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Georgia-Pacific LLC

Final Remedial Action Work Plan

Willsboro Black Ash Pond Site
Willsboro, New York

August 2012

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Final Remedial Action Work Plan

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Acronyms and Abbreviations

ANC	Adirondack Nature Conservancy
AOC	Order on Consent and Administrative Settlement
ASTM	American Society for Testing Materials
cfs	cubic feet per second
cy	cubic yards
ERP	Environmental Restoration Program
ESD	Explanation of Significant Differences
FEMA	Federal Emergency Management Agency
fps	feet per second
ft	feet
Georgia-Pacific	Georgia-Pacific LLC
H:V	horizontal:vertical
HASP	Health and Safety Plan
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
OSHA	Occupational Safety and Health Administration
PDI	Pre-Design Investigation
PPE	personal protective equipment
QA/QC	quality assurance and quality control

RAWP	Remedial Action Work Plan
ROD	Record of Decision
RPR	Resident Project Representative
Site	Willsboro Black Ash Pond Site
SMP	Site Management Plan
SPT	Standard Penetration Testing
SWPPP	Storm Water Pollution Prevention Plan
Town	Town of Willsboro
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
Work Plan	Pre-Design Investigation and Remedial Action Work Plan
WWTP	Wastewater Treatment Plant

1. Introduction

Georgia-Pacific LLC (Georgia-Pacific) and ARCADIS prepared this Final Remedial Action Work Plan (Final RAWP) to summarize progress on the remedial action for the Willsboro Black Ash Pond site (the Site) located in Willsboro, New York (Construction Drawings [Appendix A]). The RAWP has been prepared in accordance with the requirements of the March 2007 Record of Decision (ROD; NYSDEC 2007), the August 23, 2011 Order on Consent and Administrative Settlement (AOC) Index No. A5-0771-07-11 (NYSDEC 2011b), and the August 2011 Explanation of Significant Differences (ESD; NYSDEC 2011a) issued by the New York State Department of Environmental Conservation (NYSDEC). This RAWP is prepared as outlined in Section 1.b of the Scope of Work included as Exhibit C of the AOC.

Georgia-Pacific submitted a Draft RAWP to NYSDEC on March 15, 2012 (Georgia-Pacific 2012b), and NYSDEC provided comments on such submittal on April 17, 2012 (NYSDEC 2012a). Georgia-Pacific then submitted a draft Final RAWP on May 31, 2012 (Georgia-Pacific 2012c) to advance the remedial design elements, address comments provided in NYSDEC's April 17, 2012 letter, and consider comments provided by the Town of Willsboro (Town) on April 13, 2012 (Town 2012a). NYSDEC provided comments on the draft Final RAWP in e-mails dated July 6 (two emails), July 9, July 25, and July 30, 2012 (NYSDEC 2012b, NYSDEC 2012c, NYSDEC 2012d, NYSDEC 2012e, NYSDEC 2012f). Georgia-Pacific also received comments from the Willsboro Town River Project Committee in an email dated June 7, 2012 (Town 2012b), and provided a response to such comments via email on June 27, 2012 (ARCADIS 2012b).

This Final RAWP further advances the remedial design elements, addresses comments provided in NYSDEC's email communications, and considers comments provided by the Willsboro Town River Project Committee. The construction drawings and technical specifications have also been updated per such comments, and are included, along with the Health and Safety Plan (HASP) and a Storm Water Pollution Prevention Plan (SWPPP), as Appendices A, B, C, and D, respectively. In addition, a copy of the Best Management Practice for Preventing the Transport of Invasive Plant Species is included as Appendix E.

1.1 Site Background

The Site encompasses approximately 25 acres at the terminus of School Street in the Town of Willsboro, Essex County, New York, approximately two miles west of

Lake Champlain. The Site is bounded to the north and west by the Boquet River, to the east by lands owned by the Adirondack Nature Conservancy (ANC), and to the south by additional lands owned by the ANC and Town. The Town Wastewater Treatment Plant (WWTP) occupies a contiguous 2.7 acre parcel along the southern border. The undeveloped Site lies at an elevation of approximately 100 ft above mean sea level, and the surface is relatively flat with the topography slightly climbing to the south and west.

From 1884 to 1964, the Champlain Fiber Company, later known as the Willsboro Pulp Mill, operated a pulp mill on the opposite side of the Boquet River from the Site. In 1964, the mill property was purchased by Georgia-Pacific, and in 1966 the Site was deeded to the Town by Georgia-Pacific.

1.2 Project Background and Selected Site Remedy

The Town completed a Site Investigation/Remedial Alternatives Report under the New York State Environmental Restoration Program (ERP) (Earth Science Engineering 2006). NYSDEC then evaluated six remedial alternatives for the Site in the March 2007 ROD, and the NYSDEC presented the selected a remedial alternative therein as well. However, due to the lack of funding for the ERP, the ROD could not be implemented as originally intended, and NYSDEC issued an ESD in 2011 to describe a change in the Site remedy.

1.3 Document Organization

Section	Purpose
Section 1 — Introduction	Provides the purpose and scope of this report, site description, project background, and document organization.
Section 2 — Basis of Design	Summarizes the results of the 2011 Pre-Design Investigation (PDI) and how they contribute to the various elements of the removal, soil cover, and restoration activities.
Section 3 — Construction Considerations	Summarizes various construction considerations regarding site preparation, quality assurance and quality control (QA/QC) and health and safety.
Section 4 — Schedule and Post-Construction Activities	Summarizes the schedule of activities leading up to construction and summarizes post-construction activities and reporting requirements.
Section 5 — References	Lists the sources referenced in this RAWP.

2. Basis for Design

The primary design components of the selected remedy for the Site, according to the ESD, are the following:

- Establish erosion and sediment controls consistent with a SWPPP developed to protect the Boquet River during remedial activities.
- Clearing of trees and vegetation that interfere with the stream bank stabilization work, as needed (mature trees and vegetation that are found to be stable may be retained).
- Consolidation of black ash waste, excluding certain sections of the riverbank without significant river erosive forces, and movement of the black ash waste away from the river.
- Grading of the Site to mitigate the infiltration of water by diverting storm water flow around the waste mass and reducing the potential for ponding on the waste mass.
- Construction of the stream bank stabilization features along a portion of the riverbank (i.e., given existing conditions and forces on several segments of well-vegetated riverbank, only armoring with riprap at the toe of the slope may be required at those locations), and reinforcing the riverbank with riprap underlain with a geotextile fabric.
- Construction of a soil cover for consolidated black ash, and grading the cover to provide proper storm water control, drainage, and enhance recreational opportunities.
- Construction of an inlet/outfall structure to reconnect the remaining floodplain to the Boquet River.

Additional details related to each of these components of the selected remedy are discussed below. Following completion of construction an institutional control (environmental easement) will be recorded for the Site, a Site Management Plan (SMP) will be developed and submitted, and the Town will need to provide a periodic certification of institutional and engineering controls.

2.1 Supplemental Pre-Design Investigation

Georgia-Pacific completed PDI field activities in November 2011 in accordance with the NYSDEC-approved Pre Design Investigation and Remedial Action Work Plan (Work Plan; Georgia-Pacific 2011). PDI activities consisted of additional characterization of subsurface materials and completion of a detailed site survey. The following sections summarize the results of these activities relative to the remedial design. The complete results appear in the PDI Summary Report submitted to the NYSDEC on January 20, 2012 (Georgia-Pacific 2012a), and the results from geotechnical tests on sample S-4 from soil boring B-5 (performed after submittal of the PDI Summary Report) appear in Appendix B of the Draft RAWP (Georgia-Pacific 2012b).

2.2 Site Survey

A topographic survey was performed by Thew Associates in November 2011 to provide a 1-foot contour interval map of the proposed construction area. The survey data (in feet above mean sea level) is accurate to within 0.1 feet and provided in State Plane Coordinates (North American Datum 1983 [NAD83]) based on the National Geodetic Vertical Datum of 1929 (NGVD29). Spot elevations were measured at each intersection of a 50-foot square grid (or of equivalent density) as well as along transects spaced at 50-foot intervals at the grade break points including the toe of berm, top of berm, edge of water, toe of slope, and points approximately 25 feet from shore.

The surveyors located visible improvements and natural features within the work area (e.g., access roads, limits of exposed black ash, vegetation, edge of water). Surveyors also located physical evidence of above and below ground utilities, where present (e.g., manholes, catch basins, utility poles, monitoring wells).

During the topographic survey, two on-site benchmarks were established with the elevations determined to the nearest 0.01 foot. Following completion of the survey, surveyors interpreted the data collected in the field and developed topographic mapping and 30 associated cross-sections to represent the Site.

Features of the site survey were incorporated in to the Construction Drawings (Appendix A), and used to facilitate various modeling (e.g., slope stability, hydraulic) performed to support the remedial design.

2.3 Characterization of Subsurface Materials and Stability Analysis

Subsurface investigations (e.g., a boring and test pit program) were performed in targeted areas of the Site between November 14 and 22, 2011 to evaluate geotechnical properties in areas proposed for riverbank stabilization, ash consolidation, and placement of the soil cover. A summary of the geotechnical subsurface investigation program, including laboratory test results, appears in the Draft RAWP (Georgia-Pacific 2012a) and PDI Summary Report (Georgia-Pacific 2012a).

The results of the exploration program indicate that the stratigraphy across the Site generally consists of ash fill underlain by a layer of natural sand. The ash fill layer encountered in each exploration extended to depths between 16 and 20 ft below grade. The ash was typically described as black, coarse to fine sand with varying amounts of silt. The underlying natural sand layer encountered in each test boring was described as gray to brown, medium dense to dense, silty coarse to fine sand with gravel. Groundwater was encountered in the explorations at depths between 4 and 6 ft below existing grade.

The ash fill layer is typically very loose, of low strength, and compressible under temporary construction loads and the final soil cover system. Results of Standard Penetration Testing (SPT) in the ash fill were recorded as weight of hammer through the depth of the layer, confirming the very loose soil conditions with depth. Strength testing of one Shelby tube sample was completed to estimate the design strength parameters for use in evaluating the stream bank stabilization design. Strength testing was completed in accordance with American Society for Testing Materials (ASTM) D4767 Consolidated Undrained Triaxial Compression Test.

Additional laboratory testing of the ash fill material was completed for use during the placement/consolidation of ash fill and design of the final soil cover system. A composite sample of material from all the test pits was compacted in the laboratory in accordance with ASTM D1557 Laboratory Compaction Test to assess the compaction characteristics of the ash fill. Results of the laboratory compaction test of the ash fill indicate a maximum dry density of 32.8 pounds per cubic foot and an optimum moisture content of 93.8 percent. A Shelby tube sample from Boring B-5 was analyzed in accordance with ASTM D2435 One-Dimensional Consolidation Test. The resulting consolidation curve was used in the stability analysis to estimate the settlement of the ash fill under the final cover system design.

Two sections along the riverbank (i.e., Section 9+00 and Section 5+50) were selected for the slope stability evaluation, and the evaluation of the proposed finished grades using the Spencer method in the SLOPE/W® software program developed by Geo-Slope International Ltd. Circular searches with forced exit and entry locations were performed to evaluate failure surfaces through the ash fill and to evaluate the stability of the berm. The limits of the exit/entry locations were varied to estimate the critical failure surface and corresponding minimum factors of safety.

Section 9+00 was chosen as a representative section for the analysis as it represented the maximum bank height of 23 ft. Considering the relatively low strength of the ash fill, Section 5+50 was selected for the slope stability analysis to evaluate the failure surfaces through the ash fill stratus, as the proposed finished grade of Section 5+50 is shifted inland from the existing berm, and will therefore be founded on the ash fill.

A berm slope of 4:1 horizontal to vertical (H:V) was assumed for the proposed finish grade of the inland side of the berm. For the riverbank slope (i.e., the river side of the berm), the proposed finished grade of the slope was assumed to vary from 3H:1V at the top of the bank to 2.5H:1V along the bottom of the berm where riprap will be placed. (The top elevation of the riprap along the restored berm was based on the modeled flood elevations of the Boquet River, as discussed below and as illustrated on Construction Drawing G-208 [Appendix A]).

Assuming the design parameters outlined above, the results of the stability evaluation indicate an acceptable final grading design. Results of the stability evaluation are summarized in the table below:

Section	Required Factor of Safety	Factor of Safety	
		Shallow Failure Surface	Deep Failure Surface
5+50 (Riverbank side)	1.5	1.81	2.39
5+50 (Berm side)	1.3	---	1.30
9+00 (Riverbank side)	1.5	1.81	2.37

2.4 River Hydrodynamics

The United States Geological Survey (USGS) flow gauge (number 04276500) upstream of the dam at Willsboro, NY records flow in the Boquet River and provides the data online real-time (USGS 2012). The historical data collected from the USGS

gauge extend back to 1923 and provide a good record of daily mean discharge as well as flow statistics on a monthly and annual basis.

For the 12-month period preceding the March 2012 Draft RAWP, flow measured by the USGS in the Boquet River ranged from less than 100 cubic ft per second (cfs) to 11,000 cfs, with an average near 800 cfs. Monthly average flows range from 114 cfs in September to 959 cfs in April. On average, flows peak in the spring during the snow-melt and decrease in the late summer and early fall.

On August 29, 2011, during the passing of Hurricane Irene, USGS recorded a daily average flow of 11,000 cfs, a measurement 2,600 cfs greater than the next highest recorded flow in the preceding 12-month period. Although instantaneous peak flows for that day are not yet available from USGS, based on previous peak and daily average flows, a daily average flow of 11,000 cfs would correspond to a peak flow of approximately 16,000 cfs, approximately 30% higher than the next highest peak flow on record, at 12,300 cfs in November 1996.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Study for the Town, the 100-year flood is approximately 11,830 cfs, and results in average channel velocities in the River near the Site of up to 8.5 ft per second (fps). Due to the bathymetry and shape of the Boquet River, the velocities in the River immediately adjacent to the Site are generally lower than those in the main channel.

FEMA flood zone information also indicates that a portion of Site (and therefore a portion of the area affected by the environmental remedy) lies within the 100-year floodplain, and that the base flood elevation has been determined for such areas (FEMA 1992). For the Site, the base flood elevation appears to range from approximately 106 to 109 ft in elevation, depending on the specific location along the riverbank. This information available through FEMA established the design elevation to which riprap would be installed during riverbank stabilization activities, as illustrated on Construction Drawing G-208 (Appendix A).

A HEC-RAS model was developed for the Boquet River adjacent to the Site to model the effects of high flow events, assess the proposed final grade elevations, estimate velocities along the new berm on the south side of the river, and evaluate the proposed stabilization design for the riverbank. The model simulates approximately 1,400 ft of the Boquet River from the dam in Willsboro at the upriver end to the downriver portion of the Site. Transect geometry obtained from the surveyed bank profiles was modified to represent post-construction conditions on the south bank, as

illustrated on the Construction Drawings (Appendix A). As recent survey was not available for the north riverbank (or in-channel islands), it was assumed that pre-construction conditions for the south bank could be used to approximate the north bank and banks of the in-channel islands as well. This assumption was necessary to confine the channel for the purposes of modeling, and was found to be reasonable for such purpose given review of USGS maps, available photo documentation, and general site knowledge, as well as the model parameters/sensitivity.

Six flow scenarios were run using the HEC-RAS model at steady state conditions within the reach of interest. These scenarios included: average annual flow at the upriver USGS gauge (315 cfs); average flow during spring runoff (800 cfs); average annual peak flow (5,000 cfs); 100-year flood event (11,000 cfs); and two maximum flood events (14,000 and 16,000 cfs). The steady state model estimates that for each flow condition (including the maximum flood events), the surface water elevation of the river will be less than the post-construction bank elevations.

The model results also show that the average channel velocities within the area of interest increase in response to increases in river flow. In summary:

- Average increases in flow velocity for the six scenarios range from 2.6 fps for the average annual flow of the Boquet River to 10.6 fps for the most conservative maximum flood event of 16,000 cfs.

- Maximum increase in flow velocities for the reach adjacent to the Site range from 5.2 fps for average annual flow conditions to 14.6 fps for the 16,000 cfs maximum flood event. It should be noted that the maximum average channel velocity for the maximum flood event is extremely conservative, as it is predicted at three locations in the river at the estimated maximum instantaneous 15-minute flow, which is 30% higher than the previous high flow and almost 50% higher than the FEMA 100-year flow.

For the riverbank stabilization, an appropriate stone size was selected using a combination of maximum average channel velocity, predicted by the HEC-RAS model for the maximum flood event (approximately 14.6 fps), and stone stability curves published by the US Army Corps of Engineers (USACE 1994), relating average channel velocity to stone diameter. Assuming a maximum average velocity of 14.6 fps and a standard rock density of 165 lb/ft^3, riprap stone with a median diameter (D_{50}) of approximately 1.2 ft would provide stability at extreme flows. However, given that the modeled maximum average channel velocity is extremely

conservative, one-foot riprap would likely provide adequate stability at regular flow conditions as well as periodic but infrequent high flow events. (Note that riprap available from the local NYCO Minerals, Inc. quarry is larger than the sizes that provide stability in extreme flows, so it will provide stability in regular flow conditions as well as periodic but infrequent high flow events.)

2.5 Inlet/Outlet Structure

The Boquet River and remnant upland floodplain will be reconnected using an inlet/outlet structure which will have a lowered portion of the berm that exists along the river. The general configuration of the inlet/outlet structure, including the proposed location along the reconstructed berm, is illustrated on Construction Drawing G-201 (Appendix A).

Separate inlet (upriver) and outlet (downriver) structures were considered in a conceptual design. This concept was modified to a combined inlet/outlet structure following on-site discussions with NYSDEC and modeling performed during the design.

The final grading plan illustrated on the Construction Drawings (Appendix A) shows that the invert elevation of the inlet/outlet structure (i.e., 103 ft) will allow water to enter the floodplain area during high-flow conditions in the Boquet River, re-establishing a floodplain area for temporary flood storage. In addition, the design includes a check dam with a peak elevation of 105 ft to slowly return water through the inlet/outlet structure and limit the potential for erosion of upland material.

3. Construction Considerations

3.1 Permitting

The remedial action design must consider federal, state, and local requirements concerning the site location and proposed remedial activities. For example, a portion of the environmental remedy will improve the bank of the Boquet River below the ordinary high water level of the river and permission to do so will be obtained.

Section I.H of the AOC requires Georgia-Pacific to meet substantive requirements for State and Local permits to conduct construction activities, but provides an exemption from administrative requirements. Georgia-Pacific is working with the NYSDEC and Town for construction activities comply with substantive requirements of state and local permits.

It is anticipated that Federal permit requirements may be similar to requirements for the recently completed riverbank work at the adjacent WWTP. Georgia-Pacific initiated a Pre-Application Consultation with the USACE in February 2012 (ARCADIS 2012a). USACE assigned Application Number (NAN-2012-00195-UBR) for the Site (USACE 2012). Discussions with USACE regarding requirements for a Pre-Construction Notification and/or a Joint Permit Application for a Nationwide Permit have been ongoing, and a Joint Permit Application for a Nationwide Permit was submitted to USACE on August 3, 2012 (Georgia-Pacific 2012d). Implementation of the remedial design will occur after appropriate approval from the USACE.

3.2 Site Access

To control and document access to the site during construction, visitors will sign in at the Contractor's trailer (or equivalent checkpoint established by the Contractor). It is not anticipated that temporary construction fencing and gates will be necessary at the Site.

The construction activities will, to the extent possible, make use of public roads and existing access roads to the Site property. Where necessary, new access roads may be installed as shown on Construction Drawing G-200 (Appendix A), and will be approximately 15 ft wide. The access roads will be constructed to minimize the impact of the construction vehicles, including methods to reduce vegetation loss.

Construction entrance/exit pads will be installed at access points to paved public roads in accordance with Construction Drawings G-200 and G-206 (Appendix A).

3.3 Mobilization and Site Preparation

Site preparation will include mobilization of the Contractor, clearing and grubbing, construction of access roads and staging areas, monitoring well decommissioning, and installation of erosion and sedimentation controls. Mobilization includes the establishment of work zones, surveying, project management, permits, fees, record drawings, and demobilization. To monitor construction progress, quality, design conformance, and variable field conditions and to maintain consistent communication between all parties, the Engineer's Resident Project Representative (RPR) will be present for full-time oversight during construction in accordance with Section I.B.3 of the AOC.

3.3.1 Equipment Cleaning

As indicated on the Construction Drawings (see G-100 [Appendix A]), the Contractor shall be required to sufficiently clean all construction equipment prior to mobilizing such equipment on to the Site. In addition, as requested by NYSDEC in their July 6, 2012 email correspondence (NYSDEC 2012b), at a minimum, the Contractor shall clean construction equipment in compliance with the Best Management Practice for Preventing the Transport of Invasive Plant Species (Appendix E) prior to such equipment being moved into wetlands areas illustrated on Construction Drawing G-101 (Appendix A).

3.3.2 Erosion, Sedimentation, and Turbidity Controls

Silt fencing (see Construction Drawing G-207 [Appendix A]) will serve as the primary method of upland erosion control and may be placed around the staging area and access road, as well as the upland construction areas (i.e., area where soil cover will be placed). The silt fencing will consist of a geotextile fence material buried a minimum of 6 inches below grade. The geotextile will be attached to wooden posts, which would be driven into the ground at a maximum of 8-foot intervals for support. The Contractor may submit alternative measures for erosion control for approval.

A turbidity control system consisting of diversion barriers and water stilling techniques will likely serve as the primary method of in-water turbidity control and as such would be placed adjacent to the active riverbank excavation areas (see

Construction Drawings G-200 and G-207 for proposed placement and construction [Appendix A]). Additionally, turbidity curtains or silt fence may be used to provide additional turbidity control in the event that the water stilling techniques are not found to sufficiently control the effects of construction on the turbidity levels in the Boquet River. If used, the turbidity curtains will likely consist of geotextile fabric suspended from buoys, which will be connected to the diversion barrier and installed parallel to the portions of the riverbank where construction is being performed, and may be anchored to shore or the river bottom. Additional focus will be made to operator control (i.e., limiting the fall height of the bucket, slow cycle times), and it is anticipated that the work will only be actively performed in short sections of the riverbank behind the deflection wall so as to stay within the area with the least hydraulic forces. Silt fencing may also be placed just below the toe of slope. The Contractor may submit alternative measures for turbidity control for approval.

These erosion, sedimentation, and turbidity controls will meet the substantive requirements for soil erosion and sediment control in New York and the minimum requirements outlined in the SWPPP (Appendix D).

3.3.3 Temporary Access Roads and Staging Area

Temporary staging areas will be placed at the entrance to the Site, and will be sized proportionally to the amount of material to be handled in that area and will be constructed as shown on Construction Drawing G-206, in the potential location as shown on Construction Drawing G-200 (Appendix A). The temporary staging area will also be used for construction trailers and for staging equipment and vehicles. Final decisions on staging areas will be made by the Contractor in cooperation with Georgia-Pacific. Staging areas and other support areas will be located to limit the impacts to mature trees and other established vegetation.

During the recent PDI activities, the upland area was also delineated to identify areas with established vegetation and potential access to the areas requiring remedial action. Current access to the berm and upland areas varies, ranging from gravel roadways to vegetated pathways, and few access points leading directly to the riverbank exist. Although access roads and staging areas will be constructed to avoid and minimize disturbances to established vegetation, access roads may need to be constructed through certain established areas as they provide the only means of access to the riverbank berm.

Potential access routes are shown on Construction Drawing G-200 (Appendix A). Other access routes may be preferred by the Contractor based on constructability in areas available. Final decisions on access routes will be made by the Contractor in cooperation with Georgia-Pacific. Access roads and other support areas will be located to limit the impacts to mature trees and other established vegetation.

3.4 Proposed Construction Methods

The selected alternative involves excavating, reshaping, and stabilizing of two separate sections of the riverbank berm, as shown on Construction Drawing G-201 (Appendix A). In a third area of the riverbank, the toe of slope will be stabilized without any reshaping of the riverbank berm required due to heavy vegetation/forestation. The excavation depth and extent, and extent of the area to place riprap, is supported by the results of the geotechnical and hydraulic modeling discussed in Section 2, and was selected to address the potential riverbank erosion within the boundary of the Site. After removal and reshaping activities, the riverbank will be restored by placing appropriately sized riprap at the toe of the slope to address bank erosion by providing protection from the hydrodynamic forces in the river.

Excess material not required to reshape the riverbank to the proposed final grade will be transported upland and consolidated in the former black ash lagoon area (Construction Drawing G-101, Appendix A). This area will then be graded to divert storm water flow and facilitate surface water drainage, and a topsoil cover will then be placed over the area, and seeded to limit erosion. Details related to these remedial activities are provided in the following sections.

3.4.1 Reshaping of Riverbank and On-Site Consolidation of Ash Material

As discussed in Section 2.3, riverbank material will be excavated and relocated to create a finished grade with a maximum 4H:1V slope on the inland side of the berm, and both a 3H:1V or a 2.5H:1V slope along the river side of the berm in the locations shown on Construction Drawings G-201 and G-203A (Appendix A). In some areas, berm materials may be reshaped from the river side to the inland side to create the stable slopes. The top elevations of the berm indicated on Construction Drawing G-203A have been designed based on the estimated 100-year flood elevation (FEMA 1992), as discussed in Section 2.4. It should be noted that in general the reshaping activities will increase the floodplain area along this section of the Boquet River.

Material excavated from the riverbank which is not required for the reshaping activities will be transported to the upland area and placed in the area shown on Construction Drawing G-202 (Appendix A). The upland area to receive such material will be proof-rolled using conventional compaction equipment (e.g., vibratory roller) prior to placing excavated riverbank material and again once the riverbank material has been placed, as specified in Technical Specification Sections 02203 and 02201. A minimum 12-inch layer of topsoil will be placed over the top of the consolidated material, as discussed below.

Excavation from the berm area will yield approximately 9,000 cubic yards (cy) to be placed either on the upland side of the reshaped berm or within the upland soil cover area. The final grading plan for the soil cover area assumes that 1 ft of consolidation will occur during the proof rolling/compaction of the area and that 1 ft of topsoil will be placed above the fill. It should be noted that these are in-place measurements based on the available site information, and may vary based on field conditions at the time of construction. The proposed grades may be revised to accommodate field conditions.

Following the removal and reshaping activities, the bottom portion of the riverbank near the toe will be covered with a non-woven geotextile and riprap to stabilize the bank, as illustrated on Construction Drawing G-202 (Appendix A). Construction Drawing G-208 provides a typical detail of the reshaped and stabilized riverbank. The upper portion of the berm will be covered with a minimum of 12-inches of topsoil and seeded. In addition, smaller stone will be placed between the larger riprap to create more stable footing along the riprap in select locations.

As illustrated on Construction Drawing G-201, a portion of the riverbank (approximately between Sections 9+75 and 12+50) has been identified as being undisturbed during construction, except for the placement of riprap at the toe of slope. If visible black ash area(s) are encountered during construction that are outside of the proposed area of remediation illustrated on the Construction Drawings (Appendix A), those areas will be addressed during construction on a case-by-case basis in the field.

Additional details related to the materials and design specifications related to the riverbank reshaping and stabilization and consolidation of the black ash are provided on the Construction Drawings and presented in the Technical Specifications provided in Appendix A and B, respectively.

In Georgia-Pacific's discussions with the Town and the Boquet River Association (BRASS), there is an interest in planting portions of the reshaped berm. BRASS was created to facilitate river conservation and improvement efforts, and have volunteered to place plantings in conjunction with the Town's plans for their property, once the remedial construction is complete.

Construction equipment in contact with the black ash during construction activities will be cleaned prior to moving to an area without exposed black ash and/or prior to demobilization.

3.4.2 Inlet/Outlet Structure

As discussed above, the location of the inlet/outlet structure is illustrated on Construction Drawing G-201 (Appendix A). As indicated on the detail of the cross section of the proposed inlet/outlet structure, the sidewalls of the structure will be constructed at an approximate 3H:1V slope (Construction Drawing G-208 [Appendix A]). The specific elevation of the invert elevation of the structure, designed based on existing regional FEMA floodplain information, is approximately 103 ft, and a check dam will be installed with a peak elevation of 105 ft approximately five ft upland of the inlet/outlet structure (Construction Drawing G-208 [Appendix A]).

The inlet/outlet structure is designed to slow the velocity of water moving into and out of the upland floodplain. The check dam structure included in the design affords the flood waters time to filter back to the River. In addition, vegetation will be planted upland of the inlet/outlet structure during restoration to aid in facilitating a velocity reduction and filtration process (see Construction Drawing G-205 [Appendix A]).

3.4.3 Upland Restoration and Soil Cover Placement

A minimum of a 12-inch topsoil layer will be placed over the upland area where riverbank materials were placed (i.e., in the soil cover area indicated on Construction Drawing G-202 [Appendix A]). The upland area will then be restored by placing seed and mulch over the topsoil in accordance with Technical Specification Section 02210. A cross section of the typical soil cover to be placed is illustrated on Construction Drawing G-208 (Appendix A). Wood chips will also be placed along the boundary between the soil cover area and the undisturbed area, as shown on Construction Drawing G-205 (Appendix A) based on the quantity of wood chips produced during site clearing activities. A post-construction survey will be performed following completion of the restoration activities.

3.4.4 Water Management

Surface water diversion methods and protection will be implemented/used as necessary to minimize the amount of surface water that enters the riverbank areas actively under construction during implementation of remedial activities. Water diversion methods and/or controls may include, but may not be limited to, using hay bales/silt fence or channeling potential surface flow around the active area by placing a temporary berm (i.e., soil berm, jersey barriers). Additionally, an impermeable cover(s) will be used to prevent heavy precipitation and/or surface water from entering into the active construction area(s) when not in use, and anchored appropriately to resist wind forces.

3.5 General Site Restoration

Restoration of the upland area will require the removal of materials placed to stabilize the roads and portions of the staging area, and riverbank fill material and topsoil will be used, as necessary, to attain final grades for appropriate drainage. Specific details regarding the restoration will be determined in the field on an as-needed basis. Equipment related to the remedial activities will be removed, and the gravel base layer placed to construct the staging area and access pad will be left in-place at the request of the Town. The other upland areas disturbed during construction will be seeded and mulched as indicated on Construction Drawing G-205 (Appendix A).

3.6 Construction Oversight and Quality Control

As discussed in Section 3.3, a full-time RPR will oversee the work of the Contractor and confirm that the directions indicated in the contract documents (i.e., Construction Drawings, Technical Specifications, RAWP) are followed. Changes in the work will be documented and change orders issued as applicable.

During construction, the RPR will work with the Contractor to maintain a set of Record Drawings at the Site, on which the Contractor will show any changes. These drawings will be kept current on a daily basis, consistent with the progress of the work. The following items are examples of some of the types of changes that could occur and must be recorded by the Contractor:

- changes in limits/extent of removal and reshaping
- changes in materials, such as restoration materials

- changes in topographical contours of finished grades
- additions to project activities
- elimination of a project component
- unforeseen modifications made to existing underground utilities, fences, and other structures made necessary by requirements of the work

The Contractor will meet communication and documentation requirements by preparing daily construction reports, photographic documentation, and construction submittals, as well as participating in project meetings and report development. Upon completion of the project, the Contractor will provide Record Drawings for use in preparation of the Final Report [per 6 New York Codes, Rules, and Regulations [NYCRR] 375-1.6(b)] and Final Engineering Report [per 6 NYCRR 375-1.6(c)].

Prior to being brought on-site, topsoil and other restoration materials will be subject to material testing and approval by Georgia-Pacific. Offsite materials brought onsite for use as fill will be from a certified New York State Department of Transportation source, and will meet the Part 375 soil cleanup objectives, as specified in Technical Specification Section 02206. The complete QA/QC guidelines for the project are specified on the Construction Drawings and in the Technical Specifications (Appendices A and B, respectively).

3.7 Project Conditions and Monitoring

3.7.1 Existing Structures and Utilities

No permanent structures are known to exist on the property. The Town WWTP occupies adjacent parcels, and the remediation activities will be conducted in a manner to avoid the operations at the Town WWTP.

A minimum three of the five monitoring wells on the Site will be abandoned during construction in accordance with Technical Specification Section 02201 (Appendix B). The two additional monitoring wells may be abandoned at the discretion of the Owner/Engineer, if they are creating interference with the construction operations (Construction Drawing G-200 [Appendix A]).

Abandoned pipes and outfall structures within the construction area will be abandoned or removed during construction. If these pipes cannot be removed, they will be capped and sealed, as indicated on Construction Drawing G-207 (Appendix A) and in Technical Specification Section 02201 (Appendix B). Notification will be provided to the Town as intact pipes (i.e., no notification is required for pipe debris where both ends are visible) are discovered, and the current use (if any) of each intact pipe will be discussed with the Town prior to the intact pipe being abandoned or removed. Following completion of the remedial activities, Record Drawings will be provided to the Town to illustrate where pipes were found and removed during construction activities.

With regard to utility clearance, Dig Safely New York (digsafelynewyork.com, 1.800.962.7922) will be contacted and the procedures followed. Utilities may be encountered during the remedial action. Prior to the performance of removal activities, the Contractor will identify and evaluate utilities to be protected.

3.7.2 Traffic Control

Signs indicating that construction vehicles will be entering and leaving the public roadway will be placed approximately 200 ft in each direction from where trucks will enter the main roadways. Measures will be taken to limit tracking debris onto the roadways. The Contractor will prepare a traffic control plan for approval by Georgia-Pacific. The traffic control plan will outline efforts to protect School Street and other public roads potentially affected by construction activities. The traffic control plan will ensure that, to the extent practicable, for safe implementation of construction activities, the road to the Town WWTP will be kept open except when agreed upon with the Town for intermittent and temporary blockage required for moving large equipment. Similarly, to the extent practicable, community access to the public boat launch area at the end of the road to the Town WWTP shall be maintained for the duration of construction activities.

As such, the Contractor's traffic control plan shall specify where the traffic flow/pattern will be for construction vehicles, and to discuss the access for the WWTP and the public boat launch area. Every attempt shall be made to reduce the impact to the community, and in general no impact is expected on public roads/to the boat access during the bulk of construction.

3.7.3 Dust Control

The Contractor will be responsible for taking measures to control dust produced by excavation, loading, backfilling, traffic, or other means. Water trucks may be used on site, as necessary, to limit dust generation from haul roads and excavation areas.

Air monitoring for dust will be performed at the site during construction in accordance with Technical Specification Section 02508 (Appendix B). Air monitoring will be conducted prior to the start of construction to establish adequate baseline data, and will be performed until significant soil handling activities are complete.

3.7.4 Water Column Monitoring

Beginning shortly before the performance of in-water activities are initiated and continuing throughout the reshaping and restoration activities proposed for below the water line, the water column will be monitored for turbidity at two locations within the Boquet River, one upriver of the remediation area and one downriver of the construction area. Depending on access to the River, the upstream monitoring location will likely be approximately 50 ft upstream of the active work area, while still keeping downstream of the high-flow water associated with the upstream dam, and the downstream monitoring location will be a minimum of 500 ft downstream of the active work area and likely near the boat launch access point. Turbidity measurements will be made and recorded on a routine basis either by using a turbidity probe suspended at the approximate mid-depth elevation at each of the upriver and downriver locations, or by collecting a sample from the approximate mid-depth elevation at each location.

The turbidity data will be reviewed on a daily basis during in-water construction activities to assess potential changes in water column turbidity. The downriver turbidity action level to be used during this project is as follows:

$$\text{Turbidity}_{\text{Downriver}} \geq \text{Turbidity}_{\text{Upriver}} + 50 \text{ NTU}$$

This action level has been developed based on review of USEPA guidance (USEPA 2012), and experience at several NYSDEC-approved projects. The comparison of upstream to downstream turbidity levels accounts for background turbidity levels within the river system. In addition, in river systems there is a natural increase in turbidity as you move through high velocity areas, and experience has indicated that

normal variability in turbidity levels in river systems often accounts for a portion of the delta 50 NTU value used as the action level.

During in-water reshaping and restoration activities, evaluations of the turbidity data will be made at least once per day. In the event that the readings recorded at the downriver location exceed the turbidity action level (i.e., the upstream level plus 50 NTU), a number activities will be initiated, including the following, in order:

- Continued monitoring at the downriver location to evaluate if the prior sampling result was an anomaly or if the elevated reading was possibly a short duration event,

- Collection of additional samples from various locations within or adjacent to the active construction areas to possibly identify the potential source(s) of the elevated reading, and/or

- Review of the ongoing removal and replacement activities and modification of the condition or performance of the existing erosion and sedimentation control measures.

If these assessment activities indicate that the elevated downriver turbidity reading reflects a water quality impact that could persist or recur and that it is related to specific removal, reshaping, or replacement activities or site controls, the pertinent activities will be modified to the extent feasible, halted, or additional controls will be implemented.

3.7.5 Flood Control

If a storm event that may produce high-flow conditions in the Boquet River is expected, certain precautions must be taken. If such severe weather is predicted, equipment must be demobilized, moved out of the floodplain, and staged at a designated parking area on higher ground and away from the River. Active excavation areas (i.e., those areas where riverbank stabilization has not been completed) may be covered with tarps and secured, and all personnel will leave the floodplain area. Excavations will be restored as sections are completed unless otherwise permitted by the RPR. Weather forecasts will be monitored and necessary precautions will be taken based on these forecasts. If there is a chance of a significant storm event occurring, all personnel and equipment will be moved to the designated higher ground parking areas on site. In addition, if severe weather is

predicted to occur outside of regularly scheduled work hours, at the end of the work day during which such forecast was noted, the Contractor shall move all construction equipment into the designated higher ground parking area for overnight storage.

3.7.6 Project Signage for Anglers

As requested by the NYSDEC comments provided on July 6, 2012 (NYSDEC 2012b), if construction activities (in-water or upland activities) continue beyond September 15, 2012, the Contractor shall install signs to direct anglers to the appropriate location(s) to obtain access to the Boquet River without crossing within the limits of the construction site (as established by the Contractor). In addition, the Contractor shall make every appropriate attempt to prohibit persons not affiliated with the construction activities from trespassing onto the construction site.

3.8 Health and Safety

ARCADIS has provided a sample HASP that will be used for construction oversight activities in Appendix C. The Contractor will be responsible for site safety and will prepare a site-specific HASP submittal to Georgia-Pacific for review. Once reviewed, the HASP will be provided to all site personnel. The HASP will include, but will not be limited to, information on the following items:

- removal from/reshaping of riverbanks
- personal protective equipment (PPE)
- soil cover placement
- restoration
- flood protocol
- traffic control
- staging areas
- erosion and sedimentation control
- work environment

The Contractor will be required to specify in their HASP a safe work envelope (i.e., a minimum number of ft away from the edge of the riverbank) at the riverbank in which no equipment or worker may operate to prevent equipment and/or workers from falling into the Boquet River. As ticks are also a site-specific health and safety concern, the Contractor will also be required to provide a tick bite prevention/awareness plan to their workers in the HASP.

Georgia-Pacific, the Engineer, and the Contractor will each assign a Health and Safety Officer to oversee field activities and monitor compliance with the HASP. Relevant health and safety issues applicable to adjacent property owners and residents will be communicated by Georgia-Pacific or the Contractor in a clear and effective manner prior to commencing construction. All visitors to the site will require written approval from Georgia-Pacific.

The primary routes of exposure at the site are:

- inhalation of particulate and dust generated during remedial activities
- incidental ingestion from direct contact with black ash

Site-specific engineering controls and monitoring will be employed to reduce exposures and protect the safety of workers and residents during the excavation. Air monitoring will be conducted within the excavation area and at the perimeter of each work area, as discussed above in Section 3.7.3.

Soil and sediment that accumulate on equipment will require cleaning before the equipment leaves the site. The Contractor will construct a pad near the work area, as shown on Construction Drawing G-200 (Appendix A) for such cleaning operations. Cleaning will follow the procedures outlined in the HASP, which will include dry scrubbing and/or spraying the tires of vehicles leaving the site. No construction vehicles will be allowed to traverse public roadways without proper cleaning.

Site personnel must have Occupational Safety and Health Administration (OSHA) 40-hour hazardous materials training with yearly 8-hour refreshers. Site supervisory personnel must have 8-hour supervisor's training. The Contractor will provide evidence of training and refresher course updates for relevant on-site personnel.

4. Schedule and Post-Construction Activities

Construction activities are scheduled to begin in late summer of 2012. As indicated on the Construction Drawings, the Contractor shall, to the extent practicable, complete in-water activities by September 15, 2012. If this is not feasible in-water activities should be completed by October 1, 2012, unless special permission is requested from and approved by the Owner (upland work may proceed past these dates) (Appendix A). To meet this construction start date, the following schedule is anticipated to be followed:

- NYSDEC review and approval of the Final RAWP must be completed by August 29, 2012.
- USACE review and approval of the Joint Permit Application for a Nationwide Permit must be completed in August 2012, with minimal comments.
- Contractor bidding will initiate in August 2012, and the Contractor Award will be finalized by the end of August 2012.
- Construction will start in September 2012 and should be completed by the end of December 2012.

Following completion of construction activities, a Final Report per 6 NYCRR 375-1.6(b) and a Final Engineering Report as per 6 NYCRR 375-1.6(c) will be prepared and submitted to NYSDEC for their records (NYSDEC 2006). In addition, following completion of construction activities, a SMP will be developed and submitted, an institutional control will be imposed for the Site, and the property owner will need to provide a periodic certification of institutional and engineering record.

A SMP will be drafted and submitted to NYSDEC at the end of the construction period. This SMP will identify and implement institutional and engineering controls required for the Site, including: (a) management of the final cover system to restrict excavation below the soil layer, pavement, or buildings. Excavated soil will be properly handled to protect the health and safety of workers and the nearby community, and will be properly managed in a manner acceptable to the NYSDEC; (b) identification of any use restrictions on the Site; and (c) provisions for the continued proper maintenance of the components of the remedy. Specifically, the institutional control, in the form of environmental easement, will be imposed to require (a) limiting the use and development of the area of the black ash to restricted

residential use (restricted residential use as defined in 6 NYCRR Part 375 would include recreational activities); (b) compliance with the approved SMP; (c) restricting the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the New York State Department of Health; and (d) the property owner (i.e., the Town) to complete and submit to the NYSDEC a periodic certification of institutional and engineering controls.

In addition, the SMP will also describe the monitoring and maintenance activities that Georgia-Pacific will conduct annually for 4 years post construction. These activities will include monitoring of the remedy for impacts related to the natural acts and performance of vegetation replacement for dead loss, if any. After 4 years of post-construction monitoring and maintenance, Georgia-Pacific will petition NYSDEC to end Georgia-Pacific's involvement in implementation of the SMP. Georgia-Pacific will prepare and submit an Annual Report to the NYSDEC during the period of Georgia-Pacific's involvement in implementation of the SMP.

5. References

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ARCADIS. 2012b. E-mail from L.S. Ketcham to Town of Willsboro (J. Kinley) re: response to Town of Willsboro Comments on the Draft Final RAWP. June 27, 2012.

Earth Science Engineering, P.C. 2006. *Site Investigation Report*. November 2006.

FEMA. 1992. Flood Insurance Study and National Flood Insurance Rate Map for Town of Willsboro, New York (Community-Panel Number 360267 0020 C). Map revised May 18, 1992.

Georgia-Pacific. 2011. *Pre-Design Investigation and Remedial Action Work Plan*. October 3, 2011.

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Georgia-Pacific. 2012b. *Draft Remedial Action Work Plan*. March 15, 2012.

Georgia-Pacific. 2012c. *Draft Final Remedial Action Work Plan*. May 31, 2012.

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NYSDEC. 2011a. *Explanation of Significant Differences*. August 22, 2011.

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NYSDEC, 2012f. E-mail from J. Swartwout to ARCADIS (L.S. Ketcham) re: comments on the Draft Final RAWP. July 30, 2012.

Town. 2012a. E-mail from J. Kinley, Code Enforcement Officer to ARCADIS (L.S. Ketcham) re: comments on the Draft RAWP. April 13, 2012.

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USACE. 2012. Letter from V.A. Bova to ARCADIS (D.J. Stout) regarding Request for Pre-Application Consultation by Georgia-Pacific LLC; Application Number NAN-2012-00195-UBR. February 21, 2012.

USEPA on the internet. 2012. Construction and Development: Status of Rulemaking to Revise Numeric Turbidity Limit. July 2012. <http://water.epa.gov/scitech/wastetech/guide/construction/index.cfm>

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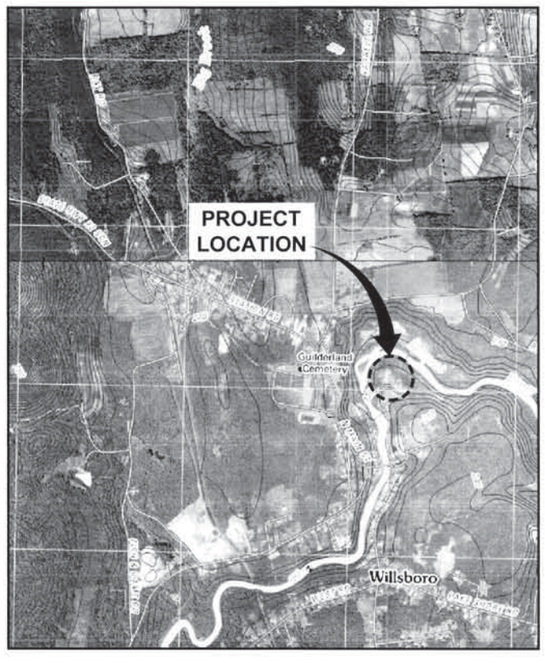
Appendix A

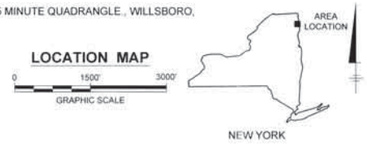
Construction Drawings

CONSTRUCTION DRAWINGS

WILLSBORO BLACK ASH POND
FINAL REMEDIAL ACTION WORK PLAN



REFERENCE: BASE MAP USGS 7.5 MINUTE QUADRANGLE., WILLSBORO, PORT DOUGLASS, N.Y., 2010.



GEORGIA-PACIFIC LLC
WILLSBORO, NEW YORK

DATE ISSUED
AUGUST 2012

ARCADIS

ARCADIS OF NEW YORK, INC.

