

DRAFT

Analysis of Brownfields Cleanup Alternatives

**Baltic Mills Site
Solid Waste Disposal Area (East Side)**

**27 Bushnell Hollow Road
Sprague, Connecticut**

Prepared for:
Town of Sprague

Prepared by:
Paul Burgess, LLC
Stonington, CT

October 2010

Paul Burgess, P.E., LEP

PAUL BURGESS, LLC

Environmental Consulting,
Engineering & Permitting

Table of Contents

1. Project Background	1
1.1 Site Description	1
1.2 Previous Reports	2
1.3 Project Objectives	2
2. Regulatory Summary	3
3. Solid Waste Disposal Area (East Side of Site)	4
5.1 Description	4
5.2 Summary of Chemical Data	4
5.3 Remediation Goal	4
4. Analysis of Alternatives	5
4.1 Public Health Threats	5
4.2 Environmental Response Objectives	5
4.3 Remedial Alternatives	5
4.4 Recommended Alternatives	6

Figures

- 1 Site Location Map
- 2 Site Schematic Plan
- 3 Summary of Soil Analytical Data

1. Project Background

This is a supplemental report to the March 2008 Analysis of Brownfields Alternatives report. This report addresses the Solid Waste Disposal Area (East Side of Site).

1.1 Site Description

This report is prepared to comply with the United States Environmental Protection Agency (EPA) requirements for the Cleanup Grant received by the Town of Sprague.

The property is located at 29 Bushnell Hollow Road in Sprague, Connecticut. Some old records cite the street address as 2 Scotland Road. The Tax Assessor's designation for the site is Map 26, Block 6, Lot 1, and another small parcel Map 26, Block 5, Lot 4. The site location is shown on Figure 1.

The main parcel (Map I.D. 26/6/1) is approximately 16.5 acres, according to Town Assessor's records. Only one structure (Mill No. 10) and a concrete water tank remain on site. Remains of the old powerhouse building (not on subject property) also exist, along with building rubble associated with the main mill structure destroyed by fire. The building rubble is predominately granite and masonry, with some metal and wood. Site features are shown on Figure 2.

The headrace and tailrace, associated with providing waterpower to the mill, still exist. Some tree growth exists, particularly in the headrace. Otherwise, the area around the main mill complex does not contain significant vegetation.

East of the Mill No. 10 Building is an undeveloped area. This area abutting the northern side of the tailrace contains some fill material and solid waste. Mr. Hunt (previous property owner) confirmed that past-unauthorized solid waste disposal took place in this area.

A narrow strip of wooded land, between Bushnell Hollow Road and the Shetucket River, extends approximately 1000 feet east of the end of the tailrace. No evidence of fill or disposal was observed in this area other than typical roadside litter.

An undeveloped area of land exists between the tailrace and the Shetucket River, east of the Nutmeg Wire Co. This area is referred to as the peninsular. Apparent disturbance in this area can be seen in old photographs (1947). Above-grade fill material is visible in this area in the old photographs and is still visible on site (although now covered by vegetation).

1.2 Previous Reports

The following environmental reports have been completed for this property:

- Phase I Environmental Site Assessment, GEI Consultants, Inc. February 2005: This report identified a number of recognized environmental conditions (RECs) at the site. They included former oil tanks, the fire combustion byproducts, onsite fill and solid waste, visible slag, former gas works, and the tailrace sediments.
- Targeted Brownfields Assessment (Draft), Tetra Tech August 2006: This investigation included drilling test borings, installation of ground water monitoring wells, collection and analysis of soil and groundwater samples, and an asbestos survey of Building 10. The investigation did not include the peninsular. The investigation identified certain petroleum hydrocarbons, polyaromatic hydrocarbons (PAHs), metals in soils exceeding CTDEP criteria. PAHs, cobalt and benzene were detected in groundwater above CTDEP criteria. Asbestos and lead paint were found in building materials in Building 10.
- Analysis of Brownfields Cleanup Alternatives, Paul Burgess, LLC, March 2008
- Asbestos Containing Materials and Lead Based Paint Monitoring Report, Eagle Environmental, June 5, 2009. Documented asbestos and lead abatement activities in Building 10.
- The US Environmental Protection Agency (USEPA) completed a Draft Targeted Brownfields Assessment Report for the Baltic Mills site dated December 2009. The USEPA report evaluated the nature and extent of soil contamination by test pit excavations, soil sampling and chemical analysis. Coal ash-like material was observed in some test pits. The soil analytical results detected extractable total petroleum hydrocarbons (ETPH), PAHs, and lead above CTDEP criteria.
- Remedial Action Plan, Paul Burgess, LLC, October 2010.

