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FINAL REPORT
ROUND 10 DAM ASSESSMENT
FIRSTLIGHT POWER RESOURCES, INC.
MT. TOM GENERATING STATION
BOTTOM ASH BASIN A, EQUALIZATION TANK, AND SPECIAL BASIN
HOLYOKE, MASSACHUSETTS

PREPARED FOR:

U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

PREPARED BY:

GZA GeoEnvironmental, Inc.
One Edgewater Drive
Norwood, MA 02062
GZA File No. 01.0170142.30

FINAL REPORT

GZA
GeoEnvironmental, Inc.

Engineers and Scientists

September 25, 2012
GZA File No. 170142.30

Mr. Stephen Hoffman, Senior Environmental Scientist, Office of Solid Waste
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: CCW Impoundment Inspection Report
Bottom Ash Basin A, Special Basin, and Equalization Tank
Mt. Tom Generating Station
Holyoke, Massachusetts

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Dear Mr. Hoffman,

In accordance with our proposal 01.P0000177.11 dated March 28, 2011, and U.S. Environmental Protection Agency (EPA) Contract No. EP10W001313, Order No. EP-B115-00049, GZA GeoEnvironmental, Inc. (GZA) has completed our inspection of the Mt. Tom Generating Station Bottom Ash Basin A, Special Basin, and Equalization Tank located in Holyoke, Massachusetts. The Site visit was conducted on May 23, 2011. The purpose of our efforts was to provide the EPA with a site specific inspection of the impoundments to assist EPA in assessing the structural stability of the impoundments under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 104(e). We are submitting one hard copy and one CD-ROM copy of this Final Report directly to the EPA. This Final Report incorporates comments received from the EPA dated April 25, 2012.

Note that the Equalization Tank does not meet the criteria set forth by the U.S. EPA with regard to coal ash impoundments. The Equalization Tank was briefly inspected by GZA during the site visit and a checklist is included in **Appendix C**, however no further study or discussion of the Equalization Tank is necessary, in GZA's opinion.

Based on our visual inspection, and in accordance with the EPA criteria, the Bottom Ash Basin A and the Special Basin were in **POOR** condition at the time of our inspection, in our opinion. Further discussion of our evaluation and recommended actions are presented in the Task 3 Dam Assessment Report. The report includes: (a) a completed Coal Combustion Dam Inspection Checklist Form for each unit; (b) a field sketch; and (c) selected photographs with captions. Our services and report are subject to the Limitations found in **Appendix A** and the Terms and Conditions of our contract agreement.

We are happy to have been able to assist you with this inspection and appreciate the opportunity to continue to provide you with dam engineering consulting services. Please contact the undersigned if you have any questions or comments regarding the content of this Task 3 Dam Assessment Report.

Sincerely,

GZA GeoEnvironmental, Inc.

Gregory W. Hunt
Project Engineer

James P. Guarente, P.E. (MA)
Consultant/Reviewer

Peter H. Baril, P.E. (MA)
Project Director

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PREFACE

The assessment of the general condition of the dams/impoundment structures reported herein was based upon available data and visual inspections. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations were beyond the scope of this report.

In reviewing this report, it should be realized that the reported condition of the dams and/or impoundment structures was based on observations of field conditions at the time of inspection, along with data available to the inspection team. In cases where an impoundment is lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions, which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is critical to note that the condition of the dam and/or impoundment structures depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the reported condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

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EXECUTIVE SUMMARY

This Inspection Report presents the results of a visual inspection of the First Light Power Resources / Mt. Tom Generating Company (FirstLight, Owner), Mt. Tom Generating Station Coal Combustion Waste (CCW) Impoundments located in Holyoke, Massachusetts. These inspections were performed on May 23, 2011 by representatives of GZA GeoEnvironmental, Inc (GZA), accompanied by representatives of FirstLight and the Massachusetts Department of Environmental Protection (MassDEP).

The Mt. Tom Generating Station is a one-unit coal-fired power plant with a maximum generating capacity of approximately 146 Megawatts. The plant originally went into service as a coal-fired unit, but the plant was converted to burn oil in 1970. In 1981, the plant was converted back to coal with updated pollution control equipment. Coal is transported to the plant by rail, and the nearby Connecticut River is used for cooling water supply. The plant contains a number of basins that were constructed to store and treat various forms of wastewater from plant operations, including Coal Combustion Waste (CCW). The management units that are included in this report are the Bottom Ash Basin A, the Special Basin. The report also briefly discusses the Equalization Tank, which does not meet the definition of a CCW management unit. The purpose of the Bottom Ash Basin A is to receive discharges of liquid-born bottom ash and boiler slag. The purpose of the Equalization Tank and Special Basin is for onsite treatment of wastewater discharges from plant wash downs and infrequent air heater washes. Note that the Mt. Tom Generating Station handles fly ash using a dry process in which the fly ash is collected by an electrostatic precipitator and trucked off site for beneficial reuse.

The Bottom Ash Basin A has a maximum structural height of approximately 6 feet and a maximum storage volume of approximately 29 acre-feet. The Equalization Tank has a maximum structural height of approximately 13 feet and a maximum storage volume of approximately 0.2 acre-feet. The Special Basin has a maximum structural height of approximately 10 feet and a maximum storage volume of approximately 15 acre-feet. Therefore, using the USACE criteria, the Bottom Ash Basin A, the Equalization Tank, and the Special Basin all have size and storage volumes less than the minimum size classification of **Small**. Under Commonwealth of Massachusetts Dam Safety Regulations (302 CMR 10.06), the Bottom Ash Basin A would be classified as a **Small** sized structure based on its maximum height being equal to 6 feet and its maximum storage volume being greater than 15 acre-feet. The Equalization Tank would be classified as a **Non-jurisdictional** sized structure due to its storage volume being less than 15 acre-feet. The Special Basin would be classified as a **Small** sized structure based on its maximum height being greater than or equal to 6 feet and less than 15 feet and its maximum storage volume being greater than or equal to 15 acre-feet and less than 50 acre-feet. GZA also notes that dams that are less than 25 feet in height or with storage volumes of less than 50 acre-feet may qualify as non-jurisdictional structures as determined by the Massachusetts Department of Conservation and Recreation (MA DCR) Commissioner using other factors. **The EPA's definition of a CCW management unit includes "surface impoundment(s) or similar diked or bermed management unit(s) or management units designated as landfills which receive liquid-borne material for the storage or disposal of residuals or by-products from the combustion of coal, including, but not limited to, fly ash, bottom ash, boiler slag, or flue gas emission control residuals. This includes units that no longer receive coal combustion residues or by-products but still contain free liquids." Since the Equalization Tank is a reinforced concrete tank structure, in GZA's opinion it does not meet the EPA's definition of a CCW management**

unit, and therefore GZA has provided only brief discussions of the Equalization Tank in the following sections. A checklist for the Tank has been included in Appendix C for informational purposes.

In GZA's opinion, the Bottom Ash Basin A and the Special Basin should be considered as being **Low** hazard potential structures under EPA hazard potential criteria. The EPA defines Low Hazard Potential structures as structures "where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property". In GZA's opinion, the Low hazard potential rating is appropriate for both structures given their relatively small size and impoundment volumes and the uninhabited area surrounding the structures.

Based on the results of GZA's May 23, 2011 visual inspection, discussions with FirstLight personnel, and a review of available design documentation, the Bottom Ash Basin A and the Special Basin were judged to be in **POOR** condition. In GZA's professional opinion, the embankments appear to be sound and no immediate remedial action appears to be necessary. However, based on EPA's inspection criteria, the impoundments have been given a POOR Condition Rating because no geotechnical or hydrologic/hydraulic computations were made available to GZA for review. Thus, the stability of the embankment(s) could not be independently verified. The following deficiencies were noted during the inspection:

Bottom Ash Basin A:

1. Small ruts and low areas and minor surficial erosion along the top of the berm/embankment;
2. Minor erosion at the top of the basin slope, with some transport of gravel into the basin through ripped and missing silt fence;
3. Staff gage numbers are worn and difficult to read near the water line;
4. Discharge pipe at Connecticut River inaccessible due to heavy vegetation growth;
5. Tree and brush growth along east 'downstream' embankment slope and brush growth along northwest and west 'downstream' embankment slopes;
6. No geotechnical or hydrologic/hydraulic computations were made available for review, thus, the stability of the embankments could not be independently verified;
7. There is no known Emergency Action Plan (EAP) for Bottom Ash Basin A.

Special Basin:

1. Small ruts and low areas and minor surficial erosion along the top of the berm/embankment;
2. Minor erosion at the top of the basin slope, with some transport of gravel into the basin through ripped and missing silt fence;
3. Tree and brush growth along east 'downstream' embankment slope;
4. Minor brush growth and minor erosion on west 'downstream' embankment slope;
5. No geotechnical or hydrologic/hydraulic computations were made available for review, thus, the stability of the embankments could not be independently verified;
6. There is no known Emergency Action Plan (EAP) for the Special Basin.

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GZA recommends the following:

Studies and Analysis Recommendations:

1. Investigate and delineate the extent of embankment fill along the eastern (Connecticut River) side of the Bottom Ash Basin A and Special Basin, and evaluate the presence of trees and woody vegetation on the surface of the filled embankment slopes.
2. Perform a geotechnical stability analysis of the embankments and/or management units under all applicable loading conditions, including earthquake-induced loading.
3. Perform a hydrologic and hydraulic analysis of the Bottom Ash Basin A and Special Basin, including an analysis of outlet capacity and overtopping potential of the units.
4. Prepare an Emergency Action Plan (EAP) for the Bottom Ash Basin A and the Special Basin for actions related to potential hazards/failure of the impoundments.

Operation & Maintenance Recommendations:

1. Cut/mow vegetated embankment slopes regularly to prevent the growth of trees and woody vegetation;
2. Fill low areas and eroded areas along the top of the berms and access roads with compacted crushed stone;
3. Maintain a safe, clear path to all discharge locations along the Connecticut River;
4. Repair/replace staff gage markers as needed so that the water surface elevation in the basins and tank can be easily read from the top of berm/top of tank walkway. A distinct marking should be provided at the maximum operating level; and
5. Annually operate all gates, valves, and outlet structures through their full range of operation.

Minor Repair Recommendations:

1. Fill low/rutted areas on access roads around the Bottom Ash Basin A and Special Basin with appropriately sized and compacted stone;
2. Repair/fill areas of erosion on the surface of the berms and embankment slopes. New material should be appropriately sized to prevent erosion from surficial runoff;
3. Replace/repair silt fence along bottom of the perimeter chain-link fence at the Bottom Ash Basin A and Special Basin, or provide alternate means to prevent erosion and transport of stone into basins;
4. Based on the results of the embankment fill delineation recommended above, clear vegetation including trees (and associated roots/ root balls) from embankment fill slopes. Fill any voids resulting from root removal with compacted granular material. Establish healthy grass cover on slopes after vegetation removal is complete;
5. Repair/replace Bottom Ash Basin A staff gage and provide a distinct marking for the maximum operating level.

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1.0 DESCRIPTION OF PROJECT

1.1 General

1.1.1 Authority

The United States Environmental Protection Agency (EPA) has retained GZA GeoEnvironmental, Inc. (GZA) to perform a visual inspection and develop a report of conditions for the First Light Power Resources / Mt. Tom Generating Company (Owner), Mt. Tom Generating Station Bottom Ash Basin A, Special Basin, and Equalization Tank in Holyoke, Massachusetts. These inspections were authorized by the EPA under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 104(e). These inspections and report were performed in accordance with Task 3 of RFQ-DC-16 Round 10 for EPA's Office of Resource Conservation and Recovery in support for the Assessment of Dam Safety of Coal Combustion Surface Impoundments, dated March 16, 2011. The inspection generally conformed to the requirements of the Federal Guidelines for Dam Safety[1], and this report is subject to the limitations contained in **Appendix A** and the Terms and Conditions of our Contract Agreement.

1.1.2 Purpose of Work

The purpose of this investigation was to visually inspect and evaluate the present condition of the dam/basins and appurtenant structures (the management unit) to attempt to identify conditions that may adversely affect their structural stability and functionality, to note the extent of any deterioration that may be observed, review the status of maintenance and needed repairs, and to evaluate the conformity with current design and construction standards of care.

The investigation was divided into four parts: 1) obtain and review available reports, investigations, and data from the Owner pertaining to the dam and appurtenant structures; 2) perform an on-site review with the Owner of available design, inspection, and maintenance data and procedures for the management unit(s); 3) perform a visual inspection of the site; and 4) prepare and submit a draft and a final report presenting the evaluation of the structure, including recommendations and proposed remedial actions.

1.1.3 Definitions

To provide the reader with a better understanding of the report, definitions of commonly used terms associated with dams are provided in **Appendix B**. Many of these terms may be included in this report. The terms are presented under common categories associated with dams which include: 1) orientation; 2) dam components; 3) size classification; 4) hazard classification; 5) general; and 6) condition rating.

[1] FEMA/ICODS, April 2004: http://www.ferc.gov/industries/hydropower/safety/guidelines/fema-93.pdf

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1.2 Description of Project

1.2.1 Location

The Mt. Tom Generating Station (Mt. Tom) is located along the Connecticut River in the City of Holyoke, Hampden County, Massachusetts. The entrance to the facility is on State Route 5 / Northampton Highway. The Bottom Ash Basin A, Special Basin, and Equalization Tank are located from about 1,000 to 1,500 feet south of the Mt. Tom power plant. The latitude and longitude coordinates for the management units inspected as part of this report are as follows:

Management Unit	Latitude	Longitude
Bottom Ash Basin A	42.277089 N	72.602689 W
Equalization Tank	42.278611 N	72.603167 W
Special Basin	42.278269 N	72.602661 W

A site locus of the power plant, management units, and surrounding area is shown in **Figure 1**. An aerial photograph of the area is provided as **Figure 2**. The management units can be accessed by vehicles via a gravel access road starting at the main parking lot at the power plant. Gravel access roads also run around the perimeter of each management unit.

1.2.2 Owner/Caretaker

The dam is owned by the Mt. Tom Generating Company, LLC, and operated by FirstLight Power Resources, Inc. (FirstLight).

	Dam Owner/Caretaker
Name	Mt. Tom Generating Company, LLC/ FirstLight Power Resources, Inc.
Mailing Address	Mt. Tom Generating Station 200 Northampton Street
City, State, Zip	Holyoke, MA 01040
Contact	Michael Gwyther
Title	Plant Manager
E-Mail	Mike.gwyther@gdfsuezna.com
Daytime Phone	(413) 536-9562
Emergency Phone	(413) 539-0695

1.2.3 Purpose of the Dam/Management Units

The Mt. Tom Generating Station is a one-unit coal-fired power plant with a maximum generating capacity of approximately 146 Megawatts. The plant went into service as a coal-fired unit. In 1970, the plant was converted to burn oil. In 1981, the plant was converted back to coal with newer pollution control equipment. Coal is transported to the plant by rail,

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and the nearby Connecticut River is used for cooling water supply. The plant contains a number of basins that were constructed to store and treat various forms of wastewater from plant operations. The management units that are included in this report are the Bottom Ash Basin A, the Special Basin, and the Equalization Tank. The purpose of the Bottom Ash Basin A is to receive discharges of liquid-born bottom ash and boiler slag. The Equalization Tank and Special Basin are used for onsite treatment of wastewater discharges from plant wash downs and infrequent air heater washes. Note that the Mt. Tom Generating Station handles fly ash using a dry process in which the fly ash is collected by an electrostatic precipitator and trucked off site for beneficial reuse.

1.2.4 Description of the Dam/Management Units and Appurtenances

Bottom Ash Basin A

The Bottom Ash Basin A (Basin A) is a lined earthen waste water basin located approximately 1,500 feet south of the Mt. Tom power plant. Basin A was originally constructed in the 1980s as an unlined basin, but converted to a lined basin in 2003. Based on available construction documentation (see Reference List in **Appendix E**), Basin A was constructed with a combination of excavation into the existing grade and earthen embankment fill. Based on construction plans provided by FirstLight[2], the majority of the perimeter berm around the basin appears to have been constructed of earthen embankment fill with a maximum height of approximately 6 feet. The basin has a gradually-sloped bottom, approximately 3:1 (Horizontal:Vertical) side slopes, a maximum depth of about 15 feet. The embankment fill section of the basin has a maximum height above natural ground of about 6 feet. The majority of the middle of Basin A appears to have been excavated into natural ground and/or into previously-deposited fill including bottom ash[3]. The low embankments constructed above grade were reportedly constructed with on-site coal ash material, sand, and gravel. Based on available documentation, the Bottom Ash Basin A does not appear to have been built over wet ash, slag, or other unsuitable materials.

