of 6-mil reinforced polyethylene sheeting (or equivalent), with a sump, for the purposes of collecting wash water. Wash water shall be stored in 55-gallon drums, storage tanks or incorporated into tanks for treatment and proper disposal as determined by LaBella. Accumulated sediments shall be legally disposed of in accordance with all applicable regulations at a location approved by the City and/or LaBella.

The Contractor shall be responsible for all costs relating to legally disposing of the decontamination pad materials at a facility approved by the City and LaBella. All permits and waste disposal manifests shall be submitted to LaBella for review and signature prior to shipment. All permits, waste disposal manifest, and receipts associated with decontamination pad materials disposal shall be submitted LaBella.

The Contractor shall provide potable water and high-pressure sprayers for decontamination activities.

Personal decontamination procedures shall follow the procedures set forth in the HASP and the Contractor shall supply a suitable container for disposal of personal protective equipment (PPE), such as a steel drum. Disposal of PPE is the responsibility of the Contractor.

11.0 LABORATORY TESTING

All samples collected during the EMP will be submitted under chain of custody procedures to a NYSDOH ELAP certified laboratory for testing. All samples will be placed in laboratory supplied sample jars and placed in coolers with ice.

12.0 GEOREFERENCE DATA MANAGEMENT

Given the anticipated environmental conditions of concern at the Site, demolition activities will require extensive documentation and reporting to ensure that environmental conditions are adequately recorded to be efficiently addressed post-demolition.

To ensure that adequate documentation occurs, a Global Positioning System (GPS) will be used to record the locations of subsurface features of interest, environmental concerns, and sampling locations. This information will be recorded in a standard GPS tracking form and applicable portions will be transferred into Geographic Information System (GIS) software and will be used to accurately document locations and conditions of the subsurface at the time of removal. This integrated approach will be used in order to record the pertinent information while not causing excessive delays during the Contractor work. LaBella uses a Trimble GeoXT handheld GPS with ArcPad, and ESRI ArcView 9.3 GIS software.

13.0 REPORTING

LaBella will develop monthly monitoring reports during the initial earthwork phases of the project and any soil disturbance and/or removal activities in order to document excavation materials generated, regulated solid waste, petroleum impacted soil and/or groundwater, asbestos containing materials, and any other impacted materials generated. The monthly reports will include mapping depicting the areas excavated to date, the extent of any regulated materials encountered and any sampling completed. The reports will also include waste disposal documentation (weigh tickets), any laboratory data received and updated waste stream tracking information/forms. LaBella will develop quarterly reports once the initial earthwork phases of the project and any soil disturbance and/or removal activities are complete.

It is understood that the monthly and quarterly monitoring reports will also be utilized by the City to determine disbursements of funding to the Contractor.

The monthly and quarterly reports will be developed to document all excavation activities and waste disposal work and to certify that this EMP was complied with. Any deviations from the scope of work in this EMP or unanticipated environmental conditions will be clearly documented in the monthly and quarterly reports. The City will be contacted within 48 hours of any deviations from this EMP or upon encountering unanticipated environmental conditions. A final report documenting all the excavation activities and waste disposal work will be submitted to the City. The final report will be a cumulative summary of the work and will be similar to the monthly and quarterly reports (i.e., mapping, attachments, etc.), but it will include the entire project.

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Tables

Table 1

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Volatile Organic Compounds (VOCs) in Soils
Test Results in micrograms per Kilogram (µg/Kg) or parts per billion (ppb)

Constituent	Sample ID																Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Residential Use
	Bourne TP-2a (5')	B-33 (4.0'-8.0')	B-34 (4.0'-5.5')	B-37 (4.0'-8.0')	BH-5 (1.0'-4.2')	BH-6 (1.0'-4.6')	BS-5 (1.0'-6.2')	BS-7 (1.0'-2.8')	BS-9 (2.0'-4.6')	BS-37 (6.0'-7.7')	BS-38 (6.0'-7.1')	BS-39 (6.0'-6.7')	TP-7 (1.0')	Phase I Fill	Phase II Fill (a)	Phase II Fill (b)	
	Slag (color unknown)	Black & Gray Slag	Red Slag	Black Slag	Ash, Cinders, & Slag (color unknown)	Cinders & Slag (color unknown)	Ash, Cinders, Foundry Sand, & Slag (color unknown)	Foundry Sand & Slag (color unknown)	Cinders, Ash, & Slag (color unknown)	Blue/Green Slag & Ash	White/Gray Slag & Ash	Gray Slag	Red Slag	Fill Materials (With Blue/Green Slag)	Fill Materials (With Blue/Green Slag)	Fill Materials (With Blue/Green Slag)	
	1/11/2000	2000	2000	2000	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007	11/10/2006	11/10/2006	11/10/2006	9/9/2008	7/2/2009	7/6/2009	7/6/2009	
Acetone	ND<726 U	NA	NA	NA	14 J	14 J	17 J	7 J	14 J	ND<6 U	13 J	8 J	ND<40.1 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000
Benzene	3,140	ND<10.1 U	ND<1,330 U	ND<10.1 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5 U	ND<8.02 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	2,900
Carbon disulfide	ND<726 U	NA	NA	NA	ND<6 U	ND<11 U	2 J	ND<6 U	ND<5 U	ND<6 U	ND<5 U	1 J	ND<8.02 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000
Ethylbenzene	7,760	ND<10.1 U	ND<1,330 U	ND<10.1 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5 U	ND<8.02 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	30,000
Isopropylbenzene	1,680	ND<10.1 U	ND<1,330 U	ND<10.1 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5 U	ND<8.02 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000
Naphthalene	9,030	ND<50.3 U	7,150	ND<50.7 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5 U	ND<8.02 U	2.0 B, J	4.3 B,J	1.80 B,J	100,000
n-Propylbenzene	6,770	ND<10.1 U	ND<1,330 U	ND<10.1 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5 U	ND<8.02 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000
Methylene chloride	ND<726 U	NA	NA	NA	9 B	40 B	6 B	12 B	10 B	ND<6 U	16	13	ND<20.1 U	ND<5.7 U	1.1 U	ND<6.7 U	51,000
Toluene	992	ND<10.1 U	ND<1,330 U	ND<10.1 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5 U	ND<8.02 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000
1,2,4-Trimethylbenzene	48,000	ND<10.1 U	32,300	ND<10.1 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5 U	ND<8.02 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000
1,3,5-Trimethylbenzene	13,500	ND<10.1 U	ND<1,330 U	ND<10.1 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5 U	ND<8.02 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000
sec-Butylbenzene	1,210	ND<10.1 U	ND<1,330 U	ND<10.1 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5 U	ND<8.02 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000
p-Isopropyltoluene	815	ND<10.1 U	ND<1,330 U	ND<10.1 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5 U	ND<8.02 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000
m,p-Xylene	25,600	ND<10.1 U	ND<1,330 U	ND<10.1 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5 U	11.4	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000
o-Xylene	5,910	ND<10.1 U	ND<1,330 U	ND<10.1 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5 U	ND<8.02 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000

Notes:

VOC analysis by United States Environmental Protection Agency (USEPA) Method 8260B
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Residential Use.
NA denotes value not available.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.
J - Denotes an estimated value.

Table 2

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Semivolatile Organic Compounds (SVOCs) in Soils
Test Results in micrograms per Kilogram (µg/Kg) or parts per billion (ppb)

Constituent	Soil Sample Identification																			Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Residential Use
	Bourne TP-1 (0-2')	TP-6 (4.0')	TP-10 (3.0')	BH-5 (1.0'-4.2')	BH-6 (1.0'-4.3')	BS-5 (1.0'-6.2')	BS-7 (1.0'-2.8')	BS-9 (2.0'-4.6')	BS-13 (2.0'-3.1')	BS-18 (2.0'-3.4')	BS-21 (4.0'-4.5')	BS-22 (2.0'-3.0')	BS-27 (4.5'-5.5')	BS-28 (4.0'-5.8')	BS-31 (2.0'-2.9')	BS-37 (6.0'-7.7')	BS-38 (6.0'-7.1')	BS-39 (6.0'-6.7')	TP-7 (1.0')	
	Slag (color unknown)	White & Blue Slag	Red & Blue Slag	Ash, Cinders, & Slag (color unknown)	Cinders & Slag (color unknown)	Ash, Cinders, Foundry Sand, & Slag (color unknown)	Foundry Sand & Slag (color unknown)	Cinders, Ash, & Slag (color unknown)	Blue/Green Slag & Ash	Foundry Sand & Blue/Green Slag	Blue/Green Slag	Foundry Sand & Slag (color unknown)	Foundry Sand & Black Slag	Red, White, & Gray Slag & Cinders, Ash, & Foundry Sand	White, Brown, & Black Slag	Blue/Green Slag & Ash	White/Gray Slag & Ash	Foundry Sand, Ash, & Slag (color unknown)	Red Slag	
	1/11/2000	2/28/2000	2/28/2000	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007		11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006	9/9/2008	
Anthracene	ND<305 U	ND<368 U	ND<318 U	ND<2,000 U	ND<760 U	380	61 J	130 J	ND<7,200 U	ND<370 U	ND<350 U	170 J	ND<400 U	ND<360 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	ND<372 U	100,000
Acenaphthylene	ND<305 U	ND<368 U	ND<318 U	ND<2,000 U	ND<760 U	690	ND<370 U	440	ND<7,200 U	ND<370 U	ND<350 U	ND<350 U	ND<400 U	ND<360 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	ND<372 U	100,000
Acenaphthene	ND<305 U	ND<368 U	ND<318 U	ND<2,000 U	ND<760 U	30 J	26 J	ND<350 U	ND<7,200 U	ND<370 U	ND<350 U	ND<350 U	ND<400 U	ND<360 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	ND<372 U	100,000
Benzo (a) anthracene	ND<356 U	1,990	ND<318 U	330 J	ND<760 U	1,800	150 J	430	380 J	22 J	ND<350 U	400	22 J	26 J	ND<1,900 U	66 J	26 J	ND<340 U	ND<372 U	1,000
Benzo (a) pyrene	ND<356 U	1,700	ND<318 U	540 J	ND<760 U	2,200	120 J	930	ND<7,200 U	21 J	ND<350 U	410	ND<400 U	ND<360 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	ND<372 U	1,000
Benzo (b) fluoranthene	ND<356 U	3,790	ND<318 U	750 J	ND<760 U	3,300	190 J	1,600	ND<7,200 U	23 J	ND<350 U	700	26 J	31 J	ND<1,900 U	90 J	30 J	ND<340 U	ND<372 U	1,000
Benzo (g,h,i) perylene	ND<356 U	2,240	ND<318 U	540 J	ND<760 U	1,000	70 J	570	ND<7,200 U	ND<370 U	ND<350 U	200 J	ND<400 U	ND<360 U	ND<1,900 U	39 J	21 J	ND<340 U	ND<372 U	100,000
Benzo (k) fluoranthene	ND<356 U	2,610	ND<318 U	300 J	ND<760 U	990	200 J	1,600	ND<7,200 U	ND<370 U	ND<350 U	ND<350 U	ND<400 U	ND<360 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	ND<372 U	1,000
Chrysene	ND<356 U	1,950	ND<318 U	400 J	ND<760 U	1,600	130 J	430	ND<7,200 U	24 J	ND<350 U	400	ND<400 U	30 J	ND<1,900 U	61 J	23 J	ND<340 U	ND<372 U	1,000
Dibenz(a,h)anthracene	ND<356 U	630	ND<318 U	140 J	ND<760 U	330 J	22 J	200 J	ND<7,200 U	ND<370 U	ND<350 U	77 J	ND<400 U	ND<360 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	ND<372 U	330
Fluoranthene	ND<356 U	2,590	ND<318 U	510 J	ND<760 U	3,000	320 J	600	410 J	45 J	ND<350 U	780	ND<400 U	30 J	ND<1,900 U	94 J	30 J	ND<340 U	ND<372 U	100,000
Fluorene	ND<356 U	ND<368 U	ND<318 U	ND<2,000 U	ND<760 U	150 J	ND<370 U	24 J	ND<7,200 U	ND<370 U	ND<350 U	ND<350 U	ND<400 U	ND<360 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	ND<372 U	100,000
Indeno (1,2,3-cd) pyrene	ND<305 U	2,200	ND<318 U	460 J	ND<760 U	990	66 J	560	ND<7,200 U	ND<370 U	ND<350 U	200 J	ND<400 U	ND<360 U	ND<1,900 U	35 J	17 J	ND<340 U	ND<372 U	500
Naphthalene	ND<305 U	ND<368 U	ND<318 U	340 J	ND<760 U	42 J	ND<370 U	25 J	ND<7,200 U	ND<370 U	ND<350 U	ND<350 U	ND<400 U	ND<360 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	11.4	100,000
Phenanthrene	ND<305 U	554	ND<318 U	130 J	ND<760 U	1,200	260 J	79 J	ND<7,200 U	26 J	ND<350 U	710	ND<400 U	ND<360 U	ND<1,900 U	46 J	17 J	ND<340 U	ND<372 U	100,000
Pyrene	ND<305 U	2,970	ND<318 U	460 J	ND<760 U	2,500	220 J	630	460 J	36 J	ND<350 U	670	ND<400 U	32 J	ND<1,900 U	84 J	29 J	ND<340 U	ND<372 U	100,000
Total SVOCs	None Detected	23,194	None Detected	4,900	None Detected	19,202	1,835	8,248	1,250	197	None Detected	4,717	48	149	None Detected	515	193	None Detected	11.4	*Not Applicable*

Notes:

SVOC analysis by United States Environmental Protection Agency (USEPA) Method 8270C.
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Residential Use.
ND<372 U - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.
J - Denotes an estimated value.

Table 3

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Metals in Soils
Test Results in milligrams per Kilogram (mg/Kg) or parts per million (ppm)

USEPA TAL Metals	Sample Identification									Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Residential Use
	Bourne TP-1	Bourne TP-2	TP-6	TP-6	TP-8 (2-3')	TP-9	TP-10 (3')	TP-15 (6-8')	TP-18	
	Slag (color unknown)	Slag (color unknown)	White Slag	Black Slag	Slag (color unknown) & Ash	Red Slag	Red & Blue Slag	White Slag	Green Slag	
	1/11/2000	2/28/2000	2/28/2000	2/28/2000	2/28/2000	2/28/2000	2/29/2000	2/29/2000	2/29/2000	
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Arsenic	20.6	0.875	ND<6.23 U	17.6	52	ND<4.9 U	51.10	7.12	7.12	16
Barium	188	511	81	193	165	177	22.2	657	ND<4.40 U	350
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	14
Cadmium	191	2.84	ND<0.623 U	ND<0.535 U	ND<0.584 U	ND<0.49 U	0.604	ND<0.382 U	80.2	3
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Chromium	43	ND<1.96 U	2.24	11.8	15.4	3.04	3.72	17.8	ND<0.440 U	22
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	270
Total Cyanide	ND<1 U	NA	NA	NA	NA	NA	NA	NA	NA	27
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Lead	191	ND<9.80 U	ND<0.623 U	4.18	62.8	ND<0.49 U	5.33	3.29	ND<0.440 U	400
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,000
Mercury	ND<0.103 U	ND<0.0690 U	ND<0.0878 U	0.0774	ND<0.079 U	ND<0.098 U	0.240	ND<0.059 U	ND<0.0760 U	0.81
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	140
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Selenium	ND<1.08 U	ND<0.980 U	ND<6.23	ND<5.35 U	1.15	ND<4.9 U	ND<5.03 U	ND<3.82 U	ND<4.40 U	36
Silver	ND<1.08 U	ND<0.980 U	3.74	ND<2.15 U	ND<2.34 U	ND<1.96 U	ND<2.01 U	ND<1.53 U	1.76	36
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,200

Notes:

TAL Metals analysis by United States Environmental Protection Agency (USEPA) Methods 6010 and 7471 (Mercury)
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Residential Use.
ND<372 U - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.

Table 3 (continued)

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Metals in Soils
Test Results in milligrams per Kilogram (mg/Kg) or parts per million (ppm)

USEPA TAL Metals	Sample Identification							Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Residential Use
	B-21 (1.0'-4.0')	B-22 (0.0'-1.0')	B-34 (4.0'-5.5')	B-41 (0.0'-4.0')	B-21 (1.0'-4.0')	B-22 (0.0'-1.0')	B-34 (4.0'-5.5')	
	Blue Slag	Cinders & Blue Slag	Red Slag	Foundry Sand	Blue Slag	Cinders & Blue Slag	Red Slag	
	8/22/2000	8/22/2000	8/23/2000	8/30/2000	8/22/2000	8/22/2000	8/23/2000	
Aluminum	NA	NA	NA	NA	NA	NA	NA	10,000
Antimony	NA	NA	NA	NA	NA	NA	NA	10,000
Arsenic	16.5	91.2	ND<0.367 U	6.97	16.5	91.2	ND<0.367 U	16
Barium	72.9	179	12.7	80.2	72.9	179	12.7	350
Beryllium	NA	1.0	NA	NA	NA	1.0	NA	14
Cadmium	ND<0.554 U	ND<0.558 U	13.1	0.655	ND<0.554 U	ND<0.558 U	13.1	3
Calcium	NA	NA	NA	NA	NA	NA	NA	10,000
Chromium	7.41	15.5	9.38	17.4	7.41	15.5	9.38	22
Cobalt	NA	NA	NA	NA	NA	NA	NA	10,000
Copper	NA	NA	NA	NA	NA	NA	NA	270
Total Cyanide	NA	NA	NA	NA	NA	NA	NA	27
Iron	NA	NA	NA	NA	NA	NA	NA	10,000
Lead	80.9	127	15	14.8	80.9	127	15	400
Magnesium	NA	NA	NA	NA	NA	NA	NA	10,000
Manganese	NA	NA	NA	NA	NA	NA	NA	2,000
Mercury	ND<0.045 U	0.138	0.088	0.06667	ND<0.045 U	0.138	0.088	0.81
Nickel	NA	NA	NA	NA	NA	NA	NA	140
Potassium	NA	NA	NA	NA	NA	NA	NA	10,000
Selenium	1.31	2.31	ND<0.367 U	ND<0.518 U	1.31	2.31	ND<0.367 U	36
Silver	ND<1.11 U	2.22	1.79	1.94	ND<1.11 U	2.22	1.79	36
Sodium	NA	NA	NA	NA	NA	NA	NA	10,000
Thallium	NA	NA	NA	NA	NA	NA	NA	10,000
Vanadium	NA	NA	NA	NA	NA	NA	NA	10,000
Zinc	NA	NA	NA	NA	NA	NA	NA	2,200

Notes:

TAL Metals analysis by United States Environmental Protection Agency (USEPA) Methods 6010 and 7471 (Mercury)
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Residential Use.
ND<372 U - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.

Table 3 (continued)

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Metals in Soils
Test Results in milligrams per Kilogram (mg/Kg) or parts per million (ppm)

USEPA TAL Metals	Sample Identification																				Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Residential Use
	BS-9 (2.0'-4.6')		BS-12 (0.4'-0.6')		BS-18 (2.0'-3.4')		BS-21 (4.0'-4.5')		BS-22 (2.0-3.0')		BS-27 (4.5'-5.5')		BS-28 (4.0'-5.4')		BS-31 (2.0'-2.9')		BS-34 (4.0'-5.5')		BS-37 (6.0'-7.7')		BS-38 (6.0'-7.1')		
	Cinders, Ash, & Slag (color unknown)		Gray Slag		Foundry Sand & Blue/Green Slag		Blue/Green Slag		Foundry Sand & Slag (color unknown)		Foundry Sand & Black Slag		Red, White, & Gray Slag & Cinders, Ash, & Foundry Sand		White, Brown, and Black Slag		Red Slag		Blue/Green Slag & Ash		White/Gray Slag & Ash		
	11/10/2006		11/10/2006		11/10/2006		11/10/2006		11/10/2006		11/10/2006		11/10/2006		11/10/2006		11/10/2006		11/10/2006		11/10/2006		
Aluminum	21,200		NA		NA		NA		NA		NA		NA		NA		NA		54,700	E	951		10,000
Antimony	ND <15.6	U	ND <14.7	U	NA		NA		NA		NA		NA		NA		NA		ND<147	U	ND<135	U	10,000
Arsenic	ND <2.1	U	5.1		5.1		ND<2.0	U	ND<1.9	U	18.7		ND<2.2	U	18.5		ND<0.367	U	36.3	N	ND<18.0	U	16
Barium	362		NA		NA		NA		NA		NA		NA		NA		12.7		368	E	11.6	E	350
Beryllium	3.2	E	0.70	E	NA		NA		NA		NA		NA		NA		NA		42.6	N,E	ND<1.8	U	14
Cadmium	ND <0.21	U	0.32		0.27		ND<0.20	U	ND<0.19	U	2.7		ND<0.22	U	1.8		13.1		32.0	N,E	ND<1.8	U	3
Calcium	214,000		NA		NA		NA		NA		NA		NA		NA		NA		251,000	E	342,000	E	10,000
Chromium	1.8	E	9.0	E	3.9	E	1.4	E	1.4	E	62.6	E	1.7		39.0	E	9.38		37.8	N,E	ND<4.5	U	22
Cobalt	0.12	B	NA		NA		NA		NA		NA		NA		NA		NA		31.8	N,E	ND<4.5	U	10,000
Copper	1.1		16.1		NA		NA		NA		NA		NA		NA		NA		33.6	N	ND<9.0	U	270
Total Cyanide	ND<1.1	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		27
Iron	2,070		NA		NA		NA		NA		NA		NA		NA		NA		6,080	N,E	2,980	N,E	10,000
Lead	1.2	E	38.1	E	NA		NA		NA		NA		NA		NA		15		35.4	N	11.4	N,E	400
Magnesium	13,500		NA		NA		NA		NA		NA		NA		NA		NA		13,100	E	6,790	E	10,000
Manganese	162		NA		NA		NA		NA		NA		NA		NA		NA		4,460	E	150	E	2,000
Mercury	ND <0.017	U	0.063		0.024		ND<0.019	U	0.021		0.030		0.186		0.025		0.088		ND<0.020	U	0.106		0.81
Nickel	6.4	E	10.0	E	NA		NA		NA		NA		NA		NA		NA		32.5	N	ND<4.5	U	140
Potassium	3,300		NA		NA		NA		NA		NA		NA		NA		NA		4,260	N	ND<271	U	10,000
Selenium	ND <4.2	U	ND <3.9	U	NA		NA		NA		NA		NA		NA		ND<0.367	U	45.3	N	ND<36.1	U	36
Silver	ND <0.56	U	ND <0.53	U	NA		NA		NA		NA		NA		NA		1.79		7.8	N	ND<4.5	U	36
Sodium	627		NA		NA		NA		NA		NA		NA		NA		NA		3,080	N	ND<1,260	U	10,000
Thallium	ND <6.2	U	ND <5.9		NA		NA		NA		NA		NA		NA		NA		ND<58.6	U	ND<54.1	U	10,000
Vanadium	5.3		NA		NA		NA		NA		NA		NA		NA		NA		52.0	N,E	ND<4.5	U	10,000
Zinc	4.9		160		NA		NA		NA		NA		NA		NA		NA		38.3	N	25.3	N	2,200

Notes:

TAL Metals analysis by United States Environmental Protection Agency (USEPA) Methods 6010 and 7471 (Mercury)
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Residential Use.
ND<372 U - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.

Table 3 (continued)

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Metals in Soils
Test Results in milligrams per Kilogram (mg/Kg) or parts per million (ppm)

USEPA TAL Metals	Sample Identification												Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Residential Use
	BS-39 (6.0'-6.7')		TP-7 (1.0')		Phase I Fill		Phase II Fill (a)		Phase II Fill (b)		Phase I Slag (a)		Phase I Slag (b)		Phase II Slag		
	Gray Slag		Red Slag		Fill Materials (With Blue/Green Slag)		Fill Materials (With Blue/Green Slag)		Fill Materials (With Blue/Green Slag)		Blue/Green Slag		Blue/Green Slag		Blue/Green Slag		
	11/10/2006		9/9/2008		7/2/2009		7/6/2009		7/6/2009		7/1/2009		7/6/2009		6/29/2009		
Aluminum	44,400	E	9,870		1,720	E	8,800	E	12,600	E	27,300	E	23,900	E	20,600	E	10,000
Antimony	ND<151	U	ND<6.62	U	4.9	N,E	6.4	N,E	1.9	N,E	0.56	N,E	0.61	N,E	0.46	N,E	10,000
Arsenic	ND<20.1	U	10.9		9.50	E	12.4	E	29.4	E	5.1	E	7.8	E	8.3	E	16
Barium	269	E	156.0		34.6	E	162	E	312	E	171	E	120	E	124	E	350
Beryllium	4.2	E	1.39		0.31	E	2.7	E	3.5	E	4.6	E	2.9	E	2.9	E	14
Cadmium	ND<2.0	U	1.830		3.7	N,E	5.4	N,E	3.4	N,E	ND<0.014	N,E	0.048	N,E	0.67	N,E	3
Calcium	202,000		54,300		2,790*		33,800*		37,300*		251,000*		243,000		166,000		10,000
Chromium	ND<5.0	U	14.4		11.1	E	18.4	E	32.8	E	3.1	E	5.7	E	12.1	E	22
Cobalt	ND<5.0	U	6.3		0.55	E	2.2	E	6.7	E	ND<0.040	E	ND<0.040	E	1.1	E	10,000
Copper	ND<10.1	U	17.9		108*	N,E	16.7*	N,E	30.2*	N,E	3.3*	E	7.7	E	17.4	E	270
Total Cyanide	NA		11,000		NA		NA		NA		NA		NA		NA		27
Iron	4,780	N,E	50,600		177,000*		273,000*		119,000*		3,610*		7,170		51,900		10,000
Lead	ND<10.1	U	35.9		145	E	69.8	E	231	E	3.3	E	4.9	E	15.1	E	400
Magnesium	28,600	E	13,200		100*	E	2,370*	E	8,390*	E	26,100*	E	39,800	E	18,200	E	10,000
Manganese	422	E	816		43.1		3,740		4,070		256		312		634		2,000
Mercury	ND<0.016	U	0.0145		0.068		0.0161		0.10		ND<0.0057	U	0.0090		0.0280		0.81
Nickel	ND<5.0	U	14.3		11.8	E	7.5	E	9.9	E	4.1	E	5.6	E	12.0	E	140
Potassium	7,060	N,E	1,510		386	E	1,440	E	1,960	E	2,290	E	2,500	E	2,250	E	10,000
Selenium	ND<40.2	U	ND<0.552	U	ND<0.76	N,E	ND<0.77	N,E	ND<1.0	N,E	1.1	N	1.3	N	ND<0.77	N	36
Silver	ND<5.0	U	2.4		ND<0.077	E	0.47	E	2.2	E	ND<0.090	E	ND<0.091	E	ND<0.078	E	36
Sodium	ND<1,410	U	489		112		610		808		1,230		1,160		1,290		10,000
Thallium	ND<60.4	U	ND<0.662	U	ND<0.24	N,E	ND<0.23	N,E	ND<0.31	N	2.3	N	1.8	N	0.55	N	10,000
Vanadium	9.800	N,E	25.5		12.1	E	15.7	E	35.0	E	6.3	E	12.1	E	17.8	E	10,000
Zinc	ND<10.1	U	111		13.9	N,E	369	N,E	2,500	N,E	3.1	N,E	7.3	N,E	47.7	N,E	2,200

Notes:

TAL Metals analysis by United States Environmental Protection Agency (USEPA) Methods 6010 and 7471 (Mercury)
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Residential Use.
ND<372 U - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.

Table 4

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Metals in Slag & Mixed Fill Samples Results
Test Results in milligrams per Kilogram (mg/Kg) or parts per million (ppm)

USEPA TAL Metals	Slag Samples								Mixed Fill Samples	Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Restricted Residential Use	Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Groundwater
	TP-6	TP-6	TP-9	TP-15 (6-8')	TP-18	Phase I Slag (a)	Phase I Slag (b)	Phase II Slag	TP-8 (2-3')		
	White Slag	Black Slag	Red Slag	White Slag	Green Slag	Blue/Green Slag	Blue/Green Slag	Blue/Green Slag	Slag (color unknown) & Ash		
	2/28/2000	2/28/2000	2/28/2000	2/29/2000	2/29/2000	7/1/2009	7/6/2009	6/29/2009	2/28/2000		
Aluminum	NA	NA	NA	NA	NA	**27,300 E**	**23,900 E**	**20,600 E**	NA	10,000	10,000
Antimony	NA	NA	NA	NA	NA	0.56 E	0.61 E	0.46 E	NA	10,000	10,000
Arsenic	ND<6.23 U	**17.6**	ND<4.9 U	7.12	7.12	5.1 E	7.8 E	8.3 E	**52**	16	16
Barium	81	193	177	**657**	ND<4.40 U	171 E	120 E	124 E	165	400	820
Beryllium	NA	NA	NA	NA	NA	4.6 E	2.9 E	2.9 E	NA	72	47
Cadmium	ND<0.623 U	ND<0.535 U	ND<0.49 U	ND<0.382 U	**80.2**	ND<0.014 E	0.048 E	0.67 E	ND<0.584 U	4.3	7.5
Calcium	NA	NA	NA	NA	NA	**251,000**	**243,000**	**166,000**	NA	10,000	10,000
Chromium	2.24	11.8	3.04	17.8	ND<0.440 U	3.1 E	5.7 E	12.1 E	15.4	110	19
Cobalt	NA	NA	NA	NA	NA	ND<0.040 E	ND<0.040 E	1.1 E	NA	10,000	10,000
Copper	NA	NA	NA	NA	NA	3.3* E	7.7 E	17.4 E	NA	270	1,720
Total Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	27	40
Iron	NA	NA	NA	NA	NA	3,610	7,170	**51,900**	NA	10,000	10,000
Lead	ND<0.623 U	4.18	ND<0.49 U	3.29	ND<0.440 U	3.3 E	4.9 E	15.1 E	62.8	400	450
Magnesium	NA	NA	NA	NA	NA	**26,100 E**	**39,800 E**	**18,200 E**	NA	10,000	10,000
Manganese	NA	NA	NA	NA	NA	256	312	634	NA	2,000	2,000
Mercury	ND<0.0878 U	0.0774	ND<0.098 U	ND<0.059 U	ND<0.0760 U	ND<0.0057 U	0.0090	0.0280	ND<0.079 U	0.81	0.73
Nickel	NA	NA	NA	NA	NA	4.1 E	5.6 E	12.0 E	NA	310	130
Potassium	NA	NA	NA	NA	NA	2,290 E	2,500 E	2,250 E	NA	10,000	10,000
Selenium	ND<6.23	ND<5.35 U	ND<4.9 U	ND<3.82 U	ND<4.40 U	1.1	1.3	ND<0.77	1.15	180	4
Silver	3.74	ND<2.15 U	ND<1.96 U	ND<1.53 U	1.76	ND<0.090 E	ND<0.091 E	ND<0.078 E	ND<2.34 U	180	8.3
Sodium	NA	NA	NA	NA	NA	1,230	1,160	1,290	NA	10,000	10,000
Thallium	NA	NA	NA	NA	NA	2.3	1.8	0.55	NA	10,000	10,000
Vanadium	NA	NA	NA	NA	NA	6.3 E	12.1 E	17.8 E	NA	10,000	10,000
Zinc	NA	NA	NA	NA	NA	3.1 E	7.3 E	47.7 E	NA	10,000	2,480

Notes:

TAL Metals analysis by United States Environmental Protection Agency (USEPA) Methods 6010 and 7471 (Mercury)
Bold type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Restricted Residential Use.
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Groundwater.
ND - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.
NA - Denotest the constituent was not part of the laboratory analysis for this sample.
E - Denotes that the constituent exceeded the calibration range of the instrument and is only an estimated value.

Table 4

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Toxicity Characteristic Leaching Procedure (TCLP) Results
Test Results in milligrams per Liter (mg/L) or parts per million (ppm)

USEPA TAL Metals	Slag Samples							Mixed Fill Sample	USEPA TCLP Regulatory Limits
	TP-6 (TCLP)	TP-6 (TCLP)	TP-9 (TCLP)	TP-15 (6-8') (TCLP)	T-16 (2') (TCLP)	TP-17 (8') (TCLP)	TP-18 (TCLP)	TP-8 (2-3') (TCLP)	
	White Slag	Black Slag	Red Slag	White Slag	Slag (color unknown)	Gray/Blue Slag	Green Slag	Slag (color unknown) & Ash	
	2/28/2000	2/28/2000	2/28/2000	2/29/2000	2/20/2000	2/29/2000	2/29/2000	2/28/2000	
Arsenic	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	5
Barium	0.1	0.25	0.3	0.35	0.60	0.4	0.75	0.2	100
Cadmium	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	1
Chromium	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	5
Lead	ND<0.025 U	ND<0.025 U	ND<0.025 U	0.045	0.045	0.045	0.045	ND<0.025 U	5
Mercury	ND<0.0020 U	ND<0.0020 U	ND<0.0020 U	ND<0.0020 U	ND<0.0020 U	ND<0.0020 U	ND<0.0020 U	ND<0.0020 U	0.2
Selenium	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	1
Silver	ND<0.1 U	ND<0.1 U	ND<0.1 U	ND<0.1 U	ND<0.1 U	ND<0.1 U	ND<0.1 U	ND<0.1 U	5

Notes:

TCLP analysis by United States Environmental Protection Agency (USEPA) Method 1311.
ND - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.

Table 4

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Sythetic Precipitation Leaching Procedure (SPLP) Results
Test Results in micrograms per Liter (µg/L) or parts per billion (ppb)

USEPA TAL Metals	Slag Samples						NYSDEC Part 703 Groundwater Standards
	Phase I Slag (a) (SPLP)		Phase I Slag (b) (SPLP)		Phase II Slag (SPLP)		
	Blue/Green Slag		Blue/Green Slag		Blue/Green Slag		
	7/1/2009		7/6/2009		6/29/2009		
Aluminum	937		676		231		NL
Antimony	ND<5.0	U	ND<5.0	U	ND<5.0	U	3
Arsenic	ND<5.0	U	ND<5.0	U	ND<5.0	U	25
Barium	208		75.6	B	28.1	B	1,000
Beryllium	ND<5.0	U	ND<5.0	U	ND<5.0	U	NL
Cadmium	ND<5.0	U	ND<5.0	U	ND<5.0	U	5
Calcium	74,600		45,700		36,800		NL
Chromium	ND<5.0	U	1.4	B	ND<5.0		50
Cobalt	ND<5.0	U	ND<5.0	U	ND<5.0	U	NL
Copper	ND<5.0	U	ND<5.0	U	ND<5.0	U	200
Total Cyanide	ND<5.0	U	ND<5.0	U	ND<5.0	U	200
Iron	ND<5.0	U	ND<5.0	U	ND<5.0	U	300
Lead	ND<5.0	U	ND<5.0	U	ND<5.0	U	25
Magnesium	79.9	B	ND<5.0	U	102	B	NL
Manganese	ND<5.0	U	ND<5.0	U	ND<5.0	U	300
Mercury	ND<5.0	U	ND<5.0	U	ND<5.0	U	0.7
Nickel	ND<5.0	U	ND<5.0	U	ND<5.0	U	100
Potassium	2,070		2,860		1,170		NL
Selenium	**33.4**		**26**	**B,G**	16.2	B	20
Silver	1.9	N	1.3	B	**86**	**B**	50
Sodium	9,290		11,200		**20,000**		20,000
Thallium	ND<5.0	U	ND<5.0	U	ND<5.0	U	NL
Vanadium	12.2	B	8.9	B	203	B	NL
Zinc	10.1	B	8.3	B	ND<5.0	U	NL

Notes:

SPLP Metals analysis by United States Environmental Protection Agency (USEPA) Method 1312.
NL - Denotes that a standard has not been listed for this constituent.
ND - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.
Bold type denotes an exceedance to the NYSDEC Part 703 Groundwater Standards.

Table 5

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Pesticides in Mixed Fill Samples
Test Results in micrograms per Kilogram (µg/Kg) or parts per billion (ppb)

Parameter/Sample ID #	Mixed Fill Samples			Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Restricted Residential Use	Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Groundwater
	BS-5 (1.0' to 6.2')	BS-7 (1.0' to 2.8')	BS-9 (2.0' to 4.6')		
	Ash, Cinders, Foundry Sand & Slag (color unknown)	Foundry Sand & Slag (color unknown)	Cinders, Ash, & Slag (color unknown)		
	3/1/2007	3/1/2007	3/1/2007		
beta-BHC	24	ND <1.9	ND <1.8	360	90
delta-BHC	ND <19	1.6 J	1.4 J	100,000	250
gamma-BHC	ND <19	1.2 J	ND <1.8	100,000	100,000
4,4'-DDD	ND <19	1.0 J	ND <1.8	13,000	14,000
4,4'-DDT	35	2.5	2.2	7,900	136,000
Diedrin	ND <19	ND <1.9	1.1 J	200	100
Endosulfan II	9.4 J	0.95 J	0.85 J	24,000	102,000
Endosulfan Sulfate	14 J	0.99 J	1.0 J	24,000	1,000,000
Endrin	17 J	ND <1.9	ND <1.8	11,000	60
Endrin Aldehyde	ND <19	ND <1.9	1.2 J	100,000	100,000
Heptachlor Epoxide	ND <19	ND <1.9	0.92 J	2,100	380
Methoxychlor	20	2.0	ND <1.8	100,000	100,000

Pesticides analysis by United States Environmental Protection Agency (USEPA) Method 8081B.
NA denotes value not available.
ND <19 - Denotes that the compound was not detected above the reported laboratory method detection limit.
J - Denotes an estimated value.

Table 6

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Polychlorinated Biphenyls (PCBs) in Mixed Fill Samples
Test Results in micrograms per Kilogram (µg/Kg) or parts per billion (ppb)

Parameter/Sample ID #	Mixed Fill Samples		Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Restricted Residential Use	Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Groundwater
	HA-114 (2.0'-4.0')	HA-117 (2.0'-4.0')		
	Foundry Sand & Slag (color unknown	Foundry Sand & Slag (color unknown		
	6/2/2000	6/2/2000		
PCB 1016	ND	ND	1,000	3,200
PCB 1221	ND	ND	1,000	3,200
PCB 1232	ND	ND	1,000	3,200
PCB 1242	ND	ND	1,000	3,200
PCB 1248	ND	ND	1,000	3,200
PCB 1254	ND	ND	1,000	3,200
PCB 1260	ND	ND	1,000	3,200

Notes:

PCBs analysis by United States Environmental Protection Agency (USEPA) Method 8082.
ND - Denotes compound not detected above the reported laboratory method detection limits.

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Rochester, New York 14614

Figures

Port Marina 90% Design Footprint

0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

N W E S

Legend

Port Marina 90% Design Footprint

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PROJECT/CLIENT

ENVIRONMENTAL MANAGEMENT PLAN

PORT MARINA PROJECT
ROCHESTER, NEW YORK

EDGEWATER RESOURCES, LLC

DRAWING TITLE

SITE LOCATION MAP WITH
7.5-MINUTE USGS TOPOGRAPHIC
QUADRANGLE

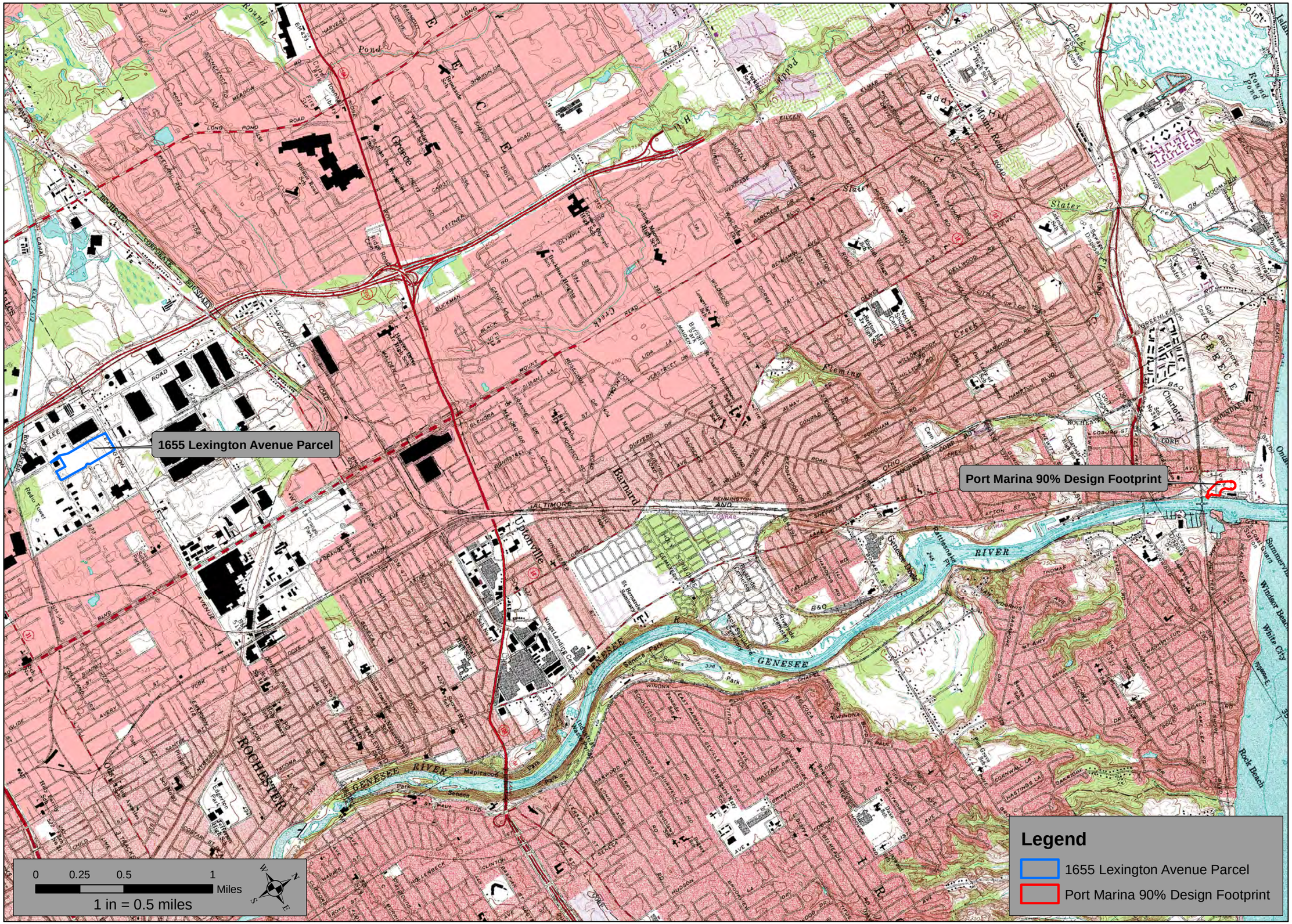
ISSUED FOR: REVIEW
DESIGNED BY: IPJ
DRAWN BY: IPJ
REVIEWED BY: DEP
DATE: 3/20/2013

PROJECT/DRAWING NUMBER

210660

FIGURE 1

Path: I:\Edgewater Resources LLP\210660 - Port Marina\Drawings\GIS\90% Volumes\EMP Figs\FINAL EMP FIGS\Figure 1 Port Site Loc (IPJ 2013-03-20).mxd



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PROJECT/CLIENT

ENVIRONMENTAL MANAGEMENT PLAN
PORT MARINA PROJECT
ROCHESTER, NEW YORK
EDGEWATER RESOURCES, LLC

DRAWING TITLE

LOCATION OF SLAG STORAGE
SITE: 1655 LEXINGTON AVE.

ISSUED FOR: REVIEW
DESIGNED BY: IPJ
DRAWN BY: IPJ
REVIEWED BY: DEP
DATE: 3/20/2013

PROJECT/DRAWING NUMBER

210660

FIGURE 2

Path: I:\Edgewater Resources LLP\210660 - Port Marina\Drawings\GIS\90% Volumes\EMP Figs\FINAL EMP FIGS\Figure 2 Large-Scale 1655 Lexington 11X17 (IPJ 2013-03-20).mxd

Legend

- December 2012 Soil Boring
- December 2012 Soil Boring/Monitoring Well
- Extraction Well
- Observation Wells
- Data Gap Monitoring Well
- Data Gap Boring

Previous Investigation Points

Type

- Soil Boring
- Hand Auger Point
- Monitoring Well
- Test Pit
- Cross Section Transects
- Port Marina 90% Design Footprint

LAKE AVE

LAKELAND AVE

FLEMING ST

HINCHER ST

PORTSIDE DR

CORRIGAN ST

RIVER ST

Genesee River

A

A'

B

B'

C

C'

MW-B12-03

MW-B12-02

MW-B12-01

MW-B12-04

MW-B12-05

B12-06

B12-04

OB-02

OB-01

PW-01

MW09-2/B09-13

MW09-1/B09-19

MW09-3/B09-28

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PORT OF ROCHESTER

ENVIRONMENTAL MANAGEMENT PLAN

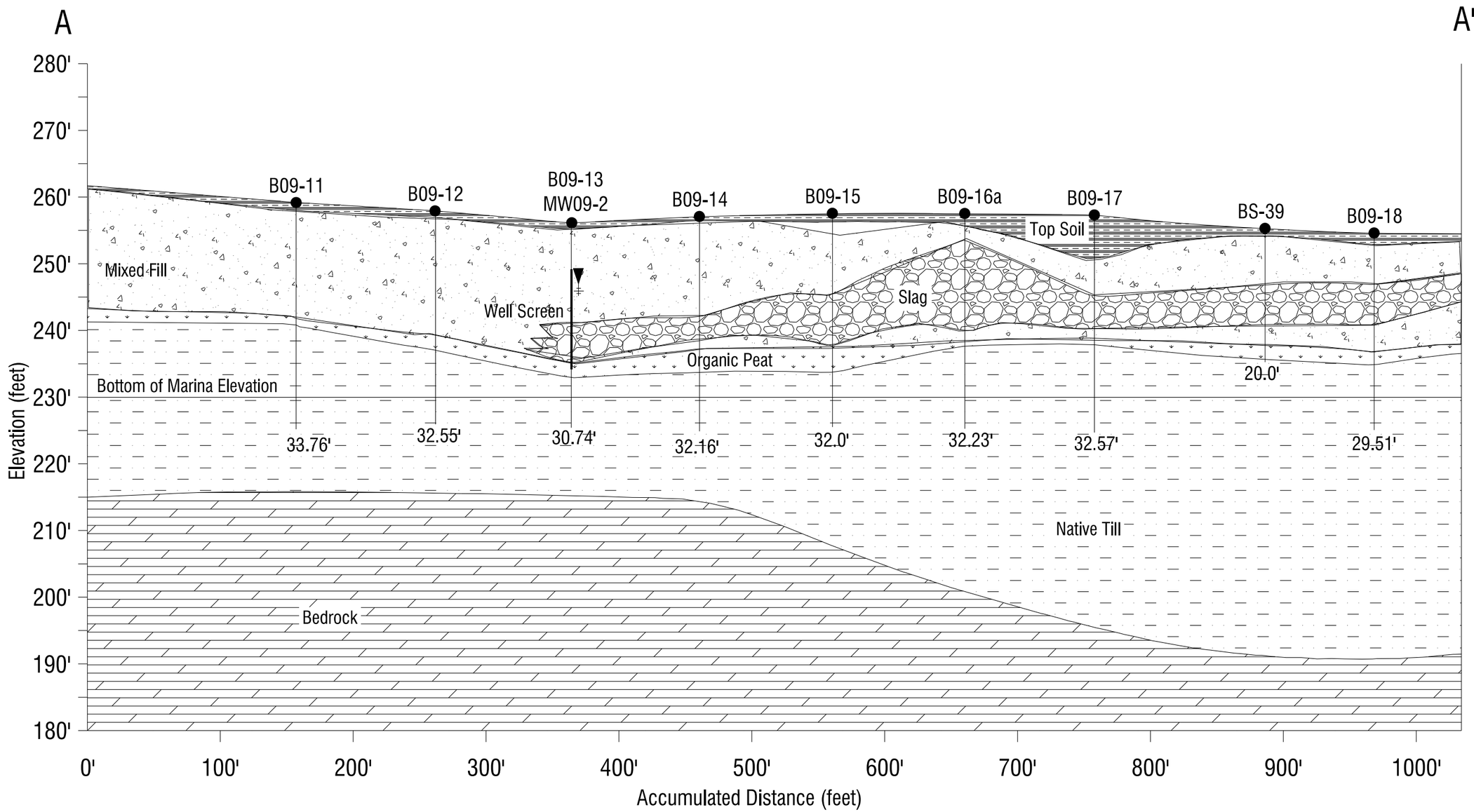
BORINGS & CROSS SECTION TRANSECTS

Sources:
(1) City of Rochester Site Survey, 2008.
(2) Passero Figure 7, updated April 2009.
(3) LaBella Port Redevelopment Mapping 2003
(4) LaBella GIS data 2005 through 2009
(5) City of Rochester GIS (buildings and street features)

1 inch = 150 feet

210660

FIGURE 3



LEGEND

- Approximate Static Groundwater Elevation
- Topsoil
- Mixed Fill
- Slag
- Organic Peat
- Native Till
- Bedrock
- Soil Boring Location
- 30.0' Depth to Boring Bottom

NOTE:

1. Formations based on contours generated using Golden Surfer 8 software.
2. Subsurface formations inferred in areas below the terminal depth of borings and beyond the first and last point.
3. Bedrock surface based on points that do not fall near the cross section axis and therefore not shown.

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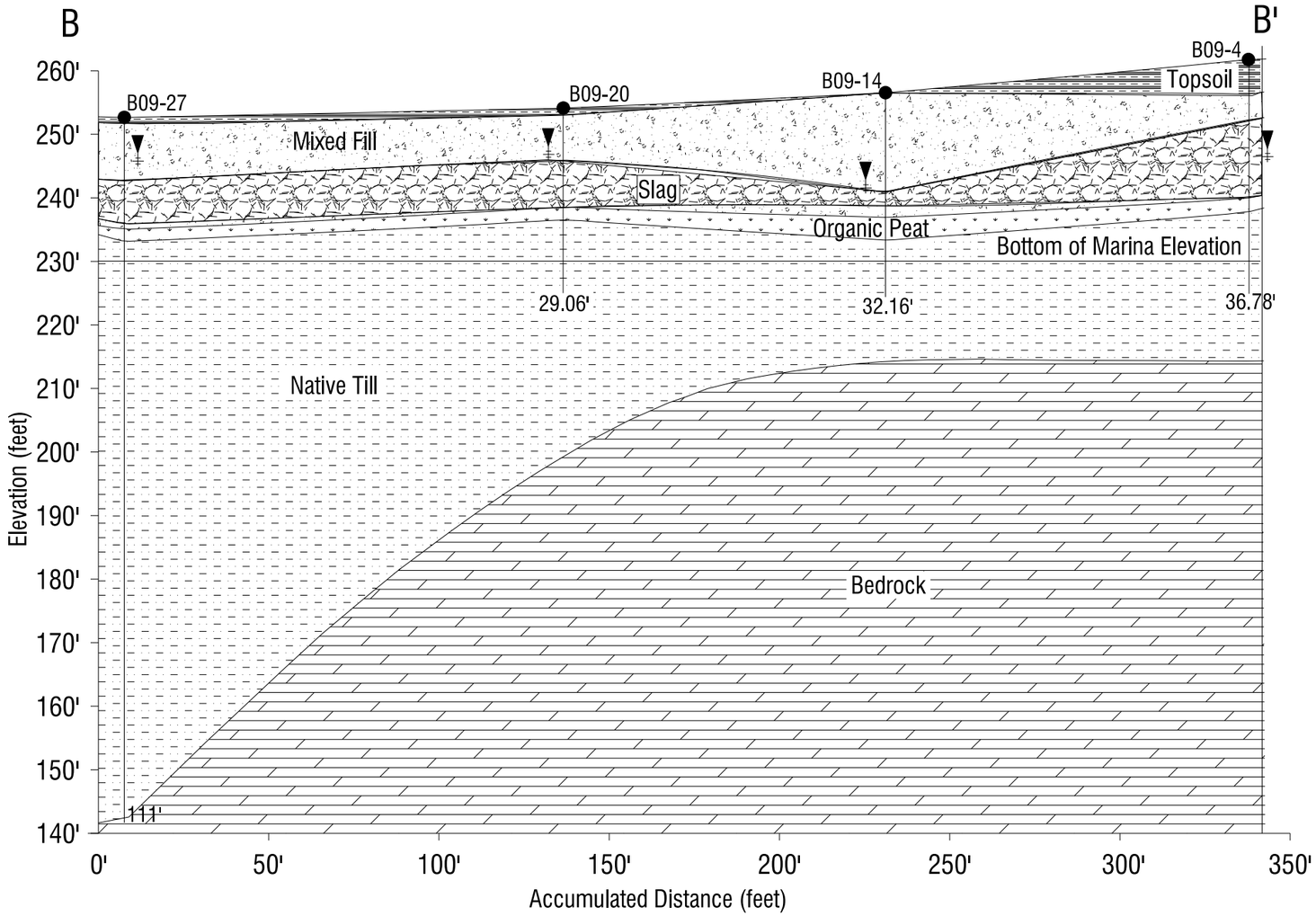
PROJECT/CLIENT
ENVIRONMENTAL MANAGEMENT PLAN
Port of Rochester
Proposed Marina
Rochester, New York

DRAWING TITLE
GEOLOGIC CROSS SECTION A-A'

ISSUED FOR: FINAL
DESIGNED BY: XXX
DRAWN BY: XXX
REVIEWED BY: XXX
DATE: MARCH 2013
XXXXXXXXXXXXXXXXXXXX

PROJECT/DRAWING NUMBER
210660

FIGURE 4



GENERAL GROUNDWATER FLOW DIRECTION

LEGEND

- Approximate Static Groundwater Elevation
- Topsoil
- Fill - Regulated Waste
- Slag
- Organic Peat
- Native Till
- Bedrock
- Soil Boring Location
- 30.0' Depth to Boring Bottom

NOTE:

1. Formations based on contours generated using Golden Surfer 8 software.
2. Subsurface formations inferred in areas below the terminal depth of borings and beyond the first and last point.
3. Bedrock surface based on points that do not fall near the cross section axis and therefore not shown.

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PROJECT/CLIENT
ENVIRONMENTAL MANAGEMENT
PLAN
Port of Rochester
Proposed Marina
Rochester, New York

DRAWING TITLE
GEOLOGIC CROSS SECTION
B-B'

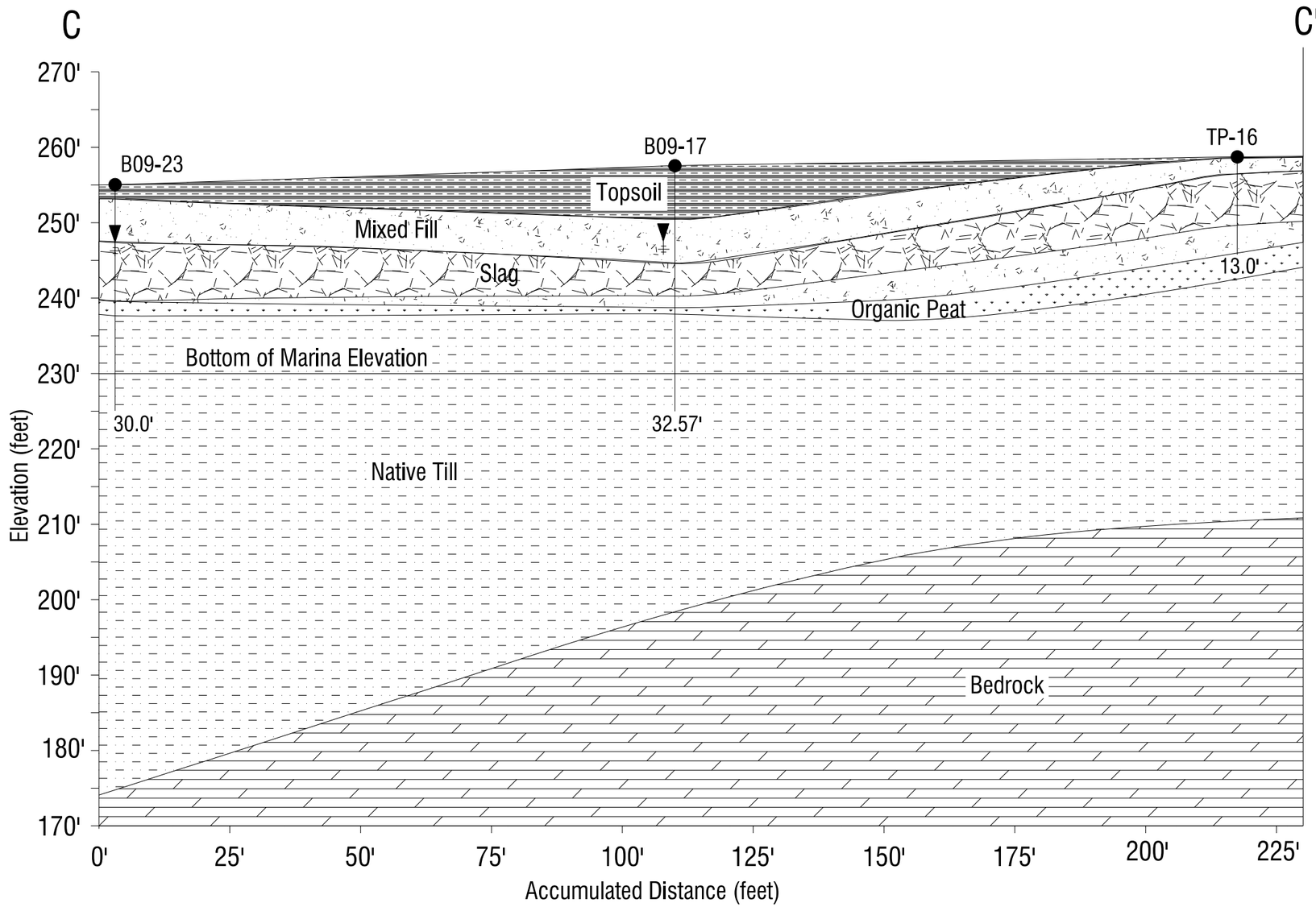
DESIGNED BY: XXX
DRAWN BY: XXX
REVIEWED BY: XXX

ISSUED FOR
FINAL

DATE:
XXXXXXXXXXXXXXXXXXXX

PROJECT/DRAWING NUMBER
210660

FIGURE 5



GENERAL GROUNDWATER FLOW DIRECTION

LEGEND

- Approximate Static Groundwater Elevation
- Topsoil
- Mixed Fill
- Slag
- Organic Peat
- Native Till
- Bedrock
- Soil Boring Location
- 30.0' Depth to Boring Bottom

NOTE:

1. Formations based on contours generated using Golden Surfer 8 software.
2. Subsurface formations inferred in areas below the terminal depth of borings and beyond the first and last point.
3. Bedrock surface based on points that do not fall near the cross section axis and therefore not shown.