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GENERAL NOTES:

1. BASE MAP DEVELOPED FROM AN INSTRUMENT SITE SURVEY COMPLETED BY THEW ASSOCIATES ON NOVEMBER 22, 2011.
2. THE BASE MAP IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE) AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). ELEVATIONS AND CONTOURS SHOWN REFERENCE NAVD88-GEOID09.
3. NORTH ARROW AS SHOWN INDICATES GRID NORTH REFERENCED TO NAD83 AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE).
4. THE REFERENCE HORIZONTAL AND VERTICAL CONTROL STATION IS A COOPERATIVE BASE NETWORK CONTROL STATION MONUMENT STAMPED "KEESVILLE". KEESVILLE IS AN A ORDER HORIZONTAL AND A SECOND ORDER CLASS 2 CONTROL MONUMENT ESTABLISHED BY THE NATIONAL GEODETIC SURVEY. ELEVATION = 490.87'.
5. CONTOURS SHOWN ON THE BASE MAP WERE GENERATED FROM A DIGITAL TERRAIN MODEL UTILIZING AUTODESK LAND DESKTOP SURVEYING AND ENGINEERING SOFTWARE.
6. THE SLOPE ALONG THE SOUTHERLY EDGE OF THE EXPOSED BLACK ASH AREA IS MOSTLY COMPRISED OF ROOT BALLS, CONCRETE, TRASH, CONSTRUCTION MATERIALS AND OTHER DEBRIS.
7. THE STATIONING SHOWN AT THE CROSS SECTIONS PROTRUDING INTO THE RIVER ARE APPROXIMATE AND FOR REFERENCE ONLY. THE CROSS SECTIONS ARE MARKED BY LATH SET DURING THE SURVEY MARKED WITH THE APPROPRIATE STATION. THERE WAS NO BASELINE ESTABLISHED DURING THE SURVEY.
8. THE CONTRACTOR WILL BE PRESENT AT A PRE-CONSTRUCTION CONFERENCE BEFORE THE WORK IS STARTED.
9. THE LOCATION OF ALL STRUCTURES/UTILITIES SHOWN IS APPROXIMATE. ADDITIONAL SITE FEATURES MAY BE PRESENT THAT ARE NOT SHOWN ON THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES PRIOR TO COMMENCING CONSTRUCTION.
10. UNLESS NOTED OTHERWISE, ALL STRUCTURES AND SITE FEATURES, INCLUDING MONITORING WELLS, FENCING, AND ESTABLISHED VEGETATION SHALL BE PROTECTED. VEGETATION EXISTING WITHIN THE LIMITS OF THE EXPOSED BLACK ASH AREA WILL BE CLEARED.
11. LOCATIONS OF ALL PHYSICAL OBSTRUCTIONS AND DEBRIS ARE APPROXIMATE. ONLY KNOWN OBSTRUCTIONS ARE SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL OBSTRUCTIONS WITHIN THE WORK AREA.
12. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN SURVEY CONTROL DURING THE PERFORMANCE OF WORK.
13. THE CONTRACTOR WILL COMPLY WITH ALL REQUIREMENTS OF SEPARATELY BOUND PROJECT IMPLEMENTATION PLANS AND PERMITS.
14. FILL AND STONE GRADATIONS ARE PROVIDED IN TECHNICAL SPECIFICATIONS.
15. THE CONTRACTOR WILL AT ALL TIMES KEEP THE CONSTRUCTION AREAS FREE FROM ACCUMULATIONS OF WASTE MATERIALS OR RUBBISH; AND PRIOR TO COMPLETION OF THE WORK, REMOVE ANY RUBBISH FROM THE PREMISES AND ALL TOOLS, EQUIPMENT AND MATERIALS.
16. THE CONTRACTOR WILL MAINTAIN SUITABLE TRAFFIC SAFETY SIGNS, EQUIPMENT, AND MANPOWER TO PROVIDE TRAFFIC CONTROL. THE CONTRACTOR WILL PROVIDE ALL LABOR AND EQUIPMENT NECESSARY TO MAINTAIN THE ROADWAYS FREE OF DIRT AND/OR DEBRIS RESULTING FROM PROJECT OPERATIONS.
17. BENCHMARKS: THE CONTRACTOR WILL USE THE BASELINE AND BENCHMARK LOCATIONS NOTED IN THE CONTRACT DRAWINGS AS THE CONTROLLING HORIZONTAL AND VERTICAL MONUMENTS FOR CONSTRUCTION, RESPECTIVELY.
18. PRIOR TO CONSTRUCTION AND UPON COMPLETION, THE CONTRACTOR WILL CONDUCT A GENERAL CLEANUP OF THE SITE TO INCLUDE FLOATING DEBRIS, DEBRIS WASHED ASHORE, REFUSE, AND OTHER ITEMS AND WILL PROPERLY DISPOSE OF ALL DEBRIS.
19. REMOVE AND STOCKPILE EXISTING RIPRAP FROM SHORELINE AS NECESSARY TO ACCESS THE WORK AREA AND COMPLETE WORK. REPLACE RIPRAP AFTER CONSTRUCTION IS COMPLETE.
20. THE EXISTING FENCE WILL BE REMOVED AS NECESSARY TO ACCESS THE WORK AREA. ANY FENCE REMOVED WILL BE REPLACED DURING RESTORATION ACTIVITIES.
21. FINAL PLACEMENT OF EROSION AND SEDIMENTATION CONTROLS WILL DEPEND ON THE CONTRACTOR'S SELECTED ACCESS AND STAGING LAYOUTS. AT A MINIMUM, SILT FENCE WILL BE PLACED ALONG DOWNGRADIENT SIDE OF ALL ACCESS ROADS, AND AROUND ALL STAGING/DECONTAMINATION AREAS. THE CONTRACTOR IS RESPONSIBLE FOR ANY SEDIMENT AND EROSION CONTROL MEASURES REQUIRED BY REGULATORY AUTHORITY REGARDLESS OF WHETHER OR NOT THEY ARE EXPLICITLY STATED IN THE CONTRACT DOCUMENTS.
22. THE CONTRACTOR WILL INSTALL AND MAINTAIN TURBIDITY CONTROL THROUGHOUT REMEDIAL ACTIVITIES.
23. THE CONTRACTOR WILL TAKE DAILY PRECAUTIONS TO MINIMIZE MATERIAL RELEASES INTO THE RIVER DURING CONSTRUCTION.
24. REMOVED MATERIAL PLACEMENT: GEORGIA-PACIFIC LLC WILL NOT APPROVE DEPOSITION OF REMOVED MATERIAL IN PLACES OTHER THAN THOSE DESIGNATED ON THE DRAWINGS OR OTHERWISE PREVIOUSLY APPROVED, AND MAY REQUIRE THE CONTRACTOR TO MOVE SUCH MISPLACED MATERIAL AT HIS OWN EXPENSE. WHEN NOTIFIED BY GEORGIA-PACIFIC LLC, EITHER TO HIS OFFICE OR HIS FOREMAN AT THE JOB SITE, OF ANY VIOLATION OF THE FOREGOING PROVISIONS, THE CONTRACTOR WILL TAKE IMMEDIATE CORRECTIVE ACTION. SHOULD THE CONTRACTOR REFUSE OR FAIL TO PROMPTLY CORRECT SUCH VIOLATION, GEORGIA-PACIFIC LLC MAY ORDER ALL OR PART OF THE WORK STOPPED PENDING CORRECTION. THE CONTRACTOR WILL NOT CLAIM OR BE ENTITLED TO AN EXTENSION OF CONTRACT COMPLETION TIME, EXCESS COSTS OR DAMAGES DUE TO TIME LOST BY SUCH A STOP WORK ORDER.
25. RESTORE NEW ACCESS POINTS TO EXISTING CONDITIONS AT A MINIMUM. RESTORE DISTURBED AREAS WITH IN-KIND PLANTINGS, AS NECESSARY.
26. UPON COMPLETION OF THE CONSTRUCTION, THE CONTRACTOR WILL LEAVE THE WORK AREA IN A CLEAN, NEAT AND ORDERLY CONDITION. DISTURBED AREAS WILL BE RESTORED IN ACCORDANCE WITH CONTRACT DRAWINGS AND APPLICABLE TECHNICAL SPECIFICATIONS.
27. THE BOUNDARY OF THE SITE WORK ZONES WILL BE DELINEATED BY THE CONTRACTOR WITH CAUTION TAPE, SAFETY FENCING, TRAFFIC CONES, BARRICADES, SIGNS, OR OTHER MEANS AS NECESSARY TO EFFECTIVELY IDENTIFY THE BOUNDARIES. THE SIZE AND BOUNDARY OF THE EXCLUSION ZONE WILL BE MODIFIED DAILY (OR MORE FREQUENTLY AS NEEDED) TO DELINEATE THE AREA AS REQUIRED TO SAFELY ACCOMPLISH THE DAY'S PLANNED ACTIVITIES.
28. THE CONTRACTOR SHALL, TO THE EXTENT PRACTICABLE, COMPLETE ALL IN-WATER ACTIVITIES BY SEPTEMBER 15, 2012. ALL IN-WATER ACTIVITIES MUST BE COMPLETED BY OCTOBER 1, 2012, UNLESS SPECIAL PERMISSION IS REQUESTED FROM AND APPROVED BY THE OWNER. UPLAND WORK MAY PROCEED PAST THESE DATES.
29. IF CONSTRUCTION ACTIVITIES (IN-WATER OR UPLAND ACTIVITIES) CONTINUE BEYOND SEPTEMBER 15, 2012, THE CONTRACTOR MUST INSTALL SIGNS TO DIRECT ANGLERS TO THE APPROPRIATE LOCATION(S) TO OBTAIN ACCESS TO THE BOQUET RIVER WITHOUT CROSSING WITHIN THE LIMITS OF THE CONSTRUCTION SITE, AS ESTABLISHED BY THE CONTRACTOR. EVERY ATTEMPT SHALL BE MADE BY THE CONTRACTOR TO PROHIBIT PERSONS NOT AFFILIATED WITH THE CONSTRUCTION ACTIVITIES FROM TRESPASSING ON TO THE CONSTRUCTION SITE.
30. IF SEVERE WEATHER IS PREDICTED IN THE FORECAST, THE CONTRACTOR SHALL MOVE ALL CONSTRUCTION VEHICLES INTO A DESIGNATED PARKING AREA ON HIGHER GROUND AND AWAY FROM THE RIVERBANK. IN ADDITION, IF THE SEVERE WEATHER IS PREDICTED TO OCCUR OUTSIDE OF REGULARLY-SCHEDULED WORK HOURS, AT THE END OF THE WORK DAY THE CONTRACTOR SHALL MOVE ALL CONSTRUCTION VEHICLES INTO SUCH DESIGNATED PARKING AREA FOR OVERNIGHT STORAGE.
31. THE CONTRACTOR SHALL SUFFICIENTLY CLEAN ALL CONSTRUCTION EQUIPMENT PRIOR TO MOBILIZING SUCH EQUIPMENT ON TO THE SITE, AND SHALL EMPLOY ALL BEST MANAGEMENT PRACTICES NECESSARY TO PREVENT THE TRANSPORT OF INVASIVE SPECIES ON TO THE SITE, AND SPECIFICALLY IN TO THE WETLAND AREA ON THE SITE.

ABBREVIATIONS:

BM	–	BENCHMARK
EL	–	ELEVATION
HDPE	–	HIGH DENSITY POLYETHYLENE
H:V	–	HORIZONTAL:VERTICAL
MAX	–	MAXIMUM
NAD83	–	NORTH AMERICAN DATUM OF 1983
NGVD29	–	NATIONAL GEODETIC VERTICAL DATUM OF 1929
PDI	–	PRE-DESIGN INVESTIGATION
STA	–	STATION
TYP.	–	TYPICAL

SURVEY BENCHMARKS			
LOCATION	NORTHING	EASTING	ELEVATION
BM-1	2019144.2681	782163.0148	119.51
BM-2	2018814.0094	782825.1409	105.53

BM-1:

YELLOW BENCHTIE SET IN THE EASTERLY FACE OF A 2 BOLE 28-INCH ASPEN TREE, LOCATED APPROXIMATELY 80' SOUTHERLY OF THE SOUTHERLY EDGE OF THE BOQUET RIVER, AND APPROXIMATELY 18' NORTHERLY OF THE MOST NORTHERLY END OF THE EXPOSED BLACK ASH. ELEVATION = 119.51'

BM-2:

RAILROAD SPIKE FOUND IN THE SOUTHERLY FACE OF A 20-INCH ASPEN TREE, LOCATED APPROXIMATELY 55 FEET SOUTHERLY OF THE SOUTHERLY EDGE OF THE BOQUET RIVER, AND ALSO LOCATED APPROXIMATELY 135 FEET NORTHERLY OF THE EASTERLY END OF THE EXPOSED BLACK ASH AREA. ELEVATION = 105.53'

LEGEND:

- CONTOUR MAJOR
- CONTOUR MINOR
- EXISTING FENCE LINE
- WOODEN FENCE
- TURBIDITY CONTROLS (3/G-207)
- EROSION AND SEDIMENT CONTROL (1/G-207) (2/G-207)
- PROPOSED TEMPORARY ACCESS PAD (1/G-206)
- PROPOSED TEMPORARY STAGING AREA (2/G-206)
- PROPOSED TEMPORARY LOCATION FOR CONSTRUCTION TRAILERS/SUPPORT FACILITIES
- PROPOSED EQUIPMENT CLEANING AREA (3/G-206)
- RIVERBANK STABILIZATION AREA
- RIPRAP
- UPLAND MULCH AND SEED
- RIVERBANK STABILIZATION AREA WITH SOIL COVER, MULCH AND SEED
- WOOD CHIP AREA
- GRAVEL AREA
- RIVERBANK STABILIZATION AREA WITH RIPRAP
- POTENTIAL ACCESS ROAD (4/G-206)
- EDGE OF WATER
- LIMITS OF EXPOSED BLACK ASH
- DRIP LINE OF MATURE WOODS
- EDGE OF GRAVEL
- EDGE OF TREES/BRUSH
- PDI-B-3 SOIL BORING
- MW-04 MONITORING WELL (MW)
- TP-10 TEST PIT (TP)
- WETLAND DELINEATION BOUNDARY
- W2-7 WETLAND DELINEATION FLAG NUMBER

CITY: SYRACUSE, NY DIV/GROUP: ENV/CAD DB:K.SARTORI PIC: D.COWIN PM/TM: D.PENNIMAN LYR:ON=*;OFF=*REF*
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NOT TO SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING
Professional Engineer's No.: 069985-1

State	Date Signed	Project Mgr.
NY	8/3/12	LSK
Designed by	Drawn by	Checked by
LJP	BKD	LSK

ARCADIS
ARCADIS OF NEW YORK, INC.

GEORGIA-PACIFIC LLC • WILLSBORO, NEW YORK
WILLSBORO BLACK ASH POND
FINAL REMEDIAL ACTION WORK PLAN

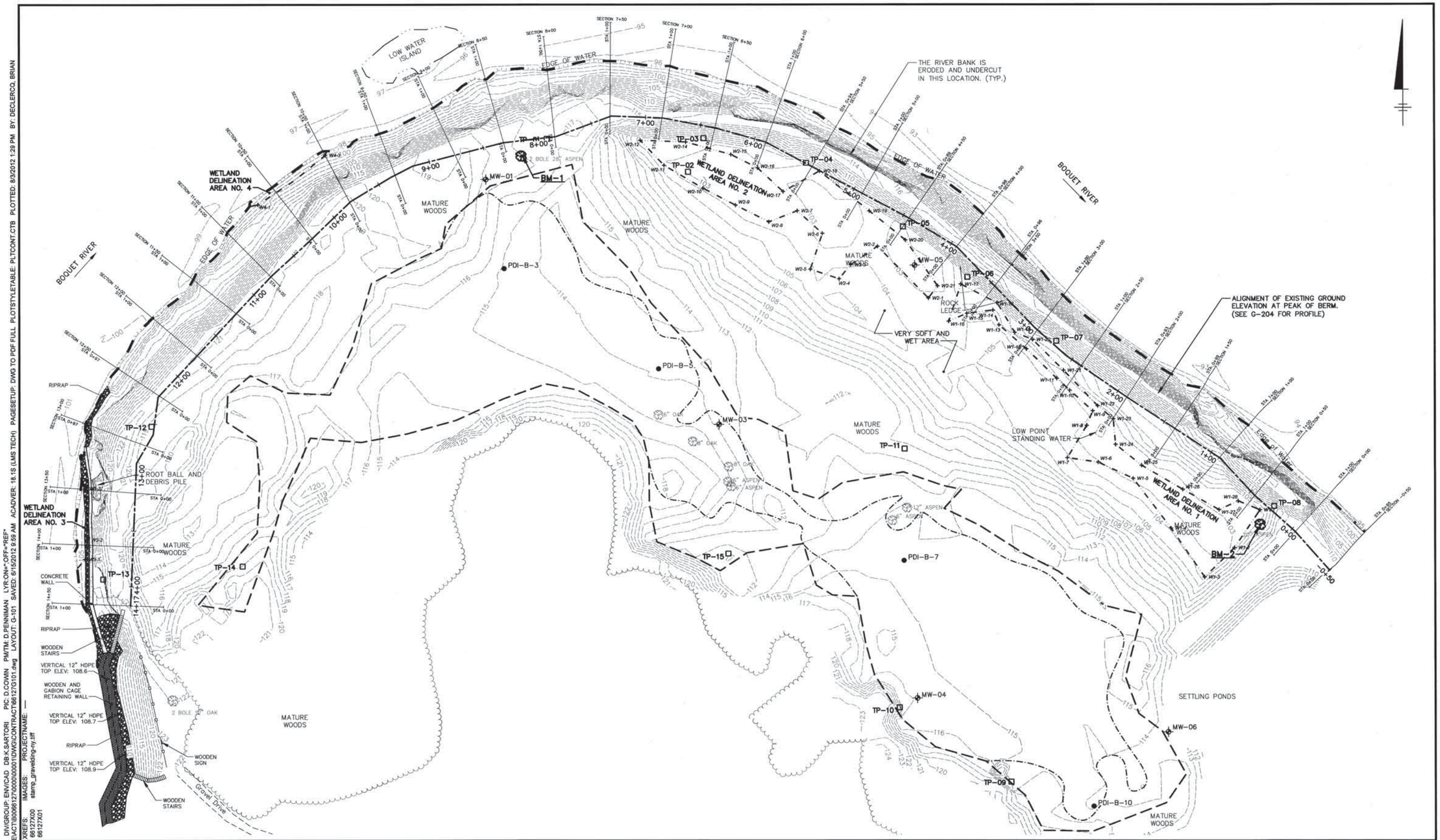
GENERAL NOTES, LEGEND, AND ABBREVIATIONS

GENERAL

ARCADIS Project No.: B0066127.0001.00001
Date: AUGUST 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-100



1"=40'	40' 0 40' 80'		
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:		USE TO VERIFY FIGURE REPRODUCTION SCALE	

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Designed by	Drawn by	Checked by
LJP	BKD	LSK

STATE OF NEW YORK · MARK OWEN GRAVELDING · 069985-1 · LICENSED PROFESSIONAL ENGINEER

ARCADIS
ARCADIS OF NEW YORK, INC.

GEORGIA-PACIFIC LLC • WILLSBORO, NEW YORK
WILLSBORO BLACK ASH POND
FINAL REMEDIAL ACTION WORK PLAN

EXISTING SITE PLAN

GENERAL

ARCADIS Project No.
B0066127.0001.00001

Date
AUGUST 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
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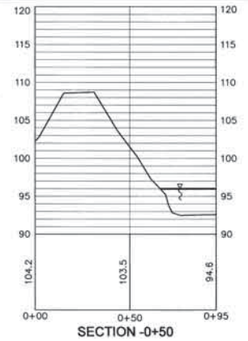
G-101



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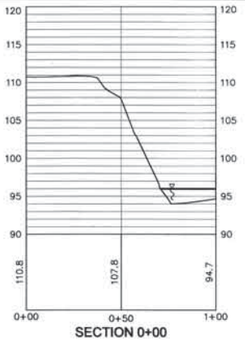

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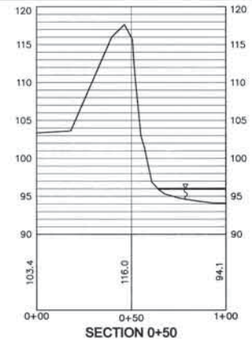

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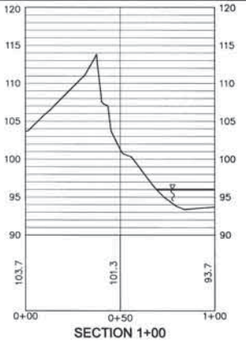

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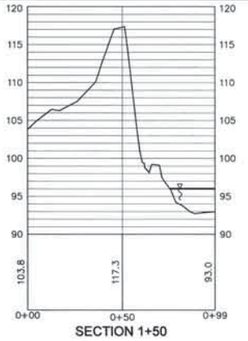

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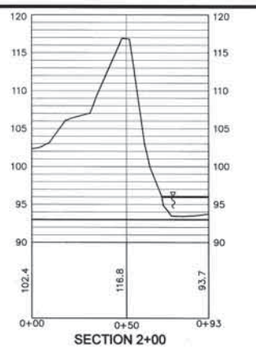

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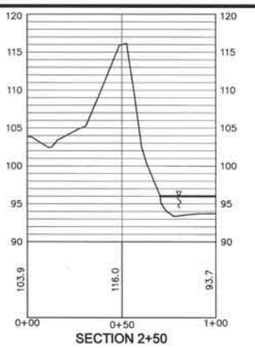

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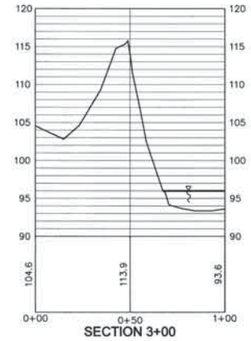

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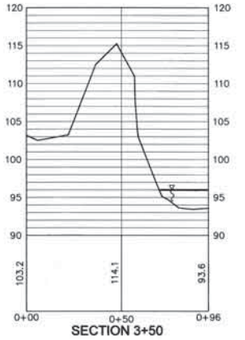

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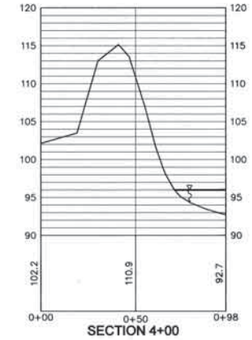

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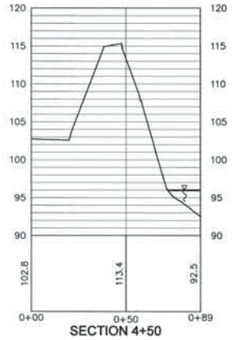

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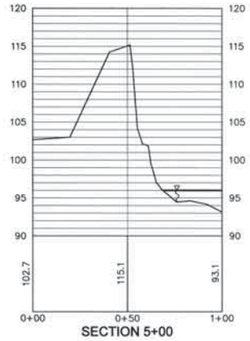

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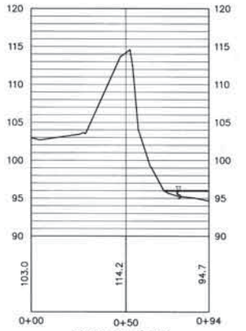

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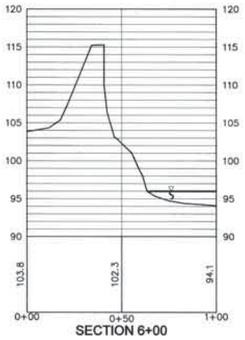

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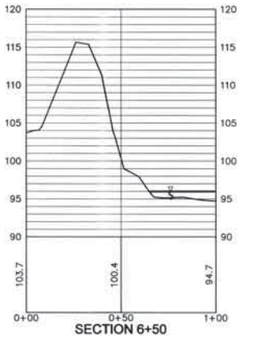

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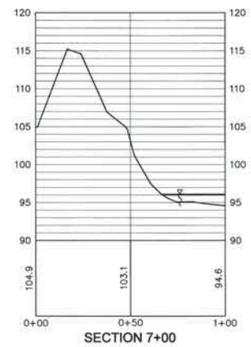

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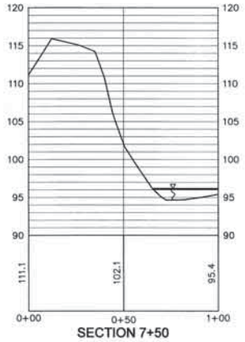

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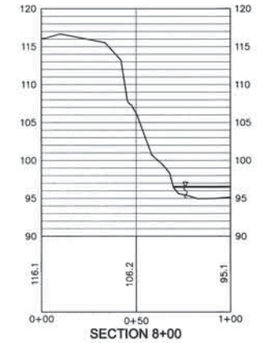

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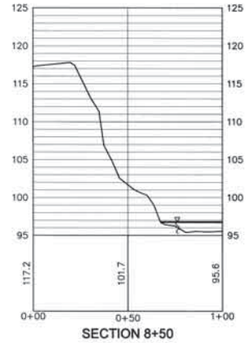

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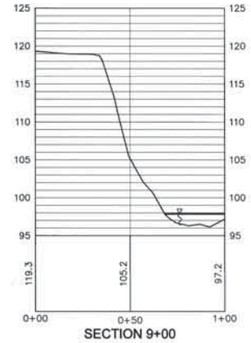

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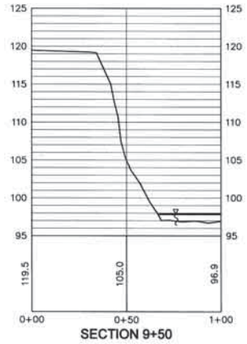

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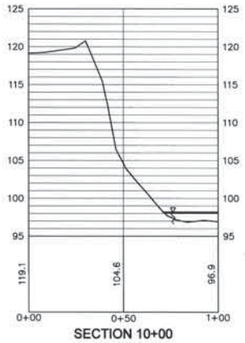

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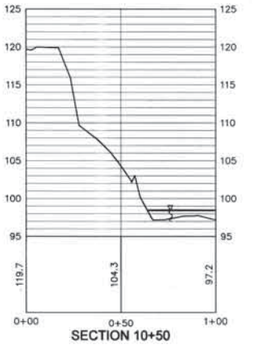

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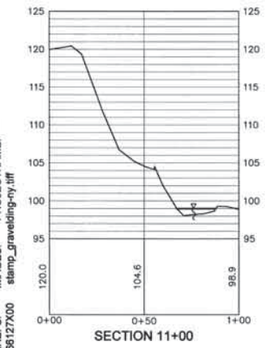

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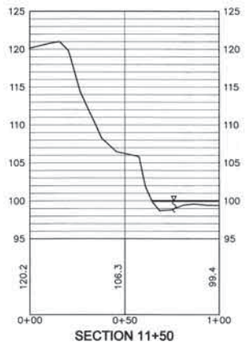

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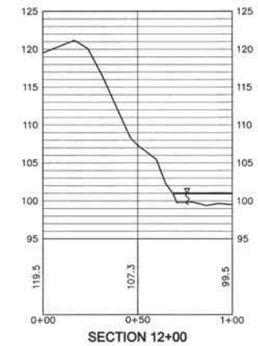

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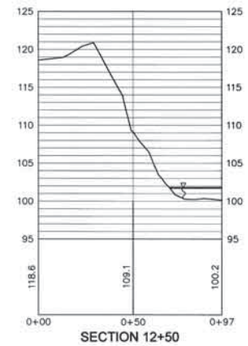

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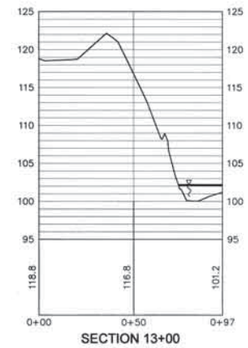

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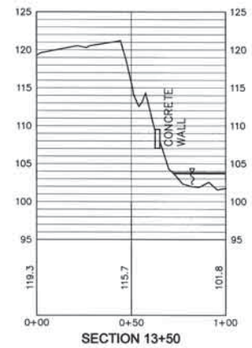

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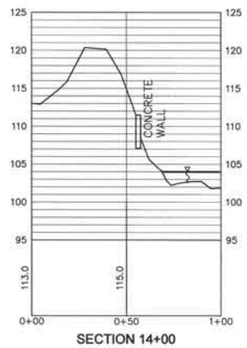


SECTION 14+00

LEGEND:

EXISTING GROUND

WATER SURFACE (AS MEASURED ON 11/22/11)

NOTE:

1. STATION 0+00 REFERENCE IS NOT A STANDARD DISTANCE FROM THE CENTERLINE OF THE EXISTING BERM.
2. PLEASE NOTE VERTICAL SCALE IS SHOWN AT A 4x EXAGGERATION.

40' 0 40' 80'
HORIZONTAL SCALE 1"=40'
10' 0 10' 20'
VERTICAL SCALE 1"=10'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name
MARK O. GRAVELDING
Professional Engineer's No.
069985-1

State	Date Signed	Project Mgr.
NY	8/3/12	LSK
Designed by	Drawn by	Checked by
LJP	BKD	LSK

STATE OF NEW YORK MARK OWEN GRAVELDING 069985-1 LICENSED PROFESSIONAL ENGINEER

ARCADIS
ARCADIS OF NEW YORK, INC.

GEORGIA-PACIFIC LLC • WILLSBORO, NEW YORK
WILLSBORO BLACK ASH POND
FINAL REMEDIAL ACTION WORK PLAN

CROSS SECTIONS - EXISTING CONDITIONS

GENERAL

ARCADIS Project No.
B0066127.0001.00001

Date
AUGUST 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-102

LOW WATER ISLAND
EDGE OF WATER
BOQUET RIVER
MW-01 TO BE ABANDONED
BM-1
2 BOLE 28" ASPEN
POTENTIAL ACCESS 4 G-206
MW-05 TO BE ABANDONED IF CREATING INTERFERENCE
ROCK LEDGE
GRASS SWALE
RIPRAP
ROOT BALL AND DEBRIS PILE
CONCRETE WALL
WOODEN STAIRS
VERTICAL 12" HDPE TOP ELEV: 108.6
WOODEN AND GABION CAGE RETAINING WALL
VERTICAL 12" HDPE TOP ELEV: 108.7
VERTICAL 12" HDPE TOP ELEV: 108.9
2 BOLE 12" OAK
WOODEN SIGN
Gravel Drive
PROPOSED LOCATION OF CONSTRUCTION ACCESS PAD
TIE TO EXISTING ROADWAY
APPROXIMATE LOCATION OF EXISTING SWALE
MW-03 TO BE ABANDONED
36" OAK
31" OAK
26" ASPEN
12" ASPEN
6" ASPEN
LOW POINT STANDING WATER
20" ASPEN
BM-2
MW-04 TO BE ABANDONED
MW-06 TO BE ABANDONED IF CREATING INTERFERENCE
POTENTIAL ACCESS 4 G-206

40' 0 40' 80'
1"=40'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
MARK O. GRAVELDING		
Professional Engineer's No.		
069985-1		
State	Date Signed	Project Mgr.
NY	8/3/12	LSK
Designed by	Drawn by	Checked by
LJP	BKD	LSK

STATE OF NEW YORK MARK OREN GRAVELDING LICENSED PROFESSIONAL ENGINEER NO. 069985-1

ARCADIS
ARCADIS OF NEW YORK, INC.

GEORGIA-PACIFIC LLC • WILLSBORO, NEW YORK
WILLSBORO BLACK ASH POND
FINAL REMEDIAL ACTION WORK PLAN

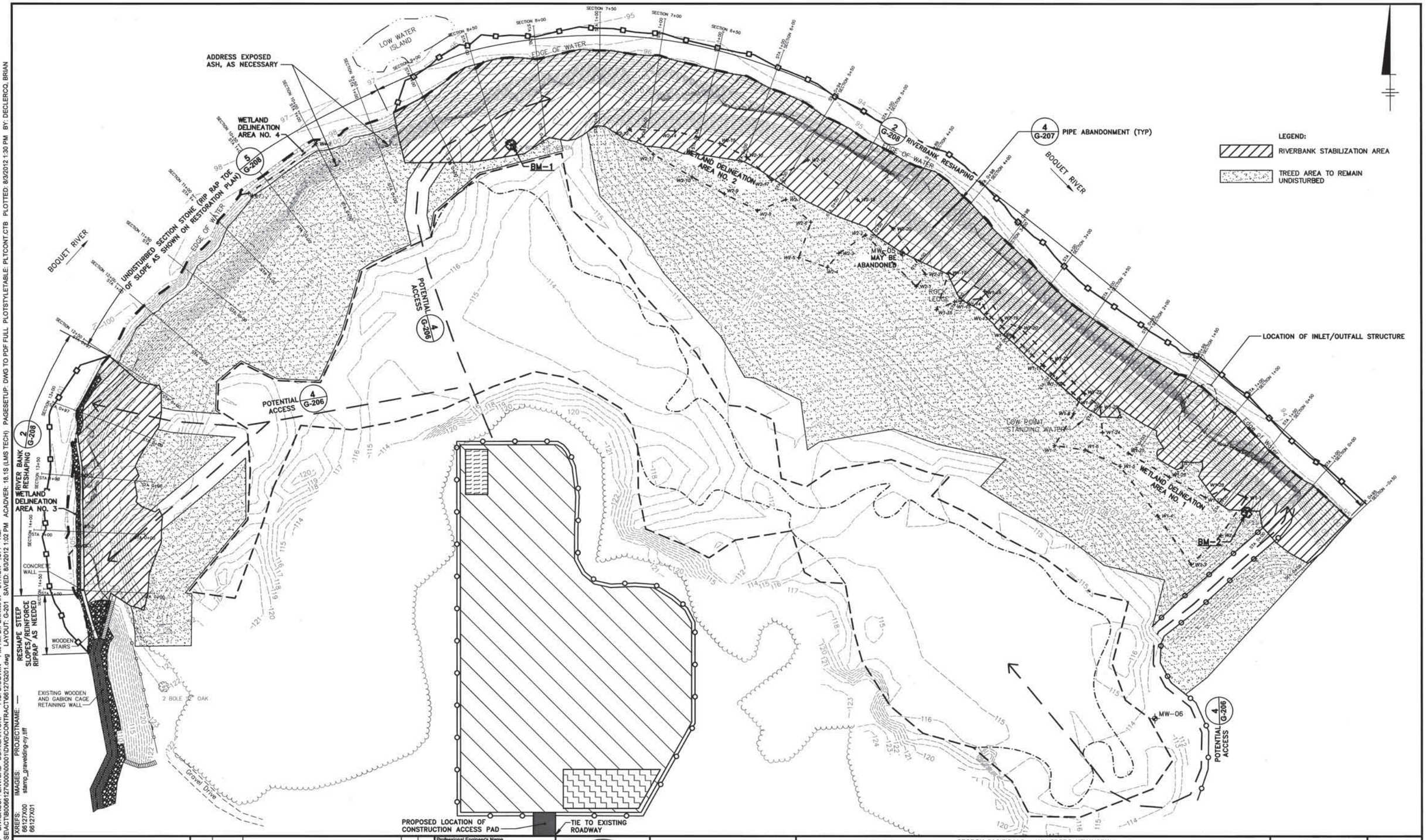
SITE DEVELOPMENT PLAN

GENERAL

ARCADIS Project No.
B0066127.0001.00001
Date
AUGUST 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-200



CITY: SYRACUSE, NY DIV/GROUP: ENV/CAD DB:K.SARTORI PIC: D.COWIN PM/TM: D.PENNIMAN LYR:ON=*OFF=*REF*
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1"=40' (40' 0 40' 80')

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NY	8/3/12	LSK
Designed by	Drawn by	Checked by
LJP	BKD	LSK

ARCADIS
ARCADIS OF NEW YORK, INC.

GEORGIA-PACIFIC LLC • WILLSBORO, NEW YORK
WILLSBORO BLACK ASH POND
FINAL REMEDIAL ACTION WORK PLAN

EXCAVATION PLAN

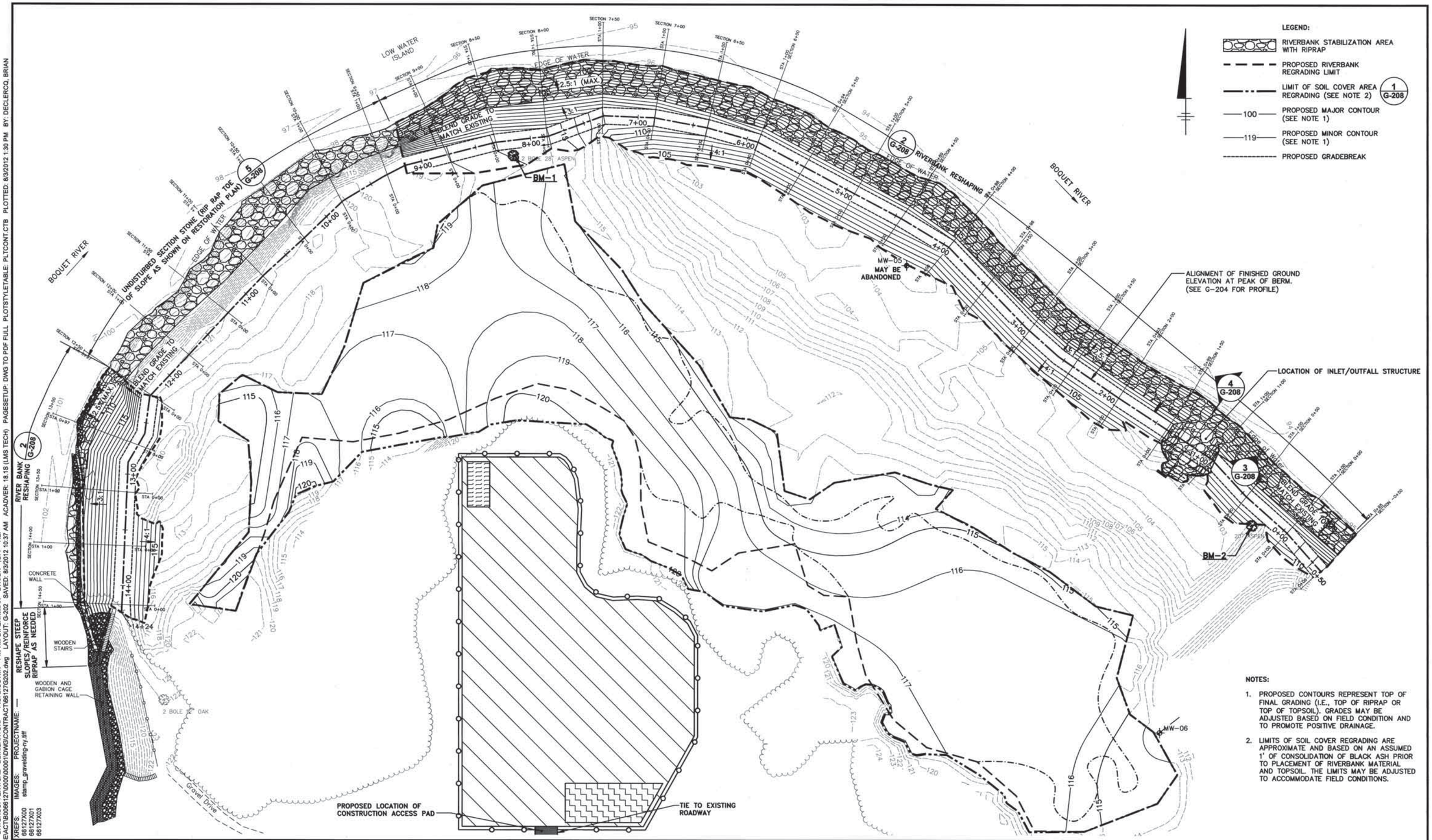
GENERAL

ARCADIS Project No.
B0066127.0001.00001

Date
AUGUST 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-201



NOTES:

1. PROPOSED CONTOURS REPRESENT TOP OF FINAL GRADING (I.E., TOP OF RIPRAP OR TOP OF TOPSOIL). GRADES MAY BE ADJUSTED BASED ON FIELD CONDITION AND TO PROMOTE POSITIVE DRAINAGE.
2. LIMITS OF SOIL COVER REGRADING ARE APPROXIMATE AND BASED ON AN ASSUMED 1' OF CONSOLIDATION OF BLACK ASH PRIOR TO PLACEMENT OF RIVERBANK MATERIAL AND TOPSOIL. THE LIMITS MAY BE ADJUSTED TO ACCOMMODATE FIELD CONDITIONS.

1"=40' 40' 0 40' 80'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING
Professional Engineer's No.: 069985-1

State	Date Signed	Project Mgr.
NY	8/3/12	LSK
Designed by	Drawn by	Checked by
LJP	BKD	LSK

STATE OF NEW YORK MARK OWEN GRAVELDING 069985 LICENSED PROFESSIONAL ENGINEER

ARCADIS
ARCADIS OF NEW YORK, INC.

GEORGIA-PACIFIC LLC • WILLSBORO, NEW YORK
WILLSBORO BLACK ASH POND
FINAL REMEDIAL ACTION WORK PLAN

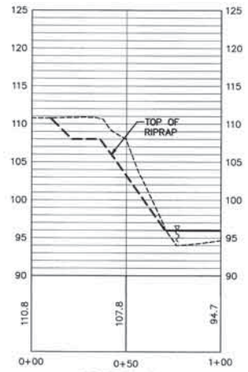
FINAL GRADING PLAN

GENERAL

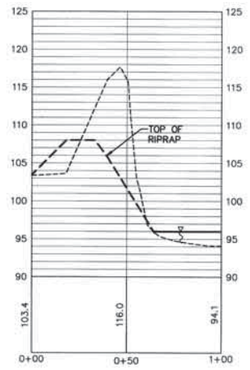
ARCADIS Project No.: B0066127.0001.00001
Date: AUGUST 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-202



SECTION 0+00



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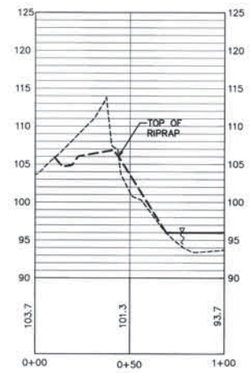

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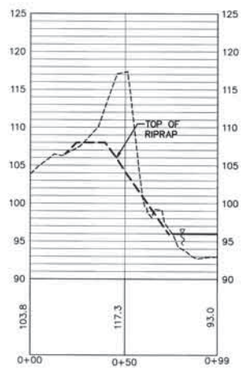

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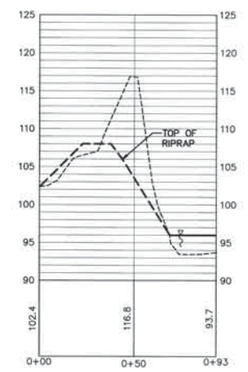

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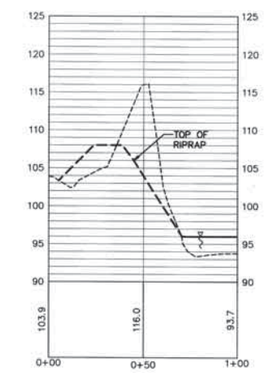

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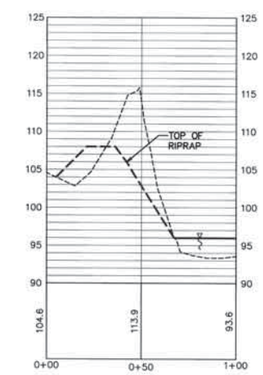

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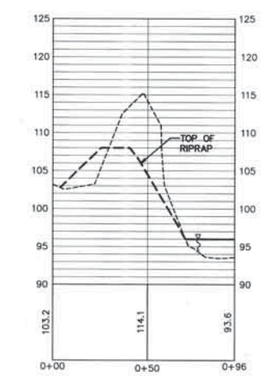

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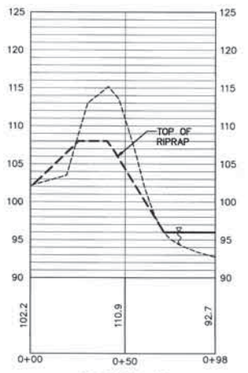

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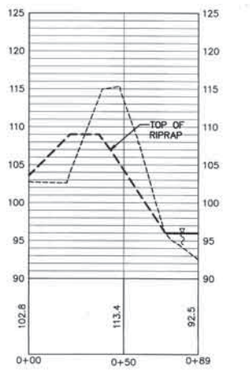

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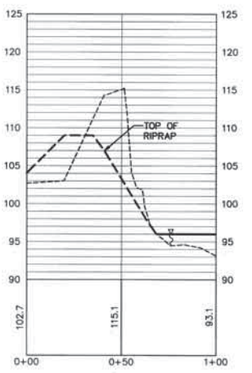

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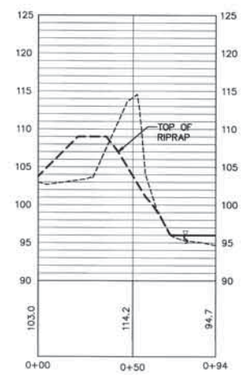

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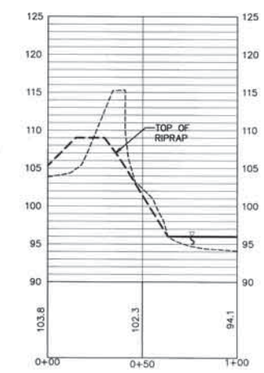

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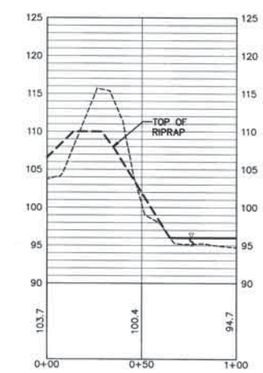

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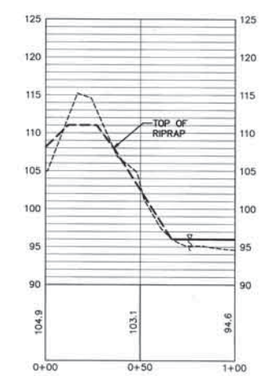

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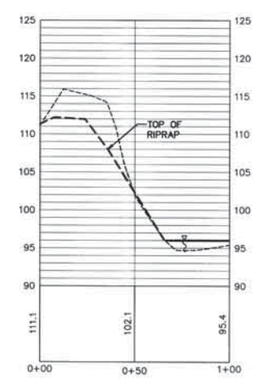

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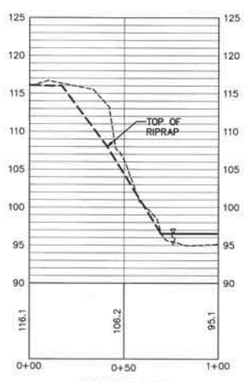

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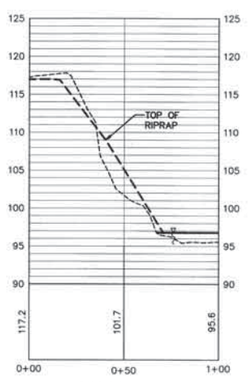

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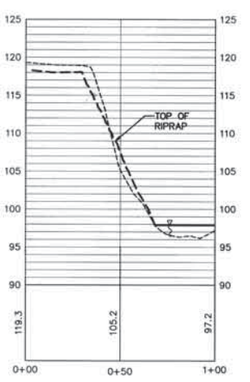
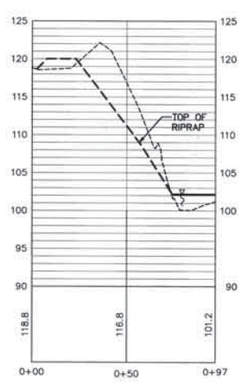


SECTION 9+00

SEE DRAWING G-203 B FOR CROSS SECTIONS 9+50 TO 12+50



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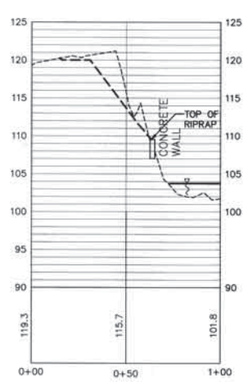

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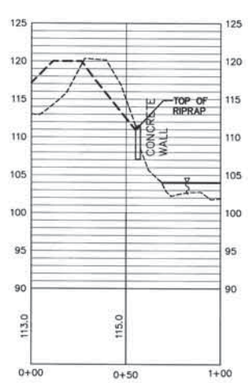

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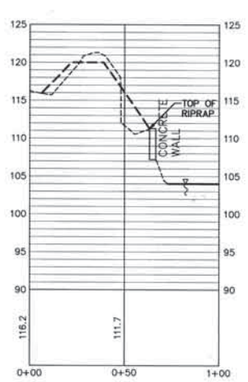

SECTION 14+50

LEGEND:

- PROPOSED FINISHED GRADE
- EXISTING GROUND
- WATER SURFACE (AS MEASURED 11/22/11)

NOTE:

1. SECTIONS PRESENTED HEREIN REPRESENT PORTIONS OF THE RIVER BANK THAT WILL BE RESHAPED.
2. NOTE THAT WATER ELEVATION DECREASES FROM UPSTREAM TO DOWNSTREAM TO REFLECT THE CHANGE IN BED ELEVATION MOVING IN THE DOWNSTREAM DIRECTION.
3. PLEASE NOTE VERTICAL SCALE IS SHOWN AT A 4x EXAGGERATION.