From about 1981 to 2003, Basin A was operated as an unlined settling basin. In 2003, approximately 30,000 cubic yards of bottom ash was excavated from Basin A, the basin was lined, and a pH neutralization system was installed to treat basin discharge. The liner for the basin is a double layer high-density polyethylene (HDPE) impermeable liner with a geonet/geotextile layer sandwiched between the impermeable layers for collection of seepage that passes through the upper layer[2].

Discharge from the power plant enters Basin A via a suspended wastewater pipeline that traverses the western upstream slope of the basin and discharges bottom ash and boiler slag near the southwest corner of the basin. The purpose of Basin A is to provide gravity settling of the bottom ash and boiler slag, which is then periodically removed from the Basin through dredging/excavation. The pH neutralization system is located in a metal trailer/shipping container located adjacent to the northeast corner of the basin. Discharge from Basin A is pumped through one of two approximately 3.5" diameter PVC pipes into the pH neutralization

[2] Northeast Utilities Service Company, "Mt. Tom Power Plan Coal Conversion Site Plan - Sheet 1 and 2", Drawings 43709-10006 SH1 & SH2, "As-Built" May 1985,
[3] MassDEP correspondence to Holyoke Water Power Company, Re: "Sedimentation Basin and Basin A Lining, Corrective Action Design and Post Closure Use – Mt. Tom Station," May 15, 2003

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system. After the pH treatment process, the effluent passes via an approximately 8-inch diameter PVC pipe to a manhole and then discharges at NPDES Outfall #8 to the Connecticut River. Basin A is surrounded by a perimeter chain link fence and a perimeter gravel access road. Maintenance dredging/excavation of Basin A is performed using typical earthwork/excavation vehicles that access the Basin from a gated section of fence along the south side of the Basin.

Equalization Tank

The Equalization Tank is a reinforced concrete primary settlement tank that is part of the on-site wastewater treatment system for the Mt. Tom facility that has been in service since about 1983. The Tank is a 25-foot square by 13-foot high reinforced concrete tank with vertical concrete walls, and an access stairway and catwalk across the top of the tank. The Tank is located just south of the main waste water treatment plant, about 1,000 feet south of the power plant.

The Equalization Tank receives waste water from the Mt. Tom power plant, including "de minimis" quantities of fly ash from infrequent air heater washes and plant wash downs. The Equalization Tank was designed to store flow from normal daily plant operations with an operating freeboard of two feet and an operating capacity of 35,000 gallons. Waste water is pumped into the Equalization Tank from the plant sump, and the tank is continuously mixed by a mixer mounted to a platform/catwalk on top of the tank. Water is pumped from the tank into the treatment plant via one of three pumps, and then passes through the treatment cycle. The Equalization Tank also has an overflow pipe that discharges directly to the Special Basin in the event that the inflow to the Tank exceeds the outflow to the treatment plant.

The EPA's definition of a CCW management unit includes "surface impoundment(s) or similar diked or bermed management unit(s) or management units designated as landfills which receive liquid-borne material for the storage or disposal of residuals or by-products from the combustion of coal, including, but not limited to, fly ash, bottom ash, boiler slag, or flue gas emission control residuals. This includes units that no longer receive coal combustion residues or by-products but still contain free liquids." Since the Equalization Tank is a reinforced concrete tank structure, in GZA's opinion it does not meet the EPA's definition of a CCW management unit, and therefore GZA has provided only brief discussions of the Equalization Tank in the following sections. A checklist for the Tank has been included in Appendix C for informational purposes.

Special Basin

The Special Basin is a lined earthen wastewater basin located approximately 1,000 feet south of the Mt. Tom power plant and east of the Equalization Tank and wastewater treatment building. The Special Basin is also referred to as the Sedimentation Basin in some permit documents and engineering reports. The Special Basin is generally rectangular, with dimensions of approximately 175 feet (east to west) by 385 (north to south). The basin has a gradually-sloped bottom, approximately 3:1 side slopes, a maximum depth of about 15 feet, and a maximum height above natural ground of about 10 feet. The Special Basin was constructed with a combination of excavation into the existing grade and earthen embankment fill. Based on

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construction plans provided by FirstLight[4], the majority of the perimeter berm around the basin appears to have been constructed of earthen embankment fill with a maximum height of approximately 10 feet. The majority of the middle of the Special Basin appears to have been excavated into natural ground and/or into previously-deposited fill including coal ash. The embankments constructed above grade were reportedly constructed with on-site coal ash material, sand, and gravel. Based on available documentation, the Special Basin does not appear to have been built over wet ash, slag, or other unsuitable materials.

The Special Basin has a design capacity of approximately 4.6 million gallons with two feet of freeboard, and serves as a primary settling basin for high volume waste waters from the power plant, including those wastes generated from chemical cleanings and fireside wash water. The Special Basin also receives overflow from the Equalization Tank and discharge from the nearby wastewater treatment building sump pumps. The Special Basin has been in service since about 1983, and was constructed in conjunction with the adjacent Equalization Tank and wastewater treatment plant. The liner for the basin is a double layer HDPE impermeable liner with a geonet/geotextile layer sandwiched between the two impermeable layers for collection and monitoring of any seepage that passes through the upper layer.

Inflows to the Special Basin (discharge from the power plant and overflows from the Equalization Tank) enter the Basin at a concrete pipe chamber located on the northern end of the basin's western slope. The outflow for the Special Basin is situated within a vertical concrete pump chamber located near the southwest corner of the basin. The pump chamber is accessed via a steel catwalk that extends from the access road on the west side of the basin. Outflow is pumped from the pump house/vault to the wastewater treatment building via an approximately 3.5-inch diameter fiberglass pipe.

More information on the construction and performance history of the dam is provided in Sections 1.3.5, 1.3.6, and 2.5 of this report.

1.2.5 Operations and Maintenance

The Bottom Ash Basin A, Equalization Tank, Special Basin, and other plant facilities are operated and maintained by on site FirstLight personnel. Wastewater treatment operations at Bottom Ash Basin A, the pH neutralization building and the wastewater treatment building are performed by trained wastewater treatment plant operators. During periods of active power generation, the water level in each of the wastewater basins is observed daily. The pH neutralization system is manually operated as needed based on the amount of inflow into Bottom Ash Basin A. The wastewater treatment plant, including the Equalization Tank, is operated on a daily basis. Discharge from the Special Basin is manually operated as needed based on the amount of inflow into the Basin.

Maintenance of the Bottom Ash Basin A includes periodic drawdowns of the basin to allow for visual inspection of the liner, and repair of the liner as needed. Leakage flow through the liner is monitored periodically, and quarterly monitoring reports of liner leakage are sent to Massachusetts Department of Environmental Protection (MassDEP) Division of Solid Waste Management. Maintenance dredging/excavation of solids in Basin A is performed

[4] Northeast Utilities Service Company, "Mt. Tom Power Plan Coal Conversion Site Plan - Sheet 1", Drawings 43709-10006 SH1, "As-Built" May 1985,

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approximately every two to three years, based on the rate of accumulation of solids within the basin.

Maintenance of the Special Basin includes periodic drawdowns of the basin to allow for visual inspection of the liner, and repair of the liner as needed. Leakage flow through the liner is monitored periodically, and quarterly monitoring reports of liner leakage are sent to MassDEP. Maintenance dredging/excavation of solids the Special Basin has yet to be performed due to the low level of solids accumulation within the Basin. The Special Basin does have a concrete access ramp on the west side to allow for maintenance dredging/excavation access, if needed.

1.2.6 Size Classification

For the purposes of this EPA-mandated inspection, the size of the dam and its impoundment will be based on U. S. Army Corps of Engineers (USACE) criteria, in which the size of the dam/impoundment structure is based on the maximum structural height above natural ground and the maximum storage volume of the impoundment. Using the USACE criteria, the lowest size classification is Small, which corresponds to a dam with a storage volume between 50 and 1,000 acre-feet and/or a height of between 25 and 40 feet.

The Bottom Ash Basin A has a maximum structural height of approximately 6 feet and a maximum storage volume of approximately 29 acre-feet. The Equalization Tank has a maximum structural height of approximately 13 feet and a maximum storage volume of approximately 0.2 acre-feet. The Special Basin has a maximum structural height of approximately 10 feet and a maximum storage volume of approximately 15 acre-feet. Therefore, using the USACE criteria, the Bottom Ash Basin A, the Equalization Tank, and the Special Basin all have size and storage volumes less than the minimum size classification of Small.

Within the Commonwealth of Massachusetts, the Department of Conservation and Recreation (MA DCR) Office of Dam Safety has different size criteria than the USACE. Using the Massachusetts criteria (302 CMR 10.06), the Bottom Ash Basin A would be classified as a **Small** sized structure based on its maximum height being equal to 6 feet and its maximum storage volume being greater than 15 acre-feet. The Equalization Tank would be classified as a **Non-jurisdictional** sized structure due to its storage volume being less than 15 acre-feet. The Special Basin would be classified as a **Small** sized structure based on its maximum height being greater than or equal to 6 feet and less than 15 feet and its maximum storage volume being greater than or equal to 15 acre-feet and less than 50 acre-feet. GZA also notes that dams that are less than 25 feet in height or with storage volumes of less than 50 acre-feet may qualify as non-jurisdictional structures as determined by the MA DCR Commissioner using other factors.

1.2.7 Hazard Potential Classification

Based on our review of available records, the Bottom Ash Basin A and the Special Basin are not regulated by the MA DCR Office of Dam Safety, and therefore have not been assigned a hazard potential classification. In GZA's opinion, and using the MA DCR Office of Dam Safety criteria (302 CMR 10.06), Bottom Ash Basin A and the Special Basin should be classified as **Low** (Class III) Hazard Potential structures. Under 302 CMR 10.06, Low Hazard Potential structures are classified as those "dams located where failure may cause minimal property damage to others, loss of life is not expected".

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Using the EPA's hazard potential rating, as presented on page 2 of the EPA checklist (**Appendix C**) and Definitions section (**Appendix B**), it is GZA's opinion that the Bottom Ash Basin A, the Equalization Tank, and the Special Basin would also be considered as being **Low** Hazard Potential structures. The EPA defines Low Hazard Potential structures as structures "where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property".

In GZA's opinion, the Low Hazard Potential rating is appropriate for all three structures given their relatively small size and impoundment volumes and the uninhabited area surrounding the structures. A potential failure of either the Bottom Ash Basin A or the Special Basin at maximum pool would likely result shallow flooding of wooded areas adjacent to the site along the Connecticut River and/or shallow flooding of the on-site access roads, coal storage area, and rail spurs. Failure of either Bottom Ash Basin A or the Special Basin would likely result in a small discharge to the Connecticut River. For the Equalization Tank, a potential failure would likely result in shallow flooding of the Mt. Tom facility access road, the wastewater treatment plant, and the adjacent coal storage area. A potential failure of either of the three structures could also result in temporary loss of power generating capacity for the Mt. Tom Generating Station due to the loss of the wastewater storage basins. A map of the area downstream of the Mt. Tom facility is provided as **Figure 3**.

1.3 Pertinent Engineering Data

1.3.1 Drainage Area

Bottom Ash Basin A

The drainage area of the Bottom Ash Basin A is approximately 4.9 acres (0.0076 square miles) and includes the area of the Basin itself, portions of the perimeter access road around the Basin, and a portion of the former Bottom Ash Basin B – which has been decommissioned as a waste water basin and now consists of a landfill with an elevation about 6 feet higher than the surrounding access roads. Note that the perimeter access road around the Basin has drainage swales around the exterior of the site to intercept runoff from surrounding upland areas.

Equalization Tank

The drainage area of the Equalization Tank includes only the open surface area of the tank itself, approximately 625 square feet.

Special Basin

The drainage area of the Special Basin is approximately 2.0 acres (0.0031 square miles) and includes the area of the Basin itself and portions of the perimeter access road around the Basin. Note that the perimeter access road around the Basin has drainage swales around the exterior of the site to intercept runoff from surrounding upland areas.

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1.3.2 Reservoir

Information regarding the approximate size and storage volume of Bottom Ash Basin A and the Special Basin is provided in the tables below. The surface area and storage volumes have been estimated by GZA based on MassGIS orthophoto mapping, topographic plans provided by FirstLight, and design documentation for the basins.

Bottom Ash Basin A – Area and Storage Volume

	Surface Area (acres)	Storage (acre-feet)
Normal Operating Pool	2.1	11.1
Maximum Pool	2.6	29.4

Special Basin – Area and Storage Volume

	Surface Area (acres)	Storage (acre-feet)
Normal Operating Pool	1.0	5.1
Maximum Pool	1.5	15.5

The Bottom Ash Basin A, Equalization Tank, and Special Basin are located within the Mt. Tom facility and are surrounded by gravel access roads. The Bottom Ash Basin A and Special Basin are engineered waste water basins and have slopes covered with an impermeable liner. The area surrounding the basins consists of developed areas of the Mt. Tom facility, beyond which the surrounding area is wooded and undeveloped.

1.3.3 Discharges at the Dam Site

Based on available documentation, discharge records are maintained for the pH neutralization system as well as the on-site wastewater treatment facility. Discharge/flow records for the wastewater treatment facilities were not requested or provided to GZA as part of the current visual inspection.

1.3.4 General Elevations

The following elevations are approximate and are taken from design drawings and engineering reports provided by FirstLight. The normal operating range for the basins was estimated based on information provided by FirstLight wastewater treatment operations staff. Elevations are listed in feet, and the datum is assumed to be the National Geodetic Vertical Datum of 1929 (NGVD 29).

<u>Bottom Ash Basin:</u>

A. Top of Embankment ± 122.5 feet
B. Low Point within Basin ± 107.75 feet
C. Pump Intake Elevation ± 112.4 feet
D. Maximum Design Pool ± 120.5 feet (design)
E. Normal Pool (Normal Operating Range) ± 112.75 to 113.75 feet

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F. Water Surface Elevation at Time of Inspection	± 113 feet
G. Downstream Tail Water at Time of Inspection	None (No tailwater)
H. Low Point along Toe of Dam	± 116.5 feet

Special Basin

A. Top of Embankment	± 122.5 feet
B. Low Point within Basin	± 108.0 feet
C. Pump Intake Elevation	Unknown
D. Maximum Design Pool	± 120.5 feet (design)
E. Normal Pool (Normal Operating Range)	± 113 to 116 feet
F. Water Surface Elevation at Time of Inspection	± 114.5 feet
G. Downstream Tail Water at Time of Inspection	None (No tailwater)
H. Low Point along Toe of Dam	± 112.5 feet

1.3.5 Design and Construction Records and History

The Bottom Ash Basin A, Equalization Tank, and Special Basin were constructed in the early 1980s and put into service in 1983 as part of the Mt. Tom Generating Station fuel conversion from oil back to coal. The Bottom Ash Basin A and Special Basin were originally constructed as unlined basins. 'As-Built' construction plans of the site were provided by FirstLight, and include two sheets showing the construction of the new basins and new wastewater treatment facilities. In 2003, the two basins were modified, double layer impermeable membranes were installed, and a pH neutralization treatment system was constructed for discharge from Bottom Ash Basin A. The 2003 work also included the decommissioning of Bottom Ash Basin B, which was formerly used in conjunction with Basin A to discharge bottom ash and boiler slag. Bottom Ash Basin B was filled and permanently closed as a solid waste landfill in accordance with MassDEP Solid Waste regulations.

FirstLight maintains design and construction records for the Mt. Tom facility, including engineering reports and plans for the initial basin construction in the early 1980s and for the modifications completed in 2003. The basins and treatment systems were designed in 1981 by Northeast Utilities Service Company, and the 2003 modifications to the basins were designed by First Light sub-consultant Tighe & Bond. The 2003 modifications were undertaken in compliance with an Administrative Consent Order (ACO-WE-01-4002A) executed between FirstLight and MassDEP. The Bottom Ash Basins A and B and the Special Basin were reportedly constructed in pre-existing solid waste. Decommissioning of the Bottom Ash Basin B and lining of the Bottom Ash Basin A and the Special Basin was considered by MassDEP as closure of these solid waste disposal areas. Use of the Bottom Ash Basin A and Special Basin following lining modifications is considered by MassDEP as a post-closure use of the underlying solid waste disposal (landfill) areas.

