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ENVIRONMENTAL CONSULTANTS, INC.

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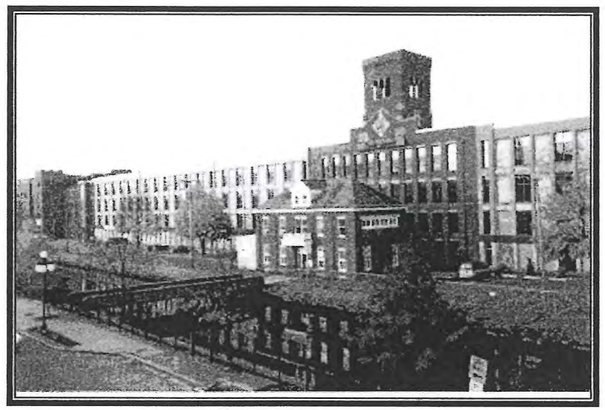
ENGINEERING EVALUATION AND COST ANALYSIS
MILL 1, MILL 2, MILL 4, MILL 5, MILL 9, #1 WING, #1 STOREHOUSE, #2 WING, AND #2 STOREHOUSE
BATES MILL COMPLEX
LEWISTON, MAINE



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Engineering Evaluation and Cost Analysis
Mill 1, Mill 2, Mill 4, Mill 5, Mill 9,
#1 Wing, #1 Storehouse,
#2 Wing, and #2 Storehouse
Bates Mill Complex
Lewiston, Maine

EXECUTIVE SUMMARY

The City of Lewiston has contracted with Summit Environmental Consultants, Inc. to perform an Engineering Evaluation and Cost Analysis (EE/CA) of a proposed Non-Time Critical Removal Action (NTCRA) at nine sites within the Bates Mill Complex as part of a United States Environmental Protection Agency (EPA) Brownfields Cleanup Revolving Loan Fund Program. The nine sites are Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, and #2 Storehouse (collectively referred to as the Site).

The Bates Mill Complex is located in the City of Lewiston (Figure 1). The Complex currently consists of four separate buildings to the north and west (Mill 5, Mill 6, Storehouse 7, and Boiler Plant Mill 9), and a series of connected buildings to the south and east (Mills 1-4, #1 Storehouse/Wing, #2 Storehouse/Wing and #4 Storehouse/Wing) as shown on Figure 2. The Bates Mill Complex is currently connected to the City of Lewiston water supply and sanitary sewer.

The Lewiston Mill Redevelopment Corporation (LMRC) was created by the City of Lewiston to manage and oversee the redevelopment of the Bates Mill Complex. The LMRC is made up of citizens, business leaders, and city officials. Critical to the redevelopment of the Mill Complex is the removal of hazardous substances that have the potential to cause unacceptable exposure risks to redevelopment workers and future occupants.

In 1998, the United States Environmental Protection Agency (EPA) removed transformers containing polychlorinated biphenyls (PCBs), drums of chemical waste and asbestos-containing materials (ACM) from the Mill Complex.

In July 1999, a Phase II Environmental Site Assessment (ESA) completed on Mill 3 and Mill 6 concluded that contamination was limited to floor trenches, oil-stained soil and coal-ash waste. The Phase II ESA concluded that NTCRAs are appropriate because the hazardous substances at these Sites have the potential to cause unacceptable exposure risks to future workers and occupants.

A completed Phase II ESA of Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, and #2 Storehouse documented metal, semi-volatile organic compounds (SVOCs), and diesel range organics (DROs) contamination in floor trenches, soils and equipment. The Phase II ESA concluded that NTCRAs are appropriate because the hazardous substances at these Sites have the potential to cause unacceptable exposure risks to future workers and occupants.

Lead-based paint and suspect and confirmed asbestos-containing materials have been identified at the nine Sites discussed in this EE/CA. However, remediation of these items will be addressed at a future time. It is not expected that ACM or lead-based paint will be encountered during the remedial actions recommended in this EE/CA. Current regulations require ACM and lead-base paint to be removed if the materials will be disturbed by renovation, demolition or other building maintenance activities. ACM and lead-based paint abatement should be performed using approved methods in accordance with applicable regulations established by the

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EPA, Occupational Safety and Health Administration (OSHA) and the Maine Department of Environmental Protection (DEP). A State of Maine licensed contractor must perform ACM and lead-based paint removal.

A streamlined human-health risk evaluation was conducted as part of the EE/CA and focused on direct contact with and incidental ingestion and inhalation of surface and subsurface soils at the various Sites by redevelopment workers and future occupants.

DEP Adult Worker Remedial Action Guidelines for Contaminated Soils and 1996 EPA Soil Screening Levels (SSL) for ingestion and inhalation were used in the selection of areas of potential concern for soils. Soils in Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, and #2 Wing were found to be above DEP adult worker Remedial Action Guidelines and/or EPA SSLs.

Because extensive renovations of the Bates Mill Complex are planned, the goal of the removal action is to mitigate risks posed to future worker safety prior to redevelopment. This EE/CA has been developed to help achieve the goal of protecting site workers, and also to mitigate the potential for chemical exposure risks for future occupants.

This EE/CA addresses remedial actions at the nine sites within the Bates Mill Complex.

Mill 1

Soil samples collected on April 19, 2000 from the basement of Mill 1 were found to contain metals and SVOCs at concentrations that exceeded the Maine Department of Environmental Protection (DEP) adult worker remedial action guideline and the EPA ingestion/inhalation guideline concentrations. Soils beneath wood floors in the basement of Mill 1 and in the adjacent alleyway between Mills 1 and 3 have been found to contain relatively high levels of volatile organic compounds (VOCs).

The remedial technology proposed for basement soils at Mill 1 is isolation by repairing or replacing the wood floor in areas where it is missing or damaged. Repairing the wood floor is a practical means of reducing the potential for exposure to the contaminants present in the sub-floor sediments. Analysis of this remedial technology indicates that it can be easily implemented and is a cost-effective means to address the contamination at this Site.

One remedial alternative that has the potential to achieve the removal action goals for subsurface soil conditions at Mill 1 is removal of existing flooring, conduct additional testing to define the zone of contamination, prepare the soil surface by leveling and removing debris, and place an impervious barrier, such as an HDPE liner or concrete, over exposed soils. Analysis of this remedial technology indicates that it is easy to implement, and is an effective technology. The estimated cost for this alternative is $29,300.

