From: "Brussel, John" <John.Brussel@arcadis-us.com>
To: "Allan Geisendorfer" <angeisen@gw.dec.state.ny.us>
Date: 8/29/2007 4:57:47 PM
Subject: Remedial Design - DEC Site #401044 (Former Fire Training Area, School Street Hydro, Cohoes, NY)

Allan:

Pursuant to our telephone conversation earlier today, please find the attached PDF file containing the Remedial Design (text, tables, figures, and one of two attachments) for the above-referenced site. The Health and Safety Plan (Attachment A) is not included in the attached PDF file due to its large file size.

A hard-copy of the full Remedial Design document, including the HASP, will follow via overnight mail. Hard-copy distribution will be in accordance with our e-mail correspondence from earlier today.

Please do not hesitate to call Jim Morgan of National Grid at 315.428.3101 or me if you have any questions.

Thank you.

-John

John C. Brussel, PE

Senior Engineer

ARCADIS BBL

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nationalgrid

James F. Morgan
Lead Senior Environmental Engineer
Environmental Department

August 29, 2007

Mr. Allan Geisendorfer, P.E.
Project Manager
New York State Department of Environmental Conservation
Region 4
1130 North Westcott Road
Schenectady, New York 12306

Re: Brookfield Power, Inc.
(Former National Grid)
School Street Hydroelectric Station
Cohoes, New York
NYSDEC Site No. 401044
Remedial Design

Dear Mr. Geisendorfer:

Please find enclosed for your review, three copies (one unbound) of the *Remedial Design* prepared by ARCADIS of New York, Inc. (ARCADIS BBL) for the above-referenced project. The *Remedial Design* presents the approach for implementing proposed remedial activities to address certain nearshore sediment east of the former fire training area that contains polychlorinated biphenyls.

Following New York State Department of Environmental Conservation (NYSDEC) approval of the *Remedial Design* (including any revisions, if needed), a final document will be issued that includes the signature and seal of ARCADIS BBL's licensed professional engineer.

As described in the attached *Remedial Design* and as previously discussed with the NYSDEC, Brookfield Power and National Grid propose to implement the proposed remedial activities in October 2007.

Please do not hesitate to call me at (315) 428-3101 or Mr. John C. Brussel, P.E., of ARCADIS BBL at (315) 671-9441 if you have any questions or require additional information.

Sincerely,

James F. Morgan /JcB

James F. Morgan
Lead Senior Environmental Engineer

cc: William Daigle, P.E., NYSDEC (2 copies)
Maureen E. Schuck, NYSDOH (2 copies)
William J. Holzhauer, Esq., National Grid (1 copy)
Ray Wingert, P.E., Brookfield Power, Inc. (1 copy)
Ken Kemp, P.E., Brookfield Power, Inc. (1 copy)
Thomas Uncher, Brookfield Power, Inc. (1 copy)
James M. Nuss, P.E., ARCADIS BBL (1 copy)

John C. Brussel, P.E., ARCADIS BBL (1 copy)
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ARCADIS BBL
Infrastructure, environment, facilities

National Grid & Brookfield Power, Inc.

Remedial Design

Former Fire Training Area
Brookfield Power, Inc.
(Former National Grid)
School Street Hydroelectric Station
Cohoes, New York

August 2007

ARCADIS BBL

James M. Nuss, PE
Senior Vice President

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Senior Engineer II

Christopher S. Angier
Senior Project Engineer-in-Training

Remedial Design

Former Fire Training Area
Brookfield Power, Inc.
(Former National Grid)
School Street Hydroelectric Station
Cohoes, New York

Prepared for:
National Grid & Brookfield Power, Inc.

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Our Ref.:
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Date:
August 2007

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Certification Statement

I, James M. Nuss, as a licensed Professional Engineer in the State of New York, to the best of my knowledge and based on my inquiry of the persons involved in preparing this document under my direction, certify that the Remedial Design for nearshore sediment within the Mohawk River east of the former fire training area at the Brookfield Power, Inc. (Brookfield) School Street Hydroelectric Station (the site) located in Cohoes, New York, has been prepared in general accordance with the following:

- The Order on Consent (Index No. A4-0416-003) between Niagara Mohawk (the former site owner, now known as National Grid) and the New York State Department of Environmental Conservation (NYSDEC), which became effective on March 31, 2000 (the "Consent Order").

- The Record of Decision (ROD) for the site issued by the NYSDEC on August 9, 2007.

James M. Nuss, PE
Senior Vice President
NY P.E. License No. 067963

ARCADIS of New York, Inc.
6723 Towpath Road, Box 66
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1. Introduction

1.1 General

This Remedial Design (RD) presents the approach for implementing proposed remedial activities to address certain nearshore sediment of the Mohawk River east of the former fire training area at the School Street Hydroelectric Station located in Cohoes, New York (the site). This RD has been prepared by ARCADIS BBL (formerly known as Blasland, Bouck & Lee, Inc.) on behalf of Brookfield Power, Inc. (Brookfield) and National Grid in accordance with the Consent Order (Index No. A4-046-003) and Record of Decision (ROD).

The remedial activities described in this work plan were originally recommended in the *Focused Feasibility Study Report* (ARCADIS BBL, October 2004), hereinafter "the FFS Report" and incorporated, with minor revisions, into the ROD. The remedial activities will consist of mechanically dredging sediment located in the nearshore area (within an area approximately 200-feet long by 15-feet wide) where polychlorinated biphenyls (PCBs) have been identified at concentrations up to 7.3 parts per million (ppm). The remedial activities are anticipated to include the following:

- Mechanically dredging approximately 100 cubic yards (CY) of PCB-containing sediment.

- Transferring the dredged sediment to a lined staging area for dewatering/stabilization, as needed.

- Transporting the sediment for offsite disposal at facilities permitted to accept the sediment.

- Placing washed sand backfill material within the dredged sediment removal area to the approximate original lines and grades.

The proposed remedial activities will be implemented by Brookfield's remedial contractor, D.A. Collins of Mechanicville, New York (hereinafter, "the Contractor"). The remedial activities will be observed by ARCADIS BBL for general compliance with this RD and contract documents to be provided to the Contractor. The Contractor will be required to comply with all requirements of this RD, contract documents, provisions of a site-specific Health and Safety Plan (HASP) that complies, at a minimum, with the requirements of ARCADIS BBL's HASP for onsite observation and sampling (included in Appendix A), and other plans to be developed by the Contractor for approval by Brookfield and National Grid,

including a Site Management Plan, an Erosion and Sedimentation Control Plan, a Decontamination Plan, and an Emergency Preparedness and Contingency Plan. Changes in the proposed remedial activities may be required due to field conditions encountered. The NYSDEC will be informed of changes, and the changes will not be implemented without prior NYSDEC approval.

The purpose and organization of this RD is presented below, followed by a summary of relevant background information related to the proposed remedial activities.

1.2 Work Plan Organization

The RD has been organized into the following sections.

Section		Purpose
Section 1 –	Introduction	Provides a brief overview of the proposed remedial activities, site background information and the remedial objectives.
Section 2 –	Description of Remedial Activities	Presents a summary of proposed remedial activities.
Section 3 –	Emergency Preparedness and Contingency Measures	Presents emergency preparedness and contingency measures to be utilized during the remedial activities.
Section 4 –	Citizen Participation	Presents a plan for citizen participation activities to be performed in support of the remedial activities.
Section 5 –	Schedule	Presents the anticipated schedule for completing the remedial activities.
Section 6 –	References	Lists the sources referenced throughout this RD.

Background information relevant to the proposed remedial activities is presented below.

1.3 Background Information

This section summarizes relevant background information used to develop the approach for the proposed remedial activities described in this work plan. A description of the site is presented below, followed by a summary of historical information, topography and drainage in the vicinity of the site, and an overview of previous investigation activities conducted to evaluate environmental concerns associated with the site.

1.3.1 Site Description

The School Street Hydroelectric Station is located on School Street in Cohoes, New York. A site location map is presented on Figure 1. The generating station is located along the south bank of the Mohawk River, which flows southeasterly through the City of Cohoes.

An approximately 1,280-foot-long dam extends across the Mohawk River approximately 0.9 miles north of the generating station. The dam diverts flow in the river through the approximately 0.9-mile-long power canal that leads to the generating station. The water level in the canal is controlled by two gatehouses, including an upper gatehouse adjacent to the western abutment of the dam and a lower gatehouse at the downstream end of the power canal. A 375-foot-long concrete ice fender north of the upper gatehouse prevents winter ice flow in the river from entering the power canal. The locations of the ice fender, the upper and lower gatehouses, the dam, and the power canal are shown on Figure 2.

Intakes and a pump house for the City of Cohoes public drinking water supply are located at the downstream end of the power canal, approximately 4,500 feet downstream from the upper gatehouse (approximately 200 feet upstream from the lower gatehouse). Water drawn from the power canal for public water supply is treated at the City of Cohoes Water Treatment Plant.

An upland area approximately 150 feet northwest of the ice fender and dam (situated along the southern bank of the Mohawk River in the Town of Colonie) was formerly utilized by Niagara Mohawk for fire training activities. The location of the former fire training area is shown on Figure 2. Access to the former fire training area is limited by a chain-link fence that runs parallel to Crescent Road and locked gates that block the access road to the north and south of the former fire training area.

The activities conducted at the former fire training area resulted in impacts to soil in the upland area and adjacent sediment along the shoreline. The impacted soil in and around the former fire training area was addressed by an interim remedial measure (IRM) implemented in 2000. The impacted sediment along the shoreline was partially addressed by the IRM and will be further addressed by the proposed remedial activities described in this document.

1.3.2 Site History

Fire training activities were conducted at the site during the summer/fall from approximately 1968 to 1980. The fire training activities consisted of igniting oil (including transformer oil)

that was piped to or poured over training props, then extinguishing the fires using a combination of dry chemical fire extinguishers and water pumped from the river. The training props, an oil storage tank, and piping were removed after the fire training activities at the site were discontinued. The approximate layout of the former fire training area is shown on Figure 3.

Several environmental investigations have been performed at the site, beginning with a two-phase environmental site assessment (ESA) in 1998 in preparation for the anticipated divestiture of the hydroelectric station. A Preliminary Site Assessment was performed in 1999 to further evaluate conditions identified by the ESA. Based on the PSA results, the former fire training area was listed in the New York State Registry of Inactive Hazardous Waste Disposal Sites (Site No. 401044), and Niagara Mohawk entered into the Consent Order with the NYSDEC, which required development and implementation of a remedial program for the site. A Remedial Investigation (RI) was implemented in 2000 and 2001. Combined, these investigations resulted in the collection and analysis of nearly 180 soil, groundwater, and sediment samples. Work activities performed and results obtained for the environmental investigations are presented in the *Remedial Investigation Report* (ARCADIS BBL, 2001a). Results obtained for the sediment investigations, which are relevant to this work plan, are summarized in Subsection 1.4.

Based on the RI results, an IRM was performed in 2002 to remove soil at and in the vicinity of the former fire training area that contained PCBs at concentrations exceeding the soil cleanup objectives presented in the NYSDEC Technical and Administrative Guidance Memorandum titled, Determination of Soil Cleanup Objectives and Cleanup Levels," HWR-94-4046, dated January 24, 1994. The IRM also addressed soil that was visibly oil-stained, soil that contained semi-volatile organic compounds (SVOCs) at concentrations exceeding NYSDEC-recommended soil cleanup objectives, and nearshore sediment in a small area of the Mohawk River east of the former fire training area that contained low concentrations of PCBs. Approximately 3,925 CY of impacted soil in the vicinity of the former fire training area and approximately 25 CY of impacted sediment along the riverbank east of the former fire training area were removed and transported for proper offsite disposal. Additional sediment sampling was performed in support of the IRM, as discussed below in Subsection 1.4.

Based on the completion of the IRM, no further investigation or remedial activities are needed in the former fire training area.

1.3.3 Topography and Drainage

The former fire training area slopes moderately to the top of the riverbank. The slope of the riverbank is steep (>45º) in places. At its maximum elevation, the top of the riverbank is approximately 20 feet above the water level of the Mohawk River, which is maintained by the upstream New York Power Authority (NYPA) Crescent Hydroelectric Station and the adjacent School Street Hydroelectric Station, to the extent possible, at a target elevation of approximately 155 to 156 feet above mean sea level.

The Mohawk River and the power canal are the primary surface-water features in the vicinity of the former fire training area. Storm water runoff in the vicinity of the former fire training area drains via overland flow to the Mohawk River. A portion of the flow in the Mohawk River is diverted through the power canal by the dam.

1.3.4 Surface Water Quality

The power canal and portion of the Mohawk River adjacent to the former fire training area are designated as Class A water bodies. The NYSDEC defines Class A surface water as a source of water for drinking, primary and secondary contact recreation, and fishing. Class A surface waters are suitable for fish propagation and survival.

As previously mentioned, the intakes for the City of Cohoes public drinking water supply are located at the downstream end of the power canal. Previous monthly and semi-annual water surface water monitoring conducted by the City of Cohoes and quarterly water surface water monitoring conducted by Niagara Mohawk indicate that PCBs have not been detected in the source of drinking water to the City of Cohoes Water Treatment Plant. Results for water monitoring conducted by the City of Cohoes are summarized in a November 8, 2001 letter from Niagara Mohawk to the NYSDEC, which describes the approach for quarterly monitoring activities. Results for quarterly water monitoring conducted by Niagara Mohawk are summarized in letters to the NYSDEC dated May 28, 2002; September 12, 2002; November 7, 2002; January 13, 2003; and July 25, 2003.

1.4 Previous Sediment Investigations

PSA sediment investigation activities were conducted to evaluate the potential presence and extent of PCBs in sediment within the Mohawk River adjacent to the former fire training area. RI sediment investigation activities were conducted to further delineate the extent of PCBs in the Mohawk River adjacent to the former fire training area, and to evaluate the potential presence and extent of PCBs in sediment within the power canal. Additional

sediment investigation activities were performed during the IRM to delineate the extent of visibly oil-stained material encountered when impacted soil was excavated along the base of the riverbank east of the former fire training area.

The sediment investigation activities are summarized below, followed by a discussion of the results.

1.4.1 Sediment Investigation Activities

The PSA and RI sediment investigation activities included:

- Probing to determine the depth of accumulated sediment in the section of the Mohawk River adjacent to the former fire training area and within the power canal.

- Collecting surface sediment and sediment core samples from the Mohawk River and power canal for visual characterization and laboratory analysis.

Sediment probing was conducted at twelve transects in the Mohawk River and the power canal (Transects T1 through T12, as shown on Figures 4A and 4B). The thickness of sediment and the depth of the water column over the sediment (where applicable) were measured at each probing location.

Surface sediment and sediment core samples were collected from 19 locations (locations SD-1 through SD-18 and SD-24, as shown on Figures 4A and 4B). Each sediment sample was visually characterized for color, texture, and staining. In addition, each surface sediment sample (19 samples total) and sediment core sample (48 samples total) were submitted for laboratory analysis for PCBs using United States Environmental Protection Agency (USEPA) SW-846 Method 8082. Selected surface sediment and sediment core samples were submitted for laboratory analysis for total organic carbon (TOC) using the Lloyd Kahn method.

Surface sediment samples collected from two locations during December 2000 to further characterize an apparent sheen seeping from the west bank of the power canal (locations SD-18 and SD-24) were also analyzed for volatile organic compounds (VOCs), SVOCs, TOC, and total petroleum hydrocarbons (TPH). The results of the December 2000 sediment investigation activities were summarized in a January 10, 2001 letter from Niagara Mohawk to the NYSDEC. Based on the investigation results, the sheen appeared to be associated with a petroleum discharge not related to past or present operations at the site. This area will be further evaluated and addressed, as needed, during upcoming power canal

construction activities by Brookfield Power, which are unrelated to the remedial activities described herein.

As part of the effort to delineate the extent of oil-stained material encountered at the base of the riverbank during the IRM soil excavation, a series of nearshore sediment samples were collected approximately 3 feet and 8 feet east of the shoreline (at locations SD-101 through SD-108, as shown on Figure 4A. Visibly oil-stained soil was not encountered at any of these sediment sampling locations. One sediment sample obtained from the 0.5-foot depth interval just above refusal at each sampling location was analyzed for PCBs and TOC.

An analytical sample summary, which identifies the analyses performed on each PSA, RI, and IRM sediment sample, is included as Table 1.

1.4.2 Sediment Investigation Results

The thickness of sediment and the depth of the water column over the sediment at each sediment probing location are presented in Table 2. Visual characterization of the recovered sediment samples (presented in Table 3) indicates that sediment in the Mohawk River and the power canal generally consists of a grayish-brown colored sand, intermixed with zebra muscle shells near the surface.

Analytical results obtained from the laboratory analysis of the PSA, RI, and IRM sediment samples for PCBs and TOC are presented in Table 4. Analytical results for the sediment samples collected from the Mohawk River east of the former fire training area are shown on Figure 4A, while the analytical results for the sediment samples collected from the power canal are shown on Figure 4B. The analytical results are also summarized below.

- PCBs were identified in nearshore sediment east of the former fire training area.
- PCBs were also identified in upstream sediment and in power canal sediment at background levels.
- The PCB concentrations diminish quickly with distance away from the shoreline and downstream from fire training area, and in general, the concentrations also diminish quickly with depth.

PCB-containing sediment within an approximately 120-foot section of the shoreline was removed via the IRM completed in 2002. The eastern edge of the excavation extended just beyond sediment sampling locations SD-101 through SD-103 (a distance of approximately

4 feet from the shoreline). The horizontal limits of the IRM sediment removal activities are shown on Figure 5.

1.5 Remedial Objectives

The objective of the proposed remedial activities described in this work plan is to remove certain PCB-containing sediment located in the nearshore area of the Mohawk River east of the former fire training area (within an area approximately 200 feet long parallel to the shoreline and extending 15 feet from the shoreline) for proper offsite transportation and disposal. The proposed remedial activities will further mitigate the potential for human and wildlife exposures to PCB-impacted sediment in the Mohawk River adjacent to the former fire training area.

2. Description of Remedial Activities

2.1 General

This section describes the proposed remedial activities, which will involve the removal of approximately 100 CY of sediment in the nearshore area via mechanical dredging. The proposed sediment removal limits, shown on Figure 6, were determined based on the results of the previous sediment investigation activities and discussions with the NYSDEC. The average PCB concentration in the nearshore sediment to be removed as part of the proposed remedial activities described in this work plan is 2.6 ppm (with a range of 0.32 ppm to 7.3 ppm). For comparison purposes, the average PCB concentration in the nearshore sediment removed as part of the IRM was 4.7 ppm (with a range of <0.04 ppm to 14 ppm). The average PCB concentration to remain in the nearshore sediment following the proposed remedial activities is 0.022 ppm (with a range of an estimated 0.013 ppm to 0.45 ppm). The averages reported above are arithmetic averages of the PCB data points within the identified areas. The removal limits will be refined, as needed, based on the results of pre-excavation verification sediment sampling to be performed as discussed in Subsection 2.2.

