REMEDY IMPLIMENTATION PLAN FOR THE AREA SOUTH OF THE RACEWAY ASSOCIATED WITH BRIDGE CONSTRUCTION

OXFORD PAPER MILL
21 CANAL STREET
LAWRENCE, MASSACHUSETTS

RTN 3-2691

Prepared for:

Office of Planning & Development
City of Lawrence
Lawrence, Massachusetts 01840

Prepared by:

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February 2012

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List of Acronyms

AUL	Activity and Use Limitation
COL	City of Lawrence
COCs	Contaminants of Concern
CSA	Comprehensive Site Assessment
LFR	Levine-Fricke
MADEP	Massachusetts Department of Environmental Protection
MCP	Massachusetts Contingency Plan
MEK	methyl ethyl ketone
MHD	Massachusetts Highway Department
MIBK	methyl isobutyl ketone
msl	mean sea level
NASDI	North American Site Developers
OHM	Oil and/or Hazardous Materials
OPM	Oxford Paper Mill
PCB	polychlorinated biphenyls
RAO	Response Action Outcome
RTN	Release Tracking Number
S&W	Stone & Webster Massachusetts, Inc.
THF	tetrahydrofuran
TSCA	Toxic Substance Control Act

1.0 INTRODUCTION

The Oxford Paper Mill (OPM) in Lawrence, Massachusetts consists of the north side, south side and the raceway. The proposed Remedy Implementation Plan (RIP) provides design information pertaining to the areas south of the raceway associated with the MassDOT (previously MHD) bridge construction at the OPM (the Site). The purpose of this submittal is to provide details of proposed construction and an overview of the Site use once all of the remediation is complete. The general site location is depicted on Figure 1 and the entire site is depicted on Figure 2. Figure 3 shows the area that is covered by this RIP (areas south of raceway). This RIP for the area south of the raceway was developed by Stone & Webster Massachusetts, Inc. (Stone & Webster or S&W), a Shaw Group Company, on behalf of the City of Lawrence (COL), the owner of the OPM property. OPM has been assigned release tracking number (RTN) 3-2691 by the Massachusetts Department of Environmental Protection (MassDEP).

The entire site (north and south of the raceway) will be developed into a park and the area south of the raceway will support a newly designed bridge. Canal Street will be relocated to accommodate the new bridge construction. This RIP provides construction details of the bridge and approach roadway as related to contamination that exists at the site. The bridge and passive park is a key part of the revitalization of the downtown area of Lawrence once it is completed. The City of Lawrence is seeking to redevelop this property as part of the Lawrence Gateway Initiative (LGI). The LGI is a comprehensive, coordinated redevelopment plan to help revitalize the City of Lawrence.

Polychlorinated biphenyls (PCBs) are the significant contaminant of concern (COC) for soils found in the former Transformer No. 6 / Courtyard area on the south side of the raceway. S&W has completed environmental investigations and remedial actions for the elevated PCBs found in the Transformer No. 6 / Courtyard area. (See the Phase II and Phase III documents in Section 4.0 References). This area is the focus for RIP for the south side of the raceway. The area contains elevated PCBs that will be located under 15 feet or greater of clean fill in preparation for bridge construction and is also in the vicinity of the bridge abutment in the bridge design.

The City of Lawrence is conducting the RIP.

Entity:	The City of Lawrence
Address:	225 Essex Street
	Lawrence, Massachusetts 01840-1517
Contact:	Mr. Arthur McCabe
Relationship:	Manager of Community Development

The Licensed Site Professional (LSP) for this RIP is:

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100 Technology Center Drive
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2.0 BACKGROUND

2.1 Site Description and General Information

The former OPM Site, Release Tracking Number 3-2691, is located on approximately three acres of land in Lawrence, Massachusetts, immediately northwest of the intersection of Canal Street and the Spicket River (refer to the Site Locus Map attached as Figure 1). A small portion of the OPM is also located north of Canal Street on the eastern bank of the Spicket River (an urban surface water body that abuts the OPM). The OPM is transected by a raceway, which discharges to the Spicket River. All nine buildings (Building Nos. 1, 2, 3, 4, 5, 6, 13, 1A, and 28) that once occupied the south side of the OPM have been demolished and removed off-site. The majority of the Site (area south of the raceway) has been backfilled with 15 feet or greater of clean fill (except for an area of approximately 30 feet from the raceway where the clean fill slopes down to the raceway) prior to the proposed bridge construction. Buildings north of the raceway were demolished in the 1970s. Oxford Paper ceased operations at the Site in the mid-1970s. The COL took ownership of the property in 1983.