Mill 2

Soil samples collected beneath wood floors in Mill 2 were found to contain elevated concentrations of DROs. Samples from the floor of the dust chutes contained elevated levels of 2-Butanone and DRO, as well as five SVOCs at concentrations that exceeded the DEP adult worker remedial action guideline. Soil samples from the storage room contained elevated levels of DRO, as well as seven SVOCs at concentrations that exceeded the DEP adult worker remedial action guideline.

The remedial technology evaluated for soils at the base of the dust chute at Mill 2 was removal of contaminated soils. Analysis of this remedial technology indicates that it is an effective,

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easily implemented, and low cost ($10,800) technology that addresses the contamination at this Site.

A remedial technology that has the potential to achieve removal action goals for soils in the basement storage room is isolation of the soils by repairing the wood floor. Isolation is easily implemented, effective, and a low cost alternative. The estimated cost for installation of a temporary floor in the storage room basement of Mill 2 is $1,800. It should be noted that, in the future, it may be necessary to remove the wood floor. If the floor is removed, the soils beneath should be removed or encapsulated to eliminate the potential of future occupant exposure to contaminated soils.

Mill 4

Two railroad cars in the basement contain caustic residues that were shown to have relatively high lead concentrations. Soil samples collected from the basement were found to contain arsenic at concentrations that exceeded the EPA's soil ingestion screening level.

Removal and disposal of residual caustic material from the two railroad cars was evaluated as the remedial alternative that has the potential to achieve the removal action goals. This option is effective for eliminating the source of contamination, can be easily and quickly implemented and is cost-effective. This will require a trained crew capable of performing confined space entry and working in a hazardous environment. As an option, the railroad cars can be cut apart in place and removed from the building. The estimated cost to decontaminate and dismantle the railroad cars is $17,200.

One remedial alternative that has the potential to achieve the removal action goals has been evaluated for soils in the basement of Mill 4 is encapsulation. This option effectively eliminates exposure to contaminated soils, is cost effective, and maintains the structural integrity of the building. The estimated cost for encapsulation of Mill 4 basement soils is $25,300.

Mill 5

Soil samples collected from the floor trenches of Mill 5 were found to contain elevated concentrations of DRO and low concentrations of SVOCs. However, detected SVOCs were not reported above the DEP adult worker remedial action guidelines or the EPA ingestion/inhalation guideline concentrations.

Two remedial alternatives that have the potential to achieve the removal action goals have been evaluated for soils/sediments in the floor trenches of Mill 5: 1) remove soils/sediment from floor trenches, or 2) encapsulate soils/sediments in place with concrete if the trenches will not be used in the future. Both alternatives are easily implemented and effective means of reducing potential future risks to occupants. The estimated cost to encapsulated the sediment in the floor trenches is $4,500. The estimated cost to remove the soil and decontaminate the floor trenches is $6,700.

Mill 9

Samples from condensate sumps, located on either side of the chimney base, contained elevated levels of DRO. Soil samples collected from floor trenches were found to contain elevated levels of metals, SVOCs, and/or DRO. Several metals and many SVOCs exceeded either the DEP or EPA soil screening standards.

One remedial alternative that has the potential to achieve the removal action goals has been evaluated for the condensate sumps in Mill 9: use of a vacuum truck to remove water and

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1.0 SITE CHARACTERIZATION

1.1 SITE DESCRIPTION AND BACKGROUND

The City of Lewiston (the City) has contracted with Summit Environmental Consultants, Inc. (Summit) to perform an Engineering Evaluation and Cost Analysis (EE/CA) of a proposed non-time critical removal action (NTRCA) at nine sites within the Bates Mill Complex as part of a United States Environmental Protection Agency (EPA) Brownfields Cleanup Revolving Loan Fund Program. The nine sites are Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, and #2 Storehouse (collectively called the Site).

The Bates Mill Complex is located in the City of Lewiston (Figure 1). The Bates Mill Complex originally occupied approximately 1.2 million square feet of space on a 10-acre parcel of property. The Complex is bounded on the east by Canal Street, on the south by Chestnut Street, on the west by Lincoln Street and on the north by Maine Street. Open canals are present to the north and east, and an underground raceway is present along the southern end of the Complex. The Complex topography is relatively flat but drops approximately 10 feet to the west along a retaining wall at the southern end of the property.

The Mill Complex currently consists of four separate buildings to the north and west (Mill 5, Mill 6, Storehouse 7, and Boiler Plant Mill 9), and a series of connected buildings to the south and east (Mills 1-4, #1 Storehouse/Wing, #2 Storehouse/Wing and #4 Storehouse/Wing, as shown on Figure 2. Mill buildings are generally comprised of several floors and are constructed of brick with wood support posts and beams. Interior portions of the buildings are open space with wood floors. Some office space has been partitioned out of the original building space.

The City of Lewiston retained Summit to complete a Phase I Environmental Site Assessment (ESA) on the Mill complex in 1996. Summit identified a variety of environmental conditions requiring additional assessment or remediation. In 1998, the EPA Emergency Planning and Response Branch completed a hazardous material removal program at the Mill. The EPA removed transformers containing polychlorinated biphenyls (PCBs), drums of chemical waste, and asbestos-containing materials (ACM).

In July 1999, Summit completed a Phase II ESA on a portion of the Mill Complex under an EPA Brownfields Pilot Project grant. The Phase II ESA documented environmental conditions at Mills 3 and 6 and included remedial alternatives for identified contamination. The Phase II ESA concluded that a NTCRA is appropriate at Mills 3 and 6 because the planned redevelopment of the Bates Mill Complex will result in the potential for increased worker exposure to hazardous substances at these Sites.

Summit has recently completed additional Phase II activities on Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, #2 Storehouse, and alleyways, yards, parking areas, and other areas on the Mill Complex property. A report documenting the results was presented to the City of Lewiston and EPA on December 4, 2001. Similar to the Phase II ESA at Mills 3 and 6, the Phase II ESA at Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, and #2 Storehouse concluded that a NTCRA is appropriate at these Sites because the planned redevelopment of the Bates Mill Complex will result in the potential for increased worker exposure to hazardous substances.

Section 1.3 discusses the results of the Phase II ESA concerning environmental conditions at these Sites. Refer to Summit's Phase II Environmental Site Assessment for a detailed discussion of the environmental conditions at the Bates Mill Complex.

QAPjP Amendment	Date	Sampling Location
1	April 5, 2000	Mill 1, 2, 3, 4, 5, and 9, #1 and #2 Storehouse, #1 and #2 Wing
2	May 26, 2000	Proposed Courtyard Area
3	September 19, 2000	#1 Wing Basement
4	February 13, 2001	Groundwater and Soil Sampling
5	May 24, 2001	Additional Sampling in Mill 4

Detailed descriptions of sampling and analytical methods are included in the QAPjP and respective Amendments.