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PROJECT/CLIENT
ENVIRONMENTAL MANAGEMENT
PLAN
Port of Rochester
Proposed Marina
Rochester, New York

DRAWING TITLE
GEOLOGIC CROSS SECTION
C-C'

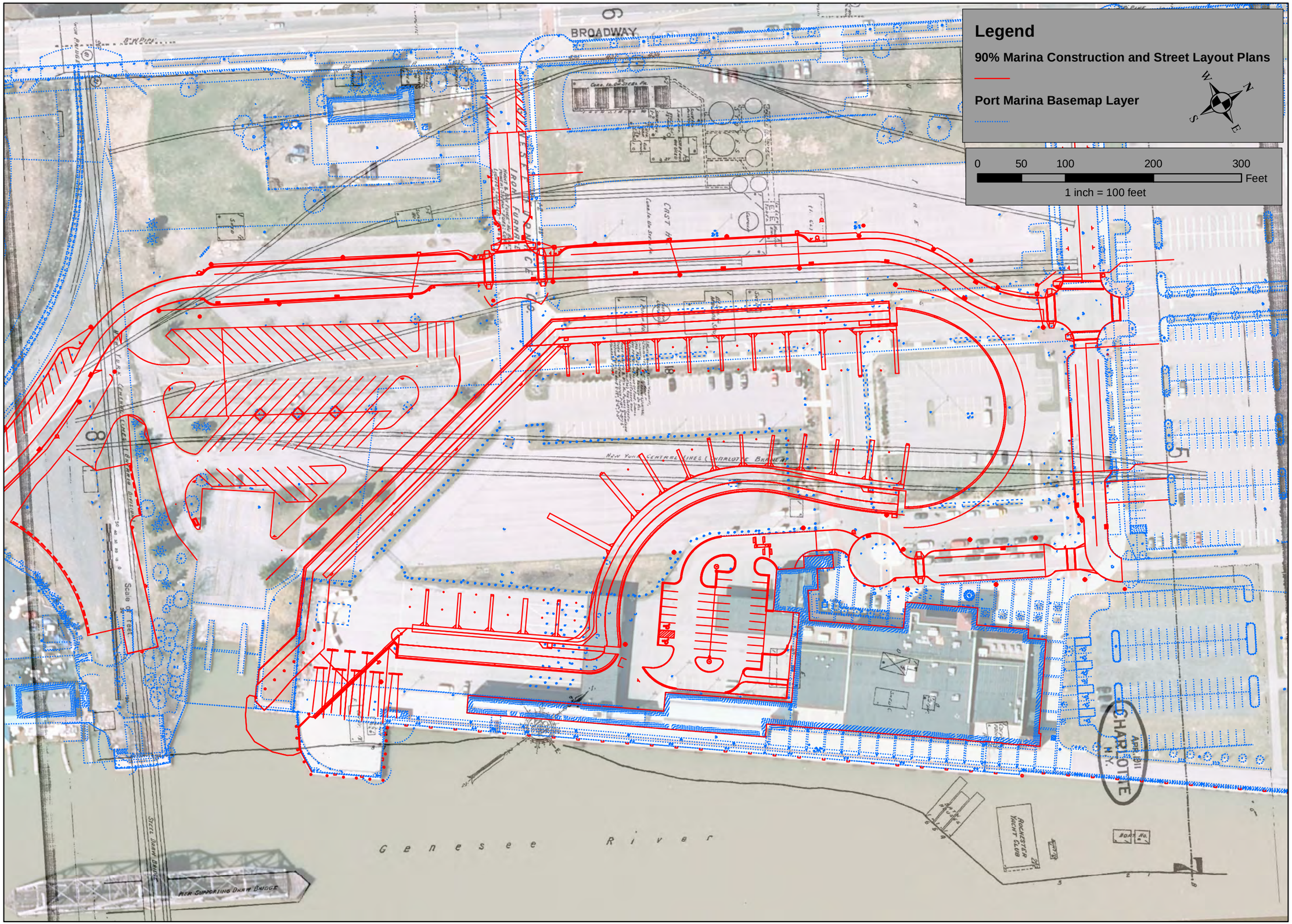
DESIGNED BY: XXX
DRAWN BY: XXX
REVIEWED BY: XXX

ISSUED FOR
FINAL

DATE: MARCH 2013

PROJECT/DRAWING NUMBER
210660

FIGURE 6



Legend

90% Marina Construction and Street Layout Plans

Port Marina Basemap Layer

0 50 100 200 300 Feet

1 inch = 100 feet

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PROJECT/CLIENT

ENVIRONMENTAL MANAGEMENT PLAN

PORT MARINA PROJECT
ROCHESTER, NEW YORK

EDGEWATER RESOURCES, LLC

DRAWING TITLE

PORT MARINA-AREA HISTORIC SANBORN MAP - 1912

ISSUED FOR: REVIEW

DESIGNED BY: IPJ

DRAWN BY: IPJ

REVIEWED BY: DEP

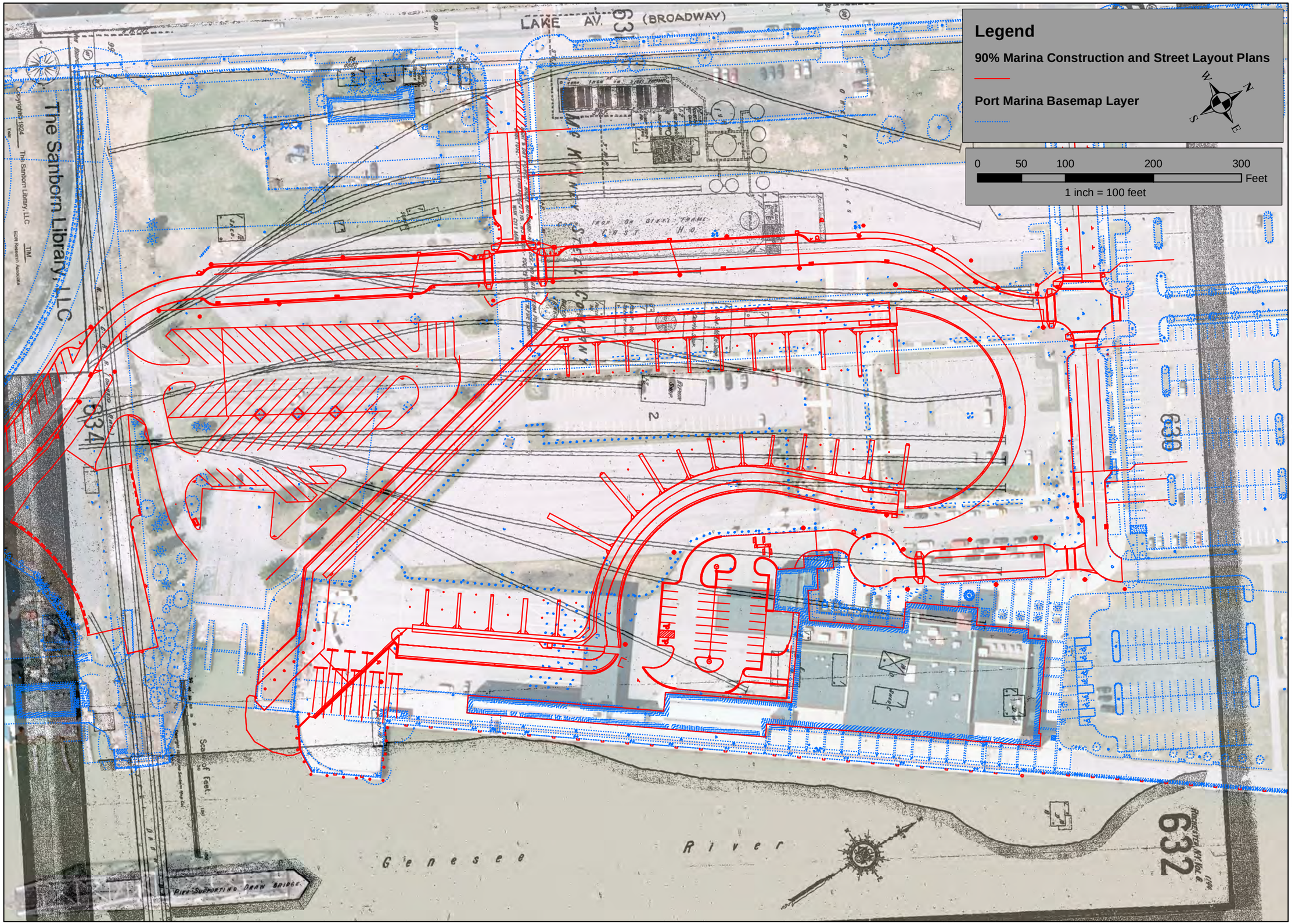
DATE: 3/12/2013

PROJECT/DRAWING NUMBER

210660

FIGURE 7

Path: I:\Edgewater Resources LLP\210660 - Port Marina\Drawings\GIS\90% Volumes\EMP Figs\Figure 7 Sanborn 1912 Overlay 11X17 (IPJ 2013-03-14).mxd



Legend

90% Marina Construction and Street Layout Plans

Port Marina Basemap Layer

0 50 100 200 300 Feet

1 inch = 100 feet

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PROJECT/CLIENT

ENVIRONMENTAL MANAGEMENT PLAN

PORT MARINA PROJECT
ROCHESTER, NEW YORK

EDGEWATER RESOURCES, LLC

DRAWING TITLE

PORT MARINA-AREA HISTORIC
SANBORN MAP - 1924

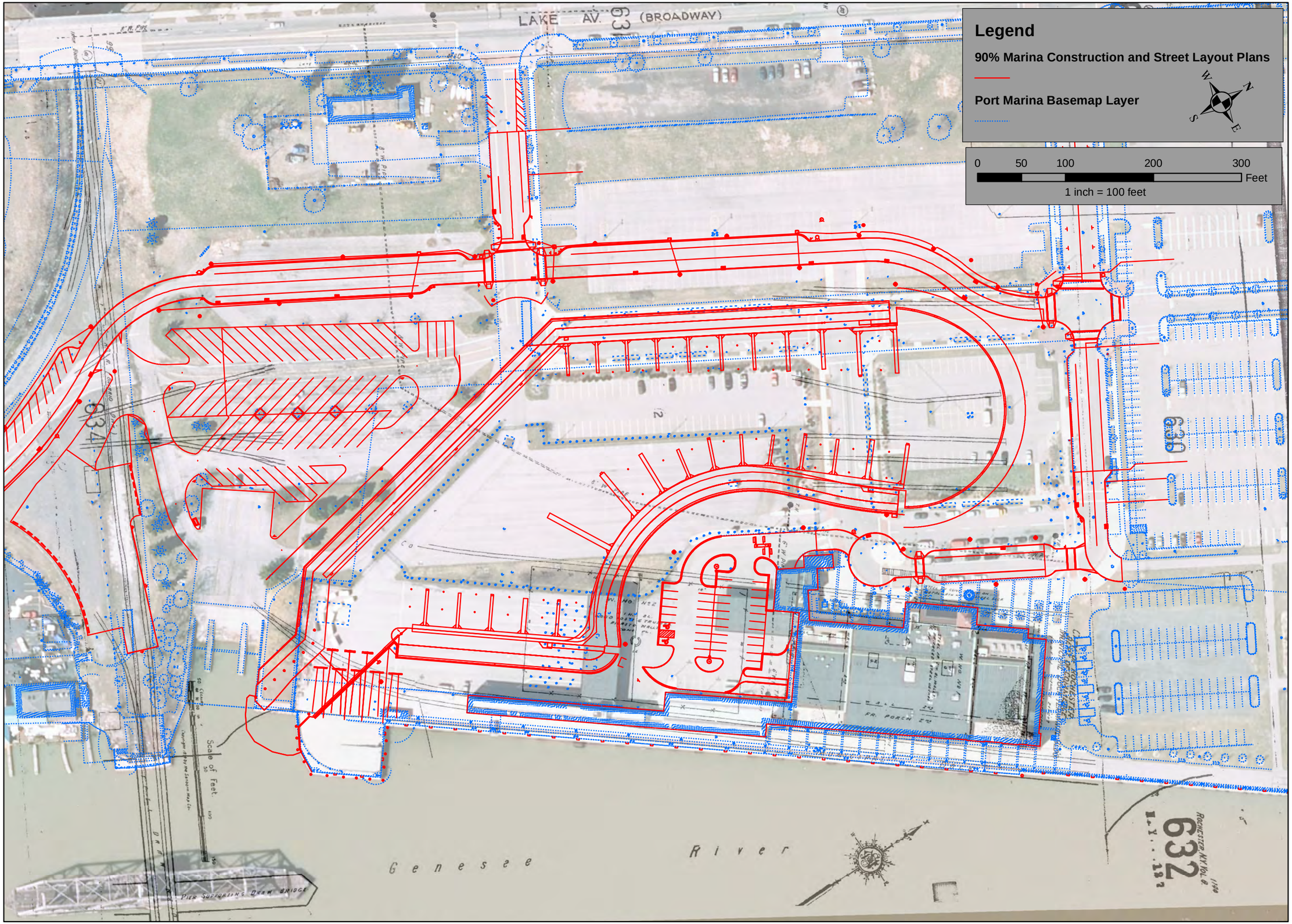
ISSUED FOR: REVIEW
DESIGNED BY: IPJ
DRAWN BY: IPJ
REVIEWED BY: DEP
DATE: 3/12/2013

PROJECT/DRAWING NUMBER

210660

FIGURE 8

Path: I:\Edgewater Resources LLP\210660 - Port Marina\Drawings\GIS\90% Volumes\EMP Figs\FINAL EMP FIGS\Figure 8 Sanborn 1924 Overlay 11X17 (IPJ 2013-03-14).mxd



Legend

90% Marina Construction and Street Layout Plans

Port Marina Basemap Layer

0 50 100 200 300 Feet

1 inch = 100 feet

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PROJECT/CLIENT

ENVIRONMENTAL MANAGEMENT PLAN

PORT MARINA PROJECT
ROCHESTER, NEW YORK

EDGEWATER RESOURCES, LLC

DRAWING TITLE

PORT MARINA-AREA HISTORIC SANBORN MAP - 1950

ISSUED FOR: REVIEW

DATE: 3/12/2013

DESIGNED BY: IPJ

DRAWN BY: IPJ

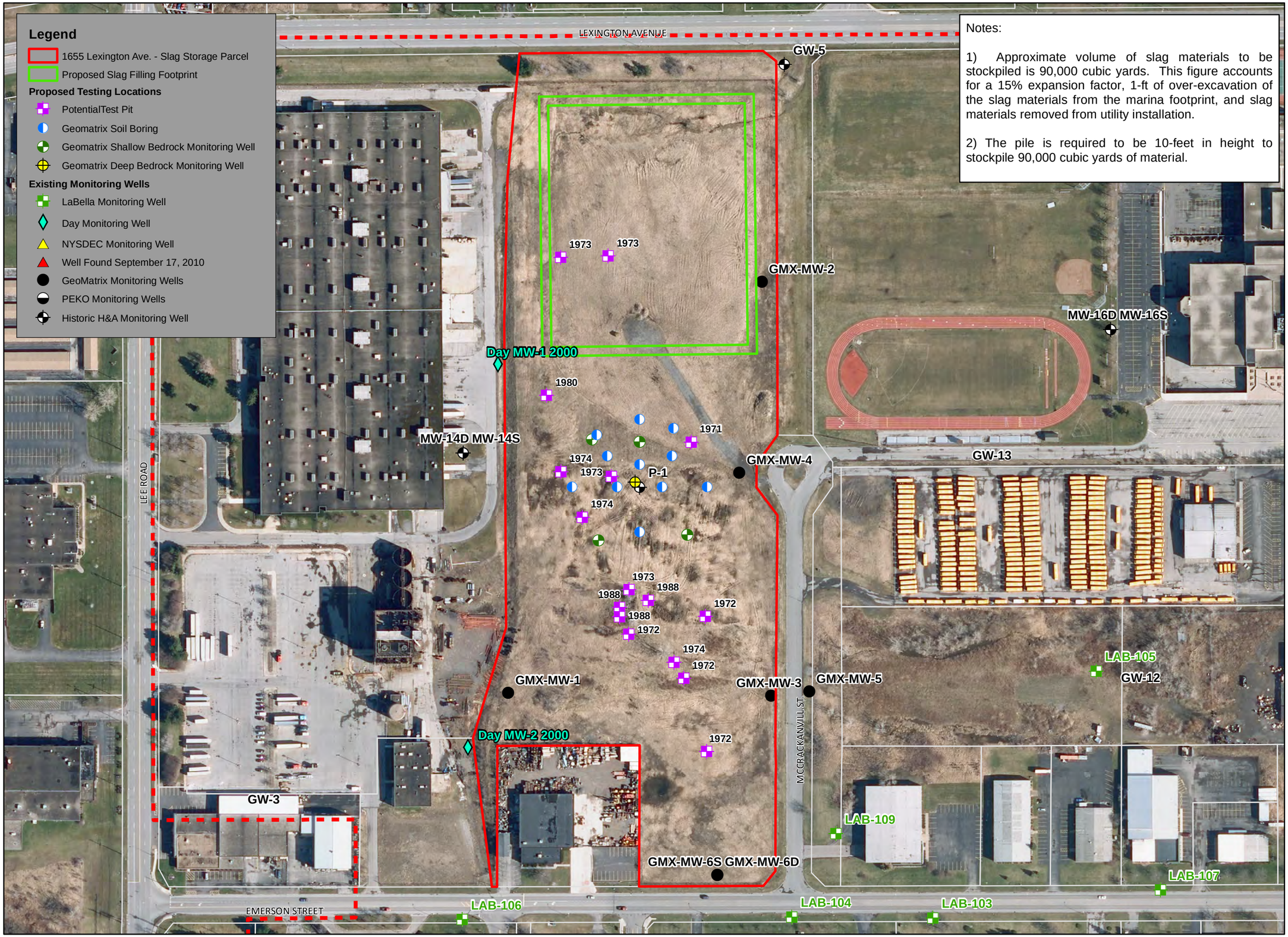
REVIEWED BY: DEP

PROJECT/DRAWING NUMBER

210660

FIGURE 9

Path: I:\Edgewater Resources LLP\210660 - Port Marina\Drawings\GIS\90% Volumes\EMP Figs\Figure 9 Sanborn 1950 Overlay 11X17 (IPJ 2013-03-14).mxd



Notes:

1) Approximate volume of slag materials to be stockpiled is 90,000 cubic yards. This figure accounts for a 15% expansion factor, 1-ft of over-excavation of the slag materials from the marina footprint, and slag materials removed from utility installation.

2) The pile is required to be 10-feet in height to stockpile 90,000 cubic yards of material.

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1655 LEXINGTON AVENUE - SITE PLAN

ENVIRONMENTAL MANAGEMENT PLAN

FORMER EMERSON STREET LANDFILL
ROCHESTER, NEW YORK

CITY OF ROCHESTER

N
W E
S

0 50 100 200 Feet
1 inch = 200 feet

210660

FIGURE 10

Path: I:\Edgewater Resources LLP\210660 - Port Marina\Drawings\GIS\90% Volumes\EMP Figs\FINAL EMP FIGS\FIGURE 10 - 1655 Lexington SITE PLAN (IPJ 2013-03-28).mxd

LaBella Associates, P.C.
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Rochester, New York 14614

Appendix 1

NYSDEC BUD & SWCP

City of Rochester
Department of Environmental Services
City Hall Room 300B, 30 Church Street
Rochester, New York 14614-1290
www.cityofrochester.gov

one city ROCHESTER Bureau of Architecture and Engineering

September 19, 2012

Mr. Gary Maslanka, P.E.
New York State Department of Environmental Conservation
6274 East Avon-Lima Road
Avon, New York 14414

Re: Beneficial Use Determination (BUD) Petition for Reuse of Iron Slag
Port of Rochester, Rochester, New York
Response to NYSDEC Comments dated June 20, 2011

Dear Mr. Maslanka:

This letter is in response to the additional information requested in your June 20, 2011 letter to Mark Gregor regarding the City BUD petition for iron slag at the Port of Rochester. After the completion of an extended SEQR process the City is now proceeding into final marina design with the goal of beginning construction in the first half of 2013.

We are proposing that the slag product generated by the Marina project meet specifications defined in the NYSDOT Standard Specifications, as updated through September 6, 2012. We anticipate that some level of processing, e.g. crushing, blending, etc, will be necessary to achieve gradations specified under certain items. Although we are proposing a number of City of Rochester projects and reuses we understand that the use of the slag product on NYSDOT or FHWA sponsored projects would require the approval of the NYSDOT, and product stock piles would need to be deemed "approved sources" for intended uses so that the quantities placed are eligible for state and/or federal reimbursement.

Listed below are the additional items requested in your June 20, 2011 letter and followed by the City's response:

l) A description of, and specification for, the products that will be produced.

Proposed BUD NYSDOT specifications and associated material descriptions:

304.15 Subbase Course, Optional Type
Types 1, 3 and 4 Subbase materials may consist of approved Blast Furnace Slag, Stone, Sand, and Gravel, or blends of these materials. For Type 2, materials consisting of approved Blast Furnace Slag or of Stone which is the product of crushing or blasting ledge rock, or a blend of Blast Furnace Slag and of Stone.

203.03 Embankment In Place
In general, any mineral (inorganic) soil, blasted or broken rock and similar materials of natural or man-made (i.e. recycled) origin, including mixtures thereof, are considered suitable materials.

203.21 Select Structural Fill
Material consisting of rock, stone, slag, cobbles, or gravel, substantially free of shale or other soft, poor durability particles

2) A letter from the City of Rochester Engineering Department listing the types of project at

which the product(s) will be used. To the extent possible include a list of specific project with an approximate volume of product that will be used at each. This letter should be signed by the city engineer and should contain a statement indicating the proposed product(s) meet their city's Specification for the intended use.

This letter is being submitted by the City Engineer in order to meet the requirements of item 2.

The City will use the slag product on public works projects, in the public right of way, and on City of Rochester properties not intended for residential re-use. In general, slag product will be suitable for reuse on highway projects as road and sidewalk sub-base, for gravel parking lot construction, or as general backfill. Slag product has been identified for the following list of currently planned and potential projects and recurring municipal uses:

1. Ridgeway Avenue (Ramona to Minder)
This City street reconstruction project is planned and the City will need approximately 10,000 cubic yards of material that meets the NYSDOT 304.15 specification.

2. Durand Eastman Beach parking lot improvements.
Much of the parking area for Durand Beach is currently unimproved dirt and gravel and would benefit from improvements. The potential volume of slag product could be up to 5,000 cubic yards assuming an application of 12 inches of product meeting the DOT 304.15.

3. Inner Loop East Project
The City is working on plans to reconstruct a 2/3 mile stretch of the eastern segment of the Inner Loop between Monroe Avenue and Charlotte Street into a multi-lane, street-level boulevard.
The City is in the process of developing the design for the Inner Loop East Project. Approximately 155,333 cubic yards of fill will be required for the project. It is expected that as much as 50,000 cubic yards of material meeting DOT 203.03 specifications will be required for the project. As the design progresses more refined estimates of the volume of slag product that could be used will be developed. Based on the estimates of slag which could be removed from the marina project site it is possible that the majority of the slag product would be reused on the Inner Loop project alone. The City is planning a new application to the Recovery Act-funded Transportation Investment Generating Economic Recovery (TIGER) grant program for the Inner Loop East Project.

4. 354 Whitney Street and 415 Orchard Street
The site which is being investigated under the Environmental Restoration Program contains substantial tunnels and subsurface structures that will require filling and on portions of the site rough grading with select structural fill and or embankment in place. Estimated quantities for this site would be about 2-3,000 cubic yards.

5. Select structural fill
The City periodically requires substantial fill for municipal new or existing municipal facilities. In general these types of project would require DOT 203.21 for foundation backfill. The availability of a stockpile of slag product would be a very helpful resource to the City.

6. Right-of-Way excavation backfill
The City of Rochester routinely performs excavations for utility repairs and replacement within the public right-of-way. These excavations are backfilled and restored using material that requires DOT 304.15 requirements. The City annually completes about 750 of these excavations and approximately 3,500 cubic yards of such backfill material.

7. 1655 Lexington Avenue – Former Emerson Street Landfill
At this 23.9 acre site slag product could be used for haul/access road preparation, re-grading, berming, and base layer construction for a final cover system. Approximately 10,000 to 15,000 cubic yards of slag product could be used for these purposes. The slag reuses associated with this location are part of the area of the City's former Emerson Street Landfill that remains on the NYS Inactive Hazardous Waste Disposal Site Inventory. Depending on the specific reuse, each of the three proposed product specifications would be used. The proposed slag staging and reuse would be coordinate with the Division of Environmental Remediation. The City is currently planning on completing remedial investigation activities at this site over the next year and proceeding into remedy selection.

The City of Rochester has also previously developed project-specific material specifications for unique applications. Most recently a special specification was developed for the Broad Street tunnel filling project. Although we are not proposing a special specification at this time we would like to identify the procedure for modifying the slag BUD if a project is identified in the near future that would require a slag product with a special specification.

The proposed specifications for the slag product indicated in item 1) above are consistent with the requirements for the projects and uses listed above and meet the City's specification for the intended use.

3) ***A list of City owned properties (address and site description) at which the product(s) will be stored prior to use. Include a description of the inventory controls that will be used to insure the product(s) are used as approved by the BUD.***

The City proposes to use secure, City-owned properties at 1655 Lexington Avenue and 210 Colfax Street for storage of slag product for subsequent reuse. The City proposes to use approximately 11.7 acres (northern portion) of the 23.9 acre parcel located at 1655 Lexington Avenue and a portion of the 18.9 acre City Operations Bureau facility at 110-210 Colfax Street for storage of slag product produces during the port marina project.

Both locations are fenced, gated, locked, and under the direct control of the City of Rochester. Reuse of the slag product and the slag inventory will be controlled by the Manager of the City's Division of Environmental Quality. Potential reuse locations and projects, including those listed above under item 2), will be reviewed by the DEQ for consistency with the limitations approved by the NYSDEC. In addition, the City Engineer will evaluate the engineering and geotechnical suitability of the slag product for each proposed reuse.

The City DEQ will track the amounts, by volume, of slag product leaving the storage sites as well as the locations where the product is being beneficially reused. Periodic storage area inspections will be performed. Inventory tracking records will be maintained by the City DEQ until all the product has been beneficially reused at which point a final inventory control report will be prepared. As indicated in the City's March 2011 letter the intended reuses will be restricted to non-residential applications.

Thank you for your continued assistance and patience with this matter. Please contact us if you have any questions or require additional information. We look forward to working with you on this important project.

Sincerely,

Jim McIntosh, PE
City Engineer

xc: T. Caffoe, NYSDEC Region 8
P. Holahan
M. Gregor
T. Hubbard
T. Haley, NYSDEC
D. Porter, LaBella Associates
P. Werthman, Benchmark

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New York State Department of Environmental Conservation
Division of Materials Management, Region 8
6274 East Avon-Lima Road, Avon NY 14414-9516
Phone: (585) 226-5411• **Fax:** (585) 226-2909
Website: www.dec.ny.gov

Joe Martens
Commissioner

June 20, 2011

Mr. Mark Gregor
Port Redevelopment Manager
City of Rochester Department of Environmental Services
30 Church Street
Rochester, NY 14614

Dear Mr. Gregor:

RE: Beneficial Use Determination (BUD) Petition for Iron Slag
Rochester(C) Monroe (C)

NYSDEC staff has reviewed the BUD petition submitted by the City of Rochester for the iron slag that will be excavated as part of the Port of Rochester Marina Project. The data included in the petition suggests products produced from the slag might be able to serve as an effective aggregate substitute, if used above the water table. However, the petition lacks information on the product(s) that will be produced, where and how the product(s) will be used, and how the product(s) will be stored prior to use. As such, the petition fails to demonstrate that there is a known or reasonably probable market for the material and a BUD cannot be granted at this time.

The petition indicates the City of Rochester plans to retain ownership of the slag and use the derived product(s) in unspecified city projects. To help clarify the types of uses/projects being proposed and to demonstrate a "market" for the product(s) please provide the following:

1) A description of, and specification for, the products that will be produced,

2) A letter from the City of Rochester Engineering Department listing the types of project at which the product(s) will be used. To the extent possible include a list of specific project with an approximate volume of product that will be used at each. This letter should be signed by the city engineer and should contain a statement indicating the proposed product(s) meet their city's specification for the intended use.

3) A list of City owned properties (address and site description) at which the product(s) will be stored prior to use. Include a description of the inventory controls that will be used to insure the product(s) are used as approved by the BUD.

Please remember the excavated slag will be regulated as a solid waste until such time that it has been processed into a product. All product(s) produced must contain a deminimus quantity of physical contamination, and require no additional processing prior to use.

As I indicated in my January letter, producing a product that meets the specification for NYSDOT Type 1 or Type 2 aggregate would increase the number of approvable applications and simplify storage and inventory control requirements.

If you or your consultant has any questions concerning this letter, please contact me at (585) 226-5414 or gmmaslan@gw.dec.state.ny.us.

Sincerely,

Gary Maslanka
Environmental Engineer

cc: S. Foti, NYSDEC
K. Prather NYSDEC
T. Haley, NYSDEC

City of Rochester

Office of the Commissioner
Department of Environmental Services
City Hall Room 300B, 30 Church Street
Rochester, New York 14614-1290
www.cityofrochester.gov

Division of
Environmental Quality

March 11, 2011

Mr. Gary Maslanka, P.E.
New York State Department of Environmental Conservation
6274 East Avon-Lima Road
Avon, New York 14414

Re: Beneficial Use Determination (BUD) Petition for Reuse of Iron Slag
Port of Rochester, Rochester, New York
Response to NYSDEC Comments dated January 20, 2010

Dear Mr. Maslanka:

Enclosed are two hard copies and one electronic copy of the City's Port Slag BUD application and associated Solid Waste Control Plan for your consideration. The Port Marina Development Project continues to be a top priority for the City of Rochester. The new marina and associated redevelopment combine the promise of the creation of a regional significant recreational destination with unique opportunities for mixed-use redevelopment and associated economic growth. As we have discussed previously, approximately one third of the volume of material required to be excavated for the marina basin is expected to be iron slag from a former iron works located on a portion of the Port site. An effective beneficial use determination for the iron slag that will be removed during the marina project is crucial to the financial viability of the project. The City has considered options available for the beneficial reuse of the slag and how the sorted and processed slag can be contractually managed. In order to ensure that this slag is managed in a responsible and cost-effective manner the City intends to direct the reuse of the slag to City project sites and capital programs. These uses will generally be for public works and other commercial-type applications undertaken by the City. The City will ensure that slag is not used in residential settings.

We have also carefully considered the comments and suggestions provided in your January 20, 2010 letter. The City, with the support of our BUD consultant team, LaBella Associates and Benchmark, offers the following responses:

Comment 1: *Section 2.1.1 Chemical Composition (General) & Section 2.2.2*

Considering the volume of material to be excavated during the marina project, the analytical data provided in the BUD petition is insufficient to establish the composition of the slag and to demonstrate it is consistent. A minimum of one composite sample for every 10,000 ton of slag to be excavated is required. The samples should be tested for total (bulk) RCRA metals (mg/kg) using EPA methods 6010C with 7471B for mercury. If these results are lower than Table 375-6.8(b) "Protection of Groundwater" values, SPLP analysis will not be required.

RESPONSE: Acknowledged. The referenced sections and other applicable sections of the report have been revised.

Comment 2: *Section 2.1.1 Chemical Composition (General)*

A review of the reports generated as part of the Autumn Height slag removal project indicate there were at least four (4) different colors of slag excavated during the Fast Ferry Project. It is assumed the same

variation will be present in the slag that will be excavated constructing the marina. The BUD petition should address possible physical and chemical variations in the different colored slag. This will require physical and chemical analysis. Depending on where the samples used to characterize the site for the Fast Ferry Project were taken, some of that analytical data may be useable for this purpose.

RESPONSE: Appendix F, containing tabulated analytical results from the previous analysis of slag from the Port site including a discussion of the different colored slag has been added to Section 2.1 of the BUD petition. After reviewing existing laboratory analytical data associated with the various Port slag color types, we do not find chemical "fingerprints" or patterns associated with specific slag colors.

Comment 3: Section *2.1.5 Analytical Testing of Site Slag Fill*
As you mentioned at our meeting, using Part 375-6 soil cleanup objectives as a reference in the SPLP data table ("Table 2") is inappropriate. Please use Part 703 ground water standards as the reference in this table. "Table 2" contains the SPLP results for two samples. Three (3) SPLP reports are included in the petition: All SPLP results should be included in "Table 2".

RESPONSE: Table 2 has been corrected to show all three (SPLP) summary data.

Comment 4: Section *2.1.5 Analytical Testing of Site Slag Fill*

As analytical testing can yield minimum detection levels above guidance values, non-detect value results should be listed as "less than values". For example if the minimum detection value for a contaminant is 0.05 ug/l, a non-detect value should be listed as < 0.05 ug/l.

RESPONSE: Acknowledged. Tables 1 and 2 have been revised accordingly.

Comment 5: Section *2.1.5 Analytical Testing of Site Slag Fill*

Please be aware 6NYCRR Part 375 was developed for use by the Division of Environmental Remediation (DER) for use in the Brownfields clean-up program. The Division of Solid and Hazardous Materials (DSHM) utilizes some of these guidance values for evaluating BUD petitions. In general, materials with contaminate levels that do not exceed the lower of the values listed in "Table 375-6.8(b) "Residential" and "Protection of Groundwater" can be considered by the department for a BUD.

Normally, the values in the columns labeled "Restricted Residential", "Commercial" and "Industrial" in Table 375-6.8(b) are not used to evaluate a material's eligibility for a case specific BUD. As such, they should not be used as reference values in the BUD petition.

RESPONSE: In order to ensure that reuse of processed slag is limited to City public works and commercial-type applications the City intends to retain control of the slag throughout the marina construction project as well as its beneficial reuse. A review of the available data indicates that while there are some data in excess of the Residential values in 375-6.8 the slag consistently meets Restricted Residential values. We believe that by closely controlling the reuses of the slag the City can beneficially reuse the slag and meet the intent of the Department to prevent improper reuses. The City's proposed uses of the reclaimed slag are all non-residential in nature (i.e., road base, structural fill for City facilities, etc.) with very limited potential for direct contact. Consistent with this approach and level of reuse control, we propose that processed slag not exceed the lower of the values listed in "Table 375-6.8(b) "Restricted Residential" and "Protection of Groundwater" for this BUD. We believe that this approach is both protective of public health and makes the best use of the slag that will be removed during the project as a cost-effective resource.

Comment 6: *Sections 2.2 Material Processing, and 2.2.1 Material Excavation*

6 NYCRR Part 360-1.15(d)(1) lists information that should be included in all case specific BUD petitions. The petition submitted lacks a solid waste control plan that describes the following: [see 360-1.15(d)(1)(iv)(a)]

- *The disposition of any solid waste which may result from the manufacture of the product into which the solid waste under review is intended to be incorporated;*
- *A description of the type of storage (e.g., tank or pile) and the maximum anticipated inventory of the solid waste under review (not to exceed 90 days) before being used;*
- *Procedures for run-on and run-off control of the storage areas for the solid waste under review; and*
- *A program and implementation schedule of best management practices designed to minimize uncontrolled dispersion of the solid waste under review before and during all aspects of its storage as inventory and/or during beneficial use.*

**Please note a dust control and monitoring plan for the crushing operation must be included as part of the best management practices program.*

RESPONSE: Reference to the required Solid Waste Control Plan (SWCP) has been added to section 2.2.3 of the BUD petition. The SWCP, which addresses the requirements identified in Comment 6, has been prepared and is enclosed.

Comment 7: *Sections 2.2 Material Processing, and 2.2.1 Material Excavation*

The petition indicates slag will be excavated, dewatered, stockpiled (unprocessed), crushed, screened, and stockpiled (processed) on about a 2.5 acres section of the site, and that off-site stock piling of finished product may be necessary. Any off-site location used for stockpiling unsold, processed slag will require Department approval. Off-site storage, and/or processing of unprocessed slag, would require a permit.

RESPONSE: Acknowledged. Section 2.2.1 has been modified to include the statement that "Any off-site location used for stockpiling unsold, processed slag will require Department approval. Off-site storage, and/or processing of unprocessed slag, would require a permit." Due to limitations on the available acreage on site for construction activities the City expects to stockpile processed slag off site on City controlled property. We will identify proposed off-site storage locations to the Department as early as possible during the project.

Comment 8: *General Comment*

All products would need to consist of slag with a deminimus quantity of physical contamination, meet applicable industry specifications, and require no additional processing by the end user.

RESPONSE: Acknowledged.

Comment 9: *General Comment*

Aggregate produced for use as road base or sub-base would need to meet NYSDOT specification for Type 1 or Type 2 aggregate.

RESPONSE: The City's BUD application will identify required specifications or gradations required for each type of reuse that is contemplated. In some cases this may include DOT Type 1 or 2 aggregate specifications or similar requirements to be determined by the City Engineer. The requirements will also be established based on the particular reuse. The City Engineer will approve the materials suitability for all potential uses of reclaimed slag in City capital or

maintenance projects, including, but not limited to reuses in the Port of Rochester construction projects.

Comment 10: *General Comment*

Slag derived aggregate produced for use as chip & seal aggregate, or for use in Portland cement would need to meet the specification of potential end users.

RESPONSE: Acknowledged. The City, as the potential end user, will evaluate the specification requirements for slag aggregate in applications in the Port marina project and other applications. We have also identified chip seal aggregate as a potential municipal reuse in our BUD application.

Comment 11: *General Comment*

Examples of typical end user specifications, and a letter from these users indicating such material is acceptable for their use, should be included in the BUD petition. The Department suggests the City contact NYSDOT to prequalify the slag as an acceptable source of aggregate for NYSDO'I projects.

RESPONSE: As mentioned in the response to Comment 9 above, the City's BUD application identifies contemplated slag reuses, locations where possible, volumes needed, and general material gradation or specification requirements. This list of municipal reuses is not intended to be precise with regard to the quantities but to provide the range of realistic potential City reuses. We believe that the information provided in this list meets the intent of 6NYCRR Part 360-1.15(d)(1)(iii) which requires a demonstration that there is a known or reasonably probable market for the intended use of the solid waste under review for a BUD. We anticipate informing the NYSDEC about actual reuses as they are confirmed and prior to the actual reuse taking place.

We are also providing generally available slag reuse information that illustrates that slag has received previous NYSDEC BUD approvals, the Portland Cement Associations: Sustainable Materials Fact Sheet (Appendix D of the BUD petition) illustrates its use for slag, and Appendix A contains the National Slag Association's information booklet for the reuse of slag.

Comment 12: *General Comment*

The petition should include a description of the type of arrangement the City will enter into with the contractor that will process the slag. Please indicate if the slag will he sold by the City to the contractor unprocessed, or if the city will retain ownership until the processed material is sold to the end user.

RESPONSE: We have determined that the most appropriate contractual approach is for the City to maintain ownership of the slag while it is being processed on site. Although the City had also considered contractually "selling" the slag to the contractor we now plan to retain control of the reuse of the processed slag. The City will maintain ownership and control of the reclaimed slag for on-site use in the marina project, off-site storage, and use on other City projects. The processing of the reclaimed slag will be included as a component of the overall marina contract documents. The contract documents will include the BUD, BUD petition and SWCP. The contract documents will also include specifications to the contractor regarding slag excavation, and the City's agreement for engineering inspection services will include requirements for identifying, monitoring, tracking and inspecting slag and slag management activities.

Comment 13: *General Comment*

Several of the cross sectional drawings show a layer identified as "regulated waste", please identify the waste, and indicate how it will he removed from and kept segregated from the slag. Please indicate how the regulated waste will be disposed of.

RESPONSE: Acknowledged. We believe a more appropriate description of the referenced fill materials is "mixed fill" as it may contain some solid waste as well as intermixed construction and demolition debris, soil, slag and historic fill. In section 2.2.1 a discussion of removing the "regulated waste" from the slag has been added. The "regulated waste" will then be handled in accordance with the overall project environmental management plan and contract documents which will direct the management and disposal of non slag waste materials.

Comment 14: *General Comment*

Finally, at the conclusion of our meeting you mentioned the City may propose using slag as fill in Lake Ontario to alter water flow patterns by the Ontario Beach Pier. Please be aware such use would require approval and input from other NYSDEC Divisions. If this reuse is being considered it should be included in the BUD petition. It is likely additional analytical testing of the slag would be required if this reuse is proposed.

RESPONSE: Acknowledged. While the conditions of the pier and beach water quality remains of interest and concern to the City we are not pursuing this option at this time.

Thank you for your continued assistance and patience with this matter. Please contact us if you have any questions or require additional information. We look forward to working with you on this important project.

Sincerely,

Mark D. Gregor, CHMM
Manager, Division of Environmental Quality

Enclosures

C: P. Holahan W/O Enc.
J. McIntosh W/O Enc.
T. Hubbard W/O Enc.
T. Haley, NYSDEC W/O Enc.
D. Porter, LaBella Associates W/O Enc. ✓
P. Werthman, Benchmark W/O Enc.

LABELLA Associates, P.C.

Engineering
Architecture
Environmental

Port of Rochester
Solid Waste Control Plan

Location:

Port of Rochester
Rochester, New York 14612

Prepared For:

City of Rochester Division of Environmental Quality
30 Church Street
Room 300B
Rochester, New York 14614

LaBella Project No. 209447.01

January 2011

Port of Rochester
Solid Waste Control Plan

Location:

Port of Rochester
Rochester, New York 14612

Prepared For:

City of Rochester Division of Environmental Quality
30 Church Street
Room 300B
Rochester, New York 14614

LaBella Project No. 209447.01

January 2011

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Table of Contents

Tables, Figures and Appendix

TABLES

FIGURES

APPENDIX

1.0 INTRODUCTION

1.1 Site Location

The Port of Rochester site is located at 4590, 4630, and 4752 Lake Avenue and 1000 North River Street in the City of Rochester, New York. The Site is generally bounded by Lake Avenue to the west, the Genesee River to the east, Corrigan Street to the north, and River Street to the south (see Figure 1).

The Port of Rochester encompasses an area bounded on the north by Lake Ontario Beach State Park, on the east by the Genesee River, on the west by Lake Avenue, and on the south by land owned by CSX Transportation. In addition the Monroe County Boat Launch (likely to be purchased by the City of Rochester) will be included in this Solid Waste Control Plan (SWCP). The City of Rochester is the owner of most of the parcels within the Port of Rochester. The location of the properties where this SWCP applies is depicted on Figure 1.

1.2 Site History

In the mid to late 1800's to the mid 1920's, Charlotte Iron Works was an operational steel mill located on the western portion of the Site. Foundry waste products, including foundry sand and slag, generated from the facility were used to expand the shoreline eastward toward the Genesee River and subsequently across the Site.

Previously completed subsurface investigations conducted at the Port of Rochester have identified:

- Slag associated with former iron production at the Site; and,
- Mixed fill materials including, but not limited to, as ash, cinders, coals, bricks, concrete, unrecoverable quantities of slag, and railroad ties.

1.3 Purpose & Scope

During development and construction, the presence of the slag materials within the fill profile will require specific handling procedures. These specific handling procedures are cumulatively described in the Beneficial Use Determination (BUD) Application and in this SWCP. Handling procedures for the mixed fill materials excavated as part of the proposed project will be outlined in the Environmental Management Plan (EMP) for the Site.

Developers and Contractors disturbing the subsurface at the Port of Rochester Site shall follow the procedures outlined in this SWCP and the EMP. No slag or processed slag generated from the Port of Rochester Site may be physically removed from the Port of Rochester Site without the expressed written permission from the City of Rochester. This procedure is presented in detail in Section 4.0.

2.0 OBJECTIVE

This SWCP is intended to provide guidance regarding the management and processing of slag material containing minimal amounts of mixed fill materials excavated during the construction and various development activities at the Port of Rochester Site.

2.1 Applicability of Solid Waste Control Plan

This SWCP applies to the excavation, processing, and handling of slag with minimal quantities of mixed fill materials collectively targeted for recovery by the site contractor selected by the City of Rochester to construct the proposed Port of Rochester marina and associated infrastructure.

3.0 BACKGROUND AND SUPPORTING ANALYTICAL DATA

This SWCP utilizes data gathered from the previous subsurface investigative reports and observations made during construction of the Port of Rochester Harbor Improvement and Harbor Ferry Terminal project as well as more recent design investigations. The reports utilized for reference are as follows:

- Phase I Environmental Site Assessment – Charlotte Port of Rochester, New York *by Galson dated April 1999*
- Geotechnical Site Characterization, Port of Rochester Harbor Improvement and Harbor Ferry Terminal *by Haley & Aldrich of New York dated January 22, 2001*
- Port of Rochester Harbor Improvement and Harbor Ferry Terminal - Phase II Environmental Site Assessment, Preliminary Site Characterization Report *by LaBella Associates, P.C. dated May 31, 2001*
- Phase III Environmental Site Assessment: Remediation Closure Report – NYSDEC Spill Number 990601 - Area #1 *by LaBella Associates, P.C. dated October 2002*
- Remedial Investigation Report *by LaBella Associates, P.C. dated March, 2007.*
- Predevelopment Subsurface Conditions analysis Investigation Report *by LaBella Associates, P.C. dated March 2009*
- Data Summary Package: Port Marina Predevelopment Site Conditions Gap Investigation *by LaBella Associates, P.C. dated September 2009*

Based on the aforementioned reports, approximately eight (8) test pits and forty (40) soil borings have been completed within the footprint of the proposed marina. In addition, three (3) groundwater monitoring wells have been installed within the proposed marina footprint.

In addition to the above reports prepared for the Port of Rochester, several miscellaneous environmental documents were generated by LaBella Associates and the City of Rochester during construction of the Port of Rochester Harbor Improvement and Harbor Ferry Terminal Project. These documents specifically addressed New York State Department of Environmental Conservation (NYSDEC) Spill #990601. The documents are:

- Phase II Environmental Site Assessment: Underground Storage Tank Closure Report – Soil Sampling and Analysis: Port of Rochester Orphan Tank Discovered September 2003 *by LeCesse Constriction*
- Underground Storage Tank Removal, Excavation Closure Sampling and Groundwater Sampling Report - North Warehouse, Port of Rochester; Rochester New York: Remediation Closure Report dated January 2003
- Memo - January 15, 2003, Vortex Excavation – Port of Rochester Parking Lot Improvements
- Memo - February 17, 2004, Groundwater Sample Results – Future Underground Storage Tank Excavation, Port of Rochester – Fast Ferry Terminal, Rochester, New York

- Memo – September 11, 2002, Questionable wastewater discharge relating to groundwater encountered and pumped at the South 24" sewer outfall trench; Beach Avenue and North Parking Lot Improvements Project – Port of Rochester
- Drawing showing approximate areas where these issues were addressed
- Letter from the City of Rochester of NYSDEC Active Spill #990601 to the NYSDEC dated May 6, 2004
- Letter from the NYSDEC of Spill #990601 to the City of Rochester dated June 14, 2004

The documents were submitted to the NYSDEC in a letter from the City of Rochester Division of Environmental Quality ("City DEQ") to the NYSDEC dated May 6, 2004, requesting No Further Remedial Action regarding the above listed issues and that the NYSDEC close NYSDEC Spill #990601. The NYSDEC responded to the City DEQ in a letter dated June 14, 2004 and indicated the NYSDEC does not require further remedial work regarding Spill #990601 at this time. A copy of this NYSDEC No Further Action letter is included in Appendix 1. It should be noted that this letter applies only to previously identified petroleum releases at the Port of Rochester; and it does not apply to slag or any man-made fill materials.

These reports and miscellaneous environmental documents may be reviewed at the City of Rochester's Department of Environmental Services located at City Hall, Room 300B. These reports detail locations of historical impacted soil and groundwater and areas where man-made fill materials have been identified.

3.1 Supporting Analytical Data for Slag and Mixed Fill Materials

Representative samples of slag and mixed fill materials were collected from in or near the proposed marina footprint and submitted for laboratory analysis of Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), Target Analyte List (TAL) Metals, including cyanide, and Polychlorinated Biphenyls (PCBs). Additionally, toxicity characteristic leaching procedures (TCLP) and synthetic precipitation leaching procedures (SPLP) were performed on select samples. Tables 2 through 7 summarize the analytical results of the various slag and mixed fill samples submitted for laboratory analysis from samples referenced in the various reports presented in Section 3.0. The locations of test pits and soil borings are presented on Figure 2.

The following is a brief summary of the analytical results contained in Tables 2 through 7. Pertinent soil boring logs are included in Appendix 2.

VOCs

As presented in Table 2, a total of fourteen (14) samples were collected in or near the proposed marina footprint and were submitted for laboratory analysis of VOCs. Four (4) of these samples contained mainly slag, while ten (10) samples contained a mixture of slag along with additional regulated fill materials. The main constituents of each sample are provided in Table 2. None of the samples submitted for laboratory analysis reported detections of VOCs found to be above the NYSDEC Part 375 Restricted Use Soil Cleanup Objectives for the Protection of Groundwater (SCOs for the Protection of Groundwater). Additionally, none of the fourteen (14) samples reported detections of VOCs at concentrations found to exceed the NYSDEC Part 375 Restricted Use Soil Cleanup Objectives for the Protection of Public Health – Restricted Residential Use (SCOs for the Protection of Public Health – Restricted Residential Use).

SVOCs

As presented in Table 2, four (4) samples containing slag were collected in or near the proposed marina footprint and submitted for laboratory analysis of SVOCs. Additionally, nine (9) other samples containing a mixture of slag and other regulated fill materials were all also collected in or near the proposed marina footprint and submitted for laboratory analysis of SVOCs. The main constituents of each sample are provided in Table 3. None of these thirteen (13) samples submitted for laboratory analysis reported detections of SVOCs found to be above the NYSDEC Part 375 SCOs for the Protection of Groundwater. Additionally, none of the thirteen (13) samples reported detections of SVOCs at concentrations found to exceed the NYSDEC Part 375 SCOs for the Protection of Public Health – Restricted Residential Use.

Metals

As presented in Table 4, a total of thirty-four (34) samples were collected in or near the proposed marina footprint and submitted for laboratory analysis of Target Analyte List (TAL) Metals. Of these thirty-four (34) samples, fifteen (15) samples contained mainly slag while the remaining fourteen (14) samples contained a mixture of slag and other regulated fill materials. The main constituents of each sample are provided in Table 4. Metals were detected at concentrations found to be above the SCOs for the Protection of Groundwater in twenty-six (26) of the thirty-four (34) samples submitted for laboratory analysis of TAL Metals. Metals were detected at concentrations found to exceed the SCOs for the Protection of Public Health – Restricted Residential Use in twenty-five (25) of the thirty-four (34) samples submitted for laboratory analysis of TAL Metals.

As presented in Table 5, the TCLP and SPLP analytical results for select samples submitted for analysis of TAL Metals are compared to the TCLP Regulatory Limits and the NYSDEC Part 703 Groundwater Standards, respectively. The following sections present the results of the analyses:

- *TCLP*

  Seven (7) total samples were collected in or near the proposed marina footprint that were submitted for laboratory Toxicity Characteristic and Leaching Procedure (TCLP) metals testing. Six (6) of these samples contained mainly slag while one (1) of these samples contained a mixture of slag and other regulated fill materials. The main constituents of each sample are provided in Table 5. None of the eight (8) samples reported metals at concentrations found to be above the United States Environmental Protection Agency (USEPA) TCLP Regulatory Limits.

- *SPLP*

  Three (3) samples containing mainly slag were collected in or near the proposed marina footprint were submitted for laboratory Synthetic Precipitation and Leaching Procedure (SPLP) metals testing. None of the three (3) samples reported metals at concentrations found to exceed the NYSDEC Part 703 Groundwater Standards.

Based on the TCLP and SPLP laboratory analytical results, the slag located within the proposed marina footprint appears to be a stable material that does not represent a concern for leaching of metals into groundwater.

Pesticides

As presented in Table 6, three (3) samples containing mixed fill materials were collected in or near the proposed marina footprint and submitted for laboratory analysis of Pesticides. None of these three (3) samples reported pesticides at concentrations found to be above either the SCOs for the Protection of Groundwater and above the SCOs for the Protection of Public Health – Restricted Residential Use.

PCBs

As presented in Table 7, two (2) samples containing mixed fill materials were collected in or near the proposed marina footprint and submitted for laboratory analysis of PCBs. PCBs were not detected above the reported laboratory MDLs in either of the two (2) samples submitted for analysis.

4.0 SOLID WASTE CONTROL PLAN (SWCP)

This SWCP has been designed for development and construction activities at the Site associated with the proposed marina. This SWCP only applies to the excavation of the slag layer. The excavation and handling of all other materials is covered by the EMP. The following sections present the types of materials that are anticipated to be encountered during earthwork activities at the Site.

4.1 Slag Material with Minor Amounts of Mixed Fill

Slag layers are present throughout the Site, and cross sections of the slag are depicted on Figures 3 through 5. The slag layer is comprised of mostly slag with minor amounts of mixed fill. Generally, beneath the topsoil or pavement, a layer of mixed fill materials is underlain by the slag layer targeted for excavation and processing. The logs of the borings, test pits, and monitoring wells depicted on the geologic cross sections depicted on Figures 3 through 5.

Typically slag can visually be identified in size ranging from approximately 1 inch to 10 inches in diameter. Photographs taken of the slag waste during previous subsurface investigation work at the Site is included in Appendix 3. These photographs feature blue slag as it is likely that blue slag will be the predominant slag recovered from the proposed marina basin.

The presence of slag can be visually identified during excavation. If questions arise during identification of the solid waste the City DEQ and the Environmental Project Monitor (EPM) shall make the final determination, for the classification on how the spoils generated during the construction activities at the Site will be managed.

Estimates of the total volume of slag indicate that approximately 47,000 cubic yards of recoverable slag is present within the excavation area of Phase I of the proposed marina. The depth of current ground surface elevation to the slag layers varies over the Site. The depth to the bottom of recoverable slag within the proposed marina footprint and immediately adjacent to the marina footprint is depicted on Figure 6.

4.2 Mixed Fill Materials

Beyond the slag materials described above, other regulated fill materials are known to exist within the subsurface at the Site. These mixed fill materials may include:

- Railroad ties
- Railroad ballast
- Ash
- Cinders
- Coal
- Any of the above intermixed with slag that is found to be unrecoverable for processing purposes

Some mixed fill materials will likely be removed from the excavation during the slag reclamation process. These end products will be managed in accordance with the EMP for the Site.

4.3 Solid Waste Control Plan to Guide Excavation of Slag

The SWCP is intended to guide the removal, processing, staging, and management of the excavated slag material. All other materials encountered during the excavation of the Site, including unrecoverable slag, will be managed in accordance with the EMP. The SWCP details the approach and the classification system that will be used to field screen and segregate excavated materials during recovery of the slag layer.

During the excavation activities, soils and other materials from the excavations will be continuously visually assessed for the presence of slag, mixed fill materials, and soils exhibiting staining, odors, or elevated photo-ionization detector (PID) readings (i.e., greater than 25 parts per million) collectively referred to as "evidence of impairment."

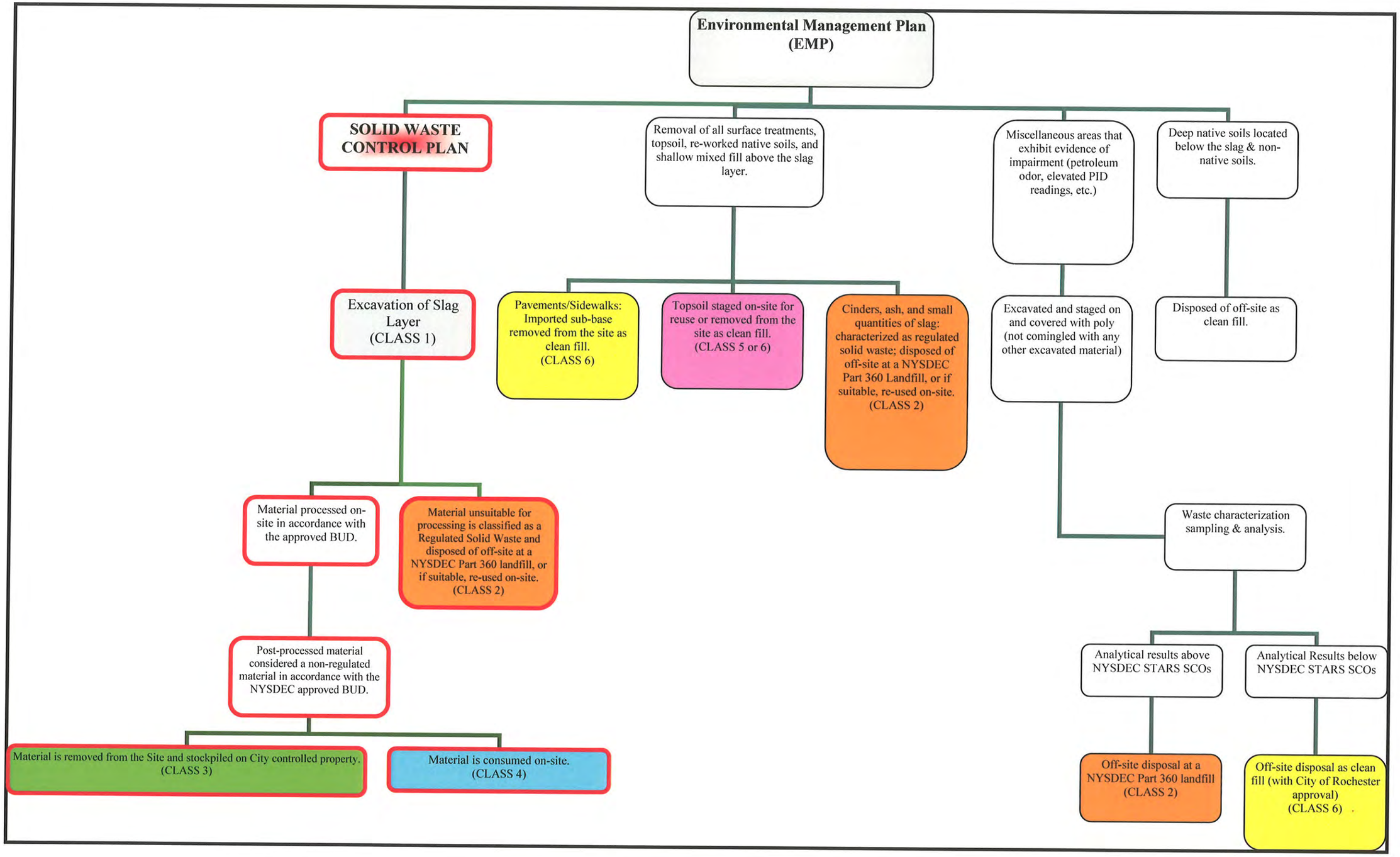
Six (6) classes of materials are expected to be generated by the activities associated with the proposed excavation. Each of these six (6) classes of material will be managed and handled in a manner dictated by the evidence of environmental impairment, visual observations during excavation, or the existing analytical data. These six (6) classes of material are described in the Table 1 on the following page:

Table 1
Materials Handling Descriptions

Class of Material	Physical Description
Class 1	Predominately slag excavated with very minor quantities of mixed fill materials to be processed in accordance with NYSDEC approved BUD.
Class 2	Regulated Solid Wastes (cinders, coals, ash, C&D debris, petroleum impacted soils, and all other miscellaneous debris) disposed of off-site at a NYSDEC Part 360 permitted landfill, or if suitable, re-used on-site in accordance with Part 360-1.7 (b) or the 2002 letter to Dan David of the NYSDEC provided in Appendix 1.
Class 3	Processed Slag to be re-used off-site in accordance with the NYSDEC approved BUD.
Class 4	Processed Slag to be re-used on-site in accordance with the NYSDEC approved BUD.
Class 5	Clean fill (topsoil, undisturbed native soil) to be re-used on site.
Class 6	Clean fill (topsoil, undisturbed native soil) to be removed from the Site.

In accordance with 6 NYCRR Part 360-1.15(d)(1), the Materials Handling Chart on the following page describes the handling procedures that will be followed to guide the excavation at the Site.

[*Note: The colors associated with each individual class of materials in Table 1 above are intended to match the corresponding colored end products on the chart on the following page for distinction purposes.*]


Environmental Management Plan (EMP)
SOLID WASTE CONTROL PLAN
Removal of all surface treatments, topsoil, re-worked native soils, and shallow mixed fill above the slag layer.
Miscellaneous areas that exhibit evidence of impairment (petroleum odor, elevated PID readings, etc.)
Deep native soils located below the slag & non-native soils.
Excavation of Slag Layer (CLASS 1)
Pavements/Sidewalks: Imported sub-base removed from the site as clean fill. (CLASS 6)
Topsoil staged on-site for reuse or removed from the site as clean fill. (CLASS 5 or 6)
Cinders, ash, and small quantities of slag: characterized as regulated solid waste; disposed of off-site at a NYSDEC Part 360 Landfill, or if suitable, re-used on-site. (CLASS 2)
Excavated and staged on and covered with poly (not comingled with any other excavated material)
Disposed of off-site as clean fill.
Material processed on-site in accordance with the approved BUD.
Material unsuitable for processing is classified as a Regulated Solid Waste and disposed of off-site at a NYSDEC Part 360 landfill, or if suitable, re-used on-site. (CLASS 2)
Waste characterization sampling & analysis.
Post-processed material considered a non-regulated material in accordance with the NYSDEC approved BUD.
Analytical results above NYSDEC STARS SCOs
Analytical Results below NYSDEC STARS SCOs
Material is removed from the Site and stockpiled on City controlled property. (CLASS 3)
Material is consumed on-site. (CLASS 4)
Off-site disposal at a NYSDEC Part 360 landfill (CLASS 2)
Off-site disposal as clean fill (with City of Rochester approval) (CLASS 6)

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Based on the "Materials Handling Chart" presented on the previous page, a variety of materials are anticipated to be encountered during the excavation of the marina basin. As such, the following section details the handling methods and procedures for the processing and destination of each distinct material that is expected to be encountered during the excavation process.

- **Class 1:** *Excavated slag with minor amounts of mixed fill to be screened and processed.*

  The slag layer is expected to be encountered beneath the layer of asphalt or topsoil. Typically, a layer of re-worked soil and/or mixed fill materials (described as Class 2 materials below) are located beneath the asphalt or topsoil and above the slag layer targeted for mining. These mixed fill materials will be removed from the excavation and handled in accordance with the EMP and the Materials Handling Chart above.

  The recovered slag with minor amounts of mixed fill will then be processed. The resulting processed slag will be free of significant quantities of mixed fill materials and, in accordance with the NYSDEC approved BUD, will then be considered a non-regulated material. Some of this material may be used on-site under the NYSDEC Part 360 exemption. The processed material will be transported to a City of Rochester controlled parcel for stockpiling until a use can be determined for this material. Once a use is determined, the NYSDEC will be notified of the project it is intended to be used for, the location, and specific use of the material.

- **Class 2:** *Regulated Solid Wastes (cinders, coals, ash, unrecoverable slag, C&D debris, petroleum-impacted soil and all other miscellaneous debris) disposed of off-site at a NYSDEC Part 360 permitted landfill or if suitable, re-used on-site in accordance with Part 360-1.7 (b) or the 2002 letter to Dan David of the NYSDEC provided in Appendix 1.*

  Various mixed fill materials including, but not limited to cinders, coals, ash, C&D debris, small quantities of slag intermixed with these fill materials, as well as other miscellaneous debris all of which are undesirable and/or considered to be regulated solid wastes are anticipated to be encountered within the marina excavation. These mixed fill materials are inclusive of petroleum impacted soils. These mixed fill materials are generally located beneath the asphalt or topsoil layer and extend several feet beneath the ground surface. Typically these mixed fill materials are underlain by the slag layer targeted for mining. Further details on the handling of the regulated solid wastes are included in the EMP.

  In accordance with NYSDEC Part 360-1.7(b)(4)(iii), all regulated solid wastes (i.e., petroleum impacted soils) found to contain NYSDEC STARS-list volatile organic compounds (VOCs) above the NYSDEC Commissioner's Policy (CP-51) guidance document values will be removed from the Site within 60 days of staging.

In accordance with NYSDEC Part 360-1.14(e)(3), all other regulated solid wastes will be removed from the Site within 90 days of staging. However, if these Class 2 materials are determined to be suitable, Class 2 materials may be re-used on-site in accordance with NYSDEC Part 360-1.7 (b) and the 2002 letter to Dan David of the NYSDEC presented in Appendix 1. Petroleum impacted soils found to be contain NYSDEC STARS-list VOCs above the NYSDEC's CP-51 guidance document will be disposed of off-site at a NYSDEC Part 360 permitted landfill and will not be considered for re-use on-site.

- **Class 3:** *Processed material to be re-used off-site in accordance with the NYSDEC approved BUD.*

  The processed slag will generally be free of significant quantities of mixed fill materials and, in accordance with the NYSDEC approved BUD, will then be considered a non-regulated material. This material will be transported to a City of Rochester controlled parcel for stockpiling until a use can be determined for this material. Once a use is determined, the NYSDEC will be notified of the project it is intended to be used for, the location, and specific use of the material.

  In accordance with NYSDEC Part 360-1.14(e)(3), all slag, once excavated, will be removed from the Site and/or processed within 90 days of staging. Once the slag has been processed, the resulting material will be considered as a non-regulated material (in accordance with the NYSDEC approved BUD).

- **Class 4:** *Processed material to be re-used on-site under NYSDEC Part 360 Exemption.*

  It is anticipated that some quantity of the processed slag may be re-used on-site.

  Approval from the NYSDEC will be needed prior to the re-use of any Class 4 materials on-site.

- **Class 5:** *Clean fill (topsoil, undisturbed native soil) to be re-used on site.*

  Soil that is excavated from the marina basin that is visually observed to be free of slag, mixed fill materials, and does not display evidence of impairment will be considered as "clean fill". Further details on the handling of the excavation materials are included in the EMP.

- **Class 6:** *Clean fill (topsoil, undisturbed native soil, asphalt, and concrete sidewalks) to be removed from the Site as clean fill.*

  Materials that are excavated from the marina basin that are visually observed to be generally free of slag, mixed fill materials, and do not display evidence of impairment will be considered as "clean fill". Further details on the handling of the excavation materials are included in the EMP.

4.4 Construction of Staging Areas

All waste streams will be staged separately. It will be required to cover the Class 2 Materials during non-working hours with a minimum of two layers of 6-mil polyethylene sheeting. The covers will be anchored or weighted at the edges to prevent stormwater and wind borne erosion.

Materials requiring off-site disposal will be disposed of in accordance with all applicable state and federal regulations.

4.5 Waste Stream Tracking

Recoverable slag is anticipated to be processed on-site. Any processed material that is scheduled to be re-used on-site and any waste materials going to a NYSDEC Part 360 landfill will be tracked on an appropriate spread sheet log to allow for accurate material quantification. An example of a Material Tracking spread sheet is included in Appendix 4.

4.6 Unknown Environmental Issues

This SWCP includes procedures and protocols to manage known environmental subsurface impacts at the Site only pertaining to recoverable slag. The EMP should be consulted for details on the handling of all other excavation materials.

5.0 IMPLEMENTATION OF SWCP

During excavation activities at the Port of Rochester, an EPM be assigned to implement the SWCP on a full-time basis. The responsibilities of the EPM with regard to the SWCP are as follows:

- Working with construction manager and City of Rochester to determine staging areas for slag
- Working with Contractors to identify slag
- Work with the Contractors to monitor excavations for evidence of environmental impairment
- Direct the Contractors as to proper staging, covering, and containment of slag
- Implementation of the Health and Safety Plan (HASP) for the SWCP and City of Rochester personnel at the Site. Contractors and other personnel working at the site are responsible for their own HASP (see Section 6.0)
- Implementation of the Community Air Monitoring Plan (CAMP) for the site (see Section 7.0)

6.0 HEALTH AND SAFETY PLAN (HASP)

This SWCP contains a Site Specific HASP for the Port of Rochester developed by LaBella Associates, P.C. This HASP is designated for the activities associated with the implementation of the SWCP and is designed to cover City of Rochester and LaBella personnel only. A copy of this HASP is included in Appendix 5.

Contractors disturbing the subsurface at the Port of Rochester will need to develop and rely on their own HASP to manage health and safety issues associated with potential exposure to site contaminants of concern and any other potential issues.