HORIZONTAL SCALE 1"=40'

VERTICAL SCALE 1"=10'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING
Professional Engineer's No.: 069985-1

State	Date Signed	Project Mgr.
NY	8/3/12	LSK
Designed by	Drawn by	Checked by
LJP	BKD	LSK

GEORGIA-PACIFIC LLC • WILLSBORO, NEW YORK
WILLSBORO BLACK ASH POND
FINAL REMEDIAL ACTION WORK PLAN

CROSS SECTIONS - RESHAPED CONDITIONS STATIONS 0+00 TO 9+00 AND 13+00 TO 14+50

GENERAL

ARCADIS Project No.: B0066127.0001.00001
Date: AUGUST 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-203 A

CITY: SYRACUSE, NY DIV/GROUP: ENV/CAD DB:K.SARTORI PIC: D.COWIN PM/TM: D.PENNIMAN LYR:ON=*;OFF=*REF*
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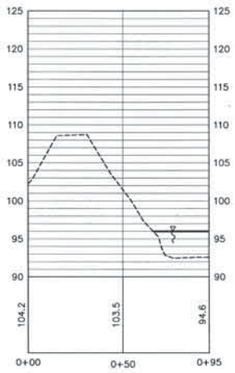
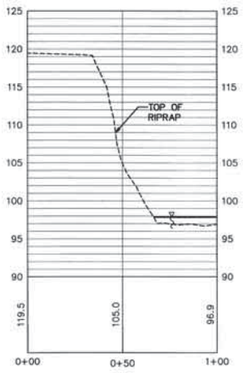
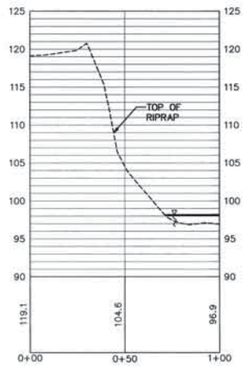


SECTION -0+50
(OUTSIDE PROJECT WORK LIMITS)



SECTION 9+50



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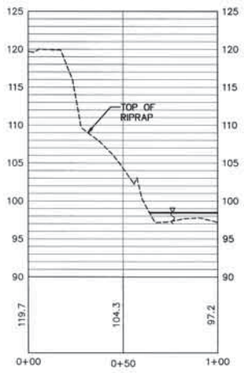

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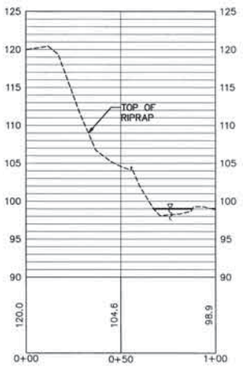

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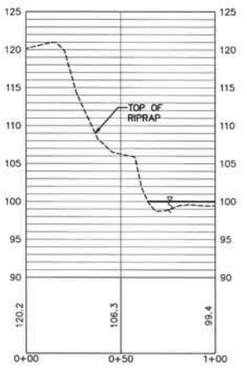

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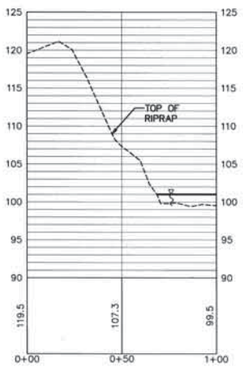

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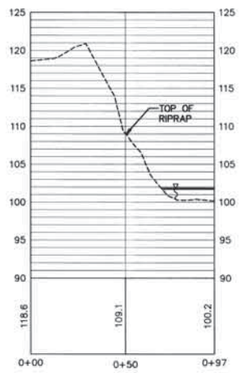

SECTION 12+50

LEGEND:

---------- EXISTING GROUND

——— WATER SURFACE (AS MEASURED 11/22/11)

NOTE:

1. SECTIONS PRESENTED HEREIN REPRESENT PORTIONS OF THE RIVER BANK THAT WILL BE UNDISTURBED, WITH THE EXCEPTION OF PLACEMENT OF RIPRAP AS INDICATED.
2. NOTE THAT WATER ELEVATION DECREASES FROM UPSTREAM TO DOWNSTREAM TO REFLECT THE CHANGE IN BED ELEVATION MOVING IN THE DOWNSTREAM DIRECTION.
3. PLEASE NOTE VERTICAL SCALE IS SHOWN AT A 4x EXAGGERATION.

CITY: SYRACUSE, NY DIV/GROUP: ENV/CAD DB:K.SARTORI PIC:D.COWIN PM/TM: D.PENNIMAN LYR:ON=*;OFF=*REF*
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XREFS: 66127X00 IMAGES: stamp_gravelding-ny.tif PROJECTNAME: —

40' 0 40' 80'
HORIZONTAL SCALE 1"=40'
10' 0 10' 20'
VERTICAL SCALE 1"=10'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING
Professional Engineer's No.: 069985-1

State	Date Signed	Project Mgr.
NY	8/3/12	LSK
Designed by	Drawn by	Checked by
LJP	BKD	LSK

STATE OF NEW YORK · MARK OREN GRAVELDING · 069985-1 · LICENSED PROFESSIONAL ENGINEER

ARCADIS
ARCADIS OF NEW YORK, INC.

GEORGIA-PACIFIC LLC • WILLSBORO, NEW YORK
WILLSBORO BLACK ASH POND
FINAL REMEDIAL ACTION WORK PLAN

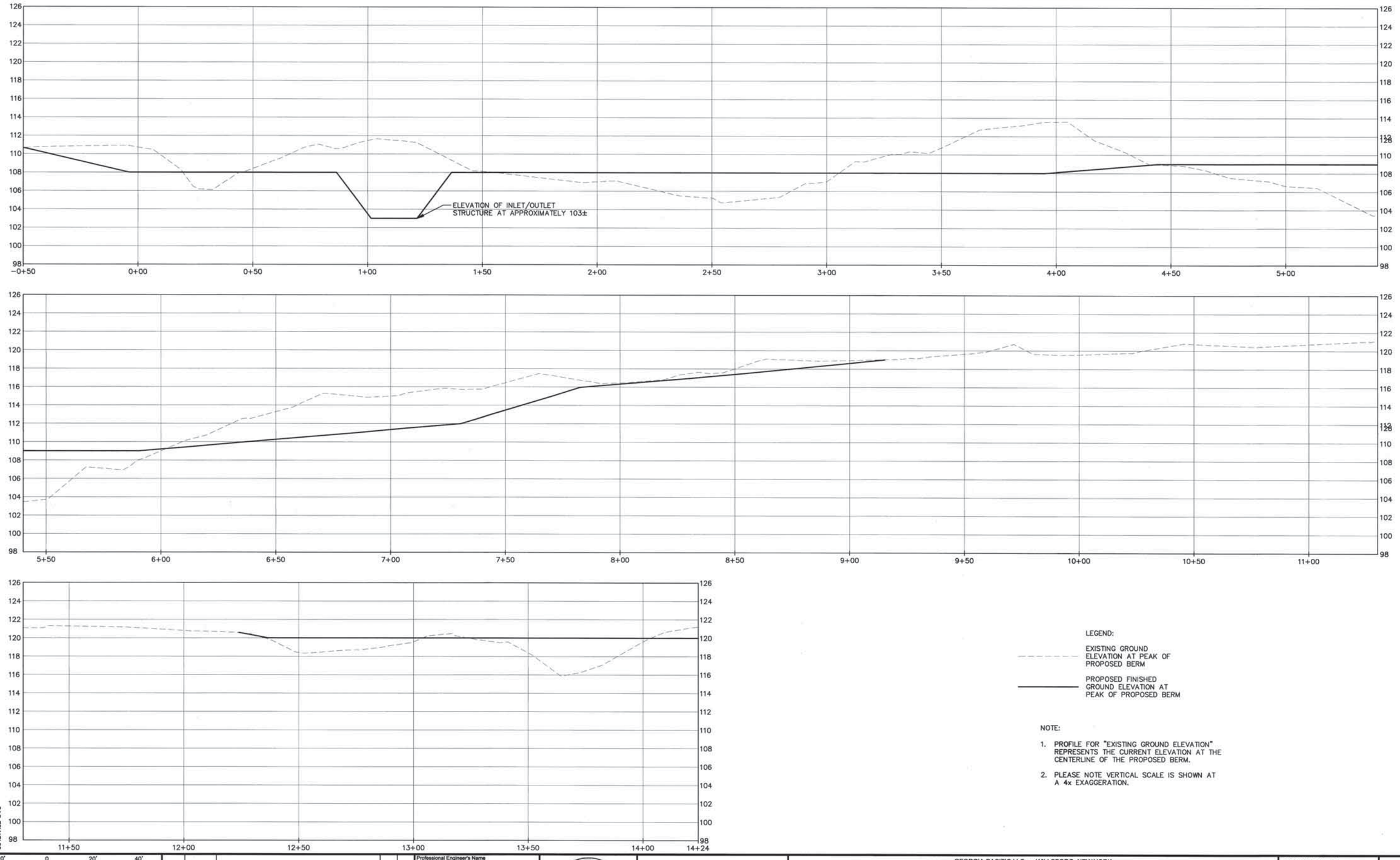
CROSS SECTIONS - RESHAPED CONDITIONS STATIONS -0+50 AND 9+50 TO 12+50

GENERAL

ARCADIS Project No.: B0066127.0001.00001
Date: AUGUST 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-203 B



LEGEND:

EXISTING GROUND ELEVATION AT PEAK OF PROPOSED BERM

PROPOSED FINISHED GROUND ELEVATION AT PEAK OF PROPOSED BERM

NOTE:

1. PROFILE FOR "EXISTING GROUND ELEVATION" REPRESENTS THE CURRENT ELEVATION AT THE CENTERLINE OF THE PROPOSED BERM.
2. PLEASE NOTE VERTICAL SCALE IS SHOWN AT A 4x EXAGGERATION.

HORIZONTAL SCALE 1"=20'

VERTICAL SCALE 1"=5'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING
Professional Engineer's No.: 069985-1

State	Date Signed	Project Mgr.
NY	8/3/12	LSK
Designed by	Drawn by	Checked by
LJP	BKD	LSK

ARCADIS

ARCADIS OF NEW YORK, INC.

GEORGIA-PACIFIC LLC • WILLSBORO, NEW YORK

WILLSBORO BLACK ASH POND

FINAL REMEDIAL ACTION WORK PLAN

PROFILE - EXISTING AND RESHAPED CONDITIONS

GENERAL

ARCADIS Project No.: B0066127.0001.00001

Date: AUGUST 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-204

XREFS: 66127X00 66127X02-CV3
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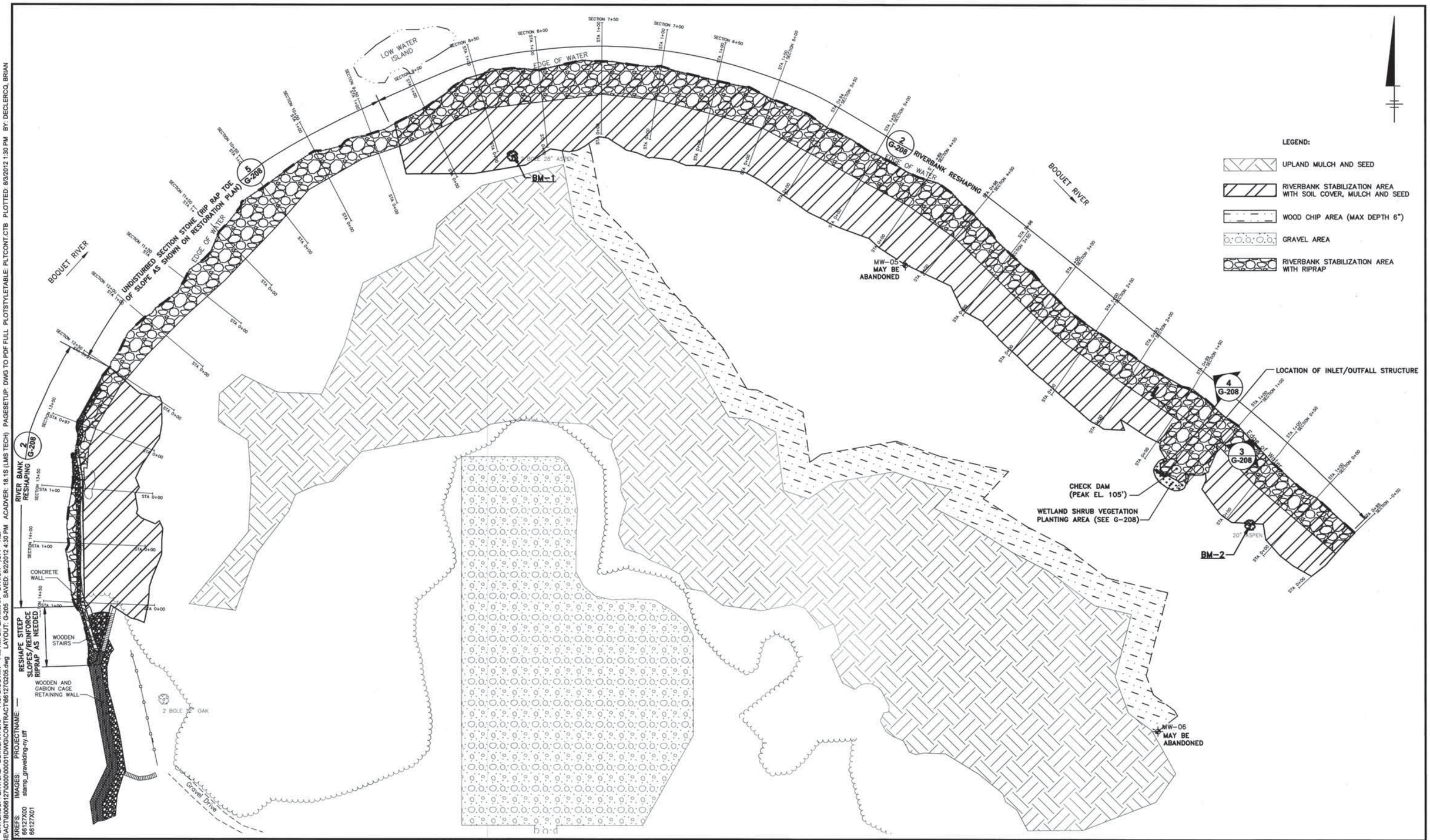

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1"=40' (40' 0 40' 80')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING
Professional Engineer's No.: 069985-1

State	Date Signed	Project Mgr.
NY	8/3/12	LSK
Designed by	Drawn by	Checked by
LJP	BKD	LSK

STATE OF NEW YORK MARK O. GRAVELDING 069985-1 LICENSED PROFESSIONAL ENGINEER

ARCADIS
ARCADIS OF NEW YORK, INC.

GEORGIA-PACIFIC LLC • WILLSBORO, NEW YORK
WILLSBORO BLACK ASH POND
FINAL REMEDIAL ACTION WORK PLAN

RESTORATION PLAN

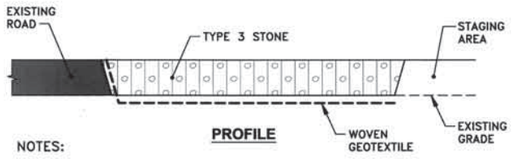
GENERAL

ARCADIS Project No.
B0066127.0001.00001

Date
AUGUST 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-205



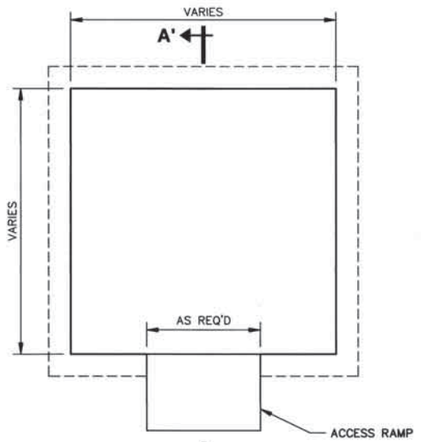
PROFILE

NOTES:

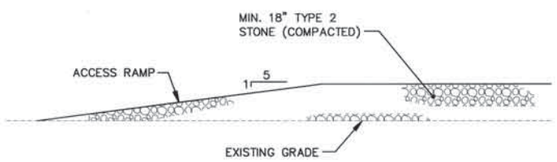
1. ACCESS PAD WILL BE A LEAST 15' WIDE AND 6" THICK.
2. INSTALL ACCESS PAD AT ALL ACCESS POINTS TO PAVED PUBLIC ROADS.

TYPICAL CONSTRUCTION ACCESS PAD (1)

NOT TO SCALE



PLAN



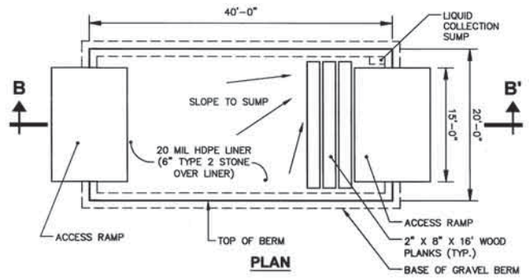
SECTION A-A'

NOTES:

1. UPON COMPLETION OF CONSTRUCTION ACTIVITIES, THE TEMPORARY STAGING AREA, INCLUDING GEOSYNTHETICS, SHALL BE REMOVED BY THE CONTRACTOR FOR OFF-SITE DISPOSAL AT AN OWNER APPROVED FACILITY.
2. COMPACTION OF GRANULAR FILL MATERIAL SHALL BE OF SUFFICIENT DENSITY TO PROVIDE A FIRM AND UNIFORM SURFACE.

TYPICAL TEMPORARY STAGING AREA (2)

NOT TO SCALE



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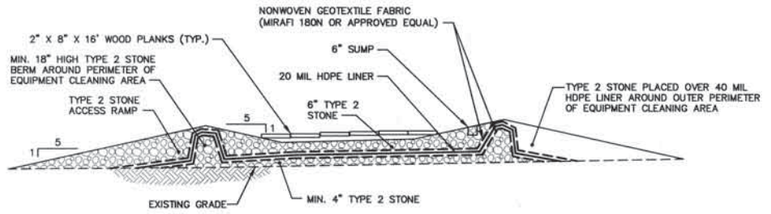


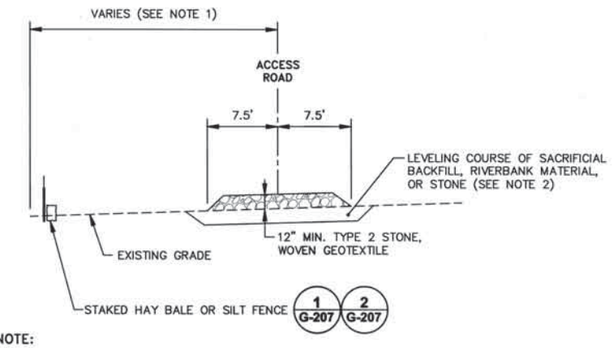
SECTION B-B'

NOTES:

1. EQUIPMENT CLEANING AREA WILL HAVE A GENERAL SLOPE TOWARD A COLLECTION SUMP TO FACILITATE THE COLLECTION OF WASH FLUIDS, IF ANY.
2. SOLIDS AND LIQUIDS, IF ANY, ACCUMULATED IN THE EQUIPMENT CLEANING AREA WILL BE COLLECTED AND PLACED IN THE SOIL COVER AREA.
3. UPON COMPLETION OF CONSTRUCTION ACTIVITIES, THE EQUIPMENT CLEANING AREA, INCLUDING HDPE LINER, IS TO BE REMOVED BY THE CONTRACTOR FOR DISPOSAL.
4. WOOD PLANKS WILL BE PLACED ABOVE THE GRAVEL DRAINAGE LAYER THROUGHOUT THE WORKING SURFACE OF THE DECONTAMINATION AREA TO PROVIDE A STABLE SURFACE FOR VEHICLES AND EQUIPMENT TO BE CLEANED.
5. THE CONTRACTOR WILL TAKE PRECAUTIONS TO CONTAIN SPRAYED FLUIDS, IF ANY, WITHIN THE EQUIPMENT CLEANING AREA.

TYPICAL EQUIPMENT CLEANING AREA (3)

NOT TO SCALE



NOTE:

1. DIMENSION VARIES TO ACCOMMODATE EXISTING FEATURES AND TOPOGRAPHY.
2. PLACEMENT OF LEVELING COURSE MATERIALS AND ACCESS ROADS SHALL BE AS REQUIRED TO SUPPORT CONSTRUCTION EQUIPMENT.

TYPICAL ACCESS ROAD (4)

NOT TO SCALE

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
MARK O. GRAVELDING		
Professional Engineer's No.		
069985-1		
State	Date Signed	Project Mgr.
NY	8/3/12	LSK
Designed by	Drawn by	Checked by
LJP	BKD	LSK

ARCADIS

ARCADIS OF NEW YORK, INC.

GEORGIA-PACIFIC LLC • WILLSBORO, NEW YORK
WILLSBORO BLACK ASH POND
FINAL REMEDIAL ACTION WORK PLAN

MISCELLANEOUS DETAILS

GENERAL

ARCADIS Project No.
B0066127.0001.00001

Date
AUGUST 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
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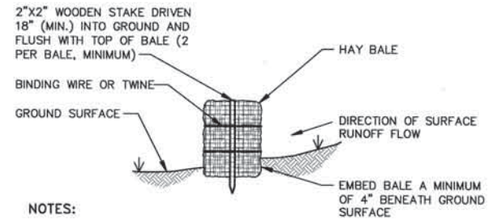
G-206

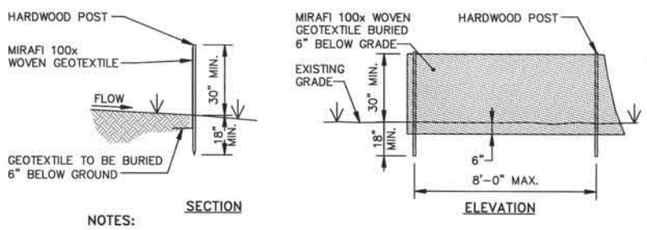


NOTES:

1. HAY BALES WILL ONLY BE USED AS REQUIRED.
2. BALES WILL BE PLACED TIGHTLY TOGETHER, END TO END, TO FORM A CONTINUOUS BARRIER IN SELECTED AREAS.
3. THE INTEGRITY OF THE HAY BALES WILL BE MAINTAINED FOR THE PROJECT DURATION AND UNTIL ADEQUATE VEGETATIVE GROWTH IS ESTABLISHED.
4. STOCKPILE ANY EXCAVATED MATERIAL ONSITE FOR USE AS BACKFILL UPON COMPLETION.

STAKED HAY BALE (1)

NOT TO SCALE

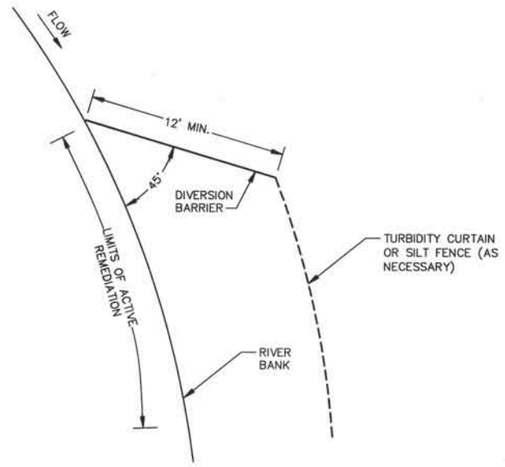


NOTES:

1. ACCUMULATIONS OF SEDIMENT ADJACENT TO SILT FENCES WILL BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF OF THE HEIGHT OF SILT FENCE THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES.
2. THE INTEGRITY OF SILT FENCING WILL BE MAINTAINED FOR THE PROJECT DURATION AND UNTIL ADEQUATE VEGETATIVE GROWTH IS ESTABLISHED.

SILT FENCE (2)

NOT TO SCALE

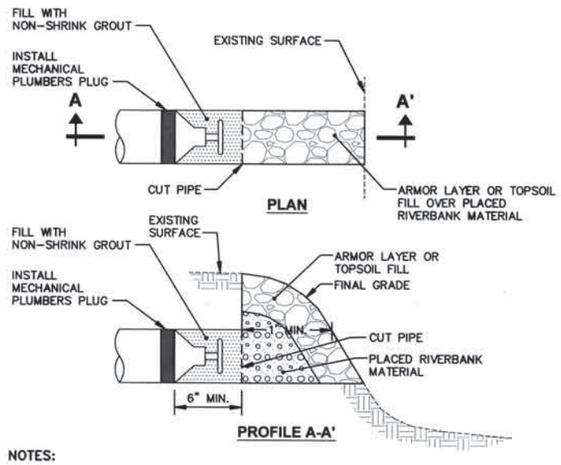


NOTES:

1. DIVERSION BARRIERS (E.G., JERSEY BARRIERS) WILL BE PLACED UPSTREAM OF THE LIMITS OF ACTIVE REMEDIATION TO CALM THE WATERS WITHIN THE WORK AREA. DIVERSION BARRIERS MUST BE A MINIMUM OF 3' HIGH. IN AREAS OF UNEVEN SURFACE, SAND BAGS MAY BE PLACED UNDER THE DIVERSION BARRIER(S) AS NEEDED TO STABILIZE SUCH STRUCTURES.
2. TURBIDITY CURTAINS OR SILT FENCE MAY BE USED TO PROVIDE ADDITIONAL TURBIDITY CONTROL IN THE EVENT THAT THE WATER STILLING TECHNIQUES ARE NOT FOUND TO SUFFICIENTLY CONTROL THE EFFECTS OF CONSTRUCTION ON THE TURBIDITY LEVELS IN THE BOQUET RIVER. IF USED, THE TURBIDITY CURTAINS WILL LIKELY CONSIST OF GEOTEXTILE FABRIC SUSPENDED FROM BUOYS, WHICH WILL BE CONNECTED TO THE DIVERSION BARRIER AND INSTALLED PARALLEL TO THE PORTIONS OF THE RIVERBANK WHERE CONSTRUCTION IS BEING PERFORMED, AND MAY BE ANCHORED TO SHORE OR THE RIVER BOTTOM.
3. THE CONTRACTOR SHALL USE APPROPRIATE OPERATIONAL CONTROL (I.E., LIMITING THE FALL HEIGHT OF THE BUCKET, SLOW CYCLE TIMES) TO REDUCE THE POTENTIAL EFFECTS OF CONSTRUCTION ON TURBIDITY IN THE BOUQUET RIVER.
4. THE LIMITS OF ACTIVE REMEDIATION WORK IN SHALL BE IN SHORT SECTIONS NO MORE THAN 100 FEET DOWNSTREAM OF THE DEFLECTION WALL SO AS TO STAY WITHIN THE AREA WITH THE LEAST HYDRAULIC FORCES.
5. THE CONTRACTOR MAY ALSO INSTALL SILT FENCING MAY ALSO BE PLACED JUST BELOW THE TOE OF SLOPE, AS NECESSARY, TO REDUCE THE EFFECTS OF CONSTRUCTION ON THE TURBIDITY LEVELS IN THE BOUQUET RIVER.

TEMPORARY TURBIDITY CONTROL SYSTEM (3)

NOT TO SCALE



NOTES:

1. GROUT SHALL BE GENERAL PURPOSE NON-SHRINK GROUT AS MANUFACTURED BY QUICKCRETE® OR AN APPROVED EQUAL. PIPES LESS THAN 4" INNER DIAMETER (ID) MAY BE SEALED WITH EXPANSIVE POLYURETHANE FOAM RATHER THAN GROUT. GROUT (OR FOAM) SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION GUIDELINES/SPECIFICATIONS.
2. CONTRACTOR SHALL FURNISH EACH PIPE PLUG. PIPE PLUGS SHALL BE OF SUFFICIENT SIZE, WEIGHT, AND MATERIAL PROPERTY TO CREATE A POSITIVE SEAL WITH THE DRAIN PIPE UNDER PRESSURE OF THE IN-PLACE NON-SHRINK GROUT (OR FOAM), AND TO NOT ALLOW ANY NON-SHRINK GROUT (OR FOAM) TO FLOW PAST THE PLUG.
3. SURFACE RESTORATION MATERIAL WILL BE SELECTED BASED ON RESTORATION DESIGN AT APPLICABLE PIPE LOCATION.
4. ALTERNATIVELY, PIPE MAY BE REMOVED RELATIVE TO THE SURROUNDING GRADES AT THE OWNER'S/ENGINEERS DISCRETION.

TYPICAL PIPE ABANDONMENT DETAIL (4)

NOT TO SCALE

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING
Professional Engineer's No.: 069985-1
State: NY | Date Signed: 8/3/12 | Project Mgr.: LSK
Designed by: LJP | Drawn by: BKD | Checked by: LSK

STATE OF NEW YORK MARK OREN GRAVELDING 069985 LICENSED PROFESSIONAL ENGINEER

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WILLSBORO BLACK ASH POND
FINAL REMEDIAL ACTION WORK PLAN

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ARCADIS Project No.: B0066127.0001.00001
Date: AUGUST 2012

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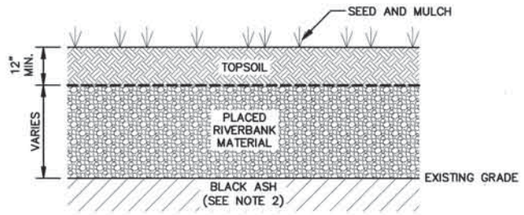
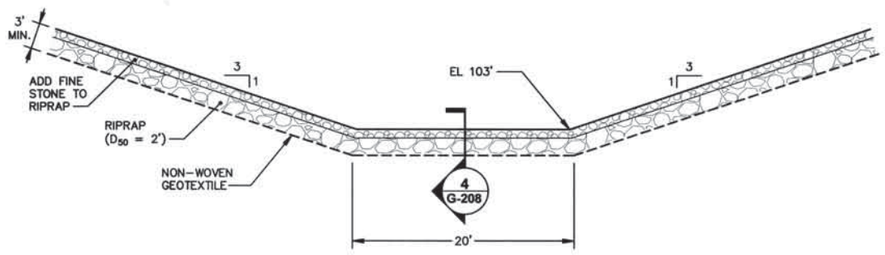


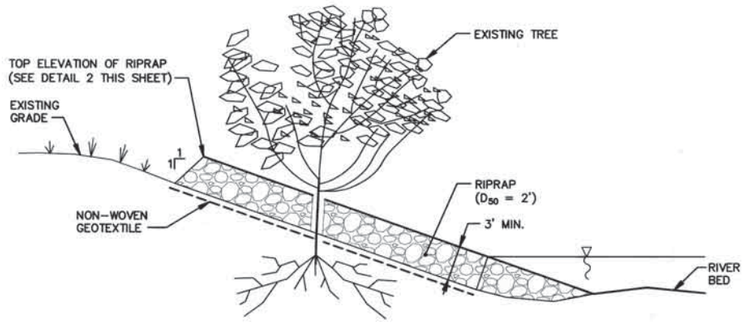
NOTES:

1. COVER SHALL BE GRADED SO AS TO DRAIN AND AVOID PONDING.
2. COMPACT SURFACE OF BLACK ASH PRIOR TO PLACEMENT OF RIVERBANK MATERIAL. REFER TO SPECIFICATION SECTIONS 02203 AND 02201 FOR COMPACTION REQUIREMENTS OF BLACK ASH SUBGRADE AND RIVERBANK MATERIALS.

TYPICAL COVER/RESTORATION DETAIL (1)
NOT TO SCALE



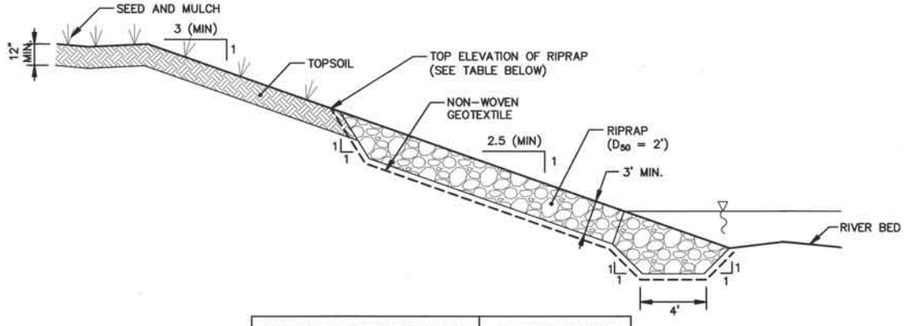
TYPICAL INLET/OUTLET STRUCTURE (3)
NOT TO SCALE



NOTE:

1. CONTRACTOR SHALL CUT GEOTEXTILE TO PLACE AROUND TREES.
2. ADDRESS EXPOSED ASH ABOVE TOP ELEVATION OF RIPRAP NOTED, AS NECESSARY WITH SIMILAR GEOTEXTILE AND RIPRAP PLACEMENT, OR AS DIRECTED BY THE ENGINEER.

TYPICAL RIPRAP PLACEMENT FOR UNDISTURBED SECTION (5)
NOT TO SCALE

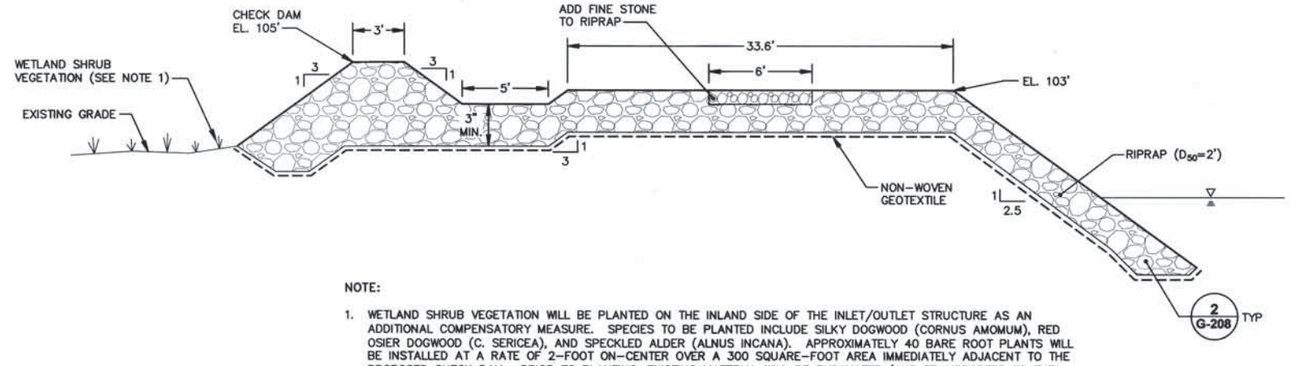


TOP ELEVATION OF RIPRAP (FT)	TRANSECT RANGE
106	0+00 TO 4+00
107	4+50 TO 6+00
108	6+50 TO 8+00
109	8+50 TO 14+00

NOTE:

1. THE CONTRACTOR SHALL GRADUALLY TAPER THE TOP ELEVATION OF THE RIPRAP BETWEEN TRANSECT RANGES (IE. GRADUALLY INCREASE THE TOP ELEVATION FROM 107 FT TO 108 FT BETWEEN TRANSECT 6+00 AND 6+50).

TYPICAL RESHAPED RIVERBANK (2)
NOT TO SCALE



NOTE:

1. WETLAND SHRUB VEGETATION WILL BE PLANTED ON THE INLAND SIDE OF THE INLET/OUTLET STRUCTURE AS AN ADDITIONAL COMPENSATORY MEASURE. SPECIES TO BE PLANTED INCLUDE SILKY DOGWOOD (CORNUS AMOMUM), RED OSIER DOGWOOD (C. SERICEA), AND SPECKLED ALDER (ALNUS INCANA). APPROXIMATELY 40 BARE ROOT PLANTS WILL BE INSTALLED AT A RATE OF 2-FOOT ON-CENTER OVER A 300 SQUARE-FOOT AREA IMMEDIATELY ADJACENT TO THE PROPOSED CHECK DAM. PRIOR TO PLANTING, EXISTING MATERIAL WILL BE EXCAVATED (AND TRANSPORTED TO THE SOIL COVER AREA) AND THE PLANTING AREA WILL BE COVERED WITH TOPSOIL AT A MINIMUM DEPTH OF 12 INCHES, MAINTAINING THE EXISTING CONTOUR ELEVATIONS.

TYPICAL INLET/OUTLET STRUCTURE CROSS SECTION (4)
NOT TO SCALE

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING
Professional Engineer's No.: 069985-1

State	Date Signed	Project Mgr.
NY	8/3/12	LSK
Designed by: LJP	Drawn by: BKD	Checked by: LSK

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ARCADIS Project No.: B0066127.0001.00001
Date: AUGUST 2012

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G-208

Appendix B

Technical Specifications

WILLSBORO BLACK ASH POND SITE
GEORGIA-PACIFIC LLC – WILLSBORO, NEW YORK
REMEDIAL ACTION WORK PLAN

LIST OF TECHNICAL SPECIFICATIONS

Section 01010 – Summary of Work
Section 01110 – Environmental Protection Procedures
Section 01160 – Survey Control
Section 01200 – Project Meetings
Section 01300 – Submittals
Section 01540 – Site Security
Section 01700 – Special Conditions
Section 01901 – Temporary Facilities and Other Support
Section 02201 – Earthwork
Section 02202 – Rock and Debris Removal
Section 02203 – Site Grading
Section 02206 – Selected Fill
Section 02208 – Restoration of Surfaces
Section 02209 – Clearing
Section 02210 – Topsoil and Seeding
Section 02232 – Geotextile Fabric
Section 02260 – Erosion, Sediment and Dust Control
Section 02508 – Air Monitoring Program

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all supervision, labor, materials, equipment, subcontractor services, and incidentals related to the implementation of the Remedial Action, including but not limited to stream bank stabilization, consolidation of black ash, grading of site materials, construction of soil cover, and other appurtenances in their entirety as shown on the Construction Drawings and specified herein.

The work shall also include all activities required of the Contractor to plan, schedule, organize, monitor, and coordinate the logical and timely sequence of site activities, in accordance with all applicable regulatory requirements. This includes, but is not limited to, activities such as preparation of submittals, permits, attendance at project meetings, weekly updates to project schedule, incidental expenses, administrative activities, etc.

B. The scope of work and related background information is generally described in the narrative portion of the *Remedial Action Work Plan* (RAWP; ARCADIS 2012). The Work includes, but is not necessarily limited to, the following:

1. General:

General activities include mobilizing and demobilizing all equipment, materials, and labor; performing site monitoring and protection; mobilizing and implementing health and safety equipment and practices; setting up and performing Site security during the project construction period; and performing air monitoring during construction as described in Section 02508 – Air Monitoring.

In addition, general activities include ancillary support services and activities throughout the performance of site activities, as well as post-construction activities (e.g., as-built documentation).

2. Technical Submittals

Refer to Section 01300 – Submittals and Section 01700 – Special Conditions for a detailed description of the necessary technical submittals required. Additionally, the following submittals shall be delivered to the Owner and Engineer for review prior to beginning work:

- Operations Plan
- Contractor Site-specific Health and Safety Plan (HASP)
- Contingency Plan

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

- Spill Prevention, Control, and Countermeasures Plan
- Initial Project Schedule in MS Project, with critical path

3. Mobilization

Initial work efforts at the site will include: equipment and personnel mobilization; construction facility set-up, equipment cleaning area construction, and temporary road construction, as necessary. Miscellaneous work items for the construction effort will include, but will not be limited to, the following items: project sign, permits, insurance, survey, photographs, shop and record drawings, health and personal protection equipment, and staging areas.

The work area will require clearing and proper disposal of topsoil, rocks, trees, brush, logs, refuse, and rubbish. The Contractor shall furnish all Site safety, health, and personal protection equipment, medical surveillance, and other materials in order to facilitate construction activities.

4. Site Preparation:

Site preparation includes all activities involving preparation of the Site. Work includes: obtaining all necessary permits; providing erosion and environmental controls; clearing; development of access roads, as necessary; providing traffic controls and temporary construction entrances; setting up work zones, including staging and cleaning areas; protecting or demolishing and removing existing site structures that are encountered, fences, and other features; relocating active utilities, as encountered; removing and plugging abandoned utilities, as encountered.

5. Stormwater Management:

Stormwater drainage involves providing, installing, and testing all necessary protective measures as shown on the Construction Drawings and described in the Stormwater Pollution Prevention Plan (SWPPP) including applicable specifications.

6. Riverbank Reshaping and Stabilization:

Riverbank reshaping and stabilization will be performed according to the Construction Drawings and following the applicable specifications.

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

7. Soil Cover Placement:

   Soil cover placement will follow the procedures described in the RAWP, Section 02203 – Site Grading, and Section 02206 – Selected Fill, which includes guidance on grading of black ash and placed riverbank material and installation of a soil cover.

8. Site Restoration Activities:

   Site restoration generally includes installing permanent erosion control measures, repairing and replacing any damaged or temporarily relocated site features, seeding and mulching disturbed areas (if any, in addition to those addressed as part of the soil cover activities), and removing temporary construction and erosion and sediment control practices (e.g., cleaning area pad, silt fencing, hay bales), as specified herein and as shown on the Construction Drawings.

9. Demobilization/Recordkeeping

   - A description of Site cleanup activities and removal of temporary facility items (i.e., field office trailer(s) [if used] and associated equipment) to be performed following restoration of the site must be provided to the Owner and Engineer prior to beginning work.

   - Provide a description of the organization method for recordkeeping and contact information to obtain project records, if necessary, following completion of remedial activities.

C. The detailed scope of work and Contractor requirements are described in several components that collectively represent the Remedial Design. These components include the following:

   - Detailed narrative approach for implementing remedial activities (RAWP)
   - Construction Drawings
   - Technical Specifications
   - Select appendices to the RAWP, including the SWPPP

   The above components address various elements of the Remedial Design and should be thoroughly reviewed by the Contractor. Nothing presented in one of the above documents should preclude the Contractor from satisfying the components specified in the other documents. In addition, in the event that there are discrepancies in the information contained in the above-listed documents, the Contractor shall identify such discrepancies for the Owner's and Engineer's review.

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

1.02 WORK SEQUENCE/WORK HOURS

A. Perform Work to ensure completion of the Work in the Contract time. Completion dates of the various stages shall be in accordance with the approved construction schedule submitted by the Contractor.

B. As noted above, the Contractor shall submit an Initial Project Schedule for review and approval prior to the start of construction. The Initial Project Schedule shall include all elements of the remedial actions and be neatly prepared and labeled indicating all anticipated start and completion dates. Additional requirements are provided below.

- Submit a Gantt chart with separate lines for each section of work, identifying the first work day of each week.

- At a minimum, the following major work items should be included, with appropriate subtasks included as necessary:

  - Technical Submittals
  - Mobilization
  - Site Preparation
  - Stormwater Management
  - Riverbank Reshaping
  - Soil Cover Placement
  - Site Restoration Activities
  - Demobilization/Recordkeeping

- Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities, including work by subcontractors. Indicate the early and late start, early and late finish, float dates, and duration.

- Critical path items shall be identified to show the relationship with subsequent activities.

C. Work activities can be conducted during daylight hours, 5 days per week (excluding holidays), except in cases of emergency or unless prior approval has been obtained from the Owner. As an option in the bid submittal, the Contractor may request to work on weekends during daylight hours.

1.03 CONTRACTOR'S USE OF PREMISES

A. Coordinate use of premises with the Owner and the Engineer within the project limits shown on the Construction Drawings. All conflicts over use of the premises shall be resolved without additional cost to the Owner. Costs related to property use (e.g., telephone, electric, etc.) shall be borne by the Contractor.

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

B. Contractor shall assume full responsibility for security of all materials and equipment stored onsite, including those of Subcontractors.