1.3.1 Mill 1

Soil samples collected from the basement of Mill 1 were found to contain metals and SVOCs at concentrations that exceeded the DEP adult worker remedial action guideline and the EPA ingestion/inhalation concentration. Arsenic was reported at 9.5 mg/kg and chromium was reported at 927 mg/kg, which exceeded the EPA ingestion/inhalation concentration of 0.4 mg/kg and 390 mg/kg, respectively. Lead was reported at 5,750 mg/kg, which exceeded the EPA ingestion/inhalation concentration of 400 mg/kg and the DEP adult worker remedial guideline concentration of 700 mg/kg. Mercury was reported at 1,180 mg/kg, which exceeded the DEP adult worker remedial guideline concentration of 610 mg/kg. Zinc was reported at 3,380 mg/kg, which exceed the DEP adult worker remedial guideline concentration of 1,500 mg/kg. Soils beneath wood floors in the basement of Mill 1 and in the adjacent alleyway between Mills 1 and 3 have been found to contain relatively high levels of volatile organic compounds (VOCs).

1.3.2 Mill 2

Soil samples collected beneath wood floors in Mill 2 were found to contain DRO at a concentration of 29,000 mg/kg. Samples from the floor of the dust chutes contained elevated levels of 2-Butanone (120 mg/kg) and DRO (13,000 mg/kg) as well as five SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoroanthracene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) at concentrations that exceeded the DEP adult worker remedial action guideline. Samples from the storage room contained DRO at a concentration of 10,000 mg/kg, as well as seven SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoroanthracene, dibenzo(a,h)anthracene, benzo(k)fluoroanthene, chrysene, and indeno(1,2,3-cd)pyrene) at concentrations that exceeded the DEP adult worker remedial action guideline.

1.3.3 Mill 4

Soil samples reported a concentration of arsenic at 3.5 mg/kg, which exceed the EPA ingestion soil screening level of 0.4 mg/kg. A water sample collected from the settling tank in the basement reported a total lead concentration of 13,400 µg/L. Samples of process chemical residues reported concentrations of lead at 463 mg/kg, which exceeds the EPA ingestion soil screening level of 400 mg/kg.

1.3.4 Mill 5

Soil samples collected from the floor trenches of Mill 5 were found to contain moderately elevated concentrations of DRO (340 mg/kg) and low concentrations of SVOCs. No SVOCs were reported at concentrations above the DEP adult worker remedial action guidelines or the EPA ingestion/inhalation concentrations.

1.3.5 Mill 9

Samples from two floor sumps, located on either side of the chimney base, reported DRO at concentrations of 400 mg/L and 29,000 mg/L. Soil samples collected from floor trenches were found to contain elevated levels of metals, SVOCs, and/or DRO. Several metals and many SVOCs exceeded either the DEP or EPA soil screening standards. DRO was reported at 1,900 mg/kg. Arsenic was reported at 12 mg/kg, which exceeds the EPA's ingestion standard for soils of 0.4 mg/kg. Lead was reported at a concentration of 410 mg/kg, which exceeds the EPA screening level of 400 mg/kg. Zinc was reported at 1,820 mg/kg, which exceeds the DEP remedial action guidelines for contaminated soils at 1,500 mg/kg.

1.3.6 #1 Wing

Soil samples collected from the basement of #1 Wing were found to contain three SVOCs (benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene) at concentrations that exceeded the DEP adult worker remedial action guideline. PCB-1254 was reported present at a concentration of 1.1 mg/kg, which is slightly above the DEP's clean-up guidance level of 1.0 mg/kg.

1.3.7 #1 Storehouse

Oil samples collected from a metal lathe on the first floor and from electrical equipment on the north wall of the second and-a-half floor reported PCB-1254 at concentrations of 6.7 µg/kg and 27 µg/kg, respectively.

A sample of residue collected from a 1,000-gallon above ground storage tank located in the basement exceeded the EPA inhalation/ingestion soil screening level for arsenic and exceeded the DEP adult worker remedial action guideline for total copper and total lead.

1.3.8 #2 Wing

Soil samples collected from the basement of #2 Wing were found to contain four SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene) at concentrations that exceeded the DEP adult worker remedial action guideline. Laboratory results also reported DRO at a concentration of 2,100 mg/kg.

1.3.9 #2 Storehouse

Soil samples from this location did not report elevated concentrations of metals, SVOCs, VOCs, or DRO. No conditions were found that would require remedial action or further investigation.

1.4 STREAMLINED RISK EVALUATION

The streamlined human-health risk evaluation focused on direct contact with and incidental ingestion and inhalation of surface and subsurface soils at the various Sites by redevelopment workers and future occupants. Short-term exposures to soils by construction workers were evaluated to develop a measure of short-term effects during a potential response action or redevelopment activities.

1.4.1 Identification of Current and Reasonably Foreseeable Future Uses of the Site

The Mill Complex was constructed between 1852 and 1923 and originally consisted of 11 buildings. In its prime, the Mill employed more than 5,000 people and was one of the nation's largest manufacturers of textiles. Owners include the Bates Manufacturing Company, Bates Fabrics, inc. and the City of Lewiston (1992–present). Before ownership by the City, these companies were primarily involved in the weaving and dyeing of cotton and wool textiles. Bates of Maine, Inc. used several buildings on the property until they ceased operations in 2001. Portions of the Complex are currently leased by various businesses.

The City of Lewiston has identified the improvement and accrual of green spaces as a high-priority issue in the current citywide redevelopment program. City planners have reviewed the current percentage of properly managed/maintained green spaces, paying particular attention to downtown areas, and have found opportunities for improvements. A goal of the Bates Mill Redevelopment Plan is to provide employment for residents and thereby improve the standard of living within the community.

The City recognized early on that redevelopment of the Bates Mill Complex would not occur until all environmental concerns were addressed. Their goal was to get a clean bill of health for the Complex to allow occupancy at any location in the Mill by any type of occupant.

1.4.2 Streamlined Human-Health Risk Evaluation

As discussed in Section 1.3, numerous samples collected throughout the Bates Mill Complex were found to contain metals and SVOCs. Refer to Appendix B for analytical data summaries.