7.0 COMMUNITY AIR MONITORING PLAN (CAMP)

This SWCP contains a CAMP designed for the excavation, processing, and crushing of the slag material at the Site. This CAMP should be implemented when the slag layer at the Port of Rochester Site has the potential to be disturbed. The EMP includes CAMP measures relating to the disturbances of other regulated materials that may be encountered during excavation activities at the Site. A copy of this CAMP is included in Appendix 6.

The EPM will be responsible to implement the CAMP and will direct the Contractor disturbing the slag layer at the Port of Rochester when abatement measures are required to mitigate particulate and VOC emissions. The Contractor shall implement these measures as directed by the EPM. The Contractor will be required to have a sufficient amount of water trucks, polyethylene sheeting, and other mitigative supplies staged and readily available at the Site.

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LABELLA
LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Tables

Table 2

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Volatile Organic Compounds (VOCs) in Slag & Mixed Fill Samples
Test Results in micrograms per Kilogram (µg/Kg) or parts per billion (ppb)

Constituent	Slag Samples				Mixed Fill Samples										Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Restricted Residential Use	Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Groundwater
	B-33 (4.0'-8.0')	B-37 (4.0'-8.0')	BS-39 (6.0'-6.7')	TP-7 (1.0')	BH-5 (1.0'-4.2')	BH-6 (1.0'-4.6')	BS-5 (1.0'-6.2')	BS-7 (1.0'-2.8')	BS-9 (2.0'-4.6')	BS-37 (6.0'-7.7')	BS-38 (6.0'-7.1')	Phase I Fill	Phase II Fill (a)	Phase II Fill (b)		
	Black & Gray Slag	Black Slag	Gray Slag	Red Slag	Ash, Cinders, & Slag (color unknown)	Cinders & Slag (color unknown)	Ash, Cinders, Foundry Sand, & Slag (color unknown)	Foundry Sand & Slag (color unknown)	Cinders, Ash, & Slag (color unknown)	Blue/Green Slag & Ash	White/Gray Slag & Ash	Fill Materials (With Blue/Green Slag)	Fill Materials (With Blue/Green Slag)	Fill Materials (With Blue/Green Slag)		
	2000	2000	11/10/2006	9/9/2008	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007	11/10/2006	11/10/2006	7/2/2009	7/6/2009	7/6/2009		
Acetone	NA	NA	8 J	ND<40.1 U	14 J	14 J	17 J	7 J	14 J	ND<6 U	13 J	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000	50
Benzene	ND<10.1 U	ND<10.1 U	ND<5 U	ND<8.02 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	4,800	60
Carbon disulfide	NA	NA	1 J	ND<8.02 U	ND<6 U	ND<11 U	2 J	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000	100,000
Ethylbenzene	ND<10.1 U	ND<10.1 U	ND<5 U	ND<8.02 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	41,000	1,000
Isopropylbenzene	ND<10.1 U	ND<10.1 U	ND<5 U	ND<8.02 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000	100,000
Naphthalene	ND<50.3 U	ND<50.7 U	ND<5 U	ND<8.02 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	2.0 B, J	4.3 B,J	1.80 B,J	100,000	12,000
n-Propylbenzene	ND<10.1 U	ND<10.1 U	ND<5 U	ND<8.02 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000	3,900
Methylene chloride	NA	NA	13	ND<20.1 U	9 B	40 B	6 B	12 B	10 B	ND<6 U	16	ND<5.7 U	1.1 U	ND<6.7 U	100,000	50
Toluene	ND<10.1 U	ND<10.1 U	ND<5 U	ND<8.02 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000	700
1,2,4-Trimethylbenzene	ND<10.1 U	ND<10.1 U	ND<5 U	ND<8.02 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	52,000	3,600
1,3,5-Trimethylbenzene	ND<10.1 U	ND<10.1 U	ND<5 U	ND<8.02 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	52,000	8,400
sec-Butylbenzene	ND<10.1 U	ND<10.1 U	ND<5 U	ND<8.02 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000	11,000
p-Isopropyltoluene	ND<10.1 U	ND<10.1 U	ND<5 U	ND<8.02 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000	100,000
m,p-Xylene	ND<10.1 U	ND<10.1 U	ND<5 U	11.4	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000	1,600
o-Xylene	ND<10.1 U	ND<10.1 U	ND<5 U	ND<8.02 U	ND<6 U	ND<11 U	ND<5 U	ND<6 U	ND<5 U	ND<6 U	ND<5 U	ND<5.7 U	ND<5.2 U	ND<6.7 U	100,000	1,600

Notes:

VOC analysis by United States Environmental Protection Agency (USEPA) Method 8260B
NA denotes value not available.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.
J - Denotes an estimated value.

Table 3

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Semivolatile Organic Compounds (SVOCs) in Slag & Mixed Fill Samples
Test Results in micrograms per Kilogram (µg/Kg) or parts per billion (ppb)

Constituent	Slag Samples				Mixed Fill Samples									Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Restricted Residential Use	Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Groundwater
	Bourne TP-1 (0-2')	TP-10 (3.0')	BS-21 (4.0'-4.5')	TP-7 (1.0')	BS-7 (1.0'-2.8')	BS-13 (2.0'-3.1')	BS-18 (2.0'-3.4')	BS-22 (2.0'-3.0')	BS-27 (4.5'-5.5')	BS-31 (2.0'-2.9')	BS-37 (6.0'-7.7')	BS-38 (6.0'-7.1')	BS-39 (6.0'-6.7')		
	Slag (color unknown)	Red & Blue Slag	Blue/Green Slag	Red Slag	Foundry Sand & Slag (color unknown)	Blue/Green Slag & Ash	Foundry Sand & Blue/Green Slag	Foundry Sand & Slag (color unknown)	Foundry Sand & Black Slag	White, Brown, & Black Slag	Blue/Green Slag & Ash	White/Gray Slag & Ash	Foundry Sand, Ash, & Slag (color unknown)		
	1/11/2000	2/28/2000	11/10/2006	9/9/2008	3/1/2007		11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006		
Anthracene	ND<305 U	ND<318 U	ND<350 U	ND<372 U	61 J	ND<7,200 U	ND<370 U	170 J	ND<400 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	100,000	1,000,000
Acenaphthylene	ND<305 U	ND<318 U	ND<350 U	ND<372 U	ND<370 U	ND<7,200 U	ND<370 U	ND<350 U	ND<400 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	100,000	107,000
Acenaphthene	ND<305 U	ND<318 U	ND<350 U	ND<372 U	26 J	ND<7,200 U	ND<370 U	ND<350 U	ND<400 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	100,000	98,000
Benzo (a) anthracene	ND<356 U	ND<318 U	ND<350 U	ND<372 U	150 J	380 J	22 J	400	22 J	ND<1,900 U	66 J	26 J	ND<340 U	1,000	1,000
Benzo (a) pyrene	ND<356 U	ND<318 U	ND<350 U	ND<372 U	120 J	ND<7,200 U	21 J	410	ND<400 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	1,000	22,000
Benzo (b) fluoranthene	ND<356 U	ND<318 U	ND<350 U	ND<372 U	190 J	ND<7,200 U	23 J	700	26 J	ND<1,900 U	90 J	30 J	ND<340 U	1,000	1,700
Benzo (g,h,i) perylene	ND<356 U	ND<318 U	ND<350 U	ND<372 U	70 J	ND<7,200 U	ND<370 U	200 J	ND<400 U	ND<1,900 U	39 J	21 J	ND<340 U	100,000	1,000,000
Benzo (k) fluoranthene	ND<356 U	ND<318 U	ND<350 U	ND<372 U	200 J	ND<7,200 U	ND<370 U	ND<350 U	ND<400 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	3,900	1,000
Chrysene	ND<356 U	ND<318 U	ND<350 U	ND<372 U	130 J	ND<7,200 U	24 J	400	ND<400 U	ND<1,900 U	61 J	23 J	ND<340 U	3,900	1,000
Dibenz(a,h)anthracene	ND<356 U	ND<318 U	ND<350 U	ND<372 U	22 J	ND<7,200 U	ND<370 U	77 J	ND<400 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	330	1,000,000
Fluoranthene	ND<356 U	ND<318 U	ND<350 U	ND<372 U	320 J	410 J	45 J	780	ND<400 U	ND<1,900 U	94 J	30 J	ND<340 U	100,000	1,000,000
Fluorene	ND<356 U	ND<318 U	ND<350 U	ND<372 U	ND<370 U	ND<7,200 U	ND<370 U	ND<350 U	ND<400 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	100,000	386,000
Indeno (1,2,3-cd) pyrene	ND<305 U	ND<318 U	ND<350 U	ND<372 U	66 J	ND<7,200 U	ND<370 U	200 J	ND<400 U	ND<1,900 U	35 J	17 J	ND<340 U	500	8,200
Naphthalene	ND<305 U	ND<318 U	ND<350 U	11.4	ND<370 U	ND<7,200 U	ND<370 U	ND<350 U	ND<400 U	ND<1,900 U	ND<350 U	ND<350 U	ND<340 U	100,000	12,000
Phenanthrene	ND<305 U	ND<318 U	ND<350 U	ND<372 U	260 J	ND<7,200 U	26 J	710	ND<400 U	ND<1,900 U	46 J	17 J	ND<340 U	100,000	1,000,000
Pyrene	ND<305 U	ND<318 U	ND<350 U	ND<372 U	220 J	460 J	36 J	670	ND<400 U	ND<1,900 U	84 J	29 J	ND<340 U	100,000	1,000,000
Total SVOCs	None Detected	None Detected	None Detected	11.4	1,835	1,250	197	4,717	48	None Detected	515	193	None Detected	*Not Applicable*	*Not Applicable*

Notes:

SVOC analysis by United States Environmental Protection Agency (USEPA) Method 8270C.
ND<372 U - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.
J - Denotes an estimated value.

Table 4

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Metals in Slag & Mixed Fill Samples
Test Results in milligrams per Kilogram (mg/Kg) or parts per million (ppm)

USEPA TAL Metals	Slag Samples										Mixed Fill Samples		Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Restricted Residential Use	Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Groundwater
	Bourne TP-1	Bourne TP-2	TP-6	TP-6	TP-9	TP-10 (3')	TP-15 (6-8')	TP-18	B-21 (1.0'-4.0')	B-34 (4.0'-5.5')	B-22 (0.0'-1.0')	TP-8 (2-3')		
	Slag (color unknown)	Slag (color unknown)	White Slag	Black Slag	Red Slag	Red & Blue Slag	White Slag	Green Slag	Blue Slag	Red Slag	Cinders & Blue Slag	Slag (color unknown) & Ash		
	1/11/2000	2/28/2000	2/28/2000	2/28/2000	2/28/2000	2/29/2000	2/29/2000	2/29/2000	8/22/2000	8/23/2000	8/22/2000	2/28/2000		
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	10,000
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	10,000
Arsenic	**20.6**	0.875	ND<6.23 U	**17.6**	ND<4.9 U	**51.10**	7.12	7.12	**16.5**	ND<0.367 U	**91.2**	**52**	16	16
Barium	188	**511**	81	193	177	22.2	657	ND<4.40 U	72.9	12.7	179	165	400	820
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0	NA	72	47
Cadmium	**191**	2.84	ND<0.623 U	ND<0.535 U	ND<0.49 U	0.604	ND<0.382 U	**80.2**	ND<0.554 U	13.1	ND<0.558 U	ND<0.584 U	4.3	7.5
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	10,000
Chromium	43	ND<1.96 U	2.24	11.8	3.04	3.72	**17.8**	ND<0.440 U	7.41	9.38	15.5	15.4	110	19
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	10,000
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	270	1,720
Total Cyanide	ND<1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	27	40
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	10,000
Lead	191	ND<9.80 U	ND<0.623 U	4.18	ND<0.49 U	5.33	3.29	ND<0.440 U	80.9	15	127	62.8	400	450
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	10,000
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,000	2,000
Mercury	ND<0.103 U	ND<0.0690 U	ND<0.0878 U	0.0774	ND<0.098 U	0.240	ND<0.059 U	ND<0.0760 U	ND<0.045 U	0.088	0.138	ND<0.079 U	0.81	0.73
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	310	130
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	10,000
Selenium	ND<1.08 U	ND<0.980 U	ND<6.23	ND<5.35 U	ND<4.9 U	ND<5.03 U	ND<3.82 U	ND<4.40 U	1.31	ND<0.367 U	2.31	1.15	180	4
Silver	ND<1.08 U	ND<0.980 U	3.74	ND<2.15 U	ND<1.96 U	ND<2.01 U	ND<1.53 U	1.76	ND<1.11 U	1.79	2.22	ND<2.34 U	180	8.3
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	10,000
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	10,000
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	10,000
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	2,480

Notes:

TAL Metals analysis by United States Environmental Protection Agency (USEPA) Methods 6010 and 7471 (Mercury)
Bold type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Restricted Residential Use.
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Groundwater.
ND<372 U - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.

Table 4 (continued)

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Metals in Slag & Mixed Fill Samples
Test Results in milligrams per Kilogram (mg/Kg) or parts per million (ppm)

USEPA TAL Metals	Slag Samples					Mixed Fill Samples							Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Restricted Residential Use	Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Groundwater
	B-21 (1.0'-4.0')	BS-12 (0.4'-0.6')	B-34 (4.0'-5.5')	BS-21 (4.0'-4.5')	BS-34 (4.0'-5.5')	BS-18 (2.0'-3.4')	B-22 (0.0'-1.0')	BS-22 (2.0-3.0')	BS-27 (4.5'-5.5')	BS-28 (4.0'-5.4')	BS-31 (2.0'-2.9')	BS-9 (2.0'-4.6')		
	Blue Slag	Gray Slag	Red Slag	Blue/Green Slag	Red Slag	Foundry Sand & Blue/Green Slag	Cinders & Blue Slag	Foundry Sand & Slag (color unknown)	Foundry Sand & Black Slag	Red, White, & Gray Slag & Cinders, Ash, & Foundry Sand	White, Brown, and Black Slag	Cinders, Ash, & Slag (color unknown)		
	8/22/2000	11/10/2006	8/23/2000	11/10/2006	11/10/2006	11/10/2006	8/22/2000	11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006		
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**21,200**	10,000	10,000
Antimony	NA	ND <14.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND <15.6 U	10,000	10,000
Arsenic	**16.5**	5.1	ND<0.367 U	ND<2.0 U	ND<0.367 U	5.1	**91.2**	ND<1.9 U	**18.7**	ND<2.2 U	**18.5**	ND <2.1 U	16	16
Barium	72.9	NA	12.7	NA	12.7	NA	179	NA	NA	NA	NA	362	400	820
Beryllium	NA	0.70 E	NA	NA	NA	NA	1.0	NA	NA	NA	NA	3.2 E	72	47
Cadmium	ND<0.554 U	0.32	**13.1**	ND<0.20 U	**13.1**	0.27	ND<0.558 U	ND<0.19 U	2.7	ND<0.22 U	1.8	ND <0.21 U	4.3	7.5
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**214,000**	10,000	10,000
Chromium	7.41	9.0 E	9.38	1.4 E	9.38	3.9 E	15.5	1.4 E	62.6 E	1.7	39.0 E	1.8 E	110	19
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.12 B	10,000	10,000
Copper	NA	16.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	270	1,720
Total Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND<1.1 U	27	40
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,070	10,000	10,000
Lead	80.9	38.1 E	15	NA	15	NA	127	NA	NA	NA	NA	1.2 E	400	450
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**13,500**	10,000	10,000
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	162	2,000	2,000
Mercury	ND<0.045 U	0.063	0.088	ND<0.019 U	0.088	0.024	0.138	0.021	0.030	0.186	0.025	ND <0.017 U	0.81	0.73
Nickel	NA	10.0 E	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.4 E	310	130
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,300	10,000	10,000
Selenium	1.31	ND <3.9 U	ND<0.367 U	NA	ND<0.367 U	NA	2.31	NA	NA	NA	NA	ND <4.2 U	180	4
Silver	ND<1.11 U	ND <0.53 U	1.79	NA	1.79	NA	2.22	NA	NA	NA	NA	ND <0.56 U	180	8.3
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	627	10,000	10,000
Thallium	NA	ND <5.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND <6.2 U	10,000	10,000
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.3	10,000	10,000
Zinc	NA	160	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.9	10,000	2,480

Notes:

TAL Metals analysis by United States Environmental Protection Agency (USEPA) Methods 6010 and 7471 (Mercury)
Bold type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Restricted Residential Use.
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Groundwater.
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Table 4 (continued)

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Metals in Slag & Mixed Fill Samples
Test Results in milligrams per Kilogram (mg/Kg) or parts per million (ppm)

USEPA TAL Metals	Slag Samples										Mixed Fill Samples										Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Restricted Residential Use	Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Groundwater
	BS-39 (6.0'-6.7')		TP-7 (1.0')		Phase I Slag (a)		Phase I Slag (b)		Phase II Slag		BS-37 (6.0'-7.7')		BS-38 (6.0'-7.1')		Phase I Fill		Phase II Fill (a)		Phase II Fill (b)			
	Gray Slag		Red Slag		Blue/Green Slag		Blue/Green Slag		Blue/Green Slag		Blue/Green Slag & Ash		White/Gray Slag & Ash		Fill Materials (With Blue/Green Slag)		Fill Materials (With Blue/Green Slag)		Fill Materials (With Blue/Green Slag)			
	11/10/2006		9/9/2008		7/1/2009		7/6/2009		6/29/2009		11/10/2006		11/10/2006		7/2/2009		7/6/2009		7/6/2009			
Aluminum	**44,400**	**E**	9,870		**27,300**	**E**	**23,900**	**E**	**20,600**	**E**	**54,700**	**E**	951		1,720	E	8,800	E	**12,600**	**E**	10,000	10,000
Antimony	ND<151	U	ND<6.62	U	0.56	N,E	0.61	N, E	0.46	N,E	ND<147	U	ND<135	U	4.9	N,E	6.4	N,E	1.9	N,E	10,000	10,000
Arsenic	ND<20.1	U	10.9		5.1	E	7.8	E	8.3	E	**36.3**	**N**	ND<18.0	U	9.50	E	12.4	E	**29.4**	**E**	16	16
Barium	269	E	156.0		171	E	120	E	124	E	368	E	11.6	E	34.6	E	162	E	312	E	400	820
Beryllium	4.2	E	1.39		4.6	E	2.9	E	2.9	E	42.6	N,E	ND<1.8	U	0.31	E	2.7	E	3.5	E	72	47
Cadmium	ND<2.0	U	1.83		ND<0.014	N,E	0.048	N, E	0.67	N,E	**32.0**	**N,E**	ND<1.8	U	3.7	N,E	**5.4**	**N,E**	3.4	N,E	4.3	7.5
Calcium	**202,000**		**54,300**		**251,000***		**243,000**		**166,000**		**251,000**	**E**	**342,000**	**E**	2,790*		**33,800***		**37,300***		10,000	10,000
Chromium	ND<5.0	U	14.4		3.1	E	5.7	E	12.1	E	37.8	N,E	ND<4.5	U	11.1	E	18.4	E	32.8	E	110	19
Cobalt	ND<5.0	U	6.3		ND<0.040	E	ND<0.040	E	1.1	E	31.8	N,E	ND<4.5	U	0.55	E	2.2	E	6.7	E	10,000	10,000
Copper	ND<10.1	U	17.9		3.3*	E	7.7	E	17.4	E	33.6	N	ND<9.0	U	108*	N,E	16.7*	N,E	30.2*	N,E	270	1,720
Total Cyanide	NA		**11,000**		NA		NA		NA		NA		NA		NA		NA		NA		27	40
Iron	4,780	N,E	**50,600**		3,610*		7,170		**51,900**		6,080	N,E	2,980	N,E	**177,000***		**273,000***		**119,000***		10,000	10,000
Lead	ND<10.1	U	35.9		3.3	E	4.9	E	15.1	E	35.4	N	11.4	N,E	145	E	69.8	E	231	E	400	450
Magnesium	**28,600**	**E**	**13,200**		**26,100***	**E**	**39,800**	**E**	**18,200**	**E**	**13,100**	**E**	6,790	E	100*	E	2,370*	E	8,390*	E	10,000	10,000
Manganese	422	E	816		256		312		634		**4,460**	**E**	150	E	43.1		**3,740**		**4,070**		2,000	2,000
Mercury	ND<0.016	U	0.0145		ND<0.0057	U	0.0090		0.0280		ND<0.020	U	0.106		0.068		0.0161		0.10		0.81	0.73
Nickel	ND<5.0	U	14.3		4.1	E	5.6	E	12.0	E	32.5	N	ND<4.5	U	11.8	E	7.5	E	9.9	E	310	130
Potassium	7,060	N,E	1,510		2,290	E	2,500	E	2,250	E	4,260	N	ND<271	U	386	E	1,440	E	1,960	E	10,000	10,000
Selenium	ND<40.2	U	ND<0.552	U	1.1	N	1.3	N	ND<0.77	N	45.3	N	ND<36.1	U	ND<0.76	N,E	ND<0.77	N,E	ND<1.0	N,E	180	4
Silver	ND<5.0	U	2.4		ND<0.090	E	ND<0.091	E	ND<0.078	E	7.8	N	ND<4.5	U	ND<0.077	E	0.47	E	2.2	E	180	8.3
Sodium	ND<1,410	U	489		1,230		1,160		1,290		3,080	N	ND<1,260	U	112		610		808		10,000	10,000
Thallium	ND<60.4	U	ND<0.662	U	2.3	N	1.8	N	0.55	N	ND<58.6	U	ND<54.1	U	ND<0.24	N,E	ND<0.23	N,E	ND<0.31	N	10,000	10,000
Vanadium	9.800	N,E	25.5		6.3	E	12.1	E	17.8	E	52.0	N,E	ND<4.5	U	12.1	E	15.7	E	35.0	E	10,000	10,000
Zinc	ND<10.1	U	111		3.1	N,E	7.3	N, E	47.7	N,E	38.3	N	25.3	N	13.9	N,E	369	N,E	2,500	N,E	10,000	2,480

Notes:

TAL Metals analysis by United States Environmental Protection Agency (USEPA) Methods 6010 and 7471 (Mercury)
Bold type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Restricted Residential Use.
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U - Denotes that the compound was not detected above the reported laboratory method detection limit.

Table 5

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Metals in Slag & Mixed Fill Samples With TCLP & SPLP Results
Test Results in milligrams per Kilogram (mg/Kg) or parts per million (ppm)

USEPA TAL Metals	Slag Samples																		Mixed Fill Samples		Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Restricted Residential Use	Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Groundwater	USEPA TCLP Regulatory Limits	NYSDEC Part 703 Groundwater Standards
	TP-6	* TP-6 (TCLP)	TP-6	* TP-6 (TCLP)	TP-9	*TP-9 (TCLP)	TP-15 (6-8')	* TP-15 (6-8') (TCLP)	* T-16 (2') (TCLP)	* TP-17 (8') (TCLP)	TP-18	* TP-18 (TCLP)	Phase I Slag (a)	† Phase I Slag (a) (SPLP)	Phase I Slag (b)	† Phase I Slag (b) (SPLP)	Phase II Slag	† Phase II Slag (SPLP)	TP-8 (2-3')	* TP-8 (2-3') (TCLP)				
	White Slag	White Slag	Black Slag	Black Slag	Red Slag	Red Slag	White Slag	White Slag	Slag (color unknown)	Gray/Blue Slag	Green Slag	Green Slag	Blue/Green Slag	Blue/Green Slag	Blue/Green Slag	Blue/Green Slag	Blue/Green Slag	Blue/Green Slag	Slag (color unknown) & Ash	Slag (color unknown) & Ash				
	2/28/2000	2/28/2000	2/28/2000	2/28/2000	2/28/2000	2/28/2000	2/29/2000	2/29/2000	2/20/2000	2/29/2000	2/29/2000	2/29/2000	7/1/2009	7/1/2009	7/6/2009	7/6/2009	6/29/2009	6/29/2009	2/28/2000	2/28/2000				
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**27,300 E**	0.937	**23,900 E**	0.676	**20,600 E**	0.231	NA	NA	10,000	10,000	Not Available	Not Available
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.56 N, E	ND U	0.61 N,E	ND U	0.46 N,E	ND U	NA	NA	10,000	10,000	1	3
Arsenic	ND<6.23 U	ND<0.025 U	**17.6**	ND<0.025 U	ND<4.9 U	ND<0.025 U	7.12	ND<0.025 U	ND<0.025 U	ND<0.025 U	7.12	ND<0.025 U	5.1 E	ND U	7.8 E	ND U	8.3 E	ND U	**52**	ND<0.025 U	16	16	5	25
Barium	81	0.1	193	0.25	177	0.3	657	0.35	0.60	0.4	ND<4.40 U	0.75	171 E	0.208	120 E	0.0756 B	124 E	0.0281 B	165	0.2	400	820	0.75	1,000
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.6 E	ND U	2.9 E	ND U	2.9 E	ND U	NA	NA	72	47	Not Available	1,100
Cadmium	ND<0.623 U	ND<0.025 U	ND<0.535 U	ND<0.025 U	ND<0.49 U	ND<0.025 U	ND<0.382 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	**80.2**	ND<0.025 U	ND<0.014 N, E	ND U	0.048 N,E	ND U	0.67 N,E	ND U	ND<0.584 U	ND<0.025 U	4.3	7.5	1	5
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**251,000**	74.6	**243,000**	45.7	**166,000**	36.8	NA	NA	10,000	10,000	Not Available	Not Available
Chromium	2.24	ND<0.025 U	11.8	ND<0.025 U	3.04	ND<0.025 U	**17.8**	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<0.440 U	ND<0.025 U	3.1 E	ND U	5.7 E	0.0014 B	12.1 E	ND	15.4	ND<0.025 U	110	19	5	50
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND<0.040 E	ND U	ND<0.040 E	ND U	1.1 E	ND U	NA	NA	10,000	10,000	Not Available	Not Available
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.3* E	ND U	7.7 E	ND U	17.4 E	ND U	NA	NA	270	1,720	Not Available	200
Total Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND U	NA	ND U	NA	ND U	NA	NA	27	40	Not Available	Not Available
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,610*	ND U	7,170	ND U	**51,900**	ND U	NA	NA	10,000	10,000	Not Available	3,000
Lead	ND<0.623 U	ND<0.025 U	4.18	ND<0.025 U	ND<0.49 U	ND<0.025 U	3.29	0.045	0.045	0.045	ND<0.440 U	0.045	3.3 E	ND U	4.9 E	ND U	15.1 E	ND U	62.8	ND<0.025 U	400	450	5	25
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**26,100 E**	0.0799 B	**39,800 E**	ND U	**18,200 E**	0.102 B	NA	NA	10,000	10,000	Not Available	35,000
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	256	ND U	312	ND U	634	ND U	NA	NA	2,000	2,000	Not Available	300
Mercury	ND<0.0878 U	ND<0.0020 U	0.0774	ND<0.0020 U	ND<0.098 U	ND<0.0020 U	ND<0.059 U	ND<0.0020 U	ND<0.0020 U	ND<0.0020 U	ND<0.0760 U	ND<0.0020 U	ND<0.0057 U	ND U	0.0090	ND U	0.0280	ND U	ND<0.079 U	ND<0.0020 U	0.81	0.73	0.2	0.7
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.1 E	ND	5.6 E	ND U	12.0 E	ND U	NA	NA	310	130	Not Available	100
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,290 E	2.07	2,500 E	2.86	2,250 E	1.17	NA	NA	10,000	10,000	Not Available	Not Available
Selenium	ND<6.23	ND<0.025 U	ND<5.35 U	ND<0.025 U	ND<4.9 U	ND<0.025 U	ND<3.82 U	ND<0.025 U	ND<0.025 U	ND<0.025 U	ND<4.40 U	ND<0.025 U	1.1 N	0.0334	1.3 N	0.026 B, G	ND<0.77 N	0.0162 B	1.15	ND<0.025 U	180	4	1	10
Silver	3.74	ND<0.1 U	ND<2.15 U	ND<0.1 U	ND<1.96 U	ND<0.1 U	ND<1.53 U	ND<0.1 U	ND<0.1 U	ND<0.1 U	1.76	ND<0.1 U	ND<0.090 E	0.0 N	ND<0.091 E	0.0013 B	ND<0.078 E	0.086 B	ND<2.34 U	ND<0.1 U	180	8.3	5	50
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,230	9.29	1,160	11.2	1,290	20	NA	NA	10,000	10,000	Not Available	20,000
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.3 N	ND U	1.8 N	ND U	0.55 N	ND U	NA	NA	10,000	10,000	Not Available	0.5
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.3 E	0.0122 B	12.1 E	0.0089 B	17.8 E	0.203 B	NA	NA	10,000	10,000	Not Available	Not Available
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.1 N, E	0.0101 B	7.3 N,E	0.0083 B	47.7 N,E	ND U	NA	NA	10,000	2,480	Not Available	2,000

Notes:

TAL Metals analysis by United States Environmental Protection Agency (USEPA) Methods 6010 and 7471 (Mercury)
Bold type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Restricted Residential Use.
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Groundwater.
ND - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.
* Indicates that a Toxicity Characteristic Leaching Procedure (TCLP) was performed on this sample.
† Indicates that a Synthetic Precipitation Leaching Procedure (SPLP) was performed on this sample.

Table 6

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Pesticides in Mixed Fill Samples
Test Results in micrograms per Kilogram (µg/Kg) or parts per billion (ppb)

Parameter/Sample ID #	Mixed Fill Samples			Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Restricted Residential Use	Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Groundwater
	BS-5 (1.0' to 6.2')	BS-7 (1.0' to 2.8')	BS-9 (2.0' to 4.6')		
	Ash, Cinders, Foundry Sand & Slag (color unknown)	Foundry Sand & Slag (color unknown)	Cinders, Ash, & Slag (color unknown)		
	3/1/2007	3/1/2007	3/1/2007		
beta-BHC	24	ND <1.9	ND <1.8	360	90
delta-BHC	ND <19	1.6 J	1.4 J	100,000	250
gamma-BHC	ND <19	1.2 J	ND <1.8	100,000	100,000
4,4'-DDD	ND <19	1.0 J	ND <1.8	13,000	14,000
4,4'-DDT	35	2.5	2.2	7,900	136,000
Diedrin	ND <19	ND <1.9	1.1 J	200	100
Endosulfan II	9.4 J	0.95 J	0.85 J	24,000	102,000
Endosulfan Sulfate	14 J	0.99 J	1.0 J	24,000	1,000,000
Endrin	17 J	ND <1.9	ND <1.8	11,000	60
Endrin Aldehyde	ND <19	ND <1.9	1.2 J	100,000	100,000
Heptachlor Epoxide	ND <19	ND <1.9	0.92 J	2,100	380
Methoxychlor	20	2.0	ND <1.8	100,000	100,000

Pesticides analysis by United States Environmental Protection Agency (USEPA) Method 8081B.
NA denotes value not available.
ND <19 - Denotes that the compound was not detected above the reported laboratory method detection limit.
J - Denotes an estimated value.

Table 7

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Polychlorinated Biphenyls (PCBs) in Mixed Fill Samples
Test Results in micrograms per Kilogram (µg/Kg) or parts per billion (ppb)

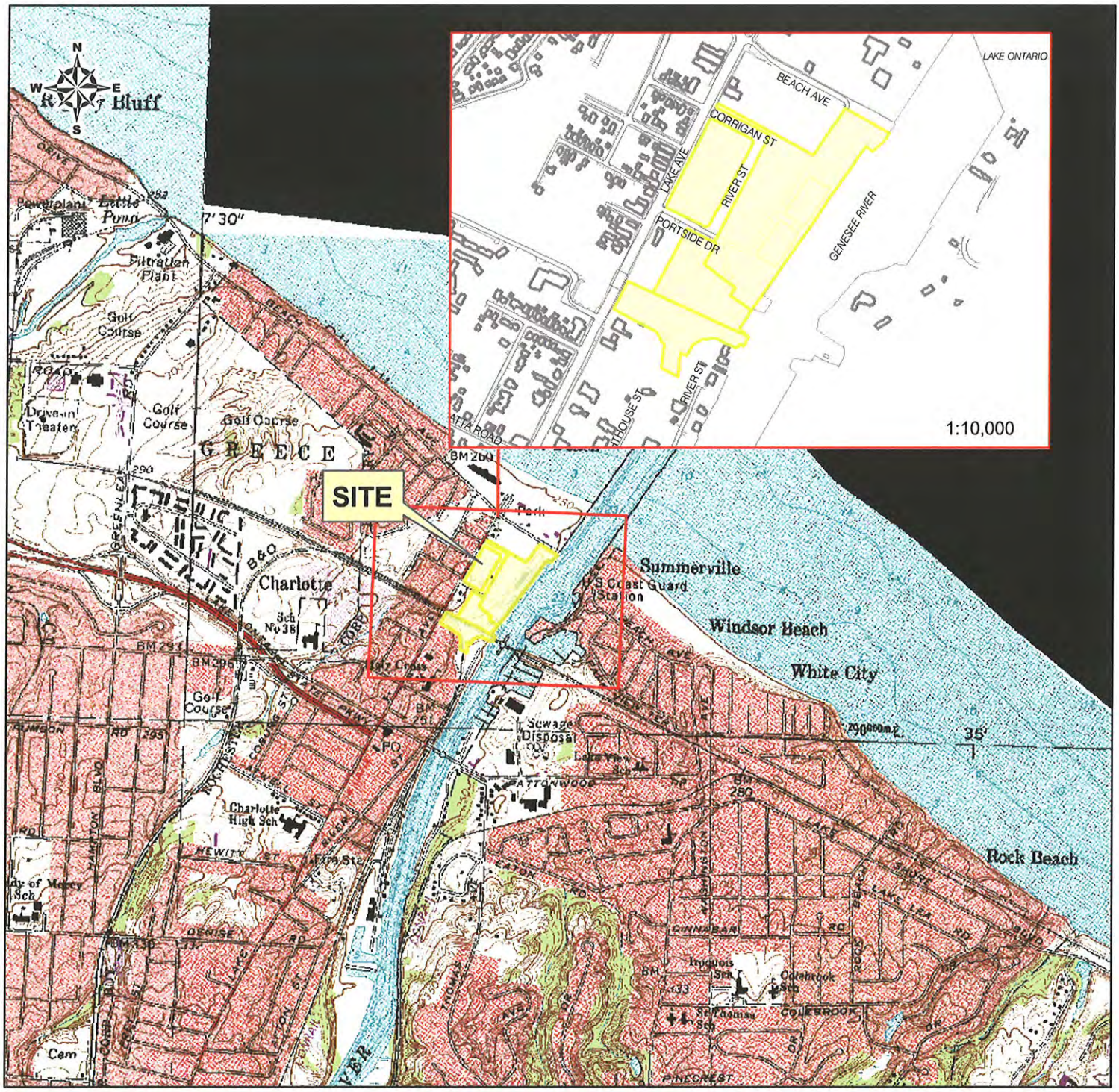
Parameter/Sample ID #	Mixed Fill Samples		Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Public Health - Restricted Residential Use	Part 375 Restricted Use Soil Cleanup Objectives (SCOs) - Protection of Groundwater
	HA-114 (2.0'-4.0')	HA-117 (2.0'-4.0')		
	Foundry Sand & Slag (color unknown	Foundry Sand & Slag (color unknown		
	6/2/2000	6/2/2000		
PCB 1016	ND	ND	1,000	3,200
PCB 1221	ND	ND	1,000	3,200
PCB 1232	ND	ND	1,000	3,200
PCB 1242	ND	ND	1,000	3,200
PCB 1248	ND	ND	1,000	3,200
PCB 1254	ND	ND	1,000	3,200
PCB 1260	ND	ND	1,000	3,200

Notes:

PCBs analysis by United States Environmental Protection Agency (USEPA) Method 8082.
ND - Denotes compound not detected above the reported laboratory method detection limits.

LABELLA
LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Figures



Location within City of Rochester

Location within Monroe County

Location within NY State

PROJECT/DRAWING NUMBER

209447.01

FIGURE 1

DRAWING TITLE

SITE LOCATION AND VICINITY MAP

1:24,000

ISSUED FOR: FINAL

DATE: 9/3/2010

DESIGNED BY: RCN

DRAWN BY: RCN

REVIEWED BY: DEP

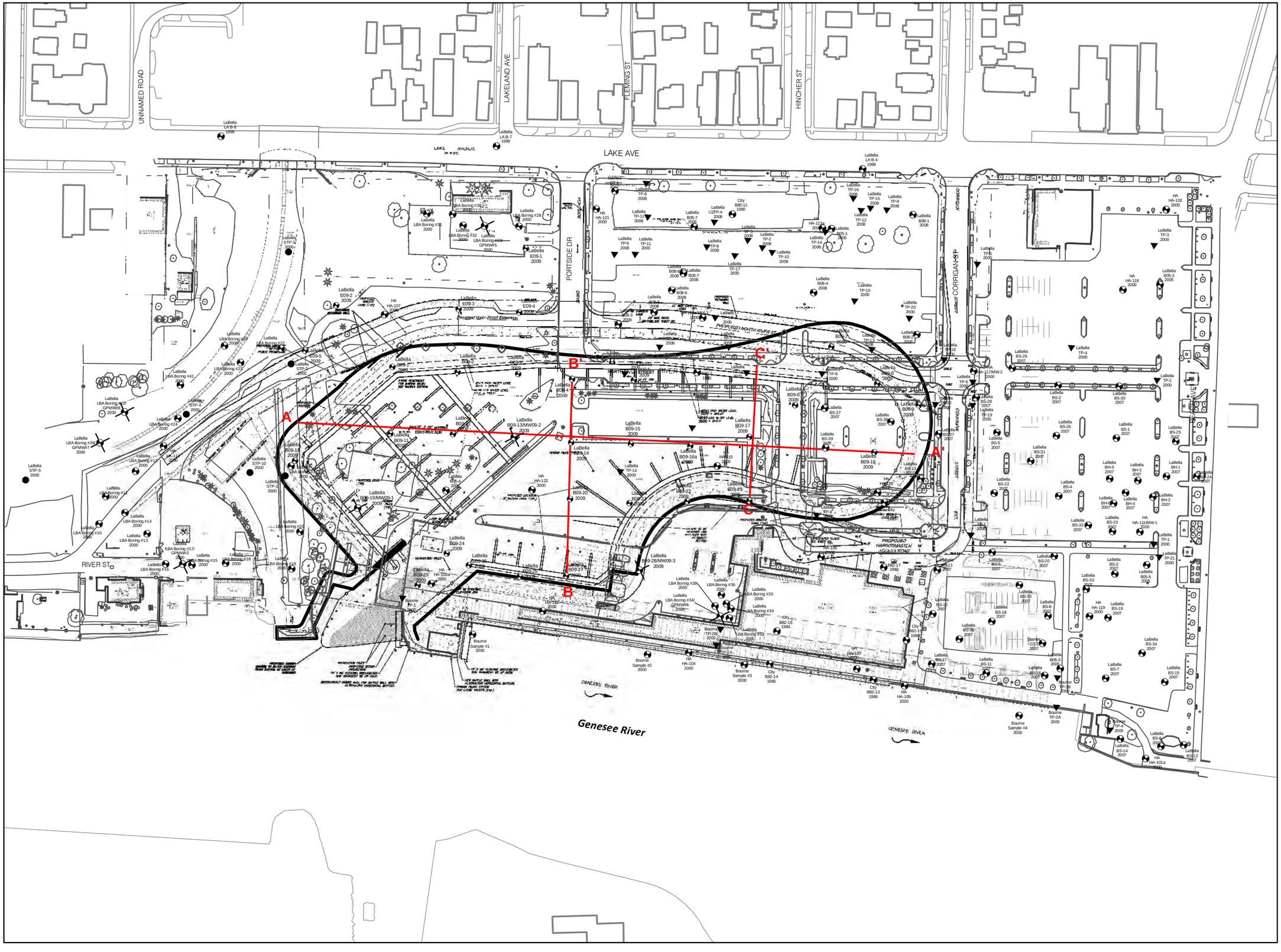
PROJECT/CLIENT

SOLID WASTE CONTROL PLAN

PORT OF ROCHESTER
Proposed Marina

LABELLA Associates, P.C.

300 STATE STREET
ROCHESTER, NY 14614
P: (585) 454-6110
F: (585)454-3066
www.labellapc.com



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PORT OF ROCHESTER

SOLID WASTE CONTROL PLAN

BORINGS & CROSS SECTION TRANSECTS

September 2010

Legend

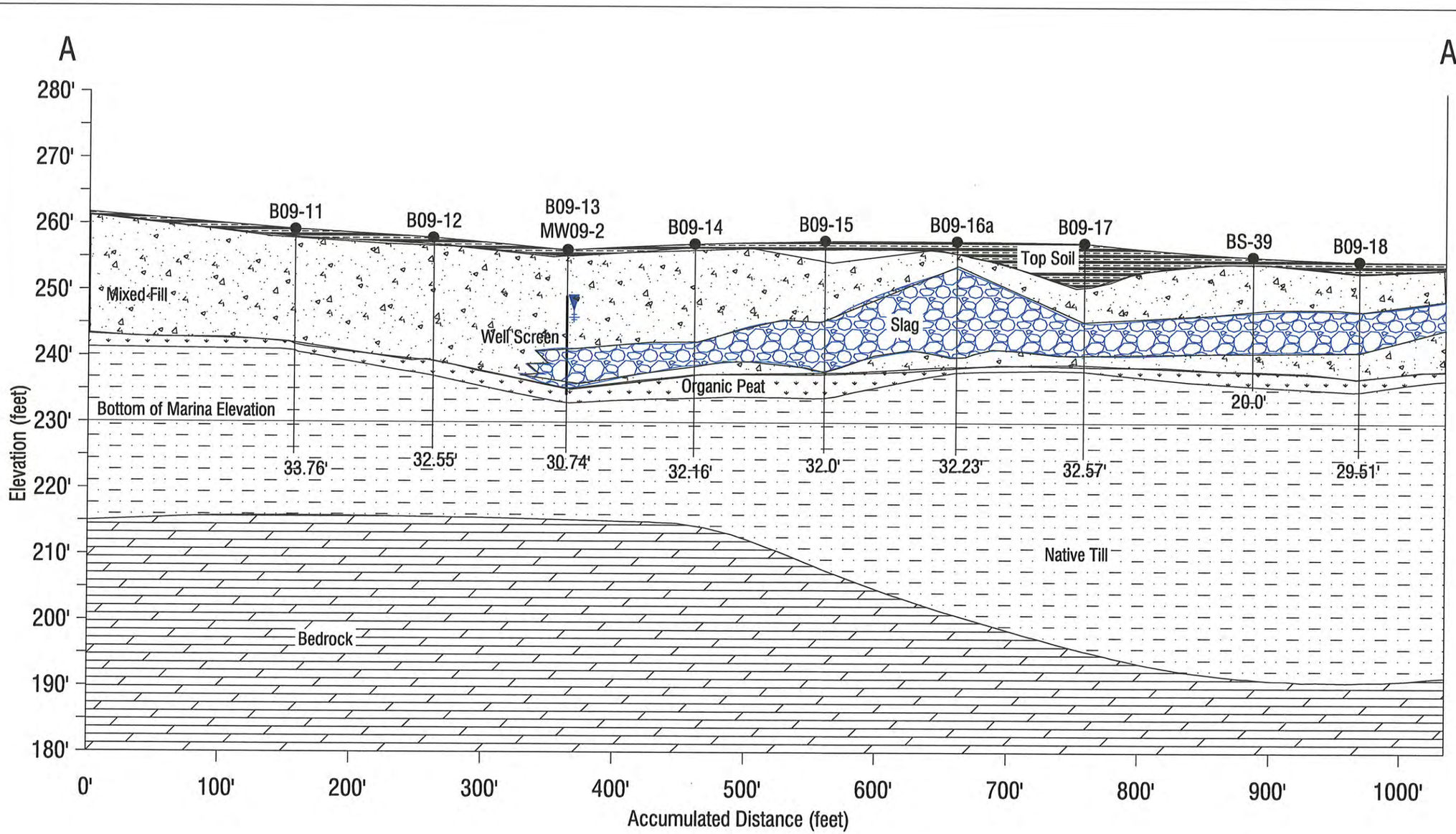
- Soil Boring
- Hand Auger Point
- Monitoring Well
- Test Pit
- Cross Section Transects
- Proposed Public Boardwalk (updated April 2009)
- Former Vortex Sewer

Sources:
(1) City of Rochester Site Survey, 2008.
(2) Passero Figure 7, updated April 2009.
(3) LaBella Port Redevelopment Mapping 2003
(4) LaBella GIS data 2005 through 2009
(5) City of Rochester GIS (buildings and street features)

0 150
1 inch = 150 feet

209447.01

FIGURE 2



LEGEND

- Approximate Static Groundwater Elevation
- Topsoil
- Mixed Fill
- Slag
- Organic Peat
- Native Till
- Bedrock
- Soil Boring Location
- 30.0' Depth to Boring Bottom

NOTE:

1. Formations based on contours generated using Golden Surfer 8 software.
2. Subsurface formations inferred in areas below the terminal depth of borings and beyond the first and last point.
3. Bedrock surface based on points that do not fall near the cross section axis and therefore not shown.

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www.labellapc.com
comment e zone

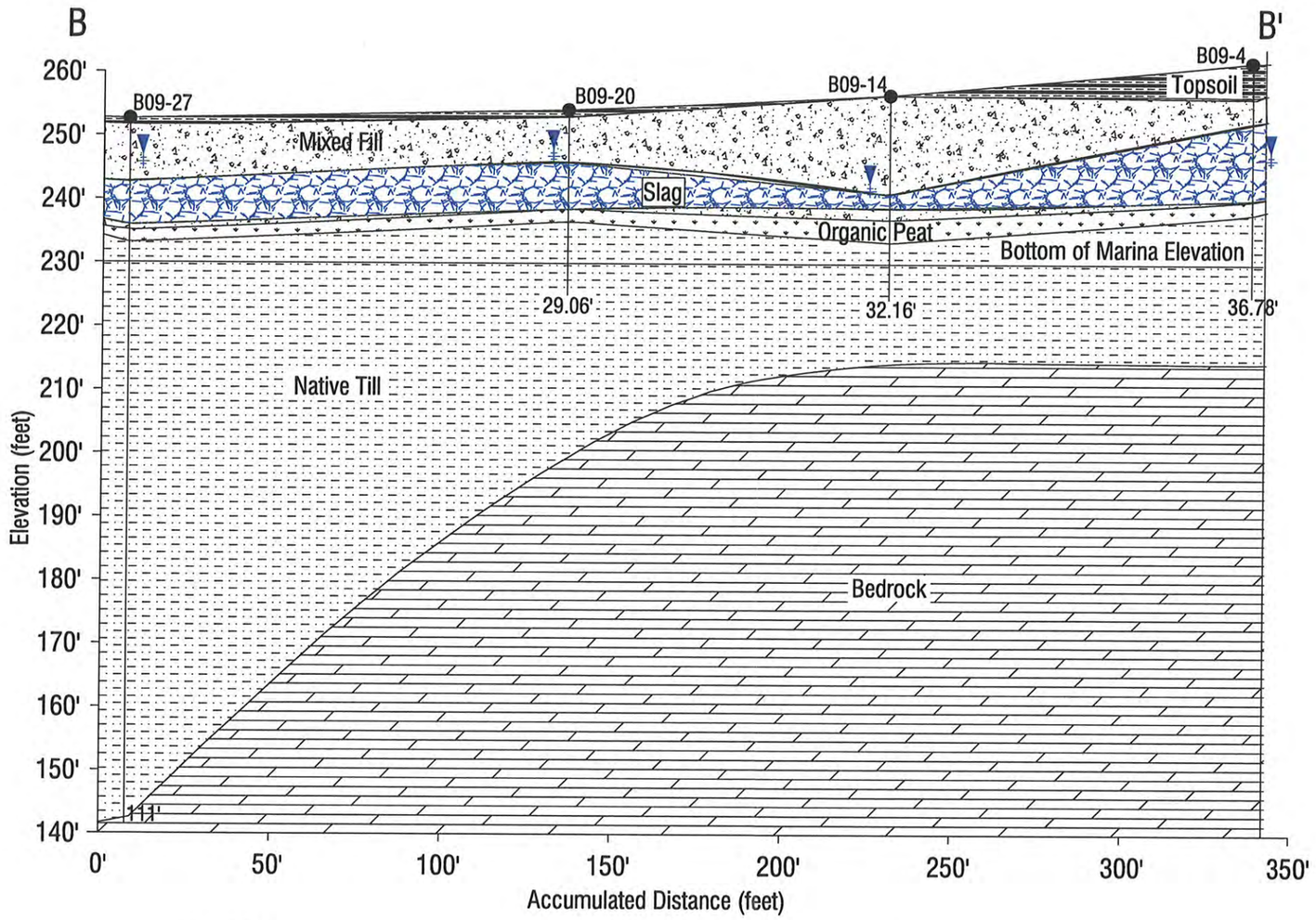
PROJECT/CLIENT
SOLID WASTE CONTROL PLAN
Port of Rochester
Proposed Marina
Rochester, New York

DRAWING TITLE
GEOLOGIC CROSS SECTION
A-A'

ISSUED FOR: FINAL
DATE: SEPTEMBER 2010
DESIGNED BY: EPD
DRAWN BY: RCN
REVIEWED BY: DEP

PROJECT/DRAWING NUMBER
209447.01

FIGURE 3



GENERAL GROUNDWATER FLOW DIRECTION

LEGEND

- Approximate Static Groundwater Elevation
- Topsoil
- Fill - Regulated Waste
- Slag
- Organic Peat
- Native Till
- Bedrock
- Soil Boring Location
- 30.0' Depth to Boring Bottom

NOTE:

1. Formations based on contours generated using Golden Surfer 8 software.
2. Subsurface formations inferred in areas below the terminal depth of borings and beyond the first and last point.
3. Bedrock surface based on points that do not fall near the cross section axis and therefore not shown.

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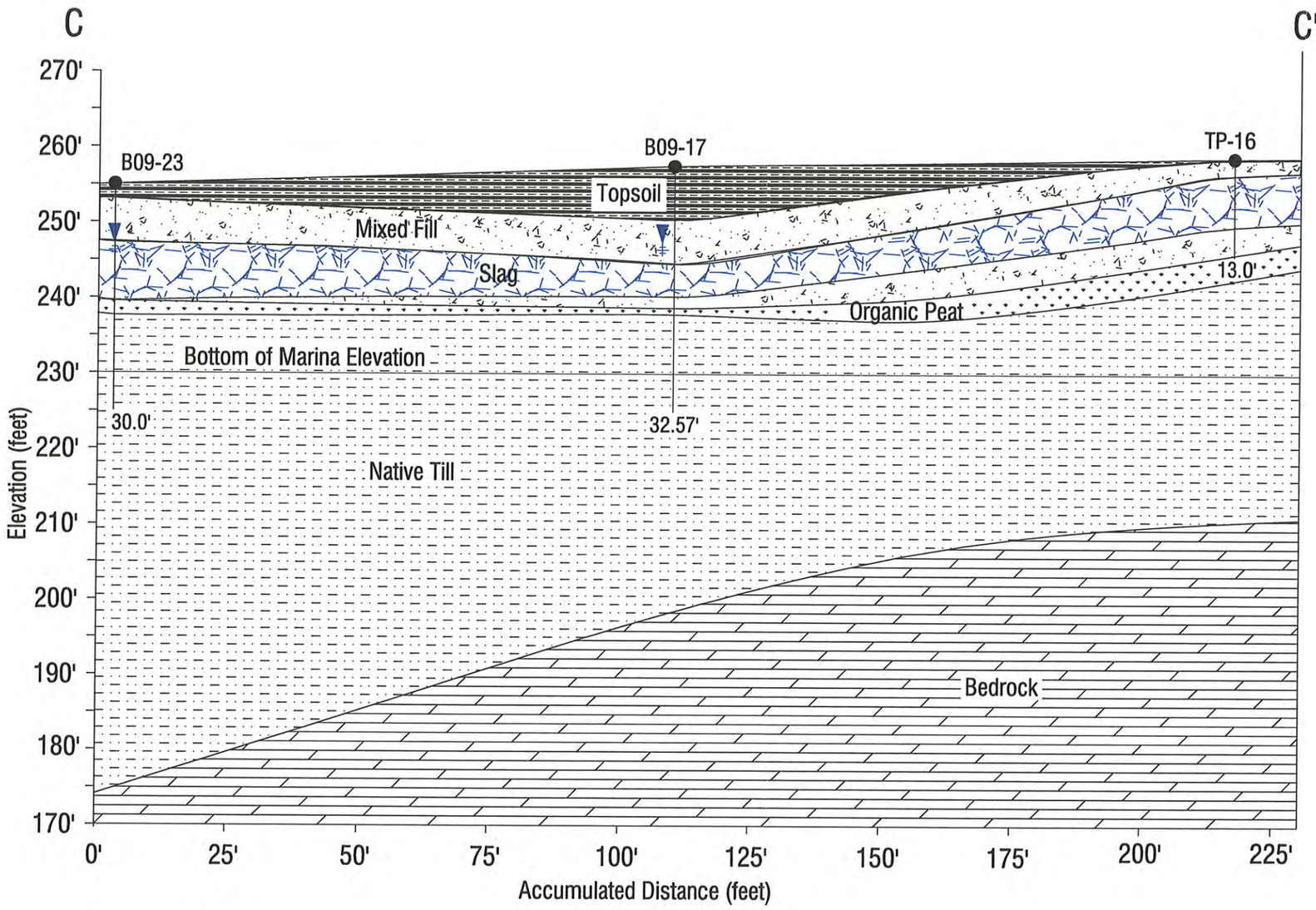
PROJECT/CLIENT
SOLID WASTE CONTROL PLAN
Port of Rochester
Proposed Marina
Rochester, New York

DRAWING TITLE
GEOLOGIC CROSS SECTION
B-B'

ISSUED FOR: FINAL
DATE: SEPTEMBER 2010
DESIGNED BY: EPD
DRAWN BY: RCN
REVIEWED BY: DEP

PROJECT/DRAWING NUMBER
209447.01

FIGURE 4



GENERAL GROUNDWATER FLOW DIRECTION

LEGEND

- Approximate Static Groundwater Elevation
- Topsoil
- Mixed Fill
- Slag
- Organic Peat
- Native Till
- Bedrock
- Soil Boring Location
- 30.0' Depth to Boring Bottom

NOTE:

1. Formations based on contours generated using Golden Surfer 8 software.
2. Subsurface formations inferred in areas below the terminal depth of borings and beyond the first and last point.
3. Bedrock surface based on points that do not fall near the cross section axis and therefore not shown.

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F: (585) 454-3066
www.labellapc.com

PROJECT: SOLID WASTE CONTROL PLAN

Port of Rochester
Proposed Marina
Rochester, New York

DRAWING TITLE: GEOLOGIC CROSS SECTION C-C'

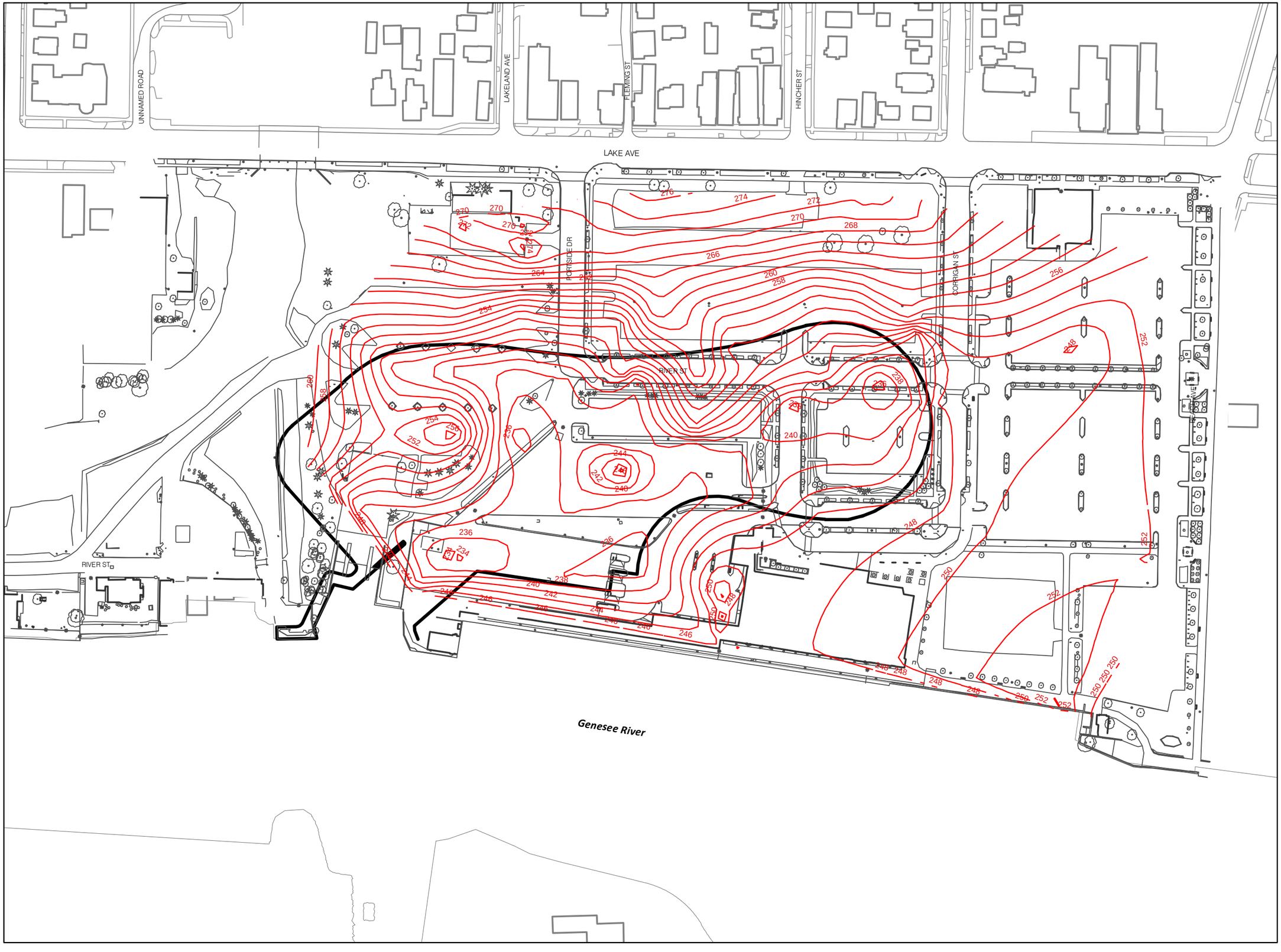
ISSUED FOR: FINAL

DATE: SEPTEMBER 2009

DESIGNED BY: EPD
DRAWN BY: RCN
REVIEWED BY: DEP

PROJECT/DRAWING NUMBER: 209447.01

FIGURE 5



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PORT OF ROCHESTER

SOLID WASTE CONTROL PLAN

BOTTOM OF RECOVERABLE SLAG CONTOURS

September 2010

Legend

- Bottom of Slag Contours August 2009
- Proposed Public Boardwalk (updated April 2009)

Notes:
(1) Contours generated with Golden Surfer 8 software using the Natural Neighbor algorithm.
(2) Elevation in feet, based on the City of Rochester Datum.

Sources:
(1) City of Rochester Site Survey, 2008.
(2) Passero Figure 7, updated April 2009.
(3) LaBella Port Redevelopment Mapping 2003
(4) LaBella GIS data 2005 through 2009
(5) City of Rochester GIS (buildings and street features)

0 150
1 inch = 150 feet

209447.01

FIGURE 6

LABELLA
LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 1

Miscellaneous Letters

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Technical Support
6274 East Avon-Lima Road, Avon, New York 14414
Phone: (585) 226-2466 • **FAX:** (585) 226-8139
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

June 14, 2004

Mr. Joseph J. Biondolillo
Sr. Environmental Specialist
City of Rochester
Division of Environment Quality
30 Church Street
Room 300B
Rochester, New York 14614

Dear Mr. Biondolillo:

Re: NYSDEC Spill # 9970601
Port of Rochester
Lake Avenue
Rochester (C), Monroe County

Let this letter serve as follow up to both your May 24, 2004 submission and the June 8, 2004 meeting and site visit attended by this Department, the City of Rochester and LaBella Associates, regarding the above referenced spill location. Based upon the remedial work completed at the site, the information contained in the May 24, 2004 submission, previously submitted information and the current and expected future use of the property, the Department does not require any additional remedial work at this time. This spill has been removed from the Department's active files. However, be aware that this ruling does not preclude reactivation of this case should new information become available and/or an impact to receptors be discovered in the future.

If there are any questions or comments, feel free to contact me at either the above address or by telephone at 585-226-5438.

Sincerely,

Michael F. Zamiarski, P.E.
Environmental Engineer II
Bureau of Technical Support
Division of Environmental Remediation

cc: Greg Senecal, LaBella Associates, P.C.

LABELLA

LaBella Associates, P.C.
Engineering, Architecture,
Environmental Consulting, and Surveying

Sergio Esteban, P.E.
Michael W. Haley, L.S.
Robert A. Healy, A.I.A.
Salvatore A. LaBella, P.E.
James R. McIntosh, P.E.
Michael S. Schatton, P.E.

January 21, 2002

Dan David, P.E.
New York State Department of Environmental Conservation
Region 8 Solid Waste Division
6274 East Avon Lima Road
Avon, New York 14414

RECEIVED
JAN 23 2002
SOLID HAZARDOUS MATERIALS
REGION8

RE: Port of Rochester, North Parking Lot/Beach Avenue Pedestrian Improvements
Northern Street Design and Construction Project
Port of Rochester, Rochester, New York
LaBella Project # 99150 Phase 2320

Dear Mr. David:

This letter is a follow up to our conversation on Monday, January 14, 2002, regarding the above referenced construction project.

During our conversation, we discussed the management of fill materials containing slag, coal, cinders, railroad ballast, and ash at the City of Rochester-Port of Rochester Redevelopment Project Site. This area of solid waste/fill encompasses approximately 13 acres on the north portions of the Site, and appears to be from historical filling associated with railroad terminals and sidings and a large iron foundry and blast furnace. The Port of Rochester Redevelopment Plan envisions paved parking lots and commercial development pads in this area of the project Site. See attached Figure.

I indicated to you that the fill materials containing slag, coal, cinders, railroad ballast, and ash had been sampled and analyzed, and that the material contained levels of arsenic above NYSDEC TAGM #4046 published Eastern USA background levels. Representative samples were submitted for TCLP analysis for metals. No TCLP failures were realized in the samples of slag and ash fill that were exposed to the toxicity leaching procedure. A copy of the Phase II Environmental Assessment: Preliminary Site Characterization Report was submitted to the NYSDEC Spills Group in 2001.

In two discreet areas, this material also contained levels of NYSDEC regulated Semi Volatile Organic (Polycyclic Aromatic Hydrocarbons) at levels slightly above NYSDEC TAGM #4046 guidance values. This condition was previously reported to the NYSDEC Region 8 Spills Group. The NYSDEC added the information to the existing spill file; NYSDEC Spill #990601. LaBella is currently addressing issues associated with these two areas with the NYSDEC Spills Group.

Upcoming construction activities that are anticipated to occur within the next year may disturb this layer of solid waste/fill are the re-grading and repaving of the Northern parking lots, and the construction of new roadways, parking lots, and associated utilities in the north central portion of the Site. See attached Figure.

You indicated that the department considers the above referenced materials as solid waste that could not be treated as a Construction and Demolition solid waste, due to the nature of its origin as a solid waste derived from an industrial source. Furthermore you indicated that the department would not approve of the disposal of this material at Construction and Demolition debris landfills.