1.3.6 Operating Records

During the inspection, FirstLight operations staff described typical operations and maintenance procedures at the dam. FirstLight operations staff reported that, during power plant operations, water level observations are made for each of the wastewater basins, including the Bottom Ash Basin A, Special Basin, and Equalization Tank. Operations staff also maintain operating records of the wastewater treatment plant and pH neutralization plant operations.

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Records are maintained of quarterly inspections of the Bottom Ash Basin A and Special Basin liners, including leakage flow measurements. These reports were not made available to GZA, however the reports are submitted to MassDEP as part of the approved post-closure use of the basins, which following installation of the liners are now considered closed landfills.

1.3.7 Previous Inspection Reports

Previous inspection reports for the Bottom Ash Basin A, Equalization Tank, and Special Basin were not available to GZA. FirstLight reports that informal visual inspections of the basins and wastewater facilities are performed on a periodic basis to evaluate maintenance needs such as patching of the basin liners and/or removal of solids from the basins. The facilities are not currently regulated by the DCR Office of Dam Safety, and no known dam safety visual inspections have previously been performed at the Mt. Tom facility.

2.0 INSPECTION

2.1 Visual Inspection

The Mt. Tom Generating Station Bottom Ash Basin A, Equalization Tank, and Special Basin were inspected on May 23, 2011 by Peter H. Baril, P.E. and Gregory W. Hunt of GZA GeoEnvironmental, Inc.. Others in attendance at the site inspection included Michael Gwyther, Milton Harris, Ron Brodeur, and James Merchant of FirstLight/Mt. Tom Generating Company; Bob Maggiani of IPR/GDF; Chet Myers, P.E. of Apex Companies, LLC; and David Howland of MassDEP. The weather at the time of the inspection was overcast with temperatures in the 50°s to 60°s Fahrenheit. Photographs to document the current conditions of the facilities were taken during the inspection and are included in **Appendix D**. Underwater areas were not inspected, as this level of investigation was beyond of GZA's scope of services. A copy of the EPA Checklist for each unit inspected is included in **Appendix C**.

With respect to our visual inspection, there was no evidence of prior releases, failures, or patchwork observed by GZA.

2.1.1 General Findings

In general, the Bottom Ash Basin A and Special Basin were found to be in **POOR** condition. In GZA's professional opinion, the embankment(s) appear to be sound and no immediate remedial action appears to be necessary. However, based on EPA's inspection criteria, the impoundment has been given a POOR Condition Rating, because no geotechnical computations were made available to GZA for review. Thus, the stability of the embankment(s) could not be independently verified. Some operational and maintenance deficiencies were observed, which are identified in more detail in the sections below. An overall site plan showing the Mt. Tom facility with key facilities is provided as **Figure 5**. A detailed site plan showing the Bottom Ash Basin A, Special Basin, and Equalization Tank is provided as **Figure 6**. The location and orientation of photographs provided in **Appendix D** is shown on the Photograph Plan in **Figure 7**.

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2.1.2 Bottom Ash Basin A (Photos 6, 13 through 24)

In general, the Bottom Ash Basin A was found to have minor deficiencies. Deficiencies noted during the inspection included low areas along the top of berm access road, minor surficial erosion along the top of berm and top of the basin slope, and brush and tree growth along the downstream (outer) slope of the berm/embankment. Some low and rutted areas were observed along the access road on the top of the berm/embankment, especially between the Bottom Ash Basin A and the Special Basin where a low area with standing water was observed. The standing water appeared to be accumulated rainwater runoff from recent precipitation. Along the top of the berm/embankment, several small (less than six-inch deep) erosion gullies were observed at the top of the upstream and downstream slopes. A perimeter chain link fence runs around the basin near the top of the upstream slope. A silt fence is attached to the bottom of the chain link fence, presumably to prevent the transport of soil into the basin. In several areas, this silt fence is ripped or missing, and small erosion gullies were observed along the top of berm and the upstream slope.

As discussed above in Section 1.2.4, the Bottom Ash Basin A was constructed through a combination of excavation/cutting and filling to create the basin and perimeter berm/embankment. Along the northwest and west sides of the basin, adjacent to the rail lines and the coal storage pile, the small downstream embankment slope is overgrown with small brush and weeds. Along the southeast side of the basin, the downstream embankment slope is heavily overgrown with brush and large trees. The majority of the large trees in this area appear to be beyond the limits of the embankment fill; however, some smaller trees and brush appear to have grown on the downstream embankment fill slope. The visual boundary between the filled embankment slope and the natural slope (riverbank) in this area is unclear.

Within the Bottom Ash Basin A, some minor surficial erosion was observed along the top of the basin/upstream slope above the liner. The surface in this area is covered by small diameter 'pea' gravel, and some of the gravel appears to have been transported from the upper slope onto the liner and/or into the Basin. The visible (above water) portions of the liner appeared to be in good condition at the time of inspection. Numerous patches were observed where damaged areas have been repaired. At the bottom ash and boiler slag discharge point, some small HDPE mats were in place to protect the liner from erosion at the end of the discharge pipe. Within the basin, the staff gage located near the pH neutralization building is difficult to read, with several numbers and marks missing near the water line. During the time of our inspection, the treatment facility at the pH neutralization building was off line. Based on a limited visual inspection of the pumps and operating facilities, the treatment facility appeared to be in good condition. The location of the pH neutralization system discharge outfall at the Connecticut River was inaccessible due to heavy vegetation growth along the river bank; however, it is reported by FirstLight operations staff to be in a good operable condition.

2.1.3 Equalization Tank (Photos 2 through 4)

Visual inspection of the Equalization Tank was limited to limited portions of the tank that were above water at the time of inspection. The reinforced concrete tank itself appeared to be in good condition, with no visible signs of instability or deterioration. The tank was in service at the time of inspection, with a water level about two feet below the top of the tank. The staff gage within the tank was deteriorated, with water level markings and numbers difficult to read near the water line (around the 11' marking).

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2.1.4 Special Basin (Photos 5, 7 through 13)

In general, the Special Basin was found to have minor deficiencies. Deficiencies noted during the inspection included low areas along the top of berm access road, minor surficial erosion along the top of berm and top of the basin slope, and minor brush growth along the small downstream slope of the berm/embankment. Some low and rutted areas were observed along the access road on the top of the berm/embankment, especially between the Special Basin and the Bottom Ash Basin A where a low area with standing water was observed. The standing water appeared to be accumulated rainwater runoff from recent precipitation. Along the top of the berm, several small (less than six-inch deep) erosion gullies were observed at the top of the upstream and downstream slopes. A perimeter chain link fence runs around the basin near the top of the upstream slope. A silt fence is attached to the bottom of the chain link fence, presumably to prevent the transport of soil into the basin. In several areas, this silt fence is ripped or missing, and small erosion gullies were observed along the top of berm and the upstream slope.

As discussed above in Section 1.2.4, the Special Basin was constructed through a combination of excavation/cutting and filling to create the basin and perimeter berm/embankment. Along the east side of the basin, the downstream embankment slope is heavily overgrown with brush and large trees. The majority of the large trees in this area appear to be beyond the limits of the embankment fill; however, some smaller trees and brush appear to have grown on the downstream embankment fill slope. The visual boundary between the filled embankment slope and the natural slope (riverbank) in this area is unclear.

Along the downstream embankment slope along the west side of the basin, some minor erosion and minor vegetation growth was observed. The slope in this area supports the bottom ash and boiler slag discharge pipelines to the Bottom Ash Basin A. Minor surficial erosion was observed on the slope, especially between supports for the pipeline. Standing water was observed along the toe of the slope in this area. The standing water was located in the coal storage pile runoff area, which receives surficial runoff from the coal pile and surrounding area.

Within the Special Basin, some minor surficial erosion was observed along the top of the basin/upstream slope above the liner. The surface in this area is covered by small diameter 'pea' gravel, and some of the gravel appears to have been transported from the upper slope onto the liner and/or into the basin. The visible (above water) portions of the liner appeared to be in good condition at the time of inspection. Numerous patches were observed where damaged areas have been repaired.

2.2 Caretaker Interview

Maintenance of the dam is the responsibility of FirstLight personnel. During the site visit, GZA met with FirstLight personnel and discussed current operations and maintenance procedures, regulatory requirements, and the history of the wastewater management units at the site. The results of the informal interview were incorporated into the text of this report.

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2.3 Operation and Maintenance Procedures

As discussed in Section 1.2.5, FirstLight personnel are responsible for the regular operations and maintenance of the Mt. Tom facilities, including the Bottom Ash Basin A, pH treatment system, Special Basin, Equalization Tank, and wastewater treatment system. Routine operation and maintenance of the wastewater basins includes daily observations of the water level within the basins, and periodic inspection and repair (as necessary) of the basin liners. FirstLight personnel also perform periodic maintenance of the on-site access roads (including those along top of the Bottom Ash Basin A and Special Basin berms), which includes the placement of gravel/crushed stone in low areas, rutted areas, and areas of erosion. Within the Bottom Ash Basin A, the basin is periodically dewatered and accumulated solids are removed from the basin. Monitoring of the Bottom Ash Basin A and Special Basin liners is performed by FirstLight staff on a quarterly basis and the results are sent to MassDEP as part of the post-closure use of the solid waste landfills. Note that FirstLight personnel also operate and maintain the on-site wastewater treatment systems, the details of which are outside of the scope of this visual inspection/evaluation.

2.4 Emergency Action Plan

There is no known Emergency Action Plan (EAP) for the Bottom Ash Basin A, Special Basin, or Equalization Tank. As discussed in Section 1.2.7, a potential failure of the Bottom Ash Basin A, the Special Basin, and/or the Equalization Tank would likely result in shallow flooding within the Mt. Tom facility and a small discharge into the Connecticut River. A map of the area downstream of the Mt. Tom facility is provided as **Figure 3**.

2.5 Hydrologic/Hydraulic Data

Hydrologic and hydraulic analyses for the Bottom Ash Basin A, Special Basin, and Equalization Tank were not available for review by GZA. GZA did not perform an independent assessment of the hydraulics and hydrology for the Bottom Ash Basin A, Special Basin, or Equalization Tank as this was beyond our scope of services. However, GZA has performed a cursory review of the tank and basins with regard to overtopping potential under flooding scenarios. Note that this cursory review does not constitute a formal assessment of the hydrologic and hydraulic capacity of the management units.

Based on the Small/Non-Jurisdictional size and Low hazard rating, the Spillway Design Flood (SDF) for the three units would be the 50-year flood under Commonwealth of Massachusetts Dam Safety Regulations (302 CMR 10.14). Under U.S. Army Corps of Engineers guidelines, the SDF for the three units would be between the 50-year and 100-year flood. For the purpose of this cursory review, GZA has taken the 100-year flood as the SDF for the Bottom Ash Basin A, Special Basin, and Equalization Tank. For the Mt. Tom area, the 100-year, 24-hour duration precipitation is approximately 6.5 inches based on the Northeast Regional Climate Center's September 1993 Atlas of Precipitation Extremes for the Northeast United States and Southeastern Canada.

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Bottom Ash Basin A

Based on GZA's cursory review, the Bottom Ash Basin A has a normal operating pool surface area of about 2.1 acres and an overall drainage area of about 4.9 acres, which includes the basin itself and a small contributory drainage area, including a portion of the decommissioned and filled former Bottom Ash Basin B. A 100-year precipitation of 6.5 inches would result in approximately 2.65 acre-feet of precipitation over the entire drainage area. Assuming that all precipitation over the drainage area results in direct runoff to the basin, the 100-year precipitation of 6.5 inches would result in a rise in water level in the Bottom Ash Basin A of about 1.25 feet assuming no discharge from the basin. Design documents indicate that the maximum design pool for the basin is 2 feet below the top of the berm/embankment, or about elevation 120.5 feet. In the event that the starting water surface elevation is at the maximum design pool, the 100-year precipitation would result in a maximum water surface elevation of about 121.75 feet, or about 0.75 feet below the top of the berm/embankment. Therefore, based on GZA's cursory review, the Bottom Ash Basin A has adequate capacity to store the SDF/ 100-year rainfall without overtopping the berm/embankment. Note that, under normal operating conditions, a freeboard of about 8 to 10 feet is maintained in the Bottom Ash Basin A.

Special Basin

Based on GZA's cursory review, the Special Basin has a normal operating pool surface area of about 1.0 acres and an overall drainage area of about 2.0 acres, which includes the basin itself and a small contributory drainage area. A 100-year precipitation of 6.5 inches would result in approximately 1.1 acre-feet of precipitation over the entire drainage area. Assuming that all precipitation over the drainage area results in direct runoff to the basin, the 100-year precipitation of 6.5 inches would result in a rise in water level in the Special Basin of about 1.1 feet assuming no discharge from the basin. Design documents indicate that the maximum design pool for the basin is 2 feet below the top of the berm/embankment, or about elevation 120.5 feet. In the event that the starting water surface elevation is at the maximum design pool, the 100-year precipitation would result in a maximum water surface elevation of about 121.6 feet, or about 0.9 feet below the top of the berm/embankment. Therefore, based on GZA's cursory review, the Special Basin has adequate capacity to store the SDF/ 100-year rainfall without overtopping the berm/embankment. Note that, under normal operating conditions, a freeboard of about 7 to 9 feet is maintained in the Special Basin.

Equalization Tank

The Equalization Tank is a rectangular concrete tank with an open surface area of approximately 625 square feet (25 feet x 25 feet), which is also the only drainage area for the tank. Based on GZA's cursory review, a 100-year precipitation of 6.5 inches over the Equalization Tank would result in a rise in water level in the Tank of approximately 6.5 inches, assuming no discharge from the tank. Design documents indicate that the maximum design/operating pool for the Equalization Tank is 2 feet below the top of the tank walls (11 foot water depth). Assuming that the starting water surface elevation is at the maximum design pool, the 100-year precipitation would result in a maximum water depth in the tank of about 11.5 feet, or about 1.5 feet below the top of the tank. Therefore, based on GZA's cursory review, the Equalization Tank has adequate capacity to store the SDF/ 100-year rainfall without overtopping the Tank.

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2.6 Structural and Seepage Stability

Structural and seepage stability analyses for the Bottom Ash Basin A and the Special Basin were not available to GZA. In GZA's professional opinion, the embankments appear to be sound and no immediate remedial action appears to be necessary. However, based on EPA's inspection criteria, the impoundments have been given a POOR Condition Rating because no geotechnical computations were made available to GZA for review. Thus, the stability of the embankments could not be independently verified.

2.6.1 Slope Stability Analyses

No slope stability analyses were made available for GZA to review, and no information was provided to GZA regarding the design of the earthen embankments. Based on our visual inspections, the Bottom Ash Basin A and Special Basin appear to have been constructed as a combination of engineered berms/embankments and cuts/excavations into natural ground. Based on available construction documentation and MassDEP correspondence, the earthen embankments were reportedly constructed with on-site coal ash material, sand, and gravel. The filled embankment slopes have approximately 3:1 side slopes. No outwardly visual indications of slope instability were observed during GZA's visual inspection. Note that the maximum height of filled embankment appears to be approximately 6 feet for the Special Basin and approximately 10 feet for the Bottom Ash Basin A.

2.6.2 Seepage Analysis

No seepage analyses were made available for GZA to review. The Bottom Ash Basin A and Special Basin originally functioned as unlined basins. As part of an Administrative Consent Order (ACO-WE-01-4002A) executed between FirstLight and MassDEP, the two basins were modified to 2003. These modifications included excavation of accumulated solids and the installation of a dual-layer impermeable HDPE liner with a seepage collection and monitoring system. FirstLight personnel conduct quarterly monitoring of the liner leakage/seepage, and report the results to MassDEP. GZA notes that the normal operating level in the Bottom Ash Basin A and Special Basin is below the surrounding ground surface.

3.0 ASSESSMENTS AND RECOMMENDATIONS

3.1 Assessments

In general, the Bottom Ash Basin A and Special Basin were found to be in **POOR** condition, with the following deficiencies:

Bottom Ash Basin A:

1. Small ruts and low areas and minor surficial erosion along the top of the berm/embankment;
2. Minor erosion at the top of the basin slope, with some transport of gravel into the basin through ripped and missing silt fence;
3. Staff gage numbers are worn and difficult to read near the water line;
4. Discharge pipe at Connecticut River inaccessible due to heavy vegetation growth;

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5. Tree and brush growth along east 'downstream' embankment slope and brush growth along northwest and west 'downstream' embankment slopes;
6. No geotechnical or hydrologic/hydraulic computations were made available for review, thus, the stability of the embankments could not be independently verified;
7. There is no known Emergency Action Plan (EAP) for Bottom Ash Basin A.