C. If directed by the Owner or Engineer, move any stored items that interfere with operations of Owner or other Contractors.

1.04 CARE AND PROTECTION OF WORK

From the commencement until the acceptance of the Work, the Contractor shall be solely responsible for the care of the Work covered by the Contract granted for performance of the Remedial Action at the Willsboro Site and for the materials, supplies, and equipment delivered at the Site intended to be used in the Work (whether provided by the Contractor or the Owner); and all injury or damage to the same from whatever cause, shall be the responsibility of the Contractor. The Contractor shall provide suitable means of protection for and shall protect all materials intended to be used in the Work, all Work in progress, and all completed Work. The Contractor shall take all necessary precautions to prevent injury or damage to the Work by flood, fire, freezing, or from other forms of inclement weather.

1.05 ONSITE OBSERVATION OF WORK

A. Engineer

1. The Engineer will provide onsite and office-based assistance to the Owner during the construction period. The Engineer will observe the progress and quality of the Work and determine if the Work is proceeding in substantial compliance with the Remedial Design. The Engineer will inform the Owner as to the progress of the Work and possible defects and deficiencies in the Work. The Engineer may disapprove Work as failing to conform to the Remedial Design. Whenever the Engineer considers it necessary or advisable for the proper carrying out of the intent of the Remedial Design, the Engineer (on behalf of the Owner) can require the Contractor to make special examination or testing of the Work (whether or not fabricated, installed, or completed).

2. The Engineer will not have any duty or obligation with reference to and will not be responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, and will not be responsible for the Contractor's failure to carry out the Work in substantial compliance with the Design Documents. The Engineer's duties, services, and work shall in no way supersede or dilute the Contractor's obligation to perform the Work. The Engineer is empowered when directed by the Owner to act on its behalf with respect to the proper execution of the Work and to give instructions when necessary to require such corrective measures as may be necessary in the Engineer's professional opinion to endeavor to protect the Owner’s interest.

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

3. The Engineer shall not have the authority to approve Work that is not defined in the contract documents. All change order requests shall be submitted to the Owner prior to commencing out-of-scope Work efforts.

B. Access to Work

1. All parties who may enter into contracts with the Owner for doing work at the Site shall, for all purposes that may be required by their contracts, and representatives of State and Federal regulatory agencies shall, for any purpose, have access to the Work and the premises used by the Contractor, and the Contractor shall provide safe and proper facilities therefore.

1.06 MATERIALS AND EQUIPMENT

A. Quality and Workmanship

1. All items of equipment and materials of like type furnished shall be the product of one manufacturer, unless otherwise specified or approved by the Owner/Engineer.

2. All materials furnished or incorporated in the Work shall be new, unused, of the best quality, and especially adapted for the service required; whenever the characteristics of any material are not particularly specified, such material shall be utilized as is customary in first class work of a nature for which the material is employed.

3. All materials and workmanship shall be subject to inspection, examination, and tests by the Engineer and other representatives of the Owner at any and all times during manufacture or construction and at any and all places where such manufacture or construction are carried on.

4. The Contractor's selection and use of organizations for the inspection and tests of supplies, materials, and equipment shall be subject to the approval of the Owner and Engineer. Satisfactory documentary evidence that the material has passed the required inspection and tests shall be furnished by the Contractor prior to the incorporation of the material in the Work.

5. All laboratory and field testing shall be at the sole cost and expense of the Contractor unless specifically stated otherwise in the Design or Contract Documents. All laboratories must be Environmental Laboratory Accreditation Program (ELAP) certified (for the parameters analyzed) and approved by the Owner and the New York State Department of Environmental Conservation.

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

B. Equivalent Products and Changes to Design Documents

1. The words "similar and equal to," "or equal," "equivalent," and such other words of similar content and meaning (hereinafter, “or equal”) shall, for the purposes of this work, be deemed to mean similar and equivalent to one of the named products.

2. Whenever any product is specified in the Design Documents by a reference to the name, trade name, make, or catalog number of any manufacturer or supplier, the intent shall not be to limit competition, but to establish a standard of quality that the Engineer has determined is necessary for the project. If any product other than that specified is proposed for use, the Contractor shall submit to the Engineer either its certification that the “or equal” strictly conforms to the Design Documents, or a statement specifically identifying all differences between the “or equal” and the Design Documents. Any variation of a proposed “or equal” from the Design Documents which is not specifically noted in the Shop Drawing or Contractor’s submittal shall be at the sole risk and expense of the Contractor. In addition, the Contractor shall provide all the information that the Engineer requests concerning the product. The proposed product shall not be used until it is accepted by the Engineer. Any “or equal” incorporated into the Work without the Engineer’s written acceptance shall be at the Contractor’s sole risk, and the Engineer may require the removal and replacement of any unaccepted “or equal.”

3. In all cases, the Engineer shall determine whether a proposed “or equal” is acceptable, and the Contractor shall have the burden of proving, at its expense, to the satisfaction of the Engineer that the proposed “or equal” is similar and equal to the named product. In making such determination the Engineer shall establish and provide such criteria in writing to the Contractor as it deems proper for the acceptance of the “or equal.”

4. Any requested change in the Design Documents not pertaining to an “or equal” must be submitted to the Engineer in writing and must be stated with sufficient clarity and detail to permit proper consideration by the Engineer. Unless accepted by the Engineer after submission as herein provided, any deviation from the Design Documents, or the use of any product which varies from the Design Documents, shall be at the Contractor’s sole risk and expense.

C. Suppliers

1. All supplies and equipment shall be furnished by manufacturers who shall have at least 3 years of experience in the design, production, assembly, and field service of equipment of like type, size, and capacity. Where required by the Engineer, the Contractor shall supply a list of at least three successful installations.

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 OPERATIONS PLAN

To gauge the Contractor's understanding of the intended Remedial Design and construction, and to demonstrate compliance with several elements of the Remedial Design, the Contractor shall prepare and submit an Operations Plan.

The plan shall address, but not be limited to, the following items:

- List/schedule of equipment to be used onsite
- Site security/property protection procedures
- Work schedule
- The Contractor's proposed plan for controlling vehicular and pedestrian traffic
- Storm water (including run-on and run-off), erosion, and dust control measures
- Material handling, processing, and staging procedures (including provisions for access control)
- Liquid handling and disposal procedures
- Equipment cleaning procedures

3.02 HEALTH AND SAFETY PLAN

The Contractor shall prepare a Site-specific HASP that identifies the health and safety procedures, methods, and requirements to be implemented by the Contractor during the performance of work activities. The Contractor's HASP shall cover all personnel who will be employed by the Contractor to perform remedial work at the work site, including direct employees, as well as subcontractors. The Contractor will be responsible for ensuring that all of its subcontractors have reviewed the HASP with every subcontract employee and shall provide documentation of formal training to the Engineer. Contractors shall ensure that subcontractors adhere to the HASPs at all times. The minimum requirements/conditions that shall be included in the Contractor's (or any of its subcontractor's) Site-specific HASP are provided in the RAWP.

Prior to commencement of field activities, the Contractor must certify that personnel employed at the work site who are directly involved with remedial activities, including employees and subcontractors, have completed a 40-hour health and safety training course (and annual refresher training) in accordance with 29 CFR 1910.120 and 29 CFR 1926.65. The Contractor must also certify that any individuals who later become employed by the Contractor also receive such training prior to performing work at the work site. This requirement does not apply to carpenters, landscapers, or other personnel who will be involved in Site restoration activities only after all specified materials have been completely covered with engineered barriers.

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

The Contractor must certify that all personnel who will be employed by the Contractor to perform work at the Site, including direct employees as well as subcontractors, have received initial and annual (if applicable) medical examinations and are enrolled in an on-going medical surveillance program as required by 29 CFR 1910 and 29 CFR 1926.

The Contractor must also comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act (OSHA) of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54).

The Contractor will be responsible for the safety of his employees, subcontractors, suppliers, and other parties at the Site as a result of the Contractor's direction.

The Contractor must prepare, submit, and implement a HASP in accordance with 29 CFR 1910.120 and 29 CFR 1926.65. The plan must address, but not be limited to, the following components:

- Identification of Key Personnel - Identify, by name and by title, the onsite and offsite health and safety personnel responsible for the implementation of health and safety procedures. All onsite personnel involved in the measures must have OSHA 40-hour Hazardous Waste Training (29 CFR 1910.120 and 1926.65) and the corresponding 8-hour refresher course update.

- Training - Describe and provide certification of all supervisory and onsite personnel having received appropriate health and safety training.

- Medical Surveillance - Certify that all supervisory and onsite personnel have received appropriate medical examinations and are able to conduct the tasks required for this project.

- Task-specific Hazard/Risk Analysis - Identify and provide a means of mitigating all foreseeable biological, chemical, and physical hazards associated with the work including, but not limited to heavy equipment operation, site conditions, weather, materials handling, work around areas being reshaped, and work near water.

- Work Near Water Bodies – Identify and provide means for creating a safe work envelope (i.e., a minimum number of feet away from the edge of the riverbank) near water bodies in which no equipment or worker may operate to prevent equipment and/or workers from falling into the water body.

- Work Zones - Provide a site plan that depicts the designation of zones, including Work Zones and Support Zones. The level of personal protection required for each zone must be included.

- Personal Safety Equipment and Protective Clothing - Identify personal safety equipment and protective clothing to be available at the work site and used by project personnel. This shall include identifying expected levels of protection (USEPA Protection Levels A, B, C, and D) for each task and the action levels for personal protective equipment (PPE) upgrades. A

respiratory protection program that meets the requirements of 29 CFR 1910.134 and establishes specific requirements for respirator use shall be included.

- Personal Air Monitoring - Identify protocols and criteria associated with personal air monitoring of onsite personnel.

- Personnel Cleaning - Describe methods and procedures to be used by personnel for cleaning after leaving Work Zones.

- Material Safety Data Sheets - Provide Material Safety Data Sheets (MSDSs) for all materials to be brought on the Site.

- Construction Safety Procedures (OSHA 1926.1 - 1926.652, Subpart A-P) to address excavation shoring and trenching safety, as well as a daily site safety inspection checklist to evaluate these items.

- Standard Operating Procedures (SOPs) and Safety Programs as required by applicable sections of 29 CFR 1910 and 1926.

3.03 CONTINGENCY PLAN

The Contractor shall prepare, submit, and implement a Contingency Plan that includes, at a minimum, the following items:

- A spill prevention, control and countermeasures plan for all materials brought to the Site

- Emergency vehicular access/egress

- Evacuation procedures of personnel from the Site

- For work areas that include or are adjacent to a surface water drainageway, a flood control contingency plan to identify measures to protect the work area(s) and the waterway from impacts in the event of high water and/or flood conditions

- A list of all contact personnel with phone numbers, routes to local hospitals, and procedures for notifying each

- Identification of responsible personnel who will be in a position at all times to receive incoming phone calls and to dispatch Contractor personnel and equipment in the event of an emergency situation

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 01110
ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, and equipment and perform all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Section, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents that adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect biota; or degrade the utility of the environment for aesthetic and/or recreational purposes.

B. The control of environmental pollution requires consideration of air, water, and land, and involves management of noise and solid waste, as well as other pollutants.

C. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching, or other special surface treatments as are required to prevent silting and muddying of existing and new drainage systems, streams, rivers, impoundments, lakes, etc.

D. This Section is intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to identify specific construction techniques to meet these guidelines and review these techniques with the Engineer prior to implementation.

E. All phases of sedimentation and erosion control shall comply with the conditions of the General Permit for the Discharge of Stormwater Associated with Construction Activities, and shall be subject to the approval of the New York State Department of Environmental Conservation. A Stormwater Pollution Prevention Plan (SWPPP) shall be maintained onsite during all phases of the Work.

F. The Contractor shall prepare a Contingency Plan in accordance with Section 01010 – Summary of Work, which identifies the proposed spill prevention, control, and countermeasures plan for all materials brought onsite.

1.02 APPLICABLE REGULATIONS

A. Comply with all applicable federal, state, and local laws and regulations concerning environmental pollution control and abatement.

MATERIALS AND PERFORMANCE – SECTION 01110

ENVIRONMENTAL PROTECTION PROCEDURES

1.03 NOTIFICATIONS

A. The Owner and/or Engineer will notify the Contractor in writing of any detected non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements may also provide notification of any non-compliance with State or local requirements. After receipt of such notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.04 IMPLEMENTATION

A. Prior to commencement of the work, meet with the Owner and Engineer to develop mutual understandings relative to compliance with these provisions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EROSION AND SEDIMENT CONTROLS

A. Erosion control measures, such as siltation basins, stone or synthetic check dams, mulching, jute netting, and other equivalent techniques, shall be used as appropriate. Flow of surface water into work areas shall be prevented to the extent practicable.

B. Temporary erosion and sediment control measures shall be installed as indicated on the Construction Drawings, Section 02260 – Erosion, Sediment, and Dust Control, and as described in the SWPPP prior to earthwork operations, or as otherwise directed by the Owner or Engineer.

3.02 PROTECTION OF SURFACE WATERS

A. Take all precautions to prevent, or reduce to a minimum, any damage to surface water from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials in or near such streams.

B. Do not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water, or any sanitary or storm sewer.

MATERIALS AND PERFORMANCE – SECTION 01110

ENVIRONMENTAL PROTECTION PROCEDURES

C. In order to minimize impacts to downstream water bodies, procedures for re-grading shall be performed as described in the Remedial Action Work Plan and Section 02201 – Earthwork.

3.03 PROTECTION OF LAND RESOURCES

A. Restore land resources within the project boundaries, outside the limits of permanent work and within right-of-ways, after completion of construction to previously existing conditions. Confine all construction activities to areas shown on the Construction Drawings.

B. Wetlands within the work zone are to be minimally disturbed only to the extent shown in the Construction Drawings. Disturbances to wetland areas that are not necessary to perform remedial actions shall be avoided.

C. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-inch in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.

D. Remove all signs of temporary construction facilities such as work areas, structures, stockpiles of excess or waste materials, or any other vestiges of construction as directed by the Engineer. It is anticipated that excavation, filling, and plowing of roadways will be required to restore the area to near natural conditions, which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and seeded as described in Section 02210 – Topsoil and Seeding, or as approved by the Engineer.

E. All rubbish, including disposable PPE, will be disposed of in at an appropriately licensed disposal facility approved by the Owner.

3.04 PROTECTION OF AIR QUALITY

A. Burning

1. The use of burning at the project site for the disposal of refuse and debris will not be permitted.

B. Dust Control

1. Maintain all work areas within or without the project boundaries free from dust that could cause the standards for air pollution to be exceeded and which would cause a hazard or nuisance to others.

MATERIALS AND PERFORMANCE – SECTION 01110

ENVIRONMENTAL PROTECTION PROCEDURES

2. An approved method of dust control consisting of wetting or other similar methods will be permitted, provided that such actions comply with the SWPPP. The use of petroleum products is prohibited.

3. Wetting, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor shall have sufficient competent equipment on the job to accomplish this. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Engineer or Owner or as required by the Technical Specifications.

4. Appropriate dust control measures include the following:

   - Spraying water on access roads and active work areas.
   - Hauling materials for riverbank re-shaping activities in properly tarped vehicles.
   - Restricting vehicle speeds to 5 miles per hour.
   - Covering work faces with a layer of polyethylene sheeting/tarp (anchored appropriately to resist wind forces) after work activities cease for the day.

   The Contractor shall make a source of water (e.g., water tank truck) available at the work site. The Contractor will be responsible for maintaining, in the immediate vicinity of the work, a supply of water and means of dispersion (e.g., a water tank and sprayer) such that water may be applied for dust control immediately as required. If the dust control measures being utilized by the Contractor do not lower particulates to acceptable limits, based on visual observations and/or the results of airborne particulate monitoring, dust-generating work activities must be suspended until the Contractor develops the appropriate corrective measure(s) to remedy the situation.

3.05 NOISE CONTROL

A. Make every effort to minimize noises caused by the construction operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with federal, state, and local noise ordinance regulations. Normal working hours shall be between 7:00 A.M. and 6:00 P.M., Monday through Friday.

3.06 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

A. Maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

MATERIALS AND PERFORMANCE – SECTION 01110

ENVIRONMENTAL PROTECTION PROCEDURES

3.07 PROHIBITED CONSTRUCTION PROCEDURES

A. Prohibited construction procedures include, but are not limited to:

1. Dumping/disposal of construction-related material (e.g., soil, black ash, construction debris) into any stream corridor, any wetlands, any surface waters, or at unspecified locations.

2. Indiscriminate, arbitrary, or capricious operation of equipment in any stream corridors, any wetlands or any surface waters.

3. Pumping of silt-laden water into any surface waters, any stream corridors, or any wetlands.

4. Damaging vegetation beyond the extent necessary for construction.

5. Disposal of trees, brush, and other debris in any stream corridors, any wetlands, any surface waters, or at unspecified locations.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 01160

SURVEY CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Survey control for construction and documentation purposes shall be the responsibility of the Contractor. The Contractor shall safeguard all survey points and bench marks. Should any of these points be destroyed, the replacement cost shall be borne by the Contractor. The Contractor shall assume the entire expense of rectifying work improperly constructed due to failure to maintain and protect such established survey points and bench marks.

B. The Contractor shall be responsible for the layout of any additional survey controls, grid coordinate locations, lines, grades, and elevations necessary for the proper construction, documentation, and testing of the work at no additional cost to the Owner. Survey activities shall include, but not be limited to: verifying existing conditions, ensuring specified grades and elevations are used during re-shaping and installation activities, and performing an as-built survey of all constructed site features (e.g., final grades, top of geosynthetics, locations and elevations of any discovered and/or relocated site utilities, location of found and abandoned pipes, etc.).

C. Unless noted otherwise in the Contract Documents, survey data shall be collected on a 50-foot by 50-foot grid. Additional survey data shall be collected at significant site features and major changes in elevation that may occur within the grid.

D. Vertical survey tolerance to be maintained during construction is 0.10 foot for general site grading and 0.05 foot for structural features (e.g., pipes, manholes, etc.) unless otherwise specified in the Contract Documents or approved by the Engineer.

E. The Contractor shall employ a New York State licensed surveyor to provide the surveying functions necessary for the proper construction and documentation of the work. All survey-related work products shall be sealed and signed by a registered New York State Professional Engineer or Licensed Surveyor.

F. The survey documentation shall be consistent with and comply with the requirements of Special Conditions Section 01719 - Record Keeping and Record Drawings.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01700 – Special Conditions

MATERIALS AND PERFORMANCE – SECTION 01160

SURVEY CONTROL

1.03 SUBMITTALS

A. Survey Crew Qualifications

1. Prior to the start of any survey work, the Contractor will submit the name, address, telephone number, and qualifications of the Surveyor, crew chief, superintendent, and all other persons who are proposed to perform surveys or survey-related duties to the Engineer for review for consistency with Contract Documents.

2. The Contractor will only use New York State-licensed Surveyors, and will provide proof of licensure prior to the start of survey work.

B. Records

1. The Contractor will furnish the Engineer with copies of all field notes, computations, any records relating to the quantity survey or to the layout of the work, and any Windows 7-compatible version of any computer software required to interpret the finished data and records. The Contractor is responsible for converting data and drawing files to a standard software version subject to review by the Engineer. Standard ASCII format is pre-approved for data files.

2. Survey data will be provided in x, y, z (easting, northing, elevation) format. Each data file will include a descriptive header including, but not limited to: software and equipment information, Owner, project, horizontal and vertical datum, units, survey type, alignment, and stations surveyed.

3. The Contractor will maintain on-site a complete, accurate log of the survey work as it progresses.

C. The Contractor will submit a Post-Construction Survey Map to the Engineer for review for consistency with Contract Documents before receiving final payment for the Contract work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 General

A. The Contractor will exercise care during the execution of the work to minimize any disturbance to existing property and to the landscape and waters in the areas surrounding the site.

MATERIALS AND PERFORMANCE – SECTION 01160

SURVEY CONTROL

3.02 Pre-Construction Survey

A. The Contractor will be provided with a pre-construction survey that will be used to document pre-existing conditions. The Contractor, at his or her own expense, will be permitted to conduct a pre-construction survey prior to starting construction.

3.03 Interim Survey

A. The Contractor will conduct interim survey during the Contract work. Interim survey activities shall include, but not be limited to: ensuring specified grades and elevations are achieved during re-shaping and installation activities and documenting constructed site features (e.g., top of geosynthetics, locations and elevations of any discovered and/or relocated site utilities, etc.).

3.04 Post-Construction Survey

A. The Contractor will perform a post-construction survey to confirm that the required terms of Contract completed.

3.05 Final Progress Payment

A. On the day the Contractor submits request for the final progress payment, the Contractor will submit to the Engineer any records as described in this Technical Specification in Part 1.03, B above. The Engineer will use these records, as necessary, to verify completion of the project prior to submittal of the final payment. The Contractor will retain copies of all such materials provided to the Engineer.

- END OF SECTION -

MATERIAL AND PERFORMANCE – SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Engineer shall schedule and administer a pre-construction meeting, weekly progress and coordination meetings, and any other site meetings throughout progress of the Work. The Engineer shall:

1. Prepare and distribute agendas for meetings.

2. Make physical arrangements for meetings.

3. Preside at meetings.

4. Record the minutes and action items; include significant proceedings and decisions.

5. Reproduce and distribute copies of minutes after each meeting:

a. To participants in the meeting.

b. To parties affected by decisions made at the meeting.

B. Representatives of Contractors, subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

C. The Contractor shall attend meetings.

D. The Contractor will conduct daily safety meetings to discuss health & safety concerns associated with current and upcoming work activities.

1.02 RELATED REQUIREMENTS

A. Section 01300 **-** Submittals

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PRE-CONSTRUCTION MEETING

A. Schedule a pre-construction meeting no later than 15 days after date of Notice to Proceed. The Engineer will facilitate the Pre-Construction Meeting.

MATERIAL AND PERFORMANCE – SECTION 01200

PROJECT MEETINGS

B. Location: To Be Determined

C. Attendance list:

1. Owner.

2. Agency representatives from New York State Department of Environmental Conservation (NYSDEC) and NYS Department of Health (NYSDOH).

3. Engineer.

4. Contractor.

5. Major Subcontractors.

6. Major Suppliers.

7. Others, as appropriate

D. Agenda Items - Meeting agenda items may include, but are not limited to, the following:

1. Safety/safe work practices and Owner onsite work requirements.

2. Distribution and discussion of:

   a. List of major subcontractors and suppliers.

   b. Projected construction schedules.

3. Major equipment deliveries and priorities.

4. Project Coordination:

   a. Designation of responsible personnel.

5. Procedures and processing of:

   a. Field decisions.

   b. Proposal requests.

   c. Submittals.

MATERIAL AND PERFORMANCE – SECTION 01200

PROJECT MEETINGS

d. Change Orders.

e. Applications for payment.

6. Procedures for maintaining Record Documents.

7. Use of premises:

a. Office, work, and storage areas.

b. Owner's requirements.

8. Construction facilities, controls, and construction aids.

9. Temporary utilities.

10. Housekeeping procedures.

11. Other

3.02 PROGRESS AND COORDINATION MEETINGS

A. Schedule regular progress and coordination meetings, as required by the progress of the Work. The Engineer will record minutes, track action items, and distribute copies to the Owner and Contractor.

B. Attendance list:

1. Owner.

2. NYSDEC/NYSDOH.

3. Engineer.

4. Contractor.

5. Subcontractors.

6. Suppliers.

7. Others, as appropriate.

MATERIAL AND PERFORMANCE – SECTION 01200

PROJECT MEETINGS

C. Potential Agenda Items:

1. Safety/safe work practices.
2. Review, approval of minutes of previous meeting.
3. Review of work progress and actions items completed since previous meeting.
4. Field observations, problems, and conflicts.
5. Problems that impede construction schedule.
6. Review of offsite fabrication and delivery schedules.
7. Corrective measures and procedures to regain projected schedule.
8. Revisions to construction schedule.
9. Progress and schedule during succeeding Work period.
10. Coordination of schedules.
11. Review submittal schedules.
12. Maintenance of quality standards.
13. Pending changes and substitutions.
14. Review proposed changes for:
    a. Effect on construction schedule and on completion date.
    b. Effect on other contracts of the Project.
15. Other.
16. Construction schedule.
17. Critical/long lead items.

D. The Contractor is to attend progress meetings and be prepared to discuss pertinent topics such as deliveries of materials and equipment, progress of the Work, etc.

MATERIAL AND PERFORMANCE – SECTION 01200

PROJECT MEETINGS

E. The Contractor is to provide a current Submittal Register at each progress meeting in accordance with Section 01300 – Submittals.

3.03 SAFETY MEETINGS

A. The Contractor (safety representatives) and its major subcontractors (if applicable) will attend daily safety meetings each morning before work begins. Safety meetings are in addition to specific meetings held for other purposes, such as regular progress meetings, but may be held in conjunction with other daily meetings such as coordination meetings as the Engineer deems appropriate.

B. Potential Agenda Items:

1. Safety hazards and risks for work to be performed each day

2. Current safety precautions in accordance with the Contractor's Health and Safety Plan

3. Housekeeping

4. Occupational Safety and Health Administration requirements for ongoing/upcoming work

C. The Contractor will submit the safety meeting minutes on a daily basis to the Engineer.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 01300
SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. Work Specified

1. This Section specifies the general methods and requirements of submissions applicable to Contractor submittals, including various plans, shop drawings, product data, samples, mock-ups, and construction or submittal schedules. Detailed submittal requirements are specified in the individual Sections.

2. All submittals shall be clearly identified by reference to Section Number, Paragraph, Drawing Number, or detail as applicable. Submittals shall be clear and legible and of sufficient size for presentation of data.

1.02 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

A. Shop Drawings

1. Shop drawings as specified in individual Sections include work plans, samples, supporting vendor information, calculations, test reports, custom-prepared data such as fabrication and erection/installation (working) drawings, schedules for carrying out the work, setting diagrams, actual shop work manufacturing instructions, custom templates, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications, as applicable to the work.

2. Shop drawings provided by subcontractors shall not be sent to the Engineer until first reviewed by the Contractor, and should only be forwarded to the Engineer once the Contractor has verified that they are complete. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.

3. The Contractor shall be responsible for checking all subcontractor shop drawings regarding measurements, size of members, materials, and details to make sure that they conform to the intent of the shop drawings and related Sections. The Contractor must return shop drawings found to be inaccurate or otherwise in error to the subcontractors for correction before submission thereof

4. All details on shop drawings shall show clearly the relation of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the shop drawings before being submitted.

MATERIALS AND PERFORMANCE – SECTION 01300

SUBMITTALS

B. Product Data

1. Product data, as specified in individual Sections, include standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the work.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Review shop drawings, product data, and samples, including those by subcontractors, prior to submission to determine and verify the following:

1. Field measurements

2. Field construction criteria

3. Catalog numbers and similar data

4. Conformance with related Technical Specifications

B. Each shop drawing, sample, and product data submitted by the Contractor shall have affixed to it the following Certification Statement (including the Contractor's Company name and Contractor’s signature). “Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable shop drawings and all Contract requirements." Shop drawings and product data sheets that are 11 x 17 inches and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide to the Engineer 2 copies of each transmittal sheet for shop drawings, product data, and samples at the time of submittal to the Engineer.

MATERIALS AND PERFORMANCE – SECTION 01300

SUBMITTALS

C. The Contractor shall utilize a 10-character submittal identification numbering system in the following manner:

1. The first character shall be a D, S, P, or M which represents shop/working drawing and other product data (D), sample (S), preliminary submittal (P), or operating/ maintenance manual (M).

2. The next five digits shall be the applicable Section Number.

3. The next three digits shall be the numbers 001 through 999 to sequentially number each initial separate item or drawing submitted under each specific Section Number.

4. The last character shall be a letter, A through Z, indicating the submission or resubmission of the same Drawing, i.e., A=1st submission, B=2nd submission, C=3rd submission, etc. A typical submittal number would be as follows:

D-02201-008-B

D = Shop Drawing

02201 = Section for Earthwork

008 = The eighth initial submittal under this section

B = The second submission (first resubmission) of that particular shop drawing

D. Notify the Engineer in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Construction Drawings and/or Technical Specifications.

E. The Contractor shall provide submittals 20 days prior to the Contractor's intended use of the item covered by the submittal. The Engineer will review shop drawings, samples, and product data for conformance with the Construction Drawings and/or Technical Specifications. The Engineer's review will not relieve the Contractor from the responsibility for the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor, and the Engineer will have no responsibility therefore.

F. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to review of the applicable submittal items by the Engineer. Fabrication performed, materials purchased, or on-site construction accomplished that does not conform to the Construction Drawings and Technical Specifications shall be at the Contractor's risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

MATERIALS AND PERFORMANCE – SECTION 01300

SUBMITTALS

G. Submittals that differ from the Remedial Design and requested information will be forwarded to the New York State Department of Environmental Conservation (NYSDEC) for review and approval, as necessary. The Engineer will address NYSDEC comments on submittals.

H. Project work, materials, fabrication, and installation shall conform to the Construction Drawings and Technical Specifications.

1.04 SUBMITTALS

A. Make submittals promptly in accordance with the approved schedule and in such sequence as to cause no delay in the work or in the work of any other contractor.

B. Each submittal, appropriately coded, will be returned following review of submittal by the Engineer.

C. Number of submittals required:

1. Shop Drawings: Four hard copies and one electronic copy, as requested

2. Product Data: Four hard copies and one electronic copy, as requested

3. Samples: Submit the number and/or size stated in the respective Technical Specifications

D. Submittals shall contain:

1. Date of submission and the dates of any previous submissions.

2. Project title and number.

3. Contractor submittal identification number.

4. The names of:

a. Contractor or subcontractor

b. Supplier

c. Manufacturer

5. Identification of the product, with the section number, page and paragraph(s).

6. Field dimensions, clearly identified as such.

7. Relation to adjacent or critical features of the work or materials.

8. Applicable standards, such as ASTM International or Federal Standards numbers.

9. Identification of deviations from the Construction Drawings and/or Technical Specifications.

10. Identification of revisions on resubmittals.

11. A blank space suitably sized for Contractor and Engineer stamps.

12. Where calculations are required to be submitted by the Contractor or subcontractor, the calculations shall have been checked by a qualified individual other than the preparer. The submitted calculations shall clearly show the names of the preparer and of the checker.

13. Drawings, which shall use the latest version of AutoCAD by Autodesk, Inc.

1.05 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS, AND SAMPLES

A. The review of shop drawings, data, and samples will be for general conformance with the design concept, Construction Drawings, and Technical Specifications. They shall not be construed as:

1. Permitting any departure from the Contract requirements

2. Relieving the Contractor of responsibility for any errors, including details, dimensions, and materials

3. Approving departures from details furnished by the Engineer, except as otherwise provided herein

B. The Contractor shall remain responsible for details and accuracy, coordinating the work with all other associated work and trades, selecting fabrication processes, techniques of assembly, and performing work in a safe manner.

C. If the shop drawings, data, or samples as submitted describe variations and show a departure from the Contract requirements, which the Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or Contract Time, the Engineer may return the reviewed shop drawings without noting an exception.

D. Submittals will be returned to the Contractor under one of the following codes.

MATERIALS AND PERFORMANCE – SECTION 01300

SUBMITTALS

"R" - "REVIEWED" is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.

"N" - "REVIEWED AND NOTED" is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.

"S" - "RESUBMIT" is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the Engineer within 15 calendar days of the date of the Engineer's transmittal requiring the resubmittal.

"J" - "REJECTED" is assigned when the submittal does not meet the intent of the Construction Drawings and/or Technical Specifications. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Construction Drawings and/or Technical Specifications.

"I" - "FOR YOUR INFORMATION" is assigned to acknowledge receipt of a submittal that does not require the Engineer's review and is being filed for informational purposes only. This code is generally used in acknowledging receipt of field conformance test reports and Health and Safety Plans.

E. Resubmittals shall be handled in the same manner as first submittals. On resubmittals the Contractor shall identify all revisions made to the submittals, either in writing on the letter of transmittal or on the shop drawings by use of revision triangles or other similar methods. The resubmittal shall clearly respond to each comment made by the Engineer on the previous submission. Additionally, the Contractor shall direct specific attention to any revisions made other than the corrections requested by the Engineer on previous submissions.

F. Partial submittals may not be reviewed. Incomplete submittals will be returned to the Contractor and considered "Rejected" until resubmitted as a complete submittal. The Engineer may, at its option, provide a list or mark the submittal directing the Contractor to the areas that are incomplete.

G. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Construction Drawings and/or Technical Specifications, the Contractor shall give written notice thereof to the Engineer at least 7 working days prior to release for manufacture.

MATERIALS AND PERFORMANCE – SECTION 01300

SUBMITTALS

H. When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

1.06 DISTRIBUTION

A. Distribute reproductions of reviewed shop drawings and copies of reviewed product data and samples, where required, to the job site file and elsewhere, as directed by the Engineer. The number of copies will be as directed by the Engineer, but will not exceed six copies.

1.07 SCHEDULES

A. Provide all schedules as required in the Technical Specifications.

1.08 PROFESSIONAL ENGINEER (P.E.) CERTIFICATION FORM

A. If specifically required in other related Technical Specifications, a New York State P.E. Certification shall be submitted for each item required.

1.09 GENERAL PROCEDURES FOR SUBMITTALS

A. Coordination of Submittal Times: Each submittal shall be prepared and transmitted sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work of other related Technical Specifications, so that the installation will not be delayed by processing times, including rejection and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the work.

B. Submittal Register: A submittal register has been prepared for the Contractor’s use and is included as Table 01300-1. The Contractor may use this register or provide one of his own that incorporates the provisions of the one specified. The Contractor shall provide a current Submittal Register at each progress meeting in accordance with Section 01200 – Progress Meetings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -

Table 01300-1. Submittal Register

Item No.	Specification Section(s)	Submittal Description	Submittal Timeline	Submittal Number	Date Received	Reviewed By	Status/Date (see Note 1)	Notes/Review Status
	01010, 01734	Operations Plan	Submit 20 days prior to mobilization					
	01010, 01731	Contractor Site-specific Health and Safety Plan	Submit 20 days prior to mobilization					Must be reviewed and certified by an Industrial Hygienist
	01010	Contingency Plan	Submit 20 days prior to mobilization					
	01010	Spill Prevention, Control, and Countermeasures Plan	Submit 20 days prior to mobilization					May be included in Remedial Action Contingency Plan
	01701, 01010	Initial Project Schedule	Submit a minimum of 10 days prior to construction					Submit at least 10 days prior to start of construction.
	01010	Demobilization Activities - Description of site cleanup activities and removal of temporary facility items	Submit 20 days prior to demobilization					May be included in Operation Plan
	01010	Recordkeeping - Description of the organization method for recordkeeping and contact information to obtain project records	Submit within 3 weeks of completion of work					
	01160	Survey – Survey crew qualifications; schedule of survey work; drawings showing tracklines for each survey; copies of grade letters and cut sheets	Submit 20 days prior to start of survey					
	01160, 02203	As-Built Grading Plans - Prepared and stamped by a land surveyor licensed in New York State	Submit within 3 weeks of completion of work					May be included in Record Drawings
	01200, 01300	Weekly Submittal Register Update	Submit prior to weekly progress meeting					Only the most recent submittal will be tracked
	01701	Weekly Schedule Update	Submit prior to weekly progress meeting					Only the most recent submittal will be tracked
	01706	Utility Contact Information	Submit 72 hours prior to construction near the utility					
	01710	Lines, Grades, and Elevations - Copies of grade letters and cut sheets	Submit 2 weeks prior to construction					
	01712	Contact List - Minimum three contact numbers of responsible personnel in the event of an emergency	Submit prior to construction					
	01716	Environmental Protection Plan	Submit 20 days prior to mobilization					
	01719	Record Drawings	Submit within 3 weeks of completion of work					

Note:

1. Submittal status nomenclature is as follows:
   - R - Reviewed
   - N - Reviewed and Noted
   - S - Resubmit
   - J - Rejected
   - I - Information Only

Tracking Key:

- - Stamped submittal included in this delivery
- - Submittal received; pending review
- - Pending submittal/resubmittal
- - Pending NYSDEC approval
- - Submittal overdue

Table 01300-1. Submittal Register

Item No.	Specification Section(s)	Submittal Description	Submittal Timeline	Submittal Number	Date Received	Reviewed By	Status/Date (see Note 1)	Notes/Review Status
	01721	Wage Rates - Proposed wage rates will be used for the duration of the construction effort	Submit upon request by Owner/Engineer					
	02201	Mechanical Plumbers Plug - Manufacturer's specifications and installation procedures.	Submit 20 days prior to installation					
	02201	Non-Shrink Grout - Manufacturer's specifications and installation procedures.	Submit 20 days prior to installation					
	02206	Type 2 Stone - Name and location of source; samples and sieve analysis (ASTM D422) report	Submit 3 weeks prior to material placement					
	02206	Type 3 Stone - Name and location of source; samples and sieve analysis (ASTM D422) report	Submit 3 weeks prior to material placement					
	02206	Riprap - Name and location of source	Submit 3 weeks prior to material placement					
	02206	Cover Fill - Name and location of source; samples and sieve analysis (ASTM D422) report	Submit 3 weeks prior to material placement					
	02210	Topsoil – Location of source; pH, organic content, and chemical analysis results	Submit 3 weeks prior to material placement					
	02210	Seed Mix – Supplier's signed QC certification including botanical name, common name, number of seeds per unit weight or percentage of seeds by weight in a mixture; purity of seed, germination percentage, amount of undesirable plant seeds present in mixture, date of packaging, date of production, and name and address of supplier; maintenance data	Submit 2 weeks prior to material placement					
	02232	Geotextile – Manufacturer's product information; material samples; certified QC testing; list of materials that comprise the geotextile; certification from Contractor that the delivered material meets specifications; listing of lot and roll numbers; proposed transportation, handling, and storage; shop drawings of installation details; certification from Contractor prior to installation that the delivered material has not been damaged; and standard warranty from Manufacturer	Submit 3 weeks prior to material placement					

Note:

1. Submittal status nomenclature is as follows:
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Table 01300-1. Submittal Register

Item No.	Specification Section(s)	Submittal Description	Submittal Timeline	Submittal Number	Date Received	Reviewed By	Status/Date (see Note 1)	Notes/Review Status
	02260	Erosion Control Material (e.g., straw bales, erosion control mat, etc.) – Manufacturer's specification and installation procedures	Submit 20 days prior to installation					
	02260	Storm Water Management and Erosion Control Plan	Submit 20 days prior to mobilization					
	02260	Silt Fence – Manufacturer's specification and installation procedures	Submit 20 days prior to installation					
	02260	Sorbent Booms/Pads – Manufacturer's specification and installation procedures	Submit 20 days prior to installation					
	02260	Turbidity Curtains – Manufacturer's specification and installation procedures	Submit 20 days prior to installation					
	02508	Air Monitoring Equipment - Detailed manufacturer's specifications	Submit 20 days prior to installation					
	02508	Air Monitoring Program Plans - Detailed plan specifying requirements of the air monitoring program; detailed site plan identifying community air monitoring station locations and windsock; and detailed response plan that includes procedures for response to an exceedance of action levels as required by NYSDOH	Submit 20 days prior to mobilization					
	02508	Air Monitoring Summary - Real-time community air monitoring results in an electronic format compatible with Microsoft Excel	Submit on a weekly basis					Only the most recent submittal will be tracked

Note:

1. Submittal status nomenclature is as follows:
   - R - Reviewed
   - N - Reviewed and Noted
   - S - Resubmit
   - J - Rejected
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Tracking Key:

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- - Pending NYSDEC approval
- - Submittal overdue

MATERIALS AND PERFORMANCE – SECTION 01540
SITE SECURITY

PART 1 - GENERAL

3.01 DESCRIPTION

A. The Contractor shall safely guard all work, materials, equipment, and property from loss, theft, damage, and vandalism. The Contractor's duty to safely guard property shall include the Owner's property and other private property from injury or loss during the performance of the Contract.

B. The Contractor's health and safety personnel shall be present while site remediation activities are being conducted (i.e., during work hours). Security checks shall be conducted by security personnel during non-work hours, as needed, to provide required security.

C. The Contractor may make no claim against the Owner for damage resulting from trespass.

D. The Contractor shall make good all damage to property of Owner and others arising from failure to provide adequate security.

E. If existing fencing or barriers are breached or removed for purposes of construction, the Contractor shall provide and maintain temporary security fencing equal to the existing, unless otherwise directed by the Owner.

F. Warning signs shall be posted at construction access points. Signs shall read "UNAUTHORIZED ENTRANCE TO THE WORK AREA IS PROHIBITED," with black lettering on a white surface. Signs shall be rectangular in shape with a minimum dimension of 24 inches wide and 18 inches high. Signs shall be maintained during construction and removed upon project completion.

G. The Contractor shall restrict access of unauthorized persons and vehicles into the site and existing facilities.

H. The Contractor shall allow entrance only to authorized persons with proper identification. Visitors will not be permitted without approval from the Owner. The Contractor shall request visitor access to the Owner's representative at least 24 hours in advance of a visit.

I. The Contractor shall maintain log of workers and visitors and make available to the Owner or Engineer on request. The log shall include the date, name, address, company employed by, company/person visited, time in and time out for each person, and record of deliveries and security incidents.

J. The Contractor shall maintain a security program throughout construction until the Owner's acceptance and occupancy precludes need for the Contractor's security program.

MATERIALS AND PERFORMANCE – SECTION 01540

SITE SECURITY

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -

SPECIAL CONDITIONS – SECTION 01700

01701 - WORK SCHEDULE

A Work Schedule shall be submitted to the Engineer by the Contractor a minimum of 10 days prior to the commencement of construction activities. The work schedule shall be in the form of a neatly labeled bar graph and shall show the order and date on which the several salient tasks will be started and completed, including a block by block breakdown along the construction route. Each Contractor is required to obtain written approval of the Work Schedule from the Engineer prior to initiating work at the Contract work area. The schedule shall be updated weekly, or as appropriate, and resubmitted to the Engineer on a weekly basis. As part of the required Work Schedule, each Contractor shall develop a detailed description of the proposed sequence of construction.

01702 - PRE-BID MEETING

In accordance with the requirements of the Invitation to Bid, prior to the date of submission of bids, a general information meeting will be held with the Owner/Engineer and the prospective Bidders. The meeting will allow the prospective Bidders to ask questions regarding specific points related to the project. All perspective Bidders are required to attend the pre-bid meeting and only those Bidders that attend the pre-bid meeting may bid on the project.

An addendum (if necessary) shall then be formally prepared and issued to clarify any pertinent points discussed at the meeting.

Following the Pre-Bid Meeting, a Site visit will be held.

01703 - PRE-CONSTRUCTION MEETINGS

Prior to the start of construction by the successful Bidder(s), a general information meeting shall be held with the Owner/Engineer, Contractor(s) and other interested parties in attendance. The meeting shall cover the general features of the project and the various requirements in the Contract(s).

01704 - PROGRESS AND COORDINATION MEETINGS

Progress and coordination meetings will be held weekly or as scheduled by the Engineer to discuss the progress of the Work. Representatives of each Contractor shall be in attendance at these meetings and shall have decision-making authority.

Toolbox “safety meetings” will be held daily at the project site to discuss the current safety precautions for work activity.

01705 - COORDINATION OF WORK WITH OTHER CONTRACTORS

In the event that Work by others may be progressing concurrently with the construction associated with the Contract(s), Work of the Contract(s) must be coordinated through the Prime Contractor by each Contractor so that a minimum interference with any construction operations of others will result.

SPECIAL CONDITIONS – SECTION 01700

01706 - PROTECTION OF EXISTING UTILITIES

During the course of the Work, it will be necessary to work adjacent to existing utilities, structures, and equipment. The Contractor shall take all necessary precautions to protect existing facilities and adjacent properties from damage. Use of equipment mats or other protective devices required for work over existing underground utilities to prevent damage to such utilities shall be required.

The Contractor shall exercise extreme caution not to interfere with or cause damage to any existing utilities, as specified in the General Conditions, and elsewhere in the Contract Documents. The Contractor shall notify the utility companies at least seventy-two (72) hours before construction is started adjacent to such utilities. The Contractor shall provide the Engineer with necessary utility contact information for the Engineer to verify such notification has occurred. Failure to provide such proof shall be cause for automatic cessation of the work. The utilities shall be protected in a manner prescribed by the utility company.

In the event of a conflict between proposed facility (e.g., sewer, force main, etc.) location and that of existing utilities, no payment will be made to the Contractor for delays caused by the relocation of the existing utility or the determination of the proposed facility realignment by the Engineer if the Contractor has not performed the necessary excavation to locate the conflicting utilities.

Any existing utility that may be damaged or broken during the construction operation shall be immediately reported to the respective utility company so that arrangements for repair can be made. The Contractor shall not at any time operate or repair the facilities of the respective utility companies unless permission is received in writing from the respective utility and filed with the Engineer.

The Contractor shall coordinate with the proper utility company whenever utility relocations are needed or called for on the Construction Drawings. Agreement shall be made between the Contractor and the utility company concerning scheduling of relocation work and payment for such work. The Contractor shall not perform the utility relocation work unless permission is received in writing, from the utility company, and filed with the Engineer.

01707 - EXISTING CONDITIONS

It is each Contractor’s responsibility to verify the exact nature, character, quality, and quantity of all conditions to be encountered. Any reliance upon the Construction Drawings and information made available by the Owner or the Engineer shall be at the Contractor’s risk. The Contractor agrees that he shall neither have nor assert against the Owner or Engineer any claim for damages for extra work or otherwise or for relief from obligation of this Contract based upon the failure by the Owner or Engineer to obtain or to furnish additional drawings or information or to furnish all drawings and information in the Owner’s or Engineer’s possession or based upon any inadequacy or inaccuracy of the drawings or information provided; however, the Contractor may be entitled to an adjustment in the Contract Price under the circumstances and to the extent provided.

SPECIAL CONDITIONS – SECTION 01700

All holders of Contract Documents will be permitted to inspect the Site of the Work. It should be understood that the party or parties inspecting the Site must assume all risks and liabilities contingent thereto. All parties wishing to visit the Site must request permission beforehand from the Owner/Engineer and coordinate such a visit with the Owner/Engineer.

01708 - BORINGS AND OTHER SUBSURFACE INVESTIGATION

It shall be each Contractor's obligation to satisfy himself as to the nature, character, quality, and quantity of subsurface conditions likely to be encountered. Any reliance upon the subsurface conditions information made available by the Owner or the Engineer shall be at each Contractor's risk.