300 State Street, Rochester, NY 14614 (716) 454-6110 FAX (716) 454-3066
20 Seneca Street, Hornell, NY 14843 (607) 324-0222 FAX (607) 324-7665
403 E. Main Street, Elkland, PA 16920 (814) 258-5673 FAX (814) 258-7116

We discussed the option of excavating the fill materials containing slag, coal, cinders, railroad ballast, and ash and placing these solid wastes into other similar filled areas of the Site for use as additional fill. You indicated that this solid waste management option was acceptable to the Department and in accordance with 6 NYCRR Part 360-1.7(b)(9). You also indicated that the department would recommend particulate air-monitoring and dust suppression measures as necessary during construction activities.

At this time, we anticipate proceeding with the on Site management of the above referenced solid waste in accordance with 6NYCRR Part 360-1.7(b)(9).

If you feel that this letter represents an accurate representation of our conversation and agreement, please sign in the space provided and return a copy of this letter to me via fax (585) 454-3066 to serve as documentation of our conversation and agreement.

Thank you for your assistance in this matter. If you have any questions, please do not hesitate to contact me at (585)-454-6110.

Sincerely,

LABELLA ASSOCIATES, P.C.

Gregory R. Seneal

Gregory Senecal, CHMM
Phase I &II Program Manager

David Daird
NYSDEC Region 8 ~~Solid Waste~~
Regional Solid & Hazardous
Materials Engineer

While I don't believe we discussed monitoring specifically, acceptable "handling, relocation and disposal practices" must minimize the likelihood of either blowing dust or runoff of excavated materials.

Attachments

cc: S. Esteban; LaBella
S. Metzger; LaBella
R. VenVertloh; LaBella
C. Ecklund; LaBella
J. Biondolillo; City of Rochester
B. Price; City of Rochester

J2A21DP1

Engineering
Architecture
Environmental

LABELLA
Associates, P.C.

300 State Street, Suite 201, Rochester, NY 14614

Phone 585.454.6110
Fax 585.454.3066
www.labellapc.com

January 24, 2002

William M. Price, RLA
Project Manager
City of Rochester
DES/Engineering and Architecture
30 Church Street, Room 300B
Rochester, NY 14614-1279

Re: Worker Health and Safety Related to Excavation of Slag-Containing Materials
Port of Rochester Harbor Improvement and Harbor Ferry Terminal
City of Rochester ID #99021
NYSDOT PIN 4752.60 and 4752.62
LaBella Project No. 99150

Dear Mr. Price:

We have conducted testing to evaluate the potential for exposure to hazardous gases and vapors as a result of disturbing subsurface slag-containing materials during trenching operations.

Three test pits were excavated to a depth of approximately 6 feet. Slag-containing materials were encountered in each test pit. The sampling procedure consisted of placing an evacuated Silco Canister at the bottom of the pit immediately upon reaching the desired depth, and opening the sample valve. Sample duration was approximately 1 minute or less. The odor of hydrogen sulfide was detected in each test pit.

The Silco Canisters were sent to Performance Analytical, Inc. for sample analysis. The analytical methods applied to the samples include EPA Method TO-15 by GC/MS for Tentatively Identified Compounds (TICs) and GC/SCD Analysis for 20 sulfur compounds. Laboratory results are attached.

The sample results indicate that no sulfur or sulfide compounds were present above the method detection limit, which is in the part per billion range. Hydrogen sulfide is obviously present at concentrations above the odor threshold, but below the method detection limit. A series of light-weight organic com-pounds was detected in each sample. The detected compounds probably represent ambient concentrations of vehicle combustion emissions. They are present at concentrations well below hazardous levels.

Planned excavations of these soils will not present an inhalation hazard to construction workers in the vicinity of excavating.

As noted, the odor of hydrogen sulfide is detectable during active excavation and subsequent disturbance of the slag. As a result there is a possibility that the odor of hydrogen sulfide may present a community nuisance during construction but it is not expected to present a health hazard.

Very truly yours,

LABELLA ASSOCIATES, P.C.

Richard K. Rote, CIH

RKR/deh
Attachments
Cc: Sergio Esteban, LaBella Associates, P.C.
LaBella Project File No. 99150, Nos. 1 and 9
N/J2A24RR1

LABELLA
LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 2

Boring, Test Pit, and Monitoring Well Logs

LABELLA Associates, P.C. 300 STATE STREET, ROCHESTER, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	PROJECT Port of Rochester 2005 Geotechnical Borings Rochester, New York	BORING **B05-1** SHEET 1 OF 2 JOB # 205182 CHKD. BY:

CONTRACTOR: Target Drilling — BORING LOCATION

DRILLER Ben Sirigusa & Steve Kahn — GROUND SURFACE ELEVATION — DATUM

LABELLA REPRESENTATIVE: C. Stiles — START DATE 09-May-05 — END DATE 09-May-05

TYPE OF DRILL RIG: CME Model 75 Truck-mounted Rotary Drill Rig

AUGER SIZE AND TYPE 3.25-Inch ID

OVERBURDEN SAMPLING METHOD 2" x 2' Split-spoon w/140# Hammer

ROCK DRILLING METHOD Not Applicable

WATER LEVEL DATA				
DATE	TIME	WATER	CASING	REMARKS

DEPTH	SAMPLE BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (INCHES)	SAMPLE DESCRIPTION	PID READINGS	NOTES
1	3 2 4 10	S-1	0'-2'	6	15"	**FILL MATERIAL** 0.0' Brown Clayey SILT, little(-) f Sand, trace(-) mf angular Gravel, trace organics in top 4" (roots, root traces, humus, etc.), moist, no odors. 1.2' Brown to orange-brown cmf GRAVEL (slag), some cmf Sand (slag), slightly moist, no odors.	0.0	
2 3	50/6"	S-2	2'-4'	>50	4"	2.0' Concrete fragments. 2.2' Brown to orange-brown cmf GRAVEL (slag), some cmf Sand (slag), moist, no odors.	0.2	
4 5	4 4 6	S-3	4'-6'	10	21"	4.0' Brown SILT, little(+) $mf^{(+)}$ Sand, trace mf angular to subangular Gravel, moist, no odors. 5.2' Brown SILT, some(-) mf angular to subangular Gravel, little(+) $mf^{(+)}$ Sand, moist, no odors.	0.0	
6 7	6 7 15	S-4	6'-8'	31	7"	6.0' As above, but damp, no odors..	0.0	
8 9	16 12 9	S-5	8'-10'	15	4"	8.0' As above, but wet, no odors..	0.0	
10 11	6 4 3 4	S-6	10'-12'	4	6"	10.0' As above, saturated, no odors. 10.3' Black to dark brownish-black $cm^{(+)}$f angular to subrounded GRAVEL, some cmf Sand, wet, no odors.	0.0	
12 13	50/3" 16 9	S-7	12'-14'	22	18"	12.0' As above, with concrete fragments, wet, no odors. **ALLUVIAL MATERIAL** 12.5' Gray Clayey SILT, little(-) f Sand, damp to wet, stratified, no odors.	0.0	
14 15	13 18 6 8	S-8	14'-16'	20	20"	14.0' As above	0.0	
16	12 14							

LEGEND

S - SPLIT SPOON SOIL SAMPLE

U - UNDISTURBED SOIL SAMPLE

C - ROCK CORE SAMPLE

NOTES:

GENERAL NOTES:

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

LABELLA Associates, P.C. 300 STATE STREET, ROCHESTER, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	PROJECT Port of Rochester 2005 Geotechnical Borings Rochester, New York	BORING **B05-2** SHEET 1 OF 2 JOB # 205182 CHKD. BY:

CONTRACTOR: Target Drilling — BORING LOCATION

DRILLER Ben Sirigusa & Steve Kahn — GROUND SURFACE ELEVATION — DATUM

LABELLA REPRESENTATIVE: C. Stiles — START DATE 10-May-05 — END DATE 10-May-05

TYPE OF DRILL RIG: CME Model 75 Truck-mounted Rotary Drill Rig

AUGER SIZE AND TYPE 3.25-Inch ID

OVERBURDEN SAMPLING METHOD 2" x 2' Split-spoon w/140# Hammer

ROCK DRILLING METHOD Not Applicable

WATER LEVEL DATA				
DATE	TIME	WATER	CASING	REMARKS

DEPTH	SAMPLE BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (INCHES)	SAMPLE DESCRIPTION	PID READINGS	NOTES
1	2 1 3 7	S-1	0'-2'	4	13"	**FILL MATERIAL** 0.0' Dark brown f SAND, some(-) Silt, trace(-) f subangular Gravel, organics (roots, root traces, humus, etc.), slightly moist, no odors. 0.4' Dark brown $m^{(+)}f$ SAND (foundry sand), little(-) mf subrounded to angular Gravel (slag & stone), moist, no odors.	0.0	
2 3	11 12 11 6	S-2	2'-4'	23	13"	2.0' As above, moist, no odors. 2.3' Very dark brown to grayish-brown $cmf^{(+)}$ SAND, some(+) cmf angular to subrounded Gravel, trace Silt, moist to damp, no odors.	0.2	
4 5	6 6 5 4	S-3	4'-6'	11	16"	4.0' As above, damp, no odors. **ALLUVIAL MATERIAL** 4.3' Gray f SAND, trace Silt, damp, no odors.. . . . Grading to . . . Gray Clayey SILT, some(-) f Sand, wet, no odors.	0.0	
6 7	3 3 7 6	S-4	6'-8'	10	18"	6.0' Gray SILT & CLAY, little(+) f Sand, massive, wet to saturated, no odors. 7.0' Gray cm SAND, wet to saturated, no odors. 7.1' Dark brown PEAT, little Silt, trace f Sand, saturated, no odors.	0.0	
8 9						7.2' Gray $cm^{(+)}f$ SAND, saturated, no odors.	0.0	
10 11							0.0	
12 13								
14 15 16								

LEGEND

S - SPLIT SPOON SOIL SAMPLE

U - UNDISTURBED SOIL SAMPLE

C - ROCK CORE SAMPLE

NOTES:

GENERAL NOTES:

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

LABELLA Associates, P.C. 300 STATE STREET, ROCHESTER, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	PROJECT Port of Rochester 2005 Geotechnical Borings Rochester, New York	BORING **B05-3** SHEET 1 OF 2 JOB # 205182 CHKD. BY:

CONTRACTOR:	Target Drilling	BORING LOCATION			
DRILLER	Ben Sirigusa & Steve Kahn	GROUND SURFACE ELEVATION		DATUM	
LABELLA REPRESENTATIVE:	C. Stiles	START DATE	19-May-05	END DATE	19-May-05

		WATER LEVEL DATA				
TYPE OF DRILL RIG:	CME Model 75 Truck-mounted Rotary Drill Rig	DATE	TIME	WATER	CASING	REMARKS
AUGER SIZE AND TYPE	3.25-Inch ID					
OVERBURDEN SAMPLING METHOD	2" x 2' Split-spoon w/140# Hammer					
ROCK DRILLING METHOD	Not Applicable					

DEPTH	SAMPLE BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (INCHES)	SAMPLE DESCRIPTION	PID READINGS	NOTES
1	10 21 12	S-1	0' - 2'	33	8"	**FILL MATERIAL** 0.0' Dark brown cmf(+) SAND, little mf subrounded Gravel, trace Silt, organic material present (roots, root traces, humus, etc.), moist, no odors.	0.0	
2	13					0.3' Gray cmf SAND, little f angular to subrounded Gravel (Includes slag and,		
3	7 8 15	S-2	2' - 4'	23	14"	cinders), moist, no odors. 0.6' Dark brown m SAND (Foundry sand), little mf andgual to subrounded Gravel (slag), moist, no odors.	0.0	
4	16					2.0' As above, but damp to wet, no odors.		
5	7 10 8	S-3	4' - 6'	18	21"	**ALLUVIAL MATERIAL** 4.0' Dark gray SILT, little(-) f SAND, stratified, wet to damp, no odors.	0.0	
6	7					**LACUSTRINE MATERIAL** 5.5' Gray alternating varves of Clayey SILT and CLAY, damp to saturated @		
7	8 8 12	S-4	6' - 8'	20	11"	~6.0-ft., no odors. 6.3' Gray $mf^{(+)}$ SAND, saturated, no odors.	0.0	
8	10							
9								
10								
11								
12								
13								
14								
15								
16								

LEGEND

S - SPLIT SPOON SOIL SAMPLE
U - UNDISTURBED SOIL SAMPLE
C - ROCK CORE SAMPLE

NOTES:

GENERAL NOTES:

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

LABELLA Associates, P.C. 300 STATE STREET, ROCHESTER, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	PROJECT Port of Rochester 2005 Geotechnical Borings Rochester, New York	BORING **B05-4** SHEET 1 OF 2 JOB # 205182 CHKD. BY:

CONTRACTOR:	Target Drilling	BORING LOCATION			
DRILLER	Ben Sirigusa & Steve Kahn	GROUND SURFACE ELEVATION		DATUM	
LABELLA REPRESENTATIVE:	C. Stiles	START DATE	06-May-05	END DATE	06-May-05

TYPE OF DRILL RIG: CME Model 75 Truck-mounted Rotary Drill Rig
AUGER SIZE AND TYPE 3.25-Inch ID
OVERBURDEN SAMPLING METHOD 2" x 2' Split-spoon w/140# Hammer
ROCK DRILLING METHOD Not Applicable

WATER LEVEL DATA				
DATE	TIME	WATER	CASING	REMARKS

DEPTH	SAMPLE BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (INCHES)	SAMPLE DESCRIPTION	PID READINGS	NOTES
1	7 7 7 7	S-1	0'-2'	14	9"	**FILL MATERIAL** 0.0' Brown SILT, little f Sand, trace mf angular Gravel, trace organics (roots, root traces, humus, etc.), moist, no odors. 0.2' Brown cmf SAND, little mf(+) angular to subrounded Gravel (Slag & Asphalt), moist to damp, no odors.	0.0	
2 3	13 13 10 9	S-2	2'-4'	23	9"	2.0' As above. 2.3' Black cmf SAND, little s angular to subrounded Gravel (Slag), moist no odors.	0.2	
4 5	7 7 4 4	S-3	4'-6'	11	13"	2.6' Brown cmf SAND, little mf(+) angular to subrounded Gravel (Slag & Asphalt), moist to damp, no odors. 4.0' Dark brown m SAND (foundry sand), trace m subrounded Gravel, damp to wet, no odors.	0.0	
6 7	4 10 20 20	S-4	6'-8'	30	9"	6.0' As above, but saturated. 6.6' Grayish-black mf angular GRAVEL (slag), some(-) cm Sand, saturated, no odors.	0.0	
8 9	15 10 15 22	S-5	8'-10'	25	5"	8.0' Bluish-gray cm(+)f angular to subangular GRAVEL, little cmf Sand, saturated, no odors.	0.0	
10 11	21 12 21 18	S-6	10'-12'	33	5"	10.0' As above, saturated, no odors.	0.0	
12 13	7 10 9 4	S-7	12'-14'	19	2"	12.0' As above, saturated, no odors.	0.0	
14 15	3 3 4	S-8	14'-16'	7	14"	**ALLUVIAL MATERIAL** 14.0' Alternating layers of dark brown SILT, some peat with Gray Clayey SILT, saturated, no odors.	0.0	
16	6					14.5' Gray Clayey SILT, stratified, marsh gas odor.		

LEGEND
S - SPLIT SPOON SOIL SAMPLE
U - UNDISTURBED SOIL SAMPLE
C - ROCK CORE SAMPLE

NOTES:

GENERAL NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

LABELLA ASSOCIATES, P.C. 300 STATE STREET ROCHESTER, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	PROJECT Port of Rochester 2005 Geotechnical Borings Rochester, New York	BORING # **B05-4** SHEET 2 OF 2 JOB # 205182 CHKD. BY

DEPTH	SAMPLE					SAMPLE DESCRIPTION	PID READINGS	NOTES
	BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (INCHES)			
17	6 5 5 5	S-9	16'-18'	10	20"	16.0' Brown Silty Peat. 16.2' Brown to grayish-brown SILT, trace(+) cmf Sand, trace(-) f angular Gravel, very soft & plastic, saturated, no odors.	0.0 0.0	
18								
19								
20								
21								
22								
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26								
27								
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29								
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31								
32								
33								
34								
35								
36								

LEGEND

S - SPLIT SPOON SOIL SAMPLE
U - UNDISTURBED SOIL SAMPLE
C - ROCK CORE SAMPLE

NOTES:

GENERAL NOTES:

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LABELLA Associates, P.C. 300 STATE STREET, ROCHESTER, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	PROJECT Port of Rochester 2005 Geotechnical Borings Rochester, New York	BORING **B05-5** SHEET 1 OF 2 JOB # 205182 CHKD. BY:

CONTRACTOR: Target Drilling — BORING LOCATION

DRILLER Ben Sirigusa & Steve Kahn — GROUND SURFACE ELEVATION — DATUM

LABELLA REPRESENTATIVE: C. Stiles — START DATE 09-May-05 — END DATE 09-May-05

TYPE OF DRILL RIG: CME Model 75 Truck-mounted Rotary Drill Rig

AUGER SIZE AND TYPE 3.25-Inch ID

OVERBURDEN SAMPLING METHOD 2" x 2' Split-spoon w/140# Hammer

ROCK DRILLING METHOD Not Applicable

WATER LEVEL DATA

DATE	TIME	WATER	CASING	REMARKS

DEPTH	BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (INCHES)	SAMPLE DESCRIPTION	PID READINGS	NOTES
1	7, 19, 23, 28	S-1	0'-2'	42	20"	**FILL MATERIAL** 0.0' Brown f SAND and SILT, trace(+) mf(+) angular to subrounded Gravel, organics (roots, root traces, humus, etc.), slightly moist, no odors. 0.3' Brown to grayish-brown cmf SAND, little cmf(+) angular to subangular Gravel, (concrete, slag and asphalt), slightly moist, no odors.	0.0	
2								
3	23, 14, 15, 19	S-2	2'-4'	29	13"	2.0' Tan mf(+) SAND, trace f Gravel, trace(-) Silt, moist to damp, no odors. 2.8' Dark grayish-brown mf SAND, trace(-) f angular to subrounded Gravel, (slag) trace(-) Silt, damp to wet, no odors.	0.2	
4								
5	6, 4, 4, 4	S-3	4'-6'	8	20"	**ALLUVIAL MATERIAL** 4.0' Gray to dark gray m(+)f SAND, wet, no odors with 1" thick interbed of dark brown SILT and f SAND @ 4.7-ft. BGS, saturated, no odors.	0.0	
6								
7	2, 4, 7, 4	S-4	6'-8'	11	12"	6.0' Gray mf SAND, trace(+) Clayey SILT, saturated, no odors.	0.0	
8								
9	12, 4, 18, 29	S-5	8'-10'	22	19"	8.0' As above, saturated, no odors.. 8.9' Gray mf SAND, trace(+) Clayey SILT, little(+) mf rounded to subrounded Gravel, saturated, no odors.	0.0	
10								
11	21, 14, 6, 7	S-6	10'-12'	20	18"	10.0' As above, saturated, no odors.. 11.2' Reddish-gray to gray c(+)mf rounded to subrounded GRAVEL, saturated very slight naphthalene odor.	0.0	
12								
13								
14								
15								
16								

LEGEND

S - SPLIT SPOON SOIL SAMPLE

U - UNDISTURBED SOIL SAMPLE

C - ROCK CORE SAMPLE

NOTES:

GENERAL NOTES:

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LABELLA ASSOCIATES, P.C. 300 STATE STREET ROCHESTER, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	PROJECT Port of Rochester 2005 Geotechnical Borings Rochester, New York	BORING # **B05-5** SHEET 2 OF 2 JOB # 205182 CHKD. BY

DEPTH	SAMPLE					SAMPLE DESCRIPTION	PID READINGS	NOTES
	BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (INCHES)			
17	6 5 5 5	S-9	16'-18'	10	20"	16.0' Brown Silty Peat. 16.2' Brown to grayish-brown SILT, trace(+) cmf Sand, trace(-) f angular Gravel, very soft & plastic, saturated, no odors.	0.0 0.0	
18								
19								
20								
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33								
34								
35								
36								

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LABELLA Associates, P.C. 300 STATE STREET, ROCHESTER, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	PROJECT Port of Rochester 2005 Geotechnical Borings Rochester, New York	BORING **B05-7** SHEET 1 OF 2 JOB # 205182 CHKD. BY:

CONTRACTOR: Target Drilling — BORING LOCATION

DRILLER Ben Sirigusa & Steve Kahn — GROUND SURFACE ELEVATION — DATUM

LABELLA REPRESENTATIVE: C. Stiles — START DATE 09-May-05 — END DATE 09-May-05

TYPE OF DRILL RIG: CME Model 75 Truck-mounted Rotary Drill Rig

AUGER SIZE AND TYPE 3.25-Inch ID

OVERBURDEN SAMPLING METHOD 2" x 2' Split-spoon w/140# Hammer

ROCK DRILLING METHOD Not Applicable

WATER LEVEL DATA				
DATE	TIME	WATER	CASING	REMARKS

DEPTH	SAMPLE BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (INCHES)	SAMPLE DESCRIPTION	PID READINGS	NOTES
1	7 8 9 7	S-1	0'-2'	17	7"	**FILL MATERIAL** 0.0' Brown cmf(+) SAND, some cmf angular to subrounded Gravel, slightly moist, very slight weathered petroleum odor.	0.1	
2								
3	50/4" S-2	S-2	2'-4'	>50	3'	2.0' Gray concrete fragments.	0.0	
4								
5	13 14 15 18	S-3	4'-6'	29	20	**ALLUVIAL MATERIAL** 4.0' Grayish-brown to brown SILT, little f SAND, stratified, moist, no odors.	0.0	
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

LEGEND

S - SPLIT SPOON SOIL SAMPLE

U - UNDISTURBED SOIL SAMPLE

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NOTES:

GENERAL NOTES:

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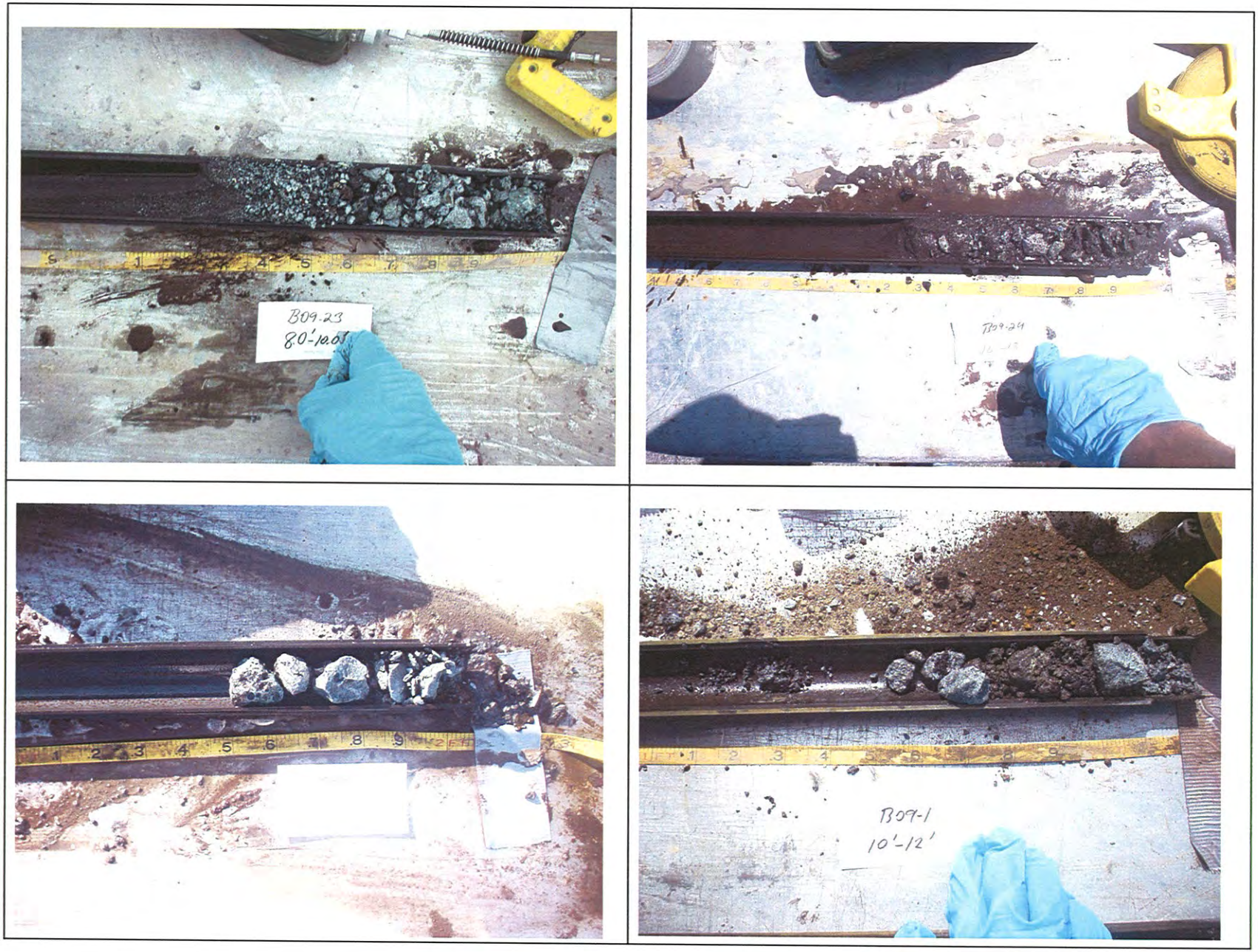
LABELLA
LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 3

Photographs of Blue Slag



Solid Waste Control Plan
Proposed Marina
Port of Rochester,Rochester, New York 14606

LABELLA

LABELLA
LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 4

Example of Material Tracking Spreadsheet

PORT OF ROCHESTER ENVIRONMENTAL MANAGEMENT PLAN
WASTE STREAM TRACKING FORM

	DATE	TRUCKING COMPANY	TRUCK I.D.	TRUCK LISCENSE PLATE NO.	MANIFEST NO.	TYPE OF WASTE STREAM	WASTE DISPOSAL LOCATION	TIME TRUCK OFF-SITE	LANDFILL TICKET NO.
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
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20									
21									
22									
23									
24									
25									

SHEET ____ OF ____

LABELLA
LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 5

Example of Health & Safety Plan

LABELLA Associates, P.C.

Engineering
Architecture
Environmental

Port of Rochester
Site Health and Safety Plan

Location:

Port of Rochester
Rochester, New York 14612

Prepared For:

City of Rochester Division of Environmental Quality
30 Church Street
Room 300B
Rochester, New York 14614

LaBella Project No. 209447.01

June 2010

Port of Rochester
Site Health and Safety Plan

Location:

Port of Rochester
Rochester, New York 14612

Prepared For:

City of Rochester Division of Environmental Quality
30 Church Street
Room 300B
Rochester, New York 14614

LaBella Project No. 209447.01

June 2010

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Table of Contents

SITE HEALTH AND SAFETY PLAN

Project Title:	Port of Rochester
Project Number:	205182
Project Location (Site):	Port of Rochester, Rochester, New York 14608
Project Manager:	Gregory R. Senecal, CHMM
Plan Approval Date:	_____
Plan Review Date:	_____
Site Safety Supervisor:	Michael Pelychaty
Site Contact	Michael Pelychaty
LaBella Safety Director	Richard Rote, CIH
Proposed Date(s) of Field Activities:	To Be Determined
Site Conditions:	Level to moderately sloping, encompassing approximately 5 +/- acres
Site Environmental Information Provided By:	Prior Environmental Reports by H&A of New York, Day Environmental, LaBella Associates, P.C., etc.
Air Monitoring Provided By:	LaBella Associates
Site Control Provided By:	To Be Determined

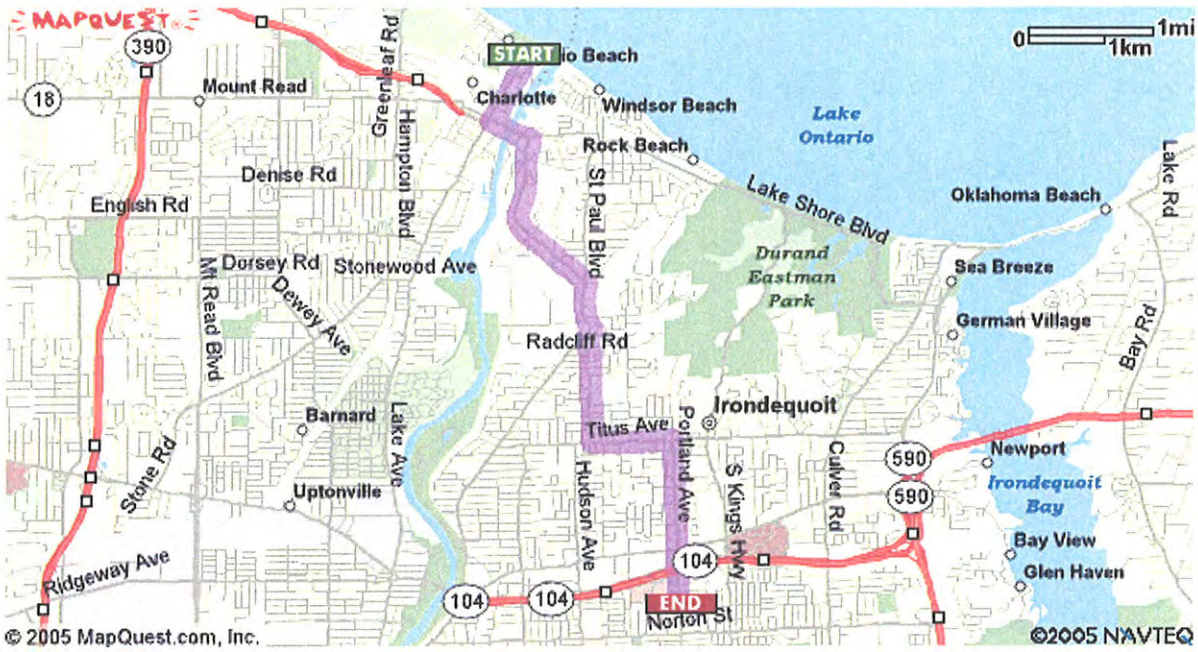
EMERGENCY CONTACTS

	Name	Phone Number
Ambulance:	As Per Emergency Service	911
Hospital Emergency:	Rochester General Hospital	585-922-4000
Poison Control Center:	Finger Lakes Poison Control	585-275-3232
Police (local, state):	City of Rochester Police Department	911
Fire Department:	City of Rochester Fire Department	911
Site Contact:	Michael Pelychaty	585-451-6225
Agency Contact	NYSDEC – To Be Determined MCDOH – To Be Determined NYSDOH – To Be Determined	
Project Manager	Gregory R. Senecal, CHMM LaBella Associates, P.C.	Direct: 585-295-6243 Cell: 585-752-6480
Safety Supervisor	Michael Pelychaty LaBella Associates, P.C.	Direct: 585-295-6253
LaBella Associates Safety Director	Richard Rote, CIH LaBella Associates, P.C.	Direct: 585-295-6241

MAP AND DIRECTIONS TO THE MEDICAL FACILITY
ROCHESTER GENERAL HOSPITAL

Directions

1:	Start out going NORTHWEST on CORRIGAN ST toward LAKE AVE.
2:	Turn LEFT onto LAKE AVE.
3:	Turn LEFT onto STUTSON ST.
4:	STUTSON ST becomes PATTONWOOD DR/CR-99.
5:	Turn RIGHT onto POW MIA MEMORIAL AVE/THOMAS AVE/CR-124.
6:	Turn RIGHT onto ST PAUL BLVD/CR-122.
7:	Stay STRAIGHT to go onto COOPER RD/CR-116.
8:	Turn LEFT onto TITUS AVE/CR-91.
9:	Turn RIGHT onto PORTLAND AVE/CR-114.
10:	End at Rochester General Hospital, **1425 Portland Ave** Rochester, NY 14621-3001



LABELLA

1.0 INTRODUCTION

The purpose of this Health and Safety Plan (HASP) it to provide guidelines for responding to potential health and safety issues that may be encountered during the earthwork construction at the port of Rochester. The requirements of this HASP are applicable to all LaBella Associates personnel and their authorized visitors at the work site. This document's Environmental Management Plan (EMP), and the Community Air Monitoring Plan (CAMP), are to be consulted for guidance in preventing and quickly abating any threat to human safety or the environment. The provisions of the HASP do not replace or supersede any regulatory requirements of the USEPA, NYSDEC, OSHA or and other regulatory body.

2.0 RESPONSIBILITIES

The HASP presents guidelines to minimize the risk of injury, to project personnel, and to provide rapid response in the event of injury. The LaBella Associates HASP is applicable only to activities of LaBella personnel and their authorized visitors. The LaBella Associates Project Manager shall implement the provisions of this HASP for the duration of the project. It is the responsibility of employees to follow the requirements of this HASP, and all applicable company safety procedures.

3.0 ACTIVITIES COVERED

The activities covered under this HASP are limited to the following:

- Observation and inspection of construction activities
- Environmental Monitoring
- Collection of samples
- Assistance with the on-Site management of excavated soil and fill.

4.0 WORK AREA ACCESS AND SITE CONTROL

The general contractor will have primary responsibility for work area access and site control.

5.0 POTENTIAL HEALTH AND SAFETY HAZARDS

This section lists some potential health and safety hazards that project personnel may encounter at the project site and some actions to be implemented by LaBella Associates personnel to control and reduce the associated risk to health and safety. This is not intended to be a complete listing of any and all potential health and safety hazards. New or different hazards may be encountered as site environmental and site work conditions change. The suggested actions to be taken under this plan are not to be substituted for good judgment on the part of project personnel. At all times the Site Safety Officer has responsibility for site safety and his or her instructions must be followed.

5.1 Hazards Due to Heavy Machinery

Potential Hazard:
Heavy machinery including trucks, excavators, backhoes, etc will be in operation at the site. The presence of such equipment presents the danger of being struck or crushed. Use caution when working near heavy machinery.

Protective Action:
Make sure that operators are aware of your activities, and heed operator's instructions and warnings. Wear bright colored clothing and walk safe distances from heavy equipment. A safety orange vest, hard hat, and steel toe shoes are required.

5.2 Excavation Hazards

Potential Hazard:
Excavations and trenches can collapse, causing injury or death. Edges of excavation can be unstable and collapse. Toxic and asphyxiant gases can accumulate in confined spaces and trenches.

Protective Action:
LaBella Associates personnel are not to enter excavations over 4 feet in depth unless excavations are adequately sloped. LaBella Associates personnel must receive approval from the LaBella Project Manager to enter an excavation for any reason. Subsequently, LaBella personnel are to receive authorization for entry from the Site Safety Officer.

LaBella Associates personnel should exercise caution near all excavations at the site as it is expected that excavation sidewalls will be unstable.

5.3 Cuts, Punctures and Other Injuries

Potential Hazard:
In any excavation or construction work site there is the potential for the presence of sharp or jagged edges on rock, metal materials, and other sharp objects. Serious cuts and punctures can result in loss of blood and infection.

Protective Action:
The LaBella Associates Project Manager is responsible for making First Aid supplies available at the work site to treat minor injuries. The First Aid supplies will be kept in the work trailer. The Site Safety Officer is responsible for arranging the transportation of authorized on-site personnel to medical facilities when First Aid treatment in not sufficient. Do not move seriously injured workers. All injuries requiring treatment are to be reported to the LaBella Project Manager. Serious injuries are to be reported immediately (see Section 9.0 - Emergency Action Plan).

5.4 Injury Due to Exposure of Chemical Hazards

Potential Hazards:
Volatile organic vapors from petroleum products, chlorinated solvents or other chemicals may be encountered during excavation activities at the project work site. Inhalation of high concentrations of organic vapors can cause headache, stupor, drowsiness, confusion and other health effects. Skin contact can cause irritation, chemical burn, or dermatitis.

Protective Action:
The presence of organic vapors may be detected by their odor and by monitoring instrumentation. LaBella Associates employees will not work in environments where hazardous concentrations of organic vapors are present. Air monitoring performed by LaBella Associates (see Section 8.0) of the work area will be performed at least every 30 minutes or more often using a Photoionization Detector (PID) or a Flame Ionization Detector (FID). LaBella Associates personnel are to leave the work area whenever PID or FID measurements of ambient air exceed 25 ppm consistently for a 15 minute period.

6.0 DECONTAMINATION PROCEDURES

Upon leaving the work area, LaBella Associates personnel shall decontaminate footwear as needed. Under normal work conditions detailed personal decontamination procedures will not be necessary. Work clothing may become contaminated in the event of an unexpected splash or spill or contact with a contaminated substance. Minor splashes on clothing and footwear can be rinsed with clean water. Heavily contaminated clothing should be removed if it cannot be rinsed with water. LaBella Associates personnel should be prepared with a change of clothing whenever on site.

LaBella will use the contractor's disposal container for disposal of PPE.

7.0 PERSONAL PROTECTIVE EQUIPMENT

Conditions requiring a level of protection greater than Level D are not expected at this work site. Typical safety equipment identified in company safety and health procedures is required, i.e., hard hat, safety glasses, orange vest, rubber nitrile sampling gloves, splash resistant coveralls, construction grade boots, etc. Additional site-specific personal protective equipment is not necessary when working under the conditions of this plan.

8.0 AIR MONITORING

The LaBella Associates representative/EPM will utilize a PID to screen the ambient air in the work areas (excavation, soil staging, and soil grading areas) for total Volatile Organic Compounds (VOCs). Work area ambient air will generally be monitored downwind of the excavation or earthwork area in the general breathing zone

Air monitoring of the work areas will be performed at least every 30 minutes or more often using a photoionization Detector (PID). LaBella Associates personnel are to leave the work area whenever PID measurements of ambient air exceed 25 ppm consistently for a 5 minute period.

LaBella personnel may re-enter the work areas wearing a ½ face respirator with organic vapor cartridges for an 8-hour duration when VOC concentrations average between 25-50 ppm. Organic vapor cartridges are to be changed after each 8-hour of use. If PID readings are sustained at levels above 50 ppm for a 5 minute average, work will be stopped immediately until safe levels of VOCs are encountered.

At all times, the Site Safety Officer has authority over actions of LaBella Associates personnel and their guests at the site and his or her requests for evacuation are to be heeded without delay. Skin and clothing should be rinsed with clean water if chemical exposure has occurred as a result of splash or spill. Contaminated clothing must be removed; LaBella personnel should bring a change of clothes to the site. Water repellant suits will be provided to help prevent contamination of clothing. Medical attention should be provided if skin irritation has occurred. Please refer to Table 1 outlining chemical compounds detected in recent soil samples at the proposed Port of Rochester.

9.0 EMERGENCY ACTION PLAN

In the event of an emergency, employees are to turn off and shut down all powered equipment and leave the work areas immediately. Employees are to walk or drive out of the Site as quickly as possible and wait at the assigned 'safe area'. Follow the instructions of the Site Safety Officer.

LaBella Associates employees are not authorized or trained to provide rescue and medical efforts. Rescue and medical efforts will be provided by local authorities.

10.0 MEDICAL SURVEILLANCE

LaBella Associates will provide medical surveillance to all LaBella employees who are injured due to overexposure from an emergency incident involving hazardous substances at this site.

11.0 EMPLOYEE TRAINING

LaBella personnel who are not familiar with this site plan will receive training on its entire content and organization before working at the Site.

Y:\ROCHESTER, CITY\209447.01\REPORTS\SWCP\HASP.DOC

Table 1
Exposure Limits and Recognition Qualities

Compound	PEL-TWA (ppm)(b)(d)	TLV-TWA (ppm)(c)(d)	LEL (%)(e)	UEL (%)(f)	IDLH (ppm)(g)(d)	Odor	Odor Threshold (ppm)	Ionization Potential
Acetone	750	750	2.5	13	20,000	Sweet	13	9.69
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	1(1)	10	1.3	7.9	Ca	Pleasant	4.7	9.24
Benzo (a) pyrene (coal tar pitch volatiles)	0.2	0.2	NA	NA	700	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100	100	1.0	6.7	2,000	Ether	2.3	8.76
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA
Ideno (1,2,3-cd) pyrene		065	NA	NA	Ca	Na	Na	Na
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
Napthalene	10, Skin	10	0.9	5.9	250	Moth Balls	0.3	8.12
n-propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	100	100	0.9	9.5	2,000	Sweet	2.1	8.82
1,2,4-Trimethylbenzene	NA	25	0.9	6.4	NA	Distinct	2.4	NA
1,3,5-Trimethylbenzene	NA	25	NA	NA	NA	Distinct	2.4	NA
Xylenes (o,m,p)	100	100			1,000	Sweet	1.1	8.56
Metals								
Arsenic	0.01	0.2	NA	NA	100, Ca	Almond		NA
Barium	0.5	0.5	NA	NA	1,100			NA
Cadmium	0.2	0.5	NA	NA				NA
Chromium	1	0.5	NA	NA				NA
Lead	0.05	0.15	NA	NA	700			NA
Mercury	0.05	0.05	NA	NA	28	Odorless		NA
Selenium	0.2	0.02	NA	NA	Unknown			NA
Silver	0.01	0.01	NA	NA				NA

(a) Skin = Skin Absorption
(b) OSHA-PEL Permissible Exposure Limit (flame weighted average, 8-hour): NIOSH Guide, June 1990
(c) ACGIH – 8 hour time weighted average from Threshold Limit Values and Biological Exposure Indices for 2003.
(d) Metal compounds in mg/m3
(e) Lower Exposure Limit (%)
(f) Upper Exposure Limit (%)
(g) Immediately Dangerous to Life or Health Level: NIOSH Guide, June 1990.

Notes:
1. All values are given in parts per million (PPM) unless otherwise indicated.
2. Ca = Possible Human Carcinogen, no IDLH information.

LABELLA
LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 6

Community Air Monitoring Plan

LABELLA Associates, P.C.

Engineering
Architecture
Environmental

Community Air Monitoring Plan for: Earthwork Construction Activities

Location:

Port of Rochester
Rochester, New York

Prepared for:

City of Rochester
Division of Environmental Quality
30 Church Street, Room 300B
Rochester, New York 14614

LaBella Project No. 209447.01

June 2010

Community Air Monitoring Plan for: Earthwork Construction Activities

Location:

Port of Rochester
Rochester, New York

Prepared for:

City of Rochester
Division of Environmental Quality
30 Church Street, Room 300B
Rochester, New York 14614

LaBella Project No. 209447.01

June 2010

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

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1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) has been prepared by LaBella Associates on behalf of the City of Rochester Department of Environmental Quality (DEQ). This CAMP addresses potential Volatile Organic Vapor (VOC) and particulate emissions that may occur during the earthwork portion of construction activities at the Port of Rochester. The Port of Rochester encompasses approximately 26 acres in the City of Rochester, Monroe County, New York 14612 (see Figure 1) herein after referred to as the "Site."

Potential future earthwork construction activities are covered by this CAMP. Low levels of VOCs, semi-VOCs, and metals have been detected in the soil, fill, and groundwater at the Site. The volatilization of organic compounds through disturbance of soil and groundwater at the Site can potentially result in nuisance odors or health threats to the neighborhood in the immediate vicinity of the Site. Inorganic compounds, present in dust, could potentially be disturbed during earthwork construction activities. This CAMP describes daily air monitoring activities intended to identify and control environmental conditions presenting the potential for neighborhood exposure to ambient airborne hazards resulting from fugitive emissions during earthwork construction activities at the Site.

Pursuant to the New York State Department of Environmental Conservation (NYSDEC) Technical Administrative Guidance Manual (TAGM) #4031 – Fugitive Dust Suppression and particulate Monitoring Program at Inactive Hazardous Waste Sites, (HWR-89-4031), this CAMP addresses methods that will be utilized to monitor particulate (dust) levels at the perimeter of, and within the work areas (excavation, soil staging, and soil grading areas) of the Site. If elevated levels of particulate emissions are encountered, this CAMP identifies the procedures that will be employed to mitigate elevated particulate levels.

Perimeter air monitoring procedures for VOCs are also included in this CAMP. VOC monitoring of the work areas (excavation, soil staging, and soil grading areas) of the Site will also be conducted per the Health and Safety Plan (HASP).

2.0 METHODOLOGY

This CAMP has been designed for construction activities at the Port of Rochester. The CAMP pertains primarily to earthwork activities that disturb, man-made fill, soil and groundwater at the Port of Rochester. Previously completed soil investigations have indicated that petroleum soil and groundwater impairment is not significant or wide spread and located at intermittent locations. Fill containing metals is typically located throughout the Port of Rochester. No significant vapor emissions are expected. However, the following procedures will be implemented to monitor and, if necessary, mitigate the potential migration of fugitive particulate and/or VOC emissions at the Site.

2.1 Site Perimeter Monitoring

Each day of field work during the intrusive earthwork, a wind sock or flag will be used to monitor wind direction in the work areas (excavation, soil staging, and soil grading areas). Based upon daily wind conditions three temporary monitoring points, one up and two downwind of the work areas, will be identified at the perimeter of the Site or field work area.

Real time particulate monitoring will be performed utilizing aerosol monitors capable of measuring particulate concentrations of Particulate Matter 10 μm in size (PM_{10}) or less. VOC monitoring will be performed with a Photo-ionization Detector (PID) equipped with at 10.6 eV lamp. Sufficiently wet Site conditions, such as after precipitation, may temporarily eliminate the need for particulate monitoring.

Each day, prior to the commencement of the intrusive earthwork work, background concentrations of particulate and VOCs will be measured and recorded as 5 minute averages at the identified upwind and downwind locations with the typical construction equipment engines and any other gas/diesel engines operating on Site.

Afterward, measurements will be recorded at approximate 30 minute intervals. The recorded 5 minute averages will be used to determine the difference in value between upwind and downwind particulate and VOC concentrations. Work will be temporarily halted and engineering controls, as per Section 2.3 or 2.5, will be implemented if the difference between the upwind and downwind particulate measurements exceed 100 $\mu g/m^3$, or downwind VOC readings exceed upwind readings by 5 parts per million (ppm). It should be noted that downwind VOC readings will be adjusted for engine exhaust. If work is required to be temporarily halted, the Contractor will be required to implement dust suppression methods or other means to control dust and VOCs.

2.2 Work Area Monitoring

In addition to monitoring the perimeter of the work Site for VOCs and particulates, the immediate work areas (excavation, staging, and grading areas) will be monitored for VOCs as per the HASP developed for this project. Real time readings from the Work Area Perimeters will be observed and recorded as 5 minute averages at 30 minute intervals. If measurements exceed 25 ppm, as a 5 minute average, the requirements of Section 2.4 will be implemented.

2.3 Fugitive Dust Control

If the monitoring at the Site Perimeter, as described in Sections 2.1, indicates an upwind/downwind difference in fugitive particulate emissions greater than 100 $\mu g/m^3$, the contractor will be required to implement dust control measures that may include the following methods:

- Apply water on haul roads
- Wetting equipment and excavation faces
- Restricting vehicle speeds to 10 mph
- Hauling material in properly tarped containers
- Spraying water in buckets during excavation and dumping
- Reducing excavation size and/or number of excavations

The contractor will be required to have a water truck or equivalent equipment on site for dust suppressions methods.

2.4 Minor Vapor Emission Response Plan

If any single Work Area Perimeter ambient air reading of total VOCs exceeds 25 ppm in the ambient air above background, as a 5 minute average, continuous Site Perimeter air monitoring shall be conducted at the downwind monitoring location.

Work activities may continue if total organic vapors in the ambient air are less than 25 ppm over background at the Work Area Perimeter, provided that the organic vapor levels measured at the Site Perimeter remain below 5 ppm over background.

Work activities may need to be modified as per the HASP if VOC measurements remain at 25 ppm or above in the ambient air at the Work Area Perimeter. See the HASP for further details.

All work activities must be halted and the Major Vapor Emission Response Plan (Section 2.5) will be implemented immediately if organic vapor levels exceed 5 ppm in the ambient air, as a 5 minute average, over background at the Site Perimeter.

2.5 Major Vapor Emission Plan

Engineering controls to abate the VOC emissions source will immediately be put into effect if total organic vapor levels in the ambient air exceed 5 ppm above background at the Site Perimeter. These engineering controls may include:

- Vapor suppression utilizing foam vapor suppressants, polyethylene sheeting, or water
- Backfilling of excavations
- Covering emission sources with stockpiled materials

If the measures taken to abate the emission source are ineffective and the total organic vapor readings continue at 5 ppm or above background for more than 15 minutes at the Site Perimeter, then the following actions shall be placed into effect.

- Occupants of the residential and commercial buildings will be advised to stay inside their respective structure and to close all windows.
- All personnel listed in the Emergency Contacts section of the HASP for this project will be contacted.
- The Site Safety Supervisor will immediately contact the local authorities and advise them of the circumstances.
- Continuous air monitoring will be conducted at the Site Perimeter and 1 minute average measurements will be recorded every 15 minutes. Air monitoring may be halted or modified by the Site Safety Supervisor when two successive measurements are below 5 ppm.

If readings remain elevated above 5 ppm over background for a period of 60 minutes the Site Safety Officer will request that local authorities evacuate the occupants of the buildings.

BENEFICIAL USE DETERMINATION (BUD) APPLICATION

PORT OF ROCHESTER
ROCHESTER, NEW YORK

January 2010 (Rev. February 2011) 0191-001-100

Prepared for:

City of Rochester - DES

Prepared By:

BENCHMARK Environmental Engineering & Science, PLLC

in association with

LABELLA Associates, P.C.

BENEFICIAL USE DETERMINATION (BUD) APPLICATION
PORT OF ROCHESTER

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1.0 INTRODUCTION

1.1 Site Location

The Port of Rochester site is located at 4590, 4630 and 4752 Lake Avenue and 1000 North River Street in the City of Rochester, New York. The Site is generally bounded by Lake Avenue to the west, the Genesee River to the east, Corrigan Street to the north, and River Street to the south (see Figure 1).

1.2 Site History

In the mid to late 1800's to the mid-1920's Charlotte Iron Works was an operational steel mill located on the western portion of the Site. Waste products, including foundry sand and slag, generated from the facility were used to expand the shoreline eastward toward the Genesee River and subsequently across the Site. Beginning in 2000, samples from **several soil borings and test pits at the Site** have been collected and **analyzed.**

1.3 Planned Marina Project

Currently the City is preparing a preliminary design for the development of the Site into a functioning public marina. The project is proposed to be completed in two phases (see Figure 2). During the first phase of construction approximately 143,000 cubic yards of material, including approximately 47,000 cubic yards of iron slag will be mechanically excavated. Initial demolition and construction activities for the first phase are planned to begin in the Fall of 2011. The second phase of the marina has not been scheduled, but will include the mechanical excavation of and additional approximately 79,000 cubic yards of material, including approximately 31,000 cubic yards of slag

1.4 Purpose & Scope

As part of the planned marina development project, the City of Rochester proposes to seek and secure a case-specific Beneficial Use Determination (BUD) for the excavated and separated slag fill in accordance with Solid Waste Management Facility Regulations (6NYCRR Part 360).

2.0 MATERIAL DESCRIPTION, PROCESSING, & USE

2.1 Material Description

As defined by the American Society of Testing and Materials (ASTM C125 Definition of Terms Relating to Concrete and Concrete Materials) iron slag is "the non-metallic product consisting essentially of silicates and aluminosilicates of calcium and other bases that is developed in a molten condition simultaneously with iron in a blast furnace". Descriptions of the subsurface slag materials encountered in previously completed borings and test pits indicated that there were color variances in the slag. The corresponding analytical data (Summarized in Appendix F) do not indicate significant variances in the concentration and types of metals detected amongst the various colored slag materials.

2.1.1 Chemical Characteristics (General)

According to the National Slag Association (See Appendix A), the primary constituents of iron slag are oxides of silica, alumina, calcium and magnesia which comprise approximately 95% of slag's total makeup. The remaining elements include manganese, iron and sulfur compounds as well as trace quantities of several others. As in natural geological formations, the major oxides are combined to form various silicate and alumnosilicate minerals such as melilite and woolastonite. The chemical composition of iron slag from a given source generally varies within relatively narrow limits since raw materials charged into the furnace are carefully selected and blended. Changes in the raw materials charged into the iron furnaces over time are likely reflected in the color changes in the slag.

2.1.2 Physical Characteristics (General)

According to the National Slag Association (see Appendix A), iron slag has a characteristically vesicular structure with many non-connected cells. Crushing slag forms angular, roughly cubical pieces with few flat or elongated fragments. Due to iron slag's vesicular structure, it generally has a greater surface area and lower density than other natural aggregates of equal volume. Iron slag is a non-corrosive material that provides an excellent bond with Portland cement, resists polishing, and is highly durable when subjected to weathering.

2.1.3 Subsurface Site Lithology

LaBella Associates, P.C. completed numerous soil borings at the Site to determine among other things, the nature and extent of slag and other fill deposition on the Site. These soil borings were used to create cross-sections of the subsurface fill and native materials within the planned Site excavation area (see Figures 3-7).

According to LaBella's boring logs, the deposits of slag consisted mainly of large chunks up to approximately 2-inch diameter. However, the maximum size was limited to the 2-inch diameter of the split spoon. Larger size chunks are likely to be present. The thickness of the slag fill layer varies from zero to 16.3 feet across the footprint of the proposed marina project.

2.1.4 Physical Testing of Site Slag Fill

Samples of the slag material from the Site were supplied to 3rd Rock, LLC of East Aurora, NY for analysis of particle size distribution and for the potential expansion of aggregates from hydration reactions (See Appendix B). The grain size distribution of the slag consisted of 63.8% gravel, 29.2% sand, and 7% fines. The distribution may be slightly skewed based on the action of the rotary drill and split spoon sampling. The slag was also tested and found to be non-expansive, consistent with most iron slag.

2.1.5 Analytical Testing of Site Slag Fill

LaBella collected composite samples of slag from the soil borings completed at the Site. The samples analyzed for semi-volatile organic compounds (SVOCs) and metals. As shown in Table 1, no SVOCs were detected in the slag samples and all metals meet the NYSDEC Part 375 Soil Cleanup Objectives (SCOs) for the protection of groundwater and restricted residential use.

The synthetic precipitation leaching procedure (SPLP) analysis was also completed to determine the leaching potential of the Site slag. As shown in Table 2, very low concentrations of metals leached from the slag, thus making the material well-suited for surface or subsurface reuse.

2.2 Material Processing

To facilitate the processing of the slag, an approximately 2.5-acre portion of the Site will be used for: storage of the raw material; processing of the slag including, crushing, screening and possibly magnetic separation of iron as required for the intended beneficial use ,and ;temporary staging of the reusable processed slag product(s). Off-site stockpiling of the processed slag products may also be necessary. Careful planning, observation and field control of excavation of the slag layer is critical to both maximize slag recovery as well as minimizing the cost and amount of mechanical processing of the excavated raw slag fill.

2.2.1 Material Excavation and On-Site Management

During Site excavation, overburden materials will be handled and disposed off-site in accordance with contract documents to be developed for the project. When the excavation reaches the slag layer, the in-place slag fill material will be dewatered as necessary and transported to the slag processing area of the Site where the slag will be processed. The raw unprocessed slag as excavated and until separated from other mixed fill materials shall be managed as a regulated solid waste in accordance with the Solid Waste Control Plan (see Appendix G). Nominal quantities of mixed fill materials separated from the slag during processing shall also be managed as a regulated solid waste in accordance with the Solid Waste Control Plan . The separated and processed slag product, subject to the BUD issued by the NYSDEC in accordance with this Application is not a regulated solid waste and therefore not subject to the Solid Waste Control Plan, .

2.2.2 Proposed Analytical Sampling of BUD Product

In order to ensure a consistent quality of the iron slag for beneficial use, one representative composite sample will be analyzed for each 10,000-tons of processed slag. The composite sample will consist of at least five grab samples. Each grab sample will consist of random aliquots taken from the lower, middle and upper sections of the working face of the excavation area or from the stockpile. Approximately equal volumes of each grab sample will be thoroughly manually mixed in the field or laboratory with a pre-cleaned stainless steel spoon in a pre-cleaned stainless steel or plastic pre-cleaned bowl to form the composite sample subject to analytical testing. Proper chain-of -custody procedures will be followed to assure sample integrity.

Each sample will be analyzed by a NYSDOH-approved (ELAP certified) analytical laboratory for RCRA Metals using EPA methods 6010C with 7471B for mercury. If the analytical results exceed the NYSDEC "Protection of Groundwater" values, SPLP extraction will be performed on split samples. Additional contingency sampling and analysis may be required the analytical data shows significantly different concentrations than the initial sampling. All data will be summarized and submitted to the NYSDEC.

2.2.3 Solid Waste Control Plan

The Solid Waste Control Plan (SWCP), provided under separate cover, describes the different native and fill materials expected to be encountered (i.e. slag, slag intermingled with mixed fill , and materials) and outlines the appropriate handling and disposition of the materials excavated from the Port of Rochester site.

2.3 Reclaimed Slag Product Uses (General)

According to the National Slag Association iron slag is an extremely versatile and durable building material with applications in concrete, asphaltic pavement, masonry units, lightweight embankments, and waterway applications.

Some of the processed slag will be used on-site as a base or sub-base for construction roadways, building foundation backfill and parking area surfacing. A portion of the material will also be used off-site on other City parcels or projects.

2.3.1 Road Base and Sub-Base

Iron slag can be crushed and screened to fulfill the grading requirements of the various City Departments or City projects, as specified by their consulting engineers and/or the City Engineer.

2.3.2 Structural Fill

The vesicular structure of iron slag results in a lower unit weight than most other natural aggregates. The slag is also very angular, well graded, and structurally competent for compaction and grading as an alternative to run-of-crusher or gravel aggregate.

2.3.3 Chip & Seal Aggregate

Iron slag has a rough surface and is resistant to weathering, making it a superior component in asphaltic wearing courses. Freezing and thawing has little to no effect on slag and since the melting point of slag is above 2100ºF slag is resistant to high temperature.

2.3.4 Portland Cement Uses

According to the Portland Cement Association's July 2005 Sustainable Manufacturing Fact Sheet for Iron and Steel Byproducts (see Appendix D), iron slag can be used in the production of clinker, blended cements, and/or as an aggregate in Portland cement concrete. In July 2005 there were 39 Portland cement plants using slag as a raw material in the production of clinker and 11 plants blending slag into one or more cement products.

2.4 Previously-Approved BUD Applications for Iron Slag

According to the New York State Department of Environmental Conservation (NYSDEC), Division of Solid and Hazardous Materials, Bureau of Solid Waste (see Appendix E) no fewer than four Beneficial Use Determinations have been granted for iron (blast furnace) slag.

The uses approved by the NYSDEC include use as a road base, a road sub-base, aggregate, and structural fill. Table 3 summarizes the list of BUD Approvals for iron slag.

2.5 Proposed Beneficial Use of Site Slag

Based upon the physical and chemical characteristics of the Site slag as presented herein which are consistent with industry-wide iron slag material, we propose the following beneficial uses of the Site slag for:

- Road base and sub-base
- Structural fill on non-residential properties
- Chip and seal aggregate
- Asphalt aggregate
- Concrete aggregate

3.0 REFERENCES

National Slag Association, *Blast Furnace Slag; The Material of Choice.*

Portland Cement Association, *Sustainable Manufacturing Fact Sheet: Iron and Steel Byproducts*, July 2005.

Labella Associates, P.C. *Data Summary Package, Port Marina Predevelopment Site Conditions Gap Investigation (DRAFT)* prepared for the City of Rochester Division of Environmental Quality, September 2009.

TABLES

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 1

SUMMARY OF SLAG ANALYTICAL RESULTS

PORT OF ROCHESTER
ROCHESTER, NEW YORK

Parameter [1]	Phase I Slag (A)	Phase I Slag (B)	Phase II Slag	[2]Residential SCOs (ppm)	[2]SCOs for the Protection of GW (ppm)
TAL Metals - mg/kg					
Aluminum	27300 E	23900 E	20600 E	--	--
Antimony	0.56 NE	0.61 NE	0.46 NE	--	--
Arsenic	5.1 E	7.8 E	8.3 E	**16**	**16**
Barium	171 E	120 E	124 E	**350**	**820**
Beryllium	4.6 E	2.9 E	2.9 E	**14**	**47**
Cadmium	<0.014	0.048 NE	0.67 NE	**2.5**	**7.5**
Calcium	251000 *	243000 *	166000 *	--	--
Chromium	3.1 E	5.7 E	12.1 E	**22**	**19**
Cobalt	<0.040	<0.040	1.1	--	--
Copper	3.3 NE*	7.7 NE*	17.4 NE*	**270**	**1720**
Iron	3610 *	7170 *	51900 *	--	--
Lead	3.3 E	4.9 E	15.1 E	**400**	**450**
Magnesium	26100 *E	3980 *E	18200 *E	--	--
Manganese	256	312	634	**2000**	**2000**
Mercury	<0.0057	0.009 E	0.028 E	**0.81**	**0.73**
Nickel	4.1 E	5.6 E	12 E	**140**	**130**
Potassium	2290 E	2500 E	2250 E	--	--
Selenium	1.1 N	1.3 N	<0.77	**36**	**4**
Sodium	1230	1160	1290	--	--
Thallium	2.3 N	1.8 N	0.55 N	--	--
Vanadium	6.3 E	12.1 E	17.8 E	--	--
Zinc	3.1 NE	7.3 NE	47.7 NE	**2200**	**2480**

Notes:
1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (June 2006);

Definitions:
= Sample result exceeds the residential use SCO.
= Sample result exceeds the SCO for the protection of groundwater.
ND = Parameter not detected above laboratory detection limit.
"--" = No SCO available.
* = Denotes the inorganic duplicate analysis was not within the established QC control limit as specified by the laboratory.
N = Denotes the inorganic analysis is associated with a spike sample not within control limits.
E = Denotes the reported value is estimated because of the presence of interference, as determined by the serial dilution analysis.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 2

SUMMARY OF SYNTHETIC PRECIPITATION LEACHING PROCEDURE (SPLP)
ANALYTICAL RESULTS

PORT OF ROCHESTER
ROCHESTER, NEW YORK

Parameter [1]	Phase I Slag (A)	Phase I Slag (B)	Phase II Slag	NYSDEC Groundwater Quality Standards (µg/L)
TAL Metals - µg/L				
Aluminum	937	676	231	--
Barium	208	75.6 B	28.1 B	**1000**
Calcium	74600	45700	36800	--
Chromium	<1.1	1.4 B	<1.1	**50**
Iron	<61	<61	66.8 B	**300**
Magnesium	79.9 B	<77	102 B	**35000**
Potassium	2070	2860	1170	--
Selenium	33.4	26 B	16.2 B	**10**
Silver	1.9 B	1.3 B	0.86 B	**50**
Sodium	9290	11200	20000	**20000**
Vanadium	12.2 B	8.9 B	20.3 B	**14**
Zinc	10.1 B	8.3 B	<7.7	**2000**

Notes:
1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.