Sediment dredging activities will be conducted in accordance with the provisions of the United States Army Corps of Engineers (USACE) Nationwide Permit 38 (NWP38). In accordance with NWP38, a pre-construction notification letter will be prepared and submitted to inform the USACE of the planned dredging activities.

Brookfield and National Grid propose to implement the sediment dredging activities described in this work plan in October 2007. This timeframe is proposed because:

- Weather conditions in later months are generally not as favorable for the proposed work activities within and around water. The lower typical flow conditions in October (compared to later months of the year) will facilitate a coordinated water level drawdown in the impoundment east of the former fire training area (by Brookfield and NYPA), which will reduce the height of the water column through which the targeted sediment will be removed.

- Sediment within the power canal downstream from the proposed sediment removal area will be completely removed in 2008 as part of construction activities (unrelated to the remedial activities described in this document) associated with improvements to the hydroelectric project required by the Federal Energy Regulatory Commission (FERC) license. It is desirable to remove the targeted nearshore sediment adjacent to the

former fire training area (upstream from the power canal) before the power canal construction activities begin. The ability to lower the water level in the nearshore area is eliminated when flow through the power canal is completely shut off for the construction activities.

- Based upon historical accounts, the 50 or so fish species that might inhabit the Mohawk River in the vicinity of the site are not likely to spawn in the proposed sediment removal area in the proposed October remediation timeframe. Most fish species in this area are likely to spawn during late spring to early summer. The few fish species that have extended spawning periods, and that may use the area for spawning up to the fall, are common (carp, golden shiner, emerald shiner, etc.) and are not likely to be impacted by the sediment removal activities due to the small footprint, short duration of work activities, and because the type of habitat within the removal area is common outside the removal area throughout this portion of the Mohawk River.

The anticipated schedule for implementing the remedial activities is presented in Section 5.

For the purposes of this work plan, work to be performed in connection with the remedial activities has been organized under the following tasks:

- Task 1 – Pre-Construction Activities.
- Task 2 – Mobilization/Site Preparation.
- Task 3 – Erosion and Sedimentation Control.
- Task 4 – Sediment Removal.
- Task 5 – Surface Water Monitoring.
- Task 6 – Air Monitoring.
- Task 7 – Material Handling.
- Task 8 – Equipment Decontamination.
- Task 9 – Site Restoration.
- Task 10 – Remedial Action Summary Report.

A detailed description of the work to be performed as part of the remedial activities is presented below.

2.2 Task 1 – Pre-Construction Activities

Various pre-construction activities were conducted prior to NYSDEC review of this document so that the proposed sediment dredging can be performed during October 2007. The pre-construction activities are described in a letter to the NYSDEC dated August 7, 2007 (see Appendix B) and include the following:

- Performing pre-removal survey activities to provide survey/control data needed for the remedial activities.

- Implementing sediment probing and sampling to verify previous sediment conditions as required by the NYSDEC under Section 8 of the ROD.

- Collecting in-situ waste characterization samples to evaluate disposal requirements for sediment to be removed during the remedial activities.

The verification sediment samples were submitted for laboratory analysis for PCBs. The in-situ waste characterization samples were submitted for laboratory analysis for PCBs, Toxicity Characteristic Leaching Procedure (TCLP) VOCs, TCLP SVOCs, TCLP metals, ignitability, corrosivity, and reactivity. Laboratory analysis is being performed on an expedited turnaround. The laboratory analytical results (including validated results for the verification sediment samples) will be provided to the NYSDEC prior to mobilization and will be presented in the Remedial Action Summary Report (as discussed in Subsection 2.11).

2.3 Task 2 – Mobilization/Site Preparation

Site preparation activities to be conducted by the Contractor, following mobilization and prior to implementing the proposed sediment removal activities include the following:

- Identifying and marking (staking, flagging, etc., as appropriate) the locations of aboveground and underground utilities near the proposed work areas.

- Performing clearing and grubbing activities, as necessary, within the upland area adjacent to the sediment dredging area.

- Constructing a lined material staging area (dewatering pad) for gravity dewatering and stabilization of the dredged sediment, as described below.

- Removing floating debris (tree branches, leaves, etc.) from along the ice fender, as necessary, to facilitate turbidity barrier installation and sediment removal.

- Installing turbidity barriers to section off the dredging area from the remainder of the Mohawk River, as described below.

The proposed material staging area will be constructed in the upland area at a location (such as that shown on Figure 6) central to the proposed sediment removal activities. The final size and configuration of the material staging area will be determined by the Contractor, but is anticipated to be approximately 80-feet long by 50-feet wide to accommodate the volume of sediment to be removed. The staging area will be constructed using a 4-inch thick granular fill base layer placed over existing soil, a 40-mil high-density polyethylene (HDPE) liner (overlapping sheets) placed over the base layer, and a sacrificial 4-inch thick stone layer placed over the liner. The HDPE liner will extend over approximately 24-inch-high bermed sidewalls formed using imported clean fill. The material staging area will slope toward a lined collection sump that will collect water that drains from the sediment. Typical construction details for a temporary sediment staging/dewatering area are shown on Figure 7.

Turbidity barriers will be installed to section off the proposed sediment removal area from the remainder of the river and address potential sediment migration during removal. The Contractor will use a low permeability fabric (polyvinyl chloride [PVC] coated polyester or similar) that will allow passage of water while retaining sediment. Two turbidity barriers will be installed, including one approximately 10 feet outside the proposed sediment removal limits, and a second approximately 5 feet outside the first, at the approximate locations shown on Figure 6.

The turbidity barriers will be manufactured in 50- or 100-foot sections that will be assembled onsite to provide the desired length. The barriers will be installed in a manner to accommodate potential waves (boat- and wind-induced) and water level fluctuations (potentially up to 4 feet from the proposed coordinated water level drawdown). The barriers will be maintained in vertical position by flotation material at the top and a ballast chain along the bottom. Anchored lines or steel posts placed at routine intervals (e.g., 25 feet) will be used to hold the turbidity barriers in the proposed configuration. The turbidity barriers to be provided by the Contractor will meet or exceed the material specifications presented in the table below.

Property	Test Method	Minimum Requirement
Material Weight	ASTM D-3776	18 ounces per square yard
Grab Tensile	ASTM D-5034	375 x 375 pounds per inch
Tongue Tear	ASTM D-2261	100 x 100 pounds
Adhesion	ASTM D-751	15 pounds
Note: ASTM = American Society for Testing and Materials		

The turbidity barriers will be furnished with the following features:

- Heat-sealed seams.
- Aluminum stress plates at the top and bottom corners.
- Galvanized steel safety snap top connection.
- A 5/16-inch diameter vinyl-coated galvanized steel top load cable with a minimum 9,800 pound break strength.
- #4 spur grommets every 12-inches on-center on the edge of the curtain for connections.
- Grommets every 5 feet along the bottom edge for anchoring.
- A ballast chain weight at the bottom, suitable for flow conditions, to maintain the turbidity barrier in vertical position.
- Expanded polystyrene (EPS) foam blocks capable of providing the needed buoyancy for the selected turbidity barrier.

Typical construction details for the turbidity barriers are included on Figure 7. The turbidity barriers will be installed so that the bottom of the barrier (the lower skirt) is no more than approximately 1 foot above the river bottom during sediment removal (i.e., close to the river bottom, but not in direct contact with the sediment, if possible).

2.4 Task 3 – Erosion and Sedimentation Control

The Contractor will install erosion and sedimentation control measures in upland areas (along the riverbank bank) in accordance with the New York Guidelines for Urban Erosion and Sediment Control (Empire State Chapter of the Soil and Water Conservation Society,

latest edition). The proposed erosion and sedimentation control measures are intended to achieve the following objectives:

- Reduce stormwater runoff flow velocity.
- Promote sedimentation.

Erosion and sedimentation control measures to be installed as part of the proposed work include, but are not limited to, silt fencing or hay bales along the top of the riverbank to minimize the potential migration of soil disturbed by machinery (e.g., crane or excavator) used to conduct dredging operations from on-land. These measures will be installed before dredging operations begin. Proposed locations for erosion and sedimentation control measures are included on Figure 6. Typical construction details for the erosion and sedimentation control measures are included on Figure 7.

Throughout the project, accumulated sediment collected by the control measures will be removed and/or the control measures will be repaired or replaced by the Contractor, as necessary, to maintain performance as intended. The silt/debris removal will be accomplished using hand shovels and/or excavator bucket. The material will be temporarily stockpiled onsite and covered for later use as fill during site restoration (to be placed, graded, and seeded to restore vegetation, as needed, in upland areas disturbed by the work activities).

Erosion and sedimentation control measures will be routinely observed by the ARCADIS BBL onsite representative and any actions taken based on the observations will be documented in the project field notebook.

2.5 Task 4 – Sediment Removal

Sediment located in the nearshore area (within an area approximately 200-feet long by 15-feet wide) will be removed via mechanical dredging. The proposed sediment removal area, shown on Figure 6, will extend along the shoreline from just north of previous sediment sampling location SD-3 to just south of previous sediment sampling location SD-6. The removal area extends outward from the shoreline a distance of approximately 15 feet, which is 4 feet past the previous PSA sampling locations. Sediment near sampling location SD-5 will be removed to a depth of 1.5 feet. Sediment in the remaining area will be removed to a depth of 1 foot or bedrock, whichever is encountered first. Depending on the results of the pre-construction sediment probing and verification sampling work, the sediment removal may be extended to bedrock throughout the entire dredging area.

ARCADIS BBL evaluated hydraulic dredging and determined that the significant hydraulic management approach that would be needed is not be warranted given the small magnitude of the project. In addition, it is not clear that hydraulic dredging would be better relative to re-suspension than mechanical dredging. Either a crane equipped with a sealed clamshell or an excavator will be used to remove the submerged nearshore sediment. The crane or excavator will be operated from the shoreline, and sediment removal will be performed proceeding from north to south (upstream to downstream). If a crane is used, sediment removed by the crane will be transferred directly from the dredging area to the material staging area for gravity dewatering and stabilization as needed. A polyethylene liner will be placed beneath the swing area of the crane to serve as a barrier for liquids that may drip from the bucket when sediment is transferred to the material staging area. If an excavator is used to remove the sediment, a second excavator or loader may be used (as appropriate) to transfer the dredged sediment to the material staging area.

Actual sediment removal (following site preparation activities) is anticipated to take two to three days to complete. In response to requests from the NYSDEC, Brookfield will coordinate with NYPA for a daily drawdown of the water level in the impoundment east of the former fire training area (to the extent practical for conditions) for the duration of the sediment removal. The drawdown will be performed to reduce the height of the water column through which the targeted sediment will be removed. The maximum anticipated drawdown would be approximately 2- to 4-feet below the crest of the dam (assuming low flow conditions in the Mohawk River and dry weather prior to the removal).

In response to a request made by Brookfield, the City of Cohoes has agreed to temporarily stop withdrawing water from the power canal during the dredging activities (the water supply intakes at the downstream end of the power canal will be closed while dredging is ongoing). The City indicated that the intakes can be kept closed for a period of up to three days, provided there is no unexpected water supply demand (e.g., fire fighting). If the City must begin withdrawing water sooner than expected or if dredging requires longer than anticipated, Brookfield will interrupt dredging activities so that the City can replenish their water supply reservoir.

Following dredging, surveying will be performed to verify that sediment has been removed to the target depths. The control points established during the pre-construction activities will be revisited. Final survey elevations (pre-backfill) will be compared to the pre-construction elevations and the pre-construction sediment probing results.

2.6 Task 5 – Surface Water Monitoring

During active dredging, surface water monitoring for turbidity will be performed to confirm the effectiveness of the turbidity barriers. Hourly turbidity measurements will be obtained approximately 100 feet upstream and approximately 100 feet downstream from the removal area using a turbidity meter. Measurements will be obtained at the water surface and mid-way through the water column at multiple locations. Dredging activities will be modified (e.g., slowed or halted) or additional measures will be implemented (e.g., placement of additional turbidity barrier) if the downstream instrument turbidity measurements are generally higher than the upstream measurements, considering natural variability in the river.

Two water column samples will be collected for PCB analysis daily (for documentation purposes) when sediment removal is performed, including one sample from a background location (approximately 100 feet upstream from the sediment removal area) and one sample from a location downstream from the sediment removal area (from the bridge across the power canal, mid-way toward the generating station). Each sample will be a composite formed using water drawn from the mid-height of the water column at multiple locations. Quality assurance/quality control (QA/QC) water samples, including blind duplicate, matrix spike, matrix spike duplicate samples, will also be collected in connection with the sampling. The water column samples will be submitted to Adirondack Environmental Services, Inc. (Adirondack) of Albany, New York for laboratory analysis for:

- PCBs using USEPA Method 608.

- Total suspended solids (TSS) using USEPA Method 160.2.

The water column samples will be analyzed on a 24-hour turnaround for reporting of preliminary results. The preliminary analytical results will be verbally reported to the NYSDEC and/or provided to the NYSDEC in e-mail correspondence. Dredging will be halted if PCBs are detected at concentrations greater than the laboratory detection limits (around 0.05 parts per billion [ppb]) in the water column sample from the downstream location (unless PCBs are detected at similar levels in the background sample from the upstream location). Dredging would resume after adjustments are made (slower dredging rate used, additional turbidity barriers put in place, etc.).

Final analytical results will be reported using NYSDEC 2005 Analytical Services Protocol (ASP) Category B data deliverables to allow for data validation. The final laboratory analytical data reports are anticipated to be available approximately 2 to 4 weeks following

sampling. The results will be validated and included in the Remedial Action Summary Report (as discussed in Subsection 2.11).

2.7 Task 6 – Air Monitoring

Airborne monitoring for particulate (dust) will be conducted during the remedial activities which have the potential to generate dust (e.g., material staging area construction, sediment load-out for offsite disposal, onsite truck travel) in accordance with the New York State Department of Health's (NYSDOH's) Community Air Monitoring Program, dated June 2000. Monitoring will be performed continuously at the upwind and downwind perimeters of the work area at temporary particulate monitoring stations, except during periods of precipitation or wet conditions. The airborne particulate monitoring will be conducted using a DustTrack aerosol monitor capable of measuring particulate matter less than 10 micrometers in size and capable of integrating over a period of 15 minutes for comparison to the airborne particulate action level. The monitoring equipment will be equipped with an alarm to indicate exceedance of the action level. The equipment will be calibrated at least once daily, prior to the start of work activities. The results of airborne particulate monitoring will be continuously recorded by the instrument datalogger and recorded by the onsite health and safety supervisor (or designated alternate) at a minimum frequency of once per hour.

If particulate monitoring indicates that the downwind particulate level is 100 micrograms per cubic meter ($\mu g/m^3$) above background for the 15-minute period or if excessive visible dust is observed leaving the work area, then work activities will cease and dust suppression techniques will be employed. Potential dust generating work activities may continue provided that dust levels at the downwind work area perimeter do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no excessive visible dust is observed leaving the work area.

Dust control measures will be provided to mitigate dust generation during the project (as necessary) and may include one or more of the following techniques presented in the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4031, entitled, "Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites," dated October 27, 1989:

- Applying water on haul roads.
- Limiting travel speed over the haul roads.

- Wetting equipment.
- Covering materials.

2.8 Task 7 – Material Handling

Dredged sediment will be dewatered via gravity drainage (and stabilized, as needed, via addition of lime, flyash, or sacrificial soil to meet landfill acceptability requirements) in the material staging area prior to offsite transportation and disposal. Sediment stockpiled in the material staging area will be covered with a low permeability liner (at the end of each workday or when precipitation is anticipated) to minimize contact with precipitation and potential migration/siltation of sediment beyond the staging area. The low permeability liner will be secured to resist potential wind forces.

The dewatered/stabilized sediment and the sacrificial stone material and liners used to construct the material staging area will be transported for offsite disposal in accordance with applicable rules and regulations based on the results of in-situ waste characterization sampling to be performed as a pre-construction activity. All waste containers used to transport impacted materials from the site will be lined with at least one layer of polyethylene sheeting. In addition, all waste containers will be covered with a tarp prior to departing the site.

Liquids (water) that accumulate within the material staging area lined collection sump will be pumped to a temporary onsite storage tank. A sample will be collected to characterize the liquids for offsite treatment/disposal. The sample will be submitted for laboratory analysis for PCBs, VOCs, SVOCs, and inorganic constituents using the methods identified in the table below.

Parameter	Analytical Method
PCBs	USEPA SW-846 Method 8082
VOCs	USEPA SW-846 Method 8260
SVOCs	USEPA SW-846 Method 8270
Inorganics	USEPA SW-846 Method 6010/7470/9010

The liquids will be transported for offsite treatment in accordance with applicable rules and regulations based on the characterization sampling results.

2.9 Task 8 – Equipment Decontamination

Project equipment, including the clamshell or excavator bucket that comes into contact with impacted sediments will be decontaminated prior to handling clean fill material and prior to being demobilized from the site. Decontamination activities will be conducted over the material staging area and/or waste transport container, and will continue until no visible debris are present on the equipment surfaces (as determined by the ARCADIS BBL onsite representative). Solids generated by the equipment decontamination activities will be transported for offsite disposal with the dredged sediments. Washwaters and other liquids (if any) generated by the equipment decontamination activities will be containerized for offsite disposal with the liquids collected in the material staging area lined collection sump.

2.10 Task 9 – Site Restoration

Site restoration activities will begin after surveying has confirmed that sediment has been removed to the target depths. The sediment dredging area will be restored by placing an imported washed sand backfill material to provide habitat for benthic invertebrate colonization. The sand backfill will be placed to the approximate pre-dredging grades. The turbidity barriers will be kept in-place during the backfill activities.

The proposed washed sand material will have a gradation by weight as presented in the table below.

Sieve Size	Percent Passing
3/8-inch	100 %
No. 4	95 – 100
No. 8	80 – 100
No. 16	50 – 85
No. 30	25 – 60
No. 50	10 – 30
No. 100	2 – 10

Before the sand backfill is brought onsite, samples will be collected from the backfill source to verify that the proposed sand does not exhibit constituents at concentrations exceeding the Class A Sediment Threshold Values presented in the NYSDEC Division of Water Technical & Operational Guidance Series document titled “In-Water and Riparian Management of Sediment and Dredged Material” (TOGS 5.1.9), dated November 2004.