Each Contractor agrees that he shall neither have nor assert against the Owner/Engineer any claim for damages for extra work or otherwise for relief from any obligation of this Contract based upon the failure by the Owner/Engineer to obtain or to furnish additional subsurface conditions information or to furnish all subsurface conditions information in the Owner's/Engineer's possession or based upon any inadequacy or inaccuracy of the information furnished.

Certain subsurface conditions information may be shown on separate sheets or otherwise made available by the Owner/Engineer to Bidders, Contractors, and other interested parties. Such information shall not be considered a part of the Contract Documents, it being understood that such information is made available only as a convenience, without express or implied representation, assurance, or guarantee that the information is adequate, complete, or correct, or that it represents a true picture of the subsurface conditions to be encountered, or that all pertinent subsurface conditions information in the possession of the Owner/Engineer has been furnished.

Any Bidder will be permitted to make test borings, test pits, soundings, and any other investigation it deems necessary at the Site of the Work if it so desires, subject to its first obtaining written approval from the Owner. It is understood that the party or parties receiving such approval must assume all risks and liabilities contingent thereto.

It shall be the obligation of each Contractor to inquire of the Owner/Engineer whether pertinent subsurface conditions information has been obtained by the Owner with respect to the Work.

01709 - STORAGE OF EQUIPMENT AND MATERIALS

Each Contractor shall provide temporary storage facilities for all materials and equipment delivered to the Site and required to complete the work of this Contract.

If severe weather is predicted in the forecast, the Contractor shall move all construction vehicles into a designated parking area on higher ground and away from the riverbank. In addition, if the severe weather is predicted to occur outside of regularly scheduled work hours, at the end of the work day the Contractor shall move all construction vehicles into such designated parking area for overnight storage.

SPECIAL CONDITIONS – SECTION 01700

For the benefit of the Contractor, the Engineer hereby makes it known that the available area for materials and equipment storage at the Site is limited and offsite storage of materials and equipment may be required. All temporary storage facilities at the Site are subject to the approval of the Owner and Engineer.

01710 - LINES, GRADES, AND ELEVATIONS

From the information provided by the Engineer, the Contractor shall verify benchmarks and develop and make all detail surveys needed for construction.

The Contractor shall set and maintain all necessary intermediate points, lines, grades and elevations, and provide slope stakes, offset stakes, batter boards, and other such items at his own expense. Where the Contractor uses the laser for control, he shall periodically check the grade and alignment during each day's operation.

The Contractor shall furnish copies to the Engineer in advance of construction of grade letters and cut sheets prepared by the Contractor. The accuracy of the Contractor's survey and other furnishing of data to the Engineer does not constitute a transfer of responsibility for checking.

01711 - EQUIVALENT PRODUCTS

There shall be no acceptance given by the Engineer during the bidding period or prior to award of Contracts for any names or equal equipment systems.

Whenever a product is specified or described in the Contract Documents by reference of name, trade name, make or catalog number of a particular manufacturer, supplier, fabricator or distributor, the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of the manufacturers, fabricators, suppliers or distributors may be accepted by the Engineer if sufficient information is submitted by the Contractor to allow the Engineer to determine that the material or equipment proposed is equivalent to that named. The procedure for the review by Engineer is described below.

Requests for review of substitute items of material and equipment will not be accepted by Engineer from anyone other than the Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall make written application to Engineer for review thereof.

Applications for use of any substitute items shall be submitted by the Contractor to Engineer within 60 days of the execution of this Contract. No applications will be considered thereafter unless the Contractor produces satisfactory evidence that the specified item is no longer manufactured or is available for the project.

SPECIAL CONDITIONS – SECTION 01700

The Contractor's written application shall include the following:

1. A statement that a clear superiority of the substitute item (over that specified) exists, supported by certified test results, performance data, and other evidence to supplement the requirements stated herein.

2. If no superiority is claimed, the application shall also state the monetary credit to the Owner that will be allowed if the substitute item is accepted.

3. Contractor shall certify that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified, and be suited to the same use and capable of performing the same function as that specified.

4. The application will state whether or not acceptance of the substitute for use in the Work will require a change in the Construction Drawings or Specifications to adapt the design to the substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty.

5. If the substitute item requires modifications to the structures, piping, layouts, etc., detailed on the Construction Drawings, the application shall also include details of proposed modifications necessary to accommodate the substitute item. Such details shall constitute scaled layouts, dimensions and other pertinent information to enable the Engineer to accurately assess the entire application. If the substitute item and proposed modifications are accepted, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications and absorb all costs of any related changes imposed on other Contractors. Final details of such modifications shall then be prepared and submitted for review by the Contractor under the Shop Drawings requirements specified elsewhere in the Contract Documents.

6. All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair, and replacement services shall be indicated.

7. The application shall also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other Contractors affected by the resulting change, all of which shall be considered by the Engineer in evaluation the proposed substitute.

In order to aid the Engineer in determining the equality of a proposed substitution (when compared to the item actually specified), the Contractor shall arrange for the performance of any tests requested by the Engineer. The nature, extent, testing, and supervision of such tests including engineering costs, shall be borne by the Contractor. Certified test results shall be mailed directly to the Engineer for all tests requested. The Engineer may require the Contractor to furnish at the Contractor's expense additional data about the proposed substitute.

SPECIAL CONDITIONS – SECTION 01700

The Engineer will be the sole judge of acceptability, and no substitute will be ordered or installed without the Engineer's written acceptance. The Owner may require the Contractor to furnish at the Contractor's expense a special performance guarantee or other surety with respect to any substitute.

The Engineer will record time required by the Engineer and/or the Engineer's consultants in evaluating substitutions proposed by the Contractor and in making changes in the Construction Drawings or Specifications occasioned thereby. If the Engineer determines the proposed substitute is not "equal," Contractor shall reimburse Owner for the charges of the Engineer and/or the Engineer's consultants for evaluating the proposed substitute.

01712 - EMERGENCY CALLS

The Contractor shall maintain telephone service 24 hours a day, 7 days a week to responsible personnel who shall be in a position to dispatch men and machinery to the project area in the event of an emergency and to clear conditions creating any hazard to life, limb, or property. The Contractor shall provide a list to the Owner and the Engineer of at least three such telephone numbers.

01713 - PERMITS

The Engineer will be responsible for obtaining permits associated with federal/state regulations, if necessary. The Contractor, however, will be obligated to meet all substantial requirements of applicable environmental permits and/or regulations, whether or not they are actually obtained.

The Contractor will obtain all other permits that may be required, including, but not limited to, the following:

- Stormwater Management and Erosion Control Plan - General permit
- Street Opening Permit
- Local Building Permit

01714 - NOISE AND DUST CONTROL

It shall be the responsibility of the Contractor to take adequate measures for controlling dust produced by drilling, earthwork, loading, or other means. The use of calcium chloride or petroleum-based materials for dust control is prohibited. Requirements for dust control are specified in Section 02508 - Air Monitoring Program.

It shall be the responsibility of the Contractor to take adequate measures for keeping noise levels as produced by construction equipment to safe and tolerable limits as set forth by the Occupational Safety and Health Administration (OSHA), the United States Environmental Protection Agency (USEPA), and the New York State Industrial Code Guidelines and Ordinances. All construction equipment presenting a potential noise nuisance shall be provided with noise muffling devices.

SPECIAL CONDITIONS – SECTION 01700

01715 - SOIL, SEDIMENT, AND EROSION CONTROL

Erosion Control

Erosion control procedures, but not limited to mulching, shall be utilized on the Site as required. Erosion control shall occur as required prior to any site work. At a minimum, erosion control measures shall be performed in accordance with the requirements of Section 02260 – Erosion, Sediment and Dust Control.

Sediment Control

Temporary silt fence, erosion control mats, and/or hay bales shall be used where necessary to protect vegetation and to achieve environmental objectives to allow sediment to settle out of runoff waters that come in contact with construction, before such water enters any surface waters. At a minimum, sediment control measures shall be performed in accordance with the requirements of Section 02260 – Erosion, Sediment and Dust Control.

01716 - PROTECTION OF THE ENVIRONMENT

In addition to meeting appropriate permit substantial requirements, the Contractor shall prepare an Environmental Protection Plan. Construction procedures shall include protection of the environment in accordance with all pertinent NYSDEC regulations. Construction procedures that are prohibited in the undertaking of work associated with this Contract include, but are not limited to:

1. Dumping of spoil material into any stream corridor, any wetlands (as defined by appropriate NYS regulations), any surface waters, or at unspecified locations.

2. Indiscriminate, arbitrary, or capricious operation of equipment in any stream corridors, any wetlands, or surface waters.

3. Pumping of silt-laden water from trenches or other excavations into any surface waters, and stream corridors, or any wetlands.

4. Damaging vegetation beyond the extent necessary for construction of the facilities.

5. Disposal of trees, brush, and other debris in any stream corridors, any wetlands, any surface waters, or at unspecified locations.

6. Permanent or unspecified alteration of the flow line of the waterway.

7. Open burning of project debris.

SPECIAL CONDITIONS – SECTION 01700

01717 - WORK HOURS

The Contractor shall provide the hours of operation necessary to facilitate the construction effort. The Contractor is cautioned that construction efforts that may impact the local residential community (e.g., equipment hauling) should be limited to those hours associated with normal business hours. The Contractor shall submit a schedule of hours proposed within his submittal that will account for different construction work efforts as well as the potential for operation during different seasonal work activities and daylight duration. It is each Contractor's responsibility to conform Work activities in accordance with any and all applicable state and local noise ordinances and regulations. Adequate lighting and all other necessary facilities for carrying out and inspecting the Work shall be provided and maintained by each Contractor in all areas where such Work is being done.

If it shall become necessary for each Contractor to modify working hours following the start of the Work, the Owner/Engineer shall be informed in writing at least 48 hours in advance of the beginning of performances of such Work.

01718 - SUBMITTALS

The Contract requires that the Contractor submit various plans, documents, data, drawings, and other information related to the performance of remedial activities. Each submittal (numbered as described in Section 01300 – Submittals) shall be received by the Engineer, ARCADIS, Attn: Mark Gravelding, P.E., 6723 Towpath Road, P.O. Box 66, Syracuse, New York 13214-0066, at least 20 days prior to the Contractor's intended use of the item covered by the submittal. The Engineer will subsequently review the submittals to determine general compliance with the Contract conditions. The Engineer's review will not be a complete check of the detailed methods, materials, or procedures and shall in no way be construed as permitting any departure from the Contract, except where the Contractor has previously requested and received written approval of the Engineer for such departure. The Contractor will not be permitted to undertake any activity that is directly or indirectly related to the item covered by the submittal until such time that the Engineer provides notification to the Contractor.

01719 - RECORD KEEPING AND RECORD DRAWINGS

During construction, the Contractor for each Contract shall keep one set of the Construction Drawings at the project Site on which he shall show all changes in, or directly associated with, the work under this Contract. Such changes shall be neatly and clearly marked on the drawings using colored ink or pencil, and the entire set of drawings shall be kept current on a day-to-day basis in concert with the progress of the work. Where applicable, the change marked on a drawing is to carry the notation "per Change Order No. ___", or similar reference that cites the reason for the change. The day-to-day construction record drawings shall be made available to the Engineer and/or Owner for review upon request.

SPECIAL CONDITIONS – SECTION 01700

The following items are examples of some of the types of changes that could occur and are to be recorded by the Contractor:

1. Change in location of project components.

2. Change in elevation of project components.

3. Change in removal volumes.

4. Change in materials, such as geotextile fabric.

5. Change in topographic contours of finished earth surfaces.

6. Change in elevation of finished grades.

7. Additions to project.

8. Elimination of a project component.

9. Relocation of existing underground utilities made necessary because of interference with project components.

10. Unforeseen modifications made to existing structures made necessary by requirements of the work.

11. Relocation of equipment.

In addition, the Record Drawings shall show the precise as-built locations of all buried, imbedded, or concealed features installed by the Contractor.

The Owner retains the right to withhold a portion of progress payments to the Contractor if Record Drawings are not kept current in accordance with this section.

Upon substantial completion of the Contract, and as a condition of reduction of retainage, the Contractor (each Contract) shall deliver one (1) complete, accurate, and legible set of Record Drawings to the Engineer for transmittal by the Engineer to the Owner.

01720 - MATERIALS ACCEPTABILITY TESTING

Contractor shall be responsible for and shall pay all costs in connection with any inspection or testing required in connection with Owner's or Engineer's acceptance of a manufacturer, fabricator, supplier, or distributor of material or equipment submitted for acceptance prior to Contractor's purchase thereof for incorporation in the Work.

SPECIAL CONDITIONS – SECTION 01700

Tests and certifications that will be required, the cost thereof to be borne by the Contractor, are as follows:

1. Testing of materials where required in the Specifications.

2. Certification of concrete materials.

3. Certification of paving materials.

4. Gradation and conformance of all granular materials.

Conformance tests may be required, the cost thereof for initial testing being borne by the Owner, and are as follows:

1. Compaction and density tests of backfill.

2. Concrete cylinder tests of concrete work.

3. Tests ordered by the Engineer.

The Contractor is advised that any follow-up testing required due to unacceptability of initial test results will be performed at no additional expense to the Owner.

01721 - WAGE RATES

The Contractor shall submit proposed labor and equipment rates for this project, which shall be used for the duration of the construction effort.

01722 - LAW AND REGULATIONS

The Contractor shall abide by all existing and future local, state, and federal laws or ordinances at all times and shall cause all his agents and employees to abide by all existing and future local, state, and federal laws and ordinances at all times.

The contents of this Contract have been based in part on numerous federal, state, and local regulations and guidance. The Contractor shall be familiar with all applicable regulations and shall be bound by the requirements of such whether specifically addressed herein or not.

01723 - REPLACEMENT OF PROPERTY

The Contractor shall replace all culverts, pavements, driveways, shrubs, lawns, fences, and any other property, either public or private, that is damaged as a result of the work of this Contract. All such replacement shall be made according to the applicable specifications and no extra payment will be made for such work. If applicable specifications do not address a replacement item, at a minimum, the Contractor will replace in kind any property or items damaged as a result of the work of this Contract.

SPECIAL CONDITIONS – SECTION 01700

01724 - DAMAGE AND CLEANUP

The Contractor shall be responsible for repairing any damage to equipment, surfaces, or finishes caused by or resulting from his operation, the work of his contract, or the activity of his personnel.

The Contractor shall be responsible for cleanup and removal from the Site of any and all dirt, rubbish, and debris resulting from his operation.

01725 - ACCEPTANCE AND FINAL PAYMENT

When the Contract work has been accepted in accordance with the requirements of the Contract, the Engineer will prepare the final estimate of the items of work actually performed. The Contractor shall approve the Engineer's final estimate or advise the Engineer of objections to the final estimate based on disputes in measurements or computations of the final quantities to be paid under the Contract as amended by Change Order or Supplemental agreement. The Contractor and Engineer shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within thirty (30) calendar days of the Contractor's receipt of the Engineer's final estimate. If, after such thirty (30) day period, a dispute still exists, the Contractor may approve the Engineer's estimate under protest of the quantities in dispute and such dispute quantities shall be considered by the Owner as a claim in accordance with the provisions of the Agreement.

After the Contractor has approved, or approved under protest, the Engineer's final estimate, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the Contract. All prior partial estimates and payments shall be deducted under the provisions of the Contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

01726 - CONTRACT WORK LIMITS AND SECURITY

Working limits, where applicable, have been depicted on the Construction Drawings. All Contractors shall restrict all work activities, including, but not limited to, storage of materials and equipment to be incorporated in the project, as well as parking of vehicles, heavy equipment, project trailers, etc., to those areas designated on the Construction Drawings. Where appropriate and in accordance with Special Condition 01709 – Storage of Equipment and Materials, the Contractor may provide off-site storage of construction materials or equipment as necessary.

All access roads within and outside of the working limits shall be kept open to allow for uninterrupted passage.

Each Contractor shall provide all elements of Work area security necessary to prevent the unauthorized entry of persons onto the Work area. Each Contractor shall be responsible for all costs associated with installation, maintaining, and removing Work area security measures instituted during the various phases of construction. This shall include, but is not limited to, the maintenance of existing fences, and providing measures to secure the work area.

SPECIAL CONDITIONS – SECTION 01700

01727 - CONTRACT WORK AREA PREPARATION

Following completion of Site activities, the area shall be restored to original condition as identified in Section 02208 - Restoration of Surfaces unless otherwise specified in the Contract Documents. In the event of any failure by each Contractor to timely or adequately meet any of its obligations as set forth in this paragraph or in Section 02208 - Restoration of Surfaces, and after notice thereof to each Contractor, or without any notice in the event of emergency, the Owner may perform such tasks and deduct the costs thereof from funds due or to become due to each Contractor, or, at the Owner's option, each Contractor shall promptly reimburse the Owner for such costs (or such remaining costs after such deduction). The Owner shall have no duty to undertake any such action, and no such action taken by the Owner shall relieve the Contractor from any obligations under the Contract or otherwise. Each Contractor's obligations under this paragraph and Section 02208 - Restoration of Surfaces shall survive final payment, completion, and acceptance of Work and termination of cancellation or completion of this Contract.

01728 - CLEANING OF EQUIPMENT

As part of everyday Work activities associated with each Contract, each Contractor shall provide a personnel cleaning area (as specified in each of the Contractor's Health and Safety Plans). The personnel cleaning area shall include those facilities necessary for personnel cleaning upon exit of the Work area, in accordance with the Contractor's Health and Safety Plans, and in accordance with local, state, and federal laws and regulations.

The Contractor shall establish procedures for cleaning of all vehicles and equipment used for construction activities. Prior to mobilization to the site, each piece of equipment shall be sufficiently cleaned by the Contractor and visually inspected for potential sources of spills of hydraulic fluid, engine oil, transmission fluid, fuel, grease, etc. (by inspecting the condition of hydraulic cylinders, hoses, gaskets, fuel tanks, etc.). If a potential spill source is identified, the Contractor will conduct the necessary repairs or replace the piece of equipment prior to mobilizing such equipment to the site.

Prior to moving equipment into wetland areas identified on Construction Drawing 101, the Contractor shall clean equipment in compliance with the Environmental Energy Alliance of New York's Best Management Practice for Preventing the Transport of Invasive Plant Species, dated April 2012.

Unless otherwise directed by the Owner/Engineer, any equipment to be taken off site shall be subject to final visual observation and cleaning (if necessary) at a designated Equipment Cleaning Area. The Equipment Cleaning Areas shall be placed as identified on the Construction Drawings and constructed in accordance with the Equipment Cleaning Area Detail shown in the Construction Drawings. In general, cleaning will include dry scrubbing and/or spraying the tires of vehicles leaving the site to prevent migration of Site materials offsite. Precautions shall be taken to limit contact between the equipment, personnel performing the cleaning activities, and any cleaning liquids that may accumulate in the cleaning area. The Contractor shall be responsible for constructing and maintaining the cleaning area to accommodate all loads, equipment, and migration scenarios. The Contractor shall dismantle and properly dispose of all materials associated with the cleaning area and shall restore the area to its original conditions.

SPECIAL CONDITIONS – SECTION 01700

The extent and method of cleaning shall be at the discretion of the Contractor; however, equipment and materials shall be observed by the Engineer's on-site representative prior to its departure from the Site. In addition, the Owner/Engineer reserves the right to require additional cleaning if deemed necessary and recleaning shall be at no additional expense to the Owner.

Wash water, solids, and other materials generated during equipment cleaning shall not contact native soils and existing facilities, and shall be collected by the Contractor and placed into designated containers.

Personnel engaged in equipment cleaning shall use the appropriate personal protective equipment in accordance with the Contractor's Health and Safety Plan.

01729 - WASTE DISPOSAL

The Contractor shall be responsible for the proper containerization, staging, loading, transportation, and disposal of waste material (e.g., rubbish, personal protective equipment). Each waste medium shall be properly containerized via DOT-approved 55-gallon drums, temporary tanks, or covered roll-off containers, and properly labeled and staged with like materials.

01730 - SAFETY

For work required by the Contract involving the potential for personnel contact or exposure to the constituents present, the Contractor must comply with 29 CFR Part 1910, 29 CFR Part 1926, 40 CFR 260-267, and related regulations that call for the development and implementation of a safety and health program for employees involved in hazardous waste operations. The Contractor will be required to comply with all requirements under these regulations for this project, as applicable.

Prior to commencement of field activities, the Contractor shall certify that personnel employed at the Site, including direct employees as well as subcontractors, meet the appropriate health and safety training requirements in accordance with 29 CFR 1910.120(e) and 29 CFR Part 1926.65(e). The Contractor shall also certify that any individuals who later become employed by the Contractor for the purpose of remedial activities also meet such training requirements prior to performing remedial work at the Site. Employees and subcontractors of the Contractor who are unable to demonstrate compliance with such training requirements shall be limited to support roles at the Site. Certificates of completion of appropriate training shall be maintained at the Site for all employees engaged in Site remediation activities.

The Contractor shall certify that all personnel who will be employed by the Contractor to perform remedial work at the Site, including direct employees as well as subcontractors, are provided medical surveillance as required by 29 CFR 1910.120(f) and 29 CFR 1926.

The Contractor shall also comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54).

SPECIAL CONDITIONS – SECTION 01700

The Contractor shall be solely responsible for the safety of his employees, subcontractors, suppliers, and other parties at the work area as a result of the Contractor's direction.

01731 - HEALTH AND SAFETY PLAN

Due to the nature of the Work at the Site, the Owner, in compliance with regulations, requires that safety precautions be observed at all times by each Contractor and all persons, employees, and subcontractors that each Contractor directly or indirectly introduces to the Work while engaging in various aspects of the Work. It is understood that each Contractor shall be solely and totally responsible for safety compliance associated with the Work at the Site.

Prior to the start of construction, each Contractor shall submit a Health and Safety Plan that has been reviewed and certified by an Industrial Hygienist for review by the Owner. At a minimum, the Health and Safety Plan shall address the following topics:

1. Designation of Work-Specific Areas, including, but not limited to, health/safety/emergency facilities (such as equipment and personnel cleaning area[s]). Specific work areas shall be designated through the use of a temporary barrier (e.g., temporary chain-link fence) with appropriate signage that identifies the specific area and details its restricted access and PPE requirements. Signage shall also be placed at the entrance/exit of the work zone that details personnel and equipment cleaning procedures.

2. Description of Work Site Hazards, including hazardous materials present, physical hazards present, and evaluation of expected risks.

3. Protective Measures, including contact protection, respiratory protection, eye protection, and airborne dust prevention.

4. Health and Safety Program and Procedures, including on-site organization, training program, monitoring program, equipment and personnel decontamination procedures, entry and exit procedures, on-site health and safety concerns, and medical program.

5. Emergency Response Provisions, including a listing of equipment and personnel to be dispatched in the event of an emergency and to remove conditions creating any hazard to life, limb, or property.

Provisions must be made for work area monitoring during construction activities. Work area monitoring will be conducted by each Contractor to determine employee exposure to airborne constituents. The requirements of the air monitoring program are detailed in Section 02508 - Air Monitoring Program.

Each Contractor shall provide a Health and Safety Officer to implement, monitor, and enforce its Health and Safety Plan. The Health and Safety Officer shall have working experience appropriate for the Work. The Health and Safety Officer shall have a sound working knowledge of any and all applicable federal and state occupational safety and health regulations and formal educational training in occupational safety and health.

SPECIAL CONDITIONS – SECTION 01700

Each Contractor shall provide documentation certifying that all onsite personnel have read and understood the provisions of the plan. Any personnel found to be disregarding provisions of the Health and Safety Plan shall, at the request of the Owner, be barred from the Site.

01732 - INSPECTION DURING CONSTRUCTION

The Owner or the Engineer will visually observe and photographically document certain aspects of the construction phase.

01733 - NON-DISCLOSURE

Each Contractor shall agree that any and all information, written or otherwise, obtained as a result of the Contract shall not be disclosed to any persons or parties, without the prior written consent of the Owner.

01734 - OPERATIONS PLAN

Based on the information presented on the Construction Drawings and the requirements of these Contract Documents, the Contractor will be required to develop and submit an Operations Plan for certain aspects of the project. The plan shall be accompanied with a written text and figures or other supporting materials, as necessary. The information in the Operations Plan shall include, but not be limited to, the proposed methods, equipment, sequence, and/or materials to perform the work:

1. Operations Plan

    - Air Monitoring Program,
    - Staging area(s) and temporary construction roads/stabilized construction surfaces
    - River bank re-shaping and stabilization as specified in the Contract Documents including ingress and egress routes to specified areas
    - Site regrading as specified in the Contract Documents
    - Erosion control to limit accelerated erosion of areas subject to remediation and to prevent excess sedimentation in Site drainage pathways. This shall include development of an erosion, sediment, and storm water control plan consistent with the requirements of the Contract Documents.
    - Methods for dust control in accordance with the HASP
    - Equipment cleaning procedures
    - Restoration of the Site

SPECIAL CONDITIONS – SECTION 01700

- Contingency Plan
  - A spill prevention, control and countermeasures plan for addressing spills that occur on site during remedial construction activities. The plan will describe the methods, means, and facilities required to prevent soil, sediment, water, structure, equipment, and material impacts caused by spills; provide information regarding spill containment and cleanup; and provide information related to decontamination measures
  - Procedures and routes for emergency vehicular access/egress
  - Procedures for the evacuation of personnel from the Site
  - A listing of contact personnel with phone numbers that, at a minimum, includes fire officials, ambulance service, local, county, and state police, local hospitals, a spill response team, NYSDEC 24-hour Spill Hotline, and procedures for notifying each party
  - Routes to local hospitals, including written directions and a map that depicts the location of the Site relative to the hospital(s)
- Procedures for working in areas near active utilities.

The selected Contractor will be required to submit the complete Operation Plan at least 20 days prior to mobilization to the Site.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 01901
TEMPORARY FACILITIES AND OTHER SUPPORT

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Furnish and/or provide all labor, tools, materials, equipment, and services, and complete all work, installed, tested, and ready for use, as described in the Contract Documents.

2. Comply with requirements during construction, including designated access points and parking areas, staging areas, temporary barriers and enclosures, and temporary controls.

3. Following final acceptance of the work, the Contractor shall remove the temporary facilities from the Site.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 TEMPORARY FACILITIES

A. Material Sheds and Temporary Structures

1. Provide material sheds and other temporary structures of sturdy construction and neat appearance, with locking capability.

2. All temporary storage facilities at the site are subject to the approval of the Owner.

B. Other Support Facilities

1. Temporary Water Service: The Contractor shall provide and maintain suitable bottled drinking water service including one 5-gallon capacity bottled drinking water cooler for the field office trailer. It is the Contractor's responsibility to provide potable water service as deemed necessary for construction activities.

2. Temporary Sanitary Facilities: The Contractor shall provide and maintain temporary sanitary facilities and enclosures as required by the Occupational Safety and Health Administration (OSHA).

MATERIALS AND PERFORMANCE – SECTION 01901

TEMPORARY FACILITIES AND OTHER SUPPORT

3. Portable Toilets: The Contractor shall provide a minimum of two portable sanitary toilets. The Contractor will be responsible for the removal and disposal/treatment of sanitary wastes off site on a periodic basis as required and in accordance with applicable laws and regulations.

4. Temporary Lighting for Construction Purposes: The Contractor shall provide and maintain lighting for construction operations.

5. Health and Safety Equipment (including equipment and personnel).

6. Eye Wash Station and Other First-Aid Equipment.

7. Trash Bin: The Contractor will provide a minimum of one rubbish bin including regularly scheduled pickup. All collected rubbish will be disposed of at a permitted sanitary landfill deemed acceptable by the Owner/Engineer.

8. Site Communications: The Contractor will equip key Contractor personnel with two-way portable radios and associated charging units. The portable radios will be furnished, at a minimum, to the Contractor's Superintendent and Foreman, key construction personnel, and a minimum of two portable radios and associated charging units to the Engineer.

C. Barriers and Enclosures

1. Protection of Workers and the Public

a. Effect and maintain at all times during work activities, barriers and lights necessary for the protection of workers and the public.

b. Provide suitable barricades, lights, "danger" or "caution" or "street closed" signs and watchmen at all places where the work causes obstruction to normal traffic, excavation sites, or in any way constitutes a hazard to the public, other contractors, and the Owner and their representative(s).

3.02 ACCESS AND PARKING

A. Temporary Access

1. The Contractor shall implement traffic controls to ensure, to the extent practicable, the road to the Town of Willsboro Wastewater Treatment Plant (WWTP) will be kept open except for intermittent and temporary blockage required for moving large equipment. Similarly, to the extent practicable, community access to the public boat

launch area at the end of the road to the WWTP shall be maintained for the duration of construction activities. As such, the Contractor's traffic control plan shall specify where the traffic flow/pattern will be for construction vehicles, and to discuss the access for the WWTP and the public boat launch area.

2. If construction activities (in-water or upland activities) continue beyond September 15, 2012, the Contractor shall install signs to direct anglers to the appropriate location(s) to obtain access to the Boquet River without crossing within the limits of the construction site (as established by the Contractor). In addition, the Contractor shall make every appropriate attempt to prohibit persons not affiliated with the construction activities from trespassing onto the construction site.

3. Construct temporary access roads to facilitate site access and completion of construction activities, as specified on the Construction Drawings and or as require by the Contractor and approved by the Owner. The location of existing roadways and proposed temporary access routes are illustrated on the Construction Drawings. The Contractor may propose alternative locations and roads subject to approval by the Owner.

4. Construct access roads by grading and compacting subgrade as necessary, placing geotextile reinforcement (if needed), and placing an overlying layer of gravel (approximately 6 to 12 inches thick) on the prepared subgrade. The temporary access roads will be removed at the completion of the remedial activities, unless otherwise agreed to in advance by the Owner.

B. Vehicle Access

1. Personally owned vehicles will not be allowed on the site except in designated employee parking areas. The Contractor is responsible for transport of personnel to designated Work Areas, if required.

2. Routes of ingress and egress on the premises to the location of construction activities will be subject to review and acceptance by the Owner/Engineer.

3. Keep designated access and public roads clear of dirt and debris that result from the work activities.

4. Provide means of removing mud from vehicle wheels before entering paved roads.

5. All means and methods for maintaining paved areas and roadways will be subject to review and acceptance by the Owner/Engineer.

MATERIALS AND PERFORMANCE – SECTION 01901

TEMPORARY FACILITIES AND OTHER SUPPORT

C. Vehicle Parking

1. Construction personnel will park vehicles and construction equipment in areas where they will not impede the public. Vehicle parking will be in full compliance with all local and state traffic laws.

2. If severe weather is predicted in the forecast, the Contractor shall move all construction vehicles into a designated parking area on higher ground and away from the riverbank. In addition, if the severe weather is predicted to occur outside of regularly scheduled work hours, at the end of the work day the Contractor shall move all construction vehicles into such designated parking area for overnight storage.

3. Keep designated parking areas clear of dirt and debris resulting from the work.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Describes all work classified as Earthwork and describes the specific Specification Sections where the associated details are found.

2. Furnish and/or provide all labor, tools, materials, equipment, services, and complete all work, installed, tested, and ready for use, as described in the Contract Documents.

3. Riverbank stabilization and site regrading, including the loosening, removing, refilling, transporting, storage, and regrading of all materials classified as “earth” necessary to be removed for the construction and completion of all Work under the Contract.

4. Excavation to the widths and depths shown on the Construction Drawings.

B. Related Work Specified Elsewhere

1. Section 01110 – Environmental Protection Procedures

2. Section 02202 – Rock and Debris Removal

3. Section 02203 – Site Grading

4. Section 02206 – Selected Fill

5. Section 02210 – Topsoil and Seeding

1.02 DEFINITIONS

A. Excavation (or Reshaping)

1. Grubbing, stripping, removing, storing, and re-handling of materials as necessary for all purposes incidental to the construction and completion of all the work under construction and to lines and dimensions indicated.

2. All diking, ditching, pumping, bailing, draining, dewatering, or otherwise disposing of water.

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

B. Earth

1. All materials, such as sand, gravel, clay, loam, ashes, cinders, pavements, muck, roots, pieces of timber, soft or disintegrated rock, not requiring blasting, barring, or wedging from their original beds, and specifically excluding all ledge or bedrock and individual boulders, masonry, or debris larger than ½-cubic yard in volume.

C. Backfill (or Material Placement)

1. Placement of materials to the elevations indicated on the Constructions Drawings or as directed using specified materials; and the compacting of all materials used in filling or refilling by rolling, or as may be required and approved by the Owner.

D. Limiting Subgrade

1. The design subgrade elevations and/or excavated surfaces depicted on the Construction Drawings and/or as described in the Technical Specifications.

1.03 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. ASTM International (ASTM). The following ASTM specifications are referred to in this Technical Specification and are to be considered a part of this specification:

1. D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3)

2. D2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)

3. D2922 Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

A. Fill Materials: See Section 02206 – Selected Fill, for a complete listing and description of the fill materials identified on the Construction Drawings.

2.02 EQUIPMENT

A. Compaction equipment shall consist of vibratory power-driven rollers (5-ton minimum weight) and in confined areas, hand-guided vibratory equipment. All compaction equipment proposed for use shall be reviewed by the Engineer prior to mobilization to the site.

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

2.03 PIPE ABANDONMENT

A. Mechanical Plumbers Plug

1. Pipe plugs shall be of sufficient size, weight, and material property to create a positive seal with the drain pipe under pressure of the in-place non-shrink grout (or foam). Pipe plug shall be installed in accordance with manufacturer's installation guidelines/specifications.

B. Non-Shrink Grout

1. Grout shall be general purpose non-shrink grout as manufactured by Quikrete® or an approved equal. Pipes less than 4" inner diameter (ID) may be sealed with expansive polyurethane foam rather than grout. Grout (or foam) shall be installed in accordance with manufacturer's installation guidelines/specifications.

2.04 MONITORING WELL ABANDONMENT

A. Neat Cement Grout

1. Neat cement grout shall be prepared using Type I Portland cement and potable water mixed at a ratio of one (1) 94-pound bag of Type I Portland cement to 5.5 gallons potable water.

PART 3 - EXECUTION

3.01 UNAUTHORIZED EXCAVATION

A. Description

1. Whenever excavations are carried beyond or below the lines and grades shown on the Construction Drawings, or beyond or below the lines and grades directed by the Engineer, all such excavated space shall be backfilled as directed by the Engineer. All refilling of unauthorized excavations shall be at the Contractor's expense.

2. All material that slides, falls, or caves into the established limits of excavations due to any cause whatsoever, shall be removed and disposed of at the Contractor's expense and no extra compensation will be paid the Contractor for any materials ordered for refilling the void areas left by the slide, fall, or cave-in.

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

3.02 MATERIAL STAGING

A. General

1. Materials temporarily stockpiled onsite shall be covered with polyethylene tarps whenever the material is not actively being placed.

B. Excavated Materials

1. All excavated materials shall be staged in locations approved by the Owner, if direct placement is not performed, so as not to endanger the work, and so that easy access may be had at all times to all parts of the removal areas. Staged materials shall be kept neatly piled and trimmed and shall be placed and regraded as soon as practicable. Contractor shall make reasonable attempts to limit visibility of excavated materials from public roads.

C. Backfill Materials

1. All backfill materials will be stored by type, separately from one another. All backfill materials must be stored in accordance with federal, state, and local regulations for proper erosion control requirements, such as covering, while temporarily stockpiled on-site prior to backfilling activities and in accordance with Section 01110 – Environmental Protection Procedures.

2. Select fill materials shall be used as specified for backfill, and when excavated material cannot be used as backfill. When on-site material is used, Contractor shall remove all frozen material, trash, and debris, from such material prior to placement.

3.03 BACKFILLING

A. General

1. The Contractor will maintain survey control for each layer placed in accordance with Section 01160 – Survey Control. All final subgrade elevations, as well as final elevations, will be verified, and an as-built grading plan is required to be produced and stamped by a New York State-licensed Land Surveyor and then submitted by the Contractor to the Engineer to review for consistency with Contract Documents.

2. Any settlement occurring to the backfilled areas below the design elevations shown on the Construction Drawings shall be refilled and compacted.

3. All rough grading and final grading must be reviewed and accepted by the Engineer prior to installation of topsoil and seeding.

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

B. Subgrade Preparation

1. The surfaces of areas to receive backfill shall be prepared in accordance with the requirements in Section 02203 – Site Grading.

2. Natural drainage shall be maintained at all times.

3. Areas to be backfilled shall be inspected by the Engineer prior to backfilling operations, and all unsuitable materials, including deleterious debris, shall be removed by the Contractor, as requested.

4. No backfill material shall be placed on frozen ground nor shall the material itself be frozen or contain frozen soil fragments when placed. No calcium chloride or other chemicals shall be added to prevent freezing.

C. Backfill Materials and Compaction Equipment

1. Backfilling will be done with suitable excavated materials which can be satisfactorily compacted during refilling of the Work Areas.

2. Select fill materials shall be used as specified for backfill, and only when excavated material cannot be used as backfill.

3. Requirement for backfill materials are specified in Section 02206 – Fill Materials.

4. Backfill material shall be inspected by the Engineer prior to placement and all roots, vegetation, organic matter, or other foreign debris shall be removed.

5. Stones shall not be allowed to form clusters with voids.

6. If, due to rain or other causes, the material becomes too wet and cannot be placed as specified, the Contractor shall mechanically adjust (reduce) the moisture content of the material as required.

7. When backfill material is too dry for adequate compaction, water shall be added to the extent necessary.

8. The Engineer reserves the right to disapprove of compaction equipment being used for compacting if the equipment in use is deemed unsuited or inadequate to compact materials to the specified densities and within a reasonable length of time.

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

D. Placement and Compaction

1. Riverbank Material: Material used to establish rough or final grade will be placed in horizontal layers not to exceed 12 inches in loose thickness. Compact Riverbank Material by completing a minimum of 4 passes using compaction equipment specified herein to obtain at least 90 percent of maximum dry density as determined by ASTM D698.

2. General Fill: Place General Fill in layers not exceeding 12 inches in depth measured prior to compaction in open areas, and 9 inches in depth in confined areas. Compact each layer with a minimum of four passes of the equipment described above to obtain at least 90 percent of maximum dry density as determined by ASTM D698.

3. Type 2 Stone: Place Type 2 Stone in layers not exceeding 12 inches in depth measured prior to compaction. Material shall be compacted to a firm non-yielding condition using a minimum of five passes of compaction equipment described above.

4. Type 3 Stone: Place Type 2 Stone in layers not exceeding 18 inches in depth measured prior to compaction. Material shall be compacted to a firm non-yielding condition using a minimum of five passes of compaction equipment described above.

E. Field Quality Control

1. Field testing performed by the independent testing agency. Provide testing agency representation onsite full-time during fill material placement.

2. Perform in place field density tests conducted in accordance with ASTM D6938 on each lift of material placed at the following frequencies:

   a. For Riverbank Material and General Fill perform not less than one test for every 50 cubic yards of material placed.

3. The Engineer shall have the option to select test locations and require additional tests when deemed necessary to check material compliances or compacted density and moisture content.

4. The testing agency shall maintain and furnish records of testing to the Owner. Records shall include a plan showing the approximate location of each test and copies of the test results.

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

3.04 PIPE ABANDONMENT

A. General

1. The Contractor shall notify the Owner/Engineer of any intact pipes that are discovered during construction. The Contractor shall survey the location of encountered pipes. Notification will be provided to the Town by the Owner/Engineer as intact pipes are discovered and the current use (if any) of each intact pipe will be discussed with the Town prior to the intact pipe being capped and sealed.

2. Encountered pipes shall be abandoned as presented in the Construction Drawings, or as directed by the Owner/Engineer, and shall generally include the following steps:

   a. Cut pipe

   b. Install mechanical plumbers plug

   c. Fill pipe/culvert with non-shrink grout

   d. Perform surface restoration

3.05 MONITORING WELL ABANDONMENT

A. General

1. Monitoring wells identified for abandonment in the Construction Drawings shall be abandoned using the plug-in-place method. In the plug-in-place method, the well screen is left in place and may be additionally perforated, along with the base of the well, to allow the grout seal to penetrate the surrounding filter pack. The monitoring well abandonment process shall consist of the following steps:

   a. Perform a search of available records concerning the well to be decommissioned. The following activities shall be performed to identify the location, construction, and condition of the well, and to determine the appropriate equipment to be utilized based on the depth, diameter, and access to the monitoring well:

      i. Review the existing monitoring well log to identify construction characteristics (e.g., total depth, casing diameter, initial borehole diameter, type of casing, type of material(s) used);

      ii. Locate the monitoring well in the field;

iii. Identify if the decommissioning equipment can access the monitoring well and/or if special considerations (e.g., construction of an access road) are necessary to gain access;

iv. Conduct total depth measurements and water level measurements;

v. Calculate the volume of the well that will need to be filled utilizing field measurements; and

vi. Record all observations and measurements.

b. Remove the protective casing and well casing to a depth of approximately 3 to 4 feet below ground surface (bgs), if possible.

c. Perforate the base of the well screen utilizing a length of drilling rod or other equipment.

d. Prepare a neat cement grout.

e. Place the neat cement grout in the perforated well casing via the tremie method (i.e., the grout is pumped from the bottom of the well upward). The grout shall be added until the well is filled to above the top of the well casing remaining in place (i.e., typically approximately 3 to 4 feet bgs). Verify that the amount of grout added equals or exceeds the calculated volume of the void to be filled.

f. The grout shall be allowed to set for a minimum of 24 hours and the remainder of the borehole will be filled with concrete and/or other surface finish materials as noted in the step below.

g. The borehole shall be terminated with a minimum 1-foot-thick concrete plug above the grout and the remaining portion of the borehole shall be filled flush with the final grade with material(s) compatible with the surrounding land surface (e.g., soil cover, topsoil, woodchips).

h. A Well Abandonment Log shall be completed and submitted to the Engineer.

3.06 OTHER REQUIREMENTS

A. Drainage

1. All materials deposited in roadway ditches or other water courses shall be removed as soon as possible and the section, grades, and contours of such ditches or water courses restored to the final elevations illustrated on the Construction Drawings, so that surface drainage will be obstructed no longer than necessary.

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

B. Unfinished Work

1. When, for any reason, the work is to be left unattended for greater than 1 week, all exposed areas shall be stabilized to the extent practicable, and watercourses shall be left unobstructed with their surfaces in a safe and satisfactory condition. Temporary erosion and sedimentation controls shall be installed as necessary to limit soil loss. Temporary seeding shall be performed in accordance with Section 02210 – Topsoil and Seeding

C. Hauling Material on Streets

1. When it is necessary to haul material over the streets or pavement, the Contractor shall provide suitable vehicles with tarps so as to prevent deposits on the street or pavements. In all cases where any materials are dropped from the vehicles, the Contractor shall clean up the same as often as required to keep the road surfaces clean and free from dirt, mud, stone and other hauled material.

D. Dust Control

1. It shall be the sole responsibility of the Contractor to control the dust created by any and all of his operations to such a degree that it will not endanger the safety and welfare of the general public.

2. Air monitoring shall be in accordance with Section 02508 – Air Monitoring Program.

E. Test Pits

1. For the purpose of obtaining detailed locations of underground obstruction, the Contractor may make excavations in advance of the work. The Contractor will consider such work as incidental to the work involved, and no separate payment will be made for such work.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02202

ROCK AND DEBRIS REMOVAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Rock and debris removal, including the loosening, removing, transporting, storing, and disposal/treatment of all materials requiring blasting, breaking, barring, or wedging for removal from their original locations, as required to complete the requirements of the Remedial Design. A survey of excavation depth will be performed following excavation and prior to backfilling.

2. Staging of acceptable material rock material for reuse.

3. Backfill of rock and debris excavations with acceptable materials, including replacement of rip rap material, as appropriate

B. Related Work Specified Elsewhere

1. Section 02201 – Earthwork

2. Section 02206 – Selected Fill

1.03 DEFINITIONS

A. Rock

1. All pieces of ledge or bedrock, boulders, or masonry larger than ½-cubic yard in volume.

B. Debris

1. Man-placed buried material larger than ½-cubic yard in volume, including concrete slabs and foundations, demolition debris, and miscellaneous fill materials.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. Rock and debris removal and backfilling shall be performed in accordance with the applicable provisions of Section 02201 – Earthwork.

MATERIALS AND PERFORMANCE – SECTION 02202

ROCK AND DEBRIS REMOVAL

3.02 REMOVAL

A. General

1. All existing pipes or structures to remain that are exposed during excavation shall be adequately protected from damage before proceeding with the removal.

2. The Owner and Engineer reserve the right to alter rock and debris removal techniques and activities, as required.

3. The Owner and Engineer reserve the right to discontinue rock and debris removal techniques and activities at any time.

B. Repair of Damages Due to Removal

1. Any injury or damage to the Work or to existing pipes or structures shall be repaired or rebuilt at the Contractor's expense.

C. Explosives

1. At no time shall explosives be kept at the site of the Work.

3.02 BACKFILL AND RESTORATION

A. Existing riprap-lined shoreline area will be restored by replacing riprap along the riverbank and in near-shore areas, as necessary, to prevent erosion/scour in accordance with Section 02206 – Selected Fill and Section 02300 – Earthwork.

B. The rock and debris excavated which cannot be incorporated into the backfill material, as specified, shall be replaced with the quantity of acceptable material required for backfilling.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02203

SITE GRADING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The Contractor shall complete all rough and final grading to the elevations presented on the Construction Drawings or as directed by the Engineer.

2. The Contractor shall provide survey verification and certification of existing surfaces, all prepared subgrade elevations, subsequent soil cover thickness, and final grade elevations as depicted on the Construction Drawings or as directed by the Engineer.

3. The Contractor shall be responsible for all excavation, backfilling, compaction, slope protection, and erosion control required to complete site grading, as specified herein.

B. Related Work Specified Elsewhere

1. Section 01110 – Environmental Protection Procedures

2. Section 01160 – Survey Control

3. Section 01721 – Record Keeping and Record Drawings

4. Section 02201 – Earthwork

5. Section 02206 – Selected Fill

6. Section 02208 – Restoration of Surfaces

7. Section 02209 – Clearing

1.02 SUBMITTALS

A. As-built grading plans shall be stamped and signed by a land surveyor licensed in New York State.

PART 2 - PRODUCTS

2.01 DESCRIPTION

A. Rough and final site grading shall be as specified in the Contract Documents or as directed by the Engineer.

MATERIALS AND PERFORMANCE – SECTION 02203

SITE GRADING

2.02 EQUIPMENT

A. Compaction equipment shall consist of vibratory power-driven rollers (5-ton minimum weight).

PART 3 - EXECUTION

3.01 PLACEMENT AREA PREPARATION

A. The existing surface of the Soil Cover Area and other areas to receive fill shall be compacted in an overlapping pattern to produce a dense and unyielding subgrade, as determined by the Engineer.