Definitions:
= Sample result exceeds the NYSDEC Groundwater Quality Standards.
ND = Parameter not detected above laboratory detection limit.
"--" = No Groundwater Quality Standard available.
B = Denotes that a "trace" cooncentration was detected below the reporting limit and equal to or above the detection limit.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

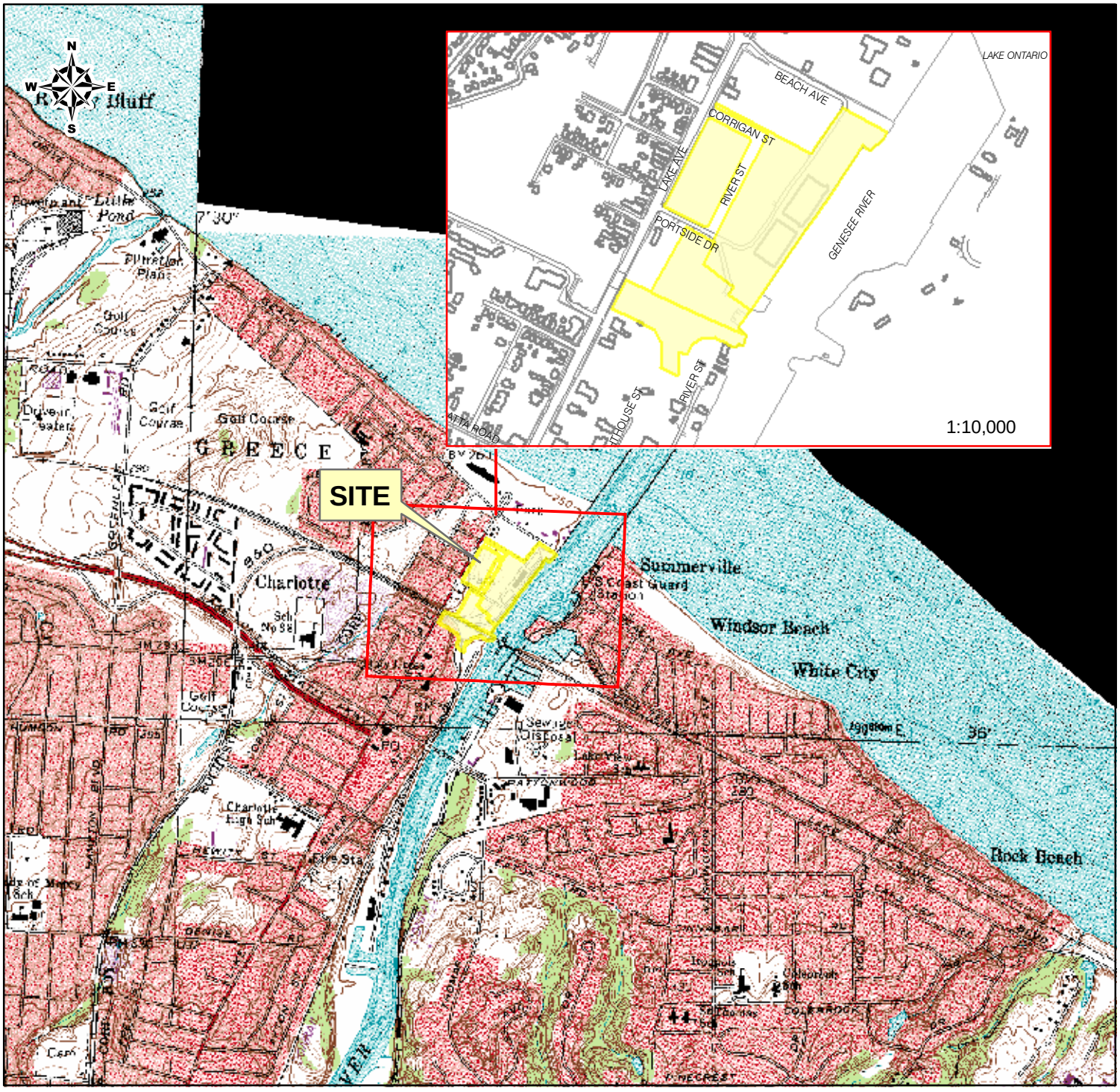
TABLE 3

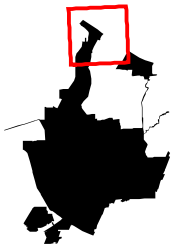
BUD APPROVALS FOR SIMILAR MATERIAL

PORT OF ROCHESTER
ROCHESTER, NEW YORK

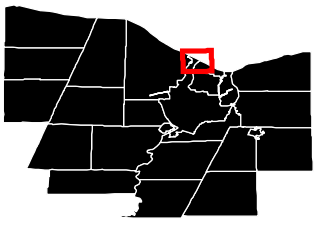
BUD #	Region	Facility Name	City	State	Beneficial Use
050-9-15	9	Buffalo Crushed Stone Inc.	Buffalo	NY	Base (road; sub); Aggregate
342-9-15	9	Buffalo Crushed Stone Inc.	Buffalo	NY	Base (sub)
406-3-00	OS	Waylite Corporation	Bethlehem	PA	Fill (lightweight)
515-4-42	4	King Road Materials	Albany	NY	Fill (lightweight); Base (sub)

FIGURES

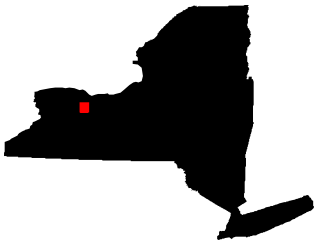




Location within City of Rochester



Location within Monroe County



Location within NY State

PROJECT/DRAWING NUMBER

209447

FIGURE 1

DRAWING TITLE

SITE LOCATION AND VICINITY MAP

1:24,000

ISSUED FOR: REVIEW

DATE: 3/13/2009

DESIGNED BY: XX

DRAWN BY: XX

REVIEWED BY: XX

PROJECT/CLIENT

BENEFICIAL USE DETERMINATION APPLICATION

PORT OF ROCHESTER
Proposed Marina Option 7

LABELLA Associates, P.C.

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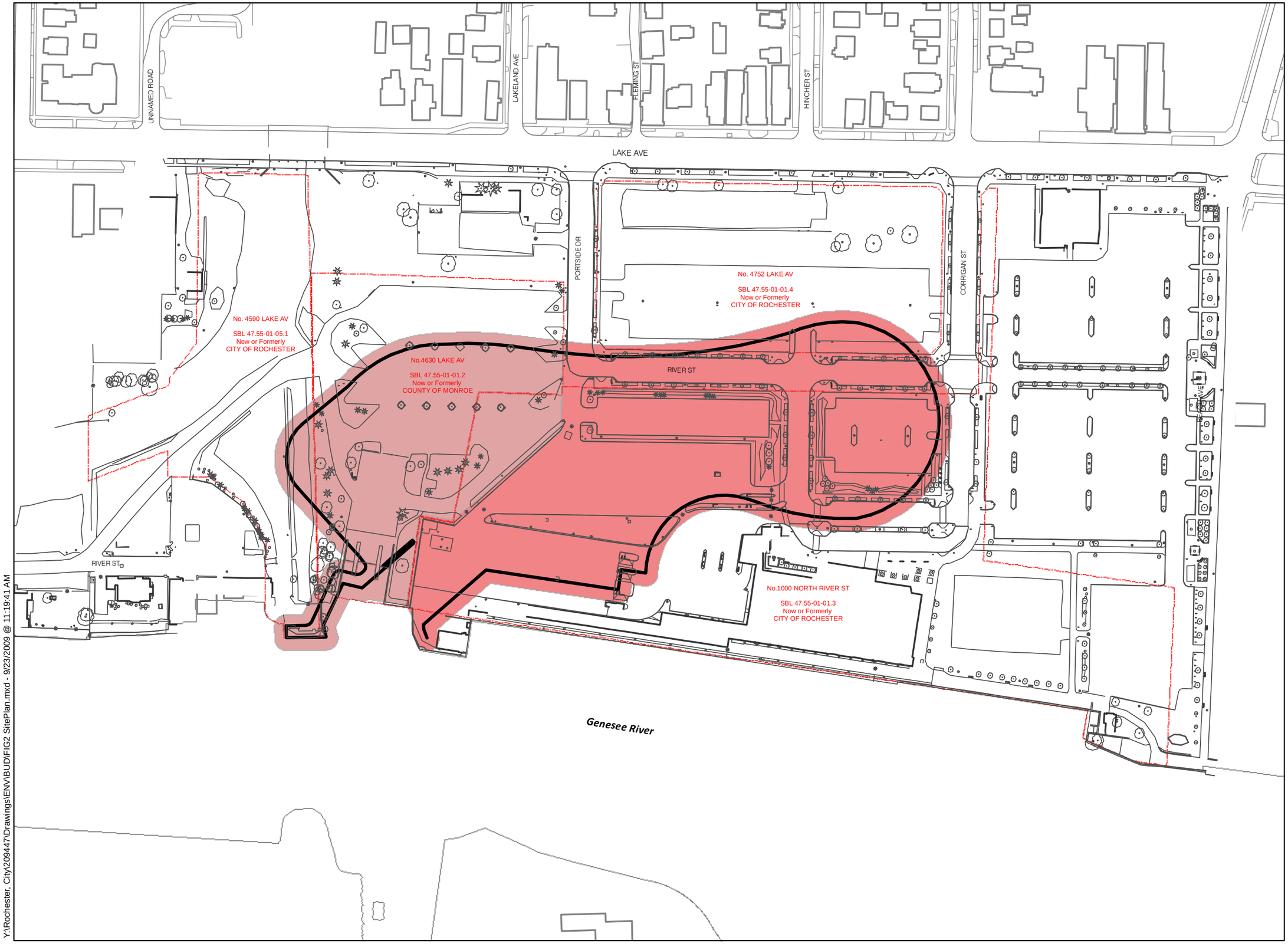
Y:\Rochester, City\209447\Drawings\EN\VIBUD\FIG1SiteLocationVicinity.mxd - 9/23/2009 @ 11:41:35 AM



Y:\Rochester, City\209447\Drawings\ENV\BUD\FIG2 SitePlan.mxd - 9/23/2009 @ 11:19:41 AM

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PORT OF ROCHESTER
Proposed Marina Option 7

BENEFICIAL USE DETER-MINATION APPLICATION

SITE PLAN

September 2009

Legend

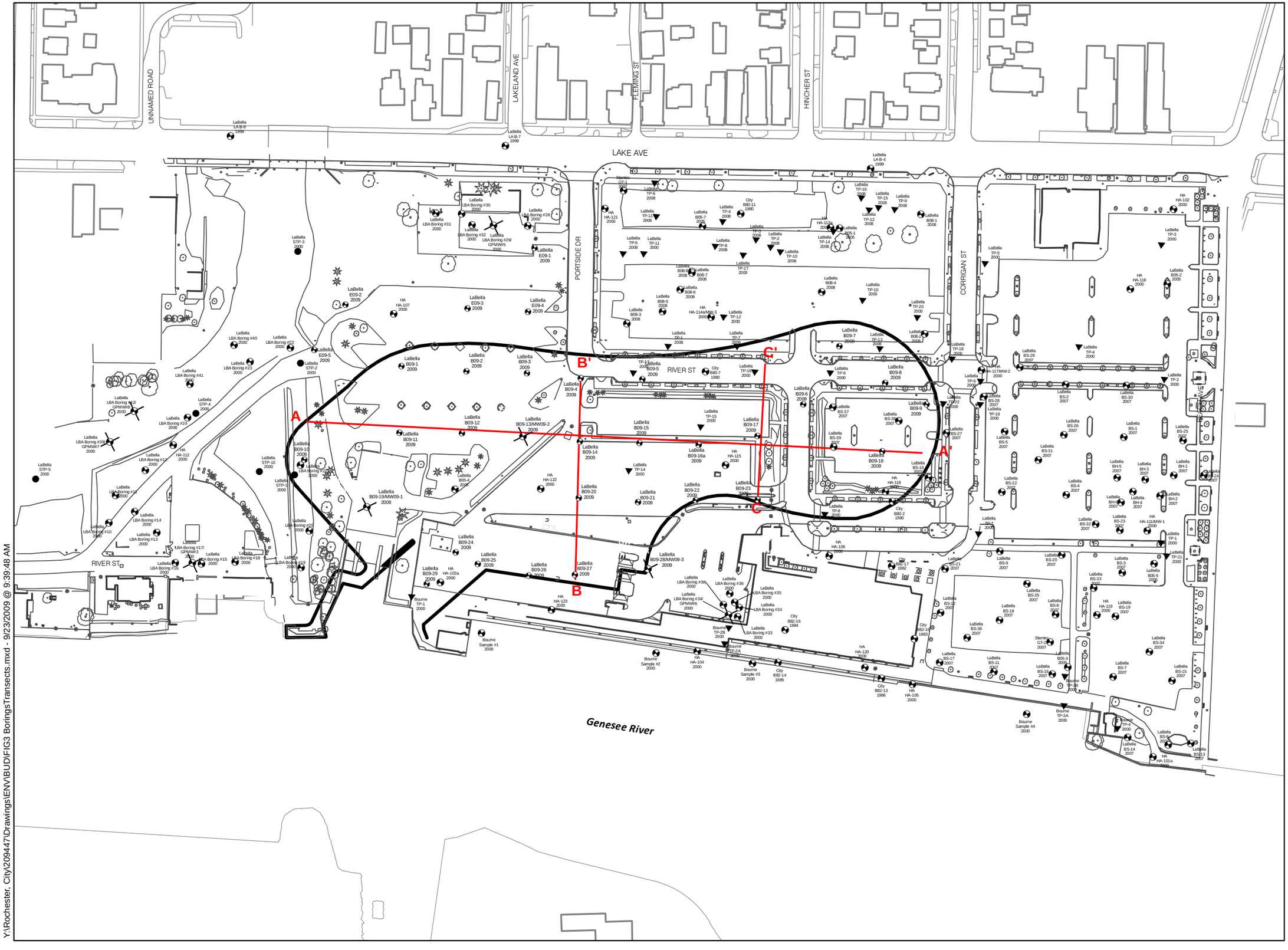
- Proposed Public Boardwalk (updated April 2009)
- Marina Redevelopment Phase I
- Marina Redevelopment Phase II
- Parcels

Sources:
(1) City of Rochester Site Survey, 2008.
(2) Passero Figure 7, updated April 2009.
(3) LaBella Port Redevelopment Mapping 2003
(4) LaBella GIS data 2005 through 2009
(5) City of Rochester GIS (buildings and street features)

0 150
1 inch = 150 feet

209447

FIGURE 2



Y:\Rochester, City\209447\Drawings\ENV\BUDFIG3 BoringsTranscects.mxd - 9/23/2009 @ 9:39:48 AM

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Proposed Marina Option 7

BENEFICIAL USE DETERMINATION APPLICATION

BORINGS & CROSS SECTION TRANSECTS

September 2009

Legend

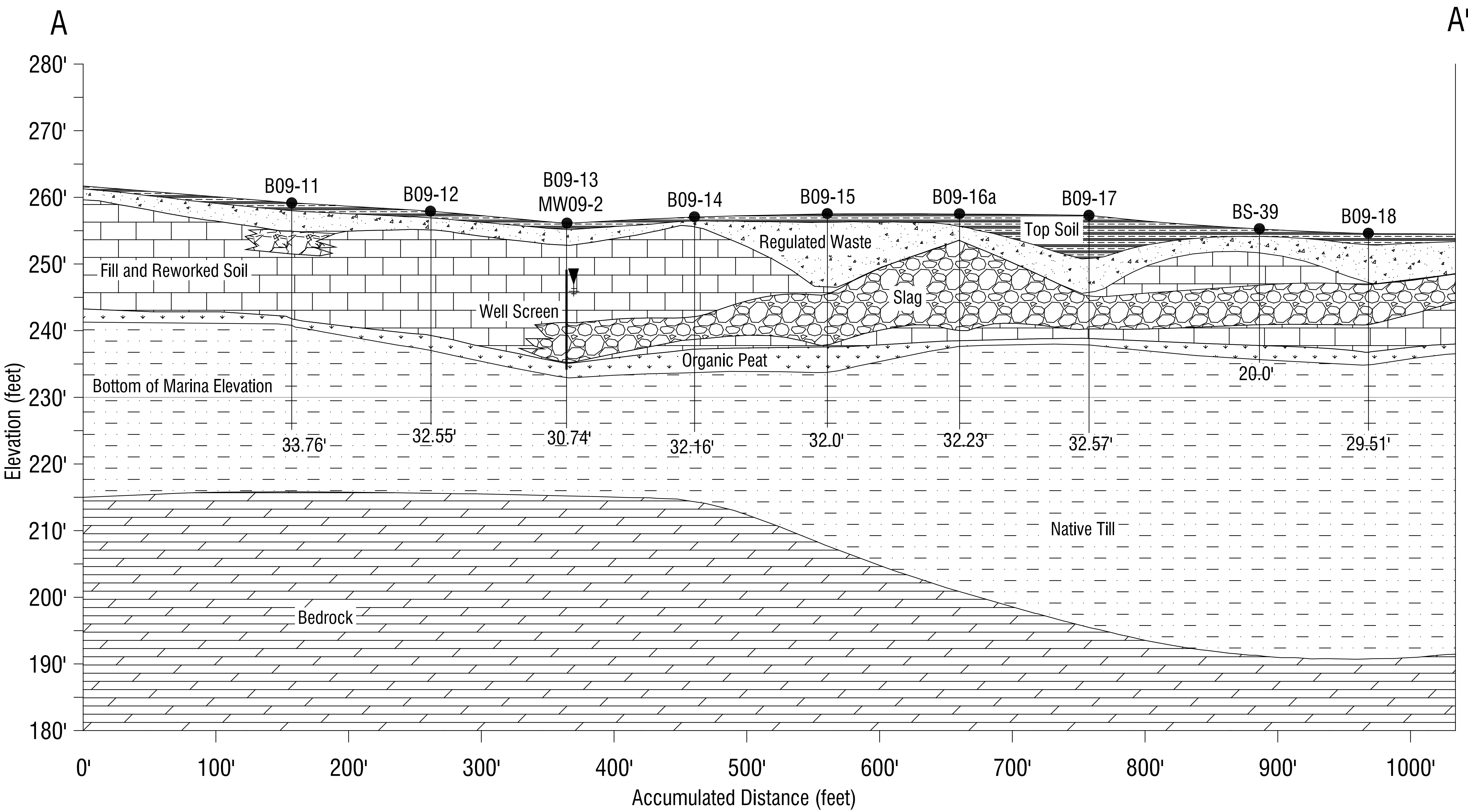
- Soil Boring
- Hand Auger Point
- Monitoring Well
- Test Pit
- Cross Section Transects
- Proposed Public Boardwalk (updated April 2009)
- Former Vortex Sewer

Sources:
(1) City of Rochester Site Survey, 2008.
(2) Passero Figure 7, updated April 2009.
(3) LaBella Port Redevelopment Mapping 2003
(4) LaBella GIS data 2005 through 2009
(5) City of Rochester GIS (buildings and street features)

0 150
1 inch = 150 feet

209447

FIGURE 3



LEGEND

- Approximate Static Groundwater Elevation
- Topsoil
- Fill & Reworked Soil
- Fill - Regulated Waste
- Fill - Slag
- Organic Peat
- Native Till
- Bedrock
- Soil Boring Location
- 30.0' Depth to Boring Bottom

NOTE:
1. Formations based on contours generated using Golden Surfer 8 software.
2. Subsurface formations inferred in areas below the terminal depth of borings and beyond the first and last point.
3. Bedrock surface based on points that do not fall near the cross section axis and therefore not shown.

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LABELLA Associates, P.C.

PROJECT/CLIENT
Beneficial Use Determination Application

Port of Rochester
Proposed Marina Option 7
Rochester, New York

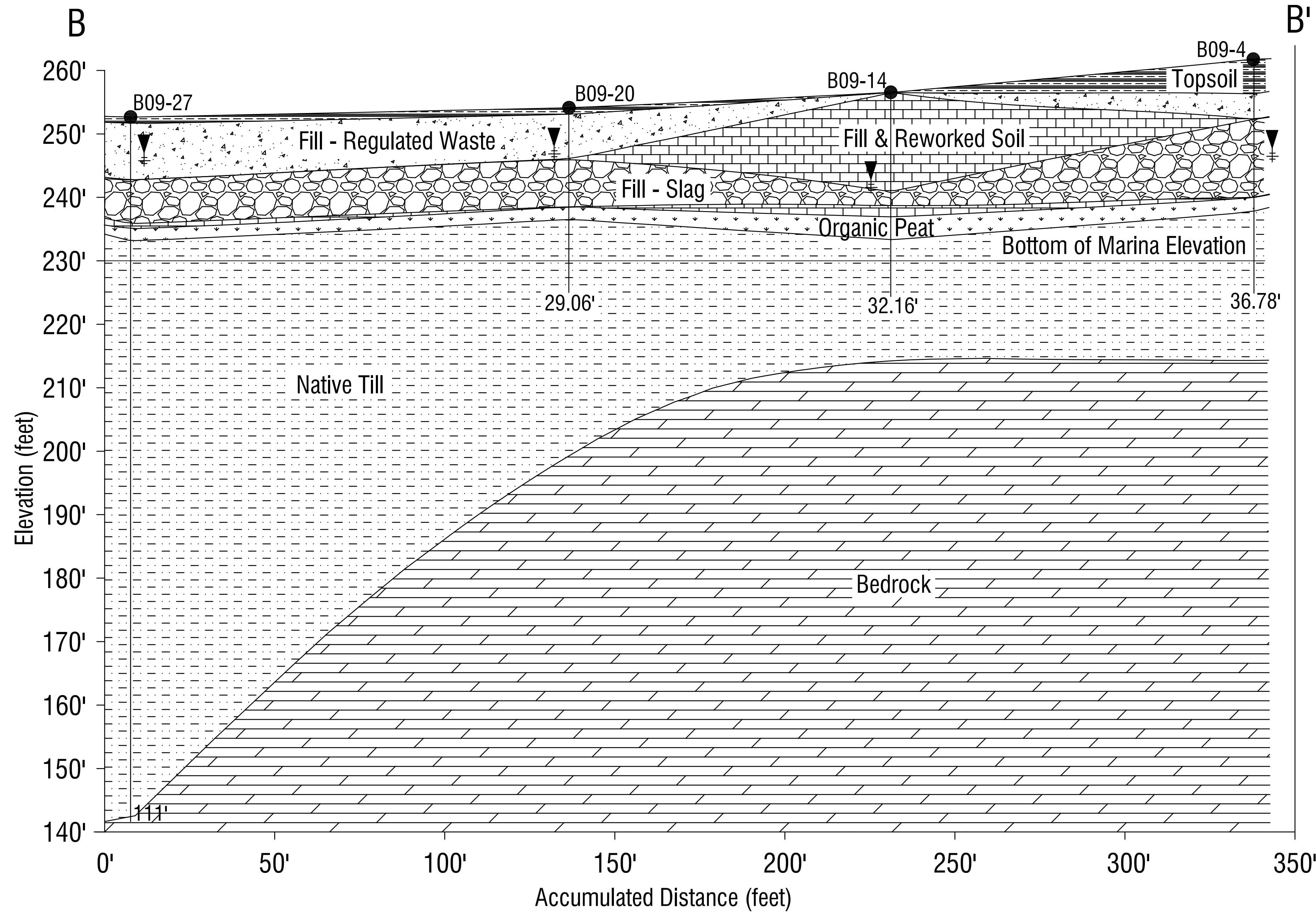
DRAWING TITLE
GEOLOGIC CROSS SECTION
A-A'

ISSUED FOR: REVIEW
DATE: SEPTEMBER 2009

DESIGNED BY: RCN
DRAWN BY: RCN
REVIEWED BY: DEP

PROJECT/DRAWING NUMBER
209447

FIGURE 4



GENERAL GROUNDWATER FLOW DIRECTION ←

LEGEND

- Approximate Static Groundwater Elevation
- Topsoil
- Fill & Reworked Soil
- Fill - Regulated Waste
- Fill - Slag
- Organic Peat
- Native Till
- Bedrock
- ● Soil Boring Location
- 30.0' Depth to Boring Bottom

NOTE:
1. Formations based on contours generated using Golden Surfer 8 software.
2. Subsurface formations inferred in areas below the terminal depth of borings and beyond the first and last point.
3. Bedrock surface based on points that do not fall near the cross section axis and therefore not shown.

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LABELLA Associates, P.C.

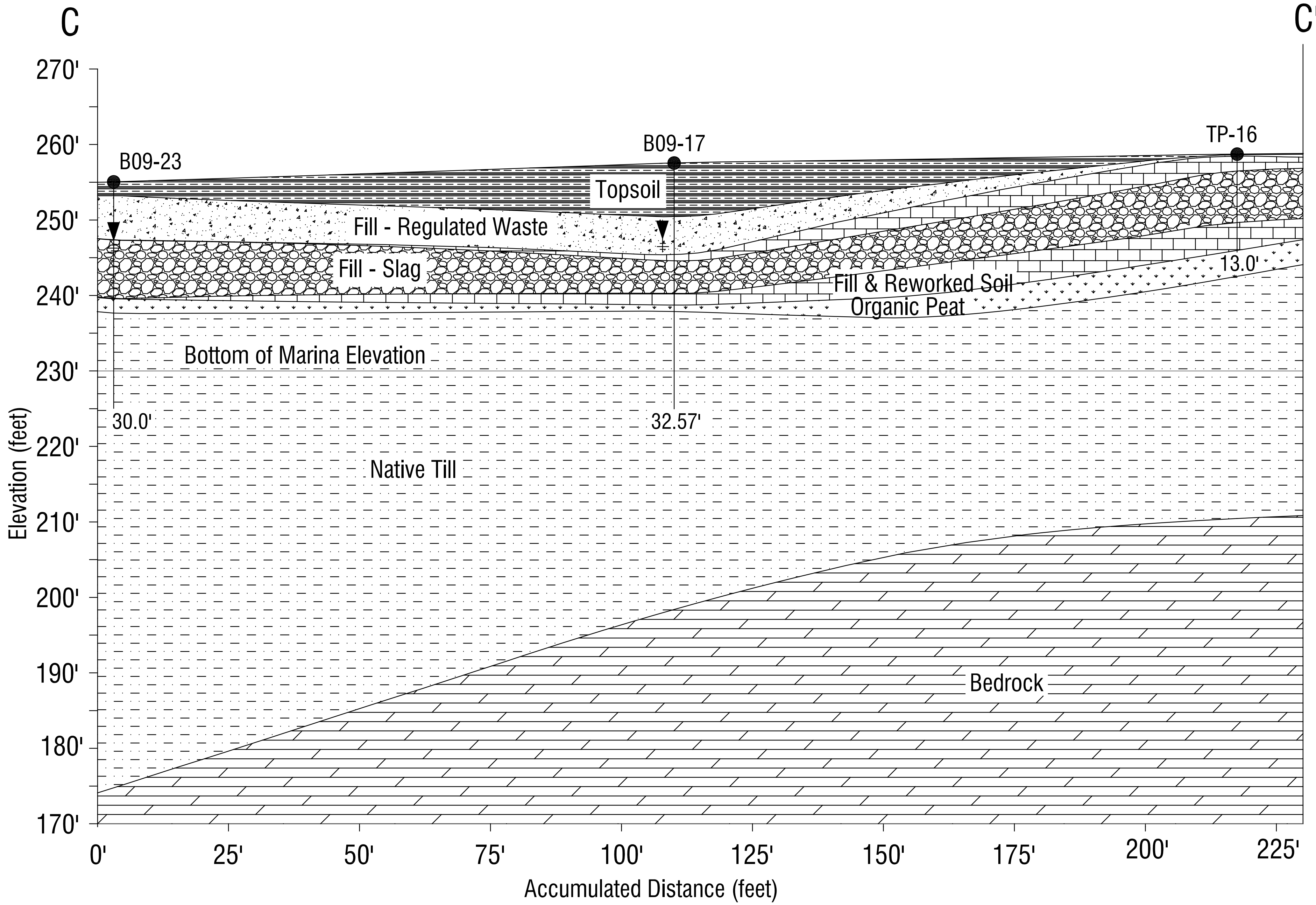
PROJECT/CLIENT
Beneficial Use Determination Application
Port of Rochester
Proposed Marina Option 7
Rochester, New York

DRAWING TITLE
GEOLOGIC CROSS SECTION
B-B'

ISSUED FOR: REVIEW
DATE: SEPTEMBER 2009
DESIGNED BY: RCN
DRAWN BY: RCN
REVIEWED BY: DEP

PROJECT/DRAWING NUMBER
209447

FIGURE 5



GENERAL
GROUNDWATER
FLOW DIRECTION

LEGEND

- Approximate Static Groundwater Elevation
- Topsoil
- Fill & Reworked Soil
- Fill - Regulated Waste
- Fill - Slag
- Organic Peat
- Native Till
- Bedrock
- ● Soil Boring Location
- 30.0' Depth to Boring Bottom

NOTE:

1. Formations based on contours generated using Golden Surfer 8 software.
2. Subsurface formations inferred in areas below the terminal depth of borings and beyond the first and last point.
3. Bedrock surface based on points that do not fall near the cross section axis and therefore not shown.

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PROJECT/CLIENT
Beneficial Use Determination Application
Port of Rochester
Proposed Marina Option 7
Rochester, New York

DRAWING TITLE
GEOLOGIC CROSS SECTION
C-C'

ISSUED FOR
REVIEW

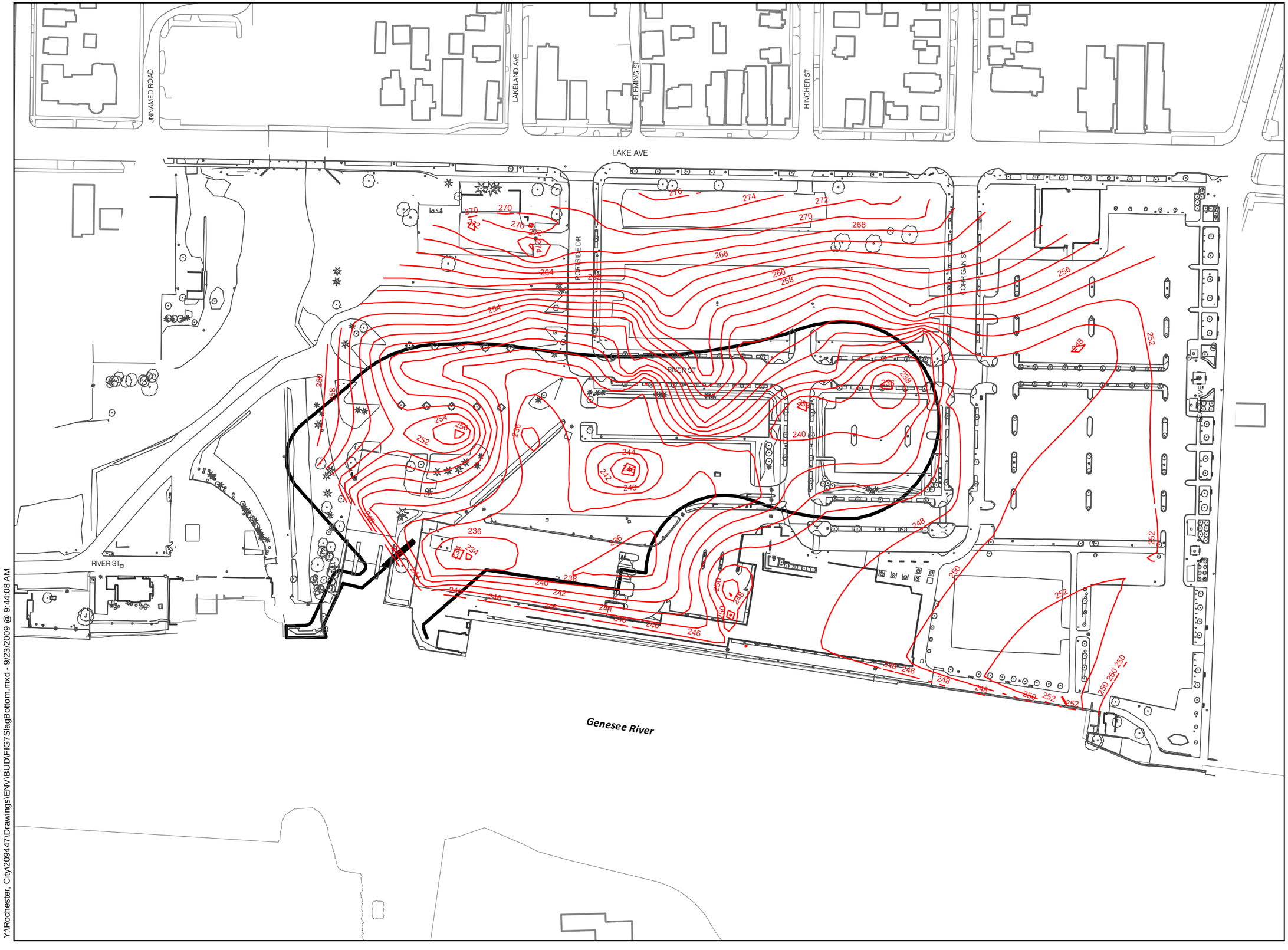
DATE: SEPTEMBER 2009

DESIGNED BY: RCN
DRAWN BY: RCN
REVIEWED BY: DEP

Y:\ROCHESTER, CITY\2082453\PORTPREDEVELOPMENTINVESTIGATION\BUD\FIG6C-C'

PROJECT/DRAWING NUMBER
209447

FIGURE 6



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PORT OF ROCHESTER
Proposed Marina Option 7

BENEFICIAL USE DETER-MINATION APPLICATION

BOTTOM OF RECOVERABLE SLAG CONTOURS

September 2009

Legend

- Bottom of Slag Contours August 2009
- Proposed Public Boardwalk (updated April 2009)

Notes:
(1) Contours generated with Golden Surfer 8 software using the Natural Neighbor algorithm.
(2) Elevation in feet, based on the City of Rochester Datum.

Sources:
(1) City of Rochester Site Survey, 2008.
(2) Passero Figure 7, updated April 2009.
(3) LaBella Port Redevelopment Mapping 2003
(4) LaBella GIS data 2005 through 2009
(5) City of Rochester GIS (buildings and street features)

0 150
1 inch = 150 feet

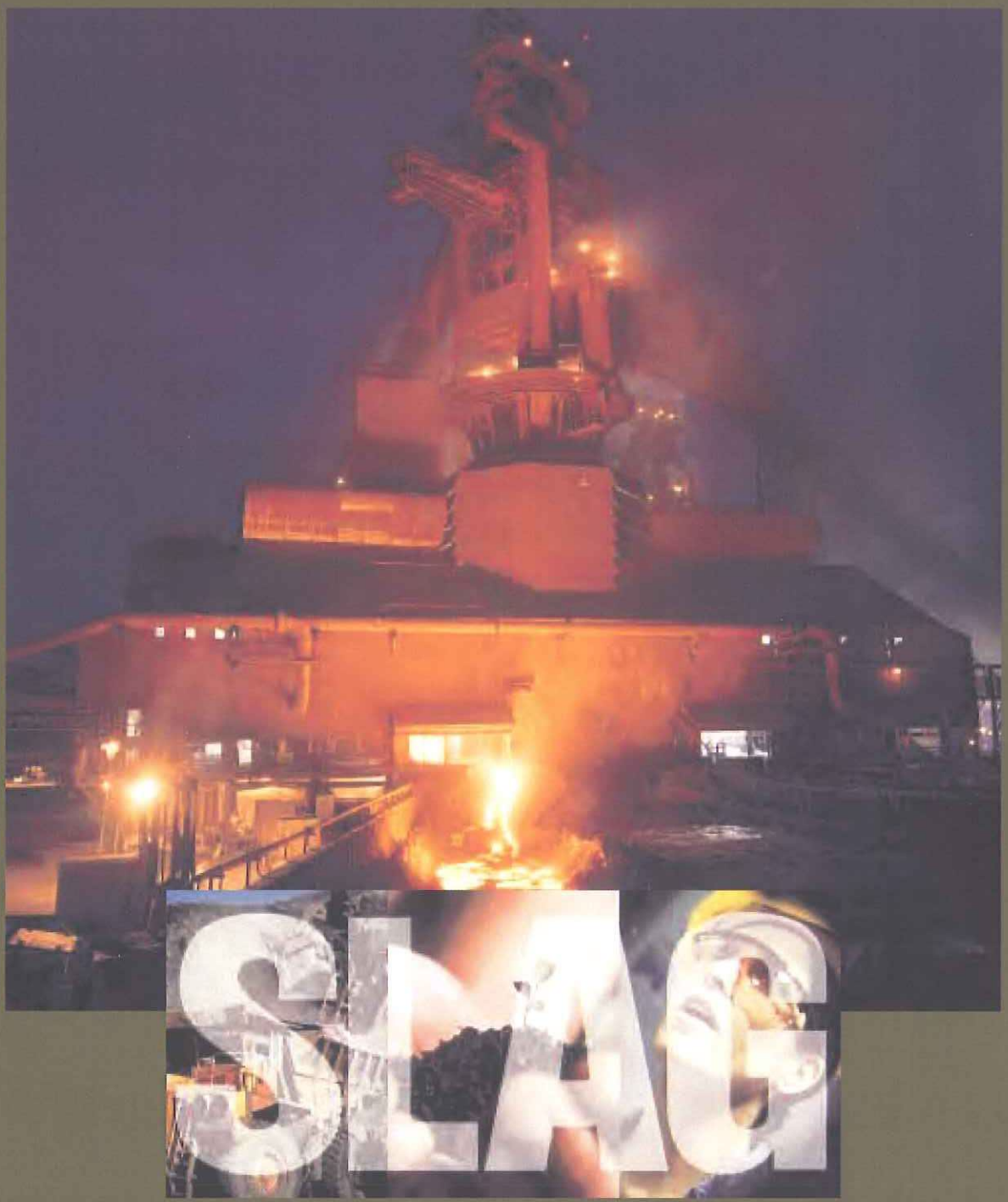
209447

FIGURE 7

APPENDIX A

BLAST FURNACE SLAG:
THE CONSTRUCTION MATERIAL OF CHOICE

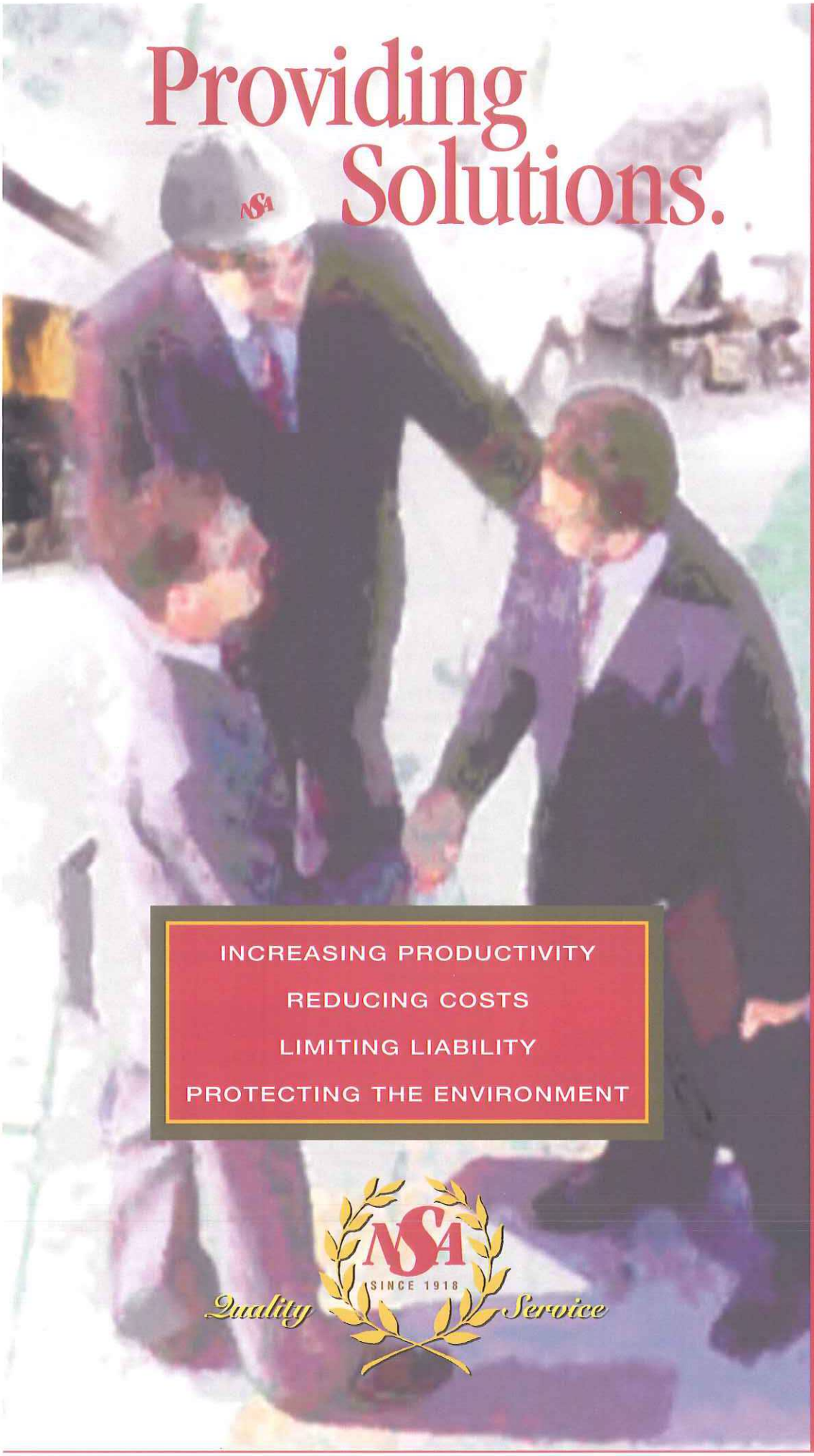
BLAST FURNACE SLAG



The Construction Material of Choice

NATIONAL SLAG ASSOCIATION

Providing NSA Solutions.



INCREASING PRODUCTIVITY

REDUCING COSTS

LIMITING LIABILITY

PROTECTING THE ENVIRONMENT

NSA SINCE 1918

Quality Service

NSA
SINCE 1918
NATIONAL SLAG ASSOCIATION

The All-Purpose Construction Aggregate

At the turn of the Twentieth Century, producers of pig iron began to look into possible applications for slag which was being produced simultaneously with the iron coming from their furnaces. In 1908 Carnegie Steel launched a study to look for a variety of possible uses of slag. As early as 1911, a Carnegie report, "Furnace Slag in Concrete" established a position for slag as a suitable product for use as an aggregate in concrete.

In 1917, it was evident that slag had become a valuable product and producing companies would benefit from a more united promotional effort. It was also apparent that slag operators were having difficulty obtaining railroad cars due to the war effort, and a cooperative effort was needed to acquire them. In 1918 ten men met in Columbus, Ohio and voted to organize the National Slag Association. The U.S. Bureau of Public Roads concluded in a 1919 survey that there were 32 plants being operated by 14 companies producing slag.

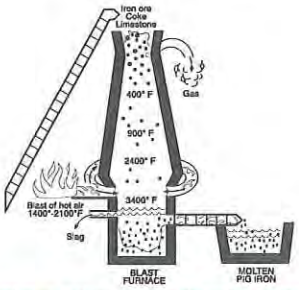
Slag has transcended it's beginnings as a road building aggregate in Ancient Rome, to its present day status of a value added construction material with diverse applications. By way of modern, state of the art processing methods, slag has present day applications in nearly every facet of the construction industry including: Ground granulated blast furnace slag (GGBF), blended cements, lightweight hydraulic fill, masonry, structural concrete, asphaltic concrete, granular base aggregate, railroad ballast, mineral wool, roofing, soil conditioning, glass, and many others.

The united effort of today's National Slag Association members worldwide, is the driving force that makes slag "the construction material of choice". This effort represents a continued emphasis on providing innovative, value added quality products to the construction industry well into the new millennium.

Definition and Description of Slag

The American Society of Testing and Materials (ASTM C125 Definition of Terms Relating to Concrete and Concrete Materials) defines blast furnace slag as "the non-metallic product consisting essentially of silicates and alumino silicates of calcium and other bases, that is developed in a molten condition simultaneously with iron in a blast furnace."

In the production of iron, the blast furnace is charged with iron ore, flux stone (limestone and/or dolomite) and coke for fuel. Two products are obtained from the furnace: molten iron and slag. The slag consists primarily of the silica and alumina from the original iron ore, combined with calcium and magnesium oxides from the flux stone. It comes from the furnace in a molten state with temperatures exceeding 1480°C (2700°F). There are four distinct methods of processing the molten slag: air cooled, expanded, pelletized and granulated. Each of these methods produces a unique slag material.



Iron and slag making process through a blast furnace.

Chemical Properties

The principle constituents of blast furnace slag are silica, alumina, calcium and magnesia (reported as oxides), which comprise 95% of slag's total makeup. Minor elements include manganese, iron and sulfur compounds as well as trace quantities of several others. Analysis of most blast furnace slags fall within the ranges that are shown below. It should be noted, however, that the major oxides shown do not occur in free form in the slag. In air-cooled BF slag, they are combined to form various silicate and aluminosilicate minerals such as melilite, merwinite, wollastonite, etc., as found in natural geological forms. In the case of granulated and pelletized slag, these elements exist primarily as glass. The chemical composition of slag from a given source varies within relatively narrow limits since raw materials charged into the furnace are carefully selected and blended.

Typical Chemical Constituents

	Percent		Percent
Silica (SiO_2)	32-42	Sulfur (S)*	1-2
Alumina (Al_2O_3)	7-16	Iron Oxide (Fe_2O_3)	1-1.5
Calcium (CaO)	32-45	Manganese Oxide (MnO)	0.2-1.0
Magnesia (MgO)	5-15		

* Principally in the form of calcium sulfide

Physical Properties

The physical characteristics-weight, particle size, structural properties, etc.-vary according to the method used in processing the molten slag. Accordingly, end use of the processed material varies, which helps to explain the unique diversity of slag products.

Types of Blast Furnace Slag Processing

Air-Cooled

ATMOSPHERIC COOLING

Extremely versatile and durable building material

Description

Air-Cooled Blast Furnace (ACBF) Slag as defined in ASTM C 125 is: "The material resulting from solidification of molten blast-furnace slag under atmospheric conditions. Subsequent cooling may be accelerated by application of water to the solidified surface."

M-5/I-96 concrete interchange, Farmington Hills, MI. Used ACBF slag for open grade drainage course and concrete pavement.

Texture and Shape

The solidified slag characteristically has a vesicular structure with many non-connected cells. ACBF slag crushes to angular, roughly cubical pieces with a minimum of flat or elongated fragments. The rough vesicular texture of slag gives it a greater surface area than smoother aggregates of equal volume and provides an excellent bond with portland cement and high stability in bituminous mixtures. For embankment applications, the rough surfaces improve the angle of internal friction or interlocking of the pieces.

Specific Gravity

The bulk specific gravity (dry basis) of ACBF slag coarse aggregate generally falls in the range of 2.0 to 2.5. Since large vesicules cannot exist in small particles, the smaller size have higher specific gravities. Slag sand (#4 to 0 size) approaches natural sand in bulk specific gravity. Due to the cellular nature of slag, it is important that bulk specific gravity be used rather than apparent specific gravity for purposes of computing yield or estimating quantities.

Unit Weight

The unit weight varies with: (a) size and grading of the slag, (b) method of measuring and (c) bulk specific gravity of the slag. Typical unit weight (compacted) of crushed and screened air-cooled slag, graded as ordinarily used in concrete, is usually in the range of 1121 kg to 1281 kg per m^3 or 70 to 85 lb per ft^3. Slag has an economic advantage in construction because it has a lower unit weight than most natural aggregates. Allowance for this differential should always be considered for design and specifications in order to assure equal volume irrespective of the type of aggregate used.

Grading

ACBF slag is crushed and screened to conform to the grading requirements of the various state highway departments, municipalities and other specifying bodies. Gradations specified in national standards, such as ASTM D 448. Standard sizes of coarse aggregate for highway construction, are usually preferred and often the most readily available.

Absorption

Absorption of ACBF slag is usually in the range of 1 to 5% by weight, as it has a greater surface area and lower specific gravity than most natural aggregates. Little water ever enters the interior vesicular cells; therefore, the degree of saturation (portion of the total void space filled by water) is low. The empty cells are similar to the air bubbles in air-entrained cement pastes and the resultant durability is outstanding.

The core of the protective breakwater at the Hammond Marina (Hammond, Ind.) consists of 65,000 tons of ACBF slag. After extensive testing, Indiana's Department of Environmental Management approved ACBF slag as an acceptable product for use in Lake Michigan.

Resistance to Polishing

An outstanding characteristic of ACBF slag is its toughness and resistance to polishing under traffic. Notwithstanding its toughness, the degradation of slag, as tested in the Los Angeles (LA) Abrasion machine, is generally higher than for round or smooth-surfaced natural aggregates. This is due mainly to the rough edges on the surface breaking off under impact of the steel balls constituting the test charge. It has been proven that there is no correlation between the LA Abrasion loss for slag in laboratory tests and degradation in field applications. For this reason ASTM has deleted this test for slag in its specifications (see ASTM D 692, D1139, etc.) and D.O.T.'s in states where slag is available do not require this test for slag. LA Abrasion limits for slag, if included in specifications, should be somewhat higher than that for natural aggregates - to a maximum of approximately 50% loss.

This higher loss, however, does not mean that slag is softer than natural aggregates. The hardness of slag as measured by the Mohs scale is between 5 and 6. This compares favorably with the hardness reported for such materials as durable igneous rocks. Tests show the fines resulting from the LA Abrasion test on slag to be non-plastic.

Non-Corrosive

The small amounts of sulfur in slag are present in combined alkaline compounds, similar to that in portland cement. These are harmless to concrete and do not cause corrosion of reinforcing steel. The corrosive properties of coal ash or cinders should not be mistakenly applied to blast furnace slag. Examination of reinforcing bars taken from slag concrete structures after 30 years of service has shown no evidence of corrosion. The pH of solutions in contact with slag is always basic which tends to inhibit corrosion.

Durability

Slag is highly resistant to the action of weathering. It will withstand an unusually large number of cycles of the sulfate soundness test (ASTM C 88). Freezing and thawing or wetting and drying tests, also have little or no effect. High temperatures have very little effect on slag as it is formed in the blast furnace at about 1480 C or 2700 F. ACBF slag shows a slow but very uniform coefficient of expansion of approximately 0.000006 per degree F, up to its melting point (1150 to 1426C/2100 to 2600F). This figure is normally accepted as the coefficient of expansion for cement mortar and steel, hence, slag, when combined with these ingredients to form reinforced concrete, affords a high degree of compatibility.

Ohio toll road: ACBF slag was utilized in asphaltic wearing course for superior friction properties.

APPLICATIONS

- CONCRETE
- ASPHALTIC PAVEMENT
- LIGHTWEIGHT EMBANKMENT
- WATERWAY APPLICATIONS
- MASONRY UNITS
- MINERAL WOOL
- SOIL CONDITIONING
- METALLURGICAL FLUX
- GLASS MAKING

AREAS OF ADDED VALUE

- Excellent paste - aggregate bond in concrete
- Greater yield for all construction applications
- Improved skid resistance and stability in asphaltic pavements
- High angle of internal friction resulting in improved aggregate interlock
- Lower unit weight/Improved engineering properties for lightweight embankment
- Improved fire resistance for masonry and concrete applications
- Lower freight and labor costs due to lower unit weight
- Replenished soil with mineral and pH balance
- Economical alternative to Wollastonite as key ingredient in metallurgical mold powders and flux products
- Physical and chemical suitability for mineral wool production

Types of Blast Furnace Slag Processing

Expanded

CONTROLLED WATER-COOLING

Lightweight vesicular material obtained by controlled processing

The Process

Controlled quantities of water are used to accelerate the solidification process of molten blast furnace slag, resulting in a low density material. The solidified expanded slag is crushed and screened for use as a lightweight structural aggregate.

Texture and Shape

Expanded blast furnace slag is angular and cubical in shape, with negligible flat or elongated particles. Due to the action of the water and resulting steam on the solidification process, the open cellular structure of the particles is even more pronounced than particles of air cooled blast furnace slag.

Grading

Expanded blast furnace slag is crushed and screened to desired product sizing. Typically this is a blend of coarse and fine aggregate particles. The actual grading of products should be reviewed with the local supplier.

The new Comiskey Park (Chicago, IL) contains over 900,000 lightweight concrete block, used EXPANDED BLAST FURNACE SLAG AGGREGATE in order to achieve the desired weight, as well as fire resistance requirements.

Fire Resistance Ratings (American Insurance Association) Walls and Partitions

Type of Coarse Aggregate	Minimum Equivalent Thickness for Ratings of 4 hrs.	3 hrs.	2 hrs.	1 hr.
Expanded Blast Furnace Slag or Pumice	4.7	4.0	3.2	2.1
Expanded Clay or Shale	5.7	4.8	3.8	2.6
Limestone, Cinders or Air Cooled Blast Furnace Slag	5.9	5.0	4.0	2.7
Calcarious Gravel	6.2	5.3	4.2	2.8
Siliceous Gravel	6.7	5.7	4.5	3.0

APPLICATIONS

- MEDIUM TO LIGHTWEIGHT CONCRETE MASONRY UNITS
- LIGHTWEIGHT EMBANKMENT
- MEDIUM TO LIGHTWEIGHT STRUCTURAL CONCRETE

AREAS OF ADDED VALUE

- Expanded blast furnace slag aggregate is a specialty product made for the masonry block industry.
- Masonry units containing expanded blast furnace slag aggregate possess many desirable properties such as reduced weight, improved sound absorption and excellent thermal properties.
- Substantial improvements in labor efficiencies can also be realized as masons can handle and place more lower weight units per day.
- Improvements in fire resistance ratings have also been documented for masonry and structural concrete units made from expanded blast furnace slag aggregate, as documented in the above table representing the findings of the American Insurance Association.

NSA
SINCE 1918
NATIONAL SLAG ASSOCIATION

Pelletized

ACCELERATED COOLING

A Unique Process that Facilitates the Manufacture of "Value Added" Products

The Process

In the pelletizing process, a molten blast furnace slag stream is directed onto an inclined vibrating feed plate where it is quenched with water. The addition of water at this stage causes the slag to foam. While in this expanded pyroplastic state the slag stream flows from the feed plate onto a revolving finned drum. as the drum rotates, the fins repeatedly strike the slag stream with sufficient force to propel the slag into the air, dispersing it and forming spherical droplets. These droplets, or slag pellets, freeze rapidly to a solid state as they are launched through the air away from the pelletizer.

Sound Cell System™
(offered by Best Block & Richvale York Block)

Texture and Shape

The treatment of the molten blast furnace slag with water and the resultant foaming action, lead to a unique internal cellular structure within each slag pellet. This cellular structure (many voids only detectable with the aid of an electron microscope) is contained within a smooth spherical skin. The combination of these characteristics leads to the formation of a low density aggregate, with diverse applications as a construction material.

Gradations and Densities

Pelletized slag is available in a number of sizes or gradations. The most common sizes processed are: Structural Coarse (1/2″ x 3/16″), Coarse (3/8″ clear), Fine (-3/16″) and Blend (-3/8″). Densities range from 912 kg/m^3 (54 lbs/ft^3) to 1105 kg/m^3 (69 lbs/ft^3), depending on gradation.

Sky Dome, Toronto, Canada

Areas of Added Value

In addition to serving as an excellent aggregate for concrete and masonry units, pelletized slag can also be ground into slag cement. Concrete mixes incorporating the use of slag cement show improved workability and pumpability characteristics. There is also a notable reduction in the heat of hydration, which can be significant in mass concrete placement applications. Slag cement also offers a high resistance to sulfate attack and alkali-silica reaction.

Pelletized slag in masonry and structural concrete offers advantages in fire resistance, sound absorption, thermal properties and a reduction in dead loads.

APPLICATIONS

- RAW MATERIAL FOR THE MANUFACTURE OF SLAG CEMENT.
- MEDIUM TO LIGHTWEIGHT CONCRETE MASONRY UNITS.
- AGGREGATE FOR USE IN STRUCTURAL CONCRETE.
- LIGHTWEIGHT FILL.
- MASS CONCRETE PLACEMENT APPLICATIONS

AREAS OF ADDED VALUE

- Facilitates "Value Added" products

SLAG CEMENT

- Improved workability
- Controls heat of hydration
- Resistance to sulfate attack

PELLETIZED AGGREGATE

- Fire Resistance
- Sound absorption
- Thermal properties
- Reduction in "Dead Loads"

Types of Blast Furnace Slag Processing

Granulated

WATER QUENCHING

Glassy, granular material formed when slag is rapidly chilled, as by immersion in water.

The Process

The most common process for granulating blast furnace slag involves the use of high water volume, high pressure water jets in direct contact with the molten blast furnace slag at a ratio of approximately 10 to 1 by mass. The molten blast furnace slag is quenched almost immediately, forming a material generally smaller than a #4 sieve.

The efficiency to which the molten blast furnace slag is rapidly chilled, as well as the chemical composition of the slag source, largely determine its cementitious properties for use in concrete. After the granulated blast furnace slag is formed, it must be dewatered, dried and ground, using processes similar to those used with portland cement clinker to make portland cement.

Typically, granulated slag is ground to an air - permeability (blaine) fineness exceeding that of portland cement to obtain increased hydraulic activity at early ages. As with portland cement and pozzolans, the rate of reaction increases with the particle fineness.

Ground Granulated Blast Furnace (GGBF) Slag

When GGBF slag is mixed with water, initial hydration is much slower as compared with portland cement. Therefore, portland cement or alkali salts are used to increase the reaction rate. In the hydration process, GGBF slag produces calcium silicate hydrate cement paste. This valuable contribution from GGBF slag improves the paste-to-aggregate bond in concrete. GGBF slag mixtures with portland cement typically result in greater strength and reduced permeability.

ASTM C989 provides three strength grades of GGBF slag, depending on their respective mortar strengths when blended with an equal amount of portland cement. As summarized below, the classifications are grade 80, 100 and 120, based on the slag activity index. (See chart below.)

Key Tower, Cleveland, Ohio.

Color

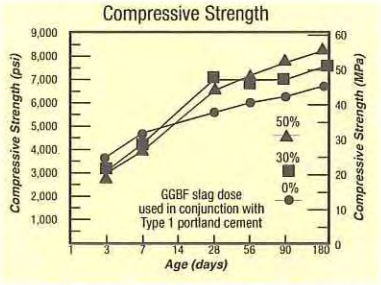
GGBF slag is considerably lighter in color than most portland cements and will produce a lighter concrete end product. Occasionally, concrete containing GGBF slag may exhibit a blue-green coloration. While this coloration effect seldom occurs, it is attributed to a complex reaction of the sulfide sulfur in the GGBF slag with other compounds in the cement and will diminish with age.

ASTM C989 Slag Activity Index Standards

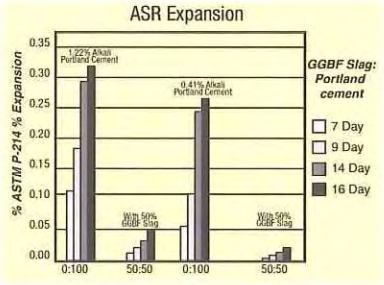
	Slag-activity index, Minimum percent	
Age and Grade	Average of last five consecutive samples	Any individual sample
7 - day index		
Grade 80	–	–
Grade 100	75	70
Grade 120	95	90
28-day index		
Grade 80	75	70
Grade 100	95	90
Grade 120	135	110

SINCE 1918

NATIONAL SLAG ASSOCIATION

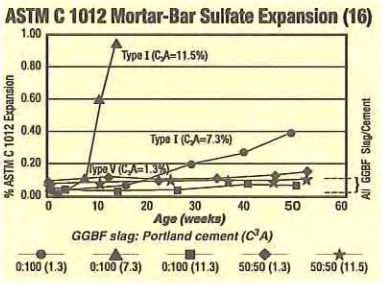


Strength Development of GGBF Slag (Grade 100)



ASR Expansion. Reduced alkali-silica reaction

Rock and Roll Hall of Fame and Museum, Cleveland, Ohio.



ASTM C1012 Mortar Bar Expansion: Improved sulfate resistance over Type V cement.

Mass Concrete: Sylvan Lake Dam, stilling basin, Rome City, IN

Baltimore-Washington International Airport Parking Structure.

GENERAL APPLICATIONS

- RAW MATERIAL FOR THE MANUFACTURE OF CEMENT
- LIGHTWEIGHT FILL
- RAW MATERIAL FOR THE MANUFACTURE OF GLASS

FACTORS AFFECTING CEMENTITIOUS PROPERTIES

- Chemical composition of GGBF slag
- Alkali concentration of the reacting system
- Glass content of the GGBF slag
- Fineness of the GGBF slag and portland cement

AREAS OF ADDED VALUE

GGBF SLAG SPECIALTY CONCRETE APPLICATIONS

- Reduced chloride permeability
- Improved resistance to sulfate attack
- Reduced heat of hydration in mass concrete
- Improved compressive and flexural strength
- Reduced alkali-silica reaction

SINCE 1918
NATIONAL SLAG ASSOCIATION

Environmental Commitment

In the early 1900s, prior to the development of viable construction markets for blast furnace slag, millions of tons were either stockpiled or disposed of by other means.

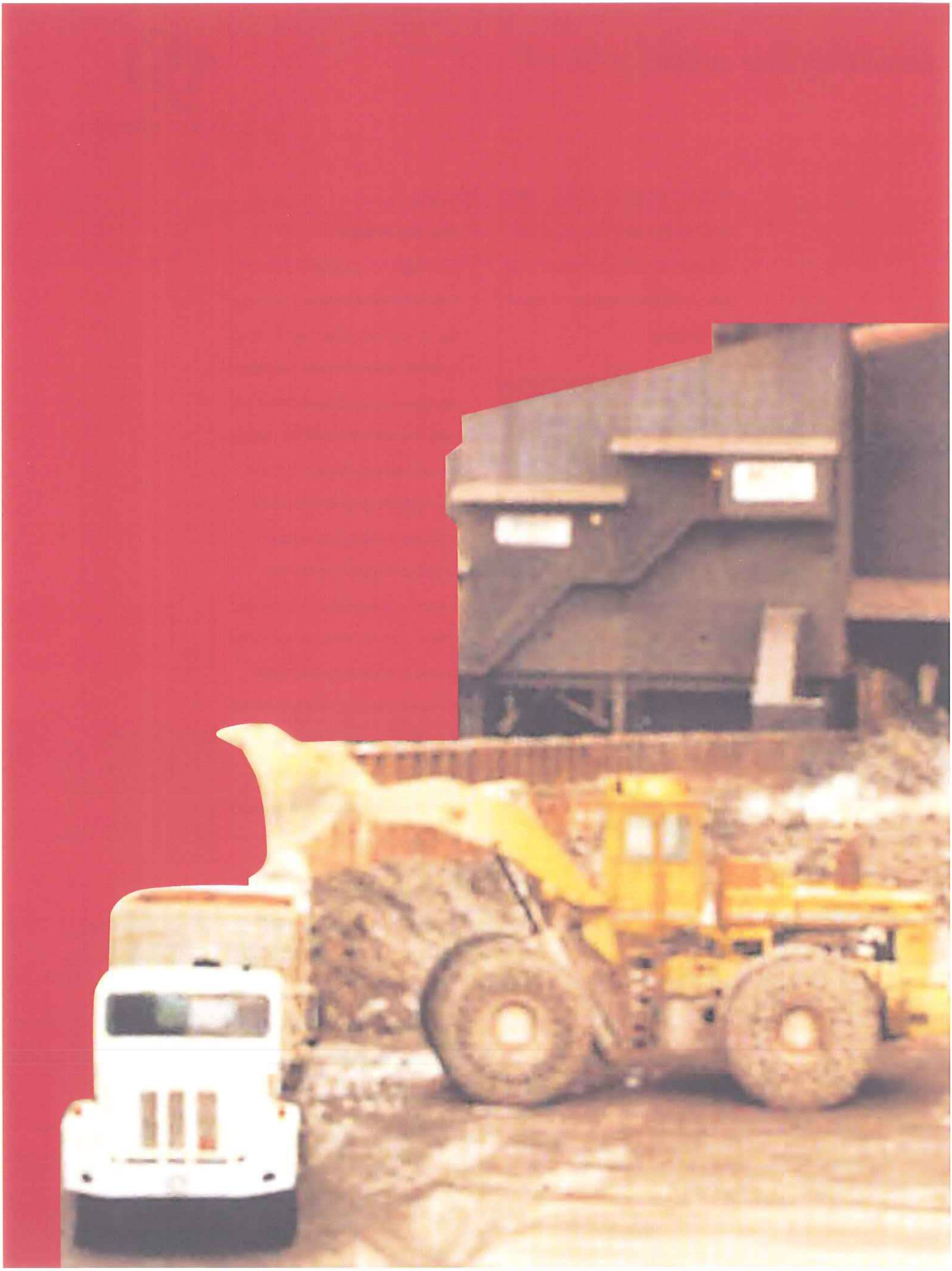
Interprovincil Steel Corp. (IPSCO) Regina, Saskatchewan, Canada

Though the marketing and research efforts of the National Slag Association's (NSA) member companies, blast furnace slag has become recognized as the "material of choice" for many construction related applications, utilizing over thirteen (13) million tons annually in North America.