Design Boundaries

The areas south of the raceway are in an area of commercial and industrial development within downtown Lawrence, Massachusetts. The areas south of the raceway at one time contained buildings that were once part of a paper mill. The raceway was constructed and used as a power source for generation for some of the Site buildings and it also was used as a means fire protection and as a power source for the Site buildings. Currently, the property does not contain any buildings due to the demolition activities conducted by Massachusetts Highway Department (MHD). The OPM contains vegetation that includes trees around the perimeter. The conceptual design area is bounded to the north by the Park boundary, to the east by the Spicket River, to the west by a commercial parking lot, and to the south by Canal Street. Access to the property is partially restricted by fencing along the south and west boundaries. A Site Plan for the raceway and the areas south of the raceway is presented in Figure 3.

GenCorp, Inc. (GenCorp), the Everett Mills property, and Union Street are west of the Site. The GenCorp facility, which was formerly occupied by Bolta Products and used for manufacturing rubber and plastic products, is currently vacant. The GenCorp facility was used most recently for manufacturing plastics and vinyl coated fabrics; polyvinyl chloride, resins; methyl isobutyl ketone (MIBK), methyl ethyl ketone (MEK), and tetrahydrofuran (THF) were used as part of these manufacturing operations. The Everett Mills property is currently used for commercial purposes.

Canal Street and the North Canal are south of the OPM beyond where there are other historic mill buildings. The Spicket River is north and east of the Site. The Lawrence General Hospital is beyond the Spicket River to the north.

At the completion of remedial activities, a Class A-4 Response Action Outcome (RAO) will be implemented for the bridge area south of the raceway in order to maintain a condition of No Significant Risk restricting the use of the area of the Site to a bridge and passive park. Note that since the PCBs will be more than 15 feet under the roadway, an AUL is not required. GenCorp

will complete the remediation of the raceway and S & W on behalf of the COL will provide a design and manage the installation of a geotextile cap on the north side (provided separately in this submittal). S&W will prepare a final RAO report for the entire site.

2.2 Previous Response Actions and Assessment Activities

In order to prepare the Site for construction of a relocated Canal Street and bridge over the Spicket River, MHD assumed the responsibility to conduct environmental assessment activities associated with the area south of raceway. These activities included the demolition of site buildings, disposal of contaminated and uncontaminated demolition debris associated with these buildings, decontamination of the basements of site buildings and backfill with structural material in anticipation of bridge construction, removal of PCB-contaminated transformers and all soils contaminated by PCBs released from various transformers on-site, and final grading for the area south of the raceway.

As part of the preparation for bridge construction, residual soils containing significantly elevated levels of COCs will be covered with at least 15 feet of clean fill throughout the entire south side of the raceway. As defined in the MCP, these soils are considered to be "isolated" from exposure. These soils will be located under the highway leading to the bridge and as such will not require an AUL for the RAO. (See Figure 4 and Figure 5)

3.0 DESIGN

3.1 Areas of Bridge and Approach Road

The area south of the raceway will be developed into an area that will support the placement of a bridge and a passive park. The bridge and passive park will help revitalize the downtown area of Lawrence once it is completed. Canal Street will be relocated to accommodate the new bridge construction. In preparation of these future plans, there are areas that must be fully restored.

MHD assumed the responsibility to conduct environmental assessment activities associated with the areas south of raceway. North American Site Developers (NASDI), was the contractor hired by the MHD to excavate any PCB and/or other Oil and/or Hazardous Materials (OHM) that was present onsite. After NASDI completed the souh side excavations, they backfilled and resloped the area to the current elevations. As determined by the confirmatory sampling conducted by S&W, the Transformer No. 6 / Courtyard area is the only portion of the Site where significant contamination exists. The total volume of impacted soil in the Transformer No. 6 / Courtyard Area is approximately 1,000 cubic yards. This impacted area is regulated by EPA's TSCA.

