DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: New Page Corporation
Facility Address: 35 Hartford St., Rumford, ME 04276
Facility EPA ID #: MED 001095041

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

   _X_ If yes - check here and continue with #2 below.

   ____ If no - re-evaluate existing data, or

   ____ If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

RDMS Doc ID 109873

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	X			Potential contaminants above MEGs/MCLs
Air (indoors)[2]	X			Potential mercury contamination
Surface Soil (e.g., <2 ft)	X			Potential mercury and PCB contamination
Surface Water		X		Testing showed no PCBs or mercury
Sediment		X		Testing showed no PCBs or mercury
Subsurf. Soil (e.g., >2 ft)	X			Potential mercury contamination
Air (outdoors)	X			Potential mercury contamination from soil

____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

_X_ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s): In 1992 the Maine Department of Environmental Protection (DEP) completed a RCRA Facility Assessment (RFA) for this site. The RFA identified eight (8) Solid Waste Management Units (SWMU 1 through SWMU 8) with known or potential releases of hazardous wastes. A description of all eight (8) SWMU

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

issues is provided in Attachment 1. After Phase I and Phase II environmental assessments of the SWMUs, it was determined that corrective action was required for three of the SWMUs (SWMU 1, SWMU 4 and SWMU 7). SWMU 1, the Commodity Storage Area, is an area previously occupied by a chloralkali plant that discharged mercury to surrounding soils and contains the most significant contamination at the New Page facility. Approximately one half of the chloralkali plant was demolished and, as described in References 7 through 11 below, mercury-contaminated soil was removed from beneath the demolished portion, tested, and found to be non-hazardous. The remaining part of the chloralkali plant was converted to a commodity storage building. A newer structure, the evaporator building, was constructed on part of the chloralkali plant footprint. Excavations attempted to remove the most-contaminated soil, but some contaminated soil may remain. SWMU 4 is a former fire fighting training area with petroleum and VOC soil contamination. References 1 and 2 below describe SWMU 4 investigations in 2001 for mercury, PCBs, residual petroleum products, and VOCs using test pits and soil samples. No mercury or PCBs were detected. Isolated pockets of DRO- and VOC-impacted soil were found. SWMU 7 is an electrical equipment storage area with PCB-contaminated concrete and soil. The only known contaminant in this area was PCBs. As described in Reference 6 below, all contaminated concrete floor, brick wall surfaces and sub-slab soil with PCBs above 1 ppm have been removed. Remaining pipes and structures were decontaminated and wipe tested.

References:

1. Sevee and Maher Engineers Inc., June 2002, *Hydrogeologic Investigation Report for 2001 Phase I Assessment of Solid Waste Management Units, MeadWestvaco Rumford Mill, Rumford, Maine*;

2. Sevee and Maher Engineers Inc., October 21, 2003 letter to Scott Reed, *Results of Phase II Assessment/Remediation of Soils in Former Fire Training Area, MeadWestvaco Paper Division, Rumford Mill, Rumford, Maine;*

3. Sevee and Maher Engineers Inc., August 13, 2004 letter to Scott Reed, *Results of Phase II Water Quality Sampling Rounds, MeadWestvaco Paper Division, Rumford Mill, Rumford, Maine*;

4. Sevee and Maher Engineers Inc., November 9, 2004, *Direct-Push Groundwater Sampling Results, Phase II Assessment of Commodity Storage Area/North Mill Yard;*

5. Sevee and Maher Engineers Inc., August 19, 2008, *SWMU 1, Monitoring Well Installation and Sampling, Newpage Corporation, Rumford, Maine;*

6. Sevee and Maher Engineers Inc., April 8, 2011, *Final Report for SWMU-7 Clean-up, Former PCB Storage Area, Rumford Paper Company, Rumford, Maine;*

7. January 29, 1990 letter from Paul A. Jones (Boise Cascade) to Stacy Ladner (DEP);

8. February 5, 1990 letter from Paul A. Jones (Boise Cascade) to Stacy Ladner (DEP);

9. Maine Department of Environmental Protection, Site Location Order L-004758-20-C-A, March 16, 1989, to Boise Cascade Corporation;

10. March 23, 1990 memo from Stacy Ladner (DEP Oil Bureau) to Dave Studer (DEP Land Bureau);

11. Maine Department of Environmental Protection, Site Location Order L-004758-20-H-M, April 26, 1989, to Boise Cascade Corporation;

12. Stone and Webster Engineering, December 1991, *Risk Assessment, Commodity Storage Building and Immediate Area, Boise Cascade Paper Mill, Rumford, Maine.*

Groundwater:

SWMU 1, Commodity Storage Area: References 1, 3, 4, 5 and 7 through 12 above discuss environmental investigations in SWMU 1 where spilled mercury is a potential risk for human exposure to excavated soil and groundwater. Groundwater monitoring in this area has been designed to evaluate water quality immediately beneath the former chloralkali facility and to assess whether a mercury plume has developed from the source area. Table 1 summarizes mercury levels in groundwater from 2001 through 2008 at 12 monitoring wells associated with SWMU 1. Mercury was equal to or below the state Maximum Exposure Guideline (MEG) of 2 ppb for all monitoring wells except for MD-14 and MD-15 which are installed directly below the former chloralkali plant. Mercury levels exceeding the MEG at these locations ranged up to 19.4 ppb. These data indicate that mercury above the MEG exists directly beneath the former chloralkali plant location, but that there is no evidence of a down-gradient groundwater plume with mercury concentrations above the MEG. The absence of a plume may be due in part to the removal of contaminated soil in association with construction in the area. Other contributing factors may be the installation of sheet piling to 20 feet and surface paving of the Commodity Storage Area. These efforts were intended to minimize water infiltration and flow.

The paper mill and surrounding areas are supplied by public water. The nearest residences are located approximately one quarter mile upstream from the mill. Public water supplies are all up-gradient from the mill.