1.3 Project Objectives

The objective of this project is to mitigate the risk and achieve CTDEP Remediation Standard Regulation and Solid Waste Regulation compliance associated with the Solid Waste Disposal Area (Eastern Side of Site). This REC is depicted on Figure 3.

2. Regulatory Summary

The Baltic Mills site is listed on Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) due to the removal assessment and removal action associated with EPA's cleanup activities after the fire. EPA site activities included demolition of the main mill and Baltic Hardware, segregating and stockpiling asbestos-containing material (ACM) and non-ACM debris, removing and disposing ACM, and decontaminating and removal of a 550-gallon aboveground storage tank (AST) that contained petroleum liquids. The site is classified as No Further Response Action Planned (NFRAP) and is listed as "Archived." The site is also included as a state Brownfields site.

The site is listed as a leaking underground storage tank (LUST) site regarding the previous two concrete 50,000-gallon, No. 6 fuel oil tanks. The incident date is listed as January 11, 1989, which is when the tanks and contaminated soil were removed. The status is listed as "completed."

The site has enrolled into the Connecticut Department of Environmental Protection (CTDEP) Voluntary Remediation program under Connecticut General Statutes 22a-133x as of March 2008.

3. Solid Waste Disposal Area (East Side of Site)

3.1 Description

Various solid waste materials are present above and below the ground surface within the area shown on Figure 3. This includes concrete brick, metal, tires, wood, and general trash. Unauthorized disposal of solid waste violates CTDEP solid waste statutes.

3.2 Summary of Chemical Data

Soil analysis has detected low concentrations of PAHs and metals, below CTDEP RDEC and PMC criteria. Groundwater monitoring well MW-5 is located within this REC. Low concentrations of benzene and PAHs were detected below applicable CTDEP groundwater criteria.

3.3 Remediation Goal

The remediation goal is to mitigate exposure of solid waste and achieve compliance with applicable environmental laws and regulations.

4. Analysis of Alternatives

4.1 Public Health Threats

Improperly disposed solid wastes exist within this area. This results in a potential human exposure contact with this material. Polluted soil (below CTDEP criteria) also exists intermixed with the solid waste.

4.2 Environmental Response Objectives

The response objective is to mitigate exposure solid waste and achieve compliance with applicable environmental laws and regulations.

4.3 Remedial Alternatives

Three remedial alternatives were evaluated as follows:

- Remove and properly dispose solid waste intermixed with polluted soil.
- Cap the material in accordance with CTDEP solid waste closure requirements (CT General Statute's 22a-208a(c)). Perform cap monitoring and maintenance.
- No action.

4.3.1 Remove and Dispose Solid Waste

This alternative involves excavation of solid waste intermixed with polluted soil and disposal at an authorized landfill. Post excavation soil confirmation samples will be collected. This alternative addresses the public health and regulatory issues by removing the solid waste from the site. It also does not restrict subsequent site redevelopment on this portion of the site.

The cost for this alternative is \$43,000 as summarized in Table 1.

4.3.2 Cap Solid Waste

A CTDEP Solid Waste Disruption Permit would be required. This alternative would require re-grading this area to create a suitable grade for capping and site drainage. A protective geotextile warning layer and a minimum of 2 feet of low permeable soil would be placed over the solid waste to form a cap. This material would be stabilized with topsoil and grass. Long term monitoring and maintenance of the cap would be required. This would include a cap inspection schedule and protocol. Any deficiencies in the cap such as erosion/stabilization would require correction. The capital cost for this alternative is \$45,000

as summarized in Table 2. The annual cap monitoring and maintenance cost is estimated to be \$ 1,500.