3.1.1 Transformer No. 6 / Courtyard Area

The Transformer No. 6 / Courtyard area is located on the southeastern portion of Building No. 6 (refer to Figure 3). A release from a transformer in the Building No. 6 Courtyard Area is the source of PCB contamination for this area. As part of the Phase II Comprehensive Site Assessment (CSA) and site remediation goals, additional assessment activities (monitoring well construction / soil borings) in the Transformer No. 6 / Courtyard area were conducted to determine the nature and extent of PCB contamination in this area. These activities were done based on sampling results from S&W and Levine-Fricke (LFR) sampling event on September 3, 2004. This sampling event was conducted by advancing into transformer pit / courtyard soils to target depths with hollow stem augering. Additional assessment activities conducted by S&W (March and May 2005) included PCB soil sampling from soil borings that were advanced by using an ATV drilling rig with hollow stemmed augers and a sonic drilling rig mounted on a truck. A detailed description of the nature and extent of site contamination is presented in Section 6.0 of the Phase II CSA prepared by Stone & Webster.

3.1.2 Results

In general, PCB contamination exists below the eastern portion of Building No. 6 and throughout the Transformer No. 6 / Courtyard area. In the former Transformer No. 6 Courtyard Area, several soil borings were advanced and analyzed for PCB contamination. In accordance with the MassDOT PCB contaminated soils are either below the concentration limit of 1.0 ppm or there will be at least 15 feet of clean fill on top of PCB contaminated soil greater than 1 ppm. According to MCP regulations, soils that have 15 feet of clean soil placed over the top are considered "isolated" from any exposure and can be left in place. Additional soil / fill will be placed over areas of concern which are where SB-6, SB-11, and SB-12 are located in to meet MassDEP requirements. A North-South Cross Section as well as a Plan View displays locations as well as approximate amount of fill that needs to be placed over these areas to meet MCP regulations (See Figures 4 and 5). Figure 6 provides finished grade elevations with all areas covered by substantially more than 15 feet of clean fill.

To satisfy MassDEP requirements, the method of remediation and also the most cost effective means chosen is to place at least five feet of additional clean fill on top of the areas of concern that are already covered with 15 feet of clean fill and hence the contaminated soil in the area will be "isolated" from any potential exposure.

3.2 Bridge Design

In an effort to help revitilize the City of Lawrence, the OPM will be converted into a passive park to enhance the quality of the Canal Street area. Along with the park, a newly designed bridge will be constructed by the MassDOT. This bridge will cross over former Building No.28, over the Spicket River and onto the south side of the OPM where it will meet the relocated Canal Street. This bridge will be erected in order to provide a link between I-495S and Lawrence's downtown industrial and commercial centers.

As needed in typical bridge cnstruction, structural supports will be placed in order to help support the weight of the overlying bridge. Two abutments will be constructed underneath the bridge. One abutment will be located where former Building No. 28 was located (approximately 105 feet in length) and the other will be placed on the south side west of the Spicket River, approximately 80 feet in length (See Design included in CD Attachment).

4.0 FUTURE PLANS FOR ENTIRE SITE

4.1 North Side

Once the bridge is constructed and Canal Street is relocated, the entire north side will be turned into a passive park. The wedge area, which is part of the north side, contained contaminated soils there were recently removed down to elevation 18 as part of the remediation goals for the site. S&W plans to place an additional three feet of clean fill over the north side as part of the construction of a geotextile cap to remediate the site. This will ensure that the asbestos contaminated soil beneath the cap is isolated from the public and the potential exposure pathway is minimized.

4.2 Raceway Design

The site is divided into two sections, the south side and the north side. Cutting through these two areas is a raceway that flows west to east and empties into the Spicket River that flows north to south (Figure 2). The raceway is located at an elevation of approximately 18 feet above msl. It was constructed to supply water for power generation and manufacturing purposes for a number of the Site buildings and used secondary as a means of fire protection.

Sediments in the raceway are presently PCB contaminated. GenCorp is responsible for remediating the material that is located in the raceway including but not limited to sediment that may or may not be PCB contaminated.