B. Compaction shall be completed with a minimum of four passes using compaction equipment specified herein. Additional passes may be required as determined by the Engineer.

C. After compaction, locations that continue to appear soft, exhibit excessive weaving, or are otherwise unstable, shall be excavated to a maximum depth of 18 inches. These local excavations shall be refilled with systematically placed and compacted fill as determined by the Engineer.

3.02 PLACEMENT

A. Fill placement and compaction requirements shall be as specified in Section 02201 – Earthwork and Section 02206 – Selected Fill for the type of fill and earthwork indicated.

B. The Contractor shall, at its own expense, moisture condition the soil fill, as needed, to meet the compaction requirements as specified.

C. The Contractor shall maintain survey control for each layer placed. All final subgrade elevations and final grade elevations shall be verified, and an as-built final grading plan produced and stamped by a land surveyor licensed in New York State, and shall be submitted by the Contractor to the Engineer for review.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02206
SELECTED FILL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Selected fill materials shall be used for subgrades, embankments, and backfill as shown on the Construction Drawings, in the Technical Specifications, as specified herein, or as directed by the Engineer.

B. Related Work Specified Elsewhere

1. Section 01110 - Environmental Protection Procedures
2. Section 02201 - Earthwork
3. Section 02202 - Rock and Debris Removal
4. Section 02203 - Site Grading
5. Section 02208 - Restoration of Surfaces
6. Section 02210 - Topsoil and Seeding

1.02 APPLICABLE CODES, STANDARDS, AND SPECS

A. New York State Department of Transportation (NYSDOT) Standard Specifications

B. The following ASTM specification is referenced in this section and is to be considered part of this section:

1. D422 - Standard Test Method for Particle-Size Analysis of Soils
2. D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3)
3. D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
4. D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

MATERIALS AND PERFORMANCE – SECTION 02206

SELECTED FILL

C. 6 NYCRR, Part 375, Table 6.8(b). Restricted Use Soil Cleanup Objectives, Protection of Ecological Resources.

1.03 SUBMITTALS

A. The name and location of the source of the selected fill material.

B. Samples and Sieve Analysis (ASTM D422) reports for the proposed selected fill material.

C. Proctor test (ASTM D698) reports for each proposed selected fill material that require compaction.

PART 2 - PRODUCTS

2.01 LISTING OF MATERIALS

A. General Fill

1. General Fill soils shall consist of mineral soil free from organic materials, loam, wood, trash, and other objectionable materials which may be compressible or which cannot be properly compacted. This offsite material shall not contain stones larger than two (2) inches in largest diameter and shall be classified according to the Unified Soil Classification System (USCS) as SP, SM or SC.

2. General Fill soils shall not contain broken concrete, masonry rubble, or other similar materials. It shall have physical properties such that it can readily spread and be compacted during filling. Snow, ice, and frozen soil shall not be permitted.

B. Stone/Stone Fill

1. Type 2 Stone: Stone for use, as shown on the Construction Drawings, will conform to NYSDOT Standard Specification (as Amended) Section 733-04 or similar, having the following gradation by weight:

Sieve Size	Percent Passing by Weight
2 in	100
¼ in	25 - 60
No. 40	5 - 40
No. 200	0 - 10

2. Type 3 Stone: Stone for use, as shown on the Construction Drawings, will conform to NYSDOT Standard Specification (as Amended) Section 733-04 or similar, having the following gradation by weight:

MATERIALS AND PERFORMANCE – SECTION 02206

SELECTED FILL

Sieve Size	Percent Passing by Weight
4 in	100
¼ in	30 - 75
No. 40	5 - 40
No. 200	0 - 10

3. Riprap: Dry riprap shall consist of stones shaped as nearly as practicable in the form of right rectangular prisms. At least fifty percent, by weight, of the stones shall weigh in excess of 300 pounds each, and the remainder of the stones furnished shall be a minimum of 100 pounds. One dimension of each of the stones furnished shall be at least equal to the thickness of riprap as shown on the Construction Drawings.

   The gradation of the materials furnished for use as dry riprap will be reviewed based on a visual examination of the material by the Engineer. Imported riprap will be provided by the Owner for use in the riverbank reshaping and stabilization.

C. Cover Fill

1. Cover Fill will meet the requirements for topsoil in Section 02210 – Topsoil and Seeding, with the following grain size distribution requirements:

Sieve Size	Percent Passing by Weight
2 in. (50 mm)	100
1 in. (25 mm)	85 – 100
1/4 in. (6.35 mm)	65 – 100
No. 200 (74 µm)	20 – 80 (1)

(1) Clay content of material passing the Number 200 sieve shall not be greater than 25 percent, as determined by hydrometer analysis.

D. Reuse Material

1. Rip rap from portions of the riverbank.

2. Riverbank Material: Black ash from riverbank reshaping

2.02 Offsite materials brought onsite for use as fill must be from a certified NYSDOT source, certified by the supplier as native material, or tested and results of analytical testing for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides/herbicides, and inorganics presented to demonstrate that the offsite materials meets 6 NYCRR Part 375 restricted residential use soil cleanup objectives. The laboratory used to analyze imported fill material shall be New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified for the parameters being analyzed.

MATERIALS AND PERFORMANCE – SECTION 02206

SELECTED FILL

2.03 Prior to importing fill materials to the Site, the Contractor shall submit certifications or a laboratory test report for each material type that indicates the grain-size profile of the material in accordance with ASTM D422.

2.04 The Contractor will provide the data to the Engineer at least 3 weeks prior to bringing any fill material onsite. If sample results show that the material does not meet the requirements, the Contractor must identify a new source for the material and provide the required data report for the new source of material prior to the use of such material onsite.

PART 3 - EXECUTION

3.01 GENERAL

A. Fill materials shall be placed and compacted in accordance with the Construction Drawings and Section 02201 – Earthwork.

B. Any settlements in the finished work shall be restored to design grade by the Contractor at no additional cost to the Owner.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02208

RESTORATION OF SURFACES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. All types of surfaces, culverts, and other features disturbed, damaged, or destroyed during the performance of the Work under or as a result of the operations of the Contract, shall be restored and maintained, as specified herein, as shown on the Construction Drawings, or as specified in the Technical Specifications.

2. The quality of materials and the performance of work used in the restoration shall produce a surface or feature equal to or better than the condition of each before the Work began, as reviewed by the Engineer.

B. Related Work Specified Elsewhere

1. Section 02201 - Earthwork

2. Section 02210 - Topsoil and Seeding

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. New York State Department of Transportation (NYSDOT) Standard Specifications

1.03 SUBMITTALS

A. The Contractor shall submit a schedule of restoration operations for review and approval by the Engineer.

1.04 SCHEDULE OF RESTORATION

A. After an accepted schedule has been agreed upon, the schedule shall be adhered to unless otherwise revised and reviewed by the Engineer.

B. The replacement of surfaces at any time, as scheduled or as directed, shall not relieve the Contractor of responsibility to repair damages by settlement or other failures.

PART 2 - PRODUCTS (NOT USED)

MATERIALS AND PERFORMANCE – SECTION 02208

RESTORATION OF SURFACES

PART 3 - EXECUTION

3.01 PERMANENT PAVEMENT REPLACEMENT

A. The Contractor shall perform the permanent and final repaving of all road surfaces, and similar surfaces where pavement has been removed, disturbed, settled, or damaged by or as a result of performance of the Contract, by repairing or replacing with a new and similar pavement to the satisfaction of the Owner.

1. The edges of existing asphalt pavement shall be saw-cut a minimum of 24 inches beyond the excavation or disturbed base, whichever is greater. All cuts shall be parallel or perpendicular to the centerline of the street.

2. The top surface shall conform to the grade of existing adjacent pavement and the entire replacement shall meet the current specifications of the local community for the particular types of pavement and/or as shown on the Construction Drawings.

3. Where the local community has no specification for the type of pavement, the work shall be done in conformity with the NYSDOT Standard Specification that conforms to the closest to the type of surfacing being replaced, as determined by the Engineer.

4. When scheduled and within the time specified, the temporary pavement shall be removed and a base prepared, at the depth required by the Owner to receive the permanent pavement.

   a. The base shall be in accordance with NYSDOT Standard Specification requirements and be brought to the required grade and cross-section and thoroughly compacted before placing the permanent pavement.

   b. Any base material which has become unstable for any reason shall be removed and replaced with compacted base materials as required by NYSDOT Standard Specifications.

3.02 STONE OR GRAVEL PAVEMENT

A. All pavement and other areas surfaced with stone or gravel shall be replaced with material to match the existing surface unless otherwise specified.

1. The depth of the stone or gravel shall be at least equal to the existing.

2. After compaction, the surface shall conform to the slope and grade of the area being replaced.

MATERIALS AND PERFORMANCE – SECTION 02208

RESTORATION OF SURFACES

3.03 SOIL COVER AREA AND IMPROVED AREAS

A. The area to receive topsoil shall be graded to a minimum depth of 6 inches below the proposed finish surface.

B. The furnishing and placing of topsoil, seed, and mulch shall be in accordance with Section 02210 – Topsoil and Seeding.

C. When required to obtain germination, the seeded areas shall be watered in such a manner as to prevent washing out of the seed.

D. Any washout or damage which occurs shall be regraded and reseeded until a good sod is established at no additional cost to the Owner.

E. The Contractor shall maintain the newly seeded areas, including regrading, reseeding, watering, and mowing, in good condition in accordance with Section 02210 – Topsoil and Seeding.

3.04 RIVERBANK STABILIZATION/RIPRAP RESTORATION

A. The riverbank shall be restored and stabilized as shown in the Construction Drawings and shall generally include placing geotextile and riprap along the riverbank to prevent erosion/scour in accordance with Section 02270 – Geotextile Fabric, Section 02206 – Selected Fill, and Section 02201 – Earthwork.

3.06 OTHER TYPES OF RESTORATION

A. Trees and shrubs within the “tree area to remain” and/or outside of areas where remedial activities are indicated on the Construction Drawings and other landscape items damaged or destroyed as a result of the construction operations shall be replaced in like species and size, unless otherwise directed by the Engineer.

B. Wood chips staged for re-use (see Section 02209 – Clearing) shall be placed to the grades indicated on the Construction Drawings, or as directed by the Engineer.

C. Water courses shall be reshaped to the original grade and cross-section and all debris removed unless otherwise indicated on the Construction Drawings, or as directed by the Engineer. Where required to prevent erosion, the bottom and sides of the water course shall be protected in accordance with the Construction Drawings and/or Technical Specifications or as directed by the Engineer.

D. Culverts destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original location and grade. When

there is minor damage to a culvert, and with the consent of the Engineer, a repair may be undertaken, if satisfactory results can be obtained.

E. Fences destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original or new location, as shown on the Construction Drawings, or as directed by the Engineer.

F. Other Site features removed or damaged as a result of the construction operations shall be restored in-kind to their original location and condition unless otherwise indicated on the Construction Drawings, or as directed by the Engineer.

3.07 MAINTENANCE

A. The finished products of restoration shall be maintained in an acceptable condition for and during a period of one year following the date of substantial completion or other such date as set forth elsewhere in the Contract Documents.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02209

CLEARING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Clearing, within limits indicated on the Construction Drawings or as directed by the Engineer, of the following:

   a. Topsoil.

   b. Pieces of rock up to ½-cubic yard in volume.

   c. Trees and bushes.

   d. Brush.

   e. Logs and stumps.

   g. Refuse and Rubbish (on top of ground surface).

   h. Decayed and growing organic matter.

   h. Snow and ice.

2. All material staged for re-use shall be properly staged on-site at a location proposed by the Contractor and accepted by the Owner/Engineer. Topsoil, fill materials, and wood chips shall be stored in locations approved by the Owner and with protective measures for dust control and stormwater protection.

3. All trees, brush, stumps and scrub material will be chipped and spread at then approved location within the Work Area, as indicated on the Construction Drawings.

B. Related Work Specified Elsewhere

1. Section 01110 - Environmental Protection Procedures

2. Section 02201 - Earthwork

3. Section 02203 - Site Grading

4. Section 02208 - Restoration of Surfaces

5. Section 02210 - Topsoil and Seeding

MATERIALS AND PERFORMANCE – SECTION 02209

CLEARING

PART 2 - PRODUCTS

2.01 QUALITY OF MATERIALS

A. Topsoil, seed, and mulch shall be in accordance with Section 02210 - Topsoil and Seeding.

PART 3 - EXECUTION

3.01 GENERAL

A. Tree Protection

1. Any tree that will not, in the opinion of the Engineer, hinder construction or landscaping shall be protected. The Contractor shall protect mature trees to the extent practicable, especially those within the “treed area to remain” as indicated on the Construction Drawings.

B. Debris Removal

1. To the extent practical, trees and other woody debris shall be chipped onsite, unless otherwise directed by the Owner. The resulting wood chips/mulch shall be reused during restoration activities in accordance with Section 02208 – Restoration of Surfaces.

2. To the extent practical, pieces of rock up to ½-cubic yard in volume shall be staged onsite and reused during the riverbank stabilization in accordance with Section 02206 – Selected Fill and Section 02208 – Restoration of Surfaces.

D. Site and Access Clearing

1. Except where directed by the Engineer, no trees shall be removed or damaged. All trees that, in the opinion of the Engineer, have been damaged by the Contractor shall be removed and replaced by the Contractor at his/her own expense.

2. To the extent practicable, existing vegetation and topsoil shall be left in place in areas that will not immediately (i.e., within 24 hours) undergo construction activities.

E. Sediment and Erosion Control

1. Erosion control procedures, inclusive of mulching, shall be used on the Site. Erosion control shall occur as required, and immediately before and following (weather permitting) completion of Site and access clearing in accordance with the Construction Drawings.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02210

TOPSOIL AND SEEDING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The furnishing of topsoil, fertilizer, seed, and mulch; the preparation of the subgrade; and the placing of the topsoil, fertilizer, seed, and mulch.

2. The maintenance required until acceptance.

B. Related Work Specified Elsewhere

1. Section 02201 - Earthwork

2. Section 02206 - Selected Fill

3. Section 02208 - Restoration of Surfaces

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. New York State Department of Transportation (NYSDOT) Standard Specifications

1.03 SUBMITTALS

A. The Contractor shall submit the location of source and data (including pH and organic content) for offsite topsoil.

B. Seed mixture (including, but not limited to, type and amount).

D. Should a hydroseeder be used, the Contractor shall submit all data including material and application rates.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Topsoil shall be natural, friable, and fertile soil that meets the USDA basic soil texture classes of loam, silt loam or sand loam to be recovered from the A horizon of an in-place soil. Topsoil shall be capable of sustaining healthy plant life and reasonably free of subsoil, heavy or stiff clay, brush, roots, weeds, other objectionable plant matter, foreign material, stones larger than 2 inches in greatest dimension, and any other materials unsuitable or

MATERIALS AND PERFORMANCE – SECTION 02210

TOPSOIL AND SEEDING

harmful for plant growth. Topsoil as delivered to the site or stockpiled shall meet the following requirements:

1. Well graded material meeting the gradation in Section 02206 Part 2.01 C.

2. pH between 5.5 and 7.5.

3. Contains greater than 2 percent and less than 20 percent organic matter as determined by loss of ignition of moisture-free samples dried at 100° to 110° Celsius.

4. Contains no nuisance weeds including seeds, stems, or rhizomes of purple loosestrife, Phragmites, or Japanese Knotweed.

5. Free of pests and pest larvae.

B. Fertilizer shall be a standard-quality, commercial carrier of available plant food elements (a complete, prepared, and packaged material containing a minimum of 10% nitrogen, 10% phosphorous, and 10% potash).

1. Each bag of fertilizer shall bear the manufacturer's guaranteed statement of analysis.

C. Seed mixtures shall be of commercial stock of the current season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix.

1. All seed shall meet the NYSDOT Standard Specifications for germination and purity.

2. Specified seed mixture is Northeast Upland Native/Naturalized Wildflower Mix (see Table 1). Contractor may propose alternate seed mix for review by the Engineer).

Table 1 -Northeast Upland Native/Naturalized Wildflower Mix

No. of seeds (not weight)	Scientific Name	Common Name
Grass Portion (15 Pounds)		
28.10%	*Festuca ovina*	Sheep Fescue
26.00%	*Panicum virgatum*	Switchgrass
15.30%	*Setaria italica*	Foxtail Millet
12.80%	*Anthoxanthum odoratum*	Sweet Vernal Grass
11.10%	*Lolium multiflorum*	Annual Ryegrass
6.70%	*Elymus canadensis*	Wild Rye

MATERIALS AND PERFORMANCE – SECTION 02210

TOPSOIL AND SEEDING

No. of seeds (not weight)	Scientific Name	Common Name
Wildflower Portion (8 Pounds)		
47.5%	*Achillea millefolium*	Common Yarrow
9.1%	*Rudbeckia hirta*	Black Eyed Susan
7.5%	*Chrysanthemum leucanthem.*	Ox-Eye Daisy
7.4%	*Verbena hastata*	Blue Vervain
7.3%	*Cichorium intybus*	Cichory
6.8%	*Lotus corniculatus*	Birdsfoot Trefoil
5.0%	*Hesperis matronalis*	Dame's Rocket
2.2%	*Daucus carota*	Queen Anne's Lace
2.0%	*Solidago canadensis*	Canada Goldenrod
2.0%	*Euthamia graminifolia*	Grass Leaf Goldenrod
1.5%	*Monarda fistulosa*	Wild Bergamot
1.3%	*Aster novae-angliae*	New England Aster
0.4%	*Asclepias syriaca*	Common Milkweed

D. Temporary seeding of cover crops, including annual ryegrass *(Lolium multiflorum)* and common oat (*Avena sativa*), may be seeded to provide temporary erosion control or to provide cover when permanent seeding is likely to fail due to conditions during planting (e.g., mid-summer heat and drought).

E. Mulch shall be stalks of oats, wheat, rye, or other approved crops free from noxious weeds.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Unless noted otherwise, restored upland areas shall receive a minimum 12 inches of topsoil.

B. The area to receive topsoil shall be graded to a depth of not less than 12 inches below the proposed finished grades shown on the Construction Drawings or as directed by the Engineer.

1. All debris and inorganic material shall be removed and the surface loosened for a depth of 2 inches prior to the placing of the topsoil.

2. The topsoil shall not be placed until the subgrade is in suitable condition and shall be free of excessive moisture and frost.

MATERIALS AND PERFORMANCE – SECTION 02210

TOPSOIL AND SEEDING

C. Satisfactory topsoil (that meets the minimum requirements of 2.01A of this Specification) removed from the excavations shall be placed on the prepared subgrade to the depth required.

1. In the event the topsoil removed during excavation does not meet the requirements of 2.01A of this Specification or is of insufficient quantity to obtain the required finished grades, the Contractor shall furnish the required quantity of satisfactory topsoil from approved sources offsite.

2. All topsoil shall be free from stones, roots, sticks, and other foreign substances and shall not be placed in a frozen or muddy condition.

3. The finished surface shall conform to the lines and grades of the area before disturbed or as shown on the Construction Drawings. Any irregularities shall be corrected before the placement of fertilizer and seed.

D. The fertilizer shall be applied uniformly at the rate of 20 pounds per 1,000 square feet.

E. After the topsoil surface has been fine graded, the seed mixture shall be uniformly applied upon the prepared surface with a mechanical spreader at a rate of not less than 23 pounds per acre.

1. Seeding and mulching shall not be done during windy weather.

F. The mulch shall be hand or machine spread to form a continuous blanket over the seed bed, approximately 2 inches uniform thickness at loose measurement. Excessive amounts or bunching of mulch will not be permitted.

1. Mulch shall be anchored by an acceptable method.

2. Unless otherwise specified, mulch shall be left in place and allowed to disintegrate.

3. Any anchorage or mulch that has not disintegrated at time of first mowing shall be removed. Anchors may be removed or driven flush with ground surface.

G. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory sod growth. Watering shall be in such a manner as to prevent washing out of seed.

H. Hydroseeding may be accepted as an alternative method of applying fertilizer, seed, and mulch. The Contractor must submit all data regarding materials and application rates to the Engineer for review.

MATERIALS AND PERFORMANCE – SECTION 02210

TOPSOIL AND SEEDING

3.02 MAINTENANCE

A. Contractor shall maintain the newly seeded areas in good condition until seeded areas indicate complete and satisfactory sod growth/coverage and until acceptance. The Contractor shall be required to repair any areas of erosion and reseed as necessary until complete coverage and satisfactory growth is achieved.

B. The Contractor shall mow wildflower establishment areas once a year in the autumn after the seed heads have matured.

C. The seeded areas shall be maintained in an acceptable condition by the Contractor for and during a period of one year following the date of substantial completion or other such date as set forth elsewhere in the Contract Documents.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02232

GEOTEXTILE FABRIC

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall supply all labor, materials, tools, and equipment required to furnish and install geosynthetics as shown on the Construction Drawings or as indicated in the Technical Specifications.

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. ASTM International (ASTM). The following ASTM specifications are referred to in this Technical Specification and are to be considered a part of this specification:

D4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity

D4533 Standard Test Method for Trapezoid Tearing Strength of Geotextiles

D 4595 Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method

D4632 Standard Test Method for Grab Breaking Load and Elongation of Geotextiles

D4751 Standard Test Method for Determining Apparent Opening Size of a Geotextile

D4833 Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products

D5261 Standard Test Method for Measuring Mass per Unit Area of Geotextiles

B. American Association of State Highway and Transportation Officials (AASHTO). The following AASHTO specification is referred to in this Technical Specification and is to be considered a part of this specification:

M 288 Standard Specification for Geotextile Specification for Highway Applications

1.03 SUBMITTALS

A. Manufacturer's data for geotextile including, at a minimum, physical properties, packaging, and installation techniques.

B. Geotextile material samples representative of each type required by the Construction Drawings.

MATERIALS AND PERFORMANCE – SECTION 02232

GEOTEXTILE FABRIC

C. Certified results of all quality control testing pertaining to the rolls of geotextile to be used onsite. At a minimum, results shall be given in accordance with the Construction Drawings and Technical Specifications for:

1. Unit weight (ASTM D5261).

2. Grab Tensile/Elongation (ASTM D4632).

3. Tear Strength (ASTM D4533).

4. Puncture Strength (ASTM D4833).

5. Apparent Opening Size (ASTM D4751).

6. Permittivity (ASTM D4491).

7. Survivability: Class 2; AASHTO M 288.

D. A list of the materials that comprise the geotextile, expressed in the following categories as percent by weight: base polymer, carbon black, other additives.

E. Written certification by the Contractor that the field-delivered material meets the Manufacturer's specifications.

F. A listing of lot and roll numbers for the material to be delivered to the Site.

G. Contractor's proposed transportation, handling, and storage techniques.

H. Shop drawings depicting installation details and a description of proposed installation techniques.

I. Written certification by the Contractor that the field-delivered geotextile has not been damaged due to improper transportation, handling, or storage. This certification shall be provided prior to installation of the geotextile.

PART 2 - PRODUCT

2.01 Geosynthetics

A. For these Technical Specifications and the Construction Drawings, the terms "geotextile" and "geosynthetics" shall be considered synonymous.

MATERIALS AND PERFORMANCE – SECTION 02232

GEOTEXTILE FABRIC

B. Non-woven geotextile (equipment cleaning area, riverbank stabilization): Mirafi 180N or approved equal. Needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50%; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 1; AASHTO M 288.

2. Grab Tensile Strength: 205 lbf (912 N); ASTM D4632.

3. Tear Strength: 80 lbf (356 N); ASTM D4533.

4. CBR Puncture Strength: 500 lbf (2224 N); ASTM D6241.

5. Apparent Opening Size: No.80 (0.18-mm) sieve, maximum; ASTM D4751.

6. Permittivity: 1.4 per second, minimum; ASTM D4491.

7. Weight: 8 ounces per cubic yard (oz/yd^2), minimum (unless otherwise noted on the Construction Drawings); ASTM D5261

C. Type 1 Woven geotextile (temporary silt fence, temporary access pad): Mirafi 100X or approved equal. Manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50%; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.

2. Grab Tensile Strength: 247 lbf (1100 N); ASTM D4632.

3. Tear Strength: 90 lbf (400 N); ASTM D4533.

4. Puncture Strength: 90 lbf (400 N); ASTM D4833.

5. Apparent Opening Size: No. 60 (0.250-mm) sieve, maximum; ASTM D4751.

6. Permittivity: 1.2 per second, minimum; ASTM D4491.

7. UV Stability: 50 percent after 500 hours' exposure; ASTM D4355.

8. Weight: 6 oz/yd^2, minimum (unless otherwise noted on the Design Drawings); ASTM D5261.

MATERIALS AND PERFORMANCE – SECTION 02232

GEOTEXTILE FABRIC

D. Type 2 Woven geotextile (temporary access road): Mirafi HP570 or approved equal, a high-strength, high-modulus geotextile manufactured for reinforcement and separation applications. Geotextile shall be woven from high-tenacity long-chain synthetic polymers composed of at least 95 percent by weight of polyolefins or polyesters. It shall comply with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.

2. Tensile Strength:

   a. Ultimate Tensile: 4800 lbf (70 kN); ASTM D4595.

   b. Tensile at 2% Strain: 960 lbf (14.0 kN) Machine Direction (MD), 1320 lbf (19.3 kN) Cross Machine Direction (CD); ASTM D4595.

   c. Tensile at 5% Strain: 2400 lbf (35.0 kN) MD, 2700 lbf (39.4 kN) CD; ASTM D4595.

   d. Grab Tensile Strength: 475 lbf (2114 N) MD, 440 lbf (1958 N) CD; ASTM D4632.

3. Tear Strength: 180 lbf (801 N); ASTM D4533.

4. Puncture Strength: 2000 lbf (8900 N); ASTM D4833.

5. Apparent Opening Size: No. 30 (0.60-mm) sieve, maximum; ASTM D4751.

6. Permittivity: 0.4 per second, minimum; ASTM D4491.

7. UV Stability: 80 percent after 500 hours' exposure; ASTM D4355.

8. Weight: 14 oz/yd^2, minimum (unless otherwise noted on the Design Drawings); ASTM D5261.

E. Smooth HDPE Liner

1. 20-mil HDPE smooth geomembrane as manufactured by GSE (or approved equivalent).

MATERIALS AND PERFORMANCE – SECTION 02232

GEOTEXTILE FABRIC

2.02 DELIVERY, STORAGE AND HANDLING

A. The geotextile shall be furnished in a protective wrapping labeled with the following information: Manufacturer's name, product identification, lot number, roll number, and dimensions.

B. The geotextile shall be protected from ultraviolet light, precipitation, mud, soil, excessive dust, puncture, cutting, and/or other damaging conditions prior to and during delivery and onsite storage. The geotextile shall be shipped and stored in relatively opaque and watertight wrappings. The geotextile shall be stored onsite at a location approved by the Owner.

C. Materials shall be deployed only after the required submittals have been received and reviewed by the Engineer.

2.03 QUALITY ASSURANCE

A. The field-delivered geotextile shall meet the specification values according to the Manufacturer's specification sheet.

B. The Manufacturer shall have in-place its own quality assurance program in the manufacture of the geotextile.

PART 3 - EXECUTION

3.01 PREPARATION

A. Prior to installing the geotextile, any soil surface to be covered with geotextile shall be leveled and uniformly compacted, as necessary, to provide a stable interface for the geotextile that is as smooth as possible. To the extent practicable, rocks or debris that may compromise the geotextile must be removed prior to geotextile installation.

3.02 GEOTEXTILE INSTALLATION

A. The following procedures and requirements will be followed during the geotextile installation.

1. Placement:

a. Placement of the geotextile shall not be conducted during adverse weather conditions. The geotextile shall be kept dry during storage and up to the time of deployment. During windy conditions, all geotextiles shall be secured with

sandbags or an equivalent approved anchoring system. Removal of the sandbags or equal shall only occur upon placement of an overlying soil layer.

b. Proper cutting tools shall be used to cut and size the geotextile materials. The proper PPE, as defined in the HASP, shall be worn by contract employees. Care shall be exercised while cutting geotextiles.

c. During the placement of geotextiles, all dirt, dust, sand, and mud shall be kept off to prevent clogging. If excessive amounts of such materials are present on the geotextile, the geotextile shall be cleaned or replaced as directed by the Engineer.

d. Geotextile shall be covered within the time period recommended by the manufacturer, and in no case later than 2 weeks after its placement.

e. In general, seams on slopes shall be parallel to the line of slope.

2. Seaming and Repairing

a. Adjacent panels of geotextile shall be overlapped a minimum 6 inches for Type 1 woven, 36 inches for Type 2 woven, and 18 inches for non-woven geotextiles.

b. Repair of tears or holes in the geotextile shall require the following procedures:

1. On slopes: A patch made from the same geotextile shall be double seamed into place; with each seam ¼-inch to ¾-inch apart and no closer than 1 inch from any edge. Should any tear exceed 10% of the width of the roll, that roll shall be removed from the slope and replaced.

2. Non-slopes: A patch made from the same geotextile shall be spot-seamed in place with a minimum 24-inch overlap in all directions.

3.03 WARRANTY

A. The Contractor shall obtain from the Manufacturer and submit to the Engineer, a standard warranty provided for the geotextiles.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02260

EROSION, SEDIMENT, AND DUST CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The Contractor shall furnish all labor, materials, tools, and equipment, and perform all operations necessary for the construction and maintenance of temporary erosion control structures.

B. Related Work Specified Elsewhere

1. Section 02201 – Earthwork

2. Section 02203 – Site Grading

3. Section 02210 – Topsoil and Seeding

C. Project Conditions

1. Earth moving activities in the project area shall be conducted in such a manner as to prevent accelerated erosion and the resulting sedimentation.

2. The Contractor shall install temporary erosion control structures as necessary to prevent accelerated erosion and sedimentation.

D. Applicable Codes, Standards, and Specifications

1. New York State Standards and Specifications for Erosion and Sediment Control (New York State Department of Environmental Conservation – Division of Water, August 2005)

2. American Society for Testing and Materials (ASTM)

E. General Methodology

1. Erosion control structures installation shall consider all factors which contribute to erosion and sedimentation including, but not limited to, the following:

a. Topographic features of the project area.

b. Proposed alteration of the area.

MATERIALS AND PERFORMANCE – SECTION 02260

EROSION, SEDIMENT, AND DUST CONTROL

c. Amount of run-off from the project area.

d. Staging of earth moving activities.

e. Temporary control measures and facilities for use during earth moving.

2. Dust control measures will consider all factors which contribute to control of airborne particulates including, but not limited to, the following:

a. Sequence of work

b. Methods of excavation and backfill

c. Material storage

d. Prevailing wind conditions (direction and velocity)

e. Moisture

F. Submittals

1. The Contractor shall submit to the Engineer for review, specifications and product data for all silt fencing, turbidity control material, and erosion control material prior to construction.

2. The Contractor will submit to the Engineer for review, specifications and product data for proposed dust control material prior to construction.

3. The Contractor will include a Dust Control Methods Section within the Operations Plan in accordance with Section 01700 – Special Conditions. The Dust Control Methods Section will detail the specific methods of dust controls/suppression.

4. The Contractor will include an Erosion and Sediment Control Section within the Remediation Plan in accordance with Section 01700 – Special Conditions. This Section will require the following information:

a. Planned location and alignment of the required features

b. Anticipated stormwater flow direction

c. Minimum dimensions/size

MATERIALS AND PERFORMANCE – SECTION 02260

EROSION, SEDIMENT, AND DUST CONTROL

d. Inlet and outlet conditions

e. Armoring or lining requirements

PART 2 - PRODUCTS

2.01 DESCRIPTION

A. Temporary Silt Fence

1. Silt fence fabric shall be a woven geotextile meeting the geotextile survivability requirements of AASHTO M 288-96 Class 1 or Class 2 with a minimum permeability of 0.2 cm/sec as tested by Method ASTM D4491 and a maximum AOS of 0.25 mm as tested by ASTM D4751.

2. Fence posts shall be a minimum of 48 inches long and made of hardwood. The hardwood posts will be of sound quality hardwood with a minimum cross sectional area of 3 square inches.

B. Staked Hay Bales

1. Shall be sound with bale ties intact.

2. Shall be anchored in place with two re-bars, steel pickets, or 2" x 2" wooden stakes driven 18 inches into the ground.

3. The first stake in each bale shall be driven toward the previously laid bale to force the bales together.

C. Turbidity Controls

1. Diversion barriers (e.g., jersey barriers) shall be a minimum of 3 feet high.

2. Turbidity curtains shall be a pre-assembled system, including floatation mechanisms (or other approved installation techniques), geomembrane, bottom weights, securing/tie-off mechanism, and joining mechanism.

a. Requirements for tie-down locations are site-specific. The number of locations is dependent on the desired shape of the ensuing containment, exterior currents, size of project, etc.

b. Maintain the silt curtain until the construction is stabilized and turbidity is reduced to specified levels.

MATERIALS AND PERFORMANCE – SECTION 02260

EROSION, SEDIMENT, AND DUST CONTROL

PART 3 - EXECUTION

3.01 INSTALLATION

A. Land-based erosion controls will be installed during site preparation activities and will be completed prior to any land disturbance or clearing activities.

1. Silt fences and/or staked hay bales will be installed onsite at locations downgradient of Work Areas and/or as shown on the Construction Drawings or modified by the Engineer in the field, or as otherwise deemed necessary by the Contractor. The silt fence will be installed in accordance with manufacturer's instructions. Hay bales will be staked as specified herein.

B. Water-based sedimentation controls will be installed prior to performing any bank reshaping activities.

C. Diversion barriers and water stilling techniques shall be used as the primary method of turbidity controls. Additional turbidity controls, such as turbidity curtains or silt fence, shall be used to provide additional turbidity control in the event that the water stilling techniques are not found to sufficiently control the effects of construction on the turbidity levels in the Boquet River.

1. Diversion barriers shall be placed upstream of the limits of active remediation to calm the waters within the work area and constructed as shown in the Construction Drawings. In areas of uneven surface, sand bags may be placed under diversions barrier(s) as needed to stabilize such structures.

2. The limits of active remediation work shall be in sections on more than 100 feet downstream of the deflection wall so as to stay within the area of least hydraulic forces.

D. The Owner/Engineer may order additional sediment and erosion controls to be installed. The Contractor shall comply with the Engineer's or Owner's request and immediately install the required controls.

3.02 INSPECTION, MAINTENANCE AND CONTROL

A. All temporary erosion control measures will be maintained throughout the course of the site construction activities, and following the completion of the site construction activities until the site has been fully stabilized (i.e., all soil-disturbing activities at the Site have been completed and a uniform, vegetative cover with a density of at least 80 percent has been established or equivalent stabilization measures, such as the use of mulches, woodchips, geotextiles, or stone cover have been employed). At the direction of the Engineer, the

MATERIALS AND PERFORMANCE – SECTION 02260

EROSION, SEDIMENT, AND DUST CONTROL

Contractor shall promptly remove and dispose of erosion control measures following the stabilization of the area after restoration activities are complete.

B. Accumulated sediments will be removed from behind the silt fence when sediments accumulate to one half the height of the silt fence.

C. Water Quality Monitoring: The Engineer or Engineer's representative will conduct water quality monitoring. The Contractor will be responsible for coordinating construction efforts with any monitoring that occurs within and outside of the work areas. Water quality monitoring will be performed at a minimum of two locations in the Boquet River, including: one (1) location approximately 50 feet upstream of the work area and one (1) location a minimum of 500 feet downstream of work area. The upstream monitoring location will be maintained at the distance above to the extent practicable while maintaining a safe distance from the high flow area associated with the dam. The upstream location will represent the background turbidity level to support comparison to the downstream location.

During the dredging operations, turbidity will be monitored a minimum of once per day during in-water reshaping and restoration activities. Turbidity measurements will be made and recorded on a routine basis either by using a turbidity probe suspended at the approximate mid-depth elevation at each of the upstream and downstream locations, or by collecting a sample from the approximate mid-depth elevation at each location. Turbidity will be measured in nephelometric turbidity unit (NTUs) using a turbidity meter (YSI or equivalent).

1. Continued monitoring at the downstream location to evaluate if the prior sampling result was an anomaly or if the elevated reading was possibly a short duration event;

2. Collection of additional samples from various locations within or adjacent to the active construction areas to possibly identify the potential source(s) of the elevated reading; and/or

3. Review of the ongoing removal and replacement activities and modification of the condition or performance of the existing erosion and sedimentation control measures.

D. Inspection of erosion and sediment controls shall be performed once every seven calendar days (at a minimum) by a qualified inspector. The Contractor shall prepare an inspection report that summarizes the results of the weekly inspections that includes, at a minimum, the following:

1. Date and time of inspection

2. Name of inspector(s)

3. Weather and soil conditions at the time of inspection

MATERIALS AND PERFORMANCE – SECTION 02260

EROSION, SEDIMENT, AND DUST CONTROL

4. Description and sketch of areas that are disturbed at the time of the inspection

5. Description and sketch of areas that have been temporarily or permanently stabilized since the previous inspection

6. Description of any runoff from the site, including sediment from work areas, discharges from pipes or ditches and overland flow

7. Identification of any erosion and sediment controls requiring repair or maintenance

8. Identification of any erosion and sediment controls not functioning as designed, which need to be reinstalled or replaced

9. List of corrective action(s) to be taken to install, repair, replace or maintain control measures

E. The inspection reports shall be submitted to the Engineer and a copy maintained onsite with the Storm Water Pollution Prevention Plan.

F. Provide positive means to prevent airborne dust from dispersing into the atmosphere. Use only potable water if a water misting system is to be used for dust and particulate control. For water application to soil surfaces during construction activities including, but not limited to, site clearing and grading, excavation, material handling, backfill, staging area development, and roadway construction, the Contractor will:

- Apply water with equipment consisting of a tank, pump with discharge gauge, hoses, and mist nozzles.

- Locate tank and spraying equipment so that the entire excavation area can be misted without interfering with excavation equipment or operations. Keep areas damp without creating nuisance conditions such as ponding.

- Apply water spray in a manner to prevent movement of spray beyond the Work Area boundaries.

G. Do not use chemical means for dust and particulate control.

H. Use appropriate dust covers on trucks hauling fine or dusty material.

I. Wet down haul routes as needed during the work, and as needed during non-working time periods, to minimize dust generation.

MATERIALS AND PERFORMANCE – SECTION 02260

EROSION, SEDIMENT, AND DUST CONTROL

J. The Owner/Engineer may stop work at any time if the Contractor's control of dusts and particulates is inadequate for the wind conditions present at the site.

K. In the event that the Contractor's control measures are not sufficient for controlling the release of dusts and particulates into the atmosphere, work will be discontinued and a meeting held between the Owner, the Engineer, and the Contractor to discuss the procedures that the Contractor proposes to use to resolve the cause. Make all necessary changes to operations prior to resuming any excavation, handling, processing, or any other work that may cause a release of dusts or particulates, at no additional cost to the Owner.

3.03 REMOVAL

A. Water-based sedimentation control measures shall only be removed following completion of the riverbank stabilization and when turbidity monitoring indicates that levels within the individual containment area are less than 50 NTU above the upstream monitoring location.

B. Land-based temporary erosion controls will be completely removed from the site following completion of all construction activities (including restoration), and only upon approval from the Owner/Engineer.

C. Once removed, water-based and land-based sedimentation and erosion controls will be disposed off-site in accordance with all applicable federal, state, and local regulations.

- END OF SECTION -

MATERIALS AND PERFORMANCE - SECTION 02508
AIR MONITORING PROGRAM

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The air monitoring program specified herein shall be conducted throughout the performance of construction activities associated with remedial action implementation.

2. The Contractor shall provide all labor, materials, and equipment necessary to implement an air monitoring program as specified herein and in conjunction with the Applicable Codes, Standards, and Specifications section below.

B. Related Work Specified Elsewhere

1. Section 01110 – Environmental Protection Procedures

2. Section 02201 – Earthwork.

C. Definitions

1. Perimeter of the Site is defined as the outer limits of the area impacted by construction activities including work and support zones.

2. Work Zone is generally defined as the area where intrusive construction activities take place.

3. Air quality will be evaluated by measurement of dust (particulates as PM10) at the site.

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM) 4031 - Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites

B. Other appropriate federal, state, and local air monitoring requirements

MATERIALS AND PERFORMANCE - SECTION 02508

AIR MONITORING PROGRAM

1.03 SUBMITTALS

A. Submit a detailed plan for the specified requirements of the air monitoring program, including, but not limited to:

1. A detailed site plan showing locations of the air monitoring locations and windsock.

2. A detailed response plan that includes procedures for response to an exceedance of action levels.

B. Submit detailed manufacturer's specifications and operations manual for air monitoring equipment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 OBJECTIVES

A. The objectives of the air monitoring program are:

1. Provide for the measurement of the level of particulates at the downwind site perimeter to facilitate the implementation of adequate measures (if necessary) to control dust generated as a result of construction activities, such that dust levels do not exceed action levels as presented herein or in the Remedial Action Work Plan.

3.02 EQUIPMENT

A. Air monitoring equipment shall include, but not be limited to the following equipment:

1. Portable air monitoring equipment/stations shall include a particulate meter

2. A windsock shall be installed in a prominent, approved location at the Site.

3.03 REPORTING

A. The Contractor shall maintain a written copy of air monitoring results for each workday, by 10:00 a.m. the following workday (to be available for State [NYSDEC and NYSDOH] personnel, Owner, or the Engineer for review at any time). Written documentation shall include an appropriately scaled map of the work area depicting sample locations, wind direction, date, time, instrumentation readings, calibration, applicable standards, description of work activities, and engineering controls implemented (if necessary).

MATERIALS AND PERFORMANCE - SECTION 02508

AIR MONITORING PROGRAM

B. The Contractor shall prepare a summary of air monitoring results on a weekly basis in format acceptable to the Owner/Engineer and submit the report to the Owner and Engineer.

3.05 MONITORING REQUIREMENTS

A. The monitoring requirements and action levels set forth herein shall be established for work zone and perimeter monitoring of particulates. If the action levels are attained at the perimeter of the work zone, then work will cease until engineering controls bring levels down to acceptable limits. These levels are general and shall be used as minimum action levels. The Contractor shall develop site-specific perimeter monitoring action levels based on impacts found in the work areas.

In the event that intrusive remediation activities are stopped as a result of dust action level exceedances, the following agencies shall be notified:

1. NYSDEC.

2. NYSDOH.

3. Community representative.

B. The Contractor shall have onsite and available for immediate use at anytime, engineering controls for dust. This shall include, but is not limited to, use of water trucks or polyethylene sheeting for covering of work areas.

C. Real-time particulate monitoring shall be performed a minimum of three times per day at each air monitoring location during the performance of intrusive construction activities including, but not limited to, stream bank re-shaping and material handling.

D. Air monitoring shall be performed using portable monitoring equipment/stations at locations upwind and downwind of the work zone to provide for adequate coverage of the work zone. Locations of air monitoring stations may require adjustment based upon changes in wind direction.

E. If the measured particulate level at the downwind perimeter is 0.100 mg/m^3 above the upwind perimeter, or if airborne dust is visually observed leaving the Work Area, then dust suppression techniques will be implemented and air monitoring will continue. If the measured downwind perimeter particulate level is 0.150 mg/m^3 above the upwind perimeter, intrusive remediation activities will be stopped, the source of the particulate identified, corrective actions to abate the particulate emissions taken, and air monitoring will continue. Intrusive remediation activities can continue when the downwind perimeter particulate level is less than 0.150 mg/m^3 above the upwind perimeter.

MATERIALS AND PERFORMANCE - SECTION 02508

AIR MONITORING PROGRAM

F. The following summarizes the action levels and suggested actions (including engineering controls) for dust:

Parameter	Reading	Action
Total Particulate	0 to 0.100 mg/m^3 above upwind background	Normal operations, continue perimeter monitoring
	0.100 mg/m^3 to 0.150 mg/m^3 above upwind background	Initiate implementation of dust emission controls to limit off-site exposure, including: 1. Covering piles and excavation faces with polyethylene sheeting or equivalent; 2. Applying water, dust suppressants, hydromulch, surfactants, or equivalent to control dust emissions; 3. Limit vehicle traffic and speeds of travel on-site; and 4. Limit exposed surface area of excavations and spoil by reducing excavation rates.
	> 0.150 mg/m^3 above upwind background	Stop work; evacuate area; determine dust levels beyond downwind site perimeter and site control zone. Notify appropriate agencies.

Notes:
1. Dust action levels are based upon total dust and not respirable dust levels. Action levels are in excess of background levels, as measured either prior to activities on-site or off-site.
2. 0.150 mg/m^3 level based on NYSDEC TAGM 4031 - Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites.

3.06 QUALITY ASSURANCE

A. A qualified technician shall be provided to calibrate and operate specified equipment.

B. All direct-reading instrumentation calibrations shall be conducted under the approximate environmental conditions in which the instrument will be used. Instruments must be calibrated before and after use, noting the reading(s) and any adjustments that are necessary. All air monitoring equipment calibration, including the standard used for calibration, must be documented on a calibration log.

C. All air monitoring equipment shall be maintained and calibrated in general accordance with specific manufacturers' procedures. Preventive maintenance and repairs will be conducted in accordance with the respective manufacturers' procedures. When applicable, only manufacturer-trained and/or authorized personnel will be allowed to perform instrument repairs or preventive maintenance.

D. If an instrument is found to be inoperative or suspected of giving erroneous readings, the Contractor is responsible for immediately removing the instrument from service and obtaining a replacement unit. At a minimum, the Contractor will have a spare particulate meter on-site at all times that is available for use in the event of equipment failure.

- END OF SECTION -

Appendix C

Site Specific Health and Safety Plan

ARCADIS
Infrastructure · Water · Environment · Buildings

Site Specific Health and Safety Plan

Version 1, May 31, 2012

Project Name: Willsboro Black Ash Pond Site
Willsboro, New York

Project Number: B0066127.0001.00001
Client Name: Georgia-Pacific, LLC
Date: May-12
Revision: 2

Approvals:

HASP Developer: Lauren Putnam

HASP Reviewer: Thomas Burgess

Project Manager: Lance Ketcham, P.E./Dawn Penniman, P.E.