One composite sample will be formed from approximately 4 to 6 discrete grab sub-samples collected from the fill source. The composite sample will be submitted for laboratory analysis for PCBs, pesticides, polycyclic aromatic hydrocarbons (PAHs), and selected metals (arsenic, cadmium, copper, lead, and mercury) using the methods identified in the table below.

Analytical Parameters	Analytical Method
PCBs	USEPA SW-846 Method 8082
Pesticides	USEPA SW-846 Method 8081
PAHs	USEPA SW-846 Method 8270
Metals	USEPA SW-846 Method 6010/7471

In addition, a portion of each discrete sample will be placed in a sample jar and will undergo headspace screening using a photoionization detector (PID). The sub-sample exhibiting the highest PID screening result will be submitted for laboratory analysis for benzene, toluene, ethylbenzene, and xylenes (BTEX compounds) using USEPA SW-846 Method 8260. Alternate sources of backfill will be identified if sample results exceed the TOGS 5.1.9 Class A Sediment Threshold Values.

After the sand backfill has been placed in the sediment dredge area, the turbidity barriers will be removed and the disturbed portion of the upland area will be restored. The remaining portions of the material staging area (i.e., the granular fill base layer) will be removed or re-graded in the fire training area. Topsoil will be placed and graded in the upland area, as needed. Before topsoil is brought onsite, samples will be collected and analyzed consistent with the approach for the proposed sand backfill to be used to in the nearshore area. Grass seed, fertilizer, and mulch will be broadcast over the topsoil to promote vegetation growth. Erosion and sedimentation control measures will be kept in-place until vegetation is restored in the area.

2.11 Task 10 – Remedial Action Summary Report

Following completion of the remedial activities, a remedial action summary report will be submitted to the NYSDEC to document that the work has been completed in general accordance with this work plan. The report will include the following:

- A discussion of relevant background information and the remedial objectives.

- A detailed description of the work performed to complete the remedial activities, including a summary of any changes in the scope of remedial activities based on field conditions encountered.

- Data tables presenting validated laboratory analytical results for the pre-construction verification sediment samples, daily water column samples, and backfill samples (and unvalidated results for the waste characterization samples). Data validation will be performed by ARCADIS BBL in accordance with the USEPA National Functional Guidelines dated October 1999.

- Record drawings showing final sediment removal limits and validated PCB analytical results for sediment samples collected at and outside the excavation limits.

- Copies of daily field reports and manifests/certificates of disposal for wastes generated by the remedial activities.

- A CD containing copies of data validation reports and the full laboratory analytical data reports.

- A certification by a licensed professional engineer that the remedial activities were completed in accordance with the Remedial Design, Field Modifications (if any, as documented in correspondence with the NYSDEC), and the Consent Order.

2.12 Site Management Plan & Environmental Easement

Upon completion of the remedial activities described in this work plan and NYSDEC approval of the Remedial Action Summary Report, a Site Management Plan (SMP) will be prepared to address residual impacted soils that may be excavated from the former fire training area during future site maintenance or development. In addition, an institutional control (in the form of an environmental easement) will be prepared to require compliance with the SMP, limit the use and development of the former fire training area for commercial/industrial purposes only, and require an annual certification related to the institutional controls, site condition, and site use.

3. Emergency Preparedness and Contingency Measures

3.1 General

The Contractor will prepare an Emergency Preparedness and Contingency Plan in accordance with the minimum requirements set forth below. In general, the plan will present measures to prevent spills from occurring and to properly respond to spills/spill-related emergencies, should they occur. Specifically, the Emergency Preparedness and Contingency Plan will contain the following minimum components.

- Spill Prevention Plan.
- Spill Response Plan.
- Coordination Plan.
- Evacuation/Emergency Access Plan.

The plan will also contain a listing of emergency contact personnel and phone numbers.

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, 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 entering the site. Each piece of heavy equipment used at the site will be equipped with a spill kit, consisting of sorbents and absorbent booms. In addition, each piece of heavy equipment at the site will be equipped with a fire extinguisher.

The Contractor will take the following precautions to minimize potential spills of fuel during the remedial activities.

- Refueling activities will be conducted on level ground within a designated area away from the steep slope of the riverbank.
- No smoking will be permitted within 50 feet of the refueling area.

- No internal combustion engine fuel tank will be refilled with a flammable liquid while the engine is running.

- Fuel caps will be replaced before starting the engine.

- Fuel pump dispensers will be secured (i.e., locked) when not in use to avoid accidental fuel release.

- Visual inspections of equipment/portable fuel tanks will be conducted to check for leaks. If leaks are observed, the Contractor will transfer the tank contents to an alternate tank and the leaking tank will be replaced or repaired, as appropriate.

- Equipment will be maintained in accordance with the manufacturer's specifications.

- Vehicles and equipment will be operated/parked a safe distance away from the edge of the riverbank.

3.3 Spill Response Plan

Spill response procedures have been developed for responding to unplanned release of oil, products, materials, hazardous waste, etc. to soil, surface water, or sediment during the remedial activities. All spills will be immediately reported to the Contractor's project manager, who in turn, will inform the ARCADIS BBL onsite observer and Brookfield's and National Grid's Project Managers (whose names and phone numbers will be included in the emergency contact personnel and phone number list). In addition, reportable spills will called in to the NYSDEC spills hotline upon discovery. The Contractor's project manager will be responsible for implementing the following spill response procedures:

1. 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.

2. 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 ditch, dam, or other containment unit will be constructed to stop the flow of the spilled material. Absorbent material will be applied as necessary.

3. 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 of the spill is observed on the water surface). Spills on land shall 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; using rags and cleaning solution to remove excess spilled material from equipment; and collecting verification samples to confirm that the impacted soil/sediment has been removed.

4. 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 contained in 49 CFR Part 172. Samples will be collected to characterize the spilled materials for disposal.

5. Disposing of Spill Materials: Impacted materials and spill cleanup debris will be disposed of at a facility permitted to accept the materials. The Contractor shall be responsible for coordination with the disposal activities.

6. Performing Post-Spill Maintenance: Following cleanup of the spill, the Contractor's project manager will ensure that all used spill cleanup material and equipment has been disposed of or decontaminated, as appropriate. If the equipment that caused the spill cannot be properly repaired, replacement equipment shall be obtained.

3.4 Coordination Plan

The Contractor's project manager will be responsible for coordinating and directing emergency response measures and should be thoroughly familiar with the remedial activities, the location and characteristics of all materials handled at the site, the general layout of the area, and all aspects of this RD. In the event of a spill and/or emergency, the project manager will complete the following activities.

- Inform site personnel of the potential hazards and required levels of personal protective equipment to conduct the cleanup.

- Notify appropriate emergency/spill response personnel.

- Notify appropriate Brookfield, National Grid, and ARCADIS BBL personnel (to be included on the emergency contact personnel and phone number list).

- Notify appropriate site security personnel of the nature of the emergency and the emergency response vehicles (i.e., fire trucks, ambulances, police cars, etc.) that will require access to the site.

- Notify spill/emergency personnel of site hazards prior to entering the exclusion zone.

The Contractor's project manager shall also record the following information pertaining to the spill:

- Name of the person who identified the spill incident.

- Date, time, and location of the spill incident.

- A brief description of the spill incident.

- The estimated quantity of material spilled.

- The extent of impacts to soil, sediment, water, etc., from the spill.

A copy of the above-identified information will be provided to the ARCADIS BBL onsite observer within 24-hours of the spill occurrence. In the event that there is an immediate threat to human health and the environment (based on observations of the spill incident and/or air monitoring results), the Contractor's project manager shall notify the appropriate authorities identified in the Health and Safety Plan (i.e., local police, fire departments, hospitals, and state and local emergency response teams). The project manager will evacuate personnel from the site as described in accordance with the Evacuation/Emergency Access Plan as discussed below.

3.5 Evacuation/Emergency Access Plan

The Contractor's project manager will inform onsite personnel of a required evacuation using appropriate methods. Onsite personnel shall evacuate the site via the main access road extending south from the former fire training area and will gather at the southern-most gate along the access road. Attendance will be taken to verify that all onsite personnel are present (based on the sign-in/sign-out sheet). In the event of an injury to onsite Contractor personnel, emergency procedures outlined in the Contractor's Health and Safety Plan should be followed. Emergency vehicles entering the site will enter through the gate along the main access road off of North Mohawk Street.

3.6 Contact Personnel

The Contractor will prepare a table listing contact names and phone numbers for Brookfield personnel, National Grid personnel, ARCADIS BBL personnel, and Contractor personnel. An emergency contact list for agency personnel, Brookfield/National Grid/ARCADIS BBL personnel, local hospital, local ambulance service, local fire department, and the police department is provided in the HASP.

4. Citizen Participation

Citizen participation activities will be performed in support of the planned nearshore sediment removal activities area in accordance with the following:

- The NYSDEC document titled Citizen Participation in New York's Hazardous Waste Site Remediation Program (NYSDEC, 1998).

- Title 6 of the Official Compilation of New York Codes, Rules and Regulations, Part 375 (6 NYCRR Parts 375-1.10 and 375-2.10).

- The Consent Order between National Grid and the NYSDEC.

Based on review of the information in these sources and considering the minimal public interest in the project to date (e.g., the limited response to the three previous community fact sheet mailings and the small attendance/limited comments raised at the public meeting that was held on May 2, 2007 to present and receive comments on the Proposed Remedial Action Plan), the following citizen participation activities are proposed for the remedial design/remedial action:

- A new community fact sheet will be prepared to announce the start of the nearshore sediment removal activities, describe the major work activities and schedule, and identify ways to obtain additional information. Following NYSDEC review and approval, the fact sheet will be mailed in accordance with the project mailing list.

- A copy of this Remedial Design and the proposed Remedial Action Summary Report will be provided to the Cohoes Public Library, after each document is approved by the NYSDEC.

Additional citizen participation activities will be performed as needed based on calls, letters, or e-mail correspondence received by National Grid, Brookfield Power, or the NYSDEC from interested individuals or organizations during the remedial activities.

5. Schedule

As discussed in Section 2, the proposed remedial activities described in this work plan (excluding the pre-construction activities to be performed in August 2007) are currently scheduled to begin in October 2007. In support of efforts to complete the proposed nearshore sediment removal activities in October, final work plan approval is needed in early September 2007. Brookfield Power and National Grid are committed to working diligently with the NYSDEC to meet this timeframe.

In accordance with National Grid's letter to the NYSDEC dated August 7, 2007, various pre-construction activities will be performed concurrently with NYSDEC review of this work plan. Contractor mobilization and site preparation activities are anticipated to begin on October 1, 2007. Actual sediment removal activities are anticipated to take 2 to 3 days to complete. However, the overall remedial activities may take up to approximately 4 to 6 weeks to complete, as outlined below:

Work Activity	Estimated Time to Complete Work Activity
Mobilization/Site Preparation	1-2 weeks
Sediment Removal	2-3 days
Post-Removal Surveying/Backfilling	1 week
Sediment Dewatering/Stabilization/Load-Out	1-2 weeks
Final Site Restoration	1 week

The Remedial Action Summary Report is scheduled to be submitted to the NYSDEC in early 2008.

The schedule for completion of the remedial activities could be impacted by NYSDEC review timeframes, weather conditions, and unexpected field conditions. National Grid will notify the NYSDEC regarding delays that impact the schedule for completing the remedial activities.

6. References

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Tables

TABLE 1
SEDIMENT ANALYTICAL SAMPLE SUMMARY

REMEDIAL DESIGN
BROOKFIELD POWER, INC.
(FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Sample ID	Sample Interval	Date Sampled	SDG#	Analyses	
				PCBs	TOC
Preliminary Site Assessment (PSA)					
SD-1	(0-0.5')	11/23/99	L56009	X	X
	(0.5-1')			X	X
	(1-1.5')			X	X
	(1.5-2')		L56012	X	
	(2-3')			X	
	(3-4')			X	
	(4-5')			X	
	(5-6')			X	
SD-2	(0-0.5')	11/23/99	L56009	X	X
	(0.5-1')			X	X
	(1-1.5')			X	X
	(1.5-2')		L56012	X	
	(2-3')			X	
	(3-4')			X	
	(4-5')			X	
SD-3	(0-0.5')	11/23/99	L56009	X	X
	(0.5-1')			X	X
	(1-1.5')			X	X
	(1.5-2')		L56012	X	
SD-4	(0-0.5')	11/23/99	L56009	X	X
	(0.5-1')			X	X
SD-D1 (SD-4)	(0.5-1')	11/23/99	L56009	X	X
SD-5	(0-0.5')	11/23/99	L56009	X	X
	(0.5-1')			X	X
	(1-1.5')			X	X
SD-6	(0-0.7')	11/23/99	L56009	X	X
SD-7	(0-0.5')	11/23/99	L56012	X	
	(0.5-1')			X	
	(1-1.5')			X	
	(1.5-2')			X	
	(2-3')			X	
SD-8	(0-0.5')	10/24/00	L64896/GAL144	X	
					X
	(0.5-1')			X	
					X
	(1-1.5')		L64901/GAL145	X	
					X
SD-9	(0-0.5')	10/24/00	L64896/GAL144	X	
					X
	(0.5-1')			X	
					X
	(1-1.5')			X	
					X

See Notes on Page 3.

TABLE 1
SEDIMENT ANALYTICAL SAMPLE SUMMARY

REMEDIAL DESIGN
BROOKFIELD POWER, INC.
(FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Sample ID	Sample Interval	Date Sampled	SDG#	Analyses	
				PCBs	TOC
Remedial Investigation (RI)					
SD-10	(0-0.5')	10/24/00	L64896/GAL144	X	
					X
	(0.5-1')			X	
					X
	(1-1.5')			X	
					X
	(1-1.5') DUP				X
	(1.5-2')		L65310/GAL144	X	
					X
	(2-2.6')			X	
					X
SD-DUP-1 (SD-10)	(0.5-1')	10/24/00	L64901/GAL144	X	
					X
SD-11	(0-0.5')	10/24/00	L64896/GAL144	X	
					X
	(0.5-1')			X	
					X
	(1-1.5')			X	
					X
	(1.5-2')		L65310/GAL144	X	
					X
	(2-3')			X	
					X
SD-12	(0-0.5')	10/24/00	L64896/GAL144	X	
					X
	(0.5-1')			X	
					X
SD-13	(0-0.5')	10/25/00	L64901/GAL144	X	
					X
	(0.5-1')			X	
					X
	(1-1.5')			X	
					X
	(1.5-2')		L65310/GAL144	X	
					X
SD-14	(0-0.5')	10/25/00	L64901/GAL145	X	
					X
	(0.5-1')			X	
					X
SD-15	(0-1.5')	10/25/00	L64901/GAL145	X	
					X
	(1.5-3')			X	
					X
	(3-3.5')			X	
					X
	(3.5-4')			X	
					X
	(4-4.5')			X	
					X
	DUP (4-4.5')				X
	(4.5-5')			X	

See Notes on Page 3.

TABLE 1
SEDIMENT ANALYTICAL SAMPLE SUMMARY

REMEDIAL DESIGN
BROOKFIELD POWER, INC.
(FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Sample ID	Sample Interval	Date Sampled	SDG#	Analyses	
				PCBs	TOC
Remedial Investigation (Cont'd)					
SD-DUP-2 (SD-15)	(3.5-4')	10/25/00	L64901/GAL145	X	
					X
SD-16	(0-0.5')	10/25/00	L64901/GAL145	X	
					X
	(0.5-1')			X	
					X
	(1-1.5')			X	
					X
SD-17	(0-0.5')	10/25/00	L64901/GAL145	X	
					X
	(0.5-1')			X	
					X
SD-18	(0-0.5')	12/8/00	L66595	X	
SD-18 DUP	(0-0.5')	12/8/00	L66595	X	X
SD-24	(0-0.5')	12/8/00	L66595	X	
Interim Remedial Measure (IRM)					
SD-101	(1.5-2')	9/11/02	R2213672	X	X
SD-102	(0.5-1')	9/11/02	R2213672	X	X
SD-103	(0-0.5')	9/11/02	R2213672	X	X
SD-104	(0.5-1')	9/11/02	R2213672	X	X
SD-105	(2.2-2.7')	9/11/02	R2213672	X	X
SD-106	(1.2-1.7')	9/11/02	R2213672	X	X
DUP-SD-1 (SD-106)	(1.2-1.7')	9/11/02	R2213672	X	X
SD-107	(0-0.5')	9/11/02	R2213672	X	X
SD-108	(0.5-1')	9/11/02	R2213672	X	X

Notes:
1. SDG = Sample delivery group.
2. Samples collected by ARCADIS BBL (formerly known as Blasland, Bouck & Lee, Inc.) on the dates indicated.
3. Sample designations indicate the following:
   - SD = Sediment sample; and
   - DUP = Blind duplicate sample.
4. Samples were analyzed using the following methods as referenced in the NYSDEC 2000 Analytical Services Protocol (ASP):
   - PCBs = Polychlorinated biphenyls using USEPA SW-846 Method 8082; and
   - TOC = Total organic carbon using the Lloyd Kahn method.
5. Laboratory analysis of the PSA and RI sediment samples for PCBs constituents was performed by Galson Laboratories, Inc. of East Syracuse, New York.
6. Laboratory analysis of the PSA and RI sediment samples for TOC was performed by H2M Laboratories, Inc. of Melville, New York.
7. Laboratory analysis of the IRM sediment samples for PCBs and TOC was performed by Columbia Analytical Services, Inc. of Rochester, New York.

TABLE 2
SEDIMENT PROBING RESULTS

REMEDIAL DESIGN
BROOKFIELD POWER, INC.
(FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Transect/Location	Water Depth* (feet)	Sediment Depth (feet)
Preliminary Site Assessment		
Transect T1		
T1-1	3.8	0.7
T1-2	8.7	1.5
T1-3	9.0	0.5
Transect T2		
T2-1	4.9	1.5
T2-2	7.4	3.5
T2-3	8.3	7.4
Transect T3		
T3-1	1.9	0.2
T3-2	10.2	4.0
T3-3	10.5	3.5
Transect T4		
T4-1	1.5	2.5
T4-2	8.3	2.0
T4-3	9.3	5.0
Transect T5		
T5-1	1.2	5.0
T5-2	7.8	1.2
T5-3	8.0	2.5
Transect T6		
T6-1	0.9	6.0
T6-2	8.0	1.5
T6-3	8.1	1.5
Remedial Investigation		
Transect T7		
T7-1	9.2	0.8
T7-2	9.4	2.4
T7-3	6.4	0.6
Transect T8		
T8-1	0.8	1.2
T8-2	0.7	0.3
Transect T9		
T9-1	0.3	0.2
T9-2	0.7	0.5
Transect T10		
T10-1	5.1	0.0
T10-2	4.8	0.0
Transect T11		
T11-1	0.4	0.4
T11-2	1.0	2.3
T11-3	0.0	2.0

See Notes on Page 2.

