

# PHASE I ENVIRONMENTAL SITE ASSESSMENT NEWSPRINT MILL SITE 3691 HIGHWAY 3, BROOKLYN, NOVA SCOTIA

Submitted to:

Bowater Mersey Paper Company Limited Liverpool, Nova Scotia B0J 1H0

Submitted by:

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TV121024



#### **EXECUTIVE SUMMARY**

AMEC Environment & Infrastructure, a Division of AMEC Americas Limited (AMEC) was engaged by Bowater Mersey Paper Company Limited ("the Client") to conduct a Phase I Environmental Site Assessment (ESA) at, The Newsprint Mill Site, 3691 Highway 3, Brooklyn, Nova Scotia (herein referred to as "the Site").

The purpose of this ESA was to identify potential environmental liabilities at the Site that may have resulted from existing and previous land uses or site development activities on and adjacent to the subject property, and to identify any present conditions or practices that may represent materially significant environmental risks or liabilities.

AMEC conducted this work according to its standard assessment procedures, which reflect the CSA Z768-01 Phase I Environmental Site Assessment and CMHC Site Assessment Procedure requirements. Briefly, these procedures set standards for the review of information pertaining to the Site (Document Review); conducting interviews with people knowledgeable about the Site (Interviews); completing a detailed checklist or protocol during an inspection of the property (Site Inspection); and preparing a report that documents the study results.

Conclusions regarding the current environmental condition of the property located at 3691 Highway 3, Brooklyn, Nova Scotia are based solely on the results of the information reviewed, Site inspection and interviews conducted as part of this Phase I ESA and as described in this report. This Phase I ESA has revealed some areas of potential environmental concern regarding the subject property, as discussed in the following subsections. Further work is recommended to address these potential liabilities.

#### POTENTIAL ASBESTOS CONTAINING MATERIAL

Previously conducted hazardous materials surveys revealed the presence of asbestos containing materials (ACMs) within certain buildings; specifically the former steam plant. Given the age of buildings on site (constructed prior to 1969) there is a potential for site wide asbestos use. Buildings constructed during the mill modernization (post 1988) are not of concern.

#### POTENTIAL METALS AND PAH CONTAMINATION

Based on review of historical documents, aerial photographs, and interviews, the following is a list of areas and their potential for metals and PAH contamination:

- Liverpool Bay Mercury based slimicide was used at the mill from the 1940s to 1958.
   During this time the mill's wastewater effluent was discharge directly to the harbour.
   There is a potential for mercury and other (hydrocarbon) contamination in the sediment of Liverpool Bay.
- O Dredge Spoils Dumpsite The dumpsite contains sediment from the harbour, caustic contaminated soil, and excavated material from the former coal pit area. There is potential for metals and PAH contaminants associated with coal and mercury in soil.
- O Former Landfill Contents of the former mill landfill are currently unknown. Potential for soil and groundwater contamination.
- Warehouse A / Former Coal Pile Aerial photos show the coal pile present from 1937 to 1955. Test pit logs completed in 1999 indicate coal is still present below ground.
   Potential soil contamination includes metals and PAHs.



- Former Locomotive Shed The pit that was previously used for locomotive maintenance and waste collection has been in-filled by material of unknown origin. There is a potential for metals contamination in the soil beneath and within the former pit.
- Site-wide Given the age of the many of the buildings on site, there is a potential for widespread use of lead based mortar, lead and mercury based paint, and mercury containing thermostats.
- O Ash from boilers As the landfill north of the paper mill did not begin operation until approximately 1965 it is unknown where ash produced from burning coal in the boilers was disposed of prior to this time. It has been suggested but not confirmed that ash was disposed of at the current gatehouse location.

# • POTENTIAL POLYCHLORINATED BIPHENYLS (PCBS)

All PCB containing transformers, capacitors, and associated liquid waste was removed from site by 1997. There is potential for soil contamination in areas where PCBs were stored or used (e.g., former transformers); specifically the areas where PCBs were historically used. A PCB trailer storage area was located directly west of the A-frame truck dumper though contamination in this area is less likely.

#### POTENTIAL OZONE DEPLETING SUBSTANCES

Though not visually confirmed, AMEC staff was notified during interviews of air conditioners located within the office buildings creating the potential concern of ozone depleting substances.

#### POTENTIAL PETROLEUM HYDROCARBON CONTAMINATION

During the site visit, AMEC staff did not observe any visual PHC leaks or impacted areas. Given the use of aboveground and belowground fuel storage tanks, pipelines, pump houses, and mechanical equipment, there is widespread potential for soil and groundwater PHC contamination. Specific areas of potential concern include the following but are not limited to:

- Former Bunker C storage tanks
- Former Bunker C pipeline
- O Former steam plant and boiler room
- Existing and removed fuel storage tanks

#### POTENTIAL LIQUID WASTE SUBSTANCES

Although it was scheduled to be removed in 2000, the acid tank remains currently on site due to its unknown contents. The current condition and contents of the tank should be assessed in order to determine potential adverse environmental effects.

Based on the findings of the Phase I Environmental Site Assessment conducted on 23 and 24 June 2012 the following recommendations are made:

- Soil and groundwater sampling should be conducted at the Site to determine the degree and extent of contamination due to use as an industrial facility. Samples should be analysed for metals, petroleum hydrocarbons, and PAHs, and PCBs.
- CNSC should be contacted to properly remove devices containing radioactive materials at the Site.

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- Licensed haulers should be contracted to removal and properly dispose of all chemicals at the Site.
- If buildings are to be demolished a full hazardous materials survey should be conducted at the Site to determine locations of materials such as Lead, asbestos, mercury, and PCBs. All hazardous materials identified at the Site should be removed and disposed of by qualified professionals.
- The lagoons and the sludge landfill at the ASB site must be properly decommissioned before being abandoned.
- Soil and groundwater testing should be completed at the old landfill site and the dredge spoils area to verify whether impacts exist to the surrounding environment; parameters of concern may include, metals, petroleum hydrocarbons, and PAHs, and PCBs.
- There should be some effort put forward to determine the disposal site of the ash from the burnt coal.

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#### 1.0 INTRODUCTION

#### 1.1 BACKGROUND

At the request of Bowater Mersey Paper Company Limited ("the Client"), AMEC Environment & Infrastructure, a division of AMEC Americas Limited (AMEC), conducted a Phase I Environmental Site Assessment (ESA) at, The Newsprint Mill Site, 3691 Highway 3 in Brooklyn, Nova Scotia (herein referred to as the "Site"). This assessment was required to evaluate known and potential environmental concerns at the Site.

The subject property is located in Brooklyn, NS, as shown on Figure 1. This figure is based on topographic mapping, 21A02, Liverpool, produced by the Centre for Topographic Information, Natural Resources Canada. A Site Location and Adjacent Properties Plan and a Detailed Site Plan are provided on Figures 2 and 3 respectively, and are based on available property mapping obtained from Service Nova Scotia and Municipal Relations.

The study area consists of four areas; the paper mill, the former landfill, the dredge spoils dumpsite, and the aerated stabilization basin. The current owner of the Site is Bowater Mersey Paper Company Limited.

The Bowater-Mersey Paper Company Limited paper mill currently occupies the site though mill operations ceased on 16 June 2012.

Facilities at the main paper mill Site include a woodchip pile and reclamation area, an A-frame wood chip storage area, truck dumper a thermomechanical pulping (TMP) plant papermachines, a roll grinding area, a primary clarifier for wastewater treatment, pulp storage tanks, chemical storage area, a wharf, and warehouses.

Satellite sites associated with the mill include a secondary effluent treatment area with an aerated stabilization basin (ASB), former landfill, and dredge spoils dumpsite.

The exterior grounds at the Site consist of asphalt and gravel covered surfaces. The topography across the Site is relatively flat with a slight slope towards the south. Stormwater is inferred to flow into Herring Cove, situated south of the Site. Sewage is pumped off site to the municipal sewer system. Freshwater for the paper mill operation is obtained from a pipeline running to the Site from Nickerson's Pond. Bottled water is used at the Site as the water is not used for potable water. Electrical service is provided by Nova Scotia Power via overhead cables from a power substation located on the northwest portion of the Site.

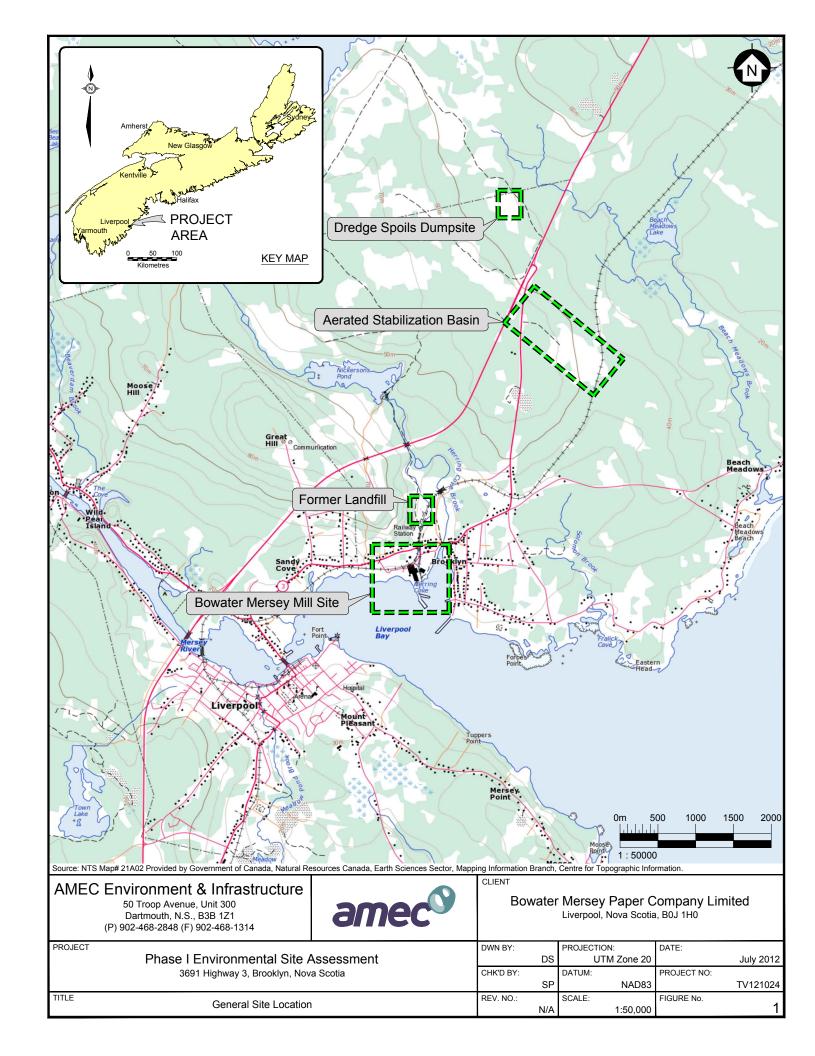
The original paper mill was constructed in 1929 on the site which was previously undeveloped. The mill utilized groundwood and sulphite pulping processes and produced its own steam by burning coal. Logs used for producing pulp were transported to the site using truck, rail, and the Mersey River located approximately 2 km west of the mill, and were retained in Herring Cove using booms. The plant began using thermomechanical pulping processes in 1976 and discontinued sulphite and groundwood use in 1989. The mill's wastewater effluent was discharged directly into the harbour until 1995 when a primary clarifier and secondary treatment system were commissioned. A detailed mill history can be found in section 3.1.

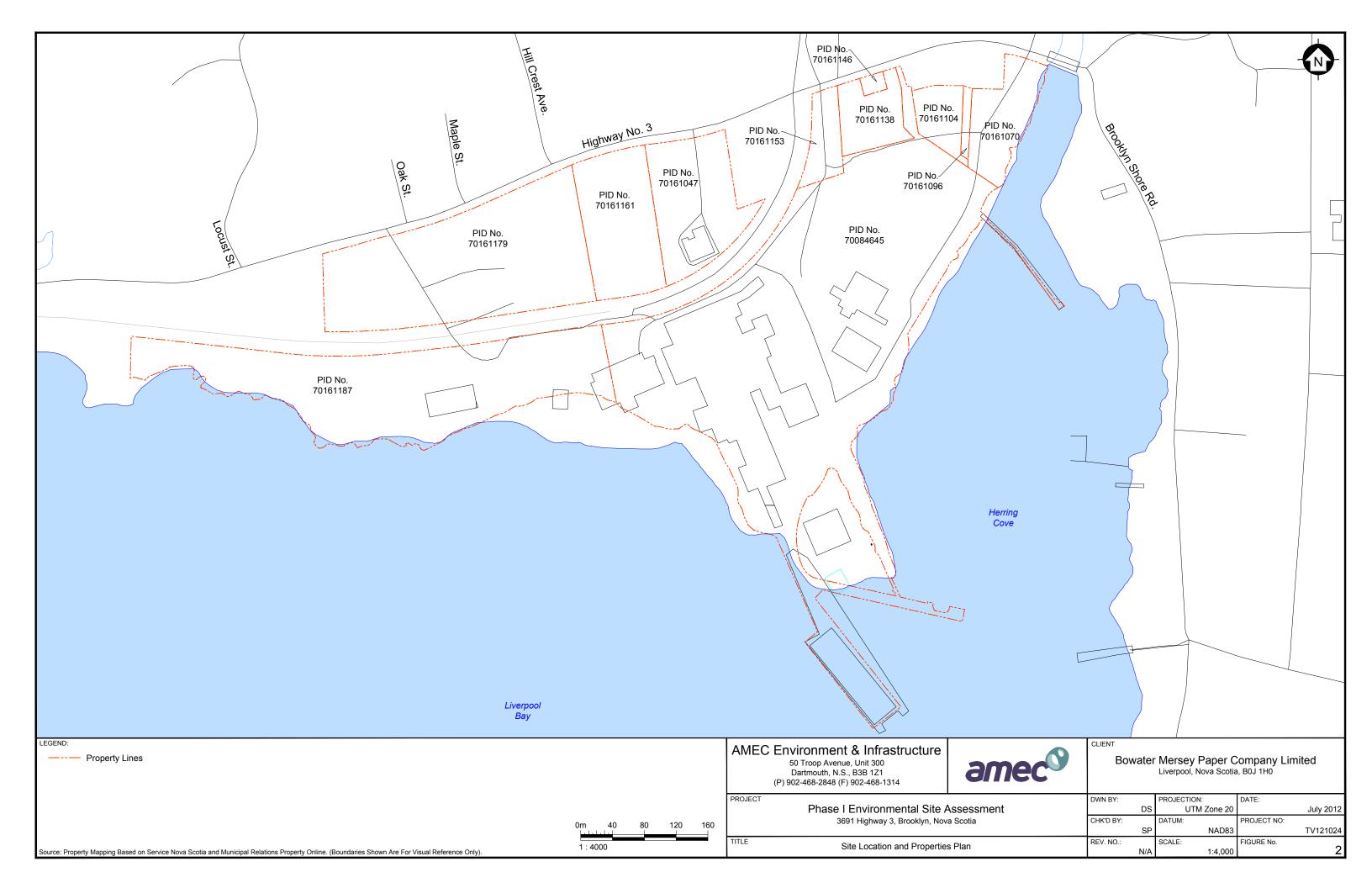
The Site is surrounded by Herring Cove to the east, Liverpool Bay to the south, residential properties to the west. The Brooklyn Energy Centre steam plant and former mill landfill are located to the north of the main site.

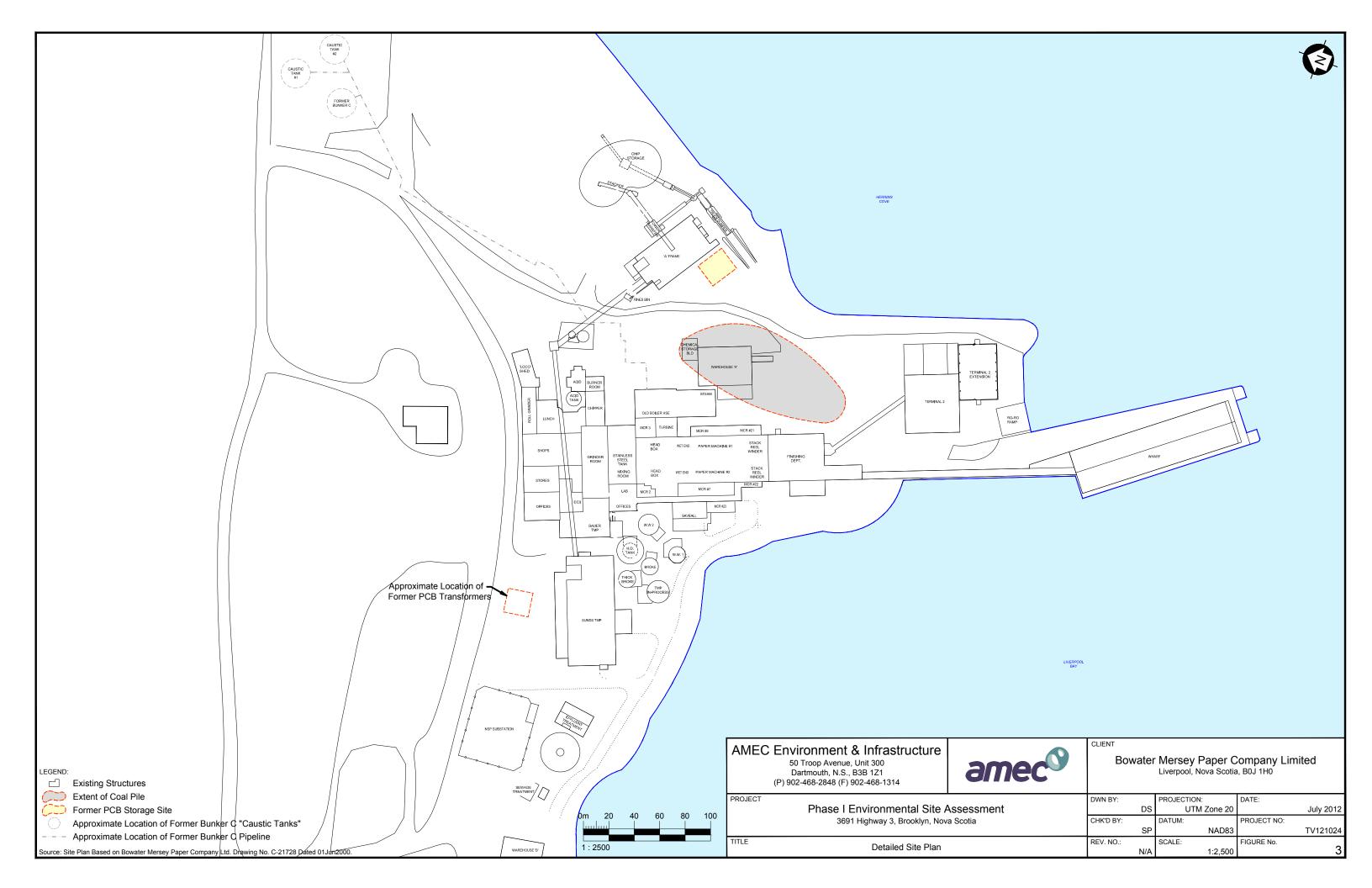


## 1.2 PURPOSE

The purpose of this ESA was to identify potential environmental liabilities at the Site that may have resulted from existing and previous land uses or Site development activities on and adjacent to the subject property, and to identify any present conditions or practices that may represent materially significant environmental risks or liabilities.









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# Bowater Mersey Paper Company Limited Liverpool, Nova Scotia, B0J 1H0

PF	OJECT	DWN BY:	PROJECTION:	DATE:
	Phase I Environmental Site Assessment	DS	UTM Zone 20	July 2012
ı	3691 Highway 3, Brooklyn, Nova Scotia	CHK'D BY:	DATUM:	PROJECT NO:
ı		SP	NAD83	TV121024
TI	TLE Aerated Stabilization Basin, Aerial Site Plan	REV. NO.:	SCALE:	FIGURE No.
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PROJECT	T .	DWN BY:		PROJECTION:	DATE:	
	Phase I Environmental Site Assessment		DS	UTM Zone 20		July 2012
	3691 Highway 3, Brooklyn, Nova Scotia	CHK'D BY:		DATUM:	PROJECT NO:	
			SP	NAD83		TV121024
TITLE	Dredge Spoils Dumpsite, Aerial Site Plan	REV. NO.:		SCALE:	FIGURE No.	_
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#### 2.0 SITE ASSESSMENT PROCESS

#### 2.1 SCOPE AND LIMITATIONS

The Phase I ESA completed by AMEC consisted of:

- Researching past use of the Site to evaluate possible historical sources of contamination. The search included reviewing historical aerial photos, interviewing persons knowledgeable about the Site, and conducting a Site inspection. Items of potential concern assessed included:
  - Air emissions:
  - Underground and aboveground storage tanks (USTs & ASTs);
  - Mercury containing materials:
  - Hazardous waste management;
  - Existing/historic dumps and landfills;
  - Mechanical equipment;
  - Methane:
  - Asbestos containing materials (ACMs);
  - Lead-based products;
  - Polychlorinated biphenyls (PCBs);
  - Radioactive materials;
  - Site in-filling and land reclamation;
  - Sumps and drains;
  - Ozone-depleting substances (ODS);
  - Pesticides and herbicides;
  - Chemical use activities;
  - Surface staining, spills and leaks;
  - Solid waste management;
  - Liquid waste and effluent (e.g. sewage and wastewater);
  - Stressed vegetation;
  - Urea formaldehyde foam insulation (UFFI);
  - Indoor human environment.
- Contacting provincial government departments with respect to environmental concerns associated with the Site or surrounding properties that may impact the Site;
- Identifying potential impacts of the surrounding environment on the property such as:
  - Nearby chemical or fuel storage and land use/zoning; and
  - o Any adjacent visually-evident environmental concerns (e.g., contaminated sites).

This report describes the methods used to investigate actual and/or potential environmental contamination affecting the subject property at the time of the assessment. This report is intended to reduce the level of uncertainty with respect to the property's environmental condition. While this report provides an overview of potential environmental concerns, both past and present, it is limited by the availability of information obtained at the time of the assessment. It is possible other activities that may have affected the environmental status of the property have occurred which could not be identified. A statement of the report limitations is provided in Appendix D.



#### 2.2 METHODOLOGY

AMEC conducted this work according to its standard assessment procedures, which reflect the CSA Z768-01<sup>1</sup> Phase I Environmental Site Assessment (reaffirmed in 2012) and CMHC Site Assessment Procedure<sup>2</sup> requirements. Briefly, these procedures set standards for the review of information pertaining to the Site (Document Review); conducting interviews with people knowledgeable about the Site (Interviews); completing a detailed checklist or protocol during an inspection of the property (Site Inspection); and preparing a report that documents the study results. The following sections describe our investigative methods in greater detail.

#### 2.2.1 Document Review

Documents relating to the development history and environmental conditions of the Site were reviewed during this assessment. Any potential environmental issues identified were subject to further investigation during the Site inspection and/or interviews. The documents reviewed consisted of the following:

- Aerial Photos obtained from Service Nova Scotia in Dartmouth, Nova Scotia and from the National Air Photo Library in Ottawa Ontario (selected photos included in Appendix B), as follows:
  - o A3651 32 (1937) Black & white, Scale 1:15,000
  - o A9009 17 (1945) Black & white, Scale 1:15,000
  - o A9008-107 (1945) Black & white, Scale 1:15,000
  - o A14746 150 (1955) Black & white, Scale 1:10,000
  - o A18851 007 (1965) Black & white, Scale 1:10,000
  - o 76302-188 (1976) Colour, Scale 1:10,000
  - o 76302-190 (1976) Colour, Scale 1:10,000
  - o 76303-015 (1976) Colour, Scale 1:10,000
  - o 86301-213 (1986) Colour, Scale 1:10,000
  - o 86301-156 (1986) Colour, Scale 1:10,000
  - o 92370-121 (1992) Colour, Scale 1:10,000
  - o 92370-123 (1992) Colour, Scale 1:10,000
  - o 00307-129 (2000) Colour, Scale 1:10,000
  - o 00313-201 (2000) Colour, Scale 1:10,000
  - o 2010307-224 (2010) Colour, Scale 1:12,500
  - o 2010307-225 (2010) Colour, Scale 1:12,500
- Fire Insurance Plans (FIP) 1940; available from RMS Inc.
- Various historical reports, drawings, photos, letters, memos, etc., obtained from the Bowater-Mersey Paper Company environmental and engineering division.
- City Directories are not available for this area.

#### 2.2.2 Interviews

In an effort to obtain information regarding the development and occupancy history, and environmental condition of the Site, interviews were conducted with the following persons:

<sup>&</sup>lt;sup>1</sup> Canadian Standards Association (CSA), 2001. Phase I Environmental Site Assessment (CSA Z768-01), Toronto, Canada (reaffirmed 2012)

<sup>&</sup>lt;sup>2</sup> Canada Mortgage and Housing Corporation (CMHC), 1993. Environmental Site Assessments, A Summary for Approved Lenders.



- Mr. Alan Sampson Utilities Supervisor, employee at the Site since 1985.
- Mr. Pierre Losier Environment Coordinator employee since 1998
- Mr. David Goodyear Shift Supervisor, employee since 2009

#### 2.2.3 Site Inspection

Representatives of AMEC's Dartmouth office visited the Site between 22 and 25 June 2012 to conduct a walk-through inspection of the Site, evaluate potential on-Site issues, and determine whether any surrounding land uses may have and/or are currently impacting the environmental condition of the Site. All accessible portions of the Site, with the exception of the roofs of the Site buildings were accessed during the inspection. Ground cover conditions at the time of the Site visit were wet which may have limited AMECs assessment of certain ground conditions. Select photos taken during the Site inspection are included in Appendix A. This study included a limited desktop review and Site visit.



#### 3.0 RESULTS

#### 3.1 SITE HISTORY AND DEVELOPMENT

The Bowater Mill was constructed in 1929 on Liverpool Bay in Brooklyn, NS. The mill originally utilized groundwood and sulphite pulping processes with production percentages of 72% and 28%, respectively. The sulphite used was calcium based and made from limestone and sulphur dioxide. Limestone was replaced by soda ash in 1964 and changed again to caustic soda in 1979. Logs were transported to the site using truck, rail, and the Mersey River located approximately 2 km west of the mill. Logs were retained in Herring Cove using booms.

Steam used in the pulping process was produced by burning coal in three boilers on site. The required coal was transported to the mill by ship and then moved to a coal storage pile using a train trellis and carts. The coal was piled and remained on site in an open area until required for steam generation.

Though various chemicals were added or modified to the pulping and paper manufacturing process, the mill operation remained generally unchanged from 1929 to 1968. In the 1940s, slimicide was added to the pulping process to inhibit bacterial growth. This slimicide was initially mercury based and changed to potassium in 1958. Potassium based slimicide continued to be used until 1967 when it was changed to caustic. Slimicide use was discontinued in 1989 with the exception of in the Broke system.

Aluminum sulphate was introduced into the pulping process in 1944 as a method of controlling pitch. In 1959, the mill began using zinc hydrosulphite for groundwood bleaching. The use of zinc hydrosulphite in the pulp and paper industry was banned in 1965 and sodium hydrosulphite was used as a substitute.

The Bowater Mill boilers used coal as a fuel source until the mid 1950s, at which point they began using Bunker C fuel. In 1968, a new steam plant was commissioned which would include the addition of a fourth and fifth boiler. The fourth boiler was designed to burn bark and oil, and the fifth boiler burned oil only. Two 3,576,825 L fuel oil storage tanks were built in 1950 with a third tank added in 1956. Bunker C fuel oil was transported to the mill by ship and then transported to the storage tanks via pipeline. The fuel would then be pumped through a separate pipeline to the boilers as required. At an unknown time two of the large fuel storage tanks began storing caustic.

Storage of logs in Herring Cove continued until 1976 when a new woodroom was commissioned. The new woodroom included dry land storage and dry debarking. Logs were moved from stockpiles to the debarker via log flume. In 1976 the Bauer TMP (thermomechanical pulping) building was also commissioned. The mechanical pulping process accounted for 17% of pulping activities with groundwood and sulphite production dropping to 59% and 24%, respectively. The Bauer plant was later expanded in 1981 which increased TMP production to 35%.

Between 1982 and 1986 various storage tanks were commissioned for the purpose of lowering fiber loss. These tanks included the Bauer TMP storage tank in March 1982, the sulphite storage tank in April 1982, and the white water storage tank in October 1986. Additional process



modifications in this time period included the Borol bleach plant construction in 1982 and the replacement of aluminum sulphate by pitch dispersant in 1986.

The mill underwent a large scale modernization project between 1988 and 1991. The major objective of this modernization was to build a new TMP plant capable of replacing all groundwood and sulphite pulping processes. The Sunds TMP was commissioned in November 1989 which raised TMP production to 100%. The groundwood and sulphite plants were shut down in December 1989. Slimicide use was also discontinued with the exception of in the Broke system. The Bauer TMP plant and the Borol bleach plant continued to operate until 1991. The Borol bleach was replaced by powdered sodium hydrosulphite.

The mill modernization project also included the construction of Terminal 2. This created enlarged shipping and receiving areas and involved various excavation and dumping activities in the harbour.

After Terminal 2 was constructed, the harbour was dredged to allow larger ships to dock. The excavation material was taken to a dredge spoils dump site located approximately 3 km north of the main mill site. This dump site was covered in 1991 but was later used to dump foundation excavation material in 1999.

In the decade following the completion of the mill modernization project, various old structures and machines were decommissioned. The mill's steam plant was shut down prior to 1995, but the boilers currently remain on site. It was at this time that the independently owned Brooklyn Energy Center (BEC) power plant opened. The new plant sold steam to the mill and electricity to Nova Scotia Power. The BEC plant burned a combination of oil, bark, and primary and secondary sludge taken from the mill's sludge press. The sludge sent to the power plant consists of solid particles removed from the clarifier that are dry enough to burn.

Additional structures that were demolished and removed in 2000 and 2001 include the digester buildings, the Bauer TMP area, the three large Bunker C oil and caustic tanks, and the acid plant. The acid tank was never removed due to the unknown quantity and composition of chemicals it contains.

The old mill landfill was used from the 1960s to 1997 when it was closed. Material entering the site is largely unaccounted for and is believed to include general mill waste, chemicals, excavation material, and pulping process by-products. In 1995, a treatment system was installed that contained a primary clarifier and a secondary treatment plant in the form of a two cell aerated stabilization basin (ASB). It was at this time that three separate effluent discharge points around the site were reduced to one submerged outfall.

The effluent treatment process saw constant optimization and additions from the time of its construction to present use. Additional aeration units were added in 1997, 1999, and 2004 to assist in the biological oxidation of the mill's wastewater. Non-contact water used to cool machinery was diverted from the primary clarifier to reduce hydraulic loading. This water naturally carries a lower suspended solids amount but is still treated in the ASB along with the primary treated effluent. Logs ceased to be debarked on-site in 1999, and the woodroom was shut down in 2001 with all chips being transported from offsite thereafter. This closure coupled with the construction of an additional white water storage tank in 2001 helped to reduce the Biochemical Oxygen Demand (BOD) load being treated.



A fire insurance plan (FIP) from 1940, available from RMS Inc, shows a paper storage warehouse at the end of the wharf, with a coal, wood, lime-stone and sulphur dock connecting. A siding on wood trestle runs from the end of the coal dock to the main land directly north. An outdoor coal pile is located south of the boiler room, approximately 2,000 m² in area. A sulphur storage area is located along the wood trestle, followed by a lime stone pile further to the north. A Blow Pit Room is located north of the boiler room, in which six circular structures are present. Two acid tanks are located outdoors north of the chipper room. The locomotive house shows rail sidings entering the building, and an underground gasoline tank is located on the north side of the sidings. A steel stock tank is located west of the mill building. A circular oil tank is drawn onto the FIP at the northeast corner of the Site, in the location where the Bunker C and Caustic tanks where historically located. Proposed pulpwood piles, stacker tracks and pulpwood conveyor are located toward the east. Pipelines are shown around this area, and travelling from the main gate house to the building; which were called the 42" wood stave pipe. Canadian National Railways runs along the north of the Site, with sidings running south onto the site east of the mill and, as previously noted, into the locomotive house.

Other areas of the building include; offices, shops, ash oil shop (south of the locomotive house), chipper room, grinder room, mixing room, screen room, turbine room, roll grinding, stores, paper machine room, acid room, transformer room. A de-barker building is located on the east side of the Site and a conveyor runs overhead to the grinder room. A first aid storage building is located north of the de-barker building.



# 3.2 AERIAL PHOTOGRAPH SUMMARY

Date	Site	Surrounding Properties		
1937	Paper Mill The Site appears to be developed as the Bowater Mersey Paper Mill. Buildings observed (starting north to south) as part of the mill include office and shop building, the grinder room, the chip storage building (east), the paper machine building, and other smaller storage areas on the Site. The northwest end of the Site consists of a relatively small parking lot. A coal storage pile is present east of the paper machine building while a wood chip pile is located northeast farther north east of the paper machine building. A large storage tank exists northwest of the paper machine building. Two storage tanks appear east of the office and shop building. A conveyor system runs from the north to the south of the site where a wharf is located. A railway runs through the north end of the Site and appears to continue to run to the south end of the Site.  Historic Landfill	The surrounding properties north of the Site (the Site being the Paper Mill) appear mainly undeveloped and forested; however there is some residential development. The Liverpool Bay is located southwest and west of the Site while the Herring Cove is located southeast and east of the Site. Logs are stored east of the site in the Herring Cove. There is residential development farther to the east of the Site, across the Herring Cove. Highway 3 and a railway are present north of the Site. Two wharves exist southeast of the Site.		
1945	The Site appears to be undeveloped and forested.  Paper Mill The Site appears similar to the 1945 aerial photograph.  Historic Landfill The Site appears similar to the 1945 aerial photograph.	The surrounding properties north and east of the Site had some additional residential development. There are fewer logs stored in the Herring Cove. The Best Yeast building now exists north of the Site, north of the railway and south of Highway 3.		
1955	Paper Mill The parking lot northwest of the Site has been further expanded. More buildings have been developed along the conveyor system. There are now two very large storage tanks present to the northeast of the Site. An additional storage tank is now present east of the office and shop building.  Historic Landfill The Site appears less forest and slightly disturbed; indicating the landfill at its early phase.	The surrounding properties appear similar to the 1945 aerial photograph. There are now six relatively small storage tanks located east of the best yeast building.		