Once the cleanup of the raceway is completed, it is anticipated that concrete culverts and clean fill will be installed in this area to build up the elevation and to follow the current topography of the north and south sides3. The backfilled area is anticipated to span from the top of slope of the wedge area on the north side to the top of slope of the final site grade (elevation 50) on the south side. Details are provided in the RIP for the North Side and Park submitted along with this RIP.

5.0 REFERENCES

Eckenfelder, Inc. 1998. *Phase II Groundwater Model Report for the GenCorp Inc., Volume I – Text.* Prepared for GenCorp Inc. – Lawrence Location. September 1998.

ENSR Corporation 2002. Spicket River Sediment Screening Report GenCorp Inc., Lawrence Location. March 2002.

Massachusetts Department of Environmental Protection (DEP), 1997. Massachusetts Contingency Plan, 310 CMR 40.0000.

Stone & Webster Massachusetts, Inc. (S&W), 2004. *Release Abatement Measure Plan for Oxford Paper Mill, Lawrence, MA.* Prepared for the City of Lawrence, April 2001.

Stone & Webster Massachusetts, Inc. (S&W), 2005. *Release Abatement Measure Status Report for Areas South of the Raceway, Lawrence, MA.* Prepared for the City of Lawrence, August 2005.

Stone & Webster Massachusetts, Inc. (S&W), 2006. *Phase II Comprehensive Site Assessment for Areas South of the Raceway.*

Stone & Webster Massachusetts, Inc. (S&W), 2006. *Phase III Remedial Action Plan for Areas South of the Raceway*

Stone & Webster Massachusetts, Inc. (S&W), 2006. *Phase II Comprehensive Site Assessment for Areas North of the Raceway.*

Stone & Webster Massachusetts, Inc. (S&W), 2006. *Phase III Remedial Action Plan for Areas North of the Raceway*

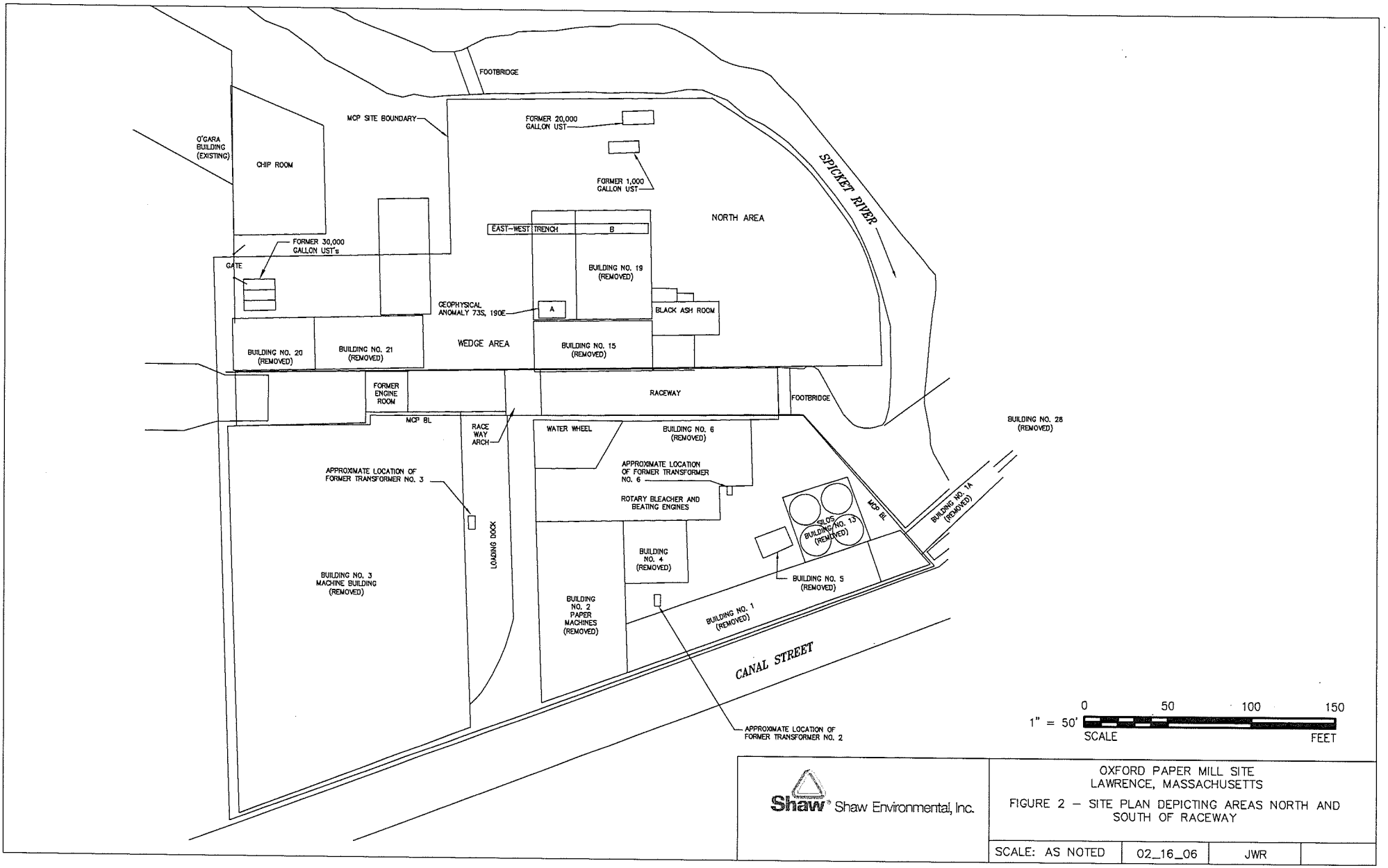
United States Department of Agriculture, Soil Conservation Service, in cooperation with the Massachusetts Agricultural Experiment Station. 1981. *Soil Survey of Essex County, Massachusetts Northern Part.*