4.3.3 No Action

The no action alternative is not acceptable because it would not be protective of public health and the environment, and would not be in compliance with CT state statutes.

4.4 Recommended Alternatives

Both the Remove and Dispose Solid Waste and the Cap alternatives have essential the same capital cost estimates. The Cap alternative has long term operation and maintenance requirements, and associated additional costs. For these reasons, the Removal and Dispose Solid Waste alternative is the preferred alternative.

ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES
SOLID WASTE DISPOSAL AREA (EAST SIDE)
BAL TIC MILLS SITE
27 BUSHNELL HOLLOW ROAD
SPRAGUE, CONNECTICUT

TABLES

Table 1
Remedial Action Plan Cost Estimate
Solid Waste Excavation and Disposal
Solid Waste Disposal Area (East Side)
Baltic Mills

ITEM DESCRIPTION	QUANTITY	UNITS	UNIT COST	EXTENDED COST
Tree Removal	1	L.S.	\$ 2,000.00	\$ 2,000.00
Soil Excavation	1,115	C.Y.	\$ 13.00	\$ 14,495.00
Solid Waste Removal/Disposal	100	C.Y.	\$ 20.00	\$ 2,000.00
Soil Disposal	400	Ton	\$ 50.00	\$ 20,000.00
Site Restoration	1	LS	\$ 1,000.00	\$ 1,000.00
				\$ -
			Subtotal:	\$ 39,495.00
			10% Contingency	\$ 3,949.50
			Total:	\$ 43,444.50
			Rounded:	\$ 43,000.00

Notes:

1.) L.S. means Lump Sum; L.F. means linear foot; C.Y. means cubic yard; S.Y. means square yard

2.) Limitations: The engineer's opinions of probable construction costs represent the engineer's best judgment as a professional generally familiar with the construction industry. Because the engineer has no control over the cost of labor, material, equipment, or services furnished by others; over the contractor's methods of determining prices; or over competitive bidding or marketing conditions, the engineer cannot and does not guarantee that actual construction costs will not vary from this estimate. The estimate is also based on our professional opinion regarding the quantity of contaminated soil, which can only be fully known upon excavation and final confirmation sampling and analysis.

Table 2
Remedial Action Plan Cost Estimate
Solid Waste Cap
Solid Waste Disposal Area (East Side)
Baltic Mills

ITEM DESCRIPTION	QUANTITY	UNITS	UNIT COST	EXTENDED COST
Solid Waste Permitting	1	L.S.	\$ 3,000.00	\$ 3,000.00
Tree Removal	1	LS	\$ 2,000.00	\$ 2,000.00
Site Regrading	1	LS	\$ 2,000.00	\$ 2,000.00
Cap	890	C.Y.	\$ 30.00	\$ 26,700.00
Topsoil	225	C.Y.	\$ 25.00	\$ 5,625.00
Site Restoration	1	LS	\$ 1,000.00	\$ 1,000.00
			Subtotal:	\$ 40,325.00
			10% Contingency	\$ 4,032.50
			Total:	\$ 45,357.50
			Rounded:	\$ 45,000.00
			Annual Maintenance & Monitoring	\$1,500

Notes:

1.) L.S. means Lump Sum; L.F. means linear foot; C.Y. means cubic yard; S.Y. means square yard

2.) Limitations: The engineer's opinions of probable construction costs represent the engineer's best judgment as a professional generally familiar with the construction industry. Because the engineer has no control over the cost of labor, material, equipment, or services furnished by others; over the contractor's methods of determining prices; or over competitive bidding or marketing conditions, the engineer cannot and does not guarantee that actual construction costs will not vary from this estimate. The estimate is also based on our professional opinion regarding the quantity of contaminated soil, which can only be fully known upon excavation and final confirmation sampling and analysis.