DEP Adult Worker Remedial Action Guidelines for Contaminated Soils and 1996 EPA Soil Screening Levels for ingestion and inhalation were used in the selection of areas of potential concern for soils. The DEP Remedial Action Guidelines for contaminated soils established separately for a resident, trespasser, and adult worker exposure scenarios protective of human health by direct exposure. The concentration of each analyte in soils was compared to the selected risk screening values. To be conservative, if an analyte concentration was above the selected risk screening value, an unacceptable risk to human health would result from future exposure to impacted soils at the Sites. Soils in Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, and #2 Wing were found to be above DEP adult worker Remedial Action Guidelines and/or EPA SSLs. Results of this comparison for soils are presented in Tables 2 and 4 of Appendix B.

If no response action is taken and redevelopment occurs, a future occupant could be exposed to contaminants in surface and subsurface soils within the footprint of the mill. During redevelopment activities, a construction worker may be exposed to contaminants in certain areas of the Complex. Consideration of this information suggests that exposure to soils at Mill 1, Mill 2, Mill 5, Mill 9, #1 Wing, #1 Storehouse, and #2 Wing pose a potential threat to human health and actions to reduce exposure are warranted and would be consistent with any future remedial action(s).

1.4.3 Streamlined Ecological Risk Evaluation

Characterization of potential ecological receptors within the Bates Mill Complex area was not performed because the remedial alternatives in this EE/CA address areas of contamination within the Bates Mill Complex.

3.3.3.1 Removal of Caustic

Two railroad cars in the basement of Mill 4 contain caustic residues that were shown to have relatively high lead concentrations. The residual materials should be removed from the railroad cars before the cars are removed from the building. This will require a trained crew capable of performing confined space entry and working in a hazardous environment.

Removal of residual caustic material from the two former railroad cars is the one remedial alternative that has the potential to achieve the remedial action goals. As an option, the cleaned tanks can be cut apart in place and removed from the building as scrap metal for recycling.

Effectiveness

Removal of caustic residue is an effective remedial technology for reducing the risk of exposure to redevelopment construction workers and future occupants.

Implementability

The removal of residue caustic can be readily implemented at this Site. The necessary equipment and labor for this task are readily available. Personal protective equipment can reduce the potential risk or worker exposure to the contaminants.

Cost

The estimated total cost to remove the caustic residue and railroad cars from the basement of Mill 4 is $17,200. Table 1 summarizes the estimated cost breakdown.

3.3.3.2 Encapsulation of Soils In Basement

Soil samples collected from the basement were found to contain arsenic at concentrations that exceeded the EPA's soil ingestion screening level. As a result, the remedial alternative evaluated for the soil/sediment in this area was encapsulation as a means of protecting against future potential exposures. Encapsulation by pouring a concrete floor would also allow the floor trenches to be filled in, eliminating a potential flow route to the cross canal system. To prepare for placement of the new floor the concrete settling tanks should be removed from the building.

Effectiveness

Encapsulation is an effective remedial technology for metal contamination in soil.

Implementability

Encapsulation can be readily implemented at this Site. The necessary equipment and labor for this task are readily available. Personal protective equipment can eliminate or reduce the potential risk or worker exposure to the contaminants. To prepare for placement of the new floor the concrete settling tanks should be removed from the building.

Cost

The estimated total cost to encapsulate basement soils of Mill 4 is $25,300. Table 1 summarizes the estimated cost breakdown.

3.3.4 Mill 5

Soil samples collected from the floor trenches in Mill 5 were found to contain moderately elevated concentrations of DRO and low concentrations of SVOCs. Two remedial alternatives have the potential to achieve the removal action goals for soils/sediments in the ground floor

trenches at Mill 5: 1) encapsulate soils/sediments in place and/or 2) remove soils/sediments from the floor trenches. Removal of soils/sediments from the floor trenches was evaluated if the floor trenches are to be used as drainage structures in the future. If the trenches will not be used in the future then encapsulation was evaluated.

3.3.4.1 Encapsulation of Soils/Sediment in Floor Trenches

Effectiveness

Encapsulation is an effective remedial technology for DRO and SVOC contamination in soil.

Implementability

Encapsulation can be readily implemented at this Site. The necessary equipment and labor for this task are readily available. Personal protective equipment can eliminate or reduce the potential risk or worker exposure to the contaminants.

Cost

The estimated total cost to encapsulate floor trench soils/sediments is $4,500. Table 1 summarizes the estimated cost breakdown.

3.3.4.2 Removal of Soils/Sediment from Floor trenches

Effectiveness

Soil removal is an effective remedial technology for DRO and SVOC contamination in soil, especially for low volumes of shallow soil located in the vadose zone. It can provide rapid and permanent cleanup of contaminant source areas.

The type of subsurface soils generally do not limit the effectiveness of excavation, and treatment/disposal facilities exist that can effectively destroy, extract, or dispose of the contaminants.

Implementability

The necessary equipment and labor for soil extraction and off-site treatment/disposal are readily available.

Migration of contamination during excavation can be effectively controlled using standard construction practices and site controls. Personal protective equipment can eliminate or reduce the potential risk or worker exposure to the contaminants.

Cost

An estimated 10 cubic yards of sediments will be disposed in a landfill licensed to accept this material. Removal of sediments and cleaning of the floor trenches will be completed using steam washers and a vacuum unit.

The estimated total cost to remove floor trench soils/sediments and decontaminate the floor trenches is $6,700. Table 1 summarizes the estimated cost breakdown.

3.3.5 Mill 9

Based upon the results of the Phase II assessments, the following environmental conditions require action:

- Condensate water and sediments
- Floor trench sediments

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This option is effective for isolating the source of contamination, can be easily and quickly implemented, and is cost-effective.

5.1.2 Subsurface Soils

Based on the results of the comparative analysis, encapsulation is the preferred remedial technology. This option effectively eliminates exposure to contaminated soils and maintains the structural integrity of the building.

5.2 MILL 2

5.2.1 Soils at Base of Dust Chute

It is recommended that a limited removal of contaminated soils be completed. This option is effective for eliminating the source of contamination, can be easily and quickly implemented and is cost-effective. Excavation is a long established and effective remedial alternative for contaminated soils.

5.2.2 Soils in Basement

Repairing the wood floors in areas where flooring is missing or damaged is a practical means of reducing potential exposure to the contaminants present in the sub-floor sediments. This option is effective for eliminating the source of contamination, can be easily and quickly implemented and is cost-effective.

In the future, depending on the extent of renovation that is performed in this room, it may be necessary to remove the wood floor. If so, soils beneath the wood floor should be removed or encapsulated beneath a concrete slab.

5.3 MILL 4

5.3.1 Caustic in Basement

Removing residual materials from the railroad cars is a practical means of reducing exposure to contamination. This option is effective for eliminating the source of contamination, can be easily and quickly implemented and is cost-effective. This will require a trained crew capable of performing confined space entry and working in a hazardous environment.

