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Memorandum

To: The Mill Site Study Committee

Date: November 4, 2009

Project No.: 11013.00

From: Geoffrey Morrison-Logan
Karen A. Fisk, P.E., LEED AP

Re: Pepperell Paper Mill Site Assessment
Existing Conditions Summary

DRAFT

On behalf of the Town of Pepperell (the Town), and working in conjunction with the Mill Site Study Committee (the Committee), VHB is assisting with evaluating the reuse potential of the 13.9-acre¹ Mill Site (the Site) located adjacent to Main and Mill Streets, and on the west bank of the Nashua River in Pepperell, MA. VHB prepared this memorandum as a brief summary of the first phase of VHB's work, which included a site visit and a review of readily available information about the existing conditions on the Site. This memorandum was prepared with a focus on identifying constraints and opportunities for future development as a basis for developing conceptual Site Reuse Alternatives that will be prepared in subsequent tasks.

Accompanying this memorandum are two draft figures which were presented at the October 1, 2009 and October 14, 2009 Committee meetings to summarize the information presented. These figures are included as attachments to this memorandum for reference:

- Figure 1, Constraints Plan, Mill Site, Pepperell, Massachusetts dated November 2, 2009 (Draft)
- Figure 2, Estimated Buildable Area Figure, Mill Site, Pepperell, Massachusetts, dated November 2, 2009 (Draft)

VHB reviewed several reports and documents available on the Town's website², the Committee's website³, the Northern Middlesex Council of Governments (NMCOG) website⁴, as well as hard copies of plans and documents provided to VHB by the Town. An existing conditions plan was also provided by BSC Group, on behalf of the Site owner (N/F Pepperell Realty LLC). VHB also spoke to several Town representatives, including Ellen Fisher, the Pepperell Conservation Administrator and Mark A. Richardson, Superintendent of the Pepperell Sewer Commission.

Of the sources noted above, the documents most relevant to this summary memorandum include:

- Pepperell Downtown Business District and Mill Site Preliminary Assessment by Fine Point Associates, LLC

¹ Existing Conditions Plan of Land Mill Street in Pepperell MA, Pepperell Mill, dated December 18, 2006 prepared by BSC Group

² <http://www.town.pepperell.ma.us/>

³ <http://www.town.pepperell.ma.us/MillSite/index.html>

⁴ <http://www.nmcog.org/>

- Wright-Pierce Site Analysis dated April 2009⁵
- Summary of 1995 Phase II Comprehensive Site Assessment completed by Haley & Aldrich - Review and summary by Committee Members Matt Nesbit and Kurtis Amidon
- Existing Conditions Plan of Land Mill Street in Pepperell MA, Pepperell Mill, dated December 18, 2006 prepared by BSC Group (the Existing Conditions Plan)
- Plan of Land in Pepperell Mass for James River Corporation dated September 23, 1991 by Bill Boston Survey, Inc. of West Groton Mass.
- Plan of Land in Pepperell, Mass for Pepperell Hydro Co LLC dated January 12, 2004 by Bill Boston Survey, Inc. West Groton Mass.
- Readily available GIS data provided by the Commonwealth of Massachusetts through www.mass.gov/mgis
- Town of Pepperell's Zoning By-Laws (as of May 4, 2009) downloaded from the Town Website
- Town of Pepperell Wetlands Protection Bylaw downloaded from the Town Website

Site Overview

The Site sits on the westerly bank of the Nashua River, has frontage on Main Street (Route 113) and Mill Street, and abuts residential properties to the north and west. The Site was originally established as a paper mill in the 1830's, and remains occupied by a series of connected and unconnected buildings built at various times and in a general state of disrepair. On the northern end of the site, a cogeneration plant, which produced electricity and steam, is in the process of being dismantled. Currently the site is accessed by a driveway on Main Street, and four separate driveways on Mill Street.

Physical Constraints

There are many physical attributes associated with the Site that present both opportunities and constraints to proposed redevelopment. The Site's location downtown, as well as its proximity to the River and adjacent open spaces, could allow it to serve as a connector not only between the two main commercial nodes downtown, but provide access to adjacent open spaces and access or views to the River. In addition to opportunities such as these, there are physical site constraints which should be considered when developing a site development concept.