Date	Site	Surrounding Properties	
1965	Paper Mill Warehouse A and the steam plant are now present east of the paper machine building, where the coal storage pile was previously located. Two additional storage tanks now exist northwest of the paper machine building. There is also an additional very large storage tank located northeast end of the Site. The power substation is now present slightly north of the parking lot.	There has been further residential development north, northwest, and east of the Site.	
	Historic Landfill The Site appears to be slightly more disturbed; indicating an expansion of the landfill.		
1976	Paper Mill There is a large decrease of log storage in the Herring Cove. A large area of land northeast of the chip storage building appears to be disturbed and there appears to be log storage in that area.  Historic Landfill The landfill has expanded substantially. The land appears to be several different colors; indicating the disposal of various types of waste.	A very large wood chip storage pile is not present northeast of the Site. There appears to be a large amount of suspended sediment and water discoloration in Liverpool Bay, to the southwest of the Site.	
1986	Paper Mill A new building (A Frame) exists northeast of Warehouse A. A wood storage area and a wood room are now present farther to the northeast of Warehouse A. A flume runs through the wood storage area to the wood room. There appears to be at least three additional storage tanks northeast and northwest of the paper machine building. The parking lot has been further expanded.  Historic Landfill The landfill has further expanded. There is a relatively dark area (i.e waste) in the landfill.	The amount of suspended sediment in Liverpool Bay appears to have increased.	



Date	Site	Surrounding Properties
1992	Paper Mill Warehouse B now exists southwest of the power substation. The TMP building is now present northwest of the paper machine building. Terminal 2 now exists at the north end of the Site, along the Herring Cove. The save-all plant is now present west of the paper machine building. The wood storage area no longer exists. There is much less wood stored in the wood storage area. The parking lot has been moved to the north of its previous location. The power substation has been moved to the west of its previous location, where the previous parking lot was located. There appears to be about two additional storage tanks are visible west of the paper machine building.  Historic Landfill The Site appears similar to the 1986	The surrounding properties appear similar to the 1986 aerial photograph. Forested areas north of the Site appear to have been cleared.
2000	aerial photograph.  Paper Mill The primary treatment system is now present south of the power substation. There is no longer a visible wood chip pile on the Site.  Historic Landfill The landfill is now very large. It appears to be no longer in use as there is vegetation on the landfill.	The Brooklyn Power Plant is now present north of the large wood chip storage pile. Some of the forested land north of the Site has been cleared. A new dock now exists to the east of the Site, across Herring Cove.
2010	Paper Mill The wood room and the wood storage area no longer exist. There is now a large wood chip pile where the wood room was previously located.  Historic Landfill The Site appears similar to the 2000 aerial photograph.	There is no longer a large wood chip storage pile south of the Brooklyn Power Plant. However, that area is still visible.

## 3.3 PRESENT SITE USE

The Bowater-Mersey Paper Company Limited paper mill currently occupies the site though mill operations ceased on 16 June 2012.

The following section summarises the Site use activities at the mill prior to closure. Woodchips were trucked to the Site where they were placed on conveyors by hydraulic truck dumpers. The conveyors either directed the chips into the A frame building for use or into the woodchip pile. Woodchips were reclaimed from the woodchip pile by a screw conveyor into the A frame. Screw



conveyors were then used to transfer wood chips form the A frame onto the conveyor to the thermomechanical pulping (TMP) plant. The TMP plant used water, steam and mechanical force to separate the individual wood fibres which were used to make paper.

The Papermachine headboox contains pulpstock that had come from the TMP and then enters the forming section; water is removed from the pulp and collected in the couch pit below. The paper enters the dryers which are heated by steam (new dryers were installed in 1980), and finally the calender stack which smoothes the product resulting in the final texture of the paper. A pulper is present below, in the event that the sheet is broken, and the material is repulped and stored in the Broke Tank. Paper is wound on the reel and then cut into individual rolls on the winder. Any trim paper at the winder is repulped and stored in the Broke Tank. Newsprint rolls are conveyed for wrapping and labelling and then the rolls are transported to the wharf or terminal 2 for transport via ship or truck.

A roll grinding room and maintenance area were present at north end of the Site. Water was used within this process and a sump, which housed a filter, was used to separate out solids from the water, which went into a pit and was recycled. A historical locomotive shed occupied this space at one time, in which a large pit was used for maintenance of trains. The current locomotive shed was present to the east of this area, it appeared that trains entered this space at one time, as scarring from rail spurs was visible on the concrete floor. The current locomotive shed appeared to be used for equipment maintenance at the present time.

The exterior grounds at the Site consist of asphalt and gravel covered surfaces. The topography across the Site is relatively flat with a slight slope towards the south. Stormwater is inferred to flow into Herring Cove, situated south of the Site. Sewage is pumped off site to the municipal sewer system. Freshwater for the paper mill operation is obtained from a pipeline running to the Site from Nickerson's Pond. Bottled water is used at the Site as the water is not used for potable water. Electrical service is provided by Nova Scotia Power via overhead cables from a power substation located on the northwest portion of the Site.

#### 3.4 PREVIOUS SITE USE

Aerial photos are not available prior to the initial mill construction in 1929; however, A.F. Church maps date back to the late 1800s. These maps show the site as an undeveloped plot of land.

#### 3.5 ADJACENT LAND USE

AMEC reviewed the current land uses of neighbouring properties from publicly accessible locations, and historical land use of the neighbouring properties from available information sources to assess potential environmental impacts to the Site that may arise from off-Site operations. Properties in the general area surrounding the Site are commercial and residential in use and are summarized as follows:

#### North of the Site

The property directly north of the Site is the Brooklyn Energy Centre (BEC) steam plant and former landfill. The steam plant was commissioned in 1994 and burns bark, oil, and sludge from the clarifier to produce steam for the paper mill. Electricity produced at the plant is sold to Nova Scotia Power. The former landfill was used for waste produced at the mill until 1997 when it was closed.



#### East of the Site

Herring Cove is located directly east of the Site. Historically logs were stored in the cove using large booms until required for pulp production. The cove has not been used for wood storage since 1976. Residential properties lie on the other side of the cove and were present prior to the initial construction of the mill in 1929.

#### South of the Site

Liverpool Bay is located south of the Site. Ships used for transporting finished goods access the wharf storage area from the Atlantic Ocean and then Liverpool Bay.

#### West of the Site

Residential properties are present west of the Site. Based on a review of A.F. Church maps dating back to the late 1800s, these properties were present prior to the initial construction of the mill in 1929.

#### Summary

Based on historical review and observations of these surrounding properties from publicly accessible locations, there were no potential environmental concerns identified related to the historical land use of the properties adjacent to the Site.

#### 3.6 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

AMEC is unaware of any previous Phase I ESA investigations conducted for this Site.

#### 3.7 FINDINGS

Environmental concerns and potential liabilities identified during the study are included and discussed in this section and findings are summarized in Table 1.

#### 3.7.1 Site Use Activities

The Bowater-Mersey Paper Company Limited paper mill currently occupies the site though mill operations ceased on 16 June 2012.

Facilities at the main paper mill Site include a woodchip pile and reclamation area, an A-frame wood chip storage area, truck dumpers, a thermomechanical pulping (TMP) plant, papermachines, a roll grinding area, roll packaging area, a primary clairifier for wastewater treatment, a wharf, and warehouses.

Satellite sites associated with the mill include a secondary effluent treatment area with an aerated stabilization basin (ASB) (shown in Figure 4), former landfill, and dredge spoils dumpsite (shown in Figure 5).

The exterior grounds at the Site consist of asphalt and gravel covered surfaces. The topography across the Site is relatively flat with a slight slope towards the south. Stormwater is inferred to flow into Herring Cove, situated south of the Site. Sewage is pumped off site to the municipal sewer system. Freshwater for the paper mill operation is obtained from a pipeline running to the Site from Nickerson's Pond. Bottled water is used at the Site as the water is not used for potable water. Electrical service is provided by Nova Scotia Power via overhead cables from a power substation located on the northwest portion of the Site.



The findings documented in this section are based on interviews and observations made by AMEC personnel at the time of the Site visit. Site Photos can be reviewed in Appendix A.

Interviews were conducted with Mr. Alan Sampson, Mr David Goodyear, and Mr Pierre Losier. Relevant information obtained from the interviews, regarding the historical Site activities, is referenced in the following sections.

#### 3.7.2 Air Emissions

At the time of the Site reconnaissance, the paper mill was not operating so AMEC did not observe the presence of air emission sources. It is possible that information regarding air emissions generated by the paper mill operations (i.e. permit to operate) may be available as part of the Nova Scotia Registry Search. Should applicable information be available when the Nova Scotia Registry is received, this section will be updated.

# 3.7.3 Underground Storage Tanks (USTs)

No active fuel USTs or associated appurtenances were noted or reported to exist on the subject property at the present time. A map indicating Mill Tanks Environmental-Dangerous Materials Site Plan (dated June 2000) both existing and removed, as included in appendix C, indicates the historical presence of four USTs at the Site. A diesel UST was present toward the eastern portion of the Site in the area which was used for heavy equipment maintenance. The diesel UST was reported to have had a capacity of 7.570 L, it was installed in 1978 and removed in 1993. A gasoline UST was present at the south end of the wharf west of Terminal 2. It was a 1,892.5 L capacity tank, installed in 1980 and removed in 2000. Another gasoline UST was historically present outdoors, north of the roller grinding area. This was a 5,000L tank, installed in 1986 and removed in 2000. The 1940 FIPs also indicated a gasoline UST in this area. The fourth UST was present off the Site, across Brooklyn Road toward the northeast. It was not located on the actual Site property included within this investigation. However it was an 11,500 L diesel tank, described as 'Esso', was removed in 2002, and appeared to be installed at some point during the 1990s. Information received from NSE on USTs at the Site corresponds with the Site plan showing tanks at the Site; however the Esso tank was not included in the NSE Petroleum Storage Tank Registration.

No records were found regarding the tank or soil conditions during the removal of the four USTs previously noted at the Site. If leaks had been present in the tank or lines, or spills had occurred it is possible that soil and/or groundwater impact may be present at these locations. The four tanks previously mentioned were listed on a map provided by Bowater Mersey to AMEC, and it is unknown whether additional USTs not listed on this map were ever present at the Site.

# 3.7.4 Aboveground Storage Tanks (ASTs)

The table below indicates the details of ASTs located at the Site, *Mill Tanks Environmental-Dangerous Materials Site Plan* (dated June 2000) both existing and removed, as included in appendix C.



Name	Location	Volume (L)	Date Installed	Contents
Thickened Broke Tank	South of TMP	1,495,075 L	1963	pulp
White Water Storage Tank #1	South of TMP	1,514,000 L	1988	pulp
Broke Storage Tank	South of TMP	1,495,075 L	1962	pulp
TMP in Process Storage Tank	South of TMP	3,595,750 L	1982	pulp
#2WW Storage Tank	South of TMP	3,595,750 L	1982	pulp
50% Liquid Caustic Day tank	East side of Site within concrete containment	454,250 L	1980	Caustic
Propane Tank	North of Terminal 2	7,570 L	1986	Propane
Nutrient Storage Silo	Inside east of clarifier	40 tonnes	1995	Urea and DAP (Hydrated Lime after 2004)
Kerosene	Outdoors west of paper drying area of mill	1,703.25 L	1989	Kerosene
Diesel – Fire Pumps	Northwest – next to fire pump house	2,500 L	Unknown	Diesel Fuel
Acid	East of acid room	Unknown	Unknown	Acid – out of service
Gas tank	Northeast of the locomotive shed, along the driveway	4,700 L	2000	Gasoline – associated pump
Lube Oil	Basement of paper drying area	Two 1,494 L Two 16,310 L Two 1,310 L Two 510 L	Unknown, with the exception of the 16,310 L tanks installed in 1983 and 1984	Lube Oil
Pitch Surfactant	Bauer TMP	11,000 Kg	Unknown	Pitch Dispersant– out of service
Truck Dumper Hydraulic Unit	South of A- frame	5,677.5 L	2000	Hydraulic Oil
Hydraulic Chip Stacker	East of A-frame	227.1 L	2000	Hydraulic Oil
Diluting 50% caustic to 15%	East of Acid Tank	Unknown	Unknown	Caustic



Name	Location	Volume (L)	Date Installed	Contents
Dye Dump Tank	Basement of paper mill	Unknown	Unknown	Dye
Boral Tank	Basement of paper mill	Unknown	Unknown	Boral- out of service
Used oil storage	Steam plant Near dye storage	205 L drums	Unknown	Waste oil Oily debris (used filters)
Liquid caustic pH Control – Nickerson Pond	Nickerson Pond	600 USG	1980	Caustic
Chlorine Containers	Nickerson Pond	Unknown	Unknown	Chlorine
Propane	Nickerson Pond	Unknown	1995	Propane
Glycol Tanks	Listed on th	e drawing, howe	ver no location or c	letails were provided
Diesel – Emergency Lighting	Within steam plant, and east of steam plant	Two 2,380 L	Unknown	Diesel
Diesel	Bauer TMP	Unknown	Unknown	Diesel
75% Phosphoric Acid Tank	ASB Site	10,000 USG	2004	75% Phosphoric Acid
50% Urea Tank	ASB Site	10,000 USG	2004	Urea
Biocide	Bauer TMP	1,100 L tote	Unknown	Biocide
TMP Storage Tank	South of TMP	Unknown	2001	pulp
Hydraulic Oil Reserves	Basement of Paper Mill and near dye storage	Six 230 L tanks 2 reserves Eight 230 L tanks	Unknown	Hydraulic reserves were observed throughout the Site
Oil	Basement of Paper Mill	Unknown (~45,000 L)	Unknown	Likely contains hydraulic oil
Retention Aid	Basement of paper mill	Four ~6,000 L	Unknown	Two tanks for primary polymer
				Two tanks for secondary polymer one each for mixing and one for storage "Perform"
Waste dye	Bauer TMP	Unknown	Unknown	Waste dye
Primary Clarifier	West of TMP plant	Unknown	1995	Effluent from paper mill operations



Other ASTs present at various locations within the Site contained steam, broke stock, head box stock (99% water), trim and cull pulper, vat for excess beneath roll cutter, Bauer TMP latency chest (water), five condensate tanks located under the dryers, and warm water tanks. These tanks contain process liquids and pulp.

The Site map also indicated 19 removed ASTs from the Site, as follows:

- Three 3,576,825 L ASTs were located at the northeast corner of the Site. The Site representative indicated that two contained 'Bunker C' and one caustic, however the reference map indicated that two were caustic and one was 'Bunker C'. The two eastern tanks were installed in 1956 and the western tank ('Bunker C') was installed in 1951, which also conflicts with anecdotal evidence provided by the Site representative and aerial photographs which indicate that two tanks were first installed and one added at a later date. All three tanks were removed in 2001.
- An approximately 95,000 L day tank ('Bunker C') serviced the boilers directly and three diesel tanks were located next to the steam plant, also removed in 2001. A second 15,000 L diesel AST was located in this area outside the steam plant, and was removed in 2002, as well as a spill tank reclaim with an unknown capacity, which was removed in 2001. A small alum tank was historically present outside of the steam plant as well.
- Two kerosene tanks were present; one north of office/shops area which had a capacity of 4,546 L and one within the paper mill for the calender machine.
- A diesel AST was historically present next to the Bauer TMP, which had a capacity of 757 L and was removed from the Site in 2000. A groundwood tank which would have stored pulp was removed in 2000 and it appears that a TMP Storage tank replaced it in 2001.
- An above ground gasoline storage tank was historically located northwest of Terminal 2 which had a capacity of 4,500 L and was removed from the Site in 1989.
- A sulphur tank was historically present within the containment that currently houses the
  caustic tank. No information regarding this tank was available. Light yellow staining was
  observed on the concrete in this area during the Site reconnaissance.
- A lube oil AST, with a capacity of 56,775 L was historically present on the west side of the paper mill (outside of the drying machines). This tank was removed in 2004. It was believed to be located in the area that a current kerosene tank was observed.
- A diesel AST was located at the east portion of the Site, near the equipment maintenance. It had a capacity of 9,000 L and was removed in 2000.
- A fuel oil AST with a capacity of 4,500 L was located at the end of the coal wharf, the tank was installed in 1987. The coal wharf was removed in 1988/89.
- The map also indicates two ASTs which were located north of the Site, and are not on the property included within the Phase I ESA.

Information received from NSE on ASTs at the Site corresponds with the Site plan showing tanks at the Site, however more tanks are shown on the Site plan that were recorded in the NSE Petroleum Storage Tank Registration (Appendix C).

No records were provided to AMEC regarding the removal of any of the ASTs historically present at the Site. No staining was noted in areas where the ASTs were previously located. A berm and building debris which were located around the three large caustic and 'Bunker C' tanks was still present and observed during the Site reconnaissance.



### 3.7.5 Mercury

Generally, in commercial and industrial buildings, minor amounts of mercury are commonly found in a variety of building materials including mercury-based paint, mercury vapour lamps, thermostats and other electrical control switches. Exposure to mercury in buildings can be managed through various methods, including encapsulation and removal.

Mercury compounds were used in paint up until 1990, and there are recent Health Canada guidelines (2005) to regulate the concentrations of mercury in paint (0.001 percent by weight). Although not a significant concern when maintained in good condition, the presence of mercury based materials poses a risk of building occupant or worker exposure to elevated levels of mercury as a result of disturbance or deterioration of these surfaces. Given the age of the buildings mercury based paint is likely to be present at the Site.

Fluorescent lights were observed throughout the various office buildings and warehouses. Many fluorescent lights are composed of a phosphor-coated glass tube which contains mercury, of which only a very small amount is in vapour form.

Thermostats in the buildings may also contain mercury. Mercury-containing items should be treated as hazardous materials and should be disposed of accordingly. Liquid mercury should never be poured down the drain.

Mercury based slimicide was used at the paper mill from the 1940s to 1958. During this time, all effluent was discharged into the harbour. Effluent quantities are unknown.

#### 3.7.6 Hazardous Waste

The paper mill is no longer in operation and hazardous waste is not produced or stored at the Site. Site representatives indicated that a management plan is in place to have on site chemicals such as acids, dyes, and chemicals for water treatment removed by licensed haulers, and this is documented in the Environmental Management System.

# 3.7.7 Dump, Landfills and Incinerators

Various landfills and dumps are known to be present at the Site. Known locations of landfills associated with the Site include the former landfill, dredge spoils dumpsite, and sludge landfill.

#### Former Landfill

The former mill landfill is located approximately 0.5km north of the main mill site adjacent to the Brooklyn Energy Center steam plant. The landfill was used from the late 1950s to 1997 when it was closed and capped with soil. Contents of the landfill are unknown though it is believed that buried waste consists of boiler ash, wood chip waste, demolition debris, waste equipment, and domestic and commercial waste (Dillon Consulting 2005). The landfill shows little disturbance from 1955 to 1966 according to aerial photos, though there is evidence of a dumping road in 1955. There are no records that indicate the use of a line or leachate collection system.

Approximately 10 monitoring wells are installed around the perimeter of the closed landfill though their exact condition and location is unknown. Groundwater monitoring was completed in 2004 and 2006 by Dillon Consulting with noted CDWQ guideline exceedances of Chlorine, TDS,



Arsenic, Copper, Iron, Manganese, and pH. Monitoring wells are sampled on a quarterly basis though no reported results were available for review.

#### **Dredge Spoils Dumpsite**

Dredging of the harbour occurred in September 1991 to allow passage and docking of larger transport ships as well as facility upgrades. A dredge spoils dumpsite was proposed and engineered by CBCL Limited. The dumpsite is located approximately 3km north of the main mill site. Environmental mitigation and monitoring of the dumpsite included construction of a lined berm, perimeter drainage ditch, siltation pond; water sampling monitoring programs; biological sampling of the nearby Halfway Brook.

Surface water sampling by CBCL (1992) around the dredge spoils Site indicated that the discharge from the waste site was typical of dilute sea water with elevated specific conductance, sodium, potassium, magnesium, and chloride. It was noted that the discharge of salt water from the dredge sediment was substantially diluted within a short distance from the dredge spoils Site. The report concluded that there was no discernable effect on the water quality of nearby Halfway Brook or on the groundwater quality at the Site. Recommendations were made to complete additional sampling events 1992 to confirm the results of surface water and groundwater sampling.

Soil sampling by Bowater Mersey Paper Company Limited (1999) north of Warehouse A indicated suspect coal and ash to be present. Excavated material was dumped at the dredge spoils site in 1999 to allow for construction of the Hazardous Chemical Storage Building. Caustic contaminated soil was also dumped at this site during the 1990s. Surface water sampling was conducted until 2005 though no results of recent sampling programs were available at the time of review.

#### Sludge Landfill

The sludge landfill is located at the aerated stabilization basin (ASB) site, just west of the treatment lagoons (discussed further in Section 3.6.24). The sludge landfill is used to dispose of the sludge generated as a by product of the secondary waste water treatment system. The sludge landfill was constructed in 1995 and according to the Site representative, is an engineered landfill. The landfill measures approximately 5.2 meters deep and 91 meters in diameter. According the Site representative, Mr. Sampson, the landfill is generally at capacity, containing approximately 10% sludge consistency. The sludge contained in the landfill is understood to contain little to no wood fibres, and simply the 'bug bodies' (or secondary sludge) generated during the wastewater treatment process. The sludge is extremely wet and the 'liquid' sinks to the bottom, while visible top layer was observed to be a 'sloppy' material. At the time of the Site reconnaissance, the Site representative indicated that due to capacity issues, the top layer of the landfill has been excavated in the past to limit the risk for overflow. Excavated material has been placed on drying pads located around the ASB site. In the past, the material on the drying pads was sent to Brooklyn Power and burned, however, this was deemed unsuccessful, as the material was too wet and a high temperature was required to burn the material. An attempt to use the material on the drying pads as compost was also deemed unsuccessful.

At the time of the Site reconnaissance, the Site representative, Mr. Sampson, indicated there is currently no plan in place for decommissioning the sludge landfill.



# 3.7.8 Mechanical Equipment

Mechanical equipment was noted throughout the Site. Equipment included elevators, TMP machinery, paper rollers, cutters and dryers, forklifts, conveyors, wood chip reclaimers, and truck dumpers. Hydraulic fluid reserves were noted to be associated with many pieces of the mechanical equipment. No evidence of ongoing spills or leaks of hydraulic fluid was observed at the time of the Site visit though staining was observed within buildings at various locations, which might have minimally leaked to the surrounding environment through cracks and open areas; however, spill response kits, training, and follow up protocols are in place to clean any small spills that may occur.

It should be noted that at the time of the Site Reconnaissance, Site representative, Mr. Sampson, indicated that heavy equipment maintenance (i.e. oil change, etc.), was historically known to be completed directly southwest of the bermed area containing the three 3,576,825 L ASTs.

#### 3.7.9 Methane

Methane is a colourless and odourless gas commonly formed by the decomposition of organic material. Methane is a large component of natural gas associated with active and closed waste disposal sites. Natural sources of methane include marshes, swamps, bogs, fens or coal and/or peat deposits. Potential risks associated with methane include explosion hazards where methane enters closed spaces and concentrations exceed the lower explosive limit.

Potential sources of methane include the former landfill, dredge spoils dumpsite, and sludge landfill. All methane producing sites are not located near buildings or confined spaces and are not of concern regarding explosion hazards.

#### 3.7.10 Asbestos Containing Materials (ACMs)

Asbestos-containing materials (ACMs) are fibrous hydrated silicates, and can be found in building materials as either "friable" or "non-friable" asbestos products. Friable asbestos refers to material which can be readily crumbled using hand pressure, separating asbestos fibres from the binding materials with which they are associated. Non-friable material refers to asbestos which is associated with a binding agent (such as tar or cement), preventing ready release of airborne fibres. Friable asbestos is commonly found in boiler and pipe insulation. Non-friable or bound asbestos is typically found in roofing tars, floor and ceiling tiles, window caulking and precast asbestos cement products commonly referred to as "transite". ACMs were discontinued from use in Canada in the late 1970s/early 1980s, although non-friable asbestos is still found in more recent buildings.

Buildings on site that were constructed prior to the asbestos ban are suspected to contain ACMs. A hazardous materials survey of the former steam plant was conducted by CBCL Limited in 2007. The results of the survey indicate asbestos present in pipe and elbow insulation, ceiling transite board, and parging on boilers. Piping insulation on the site has been tagged to indicate the presence of asbestos. Buildings on site that were constructed prior to 1969 should be considered as containing ACMs.

Asbestos that is collected as part of an on-going management and removal plan is appropriately stored in an on-site trailer and disposed of in accordance with regulations.



# 3.7.11 Lead Based Products (LBPs)

Lead compounds have been used in paint since the early 1800s. In the 1960s, public health and environmental researchers developed concerns about the long-term health effects of lead exposure. In 1976, the lead content in interior paint was limited to 0.5% by weight under the federal Hazardous Products Act and in 2005, to 0.06% by weight in a residential dwelling. Lead is also associated with plumbing solder and older pipe materials, as well as products such as radiation protective shielding. The 1990 National Building Code limits the concentration of lead in plumbing solder to 0.2% in new construction for potable water systems.

Although not a significant concern when maintained in good condition, the presence of lead-based paint poses a risk of building occupant or worker exposure to elevated levels of lead as a result of disturbance or deterioration of these surfaces. Although there are no provincial regulations specifically dealing with the disturbance of lead materials, in the past this issue has been enforced under the general provisions of provincial occupational health and safety legislation.

The hazardous materials survey completed by CBCL Limited in 2007 determined the presence of paint containing elevated levels of lead in the former steam plant. Given the age of various buildings at the mill site), it is assumed that lead based paint is present in some buildings.

Historically the digesters were used to chemically break the wood chips down. These vessels were lined with material containing lead; 5" cement against the steel, 7"x9" acid brick set with 1/2" 20% litharge joints (99.9% lead oxide) 1/4" membrane and 3" thick acid brick. The accumulator had a similar lining; 5" cement against steel, 2 1/2" thick x 7"x9" acid brick set with 1/4" litharge joints, 1" cement grout, 3" thick x7"x9" acid brick set with 1/2" litharge joints. According to a memo dated 16 December 2001, approximately 62 m³ of accumulator lining and 147 m³ of digester lining were piled in the woodyard. Maritime testing completed lead testing on the brick samples from both the accumulator brick and the digester brick, which reported concentrations of 15,000 mg/kg and 28,000 mg/kg repectively. Both which were above the Nova Scotia Department of Environment Guidelines for disposal of 1,000 mg/kg. Leachable lead was sampled from these brick samples as well, inital sampling results were dismissed and a second test indicated that all leachable lead samples were below the guideline of 5 mg/L. Safety Kleen removed this material from the Site as per a memo on 18 November 2001.

No testing was done on the ground surface in the digester area or the woodyard where this material was piled; it is possible that lead contamination may exist in these areas.

#### 3.7.12 Polychlorinated Biphenyls (PCBs)

Insulating fluids and cooling oils in electrical equipment (i.e. transformers, fluorescent light ballasts, capacitors, etc.) often contained PCBs until approximately 1980. The insulating fluid in fluorescent light ballasts is used to compensate for variations in the voltage of the electrical supply. Although the use of PCBs in electrical equipment is not prohibited, the disposal and storage of PCBs and PCB containing equipment is regulated at both the provincial and federal level. Since the early 1980's coolant oils present in transformers and other electrical equipment have generally used non-PCB oils.

PCB containing electrical equipment such as transformers and capacitors were installed at the mill in 1960. The former location of transformers and capacitors is shown on Figure 3. Beginning in 1981, the mill began taking inventory of and removing PCB containing



transformers as well as PCB contaminated soil. PCB transformers were drained into drums and stored inside a trailer (location shown on Figure 3) before they were removed. It was determined that all PCB transformers, capacitors, and storage drums were removed from site in 1997. PCB containing light ballasts may be present on site in older buildings though none have been identified to date.

#### 3.7.13 PCB Storage Sites

Drums containing liquid PCBs, soil contaminated with PCBs, and PCB containing transformers were stored on site in trailers before being removed. Transformers that had been drained of fluid were stored in a large trailer, and drums containing fluid and contaminated soil were stored in a smaller adjacent trailer. This trailer storage site was located directly west of the A-Frame's truck dump side, shown on Figure 3. The storage site was continuously monitored for leaks or visible contamination however no follow-up sampling has been completed since the trailer removals. There is currently a barrel in the storage room or the Bauer Plant basement which may contain PCB light ballasts.

#### 3.7.14 Radioactive Materials

The Canadian Nuclear Safety Commission (CNSC), formerly the Atomic Energy Control Board, under the Nuclear Safety and Control Act, is responsible for the management and licensing of radioactive materials, to ensure that the use of nuclear energy does not pose undue risk to health, safety, security and the environment. The CNSC achieves regulatory control of nuclear facilities and nuclear materials through a comprehensive licensing system which is administered through the cooperation of federal and provincial government departments such as health, environment, transport and labour.

Several pieces of equipment were observed to be fitted with devices containing radioactive materials which are used to measure density, flow, level of material in the paper making process. The equipment is clearly labelled with a radiation symbol and cesium 137 was noted on some of the devices. There are also two Promethium 147 devices, which have been removed from service and properly stored. Site representatives indicated that the CNSC would be contacted for the proper removal of these devices. Provided that proper procedures are followed for removing devices, no environmental concerns related to radioactive materials are suspected for the site. Arrangements are currently being made for proper removal and disposal of all radioactive materials.

# 3.7.15 Site In-filling and Land Reclamation

A large area of the Herring Cove coastline was in-filled during initial construction in 1929. There are no records as to the origin of the fill material though it is assumed that clean earth from the undeveloped site was used. The area between the former coal train trellis and the wharf was infilled during the construction of terminal 2 in 1988. According to interviews with Pierre Losier this fill material was clean and purchased from a nearby quarry.

The former locomotive shed historically contained an open pit for maintenance and waste collection purposes. This pit was filled in with an unknown quantity and quality of material when the shed was converted to an equipment maintenance area.



### 3.7.16 Sumps and Drains

Sumps and grated floor drains were observed in various buildings and areas of the paper mill operations. At the time of the Site reconnaissance, all sumps and floor drains were observed to be in good state of repair and/ or clean and void of debris, with the exception of the floor drains located in the basement of the paper machine area, which appeared to contain wood fibre and bits of paper pieces. Surface staining on the concrete leading to the floor drains was also observed. The Site representative, Mr. Sampson, indicated that all sumps and floor drains were pumped/ drained to the primary treatment plant on the west side of the paper mill property. However, it should be noted that historically, prior to the primary and secondary treatment processes, all effluent from sumps and drains was discharged to Liverpool Bay.

#### 3.7.17 Ozone Depleting Substances (ODS)

Ozone depleting substances (ODSs) include any substances containing chlorofluorocarbon (CFC), hydrochlorofluorocarbon (HCFC), halon or any other material capable of destroying ozone in the atmosphere. ODSs have been used in rigid polyurethane foam and insulation, laminates, aerosols, air conditioners, fire extinguishers, cleaning solvents and the sterilization of medical equipment.

At the time of the Site reconnaissance, the Site representative indicated the office areas of the paper mill were serviced by air conditioning, however air conditioning units were not observed. It is assumed that the remainder of the mill operations (i.e. processing areas, warehouses, TMP, etc.) were not serviced by air conditioning but process cooling units are present.

It is possible that other components of the paper mill operations may use equipment containing ODSs. Although the use of equipment containing ODSs is not prohibited, the storage, operation, maintenance, decommissioning, and disposal of such equipment is regulated at both a provincial and federal level and must comply with most recent Nova Scotia Ozone Depleting Substances regulations and the Environment Canada Code of Practice for the Reduction of Chlorofluorocarbon Emissions from Refrigeration and Air Conditioning Systems. These regulations should be followed with respect to the possible onsite ODSs.

#### 3.7.18 Pesticides and Herbicides

AMEC did not observe any pesticides or herbicides stored at the Site during the Site visit. No issues of significant concern regarding pesticides or herbicides at the Site have been identified through this assessment.

#### 3.7.19 Chemical Use, Handling, and Storage

General maintenance chemicals were observed throughout the Site, and janitorial supplies were stored within the supply store, next to the main office area.

Totes of Sodium Hydrosulfite were in the bleach room, and are mixed with water to form bleach. This chemical is used with the FRED vacuum system. PerForm, which is a polymer and fibre retention aid mixes with the pulp. Perform Retention aid was also observed in the basement beneath the paper rollers; primary polymer and secondary polymer were stored within AST listed in section 3.1.2. In this same area Prestige felt wash, which is used to clean the felt on which paper is transported through the papermachine, and sodium hypochlorite, also stored within totes, is added to water to reduce slime growth.



Within the old Bauer TMP, Hercobond 6230, Perform PC8717 and Infinity were observed and are used for pitch dispersion.

An AST was noted and associated with the dye system for waste dye products. Drums and totes of dyes were observed in the dye area, north of the paper rollers and dryers at the wet end of the process.

One tote of Biocide Spectrum which was almost empty was located in the Bauer TMP, and is used to kill bacteria in the hot water process.

Teresstic-C in a 205 L drum was located in the basement at the dry end of the process.

An oil storage room (which AMEC was not granted access due to a key not being available) is located within the basement. According to Mr. Goodyear, 205 L drums and 20 L pails of various oils were stored within this locked room. Drums of oil were also stored within the locomotive shed for repair and maintenance of equipment.

Outside Warehouse A contained two skids of polymer chemicals, as well as some drums of oil. Within the warehouse totes of unopened chemicals (polymer) were being stored, and Mr. Goodyear indicated that they would be returned to the supplier. In the chemical storage area at the north end of the warehouse were totes of Infinity, Hypochlorite, Spectrum trichloromethylsulfone, Prestige, sodium hydroxide, optisperse, Ferroquest (defoaming agent), drums for used batteries and drums for oil filters.

Within the concrete room, paint thinner and used thinner were observed within labelled 205 L drums, over secondary containment.

Several chemicals were stored within the Steam Plant; alumina, Steamate (put into the steam lines), Otisperse, and Cortrol. It appeared that some of these chemicals were historically stored within this area, but Mr. Goodyear indicated that totes of chemicals had recently been relocated to the chemical storage area in Warehouse A. As previously noted waste oil drums were also located within the steam plant.