As an option, after the residual caustics have been removed and the tank cars have been cleaned, the cars can be cut apart and removed from the building.

5.3.2 Soils in Basement

Encapsulation is the preferred removal action remedial technology. This option effectively eliminates exposure to contaminated soils, is cost effective, and maintains the structural integrity of the building.

5.4 MILL 5

5.4.1 Encapsulation

This remedial alternative should be used if the trenches will not be used in the future. This option effectively reduces the exposure to contaminated soils and maintains the structural integrity of the building.

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ASH ST
PINE ST
CHESTNUT ST
CANAL STREET
CANAL STREET
CANAL STREET
CANAL
CANAL
PED. BRIDGE
PED. BRIDGE
BRIDGE
EXECUTIVE OFFICES
MILL #5
MILL #1
MILL #2
BRIDGE
CROSS CANAL #1
MILL #4 BLEACHERY
#1 WING
#1 STORE-HOUSE
MILL #3
#2 WING
#2 STORE-HOUSE
CHESTNUT STREET
CROSS CANAL #2
MILL STREET
MILL STREET
MILL #6
#9 BOILER PLANT
Storehouse No. 7
MAIN STREET
LINCOLN STREET
LINCOLN STREET
JAMES P. LONGLEY MEMORIAL BRIDGE
PLATZ ASSOCIATES

SMRT
ENVIRONMENTAL CONSULTANTS INC.
(207) 795-6009

DATE: 03/20/00
SCALE: 1" = 140'

TITLE: SITE PLAN
PROJECT: BATES MILL COMPLEX PHASE II ESA
CLIENT: CITY OF LEWISTON, MAINE

FIGURE 2

Tables

TABLE 1: COST BREAK DOWN OF REMEDIAL ALTERNATIVES

TABLE 2: EVALUATION OF MILL 1 REMEDIAL ALTERNATIVES

TABLE 3: EVALUATION OF MILL 2 REMEDIAL ALTERNATIVES

TABLE 4: EVALUATION OF MILL 4 REMEDIAL ALTERNATIVES

TABLE 5: EVALUATION OF MILL 5 REMEDIAL ALTERNATIVES

TABLE 6: EVALUATION OF MILL 9 REMEDIAL ALTERNATIVES

TABLE 7: EVALUATION OF #1 WING REMEDIAL ALTERNATIVES

TABLE 8: EVALUATION OF #1 STOREHOUSE REMEDIAL ALTERNATIVES

TABLE 9: EVALUATION OF #2 WING REMEDIAL ALTERNATIVES

Table 1 Cost Break Down of Remedial Alternatives

Mill 4	
Encapsulation of Basement Soils	
Site Preparation and Debris/Settling Tank Removal	$7,800
Seal floor trenches and Place finished concrete	$17,500
Total	$25,300
Mill 5	
Encapsulation of Floor Trenches	
Place finished concrete floor in trench	$4,500
Removal and cleaning of floor trenches	
Sediment Removal and Cleaning of Floor Trench	$6,700
Mill 9	
Cleaning of Condensate Sumps	
Sediment removal and cleaning of condensate sumps	$4,100
Floor Trench Sediments	
Alternative - Encapsulation of Trench Sediments	$3,000
Alternative – Removal of Sediment and Decontamination	$10,000
#1 Wing	
Alternative - Encapsulation of Soils	
Debris and Shelving removal	$4,400
Placement of finished concrete floor	$13,000
Total	$17,400

Table 5 Evaluation of Mill 5 Remedial Alternatives

Evaluation Criteria	Remedial Alternative			
	No Action	Institutional Controls	Excavation	Encapsulation
Mill 5 Floor Trenches				
Effectiveness				
Overall Protectiveness of Human Health and the Environment	No significant reduction in risk to redevelopment workers or future occupants.	No significant reduction in risk to redevelopment workers.	Removal of soils/sediments eliminates the direct contact risk and soil ingestion risk.	Encapsulating soils reduces direct contact risk and soil ingestion risk.
Complies with ARARs	Would not meet ARARs since there will be no action.	Would not meet DEP or EPA soil ingestion/inhalation guidelines during redevelopment of the area.	Protects against soil ingestion and inhalation for redevelopment workers and future occupants.	Protects against soil ingestion and inhalation for redevelopment workers and future occupants.
Long-Term Effectiveness and Permanence	Source has not been removed. Existing risk will remain.	Source has not been removed. Existing risk will remain.	Risk reduction is permanent through soil/sediment removal.	Risk eliminated as long as concrete floor is maintained. Because source is only contained, inherent hazard of contaminated soils still remains.
Reduction of Toxicity, Mobility, or Volume through Treatment	None	None	Mobility of contaminants is reduced. Off-site treatment and disposal reduces toxicity.	None
Short-Term Effectiveness	Risk to Community is not increased, but risk to redevelopment worker remains the same.	Risk to Community is not increased, but risk to redevelopment worker remains the same.	Risk to Community and redevelopment worker is not increased.	Risk to Community and redevelopment worker is not increased.

Table 5 Evaluation of Mill 5 Remedial Alternatives (continued)

Evaluation Criteria	Remedial Alternative			
	No Action	Institutional Controls	Excavation	Encapsulation
Mill 5 Floor Trenches				
Implementability				
Technical Feasibility	No construction or operation.	No construction or operation.	Excavation is easily implemented.	Simple to construct.
Availability of Equipment, Personnel and Services	None Required	Signs and locks are readily available.	Readily available.	Readily available.
Administrative Feasibility	No approval necessary.		No approval necessary.	No approval necessary.
Cost	$0	<$5,000	$6,700	$4,500

September 18, 2002

Mr. James Byrne
US Environmental Protection Agency
New England Region
1 Congress Street
Boston, MA 02114

Re: Engineering Evaluation/ Cost Analysis Approval Memorandum
Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, and #2 Storehouse
Bates Mill Complex, Lewiston, Maine

Dear Jim:

Per US Environmental Protection Agency (EPA) guidance, this letter serves as an Engineering Evaluation/ Cost Analysis (EE/CA) Approval Memo. Your approval of the recommendations set forth herein will initiate the process for utilizing the Bates Mill Brownfields Cleanup Revolving Loan Fund (BCRLF) monies for the remediation of the Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, and #2 Storehouse (Subject Sites) of the Bates Mill Complex (Property).

I. SUBJECT

a. Purpose. The purpose of this memorandum is to document the decision to proceed with an EE/CA for a non-time critical removal action (NTCRA) at the Subject Sites at the Bates Mill Complex, located in Lewiston, Maine (City). This EE/CA will conform to 40 CFR 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The NTCRA will be funded under the City's BCRLF Program.