Remediation Quantity Estimates
Baltic Mills- Solid Waste Disposal Area (East Side)

Soil Excavation

400 FT x 30 FT x 2.5 FT x 1/27 1115 CY

Solid Waste

Assume 100 CY 100 CY

Polluted Soil Intermixed with Soil Waste

25 % of Soil Excavation $0.25 \times 1115 \text{ CY} \times 1.5 \text{ TONS/CY}$ 400 TONS

Landfill Cover Alternative

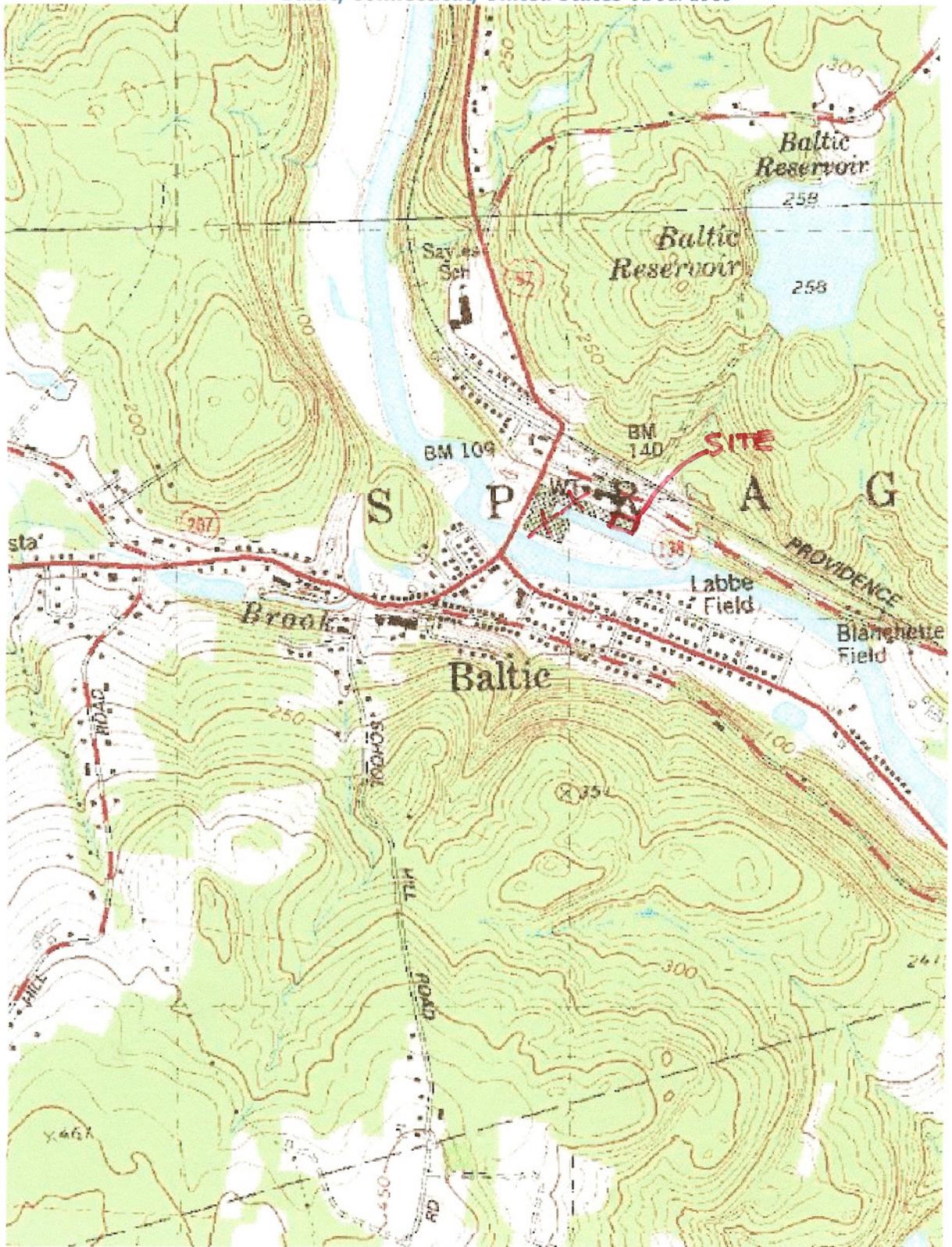
400 FT x 30 FT x 2 FT x 1/27 890 CY

Topsoil

400 FT x 30 FT x 0.5 FT x 1/27 225 CY

ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES
SOLID WASTE DISPOSAL AREA (EAST SIDE)
BALTIC MILLS SITE
27 BUSHNELL HOLLOW ROAD
SPRAGUE, CONNECTICUT