DETAC – DC722, used for pitch control; Hercobond 6230, a paper performance additive; and Perform, a coagulant were all observed to be used and stored in the TMP plant. The Polymer/flocculant Drewfloc 444 was located in the primary treatment plant.

Chorine used for water treatment and caustic for pH control were stored and used at the Nickerson's Pond dam at the start of the pipeline to the paper mill. Ammonium polyphosphate solution and urea were stored and used at the ASB site.

All of the containers noted above appeared to be in satisfactory condition, with no leaks or stains observed. According to the Site representatives a management plan is in place for onsite chemicals to be removed by licensed haulers.

#### 3.7.20 Surface Staining

Surface staining was noted on the interior floors of the building, in production areas where hydraulic and gear oils were used and stored. Some dye staining was also observed. Some areas of the interior of the building were wet due to water running over the concrete flooring. No



significant staining was observed on the exterior grounds; however it was raining at the time of the Site reconnaissance, which may have limited AMEC's observations.

### 3.7.21 Spills and Leaks

At the time of the site visit, no large spills or leaks were noted on site. Small leaks of lubrication oil were noted to have occurred; specifically in the dryer section basement, and leaks of water were observed in various locations.

Historically, larger spills have occurred but were cleaned up by mill and support staff. During decommission of the Bunker C pipeline in 2001, a 1200L leak occurred. It was recorded in an incident report that the majority of fuel was collected and pumped away. Records of spills or leaks prior to 1996 are not available.

#### 3.7.22 Solid Waste

At the time of the Site reconnaissance, no solid waste was being produced as the Site was no longer in operation. Drums with oil filters were observed and would be disposed of by a licensed waste hauler. A trailer with ACM was located on the east side of the Site, for the removal and disposal of any confirmed ACM, which were still present within the Site building.

#### 3.7.23 Liquid Waste

Liquid waste at the Site included waste oil, hydraulic and production oils and chemicals. Mr. Goodyear indicated that any unopened chemicals would be returned to the supplier, and Newalta would remove waste chemicals and Atlantic Industrial would likely pump out any hydrocarbons existing within tanks for disposal. Waste water at the site is treated within the primary treatment area of the site as previously mentioned. Provided that all liquid are disposed of as indicated through licensed waste haulers, no potential concerns regarding liquid waste handling or disposal at the Site have been identified through this assessment. It is unknown how the remaining acid in the tank will be removed.

### 3.7.24 Sewage and Wastewater Treatment

Due to the large quantity of water used as part of the paper making process, the mill operates a wastewater treatment system, as described below.

All sumps, drains, and process water associated with the paper mill are discharged and/ or pumped to the primary treatment plant, located on the east side of the Site property. A polymer/flocculant (Drewfloc 444) is added to the effluent to help with settling the fibres in the clarifier. The effluent is then pumped to the primary clarifier, where the sludge is settled to the bottom. This sludge is loaded and trucked to Brooklyn Power, where it is burned as part of the power generation process.

The effluent generated from the primary treatment process is pumped by pipe to the aerated stabilization basin (ASB) (secondary treatment), which is a satellite site of the paper mill operations and is located approximately 5 km, northeast of the paper mill property. The effluent pipeline runs from the primary treatment plant at the paper mill property, crosses Highway 3, follows the old CN rail track bed and then flows under the gravel road to the ASB site. The ASB was constructed in 1994/1995 and consists of two lagoons (known as cell 1 and cell 2), with a capacity of 90 million gallons between the two. The effluent is aerated and cooled through



surface aerators, which force effluent into the air, ultimately ensuring sufficient dissolved oxygen levels.

Chemicals used as nutrients (stored in an onsite building) in the secondary treatment process include ammonium polyphosphate and urea, both aiding in biological activity. Effluent that has completed the secondary treatment process, flows by gravity from cell 2 via a pipe (same path as the primary treatment effluent to the ASB) back to the primary treatment plant, where pH and total suspended solids (TSS) are monitored inline, as the effluent is discharged to the Liverpool Bay. Sludge generated as a by product of the secondary treatment process is placed into a landfill located west of the lagoons. This landfill has been discussed in section 3.7.7.

There are two settling ponds located down gradient of the lagoons at the ASB site. Mr. Sampson, the Site representative, indicated that the settling ponds were initially created during construction of the lagoons to catch any sediment generated. Mr. Sampson indicated that more recently the settling ponds provided a qualitative means of determining the quality of water, specifically suspended sediment, leaching from the lagoons and/ or runoff from the ASB site.

The Site representative also indicated that monitoring wells were present around the boundary of the ASB site. These wells are sampled on a quarterly basis though no results were available for review.

At the time of the Site reconnaissance, the Site representative indicated there was no plan in place for decommissioning of the ASB site.

Domestic sewage generated at the paper mill is pumped to the municipal sewage system.

No potential concerns regarding sewage or wastewater treatment have been identified through this assessment.

## 3.7.25 Stressed Vegetation

Very little vegetation was observed at the paper mill as most of the property is covered by the Site buildings, gravel, and asphalt. Trees, grass and shrubs were noted at the paper mill north of the office building, along the entrance road, and on in the area on the northeast portion of the paper mill where three ASTs were formerly located. The former landfill was observed from outside the fence surrounding the property. The landfill was observed to be covered in grass and low growing shrubs. Grass, shrubs and trees were observed surrounding the stabilization basin and the sludge landfills at the ASB site. No areas of stressed vegetation were observed at the paper mill, former landfill, or the ASB site during the Site visit.

## 3.7.26 Pipelines

A pipeline used to transport Bunker C fuel from storage tanks to the boilers was used beginning in 1950. The pipeline was mostly aboveground but tunnelled under two roadways. The pipeline delivered fuel from the large storage tanks to a service tank next to the boiler room. The aboveground and belowground sections of piping were removed in 2001. During this time areas of impact were noted.

In addition to fuel pipelines, several other pipelines are present at the Site. Steam used for drying paper is piped to the Site from the Brooklyn Power Generation Station which is located across Highway 3 to the north of the Site.



Water is supplied to the Site from Nickerson's Pond through an aboveground pipeline. Mr. Sampson indicated that the pipeline was used to supply water to the Mill since its construction in 1929. This water supply has also been used as a non-potable water supply for 38 homes in the Community of Brooklyn since 1929. This water supply does not meet current water quality standards, and is thus deemed non-potable. A 42" pipe runs from Nickerson's Pond to the paper mill entrance where the water flows into a 36" pipe.

Effluent from the primary water treatment system travels through a pipeline along the abandoned rail line to the ASBs approximately 5 km northeast of the Site. After aeration, treatment, and settling, effluent from the secondary treatment is piped back along the same route to the primary treatment building. The effluent is monitored for pH and total suspended solids and is released into the harbour. There are several equalization chambers along the pipeline route to account for the difference in elevation between the Site and the ASB.

## 3.7.27 Urea Formaldehyde Foam Insulation

Urea-formaldehyde foam insulation (UFFI) is a thermal insulation material that is pumped into interstitial spaces between the walls of building where it hardens to form a solid layer of insulation. UFFI was only used for a short period in the early 1970's. The sale and installation of UFFI was banned for health-related reasons because of the formation of formaldehyde gas which is released from the UFFI to the building interior.

Based on the age of the Site buildings (1929) and the date of renovations and additions (1980's and 1990's) it is unlikely that UFFI is present at the Site. Visual indicators suggesting the potential presence of UFFI were not observed at the Site during the site visit.

### 3.7.28 Microbial Contamination and Mould

AMEC inspected the accessible interior areas of the Site building for visual or olfactory evidence of obvious microbial contamination or mould. No building cavity inspections were performed by AMEC during the site visit. AMEC noted that the general indoor air quality (i.e. humidity, temperature, 'freshness', etc.) of most areas of the Site appeared to be satisfactory, with no unusual odours that could potentially indicate the presence of microbial contamination or mould.

The conveyor shaft that transports wood chips from the A-Frame to the TMP was noted to contain mould.

### 3.8 REGULATORY REVIEW

A written request was forwarded to Nova Scotia Environment (NSE) on 27 June 2012 to obtain available information regarding Certificates of Approvals (C-of-As) or any permits relating to air emissions (including noise), waste disposal sites, septic systems, known contamination, petroleum storage tanks and hazardous materials/waste storage, and to identify any environmental issues that NSE may be aware of at Site and surrounding properties. NSE is the responsible agency for all such information and records in the Province of Nova Scotia.

The request was made for the Bowater Mersey Paper Mill using the address 3691 and 3793 Highway 3 (PIDs 70161153, 70084645, and 70161187) to correspond with information obtained through Nova Scotia Property Online. Other smaller properties located on the Site that were searched include PID 70161179, 70161161, 70161104, 70161138, 70161146, 70161096, 70161047, 70161104, and 70161070. A search was also completed on the ASB and sludge



landfill site with PID 70084967, the historic landfill with PID 70161344 and 70161310, and the dredged spoils with PID 70167705.

A response was received from NSE on 3 July on the other smaller properties located on the Bowater Mersey Paper Mill (PIDs 70161179, 70161161, 70161104, 70161138, 70161096, 70161047, 70161104, and 70161070), the historic landfill, and the dredged spoils stating that no information was located through the environmental registry on the noted properties.

A response was received form NSE on July 11, 2012 regarding the properties at 3691 and 3793 Highway 3 (PIDs 70161153, 70084645, and 70161187), PID 70161146, and ASB and sludge landfill site (PID 70084967).

Information received on 3691 Highway #3 included a water supply registration for the Bowater Mersey Paper Company dated 2001 and a petroleum storage tank registry dated May 4, 2010. The information in the tank registration is discussed in sections 3.7.3 and 3.7.4. An approval to Operate- Pulp and Paper Manufacturing Facility dated July 2002 were in the File. Also, an Approval to Construct and Operate Sewage Works dated 2000 and amended in 2005, and an Approval to Operate – Sewage Treatment Plant dated 2004 were in the file in relation to 3691 Highway 3.

Information on file regarding the ASB and sludge landfill included an Industrial Approval for the operation of an industrial landfill dated 1996; an Approval to Construct and Operate – Windrow Composting dating 2006; an Industrial Approval to construct and/or operate a vertical extension to an existing industrial landfill dated 1999; and a Renewal of an Industrial Approval to construct and/or operate a sludge drying pad and stockpile area in conjunction with biosolids composting project.

Additional information subject to the Freedom of Information and Protection of Privacy (FOIPOP) Act was noted to be on file regarding the following PIDs: 70161153, 70084645, 70161187, and 70084967. An application was made to NSE for access to these records; however, the records were not yet received at the time this report was issued.



# 3.9 SUMMARY OF FINDINGS

A summary of the findings is provided in Table 1.

**TABLE 1: Summary of Findings** 

TABLE 1: Summary of Findings									
Issues of Potential Concern	No Evidence Found of Actual or Potential Contamination, No use of Hazardous Materials, or Item not identified.	Evidence found of Actual (A) or Potential (P) Contamination (C), Use (U), or Storage (S) of Hazardous Materials.	Observations						
Previous or Current Land Use		PC	The Site operated as a paper mill since 1929. Throughout this time, various chemicals have been used in the paper making process. Historically boilers were fired by coal, bunkers C and oil, with bulk storage contained on Site. Various renovations have also occurred since 1929.						
Air Emissions	Х		No concerns identified through this assessment.						
Underground Storage Tanks		AU/PC	Historically various underground storage tanks, ranging from 1,893 litres to 11,500 litres were present on the Site.						
Aboveground Storage Tanks		AU/PC	Various aboveground storage tanks have been present throughout the history of the Site. Tanks have held various products such as fuel, propane, process chemicals, white water, dyes, nutrients, etc. Various above ground tanks currently remain in use.						
Adjacent Land Use	Х		No concerns identified through this assessment.						
Mercury		AU/PC	Mercury based slimicide was used from the 1940's to 1958. All effluent at this time was discharged to the harbour. Mercury based paints are also likely present.						
Hazardous Waste		AU	Management plan in place to remove and dispose of chemicals by licensed haulers.						
Dumps and Landfills		AU/PC	Three landfills are associated with the Site. Former landfill, dredge spoils dumpsite and sludge landfill.						
Mechanical Equipment		AU	Numerous pieces of equipment used at the Site.						
Methane	X		No concerns identified through this assessment						
Asbestos-Containing Material		AU/PC	Asbestos is currently stored on Site in a trailer located on Site. Asbestos is known to be present throughout the facility.						
Lead-Based Products		AU/PC	Lead based paint may be present in the Site buildings, and high lead concentrations were noted in the former acid digester.						
PCBs		AU/PC	Historically PCB containing transformers were present on the Site. There were removed and stored on Site until removed. Possible PCBs in fluorescent light ballasts.						
Radioactive Materials		AU	Several pieces of equipment were fitted with devices containing radioactive materials						
Site In-filling		AU/PC	The former locomotive shed pit was in-filled with an unknown composition of fill.						
Sumps and Drains		AU	Floor drains on site direct flow to the primary clarifier. No concerns identified through this assessment.						
Ozone Depleting Substances		PU	Freon in use in A/C,cooling units. Potential larger volumes in process cooling units.						
Pesticides and Herbicides	Х		No concerns identified through this assessment.						
Chemical Use & Storage		AU	Chemicals for Site use observed. Due to mill closure all stored chemicals are being removed from the Site.						
Surface Staining		PC	Staining observed at various locations inside buildings. No significant staining observed outside.						



Issues of Potential Concern	No Evidence Found of Actual or Potential Contamination, No use of Hazardous Materials, or Item not identified.	Evidence found of Actual (A) or Potential (P) Contamination (C), Use (U), or Storage (S) of Hazardous Materials.	Observations
Spills and Leaks		AU/PC	No current or ongoing leaks or spills observed. Historic spills after 1996 show records of being contained and cleaned. No available records prior to 1996.
Solid Waste		PC	Ash from previous boiler use may have been dumped under current gatehouse location.
Liquid Waste		AU	Acid tank remains on Site with unknown contents.
Sewage Treatment		AU	No concerns identified through this assessment.
Stressed Vegetation	Х		No concerns identified through this assessment.
Pipelines		AU/PC	Former Bunker C pipeline decommissioned in 2001. Historic leaks and spills recorded with potential for soil contamination.
Insulation of Concern (UFFI)	Х		No concerns identified through this assessment.
Microbial Contamination and Mould		PC	Conveyor shaft from A-frame to TMP was observed to contain mould.



## 4.0 CONCLUSIONS

Conclusions regarding the current environmental condition of the property located at 3691 Highway 3, Brooklyn, Nova Scotia are based solely on the results of the information reviewed, Site inspection and interviews conducted as part of this Phase I ESA and as described in this report. This Phase I ESA has revealed some areas of potential environmental concern regarding the subject property, as discussed in the following subsections. Further work is recommended to address these potential liabilities.

### POTENTIAL ASBESTOS CONTAINING MATERIAL

Previously conducted hazardous materials surveys revealed the presence of asbestos containing materials (ACMs) within certain buildings; specifically the former steam plant. Given the age of buildings on site (constructed prior to 1969) there is a potential for site wide asbestos use. Buildings constructed during the mill modernization (post 1988) are not of concern.

## POTENTIAL METALS AND PAH CONTAMINATION

Based on review of historical documents, aerial photographs, and interviews, the following is a list of areas and their potential for metals and PAH contamination:

- Liverpool Bay Mercury based slimicide was used at the mill from the 1940s to 1958.
   During this time the mill's wastewater effluent was discharge directly to the harbour.
   There is a potential for mercury and other (hydrocarbon) contamination in the sediment of Liverpool Bay.
- Dredge Spoils Dumpsite The dumpsite contains sediment from the harbour, caustic contaminated soil, and excavated material from the former coal pit area. There is potential for metals and PAH contaminants associated with coal and mercury in soil.
- Former Landfill Contents of the former mill landfill are currently unknown. Potential for soil and groundwater contamination.
- Warehouse A / Former Coal Pile Aerial photos show the coal pile present from 1937 to 1955. Test pit logs completed in 1999 indicate coal is still present below ground.
   Potential soil contamination includes metals and PAHs.
- Former Locomotive Shed The pit that was previously used for locomotive maintenance and waste collection has been in-filled by material of unknown origin. There is a potential for metals contamination in the soil beneath and within the former pit.
- Site-wide Given the age of the many of the buildings on site, there is a potential for widespread use of lead based mortar, lead and mercury based paint, and mercury containing thermostats.
- Ash from boilers As the landfill north of the paper mill did not begin operation until approximately 1965 it is unknown where ash produced from burning coal in the boilers was disposed of prior to this time. It has been suggested but not confirmed that ash was disposed of at the current gatehouse location.

# • POTENTIAL POLYCHLORINATED BIPHENYLS (PCBS)

All PCB containing transformers, capacitors, and associated liquid waste was removed from site by 1997. There is potential for soil contamination in areas where PCBs were stored or used (e.g., former transformers); specifically the areas where PCBs were historically used. A PCB trailer storage area was located directly west of the A-frame truck dumper though contamination in this area is less likely.



### POTENTIAL OZONE DEPLETING SUBSTANCES

Though not visually confirmed, AMEC staff was notified during interviews of air conditioners located within the office buildings creating the potential concern of ozone depleting substances.

### POTENTIAL PETROLEUM HYDROCARBON CONTAMINATION

During the site visit, AMEC staff did not observe any visual PHC leaks or impacted areas. Given the use of aboveground and belowground fuel storage tanks, pipelines, pump houses, and mechanical equipment, there is widespread potential for soil and groundwater PHC contamination. Specific areas of potential concern include the following but are not limited to:

- Former Bunker C storage tanks
- Former Bunker C pipeline
- Former steam plant and boiler room
- Existing and removed fuel storage tanks

## POTENTIAL LIQUID WASTE SUBSTANCES

Although it was scheduled to be removed in 2000, the acid tank remains currently on site due to its unknown contents. The current condition and contents of the tank should be assessed in order to determine potential adverse environmental effects.

## 5.0 RECOMMENDATIONS

Based on the findings of the Phase I Environmental Site Assessment conducted on 23 and 24 June 2012 the following recommendations are made:

- Soil and groundwater sampling should be conducted at the Site to determine the degree and extent of contamination due to use as an industrial facility. Samples should be analysed for metals, petroleum hydrocarbons, and PAHs, and PCBs.
- CNSC has been contacted to properly remove devices containing radioactive materials at the Site. It should be ensured that all radioactive materials are removed from site.
- Licensed haulers have been contracted to remove and properly dispose of all chemicals at the Site. It should be ensured that all chemicals are removed from site.
- If buildings are to be demolished a full hazardous materials survey should be conducted at the Site to determine locations of materials such as Lead, asbestos, mercury, and PCBs. All hazardous materials identified at the Site should be removed and disposed of by qualified professionals.
- The lagoons and the sludge landfill at the ASB site must be properly decommissioned before being abandoned.
- Soil and groundwater testing should be completed at the old landfill site and the dredge spoils area to verify whether impacts exist to the surrounding environment; parameters of concern may include, metals, petroleum hydrocarbons, and PAHs, and PCBs.
- There should be some effort put forward to determine the disposal site of the ash from the burnt coal.



## 6.0 CLOSURE

This report was prepared for the exclusive use of Bowater Mersey Paper Company Limited and is intended to provide a Phase I Environmental Site Assessment of the Site located at 3693 Highway 3, Brooklyn, Nova Scotia, at the time of the Site visit. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third party. Should additional parties require reliance on this report, written authorization from AMEC will be required. With respect to third parties, AMEC has no liability or responsibility for losses of any kind whatsoever, including direct or consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The report is based on data and information collected during the Phase I ESA of the property conducted by AMEC. It is based solely on the conditions of the Site encountered at the time of the Site visit on 23 and 24 June 2012. The Phase I ESA site visit information is supplemented by a review of historical information and data obtained by AMEC as described in this report, and discussion with a representative of the owner/occupant, as reported herein. Except as otherwise maybe specified, AMEC disclaims any obligation to update this report for events taking place, or with respect to information that becomes available to AMEC after the time during which AMEC conducted the Phase I ESA.

In evaluating the property, AMEC has relied in good faith on information provided by other individuals noted in this report. AMEC has assumed that the information provided is factual and accurate. In addition, the findings in this report are based, to a large degree, upon information provided by the current owner/occupant. AMEC accepts no responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of omissions, misinterpretations or fraudulent acts of persons interviewed or contacted.

AMEC makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.

This Report is also subject to the further Standard Limitations contained in Appendix D.



We trust that the information presented in this report meets your current requirements. Should you have any questions, or concerns, please do not hesitate to contact the undersigned.

# AMEC Environment & Infrastructure, a Division of AMEC Americas Limited

DRAFT	
Scott Preston Project Manager	
Prepared by:	Reviewed by:
DRAFT	DRAFT
Scott Elliot, EIT Environmental Engineer	Chris Elliot, P.Eng. Head, Environmental Engineering

**APPENDIX A** 

**Site Photographs** 





Photo 1: Wet end of paper process, drying sheets.



Photo 2: Dryers located on the main floor.





Photo 3: Beneath the dryers in the basement, paper that is broken is collected in this area.



Photo 4: Hydraulic reserve tank, in the basement beneath paper drying machines.





Photo 5: Calender machine



Photo 6: Dye Storage





Photo 7: Bleach room, totes of Sodium Hyposulfite.



Photo 8: South end of the Site; wharf.





Photo 9: Biocide Storage, near Bauer TMP.



Photo 10: Primary and secondary retention aid tanks





Photo 11: Piping labelled within plant as asbestos containing in the background, and none asbestos containing in the front.



Photo 12: Small oil reserve and staining present within the basement of the paper processing area.





Photo 13: Boiler 4, was powered by bark and bunker C.



Photo 14: Steam pipelines within steam plant.





Photo 15: Chemical Storage area at the north end of Warehouse A.



Photo 16: Loco shed, currently used for equipment maintenance





Photo 17: Historic Acid and Caustic room.



Photo 18: Northeast portion of the Site (looking south) – loco shed on the right, black historic acid tank, decommissioned digester area, and steam plant in the background.





Photo 19: Decommissioned digester area.



Photo 20: South end of the steam plant, and warehouse A on the right.





Photo 21: North toward TMP and pulp storage tanks.



Photo 22: Old landfill – has been capped and no longer in use.





Photo 23: East toward locoshed and conveyors.



Photo 24: North towards historical bermed area containing three ASTs.





Photo 25: West toward wood chip pile and conyeors.



Photo 26: Northwest towards the truck dump and A-frame building.





Photo 27: Interior of TMP building (small section).



Photo 28: Example of equipment using radioactive substance in TMP building.





Photo 29: Area of painted historical numbers times.



Photo 30: West towards the current transformers and former PCBs transformers were located to the right on the photo.





Photo 31: Primary treatment clarifier.



Photo 32: Lagoon aerators at the ASB site.





Photo 33: View of sludge landfill at ASB site.

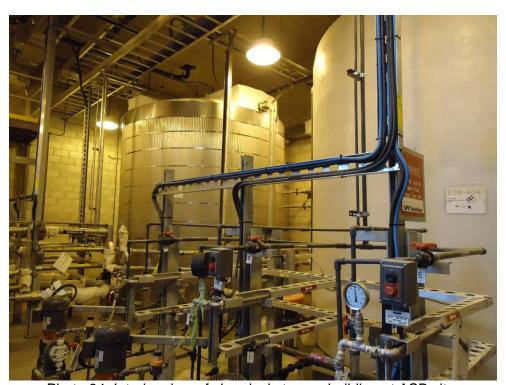


Photo 34: Interior view of chemical storage building at ASB site.

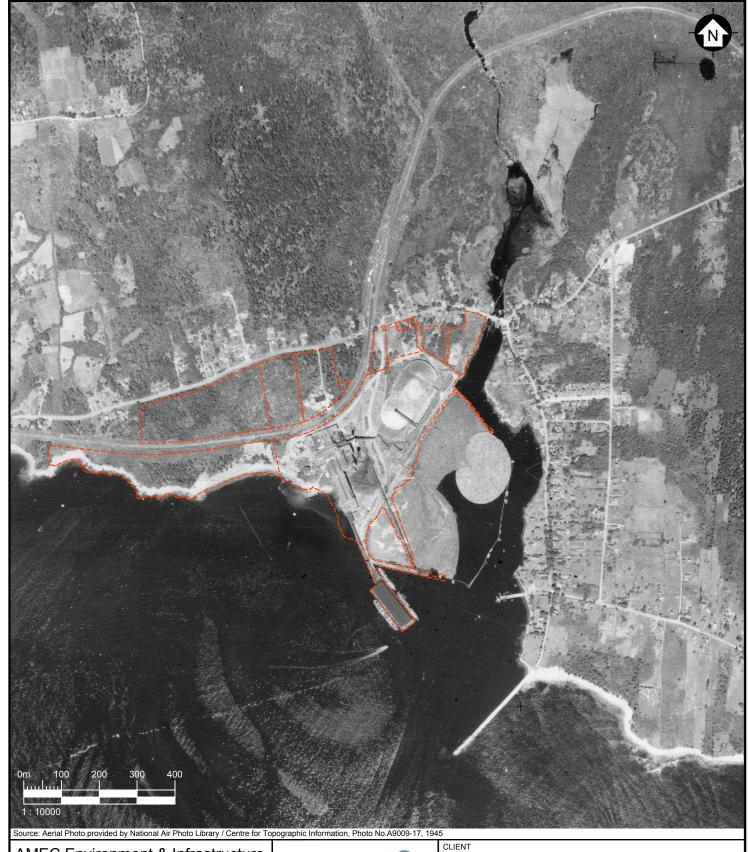
APPENDIX B

**Aerial Photographs** 



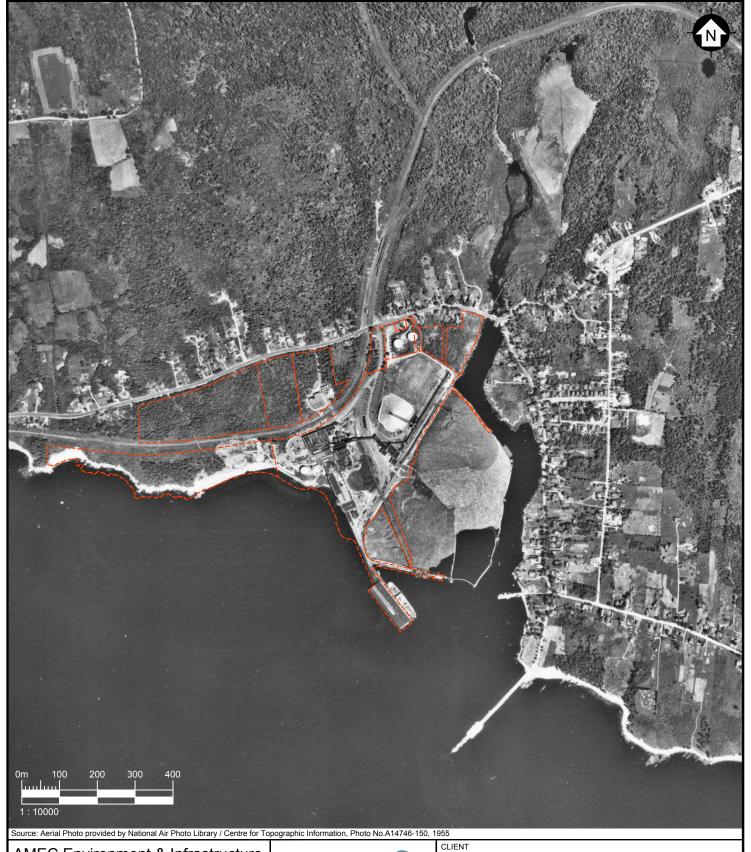


ı	PROJECT		DWN BY:		PROJECTION:	DATE:	
ı	Phase I Environmental Site A	Assessment		DS	UTM Zone 20		July 2012
ı	3691 Highway 3, Brooklyn, Nov	a Scotia	CHK'D BY:		DATUM:	PROJECT NO:	
				SP	NAD83		TV121024
ı	TITLE 1937 Aerial Photograph	h	REV. NO.:		SCALE:	FIGURE No.	
ı	1937 Aeriai Friologiapi	11	١	N/A	1:10,000		1937





ı	PROJECT		DWN BY:		PROJECTION:	DATE:	
	Phase I Environmental Site A	Assessment		DS	UTM Zone 20		July 2012
	3691 Highway 3, Brooklyn, Nova	a Scotia	CHK'D BY:		DATUM:	PROJECT NO:	
				SP	NAD83		TV121024
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	3691 Highway 3, Brooklyn, Nova Scotia	CHK'D BY:		DATUM:	PROJECT NO:	
			SP	NAD83		TV121024
TITLE	1955 Aerial Photograph	REV. NO.:		SCALE:	FIGURE No.	
	1900 Actian Hotograph	l N	I/A	1:10,000		1955



# AMEC Environment & Infrastructure

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# Bowater Mersey Paper Company Limited Liverpool, Nova Scotia, B0J 1H0

PROJECT DWN BY: PROJECTION: DATE: Phase I Environmental Site Assessment DS UTM Zone 20 July 2012 3691 Highway 3, Brooklyn, Nova Scotia CHK'D BY: DATUM: PROJECT NO: NAD83 SP TV121024 TITLE REV. NO.: SCALE: FIGURE No. 1965 Aerial Photograph 1965 N/A 1:10,000





Ì	PROJECT		DWN BY:		PROJECTION:	DATE:	
ı	Phase I Environmental Site A	ssessment		DS	UTM Zone 20		July 2012
ı	3691 Highway 3, Brooklyn, Nova	a Scotia	CHK'D BY:		DATUM:	PROJECT NO:	
ı				SP	NAD83		TV121024
I	TITLE 1976 Aerial Photograph	2	REV. NO.:		SCALE:	FIGURE No.	40-0
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PROJECT	·	DWN BY:	PROJECTION:	DATE:
	Phase I Environmental Site Assessment		S UTM Zone 20	July 2012
	3691 Highway 3, Brooklyn, Nova Scotia	CHK'D BY:	DATUM:	PROJECT NO:
		S	P NAD83	TV121024
TITLE	1986 Aerial Photograph	REV. NO.:	SCALE:	FIGURE No.
	1900 Acriai i notograpii	N/	A 1:10,000	1986





PROJECT	·	DWN BY:		PROJECTION:	DATE:	
	Phase I Environmental Site Assessment		DS	UTM Zone 20		July 2012
	3691 Highway 3, Brooklyn, Nova Scotia	CHK'D BY:		DATUM:	PROJECT NO:	
			SP	NAD83		TV121024
TITLE	1992 Aerial Photograph	REV. NO.:		SCALE:	FIGURE No.	
	1992 Actial Filologiaph		N/A	1:10,000		1992



# AMEC Environment & Infrastructure

50 Troop Avenue, Unit 300 Dartmouth, N.S., B3B 1Z1 (P) 902-468-2848 (F) 902-468-1314



# Bowater Mersey Paper Company Limited Liverpool, Nova Scotia, B0J 1H0

DWN BY: PROJECTION: DATE: UTM Zone 20 DS July 2012 CHK'D BY: DATUM: PROJECT NO: NAD83 SP TV121024 REV. NO.: SCALE: FIGURE No. 2000 N/A 1:10,000