SWMU 4, Former Fire Training Area: References 1 and 2 above describe investigations in SWMU 4. SWMU 4 was evaluated in 2001 for mercury, PCBs,

Table 1
Mercury Concentrations in SWMU 1 Groundwater
2001-2008
New Page Mill, Rumford, Maine

Well Name	Date	Sample Collection Method	Analytical Method	Concentration (ug/L)	Lab Qualifier	Quantitation Limit (ug/L)	Comments
B-301	9/11/2001	Low Flow	Unknown	0.5000			
B-301	11/13/2001	Low Flow	Unknown		U	0.2000	
B-301	6/3/2003	Unknown	SW7470		U	0.2000	
B-301	10/7/2003	Unknown	SW7470A		U	0.2000	
B-301	12/11/2007	Low Flow	E1631	0.0485		0.0012	
B-301	4/22/2008	Low Flow	E1631	0.0480		0.0030	
B-302D	9/10/2001	Low Flow	Unknown	0.9000			
B-302D	11/13/2001	Low Flow	Unknown	0.6000			
B-302D	6/2/2003	Unknown	SW7470	0.3000	J	0.5000	
B-302D	10/7/2003	Unknown	SW7470A	0.4000	J	0.5000	
B-302D	12/11/2007	Low Flow	E1631	0.2020		0.0051	
B-302D	4/21/2008	Low Flow	E1631	0.1960		0.0020	
B-302S	9/10/2001	Low Flow	Unknown		U	0.2000	
B-302S	11/13/2001	Low Flow	Unknown	0.2000	J		
B-302S	6/2/2003	Unknown	SW7470		U	0.2000	
B-302S	10/7/2003	Unknown	SW7470A		U	0.2000	
B-302S	12/11/2007	Low Flow	E1631	0.0085		0.0005	
B-302S	4/21/2008	Low Flow	E1631	0.0141		0.0005	
B-303	9/10/2001	Low Flow	Unknown	0.8000			
B-303	11/12/2001	Low Flow	Unknown	0.4000	J		
B-303	6/2/2003	Unknown	SW7470		U	0.2000	
B-303	10/6/2003	Unknown	SW7470A		U	0.2000	
MD-14	12/6/2000	Low Flow	Unknown	1.6000			
MD-14	1/4/2001	Low Flow	Unknown	2.6000			
MD-14	9/10/2001	Low Flow	Unknown	0.3000	J		
MD-14	11/12/2001	Low Flow	Unknown	1.1000			
MD-14	6/3/2003	Unknown	SW7470	1.3000		0.5000	
MD-14	10/6/2003	Unknown	SW7470A	0.5000		0.5000	
MD-15	12/6/2000	Low Flow	Unknown	10.7000			
MD-15	1/4/2001	Low Flow	Unknown	19.4000			
MD-15	9/10/2001	Low Flow	Unknown	6.0000			
MD-15	11/12/2001	Low Flow	Unknown	2.6000			
MD-15	6/3/2003	Unknown	SW7470	4.9000		0.5000	
MD-15	10/6/2003	Unknown	SW7470A	5.3000		0.5000	
MW-201A	12/6/2000	Low Flow	Unknown	0.5000			
MW-201A	1/4/2001	Low Flow	Unknown		U	0.2000	
MW-201A	9/11/2001	Low Flow	Unknown		U	0.2000	

Well Name	Date	Sample Collection Method	Analytical Method	Concentration (ug/L)	Lab Qualifier	Quantitation Limit (ug/L)	Comments
MW-201A	11/13/2001	Low Flow	Unknown	0.6000			
MW-201A	6/2/2003	Unknown	SW7470		U	0.2000	
MW-201A	10/7/2003	Unknown	SW7470A		U	0.2000	
MW-201A	12/12/2007	Low Flow	E1631	0.0314		0.0005	
MW-201A	4/21/2008	Low Flow	E1631	0.0060		0.0005	
MW-201B	12/6/2000	Low Flow	Unknown		U	0.2000	
MW-201B	1/4/2001	Low Flow	Unknown		U	0.2000	
MW-201B	9/11/2001	Low Flow	Unknown		U	0.2000	
MW-201B	11/13/2001	Low Flow	Unknown		U	0.2000	
MW-201B	6/2/2003	Unknown	SW7470		U	0.2000	
MW-201B	10/7/2003	Unknown	SW7470A		U	0.2000	
MW-201B	12/12/2007	Low Flow	E1631	0.0761		0.0025	
MW-201B	4/21/2008	Low Flow	E1631	0.0746		0.0030	
MW-202A	12/6/2000	Low Flow	Unknown	0.4000	J		
MW-202A	1/4/2001	Low Flow	Unknown		U	0.2000	
MW-202A	9/10/2001	Low Flow	Unknown		U	0.2000	
MW-202A	11/13/2001	Low Flow	Unknown	0.2000	J		
MW-202A	6/2/2003	Unknown	SW7470	0.6000		0.5000	
MW-202A	10/6/2003	Unknown	SW7470A	0.4000	J	0.5000	
MW-202A	12/12/2007	Low Flow	E1631	0.0090		0.0005	
MW-202A	4/21/2008	Low Flow	E1631	0.0163		0.0005	
MW-202B	12/6/2000	Low Flow	Unknown	1.6000			
MW-202B	1/4/2001	Low Flow	Unknown	1.5000			
MW-202B	9/10/2001	Low Flow	Unknown	1.3000			
MW-202B	11/13/2001	Low Flow	Unknown	1.2000			
MW-202B	6/2/2003	Unknown	SW7470	2.0000		0.5000	
MW-202B	10/6/2003	Unknown	SW7470A	1.8000		0.5000	
MW-202B	12/12/2007	Low Flow	E1631	0.1730		0.0051	
MW-202B	4/21/2008	Low Flow	E1631	0.1580		0.0010	
MW-401A	12/11/2007	Low Flow	E1631	0.3100		0.0052	
MW-401A	12/11/2007	Low Flow	E1631	0.1440		0.0051	Field Filtered

Well Name	Date	Sample Collection Method	Analytical Method	Concentration (ug/L)	Lab Qualifier	Quantitation Limit (ug/L)	Comments
MW-401A	4/21/2008	Low Flow	E1631	0.2320		0.0020	
MW-401B	12/11/2007	Low Flow	E1631	0.1980		0.0050	
MW-401B	4/21/2008	Low Flow	E1631	0.8440		0.0050	
MW-402	12/12/2007	Low Flow	E1631	0.4020		0.0052	
MW-402	4/21/2008	Low Flow	E1631	0.0850		0.0010	

U= not detected
J = estimated

residual petroleum products, and VOCs using test pits and soil samples. No mercury or PCBs were detected. Isolated pockets of DRO- and VOC-impacted soil, however, were found above the water table. In 2003 contaminated soils were excavated from the two (2) isolated pockets designated Remediation Area 1 and Remediation Area 2 (RA1 and RA2), treated by land spreading, and backfilled when PID readings were less than 10 ppm. A down-gradient well that did not contain elevated DROs or VOCs indicate that the groundwater beneath SWU 4 was not affected by overlying pockets of contamination.