The City's BCRLF Program was established through a cooperative agreement with EPA. Under this cooperative agreement, the City received funds from EPA to establish a loan fund for cleanup of Bates Mill Complex and other Brownfields sites in the City. The Maine Department of Environmental Protection (MEDEP) is acting as the Lead Agency under the NCP. Mr. Brian Beneski of the MEDEP will be the Brownfields Site Manager who will oversee cleanup of the property. Ms. Alyson Stone, Grants Coordinator with the City of Lewiston, is acting as the Fund Manager who will handle the financial aspects of the loan. The City of Lewiston currently owns the property. The Lewiston Mill Redevelopment Corporation (LMRC) will borrow funds from the BCRLF program under a loan agreement with the City and undertake the environmental cleanup and subsequent redevelopment of the property. Summit Environmental Consultants, Inc. (Summit) will provide technical support and project management.

b. Redevelopment Plan. This memorandum is not a final Lead Agency decision regarding the selection of a removal action for the Subject Sites. In the EE/CA, the City and

borrower will evaluate alternatives for remediating Site contamination by providing a timely response to effectively minimize potential threats to human health and the environment, which may result from the presence of hazardous substances at each Subject Site.

II. BACKGROUND

a. Site location and description. The Bates Mill Complex is located in the metropolitan center of the City of Lewiston (Figure 1). The Property originally occupied approximately 1.2 million square feet of space on a 10-acre parcel. The Complex is bounded on the east by Canal Street, on the south by Chestnut Street, on the west by Lincoln Street and on the north by Maine Street. Open canals are present to the north and east, and an underground raceway is present along the southern end of the Complex. The Complex topography is relatively flat but drops approximately 10 feet to the west along a retaining wall at the southern end of the property.

Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, and #2 Storehouse are the focus of this EE/CA Approval Memorandum. The Mill Complex currently consists of four separate buildings to the north and west (Mill 5, Mill 6, Storehouse 7, and Boiler Plant Mill 9), and a series of connected buildings to the south and east (Mills 1-4, #1 Storehouse/Wing, #2 Storehouse/Wing, #3 Mill, and #4 Storehouse/Wing). Mill buildings are generally comprised of several floors and are constructed of brick with wood support posts and beams. Interior portions of the buildings are open space with wood floors. Some office spaces have been partitioned out of the original building spaces. The EE/CA will evaluate alternatives for remediating Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, and #2 Storehouse and will determine how the City and the LMRC will provide a timely response to effectively minimize potential threats to human health and the environment which may result from the presence of hazardous substances at the Subject Sites. The Sites are not listed or proposed for listing on the National Priorities List.

Glaciomarine deposits consisting of interbedded silt, clay, sand, and minor amounts of gravel underlie the property. Canals and underground raceways surround the complex. Although these surface water bodies locally influence ground water flow, regional flow is to the west.

b. Ownership and operation. The Mill Complex was constructed between 1852 and 1923 and originally consisted of 11 buildings. In its prime, the Mill employed more than 5,000 people and was one of the nation's largest manufacturers of textiles. Owners included the Bates Manufacturing Company, Bates Fabrics, Inc. and the City of Lewiston (1992-present). Before ownership by the City, the Bates family of companies was involved in the weaving and dyeing of cotton and wool textiles. The declining fortunes of the New England textile industry affected the Mill to the point where only 25 employees worked at the complex in 1992, when the City assumed ownership.

c. Environmental Conditions. The City recognized that real or perceived environmental liabilities could inhibit the redevelopment of the Mill Complex, and therefore retained Summit to complete a Phase I Environmental Site Assessment (ESA) on the Mill Complex in 1996. In their report, Summit identified a variety of environmental conditions that required additional assessment or remediation. In 1998, the US EPA Emergency Planning and Response Branch completed a hazardous material removal program at the Mill. US EPA removed transformers containing polychlorinated biphenyls (PCBs), drums of chemical waste, and asbestos-containing materials (ACM).

concentration of arsenic at 3.5 mg/kg, which exceed the US EPA ingestion soil screening level of 0.4 mg/kg. Results of a water sample collected from the settling tank in the basement reported a total lead concentration of 13,400 µg/L. Samples of process chemical residues reported concentrations of lead at 463 mg/kg, which exceeds the US EPA ingestion soil screening level of 400 mg/kg.

Mill 5

A composite soil sample collected from the floor trenches of Mill 5 was found to contain moderately elevated concentrations of DRO (340 mg/kg) and metals and SVOCs at low concentrations. Arsenic was reported at 27.5 mg/kg, which exceeds the US EPA's ingestion standard for soils of 0.4 mg/kg. No SVOCs were reported above the MEDEP adult worker remedial action guidelines or the USEPA ingestion/inhalation concentrations.

Mill 9

Samples from two catch basins, located on either side of the chimney base, reported elevated levels of DRO at concentrations of 2,400 mg/L and 29,000 mg/L. A composites soil sample collected from floor trenches was found to contain elevated levels of metals and DRO. DRO was reported at 1,900 mg/kg. Arsenic was reported at 12 mg/kg, which exceeds the US EPA's ingestion standard for soils of 0.4 mg/kg. Lead was reported at a concentration of 410 mg/kg, which slightly exceeds the US EPA screening level of 400 mg/kg. Zinc was reported at 1,820 mg/kg, which exceeds the MEDEP remedial action guidelines for contaminated soils at 1,500 mg/kg.

#1 Wing

Soil samples collected from the basement of #1 Wing were found to contain SVOCs (benzo(a)anthracene (2.3 mg/kg), benzo(a)pyrene (2.0 mg/kg), and benzo(b)fluoranthene(2.9 mg/kg)) at concentrations that exceeded the MEDEP adult worker remedial action guideline. PCB-1254 was reported present at a concentration of 1.1 mg/kg, which is above the MEDEP's clean-up guidance level of 1.0 mg/kg.

#1 Storehouse

Oil samples collected from a metal lathe on the first floor and from electrical equipment on the north wall of the second and-a-half floor reported PCB-1254 at concentrations of 6.7 µg/kg and 27 µg/kg, respectively. A sample of residue collected from a 1,000-gallon above ground storage tank located in the basement exceeded the US EPA inhalation/ingestion soil screening level for arsenic and exceeded the MEDEP adult worker remedial action guideline for total copper and total lead.