PROJECT

Phase I Environmental Site Assessment 3691 Highway 3, Brooklyn, Nova Scotia

TITLE 2000 Aerial Photograph



#### AMEC Environment & Infrastructure

50 Troop Avenue, Unit 300 Dartmouth, N.S., B3B 1Z1 (P) 902-468-2848 (F) 902-468-1314



# Powater Mercey Paper Compa

Bowater Mersey Paper Company Limited Liverpool, Nova Scotia, B0J 1H0

PROJECT

Phase I Environmental Site Assessment

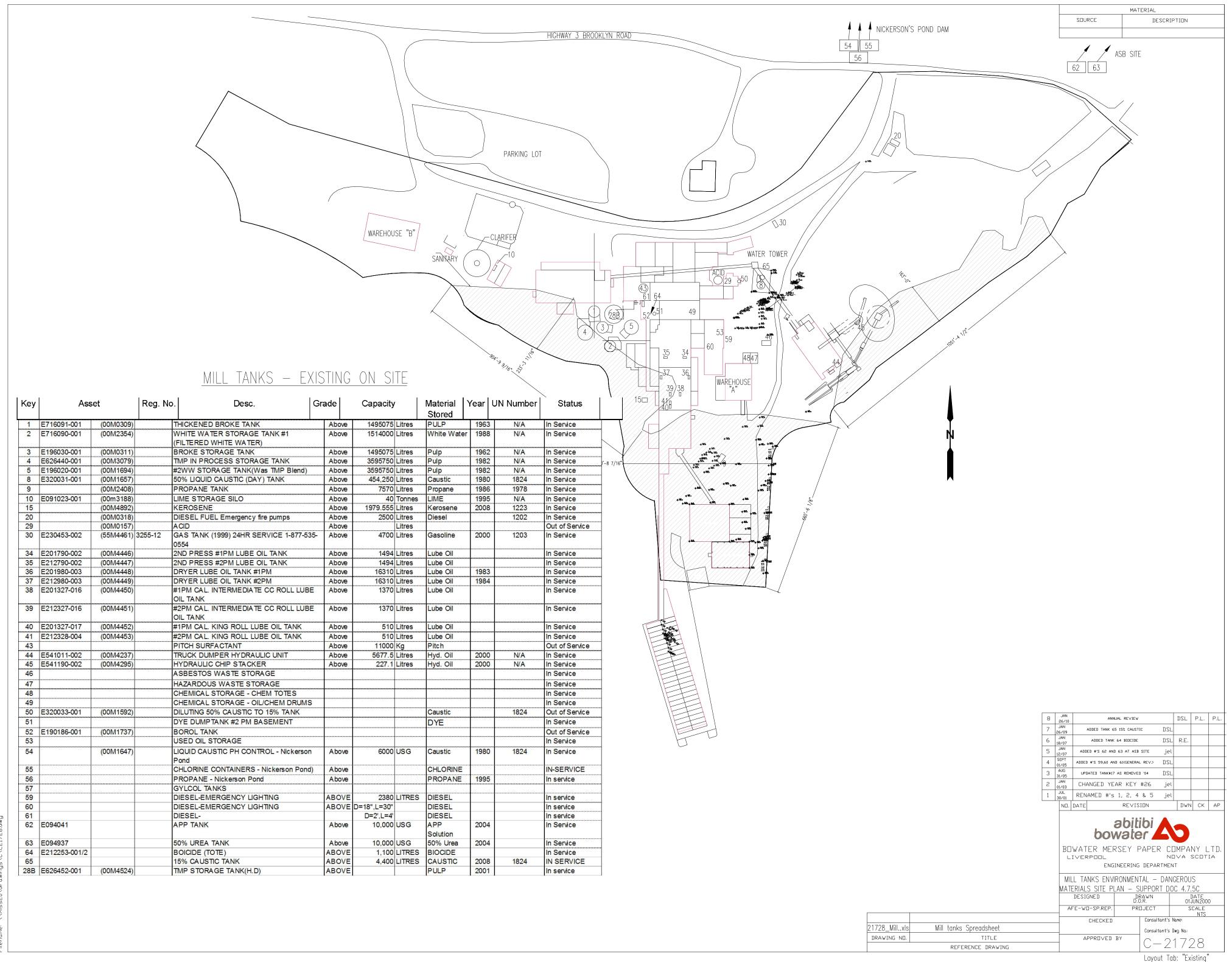
3691 Highway 3, Brooklyn, Nova Scotia

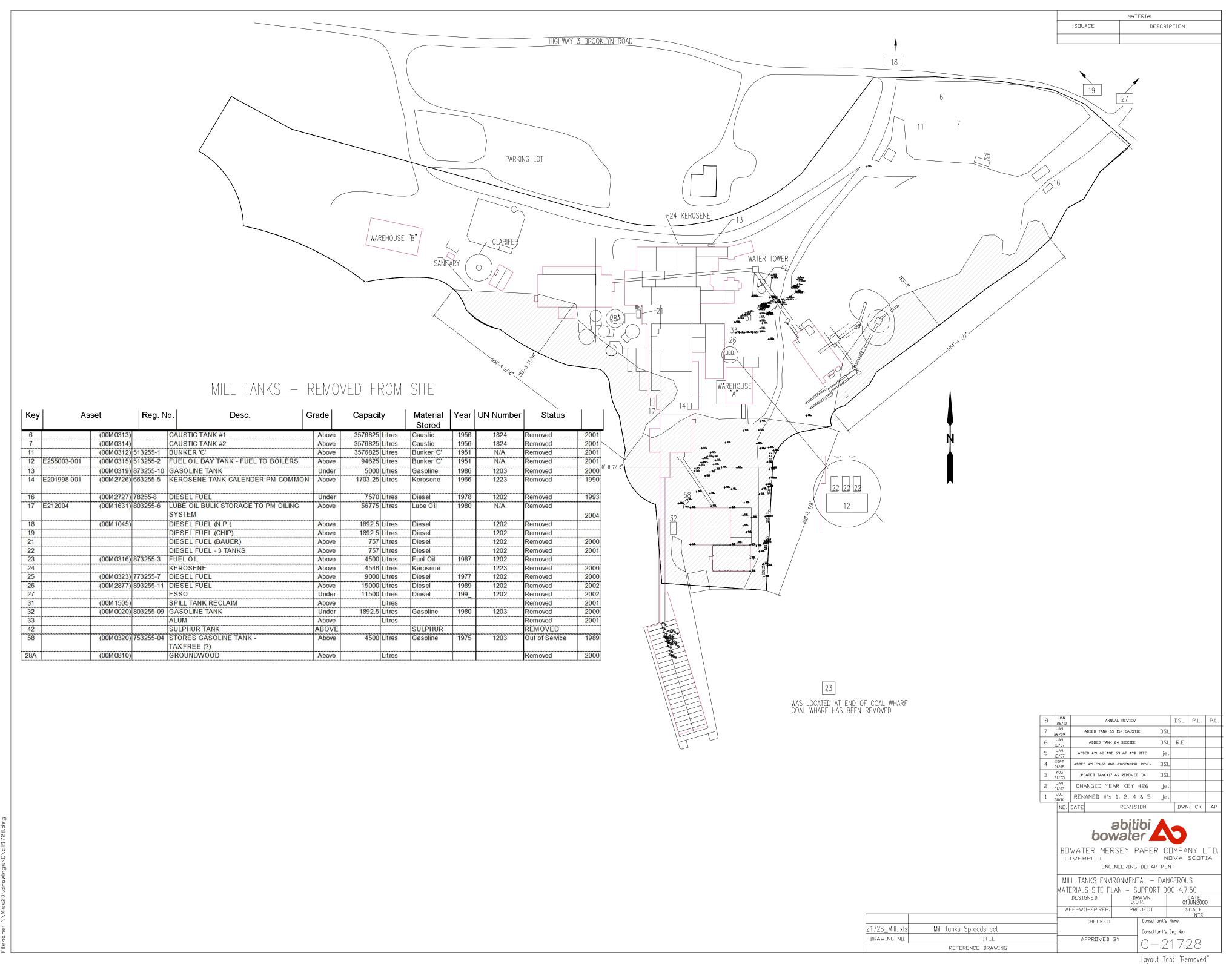
TITLE 2010 Aerial Photograph

DWN BY:		PROJECTION:		DATE:	
	DS	UTM Zone 20			July 2012
CHK'D BY:		DATUM:		PROJECT NO:	
	SP		NAD83		TV121024
REV. NO.:		SCALE:		FIGURE No.	
	N/A		1:10,000		2010

**APPENDIX C** 

**Documentation** 









PO Box 442 5151 Terminal Rd., 5<sup>th</sup> floor Halifax, Nova Scotia B3.I 2P8

> ph: (902) 424-2577 fax: (902) 424-6925

#### Environment

Information Access and Privacy

July 9, 2012

Our file # ENV-2012-0996/09980 and ENV-2012-1007/1008

Mail

Carla Sutherland AMEC 50 Troop Avenue, Unit 300 Dartmouth NS B3B 1Z1

Dear Ms. Sutherland

RE: 3691 HWY 3, PID 70161153, Brooklyn; 3793 HWY 3, PID 70084645, Brooklyn; 3793 HWY 3, PID 70161187, Brooklyn; HWY 3, PID 70161146, Brooklyn; and 2879 & 2909 HWY 3, PID 70084967, Brooklyn

I refer to your enquiry of the Environmental Registry received June 27, 2012. We acknowledge receipt of payment for five properties. Enclosed is the information that was located through the Environmental Registry with regard to 3691 HWY 3, PID 70161153, Brooklyn; 3793 HWY 3, PID 70084645, Brooklyn; 3793 HWY 3, PID 70161187, Brooklyn; and 2879 & 2909 HWY 3, PID 70084967, Brooklyn

No information was located through the Environmental Registry with regard to HWY 3, PID 70161146, Brooklyn.

Additional information (form the following files - 2005-046565-R02; 92100-30-21; 92100-30-025430; 92100-30-024279; 95100-31-019449; and 36400-30-3257) relating to 3691 HWY 3, PID 70161153, Brooklyn has been located. Additional information (form the following files - 92100-30-2003-21 and 94300-30-039473) relating to 3793 HWY 3, PID 70084645, Brooklyn has been located. Additional information (form the following file - 92100-30-2003-039473) relating to 3793 HWY 3, PID 70161187, Brooklyn has been located. Additional information (form the following files - 11-95-0113; 36400-30-3260; 11-95-0113; 92100-017777; and 92100-051255) relating to 2879 & 2909 HWY 3, PID 70084967, Brooklyn has been located. These records, while not in the Environmental Registry, may be relevant to your request. Should you feel you require these records, they are subject to the *Freedom of Information and Protection of Privacy (*FOIPOP) *Act.* A FOIPOP application is enclosed for your convenience if you wish to make application for access to these records. Each application must contain a mandatory \$5 application fee (see FOIPOP Regulations Section 6(1)). Please make cheque or money order payable to the Minister of Finance.

Nova Scotia Environment makes no representations or warranties on the accuracy or completeness of the information provided.

Sincerely,

Aimee Standen IAP Administrator



Department of Environment and Labour

60 Logan Road Bridgewater, NS 84V 3J8

Tel: (902) 543-4685 Fax: (902) 527-5480

Our File Number: 92100-30

July 4, 2002

Bowater Mersey Paper Co. Ltd. PO Box 1150 Liverpool, Nova Scotia BOT 1K0

Dear

RE: Approval to Operate - Pulp and Paper Manufacturing Facility

Approval No. 2001-025430

Enclosed please find Approval # 2001-025430 issued to Bowater Mersey Paper Company Ltd. to amend an existing approval to operate a pulp and paper manufacturing facility at or near Brooklyn, Queens County, Nova Scotia.

Strict adherence to the attached terms and conditions is imperative in order to validate this approval.

Despite the issuance of this Approval, the Approval Holder is still responsible for obtaining any other authorization which may be required to carry out the activity, including those which may be necessary under provincial, federal or municipal law.

Should you have any questions, please contact Barry Gillis, Western Region, Bridgewater Office at (902) 543-4685.

Yours Truly

Jeff Garnhúm

District Manager

CC

File: 2002-026691

C:

17/07/02



# **APPROVAL**

Province of Nova Scotia Environment Act, S.N.S. 1994-95, c.1

APPROVAL HOLDER:

**Bowater Mersey Paper Company** 

APPROVAL NO:

2001-025430

**EFFECTIVE DATE:** 

July 4, 2002

**EXPIRY DATE:** 

see approval

Pursuant to Part V of the Environment Act, S.N.S. 1994-95, c.1 as amended from time to time, approval is granted to the Approval Holder subject to the Terms and Conditions attached to and forming part of this Approval, for the following activity:

Operation of a pulp and paper manufacturing facility at or near Brooklyn, Queens County, N.S.

> Administrator Date Signed

#### TERMS AND CONDITIONS

# Nova Scotia Department of Environment and Labour

Approval Holder: Bowater Mersey Paper Company Ltd.

PO Box 1150 Liverpool, NS BOT 1KO

FILE NUMBER: 92100-30-/BRI-025430

APPROVAL NO. 2001-025430

#### REFERENCE DOCUMENTS:

The following documents form part of the approval:

Information submitted in relation to Approval #94-005. a)

Application and associated information, dated 2001/09/21. þ)

Letter of September 24, 2001 from Renee Estabrooks to Danny Shannon. c)

#### CONDITIONS:

The Approval Holder's application for an approval amendment, together with supporting information, is recommended for approval subject to the following terms and conditions:

#### 1. Scope of Approval

- This Approval relates to Bowater Mersey Paper Company Ltd., hereafter (a) called the "Approval Holder" and their request to amend approval #94-005 respecting the operation of a pulp and paper manufacturing facility at Brooklyn, Queens County.
- This Approval authorizes the continued operation of a pulp and paper (b) manufacturing facility, hereafter called the "Facility".
- In this Approval "Minister" means the Minister of Environment and Labour. (c)
- In this Approval the "Act" means the Environment Act, S.N.S. 1994-95, c.1 (d) and regulations made thereto, including the Approvals Procedure Regulations.

(e) "Department" means the Bridgewater District Office of the Nova Scotia Department of Environment and Labour. The present address for the office is:

Nova Scotia Department of Environment and Labour 60 Logan Road Bridgewater, Nova Scotia B4V 3J8 Phone: (902) 543-4685

Fax: (902) 527-5480

(f) If there is a discrepancy between the reference documents and the terms and conditions of this Approval, the terms and conditions of this Approval shall apply.

#### 2. General Terms and Conditions

- a) The Approval Holder shall operate its Facility in accordance with provisions of the:
  - i) Environment Act S.N.S. 1994-1995, c. 1;
  - ii) Regulations pursuant to the above Act;
  - iii) Any future amendments to the Act and Regulations
- b) Nothing in this Approval relieves the Approval Holder of the responsibility for obtaining and paying for all licenses, permits, approvals or authorizations necessary for carrying out the work authorized to be performed by this Approval which may be required by municipal by-laws or provincial or federal legislation. The Minister does not warrant that such licenses, permits, approvals or other authorizations will be issued.
- No authority is granted by this Approval to enable the Approval Holder to construct the Facility on lands which are not in the control or ownership of the Approval Holder. It is the responsibility of the Approval Holder to ensure that such a contravention does not occur. The Approval Holder shall provide, to the Department, proof of such control or ownership upon expiry of any relevant lease or agreement. Failure to retain said authorization will result in this Approval being null and void.
- d) If there is a discrepancy between the reference documents and the Terms and Conditions of this Approval, the Terms and Conditions of this Approval shall apply.
- e) The Minister or Administrator may modify, amend or add conditions to this Approval at anytime pursuant to Section 58 of the Act.

- f) This Approval is not transferable without the consent of the Minister or Administrator.
- g) (i) If the Minister or Administrator determines that there has been non-compliance with any or all of the Terms and Conditions contained in this Approval, the Minister or Administrator may cancel or suspend the Approval pursuant to Subsections 58(2)(b) and 58(4) of the Act, until such time as the Minister or Administrator is satisfied that all Terms and Conditions have been met.
  - (ii) Despite a cancellation or suspension of this Approval, the Approval Holder remains subject to the penalty provisions of the Act and Regulations.
- h) The Approval Holder shall notify the Department prior to any proposed extensions or modifications of the Facility, including the active area, process changes or waste disposal practices which are not granted under this Approval. Written authorization from the Department will be required before implementing any change. Extensions or modifications to the Facility may be subject to the Environmental Assessment Regulations.
- Pursuant to Section 60 of the Act, the Approval Holder shall submit to the Administrator any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates and that comes to the attention of the Approval Holder after the issuance of the Approval.
- j) The Approval Holder shall immediately notify the Department of any incidents of non-compliance with this Approval.
- k) The Approval Holder shall bear all expenses incurred in carrying out the environmental monitoring required under the Terms and Conditions of this Approval.
- Unless specified otherwise in this Approval, all samples required to be collected by this Approval shall be collected, preserved and analyzed, by qualified personnel, in accordance with recognized industry standards and procedures.
- m) All samples required by this Approval shall be analyzed by a laboratory that is:
  - Accredited by the Standards Council of Canada; or
  - ii) Accredited by another agency recognized by the Nova Scotia

Department of Environment and Labour to be equivalent to the Standards Council of Canada; or

- iii) Maintaining an acceptable standard in a proficiency testing program conducted by the Canadian Association for Environmental Analytical Laboratories for all parameters being reported; or
- iv) Maintaining an acceptable standard in a proficiency or performance testing in another program considered acceptable to the Nova Scotia Department of Environment and Labour for all parameters being reported.
- n) The Approval Holder shall submit any monitoring results or reports required by this Approval to the Department. Unless specified otherwise in this Approval, all monitoring results shall be submitted within 30 days following the month of monitoring.
- o) The Approval Holder shall ensure that this Approval, or a copy, is kept on site at all times and that responsible personnel are made fully aware of the Terms and Conditions which pertain to this Approval.
- p) The Approval Holder shall designate in writing to the Department, a contact for this approval.

#### 3. Sound Levels

(a) Sound levels measured at the property boundaries, shall not exceed the following equivalent sound levels (Leq):

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Leq 65 dBA 0700 - 1900 hours (Days)
60 dBA 1900 - 2300 hours (Evenings)
55 dBA 2300 - 0700 hours (Nights)
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(b) Monitoring shall be conducted by the Approval Holder at the request of the Nova Scotia Department of the Environment and Labour.

#### 4. Air Emissions

- (a) Operation of the Facility shall not result in or contribute to, an exceedence of the Maximum Permissible Ground Level Concentrations specified in the Air Quality Regulations as amended, established pursuant to the Environment Act.
- (b) At the request of the Department, the Approval Holder shall monitor

- ambient air concentrations of the contaminants listed in Schedule "A" of the Air Quality Regulations, as amended.
- (c) At the request of the Department, the Approval Holder shall demonstrate that operation of the Facility is not contributing to exceedances of the Maximum Permissible Ground Level Concentrations for contaminants listed in Schedule "A" of the Air Quality Regulations, as amended.
- (d) Where it is deemed by the Department that the operation of the Facility is a significant contributor to exceedances of the Maximum Permissible Ground Level Concentrations for contaminants listed in Schedule "A" of the Air Quality Regulations, as amended, the Approval Holder shall implement a control plan to prevent further such exceedances.

#### 5. Particulate Emissions (Dust)

(a) Particulate emissions shall not exceed the following limits at or beyond the property boundaries associated with the Site:

Annual Geometric Mean 60-70  $\mu$ g/m³ Daily Average (24 hr.) 120  $\mu$ g/m³

- (b) The generation of fugitive dust from the Site will be suppressed by the application of water sprays, or the application of other suitable dust suppressants approved by the Department.
- (c) Site access road(s) shall be maintained to minimize dust generation. The use of hydrocarbons or used oil is not permitted.
- (d) Monitoring of particulate emissions shall be conducted at the request of the Nova Scotia Department of the Environment. The location of the monitoring station(s) for particulate will be established by the Administrator and may include point(s) beyond the property boundary.

#### 7. Effluent Collection and Treatment

- (a) i) Only non-contact cooling water will be discharged directly to Liverpool Bay.
  - ii) All deleterious substances as defined by the Fisheries Act, Pulp and Paper Effluent Regulations will receive treatment.
- b) The primary and secondary sludges removed from the treatment process shall be dewatered and disposed of either in an approved manner at the site or at an off-site facility approved to handle the sludge.

- c) i) The ASB treatment plant is to include a 2.3 million US gal settling basin and two aerated stabilization basins designed to contain a total of 94 million US gal,
  - ii) The basins are to be constructed of earthen berms, and to be operated with a minimum freeboard of 4 feet.
  - iii) A 60 mil HDPE liner is to be installed on the side slopes and the bottom of the basins to prevent effluent leachate from contaminating the groundwater.
  - iv) The entire ASB site is to be encircled by a 6 foot chain-link fence with a lockable gate.
- The treated effluent is to discharge from the ASB to a gravity return line d) designed with drop structures to dissipate hydraulic energy and control foam.

#### 8. **Groundwater Monitoring**

The monitoring wells at the ASB site are to be sampled quarterly and analysed for pH, colour, BODs and TOC.

#### 9. Effluent Monitoring

- a) i) Treated effluent discharged to the marine outfall is to be monitored continuously for flow, pH, and electrical conductivity.
  - ii) The results of the pH and conductivity measurements are to be kept available at the mill for inspection by NSDOE for at least three years.
  - iii) The flow monitoring equipment shall be calibrated to be accurate within ± 10%.
- Effluent samples are to be collected each day the mill discharges effluent. b) i)
  - Samples for conducting a BOD (biochemical oxygen demand) test or a SS ii) (suspended solids) test are to be collected at the effluent monitoring station during a full 24 hour day, by continuous sampling, or by a composite of equal samples at least every 15 minutes during the day.
- Toxicity tests are to be conducted on grab samples collected at the iii) effluent monitoring station.

- c) The reference production rate (RPR) for the mill, as defined by the Pulp and Paper Effluent Regulations, is to be determined annually and provided to NSDOE with the monthly report for January. The RPR is utilized for determining discharge limits for BOD and SS, as per stipulations D) iii) and E) iii).
- d) i) For the purposes of monitoring effluent BOD, a five day BOD test shall be conducted a minimum of three days a week.
  - ii) The monthly BOD discharge is determined from the average daily discharges during the month multiplied by the number of days in the month that the mill discharged effluent.
  - iii) The amount of BOD discharged, as determined from the test results and the effluent flow are to comply with the following limits:
    - a) daily BOD 5 kg/te x 2.5 x RPR
    - b) monthly BOD 5 x 1.5 x RPR x D, where D is the number of days in the month.
    - e.g. if the RPR = 800 te/day, then the daily BOD limit is  $12.5 \times 800 = 10,000$  kg and the monthly BOD limit say for January is  $7.5 \times 800 \times 31 = 186,000$  kg.
- e) i) For the purposes of monitoring SS, a SS test shall be conducted on each 24 hour composite sample collected.
  - ii) The monthly SS discharge is determined from the total of the daily discharges for the month.
  - iii) The amount of SS discharged daily and monthly are to comply with the following limits:
    - daily SS 7.5 kg/te x 2.5 x RPR monthly SS 7.5 x 1.5 x RPR x D
- f) i)a) For the purposes of monitoring toxicity, the acute lethality of the effluent is to be determined from tests using rainbow trout and Daphnia magna.
  - b) For the purposes of determining toxicity, procedures as set out in the Federal Pulp and Paper Effluent Regulations shall govern.
  - ii) Effluent discharges are to be non-acutely lethal, i.e. LC 50 = 100%.
    - a) Effluent fails the rainbow trout acute lethality test when it kills more than 50% of the fish during the 96 hour test period. The test is to be conducted on undiluted effluent.

- b) Effluent fails the Daphnia magna acute lethality test when it kills more than 50 percent of the daphnids during the 48 hour test period. The test is to be conducted on undiluted effluent.
- iii) a) Effluent toxicity is to be determined once a month using rainbow trout, and once a week using Daphnia magna. A period of at least 21 days is to separate any two rainbow trout tests required by this condition.
  - b) When a sample of effluent fails the acute lethality test using rainbow trout, the frequency for testing is to be increased to once every week.
  - c) The frequency of sample collection and testing of the above condition will be maintained until three consecutive tests are passed. The monthly test frequency may then be resumed.
  - d) When a sample of effluent fails the Daphnia magna acute lethality test, the following procedures apply:
    - An effluent sample will be collected without delay, and an acute lethality test on rainbow trout conducted.
    - The frequency of conducting the Daphnia magna test will be increased to three times per week.
  - e) The frequency of sample collection and testing of the above condition will be maintained until three consecutive tests are passed. Weekly tests may then be resumed.
- g) Effluent BOD, SS, and toxicity testing shall be in accordance with the test methods referenced in schedule 1 of the Pulp and Paper Regulations, as follows:
  - Acute lethality to rainbow trout Schedule 1, section 1.
  - ii) Acute lethality to Daphnia magna Schedule 1, section 2(1).
  - iii) Effluent BOD Schedule 1, section 3.
  - iv) Effluent SS Schedule 1, section 4.

# Emergency Reporting and Contingency Plans

- a) i) In the event of any spill as defined in the Emergency Spill Regulations, said regulations are to be followed.
  - ii) Upon request, the Approval Holder is to submit a written report to the Department within a time frame specified at that time.

b) An updated Emergency Response Plan is to be submitted to the Department by January 31, of each year.

### 11. Reporting

- a) Bowater Mersey shall submit monthly reports to NSDOE containing the following information:
  - The amount of BOD in kilograms discharged for the days the effluent was tested for BOD.
  - ii) The total amount of BOD discharged for the month.
  - The daily and monthly BOD discharge limits.
  - iv) The amount of SS in kilograms discharged each day the mill discharged effluent from the ASB treatment plant.
  - v) The total amount of SS discharged for the month.
  - vi) The daily and monthly SS discharge limits.
  - vii) The effluent toxicity test results.
  - viii) The daily effluent flow in cubic meters.
  - ix) The daily production of finished product in tonnes.
  - x) The quarterly monitoring results for the groundwater at the ASB site.

#### 12. Term of Approval

This Approval shall remain valid for a period of 10 years from the date the approval is issued.



Department of Environment and Labour

60 Logan Road Bridgewater, NS B4V 3J8 Tel: (902) 543-4685 Fax: (902) 527-5480

Our File Number: 94200-30

November 30, 2004

Bowater Mersey Paper Co. Ltd. 3691 #3 Hwy PO Box 1150 Liverpool, NS B0J 1K0

Dear

RE: Approval to Operate - Sewage Treatment Plant Approval No. 2004-039473, PID # 70084645

Enclosed please find Approval #2004-039473 issued to Bowater Mersey Paper Company Ltd. to operate the Sewage Treatment Plant at 3691 #3 Hwy, Liverpool, Queens County, Nova Scotia. Please ensure that you forward the original Approval to Bowater Mersey Paper Company Ltd.

Strict adherence to the attached terms and conditions is imperative in order to validate this approval.

Despite the issuance of this Approval, the Approval Holder is still responsible for obtaining any other authorization which may be required to carry out the activity, including those which may be necessary under provincial, federal or municipal law.

Should you have any questions, please contact David Clarke, Western Region, Bridgewater Office at (902) 543-4685.

Yours Truly

Barry/Gillis

District Manager

an Gellis

cc David Clarke

Eimas #: 2004-039473



#### APPROVAL

Province of Nova Scotia
Environment Act, S.N.S. 1994-95, c.1

**APPROVAL HOLDER:** 

**Bowater Mersey Paper Company Ltd.** 

**APPROVAL NO:** 

2004-039473

**EFFECTIVE DATE:** 

November 30, 2004

**EXPIRY DATE:** 

**November 30, 2014** 

Pursuant to Part V of the *Environment Act*, S.N.S. 1994-95, c.1 as amended from time to time, approval is granted to the Approval Holder subject to the Terms and Conditions attached to and forming part of this Approval, for the following activity:

Operation of a Sewage Treatment Plant, and associated works, at or near 3691 #3 Hwy, Liverpool, Queens County in the Province of Nova Scotia.

Administrator Date Signed

#### TERMS AND CONDITIONS OF APPROVAL

# Nova Scotia Department of Environment and Labour

Project:

Bowater Mersey Paper Company Ltd.

Sewage Treatment Plant

3691 #3 Hwy,

Liverpool, Queens County

Approval No:

2004-039473

File No:

94200-30

Map Series:

21A/02

Grid Reference:

E363860 N4878964

PID#:

70084645

#### **Reference Documents:**

- Application dated April 2, 2004 and attachments.

#### 1. Definitions

- a) "Act" means the *Environment Act* S.N.S. 1994-1995, c.1, and includes all regulations made pursuant to the Act.
- b) "Composite Sample" means a representative sample which is taken from the combination of individual samples that are collected over a 24 hour period with at least one sample of 100 ml taken at two hour intervals.
- c) "Department" means the Western Region, Bridgewater Office, of the Nova Scotia Department of Environment and Labour located at the following address:

Nova Scotia Department of Environment and Labour Environmental Monitoring and Compliance Division Western Region, Bridgewater Office 60 Logan Road Bridgewater, NS B4V 3J8 Phone: (902) 543-4685 Fax: (902) 527-5480

- d) "Facility" means the Sewage Treatment Plant and associated works.
- e) "Grab sample" means an individual sample collected in less than 30 minutes and which is representative of the substance sampled.
- f) "Minister" means the Minister of the Nova Scotia Department of Environment and Labour.
- g) "NSDEL" means the Nova Scotia Department of Environment and Labour.
- h) "Sewage Collection System" means the Facility and all auxiliaries for the collection, treatment, storage and discharge of sewage from the source of the sewage to the final discharge point.

#### 2. Scope of Approval

- a) This Approval (the "Approval") relates to the Approval Holder and their application and supporting documentation, as listed in the reference documents above, to construct and operate the Facility, situated at or near 3691 #3 Hwy, Liverpool, Queens County (the "Site").
- b) The Facility shall be operated as outlined in the application for industrial approval dated April 2, 2004 and supporting documentation.
- c) The Site shall not exceed the area as outlined in the application and supporting documentation.
- d) This Approval is restricted to the operation of the Facility only. No other alteration or infill of a watercourse or water resource is permitted by this Approval. Works associated with the alteration or infill of a watercourse or water resource will require separate approval from the Nova Scotia Department of Environment and Labour.
- e) This Approval does not apply to the electrical, roadways, and structural components of the project.

#### 3. General Terms and Conditions

- a) The Approval Holder shall operate and reclaim its Facility in accordance with provisions of the:
  - i) Environment Act S.N.S. 1994-1995, c.1;
  - ii) Regulations pursuant to the above Act;
  - iii) Any future amendments to the Act and regulations
- b) No authority is granted by this Approval to enable the Approval Holder to construct the Facility on lands which are not in the control or ownership of the Approval Holder. It is the responsibility of the Approval Holder to ensure that such a contravention does not occur. Upon request, the Approval Holder shall provide, to the Department, proof of such control or ownership.
- c) If there is a discrepancy between the reference documents and the terms and conditions of this Approval, the terms and conditions of this Approval shall apply.
- d) Any request for renewal or extension of this Approval is to be made in writing, to the Department, at least ninety (90) days prior to the Approval expiry.
- e) The Minister or Administrator may modify, amend or add conditions to this Approval at anytime pursuant to Section 58 of the Act.
- f) This Approval is not transferable without the consent of the Minister or Administrator.
- g) (i) If the Minister or Administrator determines that there has been non-compliance with any or all of the terms and conditions contained in this Approval, the Minister or Administrator may cancel or suspend the Approval pursuant to subsections 58(2)(b) and 58(4) of the Act, until such time as the Minister or Administrator is satisfied that all terms and conditions have been met.
  - (ii) Despite a cancellation or suspension of this Approval, the Approval Holder remains subject to the penalty provisions of the Act and regulations.
- h) The Approval Holder shall notify the Department prior to any proposed extensions or modifications of the Facility, including process changes or waste disposal practices which are not granted under this Approval. Extensions or modifications to the Facility may be subject to the Environmental Assessment Regulations. An amendment to this Approval will be required before implementing any change.

- i) Pursuant to Section 60 of the *Act*, the Approval Holder shall submit to the Administrator any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates and that comes to the attention of the Approval Holder after the issuance of the Approval.
- j) The Approval Holder shall immediately notify the Department of any incidents of non-compliance with this Approval.
- k) The Approval Holder shall bear all expenses incurred in carrying out the environmental monitoring required under the terms and conditions of this Approval.
- Unless specified otherwise in this Approval, all samples required to be collected by this Approval shall be collected, preserved and analysed, by qualified personnel, in accordance with recognized industry standards and procedures.
- m) All samples required by this Approval shall be analysed by a laboratory that is:
  - i) Accredited by the Standards Council of Canada; or
  - ii) Accredited by another agency recognised by the Nova Scotia Department of Environment and Labour to be equivalent to the Standards Council of Canada; or
  - iii) Maintaining an acceptable standard in a proficiency testing program conducted by the Canadian Association for Environmental Analytical Laboratories for all parameters being reported; or
  - iv) Maintaining an acceptable standard in a proficiency or performance testing in another program considered acceptable to the Nova Scotia Department of Environment and Labour for all parameters being reported
- n) The Approval Holder shall submit any monitoring results or reports required by this Approval to the Department. Unless specified otherwise in this Approval, all monitoring results shall be submitted within 30 days following the month of monitoring.
- o) The Approval Holder shall ensure that this Approval, or a copy, is kept on Site at all times and that personnel directly involved in the Facility operation are made fully aware of the terms and conditions which pertain to this Approval.

#### 4. Spills or Releases

- a) All spills or releases of dangerous goods, waste dangerous goods, or petroleum hydrocarbon shall be reported to the Department in accordance with the Act (Part VI) and the *Emergency Spill Regulations*.)
- b) Spills or releases shall be cleaned up immediately.
- c) An adequate quantity of spill/release response material is to be maintained on Site at all times.

#### 5. Sludge Disposal

 All sludge generated at the Facility shall be treated and disposed of by a method approved by the Department.

#### 6. Operation

- a) The Approval Holder shall designate in writing, to the Department, a contact for this Approval.
- b) The Facility must be operated and maintained in a manner that will prevent erosion, chemical spills or any other incidents that may be detrimental to the environment and public health.
- c) The Approval Holder should ensure that the system is operated, maintained and has appropriate backup facilities to protect against failures of the power supply, treatment process, equipment, or structure. Security measures should assure the safety of the sewage treatment processes, storage facilities, and the discharge system.
- d) The Approval Holder shall ensure the development and implementation of an emergency response plan as part of the operations program. This plan is to meet the requirements of the Nova Scotia Department of Environment and Labour contingency Plan for Releases of Dangerous Goods and Hazardous Wastes. The plan should include:
  - General procedures for routine (equipment break-down, upset conditions, maintenance, etc.) or major emergencies within the sewage works system; and
  - ii) A plan for equipment becoming inoperable in a major emergency.

- iii) A plan for dealing with spills or releases.
- e) The Approval Holder shall not establish nor maintain a bypass to divert sewage around the Facility or any feature of the Facility treatment process unless the bypass has been approved by the Department. When it is necessary to use an approved by-pass, the Approval Holder shall notify the Department.
- f) The Approval Holder shall take immediate preventive or corrective action ,when results of an inspection or sampling results indicate conditions which are currently or may become a detriment to system operations, and/or result in adverse impact to the environment or public health.
- g) The Facility has been classified as a **Class II wastewater treatment facility**. The day-to-day operations of the wastewater treatment plant shall be supervised directly by certified operators who hold the appropriate certification.
- h) The Approval Holder shall establish and submit to NSDEL notification procedures to be used to contact the Medical Officer of Health, NSDEL, other relevant authorities and the general public in the case of an emergency situation.
- i) The Approval Holder shall prepare a comprehensive operations manual within three months of commencement of operation of the Facility and keep it up to date. The manual shall be subject to review by NSDEL upon request.
- j) A complete set of the drawings, incorporating any amendments made from time to time, shall be kept by the Approval Holder at the Facility for as long as the Facility is kept in operation.
- k) The Approval Holder shall establish procedures for receiving and responding to complaints including a reporting system which records what steps were taken to determine the cause of complaint and the corrective measures taken to alleviate the cause and prevent its recurrence.

#### 7. Performance And Limits

#### 7.1 Treated Effluent

The Facility and associated sewage collection system shall be managed and operated in such a manner that the effluent being discharged to the receiving waters satisfies the following criteria:

a) Biological oxygen demand, BOD<sub>5</sub>, shall not exceed 20 mg/l.

- b) Suspended Solids, shall not exceed 20 mg/l
- c) Fecal coliform shall not exceed 1000 count/mls
- d) Disinfection of the effluent from the Facility shall be continuous and if chlorine is utilized; the chorine residual in the discharge shall not exceed 0.2 mg/L:
- e) pH 6.5 to 9.

#### 7.2 Odour Control

- a) The Approval Holder shall operate the Facility in a manner which will not result in the generation of offensive or hazardous odours/vapours.
- b) The Approval Holder shall be required to implement control measures if odour generation is deemed excessive by the Department.