TABLE 2
SEDIMENT PROBING RESULTS

REMEDIAL DESIGN
BROOKFIELD POWER, INC.
(FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Transect/Location	Water Depth* (feet)	Sediment Depth (feet)
Remedial Investigation		
Transect T12		
T12-1	0.0	1.0
T12-2	0.0	1.5
T12-3	0.0	5.0

Notes:

1. Preliminary Site Assessment (PSA) sediment probing was conducted by ARCADIS BBL (formerly known as Blasland, Bouck & Lee, Inc.) during November 1999 from a small aluminum boat equipped with an outboard motor.
2. Remedial Investigation (RI) sediment probing was conducted by ARCADIS BBL during during October 2000.
   while the water level in the power canal was drawn down for maintenance activities.
3. RI sediment probing locations were accessed by boat or wading (or directly for locations that were not submerged).
4. Sediment probing was conducted using a 0.5-inch diameter hollow steel rod equipped with an end cap.
5. PSA sediment probing locations were surveyed by ARCADIS BBL
6. Distances from shoreline to RI sediment probing locations were measured by field personnel.
7. * = Water depths obtained during the RI were measured while the canal was dewatered

TABLE 3
SEDIMENT SAMPLE VISUAL CHARACTERIZATION RESULTS

REMEDIAL DESIGN
BROOKFIELD POWER, INC.
(FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Sample ID/ Depth Interval	Description
Preliminary Site Assessment	
SD-1	
0.0-0.5'	Gray-brown fine-to-very fine sand w/ some silt
0.5-1.0'	Gray-brown fine sand w/ some silt and white shells
1.0-1.5'	Gray-brown fine-to-very fine sand w/ some silt
1.5-2.0'	
2.0-3.0'	
3.0-4.0'	
4.0-5.0'	
5.0-6.0'	
SD-2	
0.0-0.5'	Gray-brown fine-to-very fine sand w/ silt
0.5-1.0'	
1.0-1.5'	
1.5-2.0'	Gray-brown fine-to-very fine sand
2.0-3.0'	
3.0-4.0'	Gray-brown fine-to-very fine sand w/ some silt
4.0-5.0'	
SD-3	
0.0-0.5'	Dark gray-brown fine sand w/ some silt & organic matter
0.5-1.0'	Gray-brown fine-to-very fine sand w/ some silt
1.0-1.5'	
1.5-2.0'	Gray-brown fine-to-very fine sand w/ silt
SD-4	
0.0-0.5'	Gray-brown coarse-to-fine sand & gravel
0.5-1.0'	
SD-5	
0.0-0.5'	Brown coarse-to-fine sand w/ some silt
0.5-1.0'	Brown coarse-to-fine sand w/ some silt & gravel
1.0-1.5'	Gray-brown coarse-to-fine sand & gravel
SD-6	
0.0-0.7'	Dark gray-brown silt w/ medium-to-fine sand & some organic matter
SD-7	
0.0-0.5'	Gray-brown coarse-to-medium sand w/ fine sand & some silt
0.5-1.0'	
1.0-1.5'	
1.5-2.0'	Gray-brown coarse-to-medium sand w/ fine sand, small white shells, & some silt
2.0-3.0'	Gray-brown medium-to-fine sand

See Notes on Page 3.

TABLE 3
SEDIMENT SAMPLE VISUAL CHARACTERIZATION RESULTS

REMEDIAL DESIGN
BROOKFIELD POWER, INC.
(FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Sample ID/ Depth Interval	Description
Remedial Investigation	
SD-8	
0.0-0.7'	Brown silt, some fine to coarse sand with some shells
0.7-1.0'	Dark gray fine to coarse sand
1.0-1.5'	
SD-9	
0.0-0.5'	Brown silt with medium to coarse sand and shells
0.5-1.0'	Dark gray fine to coarse sand
1.0-1.5'	
SD-10	
0.0-0.5'	Dark gray silt and medium to coarse sand
0.5-1.0'	Dark gray fine to coarse sand
1.0-1.5'	
1.5-2.0'	Gray brown fine sand
2.0-2.6	
SD-11	
0.0-0.5'	Brown fine to coarse sand with shells
0.5-1.5'	Dark gray fine to coarse sand
1.0-1.5'	
1.5-2.0'	Gray brown fine to coarse sand
2.0-2.3'	
2.3-3.0'	Gray to silty clay
SD-12	
0.0-0.5'	Gray, brown medium to coarse sand with shells
0.5-1.0'	
SD-13	
0.0-0.5'	Brown fine sand, some shells
0.5-1.0'	Gray-brown fine to coarse sand with some shells
1.0-1.5'	
1.5-2.0'	Gray-brown fine sand and shells
SD-14	
0.0-0.5'	Gray-brown coarse-to-medium sand w/ fine sand & some silt
0.5-1.0'	Gray-brown fine sand some silt some clay
SD-15	
0.0-0.5'	Zebra muscle shells with some fine sand
0.5-1.0'	
1.0-1.5'	
1.5-2.0'	
2.0-2.5'	
2.5-3.0'	

See Notes on Page 3.

TABLE 3
SEDIMENT SAMPLE VISUAL CHARACTERIZATION RESULTS

REMEDIAL DESIGN
BROOKFIELD POWER, INC.
(FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Sample ID/ Depth Interval	Description
Remedial Investigation	
SD-15 (Cont'd)	
3.0-3.5'	Gray-brown fine sand and zebra muscle shells
3.5-4.0'	Gray-brown fine to coarse sand with shells
4.0-4.5'	
4.5-5.0'	
SD-18	
0.0-0.5'	Brown and dark brown silt
0.5-1.0'	Light brown fine sand, some dark brown silt
1.0-1.5'	
SD-24	
0.0-0.5'	Brown and dark brown silt
0.5-1.0'	Dark brown silt, some fine sand, some gravel
1.0-1.5'	Gray-brown fine sand, some silt
Interim Remedial Measure	
SD-101	
0.0-0.5'	Brown weathered shale with some fine sand
0.5-1.5'	Grey-brown tight fine sand, some clay, some organic matter
SD-102	
0.0-0.5'	Grey brown fine to coarse sand, some silt
0.5-1.0'	Grey brown silt with weathered shale
SD-103	
0.0-0.5'	Grey brown fine to coarse sand with gravel, some silty clay
SD-104	
0.0-0.5'	Grey brown fine to medium sand
0.5-0.8'	Grey brown fine to medium sand
0.8-1.0'	Grey brown silty clay
SD-105	
0.0-2.2'	Grey brown, tight fine sand with some clay
2.2-2.7'	Grey brown, tight fine sand, some clay
SD-106	
0.0-0.3'	Silt
0.3-1.2'	Grey brown, tight fine sand, some gravel
1.2-1.7'	Grey brown, tight fine sand, some gravel
1.7-2.3'	Weathered shale
SD-107	
0.0-0.5'	Grey brown fine to coarse sand with gravel, some silty clay
SD-108	
0.0-0.8'	Grey-brown fine to medium sand
0.8-1.0'	Grey-brown silty clay

Notes:

1. Preliminary Site Assessment (PSA) sediment samples were collected by ARCADIS BBL (formerly known as Blasland, Bouck & Lee, Inc.) during November 1999.
2. Remedial Investigation (RI) sediment samples were collected by ARCADIS BBL during October 2000 and December 2000.
3. Interim Remedial Measure (IRM) sediment samples were collected by ARCADIS BBL during September 2002.

TABLE 4
SEDIMENT ANALYTICAL RESULTS FOR PCBs AND TOC (ppm)

REMEDIAL DESIGN
BROOKFIELD POWER, INC.
(FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Sample ID	TOC (ppm)	NYSDEC Sediment Criteria (ppm)			PCB Concentration (ppm)			
		Benthic Aquatic Life Acute Toxicity	Benthic Aquatic Life Chronic Toxicity	Wildlife Bioaccumulation	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs
Preliminary Site Assessment								
SD-1 (0-0.5')	12,800 J	35.3	0.25	0.018	0.069	< 0.024	0.058	0.13
SD-1 (0.5-1')	15,300 J	42.2	0.30	0.021	<0.023	< 0.023	<0.023	<0.023
SD-1 (1-1.5')	14,600 J	40.3	0.28	0.020	<0.022	< 0.022	0.013 J	0.013 J
SD-1 (1.5-2')*	NA	NA	NA	NA	0.013 J	< 0.022	<0.022	0.013 J
SD-1 (2-3')*	NA	NA	NA	NA	<0.022	< 0.022	<0.022	<0.022
SD-1 (3-4')*	NA	NA	NA	NA	<0.022	< 0.022	<0.022	<0.022
SD-1 (4-5')*	NA	NA	NA	NA	<0.022	< 0.022	<0.022	<0.022
SD-1 (5-6')*	NA	NA	NA	NA	<0.017	< 0.017	<0.017	<0.017
SD-2 (0-0.5')	21,300 J	58.8	0.41	0.030	<0.023	< 0.023	0.24	0.24
SD-2 (0.5-1')	17,800 J	49.1	0.34	0.025	<0.024	< 0.024	0.085	0.085
SD-2 (1-1.5')	6,740 J	18.6	0.13	0.009	<0.023	< 0.023	<0.023	<0.023
SD-2 (1.5-2')*	NA	NA	NA	NA	<0.021	< 0.021	<0.021	<0.021
SD-2 (2-3')*	NA	NA	NA	NA	<0.022	< 0.022	<0.022	<0.022
SD-2 (3-4')*	NA	NA	NA	NA	<0.021	< 0.021	<0.021	<0.021
SD-2 (4-5')*	NA	NA	NA	NA	<0.023	< 0.023	<0.023	<0.023
SD-3 (0-0.5')	30,700 J	84.8	0.59	0.043	< 0.46	< 0.46	7.3	7.3
SD-3 (0.5-1')	10,800 J	29.8	0.21	0.015	<0.022	< 0.022	0.32	0.32
SD-3 (1-1.5')	8,430 J	23.3	0.16	0.012	<0.021	< 0.021	<0.021	<0.021
SD-3 (1.5-2')*	NA	NA	NA	NA	<0.024	< 0.024	<0.024	<0.024
SD-4 (0-0.5')*	6,980 J	19.3	0.13	0.010	< 0.22	< 0.22	3.0	3.0
SD-4 (0.5-1')*	14,800 J	40.9	0.29	0.021	<0.20	< 0.20	1.9	1.9
SD-D1 [SD-4 (0.5-1')]	14,900 J	41.1	0.29	0.021	<0.21	< 0.21	2.6	2.6
SD-5 (0-0.5')	17,400 J	48.0	0.34	0.024	<0.12	< 0.12	1.9	1.9
SD-5 (0.5-1')	6,250 J	17.3	0.12	0.009	<0.10	< 0.10	1.0	1.0
SD-5 (1-1.5')	13,400 J	37.0	0.26	0.019	<0.10	< 0.10	1.5	1.5
SD-6 (0-0.7')	19,200 J	53.0	0.37	0.027	<0.12	< 0.12	1.6	1.6

See Notes on Page 4.

TABLE 4
SEDIMENT ANALYTICAL RESULTS FOR PCBs AND TOC (ppm)

REMEDIAL DESIGN
BROOKFIELD POWER, INC.
(FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Sample ID	TOC (ppm)	NYSDEC Sediment Criteria (ppm)			PCB Concentration (ppm)			
		Benthic Aquatic Life Acute Toxicity	Benthic Aquatic Life Chronic Toxicity	Wildlife Bioaccumulation	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs
Preliminary Site Assessment								
SD-7 (0-0.5')*	NA	NA	NA	NA	0.025	< 0.021	0.020 J	0.045 J
SD-7 (0.5-1')*	NA	NA	NA	NA	0.021	< 0.019	<0.019	0.021
SD-7 (1-1.5')*	NA	NA	NA	NA	<0.020	< 0.020	<0.020	<0.020
SD-7 (1.5-2')*	NA	NA	NA	NA	<0.019	< 0.019	<0.019	<0.019
SD-7 (2-3')*	NA	NA	NA	NA	<0.020	< 0.020	<0.020	<0.020
Remedial Investigation								
SD-8 (0-0.5')	24,800	68.5	0.48	0.035	0.036	0.049	< 0.034	0.085
SD-8 (0.5-1')	26,000	71.8	0.50	0.036	< 0.028	0.046	< 0.028	0.046
SD-8 (1-1.5')	14,600	40.3	0.28	0.020	< 0.021	0.019 J	< 0.021	0.019 J
SD-9 (0-0.5')	11,300	31.2	0.22	0.016	0.029	0.044	< 0.026	0.073
SD-9 (0.5-1')	11,100	30.6	0.21	0.016	< 0.021	< 0.021	< 0.021	< 0.021
SD-9 (1-1.5')	8,080	22.3	0.16	0.011	< 0.020	< 0.020	< 0.020	< 0.020
SD-10 (0-0.5')	14,200	39.2	0.27	0.020	< 0.024	0.030	< 0.024	0.030
SD-10 (0.5-1')	5,230	14.4	0.10	0.007	< 0.019	< 0.019	< 0.019	< 0.019
SD-DUP-1 <SD-10 (0.5-1')>	5,440	15.0	0.10	0.008	< 0.020	< 0.020	< 0.020	< 0.020
SD-10 (1-1.5')	8,690	24.0	0.17	0.012	< 0.019	< 0.019	< 0.019	< 0.019
SD-10 (1-1.5') DUP	8,230	22.7	0.16	0.012	NA	NA	NA	NA
SD-10 (1.5-2')*	2,210	6.1	0.04	0.003	<0.019	<0.019	<0.019	<0.019
SD-10 (2-2.6')*	1,600	4.4	0.03	0.002	<0.019	<0.019	<0.019	<0.019
SD-11 (0-0.5')	4,460	12.3	0.09	0.006	< 0.019	< 0.019	< 0.019	< 0.019
SD-11 (0.5-1')	4,400	12.1	0.08	0.006	< 0.019	< 0.019	< 0.019	< 0.019
SD-11 (1-1.5')	1,700	4.7	0.03	0.002	0.025	0.025	< 0.020	0.050
SD-11 (1.5-2')*	3,850	10.6	0.07	0.005	<0.018	0.025 J	<0.018	0.025 J
SD-11 (2-3')*	8,230	22.7	0.16	0.012	<0.019	<0.019	<0.019	<0.019
SD-12 (0-0.5')	6,930	19.1	0.13	0.010	< 0.019	< 0.019	< 0.019	< 0.019
SD-12 (0.5-1')	17,400	48.0	0.34	0.024	< 0.021	< 0.021	< 0.021	< 0.021

See Notes on Page 4.

TABLE 4
SEDIMENT ANALYTICAL RESULTS FOR PCBs AND TOC (ppm)

REMEDIAL DESIGN
BROOKFIELD POWER, INC.
(FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Sample ID	TOC (ppm)	NYSDEC Sediment Criteria (ppm)			PCB Concentration (ppm)			
		Benthic Aquatic Life Acute Toxicity	Benthic Aquatic Life Chronic Toxicity	Wildlife Bioaccumulation	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs
Remedial Investigation (cont'd)								
SD-13 (0-0.5')	5,530	15.3	0.11	0.008	< 0.022	< 0.022	0.015 J	0.015 J
SD-13 (0.5-1')	17,500	48.3	0.34	0.025	< 0.039	< 0.039	0.45	0.45
SD-13 (1-1.5')	3,930	10.8	0.08	0.006	< 0.020	< 0.020	0.025	0.025
SD-13 (1.5-2')*	7,860	21.7	0.15	0.011	<0.021	0.014 J	<0.021	<0.021
SD-14 (0-0.5')	5,380	14.9	0.10	0.008	< 0.021	< 0.021	0.048	0.048
SD-14 (0.5-1')	12,600	34.8	0.24	0.018	< 0.020	< 0.020	< 0.020	< 0.020
SD-15 (0-1.5')	3,680	10.2	0.07	0.005	< 0.020	< 0.020	0.016 J	0.016 J
SD-15 (1.5-3')	115,000	317.5	2.22	0.161	< 0.022	< 0.022	< 0.022	< 0.022
SD-15 (3-3.5')	83,100	229.4	1.60	0.116	< 0.021	0.013 J	< 0.021	0.013 J
SD-15 (3.5-4')	10,800	29.8	0.21	0.015	< 0.021	0.015 J	< 0.021	0.015 J
SD-DUP-2 <SD-15 (3.5-4')>	13,500	37.3	0.26	0.019	< 0.020	0.025	0.023	0.048
SD-15 (4-4.5')	11,300	31.2	0.22	0.016	< 0.021	< 0.021	0.040	0.040
SD-15 (4-4.5') DUP	11,900	32.9	0.23	0.017	NA	NA	NA	NA
SD-15 (4.5-5')	NA	NA	NA	NA	0.032	< 0.020	0.015 J	0.047 J
SD-16 (0-0.5')	10,200	28.2	0.20	0.014	< 0.020	< 0.020	< 0.020	< 0.020
SD-16 (0.5-1')	2,550	7.0	0.05	0.004	< 0.020	< 0.020	< 0.020	< 0.020
SD-16 (1-1.5')	3,460	9.6	0.07	0.005	< 0.021	< 0.021	< 0.021	< 0.021
SD-17 (0-0.5')	38,700	106.8	0.75	0.054	0.059	0.084	< 0.028	0.143
SD-17 (0.5-1')	7,380	20.4	1.00	0.010	0.027	0.049	< 0.025	0.076
SD-18 (0-0.5')	NA	66.3	0.46	0.034	0.048	0.078	<0.027	0.126
SD-18 (0-0.5') DUP	24,000	66.3	0.46	0.034	0.040	0.065	<0.026	0.105
SD-24 (0-0.5')	NA	NA	NA	NA	0.035	0.057	<0.026	0.092
Interim Remedial Measure								
SD-101 (1.5-2')	11,800	32.6	0.23	0.017	< 0.042	< 0.042	< 0.042	< 0.042
SD-102 (0.5-1')	7,730	21.3	0.15	0.011	< 0.039	< 0.039	0.180	0.180
SD-103 (0-0.5')	5,550	15.3	0.11	0.008	< 0.040	< 0.040	14.0	14.0
SD-104 (0.5-1')	10,200	28.2	0.20	0.014	< 0.044	< 0.044	1.6	1.6
SD-105 (2.2-2.7')	4,820	13.3	0.09	0.007	< 0.042	< 0.042	< 0.042	< 0.042
SD-106 (1.2-1.7')	5,440	15.0	0.10	0.008	< 0.040	< 0.040	< 0.040	< 0.040
DUP-SD-1 [SD-106 (1.2-1.7')]	12,500	34.5	0.24	0.018	< 0.040	< 0.040	< 0.040	< 0.040
SD-107 (0-0.5')	8,640	23.9	0.17	0.012	< 0.042	< 0.042	6.1	6.1
SD-108 (0.5-1')	7,860	21.7	0.15	0.011	< 0.041	< 0.041	2.0	2.0

See Notes on Page 4.