SWMU 7, PCB Storage Area: Reference 6 above describes PCB contamination at SWMU 7. Concrete, brick structures, and shallow soil, all above the water table, were contaminated with PCBs. Due to the fact that the contamination was shallow and within and immediately beneath a building indicates that risk to groundwater is minimal.

Air (indoors):

SWMU 1, Commodity Storage Area: There is potential for human exposure to mercury vapor and particulates in the commodity storage building. Exposure potential through indoor air is mitigated by the fact that the commodity storage building is low-occupancy: *i.e.* workers enter the building only when manufacturing materials arrive or are retrieved for use.

SWMU 4, Former Fire Training Area: There is no potential impact to indoor air quality. The area is now an open, paved, log storage yard.

SWMU 7, PCB Storage Area: The only known contaminant in this area was PCBs. As described in Reference 6 above, all contaminated concrete floor, brick wall surfaces and sub-slab soil with PCBs above 1 ppm have been removed. Remaining pipes and structures were decontaminated and wipe tested. All wipe samples were below the detection limit of 1.2 μg/wipe. Remediation of the site indicates that there

is no significant exposure risk thorough indoor air.

Surface Soil

SWMU 1, Commodity Storage Area: In 1992 the Maine Department of Environmental Protection (DEP) completed a RCRA Facility Assessment (RFA) for this site. The RFA identified eight (8) Solid Waste Management Units (SWMU 1 through SWMU 8) with known or potential releases of hazardous wastes.References 1, 3, 4, 5 and 7 through 12 above discuss environmental investigations in SWMU 1 where mercury had been spilled at the site of a former chloralkali plant, and is a potential risk for human exposure. Approximately one half of the chloralkali plant was demolished and mercury-contaminated soil removed from beneath the demolished portion, and found to be non-hazardous using the TCLP test. The remaining part of the chloralkali plant was converted to a commodity storage building. A newer structure, the evaporator building, was constructed on part of the chloralkali plant footprint. Excavated soil was tested again and found to be non-hazardous. Excavations attempted to remove the most-contaminated soil, but some soil with mercury remains beneath the commodity storage building and in surrounding surface soil. The entire area was paved with asphalt. A risk assessment for the commodity storage building area conducted by Stone and Webster Engineering is described in reference 12. They determined that the only significant risk of human exposure to mercury was through surface soil which would most likely occur when the pavement is penetrated and soil excavated.

Areas in SWMU 1 with potential mercury contamination are known. As required by Department Site Location Order (Reference 9 above), the New Page mill has maintained a protocol for managing projects that occur in the vicinity of the former SWMU 1. The protocol requires that the proposed project sites be characterized in advance of conducting any work. Once the presence or absence of mercury is established, then construction may proceed or may be relocated accordingly. If construction proceeds, then all soil is tested for the presence of mercury, and if present, necessary worker protection procedures will be implemented. As required by Reference 9, disposal of contaminated soil is subject to Department review and approval of proposed disposal methods and location(s).

SWMU 4, Former Fire Training Area: References 1 and 2 above describe SWMU 4 investigations in 2001 for mercury, PCBs, residual petroleum products, and VOCs using test pits and soil samples. No mercury or PCBs were detected. Two (2) isolated pockets of DRO- and VOC-impacted soil beneath the surface were found. In 2003 contaminated soils were excavated from the pockets designated Remediation Area 1 and Remediation Area 2 (RA1 and RA2), treated and backfilled when PID readings were less than 10 ppm. The area is now paved, further reducing the human exposure risk through surface soil.

SWMU 7, PCB Storage Area: As described in Reference 6 above, shallow soil beneath the concrete floor and contaminated with PCBs was removed. Sampling in remaining soil confirmed that PCB levels were below 1 ppm. Human exposure risk to surface soil was further reduced by a new concrete floor poured over uncontaminated backfill.

Surface Water

SWMU 1, Commodity Storage Area: Groundwater from this area could potentially discharge to the nearest surface water, the Androscoggin River. Groundwater monitoring in this area has been designed to evaluate water quality immediately beneath the former chloralkali facility and to assess whether a mercury plume has developed from the source area. Table 1 summarizes mercury levels in groundwater from 2001 through 2008 at 12 monitoring wells associated with SWMU 1. Mercury was equal to or below the state Maximum Exposure Guideline of 2 ppb for all monitoring wells except for MD-14 and MD-15 which are installed directly below the former chloralkali plant. Mercury levels exceeding the MEG at these locations ranged from 0.3 ppb to 19.4 ppb.

Since 2003, mercury levels in ten (10) down-gradient monitoring wells intended to detect a mercury plume if present, were below Maine's ambient surface water quality criteria, both chronic and acute (Table 1). The data in Table 1 indicate that there is no evidence down-gradient from the source for a mercury plume above the MEG or Maine's ambient surface water quality criteria, both chronic and acute that would significantly affect surface water (Androscoggin River).

SWMU 4, Former Fire Training Area: References 1 and 2 above describe SWMU 4 investigations in 2001 for mercury, PCBs, residual petroleum products, and VOCs using test pits and soil samples. No mercury or PCBs were detected. Two (2) isolated pockets of DRO- and VOC-impacted soil were found that exceeded Maine's Soil Remediation Guidelines (RAGs). In 2003 contaminated soils were excavated from the pockets designated Remediation Area 1 and Remediation Area 2 (RA1 and RA2), treated and backfilled when PID readings were less than 10 ppm. A down-gradient well did not contain elevated DROs or VOCs thus indicating the absence of a plume that could affect surface water (Androscoggin River).

SWMU 7, PCB Storage Area: As described in Reference 6 above, shallow soil beneath the concrete floor was contaminated with PCBs and was removed. Since the contamination was beneath a building and above the water table, there was no pathway to surface water (Androscoggin River). Sampling in remaining soil confirmed that PCB levels were below 1 ppm. Exposure risk was further reduced by a new concrete floor poured over uncontaminated backfill. There is no significant residual contamination that constitutes an unacceptable risk for human exposure to surface water.

Sediment

SWMU 1, Commodity Storage Area: There is potential for mercury-contaminated groundwater to impact Androscoggin River sediment. Groundwater monitoring in this area has been designed to evaluate water quality immediately beneath the former chloralkali facility and to assess whether a mercury plume has developed from the source area. Table 1 summarizes mercury levels in groundwater from 2001 through 2008 at 12 monitoring wells associated with SWMU 1. Mercury was equal to or below the state Maximum Exposure Guideline of 2 ppb for all monitoring wells except for MD-14 and MD-15 which are installed directly below the former chloralkali plant. Mercury levels exceeding the MEG at these locations ranged from 0.3 ppb to 19.4 ppb. These data indicate that mercury above the MEG exists directly beneath the former chloralkali plant location, but no down-gradient plume with concentrations above the MEG presently exists.