Steel Slag Coalition

In an attempt to provide industry with a comprehensive environmental assessment of blast furnace slag, the "Steel Slag Coalition" (SSC) was formed in 1995. This coalition, comprised of iron and steel manufacturers and slag processors, hired an independent nationally renowned chemical laboratory and risk assessment team to conduct a human and ecological health risk assessment of blast furnace slag. The risk assessment scientists analyzed samples from each participating company in accordance with EPA's risk assessment guidelines. The results of this study reinforced that blast furnace slag conforms to EPA's stringent requirements and does not pose a threat to human or plant life. Consequently, it should continue to be recommended for a wide variety of construction applications (Further information can be obtained through the NSA Office).

The National Slag Association and its member companies recognize their responsibility in protecting the environment and conserving the earth's natural resources. For this reason, they will continue to remain committed to researching and recommending responsible end uses for this environmentally safe, man made resource.



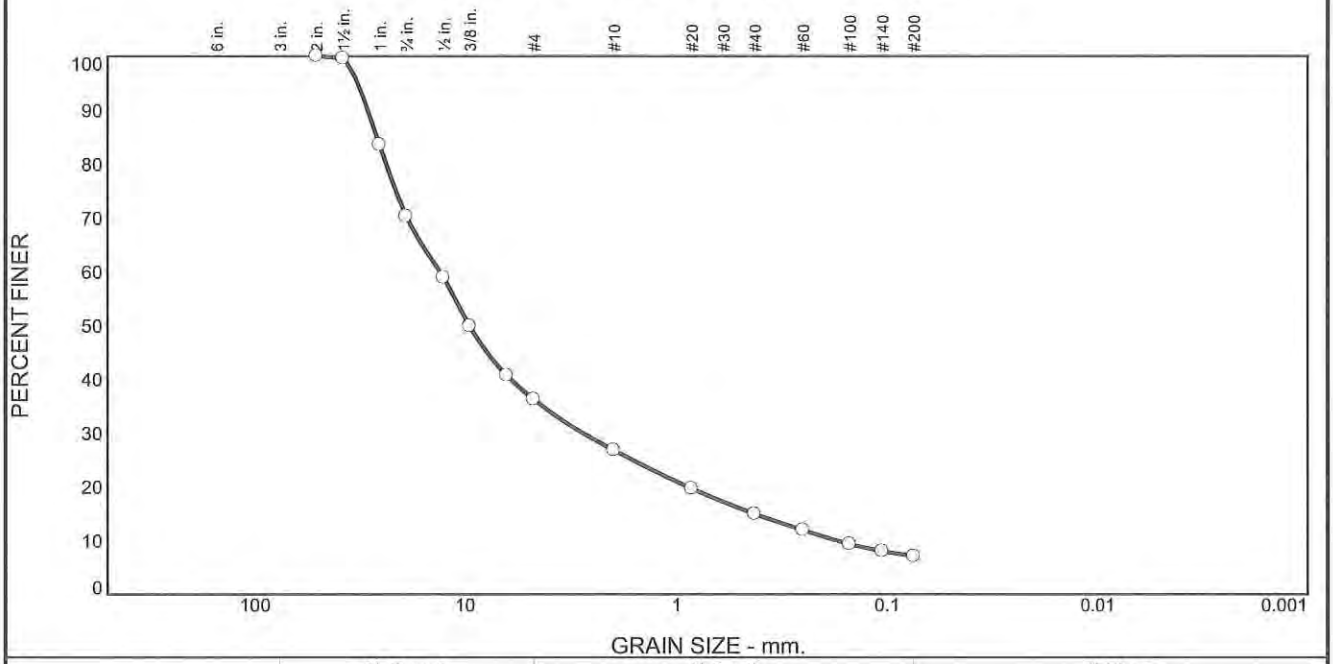
NATIONAL SLAG ASSOCIATION

Suite 2
110 W. Lancaster Avenue
Wayne, Pennsylvania 19087-4043
Phone: 610/971-4840
Fax: 610/971-4841
E-mail: useslag@aol.com
Internet: http://www.nationalslagassoc.org

APPENDIX B

GEOLOGICAL TESTING DATA

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	29.8	34.0	9.4	11.9	7.9	7.0	

TEST RESULTS (D6913)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100.0		
1.5	99.6		
1	83.5		
.75	70.2		
.5	58.9		
.375	49.8		
.25	40.7		
#4	36.2		
#10	26.8		
#20	19.6		
#40	14.9		
#60	11.9		
#100	9.3		
#140	8.0		
#200	7.0		

* (no specification provided)

Material Description

ID#09-399

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= AASHTO (M 145)=

Coefficients

D_{90}= 28.9494 D_{85}= 26.1518 D_{60}= 13.2317
D_{50}= 9.5795 D_{30}= 2.8009 D_{15}= 0.4306
D_{10}= 0.1734 C_u= 76.33 C_c= 3.42

Remarks

Date Received: 7/20/09 **Date Tested:** 7/27/09

Tested By: RP

Checked By: JMA

Title: LM

Source of Sample: Phase I **Date Sampled:**
Sample Number: Phase I

3rd Rock, LLC

East Aurora, NY

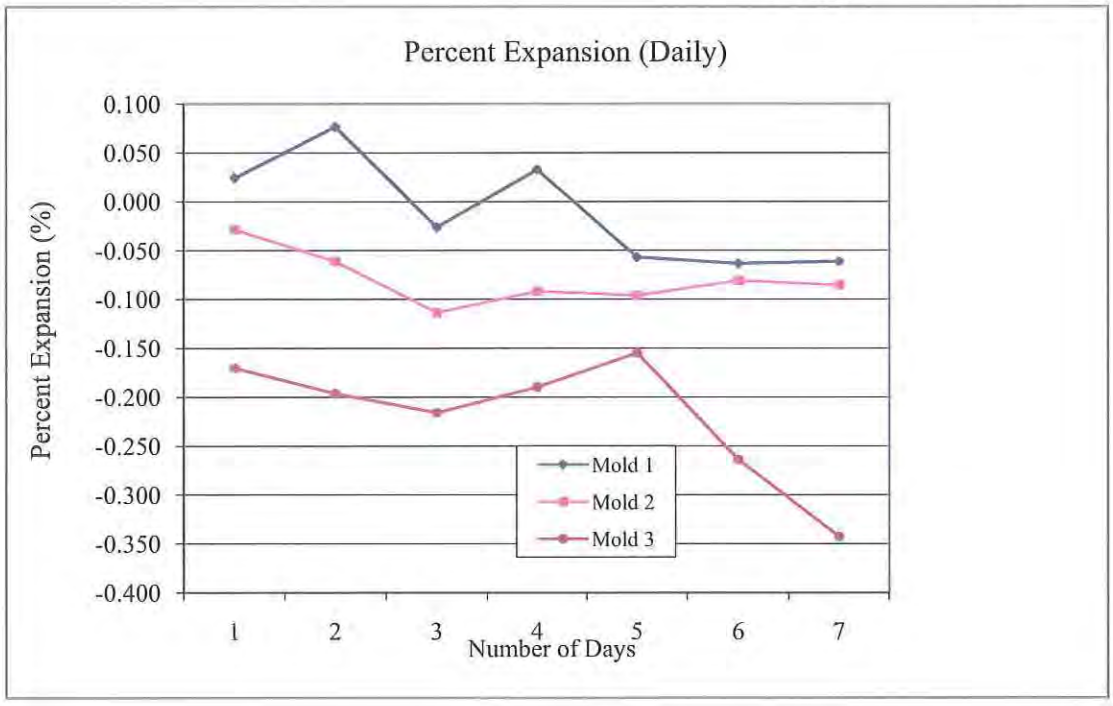
Client: LaBella Associates, P.C.
Project: Phase I & II Slag Expansion Study

Project No: 09-022 **Figure**

Potential Expansion of Aggregates from Hydration Reactions
ASTM D4792
Final Report

Project:	Slag Invest., Labella Associates	**Project No:**	09-022
Sample No.	Phase I Area	**Lab ID#:**	09-399
Testing Dates:	7/23/09-7/30/09		

	Mold 1		Mold 2		Mold 3	
Initial/Final Water Content, %	11.6	13.7	13.6	13.6	15.8	14.9
Initial Dry Density, pcf	122.5	--	123.9	--	120.6	--
Base Reading, in.	0.378	--	0.386	--	0.3775	--
	Daily Reading	Percent Expansion	Daily Reading	Percent Expansion	Daily Reading	Percent Expansion
Day 1	0.3769	0.024	0.3873	-0.028	0.3853	-0.170
2	0.3745	0.076	0.3888	-0.061	0.3865	-0.196
3	0.3792	-0.026	0.3912	-0.113	0.3874	-0.216
4	0.3765	0.033	0.3902	-0.092	0.3862	-0.190
5	0.3806	-0.057	0.3904	-0.096	0.3846	-0.155
6	0.3809	-0.063	0.3897	-0.081	0.3896	-0.264
7	0.3808	**-0.061**	0.3899	**-0.085**	0.3932	**-0.342**
					Average:	**-0.163**



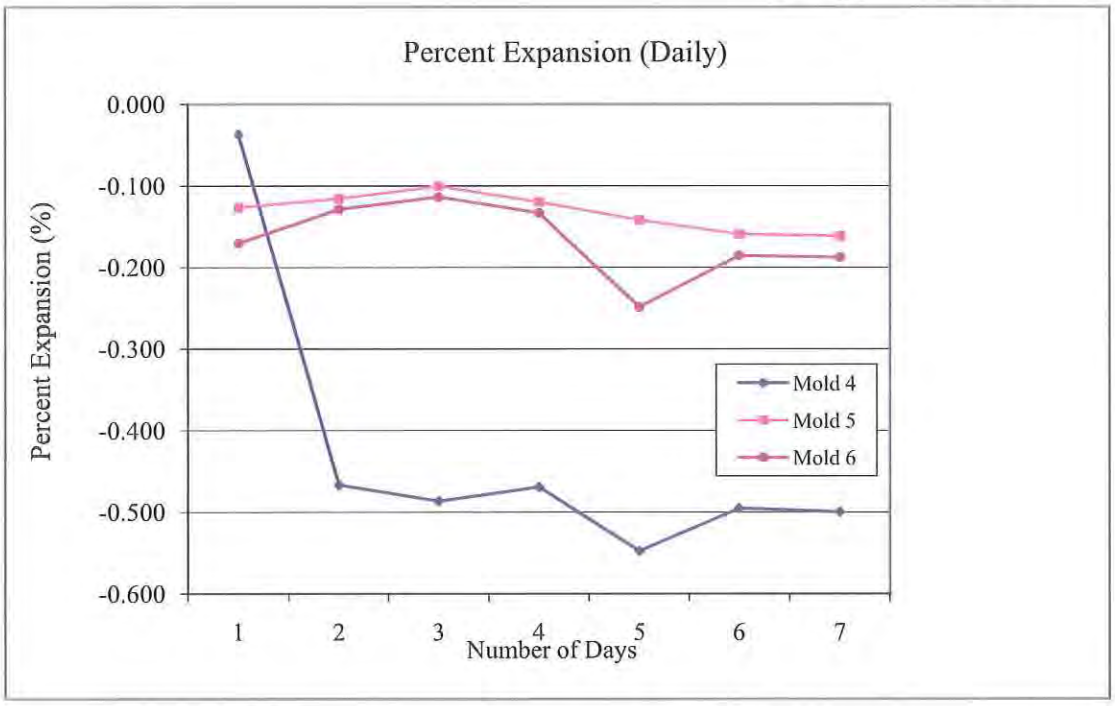
3rd Rock, LLC
580 Olean Road
East Aurora, NY 14052
(716)655-4933

3rd rock

Potential Expansion of Aggregates from Hydration Reactions
ASTM D4792
Final Report

Project:	Slag Invest., Labella Associates	**Project No:**	09-022
Sample No.	Phase II Area	**Lab ID#:**	09-399
Testing Dates:	7/30/09-8/6/09		

	Mold 4		Mold 5		Mold 6	
Initial/Final Water Content, %	9.6	13.4	11.1	12.6	11.5	13.1
Initial Dry Density, pcf	119.4	--	121.7	--	122.6	--
Base Reading, in.	0.3801	--	0.38	--	0.381	--
	Daily Reading	Percent Expansion	Daily Reading	Percent Expansion	Daily Reading	Percent Expansion
Day 1	0.3818	-0.037	0.3858	-0.127	0.3888	-0.170
2	0.4015	-0.467	0.3853	-0.116	0.3869	-0.129
3	0.4024	-0.486	0.3846	-0.100	0.3862	-0.113
4	0.4016	-0.469	0.3855	-0.120	0.3871	-0.133
5	0.4052	-0.548	0.3865	-0.142	0.3924	-0.249
6	0.4028	-0.495	0.3873	-0.159	0.3895	-0.185
7	0.403	**-0.500**	0.3874	**-0.161**	0.3896	**-0.188**
					Average:	**-0.283**



3rd Rock, LLC
580 Olean Road
East Aurora, NY 14052
(716)655-4933

APPENDIX C

ANALYTICAL DATA

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PHASE I SLAG (A)

Lab Name: MITKEM LABORATORIES Contract:

Lab Code: MITKEM Case No.: H1235 Mod. Ref No.: SDG No.: SH1235TAL

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: H1235-04A

Sample wt/vol: 30.4 (g/mL) G Lab File ID: S3F8476.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 23 Decanted: (Y/N) N Date Received: 07/08/2009

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/13/2009

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/20/2009

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
111-44-4	Bis(2-chloroethyl)ether	420	U
541-73-1	1,3-Dichlorobenzene	420	U
106-46-7	1,4-Dichlorobenzene	420	U
95-50-1	1,2-Dichlorobenzene	420	U
108-60-1	2,2'-oxybis(1-Chloropropane)	420	U
621-64-7	N-Nitroso-di-n-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
120-82-1	1,2,4-Trichlorobenzene	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
111-91-1	Bis(2-chloroethoxy)methane	420	U
87-68-3	Hexachlorobutadiene	420	U
91-57-6	2-Methylnaphthalene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	860	U
131-11-3	Dimethylphthalate	420	U
208-96-8	Acenaphthylene	420	U
606-20-2	2,6-Dinitrotoluene	420	U
99-09-2	3-Nitroaniline	860	U
83-32-9	Acenaphthene	420	U
132-64-9	Dibenzofuran	420	U
121-14-2	2,4-Dinitrotoluene	420	U
84-66-2	Diethylphthalate	420	U
7005-72-3	4-Chlorophenyl-phenylether	420	U
86-73-7	Fluorene	420	U
100-01-6	4-Nitroaniline	860	U
86-30-6	N-Nitrosodiphenylamine	420	U
101-55-3	4-Bromophenyl-phenylether	420	U
118-74-1	Hexachlorobenzene	420	U
85-01-8	Phenanthrene	420	U
120-12-7	Anthracene	420	U
86-74-8	Carbazole	420	U
84-74-2	Di-n-butylphthalate	420	U
206-44-0	Fluoranthene	420	U

SW846

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PHASE I SLAG (A)

Lab Name: MITKEM LABORATORIES Contract:

Lab Code: MITKEM Case No.: H1235 Mod. Ref No.: SDG No.: SH1235TAL

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: H1235-04A

Sample wt/vol: 30.4 (g/mL) G Lab File ID: S3F8476.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 23 Decanted: (Y/N) N Date Received: 07/08/2009

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/13/2009

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/20/2009

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
129-00-0	Pyrene	420	U
85-68-7	Butylbenzylphthalate	420	U
91-94-1	3,3´-Dichlorobenzidine	420	U
56-55-3	Benzo(a)anthracene	420	U
218-01-9	Chrysene	420	U
117-81-7	Bis(2-ethylhexyl)phthalate	420	U
117-84-0	Di-n-octylphthalate	420	U
205-99-2	Benzo(b)fluoranthene	420	U
207-08-9	Benzo(k)fluoranthene	420	U
50-32-8	Benzo(a)pyrene	420	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U
53-70-3	Dibenzo(a,h)anthracene	420	U
191-24-2	Benzo(g,h,i)perylene	420	U

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PHASE I SLAG (B)

Lab Name: MITKEM LABORATORIES Contract:

Lab Code: MITKEM Case No.: H1235 Mod. Ref No.: SDG No.: SH1235TAL

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: H1235-05A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S3F8477.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 22 Decanted: (Y/N) N Date Received: 07/08/2009

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/13/2009

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/20/2009

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
111-44-4	Bis(2-chloroethyl)ether	420	U
541-73-1	1,3-Dichlorobenzene	420	U
106-46-7	1,4-Dichlorobenzene	420	U
95-50-1	1,2-Dichlorobenzene	420	U
108-60-1	2,2'-oxybis(1-Chloropropane)	420	U
621-64-7	N-Nitroso-di-n-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
120-82-1	1,2,4-Trichlorobenzene	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
111-91-1	Bis(2-chloroethoxy)methane	420	U
87-68-3	Hexachlorobutadiene	420	U
91-57-6	2-Methylnaphthalene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	850	U
131-11-3	Dimethylphthalate	420	U
208-96-8	Acenaphthylene	420	U
606-20-2	2,6-Dinitrotoluene	420	U
99-09-2	3-Nitroaniline	850	U
83-32-9	Acenaphthene	420	U
132-64-9	Dibenzofuran	420	U
121-14-2	2,4-Dinitrotoluene	420	U
84-66-2	Diethylphthalate	420	U
7005-72-3	4-Chlorophenyl-phenylether	420	U
86-73-7	Fluorene	420	U
100-01-6	4-Nitroaniline	850	U
86-30-6	N-Nitrosodiphenylamine	420	U
101-55-3	4-Bromophenyl-phenylether	420	U
118-74-1	Hexachlorobenzene	420	U
85-01-8	Phenanthrene	420	U
120-12-7	Anthracene	420	U
86-74-8	Carbazole	420	U
84-74-2	Di-n-butylphthalate	420	U
206-44-0	Fluoranthene	420	U

SW846

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PHASE I SLAG (B)

Lab Name: MITKEM LABORATORIES Contract:

Lab Code: MITKEM Case No.: H1235 Mod. Ref No.: SDG No.: SH1235TAL

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: H1235-05A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S3F8477.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 22 Decanted: (Y/N) N Date Received: 07/08/2009

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/13/2009

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/20/2009

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
129-00-0	Pyrene	420	U
85-68-7	Butylbenzylphthalate	420	U
91-94-1	3,3´-Dichlorobenzidine	420	U
56-55-3	Benzo(a)anthracene	420	U
218-01-9	Chrysene	420	U
117-81-7	Bis(2-ethylhexyl)phthalate	420	U
117-84-0	Di-n-octylphthalate	420	U
205-99-2	Benzo(b)fluoranthene	420	U
207-08-9	Benzo(k)fluoranthene	420	U
50-32-8	Benzo(a)pyrene	420	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U
53-70-3	Dibenzo(a,h)anthracene	420	U
191-24-2	Benzo(g,h,i)perylene	420	U

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PHASE II SLAG

Lab Name: MITKEM LABORATORIES Contract:

Lab Code: MITKEM Case No.: H1235 Mod. Ref No.: SDG No.: SH1235TAL

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: H1235-06A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S3F8478.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 19 Decanted: (Y/N) N Date Received: 07/08/2009

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/13/2009

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/20/2009

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
111-44-4	Bis(2-chloroethyl)ether	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
95-50-1	1,2-Dichlorobenzene	400	U
108-60-1	2,2´-oxybis(1-Chloropropane)	400	U
621-64-7	N-Nitroso-di-n-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
111-91-1	Bis(2-chloroethoxy)methane	400	U
87-68-3	Hexachlorobutadiene	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	820	U
131-11-3	Dimethylphthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U
99-09-2	3-Nitroaniline	820	U
83-32-9	Acenaphthene	400	U
132-64-9	Dibenzofuran	400	U
121-14-2	2,4-Dinitrotoluene	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	820	U
86-30-6	N-Nitrosodiphenylamine	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-butylphthalate	400	U
206-44-0	Fluoranthene	400	U

SW846

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PHASE II SLAG

Lab Name: MITKEM LABORATORIES Contract:

Lab Code: MITKEM Case No.: H1235 Mod. Ref No.: SDG No.: SH1235TAL

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: H1235-06A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S3F8478.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 19 Decanted: (Y/N) N Date Received: 07/08/2009

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/13/2009

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/20/2009

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	400	U
56-55-3	Benzo(a)anthracene	400	U
218-01-9	Chrysene	400	U
117-81-7	Bis(2-ethylhexyl)phthalate	400	U
117-84-0	Di-n-octylphthalate	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
50-32-8	Benzo(a)pyrene	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
53-70-3	Dibenzo(a,h)anthracene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

PHASE I SLAG (A)

Lab Name: Mitkem Laboratories Contract: 209447

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SH1235TAL

Matrix (soil/water): SOIL Lab Sample ID: H1235-04

Level (low/med): MED Date Received: 07/08/2009

% Solids: 77.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	27300		E	P
7440-36-0	Antimony	0.56	B	NE	P
7440-38-2	Arsenic	5.1		E	P
7440-39-3	Barium	171		E	P
7440-41-7	Beryllium	4.6		E	P
7440-43-9	Cadmium	0.014	U	NE	P
7440-70-2	Calcium	251000		*	P
7440-47-3	Chromium	3.1		E	P
7440-48-4	Cobalt	0.040	U	E	P
7440-50-8	Copper	3.3		N*E	P
7439-89-6	Iron	3610		*	P
7439-92-1	Lead	3.3		E	P
7439-95-4	Magnesium	26100		*E	P
7439-96-5	Manganese	256			P
7439-97-6	Mercury	0.0057	U		CV
7440-02-0	Nickel	4.1		E	P
7440-09-7	Potassium	2290		E	P
7782-49-2	Selenium	1.1	B	N	P
7440-22-4	Silver	0.090	U	E	P
7440-23-5	Sodium	1230			P
7440-28-0	Thallium	2.3		N	P
7440-62-2	Vanadium	6.3		E	P
7440-66-6	Zinc	3.1		NE	P

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

PHASE I SLAG (B)

Lab Name: Mitkem Laboratories Contract: 209447

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SH1235TAL

Matrix (soil/water): SOIL Lab Sample ID: H1235-05

Level (low/med): MED Date Received: 07/08/2009

% Solids: 78.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23900		E	P
7440-36-0	Antimony	0.61	B	NE	P
7440-38-2	Arsenic	7.8		E	P
7440-39-3	Barium	120		E	P
7440-41-7	Beryllium	2.9		E	P
7440-43-9	Cadmium	0.048	B	NE	P
7440-70-2	Calcium	243000		*	P
7440-47-3	Chromium	5.7		E	P
7440-48-4	Cobalt	0.040	U	E	P
7440-50-8	Copper	7.7		N*E	P
7439-89-6	Iron	7170		*	P
7439-92-1	Lead	4.9		E	P
7439-95-4	Magnesium	39800		*E	P
7439-96-5	Manganese	312			P
7439-97-6	Mercury	0.0090	B		CV
7440-02-0	Nickel	5.6		E	P
7440-09-7	Potassium	2500		E	P
7782-49-2	Selenium	1.3	B	N	P
7440-22-4	Silver	0.091	U	E	P
7440-23-5	Sodium	1160			P
7440-28-0	Thallium	1.8		N	P
7440-62-2	Vanadium	12.1		E	P
7440-66-6	Zinc	7.3		NE	P

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

PHASE II SLAG

Lab Name: Mitkem Laboratories Contract: 209447

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SH1235TAL

Matrix (soil/water): SOIL Lab Sample ID: H1235-06

Level (low/med): MED Date Received: 07/08/2009

% Solids: 81.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20600		E	P
7440-36-0	Antimony	0.46	B	NE	P
7440-38-2	Arsenic	8.3		E	P
7440-39-3	Barium	124		E	P
7440-41-7	Beryllium	2.9		E	P
7440-43-9	Cadmium	0.67		NE	P
7440-70-2	Calcium	166000		*	P
7440-47-3	Chromium	12.1		E	P
7440-48-4	Cobalt	1.1	B	E	P
7440-50-8	Copper	17.4		N*E	P
7439-89-6	Iron	51900		*	P
7439-92-1	Lead	15.1		E	P
7439-95-4	Magnesium	18200		*E	P
7439-96-5	Manganese	634			P
7439-97-6	Mercury	0.028	B		CV
7440-02-0	Nickel	12.0		E	P
7440-09-7	Potassium	2250		E	P
7782-49-2	Selenium	0.77	U	N	P
7440-22-4	Silver	0.078	U	E	P
7440-23-5	Sodium	1290			P
7440-28-0	Thallium	0.55	B	N	P
7440-62-2	Vanadium	17.8		E	P
7440-66-6	Zinc	47.7		NE	P

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

PHASE I SLAG (A)

Lab Name: Mitkem Laboratories Contract: 209447

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SH1235SPLP

Matrix (soil/water): WATER Lab Sample ID: H1235-04

Level (low/med): MED Date Received: 07/08/2009

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	937			P
7440-36-0	Antimony	4.6	U		P
7440-38-2	Arsenic	5.3	U		P
7440-39-3	Barium	208			P
7440-41-7	Beryllium	0.13	U		P
7440-43-9	Cadmium	0.14	U		P
7440-70-2	Calcium	74600			P
7440-47-3	Chromium	1.1	U		P
7440-48-4	Cobalt	1.2	U		P
7440-50-8	Copper	5.0	U		P
7439-89-6	Iron	61.0	U		P
7439-92-1	Lead	2.2	U		P
7439-95-4	Magnesium	79.9	B		P
7439-96-5	Manganese	0.96	U		P
7439-97-6	Mercury	0.056	U		CV
7440-02-0	Nickel	1.5	U		P
7440-09-7	Potassium	2070			P
7782-49-2	Selenium	33.4			P
7440-22-4	Silver	1.9	B		P
7440-23-5	Sodium	9290			P
7440-28-0	Thallium	4.2	U		P
7440-62-2	Vanadium	12.2	B		P
7440-66-6	Zinc	10.1	B		P

Comments:

SPLP

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

PHASE I SLAG (B)

Lab Name: Mitkem Laboratories Contract: 209447

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SH1235SPLP

Matrix (soil/water): WATER Lab Sample ID: H1235-05

Level (low/med): MED Date Received: 07/08/2009

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	676			P
7440-36-0	Antimony	4.6	U		P
7440-38-2	Arsenic	5.3	U		P
7440-39-3	Barium	75.6	B		P
7440-41-7	Beryllium	0.13	U		P
7440-43-9	Cadmium	0.14	U		P
7440-70-2	Calcium	45700			P
7440-47-3	Chromium	1.4	B		P
7440-48-4	Cobalt	1.2	U		P
7440-50-8	Copper	5.0	U		P
7439-89-6	Iron	61.0	U		P
7439-92-1	Lead	2.2	U		P
7439-95-4	Magnesium	77.0	U		P
7439-96-5	Manganese	0.96	U		P
7439-97-6	Mercury	0.056	U		CV
7440-02-0	Nickel	1.5	U		P
7440-09-7	Potassium	2860			P
7782-49-2	Selenium	26.0	B		P
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	11200			P
7440-28-0	Thallium	4.2	U		P
7440-62-2	Vanadium	8.9	B		P
7440-66-6	Zinc	8.3	B		P

Comments:

SPLP

FORM I - IN SW846

0078

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

PHASE II SLAG

Lab Name: Mitkem Laboratories Contract: 209447

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SH1235SPLP

Matrix (soil/water): WATER Lab Sample ID: H1235-06

Level (low/med): MED Date Received: 07/08/2009

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	231			P
7440-36-0	Antimony	4.6	U		P
7440-38-2	Arsenic	5.3	U		P
7440-39-3	Barium	28.1	B		P
7440-41-7	Beryllium	0.13	U		P
7440-43-9	Cadmium	0.14	U		P
7440-70-2	Calcium	36800			P
7440-47-3	Chromium	1.1	U		P
7440-48-4	Cobalt	1.2	U		P
7440-50-8	Copper	5.0	U		P
7439-89-6	Iron	66.8	B		P
7439-92-1	Lead	2.2	U		P
7439-95-4	Magnesium	102	B		P
7439-96-5	Manganese	0.96	U		P
7439-97-6	Mercury	0.056	U		CV
7440-02-0	Nickel	1.5	U		P
7440-09-7	Potassium	1170			P
7782-49-2	Selenium	16.2	B		P
7440-22-4	Silver	0.86	B		P
7440-23-5	Sodium	20000			P
7440-28-0	Thallium	4.2	U		P
7440-62-2	Vanadium	20.3	B		P
7440-66-6	Zinc	7.7	U		P

Comments:

SPLP

FORM I - IN SW846

APPENDIX D

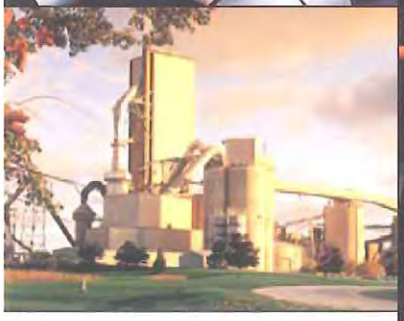
PORTLAND CEMENT ASSOCIATION: SUSTAINABLE MANUFACTURING FACT SHEET

Portland Cement Association Sustainable Manufacturing Fact Sheet

July 2005

Concrete Thinking for a sustainable world | PCA Portland Cement Association

IRON AND STEEL BYPRODUCTS



Resource efficiency means using fewer virgin raw materials. Increasingly, cement plants are turning to industrial byproducts and materials that otherwise would be discarded as sources for the basic elements needed for cement making.

After completing detailed analyses on their chemical characteristics to determine the effect on process chemistry and facility emissions, many cement plants can utilize byproducts from the iron and steel industries as a raw material in the manufacture of the clinker—the intermediate product in the process—or as an ingredient in the final cement product.

more

continued

Three byproducts of the iron and steel industries can be used in the manufacture of portland cement: foundry sand, mill scale, and slag.

Foundry sand can provide silica and possibly iron for the production of clinker. Mill scale contains iron oxides that can replace other iron-bearing materials in the kiln feed. Slag contains high percentages of calcium oxide and silicon dioxide and varying amounts of aluminum oxide and iron oxides. All of these components are needed in the cement manufacturing process. Select slags can be interground with the portland cement to produce a blended cement product. Foundry sand and some slags can replace natural stone as an aggregate in portland cement concrete. Nearly 70% of U.S. portland cement plants use one or more of these byproducts to produce clinker or cement.

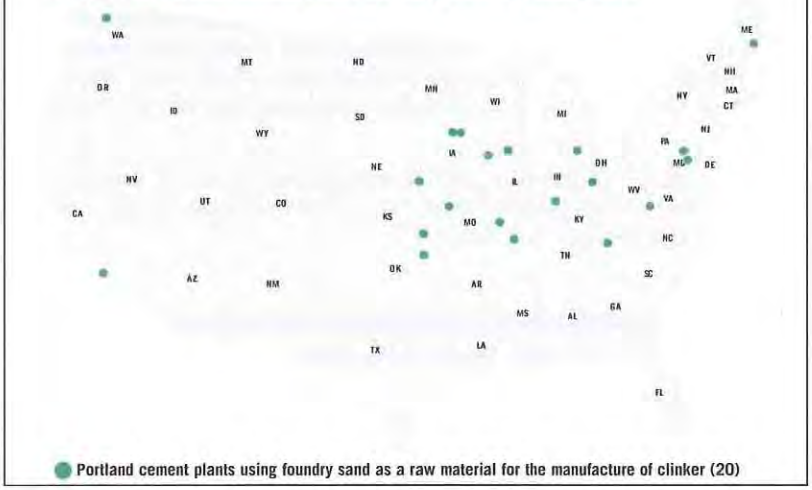
Foundry Sand

Foundry sand forms the mold into which molten metal is poured for casting iron, steel, and other metal components. After multiple uses, this high-quality silica sand degrades and is no longer used. In the United States, there are approximately 3,000 foundries that produce collectively 6 to 10 million short tons of foundry sand per year [FHWA 2004]. Because used foundry sand may contain trace amounts of metals from the castings, chemical binders used in shaping the molds, and other impurities, portland cement plants carefully analyze and monitor the foundry sands they use.

It is unknown how much foundry sand is used by the portland cement industry, but in 2005, 20 plants were using it as a raw material in the manufacture of clinker (as shown on Figure 1).

FIGURE 1

Map of U.S. Portland Cement Plants Currently Utilizing Foundry Sand



Mill Scale

During the processing of steel, iron oxides will form on the surface of the metal. These oxides, known as mill scale, occur during continuous casting, reheating, and hot rolling operations. The scale is removed by water sprays and often recycled by the steel plant. Mill scale that cannot be recycled by steel plants has been used by portland cement plants as an iron source.

Although the total amount of mill scale used by portland cement plants is unknown, in 2005, 51 plants were using it as a raw material in the manufacture of clinker (Figure 2).

Slag

There are two major types of slag: blast furnace slag and steel furnace slag. Blast furnace slag is a byproduct from the smelting of iron ore or iron pellets with coke and a flux, such as limestone or dolomite. The calcium in the stone combines with the aluminates and silicates in the ore and ash from the coke to produce this non-metallic material [NSA undated]. The slag is removed

THE CEMENT-MAKING PROCESS

Portland cement manufacturing is a four-step process:

1. Raw materials, including limestone and small amounts of sand and clay, come from a quarry usually located near the cement manufacturing plant. Limestone is typically about 80% of the raw mix and is the primary source of calcium. The remaining raw materials provide the silica and the necessary small amounts of alumina and iron.
2. The materials are carefully analyzed, precisely combined and blended, and then ground for further processing. This is called kiln feed.
3. The ground materials are heated in an industrial furnace, called a kiln, that reaches gas temperatures of 1,870°C (3,400°F). The heat causes the kiln feed to turn into a new substance called clinker. The kiln flame is fueled by powdered coal, powdered petroleum coke, natural gas, oil, and/or recycled materials burned for energy recovery.
4. Red-hot clinker is cooled and ground with a small amount of gypsum and typically other mineral components. The end result is a fine, gray-colored powder called portland cement.

At each stage, process data are continuously monitored to produce a high-quality product, improve energy efficiency, and minimize emissions.

CEMENT OR CONCRETE?

The terms cement and concrete are often misused. Cement is an ingredient of concrete. It is the fine gray powder that, when mixed with water, sand, and gravel or crushed stone, forms the rock-like mass known as concrete. Cement acts as the binding agent or glue.

FIGURE 2

Map of U.S. Portland Cement Plants Currently Utilizing Mill Scale

Portland cement plants using mill scale as a raw material for the manufacture of clinker (51)

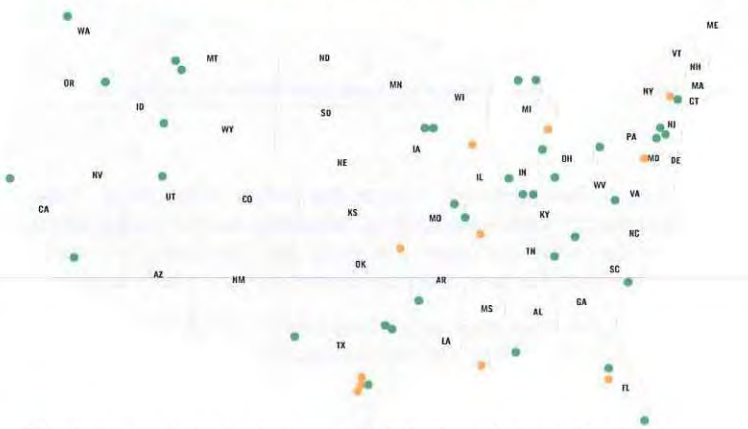
from the furnace for further processing. Blast furnace slag can be used in the production of clinker, blended cements, and/or as an aggregate in portland cement concrete.

Steel slag is a byproduct from the processing of iron or scrap steel in a basic oxygen furnace or electric arc furnace. Once again, limestone or dolomite is used as a flux to remove impurities [NSA undated]. The steel furnace slag is air cooled, and after free iron products are removed, it can be used as a raw material in the manufacture of clinker [NSA undated]. For 2003, the United States Geographical Survey estimated that 8.8 million metric tons of steel furnace slag was produced, and that over 5% of it was used by cement plants to produce clinker [USGS 2003].

In 2005, 39 portland cement plants were using slag as a raw material in the manufacture of clinker, and 11 plants were blending it into one or more cement products. (Figure 3 shows the locations of the plants utilizing slag.) | more

FIGURE 3

Map of U.S. Portland Cement Plants Currently Utilizing Slag



Portland cement plants using slag as a raw material for the manufacture of clinker (39)

Portland cement plants blending slag into one or more cement products (11)

FOUNDRY SAND

MILL SCALE

SLAG

FOR ADDITIONAL INFORMATION PLEASE CONTACT:

Portland Cement Association
1130 Connecticut Avenue, Suite 1250
Washington, DC 20036-3925
Voice: 202.408.9494
Fax: 202.408.0877
E-mail: sustainablemanufacturing@cement.org

continued

Types of Blast Furnace Slags

Blast furnace slag is processed in one of the following methods:

- Air-cooled slag is allowed to cool slowly in ambient air. It can be used in the kiln feed or as an aggregate in concrete products [NSA undated]. Of the 7.3 million metric tons of air-cooled slag produced in the U.S. in 2003, nearly 16% was used in concrete products and nearly 6% in clinker production [USGS 2003].
- Expanded slag is cooled by a controlled quantity of water to produce a low density material. It is used as an aggregate in medium to light-weight ready-mixed concrete products. The USGS does not report the production or final use of it [USGS, 2003].
- Pelletized slag is cooled by water on a vibrating plate, which produces a foam-like material that is further processed into pellets. It can also be used as an aggregate in medium to light-weight ready-mixed concrete materials, or if finely ground, can be used in blended portland cements [NSA undated]. The USGS does not report the production or final use of pelletized slag [USGS 2003].
- Granulated slag is cooled rapidly by jets of water in direct contact with the molten material. This is the most common slag used in the production of blended portland cements [NSA Undated]. For 2003, the USGS estimated that 3.6 million metric tons of ground granulated blast furnace slag (GGBFS) was produced and the majority used in cement [USGS 2003].

References

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Foundry Sand Facts for Civil Engineers, FHWA-IF-04-004, Federal Highway Administration, U.S. Department of Transportation, Washington, DC, USA, 2004.

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Concrete Thinking for a sustainable world | PCA Portland Cement Association

Portland Cement Association is a trade association representing cement companies in the United States and Canada. PCA's U.S. membership consists of 46 companies operating 102 plants in 36 states. PCA members account for more than 97% of cement-making capacity in the United States and 100% in Canada.

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www.cement.org

APPENDIX E

NYSDEC BUD APPROVALS LIST

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials, Bureau of Solid Waste, Reduction Recycling
625 Broadway, Albany, NY, 12233-7253

Granted Beneficial Use Determinations
Sorted by Waste Type

BUD #	Region	Facility Name	City	State	Waste Types	Beneficial Use
866-6-33	6	North Country Minerals (NCM)	Holland Patent	NY	Abrasive, spent	Abrasive
453-4-01	4	Lafarge Building Materials; Inc.	Ravena	NY	Abrasives	Cement (Iron Source)
517-9-32	9	Solid Surface Acrylics; Inc.	North Tonawanda	NY	Abrasives (Glass Bead Dust)	Filler (Table Tops)
333-0-00	OS	US Technology Corporation	Canton	OH	Abrasives (Plastic)	Marble Products (Cultured)
427-0-00	OS	Composite Leasing Corp.	Minocqua	WI	Abrasives (Plastic)	Resin Substitute (Acrylic)
037-6-45	6	St. Lawrence Seaway Development Corp.	Massena	NY	Abrasives (Sandblast)	Aggregate (Concrete)
219-6-45	6	St. Lawrence Seaway Development Corp.	Massena	NY	Abrasives (Sandblast)	Aggregate (Concrete)
334-6-45	6	Northeastern Industrial Maintenance; Inc	Waddington	NY	Abrasives (Sandblast)	Base (Sub)
739-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Abrasives (Sandblast)	Cement (Iron Substitute)
728-6-22	6	Sunbelt Industries	Little Falls	NY	Abrasives (Sandblast-Alumina)	Sandblasting media
735-2-43	2	Caddell Dry Dock & Ship Repair Co.	Staten Island	NY	Abrasives (Sandblast-Alumina)	Aggregate; Asphalt
689-6-33	6	North Country Minerals (NCM)	Holland Patent	NY	Abrasives (waterjet garnet)	Abrasive Media
375-8-37	OS	Innovative Municipal Products; Inc. (IM U.S.)	Ava	NY	Alcohol Distillate (Ethyl)	De-icer
195-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Alumina Sand	Cement
243-4-00	4	ACI Industries; Ltd. L.P.	Delaware	OH	Alumina Sand	Cement (Red Shale Substitute)
456-4-01	4	Lafarge Building Materials; Inc.	Ravena	NY	Alumina Tri-Nitrate Dust	Cement
392-9-07	9	Dunkirk International Glass & Ceramics	New York	NY	Alumina/Silica/Lime/Ash	Glass (Aluma) Manufacture
189-4-20	4	Lehigh Cement Company	Catskill	NY	Alumino-Silica Clay (Bauxite)	Cement (Red Shale Substitute)
587-0-00	4	Lafarge Building Materials; Inc.	Ravena	NY	Alumino-Silica Clay (Bauxite)	Cement (Alumina Source)
207-6-23	OS	Black River Power; LLC	Syracuse	NY	Ash (Coal)	Liming Agent; Land Application
339-3-36	3	MKA Realty Corp. c/o Geovation Inc.	Florida	NY	Ash (Coal)	Base (Sub)
472-3-14	3	Town of Stanford	Stanfordville	NY	Ash (Coal)	Base (Sub)
539-7-55	7	Cornell Univ. Central Heating Plant	Ithaca	NY	Ash (Coal)	Traction Agent
676-6-45	OS	Black River Power; LLC	Syracuse	NY	Ash (Coal)	Bulking Agent (Waste Sludge)
745-9-61	9	Hillcrest Industries	Attica	NY	Ash (Coal)	abrasive; blasting media
749-3-36	3	Dynegy Northeast Generation	Newburgh	NY	Ash (Coal)	cinder ballast
536-9-15	9	Protective Closures; Inc.	Buffalo	NY	Ash (Coal)/Slag/Ballast	Fill (Structural-Bldg. Found)
240-7-09	7	AES Jennison; L.L.C.	Bainbridge	NY	Ash (Coal/CTS/Tire/Wood)	Cement
641-8-51	8	AES Hickling; L.L.C.	Corning	NY	Ash (Coal/CTS/Tire/Wood)	Cement
273-8-51	8	AES Hickling; L.L.C.	Corning	NY	Ash (Coal/CTS/Tire/Wood-Bottom	Traction Agent
642-7-09	7	AES Jennison; L.L.C.	Bainbridge	NY	Ash (Coal/CTS/Tire/Wood-Bottom	Traction Agent
489-9-15	OS	NRG Huntley Operations; Inc.	Tonawanda	NY	Ash (Coal/CTS-Bottom)	Traction Agent; Asphalt; Shing
488-9-15	OS	NRG Huntley Operations; Inc.	Tonawanda	NY	Ash (Coal/CTS-Fly)	Aggregate; Gypsum; Calcium Chl
578-9-07	OS	Pohlman Materials Recovery Inc.	Lakeview	NY	Ash (Coal/Petro Coke-Fly)	Filler (Flowable Fill)
594-0-00	OS	Pohlman Materials Recovery Inc.	Lakeview	NY	Ash (Coal/Petro Coke-Fly)	Filler (Concrete)
595-0-00	OS	Pohlman Materials Recovery Inc.	Lakeview	NY	Ash (Coal/Petro Coke-Fly)	Filler (Aggregate)
596-0-00	OS	Pohlman Materials Recovery Inc.	Lakeview	NY	Ash (Coal/Petro Coke-Fly)	Surface Material (Barnyard Pad
165-7-09	7	AES Jennison; L.L.C.	Bainbridge	NY	Ash (Coal/Tire-Bottom)	Traction Agent
164-7-09	7	AES Jennison; L.L.C.	Bainbridge	NY	Ash (Coal/Tire-Fly)	Cement
122-0-34	OS	NRG Dunkirk Operations; Inc.	Dunkirk	NY	Ash (Coal-Bottom)	Traction Agent; Fill (Structur
212-7-34	OS	NRG Dunkirk Operations; Inc.	Dunkirk	NY	Ash (Coal-Bottom)	Asphalt (Hot-Mix)
262-9-15	9	Valley Coal	Buffalo	NY	Ash (Coal-Bottom)	Fill (Structural); Traction Ag
286-9-32	9	AES Somerset; L.L.C.	Barker	NY	Ash (Coal-Bottom)	Base (Sub)
372-7-34	7	Trigen-Syracuse Energy Corporation	Syracuse	NY	Ash (Coal-Bottom)	Base (Road; Sub-Fill)
398-3-14	3	Harlem Valley Psy. Clr c/o CDPC; Unit Q	Albany	NY	Ash (Coal-Bottom)	Base (Sub)
429-8-28	8	Eastman Kodak Company	Rochester	NY	Ash (Coal-Bottom)	Surface Material (Trail)
436-7-04	7	AES Westover; L.L.C.	Johnson City	NY	Ash (Coal-Bottom)	Surface Material (Running Trac
443-7-38	7	Clark Concrete Company; Inc.	Syracuse	NY	Ash (Coal-Bottom)	Traction Agent
450-8-26	8	Joseph A. Errigo	Conesus	NY	Ash (Coal-Bottom)	Traction Agent
482-8-28	8	Eastman Kodak Company	Rochester	NY	Ash (Coal-Bottom)	Road Construction
506-9-15	9	Gernatt Gravel Products; Inc.	Collins	NY	Ash (Coal-Bottom)	Concrete (Lt); Traction Agent
525-8-28	4	New York State Canal Corporation	Albany	NY	Ash (Coal-Bottom)	Sealant (Coffer Dams)
597-0-00	OS	NRG Huntley Operations; Inc.	Tonawanda	NY	Ash (Coal-Bottom)	Traction Agent; Fill (Structur
598-0-00	OS	NRG Huntley Operations; Inc.	Tonawanda	NY	Ash (Coal-Bottom)	Asphalt (Hot-Mix)

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645-7-55	7	AES Cayuga; L.L.C.	Lansing	NY	Ash (Coal-Bottom)	Surface Material (Running Trac
593-6-45	OS	Black River Power; LLC	Syracuse	NY	Ash (Coal-FBC)	Aggregate (Road Surface)
502-6-23	OS	Black River Power; LLC	Syracuse	NY	Ash (Coal-FBC-Fly)	Surface Material (Barnyard Pad)
023-4-20	4	Lehigh Cement Company	Catskill	NY	Ash (Coal-Fly)	Cement (Shale Substitute)
035-7-12	7	Pozzolanic International	Ithaca	NY	Ash (Coal-Fly)	Filler (Concrete)
048-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Ash (Coal-Fly)	Cement (Shale Substitute)
076-7-34	OS	NRG Dunkirk Operations; Inc.	Dunkirk	NY	Ash (Coal-Fly)	Filler (Flowable Fill)
096-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Ash (Coal-Fly)	Cement (Shale Substitute)
102-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Ash (Coal-Fly)	Cement (Shale Substitute)
113-6-23	6	Drum Ready Mix Company	Amsterdam	NY	Ash (Coal-Fly)	Filler (Concrete)
146-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Ash (Coal-Fly)	Cement (Shale Substitute)
171-3-56	3	Eastern Stabilized Products	Waldwick	NJ	Ash (Coal-Fly)	Stabilizing Agent
182-4-29	4	Cranesville Block Company; Inc.	Amsterdam	NY	Ash (Coal-Fly)	Filler (Concrete)
208-4-29	4	Cranesville Block Company; Inc.	Amsterdam	NY	Ash (Coal-Fly)	Filler (Concrete)
209-9-07	9	Jamestown Board of Public Utilities	Jamestown	NY	Ash (Coal-Fly)	Filler (Concrete)
265-4-20	4	Lehigh Cement Company	Catskill	NY	Ash (Coal-Fly)	Cement (Shale Substitute)
284-9-15	9	NRG Energy; Inc.	Minneapolis	MN	Ash (Coal-Fly)	Fill (Structural)
303-9-32	OS	NRG Huntley Operations; Inc.	Tonawanda	NY	Ash (Coal-Fly)	Fill
423-3-36	3	Ecomat; Inc.	Poughkeepsie	NY	Ash (Coal-Fly)	Filler (Lumber (Synthetic))
530-7-04	7	AES Westover; L.L.C.	Johnson City	NY	Ash (Coal-Fly)	Filler (Flowable Fill)
542-7-04	7	AES Westover; L.L.C.	Johnson City	NY	Ash (Coal-Fly)	Base (Sub)
543-7-04	7	AES Westover; L.L.C.	Johnson City	NY	Ash (Coal-Fly)	Landfill Cover (Posishell (TM)
599-0-00	OS	NRG Huntley Operations; Inc.	Tonawanda	NY	Ash (Coal-Fly)	Filler (Flowable Fill)
632-4-48	4	Callanan Industries Incorporated	Albany	NY	Ash (Coal-Fly)	Cement (Additive)
635-9-15	OS	NRG Huntley Operations; Inc.	Tonawanda	NY	Ash (Coal-Fly)	Absorbent
636-9-07	OS	NRG Dunkirk Operations; Inc.	Dunkirk	NY	Ash (Coal-Fly)	Absorbent
873-0-00	0	Stollberg, Inc.	Niagara Falls	NY	Ash (Coal-Fly)	Flux, Mold Casting
272-1-52	1	Rolite; Inc. Ash Management	Wayne	PA	Ash (MSW)	Landfill Closure
341-3-14	3	Dutchess County Resource Recovery Agency	Poughkeepsie	NY	Ash (MSW)	Landfill Cover (Daily; Interme
445-1-00	1	U.S. Environmental; Inc.	King of Prussia	PA	Ash (MSW)	Vitrified Product (Dec. Stone)
222-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Ash (Papermill Sludge)	Cement
176-6-25	6	Lyonsdale Power Company LLC	Lyons Falls	NY	Ash (Wood)	Fertilizer
177-6-22	6	Union Tools Co.; Inc.	Frankfort	NY	Ash (Wood)	Fertilizer (Soil; Compost)
198-0-00	OS	Generic BUD - Wood Ash	Unknown	NY	Ash (Wood)	Fertilizer
384-6-25	6	Lyonsdale Power Company LLC	Lyons Falls	NY	Ash (Wood)	Traction Agent
421-4-13	4	Norbord Industries; Inc.	Deposit	NY	Ash (Wood)	Land Application
583-5-16	5	International Paper Company; Ticonderoga Mill	Ticonderoga	NY	Ash (Wood)	Bulking; Stabilizing Agent
717-5-46	5	International Paper - Corinth	Corinth	NY	Ash (Wood)	WWTP sludge stabilizing agent
736-6-23	OS	Black River Power; LLC	Syracuse	NY	Ash (Wood);Ash (Coal)	stabilizer; sludge
569-6-23	6	City of Watertown	Watertown	NY	Ash (WWTP Sludge)	Fill (Roads)
570-4-01	4	Albany County Sewer District	Albany	NY	Ash (WWTP Sludge)	Landfill Cover; Soil (Top)
382-9-15	9	Natural Environmental; Inc.	Buffalo	NY	Asphalt Shingle	Base (Road)
483-9-32	9	Modern Landfill; Inc.	Model City	NY	Asphalt Shingle	Landfill Base (Road-Parking)
484-4-01	4	King Road Materials; Inc.	Albany	NY	Asphalt Shingle	Asphalt (Hot-Mix) Concrete
516-9-32	9	Parker Bay Consultants; Inc.	Buffalo	NY	Asphalt Shingle	Base (Road; Sub)
145-0-41	OS	Prolerized Schiabo Neu; Co.	Jersey City	NJ	Auto Shredder Res (PROPAT)	Landfill Cover (Daily)
730-9-07	9	Hazard Evaluations; Inc.	Orchard Park	NY	Bauxite/alumiglass/ceramics	Fill
859-4-20	4	Lehigh Cement	Glens Falls	NY	Biosolids (Class A)	Fuel
789-2-24	2	New York City Department of Sanitation	New York	NY	Brick (Refactory)	Fill
193-6-45	6	Aluminum Company of America (ALCOA)	Massena	NY	Brick (Refractory)/Cement	Base (Road); Fill
451-7-38	7	BBL Environmental Services; Inc.	Syracuse	NY	Brine (Calcium Chloride)	De-icer; Dust Control
309-3-03	3	Gun Hill Trucking; Ltd.	Bronx	NY	C&D	Landfill Cover; Fill
180-9-15	9	Hartford Paving Corporation	Cheektowaga	NY	C&D (Concrete)	Base (Sub)
197-0-00	OS	New York State Department of Transportation	Albany	NY	C&D (Concrete)	Aggregate (Concrete)

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271-9-15	9	Custom Topsoil; Inc.	Buffalo	NY	C&D (Concrete)	Aggregate
278-9-15	9	Swift River Associates; Inc.	Tonawanda	NY	C&D (Concrete)	Base (Sub)
353-9-32	9	Carborundum Company	Niagara Falls	NY	C&D (Concrete)	Aggregate
254-0-00	OS	Generic BUD - Recycled Concrete	Unknown	NY	C&D (Concrete/Masonery)	Aggregate
698-3-36	3	TKM Materials; Inc.	Montgomery	NY	C&D (gypsum wallboard)	Feedstock
259-0-00	OS	Generic BUD - Roofing Gravel	Unknown	NY	C&D (Roofing Gravel)	Fill; Roads
287-8-28	8	Xerox Corporation	Webster	NY	C&D (Roofing Gravel)	Base (Road)
290-3-44	3	CEK International	Setauket	NY	C&D (Screenings)	Landfill Cover (Daily)
336-3-24	2	Waste Management of New York	Brooklyn	NY	C&D (Screenings)	Landfill Cover (Daily/Interim)
656-2-41	1	Keyspan Energy	Hicksville	NY	C&D (Screenings)	Fill
849-3-60	3	L.C. Main, LLC	Bedford Hills	NY	C&D Material/Soil	Fill
870-3-36	3	Town of Monroe (Taylor Recycling)	Monroe	NY	C&D Screenings	Alternate Grading Material
344-3-40	3	COH Corporation; Inc.	Brewster	NY	Carbon (Activated)	Carbon (Reactivate)
510-3-60	3	Waste Conversion Technologies	White Plains	NY	Cardboard (Waxed)	Fuel Pellets
647-4-11	4	Wil-Roc Farms c/o Earthworks	Claverack	NY	Cardboard (Waxed)	Bedding (Animal - Farm)
637-4-01	4	Lafarge Building Materials; Inc.	Ravena	NY	Catalyst (Alumina Silicate)	Cement (Alumina Source)
149-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Catalyst (Alumina)	Cement (Alumina Source)
158-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Catalyst (Alumina)	Cement (Alumina Source)
223-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Catalyst (Alumina)	Cement (Alumina Source)
414-4-01	4	Lafarge Building Materials; Inc.	Ravena	NY	Catalyst (Alumina)	Cement (Alumina Source)
452-4-01	4	Lafarge Building Materials; Inc.	Ravena	NY	Catalyst (Alumina)	Cement (Alumina Source)
242-4-00	4	ACI Industries; Ltd. L.P.	Delaware	OH	Catalyst (Fe-Cr)	Cement (Iron Oxide Substitute)
241-4-00	4	ACI Industries; Ltd. L.P.	Delaware	OH	Catalyst (Ni-Mo)	Cement (Alumina Substitute)
605-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Catalyst (Regenerated Fluid)	Cement
370-7-27	7	Gray-Syracuse; Inc. c/o PLS Engineering	Chittenango	NY	Ceramic Castings	Base (Road)
323-8-51	8	Corning Inc.	Corning	NY	Ceramic Cullet	Fill (Structural)
742-9-05	9	Dal-Tile Corp.	Olean	NY	Ceramic Cullet	aggregate substitute
841-9-15	9	Zoladz Construction Co.	Alden	NY	China, offspec	Base (Sub)
009-9-15	9	Concrete Recycling Corp.	Niagara Falls	NY	Concrete	Aggregate (Concrete); Base (Su
115-3-56	3	Fin-Pan	Albany	NY	Concrete	Base (Sub); Fill (Backfill Tre
842-3-60	3	Blackacre Partners OPS	New York	NY	Concrete	Fill
032-9-32	9	Carbon/Graphite Group; Inc.	Niagara Falls	NY	Concrete (A. Sideblocks)	Fill (General Fill)
091-9-32	9	Carbon/Graphite Group; Inc.	Niagara Falls	NY	Concrete (L. Sideblocks)	Fill (General Fill)
110-3-40	3	Unilock	Brewster	NY	Concrete (Rejected Blocks)	Base (Sub)
582-1-52	1	John P. O'Donnell	Bellport	NY	Concrete (Uncontaminated)	Aggregate (Natural)
705-7-34	7	Trigen-Syracuse Energy Corporation	Syracuse	NY	Converter Waste - Paper	Fuel
181-9-15	9	GEMUS; Inc.	Williamsville	NY	Deposits (Wine/Juice Vat-Argol	Acid (Tartaric)
812-4-01	4	Grain Processing Corporation	Muscatine	IA	De-sugared sugar beet molasses	De-icing agent
688-0-00	OS	Sears Ecological Applications Company; LLC	Rome	NY	Distillers' Condensed Solubles	Roadway Deicing
827-8-37	8	Millenium Roads, LLC	Lyndonville	NY	Distillers' Condensed Solubles	anti-icing agent
352-4-47	4	W Larned & Sons c/o Ingalls;Smart Assts.	Schenectady	NY	Dredge	Fill
377-3-36	3	ARMA Textile Printers	Newburgh	NY	Dredge	Fill
428-3-60	3	Canal Asphalt; Inc.	Mount Vernon	NY	Dredge	Aggregate (Asphalt)
535-1-30	1	Posillico Brothers Asphalt Co.	Farmingdale	NY	Dredge	Aggregate (Asphalt-Hot-Mix)
621-1-30	1	City of Glen Cove	Glen Cove	NY	Dredge	Aggregate (Asphalt); Base (Sub)
653-3-60	3	Westchester County Department of Public Works	White Plains	NY	Dredge	Fill (Subgrade)
654-2-03	2	New York City Parks & Recreation	Flushing	NY	Dredge	Soil (Top)
666-2-41	OS	New York State Department of Transportation	Albany	NY	Dredge	Fill
718-4-47	4	New York State Canal Corporation	Albany	NY	Dredge	Aggregate
782-9-15	9	Erie County Department of Environment & Planning	Buffalo	NY	Dredge	Fill; unrestricted
130-4-42	4	Troy Sand and Gravel Co.; Inc.	Watervliet	NY	Dredge (Sand/Gravel)	Traction Agent; Fill
646-1-30	1	Blue Water Environmental (Posillico Brothers)	Farmingdale	NY	Dredge (Sand/Gravel)	Aggregate (Asphalt-Hot-Mix)
807-6-22	6	NYS Canal Corporation	Albany	NY	Dredge Material	Unrestricted use
682-1-52	1	Town of Brookhaven	Medford	NY	Dredged Material	Landfill Cover (Daily)

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695-6-22	4	New York State Canal Corporation	Albany	NY	Dredged Material	Soil (Top)
697-9-15	OS	New York State Department of Transportation	Albany	NY	Dredged Material	Soil (Grading Material)
711-3-14	3	Town of East Fishkill c/o Morris Associates	Poughkeepsie	NY	Dredged Material	Unrestricted use
737-4-29	4	New York State Canal Corporation	Albany	NY	Dredged Material	Sand & Gravel; Commercial
738-6-33	4	New York State Canal Corporation	Albany	NY	Dredged Material	Topsoil
752-4-47	4	New York State Canal Corporation	Albany	NY	Dredged Material	sand and gravel
754-4-42	4	New York State Canal Corporation	Albany	NY	Dredged Material	fill and gravel
755-7-34	4	New York State Canal Corporation	Albany	NY	Dredged Material	Road base
784-3-60	3	Village of Sleepy Hollow	Sleepy Hollow	NY	Dredged Material	Fill; structural
790-1-30	1	Jones Inlet Marina; Inc.	Riverhead	NY	Dredged Material	Fill
799-2-43	2	New York City Department of Sanitation	New York	NY	Dredged Material	Alternate Grading Material
803-1-52	1	Westhampton Mining Aggregates, Inc.	Westhampton Beach	NY	Dredged Material	Aggregate
814-1-52	1	RAMCO Development Corp.	Bay Shore	NY	Dredged Material	Topsoil
846-2-24	2	New York Sand & Stone, LLC	Brooklyn	NY	Dredged Material	Aggregate
877-2-24	2	TN & Associates	Milwaukee	WI	Dredged Material	Aggregate
819-3-60	3	Village of Rye Brook	Rye Brook	NY	Dredged Material	Fill
832-3-40	3	Pelham Country Club c/o LBG Environmental Serices	Trumbull	CT	Dredged Material	Fill
853-8-59	8	NYS Canal Corp	Liverpool	NY	Dredged Material	Fill
854-6-33	6	NYS Canal Corp	Liverpool	NY	Dredged Material	Fill
855-6-33	6	NYS Canal Corp	Liverpool	NY	Dredged Material	Fill
860-1-52	1	Costello Marine Contracting Corporation	Greenport	NY	Dredged Material	Fill
890-1-52	1	Irene Detmer Property	East Setauket	NY	Dredged Material	Fill
884-2-43	2	380 Development, LLC			Dredged Material	Fill
709-2-24	2	Brooklyn Navy Yard Development Corp.	Brooklyn	NY	Dredged Material/Fly Ash/ Spent Grit	Grading Material/Industrial Fill
390-9-15	9	Riefill Corp.	Buffalo	NY	Dust (Baghouse)	Flowable Fill
033-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Dust (Cement Kiln)	Filler (Asphalt)
325-4-01	4	Lafarge Building Materials; Inc.	Ravena	NY	Dust (Cement Kiln)	Liming;Stabilizer;Filler;LF Co
600-0-00	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Dust (Cement Kiln)	Liming Agent (Agricultural)
039-7-34	7	Waste Stream Environmental; Inc.	Jordan	NY	Dust (Cement Kiln)/Sludge	Liming Agent (Agricultural)
220-7-00	OS	United Environmental Services Group	Phillisburg	NJ	Dust (Cement Kiln)/Sludge	Liming Agent (Agricultural)
492-8-62	8	AES Greenidge; L.L.C.	Dresden	NY	E-Fuel	Fuel
469-5-16	5	International Paper Company; Ticonderoga Mill	Ticonderoga	NY	Felts (Paper Machine Dryer)	Benthic Mat
478-5-46	5	International Paper Company; Hudson River Mil	Corinth	NY	Felts (Paper Machine Dryer)	Benthic Mat
138-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Ferrous	Cement (Iron Feedstock)
806-3-40	3	BMJ Construction (Brewster WWTP)	Yonkers	NY	Filter media (WWTP)	subbase
322-3-40	3	CLEARPOOL Camp	Carmel	NY	Filter Sand	Bedding (Septic, Sewer)
346-3-42	3	Integrated Building Systems	East Greenbush	NY	Filter Sand	Fill; Base (Sub)
369-3-60	3	New York City Department of Environmental Protection	Valhalla	NY	Filter Sand	Fill; Base (Sub)
408-3-60	3	New York City Department of Environmental Protection	Valhalla	NY	Filter Sand	Bedding (Pipe); Base(Sub)
413-3-53	3	Grahamsville Sewage Treatment Plant	Grahamsville	NY	Filter Sand	Fill; Grading
419-4-13	3	New York City Department of Environmental Protection	Valhalla	NY	Filter Sand	Fill (Backfill-Pipe)
500-4-20	3	New York City Department of Environmental Protection	Valhalla	NY	Filter Sand	Fill
514-3-53	3	Narrowsburg Water & Sewer Districts	Narrowsburg	NY	Filter Sand	Fill; Base (Sub)
547-3-36	3	Town of Montgomery	Montgomery	NY	Filter Sand	Base (Road)
560-6-33	OS	New York State Thruway Authority	Albany	NY	Filter Sand	Fill
619-4-20	OS	New York State Thruway Authority	Albany	NY	Filter Sand	Fill
620-0-00	OS	New York State Thruway Authority	Albany	NY	Filter Sand	Fill
648-3-36	3	Dept. of Army; US Military Academy	West Point	NY	Filter Sand	Fill
649-1-52	1	Leisure Village WWTP/Suffolk Co. DPW	Yaphank	NY	Filter Sand	Fill
393-7-34	7	Anheuser-Busch; Inc.	Baldwinsville	NY	Filter Sand/Compost/Wood	Compost (Class I)
441-4-20	4	Pioneer Savings Bank	Rensselaer	NY	Filter Sand/Stone	Base (Sub); Fill (Backfill Tre
518-3-14	3	Town of Wappinger Falls	Wappinger Falls	NY	Filter Sand/Stone	Fill
766-8-26	8	Village of Geneseo	Geneseo	NY	Filter Sand/Stone	Subbase; backfill
362-5-46	5	Corinth Bio-Conversion; Inc. c/o Petruzzo Pro	Corinth	NY	Food	Feed (Animal - Supplement)