#2 Wing

Soil samples collected from the basement of #2 Wing were found to contain SVOCs (benzo(a)anthracene (2.3 mg/kg), benzo(a)pyrene (2.3 mg/kg), benzo(b)fluoranthene (3.2 mg/kg), and indeno(1,2,3-cd)pyrene (1.8 mg/kg)) at concentrations that exceeded the MEDEP adult worker remedial action guideline. Laboratory results reported DRO at a low level of 2,100 mg/kg.

#2 Storehouse

No conditions were found that would require remedial action or further investigation.

b. Primary Risk Screening. Soil analytical results from the Sites were evaluated using MEDEP Remedial Action Guidelines (Adult Worker criteria) and US EPA Soil Screening Levels.

Table 2
Semi-Volatile Organic Compounds and Diesel Range Organics
Analytical Results
Bates Mill Complex
Lewiston, Maine

Sample:	M4-SS-00-01	M4-SS-00-02	M4-TW-00-01	M4-TW-00-02	M4-T1-00-01	M4-RE-04-01	M5-SS-00-01	M5-SS-00-02
Date:	4/20/00	4/20/00	4/21/00	4/21/00	4/21/00	4/24/00	4/24/00	4/24/00
Description:	Mill 4 Basement	Duplicate of M4-SS-00-01	Mill 4 Trench Water	Duplicate of M4-TW-00-01	Mill 4 AST	Mill 4 Residue	Mill 5 Basement	Duplicate of M5-SS-00-01
Diesel-Range Organics (mg/Kg)	**290**	**210**	**1,100**	**1,500**	NA	NA	**230**	**340**
Detected SVOCs (mg/Kg)								
4-Methylphenol	<0.4	<0.4	<0.001	**0.027**	<0.56	<0.46	<0.33	<0.33
Acenaphthene	<0.4	<0.4	<0.001	<0.001	<0.56	**0.56**	<0.33	<0.33
Acenaphthylene	<0.4	<0.4	<0.001	<0.001	<0.56	<0.46	<0.33	<0.33
Anthracene	<0.4	<0.4	<0.001	<0.001	<0.56	**1.0**	<0.33	<0.33
bis(2-Ethylhexyl)phthalate	**0.45**	**0.35 J**	<0.001	<0.001	<0.56	**2.4**	**1.2**	**1.3**
Benzo(a)anthracene	<0.4	**0.22 J**	<0.001	<0.001	**0.96**	**2.6**	<0.33	**0.17 J**
Benzo(a)pyrene	<0.4	**0.2 J**	<0.001	<0.001	**0.67**	**1.9**	<0.33	**0.21 J**
Benzo(b)fluoranthene	**0.24 J**	**0.33 J**	<0.001	<0.001	**1.0**	**3.0**	**0.25 J**	**0.37**
Benzo(k)fluoranthene	<0.4	<0.4	<0.001	<0.001	**0.29 J**	**1.1**	<0.33	<0.33
Benzo(g,h,i)perylene	<0.4	<0.4	<0.001	<0.001	**0.34 J**	**0.94**	<0.33	<0.33
Butylbenzylphthalate	<0.4	<0.4	<0.001	<0.001	<0.56	**0.3 J**	<0.33	**0.25 J**
Carbazole	<0.4	<0.4	<0.001	<0.001	<0.56	**0.76**	<0.33	<0.33
Chrysene	<0.4	**0.26 J**	<0.001	<0.001	**1.0**	**2.6**	**0.18 J**	**0.32 J**
Dibenzofuran	<0.4	<0.4	<0.001	<0.001	<0.56	**0.31 J**	<0.33	<0.33
Dibenz(a,h)anthracene	<0.4	<0.4	<0.001	<0.001	<0.56	**0.28 J**	<0.33	<0.33
Fluoranthene	**0.27 J**	**0.33 J**	<0.001	<0.001	**2.5**	**5.0**	**0.21 J**	**0.32 J**
Fluorene	<0.4	<0.4	<0.001	<0.001	<0.56	**0.38 J**	<0.33	<0.33
Indeno(1,2,3-cd)pyrene	<0.4	<0.4	<0.001	<0.001	**0.37 J**	**1.1**	<0.33	<0.33
Nitrobenzene	<0.4	<0.4	**0.022**	<0.001	<0.56	<0.46	<0.33	<0.33
Pentachlorophenol	<0.98	<0.98	<0.025	<0.025	**0.33 J**	<0.46	<0.33	<0.33
Phenanthrene	<0.4	<0.4	<0.001	<0.001	**2.3**	**4.9**	<0.33	<0.33
Phenol	<0.4	<0.4	<0.001	**0.005 J**	<0.56	<0.46	<0.33	<0.33
Pyrene	**0.25 J**	**0.36 J**	<0.001	<0.001	**2.5**	**6.6**	**0.19 J**	**0.31 J**

Table 3
PCB Analytical Results
Bates Mill Complex
Lewiston, Maine

Sample:	1W-OL-01-01	1SH-OL-01-01	1SH-OL-025-01	1SH-OL-025-02	M4-OL-01-01	M4-OL-01-02	M5-OL-01-01	M4-C0-01-01	M5-OL-01-02	M5-OL-01-03
Date:	4/20/00	4/20/00	4/20/00	4/20/00	4/21/00	4/21/00	4/24/00	12/8/00	4/24/00	4/24/00
Description:	#1 Wing Transformer South Wall	#1 Storehouse Lathe Motor	#1 Storehouse 2 1/2 Floor Transformer	Duplicate of 1SH-OL-025-01	Mill 4 Transformer	Duplicate of M4-OL-01-01	Parts Washer Wipe	Mill 4 Oil	Mill 5 Floor Wipe	Duplicate of M5-OL-01-01
PCB Detected Parameters										
PCB-1016 ug/kg	<5	<1.3	<1.3	<1.3	<5	<5	<1.3	<1.0	<1.3	<1.3
PCB-1221 ug/kg	<5	<1.3	<1.3	<1.3	<5	<5	<1.3	<1.0	<1.3	<1.3
PCB-1232 ug/kg	<5	<1.3	<1.3	<1.3	<5	<5	<1.3	<1.0	<1.3	<1.3
PCB-1242 ug/kg	<5	<1.3	<1.3	<1.3	<5	<5	<1.3	<1.0	<1.3	<1.3
PCB-1248 ug/kg	<5	<1.3	<1.3	<1.3	<5	<5	<1.3	<1.0	<1.3	<1.3
PCB-1254 ug/kg	<5	**C6.7**	**C13**	**C27**	<5	<5	<1.3	<1.0	<1.3	<1.3
PCB-1260 ug/kg	<5	<1.3	<1.3	<1.3	<5	<5	<1.3	<1.0	<1.3	<1.3