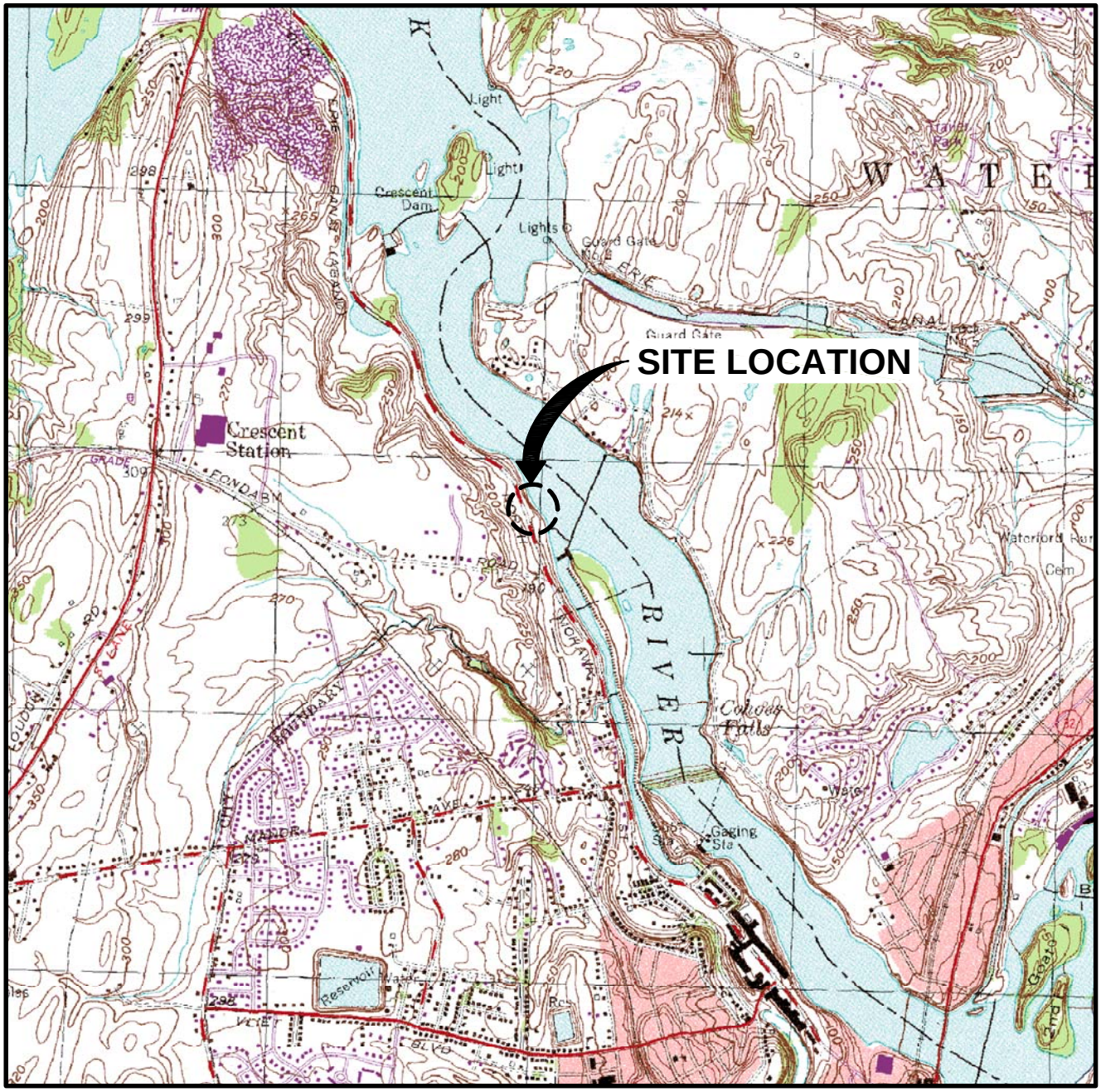
TABLE 4
SEDIMENT ANALYTICAL RESULTS FOR PCBs AND TOC (ppm)

REMEDIAL DESIGN
BROOKFIELD POWER, INC.
(FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Notes:

1. Preliminary Site Assessment (PSA) sediment samples were collected by ARCADIS BBL (formerly known as Blasland, Bouck & Lee, Inc.) during November 1999.
2. Remedial Investigation (RI) sediment samples were collected by ARCADIS BBL during October and December 2000.
3. Interim Remedial Measure (IRM) sediment samples were collected by ARCADIS BBL during September 2002.
4. TOC = Total organic carbon.
5. Samples were analyzed using the following methods as referenced in the NYSDEC 2000 Analytical Service Protocol (ASP):
   - PCBs = Polychlorinated biphenyls using USEPA SW-846 Method 8082; and
   - TOC = Total organic carbon using the Lloyd Kahn method.
6. Laboratory analysis of PSA and RI sediment samples for PCBs was performed by Galson Laboratories, Inc. (Galson).
7. Laboratory analysis of PSA and RI sediment samples for TOC was performed by H2M Laboratories, Inc. (H2M).
8. Laboratory analysis of IRM sediment samples for PCBs and TOC was performed by Columbia Analytical Services, Inc.
9. Concentrations reported on a dry-weight basis in parts per million (ppm) or milligrams per kilogram (mg/kg).
10. Sample designations indicate the following:
    - SD = Sediment sample
    - D, DUP = Duplicate sample
11. J = Indicates an estimated value.
12. * = Indicates that the sample was initially archived. Laboratory analysis of the sample was subsequently performed based on the results of sediment samples collected from the overlying depth intervals.
13. Analysis of the archived sediment samples was performed outside the 7-day allowable holding time under the NYSDEC 1995 ASP, but within the 14-day allowable holding time under USEPA SW-846 Method 8082.
14. < = Not detected exceeding the indicated laboratory detection limit.
15. D = Concentration is based on a diluted sample analysis.
16. NA = Not analyzed.
17. NYSDEC sediment criteria were calculated using the ecological, risk-based levels of protection presented in the NYSDEC Division of Fish, Wildlife, and Marine Resources document titled, Technical Guidance for Screening Contaminated Sediments, dated January 1999, and the concentration of TOC detected in the individual sediment samples.
18. Analytical results have been validated.

Figures



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., TROY NORTH, NY., 1954, PHOTOREVISED 1980.

0 2000' 4000'

Approximate Scale: 1" = 2000'

Professional Engineer's	P.E.'s Number	State	Date Signed
JAMES M. NUSS	067963	NY	

ARCADIS BBL
Infrastructure, environment, facilities

BROOKFIELD POWER • FORMER NATIONAL GRID
SCHOOL ST. HYDROELECTRIC STATION – COHOES, NY

REMEDIAL DESIGN

SITE LOCATION MAP

GENERAL

ARCADIS Project Number
36643017

Date
AUGUST 2007

1

WYR-85-LJP, KLS LAYER: ON=*, OFF=*REF*
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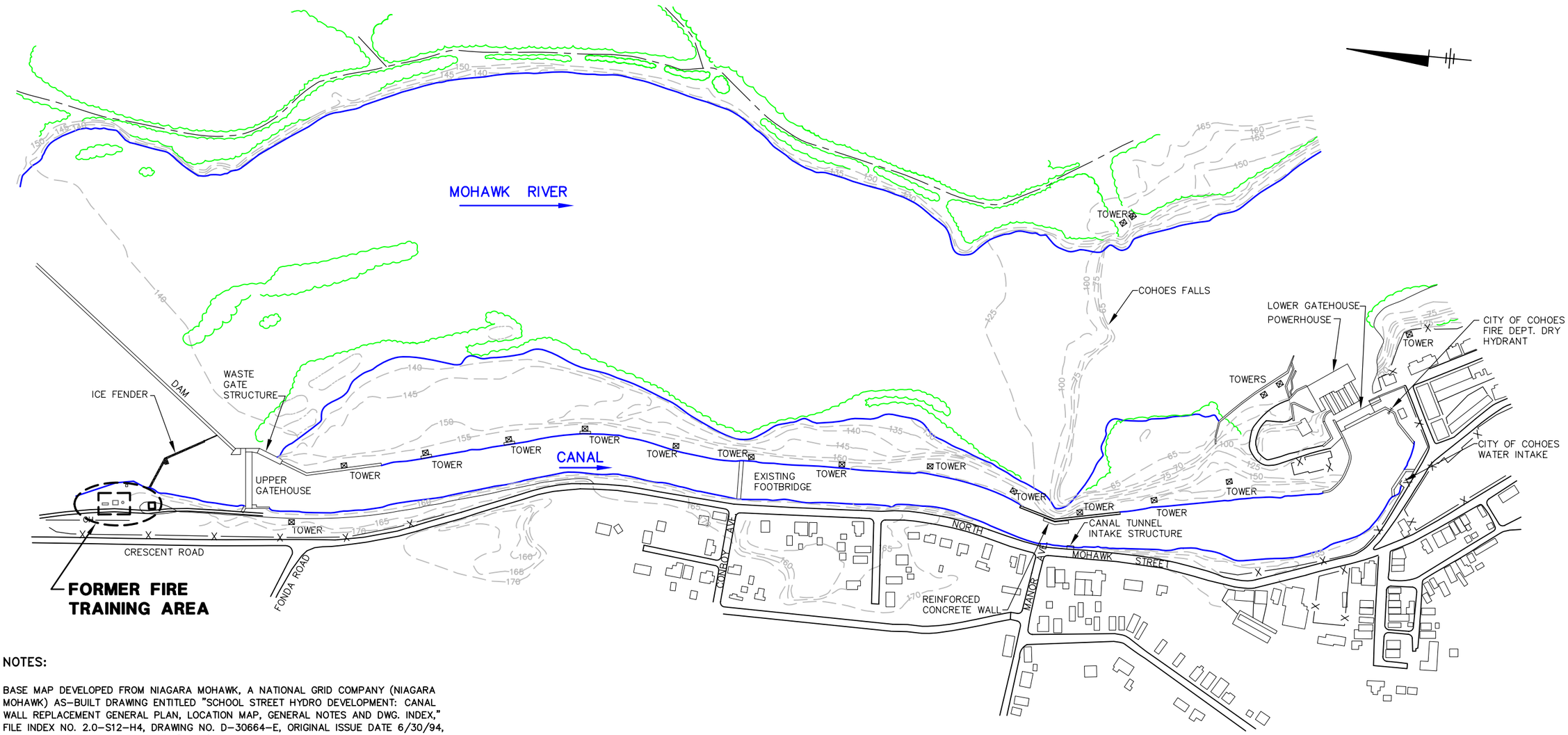

NOTES:

1. BASE MAP DEVELOPED FROM NIAGARA MOHAWK, A NATIONAL GRID COMPANY (NIAGARA MOHAWK) AS-BUILT DRAWING ENTITLED "SCHOOL STREET HYDRO DEVELOPMENT: CANAL WALL REPLACEMENT GENERAL PLAN, LOCATION MAP, GENERAL NOTES AND DWG. INDEX," FILE INDEX NO. 2.0-S12-H4, DRAWING NO. D-30664-E, ORIGINAL ISSUE DATE 6/30/94, AS-BUILT 9/95, AT A SCALE OF 1"=200'.

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ORIGINAL SCALE APPLIES TO 11"X17" DRAWING

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Professional Engineer's Name: JAMES M. NUSS
Professional Engineer's No.: 067963
State: NY
Date Signed:
Project Mgr.: JCB
Designed by: CSA
Drawn by: KMD

DRAFT
NOT FOR
CONSTRUCTION

ARCADIS BBL
Infrastructure, environment, facilities

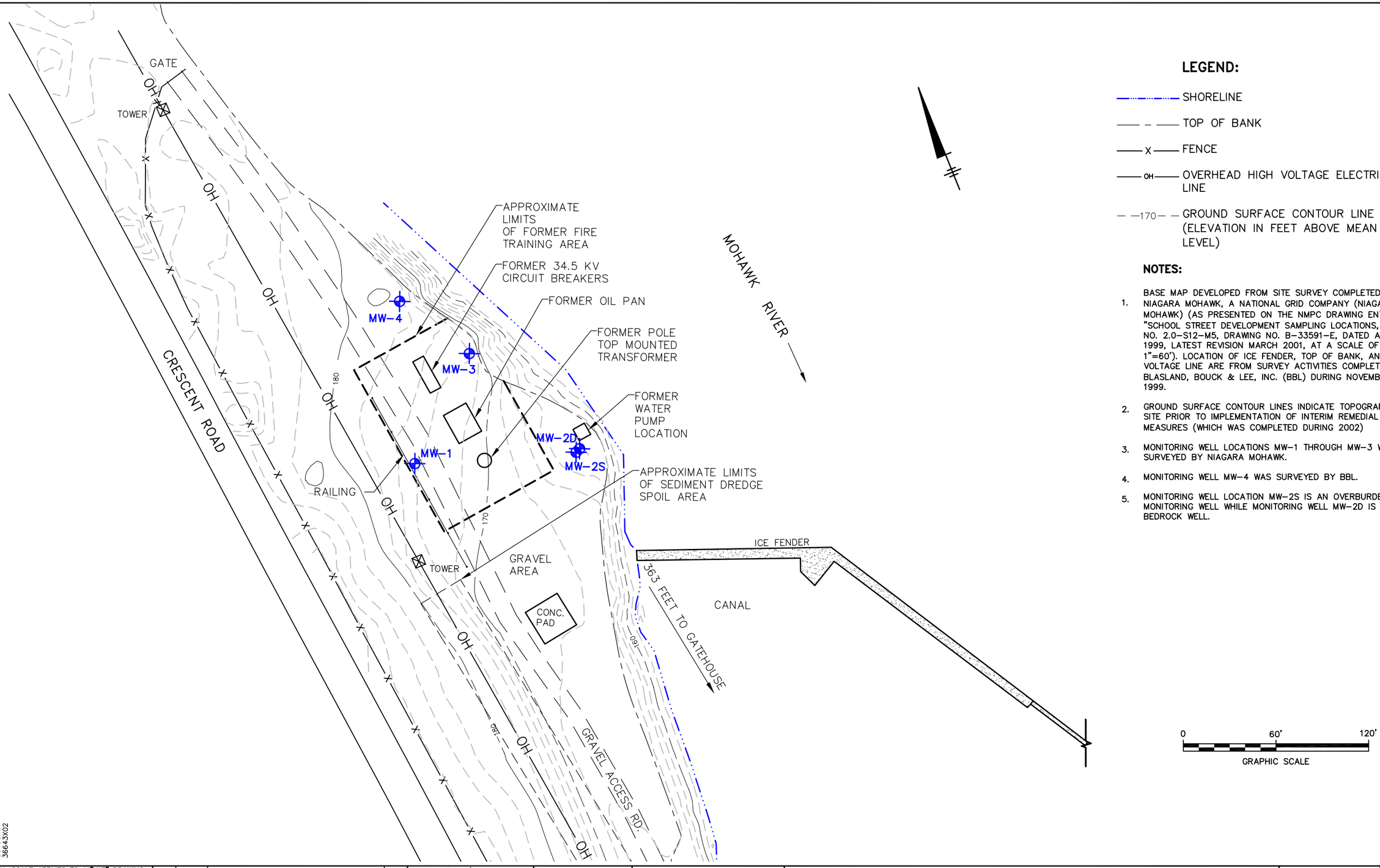
BROOKFIELD POWER
FORMER NATIONAL GRID
SCHOOL ST. HYDROELECTRIC STATION – COHOES, NY
REMEDIAL DESIGN

SITE PLAN

GENERAL

AN ARCADIS COMPANY

2



LEGEND:

- SHORELINE
- TOP OF BANK
- X FENCE
- OH OVERHEAD HIGH VOLTAGE ELECTRIC LINE
- 170 GROUND SURFACE CONTOUR LINE (ELEVATION IN FEET ABOVE MEAN SEA LEVEL)

NOTES:

1. BASE MAP DEVELOPED FROM SITE SURVEY COMPLETED BY NIAGARA MOHAWK, A NATIONAL GRID COMPANY (NIAGARA MOHAWK) (AS PRESENTED ON THE NMPC DRAWING ENTITLED "SCHOOL STREET DEVELOPMENT SAMPLING LOCATIONS, INDEX NO. 2.0-S12-M5, DRAWING NO. B-33591-E, DATED APRIL 1999, LATEST REVISION MARCH 2001, AT A SCALE OF 1"=60'). LOCATION OF ICE FENDER, TOP OF BANK, AND HIGH VOLTAGE LINE ARE FROM SURVEY ACTIVITIES COMPLETED BY BLASLAND, BOUCK & LEE, INC. (BBL) DURING NOVEMBER 1999.
2. GROUND SURFACE CONTOUR LINES INDICATE TOPOGRAPHY OF SITE PRIOR TO IMPLEMENTATION OF INTERIM REMEDIAL MEASURES (WHICH WAS COMPLETED DURING 2002)
3. MONITORING WELL LOCATIONS MW-1 THROUGH MW-3 WERE SURVEYED BY NIAGARA MOHAWK.
4. MONITORING WELL MW-4 WAS SURVEYED BY BBL.
5. MONITORING WELL LOCATION MW-2S IS AN OVERBURDEN MONITORING WELL WHILE MONITORING WELL MW-2D IS A BEDROCK WELL.