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005-6-45	6	GM Powertrain Group	Massena	NY	Foundry Sand	Aggregate (Concrete; Asphalt)
040-7-34	7	Caldwell & Ward Brass Company	Syracuse	NY	Foundry Sand	Aggregate (Concrete)
042-7-34	7	Wolf & Dungey, Inc.	Syracuse	NY	Foundry Sand	Aggregate (Concrete)
073-9-32	9	Dussault Foundry Corp.	Lockport	NY	Foundry Sand	Aggregate (Asphalt; Flowable F
155-9-15	9	Buffalo Metal Casting Co.; Inc.	Buffalo	NY	Foundry Sand	Aggregate (Asphalt)
156-9-15	9	Scott Castings; Inc.	Buffalo	NY	Foundry Sand	Base (Sub); Fill
230-9-15	9	Gernatt Asphalt Products; Inc.	Collins	NY	Foundry Sand	Aggregate (Asphalt-Hot-Mix)
320-9-07	9	Monofrax; Inc.	Falconer	NY	Foundry Sand	Aggregate (Blacktop)
439-7-04	7	Broome County Division of Solid Waste	Binghamton	NY	Foundry Sand	Landfill Cover (Daily)
519-4-20	4	Wormuth Brothers Foundry; Inc.	Athens	NY	Foundry Sand	Alternate Grading Material
520-4-20	4	Wormuth Brothers Foundry; Inc.	Athens	NY	Foundry Sand	Cement (Source of Silica)
551-9-15	OS	Pohlman Materials Recovery Inc.	Lakeview	NY	Foundry Sand	Flowable Fill
567-7-27	7	Santaro Trucking/ Crouse-Hinds c/o Spectra En	East Syracuse	NY	Foundry Sand	Aggregate (Asphalt Concrete)
713-4-20	4	Wormuth Brothers Foundry; Inc.	Athens	NY	Foundry Sand	Fill (Regrading)
748-4-20	4	Wormuth Brothers Foundry; Inc.	Athens	NY	Foundry Sand	Fill; grade and subbase
772-3-14	3	Tallix; Inc.	Beacon	NY	Foundry Sand	Aggregate; Asphalt
829-9-07	9	Chautauqua Hardware c/o Haley & Aldrich	Grand Rapids	NY	Foundry Sand	Fill, structural
139-9-15	9	Pohlman Foundry Company	Buffalo	NY	Foundry Sand/Lime Slurry	Aggregate; Fill
199-8-08	8	Chemung Co. Solid Waste Management Dist.	Elmira	NY	Foundry Sand/Sludge (WWTP)	Landfill Cover (Daily)
363-7-34	7	Crushed Products Inc.	Syracuse	NY	Foundry Slag	Base (Sub); Fill (Structural)
400-9-07	9	Monofrax; Inc.	Falconer	NY	Foundry Slag	Fill; Base (Sub); Ballast
411-9-32	9	International Waste Removal; Inc.	Niagara Falls	NY	Foundry Slag	Fill
045-4-20	4	Wormuth Brothers Foundry; Inc.	Athens	NY	Foundry Slag/Sand	Mulch; Landfill Cover (Daily)
732-5-58	5	GL&V Foundry	Hudson Falls	NY	Foundry Slag/Sand	various
813-6-33	6	Germanium Corporation of America	Utica	NY	Germanium Tetrachloride processing wastes	Germanium Tetrachloride production
137-7-34	6	General Crushed Stone Company	Easton	PA	Glass	Aggregate (Asphalt-Hot-Mix)
160-6-23	6	Jefferson Co. Dept. Recycling & Waste Mgmt	Watertown	NY	Glass	Base (Road)
161-5-16	5	Essex County Dept. of Public Works	Elizabethtown	NY	Glass	Base (Sub)
172-1-30	1	Omni Recycling of Westbury; Inc.	Westbury	NY	Glass	Landfill Base (Road)
185-6-25	6	Lewis County Department Of Solid Waste	Lowville	NY	Glass	Base (Sub)
227-0-00	OS	Generic BUD - Glass as Fill	Unknown	NY	Glass	Fill; Base (Sub)
229-8-51	8	Sanitary Disposal Company	Savona	NY	Glass	Fill
234-0-45	OS	Waste Stream; Inc.	Potsdam	NY	Glass	Base; Filter (Sand); Fill
248-5-58	5	Bola Landfill	Albany	NY	Glass	Landfill Barrier Protect; Gas
381-4-13	4	Delaware Borders Inc.	Walton	NY	Glass	Filler (Plastics)
828-6-22	6	Andela Products, Ltd.	Richfield Springs	NY	Glass	abrasive blasting media
798-6-45	6	St. Lawrence County Solid Waste Dept.	Canton	NY	Glass;Plastic	Base (Sub)
244-5-16	5	International Paper Company; Ticonderoga Mill	Ticonderoga	NY	Grit (Flume)	Landfill Cover; Closure
283-5-16	5	International Paper Company; Ticonderoga Mill	Ticonderoga	NY	Grit (Flume)	Bedding (Animal)
275-9-32	9	Occidental Chemical Corporation	Niagara Falls	NY	Gypsum	Land Application
376-9-32	9	AES Somerset; L.L.C.	Barker	NY	Gypsum	Gypsum Wallboard
385-9-15	9	Natural Environmental; Inc.	Buffalo	NY	Gypsum Wallboard	Absorbent
463-9-15	9	Natural Environmental; Inc.	Buffalo	NY	Gypsum Wallboard	Land Application
528-4-47	4	Good Riddance Inc.	Alplaus	NY	Gypsum Wallboard	Land Application
557-4-47	4	Good Riddance Inc.	Alplaus	NY	Gypsum Wallboard	Gypsum Wallboard
558-4-47	4	Good Riddance Inc.	Alplaus	NY	Gypsum Wallboard	Absorbent
206-7-55	7	AES Cayuga; L.L.C.	Lansing	NY	Gypsum; Calcium Chloride Salt	Gypsum Wall; De-icer; Dust Sup
304-6-25	6	Lyons Falls Pulp & Paper	Lyons Falls	NY	Lignosulfonate	Dust Suppressant
178-8-19	8	Batavia (C) Water Treatment Plant	Batavia	NY	Lime (WTP)	Liming Agent
245-5-18	7	Specialty Minerals; Inc.	Oswego	NY	Lime Grit	Liming Agent
615-6-25	6	FAXE Paper Pigments (Huber Engineered Materia	Havre de Grace	MD	Lime Grit	Liming Agent (Agricultural)
727-9-07	9	Bush Industries Inc.	Jamestown	NY	MDF/particle board sawdust	Bedding (Animal)
824-6-33	6	HP Hood	Vernon	NY	Milk waste, treated	Fertilizer
851-4-01	4	Lafarge Building Materials, Inc.	Ravena	NY	Mill Spillage (Limestone)	Fill

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817-6-23	6	Shred-Con	Watertown	NY	Paper	Bedding (Animal)
817-6-23	6	Shred-Con	Watertown	NY	Paper	Bedding (Animal)
224-7-34	7	Anheuser-Busch; Inc.	Baldwinsville	NY	Paper (Phone Books)	Compost
038-0-15	OS	Waste Stream Technology; Inc.	Buffalo	NY	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
049-0-52	OS	Recycling Technologies of New York	Massapequa	NY	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
075-6-33	6	American Soil and Waste Disposal	Oneida Castle	NY	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
088-9-15	OS	Waste Stream Technology; Inc.	Buffalo	NY	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
101-0-00	OS	United Retek Corporation	Medway	MA	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
105-8-61	8	Griffith Oil Co.; Inc.	Wyoming	NY	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
121-4-01	4	Cibro Petroleum Products; Inc.	Albany	NY	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
123-0-30	OS	Tyree Brothers Environmental Services	Farmingdale	NY	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
129-0-00	OS	American Reclamation Corporation	Southborough	MA	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
136-1-52	1	National Westminster Bank/Posillico	West Hempstead	NY	Petroleum Contaminated Soil	Aggregate (Asphalt)
203-0-00	OS	Generic BUD - PCS - Cold-mix asphalt	Unknown	NY	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
211-0-00	OS	Environmental Soil Solutions; Inc.	Acton	MA	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
218-1-52	1	Prima Asphalt Corporation	Hollsville	NY	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold; Hot)
260-3-36	3	Alternative Recycling Services; Inc.	Northvale	NJ	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
302-3-36	3	Al Turi Landfill; Inc.	Mahwah	NJ	Petroleum Contaminated Soil	Landfill Cover (Daily)
394-1-30	1	Rason Asphalt Inc.	Old Bethpage	NY	Petroleum Contaminated Soil	Aggregate (Asphalt-Hot-Mix)
426-4-01	4	Lafarge Building Materials; Inc.	Ravena	NY	Petroleum Contaminated Soil	Cement (Silica Substitute)
485-7-55	7	Village of Cayuga Heights	Ithaca	NY	Petroleum Contaminated Soil	Aggregate (Asphalt-Cold-Mix)
673-9-15	OS	New York State Department of Transportation	Albany	NY	Petroleum Contaminated Soil	Fill
774-4-01	4	Lafarge Building Materials; Inc.	Ravena	NY	Petroleum Contaminated Soil	Cement (Silica Substitute)
788-1-30	1	Avilas/Mairoll	White Plains	NY	Petroleum Contaminated Soil	subbase
200-9-15	9	Buffalo China; Inc.	Buffalo	NY	Plaster (Paris)	Gypsum Wallboard
079-0-00	OS	AWT Capital	Unknown	NY	Plastic	Product
133-0-27	OS	Canastota Recycling; Ltd.	Canastota	NY	Plastic	Aggregate (Asphalt-Cold-Mix)
491-8-62	8	AES Greenidge; L.L.C.	Dresden	NY	Plastic & Cellulose Fiber	Fuel
188-0-00	OS	EZflow; L.P.	Oakland	TN	Plastic (Polystyrene)	Fill (Bedding-Pipe)
880-3-14	3	Gaia Institute	LaGrangeville	NY	Plastic, misc.	Growth Medium, rooftop
142-8-19	8	Lapp Insulator Company	LeRoy	NY	Porcelain (Insulators)	Aggregate
147-9-15	9	Buffalo China; Inc.	Buffalo	NY	Pottery	Base (Sub); Concrete
187-9-15	9	Buffalo China; Inc.	Buffalo	NY	Pottery	Fill
179-6-45	6	Reynolds Metals Company	Massena	NY	Roaster Ore	Cement
847-6-45	6	ALCOA	Massena	NY	Sand (Industrial WWTP)	Asphalt (Hot-Mix)
836-3-40	3	BMJ Construction	Yonkers	NY	Sand (WWTP)	Fill
216-1-52	1	Town of Brookhaven	Medford	NY	Shells (Clam)	Bedding (Setting Substrate)
217-1-52	1	Town of Huntington	Huntington	NY	Shells (Clam/Oyster)	Bedding (Setting Substrate)
108-1-52	1	Winter Harbor Fisheries; Inc.	Greenport	NY	Shells (Conch)	Bedding (Setting Substrate)
407-1-52	1	Cornell Cooperative Extension - Southold	Southold	NY	Shells (Shellfish)	Bedding (Setting Substrate)
050-9-15	9	Buffalo Crushed Stone; Inc.	Buffalo	NY	Slag (Blast Furnace)	Base (Road; Sub); Aggregate
342-9-15	9	Buffalo Crushed Stone; Inc.	Buffalo	NY	Slag (Blast Furnace)	Base (Sub)
406-3-00	OS	Waylite Corporation	Bethlehem	PA	Slag (Blast Furnace)	Fill (Lightweight)
515-4-42	4	King Road Materials; Inc.	Albany	NY	Slag (Blast Furnace)	Fill (Lt Wt); Base (Sub)
109-5-58	5	Town of Granville	Granville	NY	Slag (Slate)	Landfill Grading Layer
345-7-06	7	Auburn Steel Company; Inc.	Auburn	NY	Slag (Steel)	Fill; Aggregate; Base
404-4-01	4	Al-tech Specialty Steel Corp.\REALCO Inc.	Watervliet	NY	Slag (Steel)	Landfill Closure; Aggregate
487-9-07	9	Erie Shore Commodities; Inc.	Brunswick	OH	Slag (Steel)	Base; Traction; Aggregate (Asp
555-9-15	9	Bethlehem Steel Corporation	Bethlehem	PA	Slag (Steel)	Fill; Aggregate(Asphalt); Base
776-2-43	2	New York City Department of Sanitation	New York	NY	Slag (Steel)	Landfill closure; base(sub); fill
691-7-06	7	Nucor Steel Auburn; Inc	Auburn	NY	Slag Lime	Soil Liming Agent
729-6-33	6	Upper Mohawk Valley Regional Water Board	Utica	NY	Sludge (Alum)	Soil (Potting)
022-8-19	8	Lapp Insulator Company	LeRoy	NY	Sludge (Clay)	Fill
114-3-14	3	IBM - East Fishkill	Hopewell Junction	NY	Sludge (Electroplating)	Cement

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120-0-00	OS	NYSDEC; Division of Fish & Wildlife	Albany	NY	Sludge (Fish Hatchery)	Land Application
883-4-01	4	CSX Transportation c/o AMEC Earth & Environmental	Schenectady	NY	Sludge (Industrial)	Fill
431-4-01	4	Lafarge Building Materials; Inc.	Ravena	NY	Sludge (Iron Oxide)	Cement
191-4-20	4	Lehigh Cement Company	Catskill	NY	Sludge (Kaolin)	Cement
822-0-00	0	Marcal Paper Mills, Inc.	Elmwood Park	NY	Sludge (Kaolin)	Bedding (Animal)
424-3-56	3	Northeast Solite Corporation	Mt. Marion	NY	Sludge (Lagoon Fines)	Landfill Closure
420-0-00	OS	Innovative Municipal Products; Inc. (IM U.S.)	Ava	NY	Sludge (Lignosulfonate)	Dust Palliative
086-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Sludge (MgOH)	Cement
716-8-28	8	Squidd's Bait Co.	Rochester	NY	Sludge (paper mill)	Worm bedding
014-5-46	5	International Paper Company; Hudson River Mil	Corinth	NY	Sludge (Papermill)	Soil Amendment;Mulch;Grow Me
017-5-57	5	Encore Paper Co/(James River Corp.)	South Glens Falls	NY	Sludge (Papermill)	Landfill Cover; Grading
044-5-46	5	Mohawk Paper Mills; Inc.	Cohoes	NY	Sludge (Papermill)	Paper Board
084-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Sludge (Papermill)	Cement
085-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Sludge (Papermill)	Cement
134-5-57	5	American Tissue of Greenwich	Greenwich	NY	Sludge (Papermill)	Landfill Cover; Grading
151-5-16	5	International Paper Company; Ticonderoga Mill	Ticonderoga	NY	Sludge (Papermill)	Paper Products
167-5-46	5	International Paper Company; Hudson River Mil	Corinth	NY	Sludge (Papermill)	Landfill Cover; Grading
170-5-16	5	International Paper Company; Ticonderoga Mill	Ticonderoga	NY	Sludge (Papermill)	Landfill Cover (Daily)
196-0-33	OS	Advanced Recovery Solutions; Inc.	Foxborough	MA	Sludge (Papermill)	Absorbent
202-5-46	5	International Paper Company; Hudson River Mil	Corinth	NY	Sludge (Papermill)	Blocks & Panels (Building)
317-5-57	5	Hollingsworth & Vose Paper Co.	Greenwich	NY	Sludge (Papermill)	Landfill Cover; Grading
459-6-33	6	Oneida-Herkimer Solid Waste Authority	Utica	NY	Sludge (Papermill)	Landfill Cover (Daily)
477-5-46	5	Corinth Fibre LLC	Corinth	NY	Sludge (Papermill)	Bedding (Animal)
480-5-46	5	Petruzzo Products; Inc.	Corinth	NY	Sludge (Papermill)	Bed (Animal); Kitty Litter; Absorbent
512-5-46	5	Corinth Fibre LLC	Corinth	NY	Sludge (Papermill)	Absorbent
513-5-46	5	Corinth Fibre LLC	Corinth	NY	Sludge (Papermill)	Bedding (Animal - Caged)
533-0-00	OS	Marcal	Elmwood Park	NJ	Sludge (Papermill)	Bedding (Animal); Kitty Litter
562-7-38	7	International Paper Company; Oswego	Oswego	NY	Sludge (Papermill)	Compost (Amendment)
568-5-16	5	International Paper Company; Ticonderoga Mill	Ticonderoga	NY	Sludge (Papermill)	Bulking Agent (Waste Sludge)
573-0-00	5	Earth Alliance of Saratoga Limited (EAL)	South Glens Falls	NY	Sludge (Papermill)	Mulch
674-6-23	6	James S. Juczak	Watertown	NY	Sludge (Papermill)	Cement
690-0-00	OS	Domtar Inc.; Communication Papers Division	Cornwall	ON	Sludge (Papermill)	Soil Liming Agent
740-5-46	5	Earth Alliance of Saratoga Limited (EAL)	South Glens Falls	NY	Sludge (Papermill)	Animal Bedding; Absorbent; Cat Litter
757-7-34	7	Syracuse Fiber Recycling; LLC	Solvay	NY	Sludge (Papermill)	Amendment; compost
876-0-00	0	Synagro	Houston	TX	Sludge (Papermill)	Non-Contact Poultry Litter
872-9-32	9	Norampac (c/o Mark Cerrone, Inc.)	Niagara Falls	NY	Sludge (Papermill)	Amendment (Soil)
683-7-34	7	Syracuse Fiber Recycling; LLC	Solvay	NY	Sludge (Papermill)/Cement Kiln Dust	Bedding (Animal)
319-7-34	7	Syracuse Fiber Recycling; LLC	Solvay	NY	Sludge (Papermill)/CKD	Fuel; Bedding (Animal)
468-6-33	6	Oneida-Herkimer Solid Waste Authority	Utica	NY	Sludge (Papermill)/Sand	Landfill Cover (Intermediate)
305-6-23	6	Development Authority of North Country	Rodman	NY	Sludge (Papermill/WWTP)	Landfill Cover (Daily)
422-4-13	4	Norbord Industries; Inc.	Deposit	NY	Sludge (Settling)	Fill
449-4-01	4	Town of Guilderland	Guilderland	NY	Sludge (WTP - Alum)	Landfill Contouring (C&D LF)
509-4-42	4	City of Troy; Dept. of Public Works	Troy	NY	Sludge (WTP - Alum)	Landfill Soil (Top)
777-4-42	4	City of Troy; Dept. of Public Works	Troy	NY	Sludge (WTP - Alum)	Topsoil; manufactured
825-3-14	3	Duffy Layton Contracting, Inc.	Stanfordville	NY	Sludge (WTP - Alum)	soil conditioner
826-6-33	6	City of Rome Water Filtration Plant	Rome	NY	Sludge (WTP - Alum)	soil. Manufactured
501-2-41	2	Woodhue; Ltd.	Wrightstown	NJ	Sludge (WTP - Alum) w/Soil	Landfill Vegetative Layer
337-4-47	4	City of Poughkeepsie; WTP	Poughkeepsie	NY	Sludge (WTP- Alum)	Landfill Cover (Daily)
471-6-22	6	Village of Ilion	Ilion	NY	Sludge (WTP Lagoon Sediment)	Soil (Top)
434-7-55	7	Southern Cayuga Lake Intermunicipal Water Commission	Ithaca	NY	Sludge (WTP)	Growing Media
455-9-15	9	Erie County Water Authority	Cheektowaga	NY	Sludge (WTP)	Land Application; Soil (Top)
581-3-60	3	Town of New Castle Department of Public Works	Chappaqua	NY	Sludge (WTP)	Fill
660-9-15	9	Erie County Water Authority	Cheeklowaga	NY	Sludge (WTP)	Land Application; Fill
454-7-55	7	Southern Cayuga Lake Intermunicipal Water Commission	Ithaca	NY	Sludge (WTP/WWTP)	Growing Media (Nursery)

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704-4-01	4	Town of Bethlehem; DPW	Delmar	NY	Sludge (WTP-Alum)	Fill
012-7-34	OS	United Environmental Services Group	Phillisburg	NJ	Sludge (WWTP)	Liming Agent (Agricultural)
025-3-14	3	Engelhard Corporation	Peekskill	NY	Sludge (WWTP)	Landfill Closure
162-4-20	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Sludge (WWTP)	Cement
213-3-60	3	Westchester County (YJTP)	Yonkers	NY	Sludge (WWTP)	Liming Agent (Agricultural)
215-3-53	3	World Envirotech; Inc.	New York	NY	Sludge (WWTP)	Aggregate (Asphalt)
338-0-53	3	World Envirotech; Inc.	New York	NY	Sludge (WWTP)	Mulch
720-3-14	3	IBM - East Fishkill	Hopewell Junction	NY	Sludge (WWTP/non-haz)	Cement (Calcium source)
268-5-46	5	GE Silicones; Waterford	Waterford	NY	Sludge (WWTP-Process Plant)	Asphalt (Hot-Mix)
577-4-20	4	NYSDEC; Bureau of Design and Construction	Albany	NY	Sludge (Zeolite/Clinoptilolite	Land Application
306-7-34	7	Landis Plastics - Solvey	Solvey	NY	Soil	Fill
415-9-32	9	Niagara Falls Bridge Commission	Niagara Falls	NY	Soil	Fill
753-1-52	1	Town of Riverhead	Riverhead	NY	Soil	Aggregate; asphalt
862-8-28	8	Cornhill Landing, LLC	Rochester	NY	Soil	Fill
602-0-00	OS	Clean Waters of America	Epsom	NH	Soil (Asphalt Emulsion Contami	Aggregate (Asphalt-Cold-Mix)
608-4-20	OS	Clean Waters of America	Epsom	NH	Soil (Coal Tar Contaminated)	Aggregate (Asphalt-Cold-Mix)
617-5-58	5	Environmental Soil Management of NY (ESMI)	Fort Edward	NY	Soil (Coal Tar Contaminated)	Fill; Base; Landfill; Asphalt
810-9-15	9	BIDCO Marine Group	Buffalo	NY	Soil (contaminated)	Fill
823-2-41	2	Phelps Dodge Corp.			Soil (Contaminated)	Fill, subbase
610-5-58	5	Environmental Soil Management of NY (ESMI)	Fort Edward	NY	Soil (Contaminated-Various)	Fill; Base (Sub); Asphalt
092-5-46	5	Edinburg Landfill Reclamation	Edinburg	NY	Soil (Landfill Reclamation)	Landfill Cover; Base (Sub)
714-5-58	5	Environmental Soil Management of NY (ESMI)	Fort Edward	NY	Soil (PCB Contaminated)	Construction Applications
127-1-30	1	Posillico Brothers Asphalt Co.	Farmingdale	NY	Soil (PCS)/Soil (Coal Tar Con	Aggregate (Asphalt); Base (Sub
750-2-24	2	F.C. Gowanus	Islandia	NY	Soil (PCS)/Soil (Coal Tar Con	Fill
391-6-33	OS	New York State Department of Transportation	Albany	NY	Soil (PCS/Coal)/Coal	Fill
175-3-56	3	New Paltz Central School District	New Paltz	NY	Soil (Pesticide-contaminated)	Fill
546-3-44	3	Town of Haverstraw	Garnerville	NY	Soil (Pesticide-contaminated)	Landfill Cover (Final; Interim
875-3-60	3	City of Yonkers	Yonkers	NY	Soil (Petroleum-Contaminated)	Fill
871-1-52	1	Westhampton Mining Aggregates, Inc.	Westhampton Beach	NY	Soil (Petroleum-Contaminated)	Aggregate
857-1-52	1	Transmine, Inc.	Westhampton Beach	NY	Soil (Petroleum-Contaminated)	Aggregate (Cold-Mix Asphalt)
473-9-15	9	New York State Office of General Services	Albany	NY	Soil/Cinders (Excavated)	Fill (Berm Construction)
838-9-15	9	New York State Department of Transportation	Buffalo	NY	Soil/Cinders (Excavated)	Fill
721-7-34	7	General Motors - Former IFG	Massena	NY	Soil/contaminated	Commercial Fill (same site)
767-2-41	2	Metropolitan Transportation Authority	New York	NY	Soil/contaminated	Fill
773-2-41	2	Phelps Dodge Corp.	Queens	NY	Soil/contaminated	Fill
778-1-52	1	Cantor Brothers	Farmingdale	NY	Soil/contaminated	Aggregate; Asphalt; Fill
781-2-24	3	New York City Department of Environmental Protection	Valhalla	NY	Soil/contaminated	Alternate Grading Material
467-3-14	3	T.T. Materials Corp.	Wingdale	NY	Soil/Rubber (Crumb)	Asphalt (Cold-Mix)
816-7-38	7	Northeast Biofuels	Fulton	NY	Spent corn, grain	Animal feed
371-5-10	5	Ayerst Laboratories Inc.	Rouses Point	NY	Sugar Solution	Feed (Cattle-Supplement)
634-0-00	OS	Nature's World	Glen Cove	NY	Tailings (Coal Mining)	Mulch
210-5-57	5	Barton Mines Corporation	Lake George	NY	Tailings (Mine)	Landfill Closure
152-5-16	5	NYCO Minerals; Inc.	Willsboro	NY	Tailings (Wollastonite)	Base (Road)
440-5-16	5	NYCO Minerals; Inc.	Willsboro	NY	Tailings (Wollastonite)	Fill; Base (Sub); Grading; LF
623-7-34	7	Honeywell/Allied Signal	Solvay	NY	Tar	Sealant (Driveway)
625-7-34	7	Honeywell/Allied Signal	Solvay	NY	Tar	Solvent (BTEX); Fuel
626-7-34	7	Honeywell/Allied Signal	Solvay	NY	Tar	Fuel (No. 2)
192-9-07	9	Envirometl Corporation	West Milford	NJ	Television Tube Cullet	Glass Products
166-5-10	5	Marina at Lighthouse Point; Inc.	Rouses Point	NY	Tire	Breakwater
225-7-55	7	Ms. Sara Jones & Mr. Craig Dunn	Ithaca	NY	Tire	Wall
228-9-32	9	National Fuel Supply Corporation	Hamburg	NY	Tire	Bedding (Pipe)
235-6-23	6	Fort Drum	Fort Drum	NY	Tire	Wall
263-4-20	4	Lehigh Cement Company	Catskill	NY	Tire	Fuel
335-4-01	4	St. Lawrence Cement Co.; LLC	Catskill	NY	Tire	Fuel

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374-5-57	5	Chestertown Conservation Club	Chestertown	NY	Tire	Backstop (Shooting Range)
493-3-56	3	Town of Shawangunk	Wallkill	NY	Tire	Erosion Control Mat
499-6-22	6	Town of Webb	Old Forge	NY	Tire	Erosion Control
588-6-25	6	Adirondack International Speedway	Castorland	NY	Tire	Wall (Barrier-Racetrack)
609-4-01	4	Arthritis Foundation; NENY Chapter	Albany	NY	Tire	Wall (Barrier-Racetrack; Temp)
650-4-47	4	Tire Conversion Technologies; Inc.	Glenville	NY	Tire	Lumber (Synthetic)
684-3-56	3	Steve Goldman; PE	West Nyack	NY	Tire	Fill
702-9-32	9	Modern Recycling; Inc.	Model City	NY	Tire	Mulch (Landscaping)
703-9-32	9	Modern Recycling; Inc.	Model City	NY	Tire	Playground Surface Material
796-7-06	7	Interstate Recycling Corp.	Auburn	NY	Tire	Rumble strips
764-9-07	9	Chautauqua County	Falconer	NY	Tire (Bales)	Base; road
250-9-32	9	Modern Recycling; Inc.	Model City	NY	Tire (Buffings)	Surface Material (Horse Arena)
343-9-02	9	Houghton College Equestrian Center	Houghton	NY	Tire (Buffings)	Surface Material (Horse Arena)
010-4-20	4	Dave Osborn's Family Fun Park	Catskill	NY	Tire (Chips)	Base (Road)
043-3-56	3	Jodi Scribner	Saugerties	NY	Tire (Chips)	Base (Road)
103-3-56	3	Tire Recycling; Inc.	Saugerties	NY	Tire (Chips)	Fill
174-7-09	7	AES Jennison; L.L.C.	Bainbridge	NY	Tire (Chips)	Fuel
380-4-01	9	New York State Office of General Services	Albany	NY	Tire (Chips)	Fill
565-4-01	4	Town of Colonie DPW	Cohoes	NY	Tire (Chips)	Landfill Road
611-1-52	1	Town of Brookhaven	Medford	NY	Tire (Chips)	Landfill Road
612-1-52	1	Town of Brookhaven	Medford	NY	Tire (Chips)	Erosion Control
613-1-52	1	Town of Brookhaven	Medford	NY	Tire (Chips)	Berm
671-5-18	5	South Stream Enterprises; Inc.	Amsterdam	NY	Tire (Chips)	Base (Road)
685-4-13	4	Delaware County	Delhi	NY	Tire (Chips)	Base (Road)
751-4-13	4	Delaware County	Delhi	NY	Tire (Chips)	Stormwater Management structure
046-3-56	3	Ridge Runners Rod and Gun Club	Kingston	NY	Tire (Shreds)	Backstop (Shooting Range)
432-4-00	4	The Tire Shredder; Inc.	Central Bridge	NY	Tire (Shreds)	Fill
534-4-20	4	Casings; Inc.	Catskill	NY	Tire (Shreds)	Aggregate (Drainage Layer)
614-3-56	3	Town of Shawangunk	Wallkill	NY	Tire (Shreds)	Fill
723-0-00	OS	Rubber Resources Limited	Hudson	FL	Tire (Shreds)	Playground Surface Material
725-0-00	OS	Rubber Resources Limited	Hudson	FL	Tire (Shreds)	Landscaping Mulch
579-7-04	OS	New York State Department of Transportation	Albany	NY	Tire (Shreds/Chips)	Base (Road-Embankment Fil
159-0-00	OS	Generic BUD - RUMAC - Glassphalt	Unknown	NY	Tire/Glass	Aggregate (Asphalt)
848-9-32	9	High Tread International	Lockport	NY	Tires	Mulch, Playground material
843-4-47	4	Alan R. Knight	Duanesburg	NY	Tires	Retaining Wall
821-0-00	0	NYSDEC	Albany	NY	Tires	Tire derived aggregate
867-5-46	5	Sara Spa Rod & Gun Club	Greenfield Center	NY	Tires	Wall, shooting range
868-3-56	3	Unity Creations	Saugerties	NY	Tires (chips)	Backfill, foundation
448-0-00	OS	Generic BUD - Aquatic Vegetation	Unknown	NY	Vegetation (Aquatic)	Land Application
668-5-58	4	New York State Canal Corporation	Albany	NY	Vegetation (Aquatic)	Land Application
681-6-45	6	Reynolds Metals Company	Massena	NY	Wet Enriched Alumina Ore	Port cement mix
051-0-36	OS	Ben Vellidi; Inc.	Valley Cottage	NY	Wood	Mulch
054-5-17	5	Boralex Chateaugay; Inc.	Chateaugay	NY	Wood	Fuel
125-5-16	5	International Paper Company; Ticonderoga Mill	Ticonderoga	NY	Wood	Mulch; Landscape
144-6-25	6	Lyonsdale Power Company LLC	Lyons Falls	NY	Wood	Fuel
190-4-01	4	Howard Hoose; Jr.	Feura Bush	NY	Wood	Mulch
233-7-34	7	Clifton Recycling	Syracuse	NY	Wood	Fuel
239-7-09	7	AES Jennison; L.L.C.	Bainbridge	NY	Wood	Fuel
274-9-61	9	Dry Creek Products; Inc.	Arcade	NY	Wood	Fuel
281-5-16	5	International Paper Company; Ticonderoga Mill	Ticonderoga	NY	Wood	Mulch; Landscaping Material
292-9-15	9	Concord Engineering; P.C.	Springville	NY	Wood	Compost
308-5-58	5	Washington County Dept. of Public Works	Fort Edward	NY	Wood	Fuel
310-5-58	5	Telescope Casual Furniture; Inc.	Granville	NY	Wood	Fuel
331-5-58	5	Danlee Industries; c/o Lemery & Reid;PC	Saratoga Springs	NY	Wood	Bedding (Animal)

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials, Bureau of Solid Waste, Reduction Recycling
625 Broadway, Albany, NY, 12233-7253

Granted Beneficial Use Determinations
Sorted by Waste Type

BUD #	Region	Facility Name	City	State	Waste Types	Beneficial Use
332-9-07	9	Westfield Pellet	Portland	NY	Wood	Bedding (Animal)
386-9-32	9	Pallet Pallet Inc. - New York Division	Buffalo	NY	Wood	Bedding;Compost;Paper;Absorb;M
412-9-15	9	Pallet Services; Inc.	Tonawanda	NY	Wood	Mulch; Fuel Pellets
461-1-30	1	Universal Recycling Services Corp.	Glen Cove	NY	Wood	Mulch; Landscape
495-9-05	9	U.S. Carbon Corporation	Ellicottville	NY	Wood	Carbon (Activated)
497-9-07	9	Bush Industries Inc.	Jamestown	NY	Wood	Fuel; Particle Board
523-9-15	9	CanFiber U.S. Ltd.	Newport Beach	CA	Wood	Fiberboard (Medium Density)
529-4-47	4	Good Riddance Inc.	Alplaus	NY	Wood	Fuel
639-8-51	8	AES Hickling; L.L.C.	Corning	NY	Wood	Fuel
640-8-62	8	AES Greenidge; L.L.C.	Dresden	NY	Wood	Fuel
677-0-00	4	New York State Canal Corporation	Albany	NY	Wood	Mulch; Bed; Fuel; Erosion;Bulk
768-4-01	4	City of Albany; Dept. of Gen. Services	Albany	NY	Wood	Base; Road
850-5-48	5	Finch, Pruyn, & Co., Inc.	Glens Falls	NY	Wood	Fuel
719-4-01	4	Windows; Doors & More	Delmar	NY	Wood (Adulterated)	Mulch
402-7-09	7	AES Jennison; L.L.C.	Bainbridge	NY	Wood (co-fired with Coal)	Fuel
643-8-51	8	AES Hickling; L.L.C.	Corning	NY	Wood (co-fired with Coal)	Fuel
644-8-62	8	AES Greenidge; L.L.C.	Dresden	NY	Wood (co-fired with Coal)	Fuel
494-8-62	8	AES Greenidge; L.L.C.	Dresden	NY	Wood (Particle & Fiber Board)	Fuel
655-7-09	7	LOK-N-LOGS; Inc.	LaFayette	NY	Wood (Tim-bor Treated)	Fiberboard (Medium Density)
379-3-56	3	Trolley Museum of New York	Kingston	NY	Wood (Treated-Telephone Pole)	Wood (Treated-Elecitic Pole)
724-6-33	6	Oneida-Herkimer Solid Waste Authority	Utica	NY	Wood (Unadulterated Pallets)	Fuel/Landscape Mulch
758-6-33	9	Pallet Services; Inc.	Tonawanda	NY	Wood (Unadulterated Pallets)	Fuel
761-7-34	7	McIntosh Box and Pallet	East Syracuse	NY	Wood (Unadulterated Pallets)	Fuel
762-6-33	7	McIntosh Box and Pallet	East Syracuse	NY	Wood (Unadulterated Pallets)	Fuel
707-7-09	7	LOK-N-LOGS; Inc.	LaFayette	NY	Wood Chips w/ Sodium Borate	Bedding (Animal)
575-9-05	9	Cherry Creek Woodcrafters; Inc.	South Dayton	NY	Wood Dust (MDF)	Fuel
576-9-05	9	Cherry Creek Woodcrafters; Inc.	South Dayton	NY	Wood Dust (MDF)	Bedding (Animal - Farm)
603-4-13	4	Indian Country; Inc.	Deposit	NY	Wood Dust (MDF)	Fuel
279-9-15	9	Myco Enterprises	Albion	NY	Wood/Paper	Bedding (Animal)
204-5-17	5	J. & J. Dowd Wood Products; Inc.	Chateaugay	NY	Wood; Ash (Wood)	Fuel; Fertilizer
770-5-10	5	New England Waste Services of NY; Inc.	Morrisonville	NY	Wood;Brick (Refactory)	Base(sub); road
030-0-00	OS	Monroe Co. Cornell Cooperative Extension	Rochester	NY	Yard Waste	Land Application
116-8-28	OS	Monroe Co. Cornell Cooperative Extension	Rochester	NY	Yard Waste	Land Application
194-9-15	9	Schichtel's Nursery	Orchard Park	NY	Yard Waste	Land Application
291-1-52	1	Association for Resource Conservation	Centerport	NY	Yard Waste	Land Application

APPENDIX F

AUTUMN HEIGHTS ANALYTICAL DATA

Table F-1

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Volatile Organic Compounds (VOCs) in Slag/Fill
Test Results in milligrams per Kilogram (mg/Kg) or parts per million (ppm)

Constituent	Sample ID						Part 375 Restricted Use Soil Cleanup Objectives (SCOs)	
	Bourne TP-2a (5')	B-33 (4.0'-8.0')	B-34 (4.0'-5.5')	B-37 (4.0'-8.0')	BS-39 (6.0'-6.7')	TP-7 (1.0')	Protection of Public Health - Restricted Residential Use	Protection of Groundwater
	Slag (color unknown)	Black & Gray Slag	Red Slag	Black Slag	Gray Slag	Red Slag		
	1/11/2000	2000	2000	2000	11/10/2006	9/9/2008		
Acetone	ND<0.726 U	NA	NA	NA	0.008 J	ND<0.0401 U	100	0.05
Benzene	**3.14**	ND<0.0101 U	ND<1.33 U	ND<0.0101 U	ND<.005 U	ND<0.00802 U	4.8	0.06
Carbon disulfide	ND<0.726 U	NA	NA	NA	0.001 J	ND<0.00802 U	--	--
Ethylbenzene	**7.76**	ND<0.0101 U	ND<1.33 U	ND<0.0101 U	ND<.005 U	ND<0.00802 U	41	1
Isopropylbenzene	1.68	ND<0.0101 U	ND<1.33 U	ND<0.0101 U	ND<.005 U	ND<0.00802 U	--	--
Naphthalene	9.03	ND<0.0503 U	7.15	ND<0.0507 U	ND<.005 U	ND<0.00802 U	100	12
n-Propylbenzene	**6.77**	ND<0.0101 U	ND<1.33 U	ND<0.0101 U	ND<.005 U	ND<0.00802 U	100	3.9
Methylene chloride	ND<0.726 U	NA	NA	NA	0.013	ND<0.0201 U	100	0.05
Toluene	**0.992**	ND<0.0101 U	ND<1.33 U	ND<0.0101 U	ND<.005 U	ND<0.00802 U	100	0.07
1,2,4-Trimethylbenzene	**48**	ND<0.0101 U	**32.3**	ND<0.0101 U	ND<.005 U	ND<0.00802 U	52	3.6
1,3,5-Trimethylbenzene	**13.5**	ND<0.0101 U	ND<1.33 U	ND<0.0101 U	ND<.005 U	ND<0.00802 U	52	8.4
sec-Butylbenzene	1.21	ND<0.0101 U	ND<1.33 U	ND<0.0101 U	ND<.005 U	ND<0.00802 U	100	11
p-Isopropyltoluene	0.815	ND<0.0101 U	ND<1.33 U	ND<0.0101 U	ND<.005 U	ND<0.00802 U	--	--
m,p-Xylene	**25.6**	ND<0.0101 U	ND<1.33 U	ND<0.0101 U	ND<.005 U	0.0114	100	1.6
o-Xylene	**5.91**	ND<0.0101 U	ND<1.33 U	ND<0.0101 U	ND<.005 U	ND<0.00802 U	100	1.6

Notes:

VOC analysis by United States Environmental Protection Agency (USEPA) Method 8260B
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Restricted Residential Use.
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Groundwater
NA denotes value not available.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.
J - Denotes an estimated value.

Table F-2

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Semivolatile Organic Compounds (SVOCs) in Slag/Fill
Test Results in milligrams per Kilogram (mg/Kg) or parts per million (ppm)

Constituent	Soil Sample Identification						Part 375 Restricted Use Soil Cleanup Objectives (SCOs)	
	Bourne TP-1 (0-2')	TP-6 (4.0')	TP-10 (3.0')	BS-21 (4.0'-4.5')	BS-31 (2.0'-2.9')	TP-7 (1.0')		
	Slag (color unknown)	White & Blue Slag	Red & Blue Slag	Blue/Green Slag	White, Brown, & Black Slag	Red Slag	Protection of Public Health - Restricted Residential Use	Protection of Groundwater
	1/11/2000	2/28/2000	2/28/2000	11/10/2006	11/10/2006	9/9/2008		
Anthracene	ND<0.305 U	ND<0.368 U	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	100	1000
Acenaphthylene	ND<0.305 U	ND<0.368 U	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	100	107
Acenaphthene	ND<0.305 U	ND<0.368 U	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	100	98
Benzo (a) anthracene	ND<0.356 U	1.99	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	1	1
Benzo (a) pyrene	ND<0.356 U	1.7	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	1	22
Benzo (b) fluoranthene	ND<0.356 U	3.79	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	1	1.7
Benzo (g,h,i) perylene	ND<0.356 U	2.24	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	100	1000
Benzo (k) fluoranthene	ND<0.356 U	26.1	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	3.9	1.7
Chrysene	ND<0.356 U	19.5	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	3.9	1
Dibenz(a,h)anthracene	ND<0.356 U	0.63	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	3.3	1000
Fluoranthene	ND<0.356 U	2.59	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	100	1000
Fluorene	ND<0.356 U	ND<0.368 U	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	100	386
Indeno (1,2,3-cd) pyrene	ND<0.305 U	2.2	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	0.5	8.2
Naphthalene	ND<0.305 U	ND<0.368 U	ND<0.318 U	ND<0.350 U	ND<1.90 U	0.0114	100	12
Phenanthrene	ND<0.305 U	0.554	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	100	1000
Pyrene	ND<0.305 U	2.97	ND<0.318 U	ND<0.350 U	ND<1.90 U	ND<0.372 U	100	1000
Total SVOCs	None Detected	23.194	None Detected	None Detected	None Detected	0.0114		

Notes:

SVOC analysis by United States Environmental Protection Agency (USEPA) Method 8270C.
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Restricted Residential Use.
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Groundwater
ND<372 U - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.
J - Denotes an estimated value.

Table F-3

Existing Data Consolidation
Port of Rochester
Rochester, New York

Summary of Detected Metals in Slag/Fill
Test Results in milligrams per Kilogram (mg/Kg) or parts per million (ppm)

USEPA TAL Metals	Sample Identification																				Part 375 Restricted Use Soil Cleanup Objectives (SCOs)	
	Bourne TP-1	Bourne TP-2	TP-6	TP-6	TP-9	TP-10 (3')	TP-15 (6-8')	TP-18	B-21 (1.0'-4.0')	B-34 (4.0'-5.5')	BS-12 (0.4'-0.6')	BS-21 (4.0'-4.5')	BS-31 (2.0'-2.9')	BS-34 (4.0'-5.5')	BS-39 (6.0'-6.7')	TP-7 (1.0')	Phase I Slag (a)	Phase I Slag (b)	Phase II Slag		
	Slag (color unknown)	Slag (color unknown)	White Slag	Black Slag	Red Slag	Red & Blue Slag	White Slag	Green Slag	Blue Slag	Red Slag	Gray Slag	Blue/Green Slag	White, Brown, and Black Slag	Red Slag	Gray Slag	Red Slag	Blue/Green Slag	Blue/Green Slag	Blue/Green Slag	Protection of Public Health - Restricted Residential Use	Protection of Groundwater
	1/11/2000	2/28/2000	2/28/2000	2/28/2000	2/28/2000	2/29/2000	2/29/2000	2/29/2000	8/22/2000	8/23/2000	11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006	9/9/2008	7/1/2009	7/6/2009	6/29/2009		
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	44,400 E	9,870	27,300 E	23,900 E	20,600 E	--	--
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND <14.7 U	NA	NA	NA	ND<151 U	ND<6.62 U	0.56 N,E	0.61 N,E	0.46 N,E	--	--
Arsenic	20.6	0.875	ND<6.23 U	17.6	ND<4.9 U	51.10	7.12	7.12	16.5	ND<0.367 U	5.1	ND<2.0 U	18.5	ND<0.367 U	ND<20.1 U	10.9	5.1 E	7.8 E	8.3 E	16	16
Barium	188	511	81	193	177	22.2	657	ND<4.40 U	72.9	12.7	NA	NA	NA	12.7	269 E	156.0	171 E	120 E	124 E	400	820
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.70 E	NA	NA	NA	4.2 E	1.39	4.6 E	2.9 E	2.9 E	72	47
Cadmium	191	2.84	ND<0.623 U	ND<0.535 U	ND<0.49 U	0.604	ND<0.382 U	80.2	ND<0.554 U	13.1	0.32	ND<0.20 U	1.8	13.1	ND<2.0 U	1.830	ND<0.014 N,E	0.048 N,E	0.67 N,E	4.3	7.5
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	202,000	54,300	251,000*	243,000	166,000	--	--
Chromium	43	ND<1.96 U	2.24	11.8	3.04	3.72	17.8	ND<0.440 U	7.41	9.38	9.0 E	1.4 E	39.0 E	9.38	ND<5.0 U	14.4	3.1 E	5.7 E	12.1 E	290	19
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND<5.0 U	6.3	ND<0.040 E	ND<0.040 E	1.1 E	--	--
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16.1	NA	NA	NA	ND<10.1 U	17.9	3.3* E	7.7 E	17.4 E	270	1720
Total Cyanide	ND<1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11,000	NA	NA	NA	27	40
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,780 N,E	50,600	3,610*	7,170	51,900	--	--
Lead	191	ND<9.80 U	ND<0.623 U	4.18	ND<0.49 U	5.33	3.29	ND<0.440 U	80.9	15	38.1 E	NA	NA	15	ND<10.1 U	35.9	3.3 E	4.9 E	15.1 E	400	450
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28,600 E	13,200	26,100* E	39,800 E	18,200 E	--	--
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	422 E	816	256	312	634	2000	2000
Mercury	ND<0.103 U	ND<0.0690 U	ND<0.0878 U	0.0774	ND<0.098 U	0.240	ND<0.059 U	ND<0.0760 U	ND<0.045 U	0.088	0.063	ND<0.019 U	0.025	0.088	ND<0.016 U	0.0145	ND<0.0057 U	0.0090	0.0280	0.81	0.73
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.0 E	NA	NA	NA	ND<5.0 U	14.3	4.1 E	5.6 E	12.0 E	310	130
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7,060 N,E	1,510	2,290 E	2,500 E	2,250 E	--	--
Selenium	ND<1.08 U	ND<0.980 U	ND<6.23	ND<5.35 U	ND<4.9 U	ND<5.03 U	ND<3.82 U	ND<4.40 U	1.31	ND<0.367 U	ND <3.9 U	NA	NA	ND<0.367 U	ND<40.2 U	ND<0.552 U	1.1 N	1.3 N	ND<0.77 N	180	4
Silver	ND<1.08 U	ND<0.980 U	3.74	ND<2.15 U	ND<1.96 U	ND<2.01 U	ND<1.53 U	1.76	ND<1.11 U	1.79	ND <0.53 U	NA	NA	1.79	ND<5.0 U	2.4	ND<0.090 E	ND<0.091 E	ND<0.078 E	180	8.3
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND<1,410 U	489	1,230	1,160	1,290	--	--
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND <5.9	NA	NA	NA	ND<60.4 U	ND<0.662 U	2.3 N	1.8 N	0.55 N	--	--
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.800 N,E	25.5	6.3 E	12.1 E	17.8 E	--	--
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	160	NA	NA	NA	ND<10.1 U	111	3.1 N,E	7.3 N,E	47.7 N,E	10000	2480

Notes:

TAL Metals analysis by United States Environmental Protection Agency (USEPA) Methods 6010 and 7471 (Mercury)
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Public Health - Restricted Residential Use.
Highlighted type denotes that the compound exceeds its associated 6 NYCRR Part 375-6.8(b) SCO - Protection of Groundwater
ND<372 U - Denotes the compound was not detected above the reported laboratory detection limit shown.
U - Denotes that the compound was not detected above the reported laboratory method detection limit.

City of Rochester

Office of the Commissioner
Department of Environmental Services
City Hall Room 300B, 30 Church Street
Rochester, New York 14614-1290
www.cityofrochester.gov

Division of
Environmental Quality

January 9, 2012

Mr. Gary Maslanka, P.E.
New York State Department of Environmental Conservation
6274 East Avon-Lima Road
Avon, New York 14414

Re: Beneficial Use Determination (BUD) Petition for Reuse of Iron Slag
Port of Rochester, Rochester, New York
Response to 12-27-2012 email questions

Dear Mr. Maslanka:

This letter is in response to your email of 12-27-2012 and our subsequent telephone conversation regarding additional details about the volumes of the proposed NYSDOT specifications identified in the letter of September 19, 2012 from the City Engineer to you. In your email you posed the following questions:

> "…*it is not clear to me what gradation specification the slag will be processed to prior to storage? and eventual reuse. Do you plan to process know volumes of slag into type 1, type 2, type 3, and type 4, aggregate then store that material for later use at one of the listed locations? If yes this approach will work and I just need to get a rough estimate on the various volumes. If not I will need a bit more information on your plan for processing and storing the material."*

We have proposed producing 304.15 Subbase Course, Optional Type, 203.03 Embankment In Place, or 203.21 Select Structural Fill from the slag material excavated from the site. The production of one or more of these specifications from excavated slag will take place on the site before transportation to one of the proposed off-site staging locations.

The City's determination regarding which DOT specifications will be produced and in what volumes is very much cost dependent. Of the three specifications that we have proposed under the BUD we anticipate that 304.15 Subbase Course, Optional Type involve the most handling and would have the most cost to produce. The City currently intends to decide which DOT specifications to produce and the approximate volumes after it receives bids from the contractor. No processing of slag will take place until after a notice to proceed is issued to the selected contractor. The notice to proceed will be issued only after bids are opened and reviewed and the contract is awarded. The City will contact you prior to the issuance of the notice to proceed regarding its determination of the slag specification(s) that will be produced. Also if at some point after the BUD approval is issued by the NYSDEC the City determines that a different special specification would be desirable to produce we will contact your office with information about the proposed specification and use. We understand that the BUD would need to be modified prior to include the special specification and slag product use prior to production.

Thank you for your continued assistance this matter. Please contact us if you require any additional information in order to approve our BUD application.

Sincerely,

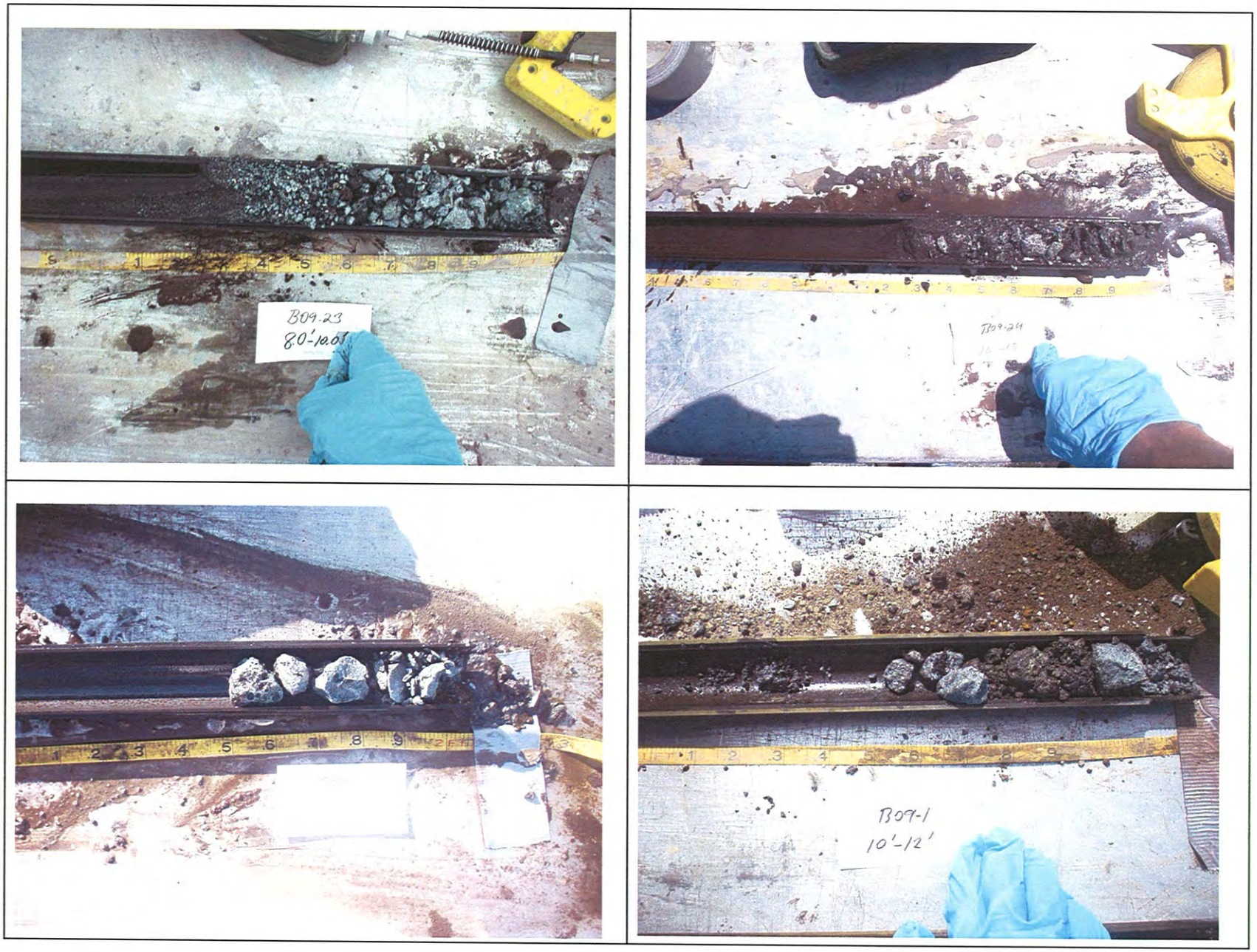
Mark Gregor
Manager, Division of Environmental Quality

C: T. Caffoe, NYSDEC Region 8
P. Holahan
J. McIntosh, City Engineer.
T. Hubbard W/O Enc.
T. Haley, NYSDEC
D. Porter, LaBella Associates
P. Werthman, Benchmark

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 2

Photographs of Slag Fill



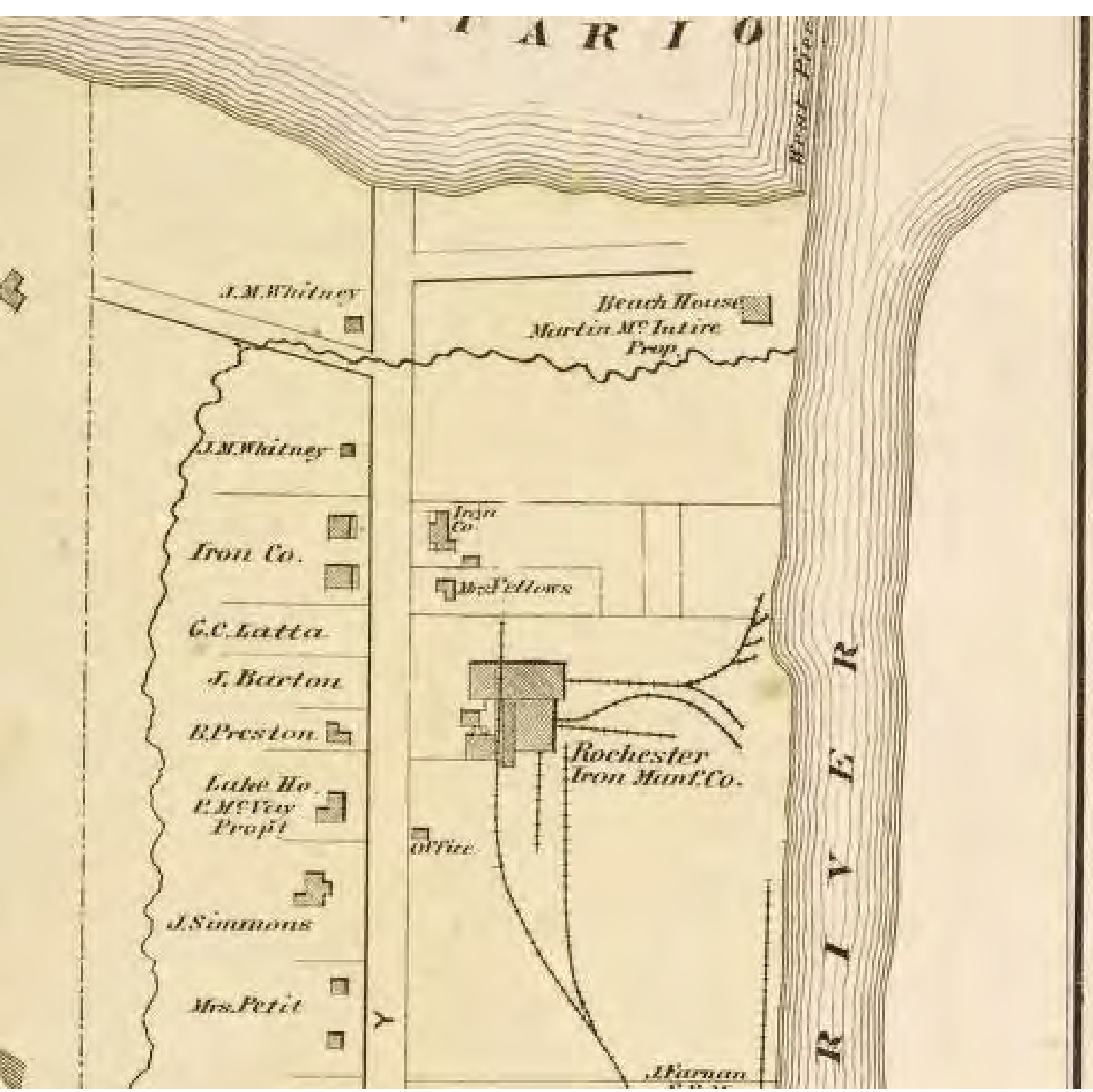
Solid Waste Control Plan
Proposed Marina
Port of Rochester,Rochester, New York 14606

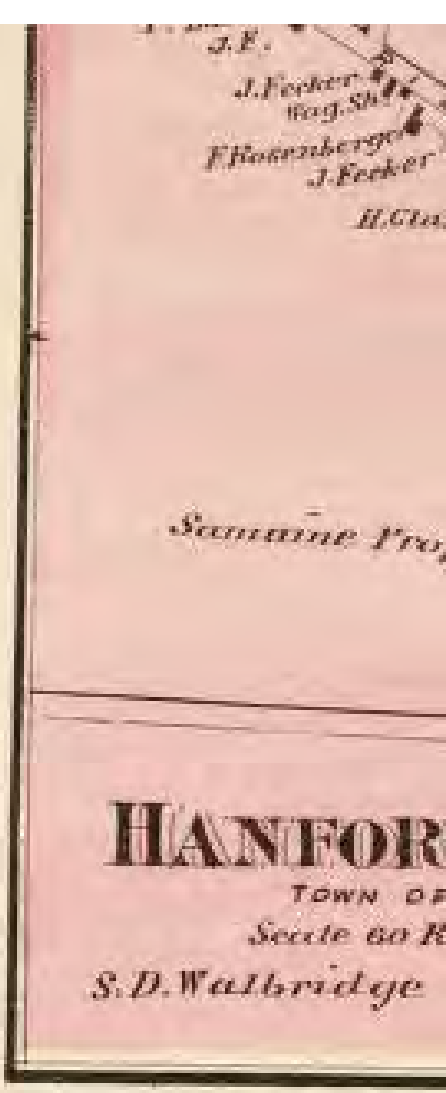
LABELLA

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 3

Site Specific Sanborn Mapping





Charlott

Business N

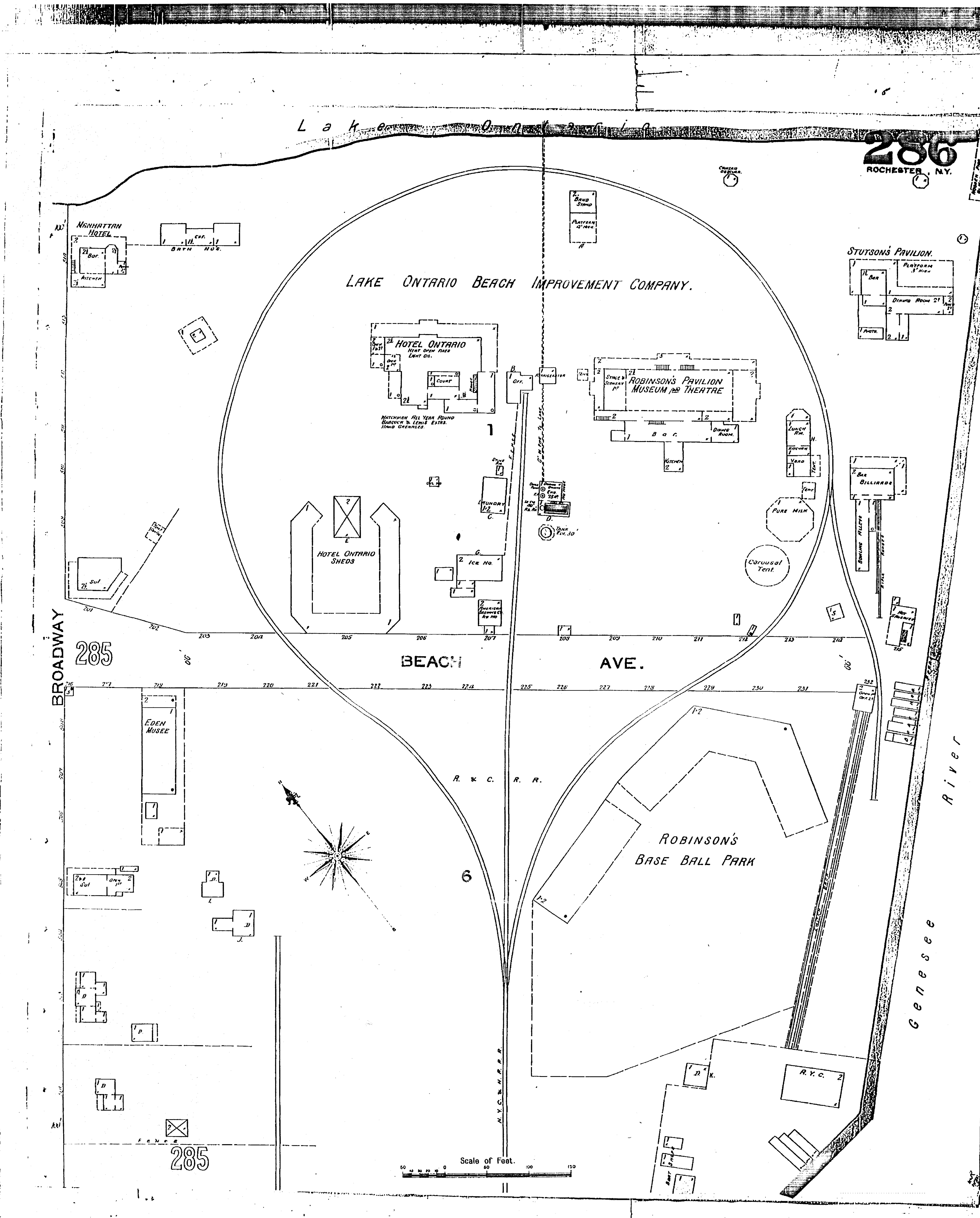
Hotels

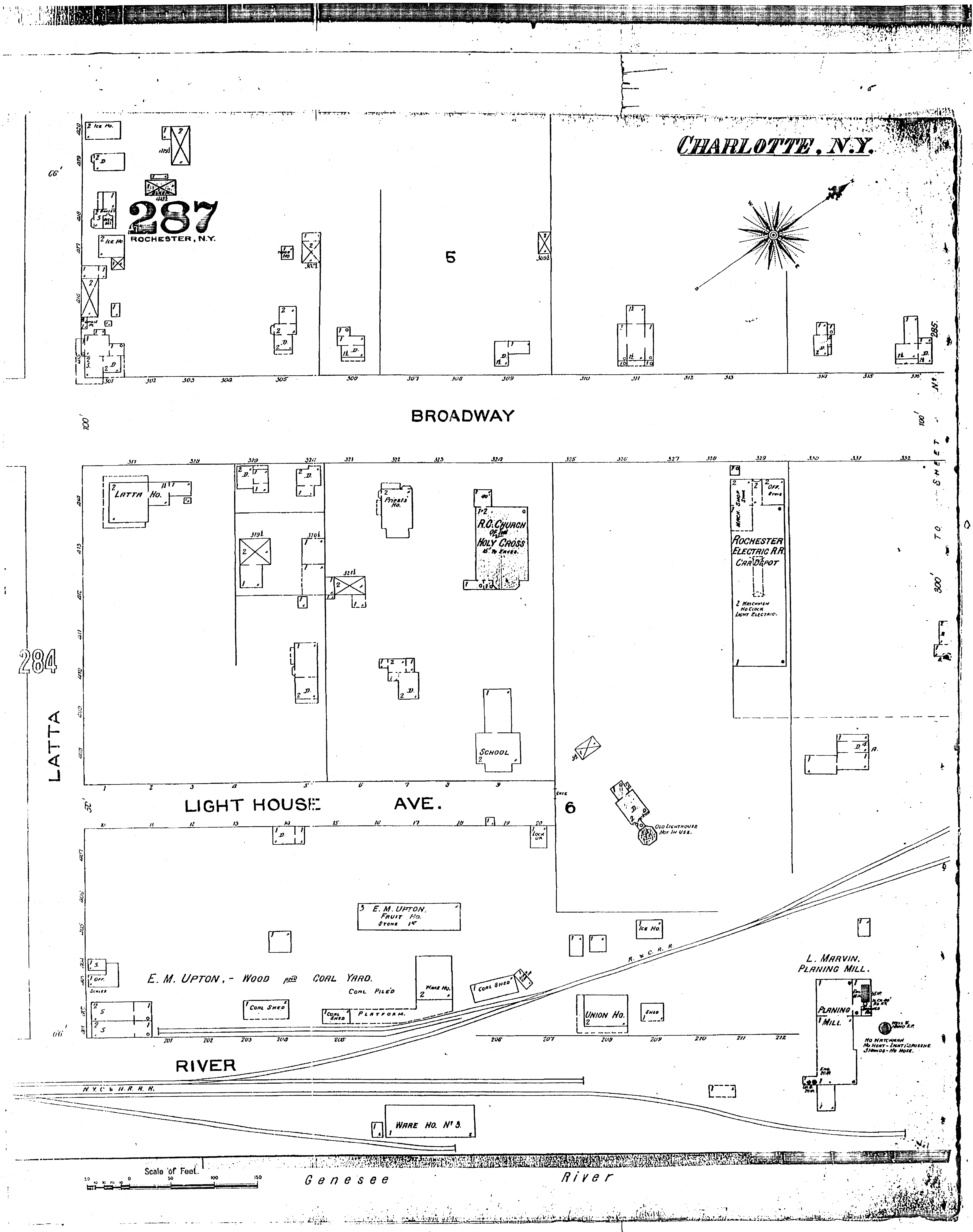
O'Conner C..Propr of "Steamboat
Seibel Joseph..Propr of "United
Dealer in Groceries, Provisio
fectioner
Wolf Chas. G..Propr of "Union Ho

Miscellaneo

Davis D..Police Justice

1.