### 8. Monitoring and Recording

- a) The Approval Holder shall conduct all monitoring and analysis required in this section according to the latest edition of "Standard Methods for the Examination of Water and Waste Water".
- b) All equipment must be installed, maintained and calibrated as specified by the manufacturer's instructions.
- c) Following a review of any of the analytical results required by this Approval, NSDEL may alter the frequencies, location, and parameters for analyses required for this Approval.

TABLE 1				
PARAMETER	MINIMUM FREQUENCY	LOCATION .		
BOD₅	5/month	treated effluent discharge		
Suspended Solids	5/month	treated effluent discharge		
Fecal Coliform	5/month	treated effluent discharge		
рН	continuous or daily grab	treated effluent discharge		

TABLE 1				
PARAMETER	MINIMUM FREQUENCY	LOCATION		
Free Chlorine Residual	continuous or daily grab	treated effluent discharge		
Plant Volumes	continuous	entering and leaving plant		
Fish Toxicity	as requested by NSDEL	treated effluent discharge		

- \* All samples shall be composite unless stated otherwise.
- d). The Facility shall be considered in compliance with the effluent limitations if 80% of the sample test results, at the frequency and number specified in table 1 meet the specified limit in section 7.1. No single result can be greater than two times the limits in section 7.1.

#### 9. Reporting

#### 9.1 Quarterly Reporting

- a) The Approval Holder shall prepare and submit to the Department on a quarterly basis, the results of the sampling conducted at the locations indicated in table 1 above.
- a) The Approval Holder shall prepare and submit to the Department, a quarterly performance report for the facility. The report shall contain the following information in a format acceptable to the Regional Manager.
  - a summary and discussion of the quantity of wastewater treated during the reporting period compared to the design values for the facility, including peak flow rates, maximum daily flows and monthly average daily flows;
  - ii) a summary and interpretation of analytical results obtained in accordance with Section 8 (monitoring and recording) of this Approval;
  - iv) a tabulation and description of any emergency or upset conditions which occurred during the period being reported upon and action taken to correct them;
  - v) Any complaints that were received and the Approval Holders response.

# 9.2 Emergency Reporting on Operation

a) The Approval Holder shall notify the Department forthwith in the event that untreated wastewater is directed to the receiving waters.

b) The Approval Holder shall immediately notify the Department of any incidents of exceedence of the compliance requirement indicated in section 8(d).

#### 10. Records

- a) The Approval Holder shall keep the following records and wastewater effluent quality analyses:
  - i) BOD<sub>5</sub>, Suspended Solids, and Bacteriological analyses shall be kept for five years;
  - ii) Flow meter readings shall be kept for 10 years.
- b) The Approval Holder shall also retain the following information for a period of three years:
  - i) calibration and maintenance records;
  - ii) continuous monitoring data;
  - iii) records of any violations of the conditions of this Approval and actions taken by the Approval Holder to correct those violations.
- c) A copy of this Approval, project reports, construction documents and drawings, inspection reports, shall be kept for the life of the facility.

10084645

# NOVA SCOTIA DEPARTMENT OF THE ENVIRONMENT

# APPROVAL TO CONSTRUCT AND OPERATE SEWAGE WORKS

Pursuant to Section 56 of the Environment Act and subject to the terms and conditions contained in Schedule "A" of this Approval, this Approval is granted to Bowater Mersey Paper Company Limited, to construct and operate a <u>sanitary sewer system</u> in the County of Queens, Province of Nova Scotia.

Gran	ited at <u>L</u>	<u>iverpool</u> i	n the County	of <b>Queens</b> , Province	of Nova Scotia,
this _	20th	_ day of	December	A.D. 1999.	

99<u>-ATCW-028</u> Approval Number Blills For J. Garnhum
Administrator

## SCHEDULE "A"

Project:

Bowater Mersey Paper Company Limited, Pump Station and Force Main, Design by CBCL Limited; Project 990868.02; Dwg. No.'s D-21152 and D-21153 latest date 10/11/99, stamped and signed by M. P. Abbott, P.Eng. (6704); Dwg. No. D-21154 latest date Nov.10, 1999, stamped and signed by M.R. MacDonald, P.Eng. (4274); letter of 10 November 1999 from Mike Abbott, M.Eng., P.Eng. to Barry Gillis, P.Eng., Memo of 99, 12, 13 (by e-mail) from Abbott to Gillis.

File:

12-99-0161

Approval No.:

99-ATCW-028

- 1. The above noted drawings and plans, including drawings and plans having design specifications and installation measures, form part of this authorization.
- 2. All phases of construction shall be overseen by a qualified professional engineer or technologist. Certification by a professional engineer is required stating that all construction/installations have been conducted in accordance with the approved plans and specifications. This certification must be provided to the Administrator, Western Region, Liverpool District Office, Nova Scotia Department of the Environment, within 3 weeks of project completion.
- 3. It is an offence under the Environment Act to proceed with construction in advance of receiving this Approval in writing.
- 4. Should the work approved under this Approval not be commenced within a year, this permit shall automatically be null and void.
- 5. Any changes in approved plans and specifications must be authorized in writing by the Administrator, Western Region, Liverpool District Office, Nova Scotia Department of the Environment prior to construction/implementation.

6. This Approval does not negate the requirement for compliance with other existing municipal, provincial and federal laws and regulations.

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- 7. A copy of the post construction report must be provided to the Administrator, Western Region, Liverpool District Office. The "Post-Construction Report" must contain all information regarding major changes from the approved plans or specifications made during construction. These major changes include any deviations which affect capacity, flow or operation of units. The "Post-Construction Report" must also include all commission or start-up of equipment tests and any other test results produced during construction. The "Post Construction Report" must also guarantee that all as-built drawings, operation and maintenance manuals, and any other relevant documentation have been turned over to the owner/operator by the engineer.
- 8. Erosion and sedimentation control measures are to be installed as required such that areas adjacent to and downstream of the construction site are protected from siltation. This includes the area immediately downstream of the discharge location.
- 9. The collection system is not to carry sanitary sewage to the proposed sewage treatment plant location until such time that an approved sewage treatment plant is constructed.



PO Box 1240 Middleton, Nova Scotia BOS 1PO 10084645

Tel: (902) 825-2123 Fax: (902) 825-4471

Middleton Office Western Region Our file no:

12-00-0154

April 28, 2000

CBCL Limited 1489 Hollis Street , P. O. Box 66, Halifax, NS B3J 2R7

Attention: Michael Abbott P. Eng.

Dear Sir:

Enclosed is approval to Construct and Operate Sewage Works, for the Bowaters Mersey paper mill Brooklyn Queens County, Nova Scotia.

Should you have any questions, or require further assistance, contact Robert Balcom P. Eng., Middleton, at 825-2123.

Yours truly,

Jeff Garnhum District Manager



# Department of the Environment

Robert Balcom, P.Eng. Professional Engineer

PO Box 1240, 142 Commercial St, Middleton, Nova Scotia BOS 1PO

Tel: (902) 825-2123 Fax: (902) 825-4471

Our file:

#### **MEMORANDUM**

TO:

Jeff Garnhum

**District Manager** 

FROM:

Robert Balcom, P. Eng.

DATE:

April 28, 2000

SUBJECT:

**Bowater Mersey Paper Company Ltd.** 

Application No:

00-ATCW-007

File No:

12-00-0154

Attached is an Engineering report describing briefly the work covered by this application, outlining the factors considered in the review process, and recommending approval of the project.

PROJECT:

Bowater Mersey Paper Company Co. Ltd. sewage treatment plant,

plans and specifications approved by M Abott March 24, 2000.

ESTIMATED COST: Not available

Robert Balcom P.Eng. Professional Engineer

# NOVA SCOTIA DEPARTMENT OF THE ENVIRONMENT

# APPROVAL TO CONSTRUCT AND OPERATE SEWAGE WORKS

Pursuant to Section 56 of the Environment Act and subject to the terms and conditions contained in Schedule "A" of this Approval, this Approval is granted to Bowater Mersey Paper Company Limited, to construct and operate a <u>sanitary sewage treatment system</u> in Brooklyn, Queens County, Province of Nova Scotia.

Granted at <u>Bridgewater</u> in the County of <u>Lunenburg</u>, Province of Nova Scotia, this <u>28th</u> day of <u>April</u> A.D. 2000.

<u>00-ATCW-007</u> Approval Number

Administrator

### Form 1 [ FOIPOP Application ]

Province of Nova Scotia Freedom of Information & Protection of Privacy Act Subsection 6(1)

Aimee Standen, FOIPOP Administrator To:

NS Environment, 5151 Terminal Road, PO Box 442, Halifax, NS B3J 2P8

Phone: (902)424-2577 Fax: (902)424-6925 email: ENVaccess@gov.ns.ca

(note: ple	-	applications for information othe fee must accompany the applicatio	•
This is an appl Check one:	<ul><li>□ (a) applicant's own</li><li>□ (b) other information</li></ul>	Freedom of Information & Protect personal information; or own personal information and other	
Below, identify the mate late of the record or the	date or period to which it o prepared or may have k	by including such particulars as the sprease, the type of record (document,	pecific event or action to which it refers, the report, letter, et cetera), names of ions to newspapers or publications which are
3. I wish to:	Check one: □ (a)	examine the record; or receive a copy of the record.	
	e purpose of communic	information collected below will ating with the applicant in respondance pay a fee before obtaining access	se to this application]
Signature: PRINT Full Name: Company:			•
Mailing Address: Phone Numbers:		[bus] [cell]	
□ (a) I cann	excused from paying feature of the contraction of t	Request to Waive Fees es related to the above application	because:
Date Received	Appl	For Office Use Only ication # ENV-	□ \$5 fee received □ fee n/a (personal/ info)

NOVA SCOTIA

Department of Environment & Labour

60 Logan Road Bridgewater, NS B4V 3J8 Tel:(902) 543-4685 Fax:(902) 527-5480

April 9, 2001

Our File Number: 95100-31

Bowater Mersey Paper Company 3691 #3 HW Brooklyn, NS B0T 1K0

Dear

# RE: Water Supply Registration - Registration No. 2001-019449 -

You are now registered with the Nova Scotia Department of Environment and Labour as an owner of a public drinking water supply system and your responsibilities as a provider of water to the public are summarized below.

Your registration number is 2001-019449. Please ensure this number is recorded on all drinking water samples and is referred to in any correspondence with our Department.

As the owner of a registered public drinking water supply, you must meet the requirements of the *Water and Wastewater Facility Regulations* and the guidelines referenced therein. A copy of the appropriate section of the regulation is attached for your information.

As the owner of a registered public drinking water supply, you are required to sample the supply for coliform bacteria a minimum of four (4) times a year at the tap. The designated months you are required to sample are November, February, May, & August. You are also required to sample for chemical quality once a year or once every two (2) years depending on the source. The water sample should be submitted within 24 hours to a laboratory for analysis. Please see the attached list for approved labs.

The lab will return the analysis results to you, and you are required to retain them as a record of your water supply quality. A representative of the Department may ask to view your lab results to ensure you are in compliance with the requirements of the regulations.

If the lab detects a contaminant in your water supply which exceeds acceptable levels, you are required to advise the Nova Scotia Department of Environment and Labour. Upon confirmation of an unacceptable result, a follow-up inspection will be conducted.

If you have any questions, please call Danny Shannon at 543-4685.

Yours truly,

Danny Shannon Inspector Specialist

File: 2001-019449

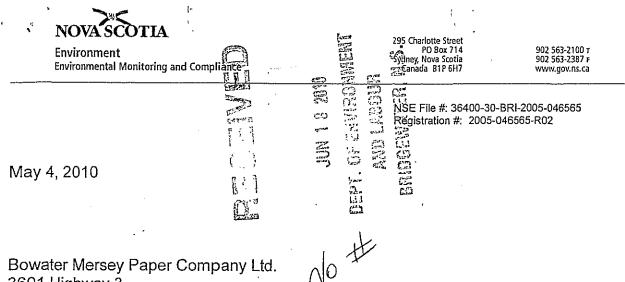
# Appendix G

## **Registration Form**





Owner:							
Last Name: Bowater Mersey Paper Company	First name:			Initial:			
Mailing Address:	Town: Liverpool		Prov: NS	Postal Code: B0T 1K0			
P.O. Box 1150	E-mail:	<u> </u>	Fax: 902 484 7591	Phone: 902 354 3445 x			
Contact:							
Last Name:	First name;			Initial:			
Mailing Address:	Town: Liverpool		Prov: NS	Postal Code: B0T 1K0			
P.O. Box 1150	E-mail;	<b></b> bowater.com	Fax: 902 484 7591	Phone: 902 354 3445 x			
Location of Facility:							
Name: Bowater Mersey Paper Company	Civic # 3691		Street: Highway 3	T			
Community: Paper Mill, Brooklyn Energy,	County: Queens		PID#	Map# 21A/2			
Brooklyn community	Easting: 364100		Northing: 4878900	Phone: 902 354 3411			
Size of Facility:							
Population served: 578 Number of connections: 32 Demand: 29980 litres/day							
Water Supply Source:							
Sources of Water: Surface of Nickerson's Pond For wells, attach copy of well log: N/A							
				· · · · · · · · · · · · · · · · · · ·			
Treatment Equipment:							
Type: Chlorine, chlorinators (2) Capacity/Size: 9 M gallons of water/day Age: 1978, 2001							
Classification: (For Office Use Only)							
Classification of Facility Operator Certification.							
#days of operation:	Type of Facility Served:						
Owner's Signature:		Date:	Thursday, April	05, 2001			



3691 Highway 3 PO Box 1150 Liverpool, NS **BOT 1K0** 

Dear

RE: Petroleum Storage Tank Registry - Certificate of Registration Site Registration # 2005-046565-R02

The Department has received the renewal fee associated with the registration and issuance of tank tags for the storage tank system located at Bowater Mersey Paper Co. Ltd., Brooklyn, Queens County. Enclosed is a receipt and a Certificate of Registration for each registered petroleum storage tank on this property.

Please take notice of the Site Registration Number and the Tank Numbers which have been assigned to this site. Please refer to these numbers on any future correspondence.

If any information on the Certificate of Registration is incorrect or if you have any questions regarding this issue, please contact me at (902) 563-2100.

Yours truly,

Nancy J Harris

Attachment

Regional/District Office cc:

# Department of Environment

## Petroleum Storage Tank Registry Certificate of Registration

Bowater Mersey Paper Company Ltd. 3691 #3 Highway P. O. Box 1150 Owner Mailing Address: Registered Owner:

Liverpool, NS BOT 1K0

Site Operator: Site Location:

Bowater Mersey Paper Co. Ltd. 3691 Highway 3 Brooklyn, Queens County

Commercial Type of Installation: Dyking Details

2005-046565 Site Registration No.:

2005-046565-R02 Appl./Appr. No.:

Tank Number	Status of Tank	Type of Y Tank Ir	Year of Installation	Year of Estimated Installation Capacity	Construction Material	External Protection Details	Secondary Containment Details	Piping Is' Details	Substance Stored	Additional Information
2005-046565-001 Removed	Removed	Aboveground	1981	4000000 litres	Welded Steel	None/Unknown	None	Black/Bare Steel	Bunker	Last Used -1999
2005-046565-002 Removed	Removed	Aboveground	1981	95000 litres	95000 litres Welded Steel	None/Unknown	None	Black/Bare Steel .	Bunker	Last Used -2001
2005-046565-003 Renioved	Removed	Aboveground	1987	4500 litres	4500 litres Welded Steel	Nons/Спкпочп	<i>None</i>	Black/Bare Steel	Fuel Oil	·
2005-046565-004 Removed	Removed	Авочедтоина		4500 litres	4500 litres Welded Steel	None/Unknown		Black/Bare Steel	Gasoline	Last Used -1989
2005-046565-005 Removed	Removed	Aboveground	1966	1703 litres	1703 litres Welded Steel	None/Unknown	None	Bluck/Bare Stee!	Kerosene	Lası Used -1990
2005-046565-006	<i>Removed</i>	Aboveground	1980	50775 litres	50775 litres Welded Steel	None/Urknown	None	Black/Bare Steel	Lube Oil	Last Used -2003 O litres Remaining
2005-046565-007 Removed	Removed	Aboveground	1977	9000 litres	Welded Steel	None/Unknown	None	Black/Bare Steel	Fuel Oil	Last Used -2000

# Department of Environment

## Petroleum Storage Tank Registry Certificate of Registration

Bowater Mersey Paper Company Ltd. 3691 #3 Highway P. O. Box 1150 Registered Owner: Owner Mailing Address:

Liverpool, NS BOT 1K0

Site Operator: Site Location:

Bowater Mersey Paper Co. Ltd. 3691 Highway 3 Brooklyn, Queens County

2005-046565 Commercial Site Registration No.: Type of Installation: Dyking Details

2005-046565-R02 Appl./Appr. No.:

Tank Number	Status of Tank	Type of Y Tank L	Year of Estimated Installation Capacity	Estimated Capacity	Construction Material	External Protection Details	Secondary Containment Details	Piping Is Details	Substance Stored	Additional Information
2005-046565-008	Removed	Underground	1978	7570 litres	Steel	None/Unknown	None -	Black/Bare Steel	Fuel Oil	Last Used -1993
2005-046565-009	Removed	Underground	0867	1892 litres Steel	Steel .	None/Unknown	None	<i>Опк</i> почт	Gasoline	Last Used -2000 .
2005-046565-010 Removed	Removed	Underground	1987	5000 litres Steel	Steel	Sacrificial Anode	None	 Опкпочт	Gasoline	Last Used -2000
2005-046565-011 Removed	Removed	Aboveground	1989	15000 litres	15000 litres Welded Steel	Noxe/Unknown	None	Unknown	Diesel	Last Used -2000
2005-046565-012 Currently in Use Aboveground	Currently In Use	Aboveground	2000	4700 litres	Welded Steel	None/Unknown	Double Wall	Biack/Bare Steel	Gasoline .	
2005-046565-013	Currently In Use Aboveground	Aboveground	. 2000	5677 litres	5677 litres Welded Steel	None/Unknown	Other: Concrete containment	Black/Bare Steel	Hydraulic	
2005-046565-014 Currently In Use Aboveground	Currently In Use	Aboveground	1983	16310 litres	16310 litres Welded Steel	None/Unknown	Other: Concrete	Black/Bare Steel	Lube	

## NOVA SCOTTA

# Department of Environment

## Petroleum Storage Tank Registry Certificate of Registration

Owner Mailing Address: Registered Owner:

Bowater Mersey Paper Company Ltd. 3691 #3 Highway P. O. Box 1150

Site Operator:

Site Location:

Liverpool, NS BOT 1K9

Bowater Mersey Paper Co. Ltd. 3691 Highway 3 Brooklyn, Queens County

Commercial Type of Installation:

2005-046565 Site Registration No.: Dyking Details

Appl./Appr. No.:

2005-046565-R02

Additional Information	
Substance Stored	Lube
Piping ' Is Details	Black/Bare Steel
Secondary Containment Details	Other: Concrete
External Protection Details	None/Unknown
Construction Material	Welded Steel
Estimated 1 Capacity	16310 litres
Year of Installation	1 1984
Type of Tank	Aboveground
Status of Tank	Currently In Use Aboveground
Tank Number	2005-046565-015



### PETROLEUM STORAGE TANK REGISTRATION VALIDATION FORM

	OFFICE USE			Application #		
Date Recid (yyyy/mm/dd)		Ext. Ref #		NSDOE File #		
Total Fees Dire		Fees Paid				7
Receipt#			Water Auth, # (Div.	1 ontyl	100 100	

NOTE: This form is intended for internal use by NSDEL staff only in order to validate information on existing petroleum storage tanks and enable the entry of this information into the Petroleum Storage Tank Database developed for EIMAS.

	SECTION 1	- OWNER		
If there is more than one owner, please indic	ate who is the primary owner	r for the petroleum st	torage tanks and attach a	complete list of owne
Company/Organization/Municipality	Imperial	oil		
Business Number (BN) if applicable	<u> </u>			
Mr.	Other:	Professional Design	nation	
First Name	Middle Initial	Family Name		
Phone Home ( )	Business ( )	Ext.	Other ( )	Ext.
Fax ( )	E-mail		· · · · · · · · · · · · · · · · · · ·	
Civic/Street Address 4D	Allerney	De.		
Mailing Address (if different than Civic)				
County H/Y	C	ity/Town	Part mouth	
Province	Postal Code B24	4-R1	Country	
s the Contact/Operator the same as Section 1		as	)R ., please skip to Section 3.	
Company/Organization/Municipality	Sowale Merx	= y Paper	(0. 1/2	
Business Number (BN) if applicable		<i></i>		
Mr.	O Other:	Professional Designa	ation	•
First Name	Middle Initial	Family Name		
Phone Home ( )	Business ( )	Ext.	Other ( )	Ext.
Fax ( )	E-mail			
Civic/Street Address 3 ( 9 /	Hw #3		4	
Mailing Address (if different than Civic)	TO BAX 1	50 1200	rond	
County (Vreens	Cil	y/Town Thi	1 Bronkly	<b>I</b> n
Province	Postal Code		Country	

### SECTION 3 - SITE/LOCATION OF PROPOSED ACTIVITIES

Site Name Sowaten 9	re available at Nova Scotia Department of the Environment Regional Offices.
Civic/Street Address 7 6 0 1 C	why Call Pla
3011	orig ( ) re 100
County Overns	Community 30 msteles
Property Identification # (PID)	1:50,000 Topo Map #
Grid Reference Easting (6)	Northing (7)
	Horaing (7)
SE	ECTION 4 - ACTIVITY
Proposed Activities - Please check 🗸 all that apply.	
<u>Activity</u>	<u>Complete Sections</u>
Petroleum Storage Tank System Registration 🗹	4, 5A, 5H, 7
SECTION	ON 5 - ACTIVITY DETAILS
	· · · · ·
ease provide all information requested in metric units in	
	ids/Waste Dangerous Goods/Salvage Yard Applications.
ype of Facility	
ilorage 🗹 Disposal	☐ Treatment ☐ Other ☐
Other, please specify:	
	ka N/A mi Total for all take, line
	kg N/Am3 Total for all tacks litre
Maximum Disposal Capacity N/A	kg <u>N/A</u> m³ <u>N/A</u> litre
Eximiten Treatment Capacity N/A	kg <u>N/A</u> fff <sup>3</sup> N/A liftre
H - Complete only for registration of Petroleum	Storage Tank System
ype of Installation: Bulk Plant Q Motiv	re Fuel Outlet 🗽 Farm □ Residential □
	mercial Government 🗆 Other 🔾
Other, please specify:	
stallation Description: Existing Site 🚨 orClosed Site 🟃	
staller Name	Installer Certificate. # Not routed for EIMAS
yking (for aboveground tanks only): Number of	tanks dyked
••	
/ke Construction Material: Concrete 🔾 Earth/Cli	ay 🔾 Steel 🔾 Synthetic Liner 🔾 Other 🔾
Other, please specify	<u></u>
ngth (metres) Width (me	tres) Effective Height (metres)
fective Capacity (length $x$ width $x$ effective height) (metres	
	,

. Description of Tanks	اک					
Tank Number (Refer to Drawing)	Y	18	3	4	5	6
Status of Tank (Mark one only)     Currently in use				1		<del> </del>
Temporarily out of use						
Abandoned in place					†	
Removed	1	1		1.		<del>                                     </del>
2. Type of Tank (Aboveground or Underground)	4/6	U/G			†	
3. Estimated Year of Installation	1997	1992				
4. Estimated Total Capacity (litres)	32000	1	,		i	
Material of Construction a. Underground Tanks Steel						
· Fiberglass reinforced plastic	1	1/				
Unknown						
Other, please specify						
b. Aboveground Tanks Welded Steel						
Rivetted steel		1		·		
Other, please specify	<u></u>	İ				
External Protection (Mark all that apply)     Sacrificial anode cathodic protection						
Impressed current cathodic protection						
Zinc reference electrode						
None or Unknown	0					
Other, please specify						
7. Secondary Containment (Mark all that apply) Double wall					Ì	
. Impermeable liner	· ·					
Vault						
Other, please specify						
Nane	<i>i</i> /	V				
8. Piping (Mark all that apply) Coated Black/Bare steel						
Galvanized steel						
Cathodically protected						
7	V	V				
Fiberglass reinforced plastic  Fiexible piping  Unknown						
Onknown Unknown						
Other, please specify						
9. Substance currently or last stored Compartment tank (Mark all that apply)						
Gasoline						
Diesel	/					
Fuel Oil						
Kerosene		Ì				
Bunker						
Used oil						
Unknown	j					
Other, please specify						
	51/02	01/02				
Estimated quantity remaining (litres)	\ - T	(				
Filled with inert material (yes or no)	1					
			<u> </u>	<u>-</u>		0/02/3000/07/07
Registration	<u> </u>					
spectors Name (Please print or type) DAVI, U C(v/£o						1- 24

Inspectors Signature

Date (yyyy/mm/dd) \_\_\_



#### Department of Environment and Labour

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60 Logan Road Bridgewater, NS B4V 3J8 Tel: (902) 543-4685 Fax: (902) 527-5480

Our File Number: 92100-30

July 4, 2002

Bowater Mersey Paper Co. Ltd. PO Box 1150 Liverpool, Nova Scotia **BOT 1K0** 

PID 10161153

Dear

RE: Approval to Operate - Pulp and Paper Manufacturing Facility Approval No. 2001-025430

Enclosed please find Approval # 2001-025430 issued to Bowater Mersey Paper Company Ltd. to amend an existing approval to operate a pulp and paper manufacturing facility at or near Brooklyn, Queens County, Nova Scotia.

Strict adherence to the attached terms and conditions is imperative in order to validate this approval.

Despite the issuance of this Approval, the Approval Holder is still responsible for obtaining any other authorization which may be required to carry out the activity, including those which may be necessary under provincial, federal or municipal law.

Should you have any questions, please contact Barry Gillis, Western Region, Bridgewater Office at (902) 543-4685.

Yours Truly

Jeff Garnhum

District Manager

CC

File: 2002-026691



#### **APPROVAL**

Province of Nova Scotia Environment Act, S.N.S. 1994-95, c.1

APPROVAL HOLDER:

**Bowater Mersey Paper Company** 

**APPROVAL NO:** 

2001-025430

**EFFECTIVE DATE:** 

July 4, 2002

**EXPIRY DATE:** 

see approval

Pursuant to Part V of the *Environment Act*, S.N.S. 1994-95, c.1 as amended from time to time, approval is granted to the Approval Holder subject to the Terms and Conditions attached to and forming part of this Approval, for the following activity:

Operation of a pulp and paper manufacturing facility at or near Brooklyn, Queens County, N.S.

Administrator Date Signed

#### **TERMS AND CONDITIONS**

#### Nova Scotia Department of Environment and Labour

Approval Holder: Bowater Mersey Paper Company Ltd.

PO Box 1150 Liverpool, NS B0T 1K0

FILE NUMBER:

92100-30-/BRI-025430

APPROVAL NO.

2001-025430

#### REFERENCE DOCUMENTS:

The following documents form part of the approval:

a) Information submitted in relation to Approval #94-005.

b) Application and associated information, dated 2001/09/21.

c) Letter of September 24, 2001 from Renee Estabrooks to Danny Shannon.

#### **CONDITIONS:**

The Approval Holder's application for an approval amendment, together with supporting information, is recommended for approval subject to the following terms and conditions:

#### 1. Scope of Approval

- (a) This Approval relates to Bowater Mersey Paper Company Ltd., hereafter called the "Approval Holder" and their request to amend approval #94-005 respecting the operation of a pulp and paper manufacturing facility at Brooklyn, Queens County.
- (b) This Approval authorizes the continued operation of a pulp and paper manufacturing facility, hereafter called the "Facility".
- (c) In this Approval "Minister" means the Minister of Environment and Labour.
- (d) In this Approval the "Act" means the Environment Act, S.N.S. 1994-95, c.1 and regulations made thereto, including the Approvals Procedure Regulations.

(e) "Department" means the Bridgewater District Office of the Nova Scotia Department of Environment and Labour. The present address for the office is:

Nova Scotia Department of Environment and Labour 60 Logan Road Bridgewater, Nova Scotia B4V 3J8

Phone: (902) 543-4685 Fax: (902) 527-5480

(f) If there is a discrepancy between the reference documents and the terms and conditions of this Approval, the terms and conditions of this Approval shall apply.

#### 2. General Terms and Conditions

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- a) The Approval Holder shall operate its Facility in accordance with provisions of the:
  - i) Environment Act S.N.S. 1994-1995, c. 1;
  - ii) Regulations pursuant to the above Act;
  - iii) Any future amendments to the Act and Regulations
- b) Nothing in this Approval relieves the Approval Holder of the responsibility for obtaining and paying for all licenses, permits, approvals or authorizations necessary for carrying out the work authorized to be performed by this Approval which may be required by municipal by-laws or provincial or federal legislation. The Minister does not warrant that such licenses, permits, approvals or other authorizations will be issued.
- c) No authority is granted by this Approval to enable the Approval Holder to construct the Facility on lands which are not in the control or ownership of the Approval Holder. It is the responsibility of the Approval Holder to ensure that such a contravention does not occur. The Approval Holder shall provide, to the Department, proof of such control or ownership upon expiry of any relevant lease or agreement. Failure to retain said authorization will result in this Approval being null and void.
- d) If there is a discrepancy between the reference documents and the Terms and Conditions of this Approval, the Terms and Conditions of this Approval shall apply.
- e) The Minister or Administrator may modify, amend or add conditions to this Approval at anytime pursuant to Section 58 of the Act.

- f) This Approval is not transferable without the consent of the Minister or Administrator.
- g) (i) If the Minister or Administrator determines that there has been non-compliance with any or all of the Terms and Conditions contained in this Approval, the Minister or Administrator may cancel or suspend the Approval pursuant to Subsections 58(2)(b) and 58(4) of the Act, until such time as the Minister or Administrator is satisfied that all Terms and Conditions have been met.
  - (ii) Despite a cancellation or suspension of this Approval, the Approval Holder remains subject to the penalty provisions of the Act and Regulations.
- h) The Approval Holder shall notify the Department prior to any proposed extensions or modifications of the Facility, including the active area, process changes or waste disposal practices which are not granted under this Approval. Written authorization from the Department will be required before implementing any change. Extensions or modifications to the Facility may be subject to the Environmental Assessment Regulations.
- Pursuant to Section 60 of the Act, the Approval Holder shall submit to the Administrator any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates and that comes to the attention of the Approval Holder after the issuance of the Approval.
- j) The Approval Holder shall immediately notify the Department of any incidents of non-compliance with this Approval.
- k) The Approval Holder shall bear all expenses incurred in carrying out the environmental monitoring required under the Terms and Conditions of this Approval.
- Unless specified otherwise in this Approval, all samples required to be collected by this Approval shall be collected, preserved and analyzed, by qualified personnel, in accordance with recognized industry standards and procedures.
- m) All samples required by this Approval shall be analyzed by a laboratory that is:
  - i) Accredited by the Standards Council of Canada; or
  - ii) Accredited by another agency recognized by the Nova Scotia

- Department of Environment and Labour to be equivalent to the Standards Council of Canada; or
- iii) Maintaining an acceptable standard in a proficiency testing program conducted by the Canadian Association for Environmental Analytical Laboratories for all parameters being reported; or
- iv) Maintaining an acceptable standard in a proficiency or performance testing in another program considered acceptable to the Nova Scotia Department of Environment and Labour for all parameters being reported.
- n) The Approval Holder shall submit any monitoring results or reports required by this Approval to the Department. Unless specified otherwise in this Approval, all monitoring results shall be submitted within 30 days following the month of monitoring.
- o) The Approval Holder shall ensure that this Approval, or a copy, is kept on site at all times and that responsible personnel are made fully aware of the Terms and Conditions which pertain to this Approval.
- p) The Approval Holder shall designate in writing to the Department, a contact for this approval.

#### 3. Sound Levels

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(a) Sound levels measured at the property boundaries, shall not exceed the following equivalent sound levels (Leq):

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Leq 65 dBA 0700 - 1900 hours (Days)
60 dBA 1900 - 2300 hours (Evenings)
55 dBA 2300 - 0700 hours (Nights)
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(b) Monitoring shall be conducted by the Approval Holder at the request of the Nova Scotia Department of the Environment and Labour.

#### 4. Air Emissions

- (a) Operation of the Facility shall not result in or contribute to, an exceedence of the Maximum Permissible Ground Level Concentrations specified in the Air Quality Regulations as amended, established pursuant to the Environment Act.
- (b) At the request of the Department, the Approval Holder shall monitor

- ambient air concentrations of the contaminants listed in Schedule "A" of the Air Quality Regulations, as amended.
- (c) At the request of the Department, the Approval Holder shall demonstrate that operation of the Facility is not contributing to exceedances of the Maximum Permissible Ground Level Concentrations for contaminants listed in Schedule "A" of the Air Quality Regulations, as amended.
- (d) Where it is deemed by the Department that the operation of the Facility is a significant contributor to exceedances of the Maximum Permissible Ground Level Concentrations for contaminants listed in Schedule "A" of the Air Quality Regulations, as amended, the Approval Holder shall implement a control plan to prevent further such exceedances.

#### 5. Particulate Emissions (Dust)

(a) Particulate emissions shall not exceed the following limits at or beyond the property boundaries associated with the Site:

Annual Geometric Mean 60-70  $\mu$ g/m³ Daily Average (24 hr.) 120  $\mu$ g/m³

- (b) The generation of fugitive dust from the Site will be suppressed by the application of water sprays, or the application of other suitable dust suppressants approved by the Department.
- (c) Site access road(s) shall be maintained to minimize dust generation. The use of hydrocarbons or used oil is not permitted.
- (d) Monitoring of particulate emissions shall be conducted at the request of the Nova Scotia Department of the Environment. The location of the monitoring station(s) for particulate will be established by the Administrator and may include point(s) beyond the property boundary.

#### 7. Effluent Collection and Treatment

- (a) i) Only non-contact cooling water will be discharged directly to Liverpool Bay.
  - ii) All deleterious substances as defined by the Fisheries Act, Pulp and Paper Effluent Regulations will receive treatment.
- b) The primary and secondary sludges removed from the treatment process shall be dewatered and disposed of either in an approved manner at the site or at an off-site facility approved to handle the sludge.