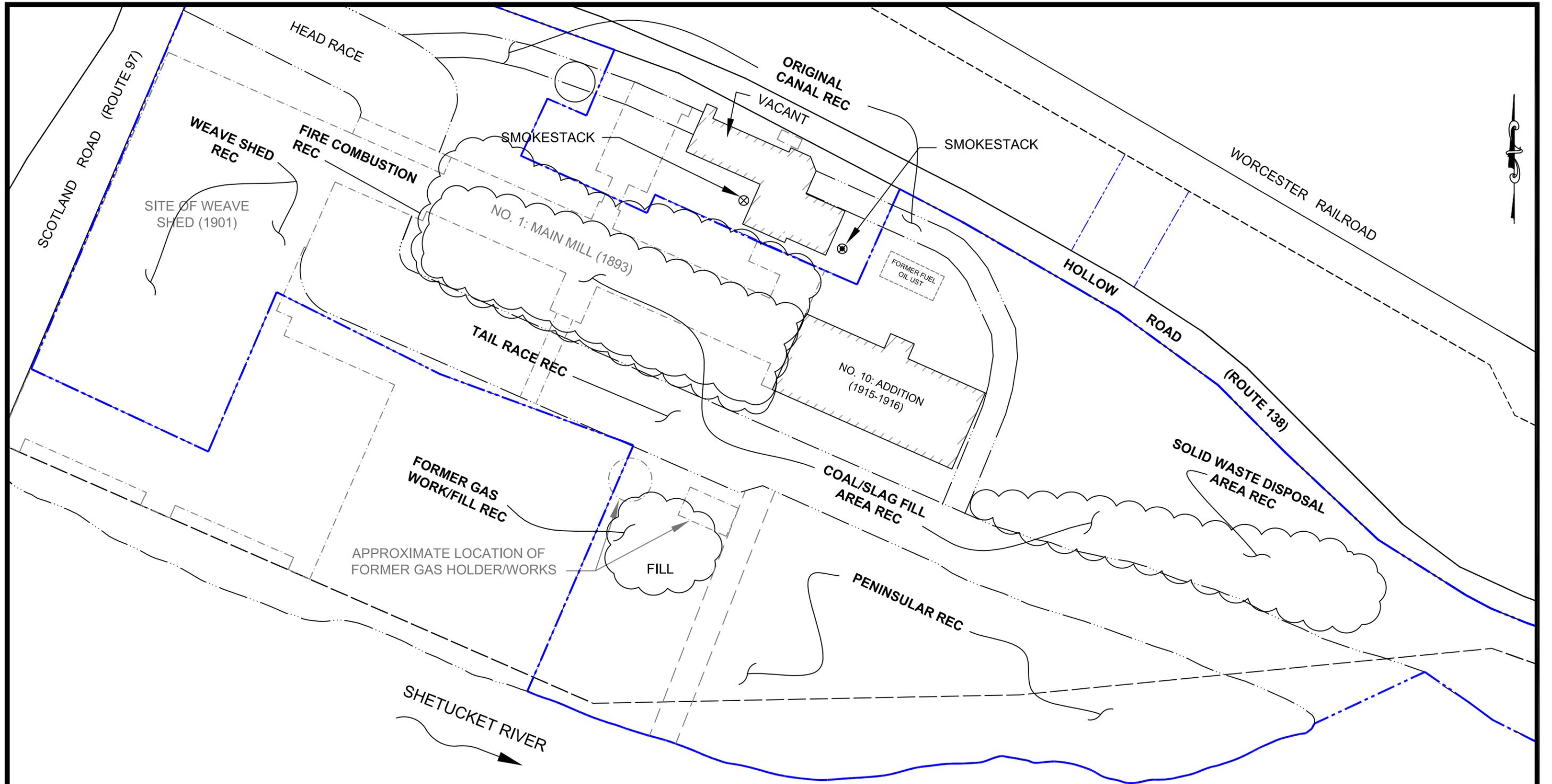
FIGURES



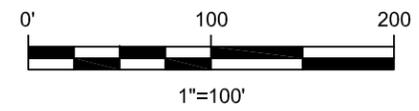
PAUL BURGESS, LLC
ENVIRONMENTAL CONSULTING
ENGINEERING & PERMITTING