Emergency Information

Site Address: School Street
Willsboro, NY 12996

Emergency Phone Numbers:

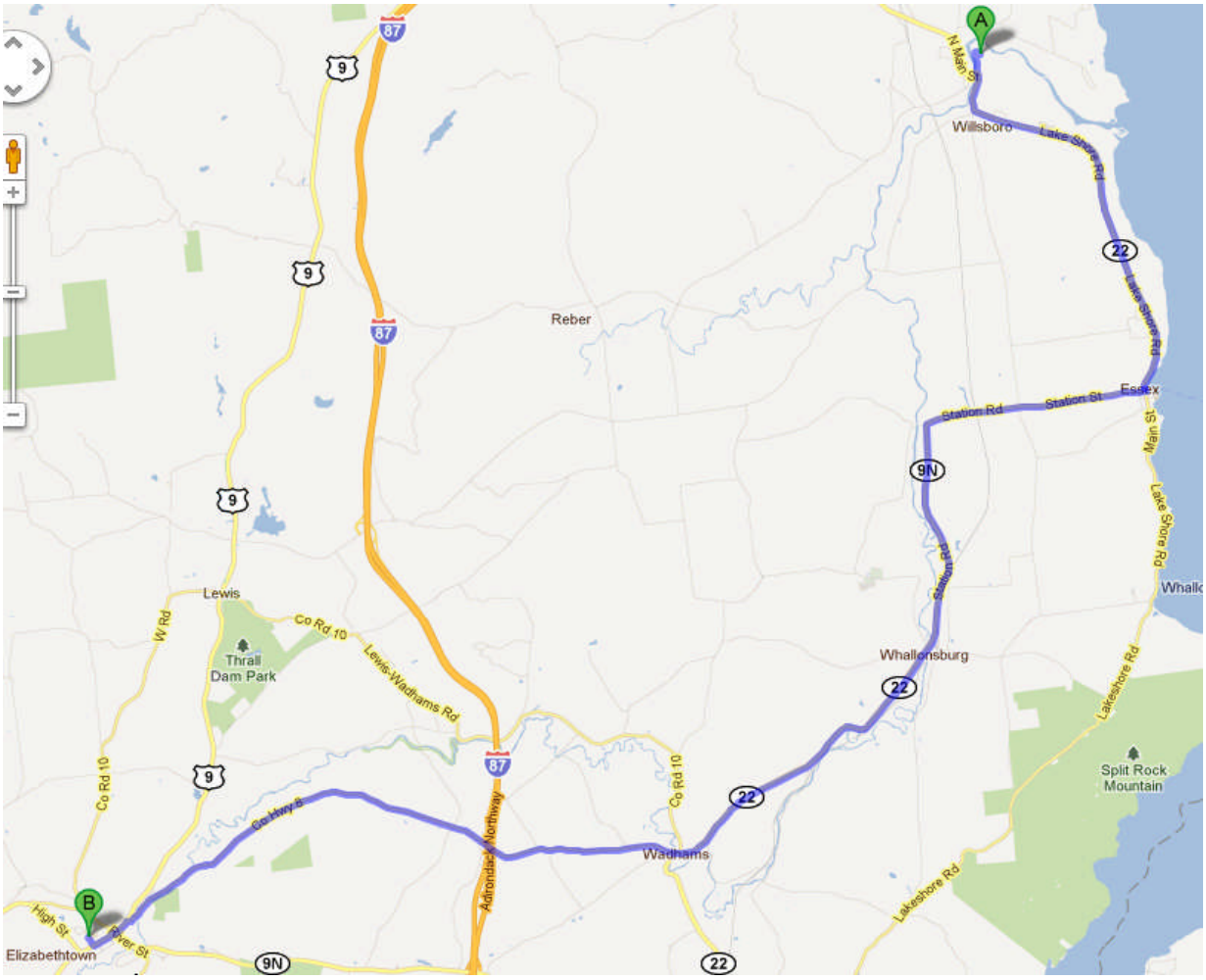
Emergency (fire, police, ambulance)		911
Emergency (facility specific, if applicable)		
WorkCare		1-800-455-6155
Project H&S (specify)	N/A	N/A
Corporate Health and Safety		1-720-344-3500
ARCADIS Near Loss Reporting Hotline		1-866-242-4304

Hospital Name and Address: Elizabethtown Community Hospital
75 Park Street
Elizabethtown, New York 12932

Hospital Phone Number: (518) 873-6377

Route to Elizabethtown Community Hospital
75 Park St, Elizabethtown, NY12932

1. Head northwest on School St. toward NY-22 N/S Main St. (0.4 mi).
2. Continue straight onto NY-22 S/S Main St., continue to follow NY-22 (4.9 mi).
3. Turn right onto NY-22 S/Station St., continue to follow NY-22 (9.3 mi).
4. Slight right onto Elizabethtown-Wadhams Rd (7.0 mi).
5. Turn left onto US-9 S/Maple St, continue to follow US-9 S (0.5mi).
6. Take second right onto Park St., destination will be on right (0.1 mi).



General Information

Site Type (select all applicable):

- ☐ Active
- ☑ Inactive
- ☐ Secure
- ☑ Unsecured
- ☐ Residential
- ☐ Retail
- ☐ Commercial
- ☐ Industrial
- ☐ Government
- ☐ Utility
- ☐ Landfill
- ☐ Roadway
- ☐ Railroad
- ☐ Marine
- ☑ Remote Area
- ☐ Unknown
- ☐ Other (specify): _____

Surrounding Area and Topography (select one):

- ☑ Surrounding area and topography are presented in the project work plan
- ☐ Surrounding area and topography (*briefly describe*):

Site Background (select one):

- ☑ Site background is presented in the project work plan
- ☐ Site background (*briefly describe)*:

Project Tasks

The following tasks are identified for this project:

	Examples: "Drilling/soil sampling", "Surveying", "Inspections"	Supporting Document(s)			
		JLA	Field H&S Handbook	STAR Plan or TCP	Other (specify below)
1	Driving	☑	☑	☐	☐
2	Construction Observation	☑	☑	☐	☐
3	Drilling	☑	☑	☐	☐
4	Surveying	☑	☑	☐	☐
5	Earthwork/Excavation	☑	☑	☐	☐
6		☐	☐	☐	☐

☐ Subcontractor supplied H&S information is attached

Print any relevant JLAs for this scope of work and attach.

FHSHB and/or applicable STAR Plan/TCP are required to be on site even if not referenced above.

Other (state document and if attached):

☑ Utility clearance required?

Roles and Responsibilities

	Name	*Role*	*Additional Responsibilities*
1	Dawn Penniman, P.E.	PM	
2	Lance Ketcham, P.E.	PM/MP	
3			
4			
5			
6			

Training

All ARCADIS employees are required to have the following training:	*Selected ARCADIS employees are required to have the following additional training:*	Names or Numbers from above
☑ 40 hr HAZWOPER w current refresh.	☐ Not applicable	
☐ 24 hr HAZWOPER	☑ First aid/CPR/BBP	
☐ 10 hr Construction	☐ 30 hr Construction	
☐ HazMat #1 (Ground/Air/MOT)	☐ 10 hr Construction	
☐ HazMat #4 (MOT)	☐ HazMat #1 (Gr./Air/MOT)	
☐ HazCom/Emergency Action Plan	☐ HazMat #4 (MOT)	
☐ LPS (classroom); or	☐ Confined space entrant	
☑ LPS (on-line)	☐ Confined space rescue	
☑ PPE	☐ Excavation CP	
☐ Respiratory protection	☐ Electrical (NFPA 70E)	
☐ Smith System (hands on)	☐ Lockout/Tagout	
☑ Smith System (on-line)	☐ LPS (classroom)	
☐ OTS/eRailsafe	☐ OTS/eRailsafe	
☐ Client specific:	☑ Smith Sys. (hands on)	
	☐ Boating safety	
☐ Other:	☐ Other:	

☑ ARCADIS subcontractors are also required to have the above training applicable to all employees.

Hazard Analysis

Rank the hazards using HIGH (H), MEDIUM (M) or LOW (L) based on current site knowledge. For hazards that are not applicable, leave blank. Use results of this analysis to verify controls in the JLA, FHSHB or other supporting document are adequate to mitigate task hazards. When in the field, use the Tailgate Safety Meeting Form for task specific evaluation of task hazards.

Rank the hazards using the chart below:

Severity	Consequence		Probability				
	Property Damage	Injury	Frequent	Likely	Occasional	Seldom	Unlikely
	> $100,000	Fatality	H	H	H	H	M
	> $10,000	Injury Requiring Hospitalization	H	H	H	M	L
	> $1000	Injury Requiring Medical Treatment Beyond First Aid	H	M	M	L	L
	< $1000	Injury Requiring First Aid	M	L	L	L	L

Use TRACK and identify rank relevant hazards expected to be encountered on this project:

Biological

L	Biting/stinging insects
L	Biting animals
L	Poisonous plants
L	Phys. damaging plants

Driving

L	Night driving
M	Off-road driving
L	Urban driving
L	All terrain vehicle
	Boat

Electrical

M	Wet environments
L	Electrical panels
L	Electric utilities
L	Electric power tools

Environment

M	Heat
M	Cold
L	Lightning
M	Inclement weather
L	High wind

Gravity

M	Slip, trip, fall
L	Fall from height
L	Ladders or scaffolds
L	Struck by falling object

Mechanical

M	Cuts on equipment/tools
M	Pinch points on equipment
L	Burns from equipment
M	Struck by equipment

Motion

M	Lifting/awkward body positions
M	Struck by vehicle/traffic

Personal Safety

M	Working late/night
L	Working alone
L	High crime area

Pressure

L	Utilities (gas, water, etc)
L	Compressed gas cylinders
L	Compressed air/aerosols
L	Hydraulic systems

Sound

M	Equipment noise
L	Tool noise
L	Traffic noise (vehicle/train/etc)

Comments:

Chemical/Radiation

☐	Not applicable
	General
	Dusts, toxic
	Dusts, nuisance
	Chemicals, ARCADIS use
	Chemicals, corrosive
	Chemicals, explosive
	Chemicals, flammable
	Chemicals, oxidizing
	Chemicals, toxic
	Chemicals, reactive
	Radiation, ionizing
	Radiation, non-ionizing

Other:

Compound Specific:

	Asbestos
	Benzene
	Cadmium
	Hydrogen sulfide
	Lead
	Silica

Hazard Communication (HazCom)

List the chemicals anticipated to be used by ***ARCADIS*** *on this project subject to HazCom requirements.*
(Modify quantities as needed)

	Acids/Bases	Qty
☑	Not applicable	
☐	Hydrochloric acid	<500 ml
☐	Nitric acid	<500 ml
☐	Sulfuric acid	<500 ml
☐	Sodium hydroxide	<500 ml
☐	Zinc acetate	<500 ml
☐	Ascorbic acid	<500 ml
☐	Acetic acid	<500 ml
☐	Other:	
	_____	
	_____	
	_____	
	_____	

	Decontamination	Qty
☑	Not applicable	
☐	Alconox	≤ 5 lbs
☐	Liquinox	≤ 1 gal
☐	Acetone	≤ 1 gal
☐	Methanol	≤ 1 gal
☐	Hexane	≤ 1 gal
☐	Isopropyl alcohol	≤ 4 gal
☐	Nitric acid	≤ 1 L
☐	Other:	
	_____	
	_____	
	_____	
	_____	

	Calibration	Qty.
☑	Not applicable	
☐	Isobutylene/air	1 cyl
☐	Methane/air	1 cyl
☐	Pentane/air	1 cyl
☐	Hydrogen/air	1 cyl
☐	Propane/air	1 cyl
☐	Hydrogen sulfide/air	1 cyl
☐	Carbon monoxide/air	1 cyl
☐	pH standards (4,7,10)	≤ 1 gal
☐	Conductivity standards	≤ 1 gal
☐	Other:	
	_____	
	_____	

	Fuels	Qty.
☑	Not applicable	
☐	Gasoline	≤ 5 gal
☐	Diesel	≤ 5 gal
☐	Kerosene	≤ 5 gal
☐	Propane	1 cyl
☐	Other:	
	_____	

	Kits	Qty.
☑	Not applicable	
☐	Hach (specify):	_____ 1 kit
☐	DTECH (specify):	_____ 1 kit
☐	EPA 5035 Soil (specify kit):	_____ 1 kit
☐	Other:	
	_____	_____
	_____	_____

	Remediation	Qty.
☑	Not applicable	
☐	_____	
☐	_____	
☐	_____	
☐	_____	
☐	_____	

	Other:	Qty.
☑	Not applicable	
☐	Spray paint	≤ 6 cans
☐	WD-40	≤ 1 can
☐	Pipe cement	≤ 1 can
☐	Pipe primer	≤ 1 can
☐	Mineral spirits	≤ 1 gal

		Qty.
☐	_____	
☐	_____	
☐	_____	
☐	_____	
☐	_____	
☐	_____	

Material safety data sheets (MSDSs) must be available to field staff. Manufacturer supplied MSDSs are preferred, however, if the manufacturer's MSDS can not be located, use the source provided below. Indicate below how MSDS information will be provided:

☑ Not applicable
☐ Printed copy in company vehicle
☐ Printed copy in the project trailer/office
☐ Printed copy attached
☐ Electronic copy on field computer

☐ Bulk quantities of the following materials will be stored: _____

Contact the project H&S contact for information in determining code and regulatory requirements associated with bulk storage of materials.

Monitoring

☑ Chemical air monitoring is not required for this project.

For projects requiring air monitoring, list the relevant constituents representing a hazard to site workers.

Constituent	Max. Conc.	Units	TWA		STEL		IDLH		LEL/UEL	VD	VP	IP
				Units		Units		Units	(%)	Air=1	(mm Hg)	(eV)
None		ppm	9999	-	0	-	0	-	0	0	0	0
None		ppm	9999	-	0	-	0	-	0	0	0	0
None		ppm	9999	-	0	-	0	-	0	0	0	0
None		ppm	9999	-	0	-	0	-	0	0	0	0
None		ppm	9999	-	0	-	0	-	0	0	0	0
None		ppm	9999	-	0	-	0	-	0	0	0	0

Notes: TWAs are ACGIH 8 hr-TLVs unless noted.
p-ppm m-mg/m3 c2- ceiling (2 hr) se-sensitizer "#N/A" -Constituent is not in database, manually enter information
s- skin c-ceiling "9999" - NA O-OSHA PEL
r- resipirable i-inhalable N-NIOSH 10 hr REL

Monitoring Equipment and General Protocols

Air monitoring is required for any task or activity where employees have potential exposure to vapors or particulates above the TWA. Action levels below are appropriate for most situations. Contact the project H&S contact for all stop work situations. Check instruments to be used.

Monitoring Frequency: _____

	Instrument				Actions
☐	Photoionization Detector		<	0.000	Continue work
		0.000	-	0.0	Sustained >5 min. continuous monitor, review eng. controls and PPE, proceed with caution
	Lamp (eV):		>	0.0	Sustained >5 min. stop work, contact SSO
☐	Flame Ionization Detector (FID)		<	0.0	Continue work
		0.0	-	0.0	Sustained >5 min. continuous monitor, review eng. controls and PPE, use caution
			>	0.0	Sustained >5 min. stop work, contact SSO
☐	LEL/O2 Meter	0-10% LEL			Continue work
		>10-25% LEL			Continuous monitor, review eng. controls, proceed with caution
		>25% LEL			Stop work, evacuate, contact SSO
		19.5%-23.5% O2			Normal, continue work
		<19.5% O2			O2 deficient, stop work, evacuate, cont. SSO
		>23.5% O2			O2 enriched, stop work, evacuate, contact SSO
☐	Colorimetric Indicator Tube (CIT)	≤PEL/TLV			Continue work
		>PEL/TLV			Stop work, review eng. controls and PPE, contact SSO
	Compound(s):				
☐	Sound Level Meter or Dosimeter	>80 dBA, sustained			Monitor continuously, continue work
		>85 dBA, sustained			Review controls, use hearing protection
		Result dBA-(NRR-7dBA)>90dBA			Stop work, contact SSO
☑	Particulate Monitor (mists, aerosols, dusts in mg/m^3)		<	2.5	Continue work
		2.5	-	5.00	Use engineering controls, monitor continuously
			>	5.00	Stop work, review controls, contact SSO
☐	Radiation Survey Meter	Specify:			Specify:
☑	Other: Visual monitoring for dust	Specify:			Specify: If dust is observed, actions will be taken to minimize the visible dust (i.e., modifying construction activities, utilizing a water truck)

Personal Protective Equipment (PPE)

See JLA for the task being performed for PPE requirements. *If the work is not conducted under a JLA, refer to the governing document for PPE requirements. At a minimum, the following checked PPE is required for* <u>*all tasks during field work*</u> *not covered by a JLA on this project:*

Level D or Level D Modified:

							Specify Type:
☑	Hard hat	☐	Snake chaps/guards	☐	Coveralls:		
☑	Safety glasses	☐	Briar chaps	☐	Apron:		
☐	Safety goggles	☐	Chainsaw chaps	☐	Chem. resistant gloves:		
☐	Face shield	☐	Sturdy boot	☑	Gloves other:		Work Gloves
☑	Hearing protection	☑	Steel toe boot	☐	Chemical boot:		
☐	Rain suit	☐	Metatarsal boot	☐	Boot other:		
☐	Other:			☑	Traffic vest:		Reflective
				☐	Life vest:		

Task specific PPE: A Personal Flotation Device/Life Vest will be required to be worn by workers who are working within 10 feet of the water.

Comments:

Medical Surveillance (*check all that apply*)

- ☐ Medical Surveillance is not required for this project.
- ☑ HAZWOPER medical surveillance applies to all ARCADIS site workers on the project.
- ☑ HAZWOPER medical surveillance applies to all subcontractors on the project.
- ☐ HAZWOPER medical surveillance applies to all site workers on the project except:

- ☐ Other medical surveillance required (describe type and who is required to participate):

- ☐ Client drug and/or alcohol testing required.

Hazardous Materials Shipping and Transportation (*check all that apply*)

- ☑ Not applicable, no HazMat will be transported or shipped
- ☐ A Shipping Determination has been reviewed and provided to field staff
- ☐ A Shipping Determination is attached
- ☐ All HazMat will be transported under Materials of Trade by ARCADIS
- ☐ Other (specify):

Roadway Work Zone Safety (*check all that apply*)

- ☑ Not applicable for this project.
- ☐ All or portions of the work conducted under a TCP
- ☐ All or portions of the work conducted under a STAR Plan
- ☐ TCP or STAR Plan provided to field staff
- ☐ TCP or STAR Plan attached
- ☐ Other (specify):

ARCADIS Commercial Motor Vehicles (CMVs)

This section is applicable to ARCADIS operated vehicles only

- ☑ This project will **<u>not</u>** utilize CMV drivers
- ☐ This project will utilize CMV drivers

Site Control (*check all that apply*)

- ☐ Not applicable for this project.
- ☐ Site control protocols are addressed in JLA or other supporting document (attach)
- ☐ Maintain an exclusion zone of _____ ft. around the active work area
- ☐ Site control is integrated into the STAR Plan or TCP for the project
- ☐ Level C site control - refer to Level C Supplement attached
- ☑ Other (specify):
  Existing project controls in place. Additional fencing may be added to control vehicle access to staging area.

Decontamination (*check all that apply*)

- ☐ Not applicable for this project.
- ☐ Decontamination protocols are addressed in JLA or other governing document (attach)
- ☑ Level D work- wash hands and face prior to consuming food, drink or tobacco.
- ☐ Level D Modified work- remove coveralls and contain, wash hands and face prior to consuming food, drink or tobacco. Ensure footwear is clean of site contaminants
- ☐ Level C work - refer to the Level C supplement attached.
- ☐ Other (specify):

Sanitation *(check all that apply)*

- ☑ Mobile operation with access to off-site restrooms and potable water
- ☑ Restroom facilities on site provided by client or other contractor
- ☐ Project to provide portable toilets (1 per 20 workers)
- ☐ Potable water available on site
- ☐ Project to provide potable water (assume 1 gal./person/day)
- ☐ Project requires running water (hot and cold, or tepid) with soap and paper towels

Safety Briefings (*check all that apply*)

- ☑ Safety briefing required daily
- ☐ Safety briefing required twice a day
- ☐ Safety briefings required at the following frequency: _____
- ☑ Subcontractors to participate in ARCADIS safety briefings
- ☑ ARCADIS to participate in client/contractor safety briefings
- ☐ Other (specify):

Safety Equipment and Supplies

Safety equipment/supply requirements are addressed in the JLA for the task being performed. *If work is not performed under a JLA, the following safety equipment is required to be present on site in good condition (Check all that apply):*

- ☑ First aid kit
- ☑ Bloodborne pathogens kit
- ☑ Fire extinguisher
- ☐ Eyewash (ANSI compliant)
- ☐ Eyewash (bottle)
- ☑ Drinking water
- ☐ Other: _____

- ☐ Insect repellent
- ☐ Sunscreen
- ☐ Air horn
- ☐ Traffic cones
- ☐ 2-way radios
- ☐ Heat stress monitor

_____

Task Improvement Process (TIP) Program (*check all that apply*)

☐ TIP metrics are provided on the account level, refer to account guidance
☑ TIP required at the following frequency on this project:
Select One: 400 mhrs _____ time(s) _____ Define: _____
☐ Field Assessment required at the following frequency on this project:
Select One: _____ mhrs _____ time(s) _____ Define: _____
☐ Other (specify):

List tasks anticipated for TIP activity:

_____
_____
_____
_____

For successful TIPs, schedule feedback sessions with supervisor in advance!

Signatures

I have read, understand and agree to abide by the requirements presented in this health and safety plan. I understand that I have the absolute right to stop work if I recognize an unsafe condition affecting my work until corrected.

Printed Name	Signature	Date

Add additional sheets if necessary

☐ Subcontractor Acknowledgement Form attached

You have an absolute right to STOP WORK if unsafe conditions exist!

Attachment A
ARCADIS Tailgate Meeting Checklist

ARCADIS

Document Control Number:TGM - _____

TGM + *project number plus date as follows: xxxxxxxx.xxxx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance, at least daily.

Project Name: Station No. 5 Hydroelectric Project			**Project Location: Rochester, New York**
Date:	**Time:**	**Conducted by:**	**Signature/Title:**
Client:		**Client Contact:**	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 _____ 3 _____ 5 _____

2 _____ 4 _____ 6 _____

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit

	Doc #		Doc #		Doc #
☐ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Any Stop Work Interventions
☐ Any corrective actions from	☐ Will any work deviate from plan?	☐ If deviations, notify PM & client
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as	☐ All equipment checked & OK?
☐ Staff has appropriate PPE?	☐ Staff knows Emergency Plan (EAP)?	☐ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **A**ssess the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

☐ trips) (L M H)	☐ water) (L M H)	☐ motors) (L M H)
☐ lightning) (L M H)	☐ wells) (L M H)	☐ cold, ice) (L M H)
☐ paint) (L M H)	☐ ivy) (L M H)	☐ laser) (L M H)
☐ generators) (L M H)	☐ not fit) (L M H)	☐ dozer) (L M H)

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss those methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes.

☒	**STOP WORK AUTHORITY** (Must be addressed in every Tailgate meeting - (*See statements below*)				
☐	Elimination	☐	Substitution	☐	Isolation
☐	Engineering controls	☐	Administrative controls	☐	Monitoring
☐	General PPE Usage	☐	Hearing Conservation	☐	Respiratory Protection
☐	Personal Hygiene	☐	Exposure Guidelines	☐	Decon Procedures
☐	Emergency Action Plan (EAP)	☐	Fall Protection	☐	Work Zones/Site Control
☐	JLA to be developed/used ***(specify)***	☐	LPO conducted ***(specify job/JLA)***	☐	Traffic Control
☐		☐		☐	Other ***(specify)***
☐		☐		☐	

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the HASP

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call WorkCare at 1.800.455.6155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720.344.3844.

In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720.344.3844 and then Corp Legal at 1.720.344.3756.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at 1.720.344.3500

Visitor Name/Co - not involved in work

	In	Out
	In	Out
	In	Out
	In	Out

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to **STOP THE JOB,** I will perform **TRACK**; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.

Post Daily Activities Review - Review at end of day or before next day's work (Check those applicable and explain:)

- ☐ Lessons learned and best practices learned today: _____
- ☐ Incidents that occurred today: _____
- ☐ Any Stop Work interventions today? _____
- ☐ Corrective/Preventive Actions needed for future work: _____
- ☐ Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1.800.455.6155
Near Loss Hotline - 1.866.242.4304

Attachment B
PPE Checklist

R = Equipment required to be present on the site. **O** = Optional equipment. Subcontractors must have the same equipment listed here as a minimum.

Description (Put Specific Material or Type in Box)	Level Of Protection		
	D	C	B
Body			
Coveralls			
Chemical Protective Suit (include type in cell, e.g., Tyvek, Saranex, PVC, etc.)			
Splash Apron			
Rain Suit	O		
Traffic Safety Vest (reflective) or Reflective T-Shirt	R		
Head			
Hard Hat (if does not create other hazard)	R		
Head Warmer (depends on temperature and weather conditions)	O		
Eyes & Face			
Safety Glasses (incorporate sun protection as necessary)	R		
Goggles (based on hazard)			
Splash Guard (based on hazard)			
Ears			
Ear Plugs	R		
Ear Muffs	O		
Hands and Arms			
Outer Chemical Resistant Gloves (specify the type of glove based on chemical hazard)			
Inner Chemical Resistant Gloves (specify the type of glove based on chemical hazard)			
Insulated Gloves			
Work Gloves*	R		
Foot			
Safety Boots (steel toe and shank)	R		
Rubber, Chemical Resistant Boots			
Rubber Boots			
Disposable Boot Covers			
Respiratory Protection			
1/2 Mask APR			
Full Face APR			
Dust Protection			
Powered APR			
SCBA			
Air Line			

Attachment C
JSA's

Job Safety Analysis

General

JSA ID	5203	**Status**	(3) Completed
Job Name	General Industry-Driving - passenger vehicles	**Created Date**	5/27/2011
Task Description	Driving to project sites and offices.	**Completed Date**	05/27/2011
Template	True	**Auto Closed**	False

Client / Project

Client	
Project Number	00000000TEST
Project Name	test
PIC	
Project Manager	NO PROJECT MANAGER

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Oakeson, Brent	9/16/2011	5/27/2011	Casaletta, Robert	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Preforming Pre-trip inspections and adjustments.	1	Failure to conduct pre- trip inspection of vehicle can lead to vehicle accident.	Use TRACK to conduct inspection of the vehicle. Walk around vehicle to check tire pressure, signs of leaking fluids, overall vehicle condition. Use vehicle inspection checklist.	
		2	Failure to adjust mirrors, seats, and controls prior to driving can lead to vehicle accident.	Adjust all mirrors, seats and vehicle controls prior to driving vehicle. Become familiar with electronic controls, such as turn signals, windshield wipers, air conditioning, and radio prior to vehicle operation.	
2	Vehicle loading and unloading	1	Objects placed in the vehicle can obstruct the view of the driver in rear, side or blindspot view.	Avoid placing objects in a manner that obstructs your views in windows, mirrors, or blind spots.	
		2	Unsecure objects causing pedal, steering or gear shift obstruction or injury during vehicle operation.	Secure all loads in vehicle (both in the bed of trucks and in passenger cabin) to prevent unanticipated movement or shifting that could injure driver, passenger, or affect safe operation of vehicle.	
		3	Obstuction of vehicle safety equipment caused by object placment in vehicle.	Keep emergency equipment clear and unobstructed to ensure ready availablity.	
3	Vehicle operation	1	Failure to use Smith System "5-Keys" increases risk of accident and injruy.	Use Smith System "5-Keys", maintain space cushion around vehicle, maintain 4 second rule and add (second for each addtional hazard (wet roads, snow, etc). Brake gradual, keep eyes moving, check mirrors every 6-8 seconds, use turn signals, focus on relavent objects, use early lane positioning when approaching turns.	
		2	Injury or death from failure to wear seatbelt	Always wear seatbelts even if driving short distances off of a public roadway.	
		3	Cell phone use increases risk of accidnt and injury	Avoid using cell phones in any capacity when operating a vehicle, check client for cell use on project sites and follow requirements. Follow all local laws.	
		4	Use of radar detectors encourages speeding resulting in increased risk for accident or injury	Use of radar detectors and similar devices is prohibited.	
		5	Intruders attempting to enter vehicle while stopped at intersections and/or while it is vacant. Doors opening during an accident.	Lock doors before driving vehicle and always after leaving vehcile when it is stopped unless client requires vehicles to remain unlocked while onsite.	

4	Routine maintenance	1	Lack of routine vehicle maintenance can lead to engine and control failures, potential vehicle accident.	Vehicle should have routine maintenance and service to keep in good operating condition.	

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
	flashlight		Recommended
Traffic Control	Other	Roadway emergency kit	Recommended

Job Safety Analysis

General

JSA ID	2796	**Status**	(3) Completed
Job Name	Construction-Oversight - excavation and construction	**Created Date**	6/14/2010
Task Description	Excavation/Trenching Oversight (Outdoors)	**Completed Date**	06/17/2010
Template	True	**Auto Closed**	False

Client / Project

Client	ARCADIS-AGMI
Project Number	000000100000
Project Name	GENERAL OVERHEAD
PIC	
Project Manager	NO PROJECT MANAGER

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Byers, Susan	6/14/2010	6/14/2010	Edwards, Lauren	☑
Developer	Moyers, Samuel	6/14/2010	6/14/2010	Coppola, Mija	☑
HASP Reviewer	Tremblay, Anthony	6/28/2010	6/17/2010	Coppola, Mija	☑
Quality Reviewer	Crandall, James	6/25/2010	6/25/2010	Johnson, Gary	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Utility Clearance	1	Contact with activities can cause injury, property damage and cause releases of hazardous substances to the environment.	Contact with activities can cause injury, property damage and cause releases of hazardous substances to the environment.	ARCHSFS019 - Utility Clearance HS Standard
		2	Slip trip and falls while performing site clearance activities	Focus on task at hand and do not hurry through task. Avoid reading maps/drawings while walking, stop walking when looking up for overhead utilities.	
2	Excavation/Trenching and Backfilling Oversight	1	Slips trips and falls from poor housekeeping around trench or excavation.	Maintain work area and minimize clutter near excavation. Place excavated material properly and at least 2 feet away from the edge of excavation. Remove potential hazards when possible. Mark hazards when it cannot be removed. Create and maintain awareness of hazard. Maintain barriers, fall hazard warning signage and traffic controls properly. Do not cross over caution tape, safety fencing etc. Follow Project specific STAR Plan	FHSHB IV(D)
		2	Excavation or trench collapse trapping workers or creating falls.	Excavation/Trench greater than five (5) feet deep in which subcontractor, employees or others will be entering must be properly sloped, benched, shored or have a trench box in place. Sloping, benching, shoring or use of trench box is not required IF an excavation is less than five (5) feet in depth and examination of the ground by a competent person provides no indication of a potential cave-in. Ensure a Competent Person is on site to inspect and oversee excavation/ trenching activities. Where feasible, stay six (6) feet from edge of excavation/trench. A safe means of egress, such as a stairway, ladder, or ramp, shall be located so that no more than twenty-five (25) feet of lateral travel is necessary for site workers conducting activities in trenches exceeding four (4) feet in depth.	

2	Excavation/Trenching and Backfilling Oversight	3	Potential high level of dust, fumes, vapors or particulates creating visibility or inhalation/contact hazards could result in exposure above occupational exposure limit or create an IDLH atmosphere.	Visually monitor air for dust, and wet excavated soil as needed to control dust. Monitor for chemical vapors if hazard exists. The atmosphere must be tested in excavations greater than four (4) feet in depth where oxygen deficiency or toxic or flammable gases are likely to be present, before workers will be permitted to enter. Ensure downwind and perimeter monitoring also performed, if atmospheric hazards exists.	
		4	Excessive noise from excavating equipment or pumps.	Make sure all authorized personnel including subcontractors are wearing hearing protection (ear plugs/muffs) when working around noisy equipment. Increase distance from noise hazard when practical.	
		5	Potential Leaks of Petroleum Fluids and Lubricants from excavating equipment and support equipment.	Make sure all authorized personnel including subcontractors perform equipment inspections looking for leaks, cracked hoses, and loose fittings. Promptly and properly repair all leaks.	
		6	Open Excavation, Unauthorized Entry, or Property Damage	Make sure all authorized personnel including subcontractors mark open excavation with demarcation tape, orange fencing, orange cones, etc. to prevent unauthorized / accidental entry. Make sure controls are adequate for traffic protection after dark or when the site is unstaffed. Backfill excavation area as soon as possible and fence off any excavation not backfilled at the end of the work day.	
		7	Contact with potentially impacted groundwater and soil.	Conduct task in a calm, cautious manner. Wear appropriate PPE. Ensure equipment is in working conditions before start of work every day. Stop work immediately and report to the site manager, if any life threatening conditions exist.	
		8	Working Around Heavy Machinery	Where feasible, maintain distance from excavation equipment in excess of the swing radius. Maintain eye contact with operators at all time. Ensure equipment is in good working condition before work begins. Wear appropriate PPE, including safety vest. Do not wear loose clothing and pull back long hair. Be aware of and avoid standing in red zones (equipment operator "blind-spots"). No personnel are permitted to stand underneath suspended loads.	
3	Stockpile Maintenance and Sampling	1	Falls climbing on or during covering of stockpile.	Avoid climbing on stockpiles when possible, keep hands free, do not hurry trough tasks such as pulling plastic sheeting up onto or over piles.	
		2	Overexertion placing plastic sheeting, weight, and straw bales.	Use proper lifting techniques, avoid twisting of body, and forceful pulling/pushing. Do not hurry through task.	
		3	Cuts, scrapes, impalement from debris in stockpiles.	Have excavation contractor remove/isolate large chunks of concrete, exposed rebar etc. from stockpile to extent practical. Inspect areas prior to kneeling or placing hands when sampling upon stockpile.	

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	When sampling groundwater	Required
	work gloves (specify type)	Leather when hand hazard exists; nitrile for soil/	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs	When working near heavy equipment	Required
Miscellaneous PPE	traffic vest--Class II or III		Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone	Remote area, check reception	Required
Decontamination	Decon supplies (specify type)		Required
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
	flashlight		Required
Personal	eye wash (specify type)		Required
	insect repellant		Recommended
Traffic Control	Other	Cones/tape to delineate trenches prior to backfill	Required

Review Comments

Reviewer		Comments
Employee: **Role** **Review Type** **Completed Date**	Tremblay, Anthony HASP Reviewer Approve 6/17/2010	
Employee: **Role** **Review Type** **Completed Date**	Crandall, James Quality Reviewer NA 6/25/2010	No additional comments. Very well done.

Job Safety Analysis

General

JSA ID	44	**Status**	(3) Completed
Job Name	Environmental-Drilling, soil sampling, well installation and decommissioning	**Created Date**	2/4/2009
Task Description	Drilling, soil sampling and well installation	**Completed Date**	02/04/2009
Template	True	**Auto Closed**	False

Client / Project

Client	ARCADIS-AGMI
Project Number	000000100000
Project Name	GENERAL OVERHEAD
PIC	
Project Manager	NO PROJECT MANAGER

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Coppola, Mija	4/5/2012	2/4/2009	Coates, Gary	☑
HASP Reviewer	Coppola, Mija	2/6/2009	2/2/2009	Coates, Gary	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Set up necessary traffic and public access controls	1	Struck by vehicle due to improper traffic controls	Use a buddy system for placing site control cones and/or signage. Position vehicle so that you are protected from moving traffic. Wear Class II traffic vest	
2	Utility Clearance	1	Potential to encounter underground or above ground utilities while drilling.	Complete utility clearance in accordance with the ARCADIS Utility Clearance H&S Standard.	ARCADIS H&S Standard ARCHSFS019
3	General drill rig operation	1	Excessive noise is generated by rig operation.	When the engine is used at high RPMs or soil samples are being collected, use hearing protection.	
		2	During drill rig operation, surfaces will become hot and cause burns if touched, and COCs in the soils more readily vaporize generating airborne contaminates.	Due to friction and lack of a drilling fluid, heat will be produced during this method. Mainly drill augers. Be careful handling split spoons. Wear proper work gloves. When soils and parts become heated, the COC could volatilize. Air monitoring should always be performed in accordance with the HASP.	
		3	Moving parts of the drilling rig can pull you in causing injury. Pinch points on the rig and auger connections can cause pinching or crushing of body parts.	Stay at least 5 feet away from moving parts of the drill rig. Know where the kill switch is, and have the drillers test it to verify that it is working. Do not wear loose clothing, and tie long hair back. Avoid wearing jewelry while drilling. Cone off the work area to keep general public away from the drilling rig.	
		4	Dust and debris can cause eye injury and soil cuttings and/or water could contain COCs.	Wear safety glasses and stay as far away from actual drilling operation as practicable. Wear appropriate gloves to protect from COCs.	
		5	Drilling equipment laying on the ground (i.e. augers, split spoons, decon equipment, coolers, etc), create a tripping hazard. Water from decon buckets generate mud and cause a slipping hazard.	Keep equipment and trash picked up, and store away from the primary work area.	
		6	The raised derrick can strike overhead utilities, tree limbs or other elevated items	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Clearance H&S Standard for guidance.	

4	Mudd rotary drilling	1	The raised derrick can strike overhead utilities, tree limbs or other elevated items	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Location H&S policy and procedure for guidance.	
		2	This technology uses fluid, which collects with sediments in large basin. Fluid can splash out and cause slipping/mud hazard. Liquid mixture can splash into your eyes.	Wear rubber boots if needed, and keep clear of muddy/wet area as much as practicable. If area becomes excessively muddy, consider mud spikes or covering the area with a material that improves traction. Wear safety glasses.	
5	Hollow stem auger drilling	1	All hazards in step 3 apply. Additionally,The raised derrick can strike overhead utilities, tree limbs or other elevated items	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Location H&S policy and procedure for guidance.	
		2	Hands or fingers can get caught and crushed if trying to clean by hand or with tools while the auger is still turning.	Auger should always be stopped and clutch disengaged prior to cleaning.	
6	Air Rotary Drilling	1	This drilling method works with high air pressure and can generate flying debris that can strike your body or get in your eyes.	When the drill rig is being driven into media, it will produce flying debris. The flaps behind the drill rig should stay closed whenever possible to reduce the risk of flying debris. Safety glasses and hard hat should always be worn when the drill rig is operating. When penetrating asphalt, protect surrounding cars that may be present to avoid damage to pain or windshields.	
		2	The raise derrick can strike overhead utilities, tree limbs or other elevated items.	Never move this rig with the derrick up. Ensure there is proper clearance to raise the derrick and that you are far enough away from overhead power lines. See the Utility clearance H&S Standard for guidance.	
		3	When drilling through bedrock prior to groundwater, dust can be produced from pulverization. Inhalation of dusts/powder can occur.	Supplemental water should be used to manage dust and/or dust masks should be used if necessary.	
7	Reverse rotary drilling	1	This method will use fresh water to pump out drill cuttings through the center of the casing. Water/sediment mixture is generated and could cause contact with impacted soils or groundwater.	Ensure the pit construction can hold the amount of cuttings that are anticipated. Air monitoring should also be used of pit area.	
		2	Fire hydrants are often used for water source. Hydrants deliver water at high pressure. Pressurized water can cause flying parts/debris and excessive slipping hazards.	Water usage from fire hydrants should be cleared with local municipalities prior to use. Only persons that know how to use the hydrant should be performing this task. Ensure all connections are tight, and hose line is not run over to cut by traffic. Any leaks from the hydrant should be reported immediately.	
		3	Settling pit construction can cause tripping hazard from excavated soils, and plastic sheeting can cause slipping.	Cone off the area to keep the general public/visitors away from the settling pit. Ensure proper sloping of excavation.	
		4	The raised derrick can strike overhead utilities, tree limbs or other elevated items.	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Location H&S policy and procedure for guidance.	
8	Rotosonic drilling	1	Fire hydrants are often used for water source. Hydrants deliver water at high pressure. Pressurized water can cause flying parts/debris and excessive slipping hazards.	Water usage from fire hydrants should be cleared with local muncipalities prior to use. Only persons that know how to use the hydrant should be performing this task. Ensure all connections are tight, and hose line is not run over to cut by traffic. Any leaks from the hydrant should be reported immediately.	

8	Rotosonic drilling	2	This method requires a lot of clearance. The drill head can turn 90 degrees to attach to the next drill flight or casing. This usually requires a large support truck to park directly behind the rig. As the drill head raises the new casing flight is angled down at the same time until it can be turned completely vertical.	Ensure sufficient overhead clearance.	
		3	Heavy lifting of cores can cause muscle strain.	Always use 2 people to move core containers. Use caution moving core samples to layout area. Plan layout area to ensure adequate aisle space between core runs for logging. Keep back straight and use job rotation.	
		4	The rotosonic drill head can move very quickly up and down while working on a borehole. Moving parts can strike someone or catch body parts.	The operator and helper must communicate and stay clear of the path of the drill head. The drill utilizes two large hydraulic clamps to continuously hold casings while load/unloading previous casings. Do not wear loose clothing.	
9	Direct push drilling	1	The drill rods will be handled by workers most of the time rather than the rig doing it, therefore pinch points can cause lacerations and crushing of fingers/body parts.	Keep a minimum of 5 feet away from drill rig operation and moving parts.	
		2	The direct push rigs are usually meant to fit in spaces where larger rig can't. Tight spaces can pin workers.	Do not put yourself between the rig and a fixed object. Use Spotters or a tape measure to ensure clearances in tight areas. Pre-plan equipment movement from one location to the next.	
		3	Some direct push equipment is controlled by wireless devices. These controls can fail and equipment can strike workers or cause damage to property.	The drill rig should be used in a large open area to test wireless controls prior to moving to boring locations. The operator of the rig will test the kill switch with wireless remote prior to use. Operator will stay in range of rig while moving so that wireless signal will not be too weak and cause errors to the controls.	
		4	Sampling sleeves must be cut to obtain access to soil. Cutting can cause lacerations.	It's preferable to let the driller cut the sleeves open. Many drillers have holders for the sleeve to allow for stability when cutting. If you cut the sleeves, use a hook blade, change blade regularly, and cut away from the body.	
		5	Soil cores may contain contaminated media.	Wear nitrile gloves and saftey glasses for protection from contaminated media when logging soil borings.	
10	Rock coring	1	Flying debris can hit workers or cause debris to get in eyes.	Rock chips or overburden may become airborne from drilling method. Wear safety glasses and hard hat and remain at a safe distance from back of drill rig.	
		2	Heavy lifting of cores can cause muscle strain.	Always use 2 people to move core containers. Use caution moving core samples to layout area. Plan layout area to ensure adequate aisle space between core runs for logging. Keep back straight and use job rotation.	
11	Sample collection and processing	1	Injuries can result from pinch points on sampling equipment, and from breakage of sample containers.	Care should be taken when opening sampling equipment. Look at empty containers before picking them up, and do not over-tighten container caps. Use dividers to store containers in the cooler so they do not break.	Sample Cooler Handling JSA
		2	Lifting heavy coolers can cause back injuries.	Use two people to move heavy coolers. Use proper lifting techniques.	
12	Monitoring well installation and decommissioning	1	Same hazards as in Step 3 with general drill rig operation	See step 3	
		2	Monitoring well construction materials can clutter the work area causing tripping hazards.	Well construction materials should be picked up during the well installation process.	