Reference 1 documents mercury concentrations in river sediment for samples taken in 2001, upstream and downstream from Outfall 001. Upstream sediment was sampled as far as 6700 feet, and downstream sediment was sampled as far as 1600 feet downstream. Trace concentrations ranged from less than 0.02 ppm to 0.08 ppm with no significant difference between upstream and downstream samples.

Reference 12 describes river sediment and fish tissue sampling during the late 1980's and early 1990s. Sediment sampling was conducted in 1987 and 1990 at former Outfall 001, and 1500 feet upstream and downstream from the outfall. Statistical analyses of sampling results determined that there was no significant difference in mercury concentrations at these locations. In 1990 fish tissue analyses for mercury were reported for samples taken upstream and downstream from the mill. Results indicated that there was no significant difference between upstream and downstream samples. Fish movement up the river is restricted by the Brookfield hydroelectric facility dam which does not have a fish passage;

SWMU 4, Former Fire Training Area: In 2003 contaminated soils were excavated from the two (2) subsurface, isolated pockets designated Remediation Area 1 and Remediation Area 2 (RA1 and RA2), treated by land spreading and backfilled when PID readings were less than 10 ppm. A down-gradient well did not contain elevated DROs or VOCs thus indicating the absence of a plume that could affect surface water sediment in the Androscoggin River.

SWMU 7, PCB Storage Area: As described in Reference 6 above, shallow soil beneath the concrete floor and contaminated with PCBs was removed. Since the contamination was beneath a building and above the water table, there was minimal risk to surface water sediment in the Androscoggin River. Sampling in remaining soil confirmed that PCB levels were below 1 ppm. Exposure risk is further reduced by a new concrete floor poured over uncontaminated backfill.

The potential for additional PBC contamination was investigated in river sediment at Outfall 1. Reference 1 reports non-detect PCB levels in river sediment at that location.

Subsurface Soil

SWMU 1, Commodity Storage Area: Excavations attempted to remove the most-contaminated soil, but some contaminated soil may remain. Water infiltration and flow are minimized by surface paving and sheet piling driven to 20 feet. A risk assessment for the commodity storage building area conducted by Stone and Webster Engineering is described in reference 12. The assessment determined that the only significant risk of human exposure to mercury in subsurface soil would occur when the pavement is penetrated and soil excavated. A potential pathway exists if there is human contact with groundwater that has been in contact with contaminated soil.

Areas in SWMU 1 with potential mercury contamination are known. As required by Department Site Location Order (Reference 9 above), the New Page mill has maintained a protocol for managing projects that occur in the vicinity of the former SWMU 1. The protocol requires that the proposed project sites be characterized in advance of conducting any work. Once the presence or absence of mercury is established, then construction may proceed or may be relocated accordingly. If construction proceeds, then all soil is tested for the presence of mercury, and if present, necessary worker protection procedures will be implemented. As required by Reference 9, disposal of contaminated soil is subject to Department review and approval of proposed disposal methods and location(s).

SWMU 4, Former Fire Training Area: References 1 and 2 above describe SWMU 4 investigations in 2001 for mercury, PCBs, residual petroleum products, and VOCs using test pits and soil samples from subsurface soil. No mercury or PCBs were detected. Isolated pockets of DRO- and VOC-impacted soil were found. In 2003 contaminated soils were excavated from the two (2) isolated pockets designated Remediation Area 1 and Remediation Area 2 (RA1 and RA2), treated by land-spreading and backfilled when PID readings were less than 10 ppm. A down-gradient well did not contain elevated DROs or VOCs thus indicating no significant impacts from contaminated subsurface soil.

SWMU 7, PCB Storage Area: As described in Reference 6 above, PCB contamination was in shallow soil (<12 inches) beneath the concrete floor. Since the contamination was beneath a building and shallow, subsurface soil greater than 2 feet deep was not affected. Shallow contaminated soil was removed. Sampling in remaining soil confirmed that PCB levels were below 1 ppm. Human exposure risk was further reduced by a new concrete floor poured over uncontaminated backfill.

Air (outdoors)

SWMU 1, Commodity Storage Area: Excavations during construction attempted to remove the most-contaminated soil, but some soil with mercury remains beneath the commodity storage building and in surrounding surface soil. The entire area was paved with asphalt. A risk assessment for the commodity storage building area conducted by Stone and Webster Engineering is described in reference 12. The assessment determined that the only significant risk of human exposure to mercury through outdoor air in this area would occur when the pavement is penetrated and excavation beneath would mobilize mercury particulates and vapor.

SWMU 4, Former Fire Training Area: References 1 and 2 above describe SWMU 4 investigations in 2001 for mercury, PCBs, residual petroleum products, and VOCs using test pits and soil samples. Isolated pockets of DRO- and VOC-impacted soil were found. No mercury or PCBs were detected. Potential outdoor air risks were minimal due to the fact that the isolated pockets were in subsoil. In 2003 risks were reduced when contaminated soils were excavated from the two (2) isolated pockets designated Remediation Area 1 and Remediation Area 2 (RA1 and RA2), treated and backfilled when PID readings were less than 10 ppm. The area is now paved, further reducing the human exposure risk through outdoor air.

SWMU 7, PCB Storage Area: The only known contaminant in this area was PCBs. As described in Reference 6 above, all contaminated concrete floor, brick wall surfaces and sub-slab soil with PCBs above 1 ppm have been removed. Remaining pipes and structures were decontaminated and wipe tested. All wipe samples were below the detection limit of 1.2 μg/wipe. Remaining PCBs, if present, are in very low concentrations. Also, there is no pathway to outdoor air.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	no	no	no	yes			no
Air (indoors)	no	yes	no				
Soil (surface, e.g., <2 ft)	no	yes	no	yes	no	no	no
~~Surface Water~~	___	___			___	___	___
~~Sediment~~	___	___			___	___	___
Soil (subsurface e.g., >2 ft)				yes			no
Air (outdoors)	no	yes	no	yes	no		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

__X__ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

Rationale and Reference(s):

Groundwater: (construction)

SWMU 1, Commodity Storage Area: References 1, 3, 4, 5 and 7 through 12 discuss environmental investigations in SWMU 1 where mercury had been spilled at a former chloralkali plant. A potential construction pathway to contaminated groundwater for human receptors exists if excavations are conducted where there is contact with groundwater.