Table 4
TAL Metals and Cyanide Analytical Results
Bates Mill Complex
Lewiston, Maine

Sample: / Date: / Description:	M5-SS-00-01 4/24/00 Mill 5 Basement	M5-SS-00-02 4/24/00 Duplicate of M5-SS-00-01	M9-SS-00-01 4/25/00 Mill 9 Trench	M9-SS-00-02 4/25/00 Duplicate of M9-SS-00-01	Maine DEP Remedial Action Guidelines for Contaminated Soil	US EPA Generic Soil Screening Levels
Aluminum, Total	**11,600**	**11,800**	**11,800**	**9,740**	NA	NA
Antimony, Total	<4	<2	**2.0**	**4.1**	NA	NA
Arsenic, Total	[redacted]	[redacted]	[redacted]	[redacted]	**30**	**0.4/750**
Barium, Total	**736**	**432**	**1,090**	**819**	**10,000**	**5,500/6.9E+05**
Beryllium, Total	<0.50	<0.50	<0.75	<0.64	**10**	**0.1/1,300**
Cadmium, Total	<4.74	<2.60	**11.9**	**8.86**	**23**	**78/1,800**
Calcium, Total	**45,500**	**49,400**	**59,100**	**37,600**	NA	NA
Chromium, Total	**37.3**	**35.8**	**78.5**	**69.6**	**10,000**	**390/270**
Cobalt, Total	**7.72**	**7.94**	**10.1**	**8.59**	NA	NA
Copper, Total	**215**	**109**	**401**	**380**	**600**	NA
Iron, Total	**64,900**	**43,700**	**63,000**	**50,600**	NA	NA
Lead, Total	**212**	**115**	[redacted]	**382**	**700**	**400**
Magnesium, Total	**5,420**	**5,850**	**6,950**	**4,890**	NA	NA
Manganese, Total	**525**	**478**	**3,590**	**2,010**	NA	NA
Mercury, Total	**2.13**	**2.08**	**36.8**	**14.9**	**610**	NA
Nickel, Total	**23.9**	**24.9**	**128**	**111**	**10,000**	**1,600/13,000**
Potassium, Total	**5,450**	**5,890**	**7,160**	**3,640**	NA	NA
Selenium, Total	<4.7	<2.6	<3.0	<2.6	**10,000**	**390/NA**
Silver, Total	<1.5	<1.5	<4.5	<3.8	**10,000**	**390/NA**
Sodium, Total	**592**	**585**	**1,700**	**1,330**	NA	NA
Thallium, Total	<7.1	<3.9	**5.1**	<3.8	NA	NA
Vanadium, Total	**36**	**35.3**	**353**	**280**	NA	**550**
Zinc, Total	**607**	**338**	[redacted]	[redacted]	**1,500**	**23,000/NA**
pH	NA	NA	NA	NA	NA	NA

Table 5
Volatile Organic Compounds
Analytical Results
Bates Mill Complex
Lewiston, Maine

Sample: **Date:** **Description:** **Detected VOCs (mg/Kg)**	M2-SS-00-03 4/19/00 Mill 2 Dust Chute	1W-SS-00-01 4/19/00 #1 Wing Basement	M4-SS-00-01 4/20/00 Mill 4 Basement	M4-SS-00-02 4/20/00 Duplicate of M4-SS-00-02	M4-TW-00-01 4/21/00 Mill 4 Trench Water	M4-TW-00-02 4/21/00 Duplicate of M4-TW-00-01	M4-T1-00-01 4/21/00 Mill 4 AST	M5-OL-01-01 4/24/00 Mill 5 Parts Washer
2-Butanone	**120**	**14**	**12**	**13**	<0.005	**0.004 J**	**17**	**2.3 J**
Acetone	**2**	**2.8**	**2.5**	**2.6**	**0.013**	**0.018**	**3.2**	**2.6 J**
Benzene	<0.6	<0.55	<0.6	<0.55	<0.001	<0.001	<0.8	<1.4
Chloroform	<0.6	<0.55	<0.6	<0.55	**0.002**	**0.002**	<0.8	<1.4
Ethybenzene	<0.6	<0.55	<0.6	<0.55	<0.001	<0.001	<0.8	<1.4
Methylene Chloride	**3.3**	**3.5**	**2.9**	**2.9**	<0.001	<0.001	**3.9 B**	**1.1 JB**
M+P-Xylene	<0.6	<0.55	<0.6	<0.55	<0.001	<0.001	<0.8	<1.4
O-Xylene	<0.6	<0.55	<0.6	<0.55	<0.001	<0.001	<0.8	<1.4
Toluene	<0.6	<0.55	<0.6	<0.55	<0.001	<0.001	<0.8	<1.4

Notes:
1. J = Estimated value less than laboratory Practical Quantation Level.
2. <1 = not detected above listed detection limit.
3. B = Analyte detected concurrently within laboratory blank.
4. 1997 Maine DEP remedial action standards reflect adult worker guideline.
[redacted]
5. 1996 US EPA Soil Screening Guidelines reflect ingestion/inhalation of fugitive particles.
[redacted]

Mill 4: Remove Concrete Settling Tanks

Debris - roll-off	2@	$575.00	$1,050.00
Disposal	20 ton@	$75.00	$1,500.00
Labor	32 Hrs@	$125.00	$4,000.00
			6,550.00
Contingency		0.20	$1,310.00
			$7,860.00
		Total	**$7,800.00**

Mill 4: Basement Flooring

125' x 75' = 9500 ft^2
4' slab = 120 CY

Disposal	120 CY@	$75.00	$9,000.00
Pump truck	2 days@	$1,200.00	$2,400.00
Stand-by			$1,000.00
Labor	20 Hrs@	$125.00	$2,500.00
			$14,900.00
Contingency		0.20	$2,980.00
			$17,880.00
		Total	**$17,500.00**

Mill 5: Floor Trench Sediment Removal

Trucking			$1,000.00
Disposal	7.5 ton@	$75.00	$565.00
Labor	32 Hrs@	$125.00	$4,000.00
			5,565.00
Contingency		0.20	$1,113.00
			$6,678.00
		Total	**$6,700.00**

Mill 5: Floor Trench Sediment Encapsulation

Concrete	24 CY	$75.00	$1,800.00
Labor	8 Hrs@	$125.00	$1000.00
Skid Steer			$750.00
Truck Stand-by			$250.00
			$3,800.00
Contingency		0.20	$760.00
			$4,560.00
		Total	**$4,500.00**