Special Basin:

1. Small ruts and low areas and minor surficial erosion along the top of the berm/embankment;
2. Minor erosion at the top of the basin slope, with some transport of gravel into the basin through ripped and missing silt fence;
3. Tree and brush growth along east 'downstream' embankment slope;
4. Minor brush growth and minor erosion on west 'downstream' embankment slope;
5. No geotechnical or hydrologic/hydraulic computations were made available for review, thus, the stability of the embankments could not be independently verified;
6. There is no known Emergency Action Plan (EAP) for the Special Basin.

The following recommendations and remedial measures generally describe the recommended approach to address current deficiencies at the dam. Prior to undertaking recommended maintenance, repairs, or remedial measures, the applicability of environmental permits needs to be determined for activities that may occur within resource areas under the jurisdiction of the appropriate regulatory agencies.

3.2 Studies and Analyses

GZA recommends the following studies and analysis:

1. Investigate and delineate the extent of embankment fill along the eastern (Connecticut River) side of the Bottom Ash Basin A and Special Basin, and evaluate the presence of trees and woody vegetation on the surface of the filled embankment slopes.
2. Perform a geotechnical stability analysis of the embankments and/or management units under all applicable loading conditions, including earthquake-induced loading.
3. Perform a hydrologic and hydraulic analysis of the Bottom Ash Basin A and Special Basin, including an analysis of outlet capacity and overtopping potential of the units.
4. Prepare an Emergency Action Plan (EAP) for the Bottom Ash Basin A and the Special Basin for actions related to potential hazards/failure of the impoundments.

3.3 Recurrent Operation & Maintenance Recommendations

GZA recommends the following operation and maintenance level activities:

1. Cut/mow vegetated embankment slopes regularly to prevent the growth of trees and woody vegetation;
2. Fill low areas and eroded areas along the top of the berms and access roads with compacted crushed stone;
3. Maintain a safe, clear path to all discharge locations along the Connecticut River;

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4. Repair/replace staff gage markers as needed so that the water surface elevation in the basins and tank can be easily read from the top of berm/top of tank walkway. A distinct marking should be provided at the maximum operating level; and
5. Annually operate all gates, valves, and outlet structures through their full range of operation.

3.4 Repair Recommendations

GZA recommends the following minor repairs intended to improve the overall condition of the Bottom Ash Basin A and the Special Basin. Although these recommendations do not alter the current design of the facilities, these actions may require design by a professional engineer and construction contractor experienced in dam construction.

1. Fill low/rutted areas on access roads around the Bottom Ash Basin A and Special Basin with appropriately sized and compacted stone;
2. Repair/fill areas of erosion on the surface of the berms and embankment slopes. New material should be appropriately sized to prevent erosion from surficial runoff;
3. Replace/repair silt fence along bottom of the perimeter chain-link fence at the Bottom Ash Basin A and Special Basin, or provide alternate means to prevent erosion and transport of stone into basins;
4. Based on the results of the embankment fill delineation recommended above, clear vegetation including trees (and associated roots/ root balls) from embankment fill slopes. Fill any voids resulting from root removal with compacted granular material. Establish healthy grass cover on slopes after vegetation removal is complete;
5. Repair/replace Bottom Ash Basin A staff gage and provide distinct marking for the maximum operating level.

3.5 Remedial Modifications Recommendations

No remedial modifications are recommended at this time by GZA.

3.6 Alternatives

There are no practical alternatives to the repairs itemized above.

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4.0 ENGINEER'S CERTIFICATION

I acknowledge that the management units referenced herein, the Mt. Tom Generating Station Bottom Ash Basin A and Special Basin have been assessed to be in **POOR** condition on May 23, 2011.

Peter H. Baril, P.E.
Principal

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FIGURES

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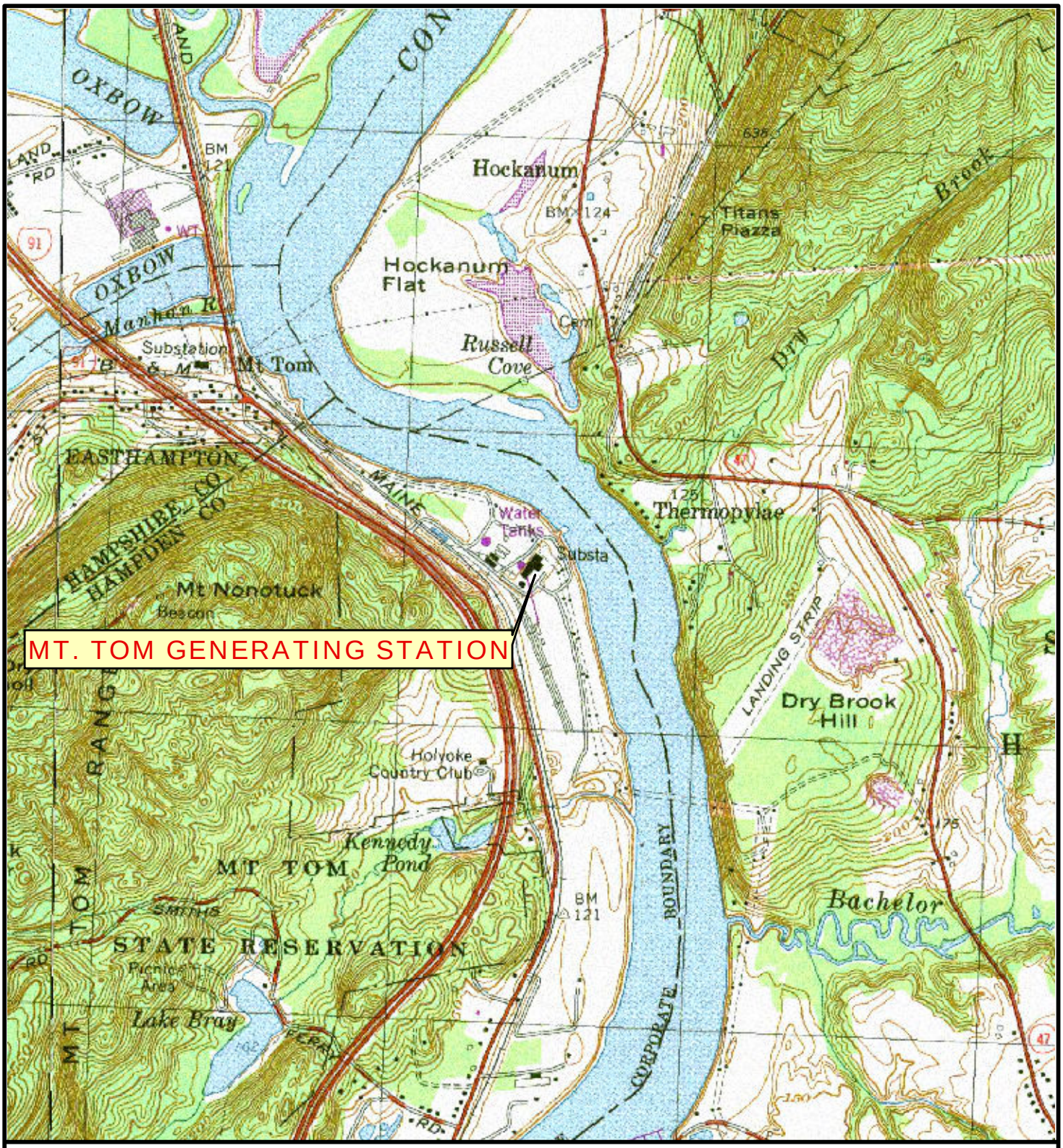

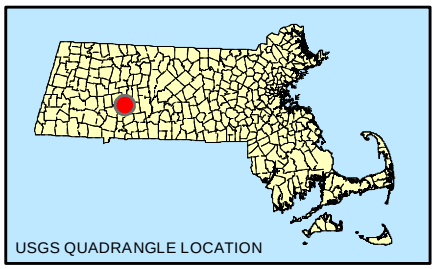

SOURCE : SCANNED USGS TOPOGRAPHIC QUADRANGLES SCANNED BY THE MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS, MASSGIS. DISTRIBUTED JUNE, 2001.

Data Supplied by : MASS GIS

0 1,000 2,000 4,000 6,000 Feet

N W E S

GZA	PROJ. MGR.: GKS DESIGNED BY: CMD REVIEWED BY: LF OPERATOR: GWH DATE: 07-27-2011	FIGURE 1 - SITE LOCUS MAP MT. TOM GENERATING STATION	JOB NO. 01.0170142.30
		HOLYOKE, MASSACHUSETTS	FIGURE NO. 1

© 2011 - GZA GeoEnvironmental, Inc., J:\170,000-179,999\170142\170142-30 Round 10\MT Tom Sation MA\Figures\GIS\mxd\Figure 1 - Locus Map.mxd, 7/27/2011, 2:05:50 PM, gregory.hunt

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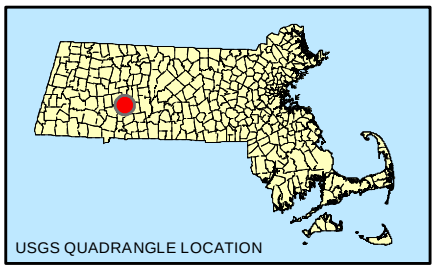
© 2011 - GZA GeoEnvironmental, Inc., J:\170,000-179,999\170142\170142-30 Round 10\MT Tom Sation MA\Figures\GIS\mxd\Figure 2 - Locus Map - Orthophoto.mxd, 7/28/2011, 12:27:04 PM, gregory.hunt



SOURCE : SCANNED USGS TOPOGRAPHIC QUADRANGLES SCANNED BY THE MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS, MASSGIS. DISTRIBUTED JUNE, 2001.

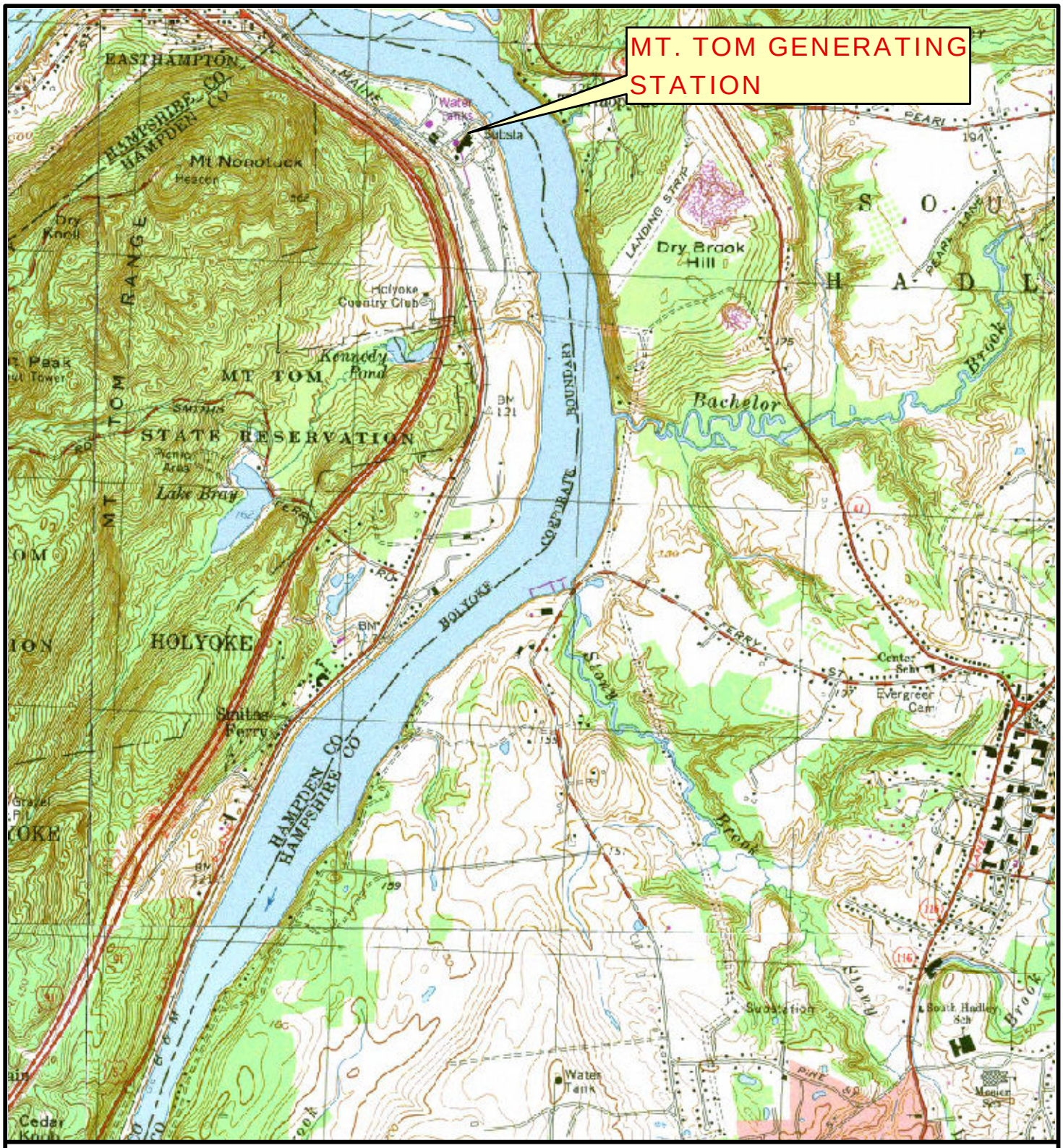
Data Supplied by :

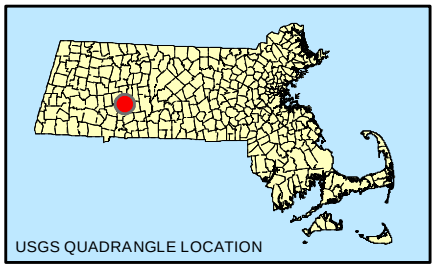
0 1,000 2,000 4,000 6,000 Feet

N W E S

GZA	PROJ. MGR.: GKS DESIGNED BY: CMD REVIEWED BY: LF OPERATOR: GWH DATE: 07-28-2011	FIGURE 2 - ORTHOPHOTO LOCUS MAP MT. TOM GENERATING STATION	JOB NO. 01.0170142.30
		HOLYOKE, MASSACHUSETTS	FIGURE NO. 2

US EPA ARCHIVE DOCUMENT





SOURCE : SCANNED USGS TOPOGRAPHIC QUADRANGLES SCANNED BY THE MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS, MASSGIS. DISTRIBUTED JUNE, 2001.