FIGURES

FIGURES

Figure 1: Site Locus Map
Former Oxford Paper Mill

Lawrence, MA

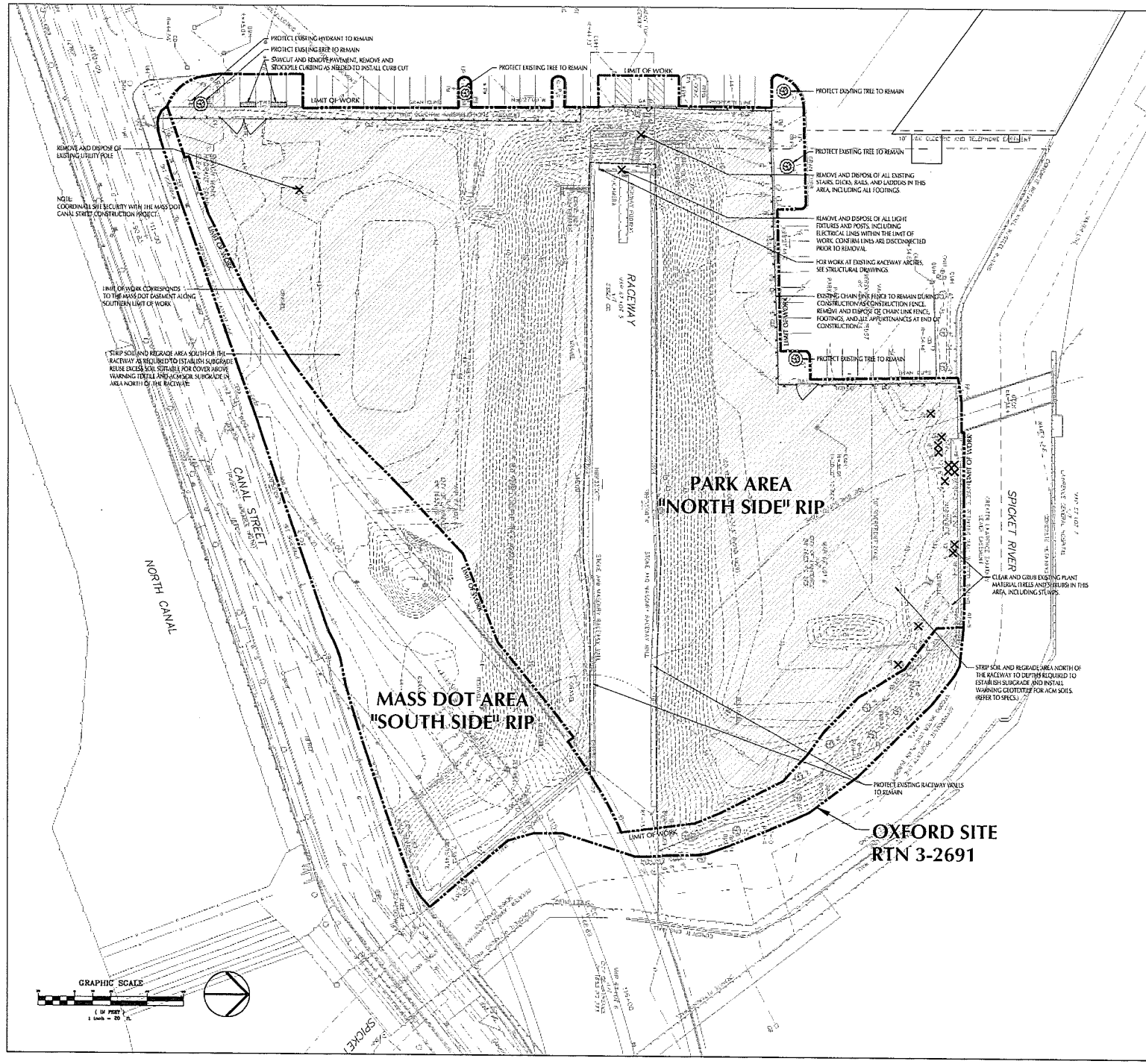


Shaw® Shaw Environmental, Inc.

OXFORD PAPER MILL SITE
LAWRENCE, MASSACHUSETTS

FIGURE 2 – SITE PLAN DEPICTING AREAS NORTH AND SOUTH OF RACEWAY

SCALE: AS NOTED	02_16_06	JWR	



SITE PREPARATION & DEMOLITION LEGEND

SYMBOL	DESCRIPTION	REF.
	LIMIT OF WORK	
X	ITEM TO BE REMOVED	
	ALL DEBRIS TO BE REMOVED. ACM SOIL TO BE REMOVED AS NEEDED FOR CAP & COVER.	SEE SPECS.
	PAVEMENT AND CURB TO BE SAWCUT AND REMOVED	

NOTE:
FOR SITE PREPARATION AND DEMOLITION NOTES SEE SHEET X-1 NOTES.

MVRTA
Merrimack Valley Regional Transit Authority
85 Railroad Avenue
Haverhill, MA 01835

Shadley Associates
Landscape Architects | Site Planning Consultants

NO.	DESCRIPTION	DATE

STAMP:

LAWRENCE GATEWAY - OXFORD PARK

SA PROJECT NUMBER: 11021.0.00

SCALE: 1"=20'-0"