12	Monitoring well installation	3	Heavy lifting can cause muscle strains, and cutting open bags can cause lacerations.	Well construction materials are usually 50 lbs or greater. Team lift or use drill rig to hoist bags. Always use work gloves while cutting open bags.	
		4	Well pack material (i.e. sand, grout, bentonite) can become airborne and get in your eyes.	Wear safety glasses for protection from airborne sand and dust.	
		5	Cutting the top of the well to size can cause jagged/sharp edges on the top of the well casing.	Wear gloves when working with the top of the well casing, and file any sharp jagged edges that resulted from cutting to size.	
13	Soil cutting and purge water management	1	Moving full drums can cause back injury, or pinching/crushing injury.	Preferably have the drilling contractor move full drums with their equipment. If this is not practicable, use lift assist devices such as drum dollies, lift gates, etc. Employ proper lifting techniques, and perfrom TRACK to identify pinch/crush points. Wear leather work gloves, and clear all walking and work areas of debris prior to moving a drum.	Drum Handling JSA

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
	work gloves (specify type)	leather	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Required
Miscellaneous PPE	traffic vest--Class II or III		Required
Respiratory Protection	dust mask		Recommended

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Decontamination	Decon supplies (specify type)	Driller to Provide and Manage	Recommended
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
Personal	eye wash (specify type)	bottle	Required
	water/fluid replacement		Recommended
Traffic Control	traffic cones		Required

Review Comments

Reviewer		Comments
Employee: **Role** **Review Type** **Completed Date**	Coppola, Mija HASP Reviewer Approve 2/2/2009	

Job Safety Analysis

General

JSA ID	38	**Status**	(3) Completed
Job Name	General Industry-Surveying - land	**Created Date**	2/2/2009
Task Description	land surveying	**Completed Date**	02/02/2009
Template	True	**Auto Closed**	False

Client / Project

Client	ARCADIS-AGMI
Project Number	000000100000
Project Name	GENERAL OVERHEAD
PIC	
Project Manager	NO PROJECT MANAGER

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Coppola, Mija	2/4/2009	2/2/2009	Coates, Gary	☑
HASP Reviewer	Coppola, Mija	2/4/2009	2/2/2009	Coates, Gary	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Site reconnaissance and walk-around	1	Slips/trips/falls can occur from walking on uneven ground surface.	Survey the site upon arrival. Note any site conditions that may pose a potential hazard.	JLA-Roadway Work ARCHSFS017
		2	Site workers or equipment can be struck by site vehicular traffic	Wear Class II traffic vest and cone off the work area. Follow the JLA and Field H&S Handbook for roadway work.	
2	Deployment and retrieval of traffic control devices during roadway work	1	Stuck by vehicles	Face traffic and use spotter if not facing traffic, stay off the travelled roadway to extent practical, wear Class II (minimum) traffic vest. Familiarize yourself with work zone control layout prior to deploying devices.	
		2	Slips trips and falls on uneven road or land surfaces	Do not carry objects that obscure visibility of ground surface when walking, wear footgear with ankle support and good tread, use buddy system when carrying large bulky objects.	
		3	Lifting heavy or bulky signage or traffic channeling device	Brake down load to manageable size. Do not over reach to grab cones from the interior of the project vehicle. Use proper lifting techniques, maintain good vehicle housekeeping to easily retrieve control devices. Use buddy system to move heavy objects like barrels.	
		4	Pinch points to hands on folding components of sign stands	Wear leather gloves or other suitable glove. Watch for hazard and avoid placing hands in pinch areas. Do not hurry through setup/take down task.	
3	Sharpen machete, brush axe or other cutting tool	1	Sharpening machete can cause lacerations and can generate metal shavings that can cause eye abrasions.	Secure blade to a sturdy fixture such as work bench and use vice. Make sure that sharp edge does not come in contact with fingers/body when sharpening. Sharpen blade 4"-10" above handle. Tip is not sharpened. Use Kevlar gloves and safety glasses.	
		2	Cuts from unsheathed/uncovered cutting tool upon completion of sharpening activity	Promptly sheath or cover cutting blade of cutting tool upon completion of sharpening task, do not "stick" machetes in ground until needed for use.	
4	Line cutting with machete	1	Improper use of the machete can cause lacerations	Do not reach or over-extend when cutting, and cut away from the body at 45 degree angle. Always keep machete sharpened. Do not use tool if the handle becomes wet/slippery. Never stick the blade into the ground--sheath machete when not in use. See the Field H&S Handbook for detailed machete use instructions (section DD).	Field H&S Handbook Section DD

4	Line cutting with machete	2	Utility lines can be accidentally severed during cutting	Inspect area for location of overhead lines prior to starting the task. Do not use machete when cutting vegetation that is close to utility lines. Use more appropriate tools such as garden clippers or shears.	
		3	Biologicals such as poisonous plants, bees/wasps, and other insects can be encountered during cutting of vegetation or brush.	Attempt to identify biological concerns prior to starting task. Use identification techniques outlined in the Field H&S Handbook.	
		4	Cardio and muscle fatigue can be experience from prolonged use of machete or when using machete for cutting of thick vegetation.	Take proper rest breaks, and rotate work jobs with co-workers. For thick vegetation, make sure the machete is the best tool for the job.	
		5	Impalement hazards from falls onto stumps of cut vegetation	Be aware of hazard and avoid walking in cut areas where vegetation exists that could present an impalement hazard. In areas where longer term work areas are cleared, take time to cut vegetation closer to ground surface without an angular cut.	
		6	Objects can fall once cut, or particles can become airborne getting into eyes or puncturing skin.	Wear hard hat, safety glasses and steel-toe shoes. Determine a safe fall zone. Do not use hard strokes when cutting with the machete to limit flying particles.	
		7	Fallen branches and vegetation can cause tripping hazard	Remove freshly cut limbs and brush from the work area to ensure balance, reduce slips and falls, and reduce obstructions.	
5	Line cutting using brush axe or chainsaw (must be approved by Party Chief).	1	Improper use of the bush axe or chainsaw can cause serious injury	Inspect equipment before use, and keep chain sharp. Hold the chainsaw with both hands, never cut above shoulder height. Keep saw close to your body. Carry brush axes sheathed and blade facing away from body. Do not carry brush axes when carrying other large or bulky objects.	Site clearing JLA
		2	Struck by brush axe	Maintain proper separation distance when cutting, ensure anti-slip tape or other material on handles of brush axe to prevent slipping out of hands , wear gloves with good gripping capability.	
		3	Utility lines can be accidentally severed during cutting	Inspect area for location of overhead lines prior to starting the task. Note direction of fall for trees and ensure contact with utility lines will not occur	
		4	Objects can fall once cut, or particles can become airborne getting into eyes or puncturing skin.	Wear hard hat, safety glasses and steel-toe shoes. Determine a safe fall zone. to limit flying particles.	
		5	Fallen branches and vegetation can cause tripping hazard	Remove freshly cut limbs and brush from the work area to ensure balance, reduce slips and falls, and reduce obstructions.	
		6	Noise hazards (chainsaw)	Wear hearing protection (ear plugs or ear muffs)	
6	Removal of manhole covers	1	Pinch points and scrape hazards when removing MH cover.	Do not place fingers under lid during removal, use shovels, pry bars, etc to place under lid edge to lift. Wear sturdy work glove. Wear steel toe boot, do not purposely drop lids.	
		2	Back/neck/arm/shoulder strains and hand blisters could occur from over lifting, or not lifting properly.	Use proper lifting techniques, keep back straight, lift with legs, use “J” Hook or pry bar, Buddy System required	
7	Equipment set-up, calibration and survey of target area	1	Slips/trips/falls can occur from walking on uneven ground surface.	Watch for uneven ground, debris, and trip hazards. If possible clear area of trip hazards. Wear gloves and heavy denim work pants to avoid cuts when working in heavy brush/briers. Use buddy system to spot for uneven ground while surveying.	

8	Placement of stakes	1	Hands/fingers/arms can get struck by hammer/mallet. Splinters and lacerations can occur if stake splints during hammering.	Wear leather work gloves and safety glasses when placing stakes.	
9	Placement of monuments	1	Back strain from digging holes or mixing concrete	Use proper shoveling techniques and keep back straight, Use right tool for the job.	refer to Concrete work JLA
		2	Exposure to concrete can cause skin irritation or illness	Wear impermeable glove during mixing and concrete placement, promptly wash exposed skin. Do not use bare hands to mix, place, or finish concrete.	
		3	Inhalation of concrete dust during mixing	Keep face away from concrete when poured out of bag, Promptly wet concrete to be mixed.	

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	work gloves (specify type)	Kevlar for machete use, leather for cutting	Required
Head Protection	hard hat		Required
Miscellaneous PPE	other	chainsaw chaps	Required

Supplies

Type	Supply	Description	Required
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
	Other	snake chaps depending on work location	Recommended
Personal	water/fluid replacement		Required
Traffic Control	traffic cones	for roadway surveying	Required

Review Comments

Reviewer		Comments
Employee: **Role** **Review Type** **Completed Date**	Coppola, Mija HASP Reviewer Approve 2/2/2009	

Job Safety Analysis

General

JSA ID	2291	**Status**	(3) Completed
Job Name	Construction-Excavation and trenching	**Created Date**	4/26/2010
Task Description	Soil Excavation	**Completed Date**	04/27/2010
Template	True	**Auto Closed**	False

Client / Project

Client	ARCADIS-AGMI
Project Number	000000100000
Project Name	GENERAL OVERHEAD
PIC	
Project Manager	NO PROJECT MANAGER

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Moyers, Sam	4/26/2010	4/26/2010	Coppola, Mija	☑
HASP Reviewer	Edwards, Lauren	5/10/2010	4/27/2010	Coppola, Mija	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Site preparation	1	Improper utility clearance may result in utility/equipment damage or injury.	Perform utility clearance with a minimum of 3 lines of evidence. document utility clearance for reference including any ticket numbers or phone numbers of utilities.	
		2	Clearing vegetation may result in impact hazards.	Stand at least 25 ft from clearing operations using manual or mechanized methods. Larger vegetation like trees may be under stress and may break and wood parts my fly in any direction.	
		3	Slip trip and fall hazards from walkover activites (vegetation, uneven surfaces, etc and applies to all job steps in this JLA)	Plan route and focus on the task at hand (walking). Do not walk while looking at utility maps/drawings or talking on cell phones.	
2	Excavation and backfilling	1	Struck by equipment during excavation.	Stay at least 10 feet beyond the reach of excavation equipment unless establishing communication with operator. wear PPE required by this JSA for increased visibility. Keep unneccessary workers away from the excavation area.	
		2	Equipment/worker falls into excavations from edge collapse	Stand at least 6 ft from edge of excavation. Competent person to oversee sloping, benching, bracing excavation to ensure stability.	
		3	Worker entrapment/suffocation/chemical overexposure/engulfment in excavation	Entry into excavations are prohibited unless approved by a Competent Person. Keep spoil piles at least 2 ft from excavation edge. Ensure proper slope/bench/shileding is in place prior to entry. Air monitor for toxic vapors and oxygen deficiency. Ensure proper means of access and egress.	
		4	Chemical exposure to site contaminants.	Wear protective clothing specified in this JSA, avoid skin contact with soil materials or any liquids in the excavation. Use air monitoring to ensure TLVs are not exceeded. Wash hands and face prior to eating, drinking or consuming tobacco.	
		5	Noise from excavation equipment	Keep distance from equipment to reduce noise levels. If levels cannot be controlled wear hearing protection appropriate for the hazard.	
3	Excavation equipment decontamination	1	Slips and falls on wet surfaces.	Wear footwear appropriate for wet environments. Reduce amount of pressure washing required by removing soils using dry methods to extent practical	

3	Excavation equipment decontamination	2	Flying particles from cleaning activities.	Wear eye and skin protection during decontamination activities. Use face shield if overspray or flying debris is a persisitent problem. Avoid cleaning (pressure washing) in direction of other nearby workers, keep uneccessary workers clear of decontamination activity.	

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	chemical protective suit (specify type)	Tyvek per SSO	Required
Eye Protection	faceshield	During decontamination (per SSO)	Required
	safety glasses		Required
Foot Protection	rubber boots	Wet environments per SSO	Required
	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile when handling impacted soils	Required
	work gloves (specify type)	leather or equivalent (per SSO)	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Required
Miscellaneous PPE	traffic vest--Class II or III	Class II	Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
	walkie talkie	per SSO	Required
Miscellaneous	auxilary lighting	Light plant for night work	Required
	fire extinguisher	ABC 10 pound minimum	Required
	first aid kit		Required
Personal	eye wash (specify type)	Bottle	Required
	insect repellant		Recommended
	sunscreen		Recommended

Review Comments

Reviewer		Comments
Employee: **Role** **Review Type** **Completed Date**	Edwards, Lauren HASP Reviewer Approve 4/27/2010	

Attachment D
Subcontractor
Acknowledgement Form

Memorandum of Acknowledgement

To: ARCADIS
From "Subcontractor": _____
{Insert Subcontractor Name}
Date: _____
Re: Subcontractor Health and Safety Plan

Pursuant to its obligations under the referenced Site and Project, Subcontractor submits the following **as the** Subcontractor's Health and Safety Plan ("HASP") for the following project and client:

Client: Georgia-Pacific, LLC **Site Name:** Willsboro Black Ash Pond Site

Project Name: Willsboro Black Ash Pond **ARCADIS Project Number:** B0066127

Start Date: _____ **End Date:** _____

Subcontractor acknowledges that it is responsible for the health and safety of its workers and others relating to the Subcontractor's Work and Site. The Subcontractor is required to submit its Health and Safety Plan for its Work. To comply with its requirements, the Subcontractor represents that its Health and Safety Plan for its Work shall include the Subcontractor's compliance (including compliance by Subcontractor's employees, officers, agents, representatives, invitees, and sub-subcontractors) with the ARCADIS Health and Safety Plan, together with any further amendments to such plan particular to the Subcontractor's Work and Site deemed necessary and appropriate by the Subcontractor.

Subcontractor agrees and understands that ARCADIS claims no responsibility for the use of the HASP and ARCADIS does not represent that the HASP is sufficient to address the Work or Site conditions of the Subcontractor. Subcontractor shall not hold ARCADIS responsible for any claims arising from the Subcontractor's use of the HASP and agrees to indemnify, defend and hold harmless ARCADIS from any claims for personal injury or property damages arising from or related to the compliance with, utilization or application, or any alleged deficiencies of the HASP. Nothing herein, including the use by Subcontractor of the HASP or acknowledgment of the Subcontractor's HASP shall create any duty, obligation, liability, or responsibility of ARCADIS for any act or failure to act in respect to any safety provision of the HASP and the Subcontractor shall remain solely responsible for the health and safety of Subcontractor, its employees or any person entering the Subcontractor's Work Site.

Signed: _____
{Insert Subcontractor Name}

By: _____
Name: _____
Title: _____
Date: _____

Appendix D

Storm Water Pollution Prevention Plan

ARCADIS

Infrastructure · Water · Environment · Buildings

Georgia-Pacific LLC

Storm Water Pollution Prevention Plan

Willsboro Black Ash Pond Site
Willsboro, New York

August 2012

Storm Water Pollution Prevention Plan

Willsboro Black Ash Pond Site
Willsboro, New York

Prepared for:
Georgia-Pacific LLC

Prepared by:
ARCADIS of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse
New York 13214-0066
Tel 315.446.9120
Fax 315.449.0017

Our Ref.:
B0066127

Date:
August 2012

ARCADIS

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1. Introduction

1.1 General

Georgia-Pacific LLC (Georgia-Pacific) and ARCADIS prepared this Storm Water Pollution Prevention Plan (SWPPP) to support the implementation of the remedial action for the Willsboro Black Ash Pond site located in Willsboro, New York (the Site). During the remedial action, storm water management practices will be implemented to 1) control potential impacts (i.e., erosion and sediment loading) to Site-related storm water runoff; and 2) achieve the following objectives:

- Minimize potential erosion of existing soil/sediments within active work areas.
- Minimize the potential for the conveyance of sediment-laden storm water beyond the project work limits.
- Minimize accumulation of water within active work areas.

1.2 Site Description

The Site encompasses approximately 25 acres at the terminus of School Street in the Town of Willsboro, Essex County, New York, approximately two miles west of Lake Champlain. The Site is bounded to the north and west by the Boquet River, to the east by lands owned by the Adirondack Nature Conservancy (ANC), and to the south by additional lands owned by the ANC and Town. The Town of Willsboro Wastewater Treatment Plant occupies a contiguous 2.7 acre parcel along the southern border. The undeveloped Site lies at an elevation of approximately 50 feet above mean sea level, and the surface is relatively flat with the topography slightly climbing to the south and west.

1.3 Overview of Remedial Action

The remedial action includes the following design components approved by the New York State Department of Environmental Conservation (NYSDEC):

- Site mobilization/preparation.
- Clearing of trees and vegetation that interfere with the stream bank stabilization work, as needed (mature trees and vegetation that are found to be stable may be retained).

- Consolidation of black ash waste, excluding certain sections of the riverbank without significant river erosive forces, and movement of the black ash waste away from the river.

- Grading of the Site to mitigate the infiltration of water by diverting storm water flow around the waste mass and reducing the potential for ponding on the waste mass.

- Construction of the stream bank stabilization features along a portion of the riverbank (i.e., given existing conditions and forces on several segments of well-vegetated riverbank, only armoring with riprap at the toe of the slope may be required at those locations), and reinforcing the riverbank with riprap underlain with a geotextile fabric.

- Construction of a soil cover for consolidated black ash that is graded to provide proper storm water control, drainage, and enhance recreational opportunities. Once constructed, the soil cover area will be revegetated or otherwise stabilized.

- Construction of an inlet/outfall structure to connect the site's low lying area as floodplain to the Boquet River.

Additional details related to each of these components of the selected remedy are discussed in the Remedial Action Work Plan (RAWP) to which this SWPPP is an appendix.

2. Erosion and Sediment Control Plan

2.1 General

The Contractor will be responsible for installing and maintaining erosion and sediment control measures required during the remedial action. Erosion and sediment controls will be installed and maintained in accordance with the *New York Standards and Specifications for Erosion and Sediment Control* (NYSDEC 2005; NYS Standards and Specifications), unless otherwise noted. Erosion and sediment control measures will be installed prior to initiating any intrusive activities as site preparation activities allow. The Contractor will also be responsible for providing additional erosion and sediment control measures during construction (as needed) to achieve the storm water management objectives of this SWPPP.

2.2 Erosion and Sediment Control Measures

The erosion and sediment control measures anticipated to be used during the remedial action include the following:

- Temporary Seeding: Temporary seeding will be applied to provide a temporary protective cover in disturbed areas when construction activities have temporarily ceased (as deemed necessary by the Owner and/or Engineer) or to provide cover when permanent seeding is likely to fail due to mid-summer heat and drought. Temporary seeding will be performed in accordance with the requirements of Materials and Performance (M&P) – Section 02210 (Topsoil and Seeding).

- Material Staging Areas: Material staging areas will be used to reduce the potential for migration of stockpiled materials (via storm water runoff) to adjacent areas. Materials will be staged in these areas will be covered with polyethylene tarps whenever the materials are not actively being placed in accordance with the Construction Drawings and M&P – Section 02201 (Earthwork). Refer to the Construction Drawings for the anticipated locations and details for material staging areas.

- Equipment/Personnel Cleaning Areas: These areas will be used for the cleaning of personnel and equipment prior to leaving the Site in accordance with the procedures outlined in the RAWP. Refer to the Construction Drawings for the anticipated locations and details of cleaning areas.

- Silt Fencing/Hay Bale Dikes: Silt fencing and/or hay bale dikes will be used to reduce the potential for migration of suspended sediments beyond the project work limits.

Refer to the Construction Drawings for the anticipated minimum locations and details of silt fencing. Hay bale dikes may be installed in lieu of or in addition to silt fencing. Silt fencing and hay bale dikes will be installed in accordance with the Construction Drawings and M&P – Section 01110 (Environmental Protection Procedures).

- Turbidity Controls: Water-based sedimentation (resuspension) controls will be utilized during the performance of excavation activities in or near the river. These controls include operational and equipment controls and use of diversion barriers (e.g., Jersey barriers and water stilling techniques. Turbidity controls will be installed immediately upstream of active work areas, visually inspected on a daily basis, and maintained throughout the construction period. Turbidity monitoring will be performed. Additionally, turbidity curtains or silt fence may be used to provide additional turbidity control in the event that the water stilling techniques are not found to sufficiently control the effects of construction on the turbidity levels in the Boquet River. If monitoring results indicate that stilling techniques are not sufficiently controlling the effects of construction on the turbidity levels in the Boquet River, additional turbidity control measures, such as use of turbidity curtains or silt fence, will be implemented. The Contractor will be responsible to meet turbidity performance standards defined in the RAWP. Details regarding installation of the turbidity controls are included on the Construction Drawing.

- Dust Controls: Dust control measures will be implemented to reduce the potential for the dust generation. The Contractor will be responsible for implementing appropriate dust control measures in accordance with the RAWP and M&P – Section 01110.

- Good Housekeeping Practices: Good housekeeping practices will be implemented to reduce the potential for construction materials becoming entrained in storm water discharges from the Site. Throughout construction, the Contractor will be responsible for maintaining the Site in a neat and orderly condition. This will include routine waste management activities (e.g., the collection and disposal of trash, rubbish, construction waste, and sanitary wastes); prompt cleanup of spills liquid or dry; and prompt cleanup of materials tracked by construction vehicles.

Refer to the Construction Drawings and Technical Specifications for additional information regarding material and installation requirements for the erosion and sediment control measures identified above.

2.3 Inspection and Maintenance of Erosion and Sediment Control Measures

Inspections of erosion and sediment controls will be performed to confirm that the erosion and sediment control plan is being implemented properly and remains functional relative to Site conditions. The Contractor will be responsible for maintaining erosion and sediment controls in accordance with the NYS Standards and Specifications and to the satisfaction of the Owner/Engineer and NYSDEC. The Contractor is also responsible for inspecting erosion and sediment controls at least once every seven calendar days per M&P – Section 02260. The Contractor will prepare an inspection report that summarizes the results of the weekly inspections. The minimum requirements for inspection reports are set forth in M&P – Section 01110.

Maintenance of existing erosion and sediment controls and/or required installation of additional controls, as determined during inspections, will be initiated within 48 hours following the inspection and completed prior to the next scheduled inspection. If Site conditions (e.g., weather, ground conditions) prevent maintenance/installation activities from being completed prior to the next inspection, such conditions will be noted in the subsequent inspection report and maintenance/installation activities will be completed as soon as Site conditions permit. Erosion and sediment control measures will be maintained for the duration of the remedial action until such time that the Site has been stabilized (i.e., soil-disturbing activities at the Site have been completed, and a uniform vegetative cover has been established or equivalent stabilization measures, such as the use of mulches, woodchips, geotextiles, or stone cover have been employed per M&P – Section 02260).

2.4 Site Restoration

Disturbed areas will be restored in accordance with the Construction Drawings and Technical Specifications. A final Site inspection will be performed by the Engineer to verify that disturbed areas are stabilized with the prescribed soil cover, woodchips, or stone. If inadequacies are found during the inspection, measures will be implemented to correct inadequate areas and another final Site inspection will be performed by the Engineer. Following acceptance of final site stabilization, the Contractor will remove temporary erosion and sediment control features that are no longer needed (e.g., silt fencing, hay bale dikes, etc.).

2.5 Construction Sequence

Refer to the Construction Drawings for additional information regarding construction sequencing.

3. Pollution Prevention Plan

3.1 General

The Contractor will be required to prepare and implement a Pollution Prevention Plan (as part of the Contractor's Contingency Plan) for the Site in accordance with the minimum requirements listed below. In general, the Contractor's Pollution Prevention Plan will outline measures to prevent spills from occurring (a Spill Prevention Plan) and measures to be implemented in the event of a spill or spill-related emergency (a Spill Response Plan). Each of these components is briefly described below.

3.2 Spill Prevention Plan

Prior to mobilization, each piece of equipment to be brought onsite will be visually inspected by the Contractor for potential sources of spills of hydraulic fluid, engine oil, transmission fluid, fuel, grease, etc. (by inspecting the condition of hydraulic cylinders, hoses, gaskets, fuel tanks, etc.). If a potential spill source is identified, the Contractor will conduct the necessary repairs or replace the piece of equipment prior to mobilizing such equipment to the Site.

The Contractor will take the following precautions to minimize potential spills of fuel during the implementation of the remedial action:

- Conduct refueling activities on level ground within a designated area away from steep slopes.
- Place on-site fuel storage tanks in containment areas.
- Do not leave equipment unattended during refueling.
- Do not re-fill internal combustion engine fuel tanks with a flammable liquid while the engine is running.
- Replace fuel caps before starting the engine.
- Secure (i.e., lock) fuel pump dispensers when not in use to avoid accidental fuel release.

- Conduct visual inspections of equipment/portable fuel tanks to check for leaks. If leaks are observed, transfer the tank contents to an alternate tank and replace or repair the leaking tank, as appropriate.

- Maintain equipment in accordance with the manufacturer's specifications.

- Operate vehicles and equipment safely, and park them a safe distance away from site hazards and sensitive resources, to the extent practicable.

- Locate and operate diesel-powered bypass pumps within a fully-lined containment area (constructed in accordance with the Remedial Design).

3.3 Spill Response Plan

The Contractor will be responsible for implementing appropriate spill response procedures when responding to unplanned releases of oil, products, or other materials to soil, surface water, or sediment during the project. The Contractor will be responsible for immediately reporting all spills to the Owner and Engineer and maintaining an emergency contact list with phone numbers for the following personnel at the Site throughout the implementation of the remedial action: the Willsboro Fire Department; ambulance service; local, county, and state police; and local hospital. The Contractor shall identify responsible personnel who will be in a position at all times to receive incoming phone calls and to dispatch Contractor personnel and equipment in the event of an emergency situation. The Contractor will also maintain a spill kit at the Site throughout the remedial action that includes solid booms (harbor booms), sorbents, absorbent booms, and fire extinguishers.

The Contractor will be responsible for implementing the following spill response procedures:

- Ceasing Operation of the Affected Equipment: This will consist of shutting off the equipment and/or closing any valves and stopping the leak, if possible.

- Containing the Spill: If the spilled material is floating on a water surface, spill-absorbent pads/booms will be placed across the path of the floating spill. If the spilled material sinks below the water surface, a dam, weir, or other containment method will be used to stop the flow of the spilled material. If the spill occurs on land, a containment unit will be constructed to stop the flow of the spilled material. Absorbent material will be applied as necessary.

- Cleaning Up the Spill: Spills in water will be recovered using pumps, sorbent material, etc. as necessary until the spilled material is recovered (and no sheen or other

evidence related to the spill is observed on the water surface). Spills on land will be recovered using pumps, sorbent material, and heavy equipment, as necessary until the spilled material is recovered. Other activities to be conducted during spill cleanup activities include: removing impacted soil/sorbent pads; and using rags and cleaning solution to remove excess spilled material from equipment.

- Containerizing Spill Materials: Spill materials, impacted soil, sorbent pads, etc. will be containerized in New York State Department of Transportation (NYSDOT)-approved containers. The containers will be labeled with the waste type and date of accumulation in accordance with applicable regulations. Samples will be collected to characterize the spilled materials for disposal.

- Disposing of Spill Materials: Impacted materials and spill cleanup debris will be disposed of at a facility permitted to accept the materials. The Contractor will be responsible for coordinating and documenting the disposal activities.

- Performing Post-Spill Maintenance: Following cleanup of the spill, the Contractor will verify and document that all used spill cleanup material and equipment have been disposed of or decontaminated, as appropriate. If the equipment that caused the spill cannot be properly repaired, replacement equipment will be obtained.

4. References

NYSDEC. 2005. New York Standards and Specifications for Erosion and Sediment Control. August 2005. Available at: http://www.dec.ny.gov/docs/water_pdf/bluebook.pdf

ARCADIS

Appendix E

Best Management Practice for Preventing the Transport of Invasive Plant Species

Best Management Practice for Preventing the Transportation of Invasive Plant Species

Environmental Energy Alliance of New York

4/26/12/2012

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Appendices

Appendix 1 - Best Management Practices (BMP's) for Invasive Species Transportation Prevention

Appendix 2 - DEC Revised Interim List of Invasive Plants Species in New York State, January 23, 2012

1.0 Introduction

Invasive species are non-native plant, animal, or microbial species that cause, or are likely to cause, economic or ecological harm or harm to human health (Presidential Executive Order 13112). Invasive species means, "A species that is nonnative to the ecosystem under consideration; and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Harm must significantly outweigh benefit" [New York Environmental Conservation Law §9-1703(10)(a)] Invasive species have been introduced by human action into a region outside their natural geographic range. Introductions occur along a variety of pathways or vectors, either intentionally such as intentional transport of a species for trade, or by accidental means, as in the case of stowaway species found in the ballast-water of ocean-going vessels.

Most scientists regard invasive species as second only to habitat loss as a threat to biodiversity. The presence of invasive species in a given region is one of the leading causes of endangerment to species native to that region. On a nationwide basis, about half of plant and animal species listed as federally Endangered or Threatened are at risk because of invasive species.

Currently, annual economic losses due to invasive species in the U.S. are estimated at over $138 billion (Pimentel et al. 2000). These losses include damage to crops and pasture, forest losses, damage from insect and other invertebrate pests, human diseases, and associated control costs.

In an effort, where feasible, to limit the introduction and spread of *invasive plant species*, this Best Management Practice ("BMP") will be employed when performing activities that occur in *jurisdictional areas* as authorized by the DEC. The BMP identifies procedures that will be incorporated into routine work practices to prevent the introduction and spread of *invasive plant species*.

2.0 Definitions

The following definitions are applicable to this BMP.

***Environmental Energy Alliance of New York (EEANY)* –** is an association of electric and gas Transmission and Distribution (T&D) companies and electric generating companies that provide energy services in the State of New York. This BMP was prepared by the Land Use Subcommittee of the T&D Committee, which currently represents the following members: Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Long Island Power Authority, National Grid USA Service Company, Inc., New York Power Authority, New York State Electric & Gas Corporation, Orange and Rockland Utilities, and Rochester Gas & Electric Corporation.

Invasive plant species – species that are non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (Management Plan National Invasive Species Council, 2001). For purposes of this document, *invasive plant species* are those contained on the "Revised Interim List of Invasive Plants Species in New York State" dated January 23, 2012 developed by NYS DEC (Appendix – 2).

Invasive species plant material – seeds, roots, or pieces of plant material that could germinate into live plants.

Jurisdictional Area – lands under the statutory jurisdiction of the NYSDEC such as certain freshwater wetlands and adjacent areas, tidal wetlands, certain water bodies, and any protected and species habitat areas specified by natural resource supervisors.

NYSDEC General Permit – a NYSDEC permit authorizing certain utility line activities under Articles 15, 24, and 25 of NYS Environmental Conservation Law. These activities include: inspection, maintenance, repair, restoration, reconstruction of pre-existing structures, vegetation cutting and trimming, and emergency actions affecting tidal wetlands, protected waters, regulated freshwater wetlands, adjacent areas, and protected habitat areas.

Regulated Activity – an activity taking place within a *jurisdictional area* that requires authorization from the NYSDEC.

Utility Rights-of-Way - is an easement-acquired or fee-owned corridor in which gas or electric transmission facilities are located.

3.0 Purpose or Goal

This BMP provides guidance for inspecting and cleaning vehicles and equipment to help prevent the spread of invasive plant species. The procedures identified within this manual outline cost-effective and realistic practices that *Environmental Energy Alliance of New York (EEANY)* utility members will implement when conducting a *regulated activity* within a *jurisdictional area*.

4.0 Applicability

This management practice applies to all *EEANY* utility members performing NYSDEC *regulated activities* within *jurisdictional areas* with populations of *invasive plant species*.

5.0 Procedures

There are two procedural options for EEANY companies to follow; one is to conduct the BMPs as detailed in the following sections of this plan or to conduct vegetation surveys for invasive species as outlined in Section 5.6.Field crews will be provided a flowchart to assist with determining when to implement these best management practices (Appendix 1).

The following detailed practices will apply where feasible when invasive species are present and when the work is covered by a GP or individual wetland permit.

5.1 Equipment

a. Equipment must arrive clean without visible soil clumps, plant or animal material.
b. Equipment includes, but is not limited to, vehicles, trailers, machinery, matting, boats, barges, and other watercraft, tools, and other materials.
c. Transporting equipment will be cleaned before accepting a new load.
d. Consider tracking pads as a means to remove soil from equipment. If tracking pads are used they must be cleaned after each use in a specific area.
e. Equipment will be cleaned using one of the methods listed below (use the most effective method that is practical):
    - Brush, broom, shovel or other similar hand tools (used without water)
    - High pressure air (when feasible)
f. Equipment must be cleaned within one of the below areas:
    - the infested work area

- an area immediately adjacent to the work area that is itself currently infested with *invasive plant species*

g. Do not clean equipment in or near waterways as it may promote the spread of *invasive plant species* downstream.
h. Where possible, staging areas will be established in locations that are free of *invasive plant species*. Otherwise, all equipment will be cleaned using the techniques described in 5.3 before leaving the area.
i. When wetland matting is required, it will arrive on site visibly clean, be installed prior to any activities, and will be appropriately cleaned before leaving the area.

5.2 Inspection and Cleaning

a. Inspections and cleaning should be conducted especially when moving from an infested area to an un-infested area.
b. Prior to exiting work area clothing, footwear, and gear should be cleaned of visible signs of plant material.
c. Carry appropriate cleaning equipment (e.g. wire brush, small screwdriver, boot brush) to help remove soils, seeds, and plant material.
d. Preferred locations for cleaning are those where:
    - Work activities are taking place;
    - *Invasive plant species* are already established; or
    - An area immediately adjacent to the work site that is itself currently infested with *invasive plant species*.
e. No cleaning of clothing, footwear, gear in or adjacent to waterways – it may promote the spread of *invasive plant species* downstream.
f. Cleaning will include brushing or self "pat down" of clothing, footwear, and other personal gear within the infested work area.

5.3 Disposal of Impacted Material

a. Preferred locations for equipment cleaning are those areas where work activities are taking place or immediately adjacent areas currently impacted with *invasive plant species*.
b. Do not clean equipment, vehicles or trailers in or near waterways.
c. Do not dispose of soil, seeds, or plant material in storm drains.
d. Any plant materials that are incidentally removed after completion of steps a-c from site will be properly disposed of in a manner that prevents viable plant parts and propagules from being spread

5.4 Other Prevention Measures

a. Reasonable steps to avoid transportation of *invasive plant species,* including small, isolated, populations, will be taken.
b. As an alternative to cleaning, ancillary equipment such as spare tires and winches when feasible will be covered when entering *jurisdictional areas* containing populations of *invasive plant species*.
c. Vehicular access into areas containing populations of *invasive plant species* will be reduced or minimized to the maximum extent practical. When practical vehicles will be parked outside of the impacted area and crews will enter on foot.

5.5 Site Restoration

a. Minimize soil disturbances by reducing work areas and reducing activities that may result in soil disturbances.
b. Re-vegetate bare soils as soon as feasible to minimize the possible establishment of *invasive plant species*. When seeding, non-invasive or local native species must be used (seed mixes will vary from region to region). Seed will be broadcasted over all bare soil areas and covered with a mulch layer such as straw. Choose appropriate seed mixes based on site conditions.
c. On steep sloping areas (i.e. slopes exceeding 20 percent), soil erosion control matting (i.e. jute mesh or straw blankets) must be installed over the seeded area. The matting should be secured with biodegradable tacks.
d. Stabilize disturbed soils using appropriate erosion and sediment control procedures as soon as possible. Use invasive free materials such as straw or wood chips; avoid using hay.

5.6 Vegetation Survey (Optional)

If the above BMPS are not followed, then vegetation surveys of site(s) to detect populations of invasive species should be made in advance prior to any activities. If the optional vegetation survey is performed and no invasive species are found, then the procedures outlined above in section 5.1 through 5.5 will not be followed. Survey inspections can be integrated with other activities such as ROW inspections and should be kept as simple as possible to meet invasive species management objectives. If significant populations of invasive species are detected on surveys, then Sections 5.1 to 5.5 apply.

a. Prior to implementing activities scout for, locate and document significant invasive species infestations.
b. Consider the need for actions based on: 1) the degree of invasiveness; 2) severity of the current infestation; 3) amount of additional habitat or host at risk for invasion; and 4) feasibility of managing the spread.
c. Plan activities to limit the potential for introduction and spread of invasive species, prior to construction.

d. Provide appropriate resources in identification of known invasive species for corridor workers.

6.0 Training

A flowchart (Appendix 1) to assist field crews on when to implement the above procedures will be distributed to all field crews.

All transmission vegetation management planners, foresters, and ROW maintenance personnel will be trained in the procedures outlined in Section 5.0 above. Additionally, training sessions focused on the identification of *invasive plant species* identified in Appendix 3 will be conducted by the individual utility companies. This may take the form of hard copy materials, tail gate briefings and/or presentations during regular staff meetings.

7.0 Emergency Work

During emergencies, *EEANY* utility members will strictly comply with the Emergency Action condition protocol outlined in the *NYSDEC General Permit*. Appropriate site-specific *invasive plant species* controls and restoration efforts will be determined on an individual basis in conjunction with the regional NYSDEC office.

8.0 References

- Electric Power Research Institute, 2008 "Invasive Species and Utility Rights of Way: A Review of the Science". EPRI Publication number 1014032, Palo Alto, CA

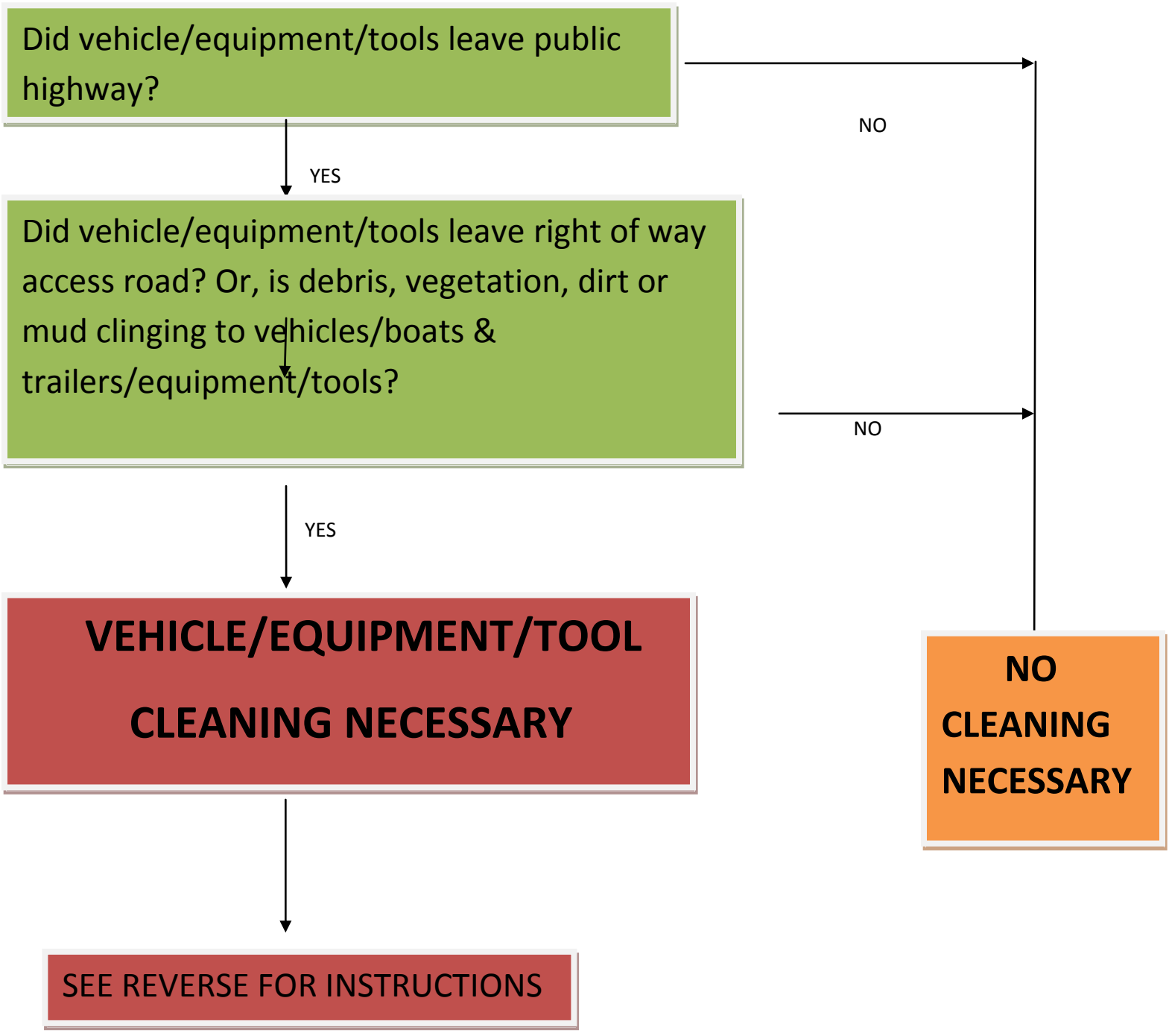
- Pimentel, D., Lach, L., Zuniga, R. & Morrison, D**.** 2000. Environmental and economic costs of nonindigenous species in the United States. Bioscience, 50(1): 53-65.

- Presidential Executive Order 13112. Volume 64, Federal Register 1999. Invasive Species.

- Wisconsin Council on Forestry. 2010. *Invasive Species Best Management Practice for Transportation and Utility Rights-of-Way*.

APPENDIX - 1

BEST MANAGEMENT PRACTICES (BMP'S) for INVASIVE SPECIES TRANSPORT PREVENTION



PRIOR TO LEAVING THE RIGHT-OF-WAY

- Prior to loading vehicle/equipment/tools remove as much debris, vegetation, dirt and mud clinging to the equipment as feasible using a brush, broom, shovel or other similar hand tool.

- High pressure air can be used on site for cleaning debris, vegetation, dirt and mud off vehicles/equipment/tools.

- Pick-ups and other small road vehicles shall remove on the right-of-way, as much debris, vegetation, dirt and mud clinging to vehicle as feasible prior to entering the highway.

- Small equipment/tools/boots shall be cleaned on site before removal or storage.

- Arrangements can be made for onsite cleaning or washing of vehicles/equipment/tools if deemed necessary.

APPENDIX - 2

REVISED INTERIM LIST OF INVASIVE PLANT SPECIES IN NEW YORK STATE

23 January 2012

Purpose

This list was not prepared pursuant to ECL 9-1705 (5) (h), the so-called "four-tier system".

The primary purpose of this list to inform New York State agencies so they can incorporate invasive species management into their funding, regulatory and other activities pursuant to ECL 9-1705 (b) and especially ECL 9-1709 (2):

> "...[DEC] in cooperation with [DAM] shall have the authority...to... coordinate state agency and public authority actions to do the following: (a) **phasing out uses of invasive species**; (b) **expanding use of native species**; (c) **promoting private and local government use of native species as alternatives to invasive species**; and (d) wherever practical and where consistent with watershed and/or regional invasive species management plans, **prohibiting and actively eliminating invasive species at project sites funded or regulated by the state**;...."

It is intended to inform regulatory actions pursuant to existing statutory authorities, e.g., protection of waters (ECL Article 15), wetlands (ECL Articles 24 and 25), State Environmental Quality Review (ECL Article 8), biocontrol (ECL Article 11), and pesticides (ECL Article 33). This list is also intended to inform non-regulatory management decisions and actions, such as for planning and priority-setting, prevention, early detection, monitoring, rapid response, control and eradication, restoration, research, and public education.

This list does not include *all* plant species that are invasive or potentially-invasive in New York State. Rather, it includes many of those plant species that are widely-recognized as invasive or potentially-invasive in New York State. ECL 9-1703 (10) defines "invasive species" as:

> "...a species that is: (a) nonnative to the ecosystem under consideration; and (b) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. For the purposes of this paragraph, the harm must significantly outweigh any benefits."

Thus, when complying with the provisions of 9-1709, agency staff use professional judgment in assessing the potential environmental harm (or harm to human health) when considering particular species in particular contexts.

Invasive Plants Field and Reference Guide: An Ecological Perspective of Plant Invaders of Forests and Woodlands http://www.fs.fed.us/ne/newtown_square/publications/information_bulletins/NA-TP-05-04.pdf

Mistaken Identity? Invasive Plants and their Native Look-alikes: an Identification Guide for the Mid-Atlantic

http://www.nybg.org/files/scientists/rnaczi/Mistaken_Identity_Final.pdf

REVISED INTERIM LIST OF INVASIVE PLANT SPECIES IN NEW YORK STATE

Floating & Submerged Aquatic		
Common Name	**Scientific Name**	**Rank**
Water thyme	*Hydrilla verticillata*	Very High
Frog Bit	*Hydrocharis morsus-ranae*	Very High
Floating Primrose Willow	*Ludwigia peploides*	Very High
Broadleaf Water-milfoil	*Myriophyllum heterophyllum*	Very High
Eurasian Water-milfoil	*Myriophyllum spicatum*	Very High
Water Chestnut	*Trapa natans*	Very High
Rock Snot (diatom)	*Didymosphenia geminata*	
Carolina Fanwort	*Cabomba caroliniana*	High
Brazilian Waterweed	*Egeria densa*	High
Parrot-feather	*Myriophyllum aquaticum*	High
Yellow Floating Heart	*Nymphoides peltata*	High
Curly Pondweed	*Potamogeton crispus*	High

Emergent Wetland & Littoral		
Common Name	**Scientific Name**	**Rank**
Japanese Knotweed	*Fallopia japonica*	Very High
Purple Loosestrife	*Lythrum salicaria*	Very High
European Common Reed Grass	*Phragmites australis*	Very High
Tall Glyceria	*Glyceria maxima*	High
Yellow Iris	*Iris pseudacorus*	High
Marsh Dewflower	*Murdannia keisak*	High
Reed Canary-grass	*Phalaris arundinacea*	High

Terrestrial - Herbaceous		
Common Name	**Scientific Name**	**Rank**
Garlic Mustard	*Alliaria petiolata*	Very High
Slender False Brome	*Brachypodium sylvaticum*	Very High
Oriental Bittersweet	*Celastrus orbiculatus*	Very High
Black swallow-wort	*Cynanchum louiseae*	Very High
Pale Swallow-wort	*Cynanchum rossicum*	Very High
Japanese Stilt Grass	*Microstegium vimineum*	Very High
Lesser Celandine	*Ranunculus ficaria*	Very High
Wild Chervil	*Anthriscus sylvestris*	High
Mugwort	*Artemisia vulgaris*	High
Small Carpgrass	*Arthraxon hispidus*	High
Narrowleaf Bittercress	*Cardamine impatiens*	High
Spotted Knapweed*	*Centaurea stoebe ssp. micranthos*	High
Canada Thistle	*Cirsium arvense*	High
Chinese Yam	*Dioscorea polystachya*	High
Cut-leaf Teasel	*Dipsacus laciniatus*	High
Winter Creeper	*Euonymus fortunei*	High
Cypress Spurge	*Euphorbia cyparissias*	High
Leafy Spurge	*Euphorbia esula*	High

Giant Hogweed	*Heracleum mantegazzianum*	High
Japanese Hops	*Humulus japonicus*	High
Cogon Grass	*Imperata cylindrica*	High
Broad-leaf Pepper-grass	*Lepidium latifolium*	High
Chinese Lespedeza	*Lespedeza cuneata*	High
Garden Loosestrife	*Lysimachia vulgaris*	High
Chinese Silver Grass	*Miscanthus sinensis*	High
Wavyleaf Basketgrass	*Oplismenus hirtellus*	High
Cup-plant	*Silphium perfoliatum*	High

Terrestrial - Vines		
Common Name	**Scientific Name**	**Rank**
Japanese Honeysuckle	*Lonicera japonica*	Very High
Mile-a-minute Weed	*Persicaria perfoliata*	Very High
Kudzu	*Pueraria montana*	Very High
Porcelain Berry	*Ampelopsis brevipedunculata*	High
Japanese Virgin's Bower	*Clematis terniflora*	High

Terrestrial - Shrubs & Trees		
Common Name	**Scientific Name**	**Rank**
Norway Maple	*Acer platanoides*	Very High
Japanese Angelica Tree	*Aralia elata*	Very High
Japanese Barberry	*Berberis thunbergii*	Very High
Autumn Olive	*Elaeagnus umbellata*	Very High
Winged Euonymus	*Euonymus alatus*	Very High
Amur Honeysuckle	*Lonicera maackii*	Very High
Morrow's Honeysuckle	*Lonicera morrowii*	Very High
Uruguayan primrose willow	*Ludwigia grandiflora*	Very High
Common Buckthorn	*Rhamnus cathartica*	Very High
Black Locust	*Robinia pseudoacacia*	Very High
Multiflora Rose	*Rosa multiflora*	Very High
Wineberry	*Rubus phoenicolasius*	Very High
Gray Florist's Willow	*Salix atrocinerea*	Very High
Sycamore Maple	*Acer pseudoplatanus*	High
Porcelain Berry	*Ampelopsis brevipedunculata*	High
Smooth Buckthorn	*Frangula alnus*	High
Border Privet	*Ligustrum obtusifolium*	High
Amur Cork Tree	*Phellodendron amurense*	High
Beach vitex	*Vitex rotundifolia*	High

* Brown and Black Knapweed have also been known to be problematic in grassland habitats

~ END ~