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Project Mgr.: JCB
Designed by: CSA
Drawn by: KMD

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ARCADIS BBL
Infrastructure, environment, facilities

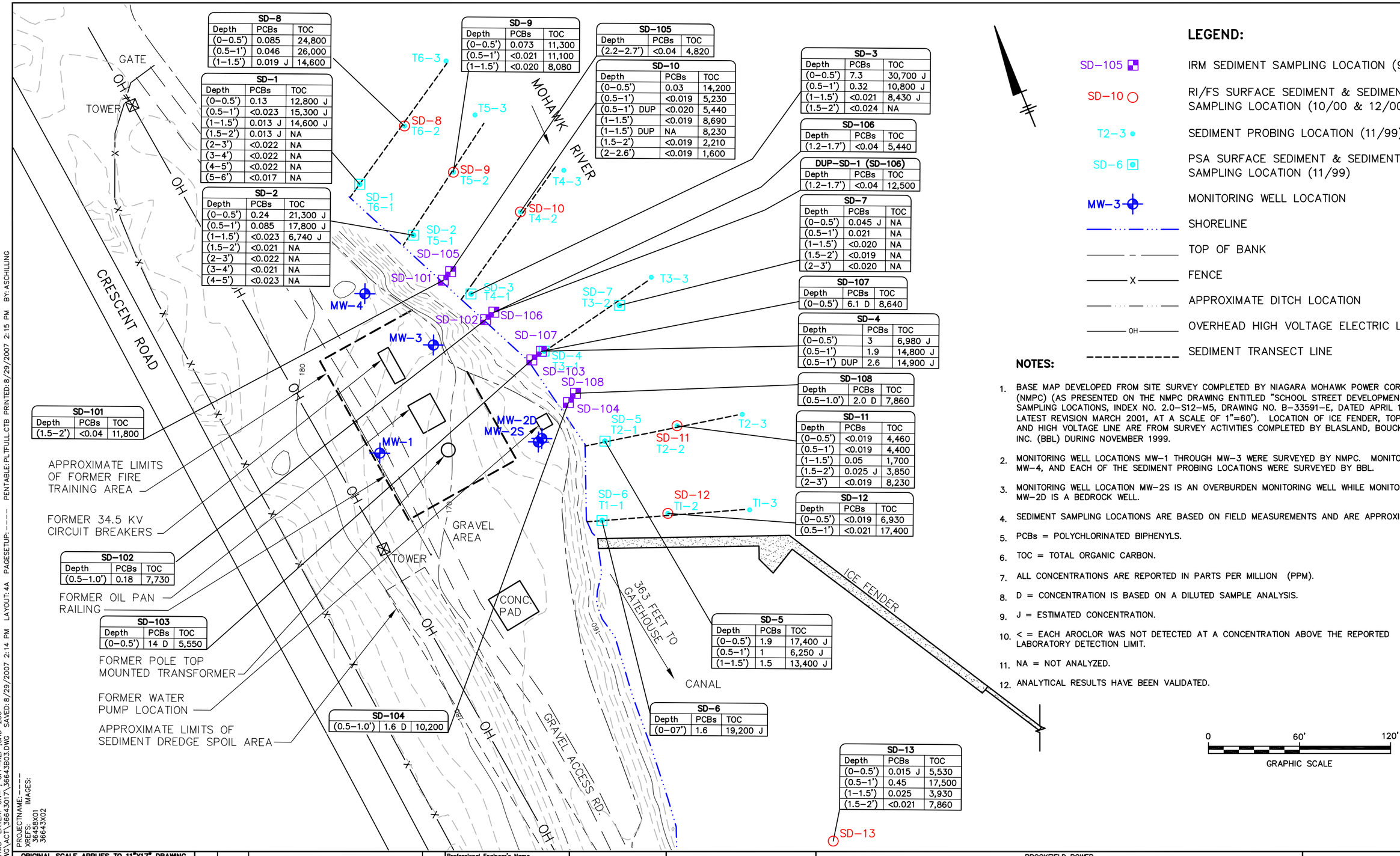
BROOKFIELD POWER
FORMER NATIONAL GRID
SCHOOL ST. HYDROELECTRIC STATION – COHOES, NY
REMEDIAL DESIGN

FORMER FIRE TRAINING AREA FEATURES

GENERAL

AN ARCADIS COMPANY

3



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3. MONITORING WELL LOCATION MW–2S IS AN OVERBURDEN MONITORING WELL WHILE MONITORING WELL MW–2D IS A BEDROCK WELL.
4. SEDIMENT SAMPLING LOCATIONS ARE BASED ON FIELD MEASUREMENTS AND ARE APPROXIMATE.
5. PCBs = POLYCHLORINATED BIPHENYLS.
6. TOC = TOTAL ORGANIC CARBON.
7. ALL CONCENTRATIONS ARE REPORTED IN PARTS PER MILLION (PPM).
8. D = CONCENTRATION IS BASED ON A DILUTED SAMPLE ANALYSIS.
9. J = ESTIMATED CONCENTRATION.
10. < = EACH AROCLOR WAS NOT DETECTED AT A CONCENTRATION ABOVE THE REPORTED LABORATORY DETECTION LIMIT.
11. NA = NOT ANALYZED.
12. ANALYTICAL RESULTS HAVE BEEN VALIDATED.

ORIGINAL SCALE APPLIES TO 11"X17" DRAWING

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Designed by: CSA
Drawn by: KMD

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ARCADIS BBL
Infrastructure, environment, facilities

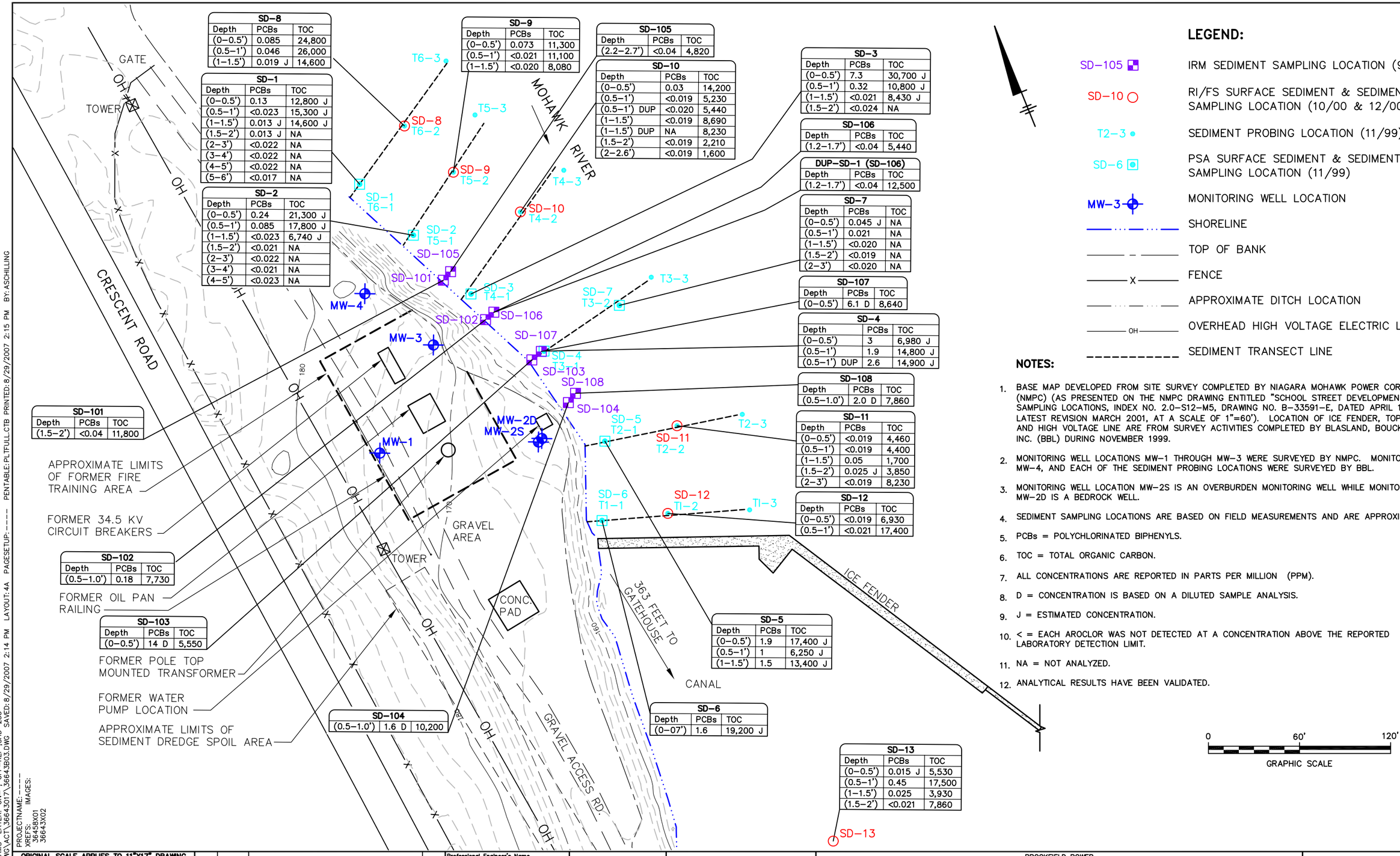
BROOKFIELD POWER
FORMER NATIONAL GRID
SCHOOL ST. HYDROELECTRIC STATION – COHOES, NY
REMEDIAL DESIGN

SEDIMENT SAMPLING LOCATIONS AND ANALYTICAL RESULTS FOR TOTAL PCBs & TOC (ppm)

GENERAL

AN ARCADIS COMPANY

4A



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2. MONITORING WELL LOCATIONS MW–1 THROUGH MW–3 WERE SURVEYED BY NMPC. MONITORING WELL MW–4, AND EACH OF THE SEDIMENT PROBING LOCATIONS WERE SURVEYED BY BBL.
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Designed by: CSA
Drawn by: KMD

DRAFT NOT FOR CONSTRUCTION

ARCADIS BBL
Infrastructure, environment, facilities

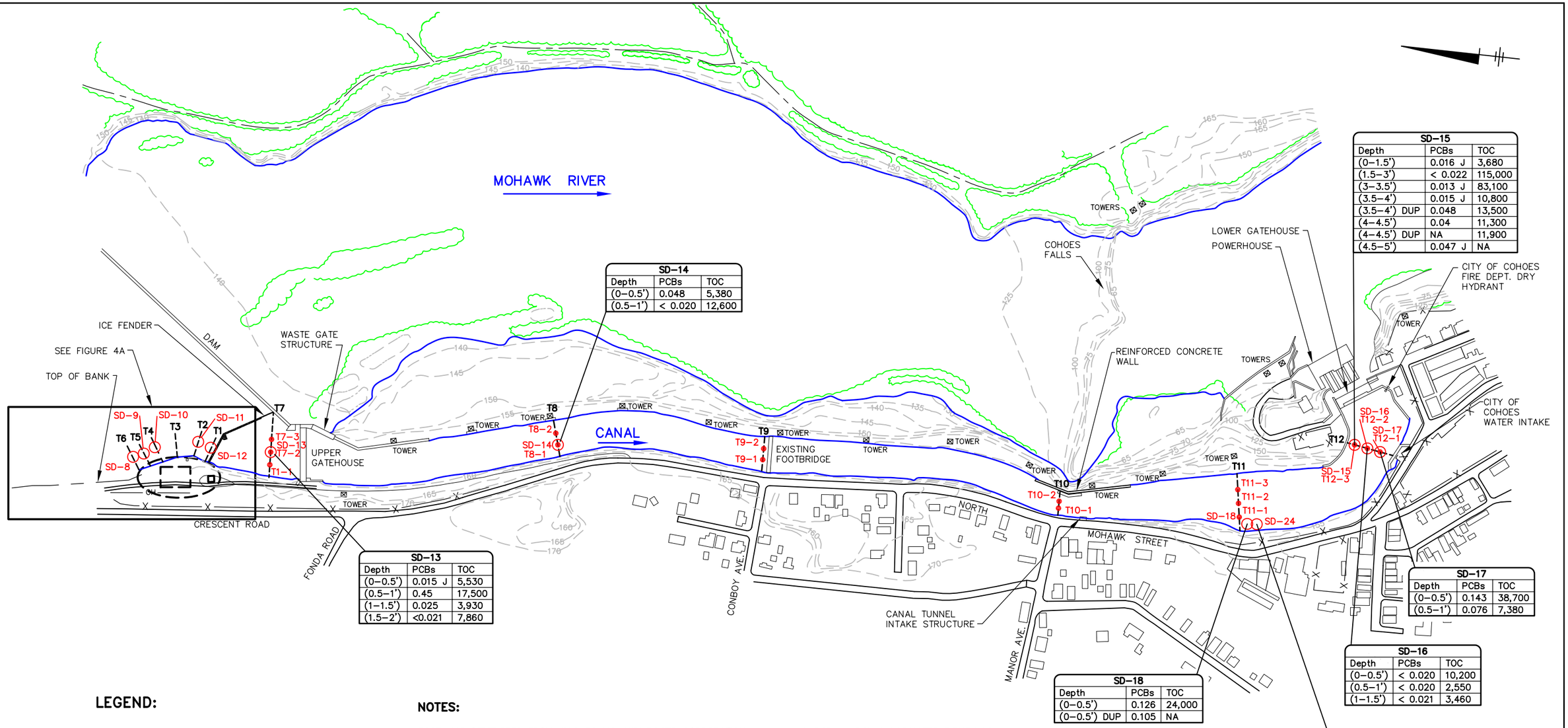
BROOKFIELD POWER
FORMER NATIONAL GRID
SCHOOL ST. HYDROELECTRIC STATION – COHOES, NY
REMEDIAL DESIGN

SEDIMENT SAMPLING LOCATIONS AND ANALYTICAL RESULTS FOR TOTAL PCBs & TOC (ppm)

GENERAL

AN ARCADIS COMPANY

4A



SD-14		
Depth	PCBs	TOC
(0–0.5')	0.048	5,380
(0.5–1')	< 0.020	12,600

SD-15		
Depth	PCBs	TOC
(0–1.5')	0.016 J	3,680
(1.5–3')	< 0.022	115,000
(3–3.5')	0.013 J	83,100
(3.5–4')	0.015 J	10,800
(3.5–4') DUP	0.048	13,500
(4–4.5')	0.04	11,300
(4–4.5') DUP	NA	11,900
(4.5–5')	0.047 J	NA

SD-13		
Depth	PCBs	TOC
(0–0.5')	0.015 J	5,530
(0.5–1')	0.45	17,500
(1–1.5')	0.025	3,930
(1.5–2')	<0.021	7,860

SD-17		
Depth	PCBs	TOC
(0–0.5')	0.143	38,700
(0.5–1')	0.076	7,380

SD-16		
Depth	PCBs	TOC
(0–0.5')	< 0.020	10,200
(0.5–1')	< 0.020	2,550
(1–1.5')	< 0.021	3,460

SD-18		
Depth	PCBs	TOC
(0–0.5')	0.126	24,000
(0–0.5') DUP	0.105	NA

SD-24		
Depth	PCBs	TOC
(0–0.5')	0.092	NA

LEGEND:

- T8–2 ● SEDIMENT PROBING LOCATION
- SD-8 ◯ RI/FS SURFACE SEDIMENT & SEDIMENT CORE SAMPLING LOCATION (10/00 – 2/01)
- T4 --- TRANSECT LINE

NOTES:

1. BASE MAP DEVELOPED FROM NIAGARA MOHAWK POWER CORPORATION (NMPC) AS–BUILT DRAWING ENTITLED "SCHOOL STREET HYDRO DEVELOPMENT: CANAL WALL REPLACEMENT GENERAL PLAN, LOCATION MAP, GENERAL NOTES AND DWG. INDEX," FILE INDEX NO. 2.0–S12–H4, DRAWING NO. D–30664–E, ORIGINAL ISSUE DATE 6/30/94, AS–BUILT 9/95, AT A SCALE OF 1"=200'.
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3. TRANSECT LOCATIONS T1 THROUGH T7 WERE SURVEYED BY BBL. TRANSECT LOCATIONS T8 THROUGH T12 WERE POSITIONED RELATIVE TO EXISTING SITE FEATURES, AS SHOWN.
4. PCBs = POLYCHLORINATED BIPHENYLS.
5. TOC = TOTAL ORGANIC CARBON.
6. ALL CONCENTRATIONS ARE REPORTED IN PARTS PER MILLION (ppm).
7. < = EACH AROCLOR WAS NOT DETECTED AT A CONCENTRATION ABOVE THE REPORTED LABORATORY DETECTION LIMIT.
8. NA = NOT ANALYZED.
9. J = ESTIMATED CONCENTRATION.

0 400' 800'
GRAPHIC SCALE

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36643X02

ORIGINAL SCALE APPLIES TO 11"X17" DRAWING

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Designed by: CSA
Drawn by: KMD

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ARCADIS BBL
Infrastructure, environment, facilities

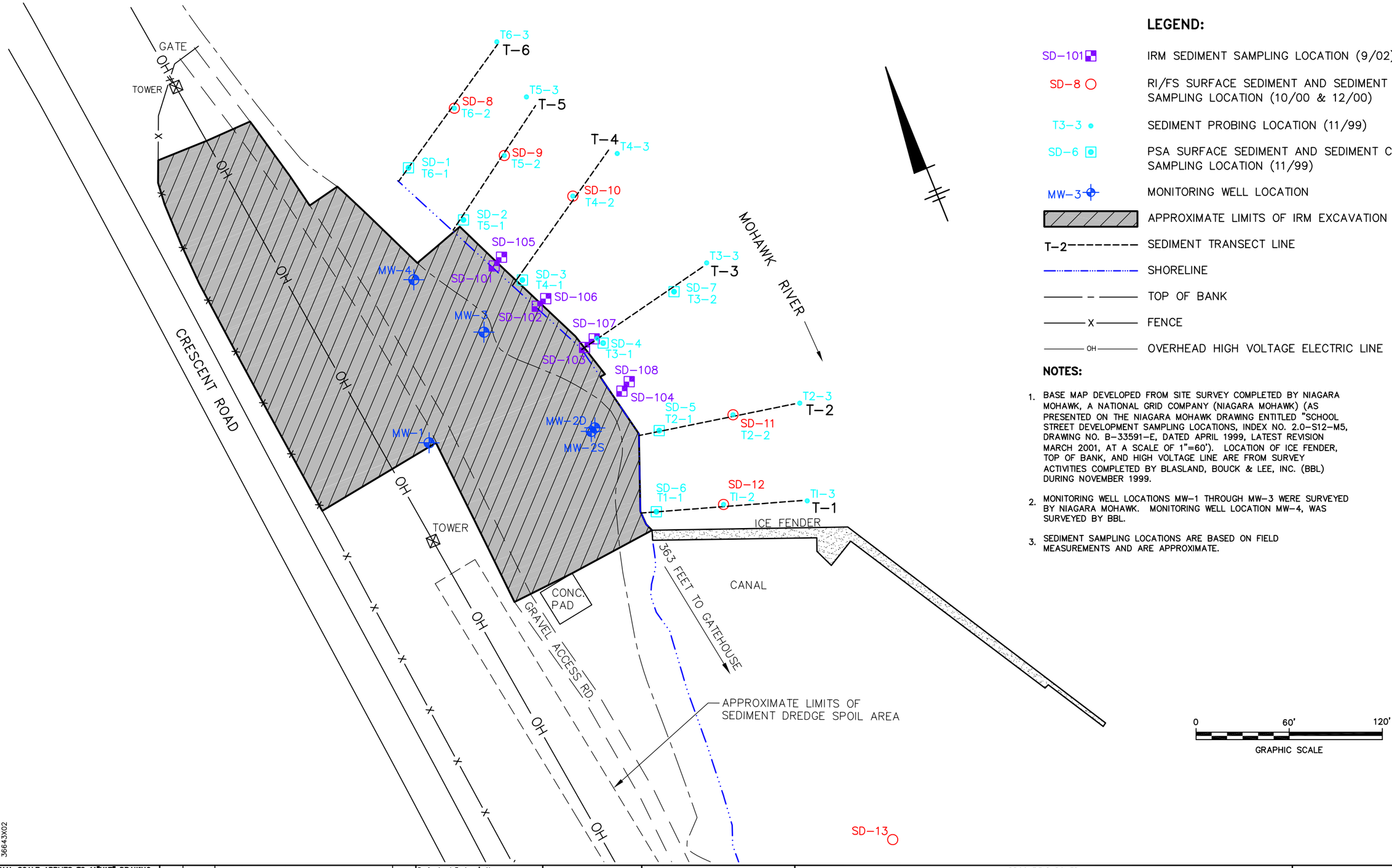
BROOKFIELD POWER
FORMER NATIONAL GRID
SCHOOL ST. HYDROELECTRIC STATION – COHOES, NY
REMEDIAL DESIGN

SEDIMENT SAMPLING LOCATIONS AND ANALYTICAL RESULTS FOR TOTAL PCBs & TOC (ppm)

GENERAL

AN ARCADIS COMPANY

4B



LEGEND:

- SD-101 — IRM SEDIMENT SAMPLING LOCATION (9/02)
- SD-8 — RI/FS SURFACE SEDIMENT AND SEDIMENT CORE SAMPLING LOCATION (10/00 & 12/00)
- T3-3 — SEDIMENT PROBING LOCATION (11/99)
- SD-6 — PSA SURFACE SEDIMENT AND SEDIMENT CORE SAMPLING LOCATION (11/99)
- MW-3 — MONITORING WELL LOCATION
- APPROXIMATE LIMITS OF IRM EXCAVATION AREA
- T-2 — SEDIMENT TRANSECT LINE
- SHORELINE
- TOP OF BANK
- FENCE
- OH — OVERHEAD HIGH VOLTAGE ELECTRIC LINE

NOTES:

1. BASE MAP DEVELOPED FROM SITE SURVEY COMPLETED BY NIAGARA MOHAWK, A NATIONAL GRID COMPANY (NIAGARA MOHAWK) (AS PRESENTED ON THE NIAGARA MOHAWK DRAWING ENTITLED "SCHOOL STREET DEVELOPMENT SAMPLING LOCATIONS, INDEX NO. 2.0-S12-M5, DRAWING NO. B-33591-E, DATED APRIL 1999, LATEST REVISION MARCH 2001, AT A SCALE OF 1"=60'). LOCATION OF ICE FENDER, TOP OF BANK, AND HIGH VOLTAGE LINE ARE FROM SURVEY ACTIVITIES COMPLETED BY BLASLAND, BOUCK & LEE, INC. (BBL) DURING NOVEMBER 1999.
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3. SEDIMENT SAMPLING LOCATIONS ARE BASED ON FIELD MEASUREMENTS AND ARE APPROXIMATE.