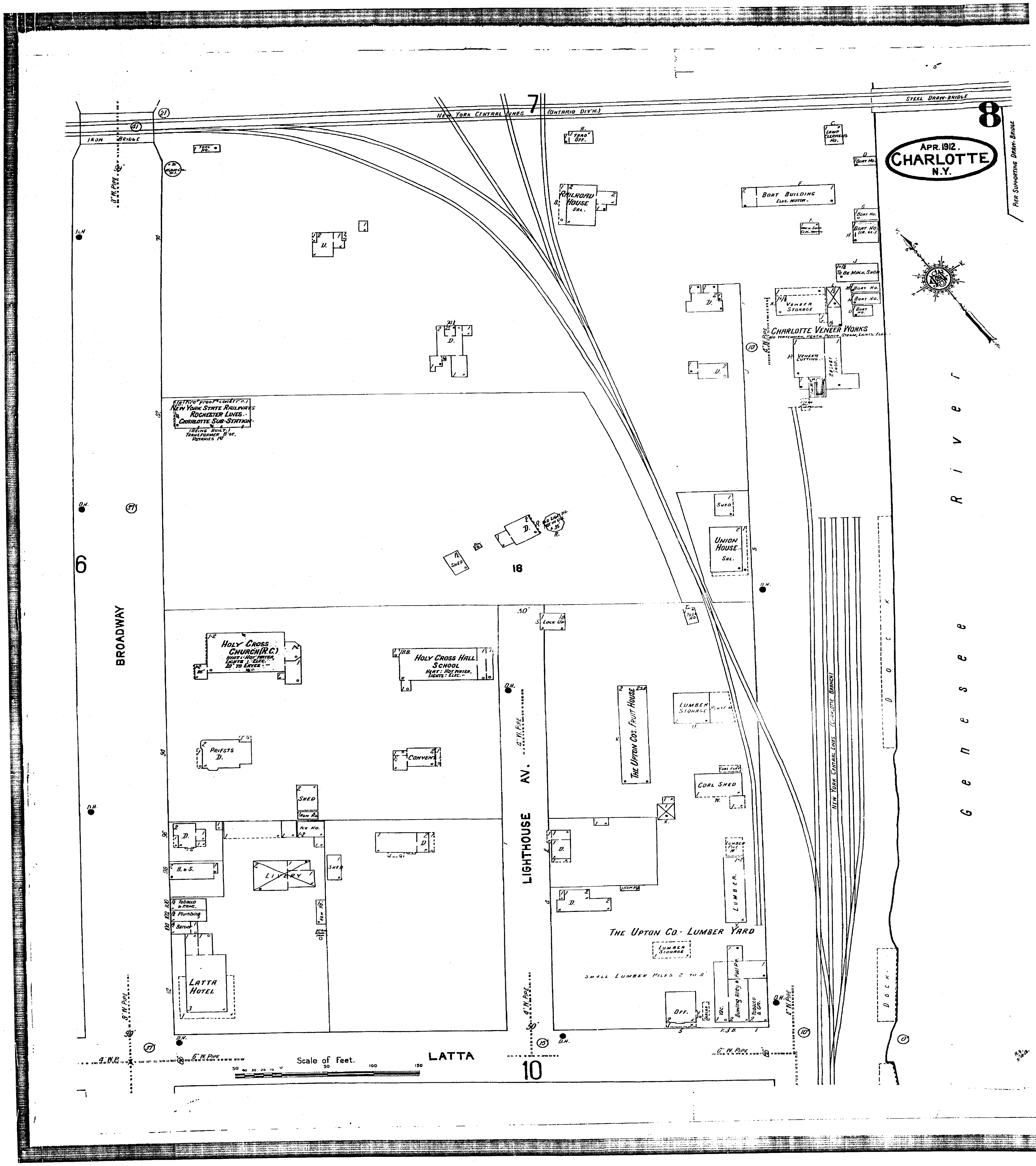
APR. 1912.
CHARLOTTE
N.Y.

GENESEE AV.
BEACH AV.
BROADWAY
8" W. PIPE.
6" W. PIPE.
O.H.
RIGHT OF WAY
(ELECTRIC R. R.)
VACANT.
VENETIAN CANALS.
VIRGINIA REEL
INCLINE COASTER.
BATH HOUSES.
OFFICE
DIVING PLATFORM
DANCE HALL
JAPANESE BAZAAR
BOOTH.
ONTARIO BEACH HOTEL
HOTEL ONTARIO
HEAT: GRATES.
17
BAND STAND
& AMUSEMENT COMPANY.
OFFICES.
PAVILION.
ELECTRIC FOUNTAIN BOARD.
STAGE.
HILARITY HALL.
"THE WAVES"
INCLINE.
CAROUSEL
VAUDEVILLE
PLATFORM 4' HIGH.
JAPANESE VILLAGE.
STEEL CABLE TOWER FOR CABLE CROSSING RIVER.
RESTAURANT.
MIDWAY
SCENIC RAILWAY TUNNELS.
GERMAN VILLAGE.
PAVILION.
PARK HOTEL.
AUTOMATIC VAUDEVILLE.
MOTION PICTURES.
FOOLISH HOUSE.
DIVING GIRLS.
PHOTO.
ROLL A BALL.
PALMISTRY.
SCENIC RAILWAY.
SCENIC RAILWAY
EXIT FROM TRAINS.
N.Y.C. LINES. (CHARLOTTE BRANCH.)
TURN TABLE.
ENTRANCE TO TRAINS.
18
BOAT HOUSES.
FERRY HO.
3" W. PIPE. TEMPORARY SUPPLY FOR SUMMERVILLE
Genesee River.
Lake Ontario.

NIGHT WATCHMAN. - ECO. MAGNETO CLOCK. - 9 STATIONS. - HOURLY ROUNDS. - PARK OPEN IN SUMMER ONLY. - DAY WATCHMAN WHEN PARK IS CLOSED, BUT CLOCK NOT USED. - ELECTRIC POWER & LIGHTS. - COAL GRATES FOR HEAT IN HOTEL. - HYD. & HOSE AS SHOWN. - IN WINTER ALL HOSE IS STORED IN OFFICE & DYES. - CHEM WAGON SHOWN IS NOT CHARGED IN WINTER. - 52 CHEM EXTGRS. DISTRIBD. IN THE CONCESSIONS DURING SEASON. - INFORMATION AS TO FIRE APP. OBTAINED FROM SUPT. AS SURVEY WAS MADE IN WINTER.

Scale of Feet.
30 40 30 20 10 0 50 100 150

E.G. 5-19-12.



APR. 1911
CHARLOTTE
N.Y.

BROADWAY

GENESEE FURNACE CO.
IRON FURNACE
NIGHT & SAT TURNS - NO HEAT -
POWER: STEAM - FUEL: COAL -
LIGHTS: ELEC. JEP - HYDS & HOSE AS SHOWN. -

CAST HO.
CURB. IN. UN STEEL FR.

STOVES

TRESTLE TO STOVES

(I. CL.)

SHED

BF. STILL & MACHINE SHOP

1 PUMP HO.

WESTERN GROUNDS

ROCHESTER YACHT CLUB

NEW YORK CENTRAL LINES (CHARLOTTE BRANCH)

GENESEE RIVER

PIER SUPPORTING DRAW BRIDGE

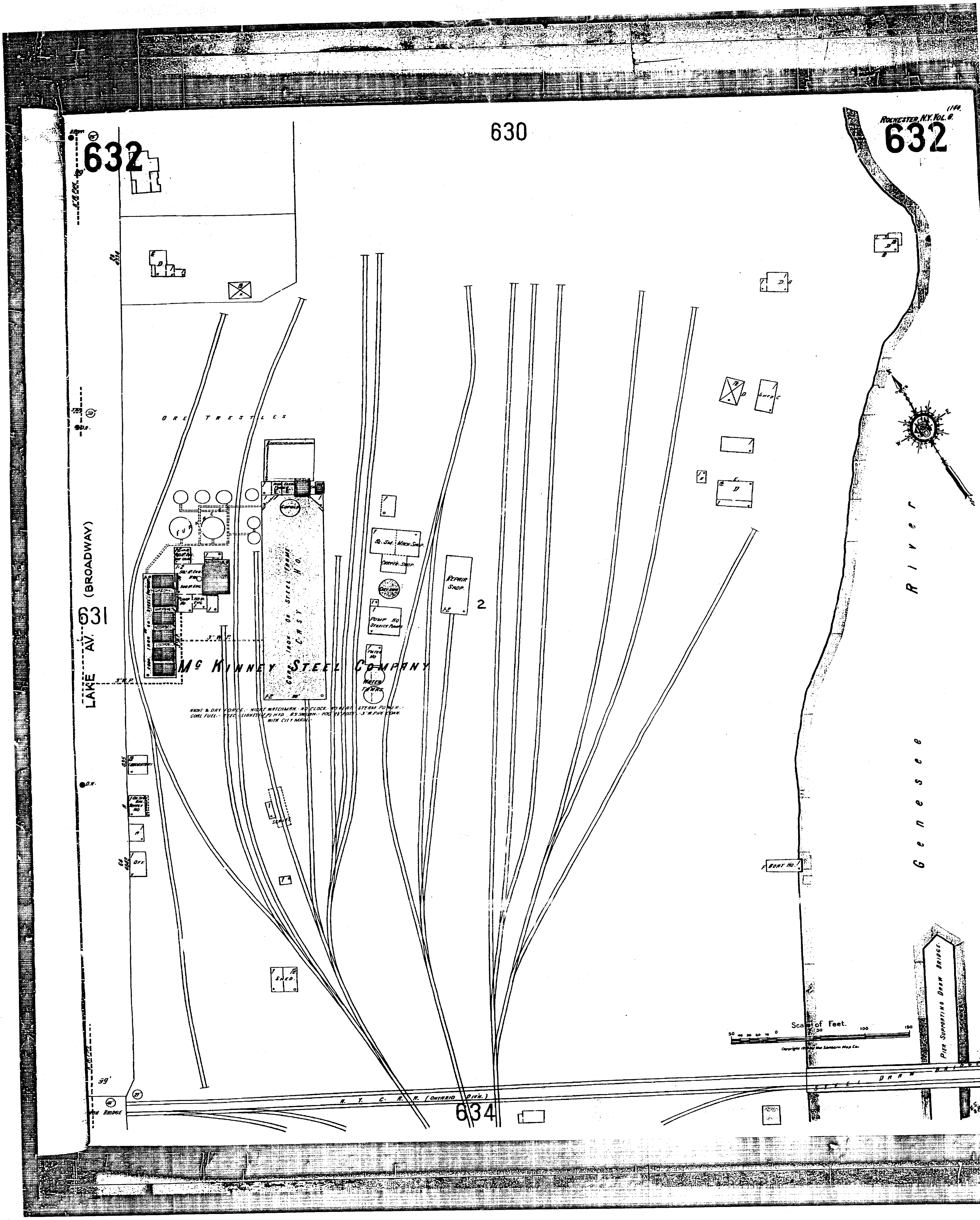
STEEL DRAW BRIDGE

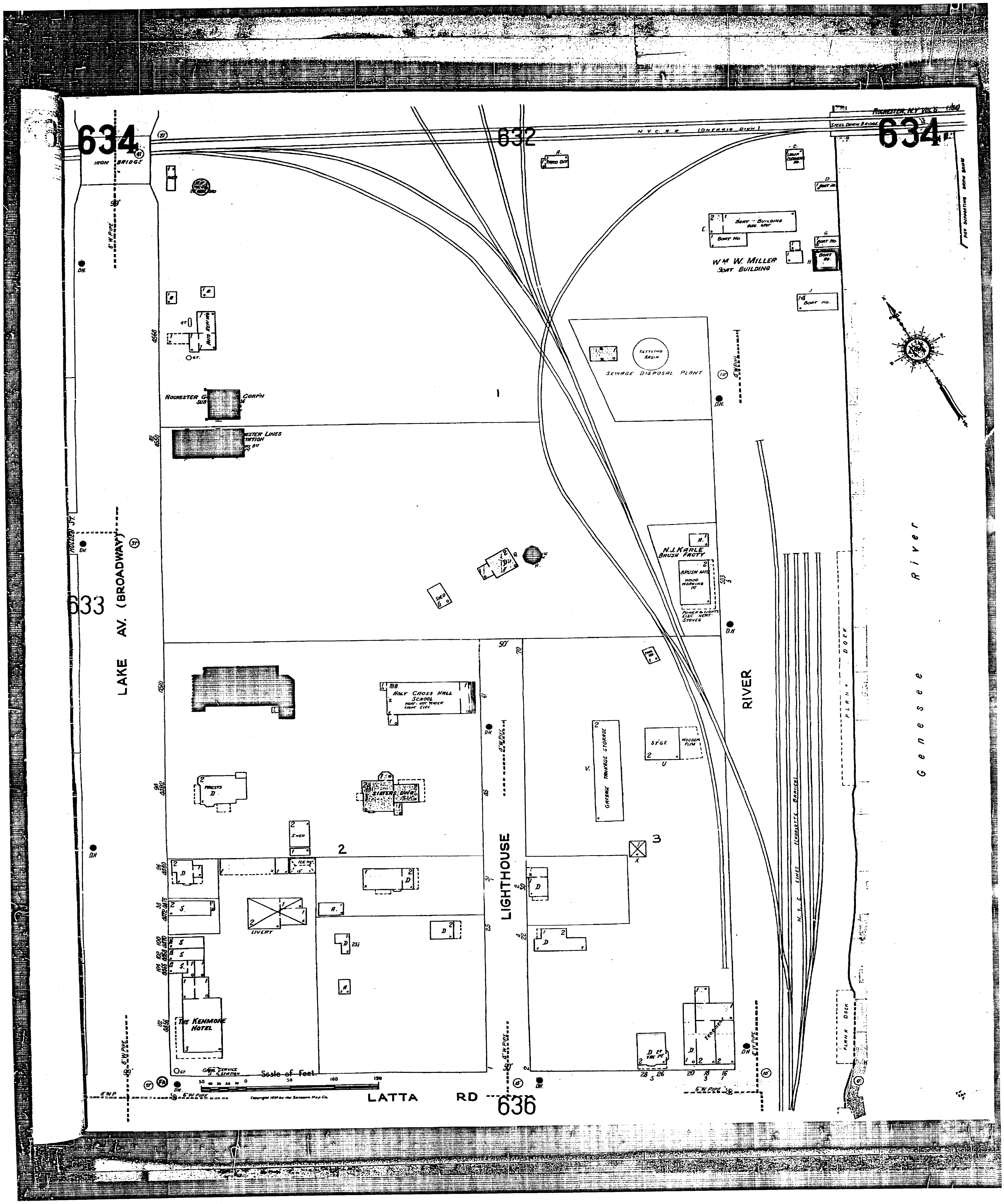
NEW YORK CENTRAL LINES (ONTARIO DIVISION)

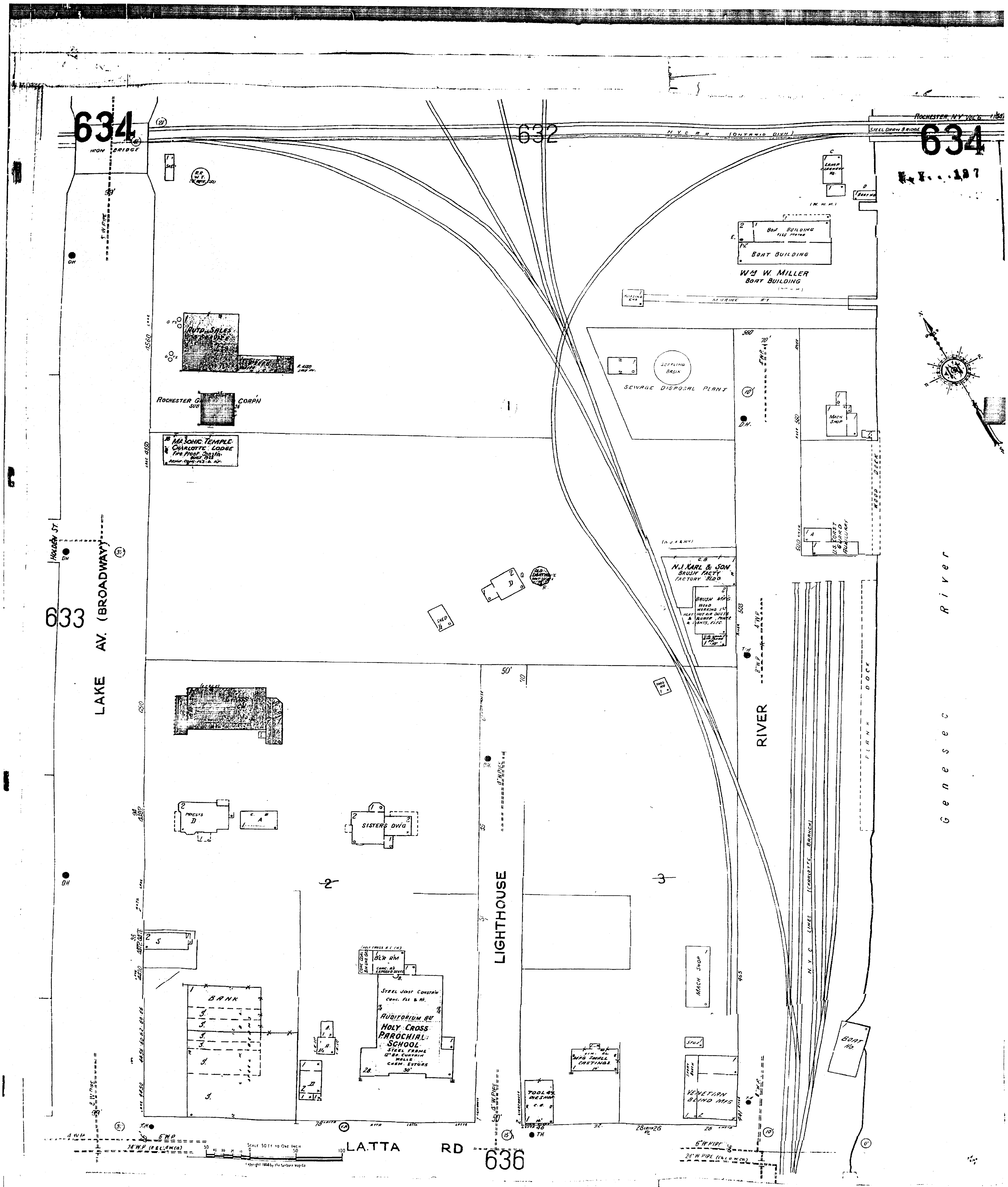
TWIN BRIDGE

B.&.M. PIPE

Scale of Feet.
50 40 30 20 10 0 50 100 150







ROCHESTER, N.Y. VOL. 8. 1946

632

N.Y. . . 127

632

631

634

LAKE AV. (BROADWAY)

CITY OF ROCHESTER
DEPT OF COMMERCE
MUNICIPAL DOCK TERMINAL BLDG

W. HO. NO 1

W. HO. NO 2

MUNICIPAL DOCK

Genesee River

PIER SUPPORTING DRAW BRIDGE

IRON BRIDGE

N. Y. C. R. R. (ONTARIO DIV.)

8" W PIPE

6" W PIPE

Scale of Feet.

630

631

634

CITY OF ROCHESTER
DEPT OF COMMERCE
MUNICIPAL DOCK TERMINAL BLDG

MUNICIPAL DOCK

LAKE AV.

A

B

2

W 110 NO 2.

NC

W NO NO 3

6" W PIPE

8" W PIPE

4660

4652

99'

IRON BRIDGE

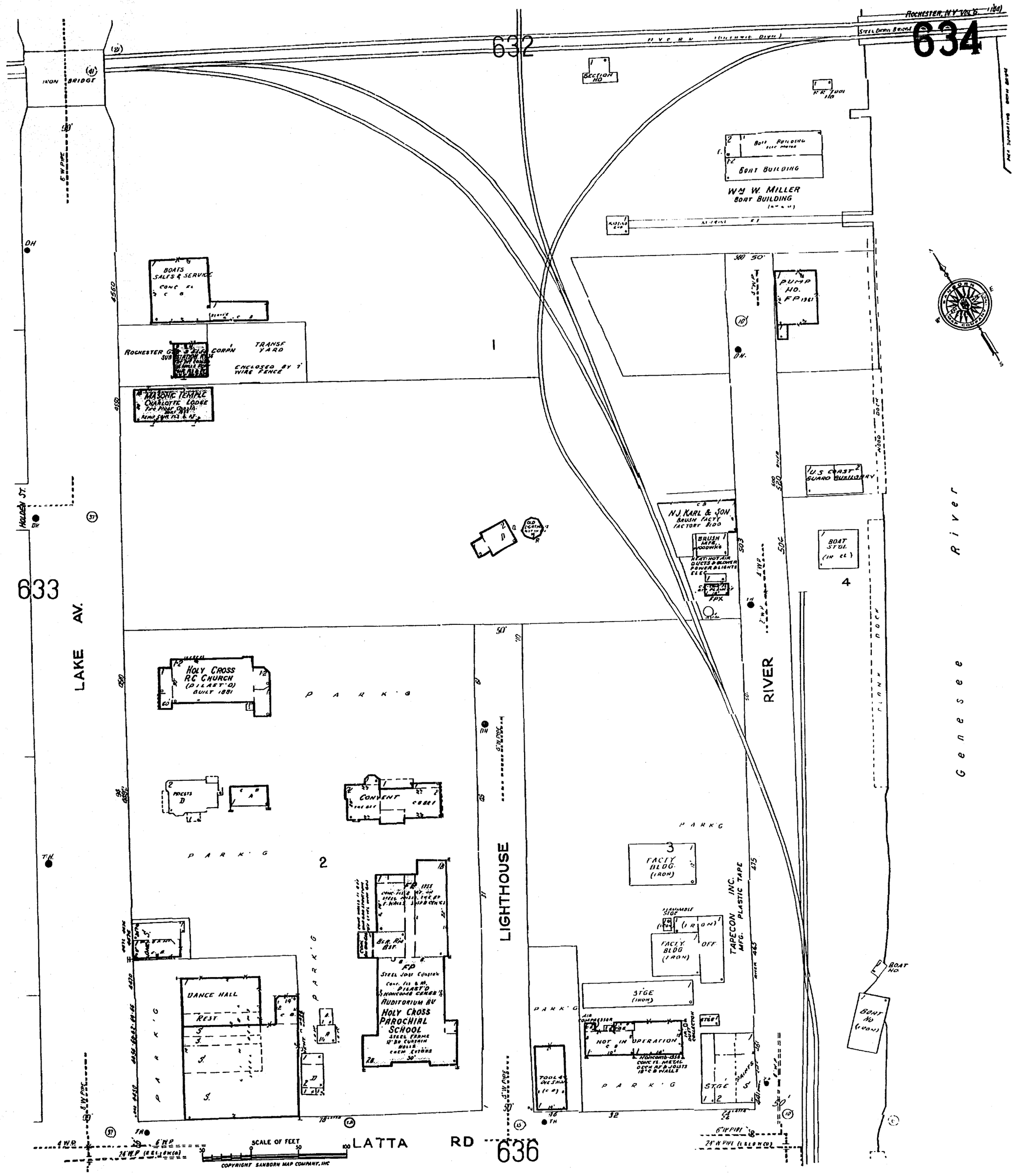
N. Y. C. R. R. (ONTARIO DIV.)

STEEL DRAW BRIDGE

PIER SUPPORTING DRAW BRIDGE

Genesee River

SCALE OF FEET
50 0 50 100



LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 4

Example of Material Tracking Spreadsheet

PORT OF ROCHESTER ENVIRONMENTAL MANAGEMENT PLAN
WASTE STREAM TRACKING FORM

	DATE	TRUCKING COMPANY	TRUCK I.D.	TRUCK LISCENSE PLATE NO.	MANIFEST NO.	TYPE OF WASTE STREAM	WASTE DISPOSAL LOCATION	TIME TRUCK OFF-SITE	LANDFILL TICKET NO.
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

SHEET ____ OF ____

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 5

Community Air Monitoring Plan
Marina Development Site; Port of Rochester

Community Air Monitoring Plan
Port of Rochester
Marina Development Project

Location:

Port of Rochester
Rochester, New York

Prepared for:

City of Rochester
Division of Environmental Quality
30 Church Street, Room 300B
Rochester, New York 14614

LaBella Project No. 210660

March 2013

Community Air Monitoring Plan
Port of Rochester
Marina Development Project

Location:

Port of Rochester
Rochester, New York

Prepared for:

City of Rochester
Division of Environmental Quality
30 Church Street, Room 300B
Rochester, New York 14614

LaBella Project No. 210660

March 2013

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

TABLE OF CONTENTS

1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) has been prepared by LaBella Associates, P.C. (LaBella) on behalf of the City of Rochester Department of Environmental Quality (DEQ). This CAMP addresses potential volatile organic vapor and particulate emissions that may occur during the earthwork and construction activities at the Port of Rochester. The Port of Rochester encompasses approximately 26 acres in the City of Rochester, Monroe County, New York (see Figure 1) and is hereinafter referred to as the "Site."

Low levels of volatile organic compounds (VOCs), semi- volatile organic compounds (SVOCs), and metals have been detected in the soil, fill, and groundwater at the Site. The volatilization of organic compounds through disturbance of soil and groundwater at the Site can potentially result in nuisance odors or health threats to the neighborhood in the immediate vicinity of the Site. Inorganic compounds, present in dust, could potentially be disturbed during earthwork and construction activities. This CAMP describes daily air monitoring activities intended to identify and control environmental conditions presenting the potential for neighborhood exposure to ambient airborne hazards resulting from fugitive emissions during earthwork and construction activities at the Site.

Pursuant to the New York State Department of Environmental Conservation (NYSDEC) Technical Administrative Guidance Manual (TAGM) #4031 – *Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites, (HWR-89-4031),* this CAMP addresses methods that will be utilized to monitor particulate (dust) levels at the perimeter of, and within the work areas (excavation, soil staging, and soil grading areas) at the Site. If elevated levels of particulate emissions are encountered, this CAMP identifies the procedures that will be employed to mitigate elevated particulate levels.

Perimeter air monitoring procedures for VOCs are also included in this CAMP. VOC monitoring of the work areas (excavation, soil staging, and soil grading areas) of the Site will also be conducted per the Health and Safety Plan (HASP).

2.0 METHODOLOGY

This CAMP has been designed for earthwork and construction activities at the Site. The CAMP pertains primarily to earthwork activities that disturb man-made fill, soil, and groundwater at the Site. Previously completed subsurface investigations have indicated that petroleum soil and groundwater impairment is not significant or widespread at the Site. Petroleum-impacted soil and groundwater are located at intermittent locations across the Site, and fill materials containing metals are typically located throughout the Site. No significant vapor emissions are expected. Therefore, the following procedures will be implemented to monitor and, if necessary, mitigate the potential migration of fugitive particulate and/or VOC emissions at the Site.

2.1 Site Perimeter Monitoring

Each day of field work during the intrusive earthwork, a wind sock or flag will be used to monitor wind direction in the work areas (excavation, soil staging, and soil grading areas). Based upon daily wind conditions three (3) temporary monitoring points, one (1) upwind and two (2) downwind of the work areas, will be identified at the perimeter of the Site or work area.

Real-time particulate monitoring will be performed utilizing aerosol monitors capable of measuring particulate concentrations of particulate matter 10 micrometers (µm) in size (PM_{10}) or less. VOC monitoring will be performed with a photoionization detector (PID) equipped with a 10.6 eV lamp. Sufficiently wet Site conditions, such as after precipitation, may temporarily eliminate the need for particulate monitoring.

Each day, prior to the commencement of the intrusive earthwork work, background concentrations of particulate and VOCs will be measured and recorded as 5-minute averages at the identified upwind and downwind locations with the typical construction equipment engines and any other gas/diesel engines operating at the Site.

Afterward, measurements will be recorded at approximate 30-minute intervals. The recorded 5-minute averages will be used to determine the difference in value between upwind and downwind particulate and VOC concentrations. Work will be temporarily halted and engineering controls, as per Section 2.3 or 2.5, will be implemented if the difference between the upwind and downwind particulate measurements exceed 100 micrograms per cubic meter (µg/m³), or downwind VOC readings exceed upwind readings by 5 parts per million (ppm). It should be noted that downwind VOC readings will be adjusted for engine exhaust. If work is required to be temporarily halted, the Contractor will be required to implement dust suppression methods or other means to control dust and VOCs.

2.2 Work Area Monitoring

In addition to monitoring the perimeter of the work Site for VOCs and particulates, the immediate work areas (excavation, staging, and grading areas) will be monitored for VOCs as per the HASP developed for this project. Real time readings from the Work Area Perimeters will be observed and recorded as 5-minute averages at 30-minute intervals. If measurements exceed 25 ppm, as a 5-minute average, the requirements of Section 2.4 will be implemented.

2.3 Fugitive Dust Control

If the monitoring at the Site Perimeter, as described in Section 2.1, indicates an upwind/downwind difference in fugitive particulate emissions greater than 100 µg/m³, the Contractor will be required to implement dust control measures that may include the following methods:

- Application of water on haul roads
- Wetting equipment and excavation faces
- Restricting vehicle speeds to 10 mph
- Hauling material in properly tarped containers
- Spraying water in buckets during excavation and dumping
- Reducing excavation size and/or number of excavations

The Contractor will be required to have a water truck or equivalent equipment on-site for dust suppressions methods.

2.4 Minor Vapor Emission Response Plan

If any single Work Area Perimeter ambient air reading of total VOCs exceeds 25 ppm in the ambient air above background, as a 5-minute average, continuous Site Perimeter air monitoring shall be conducted at the downwind monitoring location.

Work activities may continue if total organic vapors in the ambient air are less than 25 ppm over background at the Work Area Perimeter, provided that the organic vapor levels measured at the Site Perimeter remain below 5 ppm over background.

Work activities may need to be modified as per the HASP if VOC measurements remain at 25 ppm or above in the ambient air at the Work Area Perimeter. See the HASP for further details.

All work activities must be halted and the Major Vapor Emission Response Plan (Section 2.5) will be implemented immediately if organic vapor levels exceed 5 ppm in the ambient air, as a 5-minute average, over background at the Site Perimeter.

2.5 Major Vapor Emission Plan

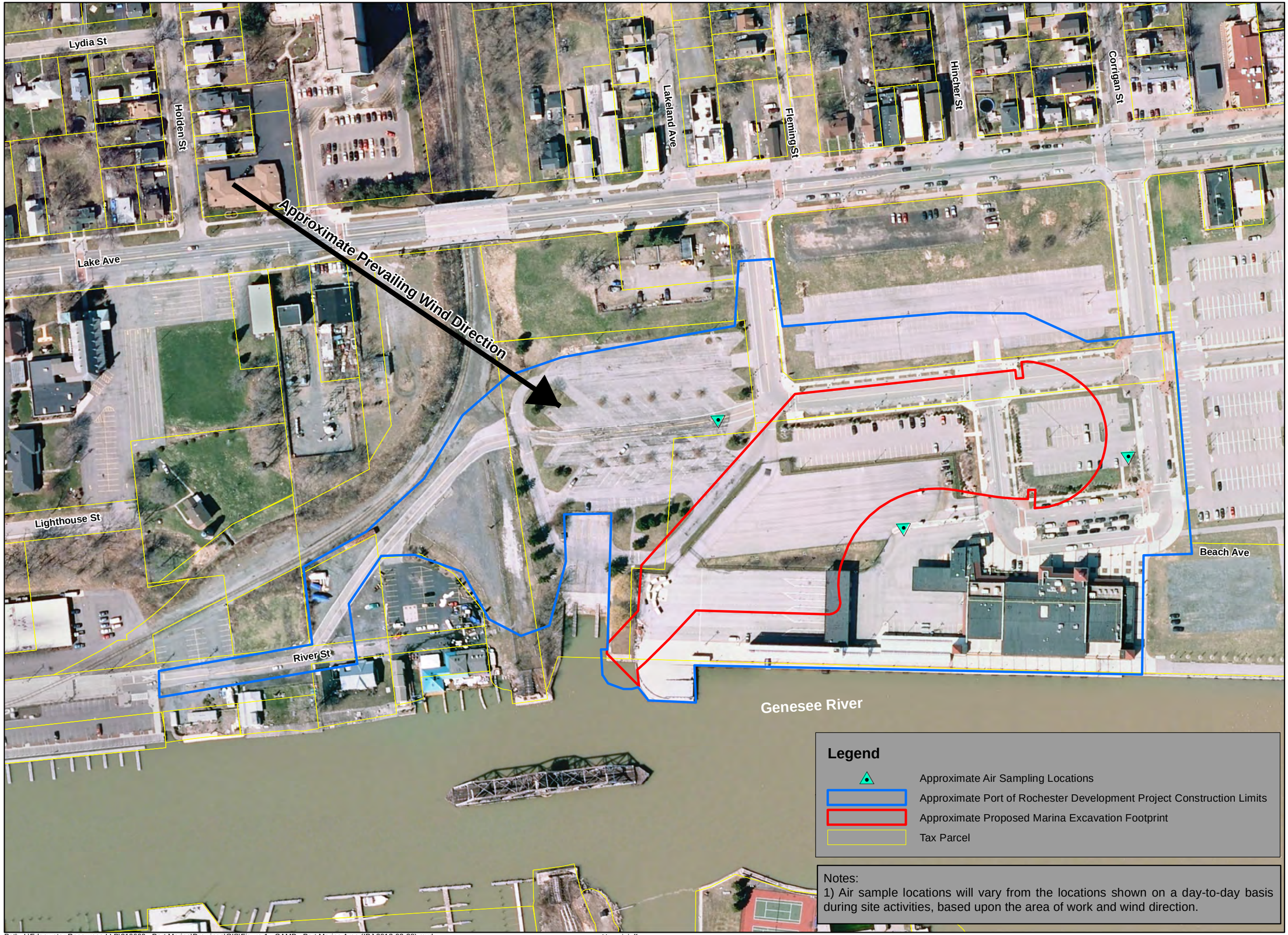
Engineering controls to abate the VOC emissions source will immediately be put into effect if total organic vapor levels in the ambient air exceed 5 ppm above background at the Site Perimeter. These engineering controls may include:

- Vapor suppression utilizing foam vapor suppressants, polyethylene sheeting, or water
- Backfilling of excavations
- Covering emission sources with stockpiled materials

If the measures taken to abate the emission source are ineffective and the total organic vapor readings continue at 5 ppm or above background for more than 15 minutes at the Site Perimeter, then the following actions shall be placed into effect.

- Occupants of nearby residential and commercial buildings will be advised to stay inside their respective structure and to close all windows.
- All personnel listed in the Emergency Contacts section of the HASP for this project will be contacted.
- The Site Safety Supervisor will immediately contact the local authorities and advise them of the circumstances.
- Continuous air monitoring will be conducted at the Site Perimeter and 1-minute average measurements will be recorded every 15 minutes. Air monitoring may be halted or modified by the Site Safety Supervisor when two (2) successive measurements are below 5 ppm.

If readings remain elevated above 5 ppm over background for a period of 60 minutes, the Site Safety Officer will request that local authorities evacuate the occupants of nearby residential and commercial buildings.



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www.labellapc.com

COMMUNITY AIR MONITORING PLAN - PORT MARINA PROJECT AREA

PORT OF ROCHESTER
CITY OF ROCHESTER, NEW YORK

N W E S

0 25 50 100 150
Feet
1 inch = 150 feet

210660

Figure 1

Path: I:\Edgewater Resources LLP\210660 - Port Marina\Drawings\GIS\Figure 1 - CAMP - Port Marina Area (IPJ 2013-03-28).mxd

User: ipjeffers

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 6

Community Air Monitoring Plan
1655 Lexington Avenue Parcel

Community Air Monitoring Plan
Slag Storage Area

Location:
1665 Lexington Avenue
City of Rochester, New York

Prepared for:

City of Rochester
Division of Environmental Quality
30 Church Street, Room 300B
Rochester, New York 14614

LaBella Project No. 210660

March 2013

Community Air Monitoring Plan
Slag Storage Area

Location:
1665 Lexington Avenue
City of Rochester, New York

Prepared for:

City of Rochester
Division of Environmental Quality
30 Church Street, Room 300B
Rochester, New York 14614

LaBella Project No. 210660

March 2013

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

TABLE OF CONTENTS

1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) has been prepared by LaBella Associates, P.C. (LaBella) on behalf of the City of Rochester Department of Environmental Quality (DEQ). This CAMP addresses potential particulate emissions that may occur during the relocation of slag to the property known as 1665 Lexington Avenue, located in the City of Rochester, Monroe County, New York (see Figure 1) and herein after referred to as the "Site."

Slag will be processed in accordance with a New York State Department of Environmental Conservation (NYSDEC) approved Beneficial Use Determination (BUD) and relocated to the Site. This fill material will be generated during earthwork and construction activities at the Port of Rochester. Low levels of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals have been detected in the soil, fill, and groundwater at the Port of Rochester.

Previously completed subsurface investigations at the Port of Rochester have found petroleum-impacted soil, as well as other regulated solid wastes, and groundwater at the Port of Rochester. However petroleum-impacted soil and other regulated solid wastes will not be relocated to the Site. Petroleum-impacted soil and other regulated solid wastes excavated from the Port of Rochester will be transported and disposed of at a NYSDEC Part 390 permitted landfill. Therefore, no VOC emissions are expected to be created during slag relocation activities at the Site.

Inorganic compounds present in the fill materials generated at the Port of Rochester and proposed for relocation at the Site could potentially be disturbed, as dust, during slag relocation activities at the Site. This CAMP describes daily air monitoring activities intended to identify and control environmental conditions presenting the potential for neighborhood exposure to ambient airborne hazards resulting from fugitive emissions during slag relocation activities at the Site.

2.0 METHODOLOGY

Pursuant to the NYSDEC's Technical Administrative Guidance Manual (TAGM) #4031 – *Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites, (HWR-89-4031)*, this CAMP addresses methods that will be utilized to monitor particulate (dust) levels at the perimeter of the Site. If elevated levels of particulate emissions are encountered, this CAMP identifies the procedures that will be employed to mitigate elevated particulate levels.

2.1 Site Perimeter Monitoring

Each day of field work during the slag relocation activities, a wind sock or flag will be used to monitor wind direction in the slag relocation areas (truck haul roads, slag relocation and grading areas). Based upon daily wind conditions, three (3) temporary monitoring points, one (1) upwind and two (2) downwind of the slag relocation areas, will be identified at the perimeter of the Site.

Real-time particulate monitoring will be performed utilizing aerosol monitors capable of measuring concentrations of particulate matter 10 micrometers (μm) in size (PM_{10}) or less. Sufficiently wet Site conditions, such as after precipitation, may temporarily eliminate the need for particulate monitoring.

Each day, prior to the commencement of the slag relocation activities, background concentrations of particulates will be measured and recorded as 5-minute averages at the identified upwind and downwind

locations.

Particulate measurements will be recorded at approximate 30 minute intervals. The recorded 5-minute averages will be used to determine the difference between upwind and downwind particulate concentrations. Slag relocation will be temporarily halted and engineering controls, as outlined in Section 2.2, will be implemented if the difference between the upwind and downwind particulate measurements exceeds 100 micrograms per cubic meter (µg/m³).

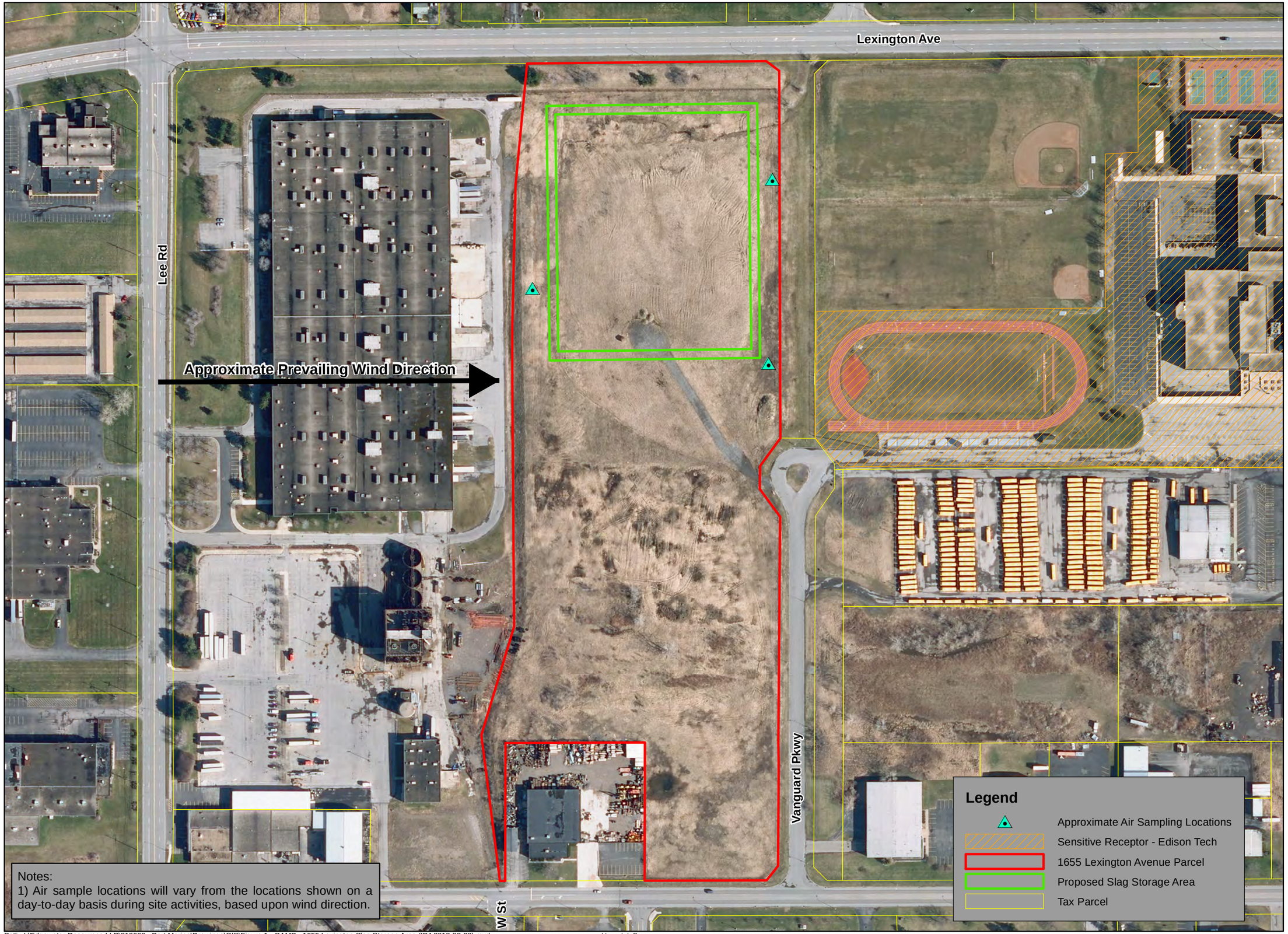
2.2 Fugitive Dust Control

If the particulate monitoring at the Site perimeter, as described in Section 2.1, indicates an upwind/downwind difference in fugitive particulate emissions greater than 100 µg/m³, the Contractor will be required to implement dust control measures that may include the following methods:

- Application of water on haul roads
- Spraying water or otherwise wetting equipment and/or fill material
- Restricting vehicle speeds to 10 mph
- Hauling material in properly tarped containers

The Contractor will be required to have a water truck or equivalent equipment on-site for dust suppressions methods.

\\PROJECTS1\PROJECTSAM\EDGEWATER RESOURCES LLP\210660 - PORT MARINA\ENVIRONMENTAL\EMP\2013 CAMPS\CAMP.03.29.2013_DRAFT SLAG STORAGE 1665 LEXINGTON AVENUE.DOCX



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COMMUNITY AIR MONITORING PLAN - 1655 LEXINGTON AVENUE SLAG STORAGE AREA

PORT OF ROCHESTER
CITY OF ROCHESTER, NEW YORK

COMMUNITY AIR MONITORING PLAN - 1655 LEXINGTON AVE. SLAG STORAGE AREA

N
W E
S

0 50 100 200 Feet
1 inch = 200 feet

210660

Figure 1

Path: I:\Edgewater Resources LLP\210660 - Port Marina\Drawings\GIS\Figure 1 - CAMP - 1655 Lexington Slag Storage Area (IPJ 2013-03-28).mxd

User: ipjeffers

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 7

Example of Health & Safety Plan

Site Health and Safety Plan
Port of Rochester Public Marina and Mixed Use Development Project

Location:

Port of Rochester
Rochester, New York 14612

Prepared For:

City of Rochester Division of Environmental Quality
30 Church Street
Room 300B
Rochester, New York 14614

LaBella Project No. 210660

January 2013

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Table of Contents

Page

SITE HEALTH AND SAFETY PLAN

Project Title:	Port of Rochester
Project Number:	210660
Project Location (Site):	Port of Rochester, Rochester, New York 14608
Project Manager:	Dennis E. Porter, CHMM
Plan Approval Date:	_____
Plan Review Date:	_____
Site Safety Supervisor:	To Be Determined
Site Contact	To Be Determined
LaBella Safety Director	Richard Rote, CIH
Proposed Date(s) of Field Activities:	To Be Determined
Site Conditions:	Level to moderately sloping, encompassing approximately 5 +/- acres
Site Environmental Information Provided By:	Prior Environmental Reports by H&A of New York, Day Environmental, LaBella Associates, P.C., etc.
Air Monitoring Provided By:	LaBella Associates, P.C.
Site Control Provided By:	To Be Determined

EMERGENCY CONTACTS

	Name	Phone Number
Ambulance:	As Per Emergency Service	911
Hospital Emergency:	Rochester General Hospital	(585) 922-4000
Poison Control Center:	Finger Lakes Poison Control	(585) 275-3232
Police (local, state):	City of Rochester Police Department	911
Fire Department:	City of Rochester Fire Department	911
Site Contact:	To Be Determined	
Agency Contact	NYSDEC – To Be Determined MCDOH – To Be Determined NYSDOH – To Be Determined	
Project Manager	Dennis E. Porter LaBella Associates, P.C.	Direct: (585) 295-6245 Cell: (585) 451-4854
Safety Supervisor	To Be Determined LaBella Associates, P.C.	Direct:
LaBella Associates, P.C. Safety Director	Richard Rote, CIH LaBella Associates, P.C.	Direct: (585) 295-6241

MAP AND DIRECTIONS TO THE MEDICAL FACILITY
ROCHESTER GENERAL HOSPITAL

	Directions
1:	Start out going NORTHWEST on CORRIGAN ST toward LAKE AVE.
2:	Turn LEFT onto LAKE AVE.
3:	Turn LEFT onto STUTSON ST.
4:	STUTSON ST becomes PATTONWOOD DR/CR-99.
5:	Turn RIGHT onto POW MIA MEMORIAL AVE/THOMAS AVE/CR-124.
6:	Turn RIGHT onto ST PAUL BLVD/CR-122.
7:	Stay STRAIGHT to go onto COOPER RD/CR-116.
8:	Turn LEFT onto TITUS AVE/CR-91.
9:	Turn RIGHT onto PORTLAND AVE/CR-114.
10:	End at Rochester General Hospital, **1425 Portland Ave** Rochester, NY 14621-3001

LABELLA

1.0 INTRODUCTION

The purpose of this Health and Safety Plan (HASP) it to provide guidelines for responding to potential health and safety issues that may be encountered during the slag excavation and slag processing activities at the port of Rochester. The requirements of this HASP are applicable to all LaBella Associates, P.C. (LaBella) personnel and their authorized visitors at the work site. This document's Environmental Management Plan (EMP) and the Community Air Monitoring Plan (CAMP) are to be consulted for guidance in preventing and quickly abating any threat to human safety or the environment. The provisions of the HASP do not replace or supersede any regulatory requirements of the USEPA, NYSDEC, OSHA, or any other regulatory body.

2.0 RESPONSIBILITIES

The HASP presents guidelines to minimize the risk of injury, to project personnel, and to provide rapid response in the event of injury. The LaBella HASP is applicable only to activities of LaBella personnel and their authorized visitors. The LaBella Project Manager shall implement the provisions of this HASP for the duration of the project. It is the responsibility of employees to follow the requirements of this HASP and all applicable company safety procedures.

3.0 ACTIVITIES COVERED

The activities covered under this HASP are limited to the following:

- Observation and inspection of excavation/processing activities
- Environmental Monitoring
- Collection of samples
- Assistance with the on-site management of excavated slag materials.

4.0 WORK AREA ACCESS AND SITE CONTROL

The General Contractor will have primary responsibility for work area access and site control.

5.0 POTENTIAL HEALTH AND SAFETY HAZARDS

This section lists some potential health and safety hazards that project personnel may encounter at the project site and some actions to be implemented by LaBella personnel to control and reduce the associated risk to health and safety. This is not intended to be a complete listing of any and all potential health and safety hazards. New or different hazards may be encountered as site environmental and site work conditions change. The suggested actions to be taken under this plan are not to be substituted for good judgment on the part of project personnel. At all times the Site Safety Officer has responsibility for site safety and his or her instructions must be followed.

5.1 Hazards Due to Heavy Machinery

Potential Hazard:
Heavy machinery including trucks, excavators, backhoes, etc will be in operation at the site. The presence of such equipment presents the danger of being struck or crushed. Use caution when working near heavy machinery.

Protective Action:
Make sure that operators are aware of your activities, and heed operator's instructions and warnings. Wear bright colored clothing and walk safe distances from heavy equipment. A safety orange vest, hard hat, and steel toe shoes are required.

5.2 Excavation Hazards

Potential Hazard:
Excavations and trenches can collapse, causing injury or death. Edges of excavation can be unstable and collapse. Toxic and asphyxiant gases can accumulate in confined spaces and trenches.

Protective Action:
LaBella personnel are not to enter excavations over 4 feet in depth unless excavations are adequately sloped. LaBella personnel must receive approval from the LaBella Project Manager to enter an excavation for any reason. Subsequently, LaBella personnel are to receive authorization for entry from the Site Safety Officer.

LaBella personnel should exercise caution near all excavations at the site as it is expected that excavation sidewalls will be unstable.

5.3 Cuts, Punctures and Other Injuries

Potential Hazard:
In any excavation or construction work site there is the potential for the presence of sharp or jagged edges on rock, metal materials, and other sharp objects. Serious cuts and punctures can result in loss of blood and infection.

Protective Action:
The LaBella Project Manager is responsible for making First Aid supplies available at the work site to treat minor injuries. The First Aid supplies will be kept in the work trailer. The Site Safety Officer is responsible for arranging the transportation of authorized on-site personnel to medical facilities when First Aid treatment in not sufficient. Do not move seriously injured workers. All injuries requiring treatment are to be reported to the LaBella Project Manager. Serious injuries are to be reported immediately (see Section 9.0 - Emergency Action Plan).

5.4 Injury Due to Exposure of Chemical Hazards

Potential Hazards:
Volatile organic vapors from petroleum products, chlorinated solvents or other chemicals may be encountered during excavation activities at the project work site. Inhalation of high concentrations of organic vapors can cause headache, stupor, drowsiness, confusion and other health effects. Skin contact can cause irritation, chemical burn, or dermatitis.

Protective Action:
The presence of organic vapors may be detected by their odor and by monitoring instrumentation. LaBella employees will not work in environments where hazardous concentrations of organic vapors are present. Air monitoring performed by LaBella (see Section 8.0) of the work area will be performed as necessary using a photoionization detector (PID) or a flame ionization detector (FID). LaBella personnel are to leave the work area whenever PID or FID measurements of ambient air exceed 25 ppm consistently for a 15-minute period.

6.0 DECONTAMINATION PROCEDURES

Upon leaving the work area, LaBella personnel shall decontaminate footwear as needed. Under normal work conditions detailed personal decontamination procedures will not be necessary. Work clothing may become contaminated in the event of an unexpected splash or spill or contact with a contaminated substance. Minor splashes on clothing and footwear can be rinsed with clean water. Heavily contaminated clothing should be removed if it cannot be rinsed with water. LaBella personnel should be prepared with a change of clothing whenever on site.

LaBella will use the contractor's disposal container for disposal of personal protective equipment (PPE).

7.0 PERSONAL PROTECTIVE EQUIPMENT

Conditions requiring a level of protection greater than Level D are not expected at this work site. Typical safety equipment identified in company safety and health procedures is required, i.e., hard hat, safety glasses, orange vest, rubber nitrile sampling gloves, splash resistant coveralls, construction grade boots, etc. Additional site-specific personal protective equipment is not necessary when working under the conditions of this plan.

8.0 AIR MONITORING

If odors indicative of the presence Volatile Organic Compounds (VOCs) are detected in a work area (excavation, soil staging, and soil grading areas)then the Environmental Project Monitor or other LaBella or City personnel will utilize a PID to screen the ambient air in this area for total VOCs. Work area ambient air will generally be monitored downwind of the excavation or earthwork area in the general breathing zone. Subsequently, air monitoring of the work areas will be performed at least every 30 minutes or more often using a PID. LaBella personnel are to leave the work area whenever PID measurements of ambient air exceed 25 parts per million (ppm) consistently for a 5 minute period.

LaBella personnel may re-enter the work areas wearing a ½ face respirator with organic vapor cartridges for an 8-hour duration when VOC concentrations average between 25-50 ppm. Organic vapor cartridges

are to be changed after each 8 hours of use. If PID readings are sustained at levels above 50 ppm for a 5 minute average, work will be stopped immediately until safe levels of VOCs are encountered.

At all times, the Site Safety Officer has authority over actions of LaBella personnel and their guests at the site and his or her requests for evacuation are to be heeded without delay. Skin and clothing should be rinsed with clean water if chemical exposure has occurred as a result of splash or spill. Contaminated clothing must be removed; LaBella personnel should bring a change of clothes to the site. Water repellant suits will be provided to help prevent contamination of clothing. Medical attention should be provided if skin irritation has occurred. Please refer to Table 1 outlining chemical compounds detected in recent soil samples at the proposed Port of Rochester.

9.0 EMERGENCY ACTION PLAN

In the event of an emergency, employees are to turn off and shut down all powered equipment and leave the work areas immediately. Employees are to walk or drive out of the Site as quickly as possible and wait at the assigned 'safe area'. Follow the instructions of the Site Safety Officer.

LaBella employees are not authorized or trained to provide rescue and medical efforts. Rescue and medical efforts will be provided by local authorities.

10.0 MEDICAL SURVEILLANCE

LaBella will provide medical surveillance to all LaBella employees who are injured due to overexposure from an emergency incident involving hazardous substances at this site.

11.0 EMPLOYEE TRAINING

LaBella personnel who are not familiar with this site plan will receive training on its entire content and organization before working at the Site.

Table 1
Exposure Limits and Recognition Qualities

Compound	PEL-TWA (ppm)(b)(d)	TLV-TWA (ppm)(c)(d)	LEL (%)(e)	UEL (%)(f)	IDLH (ppm)(g)(d)	Odor	Odor Threshold (ppm)	Ionization Potential
Acetone	750	750	2.5	13	20,000	Sweet	13	9.69
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	1(1)	10	1.3	7.9	Ca	Pleasant	4.7	9.24
Benzo (a) pyrene (coal tar pitch volatiles)	0.2	0.2	NA	NA	700	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100	100	1.0	6.7	2,000	Ether	2.3	8.76
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA
Ideno (1,2,3-cd) pyrene		065	NA	NA	Ca	Na	Na	Na
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
Napthalene	10, Skin	10	0.9	5.9	250	Moth Balls	0.3	8.12
n-propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	100	100	0.9	9.5	2,000	Sweet	2.1	8.82
1,2,4-Trimethylbenzene	NA	25	0.9	6.4	NA	Distinct	2.4	NA
1,3,5-Trimethylbenzene	NA	25	NA	NA	NA	Distinct	2.4	NA
Xylenes (o,m,p)	100	100			1,000	Sweet	1.1	8.56
Metals								
Arsenic	0.01	0.2	NA	NA	100, Ca	Almond		NA
Barium	0.5	0.5	NA	NA	1,100			NA
Cadmium	0.2	0.5	NA	NA				NA
Chromium	1	0.5	NA	NA				NA
Lead	0.05	0.15	NA	NA	700			NA
Mercury	0.05	0.05	NA	NA	28	Odorless		NA
Selenium	0.2	0.02	NA	NA	Unknown			NA
Silver	0.01	0.01	NA	NA				NA

(a) Skin = Skin Absorption
(b) OSHA-PEL Permissible Exposure Limit (flame weighted average, 8-hour): NIOSH Guide, June 1990
(c) ACGIH – 8 hour time weighted average from Threshold Limit Values and Biological Exposure Indices for 2003.
(d) Metal compounds in mg/m3
(e) Lower Exposure Limit (%)
(f) Upper Exposure Limit (%)
(g) Immediately Dangerous to Life or Health Level: NIOSH Guide, June 1990.

Notes:
1. All values are given in parts per million (ppm) unless otherwise indicated.
2. Ca = Possible Human Carcinogen, no IDLH information.