Groundwater monitoring in this area has been designed to evaluate water quality immediately beneath the former chloralkali facility and to assess whether a mercury plume has developed from the source area. Table 1 summarizes mercury levels in groundwater from 2001 through 2008 at 12 monitoring wells associated with SWMU 1. Mercury was equal to or below the state Maximum Exposure Guideline of 2 ppb for all monitoring wells except for MD-14 and MD-15 which are installed directly below the former chloralkali plant. Mercury levels exceeding the MEG at these locations ranged from 0.3 ppb to 19.4 ppb. These data indicate that mercury above the MEG exists directly beneath the former chloralkali plant location, but there is no evidence for the development of a plume leaving the source area with mercury concentrations above the MEG. Pathways to human consumption of mercury-contaminated water do not exist since the paper mill and surrounding areas are supplied by public water. The nearest residences are located approximately one quarter mile upstream from the mill. Public water supplies are all up-gradient from the mill.

Excavations attempted to remove the most-contaminated soil, but some contaminated soil may remain. Water infiltration and flow are minimized by surface paving and sheet piling driven to 20 feet. A risk assessment for the commodity storage building area conducted by Stone and Webster Engineering is described in reference 12. They determined that the only significant risk of human exposure to mercury in this area would occur when the pavement is penetrated and soil excavated. A potential pathway exists if there is human contact with groundwater that has been in contact with contaminated soil.

Areas in SWMU 1 with potential mercury contamination are known. As required by Department Site Location Order (Reference 9 above), the New Page mill has maintained a protocol for managing projects that occur in the vicinity of the former SWMU 1. The protocol requires that the proposed project sites be characterized in advance of conducting any work. Once the presence or absence of mercury is established, then construction may proceed or may be relocated accordingly. If construction proceeds, then all soil is tested for the presence of mercury, and if present, necessary worker protection procedures will be implemented. As required by Reference 9, disposal of contaminated soil is subject to Department review and

approval of proposed disposal methods and location(s).

SWMU 4, Former Fire Training Area: References 1 and 2 above describe investigations in SWMU 4. SWMU 4 was investigated in 2001 for mercury, PCBs, residual petroleum products, and VOCs using test pits and soil samples. No mercury or PCBs were detected. Isolated pockets of DRO- and VOC-impacted soil, however, were found above the water table. A down-gradient well did not contain elevated DROs or VOCs. In 2003 contaminated soils were excavated from the two (2) isolated pockets designated Remediation Area 1 and Remediation Area 2 (RA1 and RA2), treated and backfilled when PID readings were less than 10 ppm. No groundwater pathway to human receptors exists since the contaminated soil has been treated, backfilled and covered with pavement.

SWMU 7, PCB Storage Area: Reference 6 above describes PCB contamination at SWMU 7. Concrete, brick structures, and shallow soil were contaminated with PCBs. Groundwater was unaffected and no groundwater pathway to human receptors exists.

Air (indoors): (workers)

SWMU 1, Commodity Storage Area: A risk assessment for the commodity storage building area conducted by Stone and Webster Engineering is described in reference 12. Air sampling results from within the Commodity Storage Area are shown below in Table 2.

Table 2
Indoor Air Sampling Results for Highest Mercury Concentrations
Commodity Storage Building

Commodity Storage Building (mg/m^3)		NIOSH REL (mg/m^3)		Maine Ambient Air Guideline mg/m^3 (1)
Particulate	Vapor	Particulate	Vapor	Total
<0.0029	<0.0058	0.05	0.01	0.0003

(1) Identical to EPA Reference Concentration (RfC): a chronic exposure standard for residences, children, and pregnant women

All levels were below the NIOSH Recommended Exposure Level (REL). The risk assessment concluded that air quality data from the commodity storage building indicate insignificant health risks to nearest residents or onsite workers during normal operations. Levels of mercury lower than the NIOSH REL can be a concern for certain workers. The Commodity Storage building is however a low-occupancy building used for warehouse purposes. Exposure potential is therefore mitigated by

the fact that the commodity storage building is low-occupancy: *i.e.* workers enter the building only when manufacturing materials arrive or are retrieved for use.

SWMU 4, Former Fire Training Area: There are no pathways to indoor air. The area is now a paved, log storage yard.

SWMU 7, PCB Storage Area: The only known contaminant in this area was PCBs. As described in Reference 6 above, all contaminated concrete floor, brick wall surfaces and sub-slab soil with PCBs above 1 ppm have been removed. Remaining pipes and structures were decontaminated and wipe tested. All wipe samples were below the detection limit of 1.2 μg/wipe. There is no residual contamination that constitutes a significant risk to human receptors.

Surface Soil: (workers, construction)

SWMU 1, Commodity Storage Area: A risk assessment for the commodity storage building area conducted by Stone and Webster Engineering is described in reference 12. The assessment concluded that there are no significant risks for human exposure under normal operations and construction activities as long as conventional dust control measures are used. There is potential exposure for skin contact and breathing if the pavement is penetrated and soil excavated.

Areas in SWMU 1 with potential mercury contamination are known. As required by Department Site Location Order (Reference 9 above), the New Page mill has maintained a protocol for managing projects that occur in the vicinity of the former SWMU 1. The protocol requires that the proposed project sites be characterized in advance of conducting any work. Once the presence or absence of mercury is established, then construction may proceed or may be relocated accordingly. If construction proceeds, then all soil is tested for the presence of mercury, and if present, necessary worker protection procedures will be implemented. As required by Reference 9, disposal of contaminated soil is subject to Department review and approval of proposed disposal methods and location(s).

SWMU 4, Former Fire Training Area: References 1 and 2 above describe investigations in SWMU 4. SWMU 4 was investigated in 2001 for mercury, PCBs, residual petroleum products, and VOCs using test pits and soil samples. No mercury or PCBs were detected. Isolated pockets of DRO- and VOC-impacted soil, however, were found above the water table. Two samples from SWMU 4 had DRO levels above *Maine's Tier 1 Soil Remediation Guidelines Based on Petroleum Leaching to Ground Water*. No samples from SWMU 4 had VOC levels above Maine's RAGs for leaching to groundwater. A down-gradient well did not contain elevated DROs or VOCs in 2001. In 2003 contaminated soils were excavated from the two (2) isolated pockets designated Remediation Area 1 and Remediation Area 2 (RA1 and RA2), treated and backfilled when PID readings were less than 10 ppm.

The area is now an open, paved, log storage yard. No significant contaminant source exists for a pathway to human receptors since the contaminated soil has been treated, backfilled and covered with pavement.