ORIGINAL SCALE APPLIES TO 11"X17" DRAWING

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DRAFT
NOT FOR
CONSTRUCTION

ARCADIS BBL
Infrastructure, environment, facilities

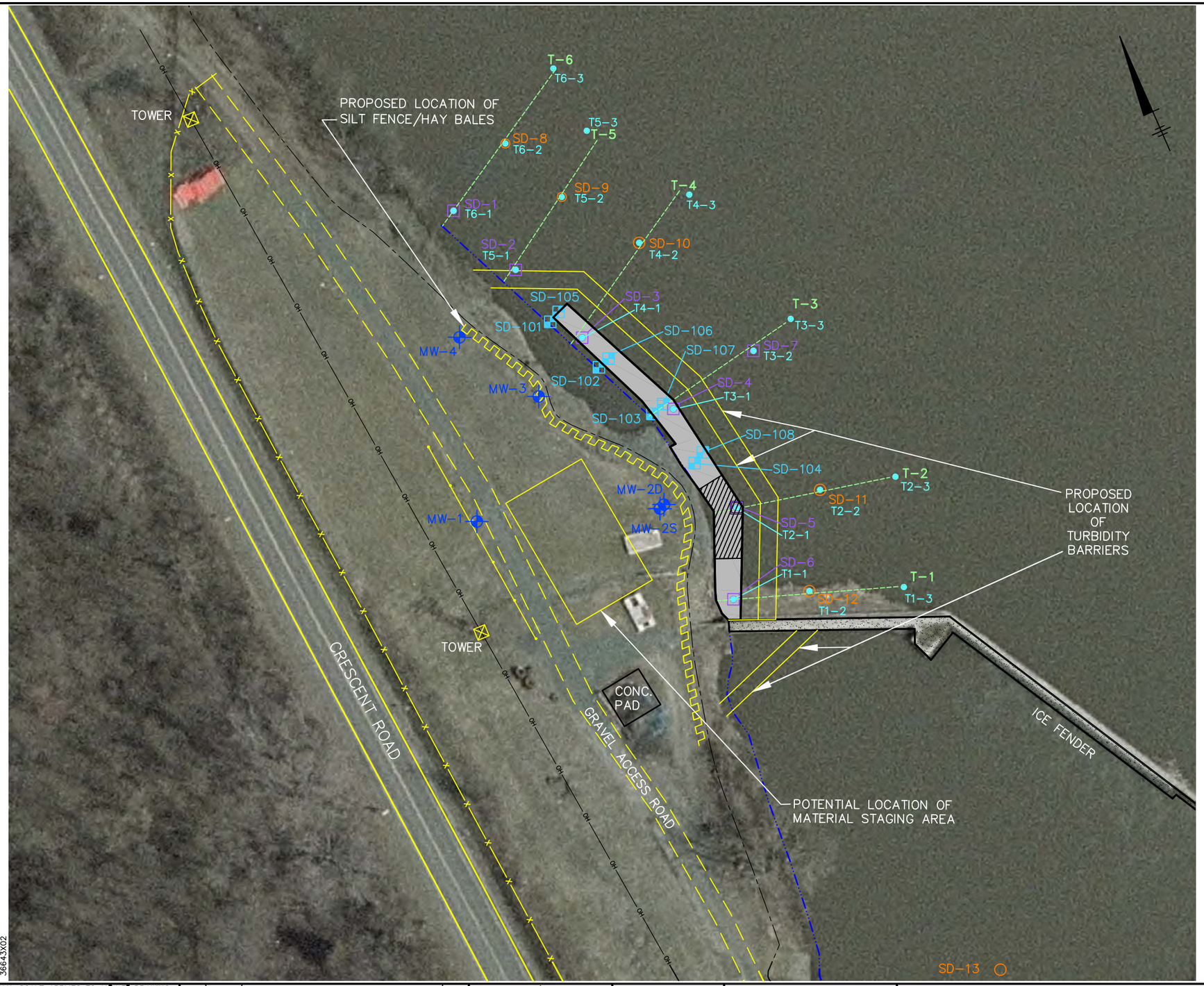
BROOKFIELD POWER
FORMER NATIONAL GRID
SCHOOL ST. HYDROELECTRIC STATION – COHOES, NY
REMEDIAL DESIGN

PREVIOUS IRM SOIL/SEDIMENT REMOVAL LIMITS

GENERAL

AN ARCADIS COMPANY

5



LEGEND:

- PROPOSED LIMITS OF SEDIMENT REMOVAL TO A DEPTH OF 1 FOOT.
- PROPOSED LIMITS OF SEDIMENT REMOVAL TO A DEPTH OF 1.5 FEET
- SD-101 IRM SEDIMENT SAMPLING LOCATION (9/02)
- SD-8 RI/FS SURFACE SEDIMENT AND SEDIMENT CORE SAMPLING LOCATION (10/00 & 12/00)
- SD-6 PSA SURFACE SEDIMENT AND SEDIMENT CORE SAMPLING LOCATION (11/99)
- MW-3 EXISTING MONITORING WELL LOCATION
- T-2---------- PREVIOUS SEDIMENT TRANSECT LINE
- APPROXIMATE SHORELINE DURING IRM WATER LEVEL DRAWDOWN (2002)
- TOP OF BANK
- FENCE
- OHE OVERHEAD HIGH VOLTAGE ELECTRIC LINE

NOTES:

1. BASE MAP DEVELOPED FROM SITE SURVEY COMPLETED BY NIAGARA MOHAWK, A NATIONAL GRID COMPANY (NIAGARA MOHAWK) (AS PRESENTED ON THE NIAGARA MOHAWK DRAWING ENTITLED "SCHOOL STREET DEVELOPMENT SAMPLING LOCATIONS, INDEX NO. 2.0-S12-M5, DRAWING NO. B-33591-E, DATED APRIL 1999, LATEST REVISION MARCH 2001, AT A SCALE OF 1"=60'). LOCATION OF ICE FENDER, TOP OF BANK, AND HIGH VOLTAGE LINE ARE FROM SURVEY ACTIVITIES COMPLETED BY BLASLAND, BOUCK & LEE, INC. (BBL) DURING NOVEMBER 1999.
2. AERIAL PHOTOGRAPH OBTAINED FROM THE NEW YORK STATE GEOGRAPHIC INFORMATION SYSTEMS (GIS) CLEARING HOUSE (WWW.NYSGIS.STATE.NY.US). THE PHOTOGRAPH IS FROM APRIL 2004.
3. MONITORING WELL LOCATIONS MW-1 THROUGH MW-3 WERE SURVEYED BY NIAGARA MOHAWK. MONITORING WELL LOCATION MW-4, WAS SURVEYED BY BBL.
4. SEDIMENT SAMPLING LOCATIONS ARE BASED ON FIELD MESUREMENTS AND ARE APPROXIMATE.

0 60' 120'

GRAPHIC SCALE

ORIGINAL SCALE APPLIES TO 11"X17" DRAWING

THIS DRAWING WAS PREPARED AT THE SCALE(S) INDICATED. INACCURACIES IN THE STATED SCALE(S) MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED. USE THE GRAPHIC SCALE BAR(S) TO DETERMINE THE ACTUAL SCALE(S) OF THIS DRAWING.

No.	Date	Revisions	Init

NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

Professional Engineer's Name: JAMES M. NUSS
Professional Engineer's No.: 067963
State: NY
Date Signed:
Project Mgr.: JCB
Designed by: CSA
Drawn by: KMD

DRAFT NOT FOR CONSTRUCTION

ARCADIS BBL
Infrastructure, environment, facilities

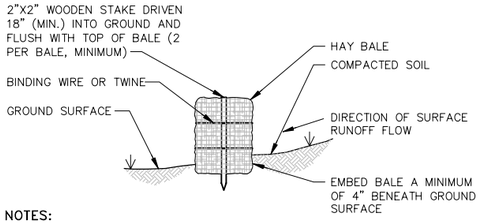
BROOKFIELD POWER
FORMER NATIONAL GRID
SCHOOL ST. HYDROELECTRIC STATION – COHOES, NY
REMEDIAL DESIGN

PROPOSED SEDIMENT REMOVAL LIMITS

GENERAL

AN ARCADIS COMPANY

6

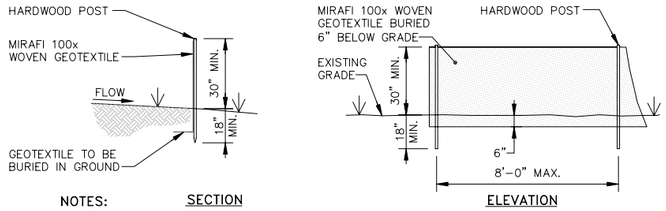


NOTES:

1. HAY BALES SHALL ONLY BE USED AS REQUIRED.
2. BALES SHALL 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.

HAY BALE 1

NOT TO SCALE

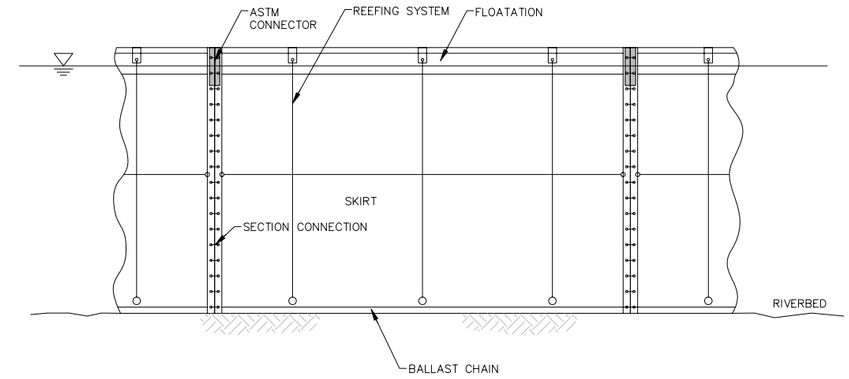


NOTES:

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

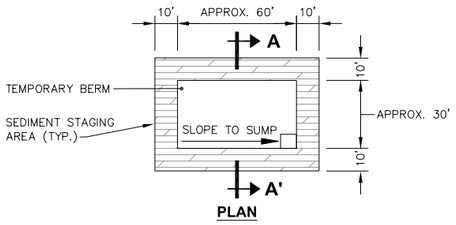
SILT FENCE 2

NOT TO SCALE

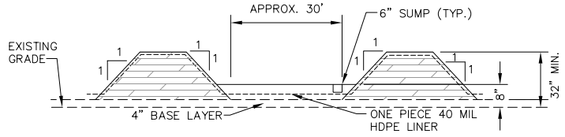


TYPICAL TURBIDITY BARRIER ELEVATION VIEW 3

NOT TO SCALE



PLAN



SECTION A-A'

NOTES:

1. CONSTRUCT ON EXISTING GRADE OVER AN AREA SIZED FOR THE AMOUNT OF MATERIAL TO BE STAGED. ENSURE AREA TO BE LINED IS FREE OF DEBRIS, STONES, AND SHARP OBJECTS.
2. PLACE A 4"-THICK LAYER OF GRANULAR FILL BASE MATERIAL (i.e., INTERLOCKING STONE).
3. PLACE 40 MIL HDPE LINER OVER THE BASE LAYER AND ANCHOR INTO TEMPORARY BERMS.
4. PLACE A 4"-THICK LAYER OF STONE OVER THE LINER. THE STONE WILL BE FROM AN APPROVED SOURCE.
5. PLACE IMPORTED CLEAN FILL AS SHOWN TO FORM BERMS.
6. THE TEMPORARY SEDIMENT STAGING AREA SHOULD BE SLOPED TO DRAIN TO A LOW POINT SUCH THAT ACCUMULATED WATER CAN BE COLLECTED.
7. WHEN DREDGING IS COMPLETE, THE LINER AND ALL MATERIAL ABOVE IT WILL BE TRANSPORTED FOR OFFSITE DISPOSAL WITH THE DREDGED MATERIALS, IN ACCORDANCE WITH APPLICABLE REGULATIONS. THE BASE LAYER WILL BE REMOVED AND TRANSPORTED FOR OFFSITE DISPOSAL IN ACCORDANCE WITH APPLICABLE REGULATIONS.

TEMPORARY SEDIMENT STAGING AREA 4

NOT TO SCALE

[SYR-85-KMD] SYR-85-KMD RCB AMS LAYER: ON=*; OFF=*REF*
G:\CAD\ACTIVE\-DWG\ACT\36643017\36643G01.dwg SAVED:8/29/2007 3:10 PM LAYOUT:7 PAGESETUP:---- PENTABLE:PLTULL.CTB PRINTED:8/29/2007 3:11 PM BY:ASCHILLING
PROJECTNAME:----
XREFS: 36643X02
IMAGES:

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

THIS DRAWING WAS PREPARED AT THE SCALE(S) INDICATED. INACCURACIES IN THE STATED SCALE(S) MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED. **USE THE GRAPHIC SCALE BAR(S) TO DETERMINE THE ACTUAL SCALE(S) OF THIS DRAWING.**

No.	Date	Revisions	Init

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Professional Engineer's Name: **JAMES M. NUSS**
Professional Engineer's No.: 067963
State: NY
Date Signed:
Project Mgr.: JCB
Designed by: CSA
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DRAFT NOT FOR CONSTRUCTION

ARCADIS BBL
Infrastructure, environment, facilities

BROOKFIELD POWER
FORMER NATIONAL GRID
SCHOOL ST. HYDROELECTRIC STATION – COHOES, NY
REMEDIAL DESIGN

TYPICAL CONSTRUCTION DETAILS

GENERAL

AN ARCADIS COMPANY

7

ARCADIS BBL

Attachment A

Health and Safety Plan

HASP to be Provided in Hard-Copy Submittal

ARCADIS BBL

Attachment B

Pre-Construction Activities Plan

27New York State Department of Environmental Conservation
Office of Environmental Quality, Region 4
1130 North Westcott Road, Schenectady, New York 12306-2014
Phone: (518) 357-2045 • **FAX:** (518) 357-2398
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

August 13, 2007

James T. Morgan
Lead Senior Environmental Engineer
National Grid
Environmental Department
300 Erie Boulevard West
Syracuse, NY 13202

Re: Site #401044
School Street
Former FireTraining Facility
Cohoes (C), Albany County

Dear Jim:

I'm pleased to notify you that the ROD has been approved. Thanks to John Brussel and you for your efforts in this project. Formal distribution will follow shortly.

I've reviewed the RD/RA Pre-construction work plan dated 8/7/2007. This work plan is designed to confirm the presence and any redistribution of the PCB sediment prior to removal. The work plan includes reverification of the previously identified area as well as transects upstream and downstream of this area. The work plan also indicates that sediment removal may be performed to bedrock in most of this area. The work plan is approved. Field work is anticipated to begin on Tuesday, August 14, 2007.

Sincerely,

O'Neill for

Allan N. Geisendorfer, P.E.
Regional Spill Engineer
Region IV

AG:lg\Letter.Nationalgrid.081307.wpd.

cc: John Brussel, Arcadis
Honorable John McDonald, Mayor, City of Cohoes
M. Schuck, NYSDOH
R. Groves, NYSDOH

ecc: Chris O'Neill/Dan Lightsey, DEC
E. Belmore, DEC
R. Cozzy, DEC

nationalgrid

James F. Morgan
Lead Senior Environmental Engineer
Environmental Department

August 7, 2007

Mr. Allan Geisendorfer, P.E.
Project Manager
New York State Department of Environmental Conservation
Region 4
1130 North Westcott Road
Schenectady, New York 12306

Re: Brookfield Power, Inc.
(Former National Grid)
School Street Hydroelectric Station
Cohoes, New York
NYSDEC Site No. 401044
RD/RA Pre-Construction Activities

Dear Mr. Geisendorfer:

Pursuant to your July 24, 2007 telephone conference call with Mr. Ray Wingert, P.E. of Brookfield Power, Inc. (Brookfield) and Mr. John C. Brussel, P.E. of ARCADIS of New York, Inc. (ARCADIS BBL), this letter describes various remedial design/remedial action (RD/RA) activities to be performed on an expedited basis ("pre-construction activities") at the Brookfield Power, Inc. (former National Grid) School Street Hydroelectric Station in Cohoes, New York. The proposed pre-construction activities will be performed to support completion of the final remedy, the removal of approximately 100 cubic yards (CY) of impacted nearshore sediment within the Mohawk River east of the former fire training area, during October 2007.