DRAWN BY: SC, PT

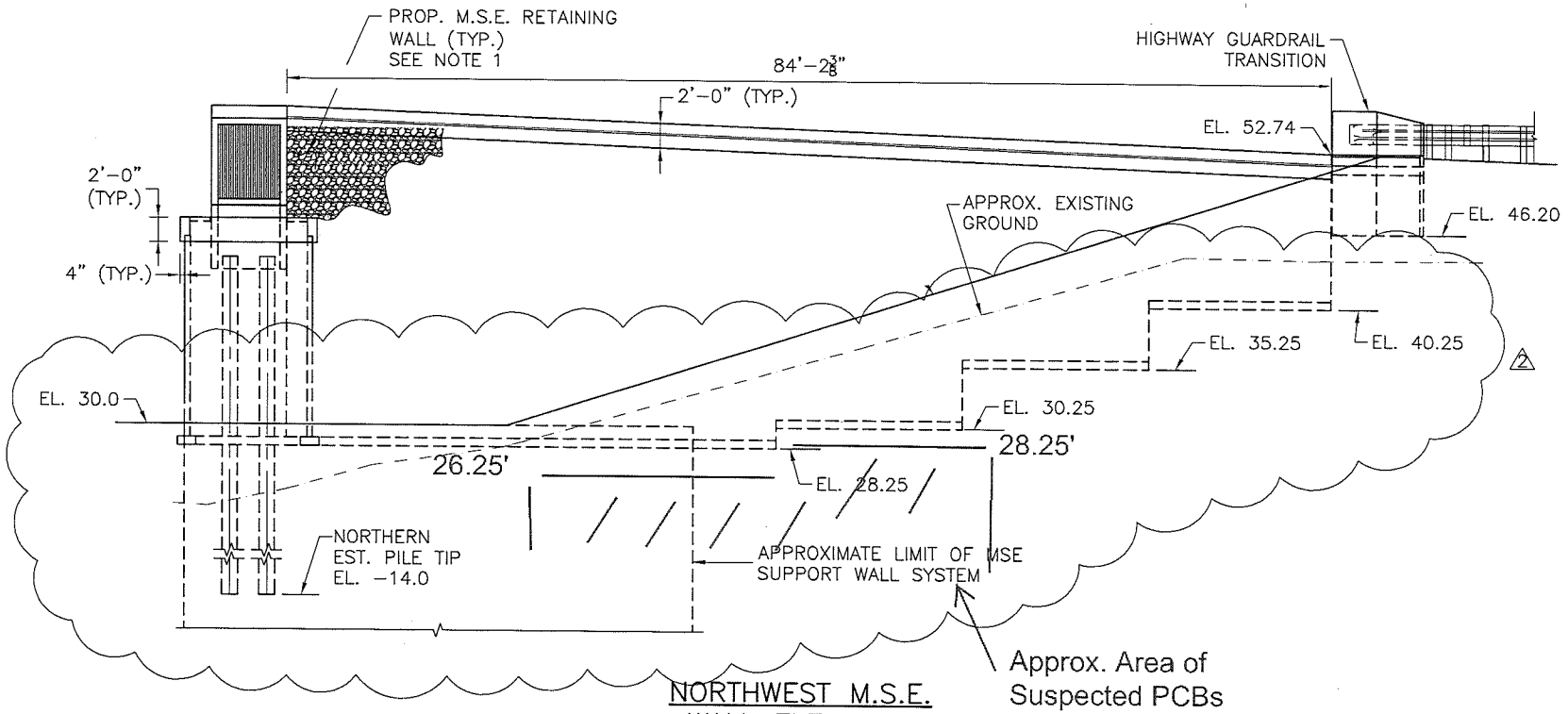
REVIEWED BY: PS

DATE: JANUARY 19, 2012

SHEET TITLE:
SITE PREPARATION & DEMOLITION PLAN

Figure 3

SHEET NUMBER:
L-1



NORTHWEST M.S.E. WALL ELEVATION

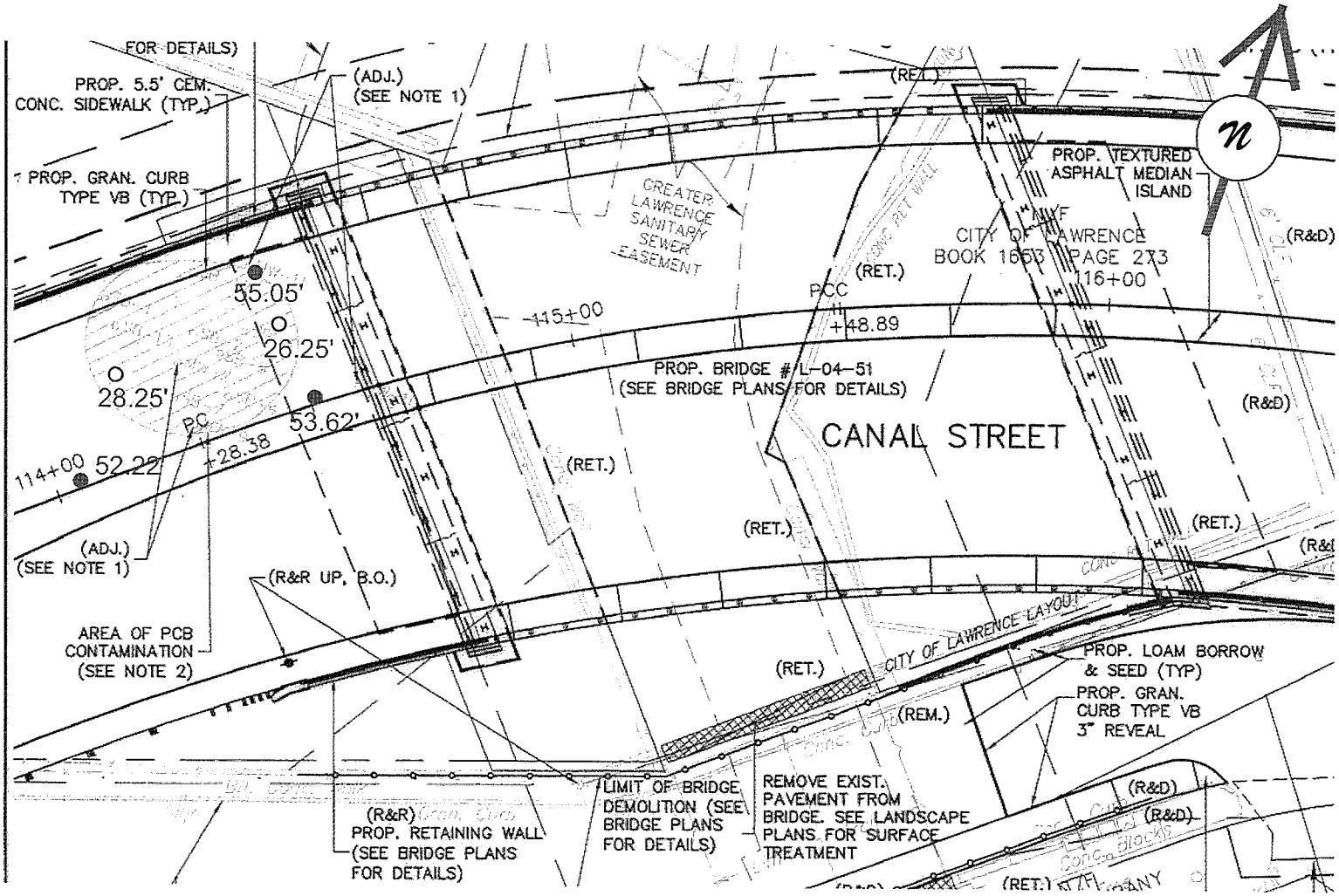
SCALE: ⅛"=1'-0"

NOTE:
Area and elevations are interpretations and are based on information provided by the DOT and present within the PhII completed by Shaw Group.

FIGURE 4
Profile of Construction in PCB Area
"Northwest Abutment Foundation Elevations"
Not To Scale
Obtained - Bid Addendum No. 2 (2/11), Sheet 9 of 26

Figure 5

Plan View of Fill in PCB Area



Note : Information Obtained from Curb Tie & Grading Plan (Sheet 29)

- ● 52.22' - Indicates Finished Elevation
- o 26.25' - Indicates Starting Grade Elevations

Figure 6

TABLE – Elevations & Cover Material Thickness

Location	Elevation (45')	Minimum Elevation Required	Finished Grade Elevation	Difference (Thickness)
MW10	31.4	PCBs <1	>53.62	22.2
MW11	24.6	39.6	55.05	30.5
MW2	20.87	35.87	53.67	32.80
MW9	21.44	36.44	>52.22	30.78
SB1	25.2	40.2	>52.22	27.0
SB12	24.1	39.1	55.05	31.0
SB13	24.9	39.9	>52.22	27.3
SB2	21.8	36.8	>52.22	30.4
SB4	21.7	36.7	>52.22	30.5
SB6	22.5	37.5	54.34	31.8
SB7	21.3	36.3	>52.22	30.9
SB8	22	37	54.02	32

Notes:

Not all finished grade elevations were determined for each boring. Where finished grade elevations were not determined the nearest lower known elevation point was utilized and are presented above as greater (>) than symbol. The roadway grade increases with approach to the water body. This is evident from elevation point 52.22' versus 53.62' as the roadway approaches the water body. Additionally, the roadway is banked which can be seen by elevations 53.62 on the median to the roadway versus elevation 55.05' on the outer roadway shoulder.