SWMU 7, PCB Storage Area: The only known contaminant in this area was PCBs. As described in Reference 6 above, all contaminated concrete floor, brick wall surfaces and sub-slab soil with PCBs above 1 ppm have been removed. Remaining pipes and structures were decontaminated and wipe tested. All wipe samples were below the detection limit of 1.2 μg/wipe. There is no residual surface soil contamination that constitutes a significant risk to human receptors.

Subsurface Soil: (construction)

SWMU 1, Commodity Storage Area: A risk assessment for the commodity storage building area conducted by Stone and Webster Engineering is described in reference 12. The assessment concluded that there are no significant risks for human exposure under normal operations and construction activities as long as conventional dust control measures are used. There is potential exposure for skin contact and breathing if the pavement is penetrated and subsurface soil excavated.

Areas in SWMU 1 with potential mercury contamination are known. As required by Department Site Location Order (Reference 9 above), the New Page mill has maintained a protocol for managing projects that occur in the vicinity of the former SWMU 1. The protocol requires that the proposed project sites be characterized in advance of conducting any work. Once the presence or absence of mercury is established, then construction may proceed or may be relocated accordingly. If construction proceeds, then all soil is tested for the presence of mercury, and if present, necessary worker protection procedures will be implemented. As required by Reference 9, disposal of contaminated soil is subject to Department review and approval of proposed disposal methods and location(s).

SWMU 4, Former Fire Training Area: In 2003 DRO- and VOC-contaminated soils were excavated from the two (2) isolated pockets designated Remediation Area 1 and Remediation Area 2 (RA1 and RA2), treated by land spreading, and backfilled when PID readings were less than 10 ppm. A down-gradient well did not contain elevated DROs or VOCs prior to removal of the contaminated soil.

The area is now an open, paved, log storage yard. There is no significant contaminant source for a pathway through subsurface soil to human receptors.

SWMU 7, PCB Storage Area: The only known contaminant in this area was PCBs. As described in Reference 6 above, all contaminated concrete floor, brick wall surfaces and sub-slab soil with PCBs above 1 ppm have been removed. Remaining pipes and structures were decontaminated and wipe tested. All wipe samples were

below the detection limit of 1.2 μg/wipe. There was no subsurface soil contamination that constitutes a significant risk through subsurface soil to human receptors.

Air (outdoors): (workers and construction)

SWMU 1, Commodity Storage Area: There is potential for outdoor air pathways to human receptors for mercury vapor and particulates where construction activities disturb pavement and underlying soil.

A risk assessment for the commodity storage building area conducted by Stone and Webster Engineering is described in reference 12. Ambient air sampling results from outside the Commodity Storage Area are shown below in Table 3. All concentrations were below the NIOSH Recommended Exposure Level (REL). The risk assessment concluded that air quality data outside the commodity storage building indicate insignificant health risks to nearest residents or onsite workers during normal operations.

Table 3
Outdoor Air Sampling Results for Highest Mercury Concentrations
Commodity Storage Building

Commodity Storage Building (mg/m^3)		NIOSH REL (mg/m^3)		Maine Ambient Air Guideline mg/m^3 (1)
Particulate	Vapor	Particulate	Vapor	Total
<0.0016	<0.0016	0.05	0.01	0.0003

(1) Identical to EPA Reference Concentration (RfC): a chronic exposure standard for residences, children, and pregnant women

Areas in SWMU 1 with potential mercury contamination are known. As required by Department Site Location Order (Reference 9 above), the New Page mill has maintained a protocol for managing projects that occur in the vicinity of the former SWMU 1. The protocol requires that the proposed project sites be characterized in advance of conducting any work. Once the presence or absence of mercury is established, then construction may proceed or may be relocated accordingly. If construction proceeds, then all soil is tested for the presence of mercury, and if present, necessary worker protection procedures will be implemented. As required by Reference 9, disposal of contaminated soil is subject to Department review and approval of proposed disposal methods and location(s).

SWMU 4, Former Fire Training Area: In 2003 DRO- and VOC-contaminated soils were excavated from the two (2) isolated pockets designated Remediation Area 1 and Remediation Area 2 (RA1 and RA2), treated by land spreading, and backfilled

when PID readings were less than 10 ppm. A down-gradient well did not contain elevated DROs or VOCs prior to removal of the contaminated soil. The area is now an open, paved, log storage yard. There is no significant contaminant source for a pathway through outdoor air to human receptors.

SWMU 7, PCB Storage Area: The only known contaminant in this area was PCBs. As described in Reference 6 above, all contaminated concrete floor, brick wall surfaces and sub-slab soil with PCBs above 1 ppm have been removed. Remaining pipes and structures were decontaminated and wipe tested. All wipe samples were below the detection limit of 1.2 μg/wipe. There is no significant residual contamination that constitutes an unacceptable risk through outdoor air to human receptors.

4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

__X__ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s): See previous sections.

Footnotes:

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

Current Human Exposures Under Control
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5 Can the "significant" exposures (identified in #4) be shown to be within acceptable limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):_____

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

__X__ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the New Page facility, EPA ID # MED083184051, located at Rumford, Maine under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by (signature) Harold Nilsson Date 9/30/11
Harold Nilsson
Environmental Specialist III

Supervisor (signature) Stacy A. Ladner Date 9/30/11
Stacy Ladner
Environmental Specialist IV
EPA Region

Locations where References may be found:

Maine Department of Environmental Protection
File Room, Ray Building
28 Tyson Drive
Augusta, ME 04333

Contact telephone and e-mail numbers

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(phone #) 207-287-5618
(e-mail) harold.d.nilsson@maine.gov

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

ATTACHMENT 1

SWMU Issues Summary

In 1992 the Maine Department of Environmental Protection (the Department) completed a RCRA Facility Assessment (RFA) for the Boise Cascade Corporation, White Paper Division, Rumford, Maine. The facility is a paper mill that began operations in the 1890's and has gone through a series of owners since Boise Cascade that includes MeadWestvaco Corporation, Mead Corporation, and New Page Corporation. Rumford Paper Company, which is a subsidiary of New Page, presently operates the mill. The mill is located in Oxford County in the town of Rumford, Maine at approximately 44° 32' 31" north latitude and 70° 32' 30" west longitude, and is located on a narrow river terrace, adjacent to the Androscoggin River, composed of alluvial and glaciofluvial gravel and glacial till up to 80 feet thick,. The nearest residences are located approximately one quarter mile away in an upstream direction. Public water and sewer serve the mill and surrounding area.