Data Supplied by : MASS GIS

0 1,000 2,000 4,000 6,000 Feet

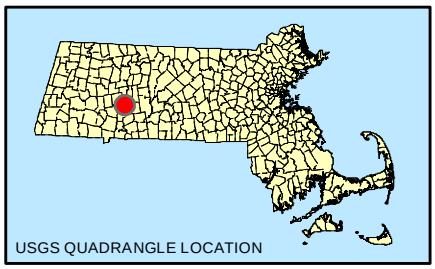
N W E S

GZA	PROJ. MGR.: GKS DESIGNED BY: CMD REVIEWED BY: LF OPERATOR: GWH DATE: 07-27-2011	FIGURE 3 - DOWNSTREAM AREA MAP MT. TOM GENERATING STATION	JOB NO. 01.0170142.30
		HOLYOKE, MASSACHUSETTS	FIGURE NO. 3

© 2011 - GZA GeoEnvironmental, Inc., J:\170,000-179,999\170142\170142-30 Round 10\MT Tom Sation MA\Figures\GIS\mxd\Figure 3 - Downstream Area Map.mxd, 7/27/2011, 2:04:11 PM, gregory.hunt

US EPA ARCHIVE DOCUMENT

© 2011 - GZA GeoEnvironmental, Inc., J:\170,000-179,999\170142\170142-30 Round 10\MT Tom Sation MA\Figures\GIS\mxd\Figure 4 - Drainage Area Map.mxd, 7/28/2011, 2:04:04 PM, gregory.hunt



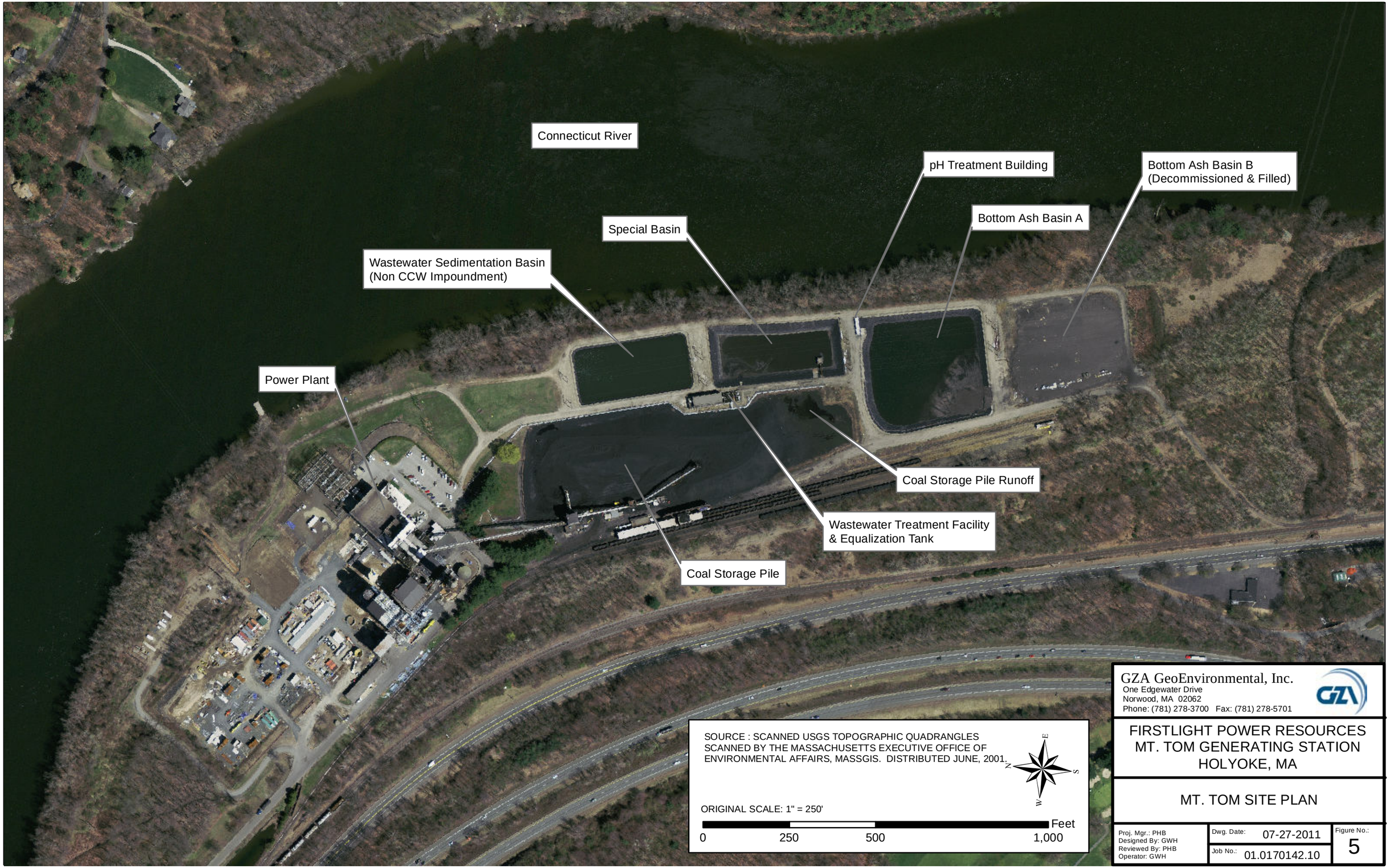
SOURCE : SCANNED USGS TOPOGRAPHIC QUADRANGLES SCANNED BY THE MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS, MASSGIS. DISTRIBUTED JUNE, 2001.

Data Supplied by :

0 125 250 500 750 Feet

N W E S

GZA	PROJ. MGR.: PHB DESIGNED BY: GWH REVIEWED BY: PHB OPERATOR: GWH DATE: 07-28-2011	FIGURE 4 - DRAINAGE AREA MAP MT. TOM GENERATING STATION	JOB NO. 01.0170142.30
		HOLYOKE, MASSACHUSETTS	FIGURE NO. 4



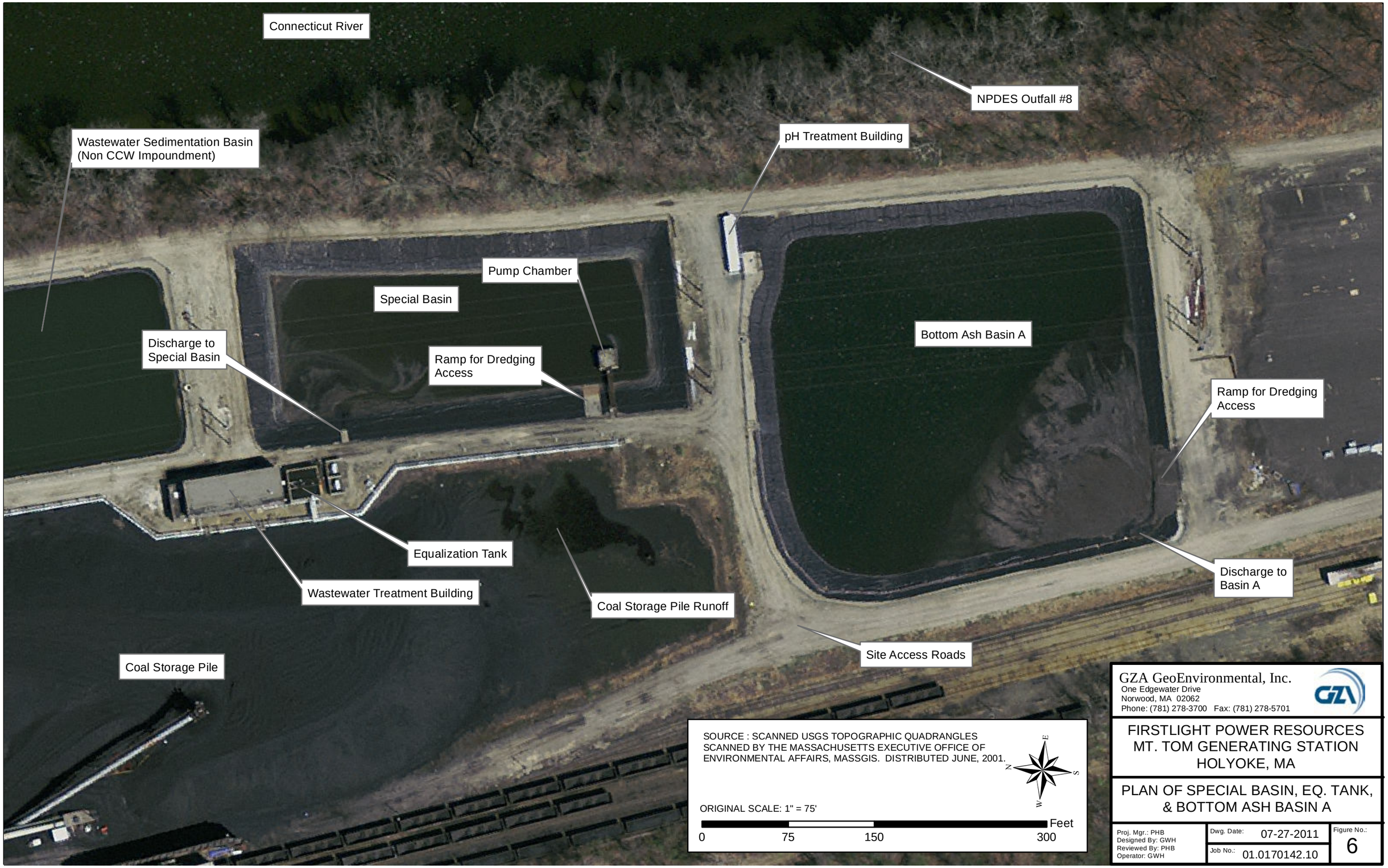
GZA GeoEnvironmental, Inc.
One Edgewater Drive
Norwood, MA 02062
Phone: (781) 278-3700 Fax: (781) 278-5701

FIRSTLIGHT POWER RESOURCES
MT. TOM GENERATING STATION
HOLYOKE, MA

MT. TOM SITE PLAN

Proj. Mgr.: PHB Designed By: GWH Reviewed By: PHB Operator: GWH	Dwg. Date: 07-27-2011 Job No.: 01.0170142.10	Figure No.: 5

© 2011 - GZA GeoEnvironmental, Inc., J:\170,000-179,999\170142\170142-30 Round 10\MT Tom Sation MA\Figures\GIS\mxd\Figure 5 - Mt. Tom Site Plan.mxd, 7/28/2011, 2:07:44 PM, gregory.hunt



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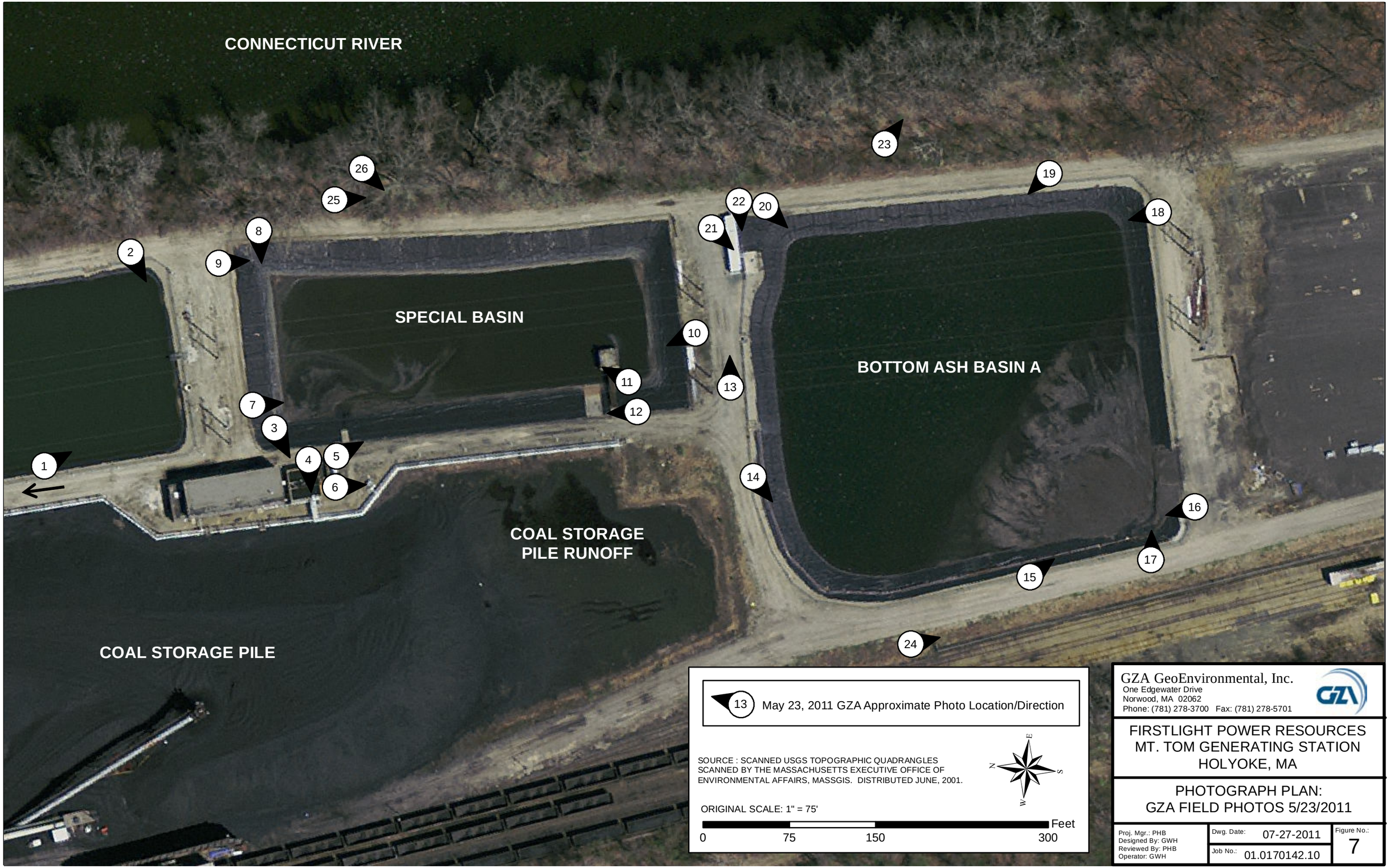
FIRSTLIGHT POWER RESOURCES
MT. TOM GENERATING STATION
HOLYOKE, MA

PLAN OF SPECIAL BASIN, EQ. TANK, & BOTTOM ASH BASIN A

Proj. Mgr.: PHB Designed By: GWH Reviewed By: PHB Operator: GWH	Dwg. Date: 07-27-2011 Job No.: 01.0170142.10	Figure No.: 6

© 2011 - GZA GeoEnvironmental, Inc., J:\170,000-179,999\170142\170142-30 Round 10\MT Tom Sation MA\Figures\GIS\mxd\Figure 6 - Basin Plan.mxd, 7/28/2011, 12:39:18 PM, gregory.hunt



GZA GeoEnvironmental, Inc.
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Phone: (781) 278-3700 Fax: (781) 278-5701

FIRSTLIGHT POWER RESOURCES
MT. TOM GENERATING STATION
HOLYOKE, MA

PHOTOGRAPH PLAN:
GZA FIELD PHOTOS 5/23/2011

Proj. Mgr.: PHB
Designed By: GWH
Reviewed By: PHB
Operator: GWH

Dwg. Date: 07-27-2011
Job No.: 01.0170142.10

Figure No.: 7

© 2011 - GZA GeoEnvironmental, Inc., J:\170,000-179,999\170142\170142-30 Round 10\MT Tom Sation MA\Figures\GIS\mxd\Figure 7 - Photograph Plan.mxd, 8/31/2011, 11:32:11 AM, gregory.hunt

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APPENDIX A

LIMITATIONS

DAM ENGINEERING & VISUAL INSPECTION LIMITATIONS

1. The observations described in this report were made under the conditions stated herein. The conclusions presented in the report were based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of described services.

2. In preparing this report, GZA GeoEnvironmental, Inc. (GZA) has relied on certain information provided by FirstLight Power Resources and Federal, state, and local officials and other parties referenced therein. GZA has also relied on other parties which were available to GZA at the time of the inspection. Although there may have been some degree of overlap in the information provided by these various sources, GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this work.

3. In reviewing this Report, it should be realized that the reported condition of the dam is based on observations of field conditions during the course of this study along with data made available to GZA. The observations of conditions at the dam reflect only the situation present at the specific moment in time the observations were made, under the specific conditions present. It may be necessary to reevaluate the recommendations of this report when subsequent phases of evaluation or repair and improvement provide more data.

4. It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions may be detected.

5. Water level readings have been reviewed and interpretations have been made in the text of this report. Fluctuations in the level of the groundwater and surface water may occur due to variations in rainfall, temperature, and other factors different than at the time measurements were made.

6. GZA's comments on the hydrology, hydraulics, and embankment stability for the facilities are based on a limited review of available design documentation provided by FirstLight Power Resources.

7. This report has been prepared for the exclusive use of the US EPA for specific application to the existing dam facilities, in accordance with generally accepted dam engineering practices. No other warranty, express or implied, is made.

8. This dam inspection report has been prepared for this project by GZA. This report is for the owner's broad evaluation and management purposes only and is not sufficient, in and of itself, to prepare construction documents or an accurate bid.

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APPENDIX B

DEFINITIONS

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COMMON DAM SAFETY DEFINITIONS

For a comprehensive list of dam engineering terminology and definitions refer to references published by the U.S. Army Corps of Engineers, the Federal Energy Regulatory Commission, the Department of the Interior Bureau of Reclamation, or the Federal Emergency Management Agency.

Orientation

Upstream – Shall mean the side of the dam that borders the impoundment.

Downstream – Shall mean the high side of the dam, the side opposite the upstream side.

Right – Shall mean the area to the right when looking in the downstream direction.

Left – Shall mean the area to the left when looking in the downstream direction.

Dam Components

Dam – Shall mean any artificial barrier, including appurtenant works, which impounds or diverts water.

Embankment – Shall mean the fill material, usually earth or rock, placed with sloping sides, such that it forms a permanent barrier that impounds water.