- c) i) The ASB treatment plant is to include a 2.3 million US gal settling basin and two aerated stabilization basins designed to contain a total of 94 million US gal.
  - ii) The basins are to be constructed of earthen berms, and to be operated with a minimum freeboard of 4 feet.
  - iii) A 60 mil HDPE liner is to be installed on the side slopes and the bottom of the basins to prevent effluent leachate from contaminating the groundwater.
  - iv) The entire ASB site is to be encircled by a 6 foot chain-link fence with a lockable gate.
- d) The treated effluent is to discharge from the ASB to a gravity return line designed with drop structures to dissipate hydraulic energy and control foam.

#### 8. Groundwater Monitoring

The monitoring wells at the ASB site are to be sampled quarterly and analysed for pH, colour, BOD<sub>5</sub> and TOC.

#### 9. Effluent Monitoring

- a) i) Treated effluent discharged to the marine outfall is to be monitored continuously for flow, pH, and electrical conductivity.

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  - ii) The results of the pH and conductivity measurements are to be kept available at the mill for inspection by NSDOE for at least three years.
  - iii) The flow monitoring equipment shall be calibrated to be accurate within ± 10%.
- b) i) Effluent samples are to be collected each day the mill discharges effluent.
  - ii) Samples for conducting a BOD (biochemical oxygen demand) test or a SS (suspended solids) test are to be collected at the effluent monitoring station during a full 24 hour day, by continuous sampling, or by a composite of equal samples at least every 15 minutes during the day.
  - iii) Toxicity tests are to be conducted on grab samples collected at the effluent monitoring station.

- c) The reference production rate (RPR) for the mill, as defined by the Pulp and Paper Effluent Regulations, is to be determined annually and provided to NSDOE with the monthly report for January. The RPR is utilized for determining discharge limits for BOD and SS, as per stipulations D) iii) and E) iii).
- d) i) For the purposes of monitoring effluent BOD, a five day BOD test shall be conducted a minimum of three days a week.
  - ii) The monthly BOD discharge is determined from the average daily discharges during the month multiplied by the number of days in the month that the mill discharged effluent.
  - iii) The amount of BOD discharged, as determined from the test results and the effluent flow are to comply with the following limits:
    - a) daily BOD 5-kg/te x 2.5 x RPR
    - b) monthly BOD 5 x 1.5 x RPR x D, where D is the number of days in the month.
    - e.g. if the RPR = 800 te/day, then the daily BOD limit is  $12.5 \times 800 = 10,000 \text{ kg}$  and the monthly BOD limit say for January is  $7.5 \times 800 \times 31 = 186,000 \text{ kg}$ .
- e) i) For the purposes of monitoring SS, a SS test shall be conducted on each 24 hour composite sample collected.
  - ii) The monthly SS discharge is determined from the total of the daily discharges for the month.
  - iii) The amount of SS discharged daily and monthly are to comply with the following limits:

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daily SS - 7.5 kg/te x 2.5 x RPR monthly SS - 7.5 x 1.5 x RPR x D
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- f) i)a) For the purposes of monitoring toxicity, the acute lethality of the effluent is to be determined from tests using rainbow trout and Daphnia magna.
  - b) For the purposes of determining toxicity, procedures as set out in the Federal Pulp and Paper Effluent Regulations shall govern.
  - ii) Effluent discharges are to be non-acutely lethal, i.e. LC 50 = 100%.
    - a) Effluent fails the rainbow trout acute lethality test when it kills more than 50% of the fish during the 96 hour test period. The test is to be conducted on undiluted effluent.

- b) Effluent fails the Daphnia magna acute lethality test when it kills more than 50 percent of the daphnids during the 48 hour test period. The test is to be conducted on undiluted effluent.
- iii) a) Effluent toxicity is to be determined once a month using rainbow trout, and once a week using Daphnia magna. A period of at least 21 days is to separate any two rainbow trout tests required by this condition.
  - b) When a sample of effluent fails the acute lethality test using rainbow trout, the frequency for testing is to be increased to once every week.
  - c) The frequency of sample collection and testing of the above condition will be maintained until three consecutive tests are passed. The monthly test frequency may then be resumed.
  - d) When a sample of effluent fails the Daphnia magna acute lethality test, the following procedures apply:
    - An effluent sample will be collected without delay, and an acute lethality test on rainbow trout conducted.
    - The frequency of conducting the Daphnia magna test will be increased to three times per week.
  - e) The frequency of sample collection and testing of the above condition will be maintained until three consecutive tests are passed. Weekly tests may then be resumed.
- g) Effluent BOD, SS, and toxicity testing shall be in accordance with the test methods referenced in schedule 1 of the Pulp and Paper Regulations, as follows:
  - i) Acute lethality to rainbow trout Schedule 1, section 1.
  - ii) Acute lethality to Daphnia magna Schedule 1, section 2(1).
  - iii) Effluent BOD Schedule 1, section 3.
  - iv) Effluent SS Schedule 1, section 4.

#### 10. Emergency Reporting and Contingency Plans

- a) i) In the event of any spill as defined in the Emergency Spill Regulations, said regulations are to be followed.
  - ii) Upon request, the Approval Holder is to submit a written report to the Department within a time frame specified at that time.

b) An updated Emergency Response Plan is to be submitted to the Department by January 31, of each year.

#### 11. Reporting

- a) Bowater Mersey shall submit monthly reports to NSDOE containing the following information:
  - i) The amount of BOD in kilograms discharged for the days the effluent was tested for BOD.
  - ii) The total amount of BOD discharged for the month.
  - iii) The daily and monthly BOD discharge limits.
  - iv) The amount of SS in kilograms discharged each day the mill discharged effluent from the ASB treatment plant.
  - v) The total amount of SS discharged for the month.
  - vi) The daily and monthly SS discharge limits.
  - vii) The effluent toxicity test results.
  - viii) The daily effluent flow in cubic meters.
  - ix) The daily production of finished product in tonnes.
  - x) The quarterly monitoring results for the groundwater at the ASB site.

#### 12. Term of Approval

This Approval shall remain valid for a period of 10 years from the date the  $\,\cdot\,$  approval is issued.

#### Report

#### **Application For Approval**

**Bowater Mersey paper Company** Pulp and Paper Manufacturing Facility Brooklyn **Queens County** 

Application Number: 2001-025430

File Number:

92100-30

Western Region

Bridgewater

Jeff Garnhum District Manager

Barry Gillis Engineer

David Clarke Inspector Specialist

July 11/02
Date

July 2/02
Date



#### Department of Environment and Labour

Environmental Monitoring and Compliance Division

David Clarke Inspector Specialist 60 Logan Road Bridgewater, NS B4V 3J8 Tel: (902) 543-4685 Fax: (902) 527-5480

NSDEL File #: 92100-30 Application #: 2001-024279

November 8, 2001

PID 70161153

Bowater Mersey Paper Company Ltd. 3691 #3 Hw PO Box 1150 Liverpool, NS **B0T 1K0** 

Dear

RE:

Application for Approval - Industrial Landfill

Brooklyn, Queens County

Enclosed is an Approval for the activity "Industrial Landfill" granted to Bowater Mersey Paper Company Ltd. to construct and operate an Industrial Landfill at or near Brooklyn, Queens County, Nova Scotia. Please ensure that you forward the original Approval to Bowater Mersey Paper Company Ltd.

If you have any questions or require further assistance, please contact David Clarke, Western Region, Bridgewater, at (902) 543-4685.

Yours truly,

District Manage

CC:

David Clarke

Barry Gillis Dan Shannon

File: 2001-024279\_Approval\_Cover\_letter



#### **APPROVAL**

Province of Nova Scotia
Environment Act, S.N.S. 1994-95, c.1

APPROVAL HOLDER:

Bowater Mersey Paper Company Ltd.

APPROVAL NO:

2001-024279

**EFFECTIVE DATE:** 

November 13, 2001

**EXPIRY DATE:** 

November 13, 2011

Pursuant to Part V of the Environmental Act, S.N.S. 1994-95, c.1 as amended from time to time, approval is granted to the Approval Holder subject to the Terms and Conditions attached to and forming part of this Approval, for the following activity:

Construction and operation of an Industrial Landfill and associated works, at or near Brooklyn, Queens County, in the Province of Nova Scotia.

Administrator:

Date Signed:

#### TERMS AND CONDITIONS

Nova Scotia Department of Environment and Labour

Approval Holder: Bowater Mersey Paper Company Ltd.

PO Box 1150

Liverpool, Nova Scotia

BOT 1KO

File Number: 92100-30-/BRI-024279

Approval Number: 2001-024279

Reference Documents:

The following documents were submitted in support of the application:

a) Application dated 2001/09/18, signed by Roger A. Loney.

- b) Letter of September 24, 2001, from Renee Estabrooks to Danny Shannon.
- ASB Landfill Cell No.1 Expansion, Bowater Mersey Paper Company,
   Specifications and Tender Documents, May 1999, Prepared by Porter Dillon Ltd.
- d) Drawings #D-20016, D-20017, D-20018, D-20019, and D-20020 by Dillon Consulting / Porter Dillon Ltd.
- e) Geotechnical Investigation, ASB Landfill Expansion, Alternative Design: Increase Capacity ASB Cell No.1, Bowater Mersey Paper Co. Ltd., Liverpool, Nova Scotia. Prepared by Moroney Associates Inc., April 12, 1999.
- f) Correspondence dated July 7, 1999 from Francis Younker to Bob Petrie.
- g) Plan D-19977, latest date Jul 12/01, by Bowater Mersey Paper Ltd., Engineering Department.
- h) Letter of November 5, 2001, and attachments, from Renee Estabrooks to Barry Gillis.
- i) Letter of July 25, 2001, from Renee Morais to Danny Shannon.

#### **CONDITIONS:**

The Approval Holder's application for an approval amendment, dated 2001/09/18, signed by Roger A. Loney, together with supporting information, is recommended for approval subject to the following terms and conditions:

#### 1. Scope of Approval

(a) The Approval relates to Bowater Mersey Paper Company Ltd., hereafter called the "Approval Holder" and their request to amend approval #99-IAW-037 respecting the operation of an industrial landfill at or near Brooklyn, Queens County. This approval replaces Approval #99-IAW-037.

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- (b) The Approval authorizes the continued operation of an industrial landfill facility hereafter called the "Facility".
- (c) In this Approval "Minister" means the Minister of Environment and Labour.
- (d) In this Approval the "Act" means the Environment Act, S.N.S. 1994-95, c.1 and regulations made thereto, including the Approvals Procedure Regulations.
- (e) "Department" means the Bridgewater District Office of the Nova
  Scotia Department of Environment and Labour. The present address
  for the office is:

Nova Scotia Department of Environment and Labour 60 Logan Road
Bridgewater, Nova Scotia
B4V 3J9

Phone: (902) 543-4685 Fax: (902) 527-5480

(f) If there is a discrepancy between the reference documents and the terms and conditions of this Approval, the terms and conditions of this Approval shall apply.

#### 2. General Terms & Conditions

- a) The Approval Holder shall construct, operate and reclaim its Facility in accordance with provisions of the:
  - i) Environment Act S.N.S. 1994-1995, c.1;
  - ii) Regulations pursuant to the above Act;
  - iii) Any future amendments to the Act and Regulations.

- Nothing in this Approval relieves the Approval Holder of the responsibility for obtaining and paying for all licenses, permits, approvals or authorizations necessary for carrying out the work authorized to be performed by this Approval which may be required by municipal by-laws or provincial or federal legislation. The Minister does not warrant that such licenses, permits, approvals or other authorizations will be issued.
- No authority is granted by this Approval to enable the Approval Holder to construct the Facility on lands which are not in the control or ownership of the Approval Holder. It is the responsibility of the Approval Holder to ensure that such a contravention does not occur. The Approval Holder shall provide, to the Department, proof of such control or ownership upon expiry of any relevant lease or agreement. Failure to retain said authorization will result in this Approval being null and void.
- d) If there is a discrepancy between the reference documents and the Terms and Conditions of this Approval, the Terms and Conditions of this Approval shall apply.
- e) The Minister or Administrator may modify, amend or add conditions to this Approval at anytime pursuant to Section 58 of the Act.
- f) This Approval is not transferable without the consent of the Minister or Administrator.
- g) (i) If the Minister or Administrator determines that there has been non-compliance with any or all of the Terms and Conditions contained in this Approval, the Minister or Administrator may cancel or suspend the Approval pursuant to Subsections 58(2)(b) and 58(4) of the Act, until such time as the Minister or Administrator is satisfied that all Terms and Conditions have been met.
  - (ii) Despite a cancellation or suspension of this Approval, the Approval Holder remains subject to the penalty provisions of the Act and Regulations.

- h) The Approval Holder shall notify the Department prior to any proposed extensions or modifications of the Facility, including the active area, process changes or waste disposal practices which are not granted under this Approval. An amendment to this Approval will be required before implementing any change. Extensions or modifications to the Facility may be subject to the Environmental Assessment Regulations.
- Pursuant to Section 60 of the Act, the Approval Holder shall submit to the Administrator any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates and that comes to the attention of the Approval Holder after the issuance of the Approval.
- j) The Approval Holder shall immediately notify the Department of any incidents of non-compliance with this Approval.
- k) The Approval Holder shall bear all expenses incurred in carrying out the environmental monitoring required under the Terms and Conditions of this Approval:
- Unless specified otherwise in this Approval, all samples required to be collected by this Approval shall be collected, preserved and analyzed, by qualified personnel, in accordance with recognized industry standards and procedures.
- m) Effective January 1, 2002, all samples required by this Approval shall be analyzed by a laboratory that is:
  - i) Accredited by the Standards Council of Canada; or
  - ii) Accredited by another agency recognized by the Nova Scotia Department of Environment and Labour to be equivalent to the Standards Council of Canada; or
  - iii) Maintaining an acceptable standard in a proficiency testing program conducted by the Canadian Association for Environmental Analytical Laboratories for all parameters being reported; or
  - iv) Maintaining an acceptable standard in a proficiency or performance testing in another program considered acceptable to the Nova Scotia Department of Environment and Labour for all parameters being reported.

n) The Approval Holder shall submit any monitoring results or reports required by this Approval to the Department. Unless specified otherwise in this Approval, all monitoring shall be submitted within 30 days following the month of monitoring.

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- o) The Approval Holder shall ensure that this Approval, or a copy, is kept on site at all times and that personnel directly involved in the facility operation, are made fully aware of the Terms and Conditions which pertain to this Approval.
- p) The Approval Holder shall designate in writing to the Department, a contact for this approval.

#### 3. Sound Levels

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a) Sound levels measured at the property boundaries, shall not exceed the following equivalent sound levels (Leq):

Leq 65 dBA 0700 - 1900 hours (Days) 60 dBA 1900 - 2300 hours (Evenings) 55 dBA 2300 - 0700 hours (Nights)

b) Monitoring shall be conducted by the Approval Holder at the request of the Nova Scotia Department of the Environment and Labour.

#### 4. Particulate Emissions

a) Particulate emissions shall not exceed the following limits at the site property boundaries:

Annual Geometric Mean 70 ug/m3 Daily Average (24 hrs.) 120 ug/m3

- b) The generation of fugitive dust from the site will be suppressed by the application of water sprays, or the application of other suitable dust suppressants approved by the Department.
- c) Site access road(s) shall be maintained to minimize dust generation. The use of waste oil is <u>not</u> permitted.

NOTE: Monitoring of Particulate Emissions shall be at the request of the Nova Scotia Department of the Environment and Labour Regional Office.\*

#### 5. Surface Water

- a) The site shall be maintained to prevent siltation of any watercourse and of the surface water drainage which is discharged from the property boundaries. This includes the installation of soil erosion and sedimentation control designed to meet the specifications of this department.
- b) The silt control ponds shall be maintained to prevent erosion and siltation.
- c) The proponent shall sample and ensure the following liquid effluent levels are met:

#### **Final Effluent Discharge Limits**

Parameters	Maximum in a Grab Sample	Monthly Arithmetic Mean	Monitoring Frequency
Total suspended solids	50 mg/l	-25 <sup>-</sup> mg/l	quarterly
рН	5-9	6-9	quarterly

#### 6. Landfill Wastes

The waste materials approved for disposal at the landfill are limited to wood waste products generated by Bowater Mersey Paper Company Limited, during the manufacturing of newsprint (Approval No. 94-005 or latest revision/amendment) including effluent treatment sludges.

#### 7. Landfill Area

The area of landfill operation is to be limited to the area outlined in the Reference Documents along with any restrictions as a result of previous approvals issued for the Facility.

#### 8. Landfill Leachate

Collected leachate is to be discharged to the secondary treatment plant for treatment.

#### 9. Landfill Cap

- The completed area of each landfill cell is to be capped and seeded for closure. The cap is to consist of one meter of silty clay underlying a minimum 0.3 m of topsoil.
- b) Alternative cover materials must be approved by the Department.

#### 10. Cell 1 Vertical Expansion

- a) Any vertical expansion is to be done in accordance with the Reference Documents and Approval 99-IAW-037.
- b) The proponent shall ensure that any vertical expansion is structurally stable and capable of supporting anticipated loads. All-fill-within-the foot print of the cell expansion shall be removed and replaced with structural fill which can support the required loads. Following construction, the cell shall be inspected quarterly for signs of instability such as slumping, erosion, or lack of vegetative cover.

#### 11. Drying Pad

- a) Operation/extension of the drying pad is to be done in accordance with the Reference Documents.
- b) Material placed on the drying pad is to consist only of biosolids reclaimed from the landfill. Wood waste bulking agents such as sawdust and/or wood chips may be mixed in with the landfill biosolids to aid in the drying process.
- c) Bowater staff are to inspect the site on a daily basis for evidence of odours and to ensure surface drainage controls are operational.
- d) Bowater staff are to conduct testing of the water collected in the sump. Water found to be a result of surface water runoff may be released to the landfill surface water drainage system. Water determined to be impacted by leachate from the drying pad biosolids must be directed to the wastewater treatment system.

e) Bowater staff are to keep records of the approximate amount of material moved from the landfill to the drying pads, the days on which this was done and the location on the pad where each day's deposit was placed. Material placed upon the drying pads is to remain there for a period no longer than nine months. Upon request, these records are to be made available to the Department no later than 5 days from the request date.

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f) Material removed from the drying pads is only to be transported to an approved location. The material must meet the requirements of any approval issued to the approval location.

#### 12. Groundwater Monitoring

- Monitoring stations are to consist of surficial and bedrock wells.
- b) The monitoring system is to include, but may not necessarily be limited to MW-1, MW-5 and MW-10.
- c) The monitoring system is to be sampled and tested quarterly. The samples are to be analyzed of pH, color, BOD<sub>5</sub>, and TOC.

#### 13. Reporting

An annual year end report is to be submitted to the Department detailing the results and a summary of any monitoring and sampling required by this approval.

#### 14. Duration of Approval

This approval is valid for a period of 10 years from the date of issuance with the following exception:

The surface water monitoring requirements under Section 5, the groundwater monitoring requirements under Section 12 and the reporting requirements under Section 13 are to be continued beyond the time frame of this approval unless authorized otherwise in writing by the Department.

#### SCHEDULE "A"

Project:

Bowater Mersey Paper Company Ltd. proposes to construct a new sewage treatment plant for the Brooklyn paper mill Queens County. Project No.990868.02 drawings D-21152, D-21165 by CBCL Consulting Engineers, approved by M Abbott P. Eng. dated March 24, 2000.

File:

12-00-0154

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Approval No.:

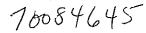
00-ATCW-007

- 1. The above noted drawings and plans, including drawings and plans having design specifications and installation measures, form part of this approval.
- 2. All phases of construction shall be overseen by a qualified Professional Engineer. Certification by a Professional Engineer is required stating that all construction/installations have been conducted in accordance with the approved plans and specifications. This certification must be provided to the District Office, Bridgewater, Nova Scotia Department of the Environment, upon request.
- 3. It is an offence under the Environment Act to proceed with construction in advance of receiving an approval.
- 4. Should the work approved under this Approval not be commenced within a year, this approval shall automatically be null and void.
- 5. Any changes in approved plans and specifications must be authorized in writing by the District Manager, Bridgewater, Nova Scotia Department of the Environment prior to construction/implementation.
- 6. This Approval does not negate the requirement for compliance with other existing municipal, provincial and federal laws and regulations.

- 7. A copy of the post construction report must be provided to the District Office, Bridgewater, Nova Scotia. The "Post-Construction Report" must contain all information regarding major changes from the approved plans or specifications made during construction. These major changes include any deviations which affect capacity, flow or operation of units. The "Post-Construction Report" must also include all commission or start-up of equipment tests and any other test results produced during construction. The "Post Construction Report" must also guarantee that all as-built drawings, operation and maintenance manuals, and any other relevant documentation have been turned over to the owner/operator by the Engineer.
- 8. Whenever a sewage force main parallels a water main it must be installed in a separate trench 3 meters from the water main. The soil between the trenches must be undisturbed.
- 9. There shall be a minimum of 18 inches of vertical separation on all crossings of sewer lines and water lines. Sewage force mains must be installed below the water main.
- 10. Whenever the vertical distance between the invert of the water line and the top of the gravity sewer is less than 300 mm (12 inches), the water and sewer lines shall be constructed in separate trenches, 3 meters apart, with undisturbed soil between the trenches.
- 11. Sewage treatment plant effluent shall not exceed 20 mg/l of BOD and 20 mg/l of suspended solids, also fecal coliforms shall not exceed 200 parts per 100 mls.

12. Sewage treatment plant effluent shall be sampled at least once a week and the results sent to the Nova Scotia Department of the Environment each month.

eorrected ) > by amendment





#### **Environment and Labour**

60 Logan Road Bridgewater, Nova Scotia 84V 3J8

Tel: (902) 543-4685 Fax: (902) 527-5480

April 26, 2001

CBCL Limited 1489 Hollis Street PO Box 66 Halifax, Nova Scotia B3J 2R7

Attention: Michael Abbott, P.Eng.

Dear Sir:

Enclosed is an amended Schedule "A" which will now apply to Approval Number 00-ATCW-007, dated the 28th day of April A.D.2000. This replaces the previous Schedule "A".

Also enclosed is an application to classify the sewage treatment plant if it has not been done as yet. This application is to be filled out in concert with the Water and Wastewater Facility Regulations.

Please advise your client to complete and return the application to the Bridgewater District Office by May 11, 2001.

Sincerely yours,

Jeff Garnhum
District Manager

/al

Enclosure

#### SCHEDULE "A"

Project:

Bowater Mersey Paper Company Limited proposes to construct a new sewage treatment plant for the Brooklyn Paper Mill in Queens County. Project No. 990868.02, drawings D-21152, D-21165 by CBCL Consulting Engineers, approved by M. Abbott, P.Eng., dated March 24, 2000. Letter of 16 February 2001 from Abbott to Mr. Jeff Garnhum.

File:

12-00-0154

Approval No .:

00-ATCW-007

AMENDMENT NO. 1

- The above noted drawings and plans, including drawings and plans having design specifications and installation measures, form part of this approval.
- 2. All phases of construction shall be overseen by a qualified Professional Engineer. Certification by a Professional Engineer is required stating that all construction/installations have been conducted in accordance with the approved plans and specifications. This certification must be provided to the District Office, Bridgewater, Nova Scotia Department of the Environment, upon request.
- 3. It is an offence under the Environment Act to proceed with construction in advance of receiving an approval.
- 4. Should the work approved under this Approval not be commenced within a year, this approval shall automatically be null and void.
- 5. Any changes in approved plans and specifications must be authorized in writing by the District Manager, Bridgewater, Nova Scotia Department of the Environment prior to construction/implementation.
- 6. This Approval does not negate the requirement for compliance with other existing municipal, provincial and federal laws and regulations.

- 7. A copy of the post construction report must be provided to the District Office, Bridgewater, Nova Scotia. The "Post-Construction Report" must contain all information regarding major changes from the approved plans or specifications made during construction. These major changes include any deviations which affect capacity, flow or operation of units. The "Post-Construction Report" must also include all commission or start-up of equipment tests and any other test results produced during construction. The "Post Construction Report" must also guarantee that all as-built drawings, operation and maintenance manuals, and any other relevant documentation have been turned over to the owner/operator by the Engineer.
- 8. Whenever a sewage force main parallels a water main, it must be installed in a separate trench 3 meters from the water main. The soil between the trenches must be undisturbed.
- 9. There shall be a minimum of 18 inches of vertical separation on all crossings of sewer lines and water lines. Sewage force mains must be installed below the water main.
- 10. Whenever the vertical distance between the invert of the water line and the top of the gravity sewer is less than 300 mm (12 inches), the water and sewer lines shall be constructed in separate trenches, 3 meters apart, with undisturbed soil between the trenches.
- Sewage treatment plan effluent shall not exceed 20 mg/l of BOD and 20 mg/l of suspended solids, also fecal coliforms shall not exceed 1000 parts per 100 mls.
- 12. Sewage treatment plant effluent shall be sampled at least once a week and the results sent to the Nova Scotia Department of the Environment each month.



Department of Environment and Labour

60 Logan Road Bridgewater, NS B4V 3J8 Tel: (902) 543-4685 Fax: (902) 527-5480

Our File Number: 94200-30

May 3, 2005

Bowater Mersey Paper Co. Ltd. 3691 #3 Hwy PO Box 1150 Liverpool, NS B0J 1K0

Dear

RE: Approval to Construct and Operate - Sewage Treatment Plant Approval No. 2004-039473-A01, PID # 70084645

Enclosed please find Approval # 2004-039473-A01 issued to Bowater Mersey Paper Company Ltd. to construct and operate the Sewage Treatment Plant at 3691 #3 Hwy, Liverpool, Queens County, Nova Scotia.

This approval is an amendment to previous approval # 2004-039473. The previous approval is now void, and has been replaced by this amendment.

Strict adherence to the attached terms and conditions is imperative in order to validate this approval.

Despite the issuance of this Approval, the Approval Holder is still responsible for obtaining any other authorization which may be required to carry out the activity, including those which may be necessary under provincial, federal or municipal law.

Should you have any questions, please contact David Clarke, Western Region, Bridgewater Office at (902) 543-4685.

Yours, Truly

Adrian Fuller

A/District Manager



#### **APPROVAL**

### Province of Nova Scotia Environment Act, S.N.S. 1994-95, c.1

APPROVAL HOLDER:

**Bowater Mersey Paper Company Ltd.** 

**APPROVAL NO:** 

2004-039473-A01

**EFFECTIVE DATE:** 

May 3, 2005

**EXPIRY DATE:** 

November 4, 2014

Pursuant to Part V of the *Environment Act*, S.N.S. 1994-95, c.1 as amended from time to time, approval is granted to the Approval Holder subject to the Terms and Conditions attached to and forming part of this Approval, for the following activity:

Construction and operation of a Sewage Treatment Plant, and associated works, at or near 3691 #3 Hwy, Liverpool, Queens County in the Province of Nova Scotia.

Administrator Date Signed

May 11/05

### TERMS AND CONDITIONS OF APPROVAL

### Nova Scotia Department of Environment and Labour

Project:

Bowater Mersey Paper Company Ltd.

Sewage Treatment Plant

3691 #3 Hwy,

Liverpool, Queens County

**Approval No:** 

2004-039473-A01

File No:

94200-30

Map Series:

21 A/02

**Grid Reference:** 

EE363860 NN4878964

PID#:

70084645

### Reference Documents:

- Application dated April 2, 2004 and attachments.

- letter of 05-01-27 from Mike Abbott, P.Eng. to Barry Gillis, P.Eng.

- letter of March 8, 2005 from Renee Estabrooks to Barry Gillis(paragraph on flow measurement only)

### 1. Definitions

- a) "Act" means the *Environment Act* S.N.S. 1994-1995, c.1, and includes all regulations made pursuant to the Act.
- b) "Composite Sample" means a representative sample which is taken from the combination of individual samples that are collected over a 24 hour period with at least one sample of 100 ml taken at two hour intervals.
- c) "Department" means the Western Region, Bridgewater Office, of the Nova Scotia Department of Environment and Labour located at the following address:

Nova Scotia Department of Environment and Labour Environmental Monitoring and Compliance Division

Western Region, Bridgewater Office 60 Logan Road Bridgewater, NS B4V 3J8

Phone: (902) 543-4685 Fax: (902) 527-5480

- d) "Facility" means the Sewage Treatment Plant and associated works.
- e) "Grab sample" means an individual sample collected in less than 30 minutes and which is representative of the substance sampled.
- f) "Minister" means the Minister of the Nova Scotia Department of Environment and Labour.
- g) "NSDEL" means the Nova Scotia Department of Environment and Labour.
- h) "Sewage Collection System" means the Facility and all auxiliaries for the collection, treatment, storage and discharge of sewage from the source of the sewage to the final discharge point.

### 2. Scope of Approval

- a) This Approval (the "Approval") relates to the Approval Holder and their application and supporting documentation, as listed in the reference documents above, to construct and operate the Facility, situated at or near 3691 #3 Hwy, Liverpool, Queens County (the "Site").
- b) The Facility shall be operated as outlined in the application for industrial approval dated April 2, 2004 and supporting documentation.
- c) The Site shall not exceed the area as outlined in the application and supporting documentation.
- d) This Approval is restricted to the installation and operation of the Facility only. No other alteration or infill of a watercourse or water resource is permitted by this Approval. Works associated with the alteration or infill of a watercourse or water resource will require separate approval from the Nova Scotia Department of Environment and Labour.
- e) This Approval does not apply to the electrical, roadways, and structural components of the project.

### 3. General Terms and Conditions

- a) The Approval Holder shall construct, operate and reclaim its Facility in accordance with provisions of the:
  - i) Environment Act S.N.S. 1994-1995, c.1;
  - ii) Regulations pursuant to the above Act:
  - iii) Any future amendments to the Act and regulations
- b) No authority is granted by this Approval to enable the Approval Holder to construct the Facility on lands which are not in the control or ownership of the Approval Holder. It is the responsibility of the Approval Holder to ensure that such a contravention does not occur. Upon request, the Approval Holder shall provide, to the Department, proof of such control or ownership.
- If there is a discrepancy between the reference documents and the terms and conditions of this Approval, the terms and conditions of this Approval shall apply.
- d) Any request for renewal or extension of this Approval is to be made in writing, to the Department, at least ninety (90) days prior to the Approval expiry.
- e) The Minister or Administrator may modify, amend or add conditions to this Approval at anytime pursuant to Section 58 of the Act.
- f) This Approval is not transferable without the consent of the Minister or Administrator.
- g) (i) If the Minister or Administrator determines that there has been non-compliance with any or all of the terms and conditions contained in this Approval, the Minister or Administrator may cancel or suspend the Approval pursuant to subsections 58(2)(b) and 58(4) of the Act, until such time as the Minister or Administrator is satisfied that all terms and conditions have been met.
  - (ii) Despite a cancellation or suspension of this Approval, the Approval Holder remains subject to the penalty provisions of the Act and regulations.
- h) The Approval Holder shall notify the Department prior to any proposed extensions or modifications of the Facility, including process changes or waste disposal practices which are not granted under this Approval. Extensions or modifications to the Facility may be subject to the Environmental Assessment

Regulations. An amendment to this Approval will be required before implementing any change.

- Pursuant to Section 60 of the *Act*, the Approval Holder shall submit to the Administrator any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates and that comes to the attention of the Approval Holder after the issuance of the Approval.
- j) The Approval Holder shall immediately notify the Department of any incidents of non-compliance with this Approval.
- k) The Approval Holder shall bear all expenses incurred in carrying out the environmental monitoring required under the terms and conditions of this Approval.
- Unless specified otherwise in this Approval, all samples required to be collected by this Approval shall be collected, preserved and analysed, by qualified personnel, in accordance with recognized industry standards and procedures.
- m) All samples required by this Approval shall be analysed by a laboratory that is:
  - i) Accredited by the Standards Council of Canada; or
  - ii) Accredited by another agency recognised by the Nova Scotia Department of Environment and Labour to be equivalent to the Standards Council of Canada; or
  - iii) Maintaining an acceptable standard in a proficiency testing program conducted by the Canadian Association for Environmental Analytical Laboratories for all parameters being reported; or
  - iv) Maintaining an acceptable standard in a proficiency or performance testing in another program considered acceptable to the Nova Scotia Department of Environment and Labour for all parameters being reported
- n) The Approval Holder shall submit any monitoring results or reports required by this Approval to the Department. Unless specified otherwise in this Approval, all monitoring results shall be submitted within 30 days following the month of monitoring.
- o) The Approval Holder shall ensure that this Approval, or a copy, is kept on Site at all times and that personnel directly involved in the Facility operation are made fully aware of the terms and conditions which pertain to this Approval.

### Spills or Releases

- a) All spills or releases of dangerous goods, waste dangerous goods, or petroleum hydrocarbon shall be reported to the Department in accordance with the Act (Part VI) and the *Emergency Spill Regulations*.)
- b) Spills or releases shall be cleaned up immediately.
- c) An adequate quantity of spill/release response material is to be maintained on Site at all times.

### 5. Sludge Disposal

a) All sludge generated at the Facility shall be treated and disposed of by a method approved by the Department.

### 6. Operation

- a) The Approval Holder shall designate in writing, to the Department, a contact for this Approval, prior to the startup and operation of the Facility.
- b) The Facility must be operated and maintained in a manner that will prevent erosion, chemical spills or any other incidents that may be detrimental to the environment and public health.
- c) The Approval Holder should ensure that the system is operated, maintained and has appropriate backup facilities to protect against failures of the power supply, treatment process, equipment, or structure. Security measures should assure the safety of the sewage treatment processes, storage facilities, and the discharge system.
- d) The Approval Holder shall ensure the development and implementation of an emergency response plan as part of the operations program. This plan is to meet the requirements of the Nova Scotia Department of Environment and Labour contingency Plan for Releases of Dangerous Goods and Hazardous Wastes. The plan should include:

- General procedures for routine (equipment break-down, upset conditions, maintenance, etc.) or major emergencies within the sewage works system; and
- ii) A plan for equipment becoming inoperable in a major emergency.
- iii) A plan for dealing with spills or releases.
- e) The Approval Holder shall not establish nor maintain a bypass to divert sewage around the Facility or any feature of the Facility treatment process unless the bypass has been approved by the Department. When it is necessary to use an approved by-pass, the Approval Holder shall notify the Department.
- f) The Approval Holder shall take immediate preventive or corrective action when results of an inspection or sampling results indicate conditions which are currently or may become a detriment to system operations, and/or result in adverse impact to the environment or public health.
- g) The Facility has been classified as a Class II wastewater treatment facility. The day-to-day operations of the wastewater treatment plant shall be supervised directly by certified operators who hold the appropriate certification.
- h) The Approval Holder shall establish and submit to NSDEL notification procedures to be used to contact the Medical Officer of Health, NSDEL, other relevant authorities and the general public in the case of an emergency situation.
- i) The Approval Holder shall prepare a comprehensive operations manual within three months of commencement of operation of the Facility and keep it up to date. The manual shall be subject to review by NSDEL upon request.
- j) A complete set of the drawings, incorporating any amendments made from time to time, shall be kept by the Approval Holder at the Facility for as long as the Facility is kept in operation.
- k) The Approval Holder shall establish procedures for receiving and responding to complaints including a reporting system which records what steps were taken to determine the cause of complaint and the corrective measures taken to alleviate the cause and prevent its recurrence.