The Site is approximately 13.9-acres in size, and has a long linear shape which follows the Nashua River. Of the 13.9 acres of Site, approximately 2-acres are within the river, and approximately twelve acres are on land. In general, the Site is approximately 1,700 ft long in the north-south direction, and an average of approximately 350 ft wide in the east-west direction (including the land but excluding portions of the Site that are within the River). The Site's primary frontage on Mill Street is on the narrow, southerly border of the Site, which presents a challenge for Site access and visibility from Main Street to the northerly portions of the site. Visibility and access are particularly critical for commercial uses. The Site also abuts several residential properties to its west.

The Site's varied topography also presents some challenges. Adjacent to the River, the Site slopes steeply from an approximate elevation of 172 at the River's edge, to elevation 184± at the top of slope (based on the Existing Conditions Plan). In some areas on the southern end of the Site, it's boundary with the River consists of existing retaining walls; the most southerly building closest to the river appears to be built out over the water. Elevations along Main Street are in the 205-208 range, and the frontage along Mill Street undulates in the 190- 200 ft range. An existing stone block wall separates the Site from the rear lot lines of the adjacent residential properties, with the residential properties sitting approximately 15' above the adjacent mill site. The visual impact of the residential uses relative to the proposed redevelopment should be considered when redeveloping the property.

⁵ Town of Pepperell, MA Site Analysis for the Industrial Mill Site, Town Center, Pepperell, MA dated April 2009 by Wright-Pierce

The existing dam located just upstream of Main Street includes hydro-electric power generation. Components of this system are visible in the river. The noise created by the power generation should be considered as part of the Site redevelopment.

Because the Site has been used for so long as an industrial property, and due to its relationship with the River and the dam, it contains many tunnels, pipes and other forms of sub-surface infrastructure. For example, floor drains from the existing buildings as well as surface runoff collected from paved areas connect to the former water treatment plant, which operated as part of the paper mill, prior to discharging to the River. The Site's fire protection system is fed through hydrostatic pressure from the high side of the dam, through a tunnel containing several pipes. Various buildings are also connected through subsurface tunnels. The quantity and extent of these subsurface features is generally unknown; once investigated, they may need to be removed or appropriately filled prior to new construction on the Site. An existing culvert, which conveys Varnum Brook from the west side of Mill Street, across the Site to the Nashua River, crosses the Site at its narrowest part. This culverted crossing of the site will need to be retained and incorporated in to the future Site design.

Easements

Based on a review of the Existing Conditions Plan for the Site, (and without the benefit of a full title search), it appears that there are three types of easements which exist on the site. First, there is a sewer easement which follows the northerly boundary of the Site and conveys approximately 1/3 of the Town's sewage flow from Mill Street and upstream areas to a sewer in Groton Street. Second, there are apparently inactive railroad easements, which likely related to old railroad tracks which were used when the mill was in operation. Finally, there are easement areas associated with power.

One power easement benefiting Mass Electric runs east-west on the northerly portion of the Site and contains overhead wires. The second is an overhead easement which crosses the River near the middle of the site, which appears to be related to the former power supply of the pre-existing buildings from the hydroelectric dam from Pro Power. Finally, a right of way through the site is mentioned in the Wright-Pierce Site Analysis to provide access from Mill Street to the river for the power plant on the eastern bank of the river. It notes that "the power plant would prefer to retain the right of way for reasonable access to the building and equipment, but does not want to prohibit site development or limit potential uses."⁶ It is unclear if this is an additional encumbrance on the Site or a reference to one of the easements noted above.

Utility Infrastructure

The Wright-Pierce Site Assessment included a summary of the utilities located near or adjacent to the Site. It states:

There are water mains located in Main Street and Mill Street and drinking water service is readily available. There is one consideration in that there is a choke point in the water mains along the Main Street Bridge; the water main along the bridge is eight inches in diameter, and the mains to each side are 12 inch and 16 inch. Water system capacity is generally driven by the need for flow and pressure for fire fighting purposes. There are no pressure issues in the area and available volume should not be restricted. There are no private drinking water wells on the site and the site is not located within a high yield aquifer.