Crest – Shall mean the top of the dam, usually provides a road or path across the dam.

Abutment – Shall mean that part of a valley side against which a dam is constructed. An artificial abutment is sometimes constructed as a concrete gravity section, to take the thrust of an arch dam where there is no suitable natural abutment.

Appurtenant Works – Shall mean structures, either in dams or separate therefrom, including but not be limited to, spillways; reservoirs and their rims; low-level outlet works; and water conduits including tunnels, pipelines, or penstocks, either through the dams or their abutments.

Spillway – Shall mean a structure over or through which water flows are discharged. If the flow is controlled by gates or boards, it is a controlled spillway; if the fixed elevation of the spillway crest controls the level of the impoundment, it is an uncontrolled spillway.

General

EAP – Emergency Action Plan – Shall mean a predetermined (and properly documented) plan of action to be taken to reduce the potential for property damage and/or loss of life in an area affected by an impending dam failure.

O&M Manual – Operations and Maintenance Manual; Document identifying routine maintenance and operational procedures under normal and storm conditions.

Normal Pool – Shall mean the elevation of the impoundment during normal operating conditions.

Acre-foot – Shall mean a unit of volumetric measure that would cover one acre to a depth of one foot. It is equal to 43,560 cubic feet. One million U.S. gallons = 3.068 acre feet.

Height of Dam (Structural Height) – Shall mean the vertical distance from the lowest portion of the natural ground, including any stream channel, along the downstream toe of the dam to the lowest point on the crest of the dam.

Hydraulic Height – means the height to which water rises behind a dam and the difference between the lowest point in the original streambed at the axis of the dam and the maximum controllable water surface.

Maximum Water Storage Elevation – means the maximum elevation of water surface which can be contained by the dam without overtopping the embankment section.

Spillway Design Flood (SDF) – Shall mean the flood used in the design of a dam and its appurtenant works particularly for sizing the spillway and outlet works, and for determining maximum temporary storage and height of dam requirements.

Maximum Storage Capacity – The volume of water contained in the impoundment at maximum water storage elevation.

Normal Storage Capacity – The volume of water contained in the impoundment at normal water storage elevation.

Condition Rating

SATISFACTORY - No existing potential management unit safety deficiencies are recognized. Acceptable performance is expected under all applicable loading conditions (static, hydrologic, seismic) in accordance with the applicable criteria. Minor maintenance items may be required.

FAIR – Acceptable performance is expected under all required loading conditions (Static, hydrologic, seismic) in accordance with the applicable safety regulatory criteria. Minor deficiencies may exist that require remedial action and/or secondary studies or investigations.

POOR – A management unit safety deficiency is recognized for any required loading condition (static, hydrologic, seismic) in accordance with the applicable dam safety regulatory criteria. Remedial action is necessary. POOR also applies when further critical studies or investigations are needed to identify any potential dam safety deficiencies.

UNSATISFACTORY – Considered unsafe. A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution. Reservoir restrictions may be necessary.

Hazard Potential

(In the event the impoundment should fail, the following would occur):

LESS THAN LOW HAZARD POTENTIAL: Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

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LOW HAZARD POTENTIAL: Dams assigned the low hazard potential classifications are those dams where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

SIGNIFICANT HAZARD POTENTIAL: Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

HIGH HAZARD POTENTIAL: Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

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APPENDIX C

INSPECTION CHECKLISTS

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	Mt. Tom Station	Date:	May 23, 2011
Unit Name:	Bottom Ash Basin A	Operator's Name:	First Light Power Resources
Unit I.D.:		Hazard Potential Classification:	High Significant Low ✓

Inspector's Name: Peter H. Baril, P.E. and Gregory Hunt

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	None		18. Sloughing or bulging on slopes?		✓
2. Pool elevation (operator records)?	Daily		19. Major erosion or slope deterioration?		✓
3. Decant inlet elevation (operator records)?	N/A		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	N/A		Is water entering inlet, but not exiting outlet? N/A		
5. Lowest dam crest elevation (operator records)?	N/A		Is water exiting outlet, but not entering inlet? N/A		
6. If instrumentation is present, are readings recorded (operator records)?	✓		Is water exiting outlet flowing clear? N/A		
7. Is the embankment currently under construction?		✓	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below).		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	✓		From underdrain?		✓
9. Trees growing on embankment? (If so, indicate largest diameter below)		✓	At isolated points on embankment slopes?		✓
10. Cracks or scarps on crest?		✓	At natural hillside in the embankment area?		✓
11. Is there significant settlement along the crest?		✓	Over widespread areas?		✓
12. Are decant trashracks clear and in place? N/A			From downstream foundation area?		✓
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		✓	"Boils" beneath stream or ponded water?		✓
14. Clogged spillways, groin or diversion ditches?		✓	Around the outside of the decant pipe?		✓
15. Are spillway or ditch linings deteriorated?		✓	22. Surface movements in valley bottom or on hillside?		✓
16. Are outlets of decant or underdrains blocked?		✓	23. Water against downstream toe?		✓
17. Cracks or scarps on slopes?		✓	24. Were Photos taken during the dam inspection?	✓	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Semi-annual inspections are performed to evaluate liner leakage.

19. Minor surficial erosion on top of berm.

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW) Impoundment Inspection

Impoundment NPDES Permit # MA0005339 Outfall #008 INSPECTOR G2A GeoEnvironmental, Inc.

Date May 23, 2011

Impoundment Name Bottom Ash Basin A

Impoundment Company Mt. Tom Generating Co./First Light Power Resources

EPA Region 1

State Agency (Field Office) Addresss MassDEP Western Region
436 Dwight St., Suite 500, Springfield, MA 01103

Name of Impoundment Bottom Ash Basin A

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?		X
Is water or ccw currently being pumped into the impoundment?	X	

IMPOUNDMENT FUNCTION: Sedimentation basin for bottom ash and boiler slag.

Nearest Downstream Town : Name Holyoke

Distance from the impoundment Approximately 3 miles

Impoundment Location:

Longitude 72 Degrees 36 Minutes 09.68 Seconds

Latitude 42 Degrees 16 Minutes 37.52 Seconds

State MA County Hampden

Does a state agency regulate this impoundment? YES X NO _____

If So Which State Agency? MassDEP

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

__x__ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

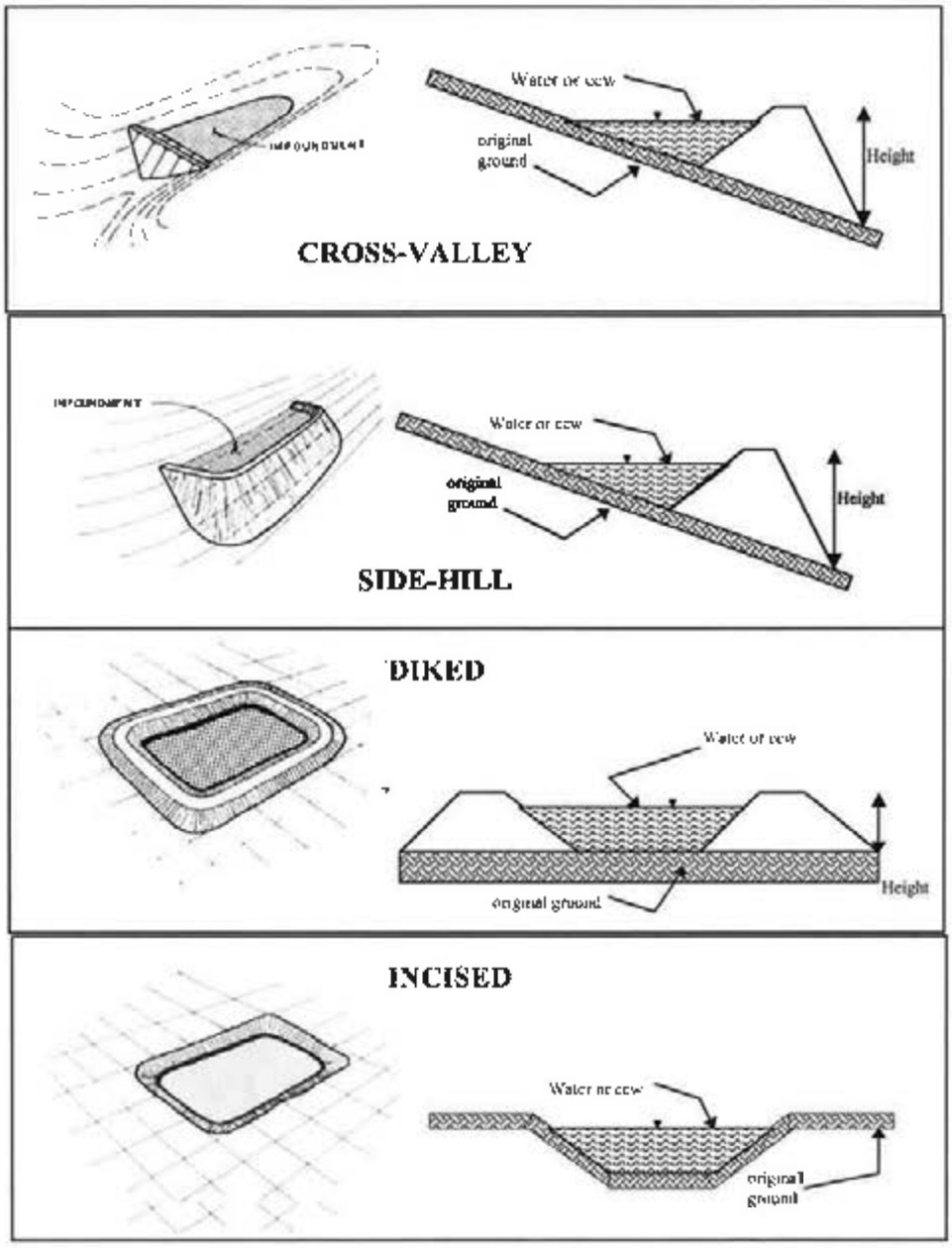
_____ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

The bottom ash basin has a maximum embankment height above natural grade of approximately 6 feet and a maximum storage volume of approximately 29 ac-ft. A potential failure of the impoundment at maximum pool would likely result in shallow flooding of wooded areas along the Connecticut River and/or shallow flooding of on-site railroad lines and access roads. Failure would likely result in a small discharge to the Connecticut River. Loss of life is very unlikely.

CONFIGURATION:



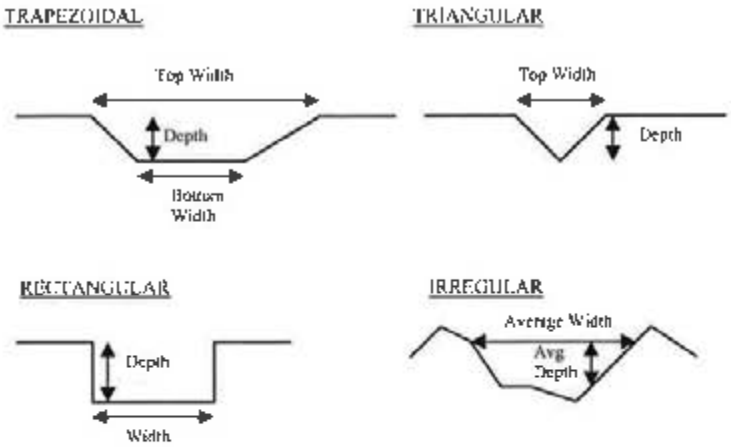
_____ Cross-Valley
_____ Side-Hill
_____ Diked
_____ Incised (form completion optional)
__x__ Combination Incised/Diked

Embankment Height __+/- 6__ feet Embankment Material __Sand/gravel & coal ash__
Pool Area __2.3__ acres Liner __Double layer HDPE__
Current Freeboard __+/- 10__ feet Liner Permeability __Impermeable__

TYPE OF OUTLET (Mark all that apply)

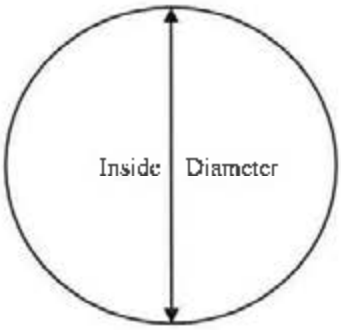
N/A **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

_____ depth
_____ bottom (or average) width
_____ top width



X **Outlet**

8" inside diameter (approximate)



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
X other (specify) Unknown

Is water flowing through the outlet? YES _____ NO X

_____ **No Outlet**

_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By Northeast Utility Service Co. (1980)
Tighe & Bond (2003)

Has there ever been a failure at this site? YES _____ NO __x__

If So When? _____

If So Please Describe : _____

Has there ever been significant seepages at this site? YES ___ ___ NO __x___

If So When? _____

IF So Please Describe: _____

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO __x__

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	Mt. Tom Station	Date:	May 23, 2011
Unit Name:	Equalization Tank	Operator's Name:	First Light Power Resources
Unit I.D.:		Hazard Potential Classification:	High Significant Low ✓

Inspector's Name: Peter H. Baril, P.E. and Gregory Hunt

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	N/A		18. Sloughing or bulging on slopes? N/A		
2. Pool elevation (operator records)?	Daily		19. Major erosion or slope deterioration? N/A		
3. Decant inlet elevation (operator records)?	N/A		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	N/A		Is water entering inlet, but not exiting outlet? N/A		
5. Lowest dam crest elevation (operator records)?	N/A		Is water exiting outlet, but not entering inlet? N/A		
6. If instrumentation is present, are readings recorded (operator records)?	✓		Is water exiting outlet flowing clear? N/A		
7. Is the embankment currently under construction? N/A			21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)? N/A			From underdrain?		
9. Trees growing on embankment? (if so, indicate largest diameter below) N/A			At isolated points on embankment slopes? N/A		
10. Cracks or scarps on crest? N/A			At natural hillside in the embankment area? N/A		
11. Is there significant settlement along the crest? N/A			Over widespread areas? N/A		
12. Are decant trashracks clear and in place? N/A			From downstream foundation area? N/A		
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area? N/A			"Boils" beneath stream or ponded water? N/A		
14. Clogged spillways, groin or diversion ditches? N/A			Around the outside of the decant pipe? N/A		
15. Are spillway or ditch linings deteriorated? N/A			22. Surface movements in valley bottom or on hillside? N/A		
16. Are outlets of decant or underdrains blocked? N/A			23. Water against downstream toe? N/A		
17. Cracks or scarps on slopes? N/A			24. Were Photos taken during the dam inspection? N/A		

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Periodic inspections as part of wastewater treatment plant operations and maintenance.

Note: Unit is a reinforced concrete tank that functions as part of a wastewater treatment plant, and therefore is not considered a management unit per EPA definition.

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # MA0005339 INSPECTOR GZA GeoEnvironmental, Inc.

Date May 23, 2011

Impoundment Name Equalization Tank (concrete tank)

Impoundment Company Mt. Tom Generating Co./First Light Power Resources

EPA Region 1

State Agency (Field Office) Addresss MassDEP Western Region
436 Dwight St., Suite 500, Springfield, MA 01103

Name of Impoundment Equalization Tank

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?		X
Is water or ccw currently being pumped into the impoundment?	X	

IMPOUNDMENT FUNCTION: Equalization basin for on-site WWTP. Receives new plant OPS waste.