The RFA contains a review of license files, relevant documents, and a visual inspection of the facility. The RFA examined the records for known or potential releases of hazardous wastes and identified eight (8) solid waste management units (SWMUs) for investigation. All SWMUs were investigated for potential contaminants based on existing and past activities at each site. Remedy Selection and Construction Complete are based on the following documents:

1. Sevee and Maher Engineers Inc., June 2002, *Hydrogeologic Investigation Report for 2001 Phase I Assessment of Solid Waste Management Units, MeadWestvaco Rumford Mill, Rumford, Maine*;

2. Sevee and Maher Engineers Inc., October 21, 2003 letter to Scott Reed, *Results of Phase II Assessment/Remediation of Soils in Former Fire Training Area, MeadWestvaco Paper Division, Rumford Mill, Rumford, Maine;*

3. Sevee and Maher Engineers Inc., August 13, 2004 letter to Scott Reed, *Results of Phase II Water Quality Sampling Rounds, MeadWestvaco Paper Division, Rumford Mill, Rumford, Maine*;

4. Sevee and Maher Engineers Inc., November 9, 2004, *Direct-Push Groundwater Sampling Results, Phase II Assessment of Commodity Storage Area/North Mill Yard;*

5. Sevee and Maher Engineers Inc., August 19, 2008, *SWMU 1, Monitoring Well Installation and Sampling, Newpage Corporation, Rumford, Maine;*

6. Sevee and Maher Engineers Inc., April 8, 2011, *Final Report for SWMU-7 Clean-up, Former PCB Storage Area, Rumford Paper Company, Rumford, Maine*

7. January 29, 1990 letter from Paul A. Jones (Boise Cascade) to Stacy Ladner (DEP);

8. February 5, 1990 letter from Paul A. Jones (Boise Cascade) to Stacy Ladner (DEP);

9. Maine Department of Environmental Protection, Site Location Order L-004758-20-C-A, March 16, 1989, to Boise Cascade Corporation;

10. March 23, 1990 memo from Stacy Ladner (DEP Oil Bureau) to Dave Studer (DEP Land Bureau);

11. Maine Department of Environmental Protection, Site Location Order L-004758-20-H-M, April 26, 1989, to Boise Cascade Corporation.

After Phase I and Phase II environmental investigations, it was determined that Remedy Selection and Construction Complete were necessary for three (3) of the eight (8) SWMUs: SWMU 1, SWMU 4 and SWMU 7. SWMU investigations, Remedy Selections and Construction Complete descriptions are outlined below:

SWMU 1: Commodity Storage Area

Investigations performed at SWMU 1 are described in references 1, 3, 4, 5 and 7 through 11 above. The commodity storage area is the former location of a chloralkali plant known as the Sorenson Electrochemical Plant that discharged mercury to soil and groundwater. The remedy selection was removal of contaminated soil, where practicable (*i.e.* in coordination with construction projects), and monitoring of groundwater potentially contaminated by mercury. At SWMU 1, approximately one half of the chloralkali plant was demolished and mercury-contaminated soil removed from beneath the demolished portion, tested, and found to be non-hazardous using the TCLP test. Soil classified as special waste was disposed at a landfill licensed for the disposal of special waste. Soils with low or non-detect levels of mercury were used as backfill. The remaining part of the chloralkali plant was converted to a commodity storage building. A newer structure, the evaporator building, was constructed on part of the chloralkali plant footprint. Excavations attempted to remove the most-contaminated soil, but some contaminated soil may remain.

Areas in SWMU 1 with potential mercury contamination are known. As required by Department Site Location Order (Reference 9 above), the New Page mill has maintained a protocol for managing projects that occur in the vicinity of the former SWMU 1. The protocol requires that the proposed project sites be characterized in advance of conducting any work. Once the presence or absence of mercury is established, then construction may proceed or may be relocated accordingly. If construction proceeds, then all soil is tested for the presence of mercury, and if present, necessary worker protection procedures will be implemented. As required by Reference 9, disposal of contaminated soil is subject to Department review and approval of proposed disposal methods and location(s).

Groundwater investigations indicated that mercury above the MEG exists directly beneath the former chloralkali plant location, but no plume with concentrations above the MEG from that source currently exists. The absence of a mercury plume with concentrations above the MEG may be due in part to the removal of contaminated soil in association with construction in the area and natural attenuation. Other contributing factors may be the installation of sheet piling to 20 feet and surface paving of the Commodity Storage Area. These efforts were intended to minimize water infiltration and flow of groundwater from the area.

Reference 5 describes the 2007-08 installation of, and groundwater sampling from, ten (10) monitoring wells to improve well coverage for detecting a mercury plume (MW07-402, MW07-401A, MW07-401B). Two rounds of sampling from all ten (10) wells resulted in no mercury detections above the Maine MEG. Since 2003, mercury levels in all ten (10) monitoring wells were below Maine's ambient surface water quality criteria, both chronic and acute. Data from the two rounds of sampling were used to calculate mercury loading to the Androscoggin River. The goal of the calculations was to determine whether Maine's standard for fish tissue had been exceeded (0.0002 ppb: per 38 MRSA, Chapter 3, Sections 420 (1-B) and 413 (11)). Table 1 shows the loading calculations which resulted in no exceedance.

Table 1
Summary of Mercury Loadings to the Androscoggin River
New Page Mill, Rumford, Maine

Data Set (Table 1)	Mercury Concentration in River (ppb)	Mercury Loading (pounds per year)	Mercury Loading 95% Confidence Limit (pounds per year)
Goal	0.0002 (2)	0.1	0.1
December 2007	0.000001139	0.006432	0.013
April 2008	0.000001101	0.00629	0.014
Average for Six Events, Ten Wells (1)	0.000004764	0.027	0.038

(1) The average for the 400 series wells is based on two events, not six (see Table 1).
(2) Based on the calculated bioaccumulation factor for human health per 38 MRSA, Chapter 3, Sections 420 (1-B) and 413 (11)

In addition, groundwater will be tested for mercury semiannually under low- and high-water conditions at the ten monitoring wells used in Reference 3 (B-301, MW-201A and MW-201B, B-302S and B-302D, and MW-202A and MW-202B, MW07-402, MW07-401A, MW07-401B). Groundwater monitoring at SWMU 1 will cease if after three (3) years of additional sampling, no concentrations exceed the Maine's MEG, ambient surface water quality standard, or fish tissue criteria.

Remedy selection and construction are complete for both soil and groundwater.

SWMU 2: Mill Wastewater Treatment System Aeration Basin

Reference 1 describes investigations performed at SWMU 2. The wastewater treatment basin is designed to aerate industrial process wastewater generated in the course of paper making, landfill leachate, and storm water runoff. The basin is lined, and has a waste discharge license and SPCC plan. Before the industrial wastewater is aerated in the basin it is subject to primary clarification, activated sludge treatment and secondary clarification. Treated wastewater is discharged to the Androscoggin River at Outfall 001.