In regards to sanitary sewage, issues associated with future development will relate more to sewer connection rather than sewer capacity. The Mill Site is within the sewer overlay district and sewer service would be provided by the Town along Mill Street. The issue with a sewer connection is that the sewer easement along the northern portion of the site is approximately 20 feet deep.

⁶ Town of Pepperell, MA Site Analysis for the Industrial Mill Site, Town Center, Pepperell, MA dated April 2009 by Wright-Pierce

Natural gas and electrical service is provided to the Site by National Grid. There appears to be three phase power available off Mill Street and Main Street.

In addition, based on input from the Mill Committee, the hydro power company has expressed the desire to continue to supply the Site with power from the hydroelectric dam.

Environmental Cleanup Issues – Oil and Hazardous Materials

The following is a summary of information obtained from existing reports provided to VHB by the Town. VHB is not providing LSP services for this Project and the following should not be considered an LSP opinion.

In general, the studies performed for the Site show that decades of industrial use have impacted subsurface conditions on the Site, resulting in the presence of Oil and Hazardous Materials (OHM) in the soil. These studies indicate that there is oil-contaminated soil throughout the Site. Volatile Organic Compounds (VOCs), metals, and Polychlorinated biphenyls (PCBs) were also detected in isolated locations throughout the Site. Prior documented spills of fuel oil and transformer oil have been cleaned up. In general, contaminants do not appear to be from a specific source (other than the documented spills) and soil contaminants seem relatively immobile and do not appear to have impacted groundwater, or the sediment in the Nashua River.

The ASTM Phase 1 ESA by CEA on April 29, 2003 noted that “the conclusion of no significant risk” is contingent on the future use of the site remaining commercial/industrial and a prohibition on the use of the site for residential purposes. It is also contingent on the maintenance of the current site buildings. Future construction activities involving the excavation and handling of the soil at the Site would need to be conducted in accordance with the MCP under a health and safety plan.

Issues related to OHM may impact future Site development in several ways. First, cleanup will likely be required. The level of cleanup necessary for future uses of the Site will need to be determined based on additional testing or investigations, and on the proposed use(s) for the site. Also, during construction, worker safety and soil management considerations will likely be relevant. Finally, the design of the stormwater management system supporting the Site redevelopment will need to carefully consider presence of subsurface contamination to minimize risk to the adjacent river.

Zoning

Portions of the site located adjacent to Main Street are located in the Commercial zoning district, and the remainder of the site is located in the Industrial zoning district. The Site is also located within the Mixed Use Overlay District (MUOD), which is an overlay district applicable to commercially and industrially-zoned parcels, created to allow mixed use commercial, residential, and open space uses. MUOD projects require a special permit from the Town.

Key Dimensional Criteria in the MUOD include:

- 30' Front Yard Setback
- 15' / 30' Side Yard Setback (depends on underlying zone)
- Max Bldg Ht 60'
- 70% Max building coverage
- 15' separation between buildings
- Structured parking allowed
- Shared parking encouraged

The Site is also located in the Sewer Overlay District, and sewer service would be provided to the town along Mill Street.

Transportation

In addition to the specific on-site constraints, it is helpful to review the surrounding transportation infrastructure to identify issues, limitations or opportunities that may impact future site re-use. With this in mind, VHB reviewed the available traffic-related information and data obtained on the Town Website as well data available from the Northern Middlesex Council of Governments (NMCOG). VHB also performed a Site visit to observe the existing functionality of the transportation systems and roadways at the Site.

Generally speaking, Main Street is a two-lane roadway with lane widths of approximately 12 feet \pm and variable shoulder widths up to 4 feet \pm in the vicinity of the site. With the exception of the crosswalks, pavement markings along Main Street are faded or not visible. Speed limits along Main Street in this area are 25 mph heading eastbound and 20 mph heading westbound approaching the intersection with Mill Street. Land use along Main Street is primarily commercial in the vicinity of the site.

Mill Street is a two-lane roadway with lane widths of approximately 12 feet \pm and no striped shoulder in the vicinity of the site. Pavement markings along Mill Street are faded or not visible. There is no posted speed limit along Mill Street along the site frontage, but vehicles were observed traveling approximately 30 mph. In addition to the former Mill, land use along Mill Street is a mix of commercial and residential.