Nearest Downstream Town : Name Holyoke

Distance from the impoundment Approximately 3 miles

Impoundment Location:

Longitude 72 Degrees 36 Minutes 11.40 Seconds

Latitude 42 Degrees 16 Minutes 43.00 Seconds

State MA County Hampden

Does a state agency regulate this impoundment? YES X NO _____

If So Which State Agency? MassDEP

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

__X__ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

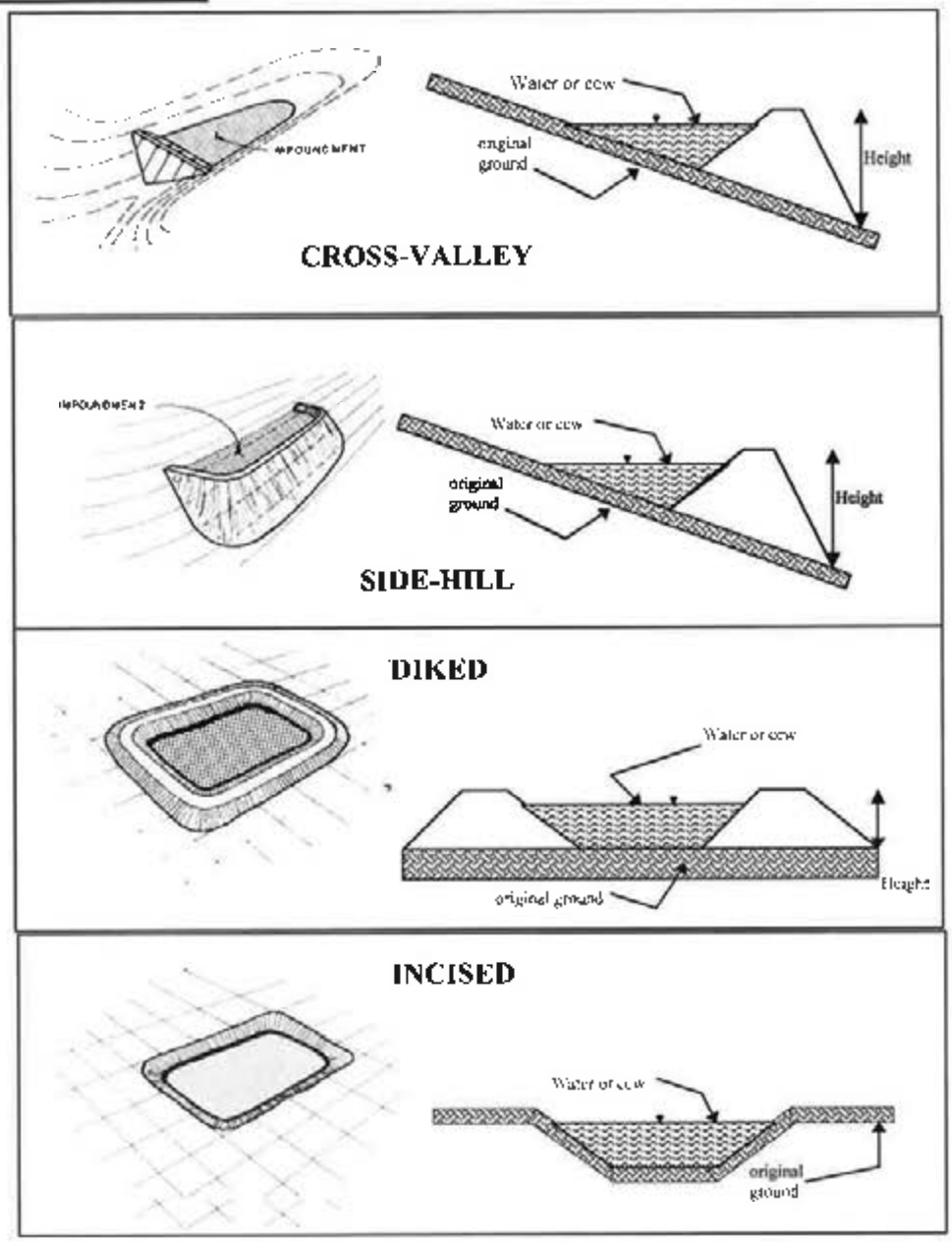
_____ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

The equalization tank is an approximately 25' x 25' x 13' reinforced concrete tank. A potential failure of the tank would likely result in shallow flooding within the plant property. Loss of life is not likely. Failure of the tank would likely result in a small discharge of untreated wastewater to the adjacent special basin, the coal pile area, and/or the sedimentation basin.

CONFIGURATION:



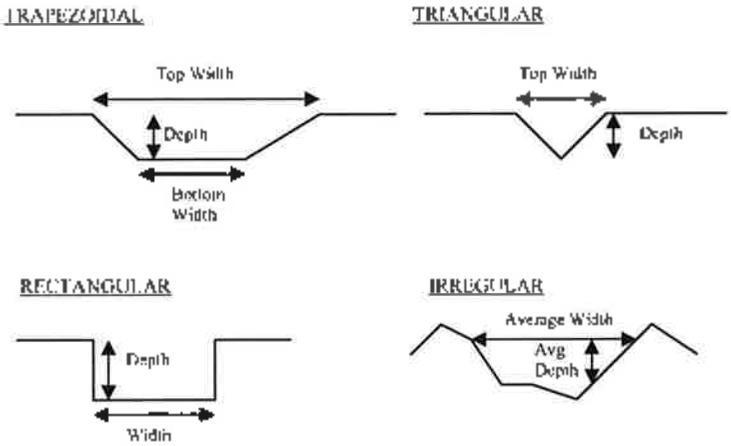
____ Cross-Valley
____ Side-Hill
X Diked (concrete tank structure)
____ Incised (form completion optional)
____ Combination Incised/Diked

Embankment Height 13' tank feet Embankment Material Reinforced concrete
Pool Area 0.01 acres Liner N/A
Current Freeboard 2 feet Liner Permeability N/A

TYPE OF OUTLET (Mark all that apply)

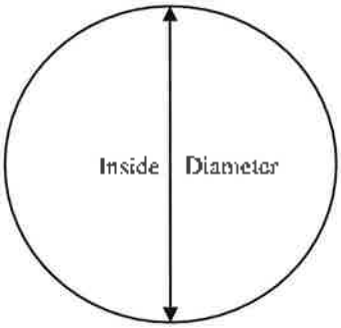
N/A **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

_____ depth
_____ bottom (or average) width
_____ top width
_____



X **Outlet**

_____ inside diameter



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

_____

Is water flowing through the outlet? YES X NO _____

_____ **No Outlet**

_____

_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By NE Utilities

Has there ever been a failure at this site? YES _____ NO ___x_____

If So When? _____

If So Please Describe : _____

Has there ever been significant seepages at this site? YES _____ NO __x__

If So When? _____

IF So Please Describe: _____

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO __x__

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	Mt. Tom Station	Date:	May 23, 2011
Unit Name:	Special Basin	Operator's Name:	First Light Power Resources
Unit I.D.:		Hazard Potential Classification:	High Significant Low ✓

Inspector's Name: Peter H. Baril, P.E. and Gregory Hunt

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	None		18. Sloughing or bulging on slopes?		✓
2. Pool elevation (operator records)?	Daily		19. Major erosion or slope deterioration?		✓
3. Decant Inlet elevation (operator records)?	N/A		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	N/A		Is water entering inlet, but not exiting outlet? N/A		
5. Lowest dam crest elevation (operator records)?	N/A		Is water exiting outlet, but not entering inlet? N/A		
6. If instrumentation is present, are readings recorded (operator records)?	✓		Is water exiting outlet flowing clear? N/A		
7. Is the embankment currently under construction?		✓	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	✓		From underdrain?		✓
9. Trees growing on embankment? (If so, indicate largest diameter below)		✓	At isolated points on embankment slopes?		✓
10. Cracks or scarps on crest?		✓	At natural hillside in the embankment area?		✓
11. Is there significant settlement along the crest?		✓	Over widespread areas?		✓
12. Are decant trashracks clear and in place? N/A			From downstream foundation area?		✓
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		✓	"Boils" beneath stream or ponded water?		✓
14. Clogged spillways, groin or diversion ditches?		✓	Around the outside of the decant pipe?		✓
15. Are spillway or ditch linings deteriorated?		✓	22. Surface movements in valley bottom or on hillside?		✓
16. Are outlets of decant or underdrains blocked?		✓	23. Water against downstream toe?		✓
17. Cracks or scarps on slopes?		✓	24. Were Photos taken during the dam inspection?	✓	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Periodic inspections performed to evaluation condition of liner.

19. Some minor surface erosion on top of berm.

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW) Impoundment Inspection

Impoundment NPDES Permit # MA0005339 Outfall #002 INSPECTOR GZA GeoEnvironmental, Inc.

Date May 23, 2011

Impoundment Name Special Basin

Impoundment Company Mt. Tom Generating Co./First Light Power Resources

EPA Region 1

State Agency (Field Office) Addresss MassDEP Western Region
436 Dwight St., Suite 500, Springfield, MA 01103

Name of Impoundment Special Basin (special WW basin)

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?		X
Is water or ccw currently being pumped into the impoundment?	X	

IMPOUNDMENT FUNCTION: Sedimentation basin for air heater wash and miscellaneous plant wash water.

Nearest Downstream Town : Name Holyoke

Distance from the impoundment Approximately 3 miles

Impoundment Location:

Longitude 72 Degrees 36 Minutes 09.68 Seconds

Latitude 42 Degrees 16 Minutes 37.52 Seconds

State MA County Hampden

Does a state agency regulate this impoundment? YES X NO _____

If So Which State Agency? MassDEP

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

__x__ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

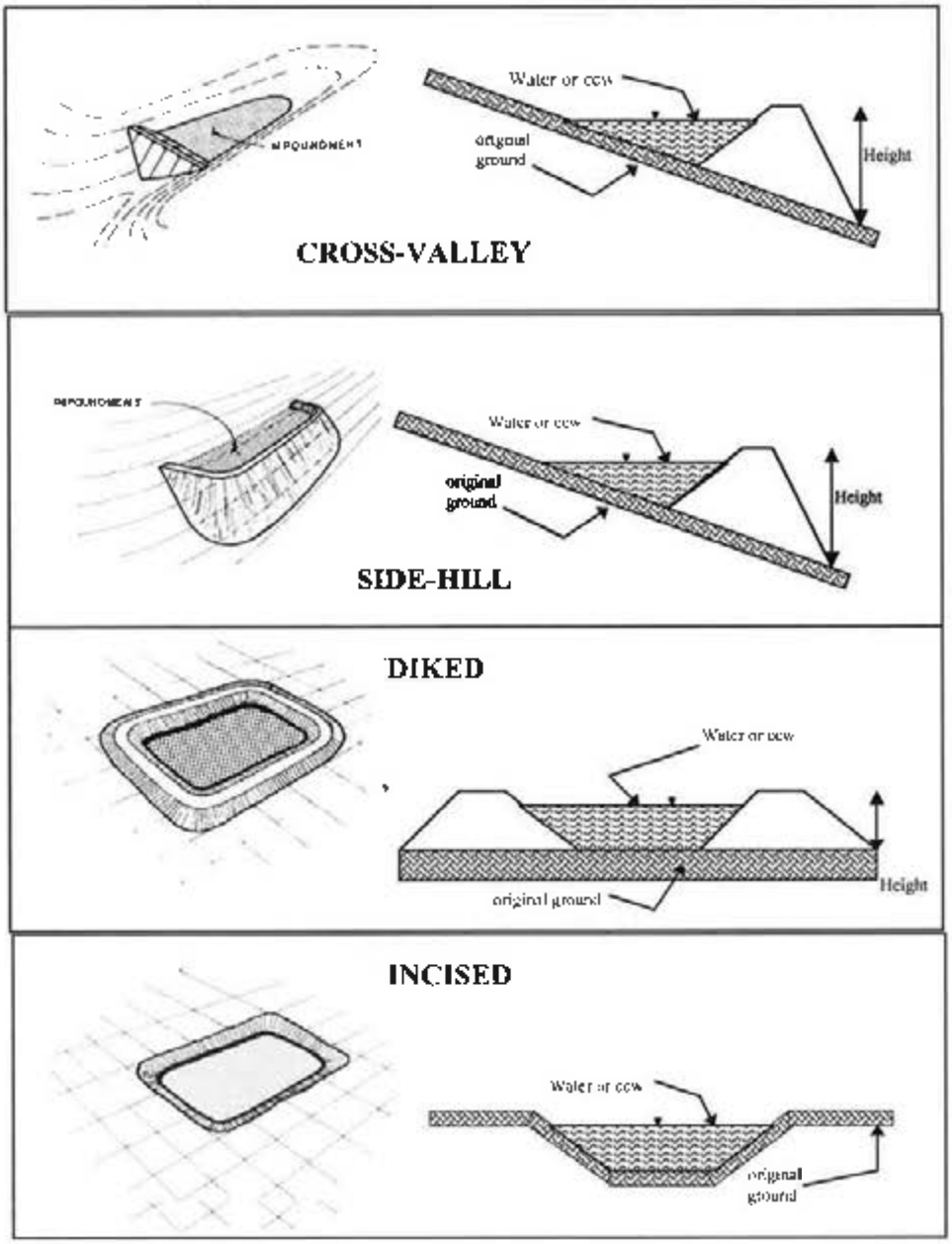
_____ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

The special basin has a maximum embankment height above natural grade of approximately 10 feet and a maximum storage volume of approximately 15 ac-ft. A potential failure of the impoundment at maximum pool would likely result in shallow flooding of wooded areas along the Connecticut River and/or shallow flooding of on-site railroad lines and access roads. Failure would likely result in a small discharge to the Connecticut River. Loss of life is very unlikely.

CONFIGURATION:



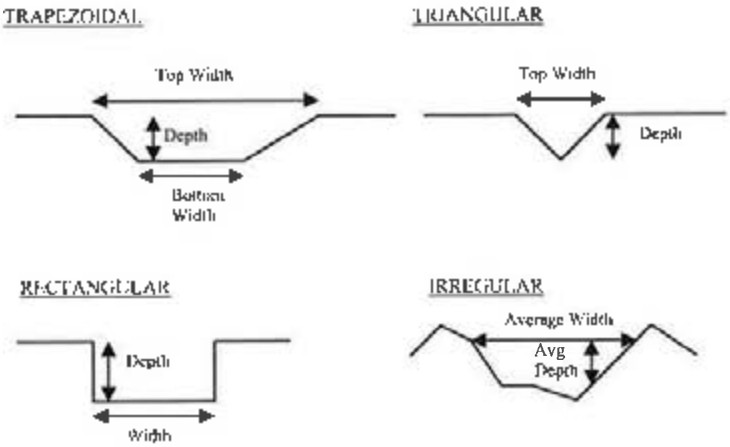
___ Cross-Valley
_____ Side-Hill
_____ Diked
_____ Incised (form completion optional)
__x__ Combination Incised/Diked

Embankment Height +/- 10 feet Embankment Material Sand/gravel & coal ash
Pool Area +/- 1.0 acres Liner HDPE Liner
Current Freeboard 8 feet Liner Permeability Impermeable

TYPE OF OUTLET (Mark all that apply)

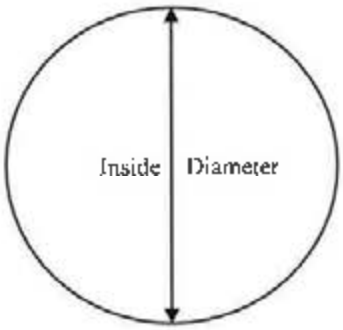
N/A **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

_____ depth
_____ bottom (or average) width
_____ top width



X **Outlet**

8" inside diameter (approximate)



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
X other (specify) Unknown

Is water flowing through the outlet? YES _____ NO X

_____ **No Outlet**

_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By Northeast Utility Service Co.

Has there ever been a failure at this site? YES _____ NO __x__

If So When? _____

If So Please Describe : _____

Has there ever been significant seepages at this site? YES _____ NO __x__

If So When? _____

IF So Please Describe: _____

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO __x__

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

US EPA ARCHIVE DOCUMENT

APPENDIX D

PHOTOS

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No. 1 **Date:** 5/23/2011

Direction Photo Taken:
South

Description:
View along wastewater and bottom ash discharge pipeline from plant.

Photo No. 2 **Date:** 5/23/2011

Direction Photo Taken:
West

Description:
Overview of wastewater treatment plant and coal pile area. The Wastewater Sedimentation Basin (non CCW) is located in the foreground.

US EPA ARCHIVE DOCUMENT

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No. 3 **Date:** 5/23/2011

Direction Photo Taken:
Southwest

Description:
View of reinforced concrete Equalization Tank at wastewater treatment plant.

Photo No. 4 **Date:** 5/23/2011

Direction Photo Taken:
West

Description:
View of Equalization Tank discharge pipes.

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No. 5

Date: 5/23/2011

Direction Photo Taken:
South/Southeast

Description:
Overview of the Special Basin from the Equalization Tank.

Photo No. 6

Date: 5/23/2011

Direction Photo Taken:
South

Description:
Overview of Special Basin (foreground, left), surface water runoff from Coal Pile (foreground, right), and Bottom Ash Basin (background, center). Note minor embankment between basins and Coal Pile runoff area.

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No. 7

Date: 5/23/2011

Direction Photo Taken:
South

Description:
View of Special Basin. Wastewater discharge to basin is located along slope in foreground. Discharge from basin is located at catwalk in background.

Photo No. 8

Date: 5/23/2011

Direction Photo Taken:
West

Description:
View along north slope of Special Basin. Note minor surficial erosion at top of liner in foreground. Equalization Tank and wastewater treatment plant located in background.