### 7. Performance And Limits

### 7.1 Treated Effluent

The Facility and associated sewage collection system shall be managed and operated in such a manner that the effluent being discharged to the receiving waters satisfies the following criteria:

- a) Biological oxygen demand, BOD<sub>5</sub>, shall not exceed 20 mg/l.
- b) Suspended Solids, shall not exceed 20 mg/l
- c) Fecal coliform shall not exceed 1000 count/100mls
- d) Disinfection of the effluent from the Facility shall be continuous and if chlorine is utilized; the chorine residual in the discharge shall not exceed 0.2 mg/L:
- e) pH 6.5 to 9.

### 7.2 Odour Control

- a) The Approval Holder shall operate the Facility in a manner which will not result in the generation of offensive or hazardous odours/vapours.
- b) The Approval Holder shall be required to implement control measures if odour generation is deemed excessive by the Department.

### 8. Monitoring and Recording

- a) The Approval Holder shall conduct all monitoring and analysis required in this section according to the latest edition of "Standard Methods for the Examination of Water and Waste Water".
- b) All equipment must be installed, maintained and calibrated as specified by the manufacturer's instructions.
- c) Following a review of any of the analytical results required by this Approval, NSDEL may alter the frequencies, location, and parameters for analyses required for this Approval.

TABLE 1				
PARAMETER	MINIMUM FREQUENCY	LOCATION		
BOD₅	5/month	treated effluent discharge		
Suspended Solids	5/month	treated effluent discharge		
Fecal Coliform	5/month	treated effluent discharge		
рН	5/month	treated effluent discharge		
Free Chlorine Residual	5/month	treated effluent discharge		
Plant Volumes	measured as per reference documents	entering and leaving plant		
Fish Toxicity	as requested by NSDEL	treated effluent discharge		

- \* All samples shall be composite unless stated otherwise.
- d). The Facility shall be considered in compliance with the effluent limitations if 80% of the sample test results, at the frequency and number specified in table 1 meet the specified limit in section 8.1. No single result can be greater than two times the limits in section 8.1.

### 9. Reporting

### 9.1 Quarterly Reporting

- a) The Approval Holder shall prepare and submit to the Department on a quarterly basis, the results of the sampling conducted at the locations indicated in table 1 above.
- b) The Approval Holder shall prepare and submit to the Department, a quarterly performance report for the facility. The report shall contain the following information in a format acceptable to the Regional Manager.
  - a summary and discussion of the quantity of wastewater treated during the reporting period compared to the design values for the facility, including peak flow rates, maximum daily flows and monthly average daily flows;
  - ii) a summary and interpretation of analytical results obtained in accordance with Section 9 (monitoring and recording) of this Approval;
  - a tabulation and description of any emergency or upset conditions which occurred during the period being reported upon and action taken to correct them;

iv) Any complaints that were received and the Approval Holders response.

### 9.2 Emergency Reporting on Operation

- a) The Approval Holder shall notify the Department forthwith in the event that untreated wastewater is directed to the receiving waters.
- b) The Approval Holder shall immediately notify the Department of any incidents of exceedence of the compliance requirement indicated in section 9(d).

### 10. Records

- a) The Approval Holder shall keep the following records and wastewater effluent quality analyses:
  - i) BOD<sub>5</sub>, Suspended Solids, and Bacteriological analyses shall be kept for five years;
  - ii) Flow meter readings shall be kept for 10 years.
- b) The Approval Holder shall also retain the following information for a period of three years:
  - i) calibration and maintenance records;
  - ii) continuous monitoring data;
  - iii) records of any violations of the conditions of this Approval and actions taken by the Approval Holder to correct those violations.
- c) A copy of this Approval, project reports, construction documents and drawings, inspection reports, shall be kept for the life of the facility.



# DEPARTMENT OF THE ENVIRONMENT

## Industrial Approval

is granted to Bowater Mersey Paper Company Limited, to operate and extend an industrial landfill, at Brooklyn, in the Municipality of Queens County, in Pursuant to the Environment Act and Regulations made pursuant thereto, and subject to the Terms and Conditions contained in the Approval, this Approval the Province of Nova Scotia.

Granted at Middleton, in the County of Annapolis, Province of Nova Scotia, A.D. 1999. day of Ille this 23

95-058 (Amendment #1)

**ADMINISTRATOR** 

### TERMS AND CONDITIONS OF APPROVAL

### NOVA SCOTIA DEPARTMENT OF THE ENVIRONMENT

Project:

Bowater Mersey Paper Company Limited

Industrial Landfill

Brooklyn, Queens County

Approval No:

99-IAW-037

File No:

11-95-0113

### **Conditions:**

This application is recommended for approval subject to the following terms and conditions:

### 1. Scope of Approval

This approval relates to Bowater Mersey Paper Company Limited, hereafter called the "Proponent" and their request to construct & operate a vertical expansion to an existing industrial landfill located in Brooklyn, Queens County, Nova Scotia.

### 2. General Terms and Conditions

- a) The proponent shall conduct its activities in accordance with provisions of the:
  - i) Environment Act, SNS 1994-95 C.1;
  - ii) Regulations pursuant to the above Act;
  - iii) Local municipal environmental bylaws, zoning restrictions.
- b) The Minister reserves the right to modify, amend, or add terms and conditions to this Industrial Approval at any time provided that any modification, addition, or amendment is deemed necessary to ensure adequate environmental protection.
- c) This Industrial Approval is not transferrable without the written permission of the Minister.
- d) If the Minister determines that there has been non-compliance with any or all of the terms and conditions provided in this Approval issued pursuant to Section 56(1) of the Environment Act, the Minister may in accordance with Section 58 (2)(b) cancel or suspend, the approval until such time as the Minister is satisfied that all terms and conditions have been met.

- e) The proponent shall notify the Nova Scotia Department of the Environment prior to any process changes or waste disposal practices not approved under authorization of this approval.
- f) The proponent shall bear all expenses incurred in carrying out the environmental monitoring required under the terms and conditions of this approval.
- g) The proponent shall ensure that a copy of the permit remains on site at all times and that all personnel involved in the manufacturing operation are familiar with the Terms and Conditions of the Approval.
- h) All samples collected under this approval shall be analysed in accordance with recognized standard procedures.

### 3. Sound Levels

Sounds levels measured at the property boundaries shall not exceed the following equivalent sound levels (leq):

Leq

65 dBA 0700-1900 hours (Days)

60 dBA 1900-2300 hours (Evenings) 55 dBA 2300-0700 hours (Night)

NOTE:

Monitoring shall be at the request of the Nova Scotia Department of the

Environment Regional Office.

### 4. Particulate Emissions

a) Particulate emissions shall not exceed the following limits at the site property boundaries:

Annual Geometric Mean

70ug/m3

Daily Average (24 hrs.)

120ug/m3

- b) The generation of fugitive dust from the site will be suppressed by the application of water sprays, or the application of other suitable dust suppressants approved by the Department.
- c) Site access road(s) shall be maintained to minimize dust generation. The use of waste oil is <u>not</u> permitted.

NOTE:

Monitoring of Particulate Emissions shall be at the request of the

Nova Scotia Department of the Environment Regional Office.\*

### 5. Surface Water

- a) The site shall be maintained to prevent siltation of the surface water which is discharged from the property boundaries. This includes the installation of soil erosion and sedimentation control designed to meet the specifications of this Department.
- b) The silt control ponds shall be maintained to prevent erosion and siltation.
- c) The proponent shall sample and ensure the following liquid effluent levels are met:

### **Final Effluent Discharge Limits**

Parameters	Maximum in a Grab Sample	Monthly Arithmetic Mean	Monitoring Frequency
Total suspended solids	50 mg/I	25 mg/l	weekly
pН	5-9	6-9	weekly

### 6. Landfill Wastes

The waste materials approved for disposal at the landfill are limited to the following:

- (a) Woodroom grit consisting of sand, gravel, woodchips and bark that is washed off the pulpwood at the log flume.
- (b) Primary treatment sludge including clarifier sludge and sludge from the ASB settling basin.

### 7. Landfill Construction

- (a) A liner consisting of a 36 in. layer of Hebbville clay (hydraulic conductivity of approximately 3 X 10<sup>-8</sup> cm/sec) will be employed to separate the waste material from overburden/bedrock, and the seasonably high groundwater table.
- (b) The leachate produced at the landfill will be collected by 3 double rows of perforated pipe, as per Landfill Site Plan, Drawing 1, attached. The perforated pipe is to be installed within a 12 in. layer of 2 in. clear stone on top of the clay liner. The collected leachate discharges to the settling basin at the ASB site.

(c) Leachate production at the landfill will be minimized by the diversion of off-site stormwater by ditching.

### 8. Landfill Cap

- a) The completed active area of the landfill will be capped and seeded each year. The cap is to consist of one metre of silty clay underlying a minimum 0.3 metres of topsoil.
- b) Alternative cover materials must be approved by the NSDOE District Office.

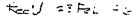
### 9. Groundwater Monitoring

- (a) Monitoring well stations consisting of surficial and bedrock wells will be installed around the landfill.
- (b) The monitoring system will include MW-1 and MW-5, which are also used for the ASB site, and an additional monitoring station to be installed down gradient of the landfill (to the NNE).
- (c) The monitoring wells are to be sampled and tested quarterly along with the monitoring wells for the ASB site. The samples are to be analysed for pH, color, BOD<sub>5</sub>, and TOC.
- (d) The new monitoring wells are to be installed prior to June 1, 1996.
- 10. Monitoring of the landfill is to continue after landfill closure, as required by the Nova Scotia Department of the Environment.

### 11. Cell 1 Vertical Expansion

- a) This Approval is based upon information submitted in the following documents and communications:
  - ASB Landfill Cell No. 1- Expansion, Bowater Mersey Paper Company, Specifications and Tender Documents, May 1999, Prepared by: Porter Dillon Limited.
  - ii) Drawings # D-20016, D-20017, D-20018, D-20019, D-20020 by Dillon Consulting/Porter Dillon Limited.

- iii) Geotechnical Investigation, A.S.B. LandfillExpansion, Alternative Design: Increase Capacity A.S.B. Cell No.1, Bowater Mersey Paper Co. Ltd, Liverpool, Nova Scotia. Prepared by: Moroney Associates Inc., April 12, 1999.
- iv) Correspondence dated July 7, 1999; Frances Younker to Bob Petrie, Re: ASB Landfill Expansion..
- v) Tel. Conversation: B. Petrie & C. Shortall (Dillon Consulting)- July 20, 1999.
- b) The proponent shall ensure that all erosion and sedimentation controls are installed prior to construction commencing. Measures shall conform, but are not limited to, specifications detailed in Drawing #D-20020. It is the proponent's responsibility to ensure structures and sedimentation ponds are appropriately sized.
- c) The proponent shall ensure that the vertical expansion is structurally stable and capable of supporting anticipated loads. All fill within the foot print of the cell expansion shall be removed and replaced with structural fill which can support the required loads. Following construction, the cell shall be inspected quarterly for signs of instability such as slumping, erosion, or lack of vegetative cover.
- d) Groundwater monitoring shall continue at the site as specified in Section 6of this Approval. Should any wells become damaged or destroyed as part of construction, the wells shall be repaired or abandoned in accordance with the Well Construction Regulations. Any destroyed/abandoned wells shall be replaced.





PO Box 2107 Halifax, Nova Scotia B3J 3B7 Our File Number:

PID 10084967
11-95-0113

February 19, 1996



Bowater Mersey Paper Company Limited P.O. Box 1150 Liverpool, Nova Scotia B0T 1K0

Dear

### Re: Industrial Approval #95-058

Enclosed please find your Industrial Approval #95-058 for the operation of an industrial landfill at or near Brooklyn, Queens County, N.S.

Strict adherence to the attached terms and conditions is imperative in order to validate your Approval.

All further correspondence relating to this approval shall be with the Western District Office in Liverpool, N.S. Should you have any questions, please contact Wayne Crouse, District Manager at (902) 354-5784, or in writing.

Yours truly,

D.E. Hiltz, P. Eng.

Manager

Industrial & Air Quality Branch

/nh Enclosure

cc:

D. Grev

D. Gates

W. Crouse

Connie Mouzar, Municipal Clerk

### TERMS AND CONDITIONS OF APPROVAL

### Nova Scotia Department of the Environment

File No:

11-95-0113

Approval No:

95-058

Project:

Bowater Mersey Paper Company Ltd.

Industrial Landfill

Brooklyn, Queens County

### Terms and Conditions:

This application is recommended for approval subject to the following terms and conditions:

4

### 1. Scope of Approval

This approval pertains to Bowater Mersey, hereafter called the proponent, and their application to operate an industrial landfill in Brooklyn, Queens County, as depicted on the Landfill Site Plan, Drawing No. 1, Secondary Treatment of Mill Effluent, ASB Site Development Landfill.

### 2. General Terms and Conditions

- (a) The Proponent shall conduct its operations in accordance with provisions of the:
  - i) Environment Act, S.N.S. 1994-95, c.1;
  - ii) Regulations pursuant to the above Act, and;
  - iii) Local municipal environment bylaws, and zoning restrictions.
- (b) The Minister reserves the right to modify, amend, or add terms and conditions to this Approval at anytime.
- (c) The approval is not transferrable without the written permission of the Minister.
- (d) If the Minister determines that there has been non-compliance with any or all of the terms and conditions provided in this approval, the Minister may cancel or suspend the approval until such time as the Minister is satisfied that all terms and conditions have been met.
- (e) The Proponent shall notify the Nova Scotia Department of the Environment prior to any process changes or waste disposal practices which are not approved under authorization of this approval.

- (f) The Proponent shall bear all expenses incurred in carrying out the environmental monitoring required under the terms and conditions of this approval.
- (g) The proponent shall ensure that this approval or a copy is kept on-site at all times and that personnel directly involved in the project are made fully aware of the conditions which pertain to this approval.

## 3. <u>Landfill Wastes</u>

The waste materials approved for disposal at the landfill are limited to the following:

- (a) Woodroom grit consisting of sand, gravel, woodchips and bark that is washed off the pulpwood at the log flume.
  - (b) Primary treatment sludge including clarifier sludge and sludge from the ASB settling basin.

### Landfill Construction

- (a) A liner consisting of a 36 in. layer of Hebbville clay (hydraulic conductivity of approximately 3x10<sup>-8</sup> cm/sec) will be employed to separate the waste material from overburden/bedrock, and the seasonably high groundwater table.
- (b) The leachate produced at the landfill will be collected by 3 double rows of perforated pipe, as per Landfill Site Plan, Drawing 1, attached. The perforated pipe is to be installed within a 12 in. layer of 2 in. clear stone on top of the clay liner. The collected leachate discharges to the settling basin at the ASB site.
- (c) Leachate production at the landfill will be minimized by the diversion of off-site stormwater by ditching.

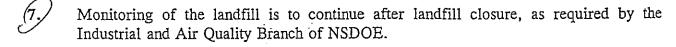
## 5. Landfill Cap

The completed active area of the landfill will be capped and seeded each year. The cap is to consist of one meter of silty clay underlying a minimum 0.3 meters of topsoil.

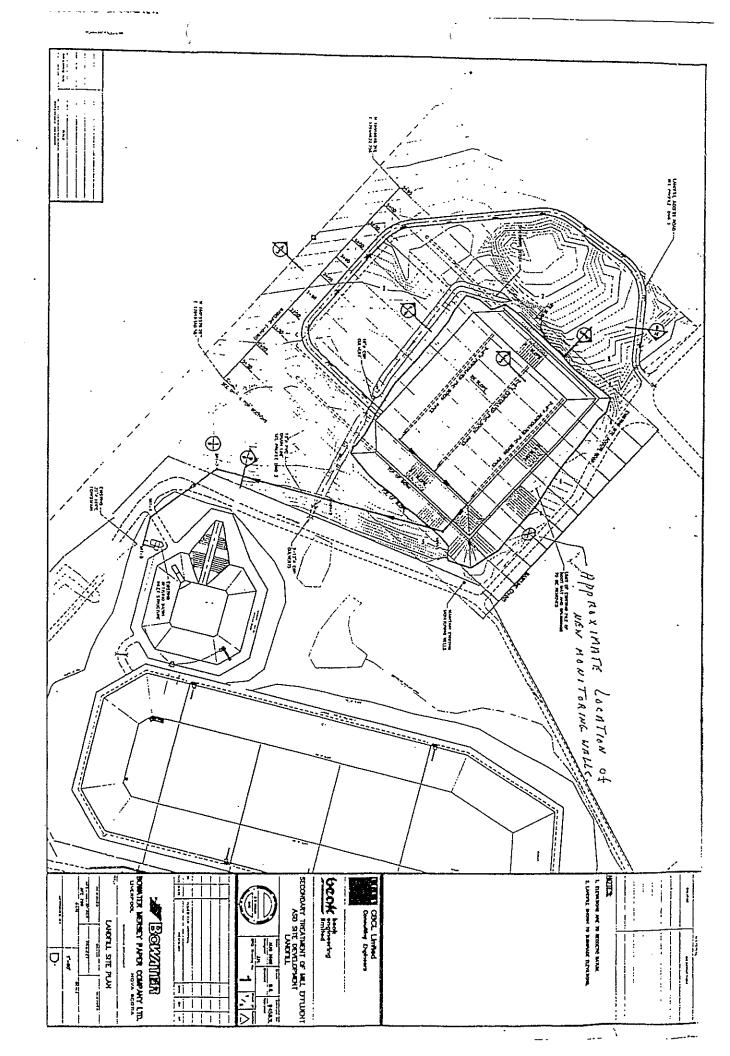
Alternative cover materials must be approved by the NSDOE District Office in Liverpool.

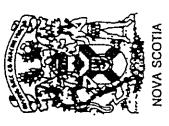
## 6. Groundwater Monitoring

- (a) Monitoring well stations consisting of surficial and bedrock wells will be installed around the landfill.
- (b) The monitoring system will include MW-1 and MW-5, which are also used for the ASB site, and an additional monitoring station to be installed downgradient of the landfill (to the NNE).
  - The installation of the new monitoring well station is to be approved by the NSDOE District Office in Liverpool.
- (c) The new monitoring wells are to be sampled and tested quarterly along with the monitoring wells for the ASB site. The samples are to be analyzed for pH, color, BOD<sub>5</sub>, and TOC.
- (d) The new monitoring wells are to be installed prior to June 1, 1996.



DLG/neh Encls.





# DEPARTMENT OF THE ENVIRONMENT

# Industrial Approval

approval, this approval is granted to Bowater Mersey Paper Company Brooklyn, in the County of Queens, in the Province of Nova Scotia. Pursuant to the Environment Act and Regulations made pursuant Ltd. to construct and/or operate an Industrial Landfill at or near thereto, and subject to the terms and conditions contained in the

Granted at Halifax, in the County of Halifax, Province of Nova Scotia, this 16th day of 7-educated, A.D. 1996.

95-058

APPROVAL NUMBER

MINISTER OR PERSON DESIGNATED BY THE MINISTER

60 Logan Road Bridgewater, NS B4V 3J8

Tel: (902) 543-4685 Fax: (902) 527-5480

Our File Number: 92100-30

August 22, 2006

Bowater Mersey Paper Co. Ltd. 3691 #3 Hwy PO Box 1150 Liverpool, NS B0J 1K0

Dear

RE: Approval to Construct and Operate - Windrow Composting Approval No. 2006-051255, PID # 70084967

Enclosed please find Approval # 2006-051255 issued to Bowater Mersey Paper Co. Ltd. to construct and operate the windrow composting at 2879 #3 Hwy, Brooklyn, Queens County, Nova Scotia. Please ensure that you forward the original Approval to Bowater Mersey Paper Co. Ltd.

Strict adherence to the attached terms and conditions is imperative in order to validate this approval.

Despite the issuance of this Approval, the Approval Holder is still responsible for obtaining any other authorization which may be required to carry out the activity, including those which may be necessary under provincial, federal or municipal law.

Should you have any questions, please contact Barry Gillis, Western Region, Bridgewater Office at (902) 543-4685.

Yours Truly

Adrian Fuller, B.Sc., CPHI(C)

A/District Manager

CC

Eimas #: 2006-051255



### **APPROVAL**

## Province of Nova Scotia Environment Act, S.N.S. 1994-95, c.1

**APPROVAL HOLDER:** 

**Bowater Mersey Paper Co. Ltd.** 

**APPROVAL NO:** 

2006-051255

**EFFECTIVE DATE:** 

08/22/2006

**EXPIRY DATE:** 

August 22, 2016

Pursuant to Part V of the *Environment Act*, S.N.S. 1994-95, c.1 as amended from time to time, approval is granted to the Approval Holder subject to the Terms and Conditions attached to and forming part of this Approval, for the following activity:

Construction and operation of a windrow composting, and associated works, at or near 2879 #3 Hwy, Brooklyn, Queens County in the Province of Nova Scotia.

Administrator Date Signed

### TERMS AND CONDITIONS OF APPROVAL

### Nova Scotia Department of Environment and Labour

Project: Bowater Mersey Paper Co. Ltd.

Windrow Composting

2879 #3 Hwy,

Brooklyn, Queens County

**Approval No:** 2006-051255

**File No**: 92100-30

**PID#**: 70084967

### **Reference Documents:**

- Application dated March 17 2006 and attachments.

- 6 page document (including cover page), titled, "Composting facility Guidelines
   Application, Bowater Mersey Paper Company, Submitted to Nova Scotia
   Environment and Labour, March 17, 2006"
- Standard Operating Procedures For Composting At Bowater, February 2006
- Drawing Number D-24340, latest date March 16, 2006
- Letter of August 15, 2006, from Renee Estabrooks to Barry Gillis
- Letter of August 17, 2006 from M. Hope-Simpson to Barry Gillis
- Nova Scotia Department of Environment and Labour Composting Facility Guidelines, latest revision.

### 1. Definitions

- a) "Act" means the *Environment Act* S.N.S. 1994-1995, c.1 and includes all regulations made pursuant to the Act.
- b) "Associated works" means any building, structure, storing facility, pollution abatement system or stockpiles of material.
- c) "Dangerous Goods" means a substance that:
  - i) conforms to the criteria set out in subsection 3.8 to 3.27, inclusive, of the Transportation of Dangerous Goods Regulations (Canada),

- ii) is included in List I of Schedule II or List II of Schedule II of the Transportation of Dangerous Goods Regulations (Canada),
- iii) is Designated in Schedule "B" of the Dangerous Goods Regulations, or
- iv) is dangerous goods generated by a residence or household.
- d) "Department" means the Western Region, Bridgewater Office, of the Nova Scotia Department of Environment and Labour located at the following address:

Nova Scotia Department of Environment and Labour Environmental Monitoring and Compliance Division Western Region, Bridgewater Office 60 Logan Road Bridgewater, NS B4V 3J8

Phone: (902) 543-4685 Fax: (902) 527-5480

- e) "Facility" means the windrow composting and associated works.
- f) "Grab sample" means an individual sample collected in less than 30 minutes and which is representative of the substance sampled.
- g) "Minister" means the Minister of the Nova Scotia Department of Environment and Labour.
- h) "NSDEL" means the Nova Scotia Department of Environment and Labour
- "Quarterly sampling" means samples taken once per quarter with no less than
   45 days interval between sampling events.
- j) "Source separated compostable organic material" means food waste, paper waste, vegetative matter, kitchen scraps, feed processing wastes, landscaping waste, garden waste, and horticultural waste.
- Waste Dangerous Goods" means dangerous goods that are no longer in use for their original purpose or materials which have become waste dangerous goods through handling including dangerous goods intended for treatment, disposal, recycling, but does not include dangerous goods returned directly to the manufacturer or supplier of the dangerous goods for reprocessing, repacking or resale.

### 2. Scope of Approval

- a) This Approval (the "Approval") relates to the Approval Holder and their application and supporting documentation, as listed in the reference documents above, to construct and operate the Facility, situated at or near 2879 #3 Hwy, Brooklyn, Queens County (the "Site").
- b) The Facility shall be constructed and operated as outlined in the application for approval dated March 17 2006 and supporting documentation.
- c) The Site shall not exceed the area as outlined in the application and supporting documentation.
- d) Should the work authorized by this Approval not be commenced within a year, this Approval shall automatically be null and void, unless extended in writing by an Administrator.

### 3. General Terms and Conditions

- a) The Approval Holder shall construct the Facility in accordance with provisions of the:
  - i) Environment Act S.N.S. 1994-1995, c.1;
  - ii) Regulations pursuant to the above Act;
  - iii) Any future amendments to the Act and regulations
- b) No authority is granted by this Approval to enable the Approval Holder to construct the Facility on lands which are not in the control or ownership of the Approval Holder. It is the responsibility of the Approval Holder to ensure that such a contravention does not occur. The Approval Holder shall provide, to the Department, proof of such control or ownership upon expiry of any relevant lease or agreement. Failure to retain said authorization will result in this Approval being null and void.
- c) If there is a discrepancy between the reference documents and the terms and conditions of this Approval, the terms and conditions of this Approval shall apply.

- d) The Minister or Administrator may modify, amend or add conditions to this Approval at anytime pursuant to Section 58 of the Act.
- e) This Approval is not transferable without the consent of the Minister or Administrator.
- f)
  i) If the Minister or Administrator determines that there has been non-compliance with any or all of the terms and conditions contained in this Approval, the Minister or Administrator may cancel or suspend the Approval pursuant to subsections 58(2)(b) and 58(4) of the Act, until such time as the Minister or Administrator is satisfied that all terms and conditions have been met.
  - ii) Despite a cancellation or suspension of this Approval, the Approval Holder remains subject to the penalty provisions of the Act and regulations.
- g) The Approval Holder shall notify the Department prior to any proposed extensions or modifications of the Facility, including the active area, process changes or waste disposal practices which are not granted under this Approval. An amendment to this Approval will be required before implementing any change. Extensions or modifications to the Facility may be subject to the Environmental Assessment Regulations.
- h) Pursuant to Section 60 of the *Act*, the Approval Holder shall submit to the Administrator any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates and that comes to the attention of the Approval Holder after the issuance of the Approval.
- i) The Approval Holder shall immediately notify the Department of any incidents of non-compliance with this Approval.
- j) The Approval Holder shall bear all expenses incurred in carrying out the environmental monitoring required under the terms and conditions of this Approval.
- k) Unless specified otherwise in this Approval, all samples required to be collected by this Approval shall be collected, preserved and analysed, by qualified personnel, in accordance with recognized industry standards and procedures.

- I) All samples required by this Approval shall be analysed by a laboratory that is:
  - i) Accredited by the Standards Council of Canada; or
  - Accredited by another agency recognized by the Nova Scotia Department of Environment and Labour to be equivalent to the Standards Council of Canada; or
  - iii) Maintaining an acceptable standard in a proficiency testing program conducted by the Canadian Association for Environmental Analytical Laboratories for all parameters being reported; or
  - iv) Maintaining an acceptable standard in a proficiency or performance testing in another program considered acceptable to the Nova Scotia Department of Environment and Labour for all parameters being reported
- m) The Approval Holder shall submit any monitoring results or reports required by this Approval to the Department. Unless specified otherwise in this Approval, All monitoring results shall be submitted within 30 days following the month of monitoring.
- n) The Approval Holder shall ensure that this Approval, or a copy, is kept on Site at all times and that personnel directly involved in the Facility operation are made fully aware of the terms and conditions which pertain to this Approval.
- o) This Approval provides for the operation at the existing Site only. Any change in location requires further Approval from the Nova Scotia Department of Environment and Labour.

### 4. Construction of Facility

a) All erosion and sedimentation controls are to be in place prior to construction at this Facility. The Nova Scotia Department of the Environment "Erosion and Sedimentation Control Handbook For Construction Sites" shall serve as the reference document for all erosion control measures. These measures are minimum requirements and additional controls shall be implemented if Site runoff exceeds the discharge limits contained herein.

- b) All erosion and sedimentation controls are to be maintained and remain in place until the disturbed areas are stabilized.
- c) All water leaving the Site during the construction phase shall be in compliance with total suspended solids limits of 50 mg/l grab or 25 mg/l monthly arithmetic mean.
- d) The generation of dust from the Site shall be suppressed by the application of water sprays, or the application of other suitable approved dust suppressants as required.

### 5. Composting

- a) The Approval Holder shall only compost, by the windrow method, the following types-of feedstocks:
  - "secondary biosolids", the byproduct of the treatment of TMP process effluent from the Bowater Mersey paper mill at or near Brooklyn, Queens Co.
  - ii) inert bulking agents such as primary biosolids, wood chip fines, and shredded bark
  - iii) any other organic waste specifically approved by the Department.
- b) The Approval Holder shall ensure that the compost product contains less than 1% foreign constituents (by weight) that are not readily decomposed such as, metals, glass, plastic, rubber, leather, etc.
- c) The Approval Holder shall not compost in excess of 25,000 wet tonnes of feedstock annually as defined in condition 5(a) unless given approval by the Administrator.
- d) Any rejected, residual or by-product materials including uncompostable materials and ferrous rejects shall be segregated from the compost feedstock and stored for ultimate disposal in a manner which prevents odour, vector and aesthetic problems. These rejected materials shall be removed from the Site on a weekly basis.
- e) The only feedstocks and compost which are permitted to be stored on the Site and outside the Facility include:

- finished/cured compost,
- ii) inert bulking agents as described in section 5(a)(ii)

### 6. Air Emissions

- a) The Approval Holder shall ensure that air emissions from the Facility do not contribute to a non-compliance with the maximum permissible ground level concentrations specified in Schedule "A" of the Air Quality Regulations or the limits established as follows:
  - Sound levels shall not exceed the following limits at any monitoring station designated by the Department which is situated at or beyond the property boundary:

Leq 65dBA (0700-1900 hours) Day 60dBA (1900-2300 hours) Evening 55dBA (2300-0700 hours) Night

ii) Total suspended particulate shall not exceed the following limits at any monitoring station designated by the Department which is situated at or beyond the property boundary:

> Annual Geometric Mean 70 μg/m³ Daily Average 120 μg/m³

- iii) Numerical or quantitative limits on odour shall be established at the discretion of the Department if odour impacts beyond the property boundaries are deemed to be excessive.
- b) Where the Approval Holder is contributing to non-compliance with the Schedule "A" concentrations or limits established in this Approval, the Approval Holder shall be required to implement a corrective action plan which may include ambient air monitoring, air modelling or risk assessment studies.
- c) The generation of fugitive dust from the site shall be suppressed by the use of water sprays or the application of other suitable dust suppressants approved by the Department. The use of used oil as a dust suppressant is not permitted.
- d) The Approval Holder shall operate the Facility in a manner which stabilizes putrescible organic materials and destroys pathogens.

- e) The Approval Holder shall have standard procedures to address odour complaints associated with the Facility which would include;
  - i) Immediately investigate the cause of the complaint and undertake immediate and appropriate action, if necessary, to correct the problem.
  - ii) The Approval Holder shall record all odour complaints and document the date, time, name, address and telephone number of the individual lodging the complaint. The record shall also state any cause of the odour and the action taken to correct the problem.
  - iii) Records referenced in condition 6(e)(ii) shall be made available to the Department upon request.
- f) The Approval Holder shall be required to reduce or cease composting or be required to limit storage of leachate, feedstock or compost if odour generation is deemed excessive by the Department.

### 7. Wastewater and Sludge Management

- a) All contaminated process wastewater/leachate shall be directed to the on-site catch basin and pumped back into the ASB treatment system, or can be reused in the composting process should increased moisture content be required.
- b) The floor surface of the receiving and the active composting area of the Facility shall be maintained as described in reference document #2, "6 page document (including cover page), titled, 'Composting facility Guidelines Application, Bowater Mersey Paper Company, Submitted to Nova Scotia Environment and Labour, March 17, 2006'."

### 8. Operation and Maintenance Manual

- a) An Operation and Maintenance Manual shall be prepared within 90 days of the date of signing of this Approval and be maintained on Site (for the purposes of this section, "Site" shall include the Gatehouse at the main mill property) and include the following:
  - i) Up-to-date as-built drawings and specifications for the Facility,
  - ii) a copy of the most recent Approval for the Facility including the terms and conditions.

- iii) a complete description of the standard operating procedures for the Facility,
- iv) a copy of the most recent contingency plan
- b) The Operation and Maintenance Manual shall be available on-Site for inspection by staff of the Department. Until such time that the operations manual is complete, reference document #3,"Standard Operating Procedures For Composting At Bowater, February 2006" and other documents submitted in support of the application for approval shall be considered to meet the requirements of Section 8(a). A first draft of the operations manual shall be in place within three months of issuance of this approval.

### 9. Litter, Housekeeping and Security Control

- a) The Approval Holder shall inspect the Site daily, maintain good housekeeping practices and take appropriate action to reduce odour generation, leachate losses and vector problems.
- b) All litter is to be contained on Site and periodically removed for disposal. Any offsite litter caused by the Facility shall be collected immediately for storage on-Site or disposal.
- c) The composting operation shall have adequate security to prevent illegal dumping and vandalism.

### 10. Vector Control

a) The Approval Holder shall provide effective means of vector control. If vector control measures employed by the Approval Holder are deemed to be inadequate by the Department; additional control measures or changes to the operation of the Facility may be requested for implementation.

### 11. Separation Distances

a) A minimum of 90 metre buffer zone shall be maintained on the property between the active composting operations and the nearest property boundary.