The pre-construction activities will be performed concurrently with New York State Department of Environmental Conservation (NYSDEC) review of the RD Work Plan, which is scheduled to be submitted to the NYSDEC on or before August 17, 2007 (pending NYSDEC issuance of the Record of Decision [ROD] this week). Based on the results of the pre-construction activities, the proposed limits of sediment to removed as part of the RA will be adjusted, as needed. The proposed pre-construction activities include:

- Performing pre-removal survey activities to provide various survey/control data needed for the RA;
- Implementing sediment probing and sampling to verify previous sediment conditions as required by the NYSDEC under Section 8 of the ROD; and
- Collecting in-situ waste characterization samples to evaluate disposal requirements for sediment to be removed during the RA.

Details of proposed pre-construction activities are presented below, followed by a discussion of the schedule for performing the expedited activities.

Proposed Pre-Construction Work Activities

The proposed pre-construction surveying, sediment probing, verification sediment sampling, and in-situ waste characterization sampling activities are discussed below.

Proposed Surveying Activities

Survey activities to be performed as a pre-construction activity in the nearshore area include:

- Re-establishing the transect lines established during the Preliminary Site Assessment (PSA) and Remedial Investigation (RI). Flagged wooden stakes will be used to document the end-point of each transect along the shoreline;

- Field-identifying each location where pre-construction sediment probing and sampling will be performed, as discussed below. Coordinates derived from Figure 1 will be used to identify each location;

- Determine the sediment surface elevation at each sediment probing/sampling location. The locations and elevations will be recorded for later reference. Selected locations will serve as control points to be revisited following implementation of the RA to confirm that sediment is removed to the target depths; and

- Identify the boundaries of the proposed sediment removal area. The boundaries will be marked using stakes and/or anchored buoys, as appropriate.

The surveying activities will be performed using conventional land surveying techniques and/or high-end global positioning system (GPS) methods.

Proposed Sediment Probing

Sediment probing will be performed to determine the sediment thickness at four re-visited sediment transect lines established during the PSA and RI, which each extend through the proposed removal area (sediment transect lines T-1 through T-4). Sediment probing will be also conducted along new transect lines to be established downstream and upstream of the proposed removal area (sediment transect lines T-0 and T-4A, respectively). Sediment probing will be completed along each transect at distances of approximately 8 feet, 15 feet, and 22 feet from the eastern shoreline. Field personnel will record the water depth, sediment depth, and sediment composition at each probing location. The transect lines and proposed probing locations are shown on Figure 1.

Proposed Verification Sediment Sampling

Sediment core samples will be collected at each sediment probing location described above. In addition, sediment core samples will be collected at the upstream and downstream limits of the proposed removal area (at sampling locations V-US and V-DS, respectively). Core samples will be collected by driving 2- or 3-inch diameter Lexan® tubing into the sediment until refusal. Based on sediment probing conducted as part of the PSA, sediment depths within the proposed removal area range from approximately 0.2 feet to 2.7 feet. Each core will be segmented into various intervals, depending on sampling location, as described below.

- *Cores Obtained from Sampling Locations At or Outside the Horizontal Limits of the Proposed Sediment Removal Area:* Each of these cores will be segmented into a surface sample (0.0 to 0.5 feet) and one or more subsurface samples (e.g., 1.0 to 1.5 feet, 2.0 to 2.5 feet, etc.), depending on the sediment thickness at the sampling location. The surface sediment sample from each sampling location along the horizontal limits of the proposed sediment removal area (sampling locations V1-2, V2-2, V3-2, V4-2, V-US, and

V-DS, as shown on Figure 1) will be submitted for laboratory analysis for polychlorinated biphenyls (PCBs) using United States Environmental Protection Agency (USEPA) SW-846 Method 8082. The remaining surface and subsurface sediment samples from the locations at and outside the horizontal limits of the proposed sediment removal area will be submitted to the laboratory for extraction, followed by archive of the extract for potential future analysis (if needed, within allowable holding times).

- *Cores Obtained from Sampling Locations Within the Horizontal Limits of the Proposed Sediment Removal Area:* Each of these cores will be segmented into an upper interval, consistent with the interval of sediment to be removed (e.g., 0.0 to 1.0 feet or 0.0 to 1.5 feet, to be composited into a waste characterization sample as discussed below) and underlying 0.5 foot intervals (to be used for potential verification purposes, if needed). Based on the results of the previous sediment probing and considering the proposed sediment removal limits shown on Figure 1, bedrock would likely be exposed over most of the removal area following dredging, except around sampling location V4-1. Depending on the findings of the proposed sediment probing activities, sediment removal may be extended to the depth of bedrock throughout the entire dredging area. This would eliminate the need for vertical delineation sampling at selected locations within the removal area (such as at sampling location V4-1 where approximately 2 feet of sediment was previously encountered) and would potentially streamline implementation of the remedy. Accordingly, sediment core samples collected from the 0.5-foot interval directly below the proposed removal depth within the dredging area (such as at sampling location V4-1) will be submitted for laboratory analysis for PCBs, only if dredging will not extend to bedrock at each location.

Proposed sampling intervals and analyses are summarized in Table 1. As discussed during the July 24, 2007 telephone conference call, additional/verification sediment sampling further downstream from the nearshore area (within the power canal) is not proposed because sediment within the power canal will be completely removed in 2008 as part of construction activities to deepen the canal by up to 5 feet. The material generated by the construction activities will be managed by Brookfield pursuant to the 401 Water Quality Certification issued by the NYSDEC on October 10, 2006.

Proposed In-Situ Waste Characterization Sampling

In-situ waste characterization sampling will be performed to evaluate disposal requirements for the nearshore sediment to be removed during the RA. One composite sample will be formed from the sediment recovered at each proposed sediment probing/core sampling location within the proposed removal area (using the portion of sediment recovered to the proposed removal depth), including locations V1-1, V2-1, V3-1, and V4-1, as shown on Figure 1. The composite sample will be submitted for laboratory analysis for PCBs, Toxicity Characteristic Leaching Procedure (TCLP) volatile organic compounds (VOCs), TCLP semi-volatile organic compounds (SVOCs), TCLP metals, ignitability, corrosivity, and reactivity using the USEPA methods identified in the table below.

Analytical Parameters	Analytical Method
PCBs	USEPA SW-846 Method 8082
TCLP VOCs	USEPA SW-846 Method 1311/8260
TCLP SVOCs	USEPA SW-846 Method 1311/8270
TCLP Metals	USEPA SW-846 Method 1311/6010/7470
Ignitability	USEPA SW-846 Method 1020A
Corrosivity	USEPA SW-846 Method 9040B
Reactivity	USEPA SW-846 Method 7.3.3.2 and 7.3.4.2

Schedule

The pre-construction activities are currently scheduled for the week of August 13, 2007. Samples will be submitted for laboratory analysis on an expedited turnaround with preliminary results due the week of August 20, 2007. This will allow time for analysis of archived samples, if necessary, within allowable holding times (and without impacting the anticipated start of sediment removal activities in October). Analytical results will be tabulated and provided to the NYSDEC two weeks after receipt of the final analytical results (including results of archived samples which are subsequently analyzed, if any).

If you have any questions or require additional information, please feel free to contact me at (315) 428-3101.

Sincerely,

James F. Morgan / JcB

James F. Morgan
Lead Senior Environmental Engineer

cc: Ray Wingert, P.E., Brookfield Power, Inc.
Ken Kemp, P.E., Brookfield Power, Inc.
Thomas Uncher, Brookfield Power, Inc.
Michael C. Jones, ARCADIS BBL
John C. Brussel, P.E., ARCADIS BBL

Environmental Department, 300 Erie Boulevard West, Syracuse, New York 13202
T: (315) 428-3101 ■ F: (315) 460-9644 ■ James.F.Morgan@us.ngrid.com ■ www.nationalgrid.com

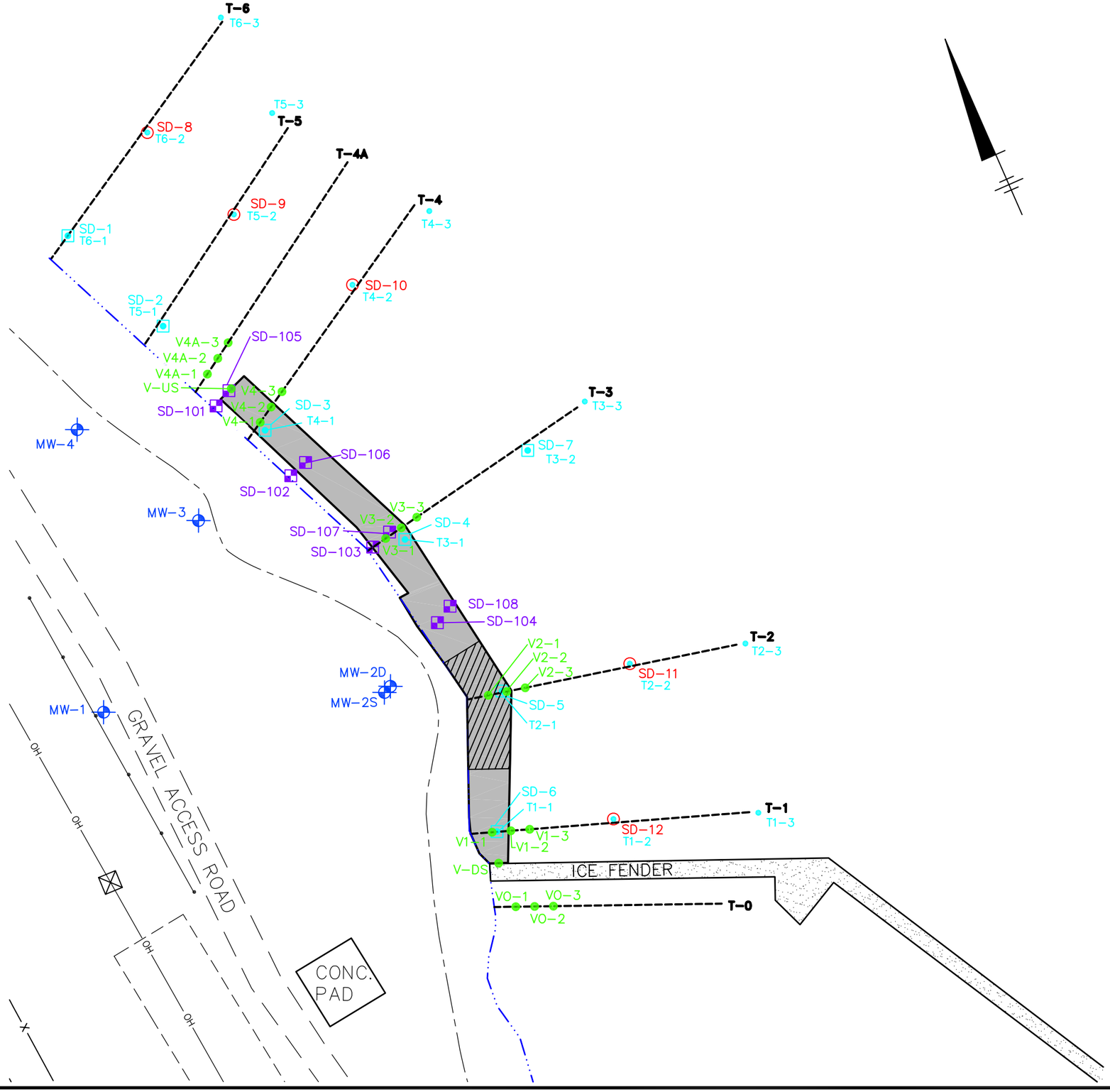
TABLE 1
PROPOSED SEDIMENT SAMPLING PLAN

PRE-REMOVAL VERIFICATION SEDIMENT SAMPLING
BROOKFIELD POWER, INC. (FORMER NATIONAL GRID)
SCHOOL STREET HYDROELECTRIC STATION
COHOES, NEW YORK

Sampling Location	Approximate Distance from Shoreline	Nearby Previous Sampling Location	Approximate Previous Total Sediment Depth	Maximum Previous PCB Analytical Result (ppm)	Sampling Interval			
					(0-0.5')	(0.5-1.0')	(1.0-1.5')	(2.0-2.5')
V-US	8'	SD-105	2.7'	<0.04 (2.2-2.7')	**PCBs**	NA	Archive	Archive
V-DS	8'	NA	NA	NA	**PCBs**	NA	Archive	Archive
Transect 0								
V0-1	8'	NA	NA	NA	Archive	NA	Archive	Archive
V0-2	15'	NA	NA	NA	Archive	NA	Archive	Archive
V0-3	22'	NA	NA	NA	Archive	NA	Archive	Archive
Transect 1								
V1-1	8'	SD-6	0.7'	1.6 (0-0.7')	**Waste Characterization***		Bedrock	
V1-2	15'	NA	NA	NA	**PCBs**	NA		
V1-3	22'	NA	NA	NA	Archive	NA		
Transect 2								
V2-1	8'	SD-5	1.5'	1.9 (0-0.5')	**Waste Characterization***			Bedrock
V2-2	15'	NA	NA	NA	**PCBs**	NA	Archive	
V2-3	22'	NA	NA	NA	Archive	NA	Archive	
Transect 3								
V3-1	8'	SD-107	0.2'	6.1 (0-0.5')	**Waste Characterization***		Bedrock	
V3-2	15'	SD-4	1.0'	3.0 (0-0.5')	**PCBs**	NA		
V3-3	22'	NA	NA	NA	Archive	NA		
Transect 4								
V4-1	8'	SD-3	2.0'	7.3 (0-0.5')	**Waste Characterization***		**PCBs**	Bedrock
V4-2	15'	NA	NA	NA	**PCBs**	NA	Archive	
V4-3	22'	NA	NA	NA	Archive	NA	Archive	
Transect 4A								
V4A-1	8'	NA	NA	NA	Archive	NA	Archive	Archive
V4A-2	15'	NA	NA	NA	Archive	NA	Archive	Archive
V4A-3	22'	NA	NA	NA	Archive	NA	Archive	Archive

Notes:

1. PCBs = Sample will be submitted to TestAmerica of Shelton, Connecticut for analysis for polychlorinated biphenyls (PCBs) using United States Environmental Protection Agency (USEPA) SW-846 Method 8082.
2. Archive = Sample will be submitted to TestAmerica for extraction and then archive of the sample extract (for potential future analysis, if needed).
3. Waste Characterization* = Discrete samples from each of these locations (four locations total) will be composited into one in-situ waste characterization sample and submitted to TestAmerica for analysis for the following:
   - PCBs using USEPA SW-846 Method 8082;
   - Toxicity Characteristic Leaching Procedure (TCLP) volatile organic compounds (VOCs) using USEPA SW-846 Method 1311/8260;
   - TCLP semi-volatile organic compounds (SVOCs) using USEPA SW-846 Method 1311/8270;
   - TCLP Metals using USEPA SW-846 Method 1311/6010/7471;
   - Ignitability using USEPA SW-846 Method 1010;
   - Corrosivity using USEPA SW-846 Method 9045C;
   - Reactive Cyanide using USEPA SW-846 Method 7.3.3; and
   - Reactive Sulfide using USEPA SW-846 Method 7.3.4.
4. Bedrock = Sediment was not encountered at this depth during previous probing activities and sediment is not expected to be encountered at this depth during this probing/sampling event.
5. NA = Not applicable.



LEGEND:

- VO-1 ● PROPOSED PRE-DREDGING VERIFICATION SAMPLING LOCATION
- T-2 ------- SEDIMENT TRANSECT LINE
- SD-101 ▪ EXISTING IRM SEDIMENT SAMPLING LOCATION (9/02)
- SD-8 ○ EXISTING RI/FS SURFACE SEDIMENT AND SEDIMENT CORE SAMPLING LOCATION (10/00 & 12/00)
- SD-6 ◎ EXISTING PSA SURFACE SEDIMENT AND SEDIMENT CORE SAMPLING LOCATION (11/99)
- MW-3 ⊕ EXISTING MONITORING WELL LOCATION
- PROPOSED EXTENT OF SEDIMENT REMOVAL TO A DEPTH OF 1 FOOT
- PROPOSED LIMITS OF SEDIMENT REMOVAL TO A DEPTH OF 1.5 FEET
- SHORELINE
- TOP OF BANK
- FENCE
- OH OVERHEAD HIGH VOLTAGE ELECTRIC LINE

NOTES:

1. BASE MAP DEVELOPED FROM SITE SURVEY COMPLETED BY NIAGARA MOHAWK, A NATIONAL GRID COMPANY (NIAGARA MOHAWK) (AS PRESENTED ON THE NIAGARA MOHAWK DRAWING ENTITLED "SCHOOL STREET DEVELOPMENT SAMPLING LOCATIONS, INDEX NO. 2.0-S12-M5, DRAWING NO. B-33591-E, DATED APRIL 1999, LATEST REVISION MARCH 2001, AT A SCALE OF 1"=60'). LOCATION OF ICE FENDER, TOP OF BANK, AND HIGH VOLTAGE LINE ARE FROM SURVEY ACTIVITIES COMPLETED BY BLASLAND, BOUCK & LEE, INC. (BBL) DURING NOVEMBER 1999.
2. MONITORING WELL LOCATIONS MW-1 THROUGH MW-3 WERE SURVEYED BY NIAGARA MOHAWK. MONITORING WELL LOCATION MW-4, WAS SURVEYED BY BBL.
3. SEDIMENT SAMPLING LOCATIONS ARE BASED ON FIELD MESUREMENTS AND ARE APPROXIMATE.

0 40' 80'

GRAPHIC SCALE

BROOKFIELD POWER
FORMER NATIONAL GRID
SCHOOL ST. HYDROELECTRIC STATION – COHOES, NY
PRE-MOBILIZATION ACTIVITIES

PROPOSED PRE-DREDGING VERIFICATION SAMPLING LOCATIONS

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE 1

SYR-85-RCB KLS WLJ L: ON=*; OFF=REF
G:\CAD\ACTIVE\-DWG\ACT\36643017\36643B10.DWG SAVED: 7/30/2007 11:25 AM LAYOUT:1 PAGESETUP:---- PENTABLE:PLTFULL.CTB PRINTED: 7/30/2007 11:25 AM BY: WJONES
PROJECTNAME:----
XREFS: IMAGES:
36643X01
36643X00