US EPA ARCHIVE DOCUMENT

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No.	Date:
9	5/23/2011

Direction Photo Taken:
South

Description:
View south along eastern side of Special Basin.

Photo No.	Date:
10	5/23/2011

Direction Photo Taken:
North

Description:
View of Special Basin discharge structure and catwalk.

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No. 11

Date: 5/23/2011

Direction Photo Taken:
East

Description:
View of staff gage at Special Basin discharge structure.

Photo No. 12

Date: 5/23/2011

Direction Photo Taken:
North

Description:
View along west side of Special Basin. Concrete slope in foreground is for dredging/sediment removal access.

US EPA ARCHIVE DOCUMENT

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No. 13

Date: 5/23/2011

Direction Photo Taken:
East

Description:
View of access roadway between Special Basin (left) and Bottom Ash Basin A (right). Note low/rutted areas and standing runoff water. Treatment plant (pH) for Bottom Ash Basin A is located in background.

Photo No. 14

Date: 5/23/2011

Direction Photo Taken:
West/Southwest

Description:
View along north/west slope of Bottom Ash Basin A with discharge line on slope.

US EPA ARCHIVE DOCUMENT

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No. 15

Date: 5/23/2011

Direction Photo Taken:
South

Description:
View along west slope of Bottom Ash Basin A looking towards bottom ash discharge into basin.

Photo No. 16

Date: 5/23/2011

Direction Photo Taken:
North

Description:
View of bottom ash discharge into Bottom Ash Basin A. Note pads placed at discharge point for protection of liner.

US EPA ARCHIVE DOCUMENT

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No. 17

Date: 5/23/2011

Direction Photo Taken:
East

Description:
View along south slope of Bottom Ash Basin A. Note bottom ash solids placed on slope to protect liner during sediment removal operations.

Photo No. 18

Date: 5/23/2011

Direction Photo Taken:
North

Description:
View along east side of Bottom Ash Basin A. Discharge from basin located in background at pH Treatment Plant.

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No. 19 **Date:** 5/23/2011

Direction Photo Taken:
North

Description:
View of minor surficial erosion along top of slope at access road along east side of Bottom Ash Basin A.

Photo No. 20 **Date:** 5/23/2011

Direction Photo Taken:
South

Description:
View off staff gage in Bottom Ash Basin A. Note marks/numbers difficult to read due to worn paint.

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No. 21

Date: 5/23/2011

Direction Photo Taken:
West

Description:
View of discharge pumps within pH Treatment Plant adjacent to Bottom Ash Basin A.

Photo No. 22

Date: 5/23/2011

Direction Photo Taken:
West

Description:
View of pH Treatment Plant at northeast corner of Bottom Ash Basin A. Note intake and overflow pipes in foreground.

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No.	Date:
23	5/23/2011

Direction Photo Taken:
East

Description:
Overview of Bottom Ash Basin A / pH Treatment Plant discharge area at Connecticut River.

Photo No.	Date:
24	5/23/2011

Direction Photo Taken:
South

Description:
View of minor embankment and slope between Bottom Ash Basin A and plant rail lines. Note woody brush on slope.

US EPA ARCHIVE DOCUMENT

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
U.S. Environmental Protection Agency	First Light – Mt. Tom Station, Holyoke, MA	170142.30

Photo No. 25

Date: 5/23/2011

Direction Photo Taken:
South

Description:
View along downstream slope of Special Basin. Note tree and brush growth. Transition between embankment slope and river bank is unclear.

Photo No. 26

Date: 5/23/2011

Direction Photo Taken:
Southwest

Description:
View along downstream slope of Special Basin. Note tree and brush growth. Transition between embankment slope and river bank is unclear.

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

APPENDIX E

REFERENCES

PREVIOUS REPORTS AND REFERENCES

The following is a list of drawings and related information that was located during the file review, or was referenced in previous reports.

1. Northeast Utilities Service Company, "Mt. Tom Power Plant Coal Conversion Site Plan – Sheet 1," Drawing No. 43719-10006SH1, May 7, 1985.
2. Northeast Utilities Service Company, "Mt. Tom Power Plant Coal Conversion Site Plan – Sheet 2," Drawing No. 43719-10006SH2, May 10, 1985.
3. Northeast Utilities Service Company, selection from "Final Engineering Report – Wastewater Treatment Facilities," 1982.
4. Northeast Utilities Service Company, "Mt. Tom Generating Station Wastewater Treatment Facilities – Equalization Basin," Drawing No. SK-LEL-41682, April 19, 1980.
5. Massachusetts Department of Environmental Protection correspondence to Holyoke Water Power Company, Re: "Sedimentation Basin and Basin A Lining, Corrective Action Design and Post Closure Use – Mt. Tom Station," May 15, 2003.

The following references were utilized during the preparation of this report and the development of the recommendations presented herein.

1. USACE, "Recommended guidelines for safety inspection of dams," EM 1110-2-106, 1979.
2. FEMA, "Federal Guidelines for Dam Safety," May 2005.
3. Commonwealth of Massachusetts Regulations, Chapter 302 CMR 10, Dam Safety
4. Northeast Regional Climate Center, "Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada," September 1993.

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

APPENDIX F

SELECTED FIGURES

EXTENSION OF DRAIN BASIN

HOLYOKE WATER POWER COMPANY PARCEL "B"

Maine Rail Road

MATCH LINE SEE SH 2

NEW 4" DUCT IRON CLASS 52 BELL & SPIGOT FOR CITY WATER (INV. EL. @ 5'-0" BELOW GRADE (AT ANY POINT ALONG LINE)

LIMIT OF GRUBBING

PIPE ROUTE

CROSS UNDER FLYASH PIPE

DRAIN BASIN

EXIST. THAW SHED

ACCESS ROAD

TOE OF SLOPE

SOUND BARRIER

LOAD CENTER BUILDING

COAL PILE AREA

LOCATION OF TEMP. HOC & XFMR.

TRANS. & FIRE WALL

REMOVE EXIST. TOOL SHED TO THIS LOCATION. REMOVE EXIST. SLAB ON GRADE

EQUALIZATION BASIN

WASTEWATER TREATMENT BLDG

COAL PILE

SUMP AREA

SPECIAL WASTEWATER BASIN

WASTEWATER SEDIMENTATION BASIN

BOTTOM ASH BASIN "A" (1,141,000 CF)

(612,000 CF)

INLET HEADER

FLUME

PH. MONITOR

EXIST. DRAIN

24" ϕ CULVERT

CONTRACTOR SHALL PROVIDE PAVING WHERE EXIST. HAS BEEN REMOVED OVER THE FLYASH & BOT. ASH PIPE TUNNELS

LIMIT OF PAVING

NEW 90' WTR. PLANT (VERIFY LOC. IN FIELD)

EXIST. 4" CITY WTR ABANDON

EXIST. 4" WTR PLANT

SWITCHGEAR AREA

Conc Platform

Tank

Power Line

Water Guard

NOTE: THE PAVING ON NORTH END OF COAL PILE SHALL SLOPE TO EX. SUMP. REFER TO NUSCO DWG # 43719-11270 FOR TYPICAL PAVING SECTION 4-4

NON Q.A.

TO STA 125+12.35

370'0" | 435' | 50'0" | 435' | 1300' | 158'0" | 435' | 435' | 263'0" | 435' | 3500'

3750'

5468' CORNER TO CORNER

SCALE 1:600 (1" = 50')

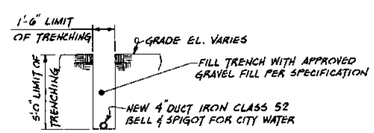
CONTOUR INTERVAL - ONE FOOT

DASHED CONTOURS INDICATE STANDARD VERTICAL ACCURACY REQUIREMENT FREE CORER

MT TOM PLANT NORTH

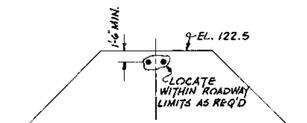
FOR GENERAL NOTES & LEGEND, SEE SHEET 2

NOTES 1 ELEVATIONS BASED ON MEAN SEA LEVEL
2 2500 GRID BASED ON MT TOM STATION COORDINATE SYSTEM



TYPICAL CITY WATER LINE TRENCH DETAIL

SCALE: 1/4" = 1'-0"



TYPICAL COUNTERPOISE SECTION

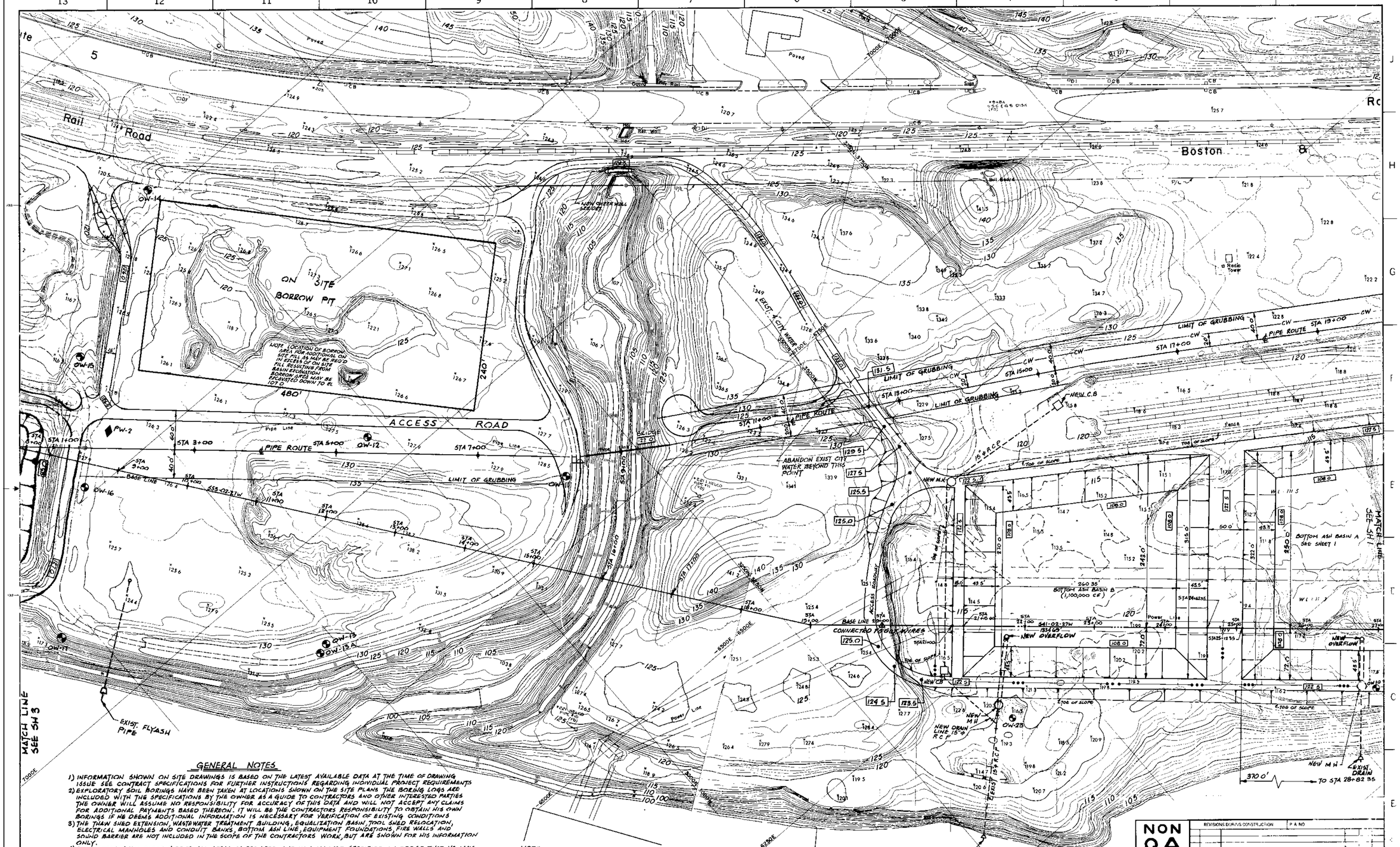
SCALE: 1/8" = 1'-0"

NO	DATE	REVISIONS DURING CONSTRUCTION	BY	CHK	APP	APP
79-160	1 5/7/85	AS BUILT PER DSR-MT-6-490-84	CO			

NORTHEAST UTILITIES SERVICE CO.
FOR HOLYOKE WATER POWER CO

TITLE
MT. TOM POWER PLANT
COAL CONVERSION
SITE PLAN - SHEET 1
HOLYOKE, MASS.

DWN J.T. DANIESS DATE 2-19-81
CHKD JD DATE 4-21-81
APP WYC DATE 4-21-81
APP DRW DATE 4-21-81
SCALE 1" = 50'
P.A. # 79-160
DWG NO 43719-10006 SH 1



GENERAL NOTES

1) INFORMATION SHOWN ON SITE DRAWINGS IS BASED ON THE LATEST AVAILABLE DATA AT THE TIME OF DRAWING ISSUE SEE CONTRACT SPECIFICATIONS FOR FURTHER INSTRUCTIONS REGARDING INDIVIDUAL PROJECT REQUIREMENTS
2) EXPLORATORY SOIL BORINGS HAVE BEEN TAKEN AT LOCATIONS SHOWN ON THE SITE PLANS THE BORING LOGS ARE INCLUDED WITH THE SPECIFICATIONS BY THE OWNER AS A GUIDE TO CONTRACTORS AND OTHER INTERESTED PARTIES THE OWNER WILL ASSUME NO RESPONSIBILITY FOR ACCURACY OF THIS DATA AND WILL NOT ACCEPT ANY CLAIMS FOR ADDITIONAL PAYMENTS BASED THEREON. IT WILL BE THE CONTRACTORS RESPONSIBILITY TO OBTAIN HIS OWN BORINGS IF HE DEEMS ADDITIONAL INFORMATION IS NECESSARY FOR VERIFICATION OF EXISTING CONDITIONS
3) THE THAW SHED EXTENSION, WASTEWATER TREATMENT BUILDING, EQUALIZATION BASIN, TOOL SHED RELOCATION, ELECTRICAL MANHOLES AND CONDUIT BANKS, BOTTOM ASH LINE, EQUIPMENT FOUNDATIONS, FIRE WALLS AND SOUND BARRIER ARE NOT INCLUDED IN THE SCOPE OF THE CONTRACTORS WORK, BUT ARE SHOWN FOR HIS INFORMATION ONLY.
4) CONTRACTOR SHALL CLEAR & GRUB ALL AREAS AS REQUIRED, AND IN A MANNER SPECIFIED, IN ORDER THAT HE MAY CONSTRUCT THE EARTHWORK, ROADS, RIGHT-OF-WAYS, CONSTRUCTION AREAS, AND ALL OTHER WORK, COMPLETELY AND TO THE SATISFACTION OF THE OWNER
5) OBSERVATION WELLS MUST BE PROTECTED DURING CONSTRUCTION AND ACCESS MUST CONTINUE DURING AND AFTER CONSTRUCTION.
6) INSIDE OF ROADS TO BE 60.0' RADII, MIN

LEGEND

- 000.00 — INDICATES NEW FINISHED GRADE
- INDICATES EXISTING CONTOUR IN AREA OF NEW GRADES
- OW- INDICATES OBSERVATION WELLS
- —CW— INDICATES NEW CITY WATER LINE (4")
- WW- INDICATES EXISTING WATER WELLS
- PW- INDICATES PUMPING WELLS
- BH- INDICATES BORING HOLE
- INDICATES COUNTERPOISE
- M.H. INDICATES ELECTRIC. MANHOLE
- INDICATES UNDER-GROUND ELECTRICAL CONDUIT BANK
- —BA— INDICATES NEW BOTTOM ASH PIPE

NON Q.A.

REVISIONS DURING CONSTRUCTION	P A NO

P A #	NO	DATE	REVISIONS	BY	CHK	APP	APP
79-160	1	5/20/85	AS BUILT PER DSR-MT-6-690-85	GO			

NORTHEAST UTILITIES SERVICE C

FOR HOLYOKE WATER POWER CO.

TITLE
MT. TOM POWER PLANT
COAL CONVERSION
SITE PLAN-SHEET 2
HOLYOKE, MASS.

BY	CHKD	APP	APP
DANIELS			
DATE 2-18-81	DATE 4-21-81	DATE 4-21-81	DATE 4-21-81
SCALE 1"=50'		DWG NO 43719-10006 SH 2	
P A # 79-160			