### 12. Monitoring, Classification and Use of Compost

a) This Approval does not cover any liability that may be associated with the sale and/or use of the compost products.

b) i) The Approval Holder shall classify, label and use the product compost in accordance with the Nova Scotia Department of Environment and Labour Composting Facility Guidelines, as amended from time to time, and any Federal requirements which may apply..

ii) Compost product shall be analysed for the parameters listed in Table 3. Additional parameters may be required as specified by the Department.

iii) The sampling and testing protocol shall comply with the Section 4 of the Canadian Council of Ministers of the Environment (CCME) document, "Guidelines for Compost Quality", latest revision.

Table 3			
Compost Product Sampling			
Parameter	Unit		
Moisture	%		
Total Nitrogen	% dry weight		
Total Phosphorus	% dry weight		
Total Potassium	% dry weight		
Organic Matter	% dry weight		
Salinity (EC)	MS cm <sup>-1</sup>		
рН	Standard Units		
Foreign Matter	%		
Arsenic	mg/kg dry weight		
Cadmium	mg/kg dry weight		
Chromium	mg/kg dry weight		
Cobalt	mg/kg dry weight		
Copper	mg/kg dry weight		
Lead	mg/kg dry weight		

Table 3			
Compost Product Sampling			
Parameter	Unit		
Mercury	mg/kg dry weight		
Molybdenum	mg/kg dry weight		
Nickel	mg/kg dry weight		
Selenium	mg/kg dry weight		
Zinc	mg/kg dry weight		
Faecal Coliform	faecal units/gram dry weight		

- c) Monitoring shall be carried out through representative sampling of every batch at the end of the curing period.
- d) All operating and testing records described in the Nova Scotia Department of Environment and Labour Composting Guidelines, as amended from time to time shall be maintained and made available to the Department upon request.

### 13. Reports and Records

- a) The Approval Holder shall submit to the Department an annual report which shall include the following information:
  - A summary of the feedstocks received at the Site including,
    - (1) Types of materials received at the Site during the period,
    - (2) Quantities of each specific feedstock received at the Site during the period,
    - (3) Quantities of feedstocks composted,
    - (4) Quantities of feedstocks rejected and sent for disposal
  - ii) Compost quality testing results



PO Box 1240 Middleton, Nova Scotia BOS 1P0

Tel: (902) 825-2123 Fax: (902) 825-4471

Regional Offices Middleton District Office

Jeff Garnhum District Manager

July 21, 1999

11-95-0113

Bowater Mersey Paper Company PO Box 1150 Brooklyn, Queens Co., N.S. BOT 1KO

Dear

Enclosed is an Industrial Approval #99-IAW-037 granted to Bowater Mersey Paper Company to construct and/or operate a vertical extension to an existing industrial landfill near Brooklyn, Queens County, Nova Scotia. Please note that this approval shall replace your existing approval # 95-058.

Please do not hesitate to contact Mr. Bob Petrie at (902) 825-2123 with any questions or concerns.

Yours truly,

Jeff Garnham

District Manager

cc:

B. Petrie

D. Gates



# DEPARTMENT OF THE ENVIRONMENT

## Industrial Approval

Pursuant to the Environment Act and Regulations made pursuant thereto, and is granted to Bowater Mersey Paper Company Limited, to operate and extend an industrial landfill, at Brooklyn, in the Municipality of Queens County, in subject to the Terms and Conditions contained in the Approval, this Approval the Province of Nova Scotia.

Granted at Middleton, in the County of Annapolis, Province of Nova Scotia, , A.D. 1999. day of

95-058 (Amendment #1)

APPROVAL NUMBER

/ ADMINISTRATOR

### TERMS AND CONDITIONS OF APPROVAL

### NOVA SCOTIA DEPARTMENT OF THE ENVIRONMENT

Project:

Bowater Mersey Paper Company Limited

Industrial Landfill

Brooklyn, Queens County

Approval No:

99-IAW-037

File No:

11-95-0113

### **Conditions:**

This application is recommended for approval subject to the following terms and conditions:

### 1. Scope of Approval

This approval relates to Bowater Mersey Paper Company Limited, hereafter called the "Proponent" and their request to construct & operate a vertical expansion to an existing industrial landfill located in Brooklyn, Queens County, Nova Scotia.

### 2. General Terms and Conditions

- a) The proponent shall conduct its activities in accordance with provisions of the:
  - i) Environment Act, SNS 1994-95 C.1;
  - ii) Regulations pursuant to the above Act;
  - iii) Local municipal environmental bylaws, zoning restrictions.
- b) The Minister reserves the right to modify, amend, or add terms and conditions to this Industrial Approval at any time provided that any modification, addition, or amendment is deemed necessary to ensure adequate environmental protection.
- c) This Industrial Approval is not transferrable without the written permission of the Minister.
- d) If the Minister determines that there has been non-compliance with any or all of the terms and conditions provided in this Approval issued pursuant to Section 56(1) of the Environment Act, the Minister may in accordance with Section 58 (2)(b) cancel or suspend, the approval until such time as the Minister is satisfied that all terms and conditions have been met.

- e) The proponent shall notify the Nova Scotia Department of the Environment prior to any process changes or waste disposal practices not approved under authorization of this approval.
- f) The proponent shall bear all expenses incurred in carrying out the environmental monitoring required under the terms and conditions of this approval.
- g) The proponent shall ensure that a copy of the permit remains on site at all times and that all personnel involved in the manufacturing operation are familiar with the Terms and Conditions of the Approval.
- h) All samples collected under this approval shall be analysed in accordance with recognized standard procedures.

### 3. Sound Levels

Sounds levels measured at the property boundaries shall not exceed the following equivalent sound levels (leq):

Leq 65 dBA 0700-1900 hours (Days)

60 dBA 1900-2300 hours (Evenings) 55 dBA 2300-0700 hours (Night)

NOTE: Monitoring shall be at the request of the Nova Scotia Department of the

Environment Regional Office.

### 4. Particulate Emissions

a) Particulate emissions shall not exceed the following limits at the site property boundaries:

Annual Geometric Mean 70ug/m3 Daily Average (24 hrs.) 120ug/m3

- b) The generation of fugitive dust from the site will be suppressed by the application of water sprays, or the application of other suitable dust suppressants approved by the Department.
- c) Site access road(s) shall be maintained to minimize dust generation. The use of waste oil is not permitted.

NOTE: Monitoring of Particulate Emissions shall be at the request of the Nova Scotia Department of the Environment Regional Office.\*

### 5. Surface Water

- a) The site shall be maintained to prevent siltation of the surface water which is discharged from the property boundaries. This includes the installation of soil erosion and sedimentation control designed to meet the specifications of this Department.
- b) The silt control ponds shall be maintained to prevent erosion and siltation.
- c) The proponent shall sample and ensure the following liquid effluent levels are met:

### **Final Effluent Discharge Limits**

Parameters  Maximum in a Grab Sample  Total suspended solids  50 mg/l		Monthly Arithmetic Mean	Monitoring Frequency		
	50 mg/l	25 mg/l	weekly		
pН	5-9	6-9	weekly		

### 6. Landfill Wastes

The waste materials approved for disposal at the landfill are limited to the following:

- (a) Woodroom grit consisting of sand, gravel, woodchips and bark that is washed off the pulpwood at the log flume.
- (b) Primary treatment sludge including clarifier sludge and sludge from the ASB settling basin.

### 7. Landfill Construction

- (a) A liner consisting of a 36 in. layer of Hebbville clay (hydraulic conductivity of approximately 3 X 10<sup>-8</sup> cm/sec) will be employed to separate the waste material from overburden/bedrock, and the seasonably high groundwater table.
- (b) The leachate produced at the landfill will be collected by 3 double rows of perforated pipe, as per Landfill Site Plan, Drawing 1, attached. The perforated pipe is to be installed within a 12 in. layer of 2 in. clear stone on top of the clay liner. The collected leachate discharges to the settling basin at the ASB site.

(c) Leachate production at the landfill will be minimized by the diversion of off-site stormwater by ditching.

### 8. Landfill Cap

- a) The completed active area of the landfill will be capped and seeded each year. The cap is to consist of one metre of silty clay underlying a minimum 0.3 metres of topsoil.
- b) Alternative cover materials must be approved by the NSDOE District Office.

### 9. Groundwater Monitoring

- (a) Monitoring well stations consisting of surficial and bedrock wells will be installed around the landfill.
- (b) The monitoring system will include MW-1 and MW-5, which are also used for the ASB site, and an additional monitoring station to be installed down gradient of the landfill (to the NNE).
- (c) The monitoring wells are to be sampled and tested quarterly along with the monitoring wells for the ASB site. The samples are to be analysed for pH, color, BOD<sub>5</sub>, and TOC.
- (d) The new monitoring wells are to be installed prior to June 1, 1996.
- 10. Monitoring of the landfill is to continue after landfill closure, as required by the Nova Scotia Department of the Environment.

### 11. Cell 1 Vertical Expansion

- a) This Approval is based upon information submitted in the following documents and communications:
  - ASB Landfill Cell No. 1- Expansion, Bowater Mersey Paper Company, Specifications and Tender Documents, May 1999, Prepared by: Porter Dillon Limited.
  - ii) Drawings # D-20016, D-20017, D-20018, D-20019, D-20020 by Dillon Consulting/Porter Dillon Limited.

- iii) Geotechnical Investigation, A.S.B. LandfillExpansion, Alternative Design: Increase Capacity A.S.B. Cell No.1, Bowater Mersey Paper Co. Ltd, Liverpool, Nova Scotia. Prepared by: Moroney Associates Inc., April 12, 1999.
- iv) Correspondence dated July 7, 1999; Frances Younker to Bob Petrie, Re: ASB Landfill Expansion..
- v) Tel. Conversation: B. Petrie & C. Shortall (Dillon Consulting)- July 20, 1999.
- b) The proponent shall ensure that all erosion and sedimentation controls are installed prior to construction commencing. Measures shall conform, but are not limited to, specifications detailed in Drawing #D-20020. It is the proponent's responsibility to ensure structures and sedimentation ponds are appropriately sized.
- c) The proponent shall ensure that the vertical expansion is structurally stable and capable of supporting anticipated loads. All fill within the foot print of the cell expansion shall be removed and replaced with structural fill which can support the required loads. Following construction, the cell shall be inspected quarterly for signs of instability such as slumping, erosion, or lack of vegetative cover.
- d) Groundwater monitoring shall continue at the site as specified in Section 6of this Approval. Should any wells become damaged or destroyed as part of construction, the wells shall be repaired or abandoned in accordance with the Well Construction Regulations. Any destroyed/abandoned wells shall be replaced.



15-3260

## PETROLEUM STORAGE TANK REGISTRATION VALIDATION FORM

OFFICE USE ONLY Application #
пристопни
Jata: kecd (yyyymm/dd): Ext. Ref. ≢ NSDOE File #
otal Fees Due Fees Faid Part in Full Ves CL Mo. Cl
1000
Water Auth, 世(Div. 1 omv)

<u>NOTE</u>: This form is intended for internal use by NSDEL staff only in order to validate nformation on existing petroleum storage tanks and enable the entry of this information into the Petroleum Storage Tank Database developed for EIMAS.

### **SECTION 1 - OWNER**

ate who is the primary owner	for the petroleum stor	rage tanks and attach a	complete list of owner		
Bowto Merses	P0005	15	t complete not of own		
	7 - 1/3				
Other:	Professional Designa	tion			
Middle Initial	Family Name				
Business ( )	Ext.	Other ( )	Ext.		
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Ci	· · · · · · · · · · · · · · · · · · ·	Brakelyn			
Postal Code 7377	1/2	, -			
-Owner? Yes	No □ If yes.	please skip to Section	3.		
			·		
	-				
☐ Other:	Professional Designation				
Middle Initial	Family Name				
Business ( )	Ext.	Other ( )	Ext.		
E-mail					
Kwy #3					
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Cit	yrrown BRa	aklya	*		
Postal Code 7307	1£0 10	Country			
	Other:  Middle Initial Business ( ) E-mail  PO R & USC  Ci Postal Code ROT  SECTION 2 - CONTA  - Owner? Yes X  Other:  Middle Initial Business ( ) E-mail  Mwy 77 3  PO. Box  Cit	Other: Professional Designal Middle Initial Family Name  Business ( ) Ext.  E-mail    Huy # 3   PD R x 1150   Nex peace     City/Town     Postal Code R D T   K O     Other: Professional Designat     Middle Initial Family Name     Business ( ) Ext.   E-mail     Middle Initial   Family Name     Business ( ) Ext.   E-mail     Mwy # 3   PD . B D X 1150   City/Town     City/Town   R and City/	Other: Professional Designation  Middle Initial Family Name  Business ( ) Ext. Other ( )  E-mail  (		

### SECTION 3 - SITE/LOCATION OF PROPOSED ACTIVITIES

1:50,000 Topo Maps (id		d Northing) are	available at	Nova Sc	otia Depa	rtment of	the Env	ironment Regional Of	fices.
Site Name	Bowater	Morsey	$-\mathcal{F}_{i3}$	n	(0.	2+1		(broom how	se)
Civic/Street Address	<u> </u>	79	Did	Huy	#	3			
Courts (1	)								
Property Identification	veens				nmunity		on tel	<del>&lt; &gt;/ -</del>	
Grid Reference	Easting (6)				,000 Top: rthing (7)	Map#			
Cha Morerence	castrid (0)	<del></del>	<del></del>	INO	ming (7)				
		SE	CTION 4	- ACT	IVITY				
Proposed Activities -	Please check (∕) all i	hat apply.							
Activity			Complete Se	ctions					
Deleter Cl.									
Petroleum Storage Tar	ik System Regisirani	n meg	4, 5A, 5H, 7						
		SECTIO	N 5 - AC	TI\/ITV	DET/	\II			
N				114111	ייייי	\ILJ			
Please provide all infor 5A - Complete for	201000000000000000000000000000000000000								
Type of Facility	ап аррисарте раг	geraus eda	ISMVASIE D	angeror	15 GUUC	SiGaiva	je rarc	i Applications.	
Storage 🔛	Đispi	osai :	ī.	Tre	atment			Other D	
ff Other, please specify									
Maximum Storage Cap	acity	N/A	kg		N//	1	m³	Total for all tours	L litres
Maximum Disposal Caj	засіту	N/A	kg .		N//		111,	N/A	litres
Maximum Treatment C	apacity	N/A	kg		N//		£11 <sup>2</sup>	N/A.	lifres
5H - Complete only	for registration of	of Petroleum	Storage Ta	nk Syst	em				
Type of Installation:	Bulk Plant 🔾	Motiv	e Fuel Outlet	۵	Far	m	a	Residential	٥
	Marine 🔾			×		vernment		Other	Q
If Other, please specify				•					
Installation Description:	Existing Site O on	Closed Site &	<u> </u>	Nice	mber of ta	nks at loc	rtion		
								115	
Installer Name				- Inst	aller Certi	ricate. # _	MOI	regulary for E	: [14] [42
Dyking (for abovegroun	nd tanks only):	Number of	tanks dyked						
Dyke Construction Mate	erial: Concrete C	1 Earth/Cla	ıy □ St	eel 🔾	Synthe	tic Liner	<u> </u>	Other 🔾	
If Other, please specify									
Length (metres)		lad to d	trac)			Fiie	ctive He	ight (metres)	
		Aniuth twe						STATE (ILLICHTON)	
Effective Capacity (len	ath washing a great of the	Width (me							

IF TOY ALAUS

·- ,	Description of Tanks						
Tank N	umber (Refer to Drawing)	1	2	3	4	5	6
1. St	atus of Tank (Mark one only)  Currently in use						
	Temporarily out of use						
	Abandoned in place						
	Removed	V					
2. Ty	rpe of Tank (Aboveground or Underground)	4					
	stimated Year of Installation	1982				•	
		4080					
	aterial of Construction a. Underground Tanks Steel	1/					
	. Fiberglass reinforced plastic						
	Unknown						
	Other, please specify						
	b. Aboveground Tanks Welded Steel				İ		
	Rivetted steel				<u> </u>		
	Other, please specify				<u> </u>		<u> </u>
6. Ex	demal Protection (Mark all that apply)  Sacrificial anode cathodic protection	<del></del>				1	
<u> </u>	Impressed current cathodic protection				İ		
	. Zinc reference electrode						
	None or Unknown						
	Other, please specify	<i></i>					
, c.							
7. S∈	econdary Containment (Mark all that apply) Double wall Impermeable liner				<u> </u>		
	Vault				<u> </u>		
	Other, please specify			<u> </u>	<u> </u>		
	· None	1/	,		<u> </u>		
		<i>V</i>					
8. Pi	ping (Mark all that apply)  Coated Black/Bare steel  Galvanized steel						
, \2	Cathodically protected						
(~~\ <sub>\</sub> \)			<u> </u>				
ped	Fiberglass reinforced plastic  Flexible piping  Unknown						
"isto"	The State				<u> </u>		
82 m	Olivinowii			-		<del> </del>	
	Other, please specify						
9. St	ubstance currently or last stored Compartment tank (Mark all that apply)  Gasoline	}		<del>                                     </del>	<u> </u>	<u> </u>	
	Diesel			<u> </u>		<u> </u>	
	Fuel Oil			<u> </u>			
	Kerosene					<u> </u>	
*	Bunker			<u> </u>		<u> </u>	
	Used oil						
	Unknown				<u> </u>	<del> </del>	
	Other, please specify						
10. Ad	dditional Information (out of service tanks) - Estimated date last used (mm/yyyy)	01/96					
	Estimated quantity remaining (litres)		<del> </del>	<u>                                     </u>			
	Filled with inert material (yes or no)						0.000
*********	Registration	Ī		Ī	· · · · · · · · · · · · · · · · · · ·		1980 1988 1988 1988 1988 1988 1988 1988

Inspectors Signature

Inspectors Name (Please print or type) Dravid ((, ko

Date (vvvv/mm/dd)

31 MAR 2003

PID 70084967

## NOVASCOTIA Department of the Environment & Labour

60 Logan Road Bridgewater, NS B4V 3J8

Tel: (902) 543-4685 Fax: (902) 527-5480

Western Region Bridgewater District Office

Danny Shannon Inspector Specialist

November 28, 2000

Bowater Mersey Paper Company Limited P.O. Box 1150 Liverpool, NS B0T 1K0

Dear

Enclosed is a renewal of Industrial Approval # 99-ATCW-005 (Amendment #1) granted to Bowater Mersey Paper Company to construct and/or operate a Sludge Drying Pad and Stockpile Area in conjunction with Biosolids Composting Project.

If you have any questions please contact me at (902) 543-4685.

Yours truly,

Jeff Garphum District Manger

CC:

Danny Shannon

Barry Gillis

### TERMS AND CONDITIONS

Nova Scotia Department of the Environment & Labour

Approval No.

99-ATCW-005

File No.

12-99-0034

Project:

**Bowater Mersey Paper Company Limited** 

Biosolids Composting Pilot Project

Brooklyn

**Queens County** 

### TERMS AND CONDITIONS

### 1. Scope of Approval

This approval (the "Approval") relates to Bowater Mersey Paper Company Limited, hereafter called the proponent (the "Proponent"), and their application (the "Application") to operate a pilot biosolids composting project (the "Facility") in Brooklyn in the Region of Queens.

### 2. General Terms and Conditions

- (a) This approval is recommended based upon the following information submitted in support of the application.
  - i) Letter of November 16, 2000 from Ms. Frances Younker, Environmental Engineer, to Danny Shannon re: Extension of Industrial Approval 99-ATCW-005.
  - ii) Letter of January 15, 1999, from Louise Lindsay, M. Sc., P. Ag., to Mr. Barry Gillis Re: Biosolids Composting Pilot Project.
  - iii) Letter of May 31, 2000, from Louise Lindsay, M. Sc., P. Ag., to Mr. Bob Petrie Re: Sludge Drying Pad Project.
  - iv) Drawing No. D-19977, date January 8, 1999, designed by L. Lindsay.

In addition to requirements of this approval, the facility is to be operated and constructed in accordance with the above documents.

- (b) The Proponent shall operate the Facility in accordance with the provisions of:
  - (I) Environment Act, S.N.S. 1994-95
  - (ii) Regulations pursuant to above act
- (c) The Minister reserves the right to modify, amend, delete, or add Terms and Conditions to this Industrial Approval at any time.

- (d) This Approval is not transferrable without the written permission of the Minister.
- (e) If the Minister determines there has been noncompliance with any or all of the Terms and Conditions provided in this Approval issued pursuant to Section 56(1) of the Environment Act, the Minister may cancel or suspend the Approval pursuant to Sections 58(2)(b) and 58(4) of the Environment Act until such time as the Minister is satisfied that all Terms and Conditions have been met.
- (f) The Proponent shall notify the Nova Scotia Department of the Environment and seek approval, where applicable, from them prior to any extension or modification as defined by the Activities Designation Regulations.
- (g) The Proponent shall ensure that this Approval or a copy is kept on site at all times and that personnel directly involved in the operation of the Facility are made aware of the Terms and Conditions which pertain to this Approval.
- (h) This approval does not relieve the Proponent of the responsibility to comply with other relevant provincial and/or municipal requirements.
- (i) The Minister reserves the right to request update and completion reports of all sampling, upsets, remediation measures, and process changes.

### 3. Operations

- (I) Bowater staff are to inspect the site on a daily basis for evidence of odours, to conduct regular monitoring of windrow temperatures, and to ensure surface drainage controls are operational.
- (ii) The amount of finished compost generated during the length of this approval is not to exceed 1500 m<sup>3</sup>. This includes all compost generated since April 12, 1999.
- (iii) The composting material in each windrow is to be sampled on a monthly basis and submitted to a certified laboratory for analysis of CCME compost parameters and the TPH content. Upon completion of the pilot project, a summary of the results is to be sent to the Bridgewater office of Nova Scotia Department of the Environment.
- (iv) Upon completion of the project, all compost is to be classified in accordance with the criteria identified in the Canadian Council of Ministers of the Environment (CCME) document "Guidelines for Compost Quality" dated March, 1996 as amended from time to time.
- (v) Finished product not meeting Category A as determined by the above mentioned CCME guidelines and the Nova Scotia Department of the Environment Composting Facility Guidelines is to be disposed of in the ASB landfill, unless indicated otherwise by Nova Scotia Department of the Environment.
- (vi) Feedstock is to be limited to those sludges generated on Bowater property. Bulking agents such as woodchips, sawdust, straw, etc., may be used for aeration and moisture content control.

- (vii) All operational and monitoring requirements as detailed in NSDOE Industrial Approval #95-058 are to remain in place for composting operations on the site.
- viii) Bowater Staff are to conduct testing of the water collected in the sump. Water found to be a result of surface water run-off may be released to the landfill surface water drainage system. Water determined to be impacted by leachate from the sludge must be directed to the wastewater treatment system.

### 4. Duration of Approval

This Approval is valid until July 31, 2001.



# DEPARTMENT OF THE ENVIRONMENT & LABOUR Industrial Approval

Composting Project at Brooklyn, in the County of Queens, in the Province of Pursuant to the Environment Act and Regulations made pursuant thereto, and subject to the terms and conditions contained in the approval, this approval is granted to Bowater Mersey Paper Company Ltd., to operate a Biosolids Nova Scotia.

Granted at Bridgewater, Lunenburg County, Province of Nova Scotia, this\_ 30th day of November, A.D. 2000.

99-ATCW-005 (AMENDMENT #1)



Environment

P10 70084967

Our File Number:

May 7, 1999

373 King Street Bridgewater, Nova Scotia B4V 1B1

Tel: (902) 543-4685 Fax: (902) 543-8024

Bowater Mersey Paper Company Ltd. Liverpool Queens County, NS BOT 1K0

Dear Sir or Madam:

Enclosed is an *Industrial Approval* granted to Bowater Mersey Paper Company Ltd. to operate a Biosolids Composting Pilot Project at Brooklyn in the County of Queens, Province of Nova Scotia.

Should you have any questions, or require further assistance, please contact Mr. Barry Gillis, P. Eng., Bridgewater office at (902) 543-4685.

"Yours truly,

Jeff Garnhum District Manager

/ale

pc:

D. MacKay, P. Eng.

✓ B. Gillis, P. Eng.

Municipality of Queens

any Gillis for



### Department of the Environment

Western Region

Barry Gillis, P.Eng.

373 King Street Bridgewater, Nova Scotia 84V 1B1

Tel: (902) 543-4685 Fax: (902) 543-8024

Our file no:

### **MEMORANDUM**

DATE:

April 12, 1999

TO:

Jeff Garnhum

District Manager

FROM:

Barry Gillis, P.Eng.

JBG

**Public Health Engineer** 

Subject:

**Composting Pilot Program** 

**Biosolids Composting Project** 

**Bowater Mersey Paper Company Ltd.** 

Brooklyn, Queens County

Application No.

99-ATCW-005

File No.

12-99-0034

Attached is a report describing briefly the work covered by this application, outlining the factors considered in the review process, and recommending approval of the project.

PROJECT:

Bowater Mersey Paper Company Ltd.

Biosolids Composting Pilot Project

Composting of Mill Clarifier Sludge and Landfill Sludge

Brooklyn, Queens County

### REPORT

### APPLICATION FOR APPROVAL

Bowater Mersey Paper Company Limited

FILE NO:

12-99-0034

APPLICATION NO:

99-ATCW-005

### WESTERN REGION

Barry Gillis, P.Eng. Public Health Engine

### Engineer's Report

File No: 12-99-0034

Approval No: 99-ATCW-005

<u>Project:</u> Bowater Mersey Paper Company Limited

Biosolids Composting Pilot Project

Composting of Mill Clarifier Sludge and Landfill Sludge

Brooklyn Queens County

<u>Purpose:</u> To evaluate the environmental impact associated with operating a pilot

project for composting at the existing Bowater Landfill site.

<u>Introduction:</u> The Proponent has applied to have approval to compost biosolids from its

mill and landfill sites as a pilot project. The pilot project will investigate the potential for composting these wastes in the hopes of reducing landfilled wastes, creating a useable product, and supporting a potential

business based upon the utilization of waste byproducts.

<u>Discussion:</u> The location for the pilot project is an excellent one. The site presently

consists of the Bowater Mersey Paper Company Limited landfill and leachate treatment system. Groundwater monitoring is already in place as

a condition of the existing industrial approval.

The proposal has been reviewed with respect to the Nova Scotia Department of the Environment Composting Facility Guidelines while taking into account that the location is an existing industrial site and the scope of the undertaking is limited as a pilot project. The section of the guidelines that is most applicable is Section 5. The remainder of the discussion deals with how the proposal meets Section 5.

The project is an open windrow composting operation. The receiving, composting, and curing area is not underlain by asphalt or concrete. The area is directly adjacent to an existing landfill cell and the site is to be set up via surface drainage controls such as swales such that all drainage from the windrows will be directed to the landfill cell. Leachate from the landfill cell is directed to the existing leachate treatment system on the site.

There will be no leachate generated other than the runoff water discussed previously. Due to the control of the runoff water, it is not expected that any watercourse impacts are possible.

Groundwater monitoring is already in place for the facility.

The site is to be inspected by Bowater staff on a daily basis to assess for odour concerns and to conduct regular monitoring of windrow temperatures. Air emissions are anticipated to include carbon dioxide, water vapour, and methane. Due to the relatively small size of the pilot study, emissions are not expected to be significant.

Separation distances are not an issue. The location is an existing industrial landfill and leachate treatment site.

It is anticipated that the finished compost will meet the requirements for Category A compost.

Conclusion:

Environmental impacts associated with the project are expected to be minimal.

Recommendation:

It is recommended that the proponent receive approval for the pilot project.

### TERMS AND CONDITIONS

Nova Scotia Department of the Environment

Approval No.

99-ATCW-005

File No.

12-99-0034

Project:

Bowater Mersey Paper Company Limited

Biosolids Composting Pilot Project

Brooklyn Queens County

### TERMS AND CONDITIONS

### 1. Scope of Approval

This approval (the "Approval") relates to Bowater Mersey Paper Company Limited, hereafter called the proponent (the "Proponent"), and their application (the "Application") to operate a pilot biosolids composting project (the "Facility") in Brooklyn in the Region of Queens.

### 2. General Terms and Conditions

- (a) This approval is recommended based upon the following information submitted in support of the application.
  - I) Letter of January 15, 1999 from Louise Lindsay, M.Sc., P.Ag., to Mr. Barry Gillis re: Biosolids Composting Pilot Project
  - ii) Drawing No. D-19977, date January 8, 1999, designed by L.Lindsay.

In addition to requirements of this approval, the facility is to be operated and constructed in accordance with the above documents.

- (b) The Proponent shall operate the Facility in accordance with the provisions of:
  - (I) Environment Act, S.N.S. 1994-95
  - (ii) Regulations pursuant to above act
- (c) The Minister reserves the right to modify, amend, delete, or add Terms and Conditions to this Industrial Approval at any time.
- (d) This Approval is not transferrable without the written permission of the Minister.
- (e) If the Minister determines there has been noncompliance with any or all of the Terms and Conditions provided in this Approval issued pursuant to Section 56(1) of the Environment Act, the Minister may cancel or suspend the Approval pursuant to Sections 58(2)(b) and 58(4) of the Environment Act until such time as the Minister is satisfied that all Terms and Conditions have been met.
- (f) The Proponent shall notify the Nova Scotia Department of the Environment and seek approval, where applicable, from them prior to any extension or modification as defined by the Activities Designation Regulations.

- (g) The Proponent shall ensure that this Approval or a copy is kept on site at all times and that personnel directly involved in the operation of the Facility are made aware of the Terms and Conditions which pertain to this Approval.
- (h) This approval does not relieve the Proponent of the responsibility to comply with other relevant provincial and/or municipal requirements.
- (I) The Minister reserves the right to request update and completion reports of all sampling, upsets, remediation measures, and process changes.

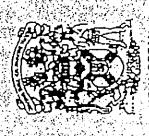
### 3. Operations

- (I) Bowater staff are to inspect the site on a daily basis for evidence of odours, to conduct regular monitoring of windrow temperatures, and to ensure surface drainage controls are operational.
- (ii) The amount of finished compost generated during the length of this approval is not to exceed 1500 m<sup>3</sup>.
- (iii) The composting material in each windrow is to be sampled on a monthly basis and submitted to a certified laboratory for analysis of CCME compost parameters and the TPH content. Upon completion of the pilot project, a summary of the results is to be sent to the Bridgewater office of Nova Scotia Department of the Environment.
- (iv) Upon completion of the project, all compost is to be classified in accordance with the criteria identified in the Canadian Council of Ministers of the Environment (CCME) document "Guidelines for Compost Quality" dated March, 1996 as amended from time to time.
- (v) Finished product not meeting Category A as determined by the above mentioned CCME guidelines and the Nova Scotia Department of the Environment Composting Facility Guidelines is to be disposed of in the ASB landfill, unless indicated otherwise by Nova Scotia Department of the Environment.
- (vi) Feedstock is to be limited to those sludges generated on Bowater property.

  Bulking agents such as woodchips, sawdust, straw, etc., may be used for aeration and moisture content control.
- (vii) All operational and monitoring requirements as detailed in NSDOE Industrial Approval #95-058 are to remain in place for composting operations on the site.

### 4. Duration of Approval

This Approval is valid until March 31, 2000.



## NOVA SCOTIA DEPARTMENT OF THE ENVIRONMENT

# INDUSTRIAL APPROVAL

Pursuant to the Nova Scotia Environment Act and Regulations made pursuant thereto, and subject to the Terms and Conditions contained in the Approval, this Approval is granted to Bowater Mersey Paper Company Ltd., to operate a Biosolids Composting Project, located at Brooklyn, Municipality of the County of Queens, Province of Nova Scotia Granted at Liverpool, in the Municipality of the County of, Province of Nova Scotia, this 12th

day of April A.D. 1999.

-ATCW-005

Approval Number

TI WIN TANNO XX

Jeff Garnhum, District Manager

**APPENDIX D** 

**Report Limitations** 

### **LIMITATIONS**

- 1. The work performed in the preparation of this report and the conclusions presented are subject to the following:
  - (a) The Standard Terms and Conditions which form a part of our Professional Services Contract;
  - (b) The Scope of Services;
  - (c) Time and Budgetary limitations as described in our Contract; and
  - (d) The Limitations stated herein.
- 2. No other warranties or representations, either expressed or implied, are made as to the professional services provided under the terms of our Contract, or the conclusions presented.
- 3. The conclusions presented in this report were based, in part, on visual observations of the Site and attendant structures. Our conclusions cannot and are not extended to include those portions of the Site or structures, which are not reasonably available, in AMEC's opinion, for direct observation.
- 4. The environmental conditions at the Site were assessed, within the limitations set out above, having due regard for applicable environmental regulations as of the date of the inspection. A review of compliance by past owners or occupants of the Site with any applicable local, provincial or federal bylaws, orders-in-council, legislative enactments and regulations was not performed.
- 5. The Site history research included obtaining information from third parties and employees or agents of the owner. No attempt has been made to verify the accuracy of any information provided, unless specifically noted in our report.
- 6. Where testing was performed, it was carried out in accordance with the terms of our contract providing for testing. Other substances, or different quantities of substances testing for, may be present on Site and may be revealed by different or other testing not provided for in our contract.
- 7. Because of the limitations referred to above, different environmental conditions from those stated in our report may exist. Should such different conditions be encountered, AMEC must be notified in order that it may determine if modifications to the conclusions in the report are necessary.
- 8. The utilization of AMEC's services during the implementation of any remedial measures will allow AMEC to observe compliance with the conclusions and recommendations contained in the report. AMEC's involvement will also allow for changes to be made as necessary to suit field conditions as they are encountered.
- 9. This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or contract. Any use which any third party makes of the report, in whole or the part, or any reliance thereon or decisions made based on any information or conclusions in the report is the sole responsibility of such third party. AMEC accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report or anything set out therein.
- 10. This report is not to be given over to any third party for any purpose whatsoever without the written permission of AMEC.
- 11. Provided that the report is still reliable, and less than 12 months old, AMEC will issue a third-party reliance letter to parties that the client identifies in writing, upon payment of the then current fee for such letters. All third parties relying on AMEC's report, by such reliance agree to be bound by our proposal and AMEC's standard reliance letter. AMEC's standard reliance letter indicates that in no event shall AMEC be liable for any damages, howsoever arising, relating to third-party reliance on AMEC's report. No reliance by any party is permitted without such agreement.