FIGURE 1

SITE LOCATION MAP



LEGEND	
REC	RECOGNIZED ENVIRONMENTAL CONDITION
---	PROPERTY LINE

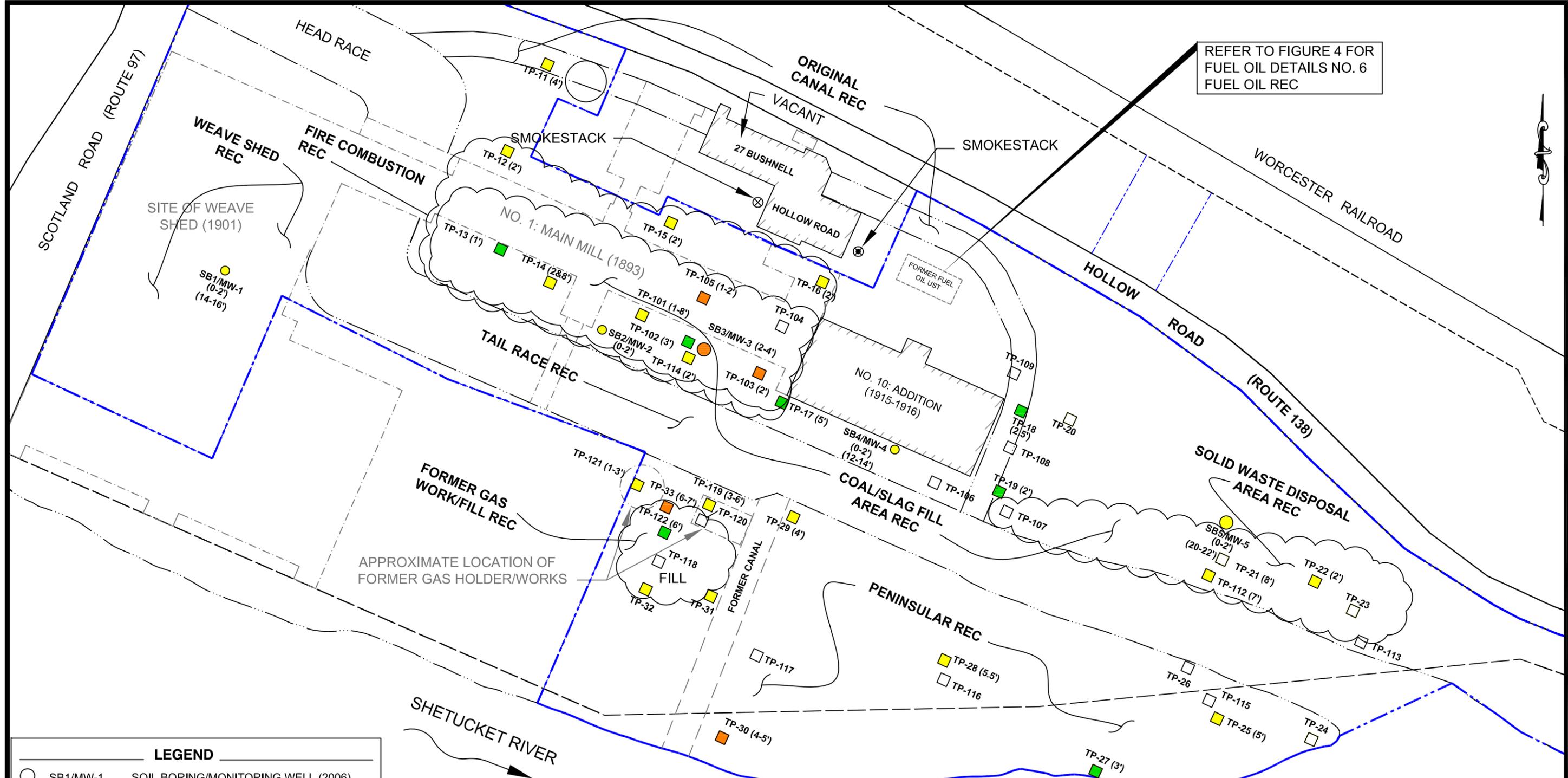


SOURCES:

1. SITE ASSESSOR'S MAPS, SCALE: 1"=100' AND 1"=200'.
2. PLAN MADE FOR THE BALTIC MILLS COMPANY, BALTIC, CONN., PREPARED BY CHANDLER & PALMER, SCALE: 1"=100', DATE: 1969.
3. SITE PLAN, FROM HISTORIC AND ARCHITECTURAL RESOURCE SURVEY OF THE TOWN OF SPRAGUE, 2002.
4. PLAN OF A PORTION OF PROPERTY OF BALTIC MILLS, ROUTE 138, BALTIC, CONN., PREPARED BY KING & MULLEN LAND SURVEYORS, DATE: JULY 1, 1985 (PERTAINING TO 27 BUSHNELL HOLLOW ROAD).
5. AES FIGURE 3 SAMPLE LOCATIONS, DECEMBER 16, 2009.

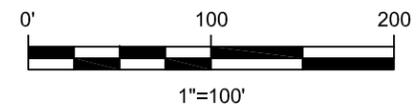
PAUL BURGESS, LLC		36 ELM STREET STONINGTON, CT 06378	
ENVIRONMENTAL CONSULTING, ENGINEERING & PERMITTING		FIGURE 2	
SITE SCHEMATIC PLAN			
SITE LOCATION:		BALTIC MILLS SITE 29 BUSHNELL HOLLOW ROAD SPRAGUE, CONNECTICUT	
SCALE: AS SHOWN	DATE PREPARED: AUGUST 2010	DRAWN BY: JLS	CLIENT: TOWN OF SPRAGUE

BALTIC MILLS/SIS PLAN



REFER TO FIGURE 4 FOR FUEL OIL DETAILS NO. 6 FUEL OIL REC

LEGEND	
○	SB1/MW-1 SOIL BORING/MONITORING WELL (2006)
□	TP-1 (4') TEST PIT (SOIL SAMPLE DEPTH) (2009)
□	TP-101 (1-8') TEST PIT (SOIL SAMPLE DEPTH) (2010)
■	EXCEEDS RDEC AND GB PMC
■	EXCEEDS RDEC
□	NO SAMPLE ANALYZED
■	SAMPLE ANALYZED, BELOW CTDEP STANDARDS
---	REC RECOGNIZED ENVIRONMENTAL CONDITION
---	PROPERTY LINE



- SOURCES:**
- SITE ASSESSOR'S MAPS, SCALE: 1"=100' AND 1"=200'.
 - PLAN MADE FOR THE BALTIC MILLS COMPANY, BALTIC, CONN., PREPARED BY CHANDLER & PALMER, SCALE: 1"=100', DATE: 1969.
 - SITE PLAN, FROM HISTORIC AND ARCHITECTURAL RESOURCE SURVEY OF THE TOWN OF SPRAGUE, 2002.
 - PLAN OF A PORTION OF PROPERTY OF BALTIC MILLS, ROUTE 138, BALTIC, CONN., PREPARED BY KING & MULLEN LAND SURVEYORS, DATE: JULY 1, 1985 (PERTAINING TO 27 BUSHNELL HOLLOW ROAD).
 - AES FIGURE 3 SAMPLE LOCATIONS, DECEMBER 16, 2009.

PAUL BURGESS, LLC		36 ELM STREET STONINGTON, CT 06378	
ENVIRONMENTAL CONSULTING, ENGINEERING & PERMITTING		FIGURE 3	
SUMMARY OF SOIL ANALYTICAL DATA			
SITE LOCATION: BALTIC MILLS SITE 29 BUSHNELL HOLLOW ROAD SPRAGUE, CONNECTICUT			
SCALE: AS SHOWN	DATE PREPARED: AUGUST 2010	DRAWN BY: JLS	CLIENT: TOWN OF SPRAGUE

BALTIC MILLS/SS PLAN