Main Street intersects with Canal Street to the south and Mill Street to the north to form a four-way unsignalized intersection. The Canal Street and Mill Street approaches are under STOP sign control. The STOP control is supplemented by an overhead flashing beacon at this intersection. Based on general observations of the operations at this location, sight distance is very limited from Mill Street looking east towards the bridge. The visibility in this direction is inhibited by an existing retaining wall for the residence on the northeast corner. Because of the poor sight distance, vehicles often pull past the STOP bar and into the Main Street westbound lane to get a better view of oncoming traffic if they want to make a left turn out of Mill Street. While the speed limits are low along Main Street, vehicles traveling over the speed limit compound the sight distance issue.

A similar condition is present at the existing Site Driveway on Main Street. This driveway, which is currently gated, is only approximately 160 feet east of Mill Street and has an even more restricted sight line resulting from the residential retaining wall and the curvature of Main Street in this area. The poor sight distance looking west is further compounded by the vertical curvature of Main Street with vehicles traveling downhill. In addition, vehicles traveling westbound are often slowed by vehicles turning right onto Mill Street or left onto Canal Street. The resulting vehicle queues not only worsen the intersection sight distance from the Site Driveway, but they create a stopping sight distance issue for vehicles traveling eastbound on Main Street, who have difficulty seeing the Site Driveway as they travel towards the bridge.

Based on VHB's preliminary review of the transportation infrastructure surrounding the site and the available traffic data, it is clear that additional information will need to be collected to establish a Site access plan that will operate safely and efficiently. In addition, data will need to be collected to determine any impacts to other area intersections resulting from the redevelopment and potential mitigation measures to address these impacts.

Environmental – Wetlands and other Resource Areas

The Site's proximity to the Nashua River and its tributary, a perennial stream called Varnum Brook, present several constraints related to the resource areas and to regulatory buffer zones associated with the resource areas. As noted in the Wright-Pierce Site Analysis, it is anticipated that redevelopment of the Site will require the filing of a Notice of Intent with the Pepperell Conservation Commission. It is possible redevelopment of the Site may also require environmental review at the state level, including a Certificate from the Secretary of Environmental and Energy Affairs, issued by the Massachusetts Environmental Policy Act (MEPA) Office, and other potential permits. This section summarizes the resource areas and buffer zones which are or may be present on the Site.

The Nashua River is a Class V Impaired Water, and it has a listed TMDL for Phosphorous, meaning that the levels of phosphorous in the river exceed the maximum concentration the river can tolerate and remain healthy. The Stormwater management system design to support the redevelopment will likely need to include Best Management Practices (BMPs) which focus on the removal of phosphorous from stormwater.

Both the Nashoba River and Varnum Brook are considered rivers, and therefore have an associated 200' Riverfront Area (RA). A majority of the Site falls within the 200' RA, and it is generally disturbed and/or developed. Riverfront Area may not be present in areas where mill buildings built before 1946 were constructed and are still present.

Additional resource areas associated with the River include Land Under Water (LUW), Bank, Bordering Land Subject to Flooding (BLSF, aka Flood Plain) and possibly bordering vegetated wetlands (BVW). The Wetlands Protection Act creates a 100' Buffer zone to these resource areas (except BLSF), and the Local Pepperell Wetlands Bylaw creates a 50' buffer zone to bordering vegetated wetlands.

As shown on the Existing Conditions Plan the Site falls within the FEMA 100-year flood Plain, which is indicated to be elevation 184. This area is regulated through the Wetlands Protection Act and the filling of Flood Plain (aka BLSF) is not permitted unless incremental compensatory flood storage is provided as compensation. The FEMA 500-year flood plain projects on to the Site, however this area is not regulated. Specific to Pepperell, the Town refers to the Raytheon Flood Line⁷ in the Zoning Bylaw as part of the definition of a "flood hazard area". This flood line is a measurement of a historical flood which occurred in the past. Based on the 2004 Plan of Land prepared for Pepperell Hydro Co, LLC, the vast majority of the Site falls within the Raytheon area. Other than the limited references in the Zoning By-Law, the Raytheon Flood Line does not appear to be a regulated area, however it does designate an area of historical flooding.