Investigations at SMU 2 include a review of the SPCC plan and groundwater sampling from monitoring wells installed near the basin. Potential contaminants included petroleum products and VOCs. Up-gradient and down-gradient groundwater was tested for diesel range organics (DRO) and VOCs. No DROs were detected and VOC concentrations were below the reporting limits. Based upon test results from nearby monitoring wells, SWMU 2 was determined to not be a threat to human health or groundwater. No remedy selection is necessary at this time.

SWMU 3: Former Rumford City Landfill

Reference 1 describes investigations performed at SWMU 3. This landfill was used as a municipal waste dump through the mid-1960s by the towns of Mexico and Rumford and the Rumford paper mill. The former landfill is now paved and used as a log stockpile area. In 2001, the area was investigated using soil screening and the installation of five (5) groundwater monitoring wells

Potential contaminants tested included total Kjeldahl nitrogen (TKN), ammonia, nitrate, total dissolved solids (TDS), total suspended solids (TSS), sulfate, sulfide, hardness and VOCs, SVOCs, metals, and pesticides/herbicides. Groundwater conditions typical for industrial sites were indicated by elevated sodium and manganese concentrations as well as by pH, specific conductance, chloride, and sulfate values. Arsenic and lead levels detected in groundwater above MEGs were all of the same order of magnitude as the MEG (10 ppb for each). Mercury concentrations in groundwater were below the MEG (2 ppb) and ambient surface water quality criteria (chronic = 0.91 ppb, acute = 1.7 ppb). No VOCs, SVOCs, or pesticides/herbicides were detected in groundwater or soil. Elevated levels of arsenic, lead and mercury were detected in soil and buried waste samples. Using the mixtures calculation method in Maine's soil Remediation Action Guidelines (RAGs), none of these metals exceeded the Excavation or Construction Worker scenario, which is the most likely scenario for this industrial site. Additional mitigating factors include a pavement cover and landfill materials positioned above the water table. Based on the information gathered to date, SWMU 3 was determined not to be a threat to human health or groundwater. No remedy selection is necessary at this time.

SWMU 4: Former Fire Training Area

References 1 and 2 above describe investigations in SWMU 4. The former fire training areas

consisted of outdoor gravel and crushed rock pad with a steel vat for containment of flammables (oil and kerosene) that were ignited for training exercises. In 2001 SWMU 4 was investigated for mercury, PCBs, residual petroleum products, and VOCs using test pits and soil samples. No mercury or PCBs were detected. Isolated pockets of DRO- and VOC-impacted soil, however, were found. Remedy Selection for this site was removal and treatment of contaminated soil in two (2) isolated pockets designated Remediation Area 1 and Remediation Area 2 (RA1 and RA2). Construction Complete was achieved in 2003 when excavated soil was tested, treated, and backfilled. No PID readings exceeded 50 ppm. Approximately 15-20 cubic yards of excavated soil with PID readings between 10 ppm and 50 ppm were spread and allowed to aerate until PID readings were less than 10 ppm. These soils and other soils with original PID readings less than 10 ppm were used for backfill. A down-gradient monitoring well did not contain elevated DRO.

SWMU 5: Demolition Debris Area

Reference 1 above describes SWMU 5 as containing temporary stockpiles of demolition debris including soil, brick, concrete, glass, rock, steel and wood waste. The demolition debris is managed in accordance with Maine's Solid Waste Management Rules, Chapter 402. Reference 1 states "*Several test pits excavated in this area*" and concludes that metal analyses performed on soil samples from these test pits indicate that the area does not impact metal levels in soil or groundwater. This conclusion is apparently based on the test pit results from the investigations of SWMU 4 immediately adjacent to SWMU 5, including the RA1 and RA2 remediation. Based on the information gathered to date, SWMU 5 was determined not to be a threat to human health or groundwater. No remedy selection is necessary at this time.

SWMU 6: Former Untreated Mill Discharge Outfall

Prior to construction of the facility's wastewater treatment plant in 1976, process wastewater, cooling water and stormwater were discharged directly at the mill's outfall to the Androscoggin River. Reference 1 describes the testing of upstream and downstream river sediment for mercury and PCBs. Trace mercury levels (0.02 mg/kg to 0.08 mg/kg) were found in river sediments with no significant difference between samples from locations upstream and downstream from the outfall. No PCBs were detected in river sediment. Reference 1 also cites a previous fish tissue study which concluded that there were no significant differences in mercury concentrations from upstream and downstream fish tissue samples. Fish movement up the river is restricted by the Brookfield hydroelectric facility dam which does not have a fish passage;

Based on the information gathered to date, SWMU 6 was determined not to be a threat to human health or groundwater. No remedy selection is necessary at this time.

SWMU 7: PCB Storage Area

SWMU 7 is also known as the 90-day PCB Storage Area, located in Building 1A. The area was used for the temporary storage of PCB wastes generated from the maintenance and repair of

electrical equipment. PCB contamination was found in the concrete floor and walls of the storage area. The Department initially approved a Remedy Selection that consisted of encapsulating contaminated areas with several coats of epoxy paint and obtaining a restrictive deed covenant for the encapsulated area. Encapsulation was carried out, but due to the complexity of Rumford Paper's mortgages and encumbrances, the Department determined that a subordinated deed covenant could not be issued. The final Remedy Selection was decided when Rumford Paper agreed to remove all floor and wall material in the PCB storage area that had PCB concentrations greater than 1 mg/kg. Underlying soil with PCBs greater than 1 mg/mg, if any, would also be removed. Construction Complete, described in Reference 6 above, was achieved in 2011 when, in accordance with a DEP and EPA-approved work plan, contaminated structural materials and soil with PCBs greater than 1 mg/kg were removed and disposed of at the Clean Harbors Grassy Mountain LLC landfill in Grantsville Utah.

SWMU 8: Hazardous Waste Storage Area

SWMU 8, also known as the 90-day Hazardous Waste Storage Area, is described in Reference 1 as a facility used for temporary storage of hazardous waste. It is a modern, modular steel building on a concrete slab. The building and surrounding paved area are inspected regularly as required by Maine's Hazardous Waste Management Rules. All structures are in good condition and capable of containing spills. Inspection and security procedures are in place for protection against potential releases. A review of records and interviews of employees determined that no problems have occurred. Based on the information gathered to date, SWMU 8 was determined not to be a threat to human health or groundwater. No remedy selection is necessary at this time.