In addition to the site-specific resource areas and buffer zones which impact the site, there are several additional areas on or near the Site which may impact redevelopment. The first is the Petapawag Area of Critical Environmental Concern (ACEC). The ACEC designation is given to large areas throughout the Commonwealth of Massachusetts with the goal of protecting the environmental resources found there. The Petapawag ACEC is noted to contain significant drinking water resources in the form of high-yield aquifers, as well as habitat. The primary restriction that this ACEC designation would have on the Site is that the filling of wetlands would not be permitted.

The northerly and easterly edges of the Site fall within a Natural Heritage Polygon, indicating that there is habitat present for state-listed species. The habitat appears to be associated with the River,

⁷ Raytheon Flood Plain – Commonwealth of Massachusetts, Department of Natural Resources, Division of Water Resources, Nashua River," dated April 1973 and prepared by the Raytheon Co.

however only the response to an official information request by Natural Heritage can provide that information. Work within this polygon will require review and approval by Natural Heritage and may require mitigation.

An Outstanding Resource Water (ORW) is located adjacent to the Site. An Outstanding Resource Water is defined in 314 CMR 4.04(3) to include "Class A public Water Supplies (314 CNR 4.06(1)(d)1 and their tributaries, certain wetlands as specified in 314 CMR 4.06(2) and other waters as determined by the [Massachusetts] Department [of Environmental Protection] based on their outstanding socio-economic, recreational, ecological and/or aesthetic values." Off-site work which may be located in this ORW may be subject to more stringent stormwater design requirements.

Preliminary Proposed Constraints Assumptions for the Site Reuse Alternatives

As with most development projects, the generation of a conceptual site plan requires the preparer to make a series of assumptions regarding the various constraints and features of a piece of land and the regulatory environment associated with its development.

Based on the information summarized above, the following potential assumptions were presented at the October 14th, 2009 meeting with VHB and the Mill Committee for discussion:

- Underground pipes and channels will be appropriately filled or removed, as suitable, prior to construction
- Soil / Subsurface / Environmental Conditions will be managed appropriately for each option
- Sewer Easements will be maintained in their current location
- Mass Electric Power Easement will be maintained
- Pro Power easement will be accommodated in the future project but will not be considered a physical constraint
- Railroad Easements to will be abandoned
- Mixed Use Overlay District zoning will be implemented
- 200' Riverfront Area (RA) - Development will maintain / will not disturb existing undisturbed Riverfront Area. Development will aim to improve RA by reducing the impervious area, with a focus on the inner 100' of RA.
- 50' No Disturb Zone in local bylaw is only applicable to the maximum extent practical. It is assumed that Riverfront Area redevelopment standards / assumption noted above will be appropriate to meet the 50 NDZ criteria.
- 100' WPA Buffer Zone - Assumed that the Riverfront Area redevelopment standards / assumption noted above will be appropriate to meet the 100' BZ criteria.
- Flood Plain -the FEMA Flood Plain boundary is assumed to be based on "Existing Conditions Plan of Land Mill Street in Pepperell MA, Pepperell Mill, dated December 18, 2006" prepared by BSC Group. Per this plan the flood elevation is assumed to be 185 (NGVD 1929). It is also assumed that the flood plain does not extend beyond the face of existing buildings along the River. No fill or buildings proposed within the 100-year FEMA flood plain.
- ACEC - Assume-that no wetland filling is proposed
- Habitat - species of concern is unknown. Suggest we assume no impact on development plans given the previously-disturbed nature of the Site.

These preliminary assumptions, once agreed upon, will serve as a starting point for the creation of Conceptual Site Reuse Alternatives. These assumptions are necessary for the creation of the Alternatives, however they should not be deemed to be final answers. As the Project evolves and

moves forward, and as more detailed information becomes available regarding the existing Site conditions and the regulatory environment, these assumptions should be continually reassessed by the Project development team.

Next Steps:

As noted above, the information summarized in this memorandum, in conjunction with Preliminary Proposed Constraints Assumptions, will be used as a basis for developing conceptual Site Reuse Alternatives that will be prepared in subsequent tasks.

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